US011895169B2

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Wang et al.

(10) **Patent No.: US 11,895,169 B2**
(45) **Date of Patent: *Feb. 6, 2024**

(54) **DISTRIBUTED MESSAGING COMMUNICATION SYSTEM INTEGRATED WITH A CROSS-ENTITY COLLABORATION PLATFORM**

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(73) Assignee: **Sure Market, LLC**, San Marino, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **18/054,128**

(22) Filed: **Nov. 9, 2022**

(65) **Prior Publication Data**

US 2023/0113369 A1 Apr. 13, 2023

Related U.S. Application Data

(63) Continuation-in-part of application No. 17/584,294, filed on Jan. 25, 2022, now Pat. No. 11,582,276, (Continued)

(51) **Int. Cl.**
G06F 15/16 (2006.01)
H04L 65/4053 (2022.01)
(Continued)

(52) **U.S. Cl.**
CPC ***H04L 65/4053*** (2013.01); ***G06F 16/176*** (2019.01); ***H04L 51/046*** (2013.01); ***H04L 63/0272*** (2013.01)

(58) **Field of Classification Search**
CPC H04L 65/4053; H04L 51/046
(Continued)

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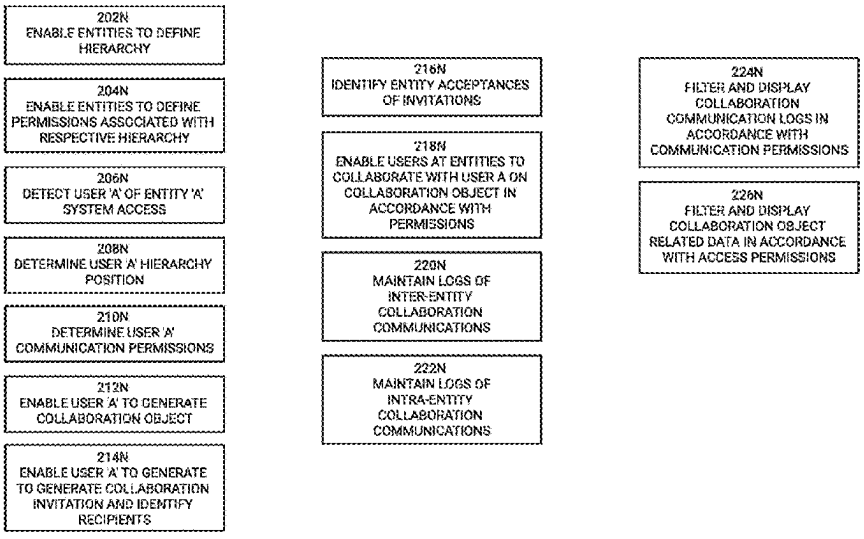
Primary Examiner — Hee Soo Kim
(74) *Attorney, Agent, or Firm* — Knobbe, Martens, Olson & Bear LLP

(57) **ABSTRACT**

A communication/collaboration system enables a first user at a first entity to define a collaboration object, and to invite a second entity to collaborate on the collaboration object in accordance with a hierarchy with corresponding permissions. A second user at a second entity is enabled to collaborate on the collaboration object. A communications log regarding the collaboration between the first user and the second user is maintained. A communications log between the first user and other users at the first entity is maintained. A communication interface is displayed on the first user computer system that displays the log of communications between the first user and the second user on the collaboration object, together with the log of communications regarding the collaboration object between the first user and other users at the first entity, and excluding communications regarding the collaboration object between the second user and other users at the second entity.

30 Claims, 128 Drawing Sheets



Related U.S. Application Data

which is a continuation of application No. 16/883,729, filed on May 26, 2020, now Pat. No. 11,240,278, which is a continuation-in-part of application No. 16/248,529, filed on Jan. 15, 2019, now Pat. No. 10,681,095.

(60) Provisional application No. 62/618,577, filed on Jan. 17, 2018.

(51) **Int. Cl.**

H04L 9/40	(2022.01)
H04L 51/046	(2022.01)
G06F 16/176	(2019.01)

(58) **Field of Classification Search**

USPC 709/204

See application file for complete search history.

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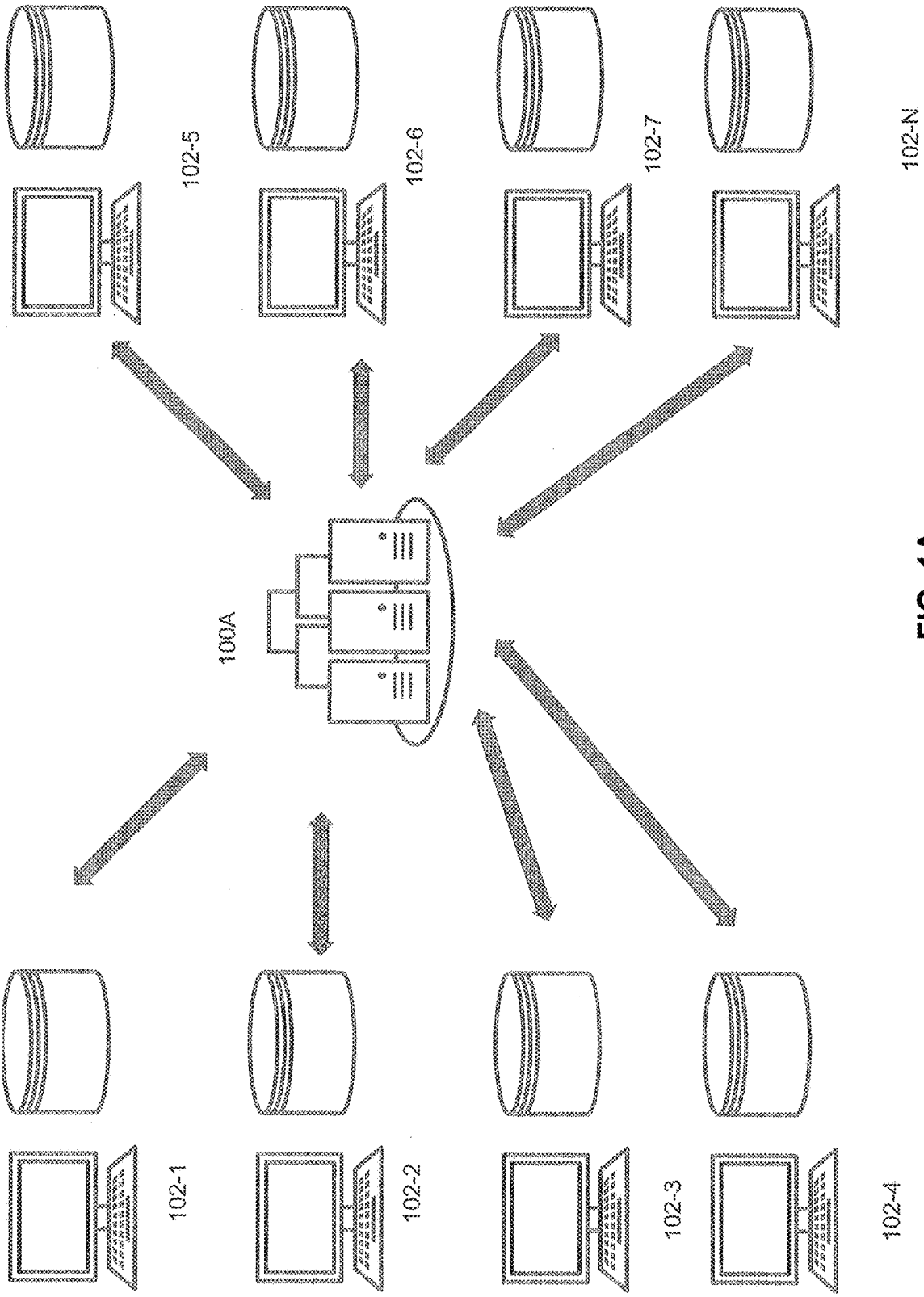


FIG. 1A

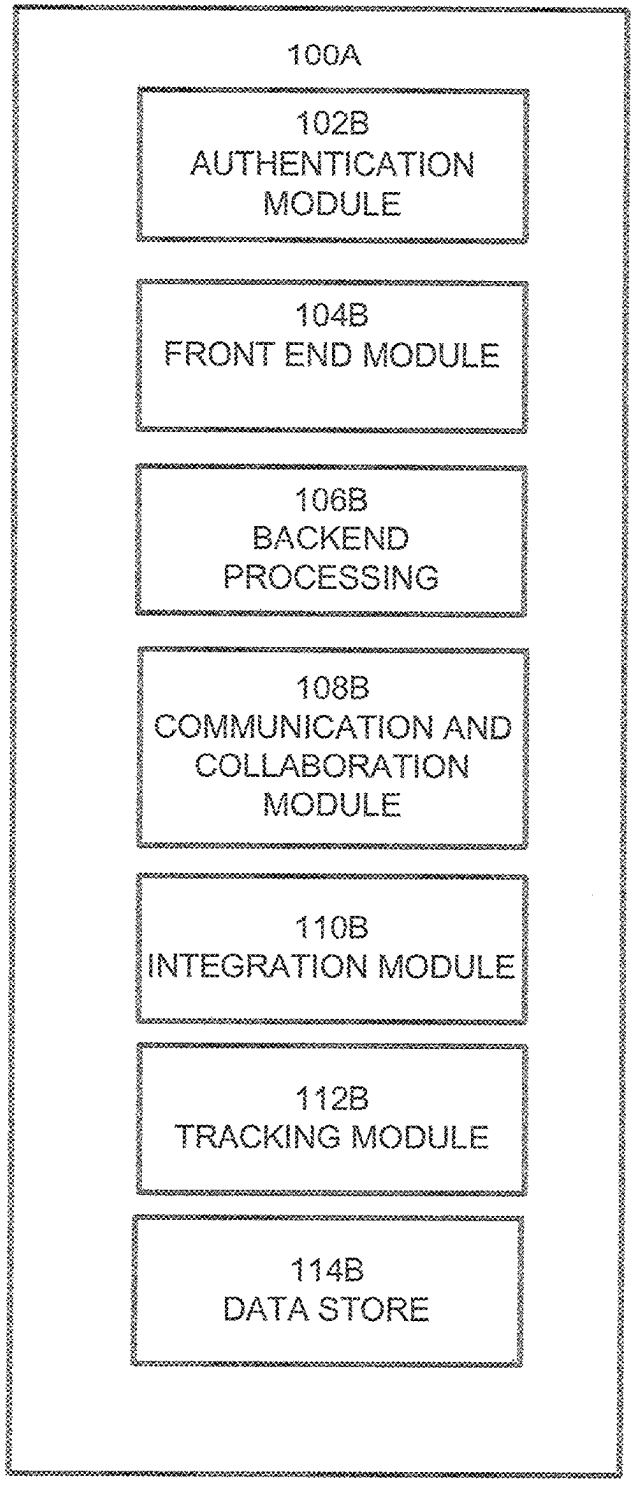

100A
102B
AUTHENTICATION
MODULE
104B
FRONT END MODULE
106B
BACKEND
PROCESSING
108B
COMMUNICATION AND
COLLABORATION
MODULE
110B
INTEGRATION MODULE
112B
TRACKING MODULE
114B
DATA STORE

FIG. 1B

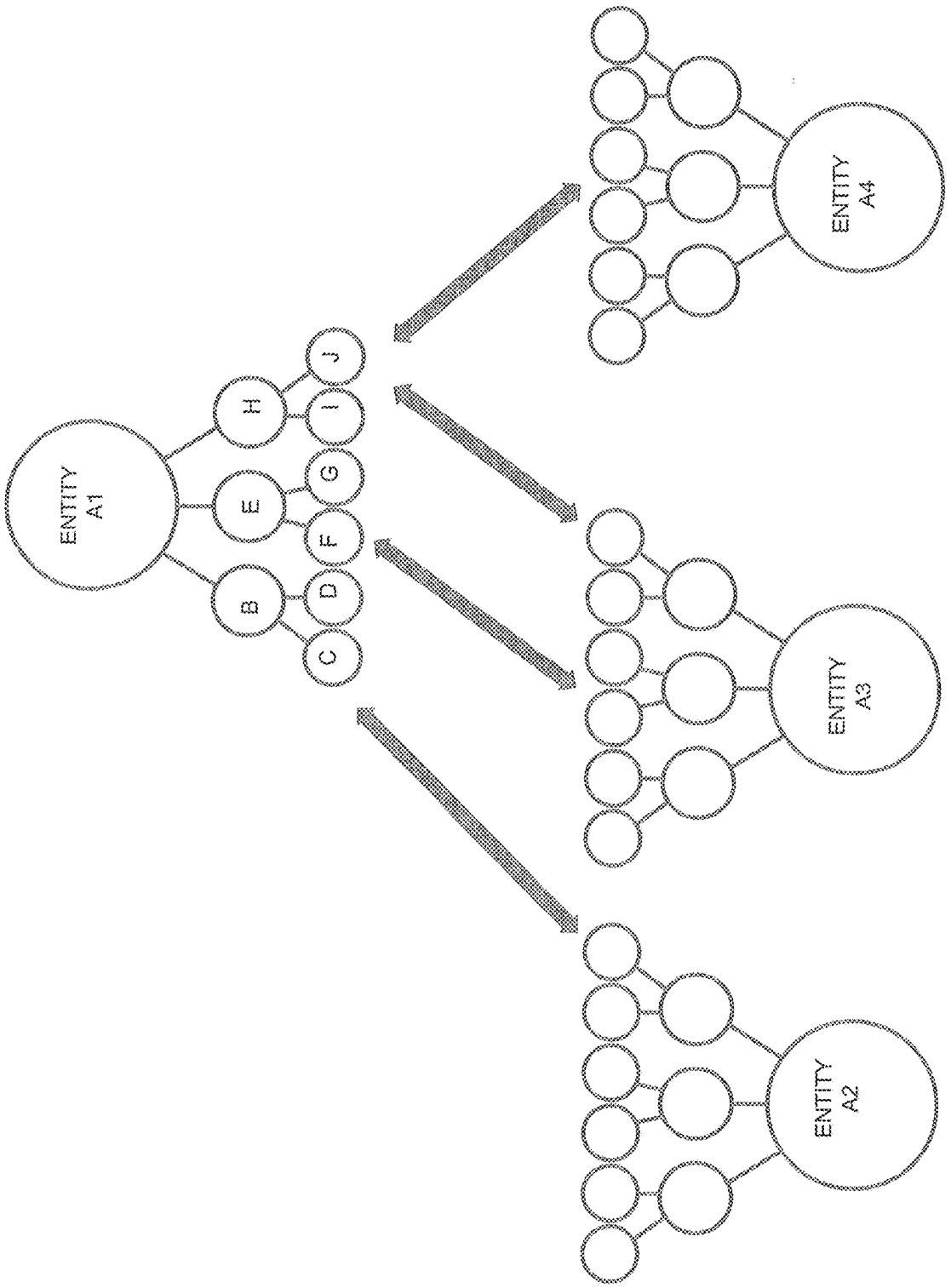


FIG. 1C

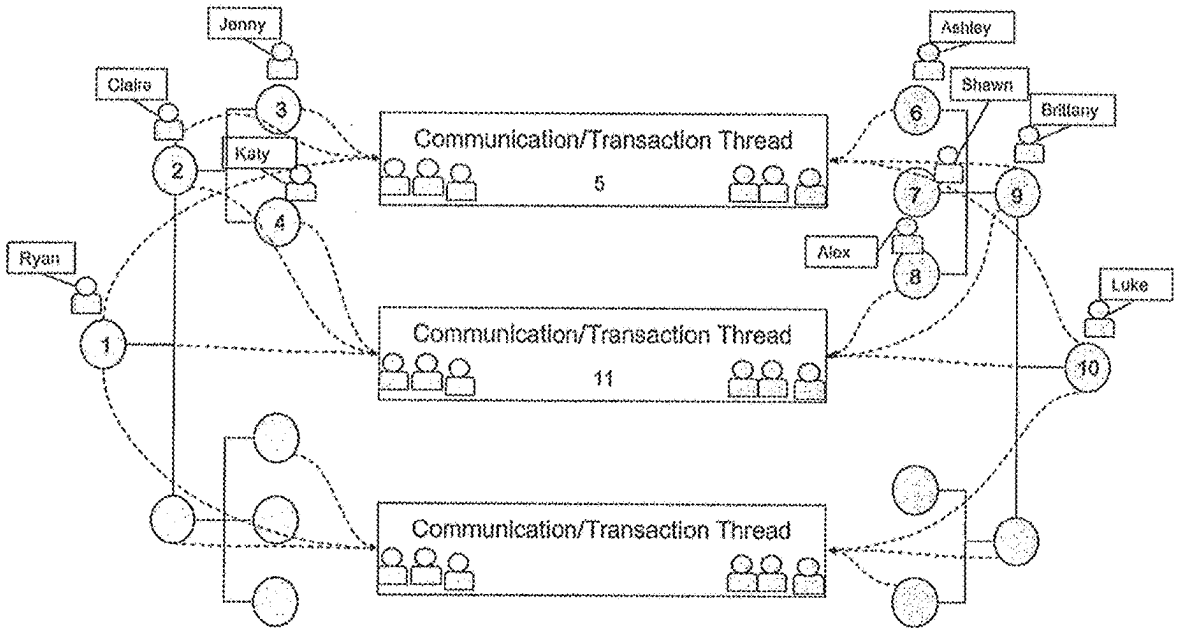

Jenny
Claire
Katy
Ryan
Ashley
Shawn
Brittany
Alex
Luke
1
2
3
4
5
6
7
8
9
10
11
Communication/Transaction Thread
Communication/Transaction Thread
Communication/Transaction Thread

FIG. 1D

Access to 1	Access to 2	Access to 3	Access to 4	Access to 5	Access to 6	Access to 7	Access to 8	Access to 9	Access to 10	Access to 11
Ryan	Ryan	Ryan	Ryan	Ryan	Ashley	Shawn	Alex	Brittany	Luke	Ryan
	Claire	Claire	Claire	Claire	Brittany	Brittany	Brittany	Luke		Claire
		Jenny	Katy	Jenny	Luke	Luke	Luke			Katy
				Ashley						Alex
				Brittany						Brittany
				Luke						Luke

FIG. 1E

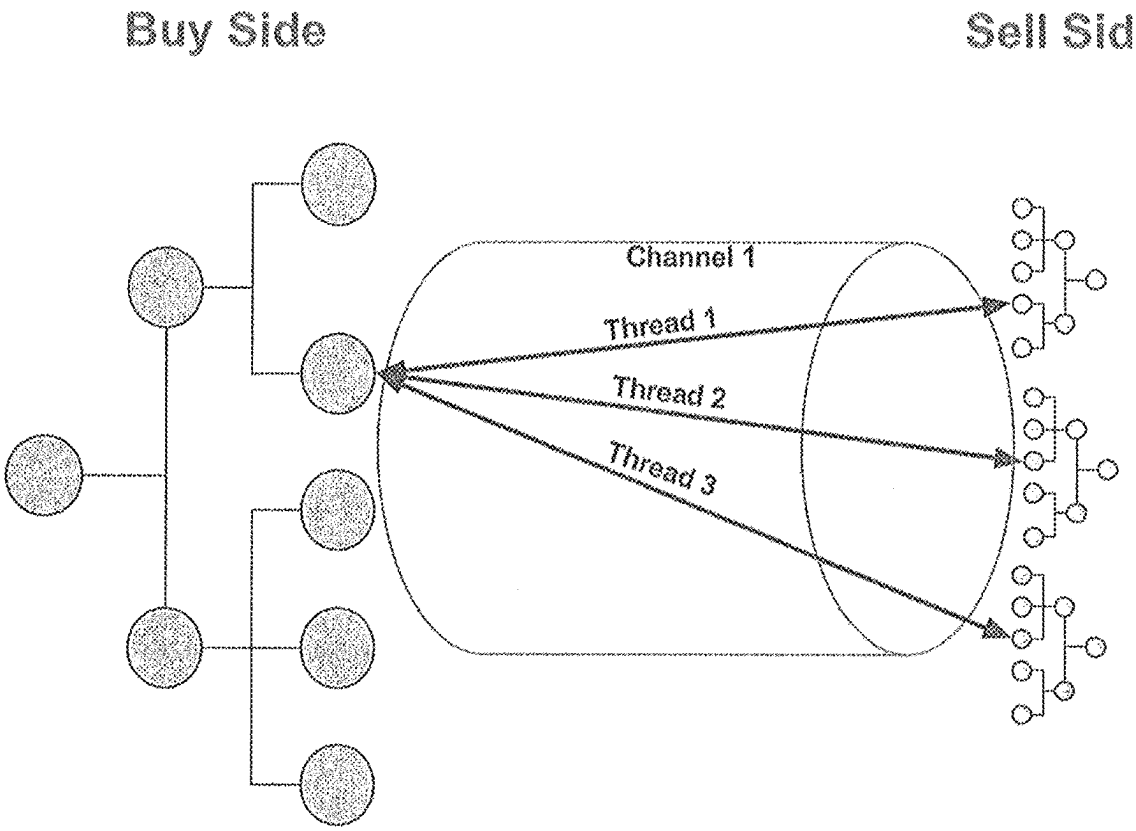


FIG. 1F

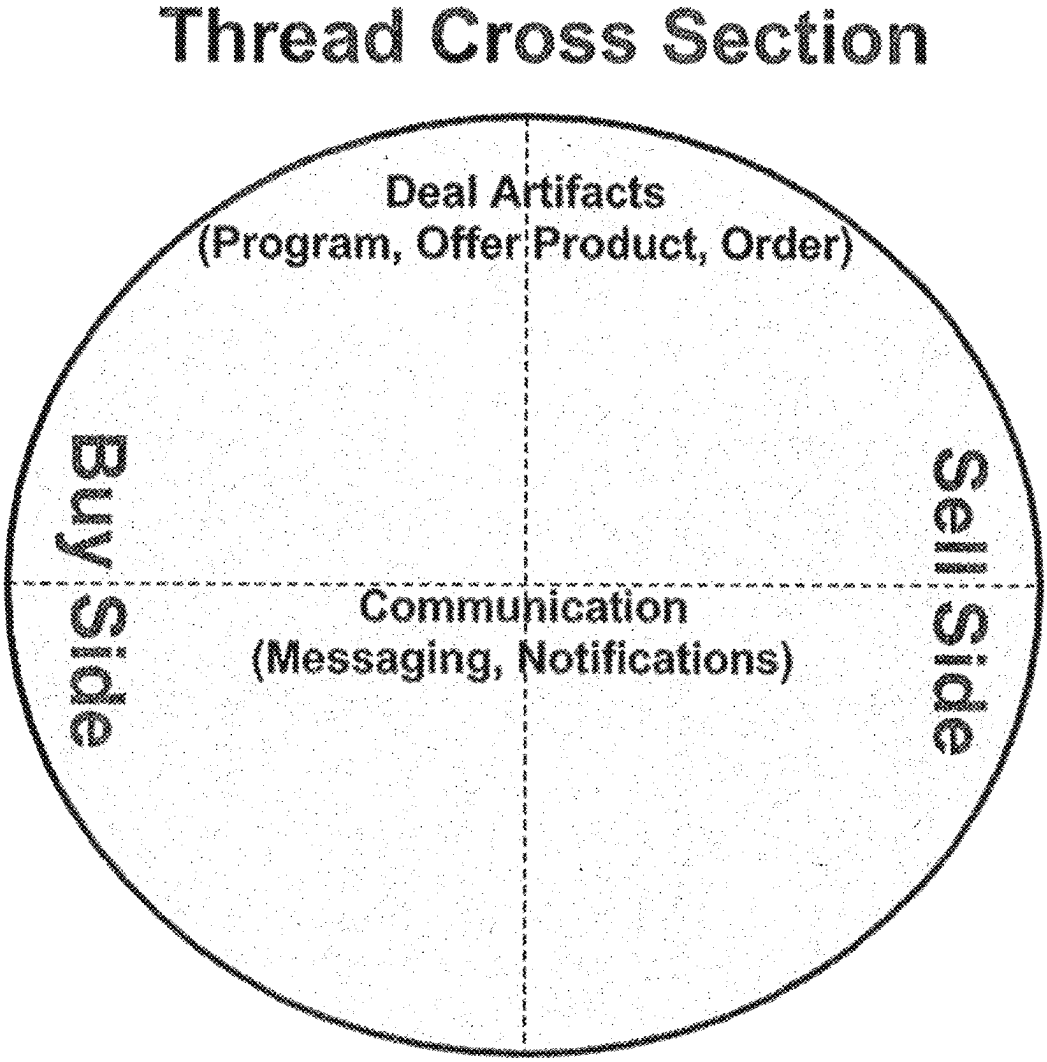

Thread Cross Section
Deal Artifacts
(Program, Offer, Product, Order)
Buy Side
Sell Side
Communication
(Messaging, Notifications)

FIG. 1G

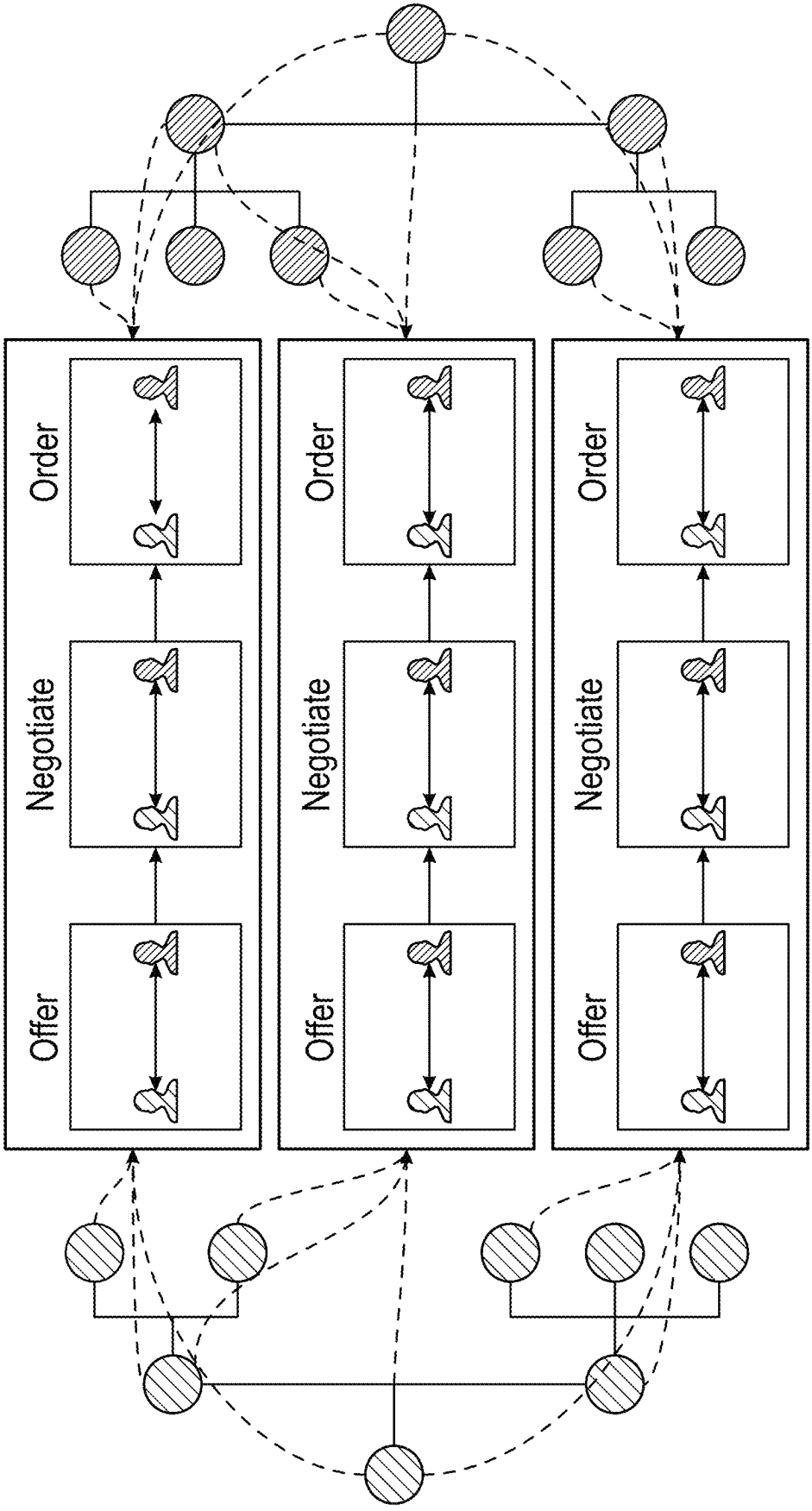

Order
Negotiate
Offer
Order
Negotiate
Offer
Order
Negotiate
Offer

FIG. 1H

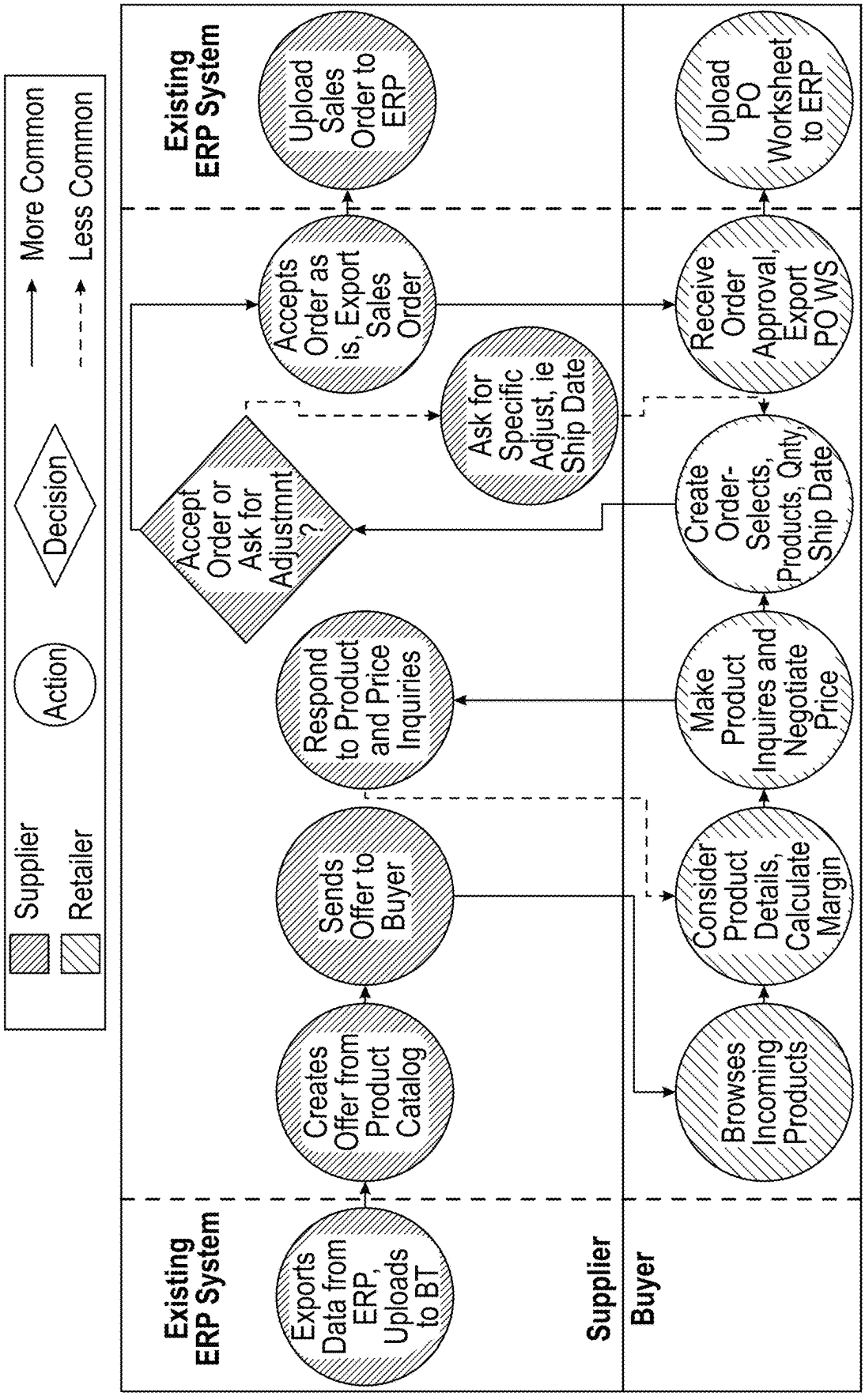

Supplier
Retailer
Action
Decision
More Common
Less Common
Existing ERP System
Existing ERP System
Supplier
Buyer
Exports Data from ERP, Uploads to BT
Creates Offer from Product Catalog
Sends Offer to Buyer
Respond to Product and Price Inquiries
Accept Order or Ask for Adjustmnt ?
Accepts Order as is, Export Sales Order
Ask for Specific Adjust, ie Ship Date
Upload Sales Order to ERP
Browses Incoming Products
Consider Product Details, Calculate Margin
Make Product Inquires and Negotiate Price
Create Order- Selects, Products, Qnty, Ship Date
Receive Order Approval, Export PO WS
Upload PO Worksheet to ERP

FIG. 1I

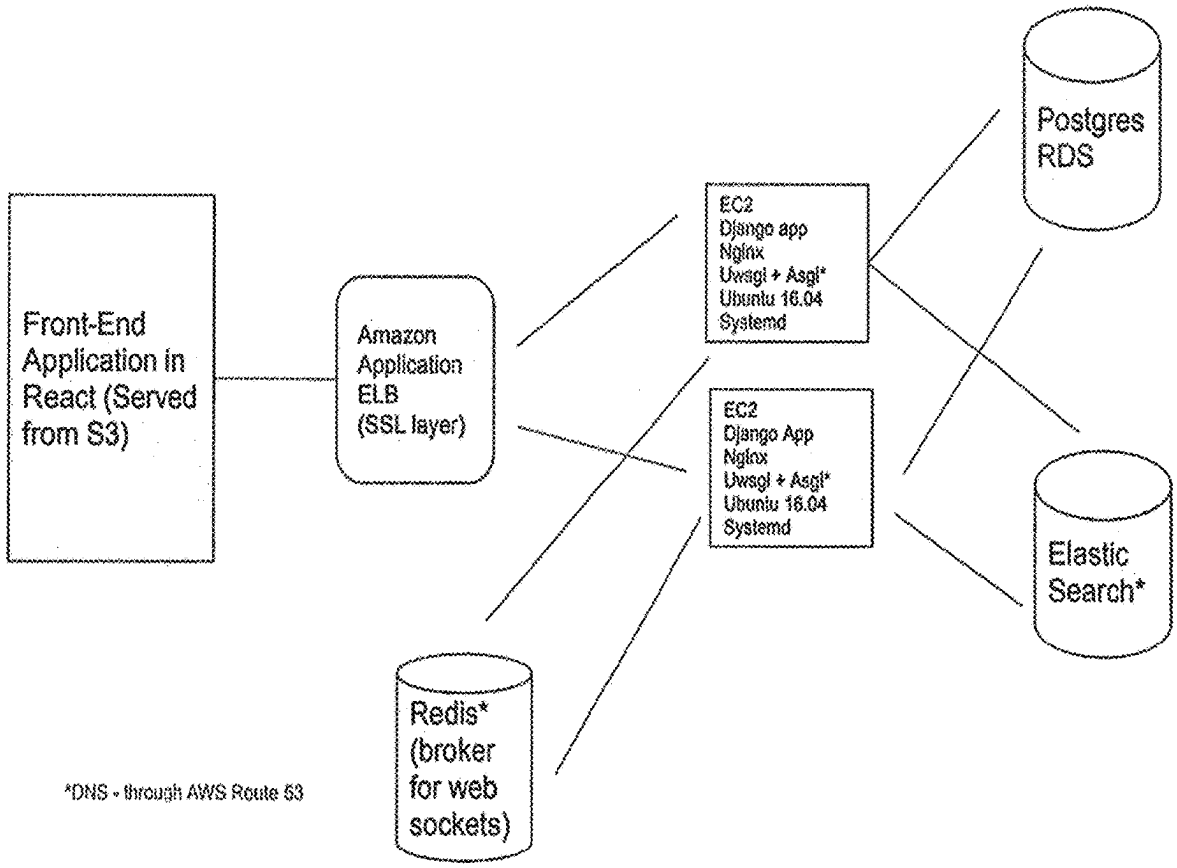

Front-End Application in React (Served from S3)
Amazon Application ELB (SSL layer)
EC2 Django app Nginx Uwsgi + Asgi* Ubuntu 16.04 Systemd
EC2 Django App Nginx Uwsgi + Asgi* Ubuntu 16.04 Systemd
Postgres RDS
Elastic Search*
Redis* (broker for web sockets)
*DNS - through AWS Route 53

FIG. 1J

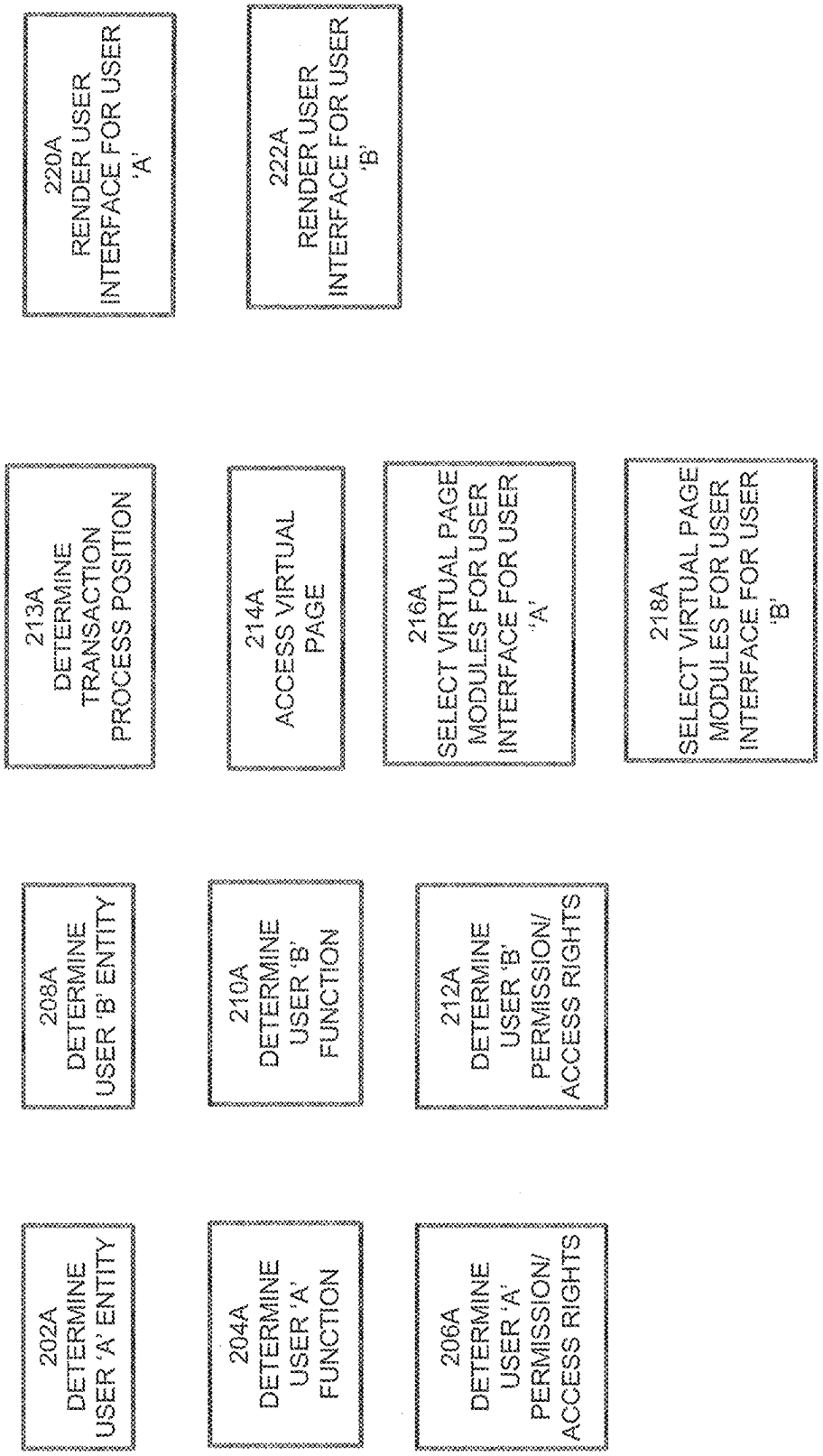

202A DETERMINE USER 'A' ENTITY
204A DETERMINE USER 'A' FUNCTION
206A DETERMINE USER 'A' PERMISSION/ ACCESS RIGHTS
208A DETERMINE USER 'B' ENTITY
210A DETERMINE USER 'B' FUNCTION
212A DETERMINE USER 'B' PERMISSION/ ACCESS RIGHTS
213A DETERMINE TRANSACTION PROCESS POSITION
214A ACCESS VIRTUAL PAGE
216A SELECT VIRTUAL PAGE MODULES FOR USER INTERFACE FOR USER 'A'
218A SELECT VIRTUAL PAGE MODULES FOR USER INTERFACE FOR USER 'B'
220A RENDER USER INTERFACE FOR USER 'A'
222A RENDER USER INTERFACE FOR USER 'B'

FIG. 1K

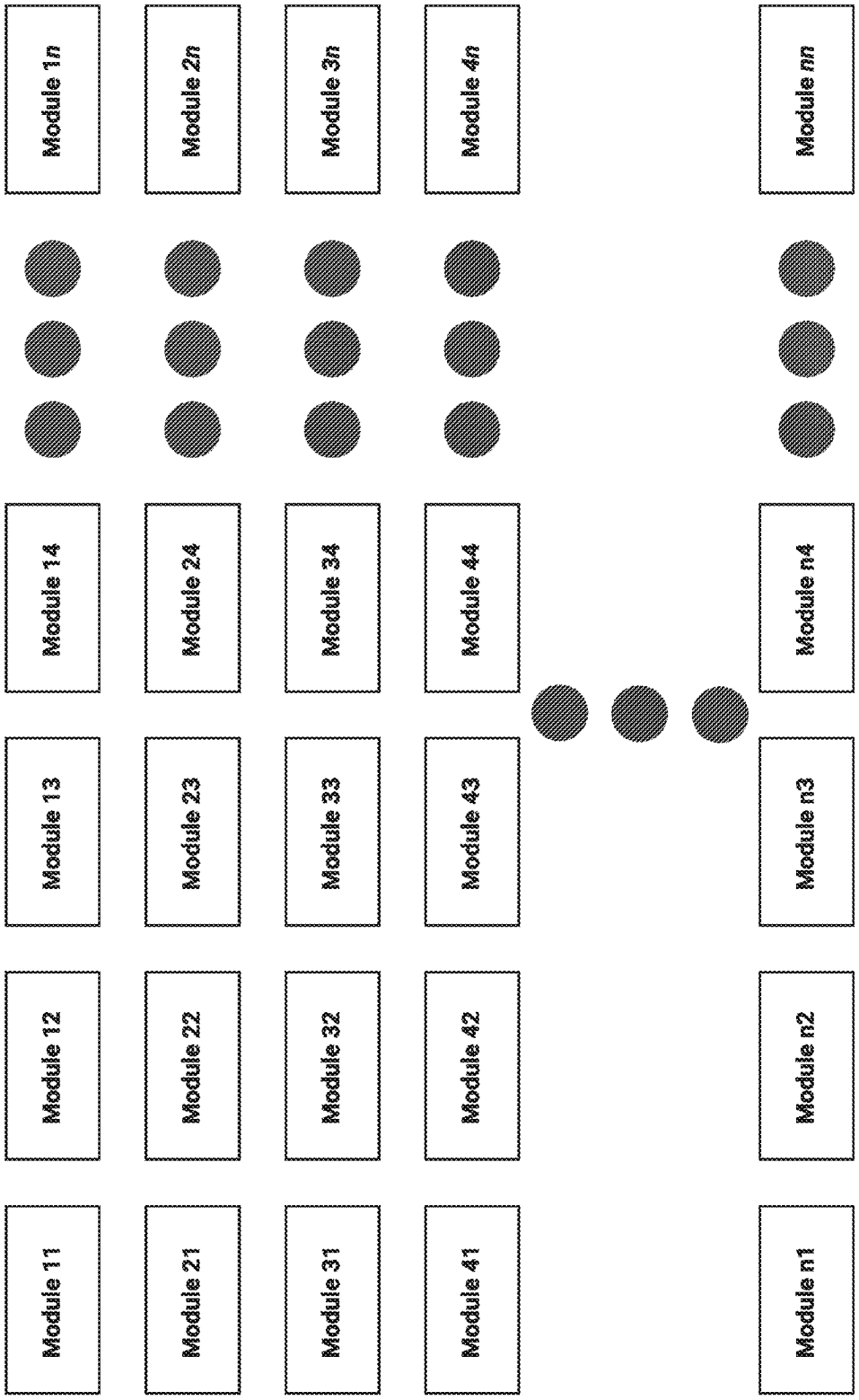
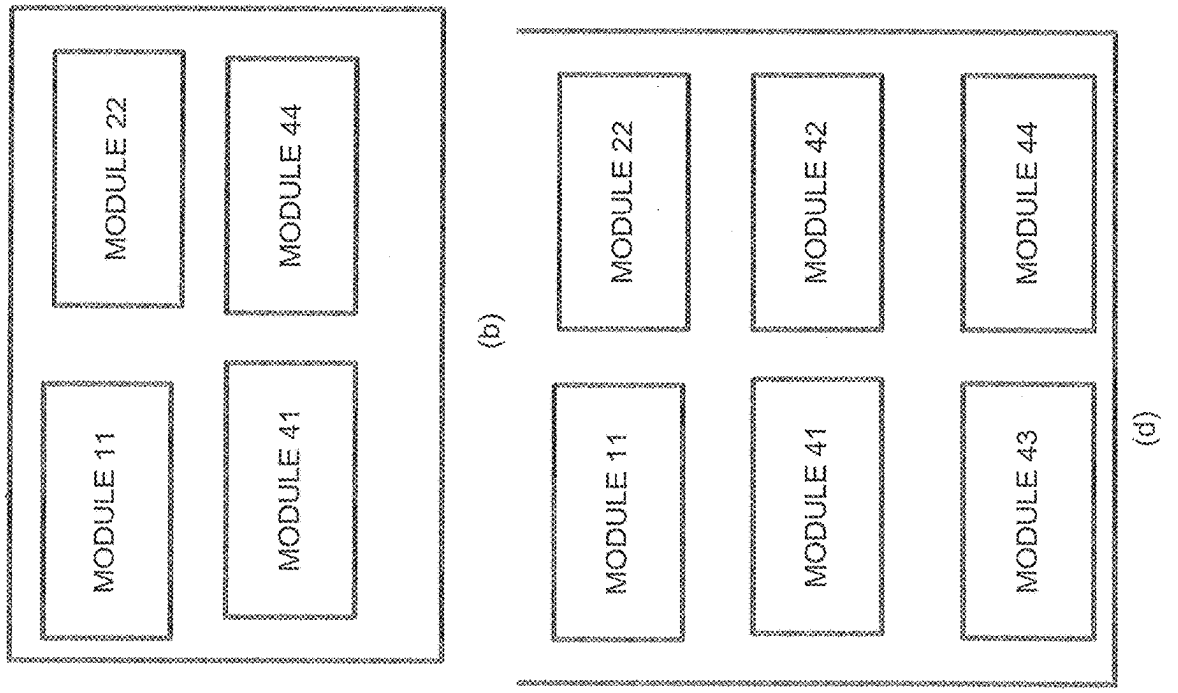

Module 11
Module 12
Module 13
Module 14
Module 1n
Module 21
Module 22
Module 23
Module 24
Module 2n
Module 31
Module 32
Module 33
Module 34
Module 3n
Module 41
Module 42
Module 43
Module 44
Module 4n
Module n1
Module n2
Module n3
Module n4
Module nn

FIG. 1L


MODULE 11
MODULE 22
MODULE 41
MODULE 44
(b)
MODULE 11
MODULE 22
MODULE 41
MODULE 42
MODULE 43
MODULE 44
(d)

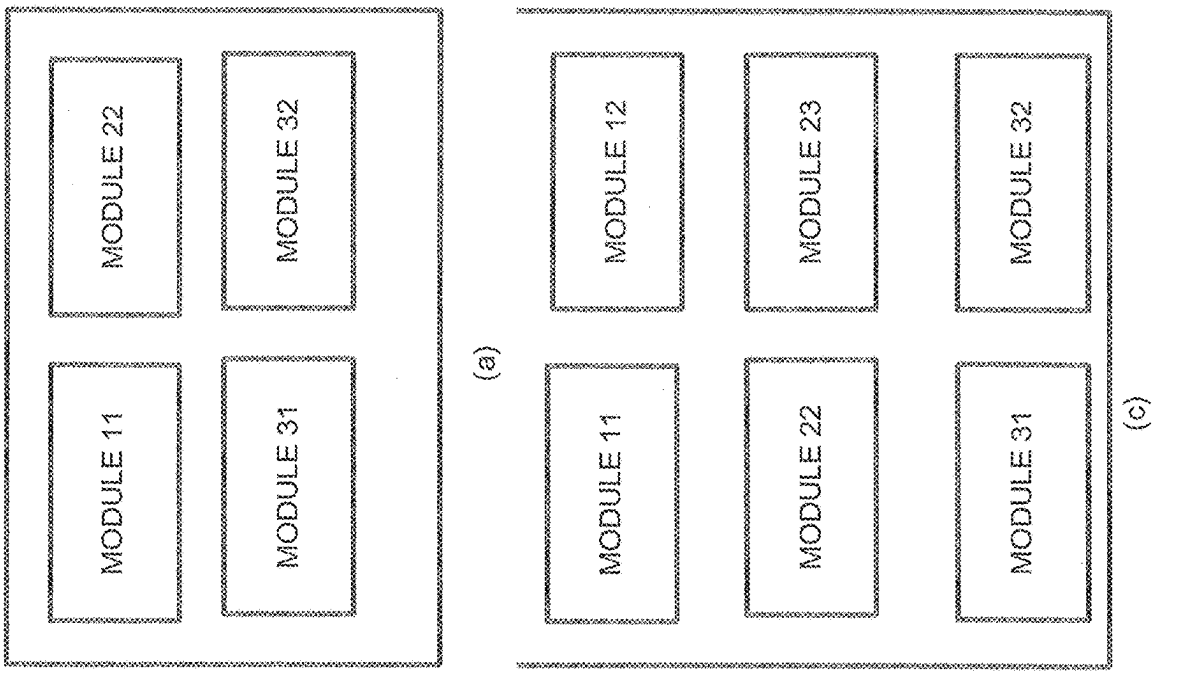

MODULE 11
MODULE 22
MODULE 31
MODULE 32
(a)
MODULE 11
MODULE 12
MODULE 22
MODULE 23
MODULE 31
MODULE 32
(c)

FIG. 1M

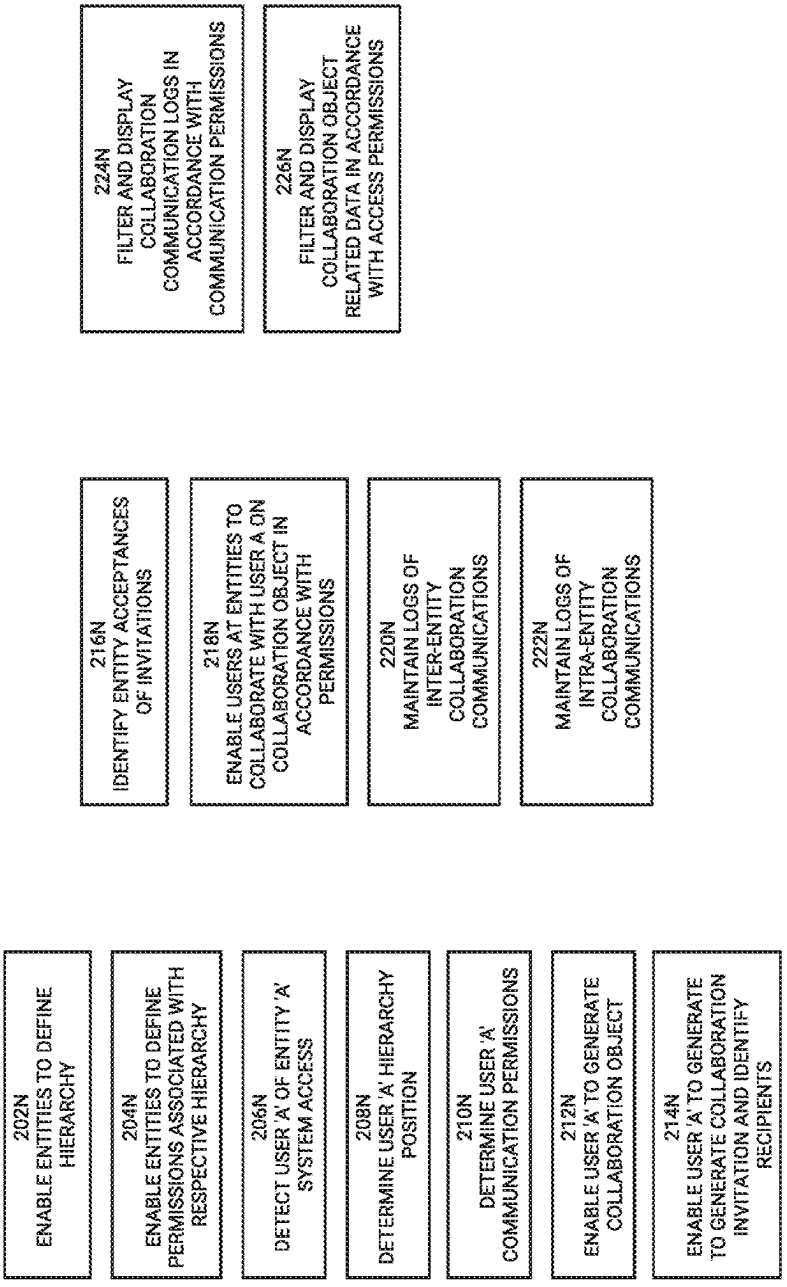

202N
ENABLE ENTITIES TO DEFINE HIERARCHY
204N
ENABLE ENTITIES TO DEFINE PERMISSIONS ASSOCIATED WITH RESPECTIVE HIERARCHY
206N
DETECT USER 'A' OF ENTITY 'A' SYSTEM ACCESS
208N
DETERMINE USER 'A' HIERARCHY POSITION
210N
DETERMINE USER 'A' COMMUNICATION PERMISSIONS
212N
ENABLE USER 'A' TO GENERATE COLLABORATION OBJECT
214N
ENABLE USER 'A' TO GENERATE TO GENERATE COLLABORATION INVITATION AND IDENTIFY RECIPIENTS
216N
IDENTIFY ENTITY ACCEPTANCES OF INVITATIONS
218N
ENABLE USERS AT ENTITIES TO COLLABORATE WITH USER A ON COLLABORATION OBJECT IN ACCORDANCE WITH PERMISSIONS
220N
MAINTAIN LOGS OF INTER-ENTITY COLLABORATION COMMUNICATIONS
222N
MAINTAIN LOGS OF INTRA-ENTITY COLLABORATION COMMUNICATIONS
224N
FILTER AND DISPLAY COLLABORATION COMMUNICATION LOGS IN ACCORDANCE WITH COMMUNICATION PERMISSIONS
226N
FILTER AND DISPLAY COLLABORATION OBJECT RELATED DATA IN ACCORDANCE WITH ACCESS PERMISSIONS

FIG. 1N

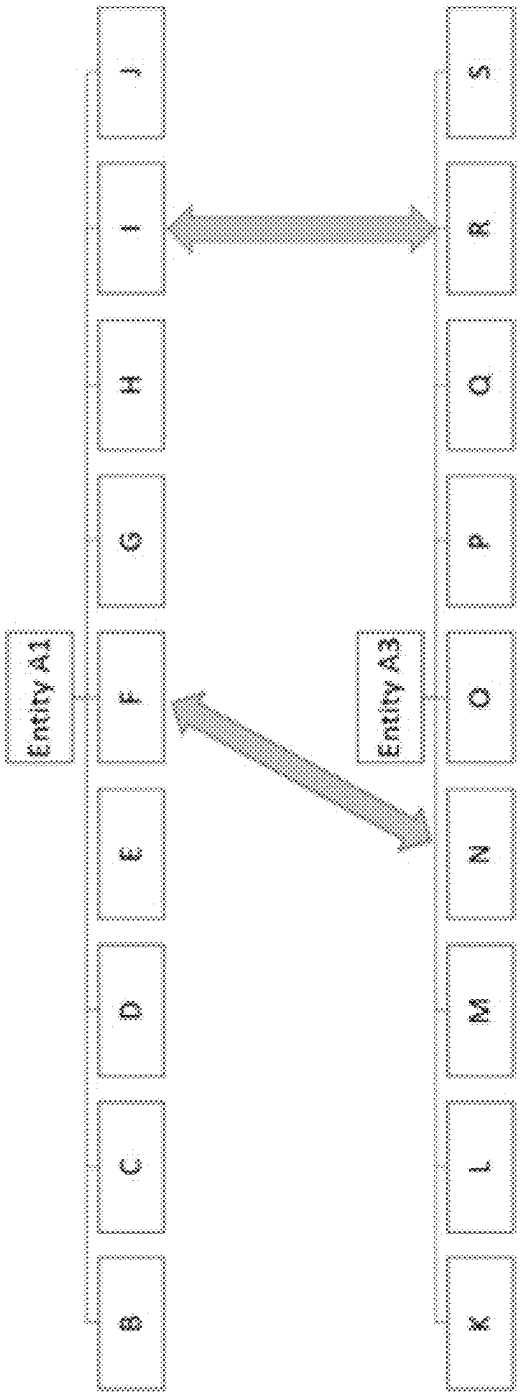


FIG. 10

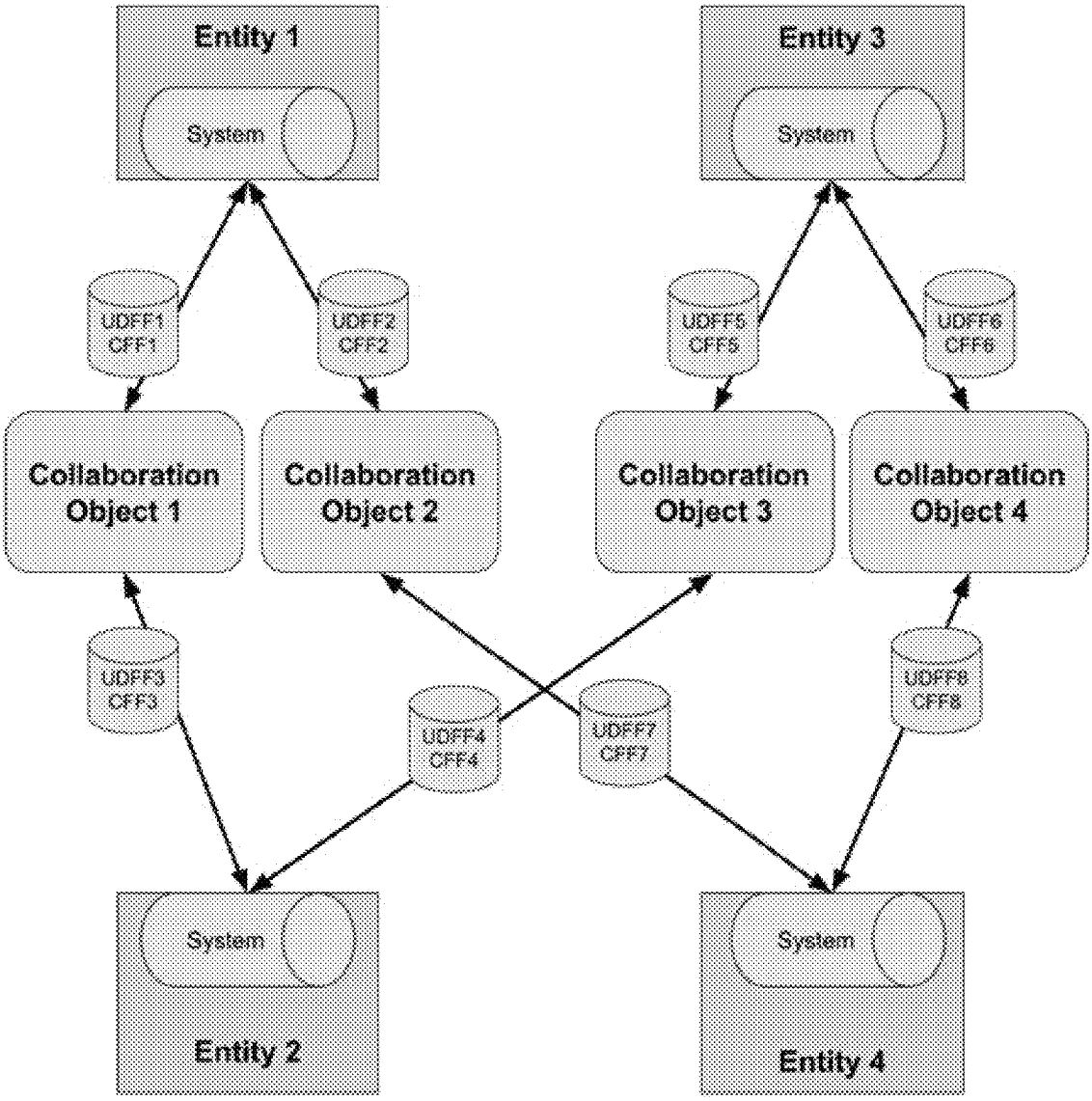

Entity 1
System
Entity 3
System
UDFF1
CFF1
UDFF2
CFF2
UDFF5
CFF5
UDFF6
CFF6
Collaboration Object 1
Collaboration Object 2
Collaboration Object 3
Collaboration Object 4
UDFF3
CFF3
UDFF4
CFF4
UDFF7
CFF7
UDFF8
CFF8
System
Entity 2
System
Entity 4

FIG. 1P

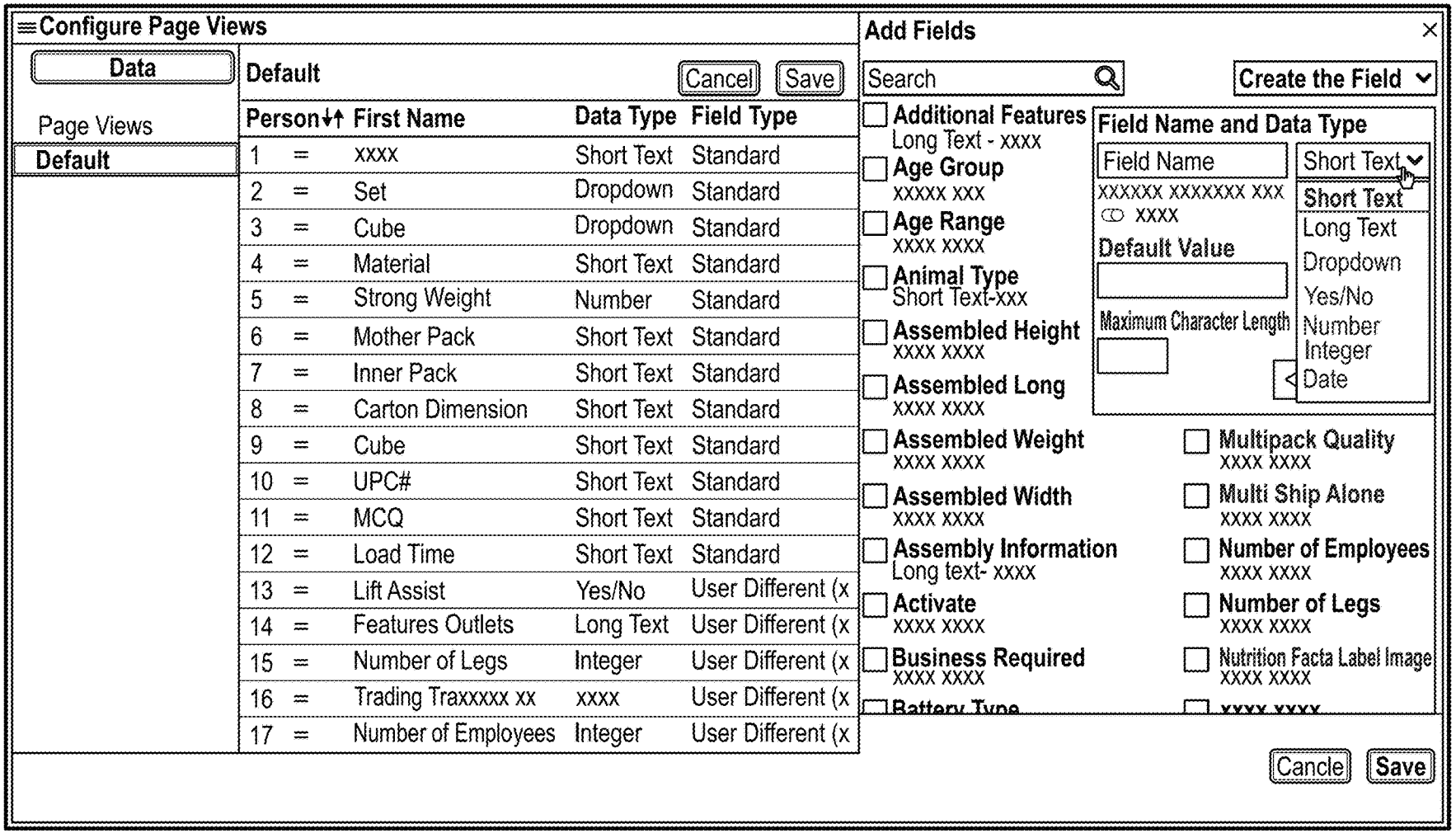

Configure Page Views
Data
Page Views
Default
Default
Cancel
Save
Person
First Name
Data Type
Field Type
1 = xxxx Short Text Standard
2 = Set Dropdown Standard
3 = Cube Dropdown Standard
4 = Material Short Text Standard
5 = Strong Weight Number Standard
6 = Mother Pack Short Text Standard
7 = Inner Pack Short Text Standard
8 = Carton Dimension Short Text Standard
9 = Cube Short Text Standard
10 = UPC# Short Text Standard
11 = MCQ Short Text Standard
12 = Load Time Short Text Standard
13 = Lift Assist Yes/No User Different (x
14 = Features Outlets Long Text User Different (x
15 = Number of Legs Integer User Different (x
16 = Trading Traxxxxx xx xxxx User Different (x
17 = Number of Employees Integer User Different (x
Add Fields
Search
Create the Field
Additional Features
Long Text - xxxx
Age Group
xxxxx xxx
Age Range
xxxx xxxx
Animal Type
Short Text-xxx
Assembled Height
xxxx xxxx
Assembled Long
xxxx xxxx
Assembled Weight
xxxx xxxx
Assembled Width
xxxx xxxx
Assembly Information
Long text- xxxx
Activate
xxxx xxxx
Business Required
xxxx xxxx
Field Name and Data Type
Field Name
Short Text
xxxxxx xxxxxxx xxx
xxxx
Default Value
Maximum Character Length
Short Text
Long Text
Dropdown
Yes/No
Number
Integer
Date
Multipack Quality
xxxx xxxx
Multi Ship Alone
xxxx xxxx
Number of Employees
xxxx xxxx
Number of Legs
xxxx xxxx
Nutrition Facta Label Image
xxxx xxxx
Cancle
Save

FIG. 1Q

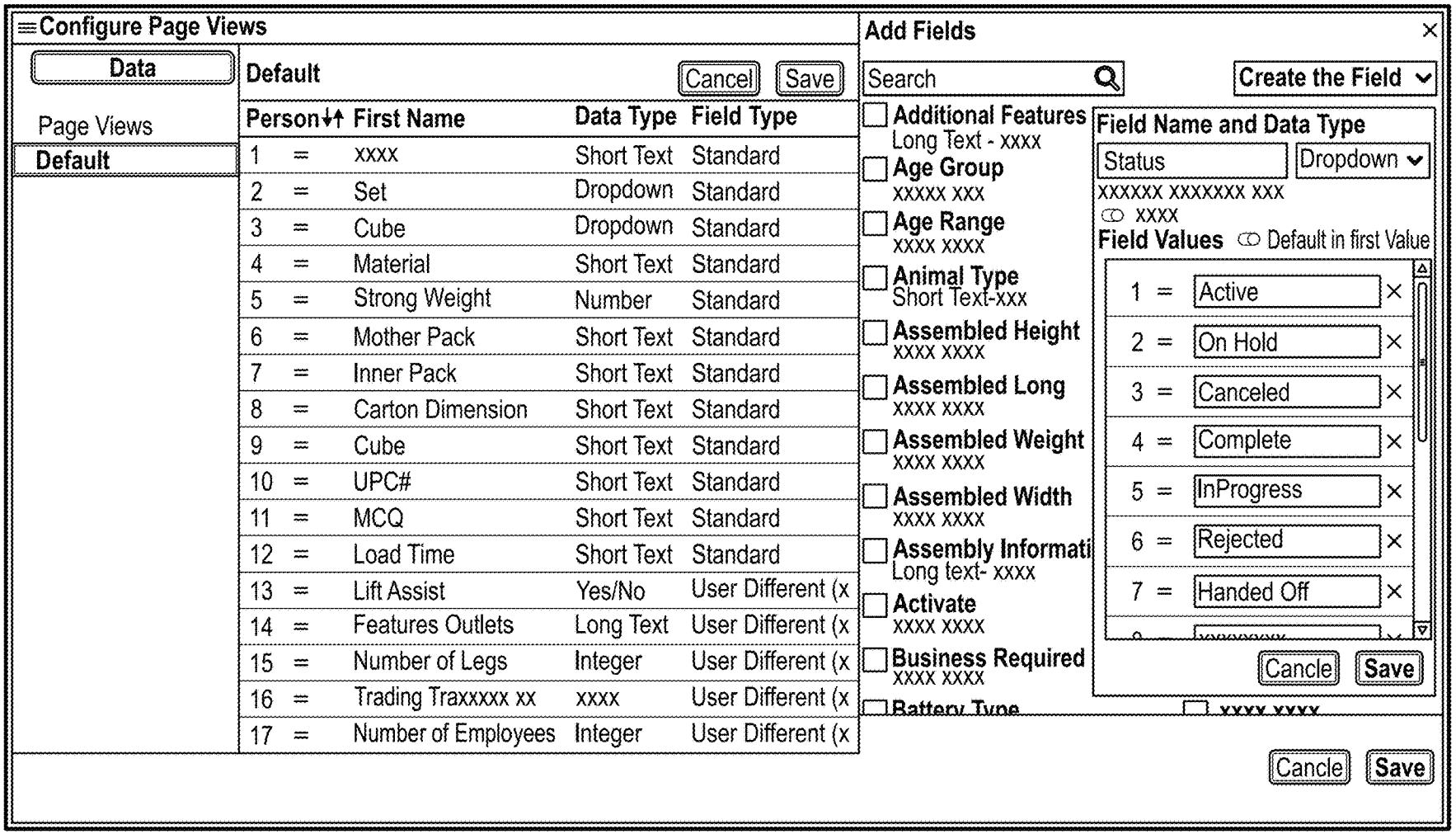

Configure Page Views
Data
Page Views
Default
Default
Cancel
Save
Person
First Name
Data Type
Field Type
1 = xxxx Short Text Standard
2 = Set Dropdown Standard
3 = Cube Dropdown Standard
4 = Material Short Text Standard
5 = Strong Weight Number Standard
6 = Mother Pack Short Text Standard
7 = Inner Pack Short Text Standard
8 = Carton Dimension Short Text Standard
9 = Cube Short Text Standard
10 = UPC# Short Text Standard
11 = MCQ Short Text Standard
12 = Load Time Short Text Standard
13 = Lift Assist Yes/No User Different (x
14 = Features Outlets Long Text User Different (x
15 = Number of Legs Integer User Different (x
16 = Trading Traxxxxx xx xxxx User Different (x
17 = Number of Employees Integer User Different (x
Add Fields
Search
Create the Field
Additional Features
Long Text - xxxx
Age Group
xxxxx xxx
Age Range
xxxx xxxx
Animal Type
Short Text-xxx
Assembled Height
xxxx xxxx
Assembled Long
xxxx xxxx
Assembled Weight
xxxx xxxx
Assembled Width
xxxx xxxx
Assembly Informati
Long text- xxxx
Activate
xxxx xxxx
Business Required
xxxx xxxx
Battery Type
Field Name and Data Type
Status
Dropdown
xxxxxx xxxxxxx xxx
xxxx
Field Values
Default in first Value
1 = Active
2 = On Hold
3 = Canceled
4 = Complete
5 = InProgress
6 = Rejected
7 = Handed Off
Cancle
Save
xxxx xxxx
Cancle
Save

FIG. 1R

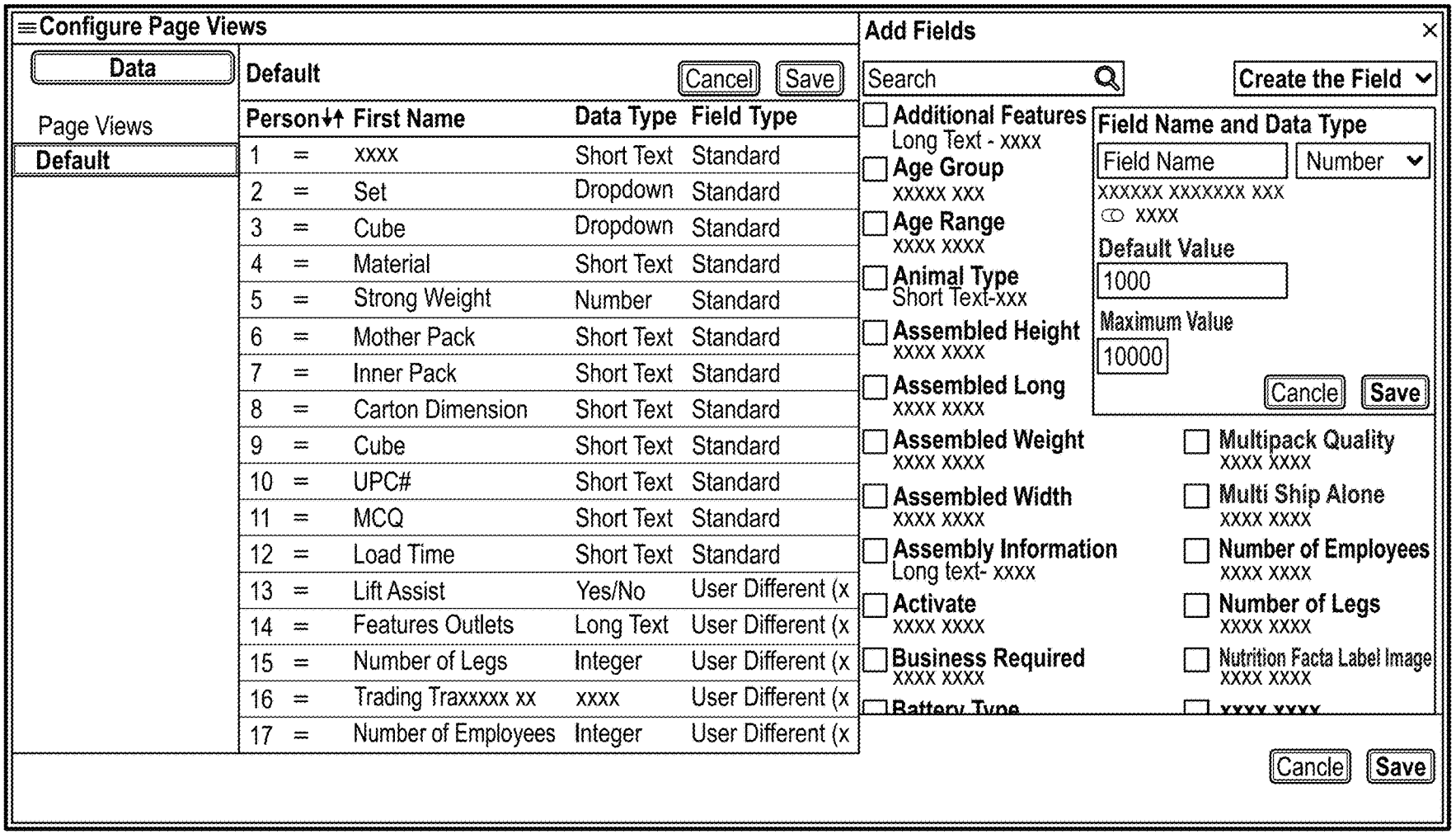

Configure Page Views
Data
Page Views
Default
Default
Cancel
Save
Person
First Name
Data Type
Field Type
1 = xxxx Short Text Standard
2 = Set Dropdown Standard
3 = Cube Dropdown Standard
4 = Material Short Text Standard
5 = Strong Weight Number Standard
6 = Mother Pack Short Text Standard
7 = Inner Pack Short Text Standard
8 = Carton Dimension Short Text Standard
9 = Cube Short Text Standard
10 = UPC# Short Text Standard
11 = MCQ Short Text Standard
12 = Load Time Short Text Standard
13 = Lift Assist Yes/No User Different (x
14 = Features Outlets Long Text User Different (x
15 = Number of Legs Integer User Different (x
16 = Trading Traxxxxx xx xxxx User Different (x
17 = Number of Employees Integer User Different (x
Add Fields
Search
Create the Field
Additional Features
Long Text - xxxx
Age Group
xxxxx xxx
Age Range
xxxx xxxx
Animal Type
Short Text-xxx
Assembled Height
xxxx xxxx
Assembled Long
xxxx xxxx
Assembled Weight
xxxx xxxx
Assembled Width
xxxx xxxx
Assembly Information
Long text- xxxx
Activate
xxxx xxxx
Business Required
xxxx xxxx
Field Name and Data Type
Field Name
Number
xxxxxx xxxxxxx xxx
xxxx
Default Value
1000
Maximum Value
10000
Cancle
Save
Multipack Quality
xxxx xxxx
Multi Ship Alone
xxxx xxxx
Number of Employees
xxxx xxxx
Number of Legs
xxxx xxxx
Nutrition Facta Label Image
xxxx xxxx
Cancle
Save

FIG. 1S

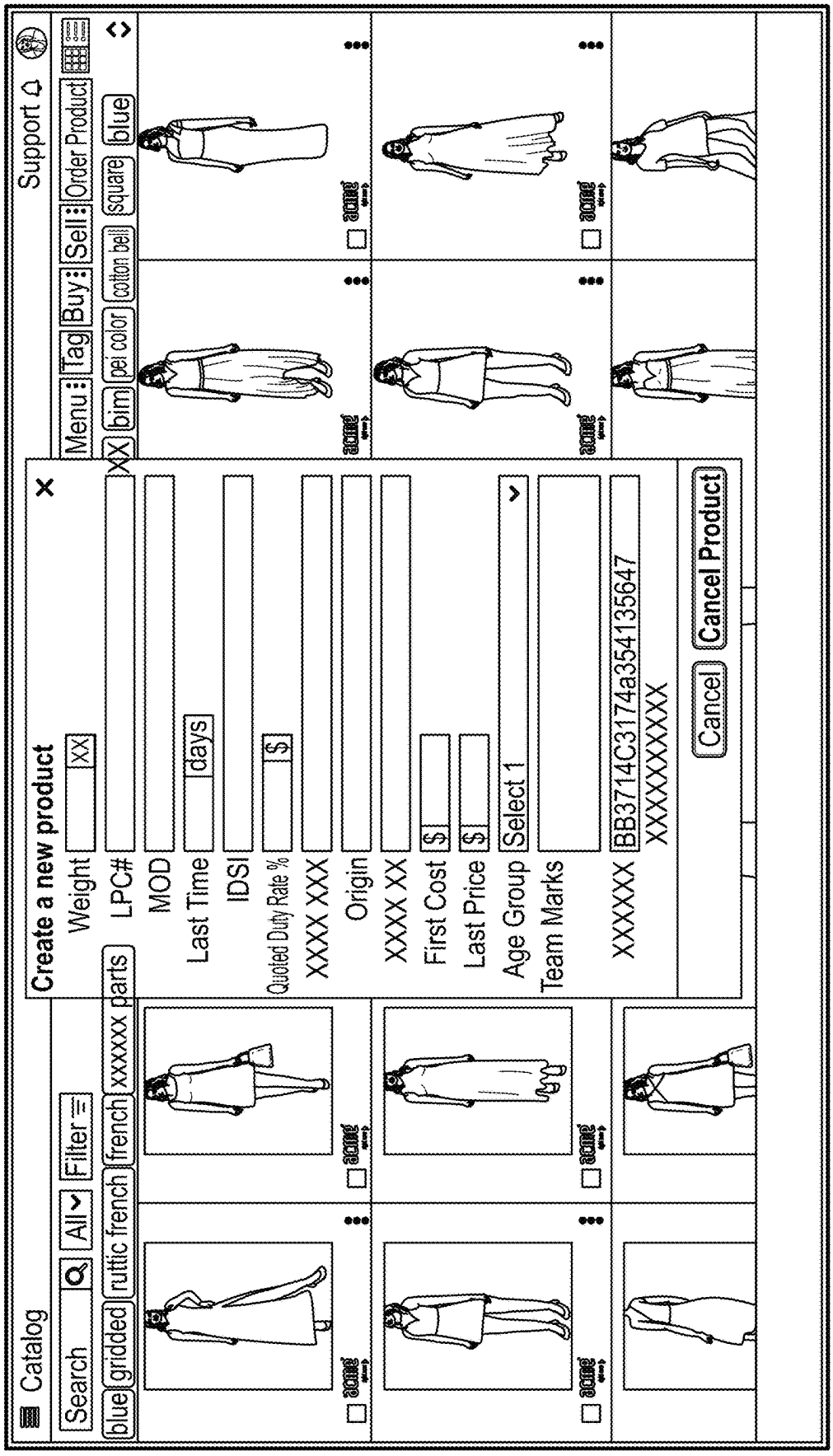

Catalog
Support
Search
All
Filter
blue
gridded
ruttic french
french
xxxxxx parts
Create a new product
Weight
XX
LPC#
MOD
Last Time
days
IDSI
Quoted Duty Rate %
$
XXXX XXX
Origin
XXXX XX
First Cost
$
Last Price
$
Age Group
Select 1
Team Marks
XXXXXX
BB3714C3174a354135647
XXXXXXXXXX
Cancel
Cancel Product
XX
bim
pei color
cotton ball
square
blue
Menu
Tag
Buy
Sell
Order Product

FIG. 1T

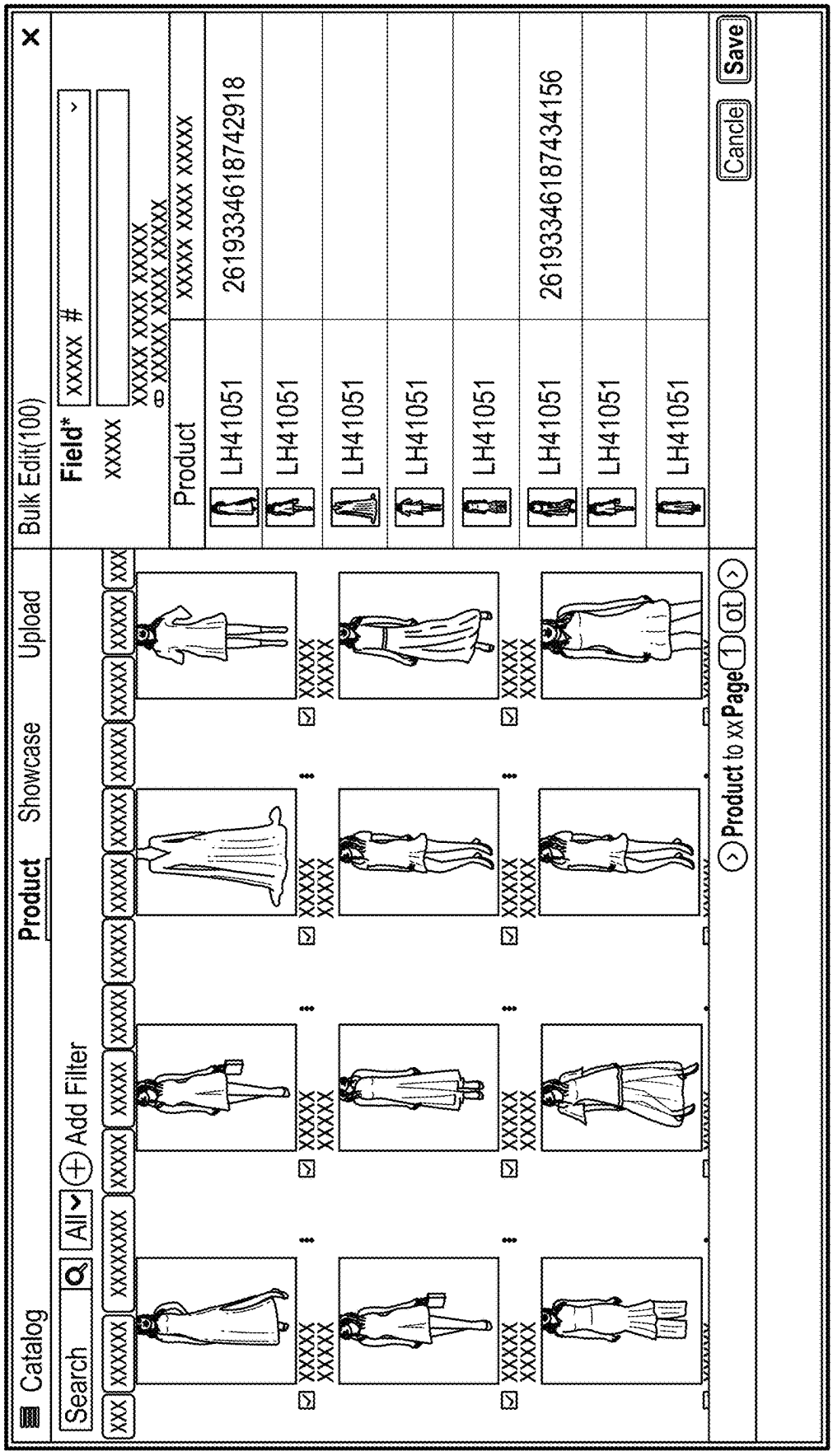

Catalog
Product
Showcase
Upload
Bulk Edit(100)
Search
All
Add Filter
Field*
xxxxx #
xxxxx
Product
xxxxx xxxx xxxxx
LH41051
26193346187429 18
Cancle
Save
Product to xx Page 1 of

FIG. 1U

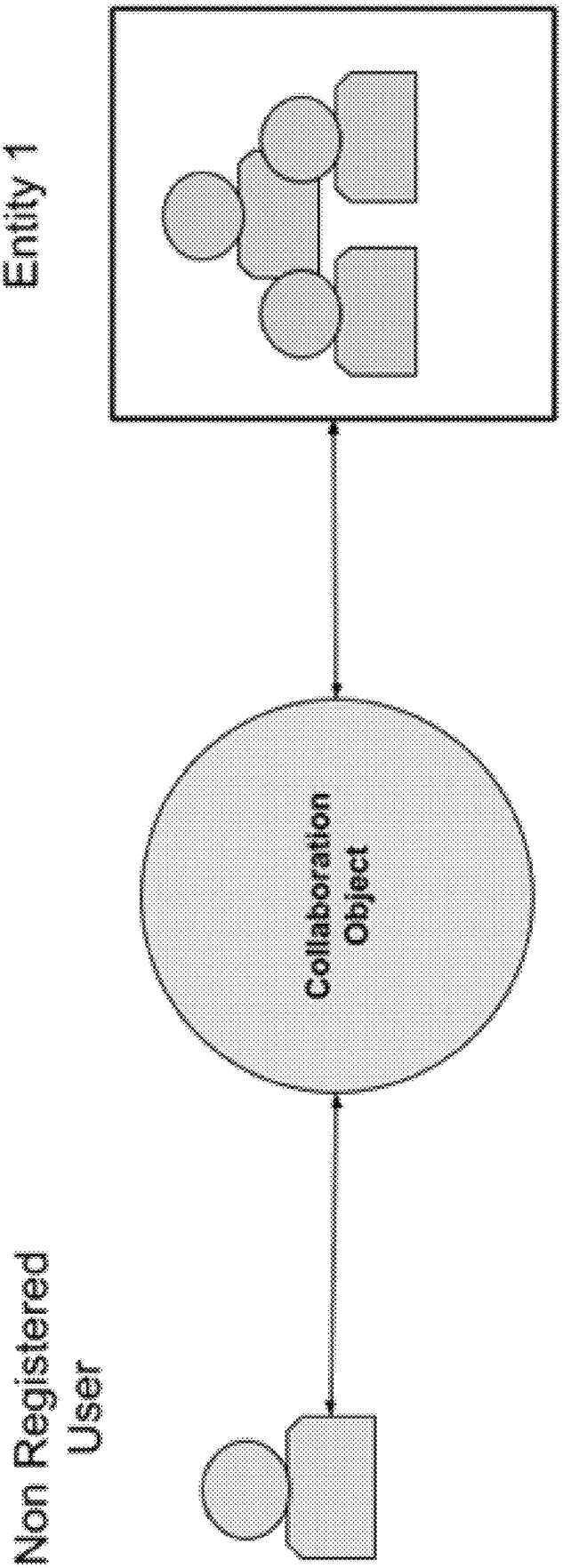


FIG. 1V

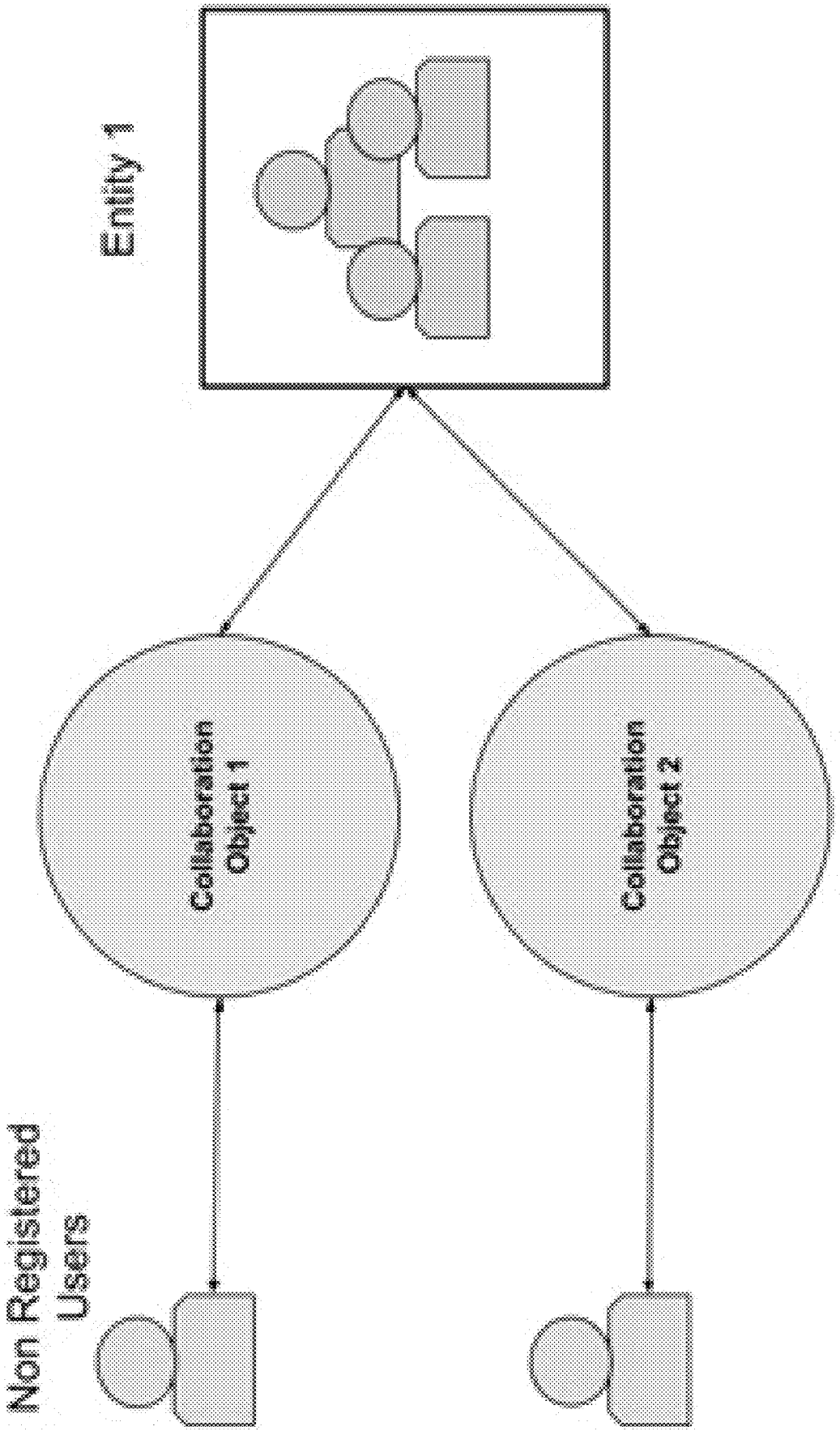

Entity 1
Collaboration Object 1
Collaboration Object 2
Non Registered Users

FIG. 1W

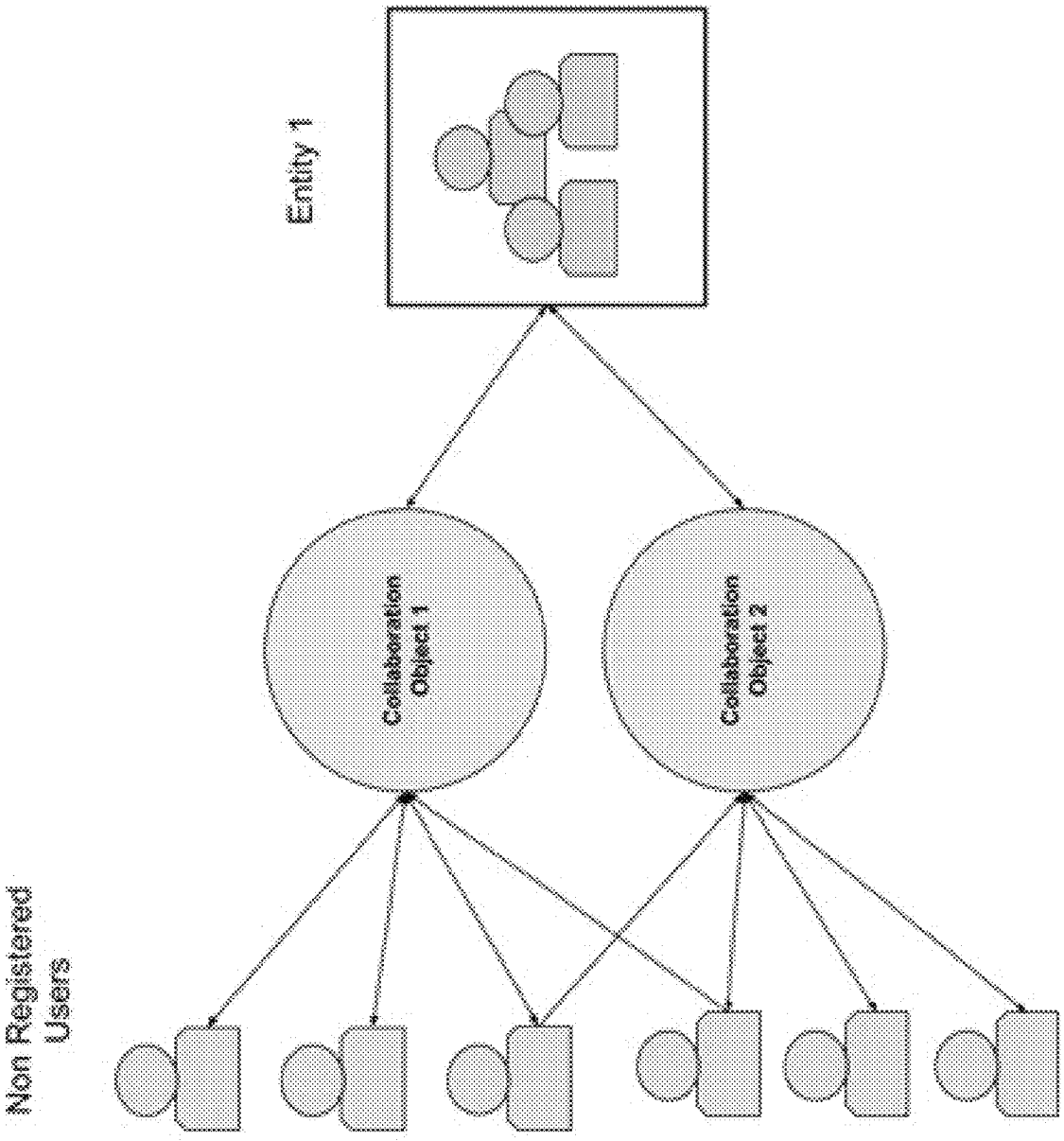

Entity 1
Collaboration Object 1
Collaboration Object 2
Non Registered Users

FIG. 1X

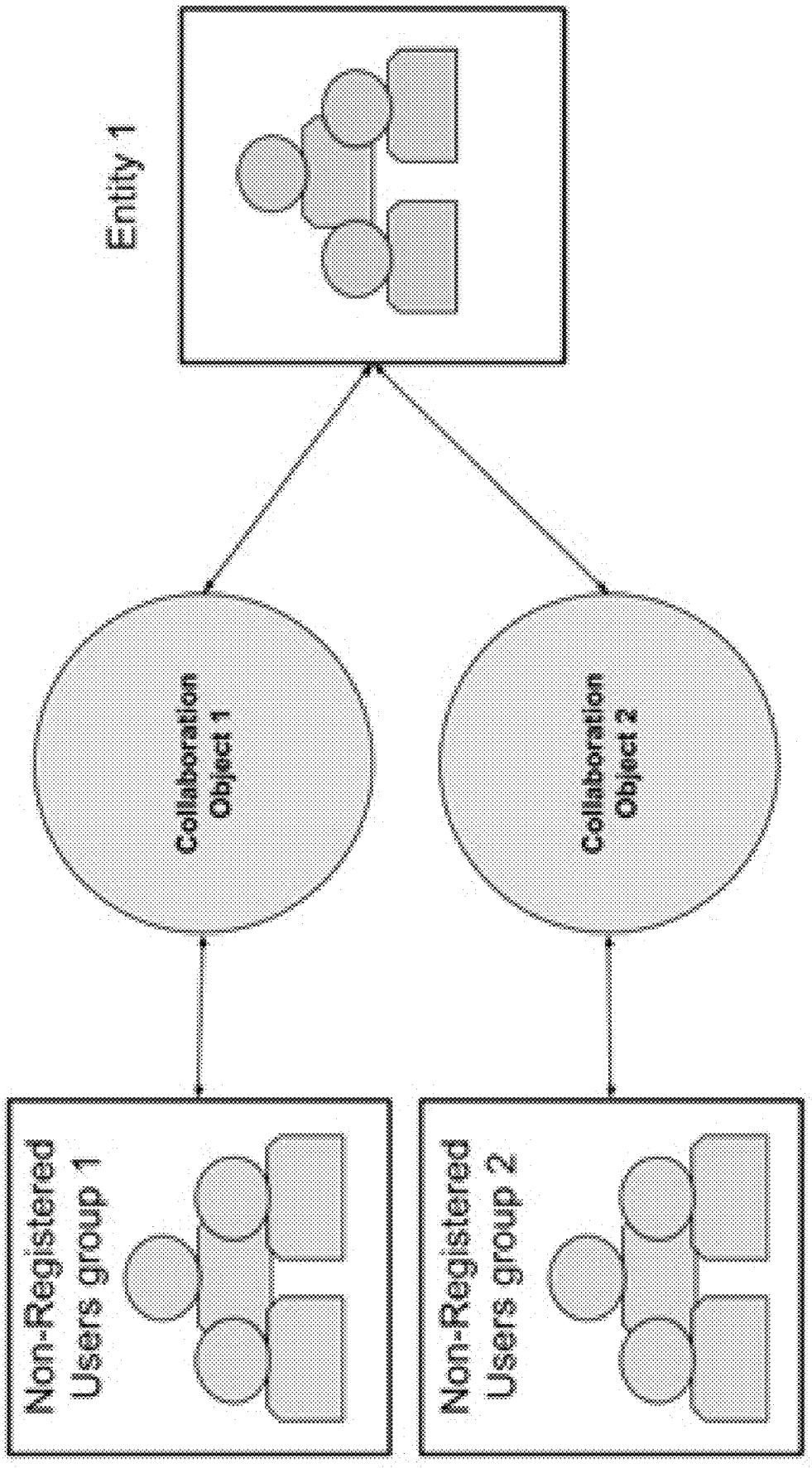

Entity 1
Collaboration Object 1
Collaboration Object 2
Non-Registered Users group 1
Non-Registered Users group 2

FIG. 1Y

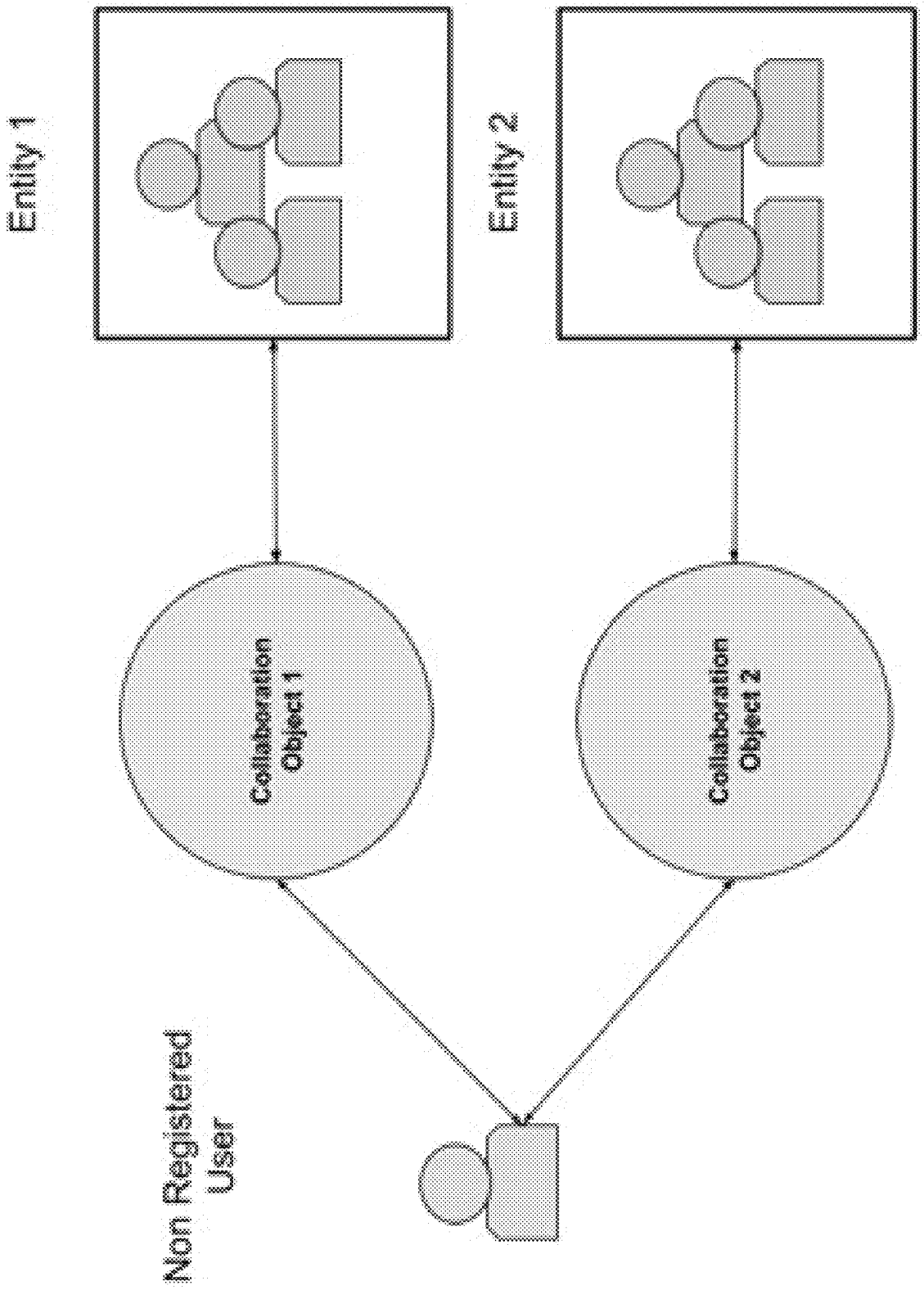

Entity 1
Entity 2
Collaboration Object 1
Collaboration Object 2
Non Registered User

FIG. 1Z

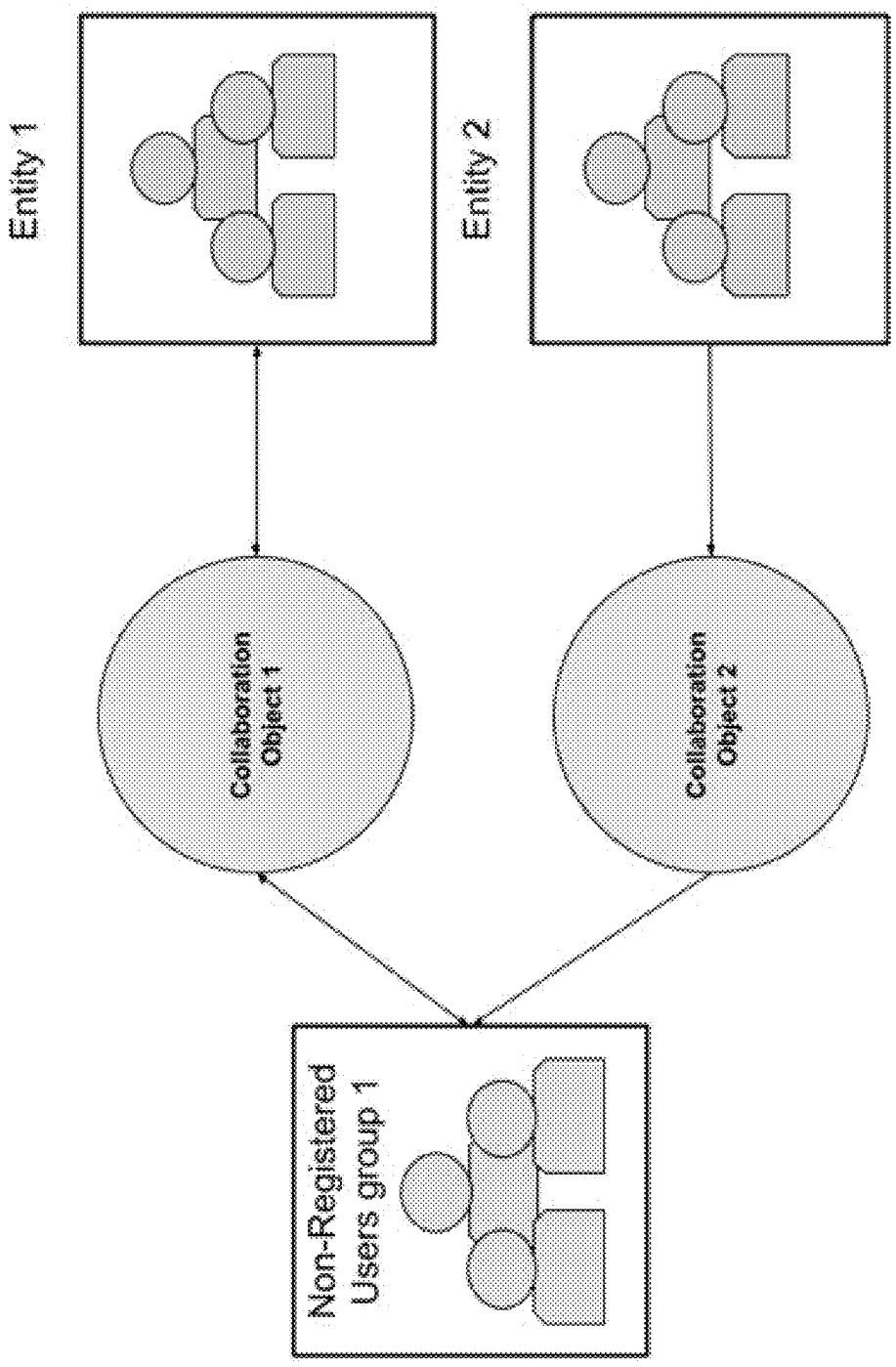

Entity 1
Entity 2
Collaboration Object 1
Collaboration Object 2
Non-Registered Users group 1

FIG. 1AA

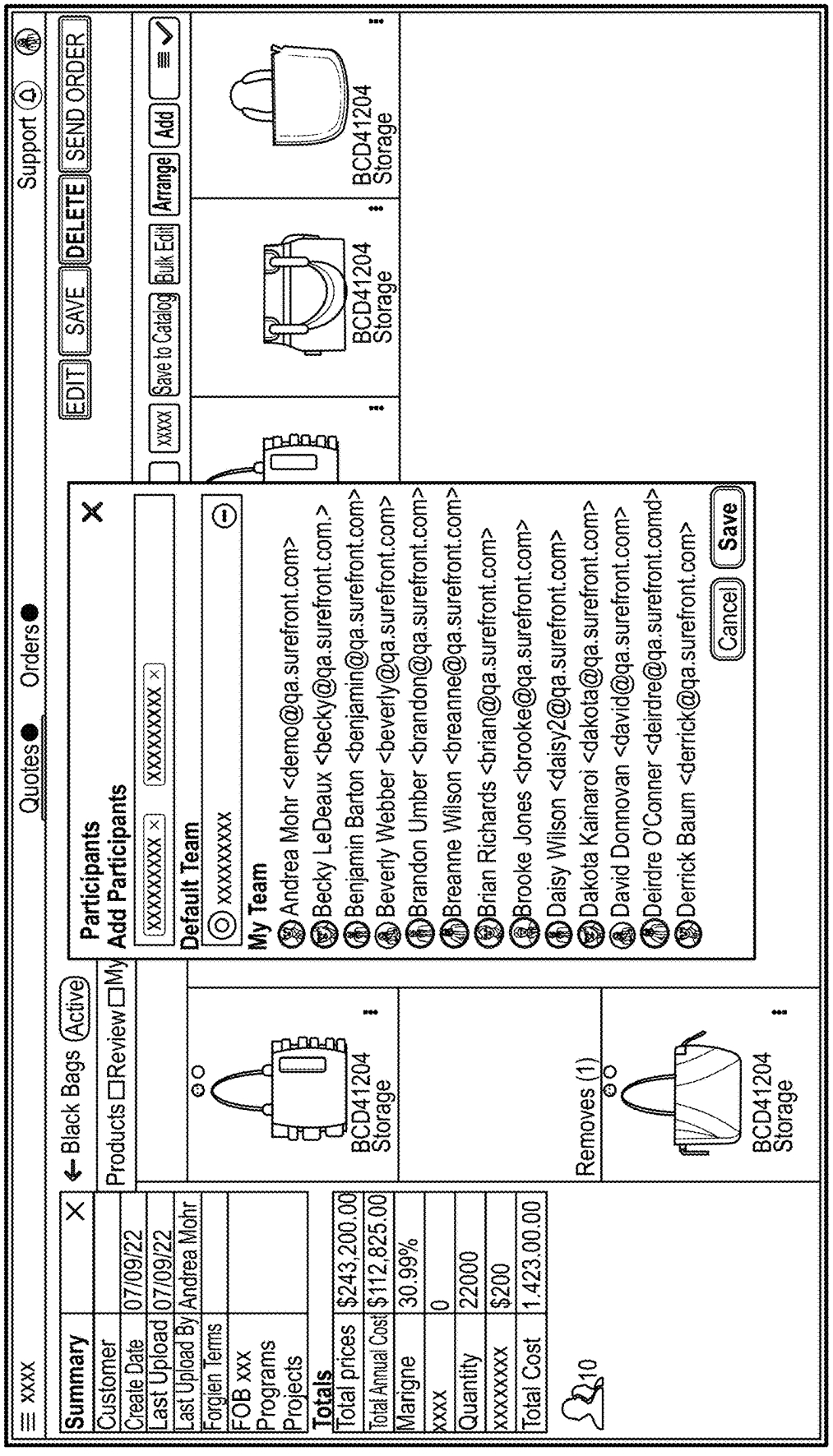

xxxx
Quotes
Orders
Support
Summary
Customer
Create Date 07/09/22
Last Upload 07/09/22
Last Upload By Andrea Mohr
Forgien Terms
FOB xxx
Programs
Projects
Totals
Total prices $243,200.00
Total Annual Cost $112,825.00
Margine 30.99%
xxxx 0
Quantity 22000
xxxxxxxx $200
Total Cost 1.423.00.00
Black Bags
Active
Products
Review
EDIT
SAVE
DELETE
SEND ORDER
xxxxx
Save to Catalog
Bulk Edit
Arrange
Add
BCD41204
Storage
Participants
Add Participants
xxxxxxxxx
xxxxxxxxx
Default Team
xxxxxxxxx
My Team
Andrea Mohr <demo@qa.surefront.com>
Becky LeDeaux <becky@qa.surefront.com.>
Benjamin Barton <benjamin@qa.surefront.com>
Beverly Webber <beverly@qa.surefront.com>
Brandon Umber <brandon@qa.surefront.com>
Breanne Wilson <breanne@qa.surefront.com>
Brian Richards <brian@qa.surefront.com>
Brooke Jones <brooke@qa.surefront.com>
Daisy Wilson <daisy2@qa.surefront.com>
Dakota Kainaroi <dakota@qa.surefront.com>
David Donnovan <david@qa.surefront.com>
Deirdre O'Conner <deirdre@qa.surefront.comd>
Derrick Baum <derrick@qa.surefront.com>
Cancel
Save
Removes (1)
10

FIG. 1BB

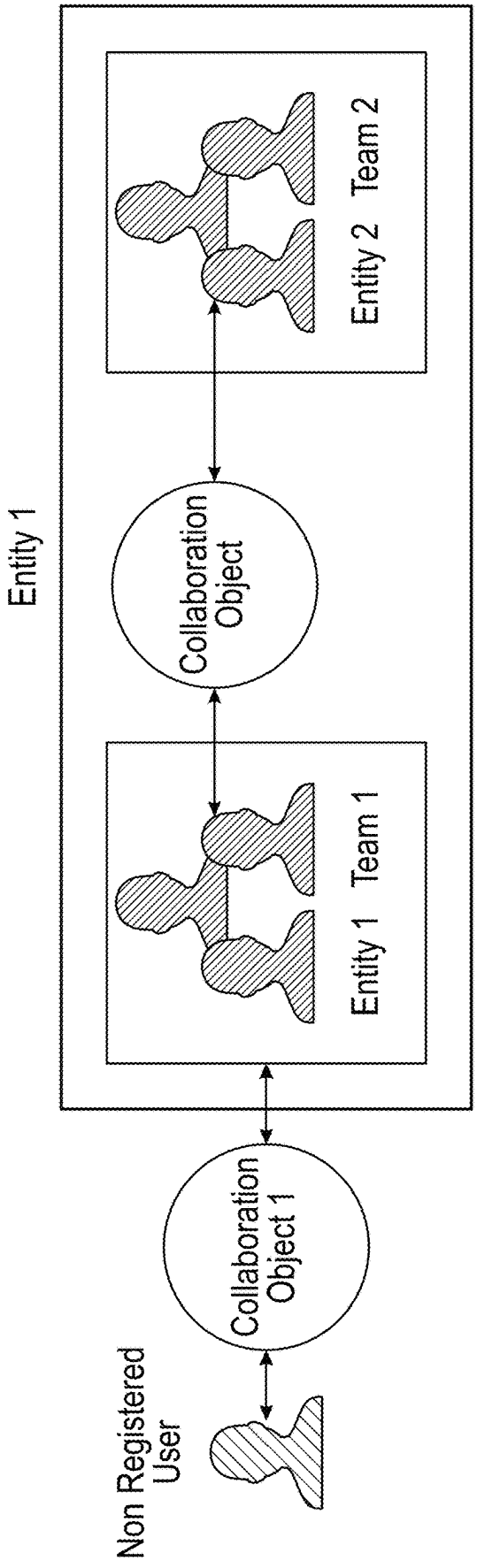

Entity 1
Entity 2 Team 2
Collaboration Object
Entity 1 Team 1
Collaboration Object 1
Non Registered User

FIG. 1CC

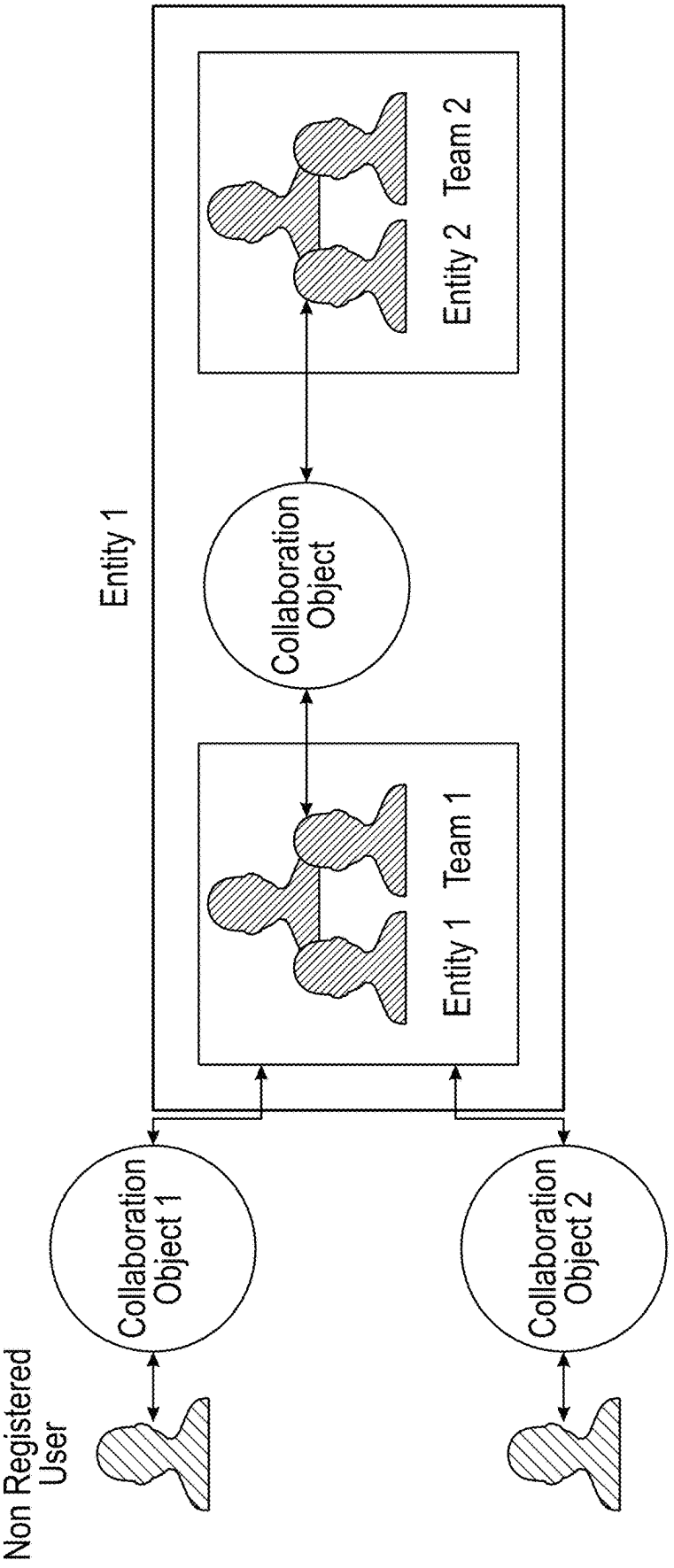

Non Registered User
Collaboration Object 1
Collaboration Object 2
Entity 1
Entity 1 Team 1
Collaboration Object
Entity 2 Team 2

FIG. 1DD

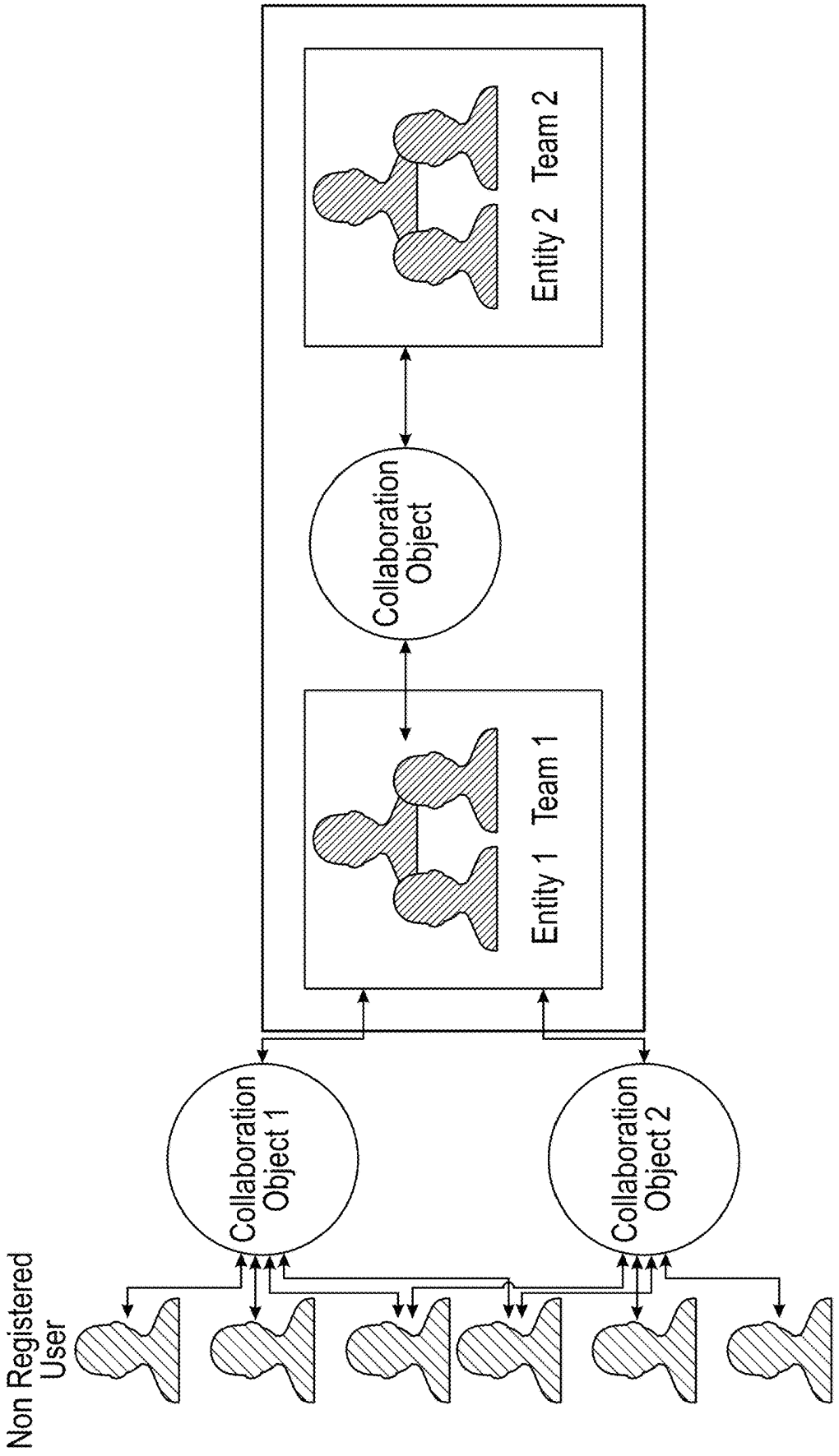

Non Registered User
Collaboration Object 1
Collaboration Object 2
Entity 1 Team 1
Collaboration Object
Entity 2 Team 2

FIG. 1EE

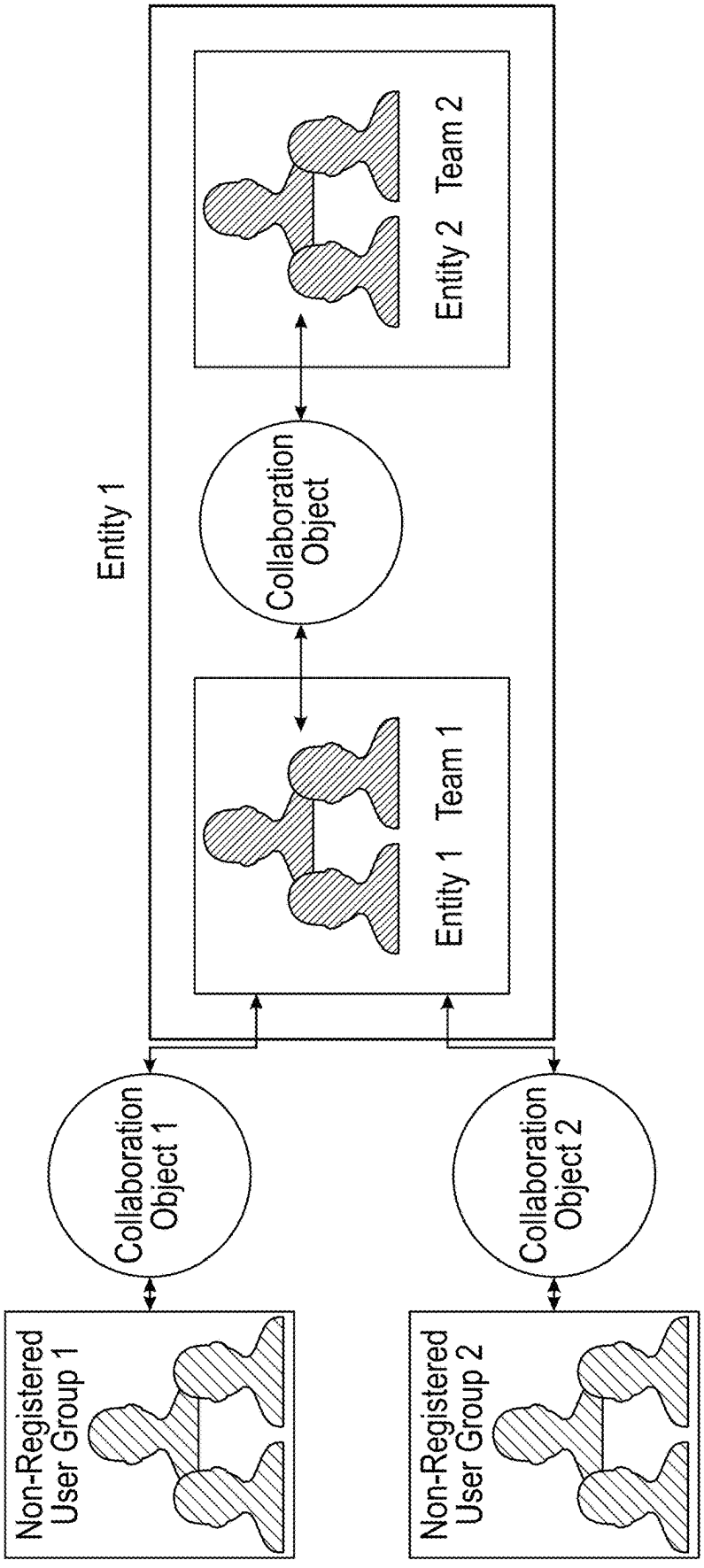

Entity 1
Entity 1 Team 1
Entity 2 Team 2
Collaboration Object
Collaboration Object 1
Collaboration Object 2
Non-Registered User Group 1
Non-Registered User Group 2

FIG. 1FF

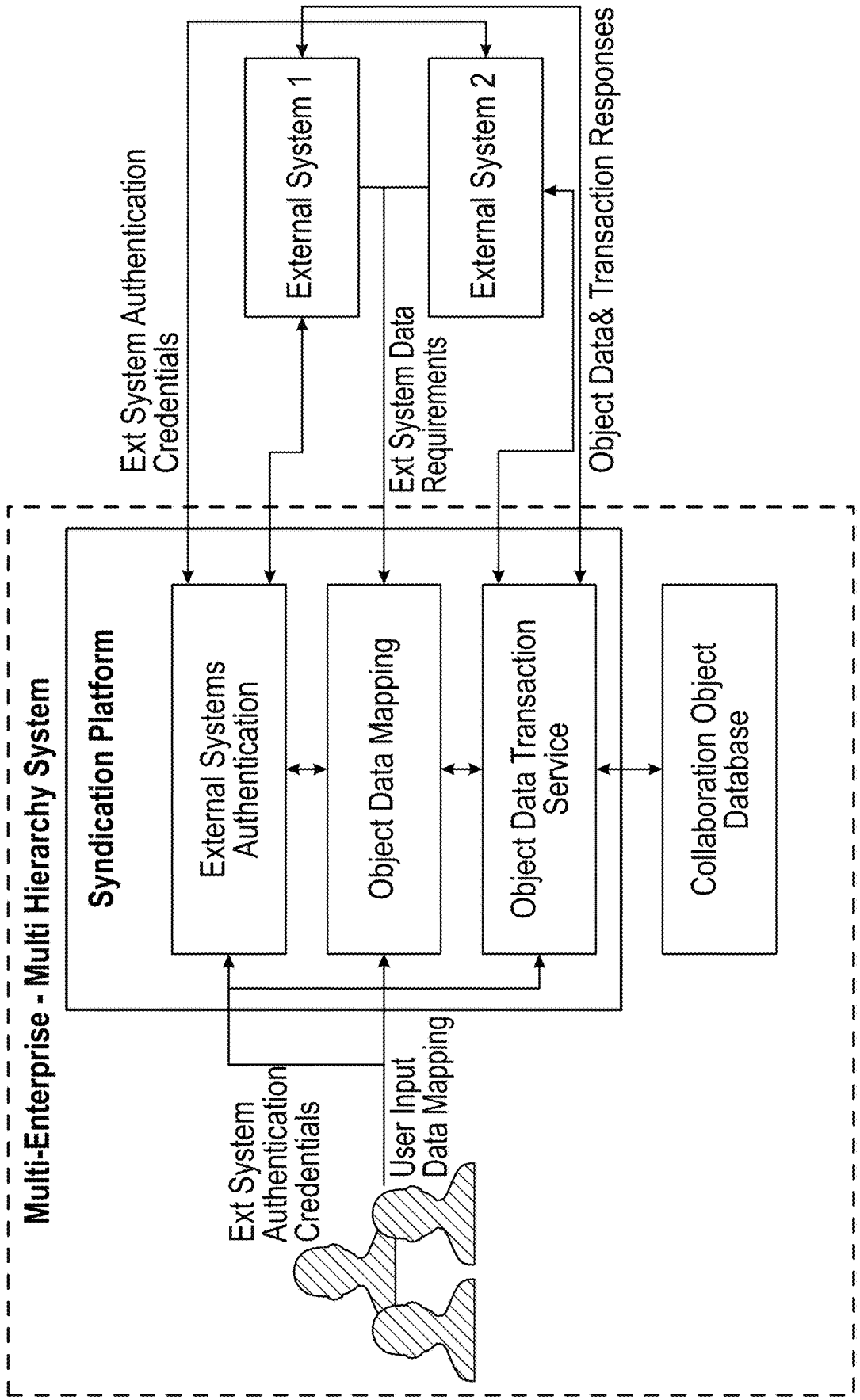

Multi-Enterprise - Multi Hierarchy System
Syndication Platform
External Systems Authentication
Object Data Mapping
Object Data Transaction Service
Collaboration Object Database
External System 1
External System 2
Ext System Authentication Credentials
Ext System Data Requirements
Object Data& Transaction Responses
Ext System Authentication Credentials
User Input Data Mapping

FIG. 1GG

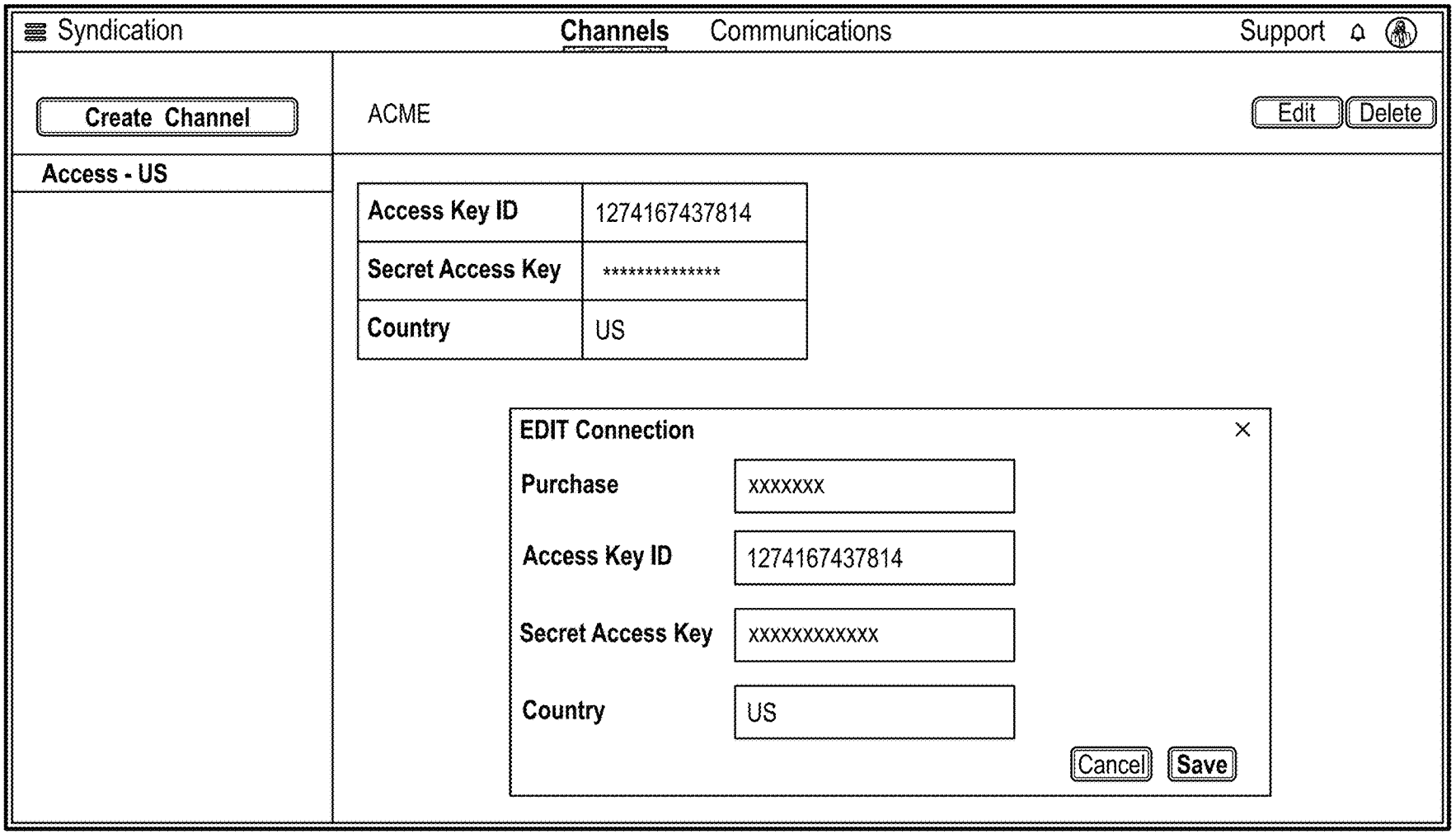

Syndication
Channels
Communications
Support
Create Channel
ACME
Edit
Delete
Access - US
Access Key ID
1274167437814
Secret Access Key
****
Country
US
EDIT Connection
Purchase
xxxxxxx
Access Key ID
1274167437814
Secret Access Key
xxxxxxxxxxxx
Country
US
Cancel
Save

FIG. 1HH

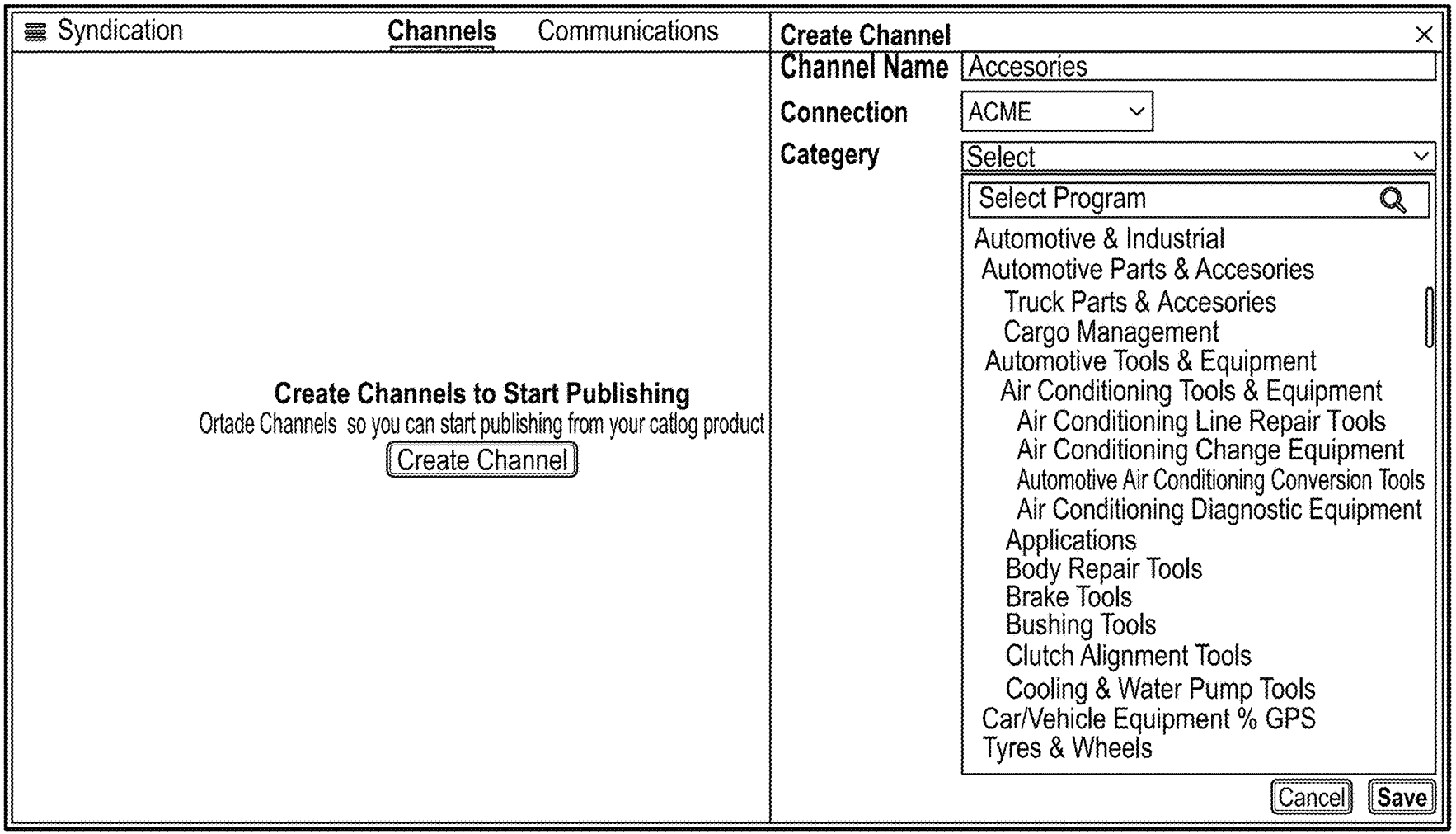

Syndication
Channels
Communications
Create Channels to Start Publishing
Ortade Channels so you can start publishing from your catlog product
Create Channel
Create Channel
Channel Name
Accesories
Connection
ACME
Categery
Select
Select Program
Automotive & Industrial
Automotive Parts & Accesories
Truck Parts & Accesories
Cargo Management
Automotive Tools & Equipment
Air Conditioning Tools & Equipment
Air Conditioning Line Repair Tools
Air Conditioning Change Equipment
Automotive Air Conditioning Conversion Tools
Air Conditioning Diagnostic Equipment
Applications
Body Repair Tools
Brake Tools
Bushing Tools
Clutch Alignment Tools
Cooling & Water Pump Tools
Car/Vehicle Equipment % GPS
Tyres & Wheels
Cancel
Save

FIG. 1II

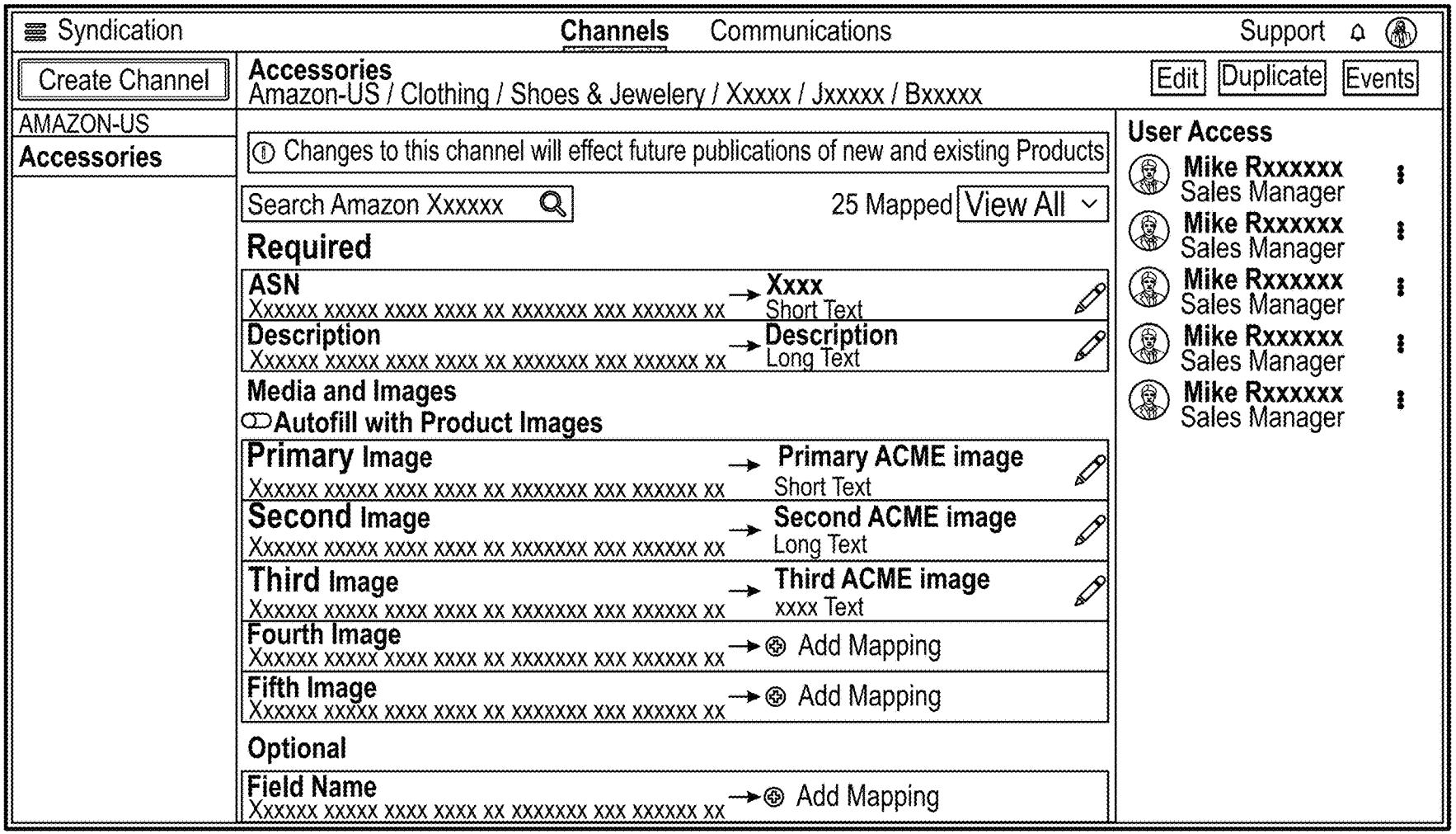

Syndication
Channels
Communications
Support
Create Channel
Accessories
Amazon-US / Clothing / Shoes & Jewelery / Xxxxx / Jxxxxx / Bxxxxx
Edit
Duplicate
Events
AMAZON-US
Accessories
Changes to this channel will effect future publications of new and existing Products
Search Amazon Xxxxxx
25 Mapped
View All
Required
ASN
Xxxxxx xxxxx xxxx xxxx xx xxxxxxx xxx xxxxxx xx
Xxxx
Short Text
Description
Xxxxxx xxxxx xxxx xxxx xx xxxxxxx xxx xxxxxx xx
Description
Long Text
Media and Images
Autofill with Product Images
Primary Image
Xxxxxx xxxxx xxxx xxxx xx xxxxxxx xxx xxxxxx xx
Primary ACME image
Short Text
Second Image
Xxxxxx xxxxx xxxx xxxx xx xxxxxxx xxx xxxxxx xx
Second ACME image
Long Text
Third Image
Xxxxxx xxxxx xxxx xxxx xx xxxxxxx xxx xxxxxx xx
Third ACME image
xxxx Text
Fourth Image
Xxxxxx xxxxx xxxx xxxx xx xxxxxxx xxx xxxxxx xx
Add Mapping
Fifth Image
Xxxxxx xxxxx xxxx xxxx xx xxxxxxx xxx xxxxxx xx
Add Mapping
Optional
Field Name
Xxxxxx xxxxx xxxx xxxx xx xxxxxxx xxx xxxxxx xx
Add Mapping
User Access
Mike Rxxxxxx
Sales Manager
Mike Rxxxxxx
Sales Manager
Mike Rxxxxxx
Sales Manager
Mike Rxxxxxx
Sales Manager
Mike Rxxxxxx
Sales Manager

FIG. 1JJ

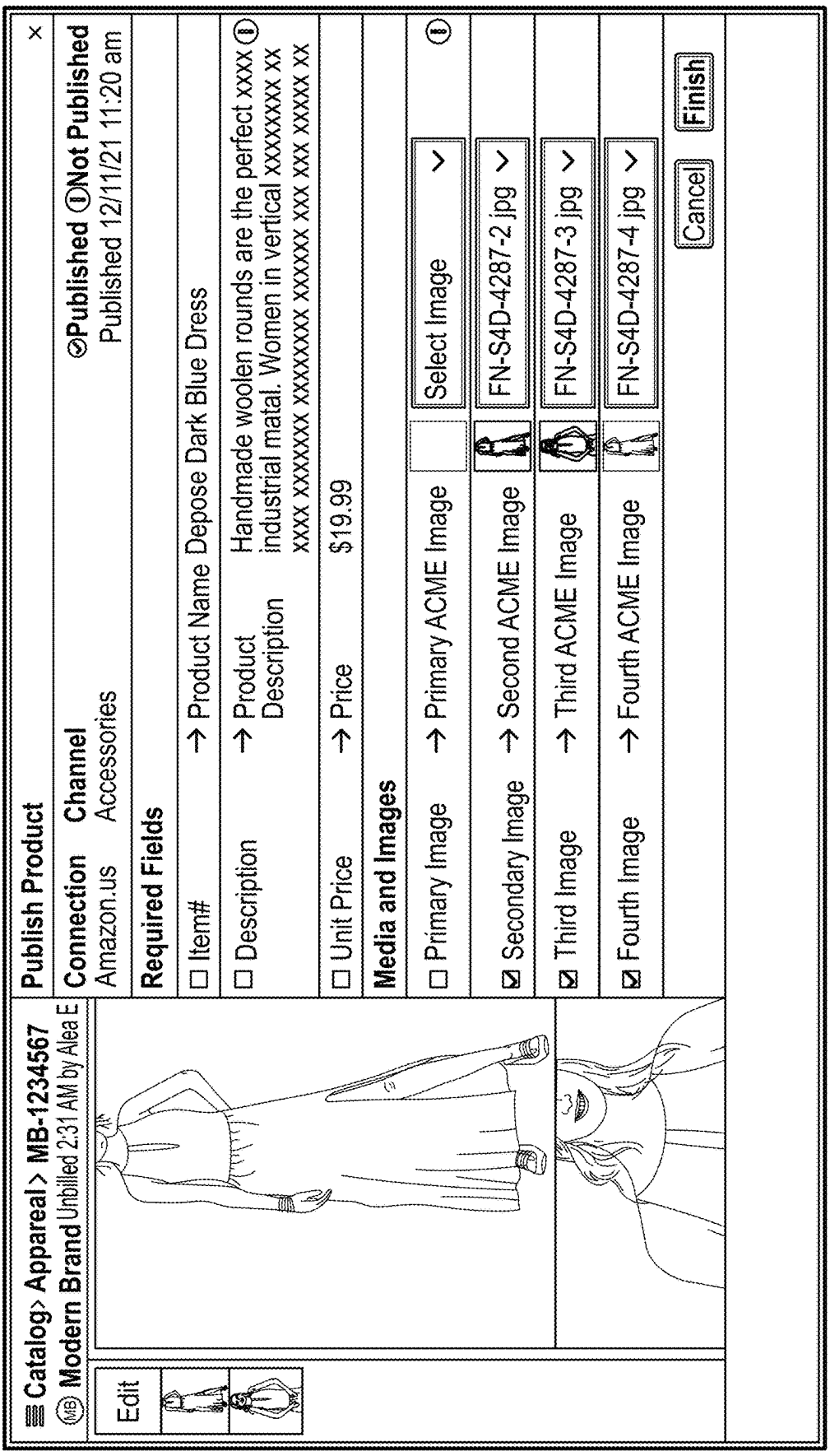

Catalog> Appareal> MB-1234567
Modern Brand Unbilled 2:31 AM by Alea E
Publish Product
Connection
Amazon.us
Channel
Accessories
Published
Not Published
Published 12/11/21 11:20 am
Edit
Required Fields
Item#
→ Product Name Depose Dark Blue Dress
Description
→ Product Description
Handmade woolen rounds are the perfect xxxx industrial matal. Women in vertical xxxxxxxx xx xxxx xxxxxxx xxxxxxx xxxxxx xxx xxx xxxxx xx
Unit Price
→ Price
$19.99
Media and Images
Primary Image
→ Primary ACME Image
Select Image
Secondary Image
→ Second ACME Image
FN-S4D-4287-2 jpg
Third Image
→ Third ACME Image
FN-S4D-4287-3 jpg
Fourth Image
→ Fourth ACME Image
FN-S4D-4287-4 jpg
Cancel
Finish

FIG. 1KK

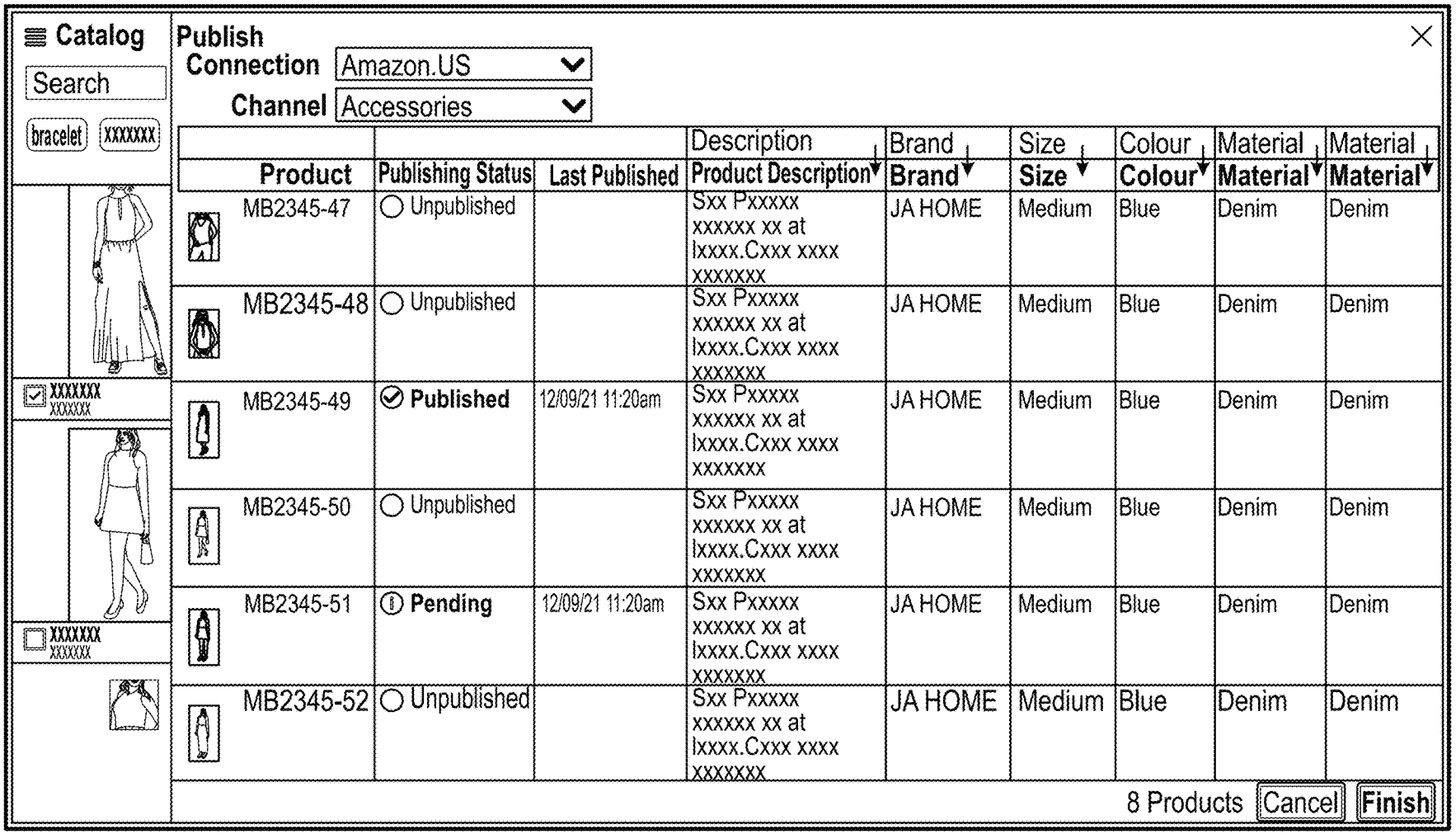

Catalog
Search
bracelet
xxxxxxx
xxxxxxx
xxxxxxx
xxxxxxx
xxxxxxx
Publish
Connection
Amazon.US
Channel
Accessories
Description
Brand
Size
Colour
Material
Material
Product
Publishing Status
Last Published
Product Description
Brand
Size
Colour
Material
Material
MB2345-47
Unpublished
Sxx Pxxxxx xxxxxx xx at Ixxxx.Cxxx xxxx xxxxxxx
JA HOME
Medium
Blue
Denim
Denim
MB2345-48
Unpublished
Sxx Pxxxxx xxxxxx xx at Ixxxx.Cxxx xxxx xxxxxxx
JA HOME
Medium
Blue
Denim
Denim
MB2345-49
Published
12/09/21 11:20am
Sxx Pxxxxx xxxxxx xx at Ixxxx.Cxxx xxxx xxxxxxx
JA HOME
Medium
Blue
Denim
Denim
MB2345-50
Unpublished
Sxx Pxxxxx xxxxxx xx at Ixxxx.Cxxx xxxx xxxxxxx
JA HOME
Medium
Blue
Denim
Denim
MB2345-51
Pending
12/09/21 11:20am
Sxx Pxxxxx xxxxxx xx at Ixxxx.Cxxx xxxx xxxxxxx
JA HOME
Medium
Blue
Denim
Denim
MB2345-52
Unpublished
Sxx Pxxxxx xxxxxx xx at Ixxxx.Cxxx xxxx xxxxxxx
JA HOME
Medium
Blue
Denim
Denim
8 Products
Cancel
Finish

FIG. 1LL

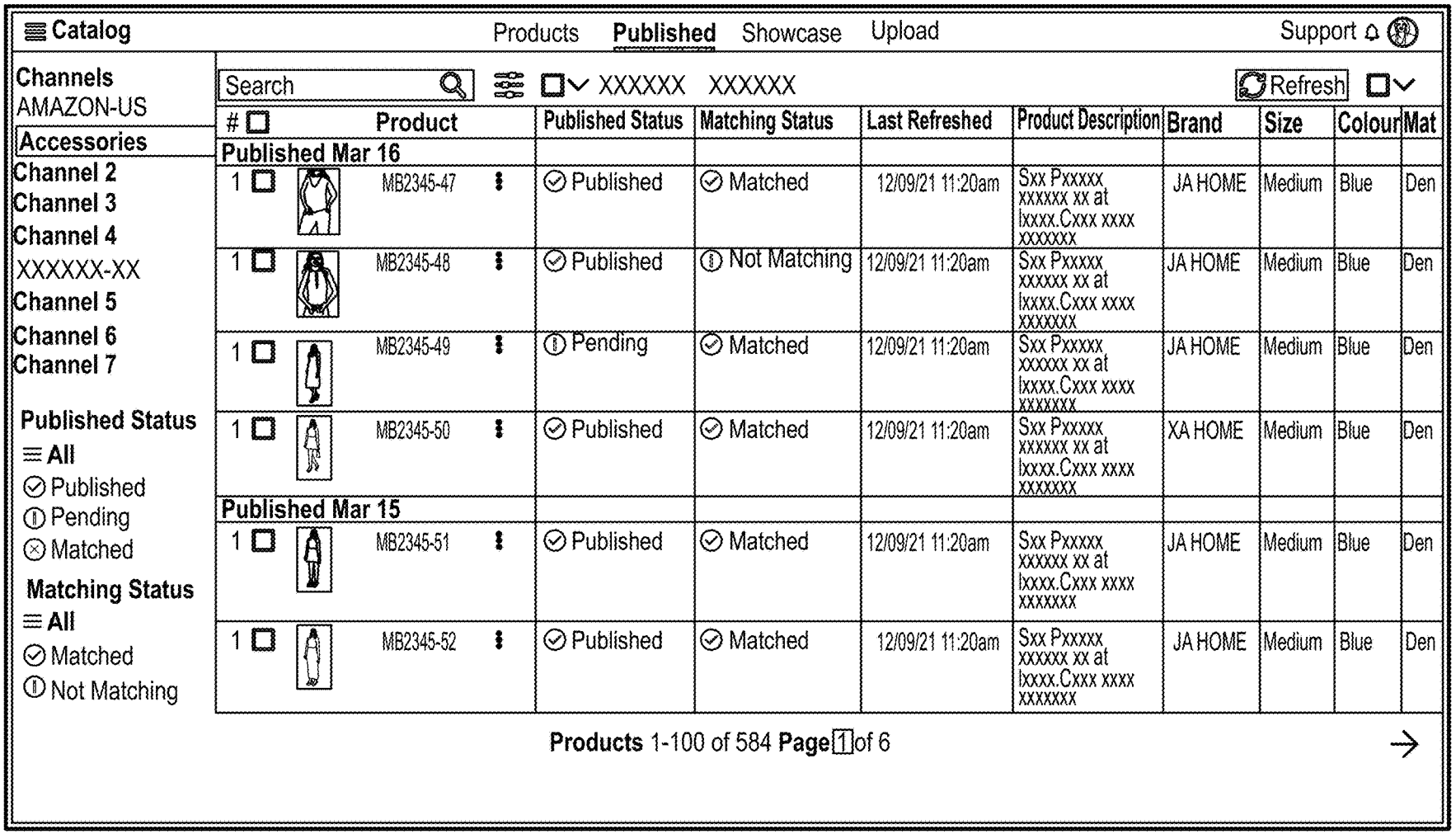

Catalog
Products
Published
Showcase
Upload
Support
Channels
AMAZON-US
Accessories
Channel 2
Channel 3
Channel 4
XXXXXX-XX
Channel 5
Channel 6
Channel 7
Published Status
All
Published
Pending
Matched
Matching Status
All
Matched
Not Matching
Search
XXXXXX
XXXXXX
Refresh
Product
Published Status
Matching Status
Last Refreshed
Product Description
Brand
Size
Colour
Mat
Published Mar 16
1 MB2345-47 Published Matched 12/09/21 11:20am Sxx Pxxxxx xxxxxx xx at lxxxx.Cxxx xxxx xxxxxxx JA HOME Medium Blue Den
1 MB2345-48 Published Not Matching 12/09/21 11:20am Sxx Pxxxxx xxxxxx xx at lxxxx.Cxxx xxxx xxxxxxx JA HOME Medium Blue Den
1 MB2345-49 Pending Matched 12/09/21 11:20am Sxx Pxxxxx xxxxxx xx at lxxxx.Cxxx xxxx xxxxxxx JA HOME Medium Blue Den
1 MB2345-50 Published Matched 12/09/21 11:20am Sxx Pxxxxx xxxxxx xx at lxxxx.Cxxx xxxx xxxxxxx XA HOME Medium Blue Den
Published Mar 15
1 MB2345-51 Published Matched 12/09/21 11:20am Sxx Pxxxxx xxxxxx xx at lxxxx.Cxxx xxxx xxxxxxx JA HOME Medium Blue Den
1 MB2345-52 Published Matched 12/09/21 11:20am Sxx Pxxxxx xxxxxx xx at lxxxx.Cxxx xxxx xxxxxxx JA HOME Medium Blue Den
Products 1-100 of 584 Page 1 of 6

FIG. 1MM

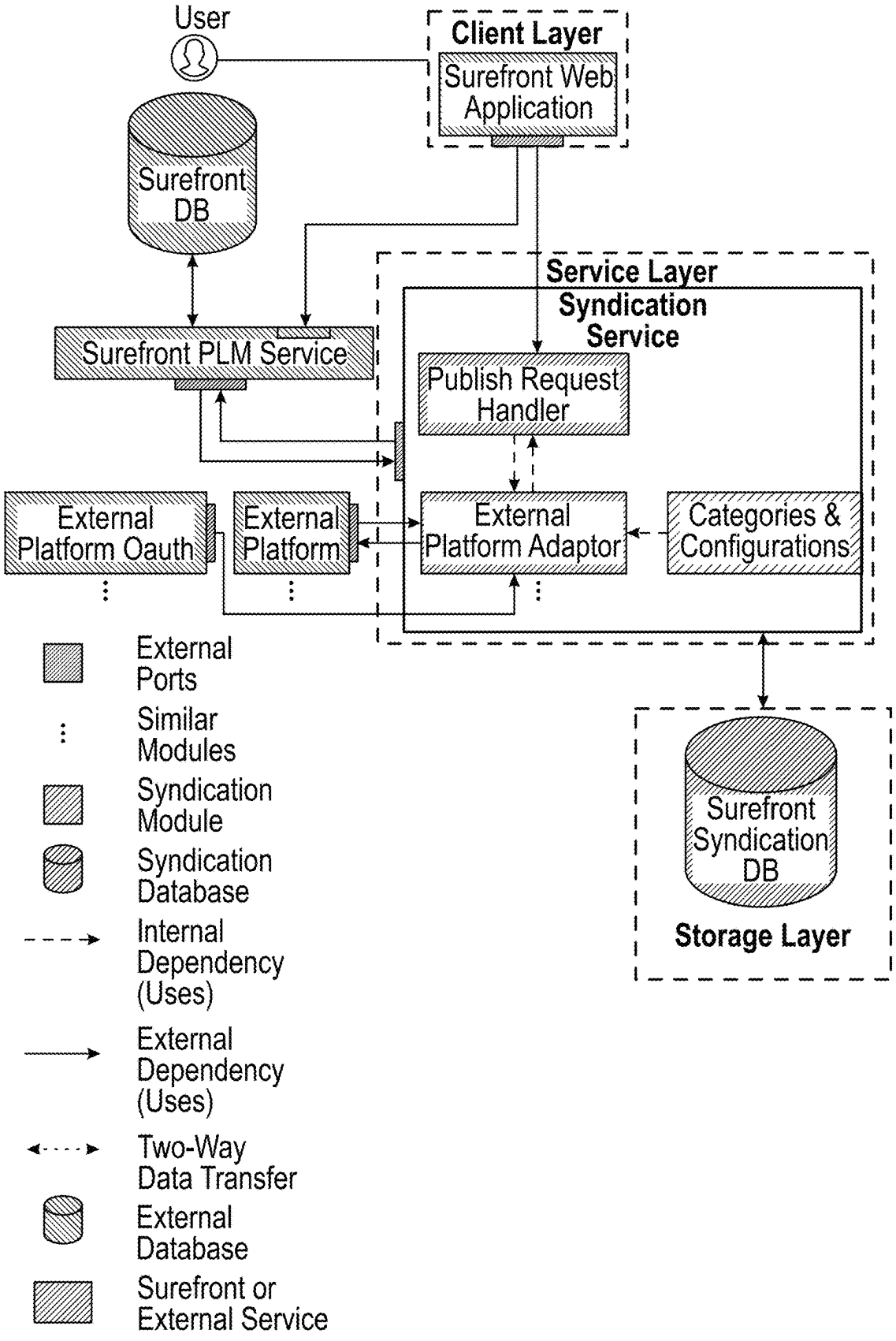

User
Client Layer
Surefront Web Application
Surefront DB
Service Layer
Syndication Service
Surefront PLM Service
Publish Request Handler
External Platform Oauth
External Platform
External Platform Adaptor
Categories & Configurations
Surefront Syndication DB
Storage Layer
External Ports
Similar Modules
Syndication Module
Syndication Database
Internal Dependency (Uses)
External Dependency (Uses)
Two-Way Data Transfer
External Database
Surefront or External Service

FIG. 1NN

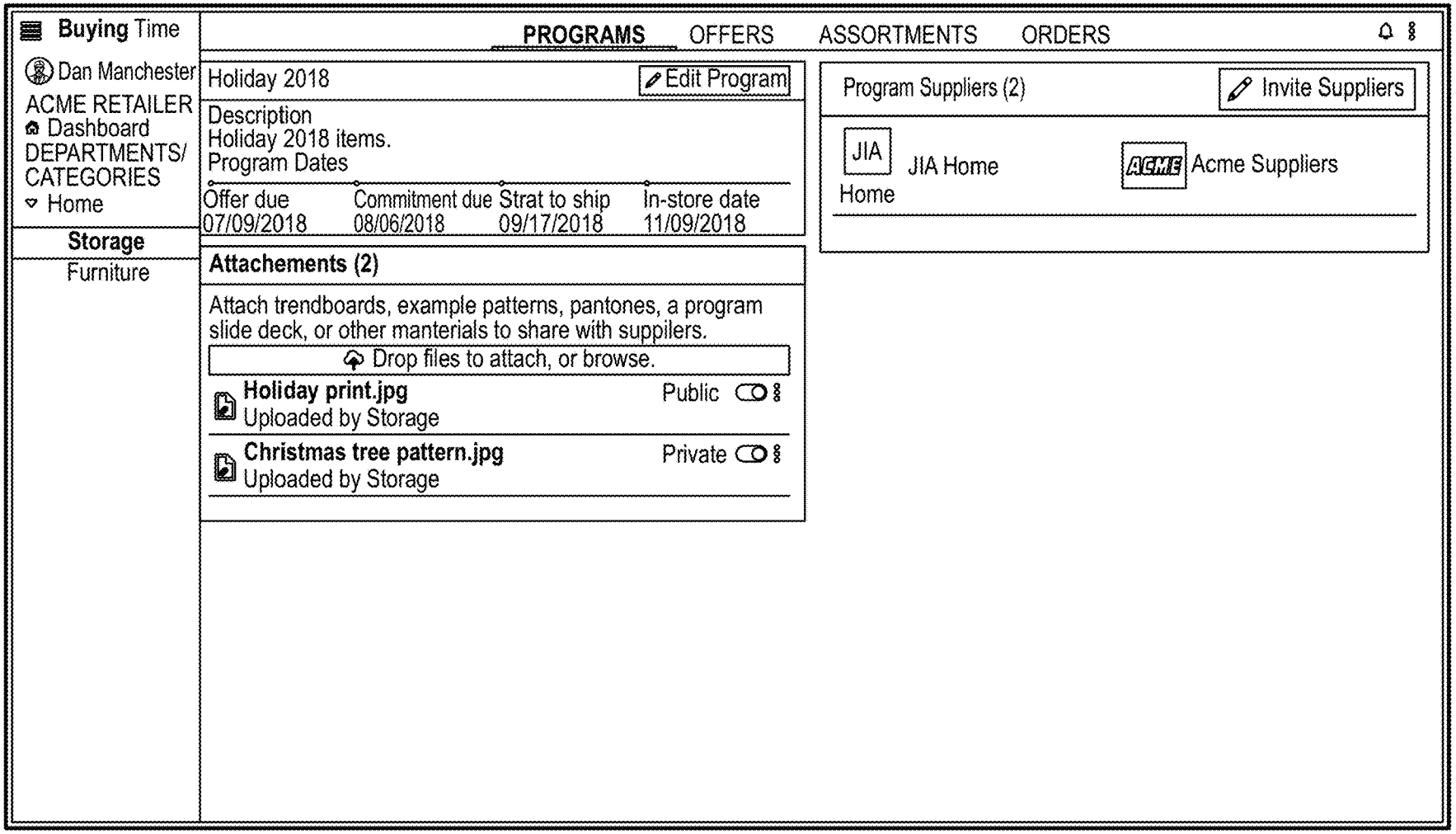

Buying Time
Dan Manchester
ACME RETAILER
Dashboard
DEPARTMENTS/ CATEGORIES
Home
Storage
Furniture
PROGRAMS
OFFERS
ASSORTMENTS
ORDERS
Holiday 2018
Edit Program
Description
Holiday 2018 items.
Program Dates
Offer due
07/09/2018
Commitment due
08/06/2018
Strat to ship
09/17/2018
In-store date
11/09/2018
Attachements (2)
Attach trendboards, example patterns, pantones, a program slide deck, or other manterials to share with suppilers.
Drop files to attach, or browse.
Holiday print.jpg
Uploaded by Storage
Public
Christmas tree pattern.jpg
Uploaded by Storage
Private
Program Suppliers (2)
Invite Suppliers
JIA
JIA Home
Home
ACME
Acme Suppliers

FIG. 2A

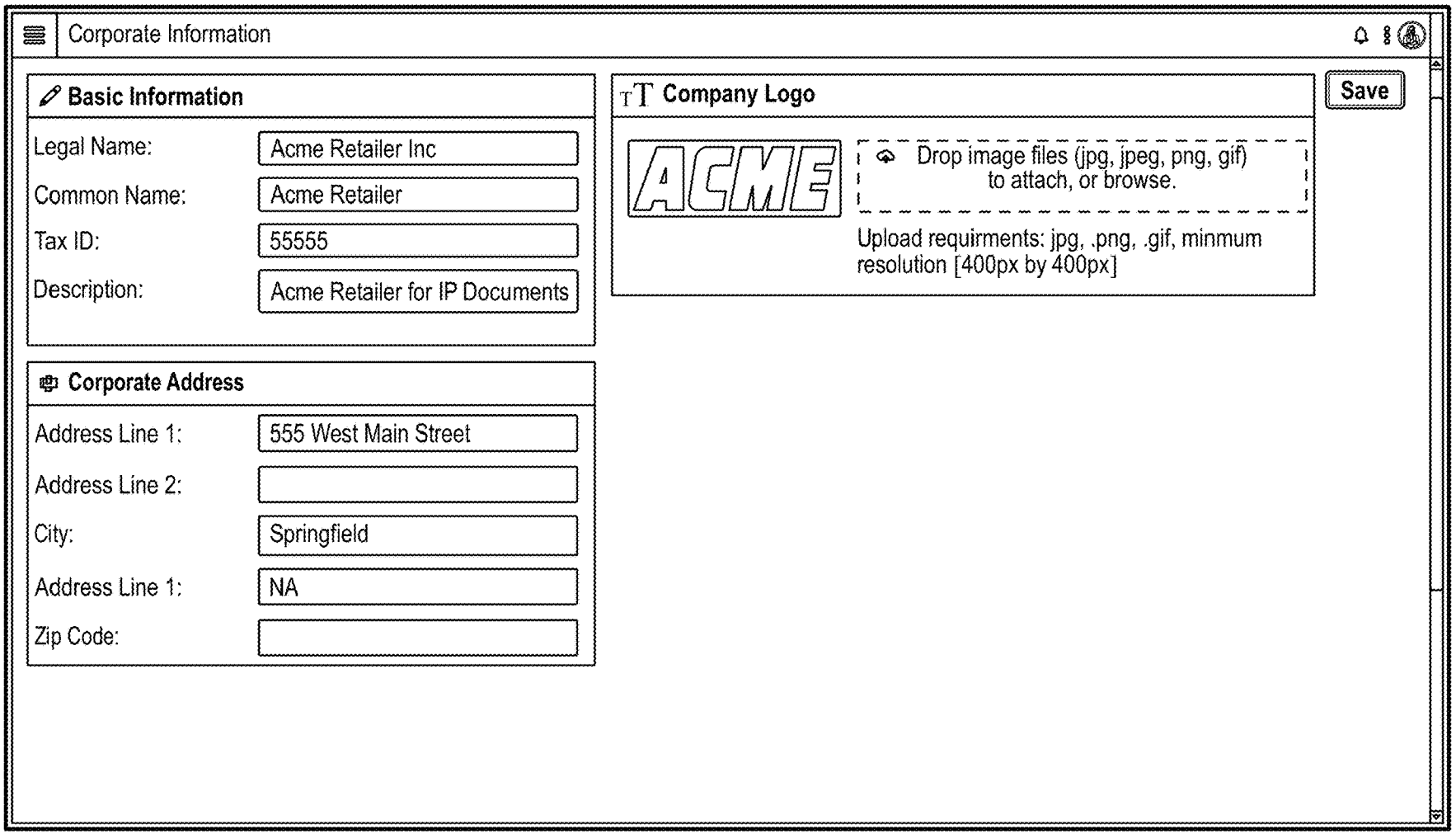

Corporate Information
Basic Information
Legal Name:
Acme Retailer Inc
Common Name:
Acme Retailer
Tax ID:
55555
Description:
Acme Retailer for IP Documents
Corporate Address
Address Line 1:
555 West Main Street
Address Line 2:
City:
Springfield
Address Line 1:
NA
Zip Code:
Company Logo
ACME
Drop image files (jpg, jpeg, png, gif) to attach, or browse.
Upload requirments: jpg, .png, .gif, minmum resolution [400px by 400px]
Save

FIG. 2B

Departments & Categories
Acme Retail
All Products
Hardlines
Home
Storage
Furniture
Softlines
Furniture
EDIT
Furniture Buyers
ADD BUYER
User
Email
Courtney Raina
courtney@email.com
All Managers
User
Email
Manager
Dan Manchester...
dan@qabuyin..
Hardlines
Suppliers
CONNECT SUPPLIER
Supplier
SupplierID
Email
Status
Acme Supplier
4444
Verified

FIG. 2C

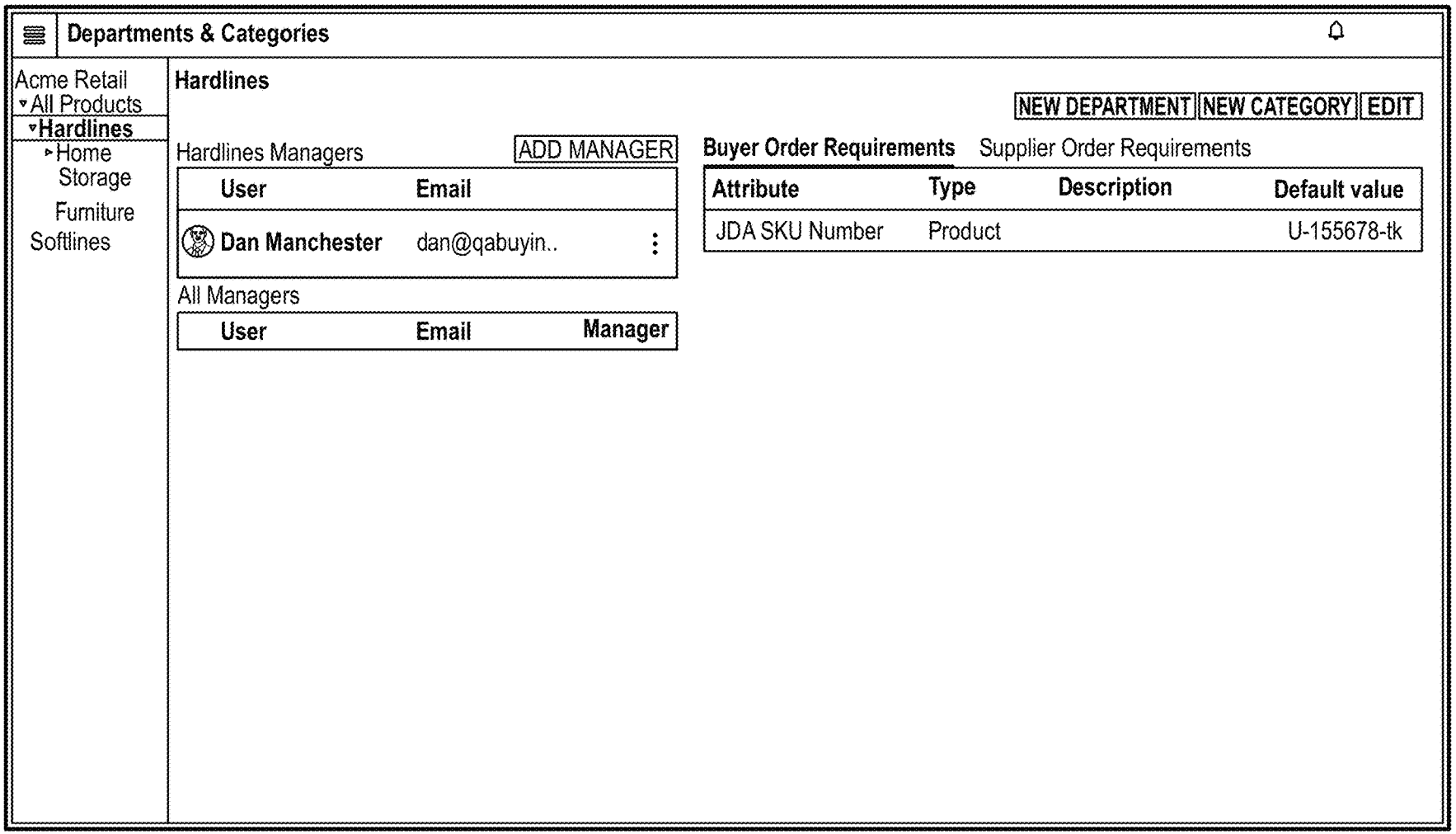

Departments & Categories
Acme Retail
All Products
Hardlines
Home
Storage
Furniture
Softlines
Hardlines
NEW DEPARTMENT
NEW CATEGORY
EDIT
Hardlines Managers
ADD MANAGER
User
Email
Dan Manchester
dan@qabuyin..
All Managers
User
Email
Manager
Buyer Order Requirements
Supplier Order Requirements
Attribute
Type
Description
Default value
JDA SKU Number
Product
U-155678-tk

FIG. 2D

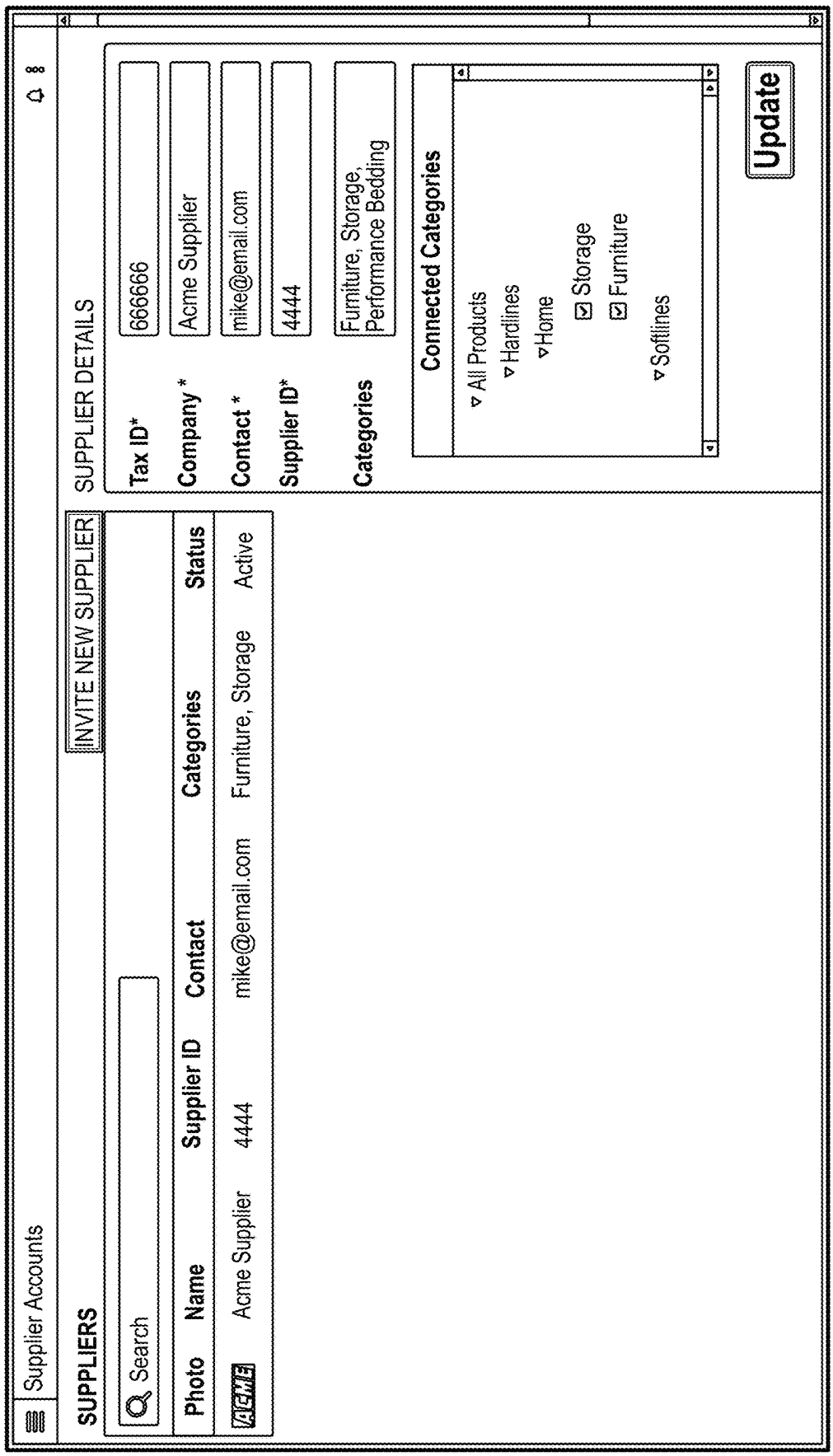

Supplier Accounts
SUPPLIERS
Search
INVITE NEW SUPPLIER
Photo
Name
Supplier ID
Contact
Categories
Status
Acme Supplier
4444
mike@email.com
Furniture, Storage
Active
SUPPLIER DETAILS
Tax ID*
666666
Company *
Acme Supplier
Contact *
mike@email.com
Supplier ID*
4444
Categories
Furniture, Storage, Performance Bedding
Connected Categories
All Products
Hardlines
Home
Storage
Furniture
Softlines
Update

FIG. 2E

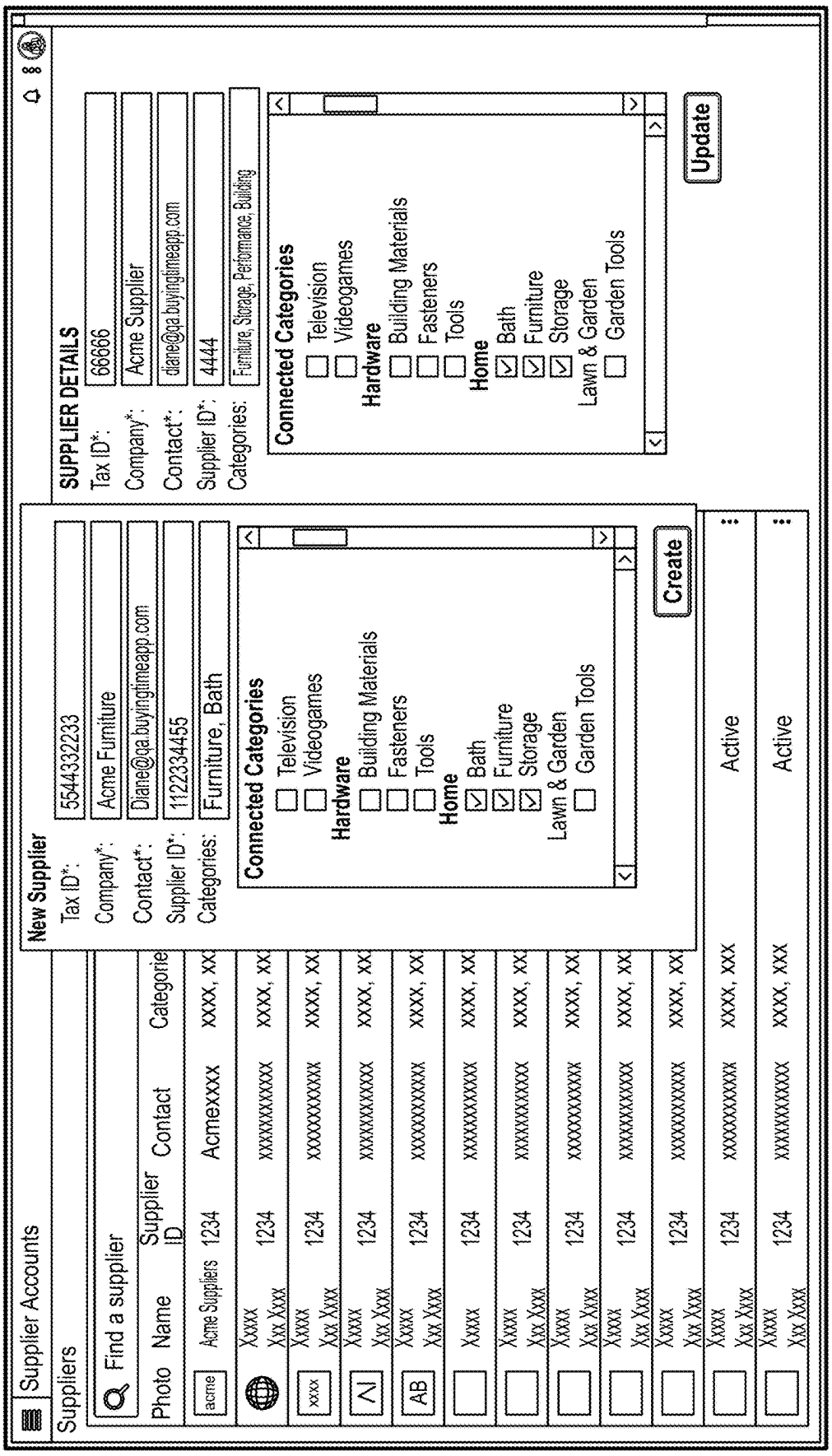

Supplier Accounts
Suppliers
Find a supplier
Photo
Name
Supplier ID
Contact
Categorie
Acme Suppliers
1234
Acmexxxx
xxxx, xx
New Supplier
Tax ID*:
5544332233
Company*:
Acme Furniture
Contact*:
Diane@qa.buyingtimeapp.com
Supplier ID*:
1122334455
Categories:
Furniture, Bath
Connected Categories
Television
Videogames
Hardware
Building Materials
Fasteners
Tools
Home
Bath
Furniture
Storage
Lawn & Garden
Garden Tools
Create
Active
SUPPLIER DETAILS
Tax ID*:
66666
Company*:
Acme Supplier
Contact*:
diane@qa.buyingtimeapp.com
Supplier ID*:
4444
Categories:
Furniture, Storage, Performance, Building
Update

FIG. 2F

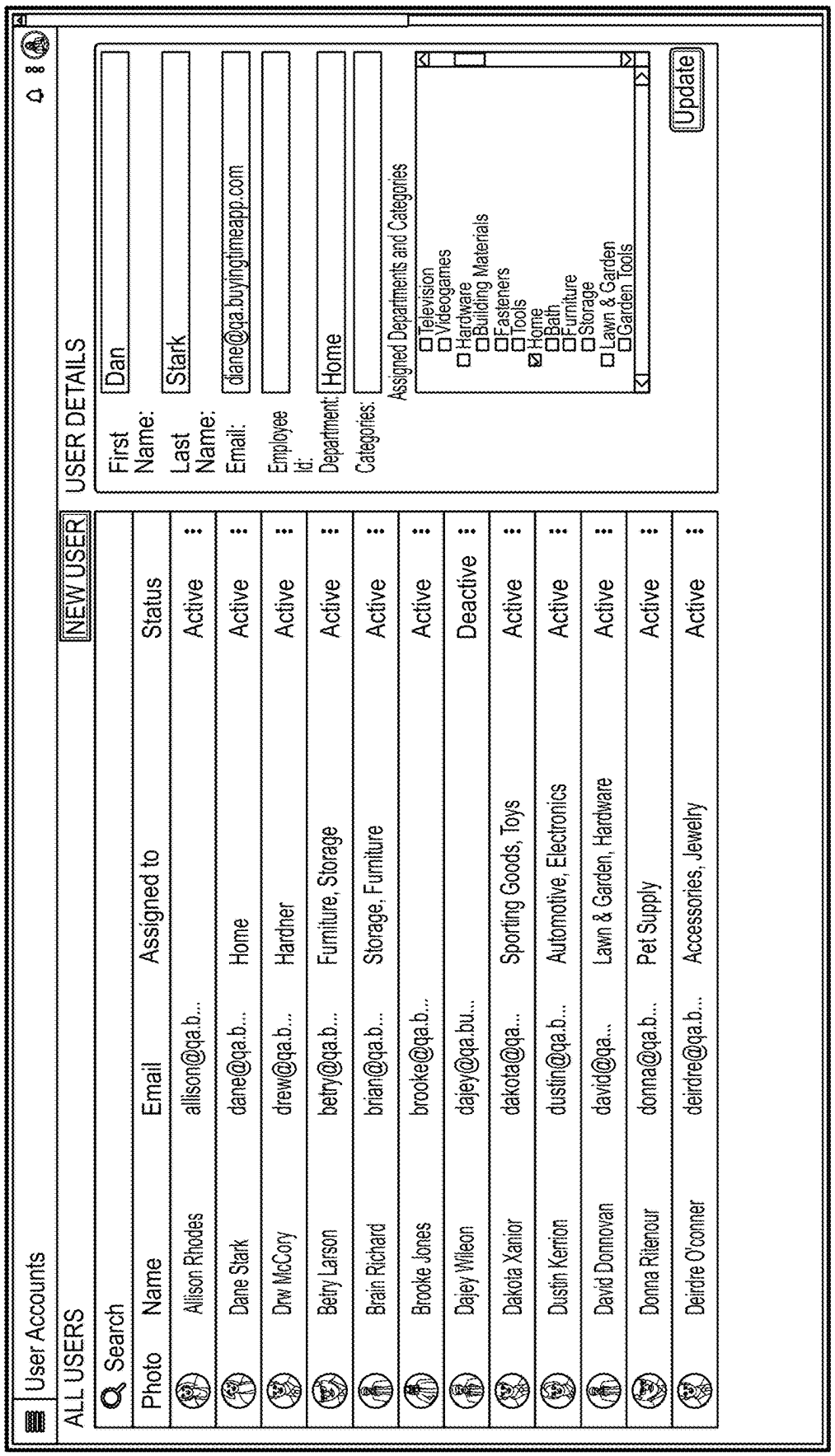

User Accounts
ALL USERS
NEW USER
Search
Photo
Name
Email
Assigned to
Status
Allison Rhodes
allison@qa.b...
Active
Dane Stark
dane@qa.b...
Home
Active
Drw McCory
drew@qa.b...
Hardner
Active
Betry Larson
betry@qa.b...
Furniture, Storage
Active
Brain Richard
brian@qa.b...
Storage, Furniture
Active
Brooke Jones
brooke@qa.b...
Active
Dajey Wileon
dajey@qa.bu...
Deactive
Dakota Xanior
dakota@qa...
Sporting Goods, Toys
Active
Dustin Kerrion
dustin@qa.b...
Automotive, Electronics
Active
David Donnovan
david@qa...
Lawn & Garden, Hardware
Active
Donna Ritenour
donna@qa.b...
Pet Supply
Active
Deirdre O'conner
deirdre@qa.b...
Accessories, Jewelry
Active
USER DETAILS
First Name:
Dan
Last Name:
Stark
Email:
diane@qa.buyingtimeapp.com
Employee Id:
Department:
Home
Categories:
Assigned Departments and Categories
Television
Videogames
Hardware
Building Materials
Fasteners
Tools
Home
Bath
Furniture
Storage
Lawn & Garden
Garden Tools
Update

FIG. 2G

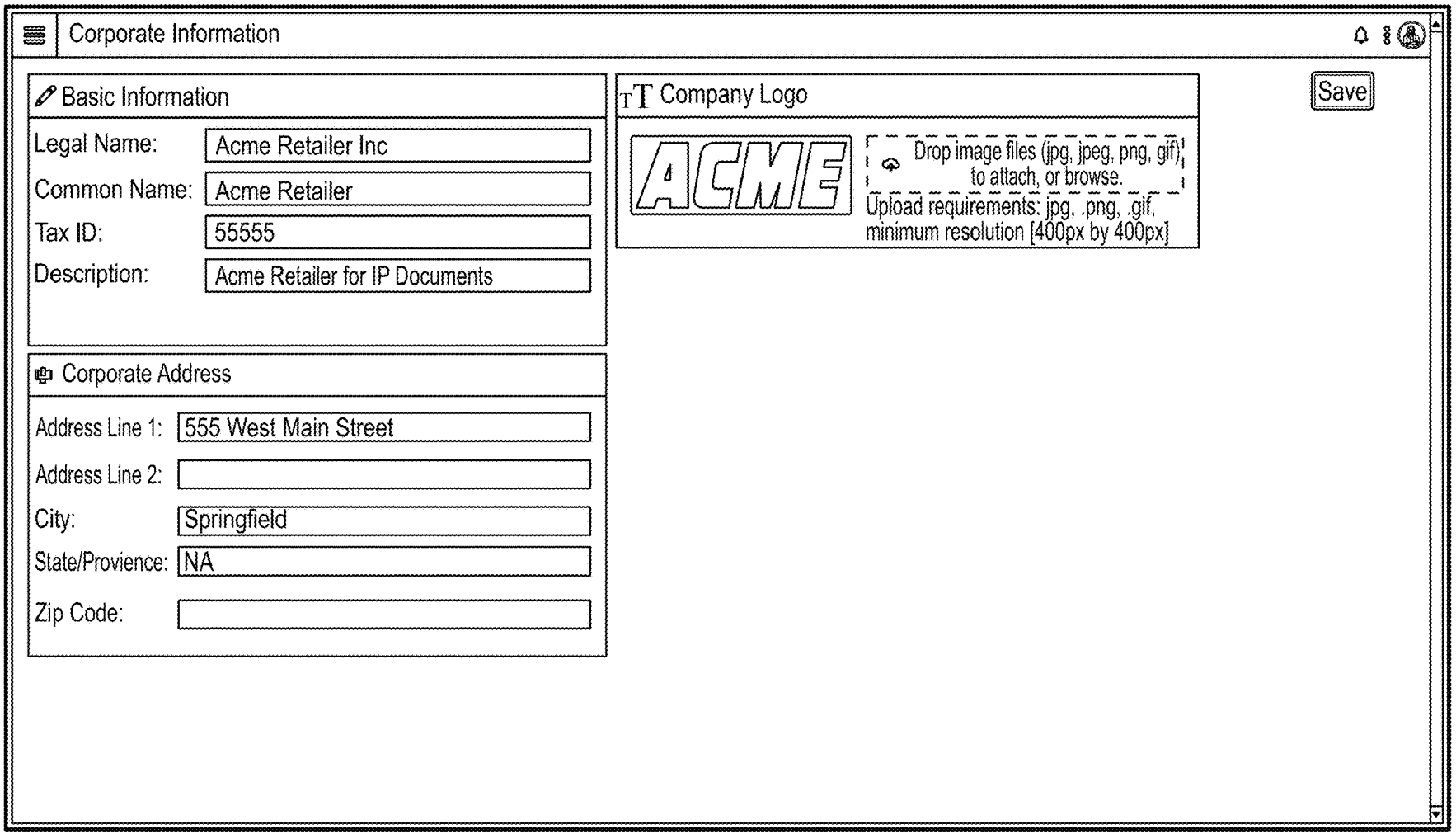

Corporate Information
Basic Information
Legal Name:
Acme Retailer Inc
Common Name:
Acme Retailer
Tax ID:
55555
Description:
Acme Retailer for IP Documents
Corporate Address
Address Line 1:
555 West Main Street
Address Line 2:
City:
Springfield
State/Provience:
NA
Zip Code:
Company Logo
ACME
Drop image files (jpg, jpeg, png, gif) to attach, or browse.
Upload requirements: jpg, .png, .gif, minimum resolution [400px by 400px]
Save

FIG. 2H

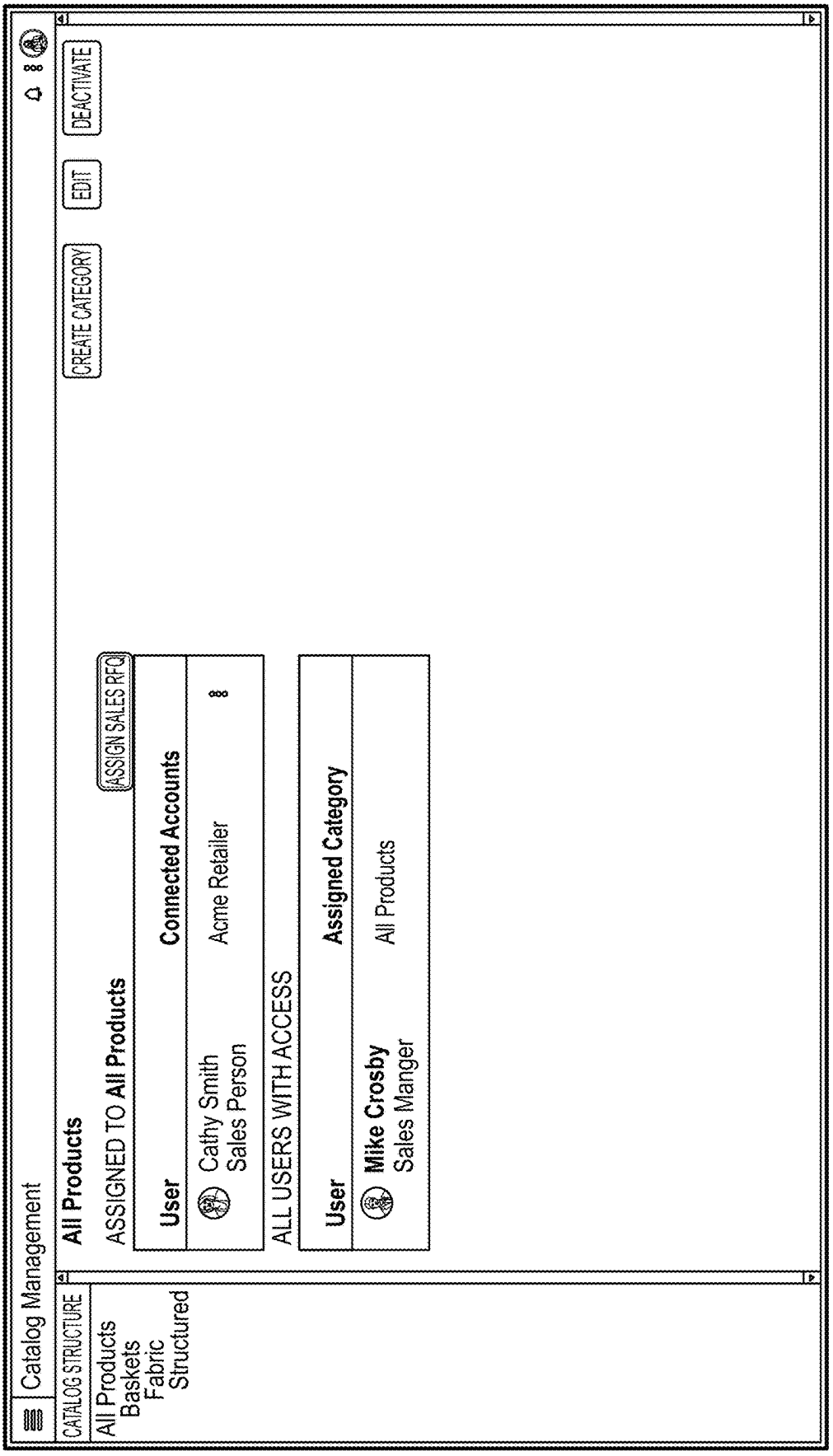

Catalog Management
CATALOG STRUCTURE
All Products
Baskets
Fabric
Structured
All Products
CREATE CATEGORY
EDIT
DEACTIVATE
ASSIGNED TO All Products
ASSIGN SALES RFQ
User
Connected Accounts
Cathy Smith
Sales Person
Acme Retailer
ALL USERS WITH ACCESS
User
Assigned Category
Mike Crosby
Sales Manger
All Products

FIG. 2I

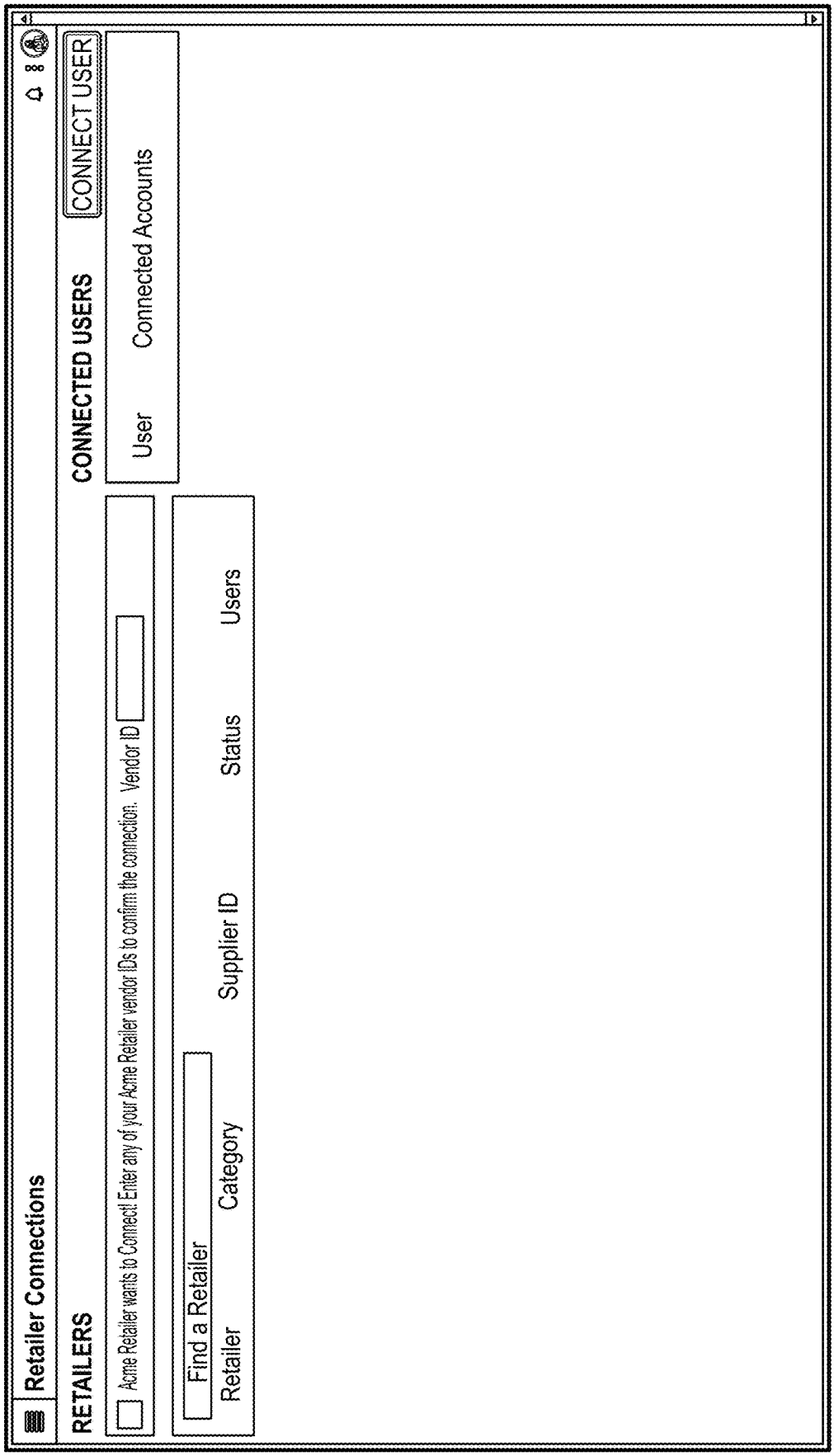

Retailer Connections
RETAILERS
CONNECTED USERS
CONNECT USER
Acme Retailer wants to Connect! Enter any of your Acme Retailer vendor IDs to confirm the connection. Vendor ID
User
Connected Accounts
Find a Retailer
Retailer
Category
Supplier ID
Status
Users

FIG. 2J

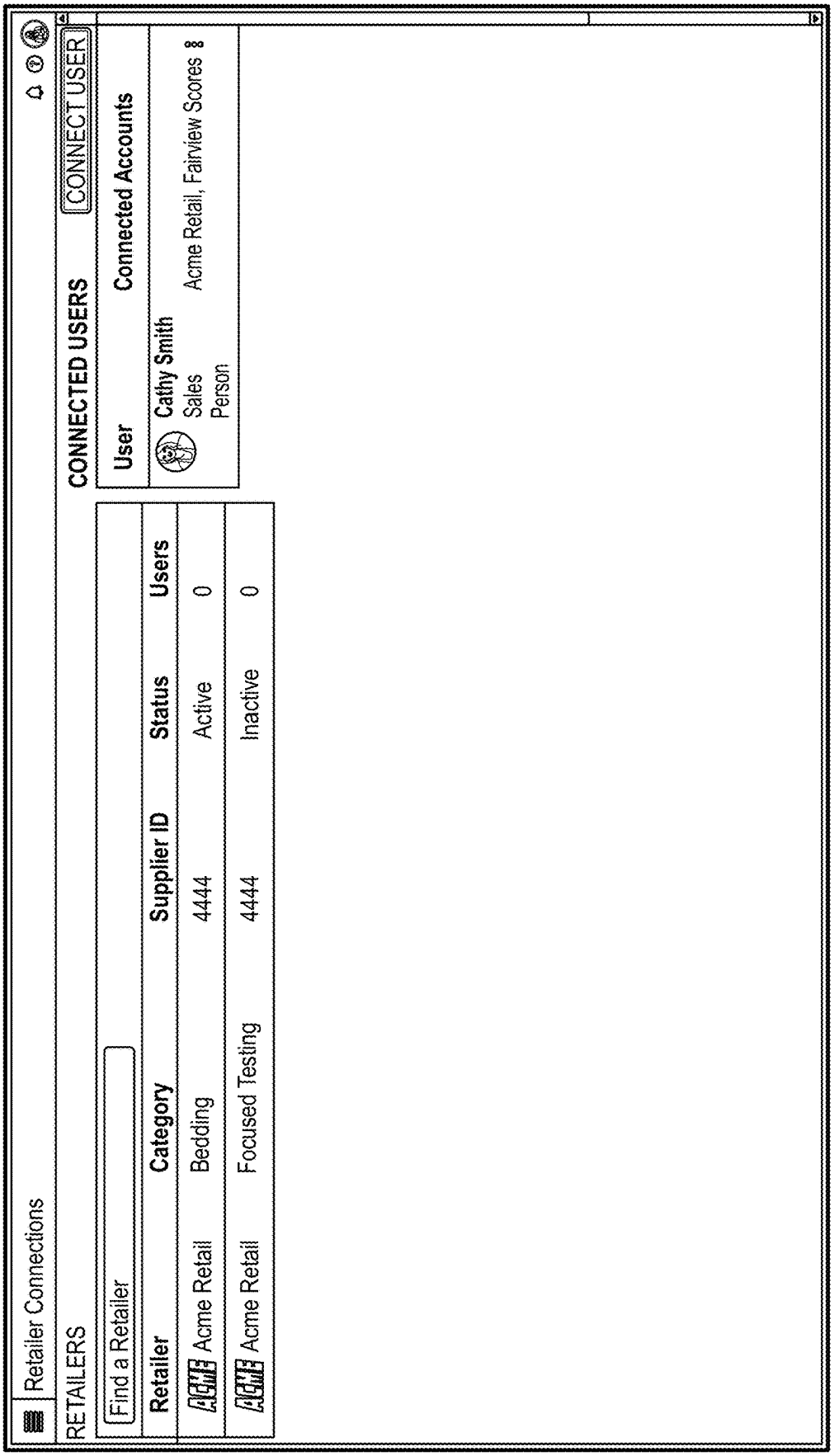

Retailer Connections
RETAILERS
Find a Retailer
Retailer
Category
Supplier ID
Status
Users
Acme Retail
Bedding
4444
Active
0
Acme Retail
Focused Testing
4444
Inactive
0
CONNECTED USERS
CONNECT USER
User
Connected Accounts
Cathy Smith
Sales Person
Acme Retail, Fairview Scores

FIG. 2K

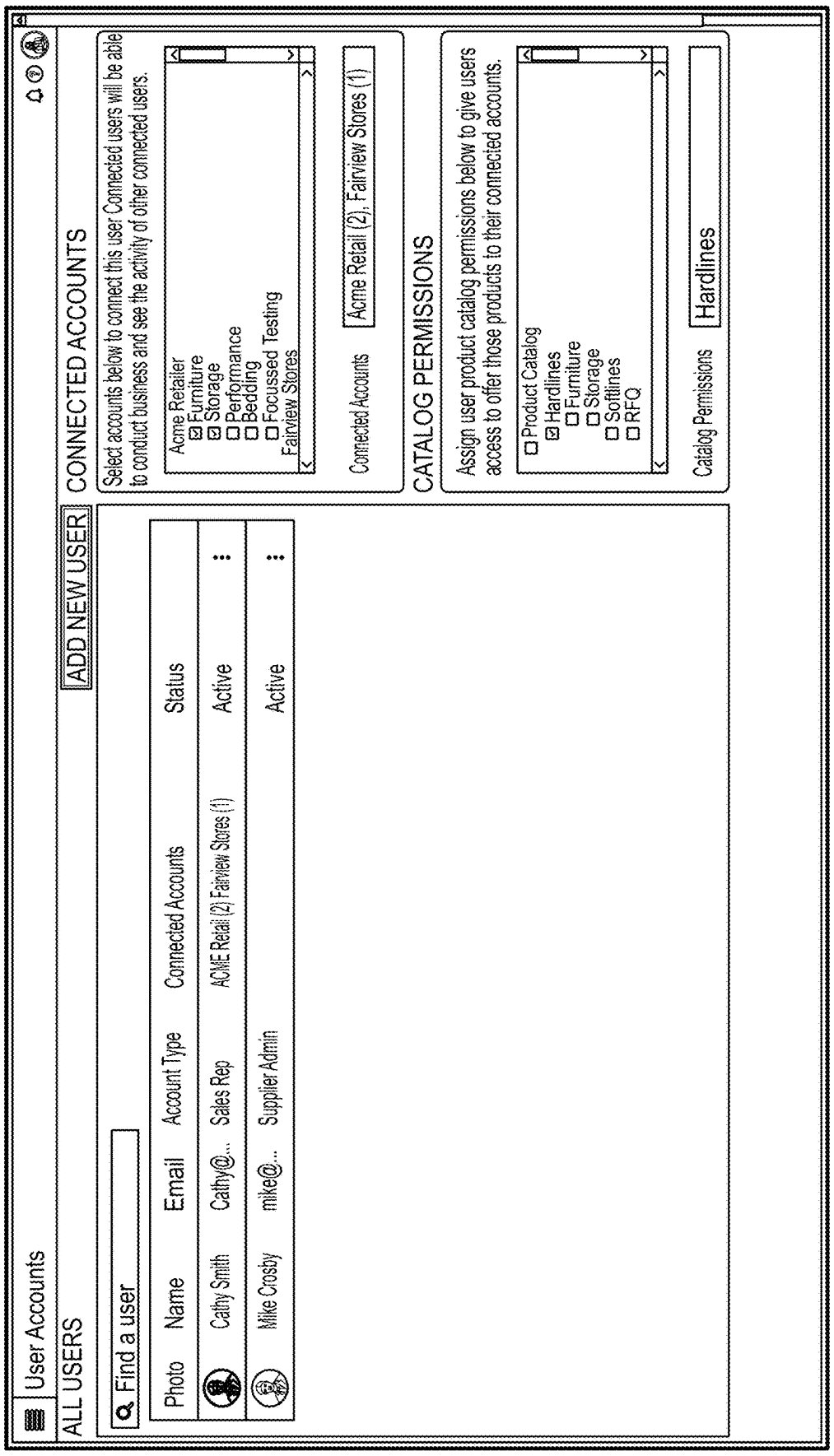

User Accounts
ALL USERS
ADD NEW USER
Find a user
Photo
Name
Email
Account Type
Connected Accounts
Status
Cathy Smith
Cathy@...
Sales Rep
ACME Retail (2) Fairview Stores (1)
Active
Mike Crosby
mike@...
Supplier Admin
Active
CONNECTED ACCOUNTS
Select accounts below to connect this user Connected users will be able to conduct business and see the activity of other connected users.
Acme Retailer
Furniture
Storage
Performance
Bedding
Focussed Testing
Fairview Stores
Connected Accounts
Acme Retail (2), Fairview Stores (1)
CATALOG PERMISSIONS
Assign user product catalog permissions below to give users access to offer those products to their connected accounts.
Product Catalog
Hardlines
Furniture
Storage
Softlines
RFQ
Catalog Permissions
Hardlines

FIG. 2L

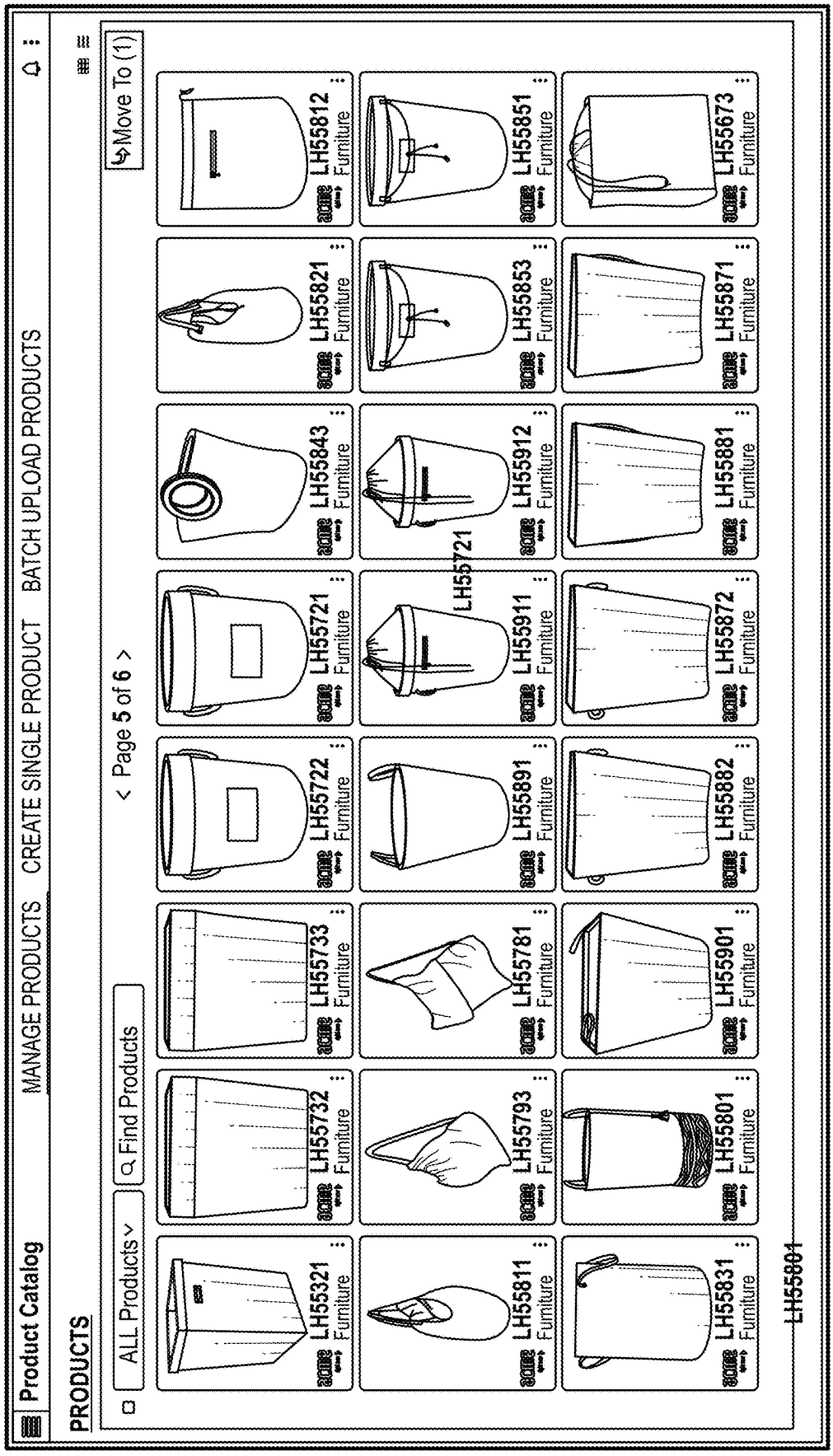
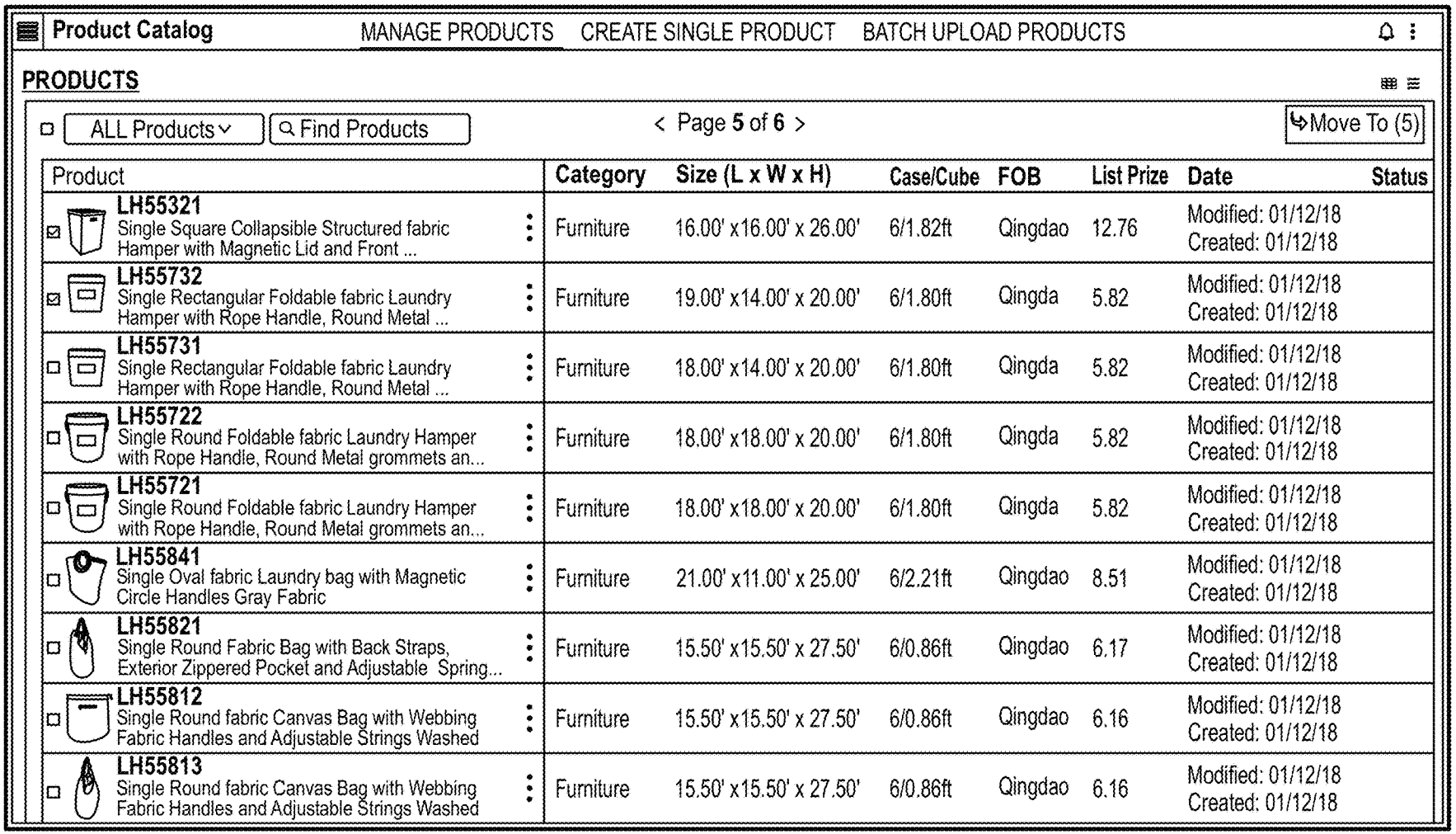

Product Catalog
MANAGE PRODUCTS
CREATE SINGLE PRODUCT
BATCH UPLOAD PRODUCTS
PRODUCTS
ALL Products
Find Products
< Page 5 of 6 >
Move To (1)
LH55321 Furniture
LH55732 Furniture
LH55733 Furniture
LH55722 Furniture
LH55721 Furniture
LH55843 Furniture
LH55812 Furniture
LH55811 Furniture
LH55793 Furniture
LH55781 Furniture
LH55891 Furniture
LH55911 Furniture
LH55912 Furniture
LH55851 Furniture
LH55831 Furniture
LH55801 Furniture
LH55901 Furniture
LH55882 Furniture
LH55872 Furniture
LH55881 Furniture
LH55673 Furniture
LH55821 Furniture
LH55853 Furniture
LH55871 Furniture
LH55721
LH55801

FIG. 3A1



Product	Category	Size (L x W x H)	Case/Cube	FOB	List Prize	Date	Status
LH55321 Single Square Collapsible Structured fabric Hamper with Magnetic Lid and Front ...	Furniture	16.00' x16.00' x 26.00'	6/1.82ft	Qingdao	12.76	Modified: 01/12/18 Created: 01/12/18	
LH55732 Single Rectangular Foldable fabric Laundry Hamper with Rope Handle, Round Metal ...	Furniture	19.00' x14.00' x 20.00'	6/1.80ft	Qingda	5.82	Modified: 01/12/18 Created: 01/12/18	
LH55731 Single Rectangular Foldable fabric Laundry Hamper with Rope Handle, Round Metal ...	Furniture	18.00' x14.00' x 20.00'	6/1.80ft	Qingda	5.82	Modified: 01/12/18 Created: 01/12/18	
LH55722 Single Round Foldable fabric Laundry Hamper with Rope Handle, Round Metal grommets an...	Furniture	18.00' x18.00' x 20.00'	6/1.80ft	Qingda	5.82	Modified: 01/12/18 Created: 01/12/18	
LH55721 Single Round Foldable fabric Laundry Hamper with Rope Handle, Round Metal grommets an...	Furniture	18.00' x18.00' x 20.00'	6/1.80ft	Qingda	5.82	Modified: 01/12/18 Created: 01/12/18	
LH55841 Single Oval fabric Laundry bag with Magnetic Circle Handles Gray Fabric	Furniture	21.00' x11.00' x 25.00'	6/2.21ft	Qingdao	8.51	Modified: 01/12/18 Created: 01/12/18	
LH55821 Single Round Fabric Bag with Back Straps, Exterior Zippered Pocket and Adjustable Spring...	Furniture	15.50' x15.50' x 27.50'	6/0.86ft	Qingdao	6.17	Modified: 01/12/18 Created: 01/12/18	
LH55812 Single Round fabric Canvas Bag with Webbing Fabric Handles and Adjustable Strings Washed	Furniture	15.50' x15.50' x 27.50'	6/0.86ft	Qingdao	6.16	Modified: 01/12/18 Created: 01/12/18	
LH55813 Single Round fabric Canvas Bag with Webbing Fabric Handles and Adjustable Strings Washed	Furniture	15.50' x15.50' x 27.50'	6/0.86ft	Qingdao	6.16	Modified: 01/12/18 Created: 01/12/18	

FIG. 3A2

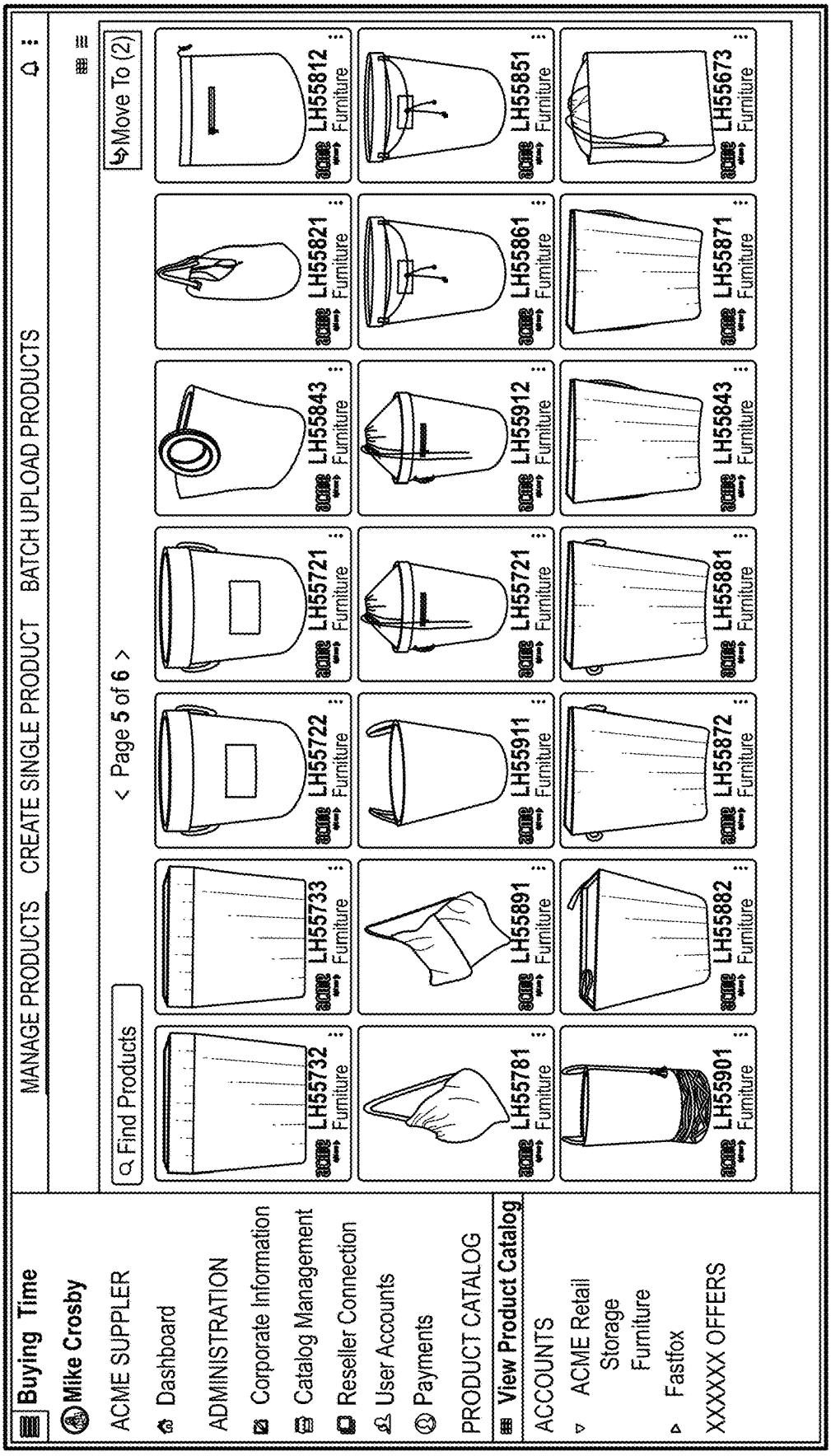

Buying Time
Mike Crosby
ACME SUPPLER
Dashboard
ADMINISTRATION
Corporate Information
Catalog Management
Reseller Connection
User Accounts
Payments
PRODUCT CATALOG
View Product Catalog
ACCOUNTS
ACME Retail
Storage
Furniture
Fastfox
XXXXXX OFFERS
MANAGE PRODUCTS
CREATE SINGLE PRODUCT
BATCH UPLOAD PRODUCTS
Find Products
< Page 5 of 6 >
Move To (2)
LH55732 Furniture
LH55733 Furniture
LH55722 Furniture
LH55721 Furniture
LH55843 Furniture
LH55821 Furniture
LH55812 Furniture
LH55781 Furniture
LH55891 Furniture
LH55911 Furniture
LH55721 Furniture
LH55912 Furniture
LH55861 Furniture
LH55851 Furniture
LH55901 Furniture
LH55882 Furniture
LH55872 Furniture
LH55881 Furniture
LH55843 Furniture
LH55871 Furniture
LH55673 Furniture

FIG. 3B

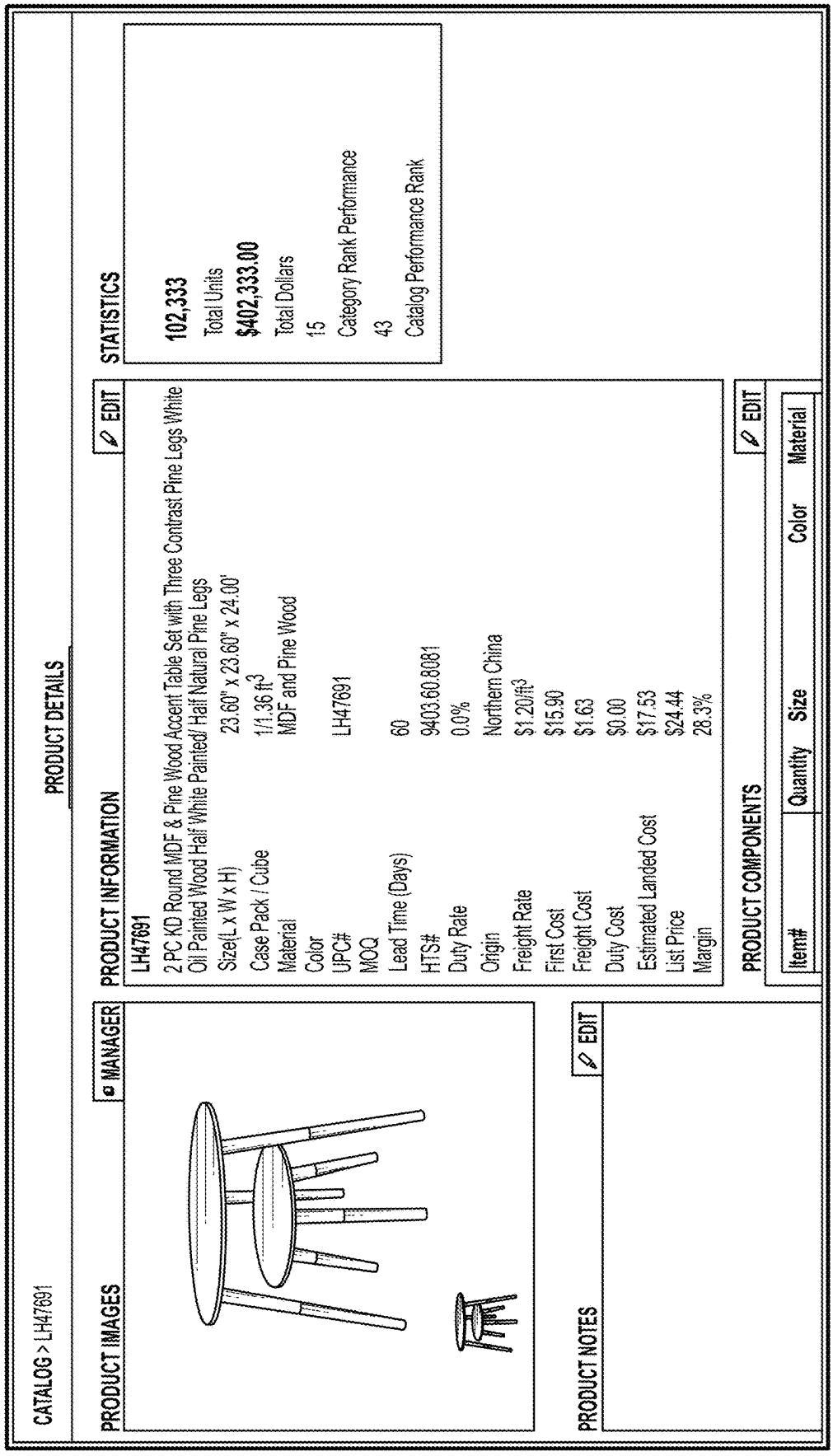

CATALOG > LH47691
PRODUCT DETAILS
PRODUCT IMAGES
MANAGER
PRODUCT INFORMATION
EDIT
STATISTICS
LH47691
2 PC KD Round MDF & Pine Wood Accent Table Set with Three Contrast Pine Legs White Oil Painted Wood Half White Painted/ Half Natural Pine Legs
Size(L x W x H) 23.60" x 23.60" x 24.00"
Case Pack / Cube 1/1.36 ft3
Material MDF and Pine Wood
Color
UPC# LH47691
MOQ
Lead Time (Days) 60
HTS# 9403.60.8081
Duty Rate 0.0%
Origin Northern China
Freight Rate $1.20/ft3
First Cost $15.90
Freight Cost $1.63
Duty Cost $0.00
Estimated Landed Cost $17.53
List Price $24.44
Margin 28.3%
102,333
Total Units
$402,333.00
Total Dollars
15
Category Rank Performance
43
Catalog Performance Rank
PRODUCT NOTES
EDIT
PRODUCT COMPONENTS
EDIT
Item# Quantity Size Color Material

FIG. 3C1

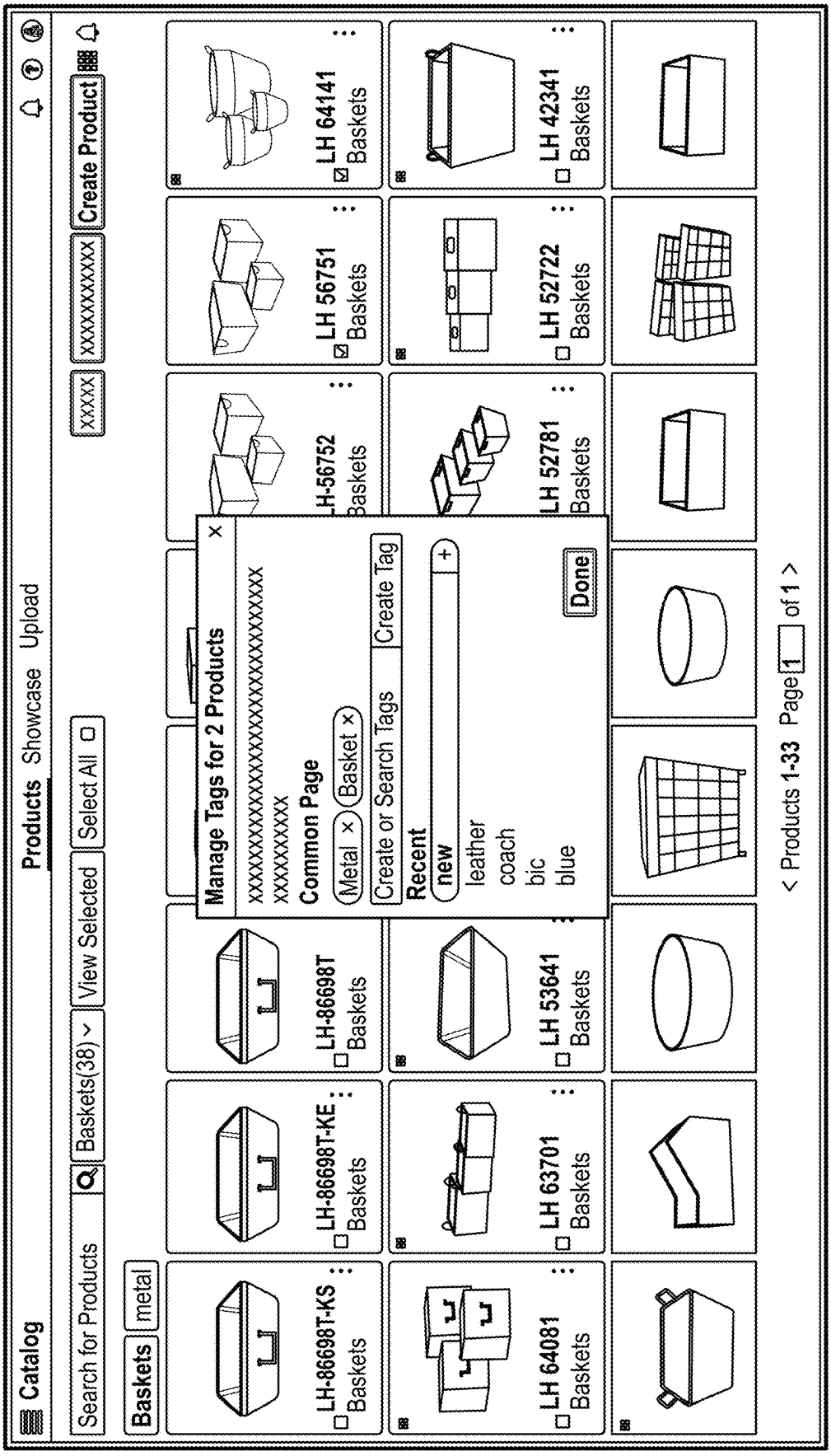

Catalog
Products Showcase Upload
Search for Products
Baskets(38)
View Selected
Select All
XXXXX
XXXXXXXXXX
Create Product
Baskets
metal
LH-86698T-KS
Baskets
LH-86698T-KE
Baskets
LH-86698T
Baskets
LH-56752
Baskets
LH 56751
Baskets
LH 64141
Baskets
LH 64081
Baskets
LH 63701
Baskets
LH 53641
Baskets
LH 52781
Baskets
LH 52722
Baskets
LH 42341
Baskets
Manage Tags for 2 Products
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXX
Common Page
Metal
Basket
Create or Search Tags
Create Tag
Recent
new
leather
coach
bic
blue
Done
< Products 1-33 Page 1 of 1 >

FIG. 3C2

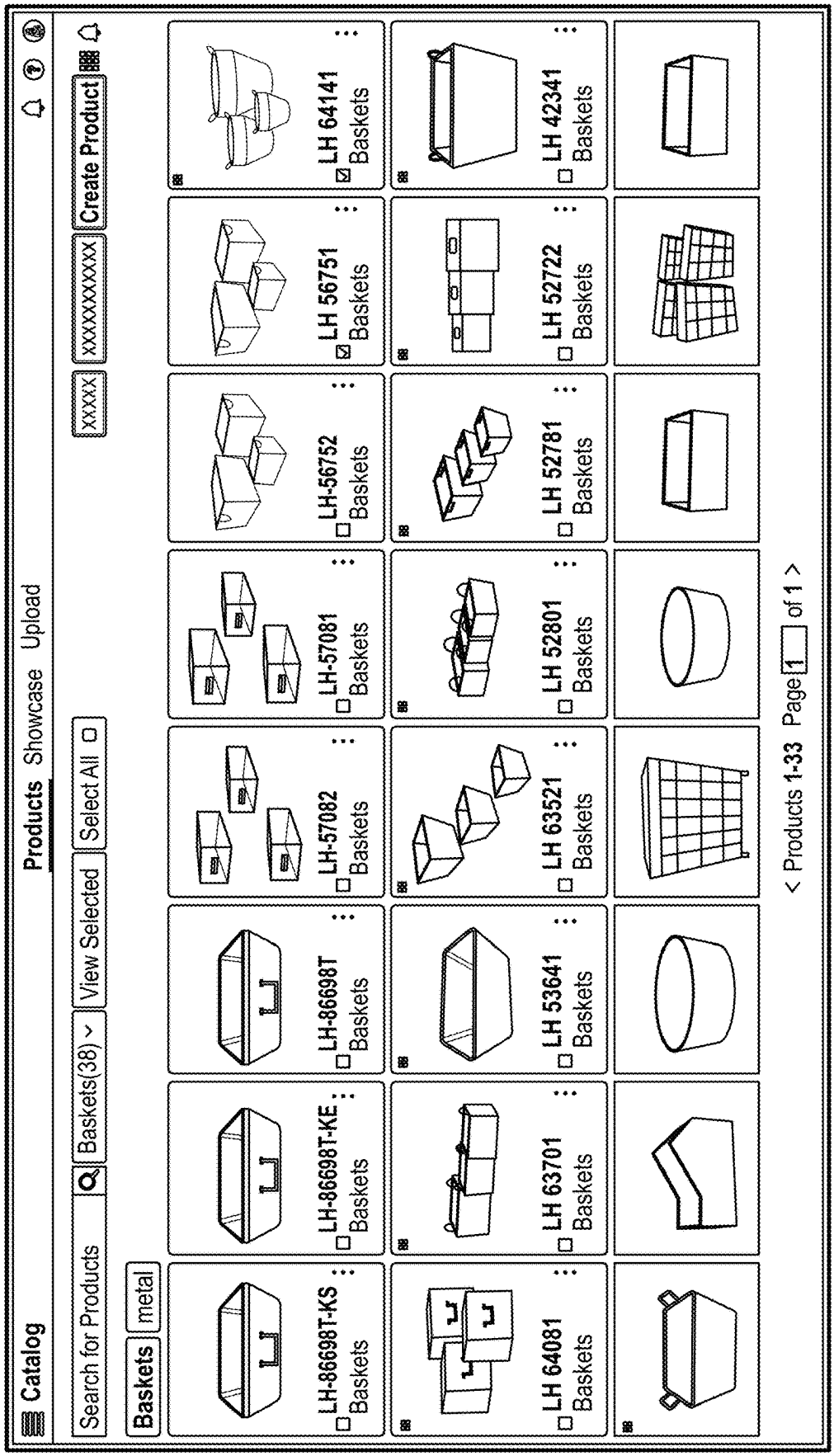

Catalog
Products
Showcase
Upload
Search for Products
Baskets(38)
View Selected
Select All
xxxxx
xxxxxxxxxx
Create Product
Baskets
metal
LH-86698T-KS
LH-86698T-KE
LH-86698T
LH-57082
LH-57081
LH-56752
LH 56751
LH 64141
LH 64081
LH 63701
LH 53641
LH 63521
LH 52801
LH 52781
LH 52722
LH 42341
Products 1-33
Page 1 of 1

FIG. 3C3

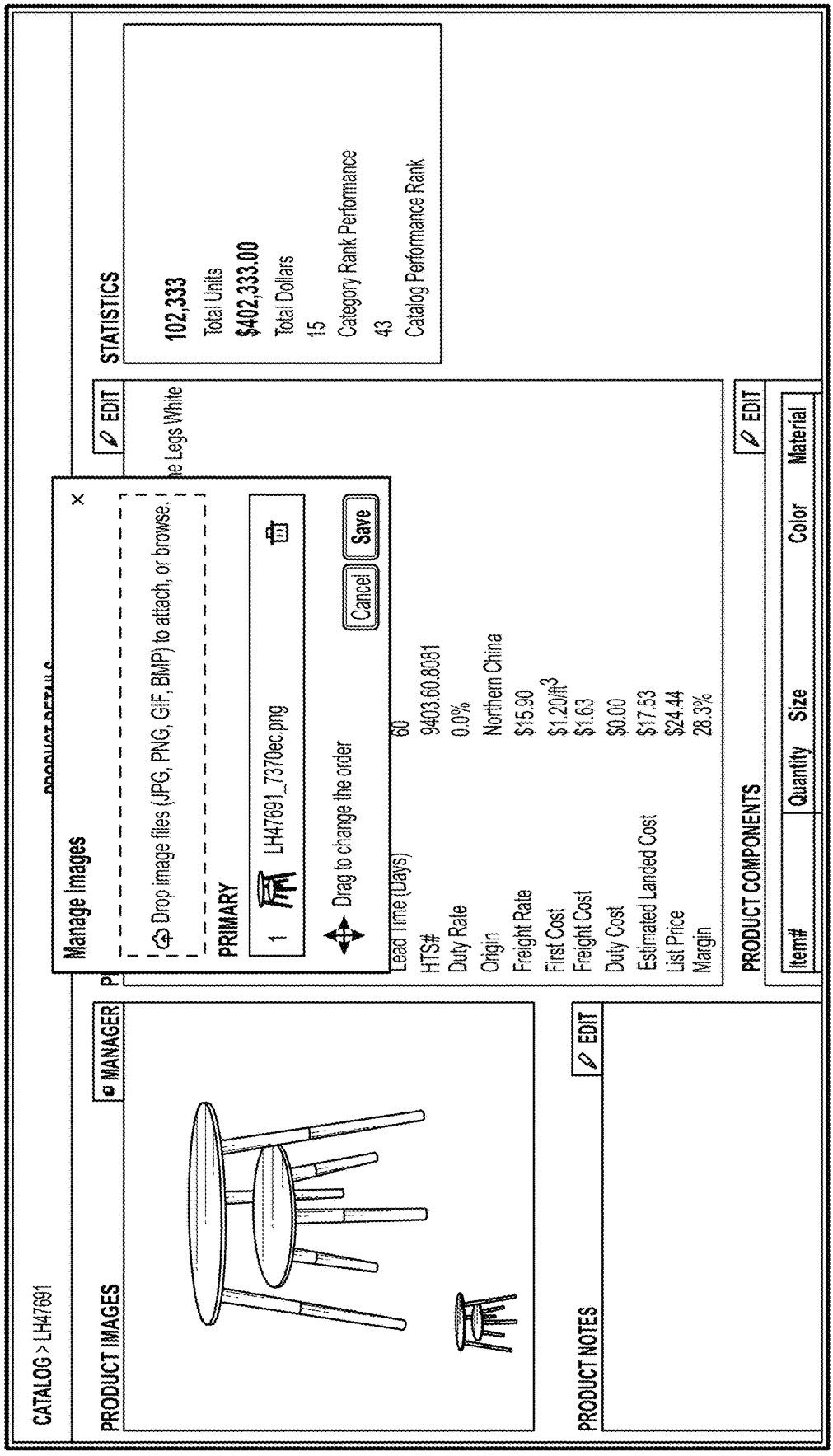

CATALOG > LH47691
PRODUCT IMAGES
MANAGER
PRODUCT NOTES
EDIT
Manage Images
Drop image files (JPG, PNG, GIF, BMP) to attach, or browse.
PRIMARY
1
LH47691_7370ec.png
Drag to change the order
Cancel
Save
Lead Time (Days) 60
HTS# 9403.60.8081
Duty Rate 0.0%
Origin Northern China
Freight Rate $15.90
First Cost $1.20/ft3
Freight Cost $1.63
Duty Cost $0.00
Estimated Landed Cost $17.53
List Price $24.44
Margin 28.3%
EDIT
STATISTICS
102,333
Total Units
$402,333.00
Total Dollars
15
Category Rank Performance
43
Catalog Performance Rank
PRODUCT COMPONENTS
EDIT
Item#
Quantity
Size
Color
Material

FIG. 3D

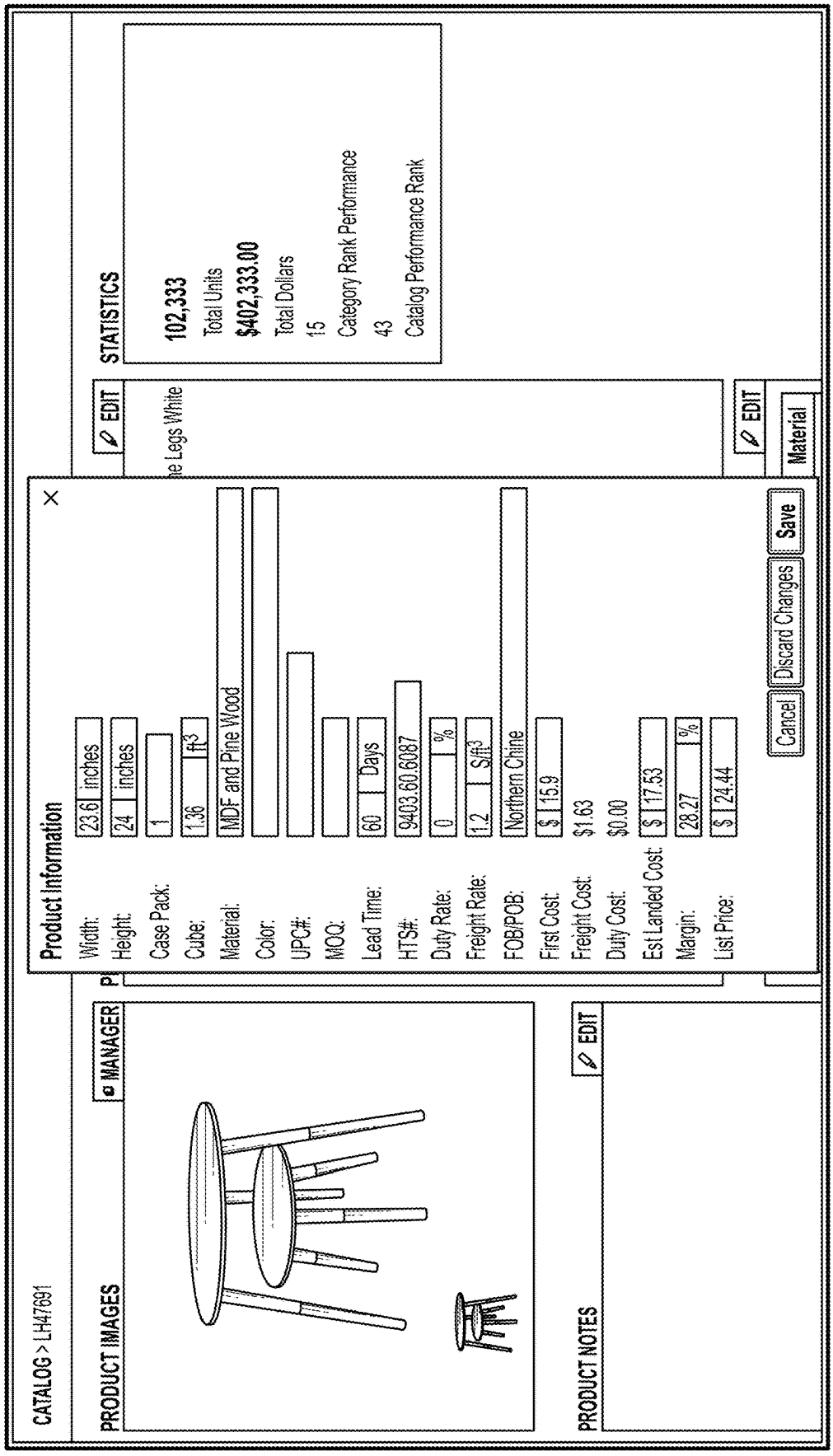

CATALOG > LH47691
PRODUCT IMAGES
MANAGER
PRODUCT NOTES
EDIT
Product Information
Width: 23.61 inches
Height: 24 inches
Case Pack: 1
Cube: 1.36 ft3
Material: MDF and Pine Wood
Color:
UPC#:
MOQ:
Lead Time: 60 Days
HTS#: 9403.60.6087
Duty Rate: 0 %
Freight Rate: 1.2 $/ft3
FOB/POB: Northern Chine
First Cost: $ 15.9
Freight Cost: $1.63
Duty Cost: $0.00
Est Landed Cost: $ 17.53
Margin: 28.27 %
List Price: $ 24.44
Cancel
Discard Changes
Save
EDIT
ne Legs White
EDIT
Material
STATISTICS
102,333
Total Units
$402,333.00
Total Dollars
15
Category Rank Performance
43
Catalog Performance Rank

FIG. 3E

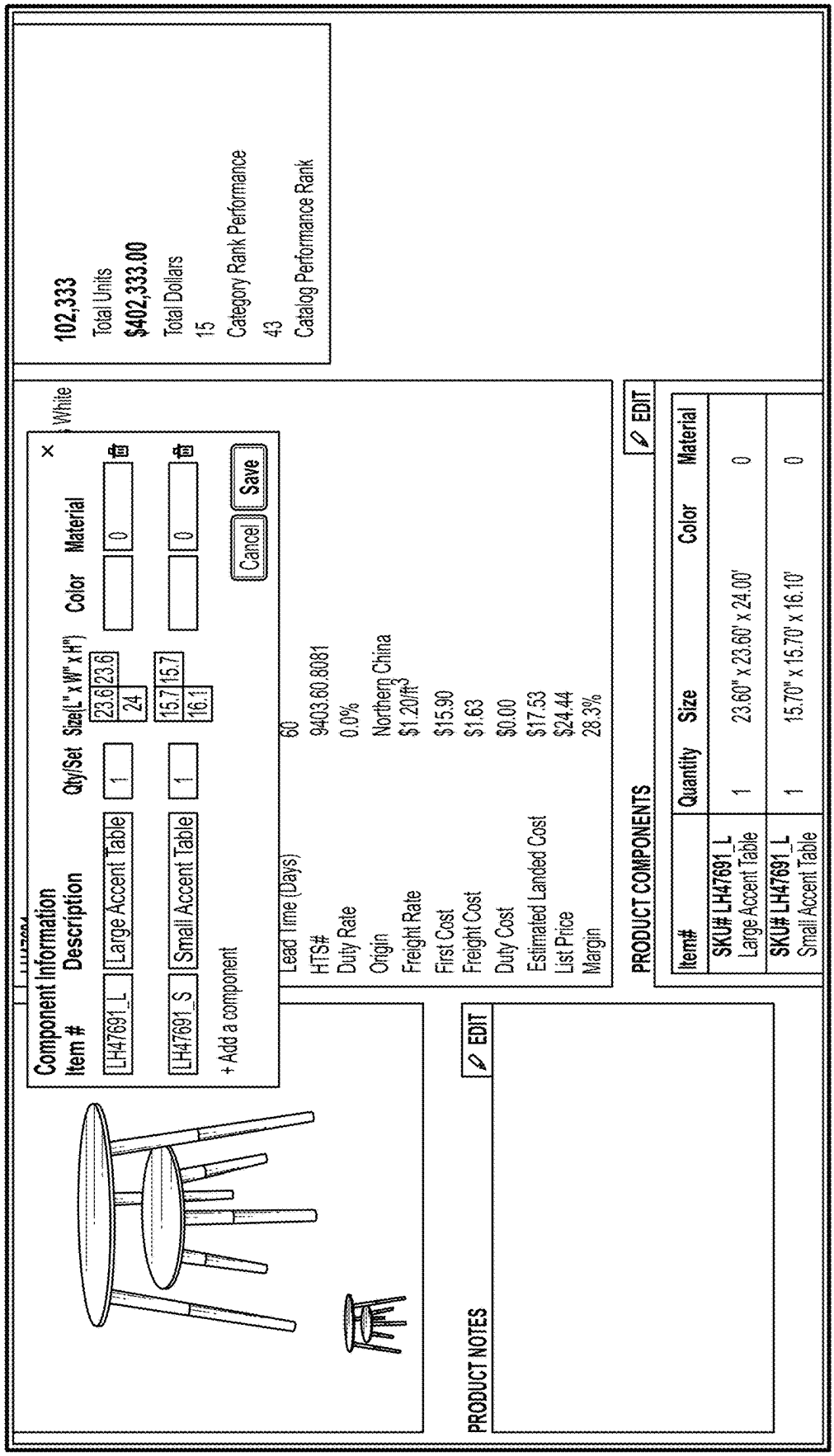

Component Information
Item # Description Qty/Set Size(L" x W" x H") Color Material
LH47691_L Large Accent Table 1 23.6 23.6 24 0
LH47691_S Small Accent Table 1 15.7 15.7 16.1 0
+ Add a component
Cancel Save
White
102,333
Total Units
$402,333.00
Total Dollars
15
Category Rank Performance
43
Catalog Performance Rank
Lead Time (Days) 60
HTS# 9403.60.8081
Duty Rate 0.0%
Origin Northern China
Freight Rate $1.20/ft3
First Cost $15.90
Freight Cost $1.63
Duty Cost $0.00
Estimated Landed Cost $17.53
List Price $24.44
Margin 28.3%
EDIT
PRODUCT COMPONENTS
Item# Quantity Size Color Material
SKU# LH47691_L Large Accent Table 1 23.60" x 23.60" x 24.00" 0
SKU# LH47691_L Small Accent Table 1 15.70" x 15.70" x 16.10" 0
EDIT
PRODUCT NOTES

FIG. 3F1

CATALOG > Baskets > LH58373

Product Details | Sales History

Search Sales

Customer	Order	Program	Exp Receipt	Ship Date	FOB Point	Unit Price	Est Landed Cost	Quantity	Margin	Amount
Acme Retail > Storage	14660	Back To School 2018	10/01/18	12/31/69	0	$20.9800	$22.08	5.24%	1,000	$20,980.00

FIG. 3F2

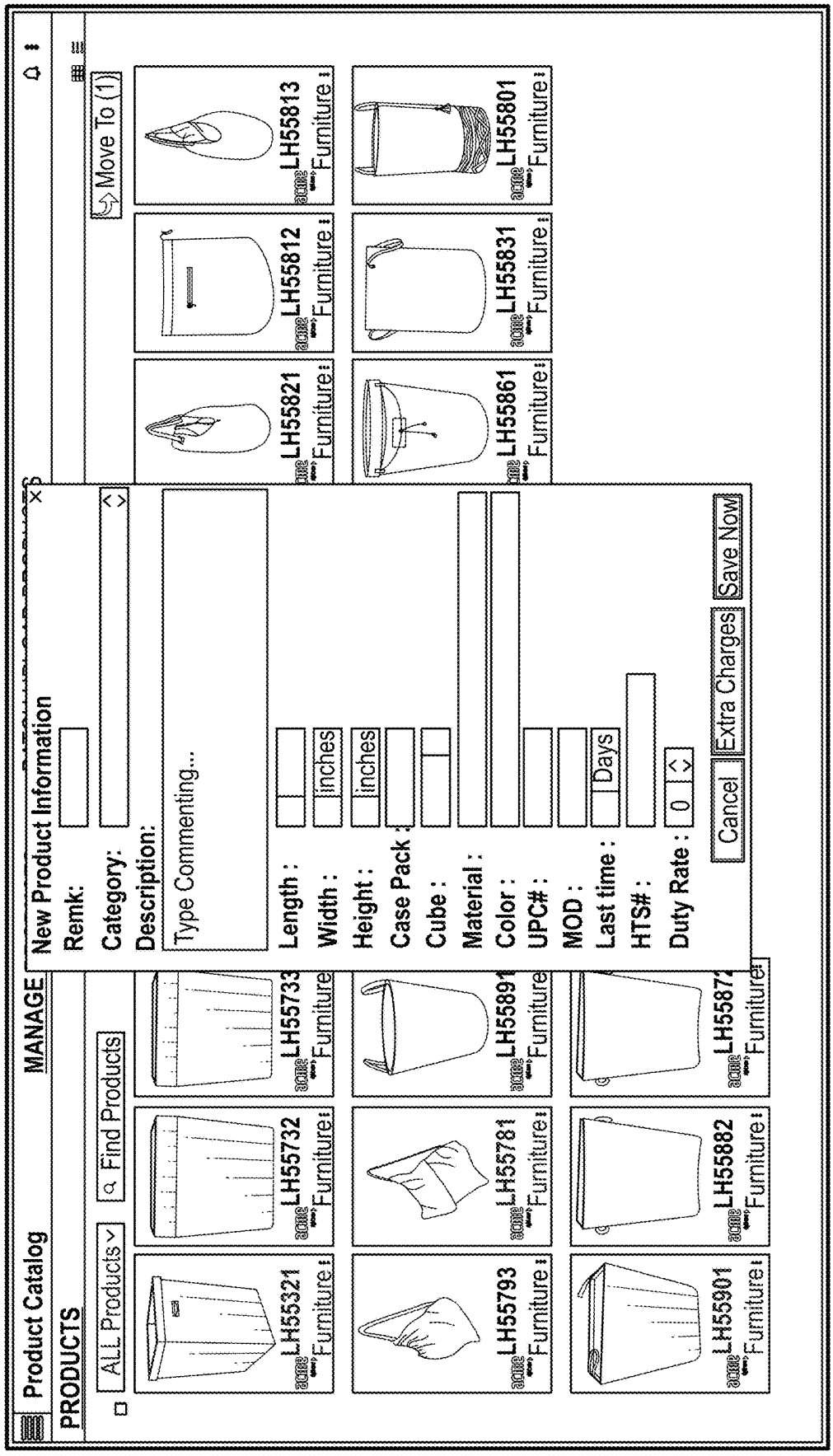

Product Catalog
MANAGE
PRODUCTS
ALL Products
Find Products
Move To (1)
New Product Information
Remk:
Category:
Description:
Type Commenting...
Length :
Width :
Height :
Case Pack :
Cube :
Material :
Color :
UPC# :
MOD :
Last time :
HTS# :
Duty Rate :
inches
Days
Cancel
Extra Charges
Save Now
LH55321
LH55732
LH55733
LH55793
LH55781
LH55891
LH55901
LH55882
LH55872
LH55821
LH55812
LH55813
LH55861
LH55831
LH55801
Furniture

FIG. 3G

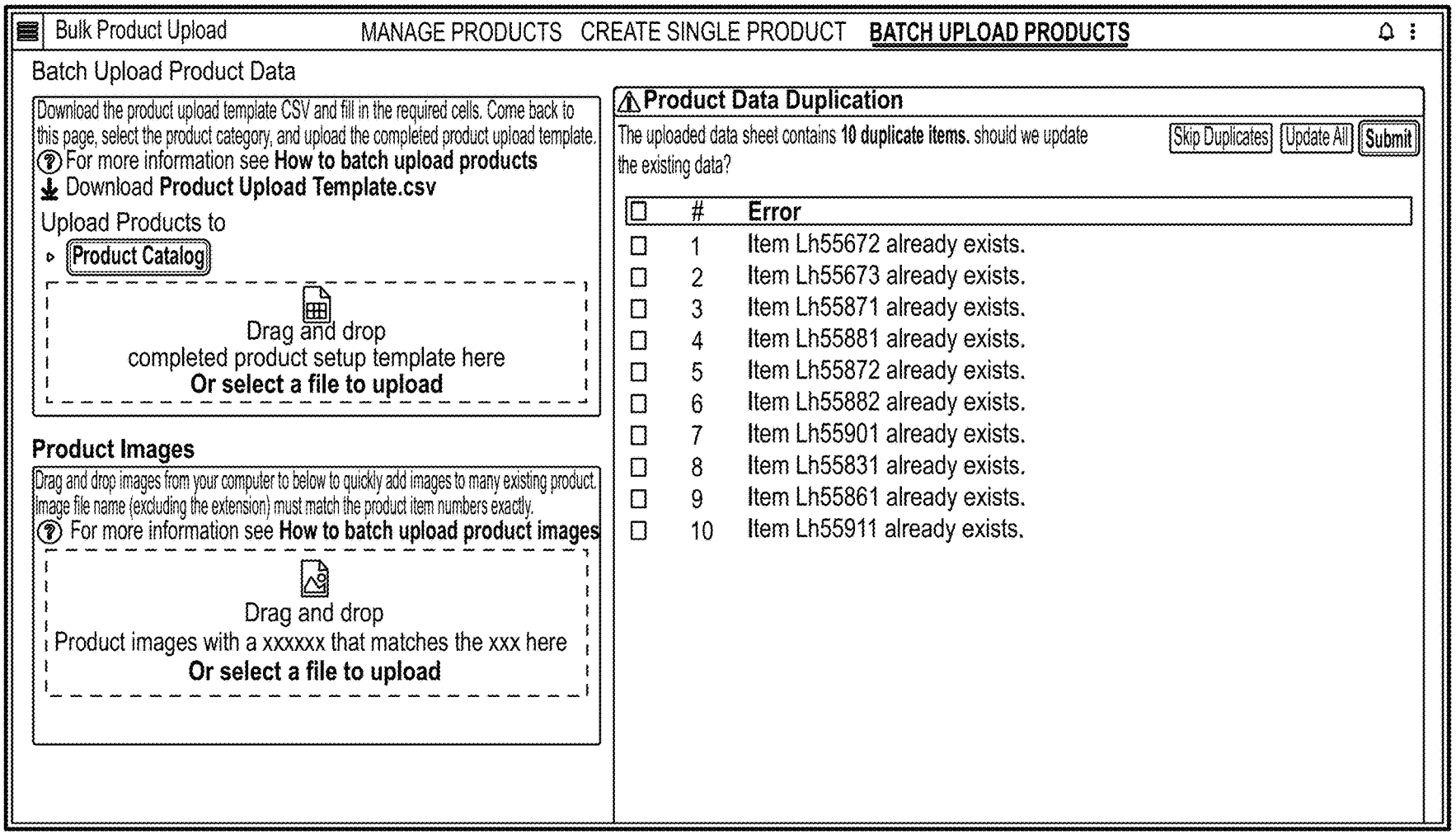

Bulk Product Upload
MANAGE PRODUCTS
CREATE SINGLE PRODUCT
BATCH UPLOAD PRODUCTS
Batch Upload Product Data
Download the product upload template CSV and fill in the required cells. Come back to this page, select the product category, and upload the completed product upload template.
For more information see How to batch upload products
Download Product Upload Template.csv
Upload Products to
Product Catalog
Drag and drop
completed product setup template here
Or select a file to upload
Product Images
Drag and drop images from your computer to below to quickly add images to many existing product. Image file name (excluding the extension) must match the product item numbers exactly.
For more information see How to batch upload product images
Drag and drop
Product images with a xxxxxx that matches the xxx here
Or select a file to upload
Product Data Duplication
The uploaded data sheet contains 10 duplicate items. should we update the existing data?
Skip Duplicates
Update All
Submit
Error
1 Item Lh55672 already exists.
2 Item Lh55673 already exists.
3 Item Lh55871 already exists.
4 Item Lh55881 already exists.
5 Item Lh55872 already exists.
6 Item Lh55882 already exists.
7 Item Lh55901 already exists.
8 Item Lh55831 already exists.
9 Item Lh55861 already exists.
10 Item Lh55911 already exists.

FIG. 3H

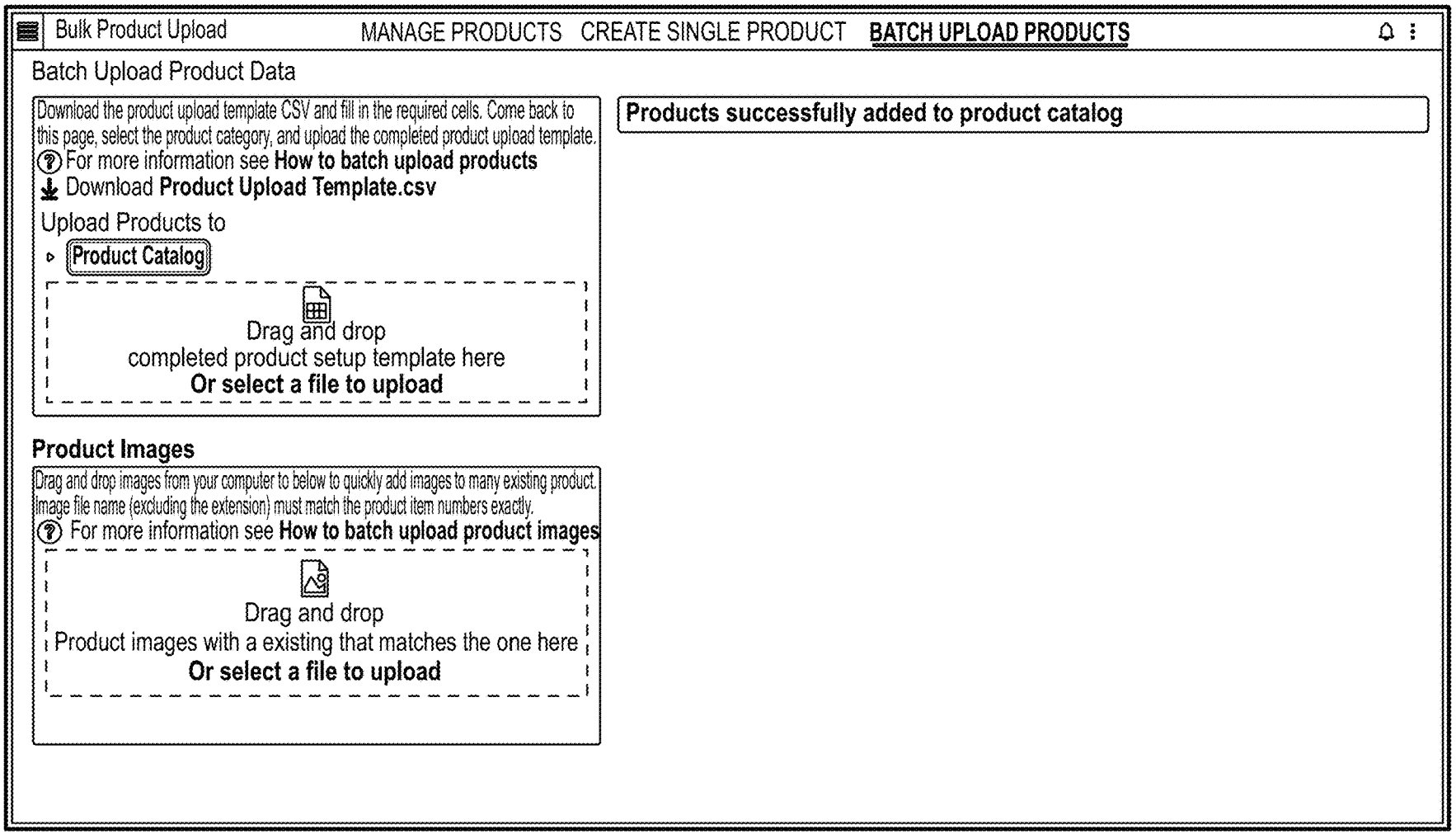

Bulk Product Upload
MANAGE PRODUCTS
CREATE SINGLE PRODUCT
BATCH UPLOAD PRODUCTS
Batch Upload Product Data
Download the product upload template CSV and fill in the required cells. Come back to this page, select the product category, and upload the completed product upload template.
For more information see How to batch upload products
Download Product Upload Template.csv
Upload Products to
Product Catalog
Drag and drop
completed product setup template here
Or select a file to upload
Products successfully added to product catalog
Product Images
Drag and drop images from your computer to below to quickly add images to many existing product. Image file name (excluding the extension) must match the product item numbers exactly.
For more information see How to batch upload product images
Drag and drop
Product images with a existing that matches the one here
Or select a file to upload

FIG. 3I

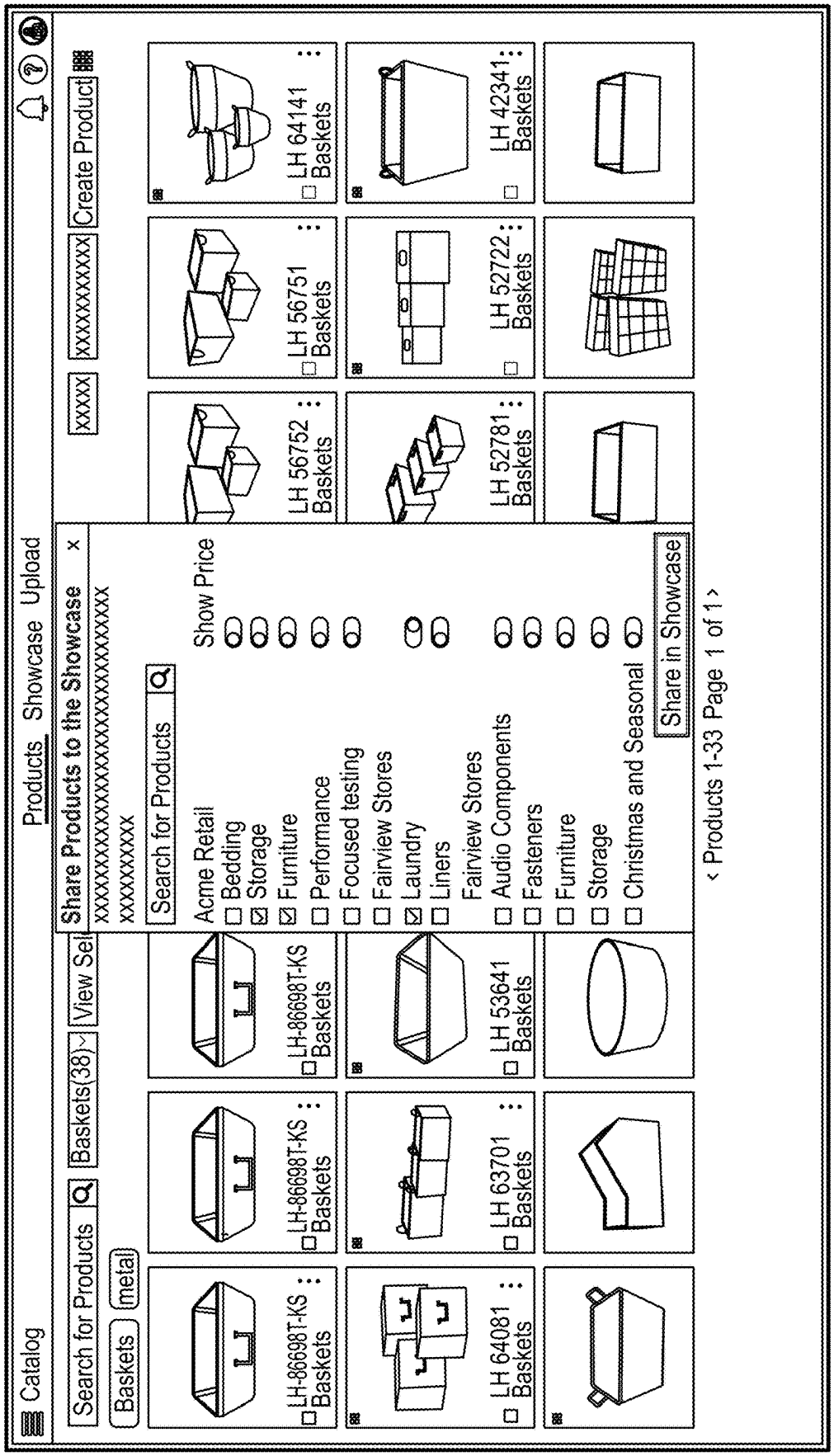

Catalog
Products Showcase Upload
Search for Products
Baskets(38)
View Sel
Baskets
metal
Share Products to the Showcase
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxx
Search for Products
Acme Retail
Bedding
Storage
Furniture
Performance
Focused testing
Fairview Stores
Laundry
Liners
Fairview Stores
Audio Components
Fasteners
Furniture
Storage
Christmas and Seasonal
Show Price
Share in Showcase
xxxxx
xxxxxxxxxxx
Create Product
LH-86698T-KS Baskets
LH 64081 Baskets
LH 63701 Baskets
LH 53641 Baskets
LH 56752 Baskets
LH 52781 Baskets
LH 56751 Baskets
LH 52722 Baskets
LH 64141 Baskets
LH 42341 Baskets
< Products 1-33 Page 1 of 1 >

FIG. 3J

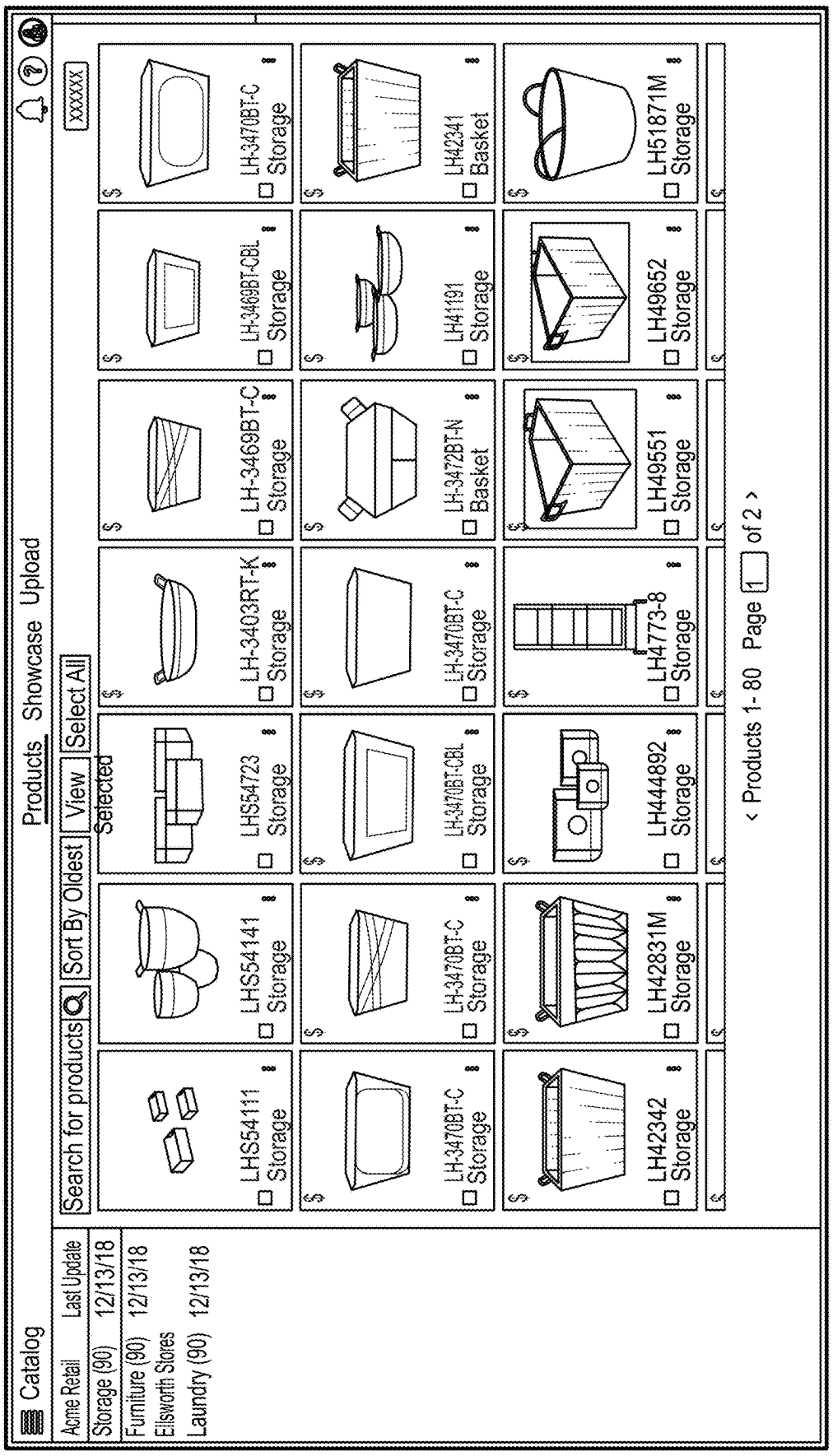

Catalog
Products Showcase Upload
Acme Retail Last Update
Storage (90) 12/13/18
Furniture (90) 12/13/18
Ellsworth Stores
Laundry (90) 12/13/18
Search for products
Sort By Oldest
View
Select All
Selected
XXXXX
LHS54111 Storage
LHS54141 Storage
LHS54723 Storage
LH-3403RT-K Storage
LH-3469BT-C Storage
LH-3469BT-CBL Storage
LH-3470BT-C Storage
LH-3470BT-C Storage
LH-3470BT-C Storage
LH-3470BT-CBL Storage
LH-3470BT-C Storage
LH-3472BT-N Basket
LH41191 Storage
LH42341 Basket
LH42342 Storage
LH428311M Storage
LH444892 Storage
LH4773-8 Storage
LH49551 Storage
LH49652 Storage
LH51871M Storage
< Products 1- 80 Page 1 of 2 >

FIG. 3K

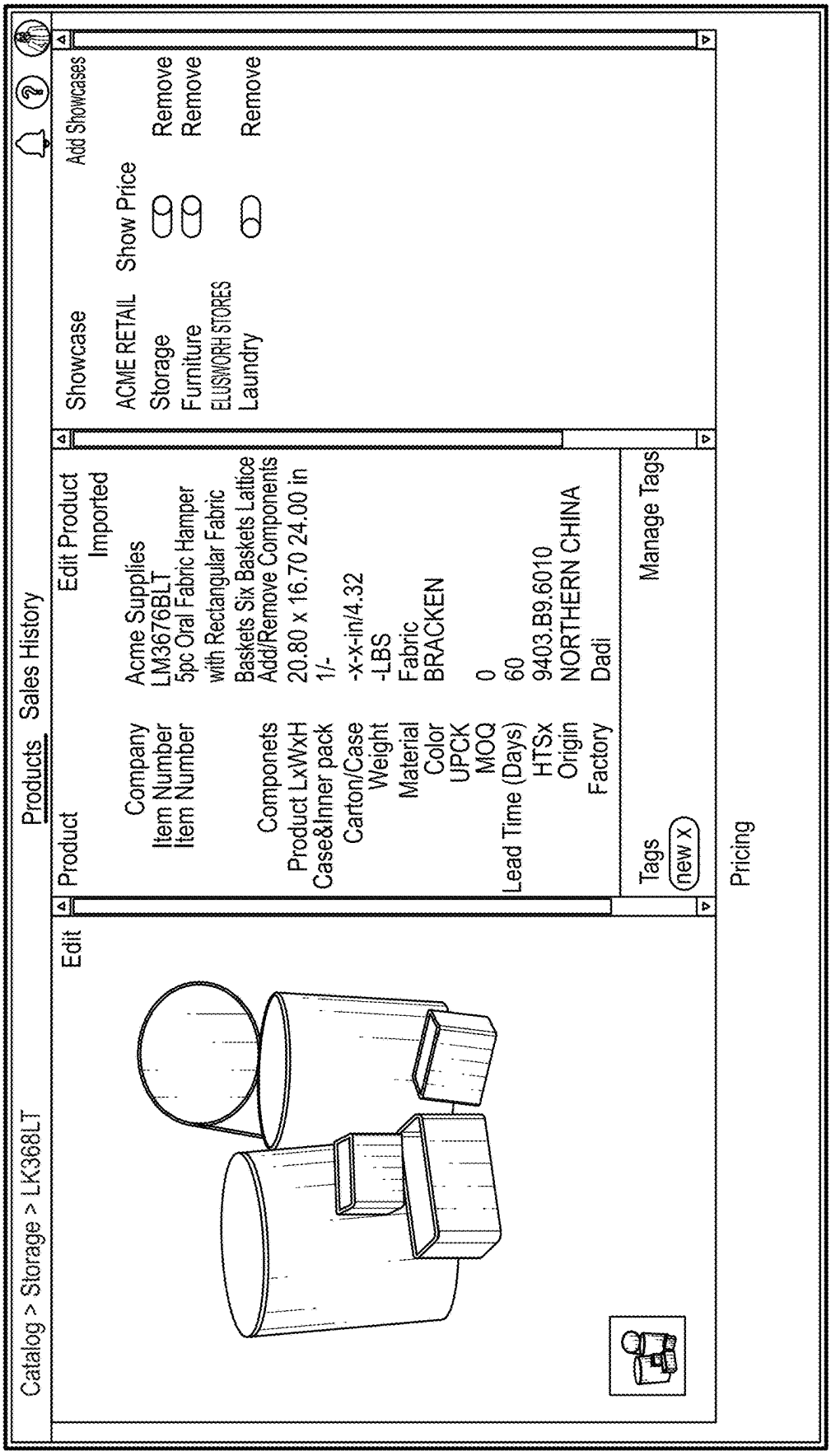

Catalog > Storage > LK368LT
Products
Sales History
Edit
Product
Edit Product
Imported
Company
Item Number
Item Number
Acme Supplies
LM3676BLT
5pc Oral Fabric Hamper with Rectangular Fabric Baskets Six Baskets Lattice
Componets
Add/Remove Components
Product LxWxH
20.80 x 16.70 24.00 in
Case&Inner pack
1/-
Carton/Case
-x-x-in/4.32
Weight
-LBS
Material
Fabric
Color
BRACKEN
UPCK
0
MOQ
60
Lead Time (Days)
9403.B9.6010
HTSx
NORTHERN CHINA
Origin
Dadi
Factory
Tags
new X
Manage Tags
Pricing
Showcase
Add Showcases
ACME RETAIL
Show Price
Storage
Remove
Furniture
Remove
ELLSWORH STORES
Laundry
Remove

FIG. 3L

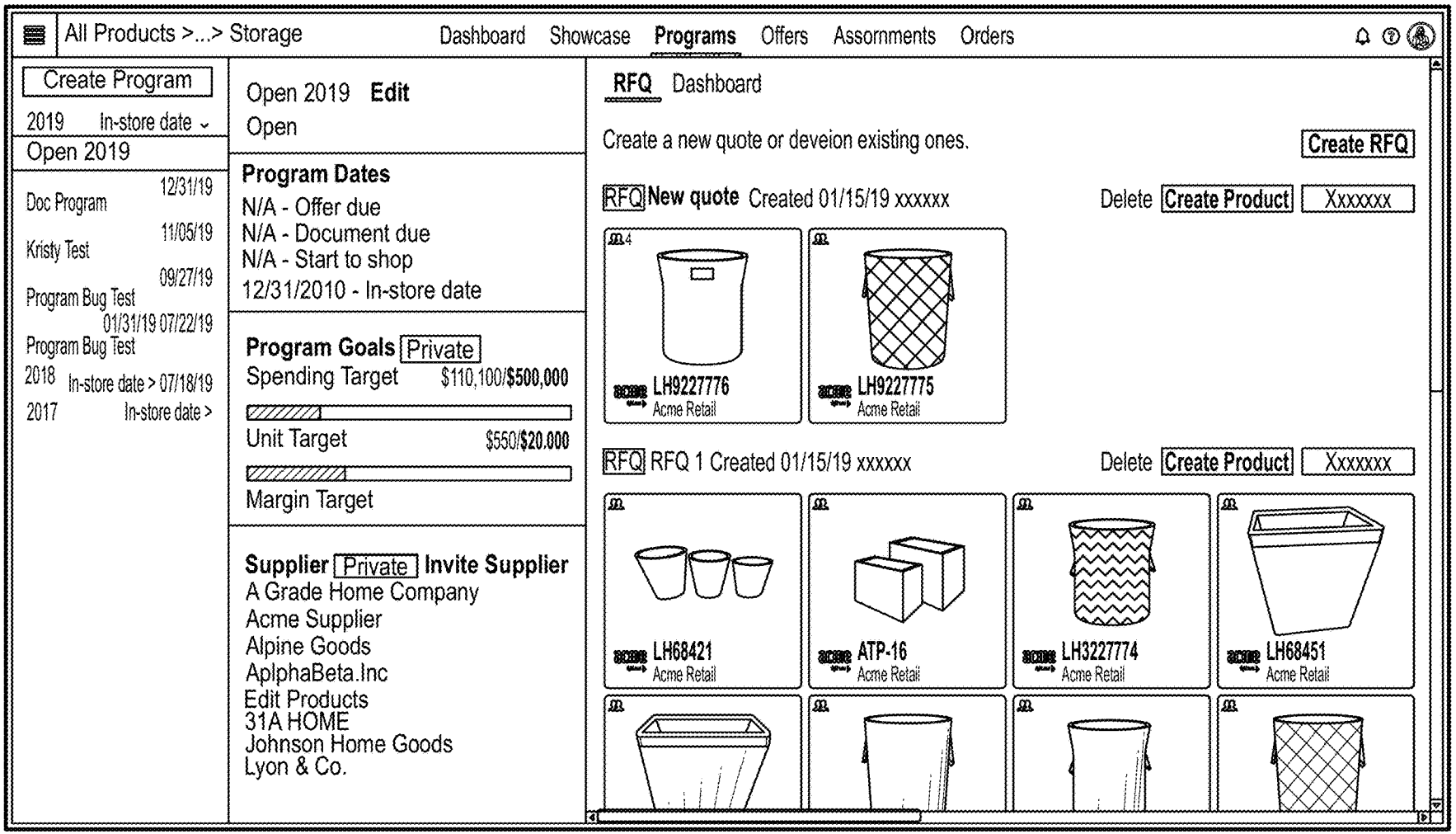

All Products >...> Storage
Dashboard
Showcase
Programs
Offers
Assortments
Orders
Create Program
2019
In-store date
Open 2019
Doc Program
12/31/19
Kristy Test
11/05/19
Program Bug Test
09/27/19
Program Bug Test
01/31/19 07/22/19
2018
In-store date > 07/18/19
2017
In-store date >
Open 2019 Edit
Open
Program Dates
N/A - Offer due
N/A - Document due
N/A - Start to shop
12/31/2010 - In-store date
Program Goals
Private
Spending Target
$110,100/$500,000
Unit Target
$550/$20,000
Margin Target
Supplier
Private
Invite Supplier
A Grade Home Company
Acme Supplier
Alpine Goods
AplphaBeta.Inc
Edit Products
31A HOME
Johnson Home Goods
Lyon & Co.
RFQ
Dashboard
Create a new quote or deveion existing ones.
Create RFQ
RFQ
New quote
Created 01/15/19 xxxxxx
Delete
Create Product
Xxxxxxx
LH9227776
Acme Retail
LH9227775
Acme Retail
RFQ
RFQ 1 Created 01/15/19 xxxxxx
Delete
Create Product
Xxxxxxx
LH68421
Acme Retail
ATP-16
Acme Retail
LH3227774
Acme Retail
LH68451
Acme Retail

FIG. 4A1

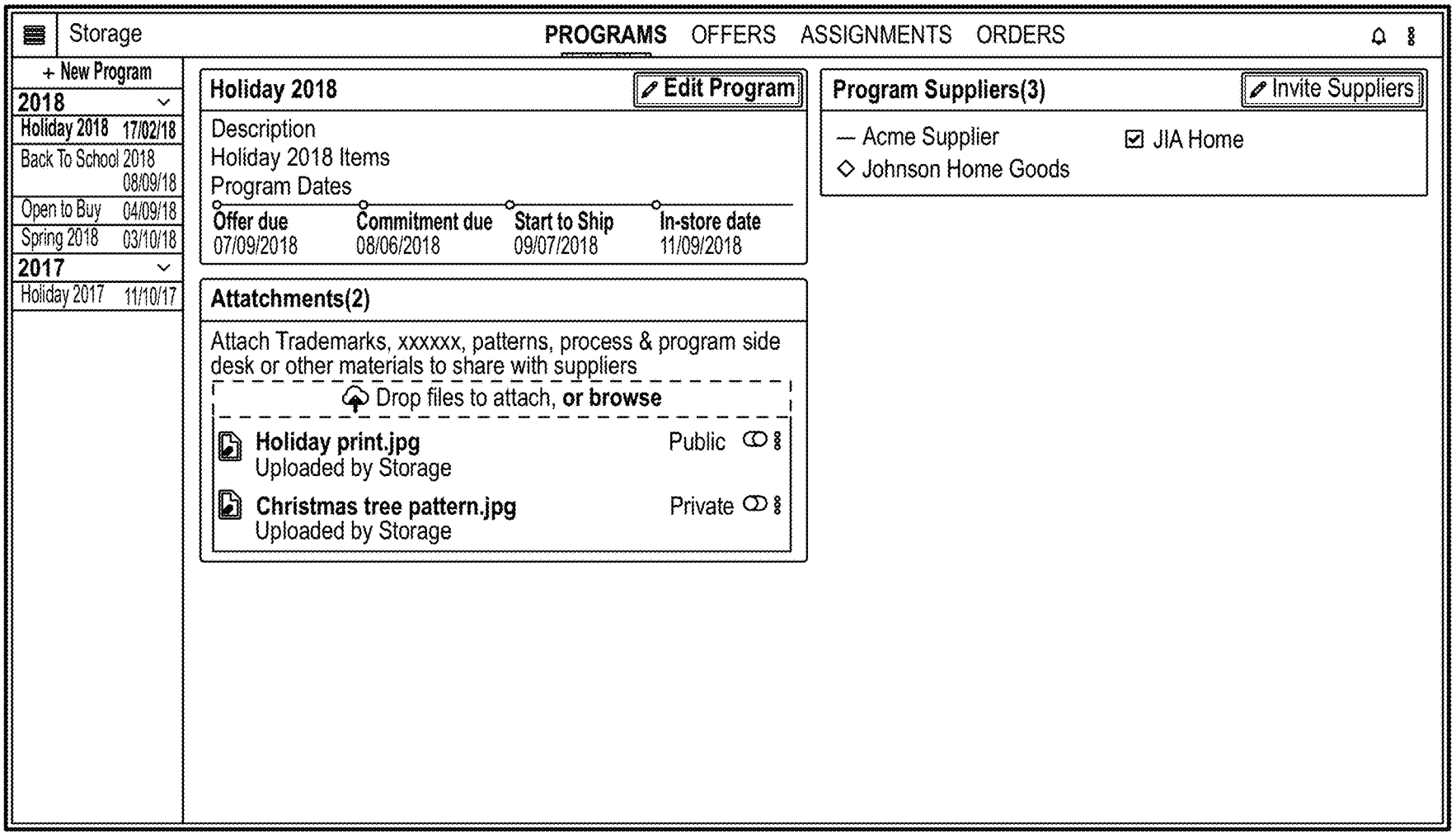

Storage
PROGRAMS
OFFERS
ASSIGNMENTS
ORDERS
+ New Program
2018
Holiday 2018 17/02/18
Back To School 2018 08/09/18
Open to Buy 04/09/18
Spring 2018 03/10/18
2017
Holiday 2017 11/10/17
Holiday 2018
Edit Program
Description
Holiday 2018 Items
Program Dates
Offer due 07/09/2018
Commitment due 08/06/2018
Start to Ship 09/07/2018
In-store date 11/09/2018
Attatchments(2)
Attach Trademarks, xxxxxx, patterns, process & program side desk or other materials to share with suppliers
Drop files to attach, or browse
Holiday print.jpg
Uploaded by Storage
Public
Christmas tree pattern.jpg
Uploaded by Storage
Private
Program Suppliers(3)
Invite Suppliers
Acme Supplier
JIA Home
Johnson Home Goods

FIG. 4A2

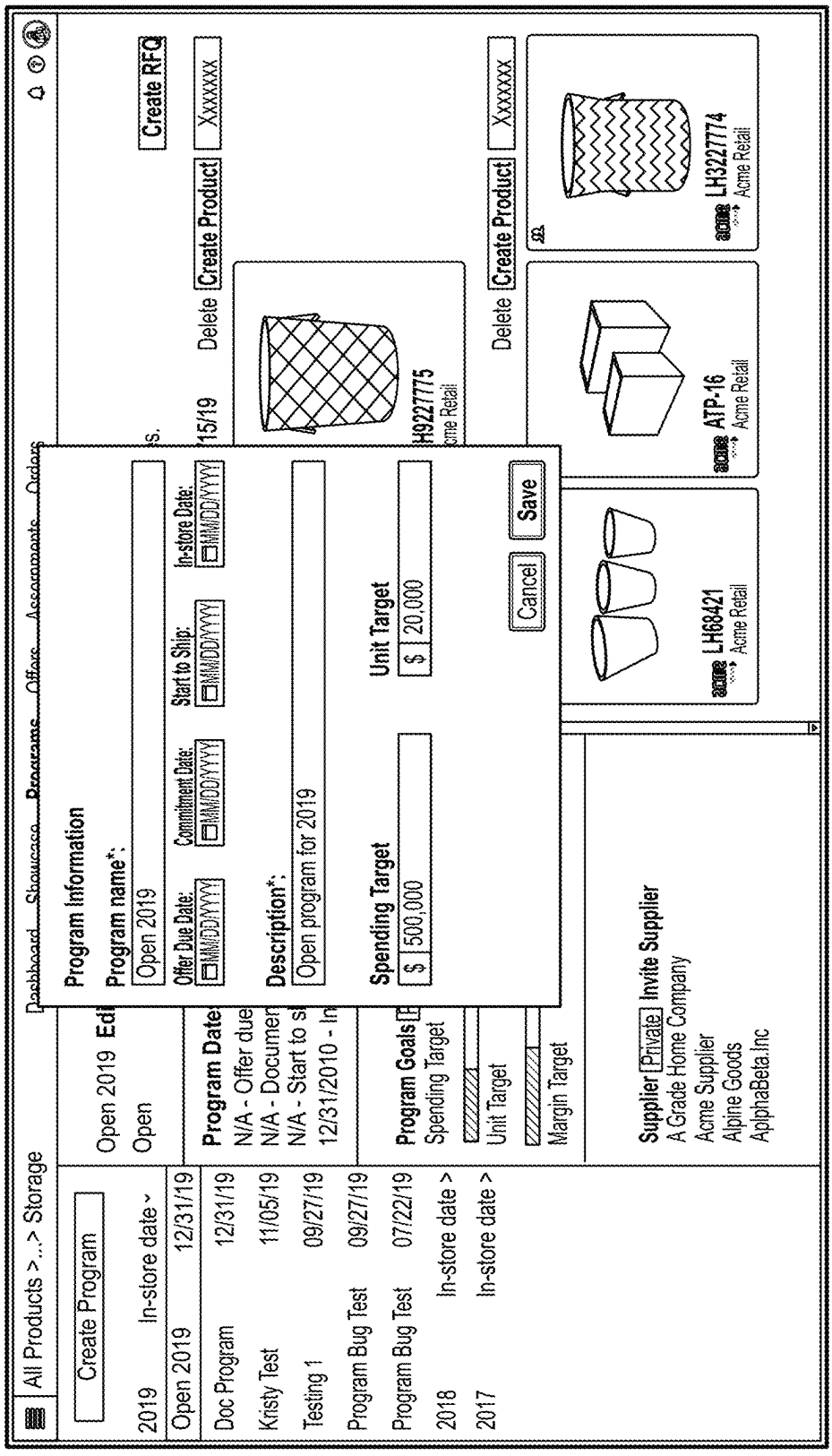

All Products > ... > Storage
Create Program
2019 In-store date
Open 2019 12/31/19
Doc Program 12/31/19
Kristy Test 11/05/19
Testing 1 09/27/19
Program Bug Test 09/27/19
Program Bug Test 07/22/19
2018 In-store date >
2017 In-store date >
Open 2019 Edi
Open
Program Date
N/A - Offer due
N/A - Documer
N/A - Start to si
12/31/2010 - In
Program Goals
Spending Target
Unit Target
Margin Target
Supplier Private Invite Supplier
A Grade Home Company
Acme Supplier
Alpine Goods
AplphaBeta.Inc
Dashboard Showcase Programs Offers Assignments Orders
Program Information
Program name*:
Open 2019
Offer Due Date:
Commitment Date:
Start to Ship:
In-store Date:
MM/DD/YYYY
Description*:
Open program for 2019
Spending Target
$ 500,000
Unit Target
$ 20,000
Cancel
Save
Create RFQ
15/19
Delete
Create Product
Xxxxxxx
H9227775
cme Retail
LH68421
Acme Retail
ATP-16
Acme Retail
LH3227774
Acme Retail

FIG. 4B

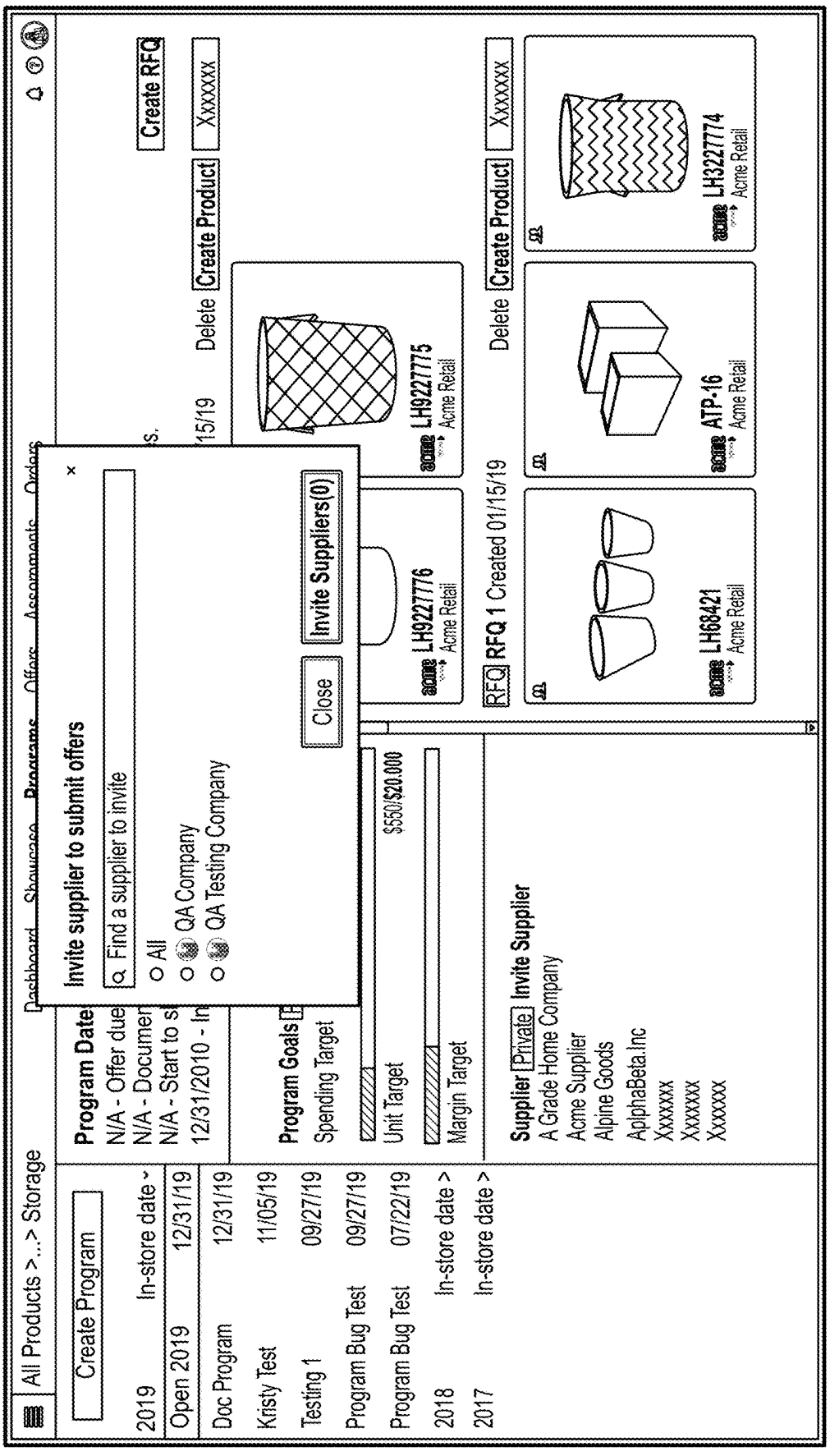

All Products > ... > Storage
Dashboard Showcase Programs Offers Assortments Orders
Create Program
2019
In-store date
Open 2019 12/31/19
Doc Program 12/31/19
Kristy Test 11/05/19
Testing 1 09/27/19
Program Bug Test 09/27/19
Program Bug Test 07/22/19
2018 In-store date >
2017 In-store date >
Program Date
N/A - Offer due
N/A - Documer
N/A - Start to s
12/31/2010 - In
Program Goals
Spending Target
Unit Target $550/$20,000
Margin Target
Supplier Private Invite Supplier
A Grade Home Company
Acme Supplier
Alpine Goods
AplphaBeta.Inc
Xxxxxxx
Xxxxxxx
Xxxxxxx
Invite supplier to submit offers
Find a supplier to invite
All
QA Company
QA Testing Company
Close
Invite Suppliers(0)
Create RFQ
15/19 Delete Create Product Xxxxxxx
LH9227775
Acme Retail
LH9227776
Acme Retail
RFQ RFQ 1 Created 01/15/19
Delete Create Product Xxxxxxx
LH68421
Acme Retail
ATP-16
Acme Retail
LH3227774
Acme Retail

FIG. 4C

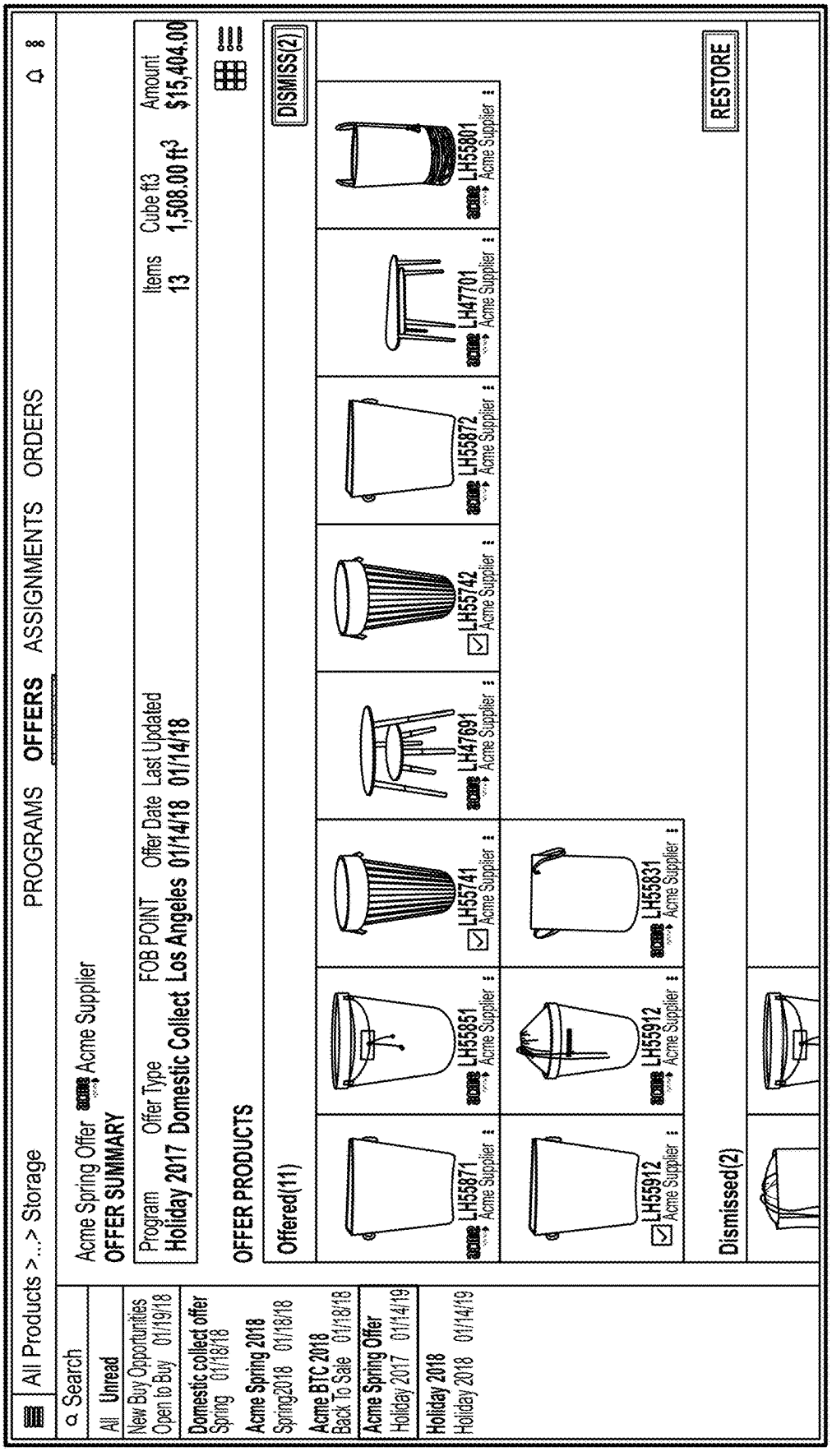

All Products >...> Storage
PROGRAMS OFFERS ASSIGNMENTS ORDERS
Search
All Unread
New Buy Opportunities
Open to Buy 01/19/18
Domestic collect offer
Spring 01/18/18
Acme Spring 2018
Spring2018 01/18/18
Acme BTC 2018
Back To Sale 01/18/18
Acme Spring Offer
Holiday 2017 01/14/19
Holiday 2018
Holiday 2018 01/14/19
Acme Spring Offer
Acme Supplier
OFFER SUMMARY
Program
Holiday 2017
Offer Type
Domestic Collect
FOB POINT
Los Angeles
Offer Date
01/14/18
Last Updated
01/14/18
Items
13
Cube ft3
1,508.00 ft3
Amount
$15,404.00
OFFER PRODUCTS
Offered(11)
DISMISS(2)
LH55871
LH55851
LH55741
LH47691
LH55742
LH55872
LH47701
LH55801
LH55912
LH55912
LH55831
Dismissed(2)
RESTORE
Acme Supplier

FIG. 4D

All Products >...> Storage

PROGRAMS **OFFERS** ASSIGNMENTS ORDERS

Search

All Unread

New Buy Opportunities
Open to Buy 01/19/18

Domestic collect offer
Spring 01/18/18

Acme Spring 2018
Spring2018 01/18/18

Acme BTC 2018
Back To Sale 01/18/18

Acme Spring Offer
Holiday 2017 01/14/19

Holiday 2018
Holiday 2018 01/14/19

Acme Spring Offer Acme Supplier

OFFER SUMMARY

Program	Offer Type	FOB Point	Offer Data	Last Updated	Items	Cube ft3	Amount
Holiday 2017	**Domestic Collect**	**Los Angeles**	**01/14/18**	**01/14/18**	**11**	**1,508.00 ft^3**	**15,404.00**

ORDER PRODUCTS

Product	Origin	Case Pack	Cases	Cube	Unit Price	Quantity	Total Cube	Amount
SKU# LH55871 Single Rectangular Fabric Laundr...		6	33	4.06	$6.39	200	135.33	$1,278.00
SKU# LH55871 Single Tapered Round Canvas Ha...		6	33	5.57	$6.45	200	185.67	$1,290.00
SKU# LH55871 Single Tapered Round Metal Wire...		6	33	7.33	$7.38	200	244.33	$1,476.00
SKU# LH55871 2 PC KD Round MDF & Pine Woo...		1	100	1.36	$23.50	100	136.00	$2,350.00
SKU# LH47691_L Large Accent Table		1				100		
SKU# LH47691_S Small Accent Table		1				100		
SKU# LH55742 Single Tapered Round Metal Wire...		6	17	6.23	$6.85	200	103.83	$685.00
SKU# LH55872 Single Rectangular Fabric Laundr...		6	33	4.06	$6.50	100	135.33	$1,300.00
SKU# LH47701 2 PC KD Teardrop MDF & Pine w...		1	100	1.47	$31.61	100	147.00	$3,161.00
SKU# LH47701_L Large Accent Table		1				100		
SKU# LH47701_S Small Accent Table		1						

FIG. 4E

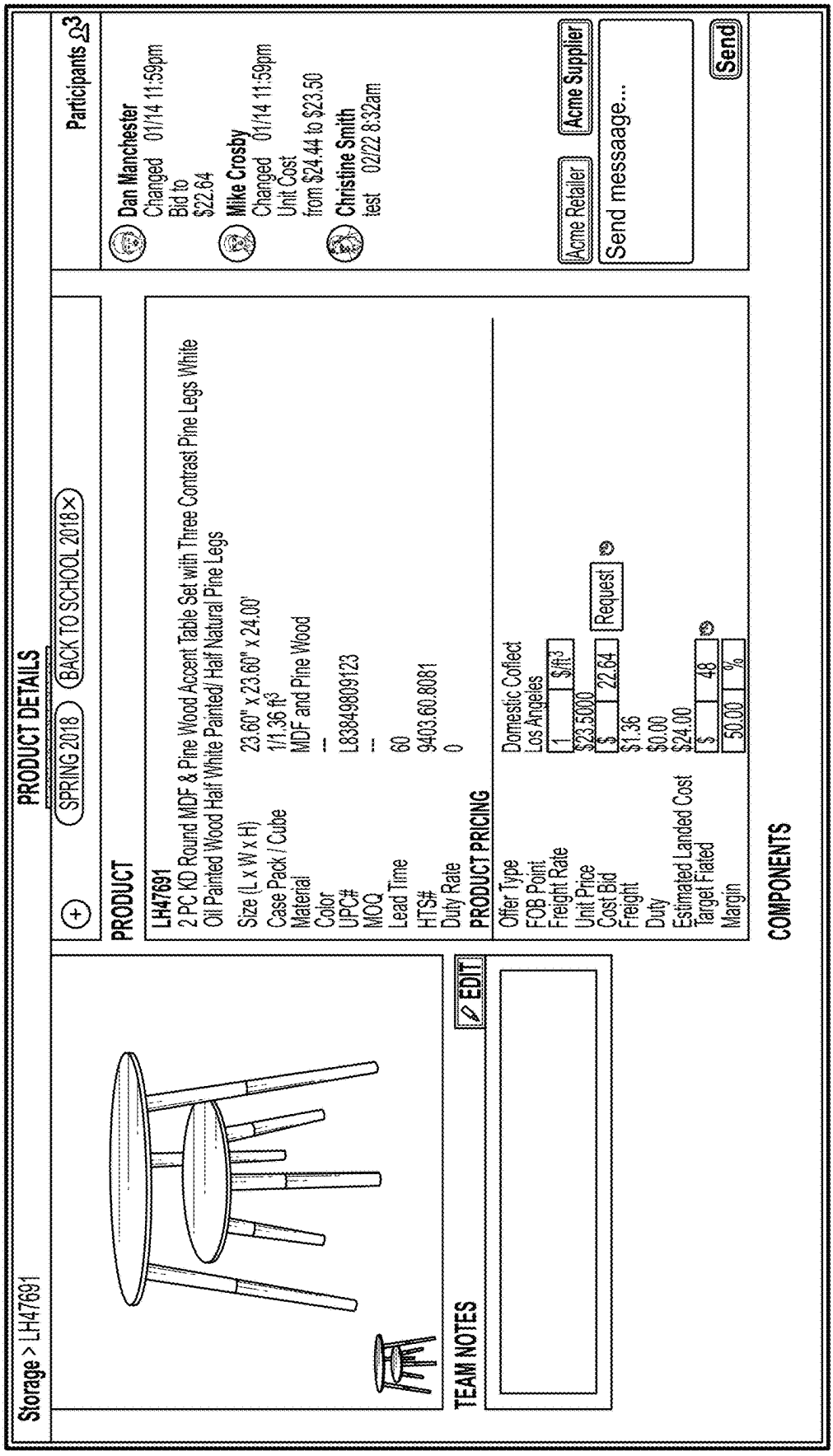

Storage > LH47691
PRODUCT DETAILS
SPRING 2018
BACK TO SCHOOL 2018
Participants 3
PRODUCT
LH47691
2 PC KD Round MDF & Pine Wood Accent Table Set with Three Contrast Pine Legs White Oil Painted Wood Half White Painted/ Half Natural Pine Legs
Size (L x W x H) 23.60" x 23.60" x 24.00'
Case Pack / Cube 1/1.36 ft³
Material MDF and Pine Wood
Color --
UPC# L83849809123
MOQ ---
Lead Time 60
HTS# 9403.60.8081
Duty Rate 0
PRODUCT PRICING
Offer Type Domestic Collect
FOB Point Los Angeles
Freight Rate 1 $/ft³
Unit Price $23.5000
Cost Bid $ 22.64 Request
Freight $1.36
Duty $0.00
Estimated Landed Cost $24.00
Target Fiated $ 48
Margin 50.00 %
Dan Manchester
Changed 01/14 11:59pm
Bid to $22.64
Mike Crosby
Changed 01/14 11:59pm
Unit Cost from $24.44 to $23.50
Christine Smith
test 02/22 8:32am
Acme Retailer
Acme Supplier
Send messaage...
Send
TEAM NOTES
EDIT
COMPONENTS

FIG. 4F

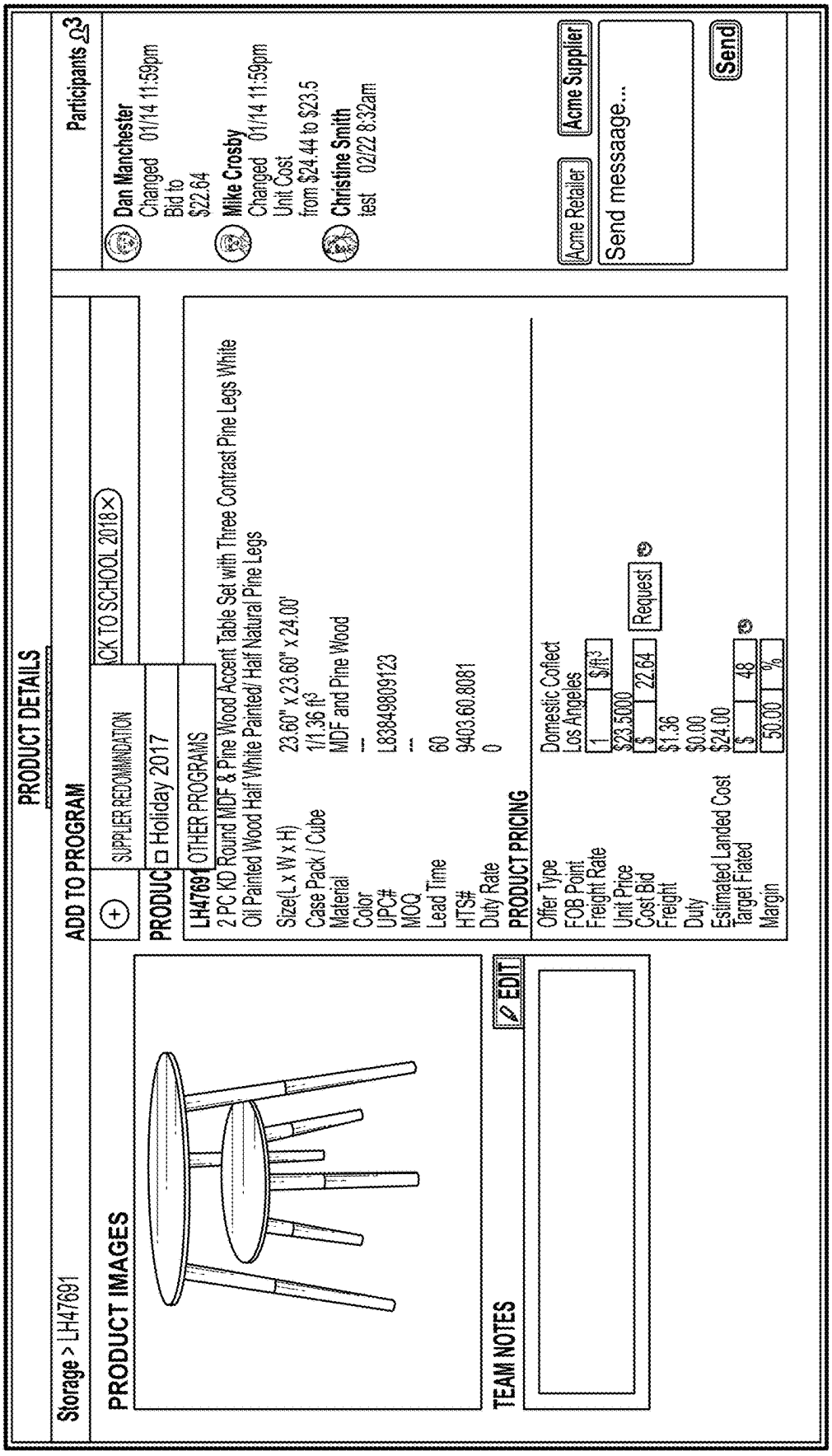

PRODUCT DETAILS
Storage > LH47691
ADD TO PROGRAM
SUPPLIER RECOMMENDATION
CK TO SCHOOL 2018
Participants
PRODUCT IMAGES
PRODUC
Holiday 2017
LH47691
OTHER PROGRAMS
2 PC KD Round MDF & Pine Wood Accent Table Set with Three Contrast Pine Legs White Oil Painted Wood Half White Painted/ Half Natural Pine Legs
Size(L x W x H) 23.60" x 23.60" x 24.00'
Case Pack / Cube 1/1.36 ft3
Material MDF and Pine Wood
Color ---
UPC# L83849809123
MOQ ---
Lead Time 60
HTS# 9403.60.8081
Duty Rate 0
PRODUCT PRICING
Offer Type Domestic Collect
FOB Point Los Angeles
Freight Rate 1 $/ft3
Unit Price $23.5000
Cost Bid $ 22.64 Request
Freight $1.36
Duty $0.00
Estimated Landed Cost $24.00
Target Fiated $ 48
Margin 50.00 %
Dan Manchester
Changed 01/14 11:59pm
Bid to
$22.64
Mike Crosby
Changed 01/14 11:59pm
Unit Cost
from $24.44 to $23.5
Christine Smith
test 02/22 8:32am
Acme Retailer
Acme Supplier
Send messaage...
Send
TEAM NOTES
EDIT

FIG. 4G

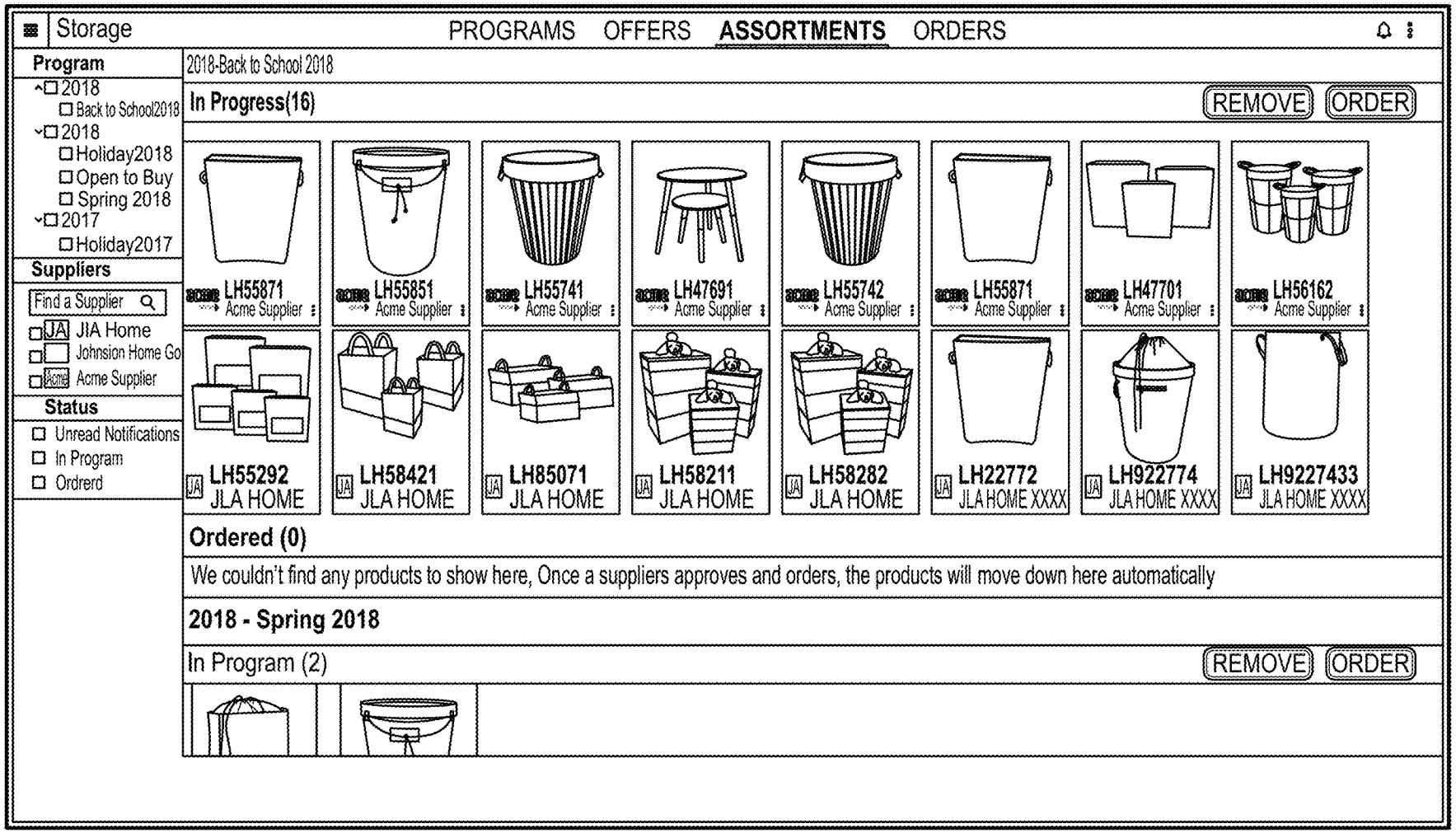

Storage
PROGRAMS
OFFERS
ASSORTMENTS
ORDERS
Program
2018
Back to School2018
2018
Holiday2018
Open to Buy
Spring 2018
2017
Holiday2017
Suppliers
Find a Supplier
JA JIA Home
Johnsion Home Go
Acme Supplier
Status
Unread Notifications
In Program
Ordrerd
2018-Back to School 2018
In Progress(16)
REMOVE
ORDER
LH55871 Acme Supplier
LH55851 Acme Supplier
LH55741 Acme Supplier
LH47691 Acme Supplier
LH55742 Acme Supplier
LH55871 Acme Supplier
LH47701 Acme Supplier
LH56162 Acme Supplier
LH55292 JLA HOME
LH58421 JLA HOME
LH85071 JLA HOME
LH58211 JLA HOME
LH58282 JLA HOME
LH22772 JLA HOME XXXX
LH922774 JLA HOME XXXX
LH9227433 JLA HOME XXXX
Ordered (0)
We couldn't find any products to show here, Once a suppliers approves and orders, the products will move down here automatically
2018 - Spring 2018
In Program (2)
REMOVE
ORDER

FIG. 4H

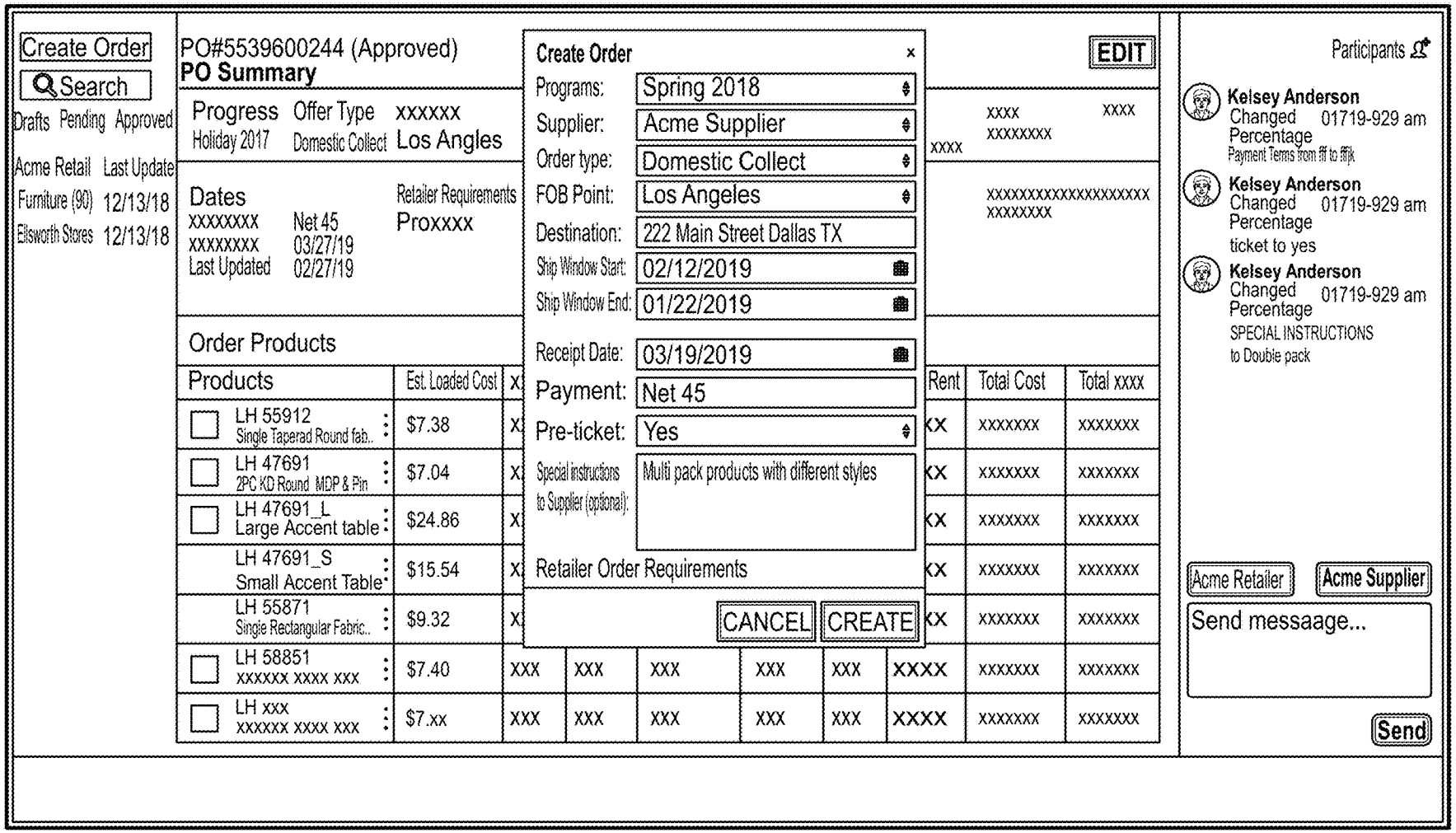

Create Order
Search
Drafts Pending Approved
Acme Retail Last Update
Furniture (90) 12/13/18
Ellsworth Stores 12/13/18
PO#5539600244 (Approved)
PO Summary
Progress Offer Type xxxxxx
Holiday 2017 Domestic Collect Los Angles
Dates
xxxxxxxx Net 45
xxxxxxxx 03/27/19
Last Updated 02/27/19
Retailer Requirements
Proxxxx
Order Products
Products
Est. Loaded Cost
LH 55912
Single Taperad Round fab..
$7.38
LH 47691
2PC KD Round MDP & Pin
$7.04
LH 47691_L
Large Accent table
$24.86
LH 47691_S
Small Accent Table
$15.54
LH 55871
Single Rectangular Fabric..
$9.32
LH 58851
xxxxxx xxxx xxx
$7.40
LH xxx
xxxxxx xxxx xxx
$7.xx
Create Order
Programs: Spring 2018
Supplier: Acme Supplier
Order type: Domestic Collect
FOB Point: Los Angeles
Destination: 222 Main Street Dallas TX
Ship Window Start: 02/12/2019
Ship Window End: 01/22/2019
Receipt Date: 03/19/2019
Payment: Net 45
Pre-ticket: Yes
Special instructions to Supplier (optional):
Multi pack products with different styles
Retailer Order Requirements
CANCEL
CREATE
EDIT
Rent
Total Cost
Total xxxx
Participants
Kelsey Anderson
Changed 01719-929 am
Percentage
Payment Terms from fff to ffjk
Kelsey Anderson
Changed 01719-929 am
Percentage
ticket to yes
Kelsey Anderson
Changed 01719-929 am
Percentage
SPECIAL INSTRUCTIONS
to Double pack
Acme Retailer
Acme Supplier
Send messaage...
Send

FIG. 4I

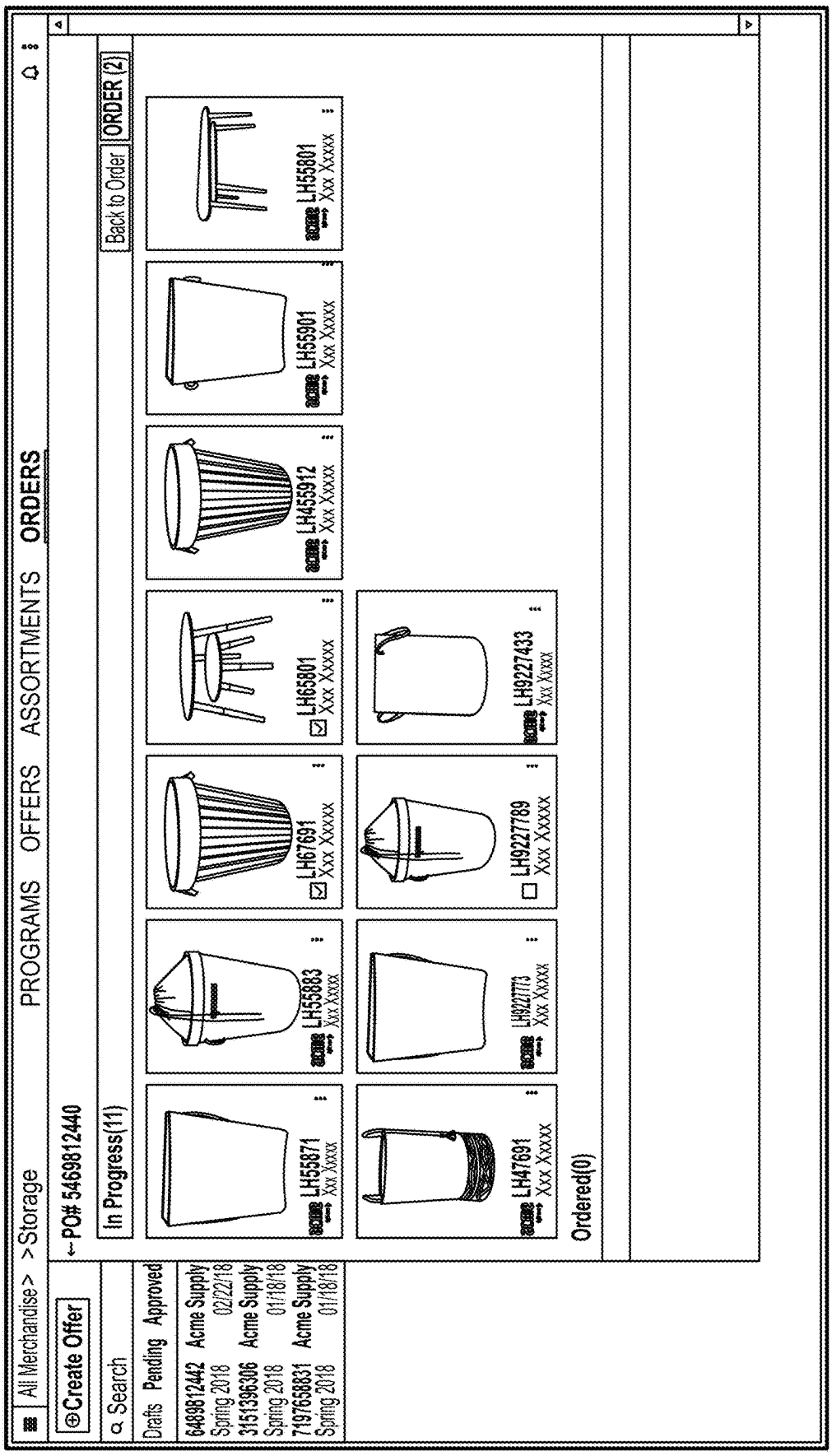

All Merchandise > Storage
PROGRAMS OFFERS ASSORTMENTS ORDERS
Create Offer
Search
Drafts Pending Approved
6489812442 Acme Supply
Spring 2018 02/22/18
3151396306 Acme Supply
Spring 2018 01/18/18
7197658831 Acme Supply
Spring 2018 01/18/18
← PO# 5469812440
In Progress(11)
Back to Order
ORDER (2)
LH55871
LH55883
LH67691
LH65801
LH55901
LH47691
LH9227773
LH9227789
LH9227433
LH455912
Ordered(0)

FIG. 4J

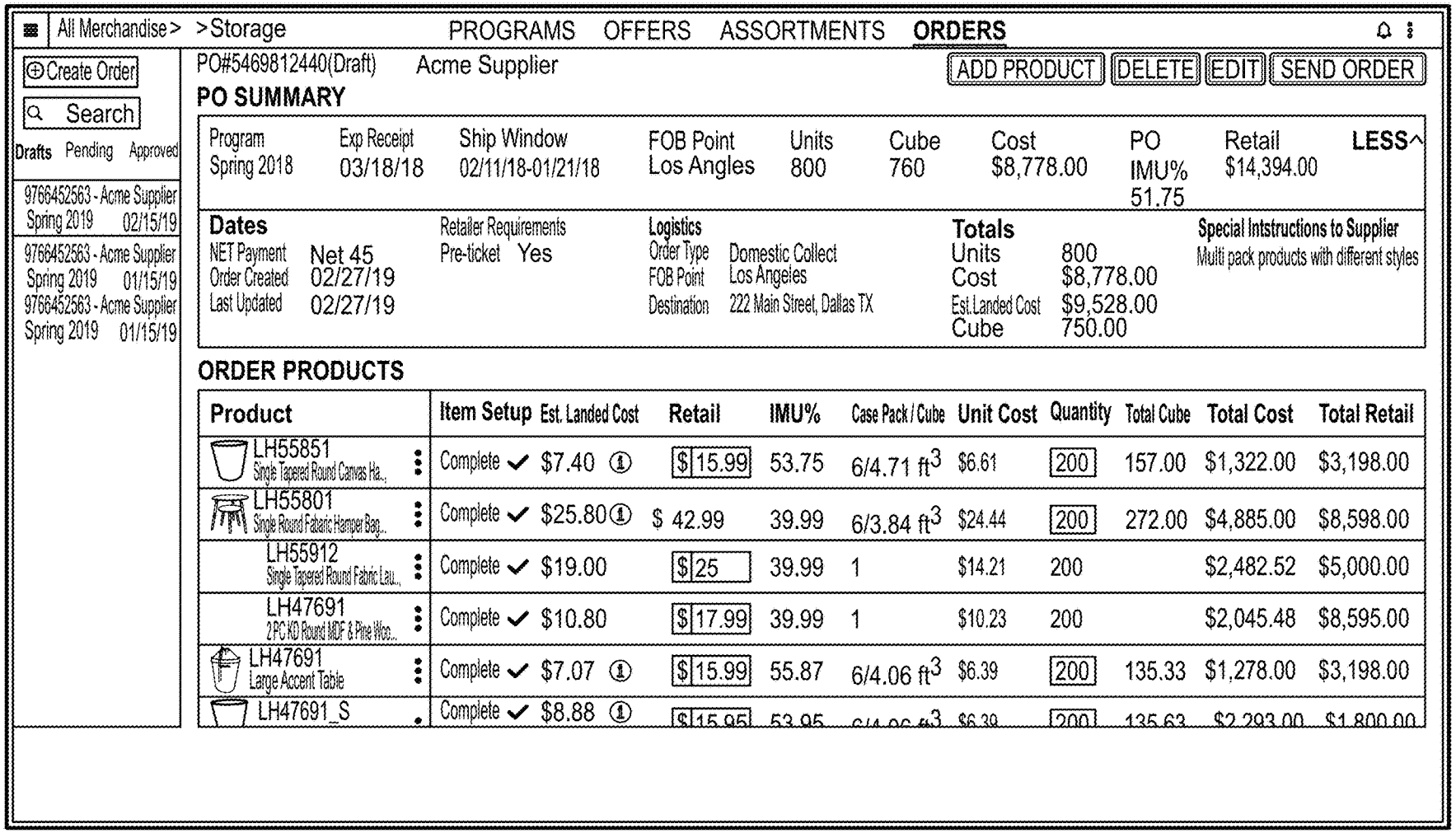

All Merchandise> >Storage
PROGRAMS OFFERS ASSORTMENTS ORDERS
Create Order
Search
Drafts Pending Approved
9766452563 - Acme Supplier Spring 2019 02/15/19
9766452563 - Acme Supplier Spring 2019 01/15/19
9766452563 - Acme Supplier Spring 2019 01/15/19
PO#5469812440(Draft) Acme Supplier
ADD PRODUCT DELETE EDIT SEND ORDER
PO SUMMARY
Program Spring 2018
Exp Receipt 03/18/18
Ship Window 02/11/18-01/21/18
FOB Point Los Angles
Units 800
Cube 760
Cost $8,778.00
PO IMU% 51.75
Retail $14,394.00
LESS
Dates
NET Payment Net 45
Order Created 02/27/19
Last Updated 02/27/19
Retailer Requirements
Pre-ticket Yes
Logistics
Order Type Domestic Collect
FOB Point Los Angeles
Destination 222 Main Street, Dallas TX
Totals
Units 800
Cost $8,778.00
Est.Landed Cost $9,528.00
Cube 750.00
Special Intstructions to Supplier
Multi pack products with different styles
ORDER PRODUCTS
Product
Item Setup
Est. Landed Cost
Retail
IMU%
Case Pack / Cube
Unit Cost
Quantity
Total Cube
Total Cost
Total Retail
LH55851 Single Tapered Round Canvas Ha... Complete $7.40 $15.99 53.75 6/4.71 ft3 $6.61 200 157.00 $1,322.00 $3,198.00
LH55801 Single Round Fabaric Hamper Bag... Complete $25.80 $ 42.99 39.99 6/3.84 ft3 $24.44 200 272.00 $4,885.00 $8,598.00
LH55912 Single Tapered Round Fabric Lau... Complete $19.00 $25 39.99 1 $14.21 200 $2,482.52 $5,000.00
LH47691 2 PC KD Round MDF & Pine Woo... Complete $10.80 $17.99 39.99 1 $10.23 200 $2,045.48 $8,595.00
LH47691 Large Accent Table Complete $7.07 $15.99 55.87 6/4.06 ft3 $6.39 200 135.33 $1,278.00 $3,198.00
LH47691_S Complete $8.88

FIG. 4K

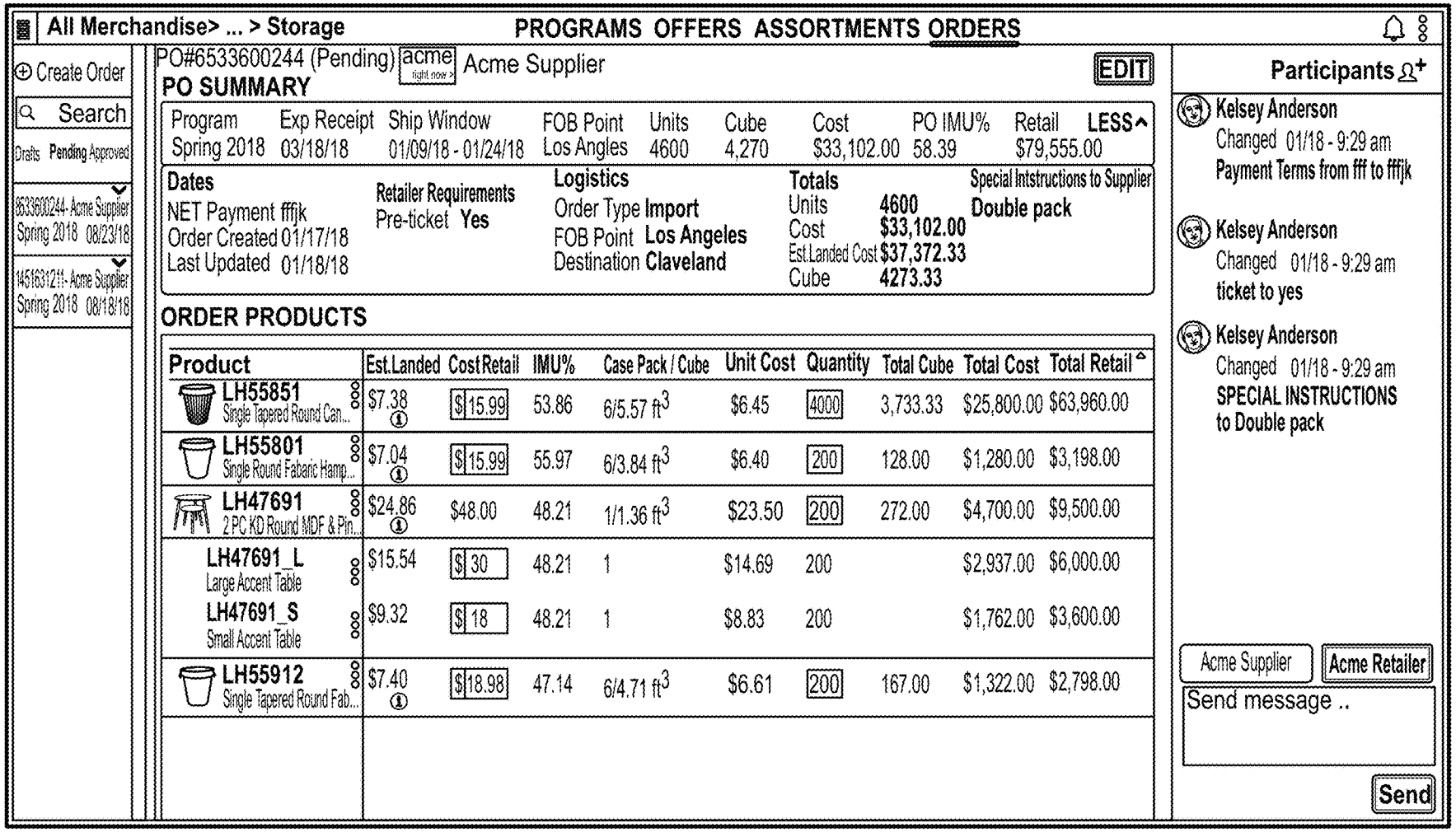

All Merchandise> ... > Storage
PROGRAMS OFFERS ASSORTMENTS ORDERS
Create Order
Search
Drafts Pending Approved
6533600244- Acme Supplier
Spring 2018 08/23/18
1451631211- Acme Supplier
Spring 2018 08/18/18
PO#6533600244 (Pending)
acme right now >
Acme Supplier
EDIT
PO SUMMARY
Program Exp Receipt Ship Window FOB Point Units Cube Cost PO IMU% Retail LESS
Spring 2018 03/18/18 01/09/18 - 01/24/18 Los Angles 4600 4,270 $33,102.00 58.39 $79,555.00
Dates
NET Payment fffjk
Order Created 01/17/18
Last Updated 01/18/18
Retailer Requirements
Pre-ticket Yes
Logistics
Order Type Import
FOB Point Los Angeles
Destination Claveland
Totals
Units 4600
Cost $33,102.00
Est.Landed Cost $37,372.33
Cube 4273.33
Special Intstructions to Supplier
Double pack
ORDER PRODUCTS
Product
Est.Landed Cost
Retail
IMU%
Case Pack / Cube
Unit Cost
Quantity
Total Cube
Total Cost
Total Retail
LH55851
Single Tapered Round Can...
$7.38
$15.99
53.86
6/5.57 ft3
$6.45
4000
3,733.33
$25,800.00
$63,960.00
LH55801
Single Round Fabaric Hamp...
$7.04
$15.99
55.97
6/3.84 ft3
$6.40
200
128.00
$1,280.00
$3,198.00
LH47691
2 PC KD Round MDF & Pin...
$24.86
$48.00
48.21
1/1.36 ft3
$23.50
200
272.00
$4,700.00
$9,500.00
LH47691_L
Large Accent Table
$15.54
$30
48.21
1
$14.69
200
$2,937.00
$6,000.00
LH47691_S
Small Accent Table
$9.32
$18
48.21
1
$8.83
200
$1,762.00
$3,600.00
LH55912
Single Tapered Round Fab...
$7.40
$18.98
47.14
6/4.71 ft3
$6.61
200
167.00
$1,322.00
$2,798.00
Participants
Kelsey Anderson
Changed 01/18 - 9:29 am
Payment Terms from fff to fffjk
Kelsey Anderson
Changed 01/18 - 9:29 am
ticket to yes
Kelsey Anderson
Changed 01/18 - 9:29 am
SPECIAL INSTRUCTIONS
to Double pack
Acme Supplier
Acme Retailer
Send message ..
Send

FIG. 4L

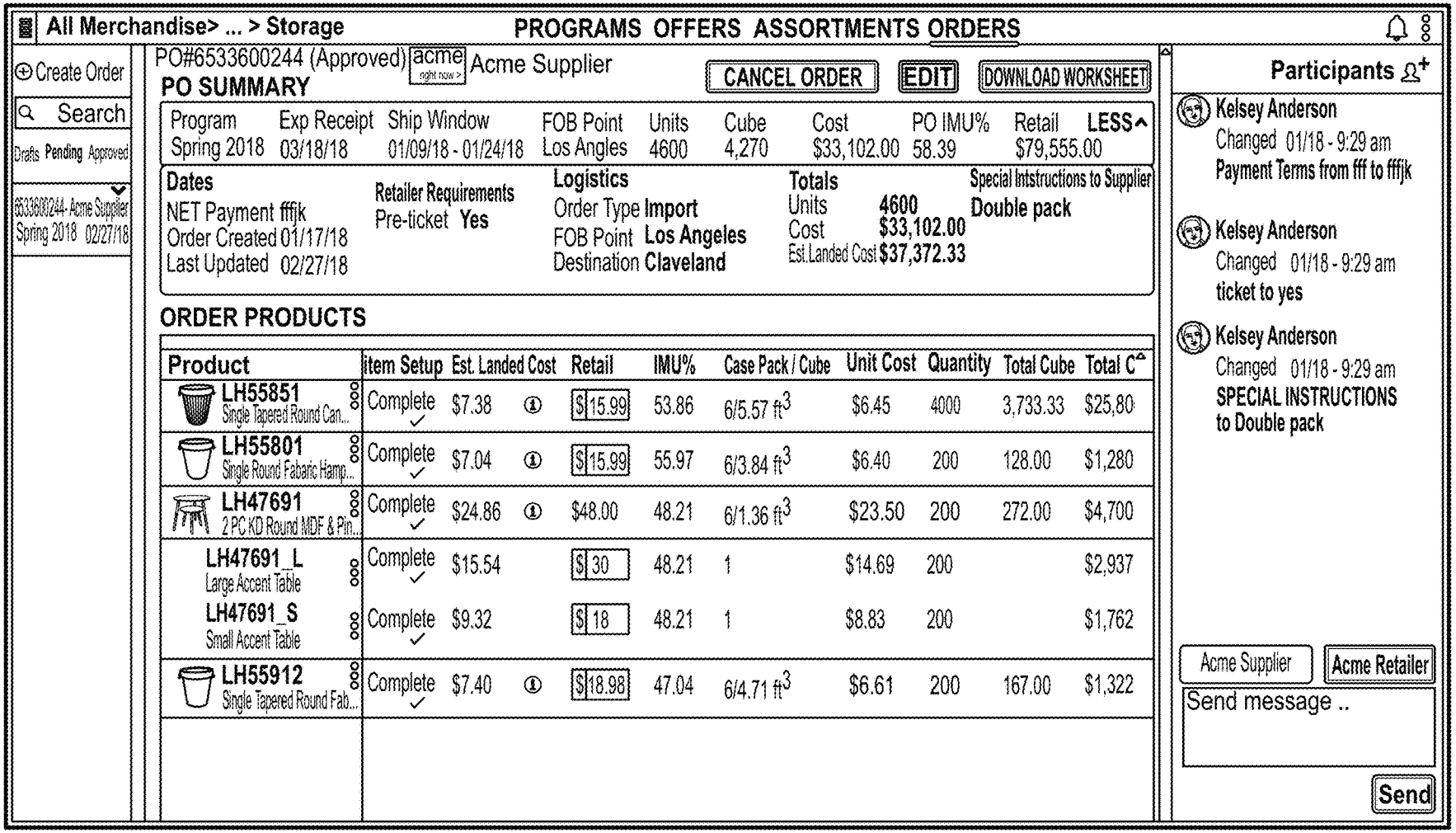

All Merchandise> ... > Storage
PROGRAMS OFFERS ASSORTMENTS ORDERS
Create Order
Search
Drafts Pending Approved
6533600244- Acme Supplier Spring 2018 02/27/18
PO#6533600244 (Approved) acme right now > Acme Supplier
PO SUMMARY
CANCEL ORDER
EDIT
DOWNLOAD WORKSHEET
Program Exp Receipt Ship Window FOB Point Units Cube Cost PO IMU% Retail LESS
Spring 2018 03/18/18 01/09/18 - 01/24/18 Los Angles 4600 4,270 $33,102.00 58.39 $79,555.00
Dates
NET Payment fffjk
Order Created 01/17/18
Last Updated 02/27/18
Retailer Requirements
Pre-ticket Yes
Logistics
Order Type Import
FOB Point Los Angeles
Destination Claveland
Totals
Units 4600
Cost $33,102.00
Est.Landed Cost $37,372.33
Special Intstructions to Supplier
Double pack
ORDER PRODUCTS
Product
item Setup
Est. Landed Cost
Retail
IMU%
Case Pack / Cube
Unit Cost
Quantity
Total Cube
Total C
LH55851 Single Tapered Round Can... Complete $7.38 $15.99 53.86 6/5.57 ft3 $6.45 4000 3,733.33 $25,80
LH55801 Single Round Fabaric Hamp... Complete $7.04 $15.99 55.97 6/3.84 ft3 $6.40 200 128.00 $1,280
LH47691 2 PC KD Round MDF & Pin... Complete $24.86 $48.00 48.21 6/1.36 ft3 $23.50 200 272.00 $4,700
LH47691_L Large Accent Table Complete $15.54 $30 48.21 1 $14.69 200 $2,937
LH47691_S Small Accent Table Complete $9.32 $18 48.21 1 $8.83 200 $1,762
LH55912 Single Tapered Round Fab... Complete $7.40 $18.98 47.04 6/4.71 ft3 $6.61 200 167.00 $1,322
Participants
Kelsey Anderson
Changed 01/18 - 9:29 am
Payment Terms from fff to fffjk
Kelsey Anderson
Changed 01/18 - 9:29 am
ticket to yes
Kelsey Anderson
Changed 01/18 - 9:29 am
SPECIAL INSTRUCTIONS to Double pack
Acme Supplier
Acme Retailer
Send message ..
Send

FIG. 4M

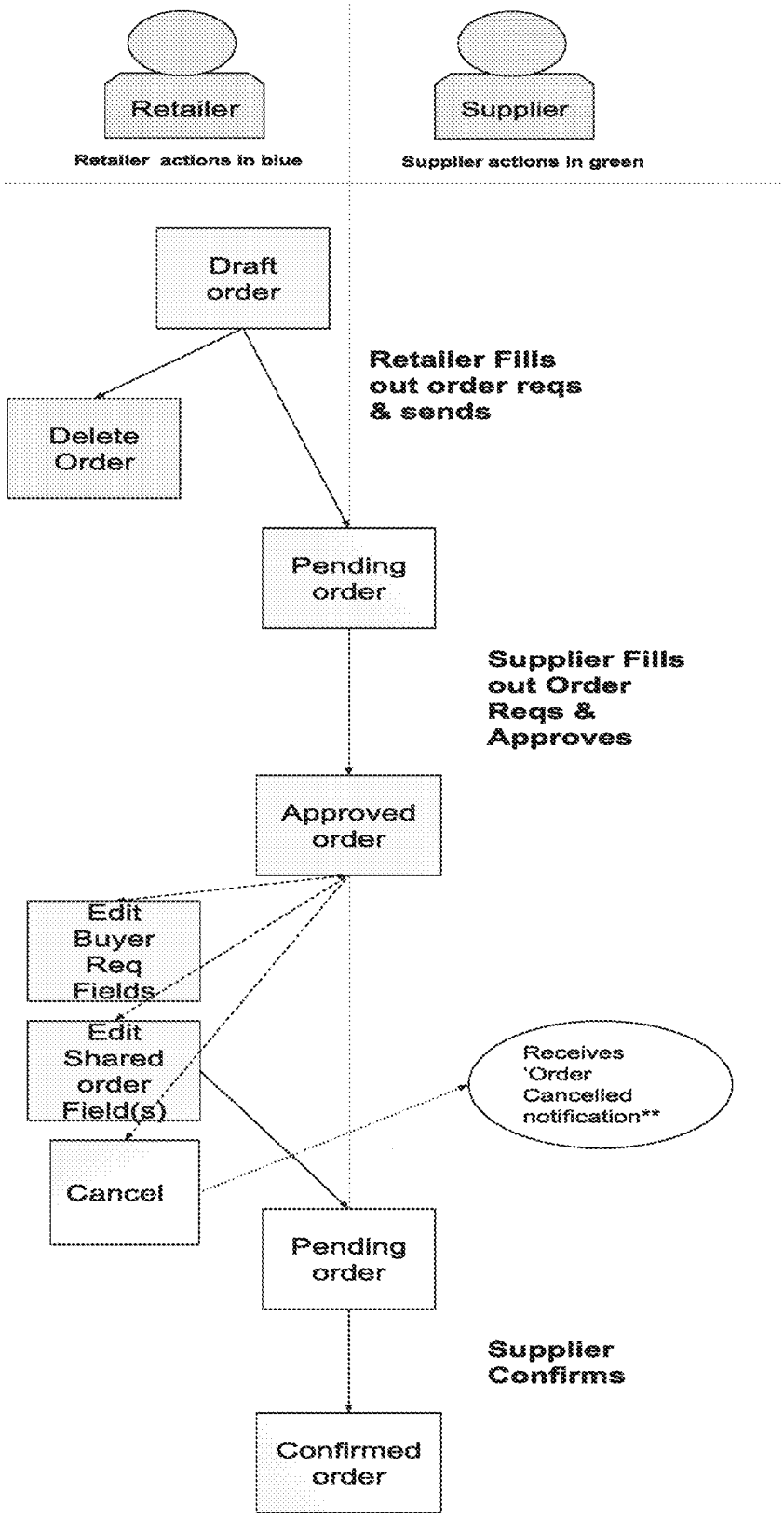

Retailer
Supplier
Retailer actions in blue
Supplier actions in green
Draft order
Retailer Fills out order reqs & sends
Delete Order
Pending order
Supplier Fills out Order Reqs & Approves
Approved order
Edit Buyer Req Fields
Edit Shared order Field(s)
Receives 'Order Cancelled notification**
Cancel
Pending order
Supplier Confirms
Confirmed order

FIG. 4N

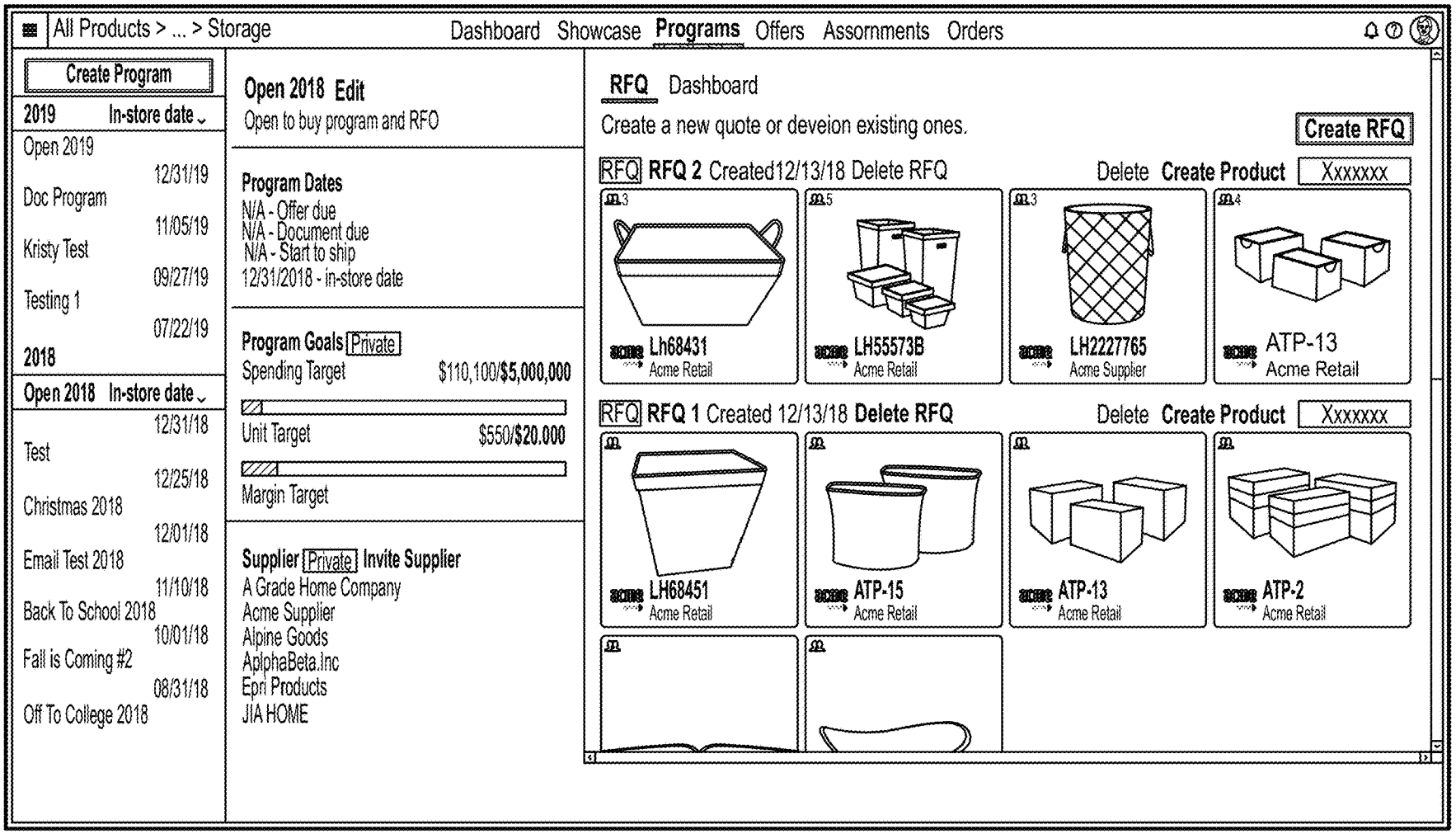

All Products > ... > Storage
Dashboard Showcase Programs Offers Assortments Orders
Create Program
2019 In-store date
Open 2019
12/31/19
Doc Program
11/05/19
Kristy Test
09/27/19
Testing 1
07/22/19
2018
Open 2018 In-store date
12/31/18
Test
12/25/18
Christmas 2018
12/01/18
Email Test 2018
11/10/18
Back To School 2018
10/01/18
Fall is Coming #2
08/31/18
Off To College 2018
Open 2018 Edit
Open to buy program and RFO
Program Dates
N/A - Offer due
N/A - Document due
N/A - Start to ship
12/31/2018 - in-store date
Program Goals Private
Spending Target $110,100/$5,000,000
Unit Target $550/$20.000
Margin Target
Supplier Private Invite Supplier
A Grade Home Company
Acme Supplier
Alpine Goods
AlphaBeta.Inc
Epri Products
JIA HOME
RFQ Dashboard
Create a new quote or deveion existing ones.
Create RFQ
RFQ RFQ 2 Created12/13/18 Delete RFQ
Delete Create Product Xxxxxxx
Lh68431 Acme Retail
LH55573B Acme Retail
LH2227765 Acme Supplier
ATP-13 Acme Retail
RFQ RFQ 1 Created 12/13/18 Delete RFQ
Delete Create Product Xxxxxxx
LH68451 Acme Retail
ATP-15 Acme Retail
ATP-13 Acme Retail
ATP-2 Acme Retail

FIG. 4O

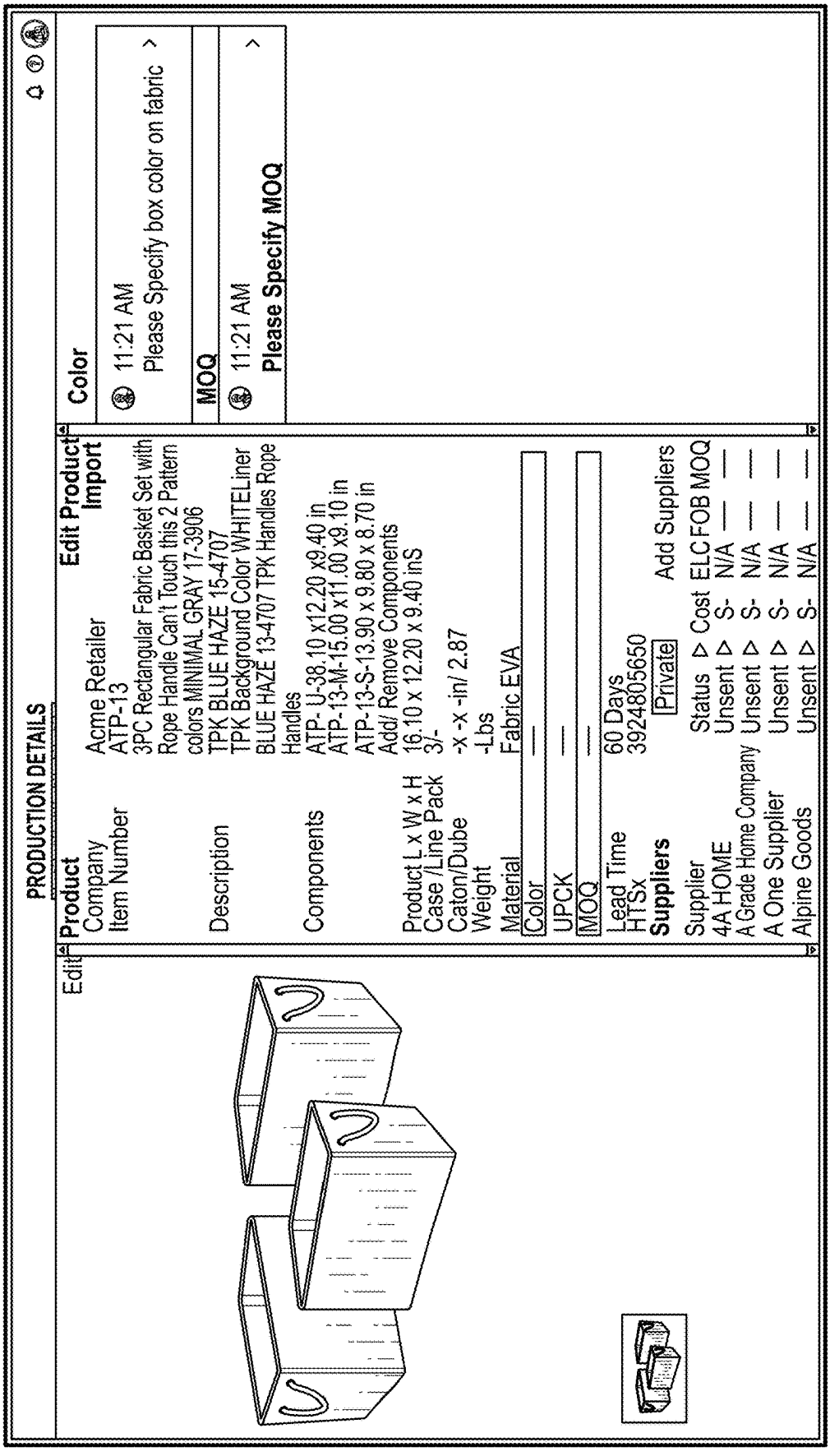

PRODUCTION DETAILS
Edit
Product
Company Acme Retailer
Item Number ATP-13
Description 3PC Rectangular Fabric Basket Set with Rope Handle Can't Touch this 2 Pattern colors MINIMAL GRAY 17-3906
TPK BLUE HAZE 15-4707
TPK Background Color WHITELiner
BLUE HAZE 13-4707 TPK Handles Rope Handles
Components ATP- U-38.10 x12.20 x9.40 in
ATP-13-M-15.00 x11.00 x9.10 in
ATP-13-S-13.90 x 9.80 x 8.70 in
Add/ Remove Components
Product L x W x H 16.10 x 12.20 x 9.40 inS
Case /Line Pack 3/-
Caton/Dube -x -x -in/ 2.87
Weight -Lbs
Material Fabric EVA
Color ___
UPCK ___
MOQ ___
Lead Time 60 Days
HTSx 3924805650
Suppliers Private
Supplier Status ▷ Cost ELC FOB MOQ
4A HOME Unsent ▷ S- N/A ___ ___
A Grade Home Company Unsent ▷ S- N/A ___ ___
A One Supplier Unsent ▷ S- N/A ___ ___
Alpine Goods Unsent ▷ S- N/A ___ ___
Edit
Import
Add Suppliers
Color
11:21 AM
Please Specify box color on fabric
MOQ
11:21 AM
Please Specify MOQ

FIG. 4P

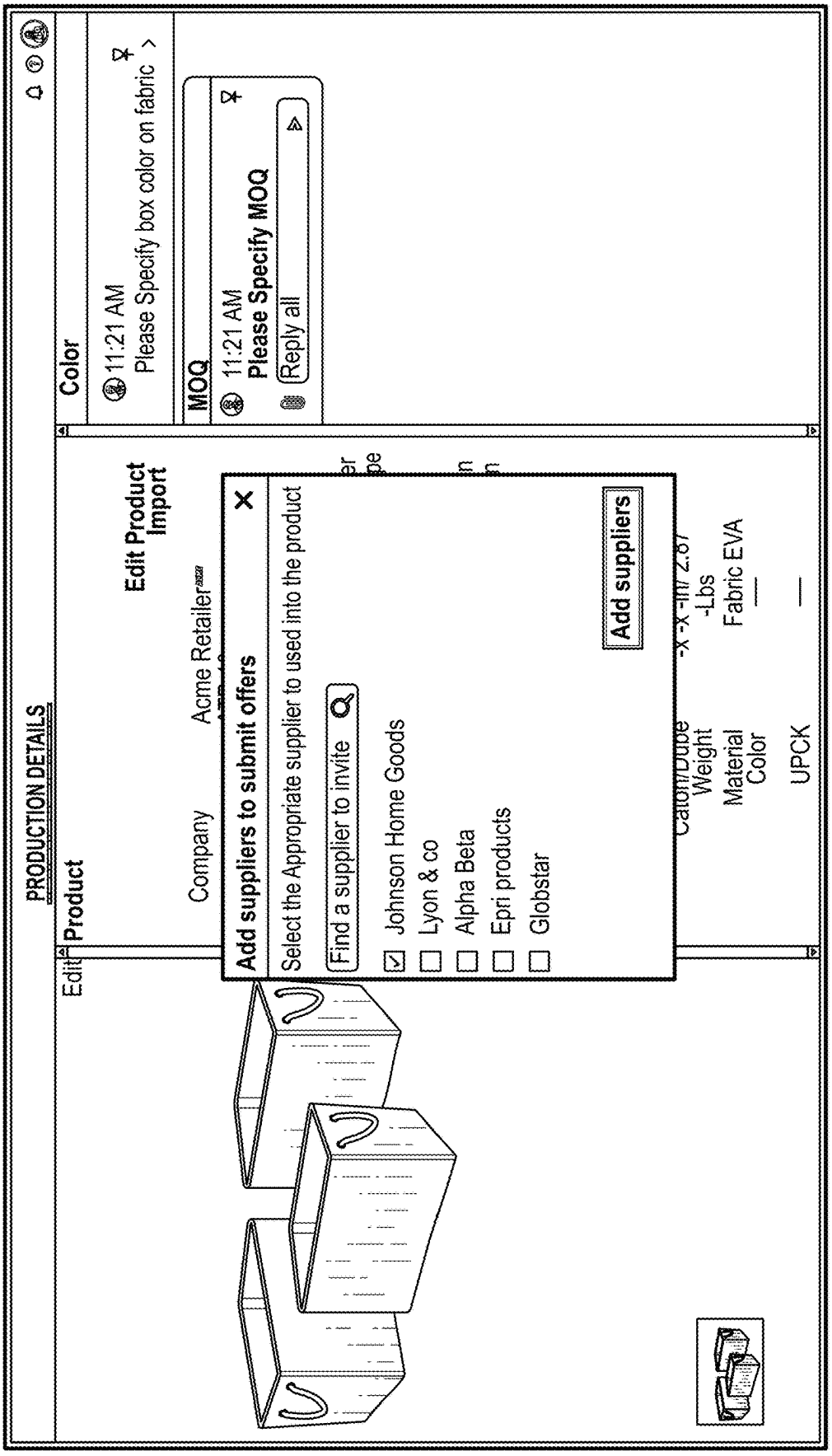

PRODUCTION DETAILS
Edit
Product
Edit Product
Import
Company
Acme Retailer
Color
11:21 AM
Please Specify box color on fabric
MOQ
11:21 AM
Please Specify MOQ
Reply all
Add suppliers to submit offers
Select the Appropriate supplier to used into the product
Find a supplier to invite
Johnson Home Goods
Lyon & co
Alpha Beta
Epri products
Globstar
Add suppliers
Weight
-Lbs
Material
Fabric EVA
Color
UPCK

FIG. 4Q

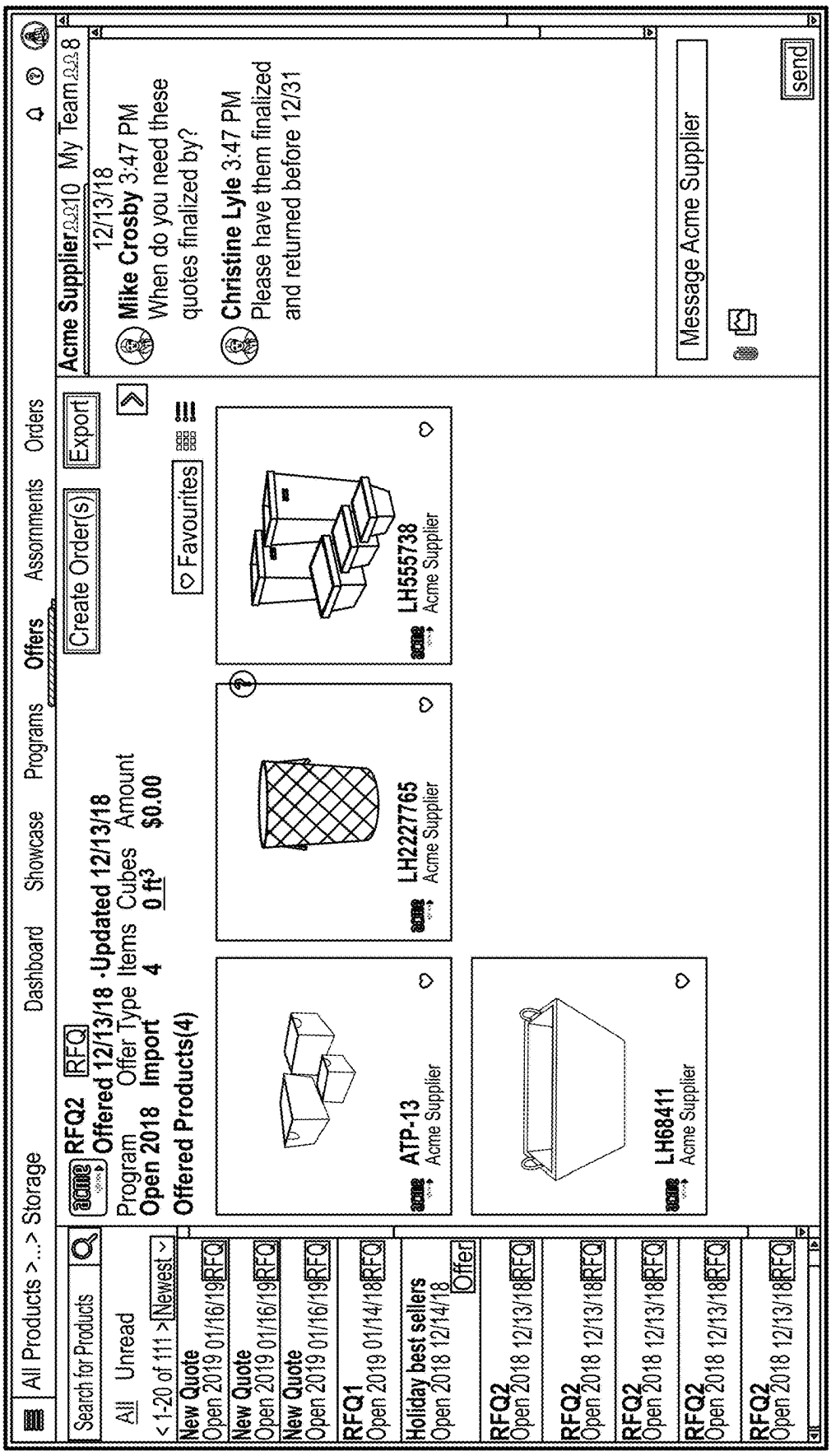

All Products > ... > Storage
Dashboard
Showcase
Programs
Offers
Assignments
Orders
Search for Products
All Unread
< 1-20 of 111 > Newest
New Quote
Open 2019 01/16/19 RFQ
New Quote
Open 2019 01/16/19 RFQ
New Quote
Open 2019 01/16/19 RFQ
RFQ1
Open 2019 01/14/18 RFQ
Holiday best sellers
Open 2018 12/14/18
Offer
RFQ2
Open 2018 12/13/18 RFQ
RFQ2
Open 2018 12/13/18 RFQ
RFQ2
Open 2018 12/13/18 RFQ
RFQ2
Open 2018 12/13/18 RFQ
RFQ2
Open 2018 12/13/18 RFQ
RFQ2
Offered 12/13/18 · Updated 12/13/18
Program
Open 2018
Offer Type
Import
Items
4
Cubes
0 ft3
Amount
$0.00
Offered Products(4)
Create Order(s)
Export
Favourites
ATP-13
Acme Supplier
LH2227765
Acme Supplier
LH555738
Acme Supplier
LH68411
Acme Supplier
Acme Supplier 2210
My Team 228
12/13/18
Mike Crosby 3:47 PM
When do you need these quotes finalized by?
Christine Lyle 3:47 PM
Please have them finalized and returned before 12/31
Message Acme Supplier
send

FIG. 4R1

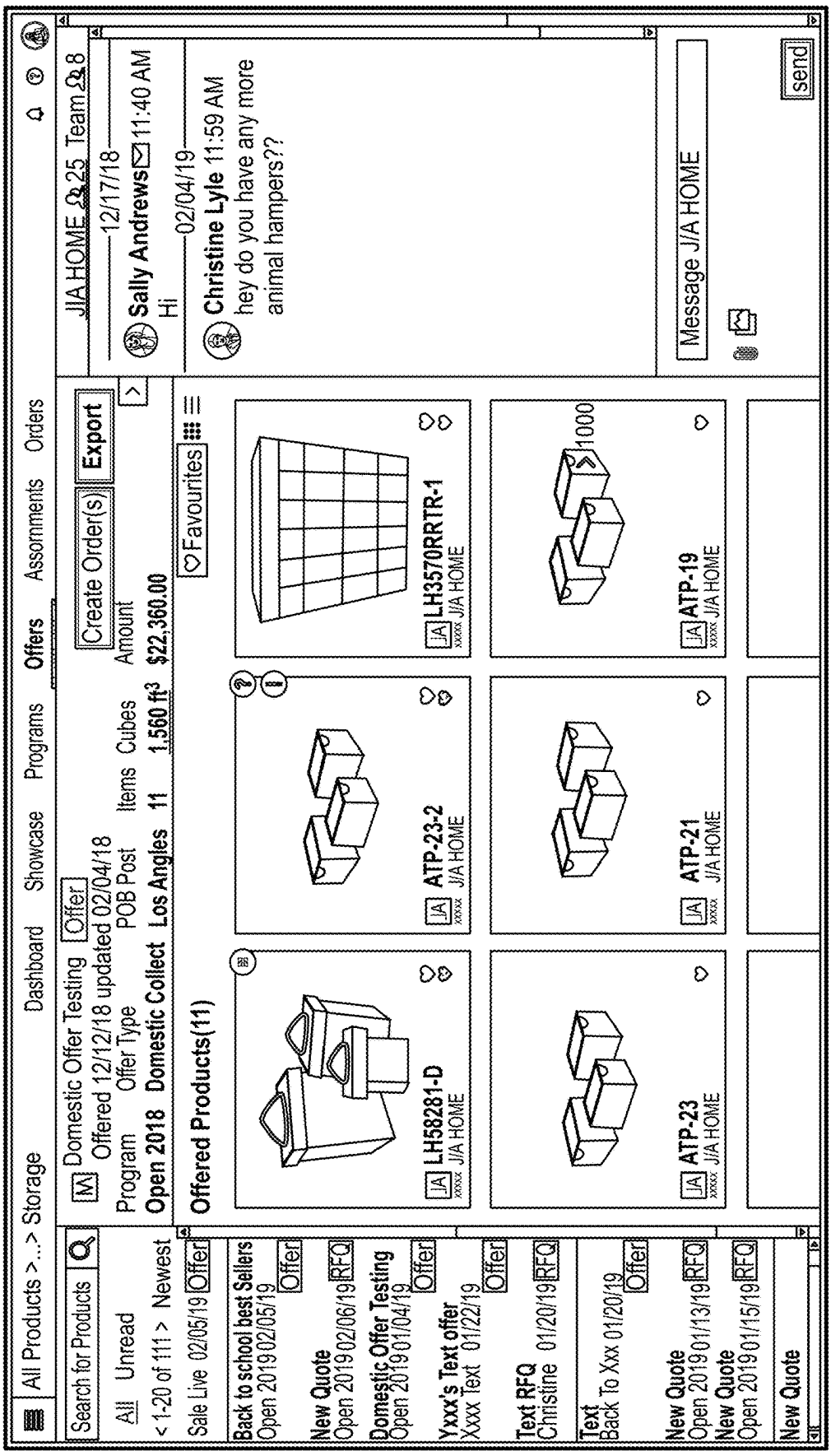

All Products >...> Storage
Dashboard
Showcase
Programs
Offers
Assortments
Orders
Search for Products
All Unread
< 1-20 of 111 > Newest
Sale Live 02/05/19 Offer
Back to school best Sellers
Open 2019 02/05/19 Offer
New Quote
Open 2019 02/06/19 RFQ
Domestic Offer Testing
Open 2019 01/04/19 Offer
Yxxx's Text offer
Xxxx Text 01/22/19 Offer
Text RFQ
Christine 01/20/19 RFQ
Text
Back To Xxx 01/20/19 Offer
New Quote
Open 2019 01/13/19 RFQ
New Quote
Open 2019 01/15/19 RFQ
New Quote
Domestic Offer Testing Offer
Offered 12/12/18 updated 02/04/18
Program Offer Type POB Post
Open 2018 Domestic Collect Los Angles
Items 11
Cubes 1,560 ft3
Create Order(s)
Export
Amount $22,360.00
Favourites
Offered Products(11)
LH58281-D
xxxxx J/A HOME
ATP-23-2
xxxxx J/A HOME
LH3570RRTR-1
xxxxx J/A HOME
ATP-23
xxxxx J/A HOME
ATP-21
xxxxx J/A HOME
ATP-19
xxxxx J/A HOME
1000
JIA HOME 25 Team 8
12/17/18
Sally Andrews 11:40 AM
Hi
02/04/19
Christine Lyle 11:59 AM
hey do you have any more animal hampers??
Message J/A HOME
send

FIG. 4R2

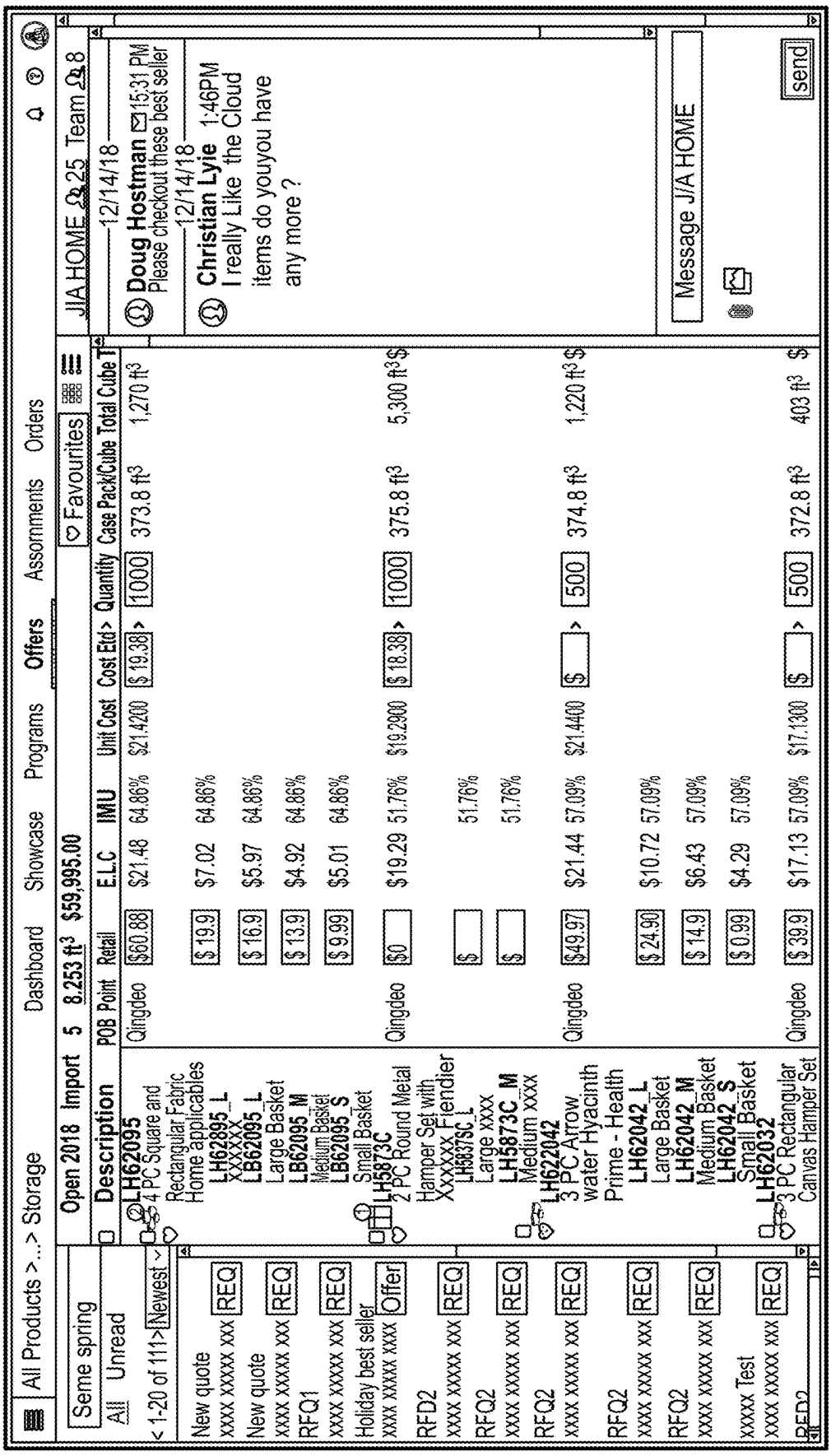

All Products >...> Storage
Dashboard
Showcase
Programs
Offers
Assortments
Orders
Favourites
Seme spring
All Unread
< 1-20 of 111> Newest
Open 2018 Import 5 8.253 ft³ $59,995.00
JIA HOME 25 Team 8
Description
POB Point
Retail
E.L.C
IMU
Unit Cost
Cost Etd>
Quantity
Case Pack/Cube Total Cube T
LH62095
4 PC Square and Rectangular Fabric Home applicables
Qingdeo
$60.88
$21.48
64.86%
$21.4200
$ 19.38
1000
373.8 ft³
1,270 ft³
LH62895_L
XXXXX
$ 19.9
$7.02
64.86%
LB62095_L
Large Basket
$ 16.9
$5.97
64.86%
LB62095_M
Medium Basket
$ 13.9
$4.92
64.86%
LB62095_S
Small Basket
$ 9.99
$5.01
64.86%
LH5873C
2 PC Round Metal Hamper Set with Xxxxxx Fiendier
Qingdeo
$0
$19.29
51.76%
$19.2900
$ 18.38
1000
375.8 ft³
5,300 ft³
LH5873C_L
Large xxxx
$
51.76%
LH5873C_M
Medium xxxx
$
51.76%
LH622042
3 PC Arrow water Hyacinth Prime - Health
Qingdeo
$49.97
$21.44
57.09%
$21.4400
$
500
374.8 ft³
1,220 ft³
LH62042_L
Large Basket
$ 24.90
$10.72
57.09%
LH62042_M
Medium Basket
$ 14.9
$6.43
57.09%
LH62042_S
Small Basket
$ 0.99
$4.29
57.09%
LH62032
3 PC Rectangular Canvas Hamper Set
Qingdeo
$ 39.9
$17.13
57.09%
$17.1300
$
500
372.8 ft³
403 ft³
Offer
REQ
12/14/18
Doug Hostman 15:31 PM
Please checkout these best seller
12/14/18
Christian Lyie 1:46PM
I really Like the Cloud items do youyou have any more ?
Message J/A HOME
send

FIG. 4S

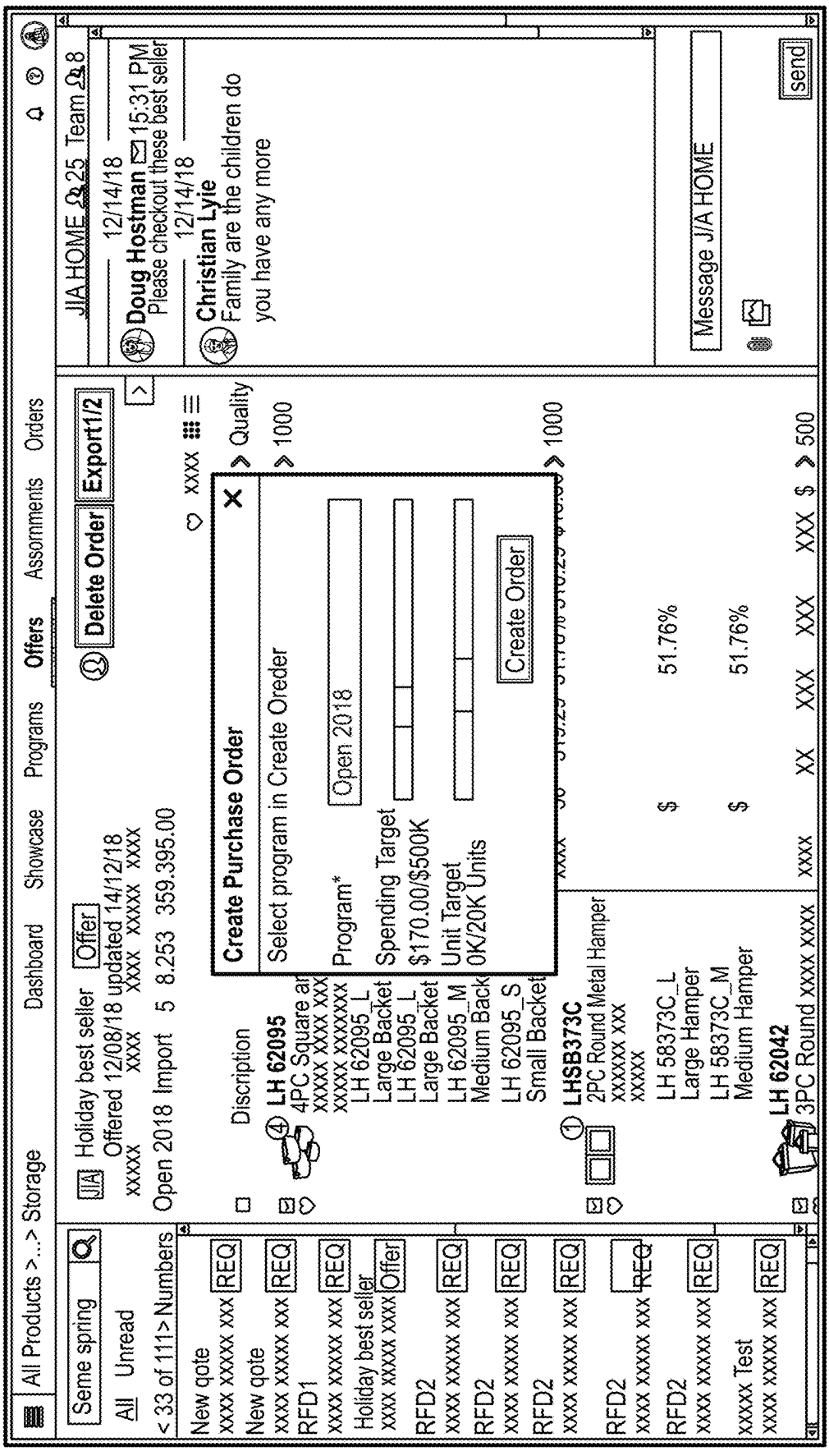

All Products > ... > Storage
Dashboard
Showcase
Programs
Offers
Assignments
Orders
Seme spring
All Unread
< 33 of 111 > Numbers
New qote
xxxx xxxxx xxx REQ
New qote
xxxx xxxxx xxx REQ
RFD1
xxxx xxxxx xxx REQ
Holiday best seller
xxxx xxxxx xxxx Offer
RFD2
xxxx xxxxx xxx REQ
RFD2
xxxx xxxxx xxx REQ
RFD2
xxxx xxxxx xxx REQ
RFD2
xxxx xxxxx xxx REQ
RFD2
xxxx xxxxx xxx REQ
xxxxx Test
xxxx xxxxx xxx REQ
JIA
Holiday best seller
Offer
Offered 12/08/18 updated 14/12/18
xxxxx xxxx xxxx xxxxx xxxx
Open 2018 Import 5 8.253 359.395.00
Delete Order
Export1/2
xxxx
Discription
LH 62095
4PC Square ar
xxxxx xxxx xxx
xxxxx xxxxxxx
LH 62095_L
Large Backet
LH 62095_L
Large Backet
LH 62095_M
Medium Back
LH 62095_S
Small Backet
LHSB373C
2PC Round Metal Hamper
xxxxxx xxx
xxxxx
LH 58373C_L
Large Hamper
LH 58373C_M
Medium Hamper
LH 62042
3PC Round xxxx xxxx
Create Purchase Order
Select program in Create Oreder
Program*
Open 2018
Spending Target
$170.00/$500K
Unit Target
0K/20K Units
Create Order
Quality
1000
1000
500
xxxx
XX
XXX
XXX
XXX
$
51.76%
$
51.76%
JIA HOME 25 Team 8
12/14/18
Doug Hostman 15:31 PM
Please checkout these best seller
12/14/18
Christian Lyie
Family are the children do
you have any more
Message J/A HOME
send

FIG. 4T

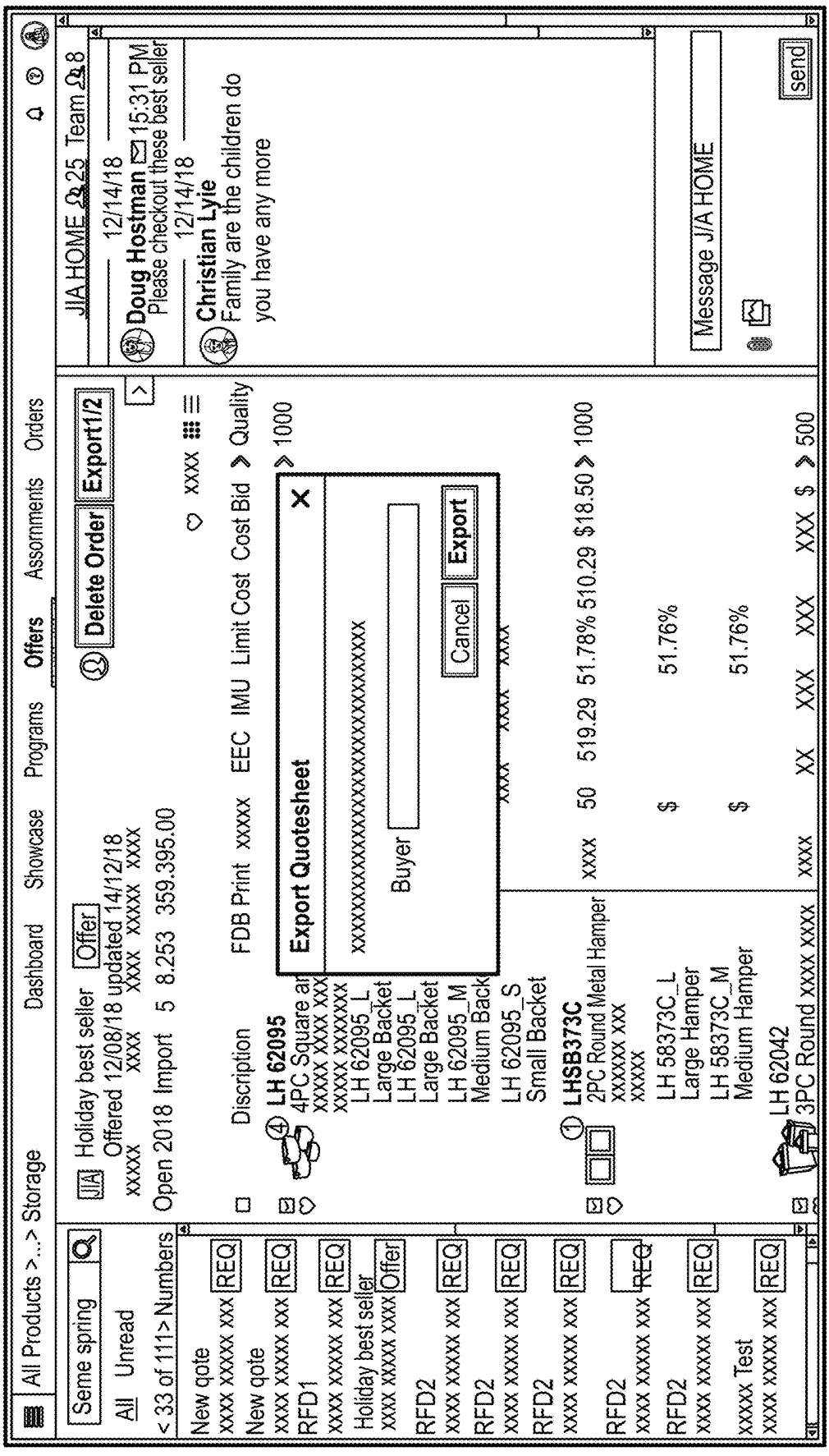

All Products >...> Storage
Dashboard
Showcase
Programs
Offers
Assornments
Orders
Seme spring
All Unread
< 33 of 111> Numbers
New qote
New qote
RFD1
Holiday best seller
RFD2
RFD2
RFD2
RFD2
xxxxx Test
REQ
Offer
Holiday best seller
Offered 12/08/18 updated 14/12/18
Open 2018 Import 5 8.253 359.395.00
Delete Order
Export1/2
Discription
FDB Print xxxxx EEC IMU Limit Cost Cost Bid Quality
LH 62095
4PC Square ar
LH 62095_L
Large Backet
LH 62095_M
Medium Back
LH 62095_S
Small Backet
LHSB373C
2PC Round Metal Hamper
LH 58373C_L
Large Hamper
LH 58373C_M
Medium Hamper
LH 62042
3PC Round xxxx xxxx
Export Quotesheet
Buyer
Cancel
Export
50 519.29 51.78% 510.29 $18.50 1000
51.76%
51.76%
XX XXX XXX XXX $ 500
JIA HOME 25 Team 8
12/14/18
Doug Hostman 15:31 PM
Please checkout these best seller
12/14/18
Christian Lyie
Family are the children do you have any more
Message J/A HOME
send

FIG. 4U

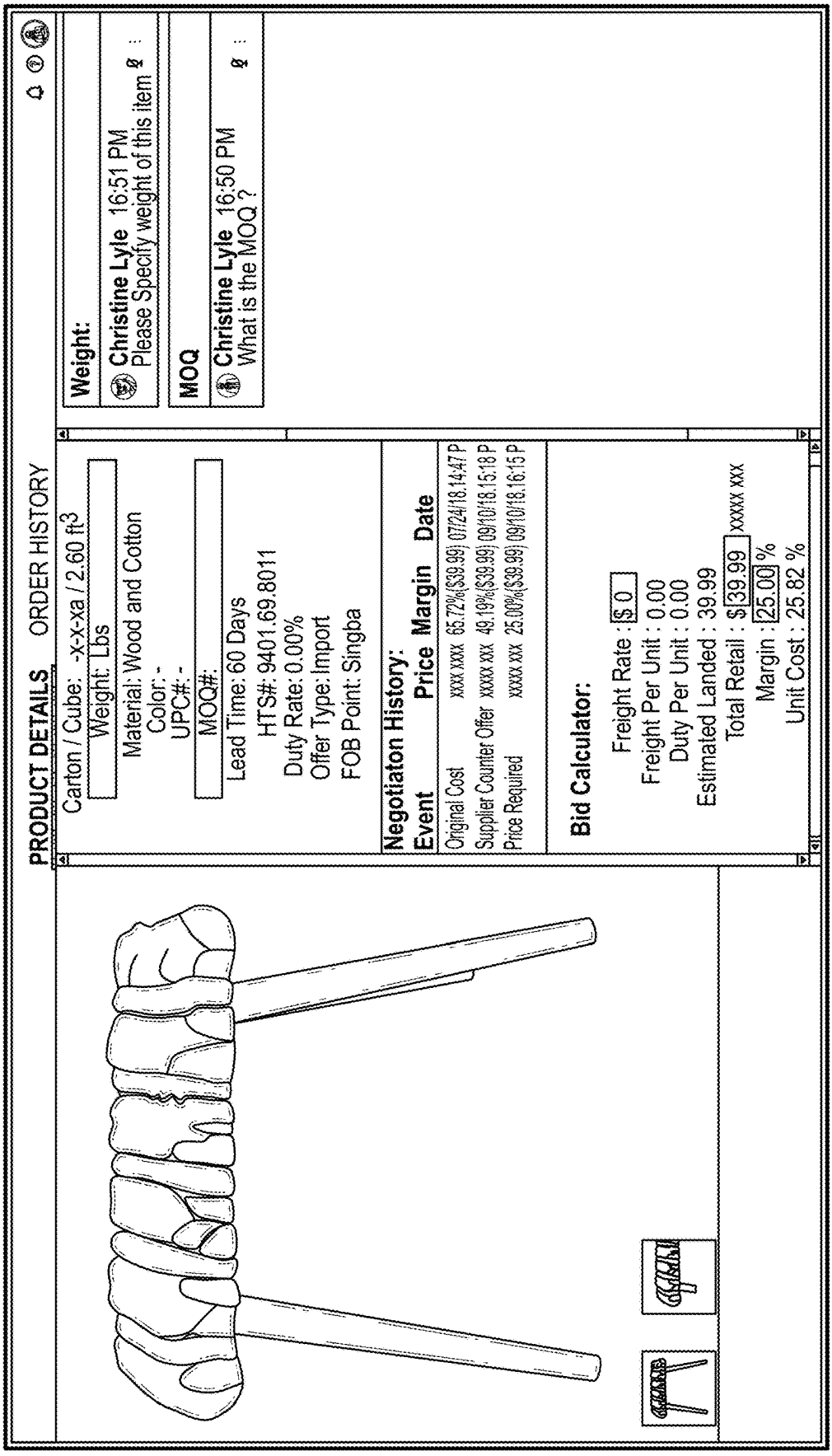

PRODUCT DETAILS
ORDER HISTORY
Carton / Cube: -x-x-xa / 2.60 ft3
Weight: Lbs
Material: Wood and Cotton
Color: -
UPC#: -
MOQ#:
Lead Time: 60 Days
HTS#: 9401.69.8011
Duty Rate: 0.00%
Offer Type: Import
FOB Point: Singba
Negotiaton History:
Event Price Margin Date
Original Cost xxxx.xxxx 65.72%($39.99) 07/24/18.14:47 P
Supplier Counter Offer xxxxx.xxx 49.19%($39.99) 09/10/18.15:18 P
Price Required xxxxx.xxx 25.08%($39.99) 09/10/18.16:15 P
Bid Calculator:
Freight Rate : $ 0
Freight Per Unit : 0.00
Duty Per Unit : 0.00
Estimated Landed : 39.99
Total Retail : $ 39.99 xxxxx.xxx
Margin : 25.00 %
Unit Cost : 25.82 %
Weight:
Christine Lyle 16:51 PM
Please Specify weight of this item
MOQ
Christine Lyle 16:50 PM
What is the MOQ ?

FIG. 4V

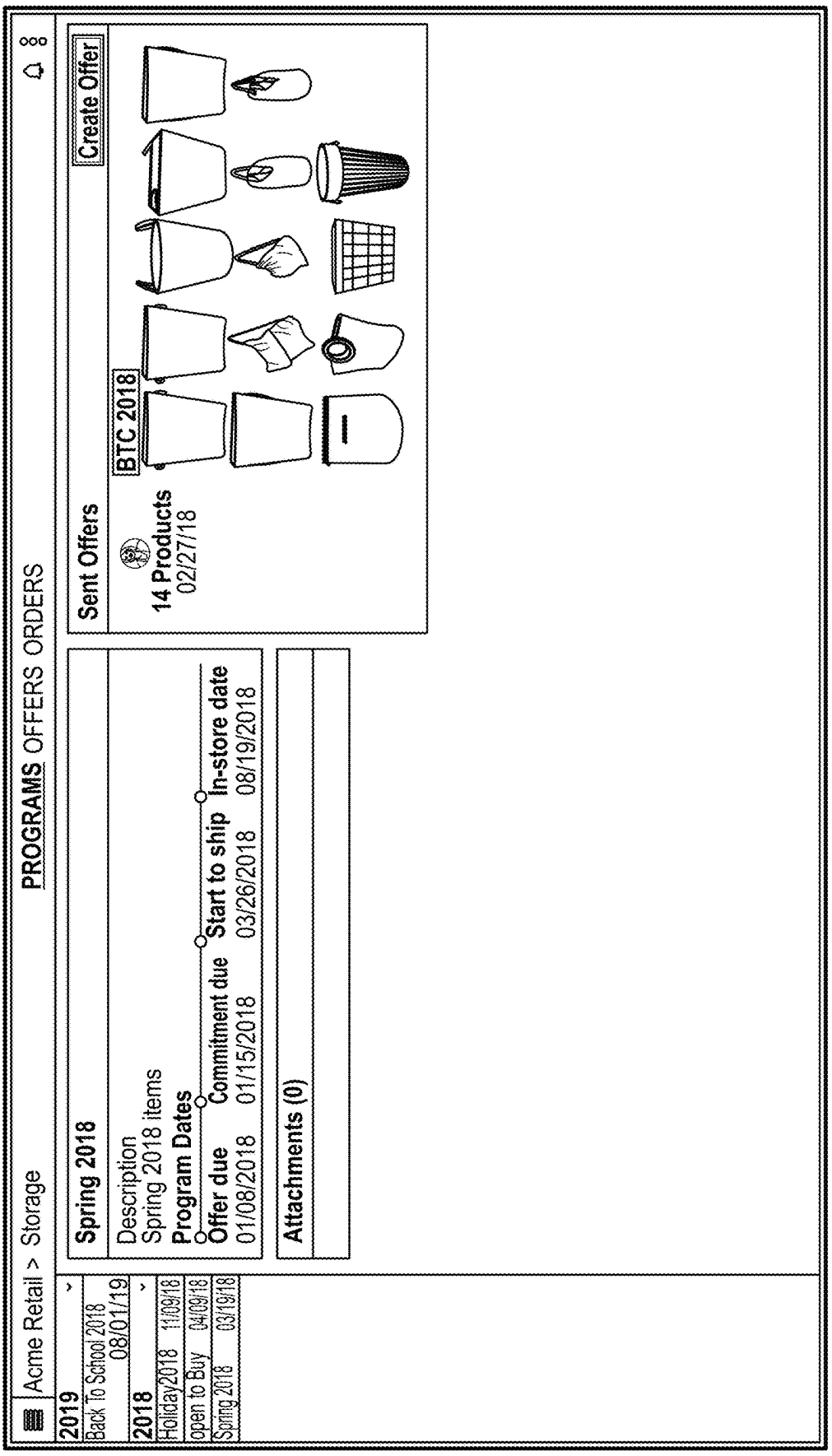

Acme Retail > Storage
PROGRAMS OFFERS ORDERS
2019
Back To School 2018
08/01/19
2018
Holiday2018 11/09/18
open to Buy 04/09/18
Spring 2018 03/19/18
Spring 2018
Description
Spring 2018 items
Program Dates
Offer due
01/08/2018
Commitment due
01/15/2018
Start to ship
03/26/2018
In-store date
08/19/2018
Attachments (0)
Sent Offers
Create Offer
BTC 2018
14 Products
02/27/18

FIG. 5A

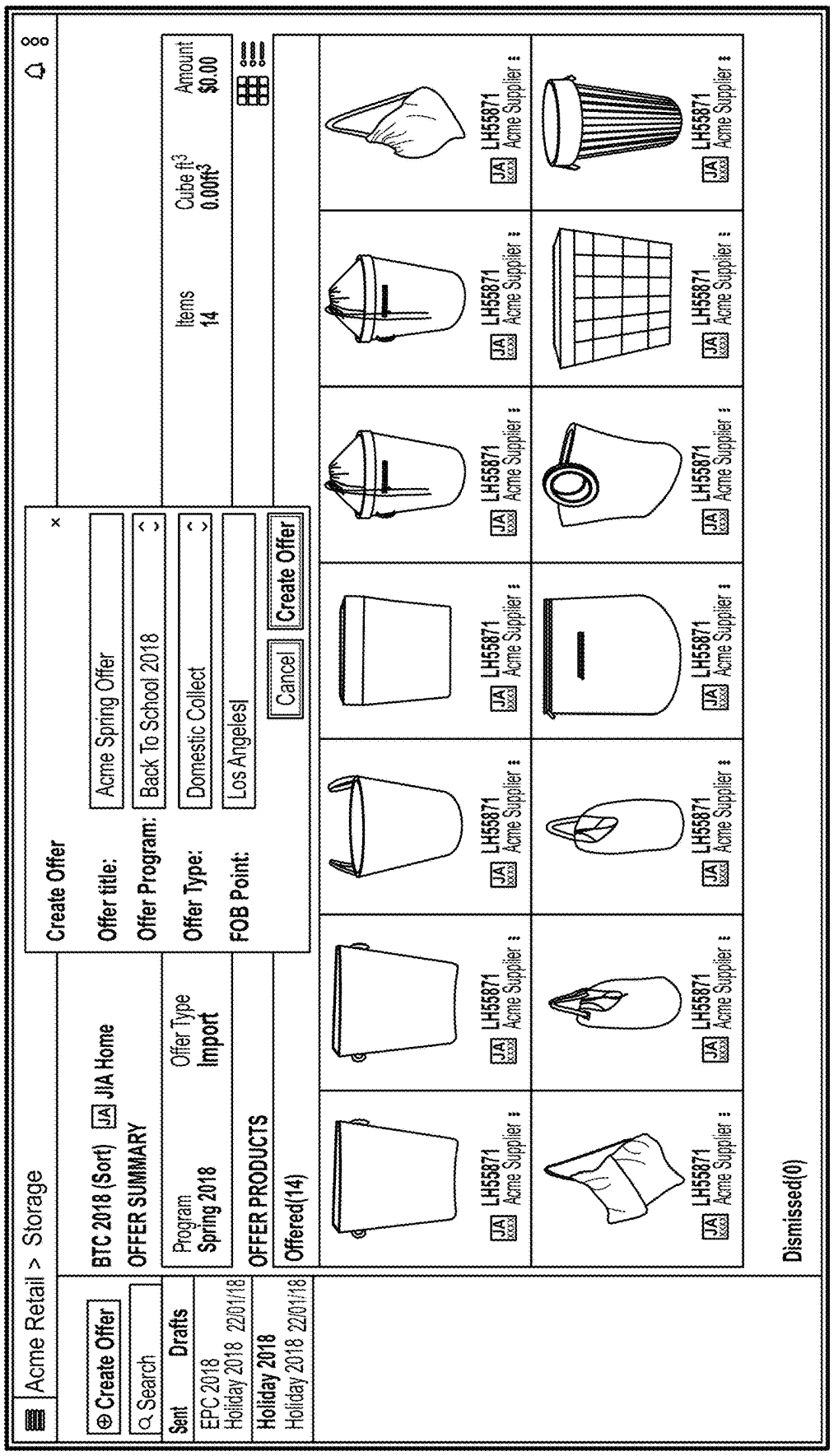

Acme Retail > Storage
Create Offer
Offer title: Acme Spring Offer
Offer Program: Back To School 2018
Offer Type: Domestic Collect
FOB Point: Los Angeles
Cancel
Create Offer
Items 14
Cube ft3 0.00ft3
Amount $0.00
Create Offer
BTC 2018 (Sort)
JIA Home
OFFER SUMMARY
Program Spring 2018
Offer Type Import
OFFER PRODUCTS
Offered(14)
Dismissed(0)
Sent
Drafts
EPC 2018 Holiday 2018 22/01/18
Holiday 2018 Holiday 2018 22/01/18
LH55871 Acme Supplier

FIG. 5B

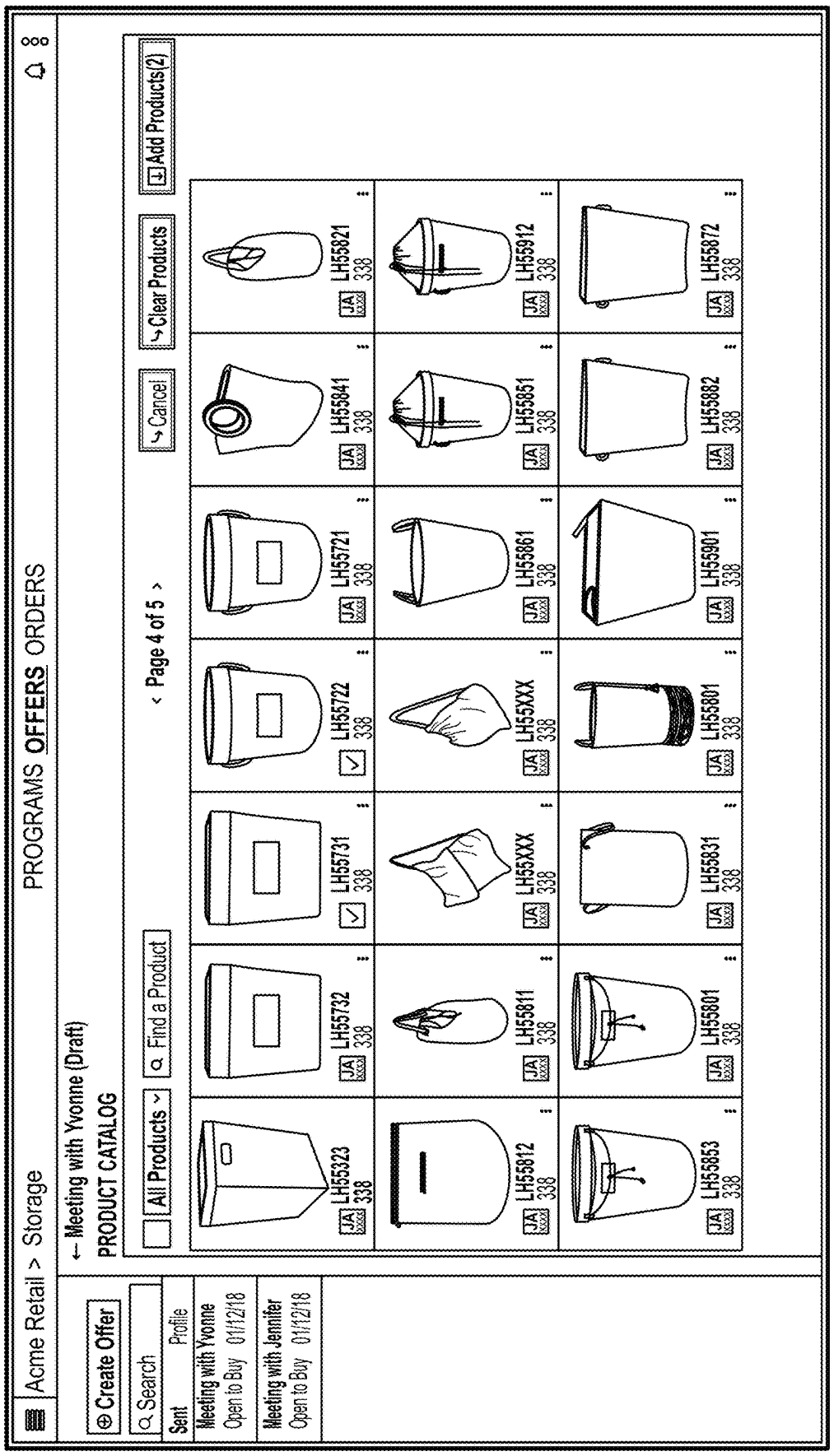

Acme Retail > Storage
PROGRAMS OFFERS ORDERS
Create Offer
Search
Sent Profile
Meeting with Yvonne Open to Buy 01/12/18
Meeting with Jennifer Open to Buy 01/12/18
← Meeting with Yvonne (Draft)
PRODUCT CATALOG
All Products
Find a Product
< Page 4 of 5 >
Cancel
Clear Products
Add Products(2)
LH55323 338
LH55732 338
LH55731 338
LH55722 338
LH55721 338
LH55841 338
LH55821 338
LH55812 338
LH55811 338
LH55XXX 338
LH55XXX 338
LH55861 338
LH55851 338
LH55912 338
LH55853 338
LH55801 338
LH55831 338
LH55801 338
LH55901 338
LH55882 338
LH55872 338

FIG. 5C

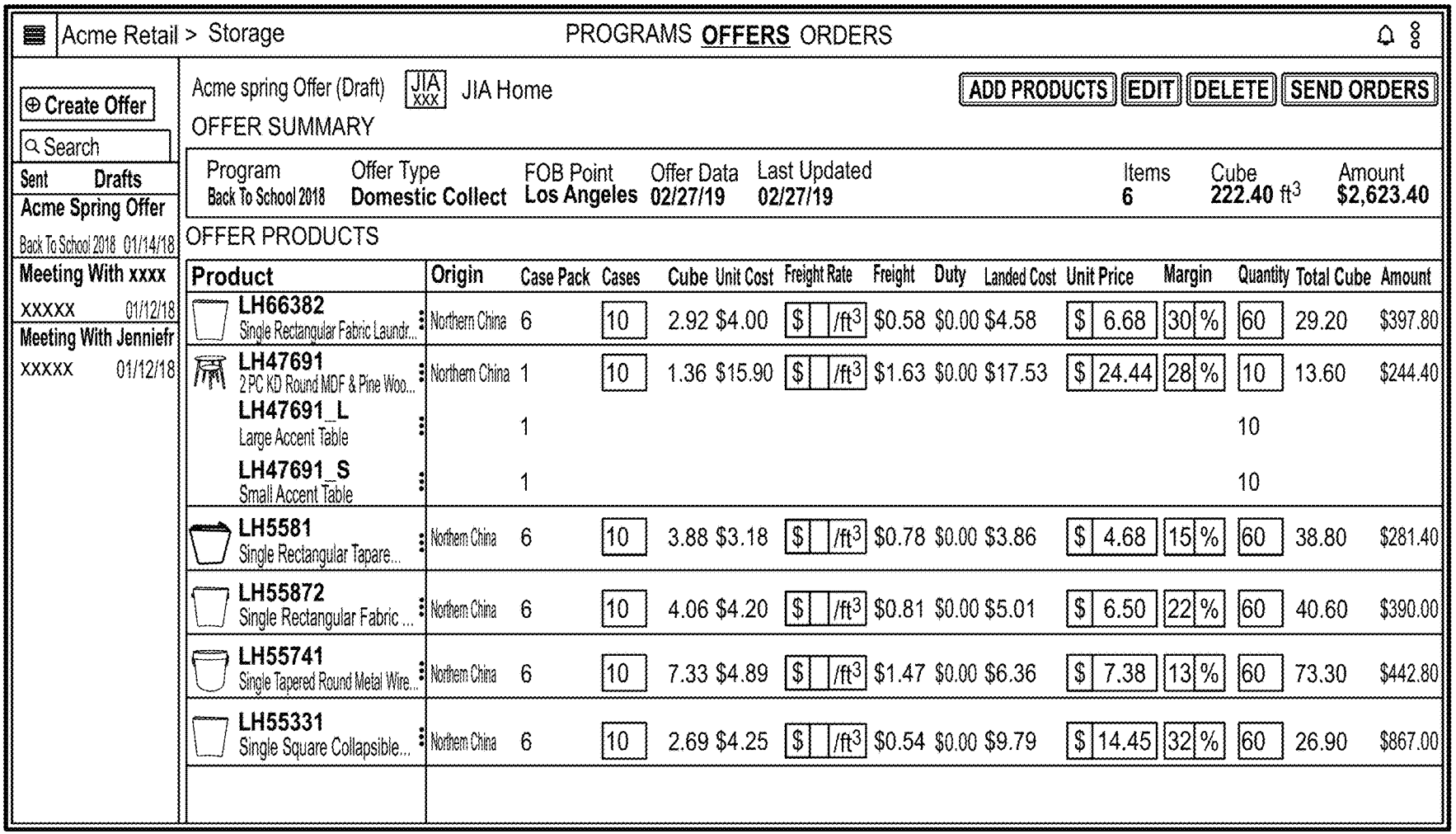

Acme Retail > Storage
PROGRAMS OFFERS ORDERS
Create Offer
Search
Sent Drafts
Acme Spring Offer
Back To School 2018 01/14/18
Meeting With xxxx
xxxxx 01/12/18
Meeting With Jenniefr
xxxxx 01/12/18
Acme spring Offer (Draft)
JIA xxx
JIA Home
ADD PRODUCTS
EDIT
DELETE
SEND ORDERS
OFFER SUMMARY
Program Back To School 2018
Offer Type Domestic Collect
FOB Point Los Angeles
Offer Data 02/27/19
Last Updated 02/27/19
Items 6
Cube 222.40 ft3
Amount $2,623.40
OFFER PRODUCTS
Product
Origin
Case Pack
Cases
Cube
Unit Cost
Freight Rate
Freight
Duty
Landed Cost
Unit Price
Margin
Quantity
Total Cube
Amount
LH66382 Single Rectangular Fabric Laundr... Northern China 6 10 2.92 $4.00 $ /ft3 $0.58 $0.00 $4.58 $ 6.68 30 % 60 29.20 $397.80
LH47691 2 PC KD Round MDF & Pine Woo... Northern China 1 10 1.36 $15.90 $ /ft3 $1.63 $0.00 $17.53 $ 24.44 28 % 10 13.60 $244.40
LH47691_L Large Accent Table 1 10
LH47691_S Small Accent Table 1 10
LH5581 Single Rectangular Tapare... Northern China 6 10 3.88 $3.18 $ /ft3 $0.78 $0.00 $3.86 $ 4.68 15 % 60 38.80 $281.40
LH55872 Single Rectangular Fabric ... Northern China 6 10 4.06 $4.20 $ /ft3 $0.81 $0.00 $5.01 $ 6.50 22 % 60 40.60 $390.00
LH55741 Single Tapered Round Metal Wire... Northern China 6 10 7.33 $4.89 $ /ft3 $1.47 $0.00 $6.36 $ 7.38 13 % 60 73.30 $442.80
LH55331 Single Square Collapsible... Northern China 6 10 2.69 $4.25 $ /ft3 $0.54 $0.00 $9.79 $ 14.45 32 % 60 26.90 $867.00

FIG. 5D

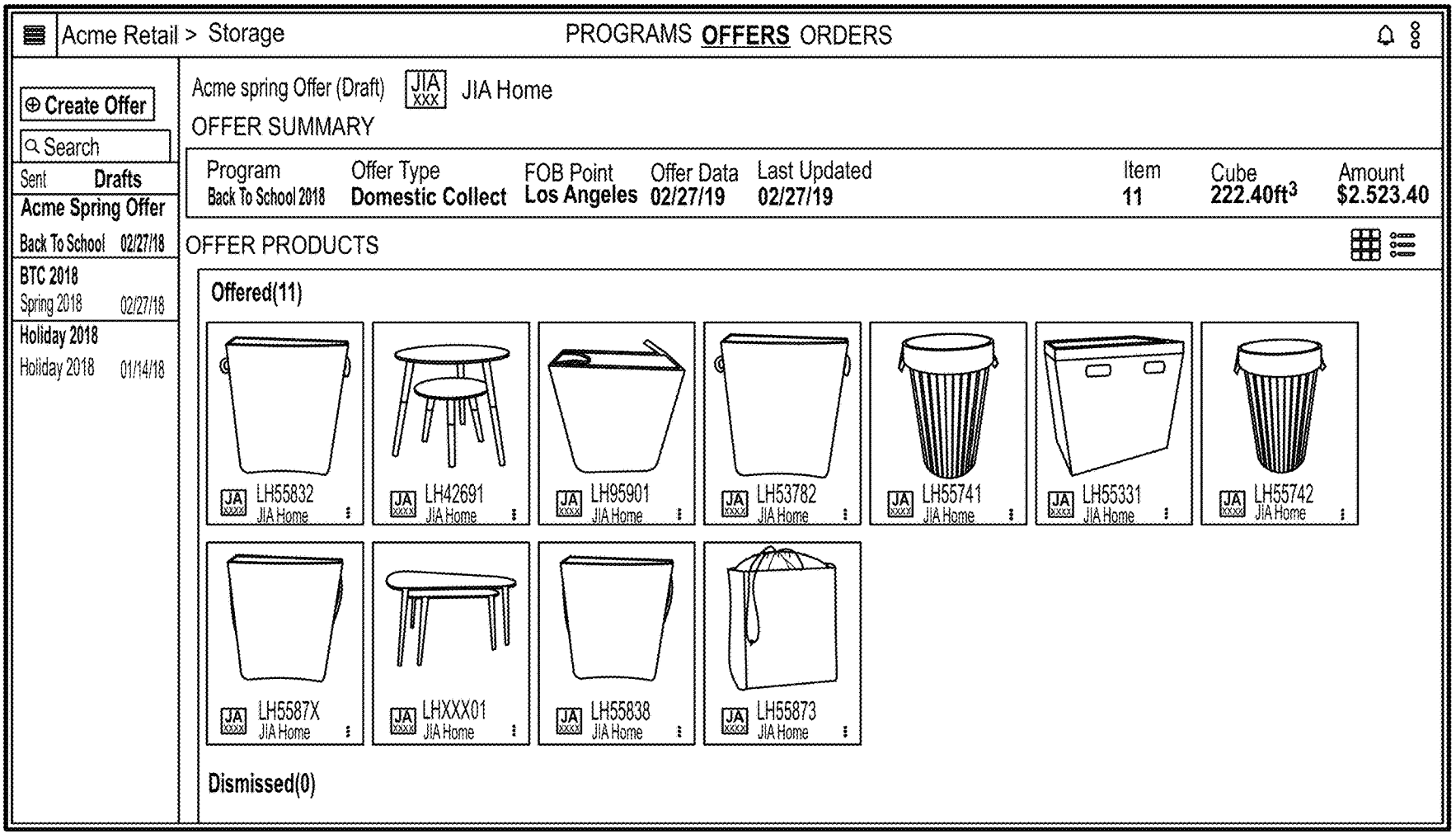

Acme Retail > Storage
PROGRAMS OFFERS ORDERS
Create Offer
Search
Sent Drafts
Acme Spring Offer
Back To School 02/27/18
BTC 2018
Spring 2018 02/27/18
Holiday 2018
Holiday 2018 01/14/18
Acme spring Offer (Draft)
JIA Home
OFFER SUMMARY
Program Back To School 2018
Offer Type Domestic Collect
FOB Point Los Angeles
Offer Data 02/27/19
Last Updated 02/27/19
Item 11
Cube 222.40ft3
Amount $2.523.40
OFFER PRODUCTS
Offered(11)
LH55832 JIA Home
LH42691 JIA Home
LH95901 JIA Home
LH53782 JIA Home
LH55741 JIA Home
LH55331 JIA Home
LH55742 JIA Home
LH5587X JIA Home
LHXXX01 JIA Home
LH55838 JIA Home
LH55873 JIA Home
Dismissed(0)

FIG. 5E

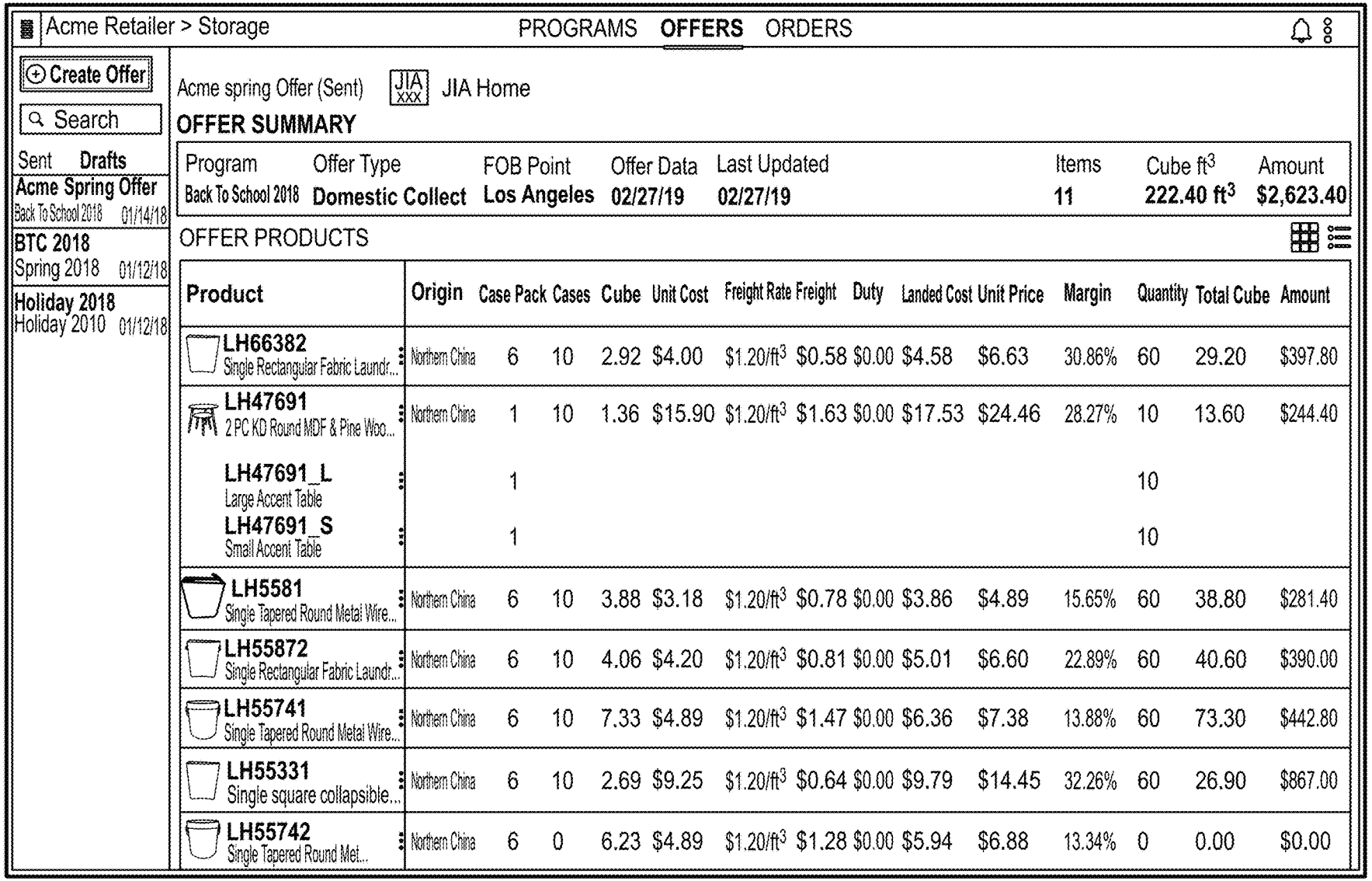
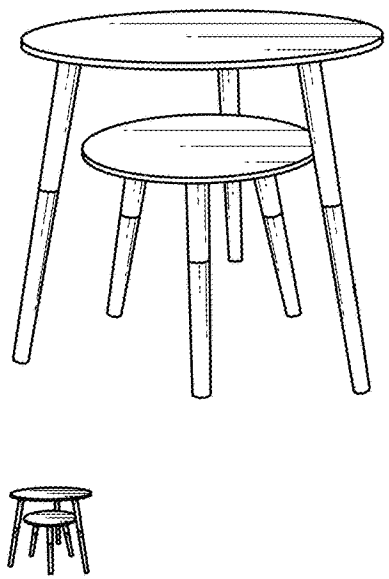

Acme Retailer > Storage
PROGRAMS OFFERS ORDERS
Create Offer
Search
Sent Drafts
Acme Spring Offer
Back To School 2018 01/14/18
BTC 2018
Spring 2018 01/12/18
Holiday 2018
Holiday 2010 01/12/18
Acme spring Offer (Sent)
JIA Home
OFFER SUMMARY
Program Offer Type FOB Point Offer Data Last Updated Items Cube ft3 Amount
Back To School 2018 Domestic Collect Los Angeles 02/27/19 02/27/19 11 222.40 ft3 $2,623.40
OFFER PRODUCTS
Product Origin Case Pack Cases Cube Unit Cost Freight Rate Freight Duty Landed Cost Unit Price Margin Quantity Total Cube Amount
LH66382 Single Rectangular Fabric Laundr... Northern China 6 10 2.92 $4.00 $1.20/ft3 $0.58 $0.00 $4.58 $6.63 30.86% 60 29.20 $397.80
LH47691 2 PC KD Round MDF & Pine Woo... Northern China 1 10 1.36 $15.90 $1.20/ft3 $1.63 $0.00 $17.53 $24.46 28.27% 10 13.60 $244.40
LH47691_L Large Accent Table 1 10
LH47691_S Small Accent Table 1 10
LH5581 Single Tapered Round Metal Wire... Northern China 6 10 3.88 $3.18 $1.20/ft3 $0.78 $0.00 $3.86 $4.89 15.65% 60 38.80 $281.40
LH55872 Single Rectangular Fabric Laundr... Northern China 6 10 4.06 $4.20 $1.20/ft3 $0.81 $0.00 $5.01 $6.60 22.89% 60 40.60 $390.00
LH55741 Single Tapered Round Metal Wire... Northern China 6 10 7.33 $4.89 $1.20/ft3 $1.47 $0.00 $6.36 $7.38 13.88% 60 73.30 $442.80
LH55331 Single square collapsible... Northern China 6 10 2.69 $9.25 $1.20/ft3 $0.64 $0.00 $9.79 $14.45 32.26% 60 26.90 $867.00
LH55742 Single Tapered Round Met... Northern China 6 0 6.23 $4.89 $1.20/ft3 $1.28 $0.00 $5.94 $6.88 13.34% 0 0.00 $0.00

FIG. 5F

Acme Retailer > **Storage** > LH47691 **Product Details**

PRODUCT IMAGES MANAGE



TEAM NOTES EDIT

PRODUCT EDIT

Lh47691
2 PC KD Round MDF& Pine Wood Accent Table Set with Three Contrast Pine Legs White Oil Painted Wood Half White Painted/ Half Natural Pine Legs

Size(L x W x H)	23.60' x 23.60 x 24.00'
Case Pack/Cube	1/1.36 ft^3
Material	MDF and Pine Wood
Color	- -
UPC#	83849800123
MOQ	- -
Lead Time	60
HTS#	9403.60.8081
Duty	0

Prouduct Pricing

Offer Type	Domestic Collect
FOB Print	Los Angeles
First Cost	$15.90
Freight	$1.63
Duty	$0.00
Estimated Landed	$17.53
List Price	$24.44
Discount	3.85%
Offer Price	$ 23.5 UPDATE OFFER PRICE
Margin	25.40 %

COMPONENTS EDIT

Item #	Quantity	Size	Color	Material
SKU# LH47691_L	1	23.60" x 23.60"x 24.00"		0

Participants 2

Dan Manchester
Changed 01/14 11:59 pm
Bid to
$22.64

Mike Croaby
Changed 01/14 11:59 pm
Unit Cost
from $ 22.64 to $23.5

Acme Retailer | Acme Supplier

Send messaage...

Send

FIG. 5G

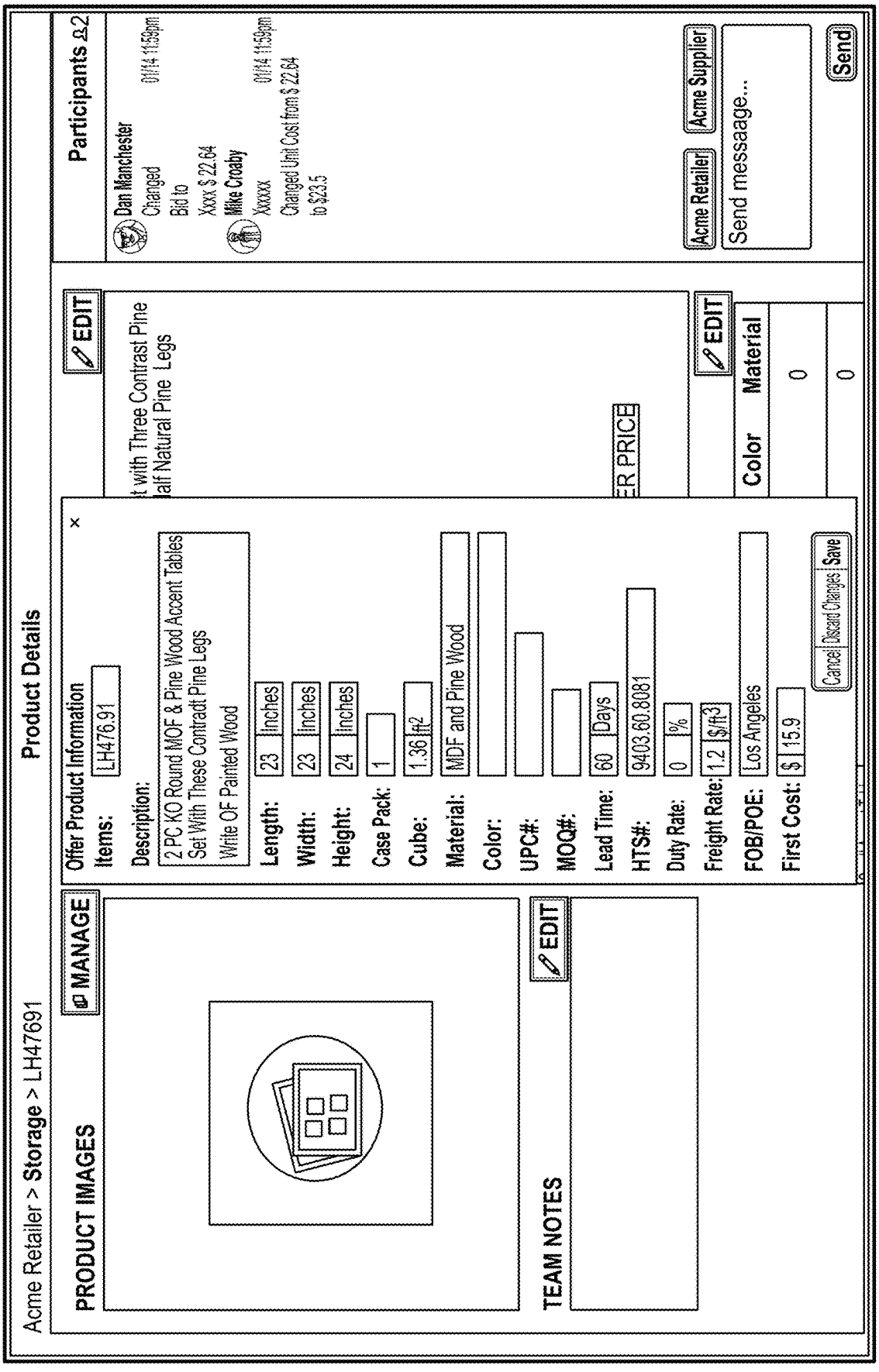

Acme Retailer > Storage > LH47691
Product Details
PRODUCT IMAGES
MANAGE
TEAM NOTES
EDIT
Offer Product Information
Items: LH476.91
Description:
2 PC KO Round MOF & Pine Wood Accent Tables
Set With These Contradt Pine Legs
White OF Painted Wood
Length: 23 Inches
Width: 23 Inches
Height: 24 Inches
Case Pack: 1
Cube: 1.36 ft2
Material: MDF and Pine Wood
Color:
UPC#:
MOQ#:
Lead Time: 60 Days
HTS#: 9403.60.8081
Duty Rate: 0 %
Freight Rate: 1.2 $/ft3
FOB/POE: Los Angeles
First Cost: $ 15.9
Cancel Discard Changes Save
EDIT
t with Three Contrast Pine
alf Natural Pine Legs
ER PRICE
EDIT
Color Material
0
0
Participants &2
Dan Manchester
Changed Bid to Xxxx $ 22.64
01/14 11:59pm
Mike Crosby
Xxxxxx Changed Unit Cost from $ 22.64 to $23.5
01/14 11:59pm
Acme Retailer
Acme Supplier
Send messaage...
Send

FIG. 5H

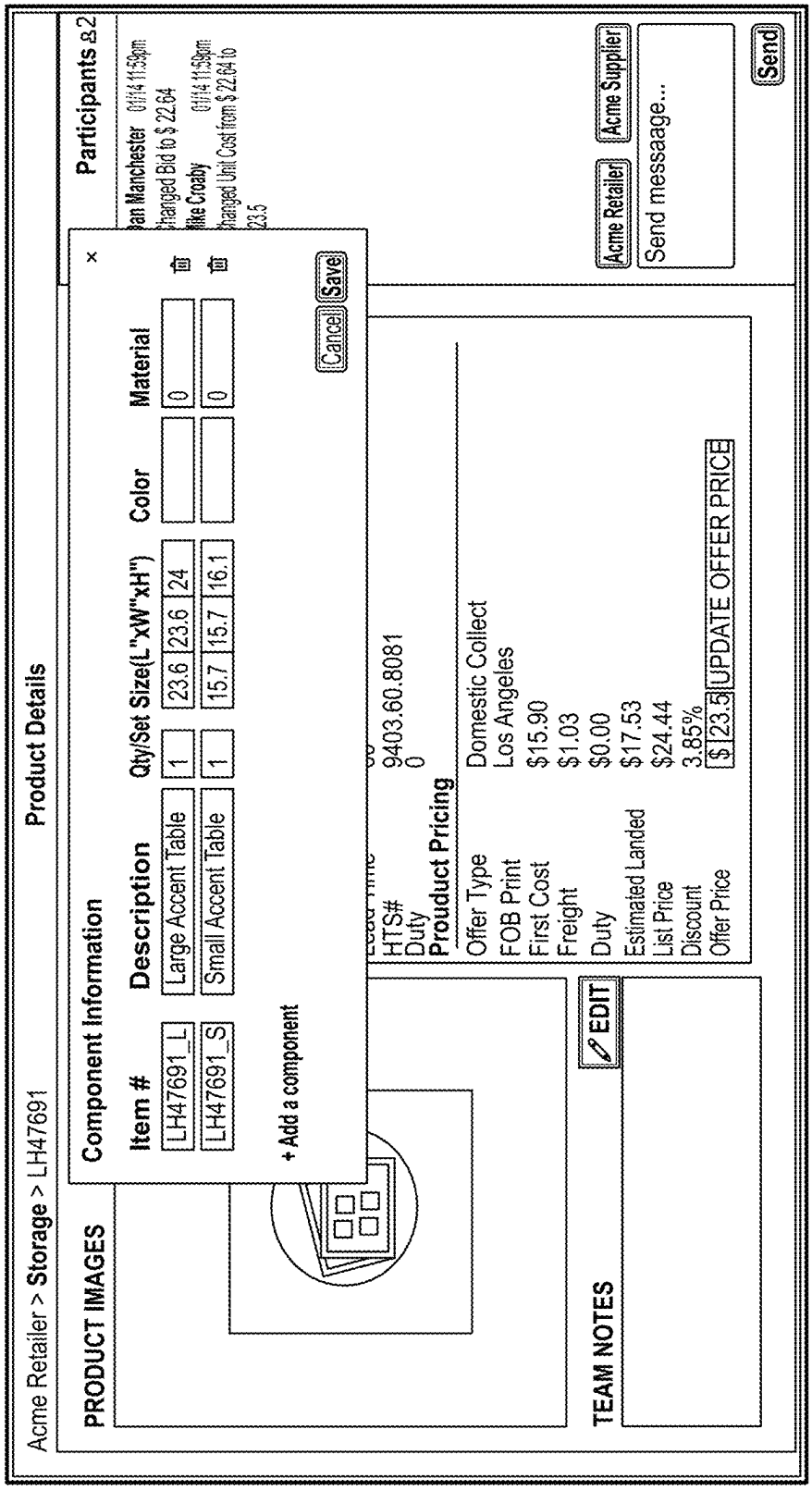

Acme Retailer > Storage > LH47691
Product Details
Participants & 2
PRODUCT IMAGES
Component Information
Item #
Description
Qty/Set Size(L"xW"xH")
Color
Material
LH47691_L
Large Accent Table
1
23.6 23.6 24
0
LH47691_S
Small Accent Table
1
15.7 15.7 16.1
0
+ Add a component
Cancel
Save
HTS#
9403.60.8081
Duty
0
Prouduct Pricing
Offer Type
Domestic Collect
FOB Print
Los Angeles
First Cost
$15.90
Freight
$1.03
Duty
$0.00
Estimated Landed
$17.53
List Price
$24.44
Discount
3.85%
Offer Price
$ 23.5
UPDATE OFFER PRICE
EDIT
TEAM NOTES
Acme Retailer
Acme Supplier
Send message...
Send

FIG. 5I

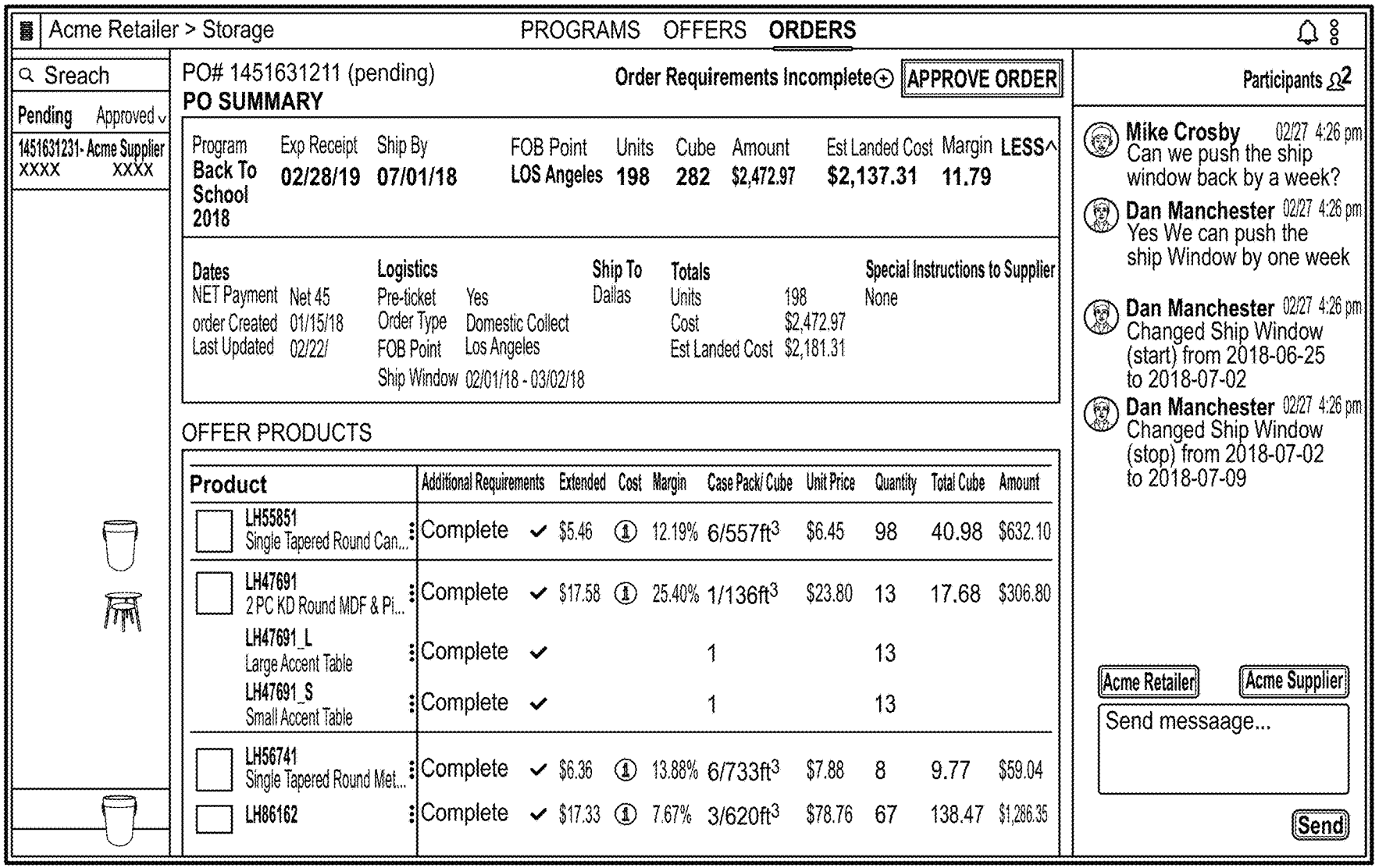

Acme Retailer > Storage
PROGRAMS OFFERS ORDERS
Sreach
Pending Approved
1451631231- Acme Supplier
xxxx xxxx
PO# 1451631211 (pending)
PO SUMMARY
Order Requirements Incomplete
APPROVE ORDER
Participants 2
Program Exp Receipt Ship By FOB Point Units Cube Amount Est Landed Cost Margin LESS
Back To School 2018 02/28/19 07/01/18 LOS Angeles 198 282 $2,472.97 $2,137.31 11.79
Dates
NET Payment Net 45
order Created 01/15/18
Last Updated 02/22/
Logistics
Pre-ticket Yes
Order Type Domestic Collect
FOB Point Los Angeles
Ship Window 02/01/18 - 03/02/18
Ship To
Dallas
Totals
Units 198
Cost $2,472.97
Est Landed Cost $2,181.31
Special Instructions to Supplier
None
OFFER PRODUCTS
Product
Additional Requirements
Extended Cost
Margin
Case Pack/ Cube
Unit Price
Quantity
Total Cube
Amount
LH55851 Single Tapered Round Can... Complete $5.46 12.19% 6/557ft3 $6.45 98 40.98 $632.10
LH47691 2 PC KD Round MDF & Pi... Complete $17.58 25.40% 1/136ft3 $23.80 13 17.68 $306.80
LH47691_L Large Accent Table Complete 1 13
LH47691_S Small Accent Table Complete 1 13
LH56741 Single Tapered Round Met... Complete $6.36 13.88% 6/733ft3 $7.88 8 9.77 $59.04
LH86162 Complete $17.33 7.67% 3/620ft3 $78.76 67 138.47 $1,286.35
Mike Crosby 02/27 4:26 pm
Can we push the ship window back by a week?
Dan Manchester 02/27 4:26 pm
Yes We can push the ship Window by one week
Dan Manchester 02/27 4:26 pm
Changed Ship Window (start) from 2018-06-25 to 2018-07-02
Dan Manchester 02/27 4:26 pm
Changed Ship Window (stop) from 2018-07-02 to 2018-07-09
Acme Retailer
Acme Supplier
Send messaage...
Send

FIG. 5J

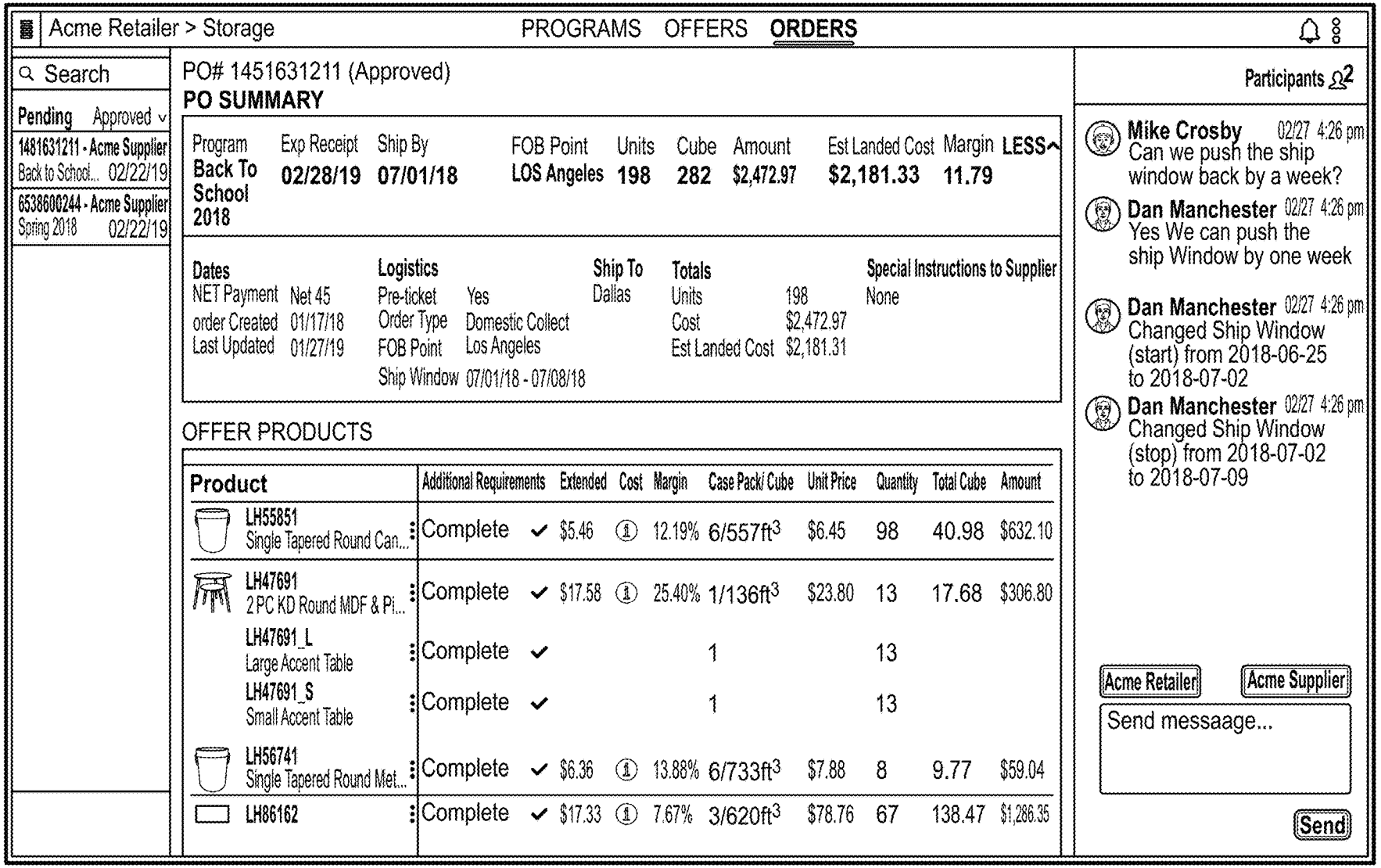

Acme Retailer > Storage
PROGRAMS OFFERS ORDERS
Search
Pending Approved
1481631211 - Acme Supplier
Back to School... 02/22/19
6538600244 - Acme Supplier
Spring 2018 02/22/19
PO# 1451631211 (Approved)
PO SUMMARY
Program Exp Receipt Ship By FOB Point Units Cube Amount Est Landed Cost Margin LESS
Back To School 2018 02/28/19 07/01/18 LOS Angeles 198 282 $2,472.97 $2,181.33 11.79
Dates
NET Payment Net 45
order Created 01/17/18
Last Updated 01/27/19
Logistics
Pre-ticket Yes
Order Type Domestic Collect
FOB Point Los Angeles
Ship Window 07/01/18 - 07/08/18
Ship To
Dallas
Totals
Units 198
Cost $2,472.97
Est Landed Cost $2,181.31
Special Instructions to Supplier
None
OFFER PRODUCTS
Product
Additional Requirements
Extended Cost
Margin
Case Pack/ Cube
Unit Price
Quantity
Total Cube
Amount
LH55851 Single Tapered Round Can... Complete $5.46 12.19% 6/557ft3 $6.45 98 40.98 $632.10
LH47691 2 PC KD Round MDF & Pi... Complete $17.58 25.40% 1/136ft3 $23.80 13 17.68 $306.80
LH47691_L Large Accent Table Complete 1 13
LH47691_S Small Accent Table Complete 1 13
LH56741 Single Tapered Round Met... Complete $6.36 13.88% 6/733ft3 $7.88 8 9.77 $59.04
LH86162 Complete $17.33 7.67% 3/620ft3 $78.76 67 138.47 $1,286.35
Participants 2
Mike Crosby 02/27 4:26 pm
Can we push the ship window back by a week?
Dan Manchester 02/27 4:26 pm
Yes We can push the ship Window by one week
Dan Manchester 02/27 4:26 pm
Changed Ship Window (start) from 2018-06-25 to 2018-07-02
Dan Manchester 02/27 4:26 pm
Changed Ship Window (stop) from 2018-07-02 to 2018-07-09
Acme Retailer
Acme Supplier
Send messaage...
Send

FIG. 5K

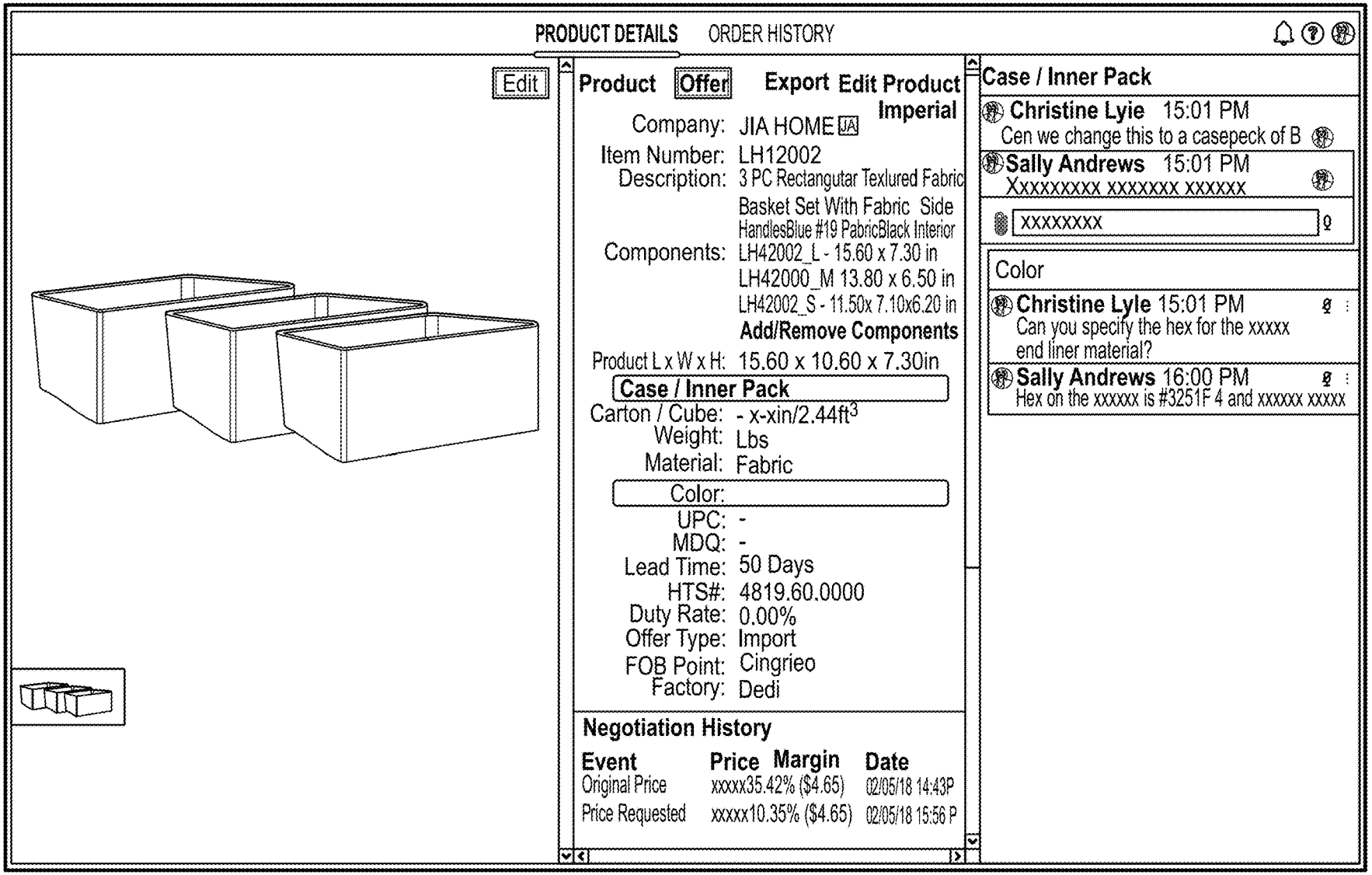

PRODUCT DETAILS
ORDER HISTORY
Edit
Product
Offer
Export
Edit Product
Imperial
Company: JIA HOME
Item Number: LH12002
Description: 3 PC Rectangutar Texlured Fabric Basket Set With Fabric Side HandlesBlue #19 PabricBlack Interior
Components: LH42002_L - 15.60 x 7.30 in
LH42000_M 13.80 x 6.50 in
LH42002_S - 11.50x 7.10x6.20 in
Add/Remove Components
Product L x W x H: 15.60 x 10.60 x 7.30in
Case / Inner Pack
Carton / Cube: - x-xin/2.44ft3
Weight: Lbs
Material: Fabric
Color:
UPC: -
MDQ: -
Lead Time: 50 Days
HTS#: 4819.60.0000
Duty Rate: 0.00%
Offer Type: Import
FOB Point: Cingrieo
Factory: Dedi
Negotiation History
Event Price Margin Date
Original Price xxxxx35.42% ($4.65) 02/05/18 14:43P
Price Requested xxxxx10.35% ($4.65) 02/05/18 15:56 P
Case / Inner Pack
Christine Lyie 15:01 PM
Cen we change this to a casepeck of B
Sally Andrews 15:01 PM
Xxxxxxxxx xxxxxxx xxxxxx
xxxxxxxx
Color
Christine Lyle 15:01 PM
Can you specify the hex for the xxxxx end liner material?
Sally Andrews 16:00 PM
Hex on the xxxxx is #3251F 4 and xxxxx xxxxx

FIG. 6A

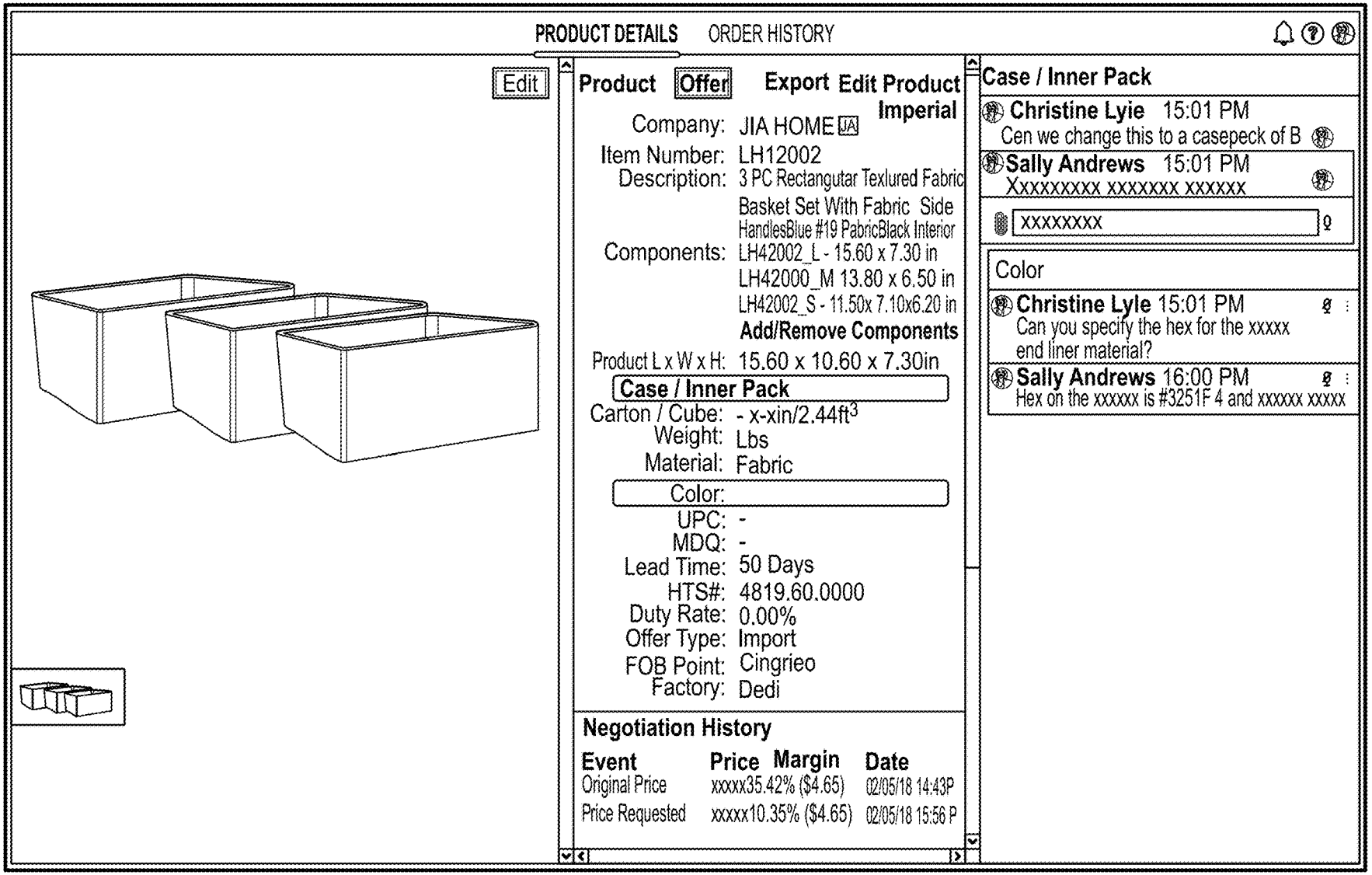

PRODUCT DETAILS
ORDER HISTORY
Edit
Product
Offer
Export
Edit Product
Imperial
Company: JIA HOME
Item Number: LH12002
Description: 3 PC Rectangutar Texlured Fabric Basket Set With Fabric Side HandlesBlue #19 PabricBlack Interior
Components: LH42002_L - 15.60 x 7.30 in
LH42000_M 13.80 x 6.50 in
LH42002_S - 11.50x 7.10x6.20 in
Add/Remove Components
Product L x W x H: 15.60 x 10.60 x 7.30in
Case / Inner Pack
Carton / Cube: - x-xin/2.44ft3
Weight: Lbs
Material: Fabric
Color:
UPC: -
MDQ: -
Lead Time: 50 Days
HTS#: 4819.60.0000
Duty Rate: 0.00%
Offer Type: Import
FOB Point: Cingrieo
Factory: Dedi
Negotiation History
Event Price Margin Date
Original Price xxxxx35.42% ($4.65) 02/05/18 14:43P
Price Requested xxxxx10.35% ($4.65) 02/05/18 15:56 P
Case / Inner Pack
Christine Lyie 15:01 PM
Cen we change this to a casepeck of B
Sally Andrews 15:01 PM
Xxxxxxxxx xxxxxxx xxxxxx
xxxxxxxx
Color
Christine Lyle 15:01 PM
Can you specify the hex for the xxxxx end liner material?
Sally Andrews 16:00 PM
Hex on the xxxxx is #3251F 4 and xxxxx xxxxx

FIG. 6B

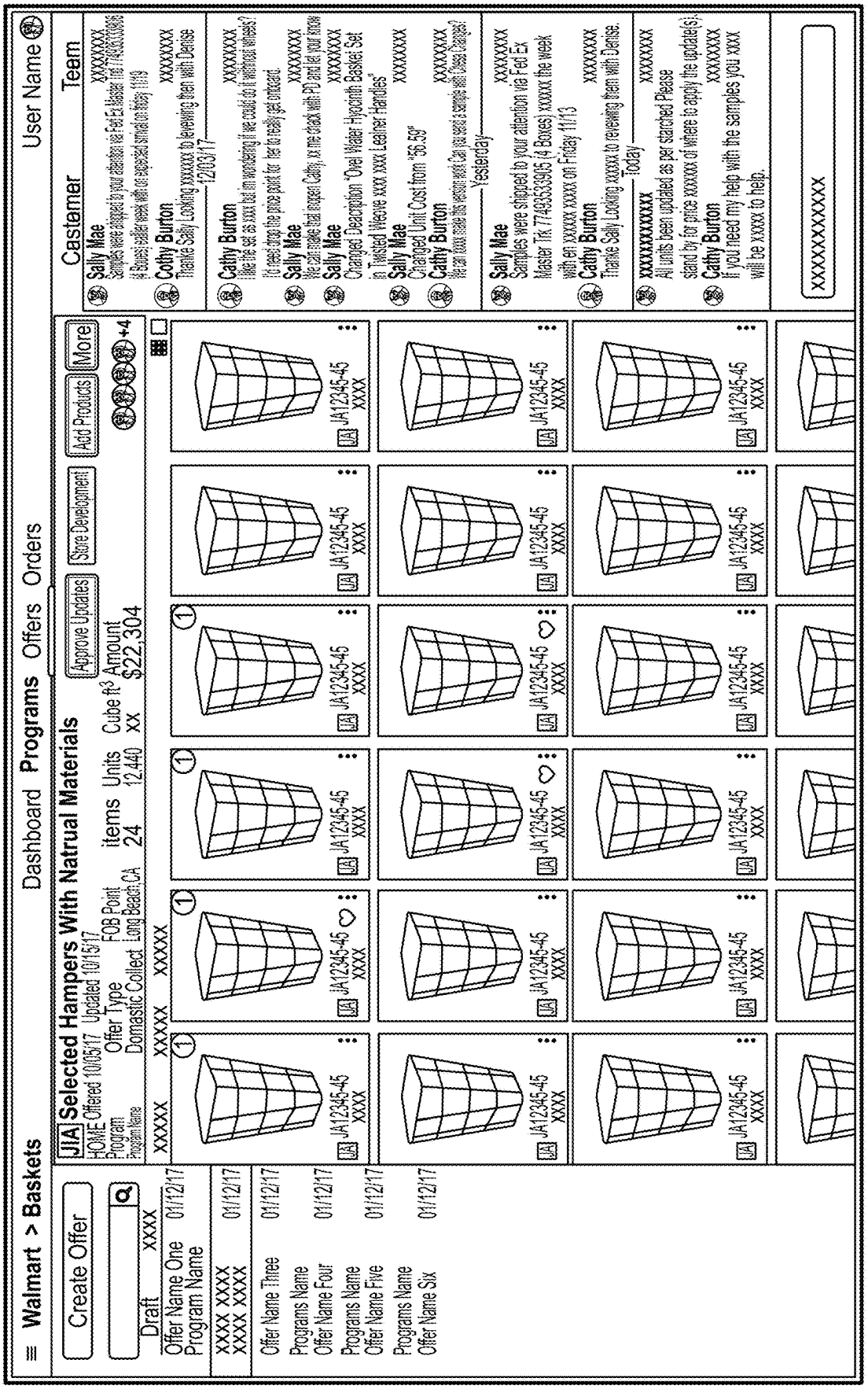

Walmart > Baskets
Dashboard
Programs
Offers
Orders
User Name
Create Offer
Draft
Selected Hampers With Natrual Materials
Approve Updates
Store Development
Add Products
More
Offer Name One
Program Name
Offer Name Three
Programs Name
Offer Name Four
Programs Name
Offer Name Five
Programs Name
Offer Name Six
Offered 10/05/17
Updated 10/15/17
Offer Type
Domastic Collect
FOB Point
Long Beach,CA
items
24
Units
12,440
Cube ft3
xx
Amount
$22,304
Castamer
Team
Sally Mae
Cathy Burton
Yesterday
Today
JA12345-45
XXXX

FIG. 6C

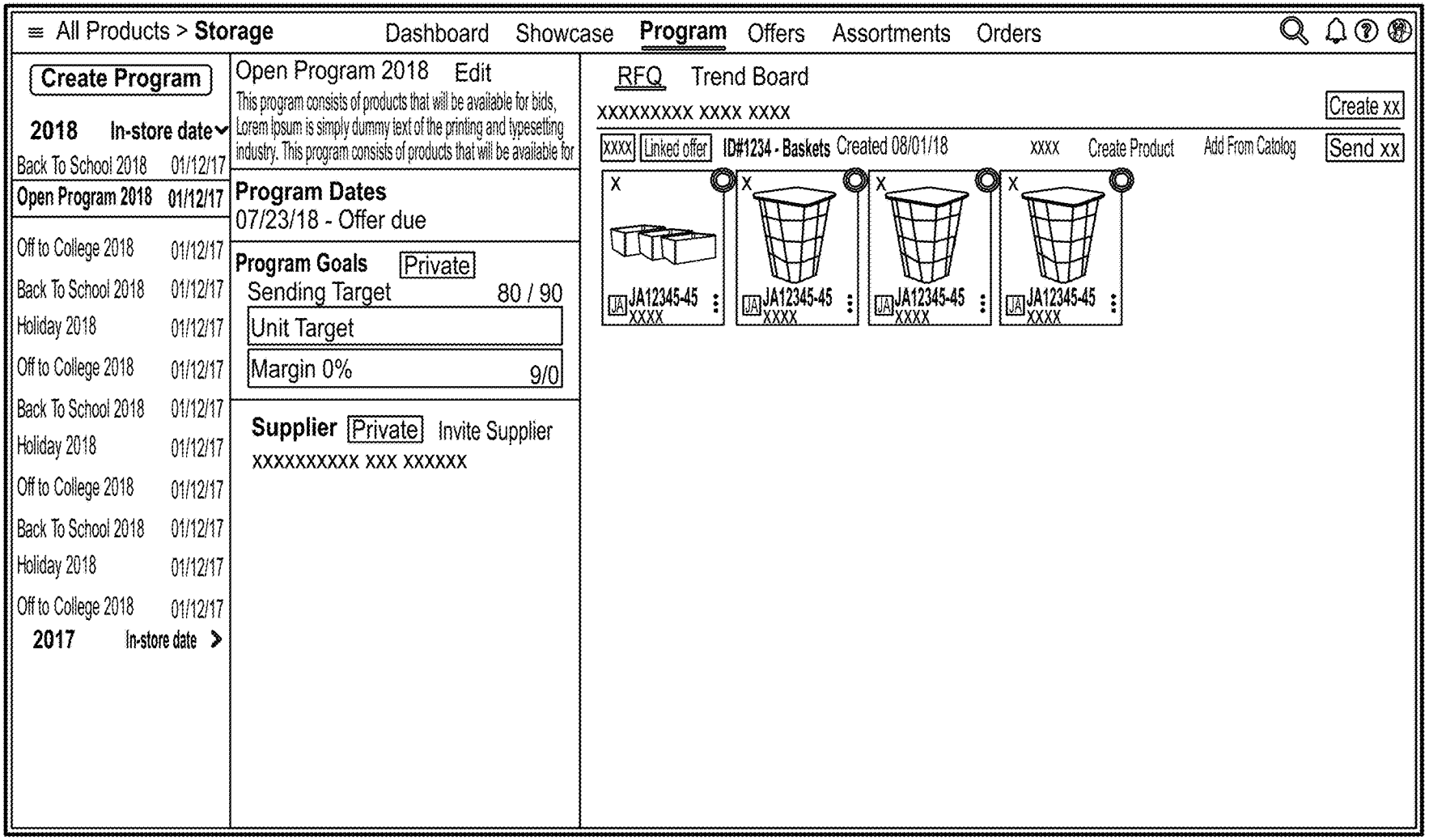

All Products > Storage
Dashboard
Showcase
Program
Offers
Assortments
Orders
Create Program
2018 In-store date
Back To School 2018 01/12/17
Open Program 2018 01/12/17
Off to College 2018 01/12/17
Back To School 2018 01/12/17
Holiday 2018 01/12/17
Off to College 2018 01/12/17
Back To School 2018 01/12/17
Holiday 2018 01/12/17
Off to College 2018 01/12/17
Back To School 2018 01/12/17
Holiday 2018 01/12/17
Off to College 2018 01/12/17
2017 In-store date
Open Program 2018 Edit
This program consists of products that will be available for bids, Lorem Ipsum is simply dummy text of the printing and typesetting industry. This program consists of products that will be available for
Program Dates
07/23/18 - Offer due
Program Goals Private
Sending Target 80 / 90
Unit Target
Margin 0% 9/0
Supplier Private Invite Supplier
xxxxxxxxxx xxx xxxxxx
RFQ
Trend Board
xxxxxxxxx xxxx xxxx
Create xx
xxxx
Linked offer
ID#1234 - Baskets Created 08/01/18
xxxx
Create Product
Add From Catolog
Send xx
JA12345-45 xxxx

FIG. 6D

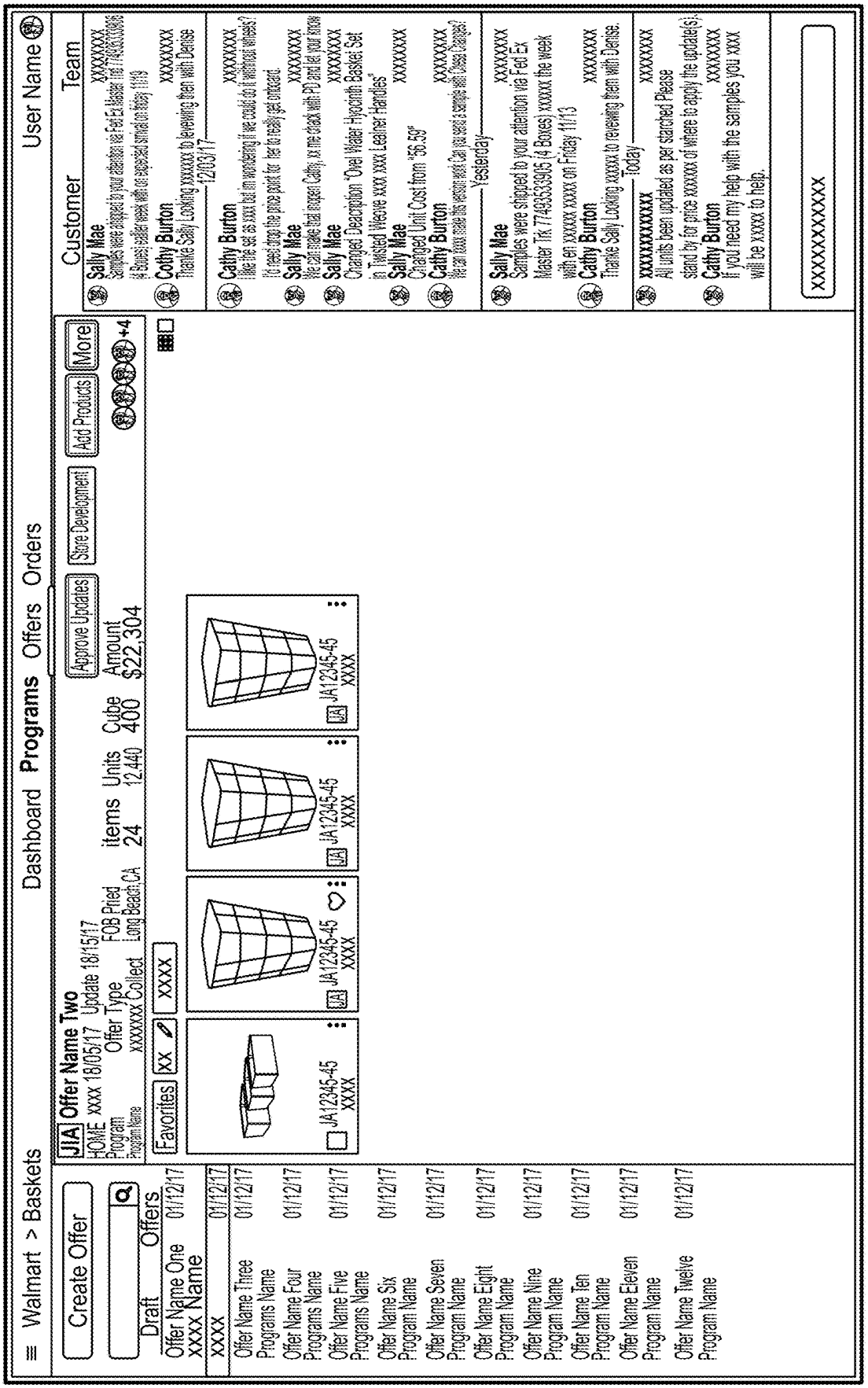

Walmart > Baskets
Dashboard Programs Offers Orders
User Name
Create Offer
Draft Offers
Offer Name One xxxx Name 01/12/17
xxxx 01/12/17
Offer Name Three Programs Name 01/12/17
Offer Name Four Programs Name 01/12/17
Offer Name Five Programs Name 01/12/17
Offer Name Six Program Name 01/12/17
Offer Name Seven Program Name 01/12/17
Offer Name Eight Program Name 01/12/17
Offer Name Nine Program Name 01/12/17
Offer Name Ten Program Name 01/12/17
Offer Name Eleven Program Name 01/12/17
Offer Name Twelve Program Name 01/12/17
JIA Offer Name Two
HOME xxxx 18/05/17 Update 18/15/17
Program Program Name
Offer Type xxxxxxx Collect
FOB Pried Long Beach,CA
items 24
Units 12,440
Cube 400
Amount $22,304
Approve Updates
Store Development
Add Products
More
+4
Favorites
xx
xxxx
JA12345-45 XXXX
Customer
Team
Sally Mae xxxxxxxx
Samples were shipped to your attention via Fed Ex Master Trk 77493533905 (4 Boxes) xxxxxx the week with en xxxxxx xxxxx on Friday 11/13
Cathy Burton xxxxxxxx
Thanke Sally Looking xxxxxxx to levewing them with Denise
12/03/17
Cathy Burton xxxxxxxx
Like the set as xxxx but im wondering if we could do it without wheels? I'd need drop the price point for her to really get onboard.
Sally Mae xxxxxxxx
We can make that inopen Cathy, xx me check with PD and let your know
Sally Mae xxxxxxxx
Changed Description "Oval Water Hyacinth Basket Set in Twisted Weave xxxx xxxx Leather Handles"
Sally Mae xxxxxxxx
Changed Unit Cost from "56.59"
Cathy Burton xxxxxxxx
We can xxxx make this version work Can you send a sample with Close Changes?
Yesterday
Sally Mae xxxxxxxx
Samples were shipped to your attention via Fed Ex Master Trk 77493533905 (4 Boxes) xxxxxx the week with en xxxxxx xxxxx on Friday 11/13
Cathy Burton xxxxxxxx
Thanke Sally Looking xxxxxx to revewing them with Denise.
Today
xxxxxxxxxxxxx xxxxxxxx
All units been updated as per starched Please stand by for price xxxxxxx of where to apply the update(s).
Cathy Burton xxxxxxxx
If you need my help with the samples you xxxx will be xxxxx to help.
xxxxxxxxxxxx

FIG. 6E

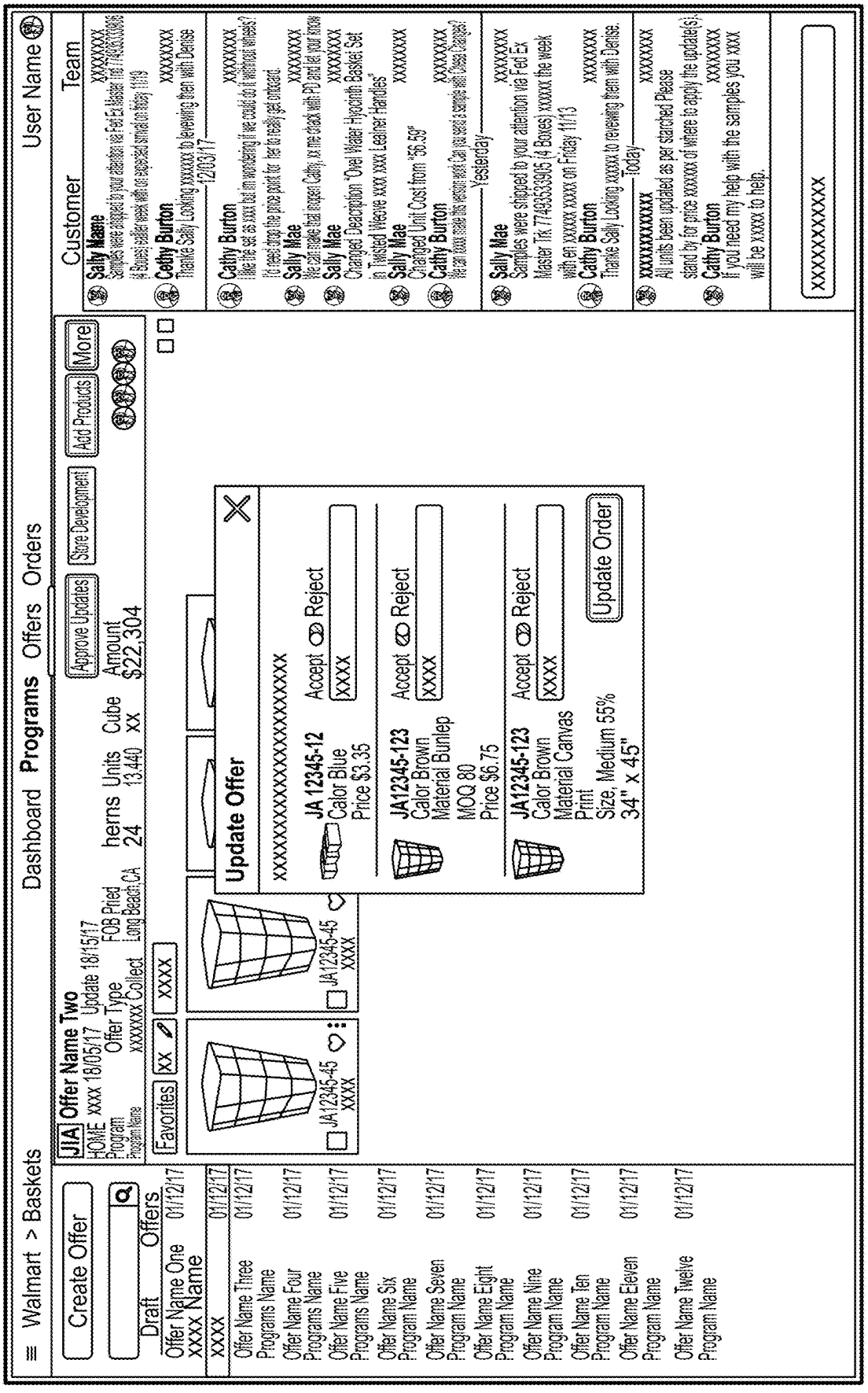

Walmart > Baskets
Dashboard Programs Offers Orders
User Name
Create Offer
Draft Offers
Offer Name One xxxx Name 01/12/17
xxxx 01/12/17
Offer Name Three Programs Name 01/12/17
Offer Name Four Programs Name 01/12/17
Offer Name Five Programs Name 01/12/17
Offer Name Six Program Name 01/12/17
Offer Name Seven Program Name 01/12/17
Offer Name Eight Program Name 01/12/17
Offer Name Nine Program Name 01/12/17
Offer Name Ten Program Name 01/12/17
Offer Name Eleven Program Name 01/12/17
Offer Name Twelve Program Name 01/12/17
JIA Offer Name Two
HOME xxxx 18/05/17 Update 18/15/17
Program Program Name
Offer Type xxxxxxx Collect
FOB Pried Long Beach,CA
herns 24
Units 13,440
Cube xx
Amount $22,304
Approve Updates
Store Development
Add Products
More
Favorites
xx
xxxx
JA12345-45 xxxx
JA12345-45 xxxx
Update Offer
xxxxxxxxxxxxxxxxxxxxxxxx
JA 12345-12 Calor Blue Price $3.35
Accept Reject
xxxx
JA12345-123 Calor Brown Material Bunlep MOQ 80 Price $6.75
Accept Reject
xxxx
JA12345-123 Calor Brown Material Canvas Print Size, Medium 55% 34" x 45"
Accept Reject
xxxx
Update Order
Customer Team
Sally Mae xxxxxxxx
Samples were shipped to your attention via Fed Ex Master Trk 77493533905 (4 Boxes) xxxxxx the week with en xxxxxx xxxxx on Friday 11/13
Cathy Burton xxxxxxxx
Thanke Sally Looking xxxxxxx to levewing them with Denise
12/03/17
Cathy Burton xxxxxxxx
Like the set as xxxx but im wondering if we could do it without wheels? I'd need drop the price point for her to really get onboard.
Sally Mae xxxxxxxx
We can make that inopen Cathy, xx me check with PD and let your know
Sally Mae xxxxxxxx
Changed Deacription "Oval Water Hyacinth Basket Set in Twisted Weave xxxx xxxx Leather Handles"
Sally Mae xxxxxxxx
Changed Unit Cost from "$6.59"
Cathy Burton xxxxxxxx
We can xxxx make this version work Can you send a sample with Close Changes?
Yesterday
Sally Mae xxxxxxxx
Samples were shipped to your attention via Fed Ex Master Trk 77493533905 (4 Boxes) xxxxxx the week with en xxxxxx xxxxx on Friday 11/13
Cathy Burton xxxxxxxx
Thanke Sally Looking xxxxxx to revewing them with Denise.
Today
xxxxxxxxxxxxx xxxxxxxx
All units been updated as per starched Please stand by for price xxxxxxx of where to apply the update(s).
Cathy Burton xxxxxxxx
If you need my help with the samples you xxxx will be xxxxx to help.
xxxxxxxxxxx

FIG. 6F

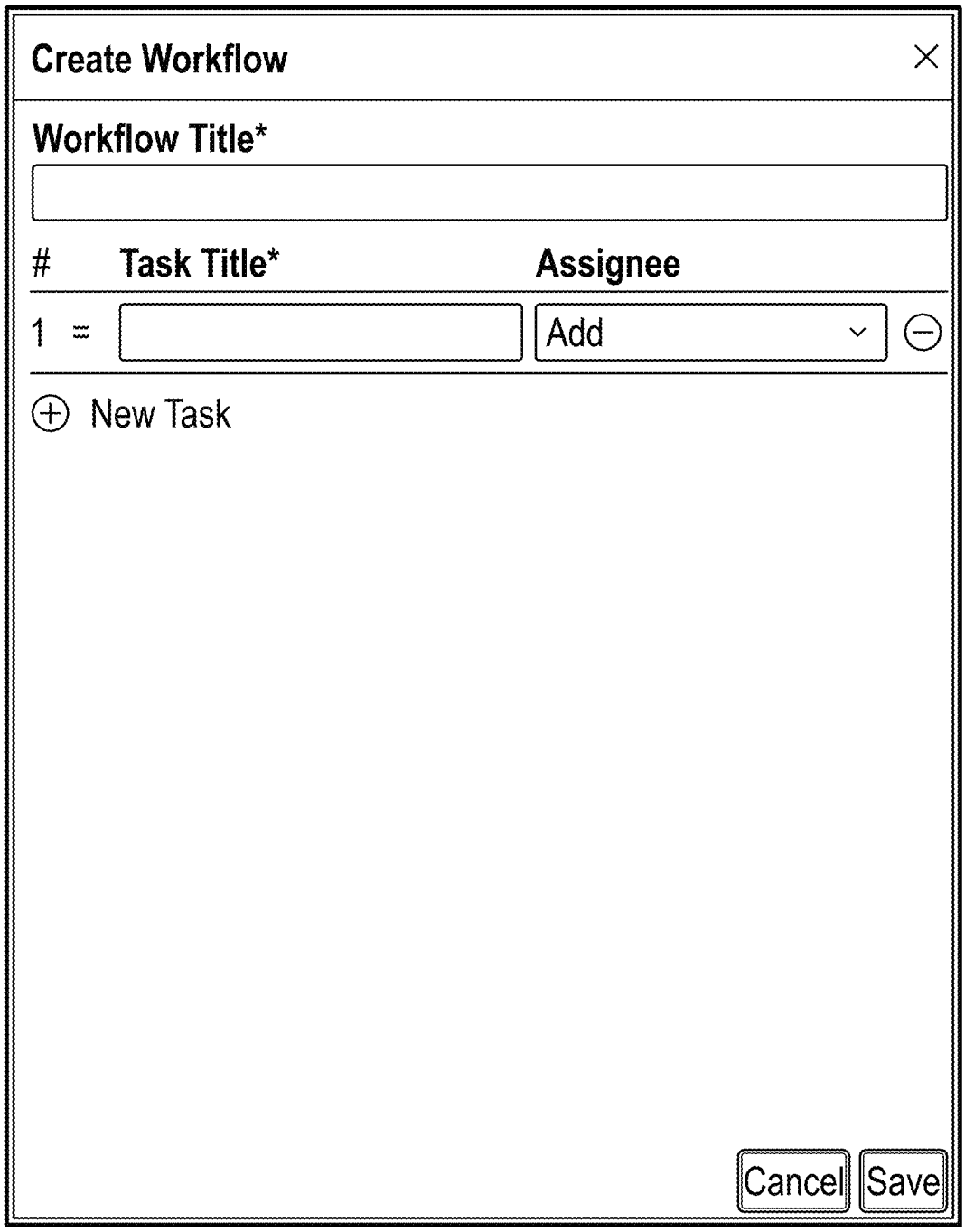

Create Workflow
Workflow Title*
#
Task Title*
Assignee
1
Add
New Task
Cancel
Save

FIG. 7A

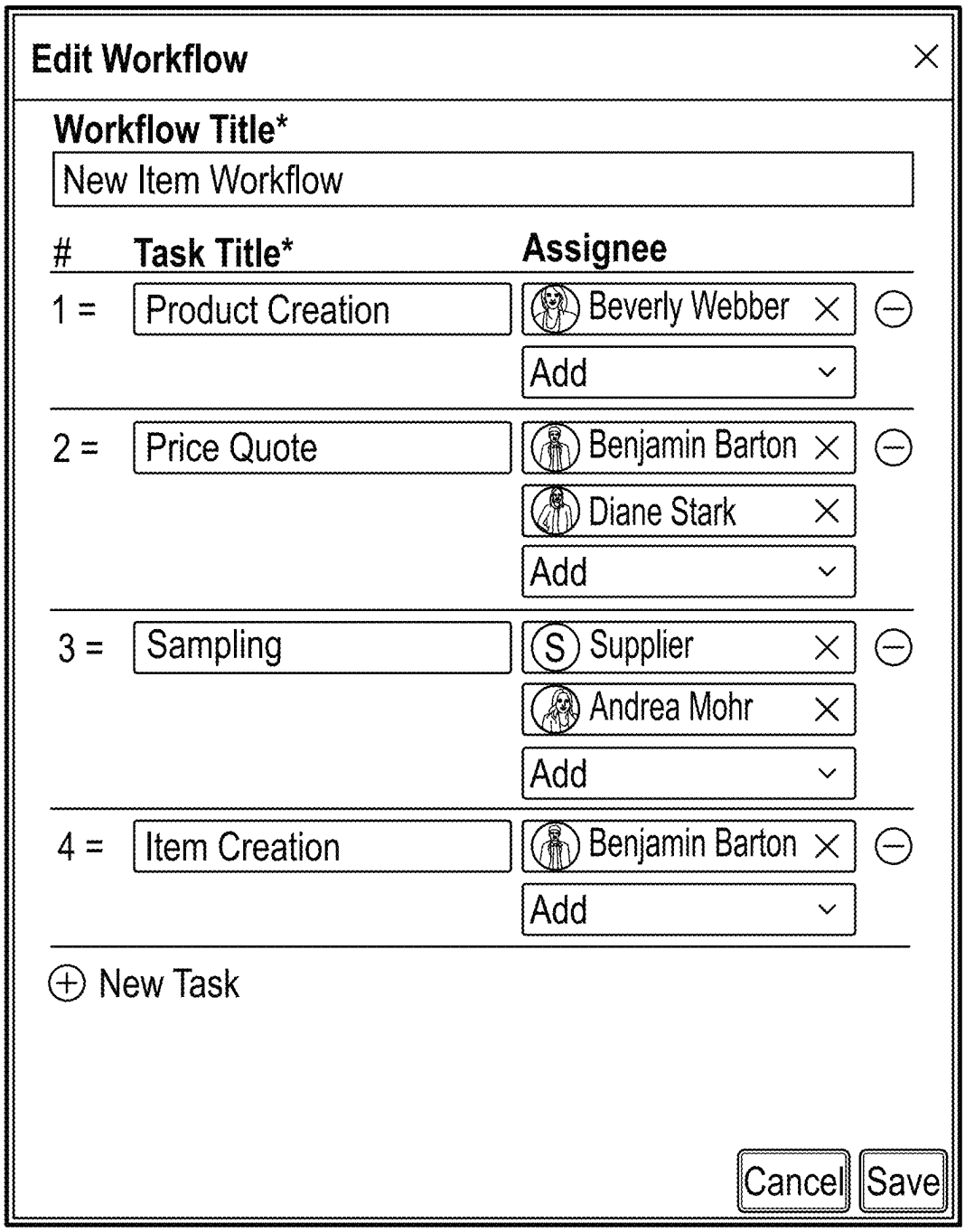

Edit Workflow
Workflow Title*
New Item Workflow
#
Task Title*
Assignee
1 =
Product Creation
Beverly Webber
Add
2 =
Price Quote
Benjamin Barton
Diane Stark
Add
3 =
Sampling
Supplier
Andrea Mohr
Add
4 =
Item Creation
Benjamin Barton
Add
New Task
Cancel
Save

FIG. 7B

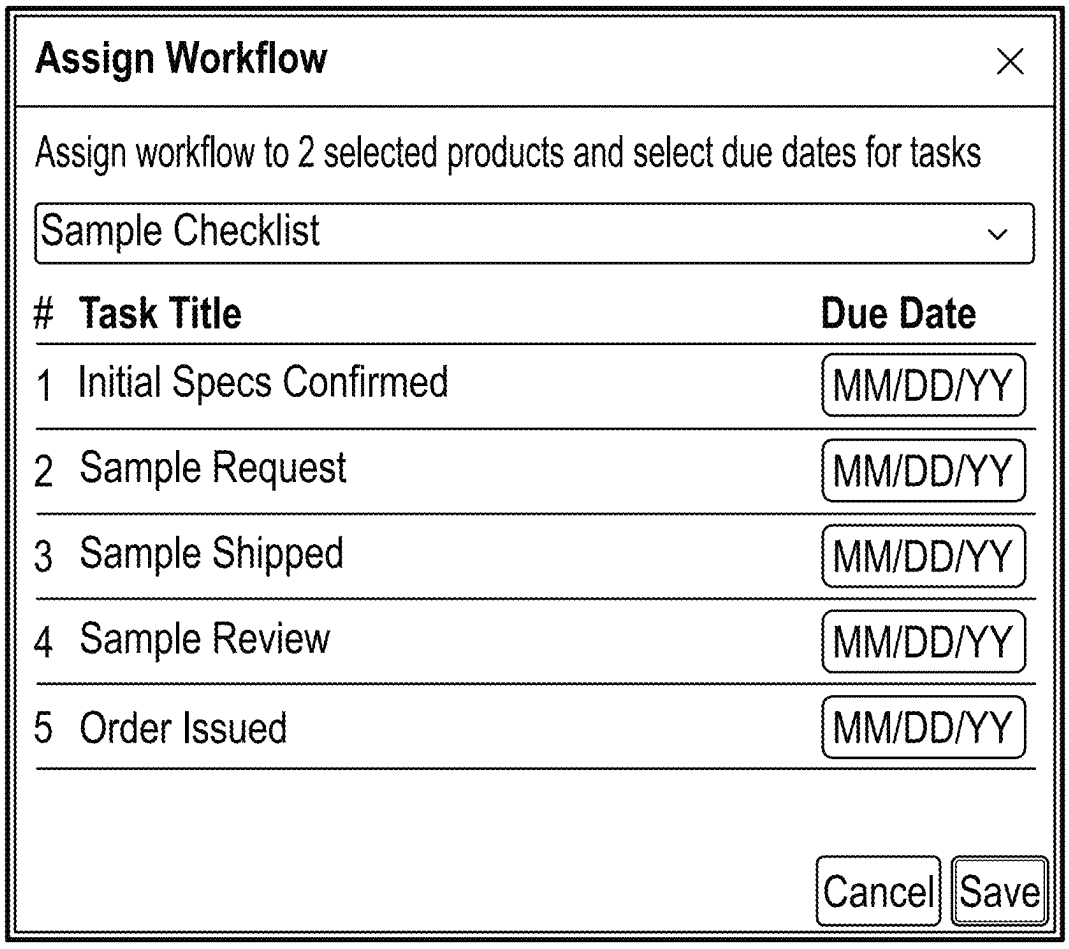
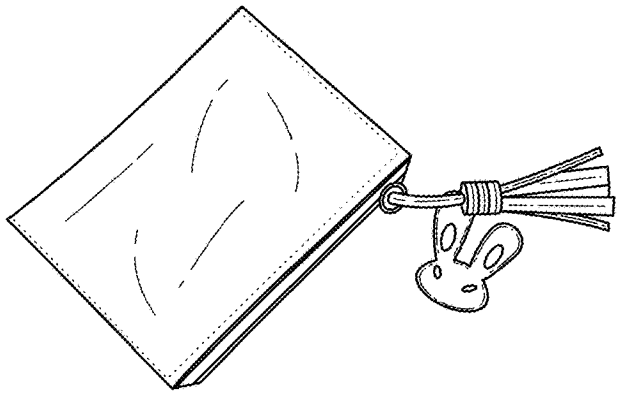

Assign Workflow
Assign workflow to 2 selected products and select due dates for tasks
Sample Checklist
Task Title
Due Date
1 Initial Specs Confirmed
MM/DD/YY
2 Sample Request
MM/DD/YY
3 Sample Shipped
MM/DD/YY
4 Sample Review
MM/DD/YY
5 Order Issued
MM/DD/YY
Cancel
Save

FIG. 7C

Quote ▷ bag181219331 | Product Details | Events

epri **Epri Products** | ◁ 4 of 10 Products ▷ | More | Duplicate

Edit



bag181219331 Edit
Slogan Print Tassel Decor Wallet

Price Calculator	Save
FOB Point	Qingdao
Freight Rate	$1.20 / 1.00 ft³
Freight Description	
Duty Rate	4.60%
Unit Cost	$1.8500
Freight Cost (Private)	$0.03
Duty Cost	$0.09
Misc Cost	$0.00
Landed Cost	$1.97
Margin	67.19%
Unit Price	$5.9900

Brand	
Size	
Color	Pink
Material	PU
Weight	0.5 lbs
Quantity	1000
Master Pack	20
Inner Pack	

Miscellaneous Cost
Andrea Mohr 8:17 AM 03/13/2020
Changed Misc Cost to 0.0

Price
Andrea Mohr 8:17 AM 03/13/2020
Changed Unit Cost to 1.85

Material
Andrea Mohr 11:19 AM 02/10/2020
Changed to leather

Workflow

#	Task	Assignee	Due Date
1	Product Creation		03/02/20
2	Price Quote		03/10/20
3	Sampling	S	03/17/20
4	Item Creation		03/24/20

Sample Checklist Edit Remove

#	Task	Assignee	Due Date
1	Initial Specs Confirmed		12/13/19
2	Sample Request	S Supllier	12/20/19
3	Sample Shipped	S Supllier	01/02/20

FIG. 7D

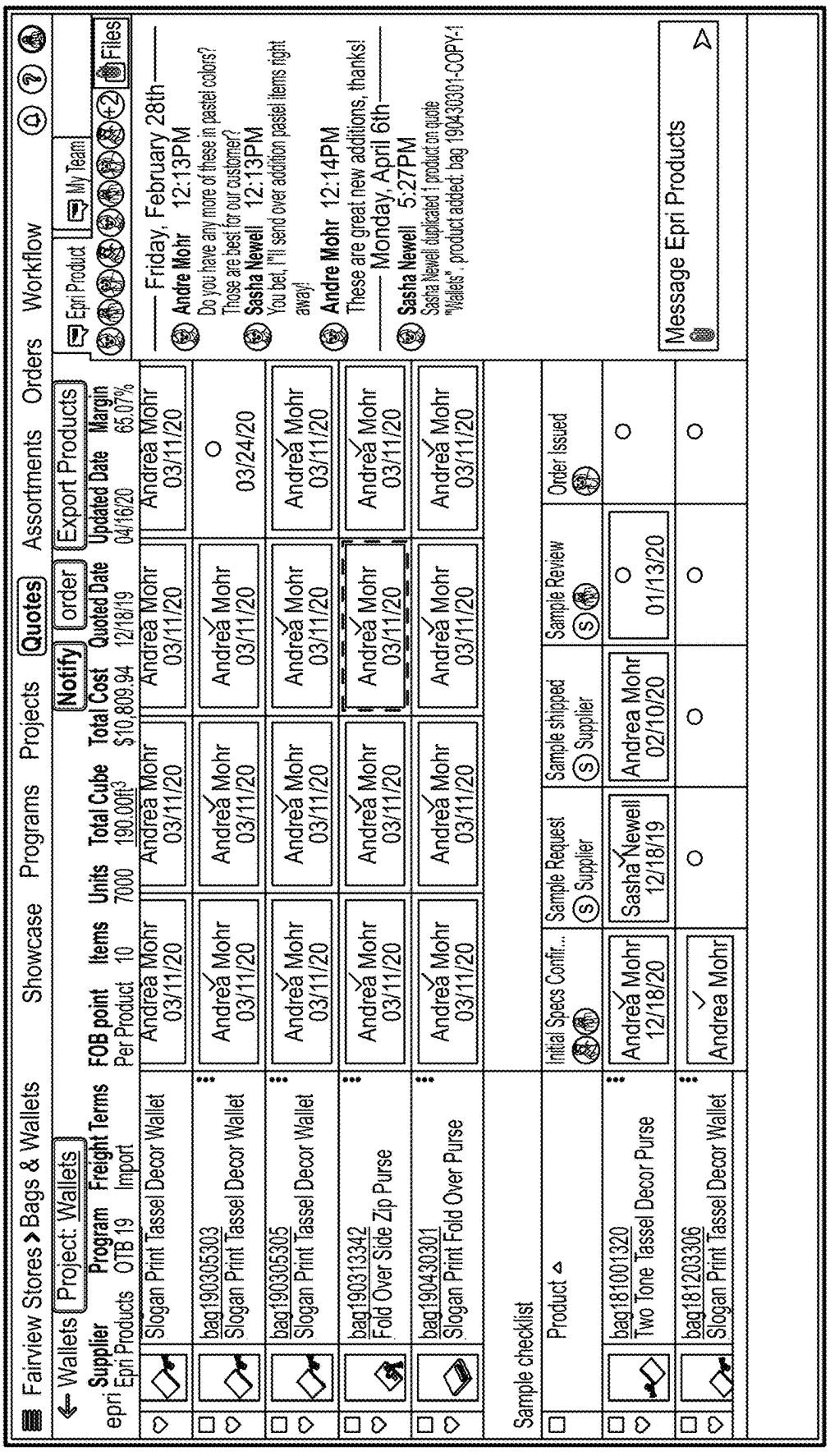

Fairview Stores > Bags & Wallets
Showcase
Programs
Projects
Quotes
Assortments
Orders
Workflow
Wallets
Project: Wallets
Supplier
Program
Freight Terms
epri
Epri Products
OTB 19
Import
FOB point
Per Product
Items
10
Units
7000
Total Cube
190.00ft3
Notify
order
Total Cost
$10,809.94
Quoted Date
12/18/19
Export Products
Updated Date
04/16/20
Margin
65.07%
Epri Product
My Team
Files
Slogan Print Tassel Decor Wallet
bag190305303
Slogan Print Tassel Decor Wallet
bag190305305
Slogan Print Tassel Decor Wallet
bag190313342
Fold Over Side Zip Purse
bag190430301
Slogan Print Fold Over Purse
Andrea Mohr
03/11/20
03/24/20
Sample checklist
Product
Initial Specs Confir...
Sample Request
Supplier
Sample shipped
Supplier
Sample Review
Order Issued
bag181001320
Two Tone Tassel Decor Purse
bag181203306
Slogan Print Tassel Decor Wallet
Sasha Newell
12/18/19
02/10/20
01/13/20
Friday, February 28th
Andre Mohr 12:13PM
Do you have any more of these in pastel colors? Those are best for our customer?
Sasha Newell 12:13PM
You bet, I'll send over addition pastel items right away!
Andre Mohr 12:14PM
These are great new additions, thanks!
Monday, April 6th
Sasha Newell 5:27PM
Sasha Newell duplicated 1 product on quote "Wallets". product added: bag 190430301-COPY-1
Message Epri Products

FIG. 7E

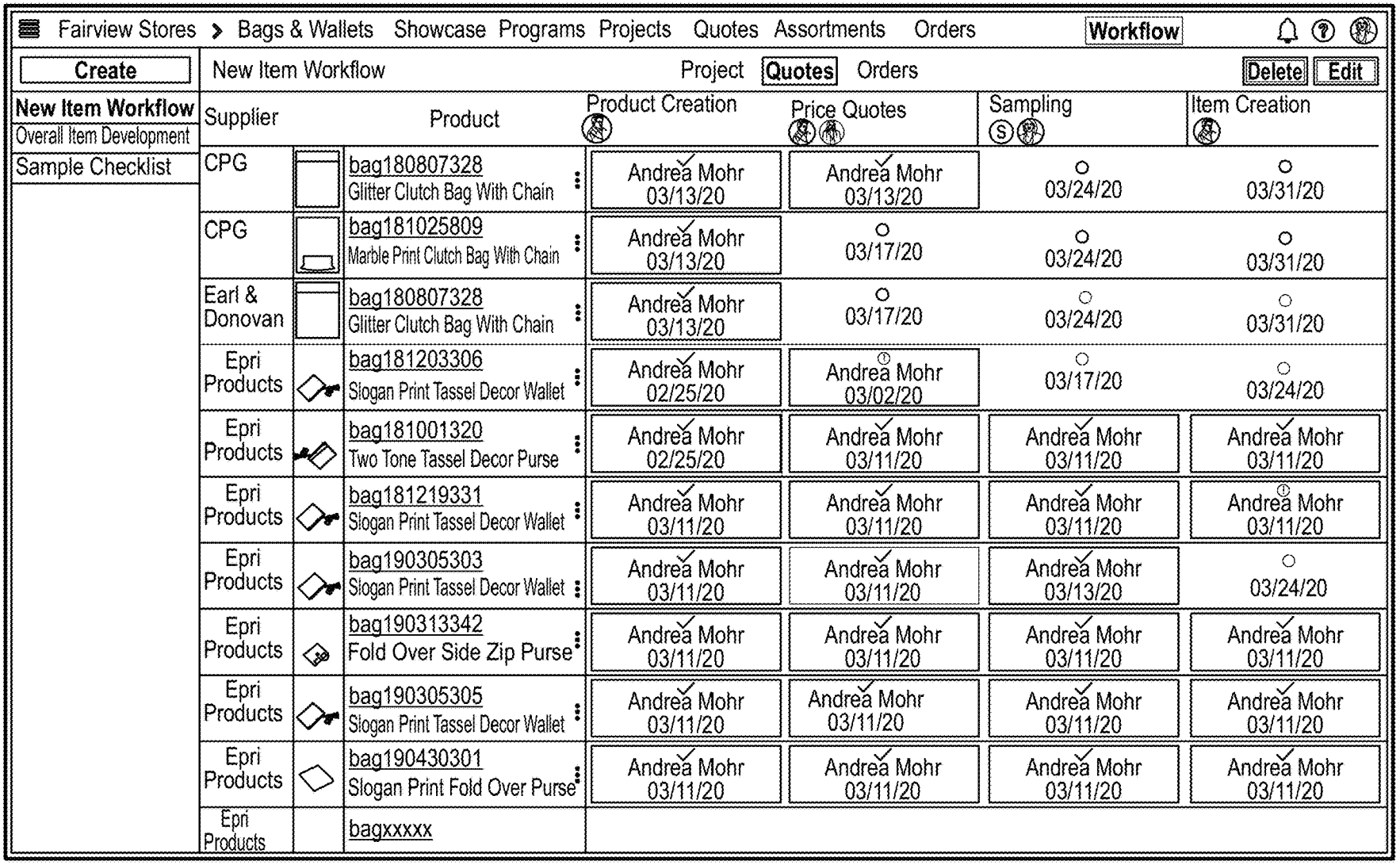

Fairview Stores
Bags & Wallets
Showcase
Programs
Projects
Quotes
Assortments
Orders
Workflow
Create
New Item Workflow
Overall Item Development
Sample Checklist
New Item Workflow
Project
Quotes
Orders
Delete
Edit
Supplier
Product
Product Creation
Price Quotes
Sampling
Item Creation
CPG
bag180807328
Glitter Clutch Bag With Chain
Andrea Mohr 03/13/20
Andrea Mohr 03/13/20
03/24/20
03/31/20
CPG
bag181025809
Marble Print Clutch Bag With Chain
Andrea Mohr 03/13/20
03/17/20
03/24/20
03/31/20
Earl & Donovan
bag180807328
Glitter Clutch Bag With Chain
Andrea Mohr 03/13/20
03/17/20
03/24/20
03/31/20
Epri Products
bag181203306
Slogan Print Tassel Decor Wallet
Andrea Mohr 02/25/20
Andrea Mohr 03/02/20
03/17/20
03/24/20
Epri Products
bag181001320
Two Tone Tassel Decor Purse
Andrea Mohr 02/25/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Epri Products
bag181219331
Slogan Print Tassel Decor Wallet
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Epri Products
bag190305303
Slogan Print Tassel Decor Wallet
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/13/20
03/24/20
Epri Products
bag190313342
Fold Over Side Zip Purse
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Epri Products
bag190305305
Slogan Print Tassel Decor Wallet
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Epri Products
bag190430301
Slogan Print Fold Over Purse
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Andrea Mohr 03/11/20
Epri Products
bagxxxxx

FIG. 7F

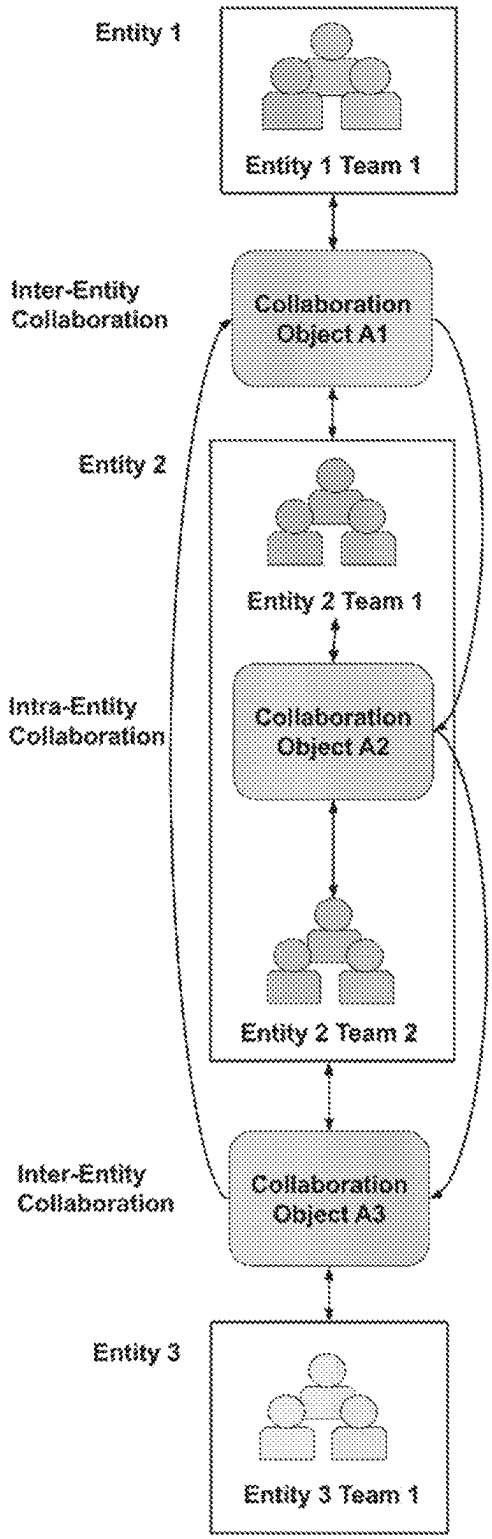

Entity 1
Entity 1 Team 1
Inter-Entity Collaboration
Collaboration Object A1
Entity 2
Entity 2 Team 1
Intra-Entity Collaboration
Collaboration Object A2
Entity 2 Team 2
Inter-Entity Collaboration
Collaboration Object A3
Entity 3
Entity 3 Team 1

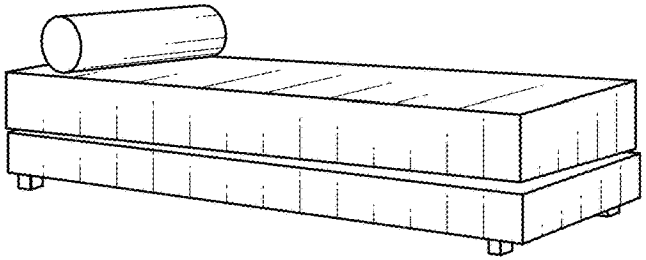
FIG. 7G

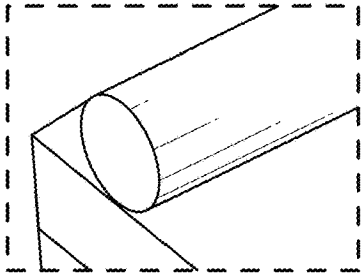
Quote > C9-1067 | Product Details | Events

Pacific Buying Co

1 of 7 Products | More | Duplicate

Edit





Duty Rate	0.00%
Supplier	Add
Unit Cost	$225.0000
Freight Cost	$0.00
Duty Cost	$0.00
Misc Cost	$0.00
Landed Cost	$225.00
Margin	50.00%
Unit Price	$450.0000
Brand	
Size	
Color	Natural
Material	Upholstery
Weight	
Quantity	250
Case Pack	1
Carton Dimension	81 x 34.5 x 32.5 in
Cube	52.56 ft^3
UPC#	
MOQ	200
Lead Time	60
HTS#	9403.30.9000
Quoted Duty Rate	10.00%
Origin	Shanghai
Comments Edit	

Material New

SJ Sophia Johnson 6:32 AM Today
Quote in Leather

Weight New

SJ Sophia Johnson 6:32 AM Today
Specify Weight

Quantity

Andrea Mohr 11:57 AM 05/01/2020
Changed Quatity to 250

FIG. 7H

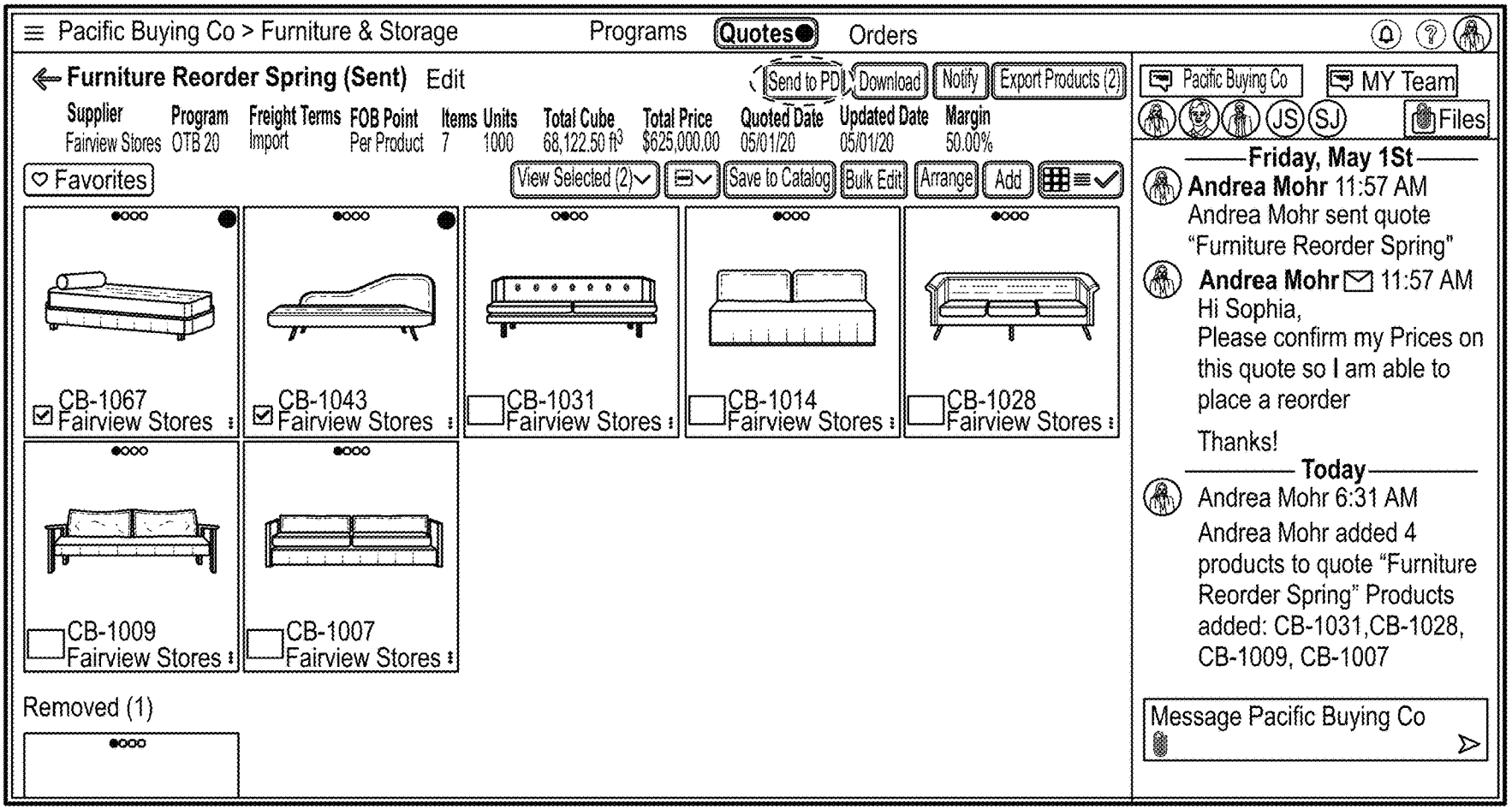

Pacific Buying Co > Furniture & Storage
Programs
Quotes
Orders
Furniture Reorder Spring (Sent)
Edit
Send to PDL
Download
Notify
Export Products (2)
Supplier
Program
Freight Terms
FOB Point
Items
Units
Total Cube
Total Price
Quoted Date
Updated Date
Margin
Fairview Stores
OTB 20
Import
Per Product
7
1000
68,122.50 ft3
$625,000.00
05/01/20
05/01/20
50.00%
Favorites
View Selected (2)
Save to Catalog
Bulk Edit
Arrange
Add
CB-1067 Fairview Stores
CB-1043 Fairview Stores
CB-1031 Fairview Stores
CB-1014 Fairview Stores
CB-1028 Fairview Stores
CB-1009 Fairview Stores
CB-1007 Fairview Stores
Removed (1)
Pacific Buying Co
MY Team
JS
SJ
Files
Friday, May 1St
Andrea Mohr 11:57 AM
Andrea Mohr sent quote "Furniture Reorder Spring"
Andrea Mohr 11:57 AM
Hi Sophia,
Please confirm my Prices on this quote so I am able to place a reorder
Thanks!
Today
Andrea Mohr 6:31 AM
Andrea Mohr added 4 products to quote "Furniture Reorder Spring" Products added: CB-1031,CB-1028, CB-1009, CB-1007
Message Pacific Buying Co

FIG. 7I

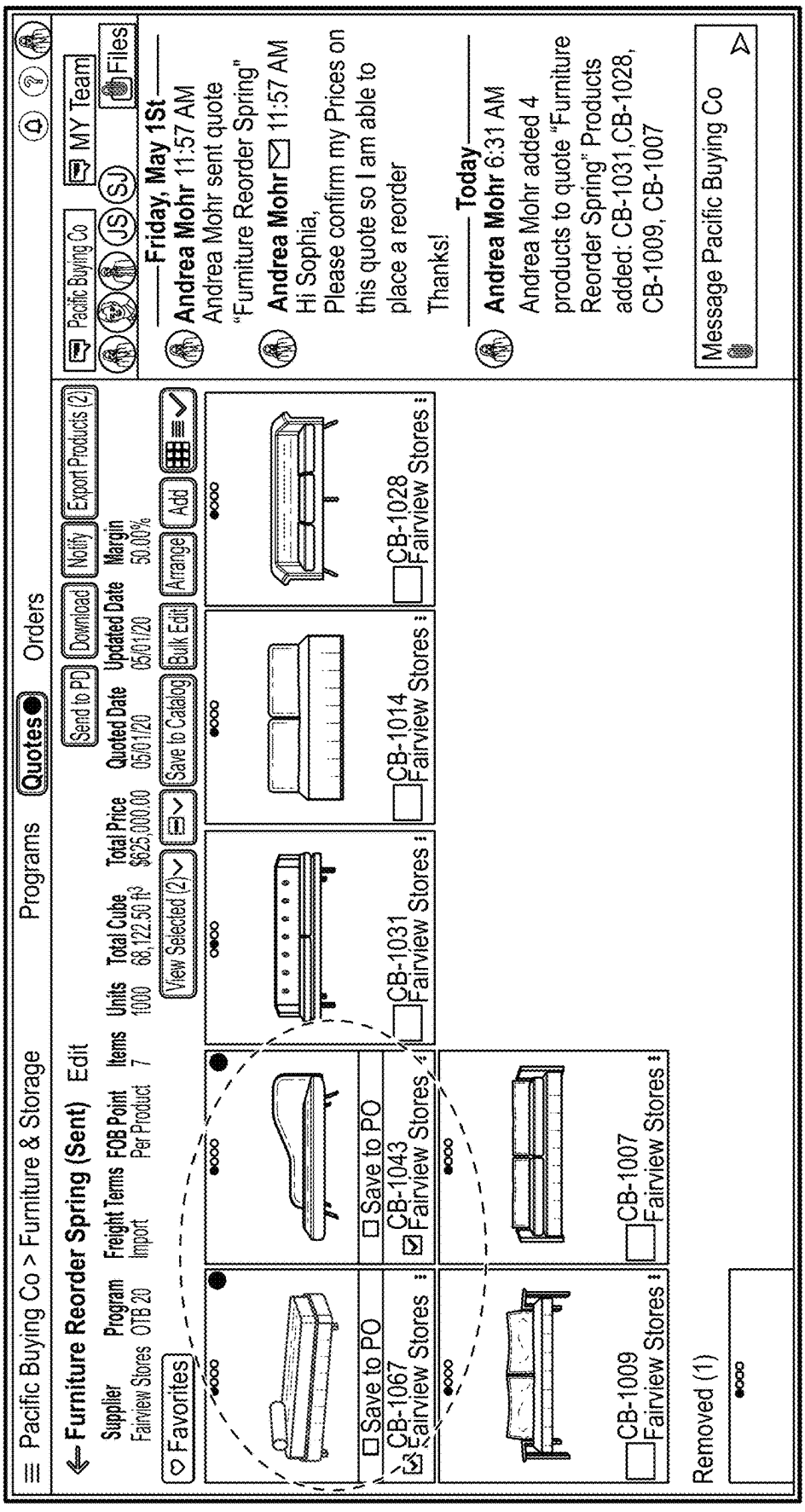

Pacific Buying Co > Furniture & Storage
Programs
Quotes
Orders
Furniture Reorder Spring (Sent)
Edit
Supplier
Fairview Stores
Program
OTB 20
Freight Terms
Import
FOB Point
Per Product
Items
7
Units
1000
Total Cube
68,122.50 ft3
Total Price
$625,000.00
Quoted Date
05/01/20
Updated Date
05/01/20
Margin
50.00%
Send to PO
Download
Notify
Export Products (2)
Favorites
View Selected (2)
Save to Catalog
Bulk Edit
Arrange
Add
CB-1067
Fairview Stores
Save to PO
CB-1043
Fairview Stores
CB-1031
Fairview Stores
CB-1014
Fairview Stores
CB-1028
Fairview Stores
CB-1009
Fairview Stores
CB-1007
Fairview Stores
Removed (1)
Pacific Buying Co
MY Team
JS
SJ
Files
Friday, May 1St
Andrea Mohr 11:57 AM
Andrea Mohr sent quote "Furniture Reorder Spring"
Andrea Mohr 11:57 AM
Hi Sophia,
Please confirm my Prices on this quote so I am able to place a reorder
Thanks!
Today
Andrea Mohr 6:31 AM
Andrea Mohr added 4 products to quote "Furniture Reorder Spring" Products added: CB-1031,CB-1028, CB-1009, CB-1007
Message Pacific Buying Co

FIG. 7J

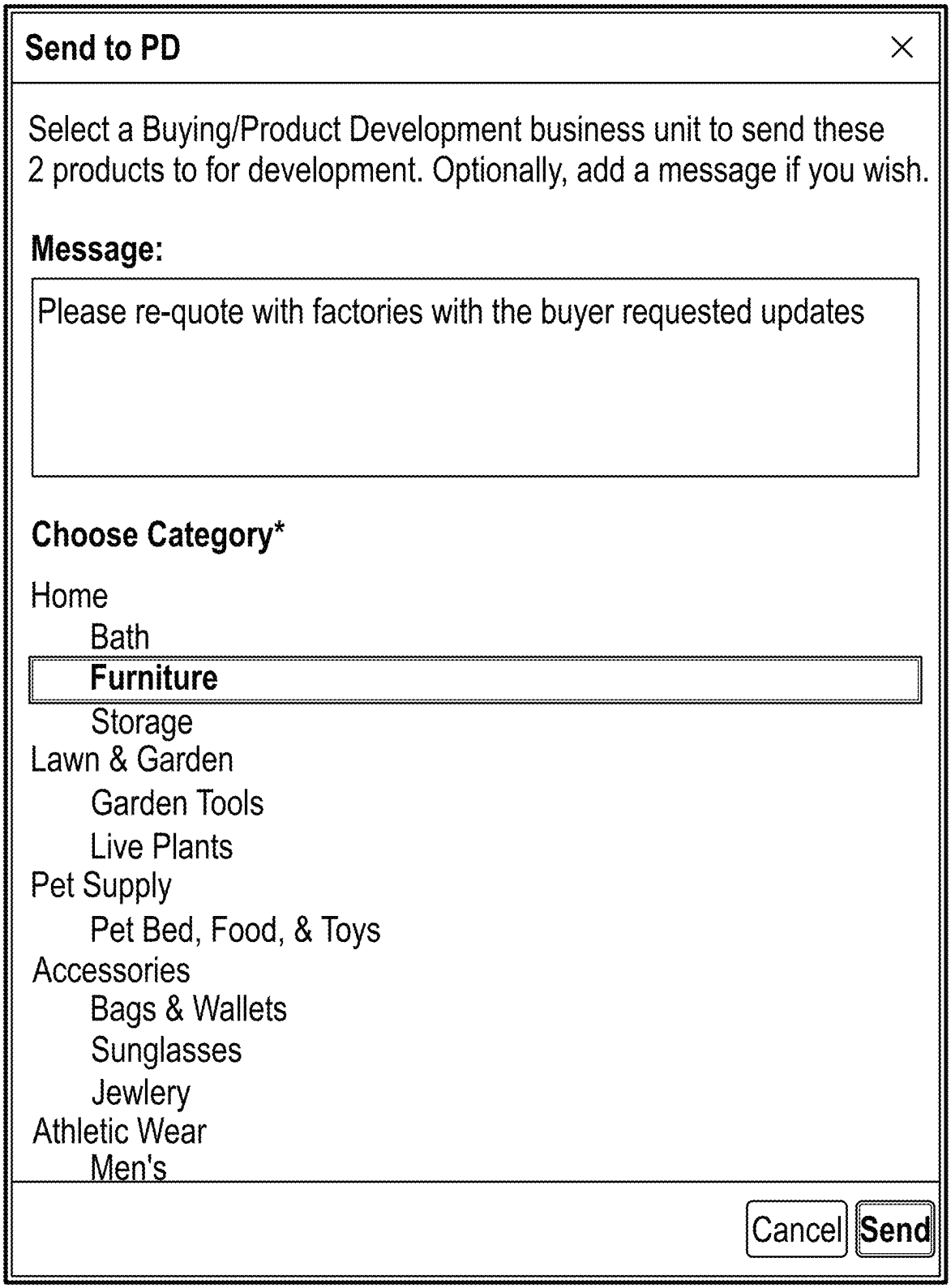

Send to PD
Select a Buying/Product Development business unit to send these 2 products to for development. Optionally, add a message if you wish.
Message:
Please re-quote with factories with the buyer requested updates
Choose Category*
Home
Bath
Furniture
Storage
Lawn & Garden
Garden Tools
Live Plants
Pet Supply
Pet Bed, Food, & Toys
Accessories
Bags & Wallets
Sunglasses
Jewlery
Athletic Wear
Men's
Cancel
Send

FIG. 7K

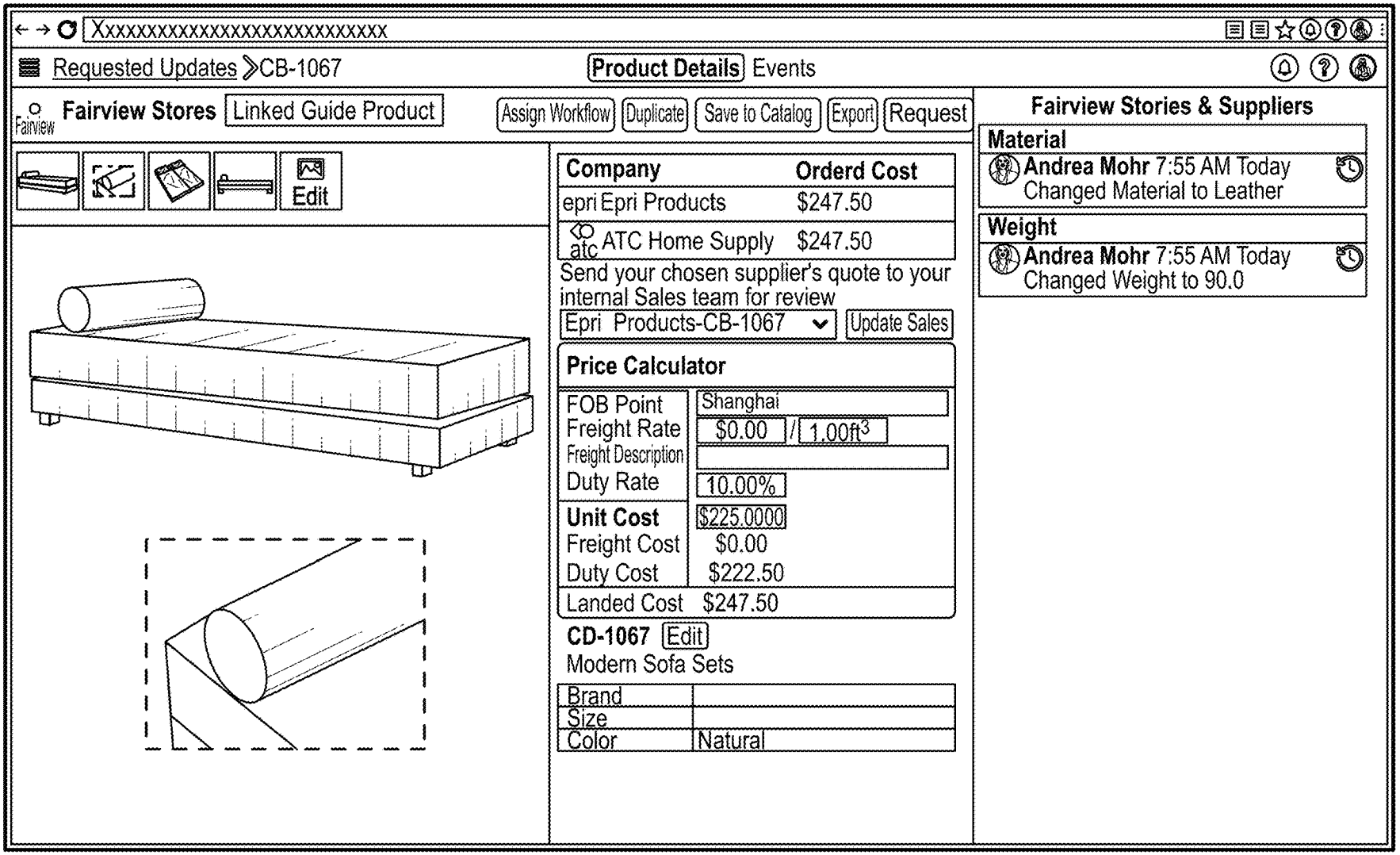

Xxxxxxxxxxxxxxxxxxxxxxxxxxxx
Requested Updates CB-1067
Product Details Events
Fairview Stores
Linked Guide Product
Assign Workflow
Duplicate
Save to Catalog
Export
Request
Edit
Company
Orderd Cost
epri Epri Products
$247.50
atc ATC Home Supply
$247.50
Send your chosen supplier's quote to your internal Sales team for review
Epri Products-CB-1067
Update Sales
Price Calculator
FOB Point
Shanghai
Freight Rate
$0.00
/ 1.00ft3
Freight Description
Duty Rate
10.00%
Unit Cost
$225.0000
Freight Cost
$0.00
Duty Cost
$222.50
Landed Cost
$247.50
CD-1067
Edit
Modern Sofa Sets
Brand
Size
Color
Natural
Fairview Stories & Suppliers
Material
Andrea Mohr 7:55 AM Today
Changed Material to Leather
Weight
Andrea Mohr 7:55 AM Today
Changed Weight to 90.0

FIG. 7L

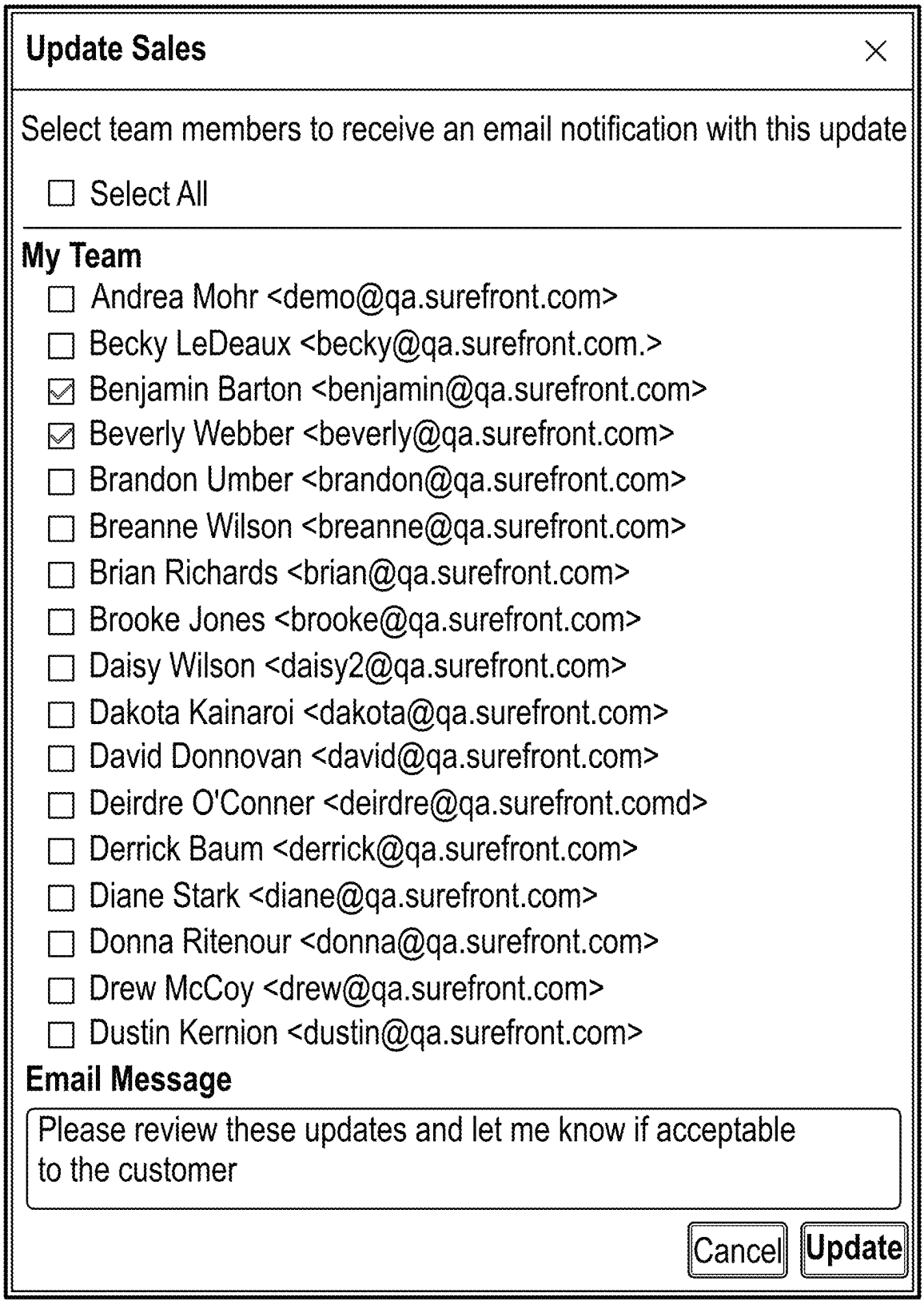

Update Sales
Select team members to receive an email notification with this update
Select All
My Team
Andrea Mohr <demo@qa.surefront.com>
Becky LeDeaux <becky@qa.surefront.com.>
Benjamin Barton <benjamin@qa.surefront.com>
Beverly Webber <beverly@qa.surefront.com>
Brandon Umber <brandon@qa.surefront.com>
Breanne Wilson <breanne@qa.surefront.com>
Brian Richards <brian@qa.surefront.com>
Brooke Jones <brooke@qa.surefront.com>
Daisy Wilson <daisy2@qa.surefront.com>
Dakota Kainaroi <dakota@qa.surefront.com>
David Donnovan <david@qa.surefront.com>
Deirdre O'Conner <deirdre@qa.surefront.comd>
Derrick Baum <derrick@qa.surefront.com>
Diane Stark <diane@qa.surefront.com>
Donna Ritenour <donna@qa.surefront.com>
Drew McCoy <drew@qa.surefront.com>
Dustin Kernion <dustin@qa.surefront.com>
Email Message
Please review these updates and let me know if acceptable to the customer
Cancel
Update

FIG. 7M

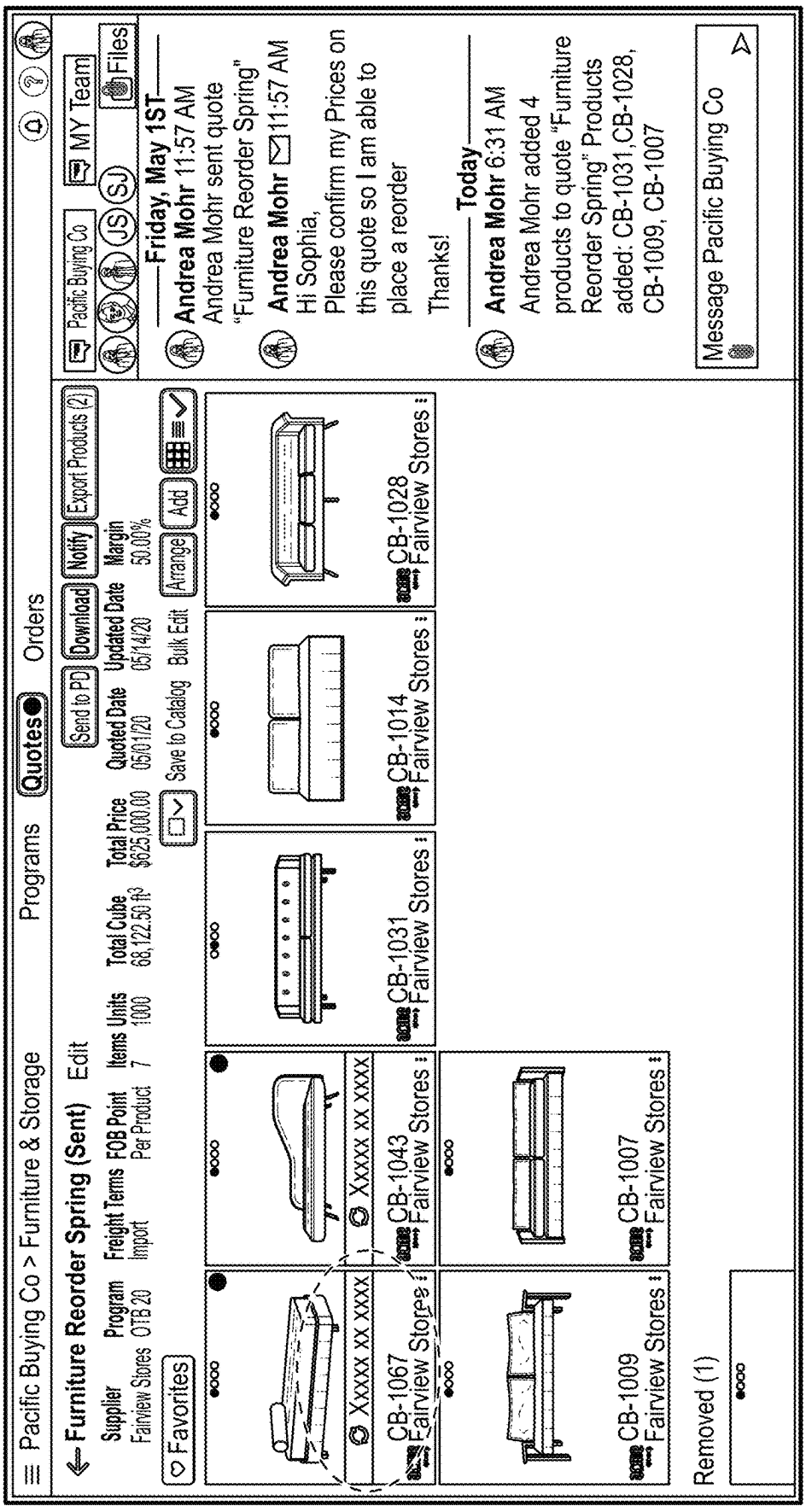

Pacific Buying Co > Furniture & Storage
Programs
Quotes
Orders
Furniture Reorder Spring (Sent)
Edit
Supplier
Fairview Stores
Program
OTB 20
Freight Terms
Import
FOB Point
Per Product
Items
7
Units
1000
Total Cube
68,122.50 ft3
Total Price
$625,000.00
Quoted Date
05/01/20
Updated Date
05/14/20
Margin
50.00%
Send to PD
Download
Notify
Export Products (2)
Favorites
Save to Catalog
Bulk Edit
Arrange
Add
CB-1067
Fairview Stores
CB-1043
Fairview Stores
CB-1031
Fairview Stores
CB-1014
Fairview Stores
CB-1028
Fairview Stores
CB-1009
Fairview Stores
CB-1007
Fairview Stores
Removed (1)
Pacific Buying Co
MY Team
Files
Friday, May 1ST
Andrea Mohr 11:57 AM
Andrea Mohr sent quote "Furniture Reorder Spring"
Andrea Mohr 11:57 AM
Hi Sophia,
Please confirm my Prices on this quote so I am able to place a reorder
Thanks!
Today
Andrea Mohr 6:31 AM
Andrea Mohr added 4 products to quote "Furniture Reorder Spring" Products added: CB-1031,CB-1028, CB-1009, CB-1007
Message Pacific Buying Co

FIG. 7N

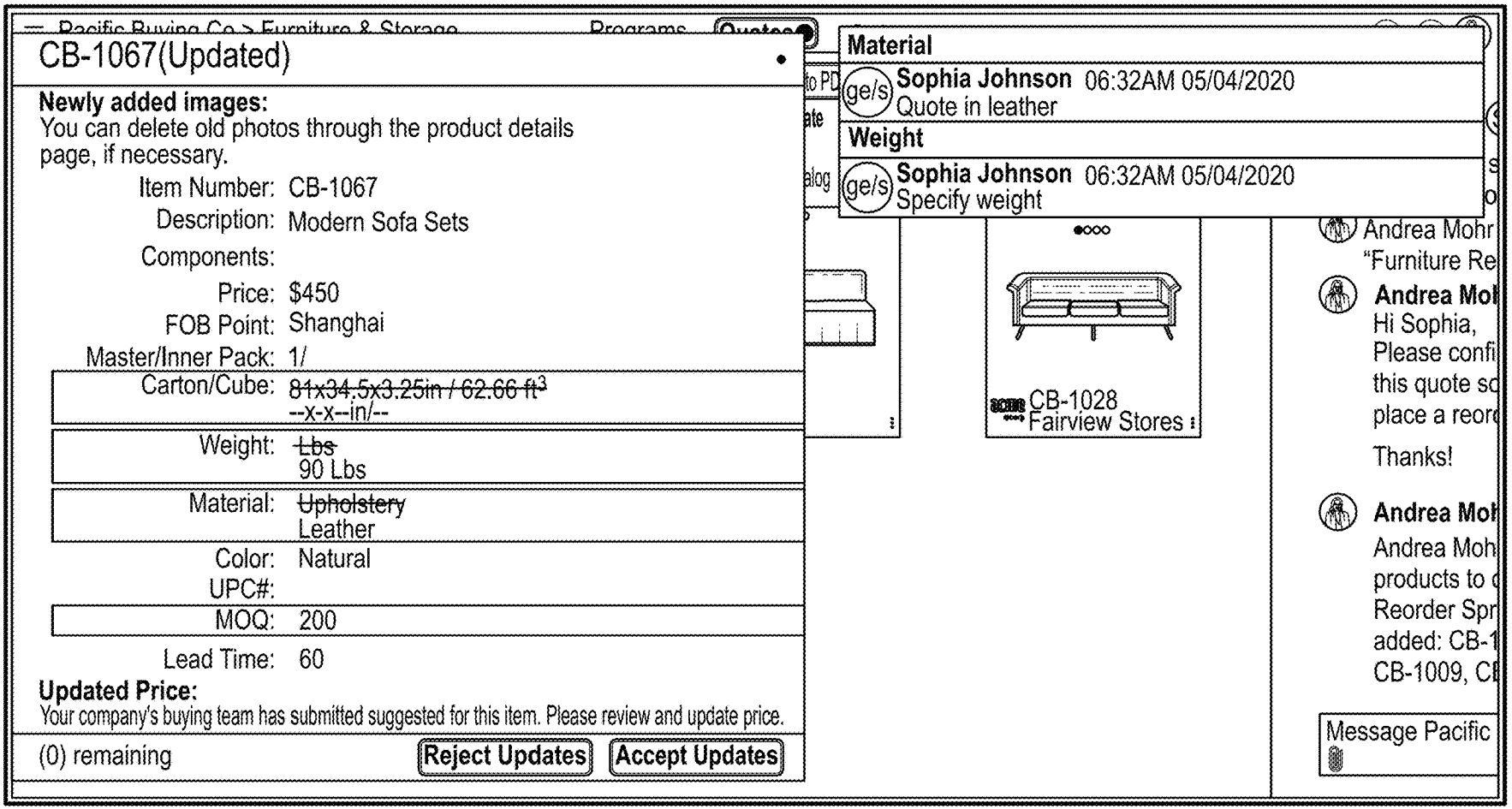

CB-1067(Updated)
Newly added images:
You can delete old photos through the product details page, if necessary.
Item Number: CB-1067
Description: Modern Sofa Sets
Components:
Price: $450
FOB Point: Shanghai
Master/Inner Pack: 1/
Carton/Cube: 81x34.5x3.25in / 62.66 ft3
--x-x--in/--
Weight: Lbs
90 Lbs
Material: Upholstery
Leather
Color: Natural
UPC#:
MOQ: 200
Lead Time: 60
Updated Price:
Your company's buying team has submitted suggested for this item. Please review and update price.
(0) remaining
Reject Updates
Accept Updates
Material
Sophia Johnson 06:32AM 05/04/2020
Quote in leather
Weight
Sophia Johnson 06:32AM 05/04/2020
Specify weight
CB-1028
Fairview Stores
Andrea Mohr
Thanks!
Message Pacific

FIG. 7O

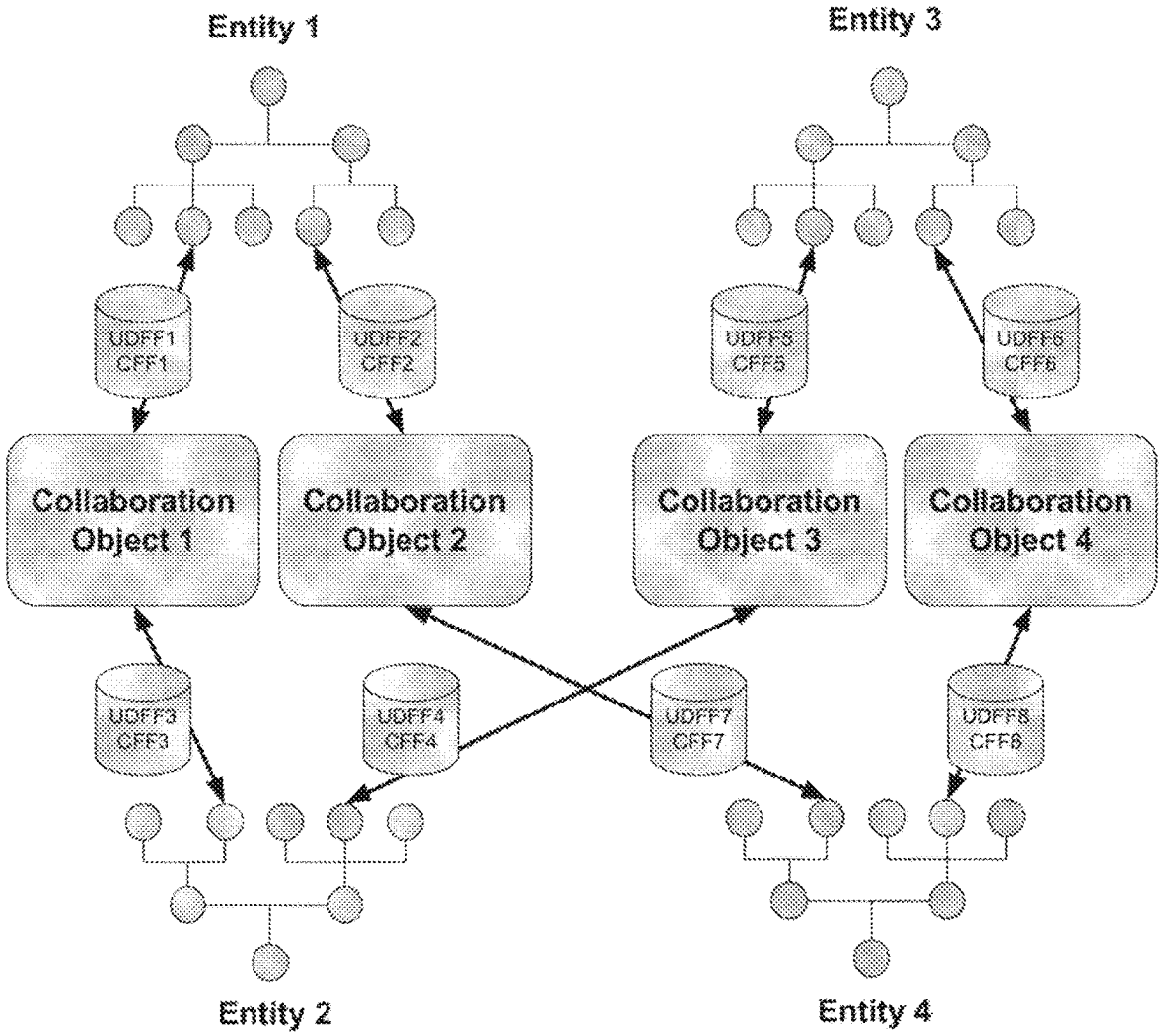

Entity 1
Entity 3
UDFF1 CFF1
UDFF2 CFF2
UDFF5 CFF5
UDFF6 CFF6
Collaboration Object 1
Collaboration Object 2
Collaboration Object 3
Collaboration Object 4
UDFF3 CFF3
UDFF4 CFF4
UDFF7 CFF7
UDFF8 CFF8
Entity 2
Entity 4

FIG. 7P

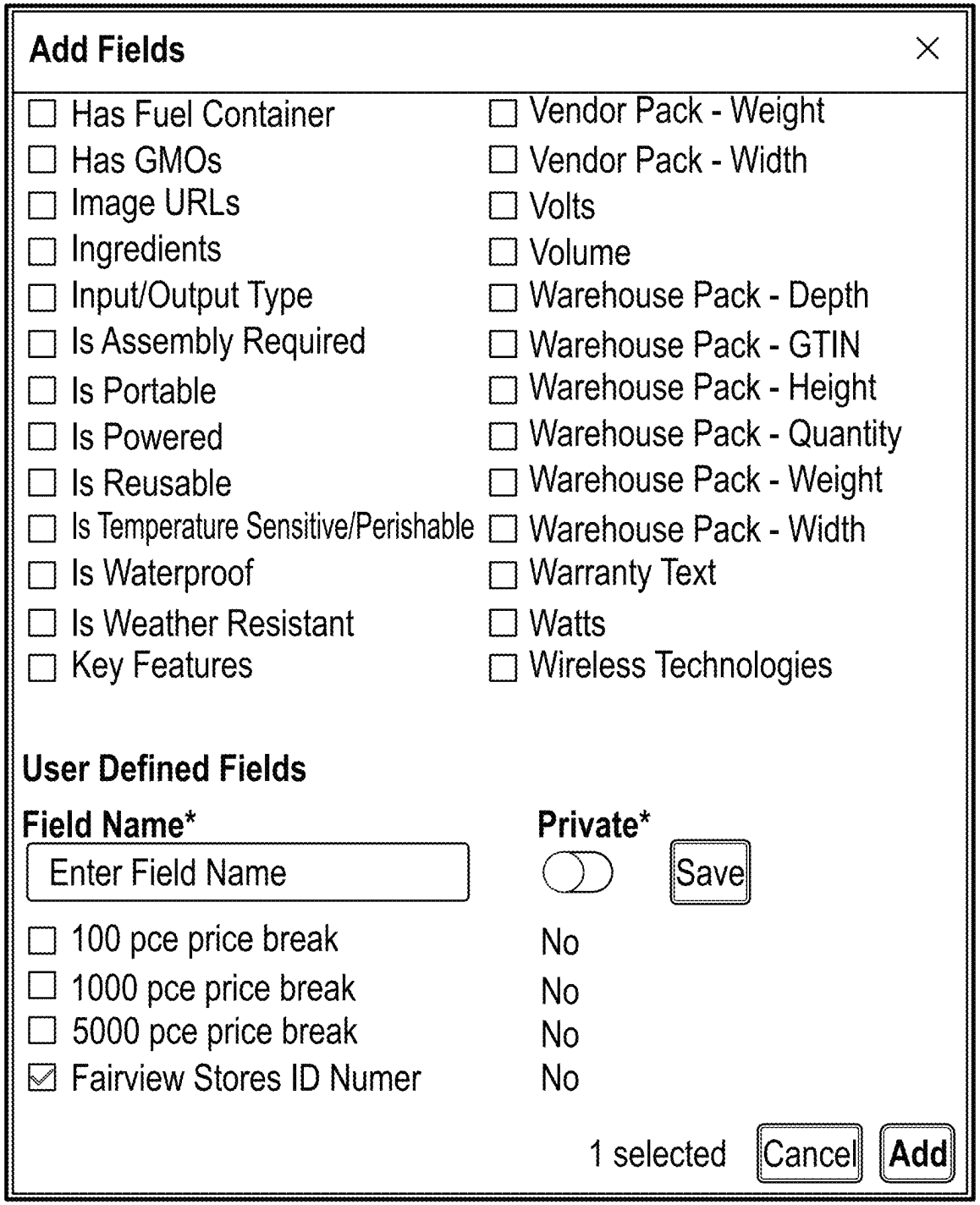

Add Fields
Has Fuel Container
Has GMOs
Image URLs
Ingredients
Input/Output Type
Is Assembly Required
Is Portable
Is Powered
Is Reusable
Is Temperature Sensitive/Perishable
Is Waterproof
Is Weather Resistant
Key Features
Vendor Pack - Weight
Vendor Pack - Width
Volts
Volume
Warehouse Pack - Depth
Warehouse Pack - GTIN
Warehouse Pack - Height
Warehouse Pack - Quantity
Warehouse Pack - Weight
Warehouse Pack - Width
Warranty Text
Watts
Wireless Technologies
User Defined Fields
Field Name*
Enter Field Name
Private*
Save
100 pce price break
No
1000 pce price break
No
5000 pce price break
No
Fairview Stores ID Numer
No
1 selected
Cancel
Add

FIG. 7Q

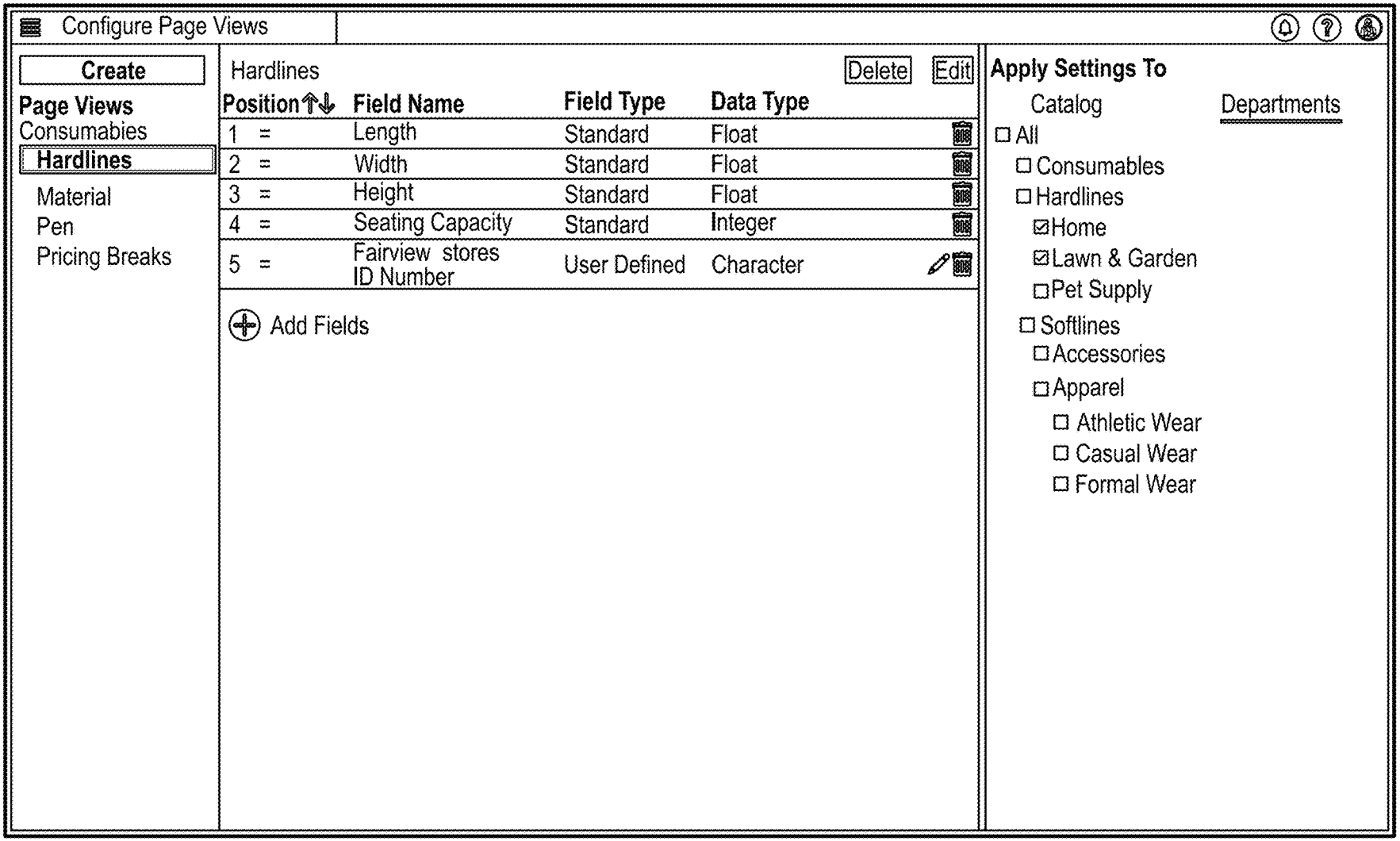

Configure Page Views
Create
Page Views
Consumables
Hardlines
Material
Pen
Pricing Breaks
Hardlines
Delete
Edit
Position
Field Name
Field Type
Data Type
1 = Length Standard Float
2 = Width Standard Float
3 = Height Standard Float
4 = Seating Capacity Standard Integer
5 = Fairview stores ID Number User Defined Character
Add Fields
Apply Settings To
Catalog
Departments
All
Consumables
Hardlines
Home
Lawn & Garden
Pet Supply
Softlines
Accessories
Apparel
Athletic Wear
Casual Wear
Formal Wear

FIG. 7R

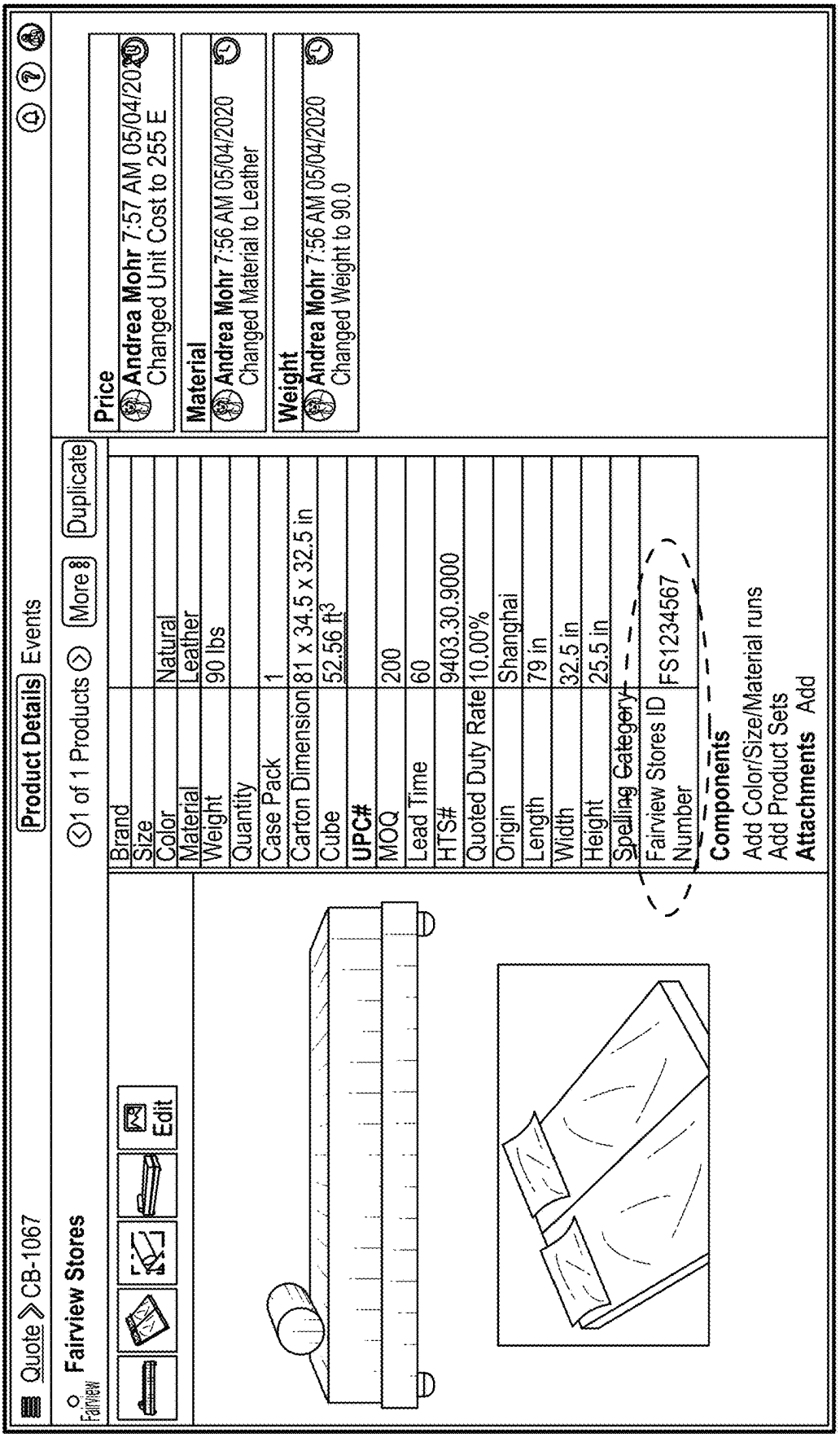

Quote CB-1067
Product Details
Events
Fairview Stores
Fairview
1 of 1 Products
More
Duplicate
Edit
Brand
Size
Color Natural
Material Leather
Weight 90 lbs
Quantity
Case Pack 1
Carton Dimension 81 x 34.5 x 32.5 in
Cube 52.56 ft3
UPC#
MOQ 200
Lead Time 60
HTS# 9403.30.9000
Quoted Duty Rate 10.00%
Origin Shanghai
Length 79 in
Width 32.5 in
Height 25.5 in
Spelling Category
Fairview Stores ID Number FS1234567
Components
Add Color/Size/Material runs
Add Product Sets
Attachments Add
Price
Andrea Mohr 7:57 AM 05/04/2020
Changed Unit Cost to 255 E
Material
Andrea Mohr 7:56 AM 05/04/2020
Changed Material to Leather
Weight
Andrea Mohr 7:56 AM 05/04/2020
Changed Weight to 90.0

FIG. 7S

DISTRIBUTED MESSAGING COMMUNICATION SYSTEM INTEGRATED WITH A CROSS-ENTITY COLLABORATION PLATFORM

INCORPORATION BY REFERENCE TO ANY PRIORITY APPLICATIONS

Any and all applications for which a foreign or domestic priority claim is identified in the Application Data Sheet as filed with the present application are hereby incorporated by reference under 37 CFR 1.57.

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BACKGROUND

Communications associated with various types of networked transactions have become essential in many industries. However, with the enormous flow of such communications, it has become increasingly challenging to manage and intelligently present such communications. The failure of conventional systems to adequately manage and present related communications has hindered users from collaborating in an efficient, error-free manner.

SUMMARY

The following presents a simplified summary of one or more aspects in order to provide a basic understanding of such aspects. This summary is not an extensive overview of all contemplated aspects, and is intended to neither identify key or critical elements of all aspects nor delineate the scope of any or all aspects. Its sole purpose is to present some concepts of one or more aspects in a simplified form as a prelude to the more detailed description that is presented later.

An aspect of the present disclosure relates to enabling a first entity to establish a hierarchy of permissions with respect to transactions with other entities and to maintaining a record of communications between such entities organized by object. The hierarchy of permissions may control which users of the first entity may communicate regarding an object with users of the second entity. The hierarchy of permissions may control what object-related data users of the first entity may access and what object-related data users of the second entity may access.

An aspect of the present disclosure relates to a communication/collaboration system enables a first user at a first entity to define a collaboration object (e.g., a document, transaction, program, etc.), and to invite a second entity to collaborate on the collaboration object in accordance with a hierarchy with corresponding permissions. A second user at a second entity is enabled to collaborate on the collaboration object. A communications log regarding the collaboration between the first user and the second user is maintained. A communications log between the first user and other users at the first entity is maintained. A communication interface is displayed on the first user computer system (e.g., a desktop, laptop, smart, smart television, smart wearable, etc.) that displays the log of communications between the first user and the second user on the collaboration object, together with the log of communications regarding the collaboration object between the first user and other users at the first entity, and excluding communications regarding the collaboration object between the second user and other users at the second entity.

An aspect of the present disclosure relates to a communication and collaboration system comprising: one or more processing devices; a network interface; non-transitory memory that stores instructions that when executed by the one or more processing devices are configured to cause the communication and collaboration system to perform operations comprising: enable a first entity to establish a first hierarchy of permissions comprising communication permissions with respect to users of the first entity; enable a second entity to establish a second hierarchy with corresponding permissions comprising communication permissions with respect to users of the second entity; detect a first user of the first entity accessing the communication and collaboration system, the first user at a first position in the first hierarchy; enable the first user to define a first collaboration object; access the first hierarchy with corresponding permissions; enable the first user to invite a second entity to collaborate on the first collaboration object in accordance with the first hierarchy with corresponding permissions; in response to receiving over a network via the network interface from a first computer system of the first user an invite instruction for the second entity, the invite instructions regarding collaboration on the first collaboration object, transmit the invitation to collaborate on the first collaboration object to the second entity, the second entity associated with a second user; receive from a second computer system of the second user an acceptance of the invitation to collaborate on the first collaboration object; access the second hierarchy with corresponding permissions the second user at a first position in the second hierarchy; enable the second user to collaborate on the first collaboration object in accordance with the second hierarchy with corresponding permissions; generate a log of communications regarding the collaboration between the first user and the second user on the first collaboration object; generate a log of communications regarding the first collaboration object between the first user and one or more other users at the first entity; generate a log of communications regarding the first collaboration object between the second user and one or more other users at the second entity; provide for display on the first computer system of the first user the log of communications regarding the collaboration between the first user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity, and excluding from display on the first computer system the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity; and provide for display on the second computer system of the second user the log of communications regarding the collaboration between the second user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity, and excluding the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity.

An aspect of the present disclosure relates to a communication system: one or more processing devices; a network interface; non-transitory memory that stores instructions that when executed by the one or more processing devices are configured to cause the communication system to perform operations comprising: detect a first user of a first entity accessing the communication system; access permissions associated with the first user; enable the first user to define a first collaboration object; enable the first user to invite a second entity to collaborate on the first collaboration object in accordance with the permissions associated with the first user; in response to receiving over a network via the network interface from a computer system of the first user an invite instruction for the second entity, the invite instructions regarding collaboration on the first collaboration object, transmit the invitation to collaborate on the first collaboration object to the second entity, the second entity associated with a second user; enable the second user to collaborate on the first collaboration object in accordance permissions associated with the second user; maintain a log of communications regarding the collaboration between the first user and the second user on the first collaboration object; maintain a log of communications regarding the first collaboration object between the first user and one or more other users at the first entity; maintain a log of communications regarding the first collaboration object between the second user and one or more other users at the second entity; enable the first computer system of the first user to display the log of communications regarding the collaboration between the first user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity, and excluding from display on the first computer system the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity; and enable the second computer system of the second user to display the log of communications regarding the collaboration between the second user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity, and excluding the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity.

An aspect of the present disclosure relates to a computer-implemented method, the method comprising: accessing permissions associated with a first user; enabling the first user to define a first collaboration object; enabling the first user to invite a second entity to collaborate on the first collaboration object in accordance with the permissions associated with the first user; in response to receiving over a network via the network interface from a computer system of the first user an invite instruction for the second entity, the invite instructions regarding collaboration on the first collaboration object, causing the invitation to collaborate on the first collaboration object to be transmitted to the second entity, the second entity associated with a second user; enabling the second user to collaborate on the first collaboration object with the first user; maintaining a log of communications regarding the collaboration between the first user and the second user on the first collaboration object; maintaining a log of communications regarding the first collaboration object between the first user and one or more other users at the first entity; enabling the first computer system of the first user to display the log of communications regarding the collaboration between the first user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity; and enabling the second computer system of the second user to display the log of communications regarding the collaboration between the second user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity, and excluding the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity.

An aspect of the disclosure relates to a communication and collaboration system, comprising: one or more processing devices; a network interface; non-transitory memory that stores instructions that when executed by the one or more processing devices are configured to cause the communication and collaboration system to perform operations comprising: provide an interface that enables a first user at a first entity having a first permission to define a first collaboration object; provide an interface that enables the first user to assign one or more sets of users at the first entity to one or more first entity tasks associated with processing the first collaboration object; provide an interface that enables the first user to assign timing data corresponding to the one or more first entity tasks associated with processing the first collaboration object; provide an interface that enables the first user to invite a second entity to collaborate on the first collaboration object; in response to receiving over a network via the network interface from a first computer system of the first user an invite instruction for the second entity, the invite instruction regarding collaboration on the first collaboration object, transmit the invitation to collaborate on the first collaboration object to the second entity, the second entity; enable a second user at the second entity to assign one or more sets of users at the second entity to one or more second entity tasks associated with processing the first collaboration object; enable the assigned one or more sets of users at the first entity and the assigned one or more sets of users at the second entity to collaborate on the first collaboration object; generate a first communication log of communications regarding the collaboration on the first collaboration object, the first communication log comprising: communications between users in the assigned one or more sets of users at the first entity, communications between users in the assigned one or more sets of users at the second entity, and communications between users in the assigned one or more sets of users at the first entity and users in the assigned one or more sets of users at the second entity; cause a second communication log to be presented to users in the assigned one or more sets of users at the first entity, the second communication log comprising a subset of the first communication log, including communications between users in the assigned one or more sets of users at the first entity, and communications between users in the assigned one or more sets of users at the first entity and users in the assigned one or more sets of users at the second entity, wherein the presented second communication log visually distinguishes communications between users in the assigned one or more sets of users at the first entity from communications between users in the assigned one or more sets of users at the first entity and users in the assigned one or more sets of users at the second entity; cause a third communication log to be presented to users in the assigned one or more sets of users at the second entity, the third communication log comprising a subset of the first communication log, including communications between users in the assigned one or more sets of

users at the second entity, and communications between users in the assigned one or more sets of users at the first entity and users in the assigned one or more sets of users at the second entity, wherein the presented third communication log visually distinguishes communications between users in the assigned one or more sets of users at the second entity from communications between users in the assigned one or more sets of users at the first entity and users in the assigned one or more sets of users at the second entity; track progress on the one or more first entity tasks associated with processing the first collaboration object; track progress on the one or more second entity tasks associated with processing the first collaboration object; provide an interface that enables users in the assigned one or more sets of users at the first entity at access to some or all of the tracked progress on the one or more first entity tasks associated with processing the first collaboration object and on the one or more second entity tasks associated with processing the first collaboration object; provide an interface that enables users in the assigned one or more sets of users at the second entity at access to some or all of the tracked progress on the one or more first entity tasks associated with processing the first collaboration object and on the one or more second entity tasks associated with processing the first collaboration object.

An aspect of the disclosure relates to a communication and collaboration system, comprising: one or more processing devices; a network interface communication system: one or more processing devices; a network interface; non-transitory memory that stores instructions that when executed by the one or more processing devices are configured to cause the communication system to perform operations comprising: detect a first user of a first entity accessing the communication system; access permissions associated with the first user; enable the first user to define a first collaboration object; enable the first user to invite a second entity to collaborate on the first collaboration object in accordance with the permissions associated with the first user; in response to receiving over a network via the network interface from the first user an invite instruction for the second entity, the invite instruction regarding collaboration on the first collaboration object, transmit the invitation to collaborate on the first collaboration object to the second entity, the second entity associated with a second user; provide an interface that enables the second user to collaborate on the first collaboration object in accordance permissions associated with the second user; maintain a log of communications regarding the collaboration between the first user and the second user on the first collaboration object; maintain a log of communications regarding the first collaboration object between the first user and one or more other users at the first entity; maintain a log of communications regarding the first collaboration object between the second user and one or more other users at the second entity; enable a first computer system of the first user to display the log of communications regarding the collaboration between the first user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity, and excluding from display on the first computer system the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity; and enable a second computer system of the second user to display the log of communications regarding the collaboration between the second user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity, and excluding the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity.

An aspect of the disclosure relates to a communication and collaboration system, comprising: one or more processing devices; a network interface computer-implemented method, the method comprising: providing an interface that enables a first user at a first entity to define a first collaboration object; providing an interface that enables the first user to assign one or more sets of users at the first entity to one or more first entity tasks associated with processing the first collaboration object; providing an interface that enables the first user to assign timing data corresponding to the one or more first entity tasks associated with processing the first collaboration object; enabling the first user to invite a second entity to collaborate on the first collaboration object; in response to receiving over a network via a network interface from the first user an invite instruction for the second entity, the invite instruction regarding collaboration on the first collaboration object, causing the invitation to collaborate on the first collaboration object to be transmitted to the second entity, the second entity associated with a second user; enabling the second user to collaborate on the first collaboration object with the first user; maintaining a log of communications regarding the collaboration between the first user and the second user on the first collaboration object; maintaining a log of communications regarding the first collaboration object between the first user and one or more other users at the first entity; enabling a first computer system of the first user to display the log of communications regarding the collaboration between the first user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity; and enabling a second computer system of the second user to display the log of communications regarding the collaboration between the second user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity, and excluding the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1**A illustrates an example distributed communication and collaboration architecture.

FIG. **1**B illustrates an example architecture of a communication/collaboration system.

FIG. **1**C illustrates an example communication hierarchy.

FIGS. **1**D and **1**E illustrate example communication/transaction threads and permissions.

FIG. **1**F illustrates an example one-to-many communication scenario.

FIG. **1**G illustrates an example thread cross section.

FIG. **1**H illustrates multiple communication threads and multiple channels.

FIG. **1**I illustrates an example transaction collaboration process.

FIG. **1**J illustrates aspects of an example communication/collaboration system.

FIG. **1**K illustrates an example rendering process using a virtual page.

FIG. **1**L illustrates an example virtual page.

FIG. 1M illustrates example user interfaces rendered based on a virtual page.

FIG. 1N illustrates an example communication process.

FIGS. 1O-1P illustrate example communication architectures.

FIGS. 1Q-1U illustrate example user interfaces.

FIGS. 1V-1AA illustrate example collaboration permission configurations.

FIG. 1BB illustrates an example user interface.

FIGS. 1CC-1FF illustrate example collaboration permission configurations.

FIG. 1GG Illustrates a representation of an example data syndication architecture within a multi-entity multi-hierarchy system.

FIGS. 1HH-1MM illustrate example user interfaces.

FIG. 1NN illustrates an example multi-layer service architecture.

FIGS. 2A-2L illustrate example user interfaces.

FIGS. 3A1-3L illustrate additional example user interfaces.

FIGS. 4A1-4M illustrate additional example user interfaces.

FIG. 4N illustrates an example process.

FIGS. 4O-4V illustrate additional example user interfaces.

FIGS. 5A-5K illustrate additional example user interfaces.

FIGS. 6A-6F illustrate additional example user interfaces.

FIGS. 7A-7F illustrate additional example user interfaces.

FIG. 7G illustrates an example process.

FIGS. 7H-7O illustrate additional example user interfaces.

FIG. 7P illustrates an example sharing of collaboration objects.

FIGS. 7Q-7S illustrate additional example user interfaces.

DETAILED DESCRIPTION

Methods and systems are described for secure communication over a network among multiple systems enabling secure inter-entity and intra-entity collaboration over the network.

As will be described, technologies are provided that enable threaded communication to be associated with an object and that enable such threaded communications to be selectively provided to users in accordance with respective permissions, in a display-efficient and organized manner. Such display of communications may reduce errors with respect to conducting shared transactions related to such object.

By way of illustration, systems may be associated with respective entities. For example, the systems may include a first set of systems associated with an entity, such as an acquirer of products (e.g., a retailer). The systems may include a second set of systems associated with another entity, such as a product provider (e.g., a manufacturer, distributor, etc.). It is understood that an entity may be both an acquirer of products and a provider of products. The systems may include a third set of systems associated with a communications/collaboration service provider.

The transmitted data may be secured by establishing a virtual private network (VPN) which establishes an encrypted transmission path between the communication/collaboration service provider system and that of the first set of systems and the second set of systems. The systems may communicate with each other using Secure Sockets Layer (SSL), a secure transfer tunnel, which may be used to encrypt data in transit between the systems. Optionally, some or all of the communicated information may be stored using file encryption. Optionally, respective encryption keys may be stored physically separate from the data being encrypted (e.g., on different physical servers) to provide added security.

Optionally, the communication/collaboration system may comprise a secure, cloud based system of co-located and/or geographically distributed server systems.

As discussed in greater detail herein, the communication/collaboration system may enable sensitive data to be siloed, so that only authorized users may access the sensitive data while still enabling users at different entities with different levels of authorization to collaborate. A hierarchy of users or user types may be defined, where those lower on the hierarchy have relatively less access to sensitive data than those higher on the hierarchy. In addition, the hierarchy of users or user types may be defined to indicate which users or types of users may edit which types of data.

The disclosed communication/collaboration system enables communications to be associated with an object, such as a project. Thus, by accessing a project-related user interface, communications related to the project may be viewed together. As will be discussed elsewhere herein, a control may be provided which enables the user to specify whether only communications within a chat window are to be displayed, whether only communications with an external entity are to be displayed, or whether both internal communications and communications with external entities are to be displayed, thereby making efficient use of screen real estate by filtering the data presented to a user to the data of interest.

As discussed in greater detail herein, the disclosed communication/collaboration system further enables a user to generate a dynamic document that includes one or more editable fields, and one or more fields that display data automatically generated by one or more formulas associated with one or more fields (e.g., one or more editable fields). Changes to the document made by a user of a first entity may be selectively transmitted to a user of a second entity. Optionally, a communication (e.g., a chat entry, text message, audio communication, video communication, still image, emoji entry, and/or other communication-type) may be generated and displayed that provides a summary of the change to the document. Optionally, the chat entry may be displayed at the same time as the document. For example, if the document is a submission from a product provider offering to sell items to a retailer, the submission may be made available to a retailer. As will be discussed elsewhere herein, the submission may include price per unit, number of items in a unit, shipping volume, weight, materials, and/or other information. If the retailer requests or makes a change to a product material specified by the product provider (e.g., a change of a basket from plastic to bamboo), a chat entry may be generated the reflects the change (e.g., "Jane has requested that the basket material be changed from plastic to bamboo") and displayed on a user terminal of the retailer and on a user terminal of the product provider in a chat pane at the same time as the changed document is displayed. Certain other data entered by a user at a first entity, such as desired profit margin, may be inhibited from being provided to a user at a second entity, and indeed, may be inhibited from being provided with users without the appropriate permissions at the first entity.

Optionally, changes to a given object may only be made by the entity that created the object, and the other entities collaborating on the object may only request, but not make,

a change. For example, optionally, If an acquirer requests a product, only the supplier can change product information belonging to supply side (e.g., materials, weight, etc.), while only the acquirer may be permitted to specify or make changes to an acquisition price.

By way of further example, if an acquirer announces a purchase program or issues a request for quote (RFQ) for a product, the acquirer may specify desired product specification. A supplier may then respond by submitting a supplier product, wherein only the supplier is permitted to change properties of the supplier product.

As discussed in greater detail herein, the communication/collaboration system enables communications between users to be restricted so that a given user at a given entity may only be permitted to contact certain designated users at other entities, and may further restrict communications to those designated users to only certain designated subjects/object-types. For example, as will be discussed in greater detail herein, a user (e.g., a buyer) at a retailer may be limited, via the system, to communicate only with certain product providers, and only with certain designated users at such product providers, and only regarding designated product categories (e.g., outdoor furniture). By way of further example, a given user at a product provider may only be permitted to communicate with certain retailers regarding certain product categories.

By way of yet further example, a given user at a product provider may only be permitted to communicate with a given user at a retailer if the retailer user invited the product provider to submit a bid for a given retailer program. For example, a retailer program may provide a description (e.g., a high level and/or a low level description), a trend board (e.g., a presentation of images of one or more products indicating current product trends), a colorway (e.g., a range of combinations of colors in which a design or product type is available), a target price, and/or a quantity of product the retailer is seeking to acquire. The retailer program may have been specified by a retailer user with a specified level of rights. For example, a hierarchy of user levels may be specified with different user levels having different rights. For example, a relatively high level manager may be authorized to add product suppliers to an approved provider list, may be authorized to specify a retailer program/project, may be authorized to access confidential information of a highest level of confidentiality, and may be authorized to approve purchases up to a first threshold level. A level down manager may be authorized to specify a retailer program/project, may be authorized to access confidential information of a second level of confidentiality (lower than the first level of confidentiality), and may be authorized to approve purchases up to a second threshold level (which is lower than the first threshold). A still lower level buyer may be authorized to access confidential information of a third level of confidentiality (lower than the second level of confidentiality), may be authorized to select product providers from the approved product provider list and submit invitations to the selected product providers to submit bids to the retailer to supply products for a specified retailer program.

A user interface may be provided that enables a given user (e.g., a manager) to specify a project goal by units (e.g., purchase 100 units) and/or by price (e.g., purchase $10,000 of units). The goal may be assigned to a department and on a sub-department level and/or on a user level. For example, 20% of the goal may be assigned to a first department, 45% of the goal may be assigned to a second department, and 35% of the goal may be assigned to a third department. Sub-sub-goals may be assigned to users within a sub-department. Progress towards the respective sub-goals may be tracked and aggregated in real time. The progress towards the subgoals and the aggregated progress towards the overall goal may be reported (e.g., via text and/or graph) in real time to the appropriate user (e.g., manager).

Further, a given entity may act as both a seller and a buyer of items. For example, a furniture manufacturer may purchase materials to make the furniture (e.g., wood, nails, screws, brackets, etc.), and may then sell the furniture to a retailer. A given user at an entity may be restricted to only buying or only selling items, or may perform both buying and selling of items, based on the permissions assigned to the user. Thus, a user with appropriate permissions may, via a single sign-in to the system, access both seller user interfaces and data, and buyer user interfaces and data. When the user is acting in a buyer function, the user may be permitted to communicate with a first set of entities (e.g., product providers), and corresponding sets of users associated with the first set of entities. When the user is acting in a seller function, the user may be permitted to communicate with a second set of entities (e.g., retailers), and corresponding sets of users associated with the second set of entities.

Unique graphical user interfaces are described that enable a user to flexibly control what data is presented. Further, graphical user interfaces are described that enable fast paced communication and inter-entity and intra-entity collaboration. Further, user interfaces are described that organize communications around objects (e.g., projects, product offers, purchase programs, etc.), to create a better sense of organization, auditability, and insight of and into artifacts. In addition, chat interfaces are described that include not just user-to-user messages, but that also include events detected by the system, such as bids, price changes, field updates, and/or the like. Thus, user interfaces are described that solve problems with prior graphical user interfaces devices in the computerized product-related transaction area, improving speed, accuracy and usability as compared to conventional user interfaces.

Advantageously, in order to speed processing, reduce processing loads, and reduce memory utilization, a given virtual page may be associated with a given object (e.g., a project or transaction). The virtual page may include different modules with a variety of sensitive and confidential data and/or communications that are not to be shared with unauthorized users. Further, a virtual page may include certain data that is not of interest to certain entities or to certain users at certain entities. When multiple users are collaborating on the same object, each time new data and/or data types are to be displayed to users, the communication/collaboration system may optionally determine which entity a given user is associated with, which user(s) at a given collaborating entity the given user is collaborating with, the permissions associated with a given user, and/or the job function of a given user. The communication/collaboration system may use some or all the foregoing information to determine what data and/or communications are to be shown to a given collaborating user. The communication/collaboration system may then determine which modules of the virtual page are to be displayed to a given user. The modules may then be rendered with the corresponding modules and module data (which may already have been present in the virtual page) via a terminal display of a given user. Thus, different users within the same entity may see different versions of the virtual page, with different data. Further, users at different entities may see different versions of the virtual page, with different data. Thus, the foregoing process may advantageously use the same virtual page in rendering

the different pages for the different users. As noted above, this technique reduces processor and memory utilization, as the system does not generate, de novo, a new page with data separately accessed for each user.

A virtual page may be used as part of a workflow. A workflow may be associated with several virtual pages. A first user, at a first entity at a given state of a collaboration workflow being performed in collaboration with a second entity, may be presented with the same virtual modules (but different data) as a second user (with the same permission level as the first user) at the first entity at the given state of the collaboration workflow being performed in collaboration with a third entity. Thus, advantageously, users at a given permission level at a given entity will utilize the same workflow even when working with different entities, so that the workflow is agnostic as to which entity is being collaborated with.

Certain aspects will now be discussed with reference to the figures.

The communication/collaboration system optionally enables a centralized workflow between different entities that enables the different entities (e.g., organizations) to collaborate on an object across a network. For example, a given entity may be an acquirer (e.g., a buyer) and/or a supplier (e.g., a seller) of items. With reference to FIG. **1**A an example communication/collaboration system **100**A manages communications and data transfers between a plurality of entity systems **102-1** . . . **102-***n*, such as between entities on the acquisition side and entities on the supply side. The entity systems **102** may include standalone computers (e.g., desktop, laptop, tablet, smart phone, or other computer device), a centralized computer system, and/or a cloud computing system.

A given entity system **102** may include a data store hosting an enterprise database/warehouse/repository. The enterprise database may optionally store data such as item or service data (e.g., product data) and/or order data. By way of example, the product or service data may include specifications and attributes of the products and services offered by an entity, such as dimensions, weight, color, configuration, cost, and/or the like. The order data may include data such as buying information (e.g., buying program data), inventory data of items, quantity of items needed, shipping location, buying terms, and/or the like. As discussed elsewhere herein, the communication between the different entities may be via a secure communication channel, where data is encrypted. Further, data stored by the communication/collaboration system **100**A may be encrypted and/or otherwise secured.

The communication/collaboration system **100**A is configured to accommodate differing informational access and differing artifact ownership within a given workflow depending on the organization and organization user accessing the given information and/or artifact.

The communication/collaboration system **100**A is optionally a web based and/or app based SaaS platform that connects entities, such as retailers and suppliers. Unlike conventional platforms, the disclosed platform is a shared system, built for collaboration and the shared workflows and needs of item acquirers (e.g., retailers or other buyers) and suppliers (e.g., manufacturers). For example, a retailer may wish to order products from a supplier, where the ordered products will need to be manufactured for the retailer in accordance with the order. As a shared software platform, the communication/collaboration system **100**A bridges the gap that conventionally exists between systems at suppliers and retailers. The disclosed communication/collaboration system **100**A increases speed of deploying products (e.g., new products) to market by decreasing the friction in information transfer between organizations and their systems by removing or decreasing the human error in reconciling informational differences instance by instance. The communication/collaboration system **100**A may optionally be configured to be the final platform accessed by "suppliers" (e.g., companies offering items to be resold) as information flows out of their company via actions of salespersons, and may optionally be configured to be the first platform accessed by "retailers" (e.g., companies purchasing items) as they encounter information on products and orders. As noted above, a given entity may be both a supplier of items and an acquirer of items.

An item supplier can publish items and/or services via the communication/collaboration system **100**A to one or more other entities (e.g., item acquirers). Optionally, the supplier may specify which entities can view the published items and/or services, or the published items and/or services may be made accessible to all users of the communication/collaboration system **100**A. Conversely, acquirers can publish acquisition plans and selectively invite certain suppliers (e.g., within or outside of the acquirer's current supply network), review item/service offers, communicate with suppliers, iteratively negotiate specifications, attributes, pricing of items and services, other transaction terms, and generate purchase orders. Advantageously, the use of a shared communication/collaboration system **100**A by an acquirer and supplier will reduce the need for duplicative, error prone, arduous data entry by each party.

Thus, for example, a given entity/organization may comprise various units (e.g., business units, such as subsidiaries, divisions, groups, departments, or the like), where a given user may be associated with an organization unit. An organization may have a complex hierarchical structure, with many layers of units. The communication/collaboration system **100**A may enable connections to be defined to link units within an organization to enable users within an organization to collaborate on an object. In addition, the communication/collaboration system **100**A may enable connections to be defined to link units across organizations to enable a user at a unit of one organization to collaborate with users at one or more other linked-to organizations. A given connection may have an upstream side (e.g., where the user on the upstream side performs an item acquisition workflow) and a downstream side (e.g., where the user on the downstream side performs an item supply workflow).

FIG. **1**A-**2** illustrates an example implementation of the communication/collaboration system **100**A. The system **100**A may optionally be a cloud-based system including a hosted computing environment that includes a collection of physical computing resources that may be remotely accessible and may be rapidly provisioned as needed. Further, the system **100**A may include a hosted storage environment that includes a collection of physical data storage devices that may be remotely accessible and may be rapidly provisioned as needed (sometimes referred to as "cloud" storage). The example communication/collaboration system **100**A includes an authentication module, a front end module **104**B, backend processing module **106**B, a communication and collaboration module **108**B, an integration module **110**B, a tracking module **1128**, and a data store **114**B (which may include cloud storage).

The data store **114**B may host one or more databases. A given database may be a relational database (e.g., an SQL database) or a non-relational database (a nonSQL database, such as NoSQL). For example, a relational database may

advantageously use the same uniform language (e.g., DDL) for different user roles (developer, user, administrator), may use a standardized language for different relational database management systems, may use an advanced and non-structural querying language, and may comply with ACID principles (atomicity, consistency, isolation, durability), thus ensuring stability, security, and predictability both of the entire database and each transaction. A nonSQL database may be used rather than an SQL database as it better scales out horizontally across distributed systems and so can handle a large number of transactions (e.g., millions of transactions at a time). Further, a nonSQL database may be schema-free and so better utilized with unstructured and semi-structured data. Thus the selection of the database technology may be based on the particular use scenario (e.g., the need for stability and uniformity offered by SQL databases v. the need to process large amounts of unstructured and semi-structured data as provided by a nonSQL database).

Optionally, a cloud-based object database (e.g., to store images, audio and videos) may be used. Optionally, text messages may be stored in a specialized text database that is document-oriented. Optionally, a graph database (rather than a database organized as a table with rows and columns) may be used to store hierarchy data, where the graph database provides index-free adjacency, where a given element in the database contains a direct link to its adjacent element and index lookups are not required.

The communication/collaboration system **100**A may provide interfaces to and utilize one or more microservices from one or more remote systems to thereby provide additional features and/or enhance system performance. For example, an intercom microservice may be used for customer communication and technical support. An email automation service may be used to manage emails. An event-driven, serverless computing platform may be used to manipulate images. An error tracking service may be used to track and report bugs. A cloud based automated load and performance testing service may be used to monitor system performance.

The data store **114**B may store data published by various entities using the system **100**A, data accessed from respective enterprise databases of the systems **102**, communications between entities, purchase orders, and/or other data discussed herein. The data store **114**B may store an identifier associated with the creator/provider of a given item of data. The identifier may include identification information on the user's unit and organization, and may include creation and/or editing timestamps.

The data store **1148** may optionally host a connections database storing information on connections between organizations, organization units, and organization/unit users, and data communicated and/or stored relating to such connections.

The data store may provide data in response to user or system queries. Optionally, an interface may be provided (e.g., via the front end module **104**B) that enables queries to be submitted with respect to analytics. For example, a user can submit a query as to what is the most popular color (e.g., in general, for a specific item-type, or for a specific model of an item, for a specific SKU, etc.), what is the best-selling item in a given category (e.g., what is the best-selling desk chair), how many of a given item have been sold (e.g., in general, by a specific entity, to a specific entity, etc.), and/or the like. The response may be generated using data from the data store **114**B and/or from data accessed from the enterprise databases of the entity systems **102**.

The authentication module **102**B may be used to determine a user access and permissions based on user login information (e.g., UserID, password, and/or biometric data). Based on a user's access authorization and permissions, a user may be granted access to certain enterprise data within the entity to which the user belongs, and the user may also be granted access to certain enterprise data shared by other entities that have connections to the user's own entity. For example, certain users may be permitted to view certain data and not other data, may be permitted to access certain user interfaces and not other user interfaces, may be permitted to communicate with certain users at certain entities and not other users at a given entity and not other entities, and/or may be permitted to conduct certain transactions and not other transactions. By way of further example, certain data in the connection database referenced above may be accessed by users on the acquisition side of a given connection, certain data in the connection database referenced above may be accessed by users on the supply side of the given connection, and certain data may be accessible to users on both sides of the given connection.

By way of yet further illustrative example, based on the specified permissions and access, a given user may be permitted to only conduct purchases and not sales, sales and not purchases, or both purchases and sales of certain items/services. The permissions may be based on a user's position in a hierarchy of users (e.g., a hierarchy of users defined by an organization's administrator). By way of example, a user associated with an organization unit may be granted access and permission to enterprise data and workflows of the units below the user's unit in the hierarchy, but not necessarily to enterprise data and workflows of the units above the user's unit in the hierarchy.

The front end module **104**B (which may include a web server) may generate and provide for display or reproduction on user systems user interfaces configured to display data, receive data from the user or user system, download data, and/or upload data. Data may include text, graphic, still image, video, and/or audio data. Optionally, the user interfaces may include sounds that are triggered by a corresponding event. For example, each time a transaction of a specified type is generated (e.g., a final purchase order), a corresponding sound and/or animation may be generated. The sounds may include non-verbal sounds (e.g., beeps, horn honking, a tune, etc.) and/or words providing information and/or positive feedback to the user (e.g., "Purchase order completed. Great job!"). The animation may likewise provide positive feedback to the user (e.g., an animation or video of fireworks, a waving flag, a tooting horn, etc.).

Optionally, a threshold needs to be reached in order for certain sounds/animations/videos/emojis to be rendered to the user. For example, the user may need to have finalized a threshold number of purchase orders in order for a corresponding sound/graphic to be generated and provided to the user. By way of further example, a purchase order may need to be for a threshold dollar amount and/or quantity of product in order for a corresponding sound/graphic to be generated and provided to the user.

The sounds, animations, and thresholds may be different for different entities and may be different depending on the user function. For example, an entity may be able to custom-specify sounds, animations, and thresholds for a given event or transaction type. By way of further example, different sounds/animations/videos/emojis may be used for a user at a supplier entity and for a user at an acquirer entity even though both users are negotiating the same transaction (e.g., the same purchase order). Further, different sounds/anima-

tions/videos/emojis may be provided based on the user level in a hierarchy at the user's entity. For example, a sales person may be provided with different sounds/animations/videos/emojis than a supervisor of the sales person for a given transaction.

The front end module **104**B optionally determines the screen resolution of a target device (e.g., by querying the target device regarding the height and width layout in pixels). The front end module **104**B may then dynamically format the user interfaces accordingly. For example, different user interfaces may be used for phones, tablets, laptop, and desktop displays, to enable information to be appropriately presented for easy viewing while reducing navigation through multiple layers of user interfaces. Optionally, the front end module **104**B may utilize a flexible layout that enables a given user interface to dynamically scale to different screen sizes, densities, and/or aspect ratios. By way of illustration, a given user interface layout may be defined using density and scale independent pixels (dp) instead of using absolute pixels. User interface elements may be placed and sized relative to other user interface elements. Elements may be dynamically sized based at least in part on their content.

The backend processing system **106**B is configured to perform computations, data processing, filtering, query servicing, business intelligence, analytics, graph generation, diagram generation, dashboard generation, and report generation. For example, the backend processing system **106**B may be configured to process and analyze vast amounts of data being published by acquirers and suppliers of products and/or services to identify trends. Examples of trends which may be identified include which products are or are becoming popular (e.g., becoming increasingly offered or purchased over a specified time frame), and which products are unpopular or becoming unpopular (e.g., trending downwards with respect to offers and/or purchases over a specified time frame). Such trend information may be reported to a user (e.g., at an entity using the system **100**A) textually, via a graph, and/or otherwise.

Optionally, the backend processing system **106**B includes an artificial intelligence module. The artificial intelligence module may include a machine learning engine, such as a neural network, that identifies such trends and/or that identifies anomalies in the offer and/or purchases of products/services. In addition or instead, statistical predictive algorithms may be used to predict trends.

For example, optionally a deep, convolutional, neural network model trained using historical data (e.g., data published by supplier entities and/or acquirer entities, data acquired from enterprise databases of the entities, data obtained from purchase orders, sales data from remote databases, etc.) to identify trends with respect to the popularity of products and product types may be used. The deep neural network may include an input layer, an output layer, and one or more levels of hidden layers between the input and output layers. The deep neural network may be configured as a feed forward network. Optionally, the deep neural network may be used to analyze, optionally in real time, data published by product suppliers, product acquirers, and other data sources. In addition, the deep neural network may be used to analyze transaction data (e.g., data included in a purchase order).

The convolutional deep neural network may be configured with a shared-weights architecture and with translation invariance characteristics. The hidden layers may be configured as convolutional layers, pooling layers, fully connected layers and/or normalization layers. The convolutional deep neural network may be configured with pooling layers that combine outputs of neuron clusters at one layer into a single neuron in the next layer. Max pooling and/or average pooling may be utilized. Max pooling may utilize the maximum value from each of a cluster of neurons at the prior layer. Average pooling may utilize the average value from each of a cluster of neurons at the prior layer.

The trend spotting data may be stored in data store **114**B. Advantageously, the neural network, configured to derive trend data from complicated or imprecise data, can be used to extract patterns and detect trends that are too complex to be identified by humans or conventional computer techniques.

Thus, the backend processing system **106**B may be configured to determine trends, generate forecasts (e.g., in the purchase or sales of a product or product-type), perform prescriptive analytics, identify value drivers that make a given product more desirable (e.g., increases sales and/or enables an increase in prices without reducing sales), identify key segments correlations, identify anomalies, compare and rank sales performs of various items (e.g., where an item is associated with a corresponding SKU (Stock Keeping Unit)), and perform a what-if analysis. By way of example, the backend processing system **106**B may use determined trends to recommend to a supplier what products to offer in the future, and may recommend to an acquirer what products to acquire (e.g., for resale) in the future.

The communication and collaboration module **108**B enables inter-entity and intra-entity communication, such as chat, messaging, video, audio, and/or email communication (e.g., between established connections). As will be discussed elsewhere, the communications may be threaded, and communications associated with a given object (e.g., a given transaction) may be presented together in an organized fashion. Thus, for example, a user from one business unit of an entity (e.g., a subsidiary, division, group, or department of the entity) can communicate in real time via messaging/chat/video conferencing/audio with one or more users of the same business unit or with members of other business units which have connections to the user's business unit.

The integration module **110**B can connect to the existing system infrastructure of a given entity via an application programming interface (API), using XML, JSON, EDI, and/or other data exchange format. The integration module **110**B can perform data sharing, exchanging, and/or synchronization with other systems. In addition, the integration module may perform a data validation process, such as to determine which data item is most current (e.g., which SKU for a given product is most current and should be used). The integration module **110**B may identify data conflicts, generate a warning message and cause the warning message to be displayed when such a conflict is detected, and inhibit the overwriting of data when such a conflict is detected until the module **110**B receives a user or other instruction enabling the overwrite to be performed. The synchronization of data from an enterprise database or other data store of an entity system **102** with the data store **114**B may be performed periodically and/or in response to a detected event (e.g., the generation of a final purchase order or other agreement for a transaction between two entities).

Optionally, in response to detecting a given entity publishing information on a new product or an offer to supply a product, the integration module **1108** can broadcast in batch mode some or all of the published information on the new product or the offer to user interfaces (e.g., communication interfaces, dashboards, etc.) displayed by systems **102** of other entities. Such broadcast may be filtered so that it is

only available to entities specified by the given entity, only available to those with which the given entity has conducted a transaction with via the system **100**A within a specified time period, and/or only available to those entities that have opted-in to receive such broadcast from the given entity. This approach reduces network bandwidth usage and memory usage by inhibiting the broadcast of data to certain destinations while still ensuring that the data reaches the appropriate destinations in a timely manner. Further, the batch broadcast may be performed in response to detecting or predicting that the system **100**A communications interface is otherwise at low utilization to thereby avoid overburdening the communication interface.

The communication/collaboration system **100**A may be configured to accommodate the differing leverage between entities (e.g., retailers and suppliers). For example, the communication/collaboration system **100**A is optionally configured to provide workflows, features, and functions that operate in one-to-many relationships with the retailer (acquisition side company) being "one" and the suppliers (supply side companies) being "many". This enables acquisition side companies to communicate buying needs, specifications, and/or timelines to many supply side companies with the same or similar degree of effort as communicating with just one other company. Under the same or similar relationship, data from the many supply side companies flows many to the one acquisition side company. As such, acquisition side companies are enabled to improve acquisition decisions through comparison of similar offerings from many supply side companies (e.g., using a central repository of data). Further, the communication/collaboration system **100**A is optionally configured to provide workflows, features, and functions that operate in one-to-many relationships with the supply side company being "one" and the acquisition side companies (e.g., retailers) being "many".

The communication/collaboration system **100**A may also be configured to provide workflows, features, and functions that operate in many-to-many relationships, enabling multiple supply side companies to interact with multiple acquisition side companies, and enabling multiple acquisition side companies to interact with multiple supply side companies.

Thus, for example, a supply side company may use the same communication/collaboration system **100**A and interfaces to provide offers and process sales with multiple acquisition side companies. A given user at an entity may access data and user interfaces via a user device (e.g., a desktop computer, laptop computer, tablet computer, phone, smart television, virtual or augmented reality system, or other computing device). A given user device may be equipped with a processor, memory, a network interface, a display (e.g., a touch display), a microphone, a speaker, a point device (e.g., a mouse, touchpad, stylus), a printing device, and/or other interfaces. The user device may communicate with the communication/collaboration system described herein via a respective network interface.

The tracking module **1128** may optionally be deployed in the system **100**A to provide additional services, such as logistics (e.g., when is a given order scheduled to ship, what orders have shipped, when is a given order expected to arrive, what is the origination location for a shipment, what is the destination location for a shipment, etc.), invoicing services, billing services, or the like. Such services may be provided using data accessed from the data store **1148** and/or from the entity systems.

As illustrated in FIGS. **1**C, **1**D, **1**E, as a platform configured to be utilized by many different entities, the communication/collaboration system enables users to set up their account and rules by incorporating their organizational hierarchy as conditionally accessible nodes into the communication/collaboration system. The hierarchy and associated permissions and access rights may be specified by an authorized user via a user interface. Permissions and access rights may be assigned to a role, rather than a particular user. For example, a given position on the hierarchy may be assigned certain permissions and access rights. A user may then be assigned to the given position and will inherit those permissions and access rights. If the user then is no longer in the given position (e.g., the user quits), and a new user is assigned to the given position, the new user will inherit the position permissions and access rights and the old user will lose those permissions and access rights.

For example, with reference to FIG. **1**C, a given organization may have multiple levels of hierarchy. The hierarchy of entities A1, A2, A3 or A4 in FIG. **1**C may be any hierarchical structure (e.g. a hierarchical structure that fits a business structure). The hierarchy may represent an organization chart or a hierarchical structure derived from the organization chart. The hierarchy may represent a hierarchical structure not related to the organizational chart such as a hierarchy representing a supply chain, for example, a hierarchy of a customer list, or a hierarchy of a supplier list by way of illustrative example. A given hierarchy level may correspond to a given authority (e.g., management) level. A given branch of the hierarchy may correspond to a department, business unit, or the like. For example, roles B, C, and D (to which respective users are assigned) may be members of a first department (where role B is a supervisor role with respect to roles C and D), roles E, F, G may be members of a second department (where role E is a supervisor role with respect to roles F and G), and roles H, I, J may be members of a second department (where role H is a supervisor role with respect to roles I and J). Users assigned to a supervisor role may be provided with access to all of the data and communications of each of their subordinates but not of the subordinates of other supervisors on the same hierarchy level. Further, users assigned to roles on a lower hierarchy level may not be able to access all the data and communications of users assigned to roles on a relatively higher hierarchy level. As illustrated, a given user (e.g., assigned to roles C, D, F, G, I, or J) of an entity may be permitted to communicate with one or more users of one more other entities and not other entities or other users.

Thus, a complex yet flexible hierarchy may be implemented that provides data security to safeguard valuable data (e.g., confidential pricing data, purchase data, corporate data, etc.) to ensure that only a user (e.g., an employee) with the proper hierarchy level and/or permissions may access the data. For example, a user assigned to a high level role (node) in the hierarchy has more access privileges to data and communications than users assigned to a lower level role (node) in the hierarchy. Thus, higher level roles in the hierarchy may be permitted access to the data and communications of users assigned lower level roles in the hierarchy, but not vice versa. For example, referring to entity A1 in FIG. **1**C, users assigned to Role B in the illustrated hierarchy may access all data and communications of users assigned to Roles C and D, but users assigned to Roles C and D may not access data and communications of users assigned to Role B.

Referring to FIG. **1**D, a given node contains information, artifacts, and communications (e.g., organized as communication/transaction threads) that are conditionally accessible by users. Within an entity, access to a given node is set by an authorized entity administrator and is subject to a hierarchical inheritance scheme determined by the nodes

comprising the organizational hierarchy as similarly discussed above. By way of illustrative example, across internal organizations, a buy side company administrator may designate which nodes a given sell side company can access, and authorized sell side company administrators may then designate which users within the sell side company can access those nodes.

After organizational hierarchies are established, buy side companies have been connected to multiple sell side companies via a given node, and users for both companies have been assigned access, users generate information, artifacts, and communication within that node that are contained within (associated with) that node. The communication/collaboration system enables a given user's permission to access a given node to be removed (e.g., by an administrator or manager) and enables granting, to new users, access to the system. The communication/collaboration system further enables granting to new or existing users access to all or select items of information, artifacts, and/or communications generated by users (e.g., generated during the entire existence of the node or a select time frame thereof). For example, as discussed above, access and permissions may optionally be assigned on a role-basis, wherein if a user's role changes the user's access and permissions may likewise change.

By way of illustration and with reference to FIG. **1**D, Ryan, Claire and Ryan, Claire, Katy, Alex, Brittany, and Luke are granted access to communication/transaction threads **5** and **11**.

With reference to the table illustrated in FIG. **1**E:

Ryan is granted access to node **1**,

Ryan and Claire are granted access to node **2**,

Ryan, Claire and Jenny are granted access to node **3**,

Ryan, Claire and Katy are granted access to node **4**, and so on.

With reference to FIG. **1**F, links are illustrated in the context of an organization acting in a buy function and an organization acting in a sell function. The communication/collaboration system may optionally be configured so that the one-to-many/many-to-one type relationship in the connection of multiple sell side companies to a node of a given buy side company enables users of the buy side company to access information, artifacts, and/or communications generated by many sell side companies that are connected to the given node (sometimes referred to herein as a "Channel"), while sell side company users are only provided access to information, artifacts, and communications generated by their own users or buy side users (sometimes referred to herein as a "Threads") and not those of other sell side companies.

Users of the communication/collaboration system may collaborate with each other on collaboration objects, such as products, request for quotation (RFQ), quotes, purchase orders, shipments, invoices and payments, and other business objects. Collaboration objects may correspond to elements of business workflows between entities.

The communication/collaboration system may be object oriented in that the system is configured to streamline workflows around common collaboration objects. Advantageously, optionally the system is contextual, in that both data and communications specific to a collaboration object may be stored together and presented side by side via the same user interface, so users can view the details and history of the communications, and a given attribute of collaboration objects. Hence, communications regarding a collaboration object may be associated with and/or presented with the data of the same collaboration object in an object-oriented fashion. This is in contrast to conventional approaches where data and communications are stored and presented via separate systems, via separate user interfaces, in a traditional IT infrastructure. For example, conventionally data may be stored in such business applications as ERP (enterprise resource planning), CRM (customer relationship management), PLM (product lifecycle management) systems, while communications are separately stored in emails (e.g., OUTLOOK, GMAIL, etc.), chat messages (e.g., MICROSOFT TEAM, SLACK, GOOGLE CHAT, etc.), video conferencing (e.g., ZOOM, MICROSOFT TEAM, etc.). Conventionally, to sort out the relevant communications related to a collaboration object, a user has to manually search through and read many email threads and chat messages, taking an inordinate amount of user time and computer resources.

Referring to FIG. **1**O, a conventional group-based communication system typically has a flat communication architecture rather than the complex, multilevel hierarchical communication architecture disclosed herein (see, e.g., FIG. **1**C). In contrast to the complex, multilevel hierarchical communication architecture illustrated in FIG. **1**C, entities A1 and A3 do not have hierarchical layers and instead have flat organizations with a single level as would be found in a group-based communication system, where nodes F and I of entity A1 are connected to nodes N and R of entity A3. However, it should be understood that the present system enables different levels of hierarchy to be defined, including a single level, so that the disclosed system is backward compatible with group-based communication systems, although conventional group-based communication systems are not upwardly compatible with multilevel hierarchical communication architectures.

Further, disadvantageously, collaboration objects are not built in the architecture of a conventional group-based communication system (e.g., MICROSOFT TEAMS, SLACK, etc.). Because collaboration objects are not built in the architecture of a conventional group-based, collaboration objects may need to be added to the conventional group-based communication system via attachments or complex, failure prone integrations to third party applications such as an ERP system. For example, a collaboration object, such as a purchase order, may be attached to a chat message in a group-based communication system, such as SLACK. In another example, a purchase order may be pulled from a business application, such as Microsoft DYNAMICS, into a group-based communication system, such as MICROSOFT TEAMS, via integration. On the surface, it may appear that both data (e.g., a purchase order) and communications (chat messages) are associated in the group-based communication system, just as a purchase order may be attached to an email communication.

Practically, however, it is very difficult for a user of a group-based communication system to search and identify all data and communications of a collaboration object, such as a purchase order, which may exist in dozens if not hundreds of email threads or chat message threads across many channels and on multiple platforms. A typical user may be able to subscribe to no more than 100 channels in a chat message system, but the same user may have to work on hundreds or thousands of collaboration objects such as products, quotes, purchase orders, and/or other objects in his/her job function. The disclosed object-oriented communication/collaboration system naturally contextually ties communications to the collaboration object providing much better functionality and greater ease of use and deeper visibility than conventional group-based communication systems.

Further, by utilizing a hierarchical communication architecture, a user can opt to view a log at a high level of the hierarchy, which will have relatively few members and communications, and may then navigate to a desired lower level-hierarchy to view corresponding communications and collaboration objects, rather having to view all communications and objects at the same time.

With reference to FIG. **1**G, an example thread cross section is illustrated. In this example, the information contained within a given thread is comprised of object(s) and communication(s), generated by buy side company users and sell side company users. The communication in a thread is organized by object (e.g., program, product(s), purchase order(s), and/or the like) to provide useful context for the communication.

With reference to FIG. **1**H, within a given Channel and Thread are functions to support or enable a buy/sell process (e.g., a buy/sell process for retail purchasing and wholesale selling). These functions may include some or all of the following: programmatic buying planning, request for proposal like specification sharing, offering of goods, negotiation and customization of goods for the buyers, ordering, and/or the like. Access to such functions for a specific channel or thread may be governed by the hierarchical permissions of the organizations as discussed elsewhere herein.

With reference to FIG. **1**I, the communication/collaboration system optionally integrates functions and features that enable a retail buying/wholesale selling process and that enables access to tools and related information, artifacts, and communications to be governed by hierarchical structures of multiple organizations so as to accommodate the needs and sensitivity of each organization.

With further reference to FIG. **1**I, in this example, the supplier may export data (e.g., product data, catalog data, etc.) from its ERP system and upload the data to the communication/collaboration system. the communication/collaboration system may store the uploaded data in the communication/collaboration system data store. Using interfaces provided by the communication/collaboration system and the uploaded catalog data, a supplier user with the appropriate permissions and access rights may generate an offer and transmit the offer to a buyer (e.g., a retailer) via the communication/collaboration system. The offer may include an offer identifier, a product identifier, a product description, product attributes, product pricing, product delivery times, and/or other information, as discussed elsewhere herein.

Many suppliers may be similarly generating offers and transmitting the offers to the buyer via the communication/collaboration system. A buyer user (with the appropriate permissions and access rights), may browse through the offers and view the offer details via an interface provided by the communication/collaboration system (discussed in greater detail elsewhere herein). The interface may also be configured with formulas enabling the buyer user to calculate such data as estimated landed cost, margin, estimated retail price, and/or other data. The buyer user may then communicate (e.g., via text message, photograph, video, form field changes, or otherwise) questions or desired changes (e.g., change in color, configuration, price, etc.) via the communication/collaboration system as part of a negotiation process with respect to the offer. The supplier receives the buyer communication and may accept the changes, refuse the changes, or propose different changes (e.g., compromise changes). The negotiation process may be repeated one or more times. The buyer may then generate an order via a corresponding user interface provided via the communication/collaboration system which may specify products, quantity, ship date, case pack/cube dimensions, unit price, total price, etc. The order may be transmitted via the communication/collaboration system to the supplier who may accept the order or request changes to one or items in the order (e.g., change in ship date, quantity, etc.). If the supplier accepts the order, the sales order is exported and transmitted to the buyer and uploaded to the supplier's ERP system. The buyer receives the order, approves the order, and exports a corresponding purchase order to the buyer ERP system.

With reference to FIG. **1**J, an example communication/collaboration system architecture is illustrated with example components. As similarly discussed with reference to FIG. **1**B, the example communication/collaboration system architecture may include a front-end application (optionally implemented using a user interface library for building web applications out of components, such as REACT, and served from a cloud system). An SSL layer may be provided to enable secure communications between the front end and a cloud-based web computing service (e.g., EC2) which may be used to provide the backend processing (see, e.g., FIG. **1**B). Optionally, the cloud computing service may provide resizable computing capacity. A database, cache and/or message broker/web sockets broker (e.g., REDIS) may also interface with the cloud-based web computing service. A search engine (e.g., ELASTICSEARCH) may be provided that is deployed via the cloud-based web computing service. For example, the search engine may be a distributed, multitenant, full-text search engine with an HTTP web interface and schema-free JSON documents. The search engine may be configured to process query and return search results, such as those discussed elsewhere herein. A relational database (e.g., POSTGRES RDS) may also be provided that is deployed via the cloud-based web computing service. As discussed above, optionally in addition or instead, a non-relational database (e.g., NoSQL) may be used.

As discussed above, different users at different hierarchies of a given organization may be assigned different permissions and access rights. Further, when users at different organizations are collaborating on an object (e.g., a transaction process involving the supply and acquisition of a product), a first user at a first organization may be permitted to view a first set of data related to the object that a second user at a second organization is not permitted to view, the second user at the second organization may be permitted to view a second set of data related to the object that the first user at the first organization is not permitted to view, and both the first user and the second user may be permitted to view a third set of data related to the object. However, not all of the first set or the third set of data may be of interest to the first user throughout the entire transaction process. Similarly, not all of the second set of data and third set of data may be of interest to the second user throughout the entire transaction process. Further, still different sets of object-related data may need to be presented to other users at the first organization and the second organization based on their respective hierarchy levels and associated permissions and access rights. Thus, using conventional techniques, the process of determining what data to present to who during a transaction, and then rendering user interfaces with such data, is burdensome with respect to processor and memory utilization.

Thus, as noted above, in order to address the foregoing challenges, a given virtual page may be generated (and maintained in memory) that is associated with a given object (e.g., a project or transaction). With reference to FIG. **1**L, the

virtual page may include different modules (Module 11 . . . Module nn) used to present different types of data. For example, a first module may be used to present the seller margin on a product that is the subject of a transaction process, a second module may be used to present the buyer margin on the product, and a third module may present a freight on board (FOB) location. By way of further example, a given module may be used to present inter-entity communications between a first entity and a second entity related to a collaboration, another module may be used to present intra-entity communications between users at the first entity, and another module may be used to present intra-entity communications between users at the second entity. The data presented by one module (e.g., intra-entity communications between users at the first entity) may be confidential and not intended to be viewed by a user of the second entity, while other data (e.g., inter-entity communications between the first entity and the second entity related to the collaboration) may be shown to both the first and second entities. Similarly, intra-entity communications between users at the second entity may be confidential and not intended to be viewed by a user of the first entity. Still further, the data presented by a given module may not be of particular interest during certain steps of the transaction process.

When multiple users are collaborating on the same object, each time new data and/or data types are to be displayed to users, the communication/collaboration system may optionally determine which entity a given user is associated with, which user(s) at a given collaborating entity the given user is collaborating with, the permissions associated with a given user, the job function of a given user, and/or the current position of the transaction process (e.g., offer generation, negotiation, purchase order generation, etc.). The communication/collaboration system may use some or all the foregoing information to determine what data is to be shown to a given collaborating user. The communication/collaboration system may then determine which modules of the virtual page are to be displayed to a given user. The modules may then be rendered with the corresponding modules and module data (which may already have been present in the virtual page) via a terminal display of a given user.

An example rendering process will now be described with reference to FIG. **1**K. At block **202**A a user 'A' accesses the communication/collaboration system (e.g., by logging in). The process determines which entity (e.g., organization 'A') user 'A is a member of. At block **204**A, user 'A's' function is determined. For example, the function (e.g., sales agent, purchasing agent, sales supervisor, purchasing supervisor, etc.) may be determined by the position of user 'A' in the organization hierarchy. The function may be determined from a user function database stored in the data store of the communication/collaboration system. Using the identified function of user 'A', at block **206**A a determination is made as to the permissions and access rights granted to user 'A'. For example, the permissions and access rights granted to user 'A' may be retrieved from the data store of the communication/collaboration system. Similarly, at block **208**A, a user 'B' accesses the communication/collaboration system (e.g., by logging in). The process determines which entity (e.g., organization 'B') user 'B' is a member of. At block **210**A, user 'B's' function is determined. For example, the function (e.g., sales agent, purchasing agent, sales supervisor, purchasing supervisor, etc.) may be determined by the position of user 'B' in the hierarchy of organization 'B'. Using the identified function of user 'B' at block **212**A, a determination is made as to the permissions and access rights granted to user 'B'.

At block **213**A, the process determines the current position/state of the transaction process (e.g., offer generation, negotiation, purchase order generation, etc.). At block **214**A a generated virtual page is accessed from memory. As discussed above, the accessed virtual page may include a plurality of modules displaying different sets or types of data. At block **216**A, using the determined permissions and access rights of user CA' and the determined transaction process position, one or more modules are selected from the virtual page for user CA' (e.g., those modules that present data that user CA' is authorized to view and that are relevant to the current transaction process position). Similarly, at block **218**A, using the determined permissions and access rights of user 'B' and the determined transaction process position, one or more modules are selected from the virtual page for user 'B'. At block **220**A the user interface is rendered for user CA' using the modules selected for user 'A'. Similarly, at block **222**A, the user interface is rendered for user 'B' using the modules selected for user CB'.

Referring to FIG. **1**M, four different user interfaces are rendered using modules selected from the virtual page illustrated in FIG. **1**L. User interface **1**M(a) with modules **11**, **22**, **31**, and **32** may be rendered via the terminal display of user CA'. User interface **1**M(b) with modules **11**, **22**, **41**, and **44** may be rendered via the terminal display of user 'B'. User interface **1**M(c) with modules **11**, **12**, **22**, **23**, **31**, and **32** may be rendered via the terminal display of a supervisor of user 'A'. User interface **1**M(d) with modules **11**, **22**, **41**, **42**, **43** and **44** may be rendered via the terminal display of a supervisor of user 'B'. Thus, while there is a certain number of module overlaps for each user in this example, the users of one organization are present with modules not visible to users of another organization, and the supervisors are presented with all of the modules displayed to their subordinates and are also presented with additional modules. Thus, different users within the same entity may see different subsets of the virtual page, with different data. Further, users at different entities may see different subsets of the virtual page, with different data. Thus, the foregoing process may advantageously use the same virtual page in rendering the different pages for the different users.

As similarly discussed elsewhere herein, optionally, the communication/collaboration system is oriented to providing solutions on an organizational level (e.g., retailer-type entities and supplier-type entities). The platform is configured to address the differences in how these different types of organizations structure themselves and enables explicit definitions of their relationships to each other. Once these relationships are defined within the platform, users from different companies (or other organization-types) may be granted access to interact with one another through these defined relationships (e.g., using Channels and Threads).

As discussed elsewhere herein, there may be multiple types of users within an organization, where different types of users may be assigned different responsibilities, levels of authority, and/or permissions. By way of illustrative example, a retailer may have users with the following titles/roles: retailer administrators, department managers, and category buyers, supplier companies have supplier administrators, sales managers, sales representatives, and/or the like. Examples of differences in their permissions and workflows are discussed herein. Example workflows correlating with different user roles are discussed herein.

In general and with reference to example user interfaces, the user interface navigation pattern provided by the platform may comprise a user choosing a specific workflow to which the user has been granted access (e.g., via a collapsible left navigation bar illustrated in relevant user interface), the states of the workflow may then optionally be distinguished (e.g., as tabs across the header of the user interfaces within the workflow), and the remaining screen area may be comprised of objects, information, functions, and/or communication that are utilized in the selected workflow as selected from a virtual page as described above (see example navigation user interface illustrated in FIG. **2**A).

Referring to FIG. **1**N, an example communication collaboration process is described that may be executed using the communication/collaboration system. At block **202**N, entities (e.g., retailer, suppliers, etc.) are enabled, via respective user interfaces, to define internal hierarchies of personnel and/or functions (e.g., company president, group vice president, manager of product acquisition and program definition, purchasing agent, etc.). A given user at the entity may be assigned to a given hierarchy position, where optionally multiple users may be assigned to the same hierarchy position (e.g., purchasing agents for home furnishings). The hierarchies may be saved in the communication/collaboration system data store and/or in respective entity enterprise data stores.

At block **204**N, the entities are enabled to define certain permissions for a given hierarchy position and/or a user at a given position. The permissions may include communication permissions. For example, the permissions may indicate what other entities a given user/functional position is permitted to communicate with, regarding what types of objects (e.g., product type purchases/sales) a given user/functional position is permitted to communicate about, what types of communications a user is permitted to communicate (e.g., makes sales offers, making purchase order, etc.), and/or the like. In addition or instead, the permissions may indicate what data or data-types a given user is permitted to access. For example, a manager may be granted access to communications and/or purchase data for all of the manager's subordinates, while a subordinate may only be able to view the communications she is engaged with. By way of further example, certain types of data (e.g., profitability data for a department) may only be provided to those above a specified hierarchy level.

At block **206**N, a user of a given entity (user CA' of entity CA' in this example) accesses the system (e.g., logs in to the system using appropriate credentials, such as UserID, password, biometrics, and/or the like). At block **208**N, using an identification of the user obtained from the user's credentials, the user's position in her entity's organization is optionally determined from the defined hierarchy assignments. At block **210**N, the user's communication permissions are determined (e.g., based on the user's hierarchy position or via communication permissions stored in association with a user record). At block **212**N, the user is enabled to generate a collaboration object (e.g., using the user interfaces described herein). As discussed elsewhere herein, a collaboration object may be a project, a product offer, a purchase program, a document, a transaction, and/or the like.

At block **214**N, the user is enabled to generate a collaboration invitation with respect to the collaboration object. The user may be limited to issuing the invitation to those entities that the user's communication permissions permit. Optionally, a listing of potential invitees is presented from which the user may select, where the listing is filtered to those entities the user is permitted to communicate with regarding the collaboration object.

At block **216**N, acceptances to the invitation are received from one or more of the invited entities. Optionally, an invitation is associated with an expiration date specified by the inviting entity, wherein if the entity has not accepted the invitation prior to the expiration date, the invitation is disabled so that the invitee is inhibited from collaborating on the collaboration object.

At block **218**N, the user and one or more other users at the entities that accepted the invitation are enabled to collaborate on the collaboration object (e.g., using the interfaces described herein). For example, users may exchange data, images, propose delivery times, collaboratively agree on product characteristics, packaging, shipping, and/or the like. Optionally, the collaboration is performed on a one-to-many basis, where the user that issued the invitation is separately collaborating with each entity, but the invited entities are not collaborating with each other. For example, if the collaboration object is a transaction for the acquisition of a product, the user that issued the invitation may receive separate proposals/offers from respective invitees, may evaluate such proposals/offers, and may negotiate separately with the entities that submitted the proposals/offers. By way of example, the offers may be presented via an offer inbox that may be organized by data or grouped based on whether the offers have been reviewed, not reviewed, responded to, and/or using other grouping categorizations.

At block **220**N, logs of communications between the user and the invited entities regarding the collaboration object may be generated and maintained (an inter-entity communication log). The communications may include text communications (e.g., via an instant message communication, email, or otherwise), images, videos, audio, documents, and/or the like. The communications may include questions, instructions, comments, offers, and/or counteroffers related to the collaboration object as discussed elsewhere herein.

At block **222**N, logs of communications between the user and other users within the user's entity regarding the collaboration object may be generated and maintained (an intra-entity communication log). The communications may include text communications (e.g., via an instant message communication, email, or otherwise), images, videos, audio, documents, and/or the like. The communications may include questions, instructions, comments, and/or the like.

At block **224**N, communication logs may be presented via respective systems to users at the various entities participating in the collaboration. The displayed logs may be filtered so that a given viewing user accessing the communication/collaboration system is only presented with collaboration communications the user is entitled or has permissions to view. For example, a given user at an invited entity may be presented with the communications between the given user and the entity that issued the invitation regarding the collaboration object, as well as communications between the given user and other users at the given user's entity. However, the displayed communications may exclude communications between users at the entity that issued the invitation and may further exclude communications between the entity that issued the invitation and other invited entities.

At block **226**N, data associated with the collaboration object may be filtered and displayed to a given user in accordance with associated access permissions. For example, as similarly discussed above, a user at a given entity may be permitted to view certain data (e.g., the margin for a given product) and not other data (e.g., the total

profitability of sales for the company as a whole). By way of further example, a user at one entity may be prevented from accessing and viewing data from an enterprise database of another entity.

Certain example user interfaces, including graphical user interfaces, will now be described. The user interfaces may be provided by the communication/collaboration system as web pages from a cloud system (e.g., for display via a user web browser) and/or the user interfaces may be provided via a dedicated application hosted on a user or other device. The data displayed via the user interface may have been entered by a user and/or may have been accessed from or using the communication/collaboration system or other system. For example, the user interfaces may be populated from data accessed from the communication/collaboration system data store or administrator or other authorized user, a supplier system data store or supplier authorized user, or an acquirer system data store or acquirer user, as appropriate.

With reference to FIG. **2**A, the left side of the example user interface includes a name and image of the current retailer user, the name of the retailer, a control that enables navigation to a dashboard, and a hierarchy tree of departments/categories, including departments/categories (e.g., products for the "Home"), and sub-departments/sub-categories (e.g., storage, furniture, etc.). The illustrated user interface further includes information on one or more buying programs, including the name/description of the program (e.g., "Holiday **2018**"), the milestone dates associated with the program (e.g., offer due date, commitment due date, start to ship date, in-store date, and/or the like). The milestones and milestone date are optionally graphically depicted (e.g., using a line with milestones and milestone dates proportionally indicated). Optionally, the user interface includes one or more media file attachments (e.g., image files of patterns, trend boards, pantones, program slide deck, etc.) to share with suppliers. Optionally, a control may be provided for each attachment indicating whether the attachment is public or private. Such public/private designation may be utilized in determining who may access the attachment. For example, a private document may only be shared by buyer personnel, and a public document may be shared with suppliers. One or more program suppliers may be listed, including a supplier name. A control may be provided that enables the user to invite additional suppliers to bid on the program. In response to activation of such invite control, the invitation may be transmitted to the corresponding supplier.

With reference to FIG. **2**B, an example retailer administrator user interface is illustrated. The illustrated user interface may be utilized by a user (e.g., an administrator) to input/edit information about the retail company (e.g., identifying information such as legal name, trade name (DBA), federal tax identification number, address, logo, textual description, and/or other information) via corresponding fields. The logo (or other graphic/image file) may be dragged and dropped onto the user interface to upload the logo to the communications system. Activation of a save control enables the entered data to be saved on the communications system. The user interface and/or communication/collaboration system may incorporate error checking for expected data types and compliance with rules (e.g., checks for empty fields, checks that the correct file type is being uploaded for the logo, checks that the logo image meets minimum and/or maximum resolution requirements, etc.).

FIGS. **2**C and **2**D illustrate example "Department and Categories" user interfaces. Optionally, only users with administration/management authority are granted editing permissions with respect to these user interfaces. The illustrated user interfaces may be utilized by a user (e.g., an administrator) to define the organizational structure/hierarchy of the company (e.g., composed of parts such as "Departments" and "Categories"), assign users within the company to a department or category, provide access to one or more parts of the organization, and to grant supplier companies access to interact with the retail company and its users (e.g., specified users) via one or more parts of the company.

With reference to FIGS. **2**C and **2**D, the user interfaces may include an expandable/collapsible tree representation of the organizational structure (see the example left panel). Users may utilize the tree to select, view and edit different parts of the organization and to alter the structure of organization.

A user interface may access and display, in a user access area, a list of users who have access to the part of the organization selected in the previously described organizational structure user interface. Optionally, the user interface textually and/or graphically draws distinction between users who are assigned directly to that part of the organization versus users who have inherited access to that part of the organization because of assigned permissions to a parent branch of the organizational hierarchy (e.g., furniture buyers vs. all managers). The user access area interface may also be optionally utilized by users to add additional users to the selected part of the organization.

Another section of the user interface may be configured based on whether the user selected a Department or Category via the organizational structure user interface. If a Department is selected then this section of the user interface may display a table element containing information on order requirements, order product requirements, and/or order product component requirements, including both those that are assigned to and those inherited by that department. In addition, a user interface may be provided that enables the user to add or edit requirements assigned to the selected department. Optionally, the user interface accesses and provides for display (e.g., via respective tabs) both buyer order requirements and supplier order requirements. If a Category was selected via the organizational structure user interface, then this section of the user interface displays (optionally all) supplier companies that have access to interact with this part of the organization via sending and receiving workflow related objects and communications. This section also provides the function and controls that enable the user to add, edit, or restrict suppliers that can interact with the selected Category (e.g., using edit controls). Thus, the system enables integration with multiple entities and corresponding systems. Requested and accessed data may be specific to the requesting entity (rather than standardized across entities). Thus, a given entity can specify what information may be pulled from or pushed to specified systems.

Example controls that may be provided may include edit controls, connect supplier controls, add manager controls, add new department controls, add new category controls, and/or the like.

FIGS. **2**E and **2**F illustrate a supplier accounts user interface. For example, the "Supplier Accounts" user interface may be accessed by a retailer administrator to view, add, and edit supplier company permissions to access and interact with parts of the retailer company organization. The "Supplier Accounts" user interface may enable Channels and Threads relationships to be defined and displayed.

In the example user interface illustrated in FIG. **2**E, distinct sections with distinct functionality are graphically

defined. In this example, the section on the left/middle portion of the user interface displays a table comprised of suppliers that have a defined relationship (Connection) with the retailer company on the communication/collaboration systems, optionally including the supplier name, logo, retailer unique supplier identification strings, contact information (e.g., email address, sms address, phone number, etc.), categories the supplier has been granted access to interact with (e.g., to submit offers on), and status information (e.g., active, inactive, etc.). The user may select individual suppliers in this table.

The right portion of the example user interface illustrated in FIG. **2**E illustrates supplier details and is comprised of a form that both displays the information about the supplier selected via the table (e.g., Supplier Tax ID, company name, supplier contact, supplier ID, connected categories) and enables the user to alter the selected supplier's access to parts of the retailer organization ("Categories"). For example, a checkbox may be provided in association with a given category or sub-category, and the user may check the box to provide access to the respective category or sub-category, or uncheck the box to deny access to the respective category or sub-category. Optionally, the categories and sub-categories are displayed using a hierarchical tree. This section thus may display "Threads" that have been created between the retailer company and the selected supplier company.

A search user interface may be provided configured to receive a search query to find a supplier record. In response to receive a textual search query, the system may query a database of supplier records, identify matching supplier records, and provide those records for display, optionally in ranked order according to relevance or closeness of match.

FIG. **2**F illustrates an example modal window user interface that is accessed via the supplier accounts user interface illustrated in FIG. **2**E that is utilized to establish initial connection/relationship/"Threads" between the retailer and a given supplier company. A user may enter a supplier tax ID and supplier ID, and supplier companies are matched for this initial connection using federal tax id as a primary key and retailer ID as a single use "password" to verify authenticity. Email for one or more primary contacts of the supplier company is also collected so that suppliers that have not already created a supplier company on the platform have people in their organization contacted and notified via email. The modal user interface may display supplier tax ID, company name, supplier contact, supplier ID, and connected categories.

FIG. **2**G illustrates an example "User Accounts" user interface which may be utilized by a user (e.g., retailer administrators) to create new users and to edit existing user information and permissions within their retail company. When creating a new user information is collected such as name, email address, user type, employee ID, title, assignment (e.g., to products, categories, or other portions of the retail company), access to parts of the retailer organization, and/or status.

In the illustrated example user interface, graphically distinct sections are provided. The left/middle section is comprised of a table of users and related information such as name, photo/image, email address, assignment, title, status, and/or additional information. The users listed in this table are selected by the retailer administrator user. This section of the screen also has a function to collect information on retailer employees that are being newly created in the platform. The right section of the user interface is comprised of a user details form that enables a user to view and edit information and permissions about the user selected via the user table. This section includes information such as name, email address, user type, employee ID, employee permissions to parts of the retailer organization (assigned departments and categories, optionally displayed as a hierarchical tree), and managing department. For example, with respect to assignments of departments and categories, check boxes may be provided enabling a user to select or unselect departments and categories for which the user is a manager. Optionally, selection of a department or category, will also assign the user as manager to any sub-departments or sub-categories.

Certain example supplier-side user interfaces will now be described.

With reference to FIG. **2**H, an example supplier administrator user interface is illustrated that enables a user (e.g., a supplier administrator) to input/edit information about the user's supplier company (e.g., identifying information such as legal name, trade name (DBA), federal tax identification number, address, logo, textual description, and/or other information). The supplier logo may be dragged and dropped onto the user interface to upload the logo to the communications system. Activation of a save control enables the entered data to be saved on the communications system. The user interface and/or communication/collaboration system may incorporate error checking for expected data types and compliance with rules (e.g., checks for empty fields, checks that the correct file type is being uploaded for the logo, checks that the logo image meets minimum and/or maximum resolution requirements, etc.).

With reference to FIG. **2**I, an example catalog management user interface is illustrated that enables a user (e.g., a supplier administrator) to organize the supplier's electronic product catalog and assign supplier users permissions to part or all of the catalog. The product catalog functions as a file path folder system where the equivalents of folders are called "Product Categories" and the analog to files are "Products." A given product is assigned by a user (individually or in batch mode) to a product category.

In the illustrated example catalog management user interface, distinct sections are graphically defined. In this example, the leftmost section ("Catalog Structure") is a container comprised of a selectable, expandable and collapsible tree element that represents the structure of product categories within the product catalog. The Catalog Structure user interface enables a user to select a product category, and once selected, an edit user interface enables the user to edit product categories and to create new "nested" children product categories. A product catalog section of the user interface lists users (e.g., including a user photograph, name, title, connected accounts) that have access to the selected product category. The illustrated tables optionally visually and/or textually distinguish users who are assigned to the selected product category from users who have inherited permissions to the selected product category from an assignment to a parent of the selected product category. User access can be granted or altered in this section as well.

FIG. **2**J illustrates an example retailer connections user interface. In this example, the user interface indicates that a retailer sent an invitation to the supplier indicating that the retailer wants to connect to the supplier. The displayed invitation includes a prompt to enter an identifier (a vendor ID provided by the retailer) to confirm the connection, and a field is provided to receive the connection. A connect control is provided, which when activated causes acceptance of the invitation to be transmitted to the communication/collaboration system, and from the communication/collabo-

ration system to the retailer. A search user interface may be provided configured to receive a search query to find a retailer record. In response to receive a textual search query, the system may query a database of retailer records, identify matching retailer records, and provide those records for display, optionally in ranked order according to relevance or closeness of match.

A user (e.g., a supplier administrator) may utilize the "Retailer Connections" user interface to verify connections with retail companies who have granted that supplier company access to one or more of their Categories (Threads), and to manage user permissions on which users from the supplier company have access to the Categories (Threads) from the connected retailers.

FIG. **2**K illustrates an example retailer connections user interface, optionally with graphically/textually distinct sections. In this example, a retailers section provides a table of retailer companies with associated information (e.g., logo, company name, category, supplier ID, status, and/or other information). The user interface enables a user to select a table entry. In response, in a connected users section, the user interface accesses and displays a table of users within the supplier company who have permission to access the selected category. The example table contains information about a given user (e.g., name, title, picture, list on connected accounts, and/or other information). Edit controls may be provided that enables a user to be added or deleted.

FIG. **2**L illustrates an example "User Accounts" user interface which may be utilized by a user (e.g., a supplier administrator) to add new users and edit existing user information and permissions within the supplier company. The user interface may also enable the supplier administrator to interact with connected retail company categories via threads. In response to activating an add new user control, an interface may be provided via which new user data may be received and stored (e.g., name, email address, user type, employee ID, title, access to parts of the supplier's catalog (Product Categories), and access granted to interact with retailer categories the supplier is connected with via threads.

In the example illustrated in FIG. **2**L, graphically/textually distinct sections are provided. The left/middle section ("All users") is comprised of a table of users and their related information such as name, photo/image, email address, status, title, connected accounts and/or other information. A user (e.g., a supplier administrator) may select users listed in this table. The right section of the user interface is comprised of a connected accounts interface and a catalog permissions user interface which respectively display for the selected user the access permissions to access the retailer categories (threads) and the product catalog (product categories). The check boxes are provided in association with respective hierarchical parent-child structures via which the supplier user may add or delete permissions for the selected user (e.g., add or delete retailer categories/sub-categories and/or catalog categories/sub-categories). A deactivated products tab is provided, which when activated, causes a list of no-longer available products, that had previously been available via the catalog, to be accessed and presented.

Example user interfaces related to the suppler catalog workflow will now be described.

With reference to FIG. **3A1**, an example supplier product catalog user interface is illustrated. In the illustrated user interface, images of products are provided in association with a product identifier and a product category. A product category filter user interface is provided via which the user can select one or more categories to view. A search field is provided via which a user may enter a search query (e.g., a product name, a product identifier, product characteristics, product category, values from the product fields such as description, price, material, color, size, quantity in a set, etc.), and in response a search engine will locate matching products which will be provided for display to the user. Optionally, the search results will be in rank order based on the relevance or closeness of a given match.

Some or all of the supplier users may be granted access to the illustrated user interface. Optionally, only a designated subset of supplier users (e.g., supplier administrators and/or sales managers) are provided the ability to edit the product organization (e.g., by changing, for a given product, the product category to which it is assigned).

Multiple views of the product catalog may be generated and displayed, such as the example views illustrated in FIGS. **3A1** and **3A2**. FIG. **3A1** provides a representation of the product catalog with product images as the primary indicators of products, which is referred to herein as a "Product Card" representation of a product. This product card changes appearance in response to detecting that the user is focusing on the product card (e.g., hovering over the card with a mouse, trackpad, stylus; selecting/clicking on the card, staring at the card, etc.). Upon detecting the user focus on the product card, the user interface accesses and displays additional information on the product details are revealed.

In another view, illustrated in FIG. **3A2**, a table representation of the product catalog may be provided, where images are relatively smaller than in the product cards and more information about the products (e.g., textual description, category, sales rank, dimensions, materials, colors, weight, and/or other information), is constantly visible in the table format. Checkboxes may be provided via which a user can select products by clicking the checkbox on the product card or product row. A toggle control may be provided that enables a user to toggle between the image view of FIG. **3A1** and the table view of FIG. **3A2** (e.g., via clicking the grid and table icons).

FIG. **3**B illustrates the catalog user interface of FIG. **3A1**, with a navigation toolbar exposed on the left side. The navigation pattern within the application may include a user selecting a part of the application corresponding to distinct workflow objects, and functions provided via the navigation toolbar. The workflow steps may then be displayed across the top center portion of the user interface and the corresponding objects and functions in the main area of the screen.

The "Product Details" catalog user interface may act as a centralized source of information about a given product. For example, users may navigate to the "Product Details" user interface to view some or all of the product information. Certain users (e.g., supplier administrators and sales managers) may be provided with edit control so that they have the ability to edit the product's information.

Details page with multiple distinct sections. A product image section (in this example, the leftmost third of the user interface) displays images and product notes, and contains controls enabling the upload of new product images (see, e.g., FIG. **3**D), manage or delete existing images, and add notes about a product. A product information section (in this example, in the center of the user interface), are panels displaying core product information such as size, material, color, pricing, MOQ, lead time, product components, origin, freight rate, freight cost, duty, estimated landed cost, margin, and/or other information. A product components table may provide item numbers, quantity, size, color, material, and/or other information for each separate component that makes

up the product. A designated subset of supplier users (e.g., supplier administrators and/or sales managers) are provided the ability to launch forms/modals enabling the users to edit the product details (e.g., dimensions, case pack, volume/cube size, material, color, UPC, MOQ, lead time, HTS, duty rate, freight rate, FOB/POE, first cost, freight cost, duty cost, list price) and calculate pricing, such as estimated landing cost (see, e.g., FIG. **3**E) and edit product components (see, e.g., FIG. **3**F**1**).

FIG. **3**F**2** illustrates an example user interface that accesses and displays the order and sales history of a selected product. The user interface may, for example, display the identifies of organizations purchasing the selected product, the corresponding price(s), the date/time of the purchases, and the quantities of product included in each purchase. A link may be provided, which when activated, navigates the user interface to the order document.

A designated subset of supplier users (e.g., supplier administrators and/or sales managers) are provided the ability to access a create single product form (see, e.g., FIG. **3**G) from the catalog page to define individual products in the product catalog by entering in the corresponding detailed product information (e.g., item number, product category it will be assigned to, size, description, color, material, pricing, other detail information discussed herein, and/or other information). The platform checks new products to ensure item number uniqueness within supplier product catalogs and identifies an error if it is not unique. Optionally, the platform automatically generates the unique item identifier.

FIGS. **3**C**2** and **3**C**3** illustrate user interfaces that enable a user to tag products included in the catalog with relevant text. The tags will then be stored in association with a corresponding product record. When a user wants to find certain products, the user can enter a text query into a search field or select a search term from a menu of search terms. The system may then search product records to locate products whose associated tags match the search query. The system may then present the search results, optionally including the product names, product images, and/or other product related data. In particular, the user interface illustrated in FIG. **3**C**2** enables a user to create new tag values, search for matching tags, assign tags, or remove existing tag values for a given product or set of products. Referring to the user interface illustrated in FIG. **3**C**3**, a search field and sort control are provided. Example search results are illustrated. The search results may include the associated tags. A category menu is provided which enables the user to limit the search to a selected category. Each listed search result entry includes a selection field. A control is provided that enables the user to have the system filter the displayed search results to the selected products, thereby enabling more entries to be listed at the same time and enabling the exclusion of products that are not of interest.

FIG. **3**H illustrates a "Bulk Product Upload" user interface. Optionally, only a designated subset of supplier users (e.g., supplier administrators and/or sales managers) are provided the ability to access the "Bulk Product Upload" user interface. These users may utilize the "Bulk Product Upload" user interface to upload product data for several products at a time into the supplier company's product catalog by uploading data files (e.g., CSV formatted files) and image files (e.g., png, jpeg, and/or other image file formats). The system optionally error checks for file type and format and optionally checks for duplicate images and product data (as illustrated in FIG. **3**H).

The example "Bulk Product Upload" user interface is comprised of distinct sections. The left section is comprised of instructions on how to upload product data and images, an interface to download a template of an acceptable data format, the user selection of which product category to upload the products to and drag and drop/launch system browser areas from which the system accepts files. The right section of the user interface provides system feedback, where users are given feedback on the outcome of their data/image uploads, including the ability to overwrite product information for products with duplicate item numbers to those existing in the catalog (see, e.g., FIG. **3**H), information on errors on why data could not be accepted, and information on successful data upload (see, e.g., FIG. **3**I).

Referring to FIGS. **3**J, **3**K **3**L example user interfaces are illustrated that enable a user (e.g., a supplier user) to broadcast product announcements or other data to multiple potential acquirers at the same time to thereby showcase and enhance the visibility of such products and stimulate the interest of potential acquirers. For example, the showcased product may be a new product, a product with a price reduction, a product undergoing a closeout, or the like.

With reference to FIG. **3**J, a catalog page is illustrated with an overlying form enabling the user to select which products are to be added to the showcase. In addition, for each product/product-type a control may be provided which enables the user to specify with the associated price is to be included in the showcase presented to potential acquirers. A search field is provided that enables the user to enter a search term to search for potential acquirers to invite to view the showcase.

Referring to FIG. **3**K, the user interface includes a left panel displaying different showcases of products segmented by listed potential acquirer. The user can select a listed potential acquirer and the right panel will display all the showcased products shared to the selected potential acquirer.

Referring to FIG. **3**L, the user interface includes a left panel displaying one or more images of a showcased product. A middle panel includes a table of product details, such as item number, description, case pack, cube, lead time, color, material, size, HTS (Harmonized Tariff Schedule), MOQ (Minimum Order Quantity), product components, lead time, pricing, tags, and/or the like. The right panel indicates which showcases for which potential acquirers the product has been included in. Controls are provided enabling the user to share or hide pricing, and enabling the user to remove the product from a selected potential acquirer's showcase.

Certain example user interfaces relevant to the buyer workflow will now be described. Optionally, only a designated subset of supplier users (e.g., buyers and/or department managers) is provided access to user interfaces for creating, editing, and/or inviting suppliers to "Programs." The term "Program" as used herein (unless the context indicates otherwise) refers to how certain buyer personnel (e.g., buyers and department managers) organize their budgets, set goals for what types of products and how many products to buy, keep track of supplier offers, and the orders they create. Programs can be assigned to any set of Departments and Categories, and can be queried from any set of the Departments and Categories to which they are assigned. This enables users to draw insight regarding the Programs.

Examples retailer programs user interfaces are illustrated in FIGS. **4**A**1**-A**2**. With reference to FIG. **4**A**1**, the example user interface enables an acquirer (e.g., a retailer) to create, edit, and invite suppliers to one or more Programs. The example user interface includes a left panel that lists each program assigned to a given product category, optionally organized by date. The user may select one of the listed

programs in order to view and optionally edit the program details. The middle panel displays and enables the user to edit the program details (e.g., using the form illustrated in FIG. **4**B). For example, the panel may include program description fields and program relevant dates (e.g., offer due date, commitment due date, start to ship date, in-store date, etc.). A user interface is provided (e.g., a Private control) via which the user can upload, alter, and delete files (e.g., image, video, pdf, word processing, and/or other files) to be shared with other authorized users at the acquirer who have been granted access to the category (but not with suppliers). Optionally a user interface is provided (e.g., a Public control) that enables such files to be shared with an entire channel of suppliers that have been granted access to the program. For example, a list of suppliers may be provided. The listed suppliers can be invited, via an invite control, to the program (e.g., using the example invitation to submit offers form illustrated in FIG. **4**C). A program progress section may include text and/or graphed data indicating the progress made towards one or more goals (e.g., spending target goals, unit target goals, margin underruns or overruns, etc.). A right-hand panel provides a table of suppliers who have been granted access to the program. The set of suppliers with access to the program may be restricted to those suppliers (or a subset thereof) that have been granted access to the corresponding Category (via a Thread). The supplier information provided in the table may include the supplier's name and logo, and associated supplier products. As will be described the user can request a supplier included in the table to provide a quote (RFQ).

With reference to FIG. **4**A**2**, another example user interface is illustrated that enables an acquirer (e.g., a retailer) to create, edit, and invite suppliers to one or more "Programs. The example retailer programs user interface is comprised of distinct sections. A left side container, organized by date, lists each program assigned to the corresponding category. In response to the user selecting a program from the list, program details may be displayed and the details may be edited. The middle section of the example user interface is where the program information is displayed, created, or altered (e.g., using the form illustrated in FIG. **4**B). The displayed and editable fields may include, by way of example, a description of the program and dates relevant to the program (e.g., Offer due date, Commitment due date, Start to ship date, In-Store date, and/or other dates). The dates may be listed graphically using a timeline. Also provided in this middle section is an area via which a user can upload, alter, and delete files (e.g., image files, pdfs, and/or other files). The user can specify whether the files are to be shared only with other retail members who have access to this category and therefore this program (by keeping the file "Private" via a private/public control) or are to be shared with an entire "Channel" of suppliers who have been granted access to this program (by choosing to make the file "Public" via a private/public control). A third section of the example user interface is comprised of a table of supplier companies who have been granted access to this program. Included in this table is information about the supplier (e.g., name and logo of the company). The set of suppliers with access to this program may be restricted to those suppliers (or a subset thereof) that have been granted access to the corresponding Category (via a Thread). This section also provides an interface via which access may be granted to suppliers for this program from the set of suppliers with access to the Category (e.g., using the example invitation to submit offers form illustrated in FIG. **4**C).

FIG. **4**D illustrates an example "Offers" user interface. The "Offers" user interface may be utilized by retail users as an "inbox" of incoming "Offers" for "Offer Products" sent by supplier users. The offers (including updated offers) may be sorted according to date/time received, with the most recent offers (or most recent unread offers) displayed at the top of the inbox. This enables retail users to quickly access and review recently received and recently updated offers, and begin to triage which Offer Products they want to consider further and which offer products they no longer want to consider purchasing. In the illustrated example, the retail user can toggle between viewing an offer via a product card layout (FIG. **4**D) or via a table layout (FIG. **4**E) with smaller images but more details (e.g., description, origin, case pack, cube dimensions, unit price, total cube, total amount, etc.) about the Offer Products.

In the example user interfaces there are distinct sections. The left hand element is a container of received offers that functions as an inbox in that it indicates new and unseen/unread activity, in this example, via sorting and bolding of text (or other visual highlighting). The majority of the example user interface displays the offer information corresponding to the offer object selected via the left hand section. In both the product card and table example layouts, this section includes an offer summary with data fields such as Program, Offer type, FOB Point, Offer date, Updated Date, Items, Cube, and Amount. Underneath the offer summary section is a collection of Offer Products, laid out in product card layout or table layout (e.g., with information including the product image, the product item number, Notification Badge, Origin, Case Pack, Unit Price, Cube, Quantity, Total cube, and/or amount). In both example representations, Offer Products that have been "Dismissed" (where the user has indicated via the user interface that the user is not interested in purchasing the Offer Product) are visually and/or textually distinguished from the other Offer Products. In this example, buyers may dismiss or restore products by selecting them (e.g., via checkbox as illustrated in FIG. **4**D or via vertical ellipses as illustrated in FIG. **4**E), and selecting a dismiss control or restore control as desired.

FIG. **4**F illustrates an example "Offer Product Details" user interface that enables a retail user to review product information in depth, request any changes or customizations, and/or negotiate price/terms of an Offer Product. This user interface is configured to enable high-touch, fast paced, communication, collaboration, and negotiation. This user interface layout reflects an intentional design choice to organize communications around objects, "Object First Communication", in this instance communication specifically tied to an Offer Product object, to create a better sense of organization, auditability, and insight around the critical artifacts involved in the workflow.

In the illustrated example, the Offer Product Details user interface is comprised of distinct sections. The left section of the user interface includes an area to present one or more images of the Offer Product, while the lower panel in the left is utilized by retail users to enter private team notes on individual offer products. The middle section in this example is comprised of a table containing product details (e.g., Item number, description, case pack, cube, lead time, color, material, size, HTS, MOQ, Product components, other detail information discussed here, and/or other information). This example section includes pricing tools enabling the retail user to quickly calculate and determine such useful information as Estimated Landed Cost, Margin, Retail, and what maximum cost the buyer needs to purchase the product to achieve a target margin. At the top of this middle section of

the user interface an interface is provided enabling a retail user to add this Offer Product to a Program (see, e.g., FIG. **4**G), so that it may be considered and compared with other products from the same or different suppliers from which the retail user will make their final purchasing decision. For example, a drop-down menu of programs may be accessed, with checkboxes associated with respective listed programs. A user can select, via the checkbox, which programs the Offer Product is to be added to. This example section also includes elements in the table that show a change log/revision history for every field that has changed in value.

The right most section of the user interface illustrated in FIGS. **4**F, **4**G, is comprised of chat function and event log. In this section, users can message either all users (including those users of both the retailer/buyer and of the supplier) and that have access to this Offer Product, or limit the communication to all users within their own company that have access to this Offer Product. In this example, an interface is provided via which the user can specify which group she wants to message by toggling the company controls ("Acme Supplier" and "Acme Retailer" in the illustrated example) adjacent to the chat input box. In addition to messages, events detected by the system, such as a cost bid, a price change, field updates, and/or the like, are inserted into and displayed by the chat history creating a fluid timeline of communication about and updates to the Offer Product.

FIG. **4**H illustrates an example Assortments user interface which displays to retail users the sets of products they have added to Programs from one or more offers from one or more suppliers. This interface enables retail users to make their final decisions on which products they want to purchase, from which suppliers, and in what quantities for their designated Programs.

In this example, the user interface is comprised of distinct sections. The leftmost section is a container of filters (e.g., program filters, supplier filters, status filters), that scope the objects on the right section of the user interface across one or more parameters such as Supplier, Program, Product Status, and/or the like. Thus, for example, the user can use the filters to specify which products are to be displayed in the right section by selecting desired programs, suppliers, and/or status. The filters may be organized as parent-child trees (e.g., programs for 2018 may be listed under a 2018 heading, and programs for 2019 may be listed under a 2019 heading). The right (and in this example) larger section of the user interface is comprised of one or more containers corresponding to one or more Programs, that contain offer products that retail users added to that program and or purchased for that program. Each program section may include respective remove product and order product controls. Offer product cards include information (e.g., supplier company name and/or logo) that distinguish products from different suppliers. The card layout serves as a visualization tool for the retail users to stage their assortment. Retail users can select one or more products via the checkboxes on the product cards and remove the products from the Program (by activating a remove control) or place the products on an order or on orders (by activating an order control).

FIG. **4**I illustrates an example order creation form, including program, supplier, order type, FOB (Freight on Board) point, destination, ship window start, ship window end, receipt date, payment terms, pre-ticket, and/or special instruction fields. To create an Order, retail users fill in the information in the form with available values which may be filtered based on the user's previous selections. Once the fields in the form have been completed the user is navigated to the "Add Products to Order" user interface, an example of which is illustrated in FIG. **4**J.

The Add Products to Order user interface displays a set of products filtered to match the values that the retail user entered for certain fields (e.g., "Supplier") in the create order form illustrated in FIG. **4**I. The Add Products to Order user interface enables the user to select which products the user wants to add to the order. In this example, the user interface includes distinct sections. A container of orders on the left side of the user interface (That functions similarly to the container of Offers illustrated in FIGS. **4**D, **4**E. The user can select to view draft orders, pending orders, or approved orders (e.g., via respective tabs). An order search field is provided via which a user can enter an order search query, and a search engine will return and display matching orders (e.g., in ranked order based at least in part on relevance or closeness of match). When an order is selected via the order container, the container on the right side of the user interface accesses and displays objects, information, and functions related to that order. In this example those objects are a set of products filtered by the user's input when creating the order, that the user can select from (e.g., by clicking corresponding checkboxes) to add to the order. An order control may be enhanced to show the number of items added to the order.

FIG. **4**K illustrates an example draft order user interface. Once the retail user adds products to the order they become "cloned instances" of the Offer Products, called "Order Products." This allows for the same Offer Product to be ordered many times, potentially in different ways due a change in terms such as price or FOB Point. Retail users may utilize the "Draft Order" user interface to finalize information needed to transmit the order to the supplier. The Draft Order user interface may include fields such as Quantity, Unit Cost, Retail Cost, IMU, Case Pack/Cube, Margin, Total Cube, Total Cost, and/or Total Retail Cost fields. The retail user may review information presented via the various fields and finalize the order.

The retailer may also finalize any information needed to execute a purchase order that may not have been necessary to provide at an earlier stage in the process. For example, the retailer may add a retailer specific item number to each product and/or a short description to print on the tag/label of a product. Such types of information may not have been needed to make a decision as to which products to purchase from which suppliers, or to negotiate a product purchase, but may be required by the retailer to execute an order. Such information may be referred to as Order Requirements, Order Product Requirements, and Order Product Component Requirements. These requirements are available via the user interface illustrated in FIG. **4**K to complete in the table of order products and via a form launched by the "Edit" order button.

The example draft order user interface includes distinct sections. A container of orders on the left side of the user interface (that functions similarly to the container of Offers in FIGS. **4**D and **4**E). The user can select to view draft orders, pending orders, or approved orders (e.g., via respective tabs). An order search field is provided via which a user can enter an order search query, and a search engine will return and display matching orders (e.g., in ranked order based at least in part on relevance or closeness of match). The right section of the example user interface which contains information, objects and functions related to the order selected via the order container section. For example, the right section may include objects such as a table of Order Products and Order Product Components, with details about

each such as Quantity, Unit Cost, Retail Cost, IMU, Case Pack/Cube, Margin, Total Cube, Total Cost, and/or Total Retail Cost, and a summary of the order (e.g., including program name, expected receipt, ship window, FOB point, number of units, cube, cost PC MU, retail cost, relevant dates (e.g., net payment period, order created date, last updated date), retailer requirement, logistics (e.g., order type, FOB point, destination), and/or totals (e.g., units, cost, estimated landing cost, total cube)). Functions provided via the user interface may include: calculation tools to calculate Estimated Landed Cost, Margin, Total Cost, Total Retail, and/or Total Cube, user ability to add more products, edit the order details, delete the order, and send the order to the supplier.

FIG. **4**L illustrates an example pending order user interface. Once the retail user has transmitted the order to the supplier, the order becomes viewable by the supplier and the order changes status from being a "Draft" Order to a "Pending" Order. At this point much of the user interface is optionally the same as the Draft Order user interface (see, e.g., FIG. **4**K), with many of the same fields displayed to the buyer and with the same or similar functionality available. Optionally, the Pending Order user interface omits a delete order control. The example Pending Order user interface includes a Chat/Messaging user interface and functionality. The Chat/Messaging user interface enables users to message all other users who have access to this order (e.g., including retailer users and supplier users) or only all other users from their company who have access to this order. As similarly discussed with respect to the chat panel on the offer product user interface, this chat panel accesses and displays a revision log of changes to the order. Optionally, only retailer users are provided the sole ability and discretion to edit/alter information about the order.

FIG. **4**M illustrates an example approved order user interface-retailer view. After a retail user sends an order to a supplier, the supplier users receive the order and may review the order details and request any desired changes, such as changing the ship window. Once the supplier is in agreement with the terms of the order, the supplier approves the order, allowing the buyer to export the order via one or more formats such as to a CSV or Excel file in their preferred format, or as a JSON file to transmit to another system. In response to detecting any editing of the fields/terms of the order that would affect the supplier (e.g., changing the ship date or quantity of a product ordered), the system changes the order status back to "Pending". The system may then require the supplier to re-approve the order before the retail user is enabled to export the order from the platform.

FIG. **4**N illustrates an example order process. The retailer drafts the order (including order details). The retailer may cancel the order or transmit the order to the supplier. If the retailer transmits the order to the retailer, the order status is changed from draft to pending. The supplier may fill out additional needed order details and approve the order. The approved order may be transmitted back to the retailer. In response to detecting that the retailer has activated an order cancel control, the system transmits an order cancellation notification to the supplier. In response to detecting that the retailer has edited buyer required fields or shared order fields, the status of the order may be changed to pending, and transmitted to the supplier for approval or rejection. If the supplier approves the order with the changes, the status of the order is changed to confirmed.

FIGS. **4**O, **4**P, **4**Q**1** illustrates example user interfaces usable in a workflow that enables an acquirer (e.g., a retailer) to create one or more requests for quotes (RFQs), setup RFQs for specific products, and invite suppliers to respond to RFQs and RFQs for specific products. The user interfaces enable a user at the acquirer to specify details of products for which a quote is to be requested. The user may add additional information via a note interface, select suppliers to whom the product RFQs are to be transmitted to, and review received responses to the RFQs.

With reference to FIG. **4**O, as similarly discussed with respect to FIG. **4**A**1**, the example user interface enables an acquirer (e.g., a retailer) to create, edit, and invite suppliers to one or more Programs. The example user interface includes a left panel that lists programs assigned to a given product category, optionally organized by date. The user may select one of the listed programs in order to view and optionally edit the program details. The middle panel displays and enables the user to edit the program details (e.g., using the form illustrated in FIG. **4**B). For example, the panel may include program description fields and program relevant dates (e.g., offer due date, commitment due date, start to ship date, in-store date, etc.). A user interface is provided (e.g., a Private control) via which the user can upload, alter, and delete files (e.g., image, video, pdf, word processing, and/or other files) to be shared with other authorized users at the acquirer who have been granted access to the category (but not with suppliers). Optionally a user interface is provided (e.g., a Public control) that enables such files to be shared with an entire channel of suppliers that have been granted access to the program. For example, a list of suppliers may be provided that can be invited, via an invite control, to the program (e.g., using the example invitation to submit offers form illustrated in FIG. **4**C). A program progress section may include text and/or graphed data depicting the progress made towards one or more goals (e.g., spending target goals, unit target goals, margin underruns or overruns, etc.). A right-hand panel provides a table of suppliers who have been granted access to the Program. The set of suppliers with access to the Program may be restricted to those suppliers (or a subset thereof) that have been granted access to the corresponding Category (via a Thread). The supplier information provided in the table may include the supplier's name and logo, and associated supplier products. As will be described the user can request a supplier included in the table to provide a quote (RFQ).

With reference to FIG. **4**P, an example RFQ product details page is illustrated. In this example, the left pane includes one or more product images of the product for which the RFQ is being generated. The acquirer users can add to or remove images. The middle panel displays product details (e.g., supplier name, item number, description, components, dimensions, case data, carton/cube dimensions, weight, materials, color, UPC code, MOQ, lead time, and/or HTS number). In addition, the middle pane lists the suppliers that have been requested to provide a quote for the product with corresponding quote terms such as price/cost, minimum order quantity, FOB point, MOQ, and/or the like. Optionally, the status of a given quote request is reported (e.g., unsent, sent, response received, and/or the like). The right pane includes a notes/communication section via which the user can add additional comments, information, instructions or questions regarding the product.

With reference to FIG. **4**Q, an example invite user interface is illustrated. A list of potential suppliers is provided. A user can select one or more of the potential suppliers to whom an invite to respond to the specific RFQ will be transmitted.

With reference to FIGS. **4**R**1**, **4**R**2**, **4**R**3**, example offers received user interfaces are illustrated. The user interfaces

may be intended to be used by an acquirer user to view and manage offers. In this example, the left pane lists offers received in response to an RFQ and RFQ for which offers have not yet been received. The list may include the program name associated with a given offer, and an associated data and/or time. The middle pane may include images of the products being offered displayed in association with the corresponding supplier name and product identifier. The right pane may include a communication section via which the user can view and provide alternate terms, comments, information, instructions or questions regarding the RFQ or product from or to an identifier supplier. Thus, the user interface may be utilized to negotiate the terms of a corresponding RFQ. With reference to FIG. **4**R**3**, an example acquirer's view of an offers received user interface in table format is illustrated.

The "offers" user interfaces illustrated in FIGS. **4**R**2**, **4**R**3** may be utilized by a user at the acquirer as an inbox of incoming "offers" for products which are sent by supplier users. The illustrated user interfaces enables a user to review recently received and recently updated offers and begin to triage which offered products the user wants to consider further (e.g., by selecting a like control) and which offer products they no longer want to consider to buy (e.g., by activating a delete control). A control is provided that enables the user to toggle between a user interface displaying offers via a product card layout (FIG. **4**R**2**) and the table layout (FIG. **4**R**3**) providing smaller images but more product details. Thus, the user interfaces can be configured to format and provide data so as to provide the most relevant details (e.g., larger images, more text description) needed at a given time.

In this example, a left-hand pane lists received offers, and indicates new and unviewed activity/offers (e.g., via sorting items so that the unviewed items are on top and/or via bolding of text). The user can select a given offer in the left hand pane, and the corresponding offer information is accessed and displayed in the middle pane. The offer information may be in the form of an offer summary, including some or all of the following fields: program name, offer type, FOB point, offer date, offer updated date, items, case pack, quantity, cube, amount, and/or the like. Underneath the offer summary section, a set of offer products may be displayed, laid out in product card or table layout with information. The information may include some or all the following information: the product image, the product item number, notification badge, origin, case pack, unit price, cube, quantity, total cube, and amount. In both representations, offer products that have been "Dismissed" (e.g., via a corresponding control to indicate that the offer products will not be further considered with respect to the RFQ), are distinguished from the other offer products. In the example illustrated in FIG. **4**R**2**, the user can select an item via a corresponding checkbox, and then dismiss or restore the selected product. In the example illustrated in FIG. **4**R**3**, the user can select an item via corresponding vertical ellipses.

With reference to FIG. **4**S, the example offers user interface may be used to negotiate an order and place an order. For example, the acquirer user may change values as a counter-offer to a supplier (e.g., cost bid, quantity, etc.) and/or via a communication via the right hand pane.

With reference to FIG. **4**T, the user may place an order with one of the suppliers. When the user initiates the order operation, a pop-up user interface is presented via which the user can specify which program the order is for. In addition, the spending target and unit target calculations may be re-executed based on the order and presented to the user.

With reference to FIG. **4**U, the example user interface enables the user to export quote sheet data for a specified buyer.

With reference to FIG. **4**V, an example Offer Product Details user interface is illustrated. A pane includes one or more images of the product (e.g., from different perspectives). Another pane provides textual product data (e.g., dimensions, case pack, volume/cube size, material, color, UPC, MOQ, lead time, HTS, duty rate, freight rate, FOB/POE, freight cost, duty cost, offer type, etc.). Another pane may display the negotiation history for the product order. For example, the history may be presented in column format including the negotiation event (e.g., original quoted price, counter offer, supplier counter offer, purchaser requested price), price, margin (as a percentage and/or dollar amount), event date, and/or the like. A calculation pane may be provided. Fields are provided via which the user can enter certain data to be used in the calculations (e.g., freight rate, target retail price, margin, etc.). Functions provided via the user interface may include calculation tools to calculate estimated landed cost, margin, retail price, and the cost the product needs to be purchased at so as to achieve the target margin. A field is provided via which the user may request and specify a different price. A communication pane is provided via which additional comments, information, instructions or questions regarding the product or offer may be communicated, and a log of such communications may be presented. For example, the communication pane may be used to message all users that have access to the product, or all users within the user's organization that have access to the product. A control may be provided that enables the user to specify which group the user wants to message (e.g., by toggling the organization buttons directly above the communication input pane). In addition to messages, events such as a cost bid, a price change, and field updates may be displayed in the chat history creating a fluid timeline of communication about and updates to the offer product.

A control may be provided that enables the user to add the offer product to a Program, thereby enabling the offer product to be considered and compared with other products from the same or different suppliers from which the buyer user will make a final purchasing decision.

Certain example user interfaces related to seller/supplier workflow will now be described. FIG. **5**A illustrates an example programs user interface-supplier view. The programs user interface will display to supplier users who have access to this retailer Category (Thread) all programs that the retail users have elected to share with the supplier. The supplier users may utilize the user interface to review information, such as dates related to the program and any files the retail user has shared to determine what products to offer and when to offer such products.

The programs user interface, in this representation, is comprised of distinct sections. A left side container, organized by date, with a list of programs assigned to that category. The user selects a program from the list to see the details of the program. The middle section of the user interface displays program information. Example data fields may include a description of the program, dates relevant to the program such as offer due date, commitment due date, start to ship date, and/or in-Store date (optionally listed graphically using a timeline), and any files shared by the retail user. A preview section of the user interface displays previews of offers made by users of the supplier company for this program (e.g., thumbnail images of the products on

the offer, the name of the offer, a picture of the user who sent the offer, the date when the offer was sent, and/or other information).

FIG. **5**B illustrates an example create offer user interface which may be utilized by supplier users to create a new Offer. An Offer may include Offer Products, and may include values for certain fields (e.g., Title, Program, Offer Type, and if Offer Type is "Domestic", then FOB Point).

After completing the create offer form (FIG. **5**B) the supplier user is navigated to the "Add Products to Offer" user interface (see, e.g., FIG. **5**C). This user interface enables supplier users to select products from the subset of the product catalog to which they have permission to access. The supplier user may utilize browsing, filtering, and searching, to identify products to add to the offer and may select the desired products via the checkboxes on the product cards. In response to the user clicking on the "Add Products" control, a clone of each product selected may be generated and added to the Offer. Such a product may be referred to as an Offer Product. The Offer Product clones may be generated so that through the course of negotiations with any given customer the Offer Product can be altered and changed without affecting the original product in the catalog and without hindering the ability of the original product to be offered in its original form to another customer or at a different time.

This example Add Products to Offer user interface is comprised of distinct sections. The left hand element is a container of draft and sent offers that functions as an inbox in that it indicates new and unseen activity, in this instance, via sorting and bolding of text. The offers may be sorted according to date/time. A user may select Offers in this element, and in response, corresponding objects, information, and functions for the selected offer are accessed and displayed in a second section of the user interface. The second section of the user interface may display a product catalog-like element that displays the product card view of products the user has permission to access. The user can select/deselect and hover on these cards to expose more information about the product.

FIG. **5**D illustrates an example draft offer user interface that enables supplier users to finalize offers before sending the offers to retailers. For example, the user interface may enable supplier users to make adjustments to data fields, such as pricing, quantity, and/or other Offer Product fields. Users can also edit details of an offer product by launching a form from the table.

The example draft offer user interface is comprised of distinct sections. The left hand element is a container of draft and sent offers that functions as an inbox in that it indicates new and unseen activity, in this instance, via sorting and bolding of text. The listed offers may be sorted according to date/time. In response to detecting a user selection of an offer in the inbox, the corresponding objects, information, and functions for the selected offer are accessed and displayed in a second section of the user interface. In this example, the right section of the user interface contains a table of offer products. The table accesses and displays product information such as item number, product image, origin, case pack, cube and provides calculation tools to help supplier users finalize price, freight rate, freight cost, duty cost, estimated landed cost, margin, cube, and/or total amount. This section also contains an offer summary element, optionally including calculations of total amount, total cube, number of SKUs, offer title, offer date, and/or updated date.

After a supplier user sends an offer, a sent offer product card view may be displayed to the supplier user (see, e.g., FIG. **5**E) which serves as the launching point for communication and negotiation about individual offer products. FIG. **5**F illustrates an example of the sent offers user interface that utilizes a table view to display additional information on the products (e.g., pricing, origin, duty, margin, and/or other information). Notification elements on both the product cards and in the rows of the product table may be provided that inform users that new activity has occurred on one or more Offer Products.

The user interfaces may include distinct sections. The left hand element is a container of draft and sent offers that functions as an inbox in that it indicates new and unseen activity, in this instance, via sorting and bolding of text. The activity may be sorted by date/time. The inbox element enables a user to select listed Offers, and in response, the corresponding objects, information, and functions for the selected offer are accessed and displayed in a second section of the user interface. The majority of the user interface in this example displays the offer information corresponding to the offer object selected in the first described section. In both the product card and table layouts, this section includes an offer summary (e.g., with fields such as Program, Offer type, FOB Point, Offer date, Updated Date, Items, Cube, and/or Amount). Underneath the offer summary section is a collection of Offer Products, laid out in product card or table layout with corresponding information (e.g., the product image, the product item number, Notification Badge, Origin, Case Pack, Unit Price, Cube, Quantity, Total cube, and/or amount). In both representations, Offer Products that have been "Dismissed" are textually and/or graphically distinguished from the other Offer Products.

After sending offers, retail users and suppliers may communicate, collaborate, and negotiate deals utilizing an offer product details user interface. FIG. **5**G illustrates an example offer product details user interface—supplier view. A subset of supplier users (those that are authorized) will see this representation of the Offer Product Details user interface, in this example, Supplier Administrator and Sales manager. Often, buyers will request changes in physical attributes and/or price. Those changes can be easily addressed by the supplier user by editing this information via the Offer Product Details user interface. Elements of this user interface, such as the middle product details panel as well as the messaging log, show the history of each change made to the product by the supplier. The supplier and retailer user may go back and forth in negotiation using this user interface until a retailer user ultimately decides to add this Offer Product to a Program or to dismiss it from consideration.

The illustrated example Offer Product Details user interface is comprised of distinct sections. The leftmost section contains a panel displaying images of the product and of product components (if any), while also affording a subset of supplier users the ability to manage/edit those images (e.g., using the user interface illustrated in FIG. **5**H). This section of the user interface also contains a private notes interface via which supplier users may add notes on the offer product that will be only visible to users within their company who have access to this Offer Product (and not to the retailer users).

The middle section of the example user interface is primarily comprised of a table of the Offer product information (e.g., description, size, material, HTS, color, cube, case pack, and/or other information). This section of the user interface also contains calculation tools which may be utilized to aid the supplier user during negotiation. One

subset of supplier users (in this example supplier administrators and sales managers) will be provided with access and may view the full pricing information including, for example, cost of the product, fright cost, and margin, while another subset of supplier users (in this example, sales reps) will instead see only a list price and discount percentage in the calculation tools. This portion of the user interface also contains a table of Offer Product Components—which are used for products that are sold as a set. This middle section of the user interface also has functions to launch forms to edit offer product information, including calculation tools (FIG. **5**H) and edit Offer Product Component information (FIG. **5**I). Optionally, the supplier users are provided the sole ability and discretion to edit/alter Offer Products and Offer Product Components. The rightmost section of the user interface is comprised of a chat/messaging panel that users utilize to communicate with every user that has access to this offer product as well as to only users within the user's same company with access to this Offer Product. This chat/messaging panel also includes a log of all the changes made to the Offer Product information.

FIG. **5**I illustrates an example component edit user interface that enables a user to edit component information for an Offer Product.

After supplier users and retailer users finalize the product details and pricing, retailer users may send supplier users an Order with one or more Order Products contained on the order. Optionally, attributes of Order Products are locked at this stage so that no details may change once the supplier and retailer users have progressed to this step. Supplier users may review, via a pending order—supplier view user interface (FIG. **5**J) the information contained on the order such as quantity of products ordered, terms, ship date, destination, and other information and decide whether or not they can fulfill this order as written. If they need to request an adjustment from the retailer users they may communicate with the retail users via the chat/messaging panel. Changes to the order are detected and displayed via the chat/messaging panel. Once acceptable to supplier users, a subset of supplier users (in this example, authorized users such as supplier administrators and sales managers) are enabled to approve the order.

The example Pending Order user interface illustrated in FIG. **5**J is comprised of distinct sections. A container of orders on the left side of the user interface functions similarly to an email inbox and similarly to the container of offers described in FIGS. **5**A, **5**B. The middle section of the user interface contains information, objects and functions related to the order selected via the order container. The objects may include a table of Order Products and Order Product Components with details about each (e.g., Unit Price, Margin, Quantity, and/or other information) and a summary of the order. Functions provided may include calculation tools to calculate Estimated Landed Cost, Margin, Total Cost, and/or Total cube. Here the suppliers also have the ability to provide any information needed to execute a purchase order that may not have been necessary to the purchasing decision, such as providing UPC for new products. This type of information is collected via Order Requirements, Order Product Requirements, and Order Product Component Requirements, and any existing requirements will need to be completed by supplier users before they are enabled to approve an order. The rightmost section of the user interface is comprised of a chat/messaging panel where users can message all other users who have access to this Order or all other users from their own company who have access to this Order. This panel also displays a change history/revisions log of any changes to the order information.

After a supplier user has approved the order the retail user is enabled to export the order into an existing ERP (Enterprise Resource Planning) system to execute and transmit the approved order. Supplier users and retail users are still enabled to communicate with each other about the order via the chat/messaging panel, but any material changes to the information of the order (which optionally only retail users are enabled to make) will change the order status back to "Pending" and may require additional approval from the supplier user.

FIG. **5**K illustrates an example Approved order user interface, comprised of distinct sections. A container of orders on the left side of the user interface functions similarly to an email inbox and similarly to the container of offers described above. The middle section of the user interface contains information, objects and functions related to the order selected via the order container section. The objects may include a table of Order Products and Order Product Components with details about each (e.g., Unit Price, Margin, Quantity, and/or other information) and a summary of the order. Functions available may include calculation tools to calculate Estimated Landed Cost, Margin, Total Cost, and/or Total cube. The rightmost section of the example user interface is comprised of a chat/messaging panel where users can message all other users who have access to this Order or all other users from their own company who have access to this Order. This panel also displays a change history/revisions log of any changes to the order information.

As discussed above a given entity may perform both acquisition functions (e.g., purchaser of items) and supplier functions (a seller of items). FIGS. **6**A-**6**F illustrate example user interfaces that may be used by an entity that performs both acquisition and supplier functions. The user interfaces may be used as part of a workflow utilized buy different users in different business units (e.g., a business unit that performs acquisition functions and a business unit that performs supplier functions) within the same entity to pass information back and forth for specific functions available only to either set of users in either business unit.

For example, when an entity is in the process of supplying a product to a customer, the customer may have made related requests (e.g., regarding color, size, materials, configuration, packaging, etc.) that can affect how the product is manufactured. Such requests and other related information can be useful information for future product development and item procurement. A notes/comments section may be provided within a certain user interface that enables users at the entity to make notes on products. Such product notes may optionally be segmented in threads by using different fields as segmentors. Users at the entity can transfer such information to other users within the entity who have access to different business units (e.g., procurement/acquisition units). Users can also highlight (e.g., "Pin") such notes to call additional attention to individual notes.

Data in acquirer and supplier workflows may include multiple subsets of data and multiple subsets of communications. For example, there may be data that is private to users at a first business unit within a first entity. There may be data that is private to users at a second business unit within a second entity. There may be data that is shared by both users in the first business unit within the first entity, and users in the second business unit within the second entity. There may be communications that are private to users at the

first business unit within the first entity. There may be communications that are private to users at the second business unit within the second entity. There may be communications that are shared by both users in the first business unit within the first entity, and users in the second business unit within the second entity.

Referring now to FIGS. **6**A, **6**B, the illustrated user interfaces include a left pane wherein one or more images of the Offer Product are displayed. Supplier-side users may update the images that appear in this pane, add images to the pane, or delete images from the pane. The middle pane in this example includes a table containing product details such as item number, description, case pack, cube, lead time, color, material, size, HTS, MOQ, product components, and/or additional data. The middle pane may optionally also include pricing tools that enable the supplier user to quickly and accurately determine such data as estimated landed cost, margin, unit price, and what sales price for the product needed in order to achieve the desired target margin. A supplier-side user may edit/modify the product related data displayed in this section.

The right panel in this example includes a communication interface and event log via which users can message either all users that have access to this product, or all users within their own company that have access to this product. These messages (e.g., with questions regarding the product, regarding changes to the product, regarding packing the product for shipment, regarding cost impact of changes, and the like, answers to such questions, comments, etc.) are grouped into notes which are segmented into different threads using the fields of the product data as segmentors. For example, communications/notes may be analyzed and grouped as relating to product components, product dimensions, case/inner pack, carton/cube, weight, material, color UPC, MOQ, lead time, HTS, duty rate, offer type, FOB point, factory, etc. The user interface enables a user, via a control associated with a new message form, to selectively transmit a given note (or all notes) to just the user's team members (e.g., on the supply side) or to team members on both teams (e.g., supply side and procurement teams). Advantageously, such notes may also serve as a change log of changes to the product information, where a change is displayed in the corresponding changed field's note thread/category.

Referring to FIG. **6**C, an example user interface is illustrated depicting an offer where a set of products has been selected by users on the supply side of an entity. The selected set product may be transmitted to an acquirer or to product development users within the entity to update the entity products. For example, a supply-side user selects which products are to be sent to one or more buying business unit(s) within the entity, calls out (e.g., via notes, pins, or messages) any specific information, then shares these products with one or more buying-side business units. The buying business units that receive these products can utilize them as part of a request for quote (RFQ), such as is illustrated in FIG. **6**D, where the products can be easily quoted and sourced from multiple suppliers from different entities. Once the users in the acquisition-side business unit are satisfied with the updates to the products, they can select the products and send them back to the original supplier business unit within their entity for the supplier-side users to review and either accept or reject the products, using for example, the user interfaces illustrated in FIGS. **6**E, **6**F.

Referring to FIG. **6**E, an example offer development review user interface is illustrated. The left pane includes a list of offers, including offer name, associated program name, and offer date. The middle pane depicts offer details of an offer selected by a user from the left pane. The offer details may include the offer name, associated program name, offer date, update date, offer type (e.g., domestic, imported, etc.), FOB point, number of items, number of units, cube size, total dollar amount, images of the offer product with associated product identifiers, and selection controls associated with the images that enable a user to select and/or like a given product. Controls are provided to approve product updates, start product development, and add products. A right pane enables the user to selectively communicate with the customer or the user's team.

Referring to FIG. **6**F, an example offer update user interface is presented via which the user may accept or reject changes to a given product via controls presented in association with product images and a list of changed product details. If the user activates a reject control, a reason field is dynamically generated and presented via which the user may enter a reason for rejection, which may then be transmitted to the product development team. An update control is provided via which the user can initiate an update to the offer.

Following are descriptions of example user interface and data fields:

Duty Rate	Percentage of tax paid to import a product
Estimated Landed Cost	Total realized cost to either deliver or receive a product at a specified location under specified terms. First cost + Freight Cost + Duty Cost
First Cost	The initial price a supplier or buyer pays for a product before factoring in Freight and duty costs
FOB Point	The point where products transfer ownership
Freight Cost	Cost of freight for a specified product
Freight Rate	Dollar per cubic foot paid to ship a product
HTS	US Harmonized Tariff Schedule Code denoting how much duty a product is subject to
In-store Date	Date when a product is expected to be on store shelves
Item	Product, good
Item Number	Unique identifier for a product in the system. Must be unique within a catalog of a single supplier company but not globally
Lead Time	The amount of time necessary to manufacture and ship a product, time until soonest availability
Margin	1-cost of a product/price product is sold
MOQ	Minimum Order Quantity for which an item will be sold
Notification	An alert generated by the software platform
Notification Badge	An indicator than an object has had an alert/notification generated

-continued

Duty Rate	Percentage of tax paid to import a product
Object First Communication	Pattern of organizing communication and artifacts such that the artifact or object is the independent variable the communication is organized by
Offer	A collection of products available for purchase, presented from supplier to buyer
Offer Due Date	Date when buyer wishes to have received all offers by for a given program
Offer Product	An object in the system that lives solely in the workflow between one supplier company and one retailer category
Offer Type	The terms of an offer shipment and pricing, (e.g., import or domestic)
Order	Object comprised of products to be purchased
Order Product Component Requirement	Information requirement necessary to complete a purchase order- associated with an order product component object
Order Product Requirement	Information requirement necessary to complete a purchase order-associated with an order product object
Order Requirement	Information requirement necessary to complete a purchase order-associated with an order object
Origin	Port closest to where a product is manufactured
Product	Good/item for purchase
Product Card	Image centric representation of a product, offer product, or order product
Product Catalog	Set of all products a supplier maintains in the system, organized by product categories
Product Category	Essentially folders/grouping of products within a product catalog
Product Component	An item that is being sold as part of a set
Program	An organizational tool buyers use to segment purchasing goals and purchases
Program Suppliers	A supplier company that has been granted access to a buyer's program
Restore	The action of changing a product status from dismissed to active
Retailer	A company type within the system, comprised of Departments and Categories
Retailer Admin	User type within the system- sets up company and users
Revision	A logged change on an object such as a product or order
Sales Manager	User type within the system, has full access to supplier product catalog
Sales Rep	User type within the system, has conditionally restricted access to supplier product catalog, and restricted access to some information such as product costs
Ship Window	Period of Time when transfer of products is expected
Size	physical dimensions of a product
SKU	Stock Keeping Unit, a unique item
Start to Ship Date	Date at the beginning of a ship window
Supplier	A company type within the system, comprised of products, product categories
Supplier Admin	User type within the system- sets up company and users
Supplier ID	A unique identifier for the relationship between one retailer and one supplier, unique to that retailer not necessarily globally
Thread	The connection between one supplier company and one retailer category
Total Units	Sum number of items purchased
Unit Price	Price at which seller agrees to sell a product to a buyer
UPC	Universal Product Code

As similarly discussed above, a shared software platform is provided that enables users at an entity to collaborate among internal teams within the same entity (sometimes referred to as intra-entity collaboration) and also to collaborate with external teams at different entities (sometimes referred to as multi-entity or inter-entity collaboration). For example, an entity may be a retailer or a supplier as discussed elsewhere herein. A given entity may have its own complex permissions hierarchy. Thus, when two or more entities are collaborating, multiple hierarchies of permissions may be implicated (sometimes referred to herein a multi-hierarchy). The workflow of various collaboration objects among internal teams (within the same entity) and external teams (across different entities) may include, for each involved entity, complex permission hierarchies (e.g., an Object-Oriented Multi-Entity Multi-Hierarchy Workflow). An entity team may comprise a collection of users who share one or more common permissions within a hierarchy of a given entity.

In order to further enhance such collaborations, systems and methods are provided to manage workflows within an entity and across entities using one or more networks and utilizing disparate systems. For example, a workflow may be composed of interrelated sequential and/or parallel tasks related to a collaboration object.

As described herein, techniques are provided that enable collaboration objects to be visualized. As similarly discussed elsewhere herein, a collaboration object may include a product, a product offer, a Request for Quote (RFQ), a quote, a Purchase Order (PO), a project, a purchase program, a document, a transaction, and/or the like. Optionally, a workflow may be created for each collaboration object. A given collaboration object may include one or more sub-collaboration objects. Interfaces may be provided that enable such tasks to be assigned a due date/time. Further, such tasks may be assigned to an individual user or to multiple users (e.g., a team or other set of users) in internal and/or external team(s).

A given workflow task, and the progress made on such task, may be tracked. The status of such a workflow task may be accordingly updated, and the updated task status may be made available/reported (optionally in real time) to one or more authorized users (e.g., via an interface provided by a dedicated application, a webpage hosted by a server and accessed by a user device browser, via an email, a short messaging service, and/or otherwise). Example task status types that may be tracked and reported (e.g., via user interfaces described herein) may include "To be completed", "In progress", "Completed", "Aborted/Canceled", "Delayed", "Approved", "Denied", "Dismissed", "New", "Draft", "Pending", "Confirmed", "Active", "Inactive", "Unsent", "Sent to [insert destination]", "Received from [insert source]", "Response received", and/or the like. In order to efficiently communicate a task status and make different types of status easily identifiable, each status type may optionally be displayed in different color (color coded), a different font, and/or using different artwork (e.g., a graphic logo).

To further facilitate multi-modal communications via system users regarding tasks, a user may record a specific note or comment (sometimes referred to collectively as a comment) regarding a specific task, and the user note/comment may be stored in association with the corresponding task record. The user comments (e.g., text, icon, video comments) may be displayed in association with a given display of a collaboration object workflow task description, a task status, and/or otherwise. Optionally, a comment assigned to a task may be shared with other users (e.g., within one or more teams within the same entity or at different entities) assigned to the task via one or more communication channels (e.g., via an interface provided by a dedicated application (an "app"), via an app pop-up alert, via a webpage hosted by a server and accessed by a user device browser, via an email, via a short/instant messaging service, and/or otherwise).

Further, other workflow task-related notifications may be provided via an interface provided by an app, via an app pop-up alert, via a webpage hosted by a server and accessed by a user device browser, via an email, via a short/instant messaging service, and/or otherwise. Such notifications may be provided to remind users when their tasks are due to be completed, to report task status, to report collaboration object modifications or proposed modifications, and/or to provide other information, alerts, or reminders.

Optionally, a user interface may be provided which enables an authorized user to define an algorithm that utilizes variables such as tasks, task statuses, and/or task assignees, for a given workflow. The algorithm may generate, using the variables, automated workflow and task updates and may transmit such updates to determined appropriate users and entities. For example, a scheduling algorithm may determine when to generate and transmit alerts to appropriate recipients (e.g., collaboration object workflow task assignees). For example, a scheduling algorithm may generate and send a reminder alert to task assignees a determined period of time before the task is scheduled to be completed. By way of further example, an algorithm may determine when to snooze a reminder (e.g., on the first and second reminder) and when to dismiss the reminder (e.g., on the third reminder).

By way of still further example, a reporting algorithm may generate a performance report that reports on the percentage of tasks that were performed by the corresponding assigned deadline over a specified time frame and/or since inception. By way of further example, the reporting algorithm may generate a performance report that reports on the percentage of workflow tasks (for workflows with more than a threshold number of tasks) that were performed by the assigned deadline over a specified period of time and/or since inception. By way of further example, a reporting algorithm may periodically (e.g., once a day, once a week, etc.) generate a performance report that reports on the percentage of workflow tasks that have been completed.

By way of yet further example, a critical path analysis algorithm may analyze the performance of collaboration object workflow tasks, identify critical tasks (which must be completed before one or more other tasks may be performed), determine if a critical task has not been completed by its associated deadline, and generate notifications to the team(s) assigned to the task and/or subsequent workflow tasks indicating that the critical task deadline, subsequent tasks, and/or workflow completion deadlines need to be postponed by a specified period. If, on the other hand, the critical path analysis algorithm determines that the critical tasks and/or other tasks have been completed on time, the critical path analysis algorithm may generate and transmit a notification to workflow task assignees indicating that the workflow collaboration object will be completed on time.

Optionally, an artificial intelligence engine may be utilized that, based on variables (e.g., tasks, task statuses, and/or task assignees), for a given workflow, may generate automated updates and may transmit such updates to determined appropriate users and entities. The artificial intelligence engine may automate workflow task planning vs. progress checks, generate activity reminders for team members, and/or provide document tracking. The artificial intelligence engine may perform workflow object collaboration analysis to identify potential risks to workflow tasks becoming accomplished according to schedule and may generate corresponding notifications to the appropriate users. The artificial intelligence engine may include a neural network. The neural network may be trained to identify when a given task status poses a risk to the completion of a workflow task. The neural network may comprise an input layer, an output layer, and one or more levels of hidden layers between the input and output layers, wherein the neural network is configured as a feed forward network.

For example, the artificial intelligence engine may factor in past collaboration object workflow task assignee performance (e.g., determine who tends to perform tasks early (and how early) or on time, and who tends to perform tasks late (and how late), critical path(s) (dependencies of related tasks in a local workflow and global workflows), task conflicts between collaboration workflow tasks managed by the system and other user tasks (not managed by the system) on users' calendars, and generate user conflict notifications when a conflict is detected. The artificial intelligence engine may perform task prioritization (e.g., generate user task assignment recommendation to ensure that relatively more

important or critical path tasks are performed prior to less important or non-critical tasks.

Certain example user interfaces will now be described with respect to inter-entity and intra-entity collaboration object workflows.

Certain interfaces enable an object-oriented, multi-entity, multi-hierarchy workflow to be constructed, where the workflow comprises a set of interrelated sequential and/or parallel tasks (e.g., related to a collaboration object).

FIG. **7**A illustrates an example workflow creation user interface for defining a workflow for a collaboration object. A workflow title field is provided configured to receive a textual workflow name (which may be a descriptive name that is meaningful to the users to whom tasks are assigned). A task assignment area includes a task title field configured to receive a textual task name (which may be a descriptive name) and a task assignee field configured to enable a user to specify a user or group (e.g., a team or other set of users) to whom the workflow task is assigned to. Optionally, the assignee field may provide a menu of potential task assignees from which the user may select. Optionally, the assignee field is configured to receive an assignee name as a text entry. The assignee field may optionally include an image of the assignee instead or in addition to a textual assignee name. A given assignee may be granted access to the workflow by nature of configured multi-entity user permissions (as similarly discussed elsewhere herein). Optionally, the user interface may have an assignee delete control which when activated causes a corresponding assignee to be removed from the workflow. Optionally, tasks may be deleted via a task delete control.

Optionally, the system automatically assigns a task identifier (e.g., a task number). The task number may be automatically incremented for each new task. Optionally, the task numbers may correspond to a sequence order in which the tasks are to be performed. A new task control enables a user to add an additional workflow task. A save control may be provided that enables a user to save the user entries.

Optionally, hierarchical tasks may be defined, where a given task may include multiple subtasks with associated assignees and due dates.

Referring now to FIG. **7**B, the user interface of FIG. **7**A is illustrated with four example workflow tasks created. The user interface may be used to edit the workflow. As illustrated in this example, certain tasks have one assigned individual person (task **1** and task **4**), certain tasks have two assigned individual persons (task **2**), and certain tasks have one assigned individual person and one assigned team (task **3**), where the assigned team may have multiple team members that will receive the corresponding task notifications and have access to the corresponding task data. Optionally, tasks (e.g., displayed using task titles) may be selected from a dropdown menu of tasks.

Referring now to FIG. **7**C, a workflow menu is provided via which a user may select a collaboration object workflow that the user is authorized to access. The workflow menu may optionally be dynamically generated based on an identification of the user currently accessing the user interface (e.g., as determined via the authentication module **102**B) so that the menu only includes workflows the user is authorized to access. The user interface may enable the workflow to be assigned to one or more collaboration objects (e.g., products). The corresponding workflow tasks named using the interface described with respect to FIGS. **7**A and **7**B are listed, ordered sequentially, according to the task numbering. A due date may be assigned to a given task. The user interface may enable a user to designate a corresponding due date/time and set notifications (e.g., via in-app alerts, mobile text/multimedia messages, emails, and/or the like) for a given workflow task. Optionally, the user interface enables the user to drag and drop the tasks into a different order (which may reflect the order in which the tasks are to be performed). Optionally, the tasks are automatically renumbered based on the new ordering. A save control may be provided that enables a user to save the user entries.

Referring now to FIG. **7**D, an example user interface includes an object-oriented workflow user interface. In the illustrated example, the tasks are listed in sequential order, the task numberings are provided, the task assignees are identified (e.g., by name and/or image), the due dates are provided, and the current status is provided. Controls are provided via which task entries may be removed or edited. The user interface enables users to communicate (e.g., via text, images, icons, sound, or video) with other users across one or more teams assigned to the workflow, at one or more entities.

For example, a workflow checklist matrix may be presented that includes a collaboration object column and a column for each workflow task. The top row may include column identifiers. For example, the collaboration object column may identify the collaboration object type ("product" in this example). A task column may include a task name and may identify the task assignees.

The collaboration object column may list collaboration objects (e.g., products) including unique collaboration object (e.g., product) identifiers, a collaboration object (e.g., product) description, and optionally a collaboration object image. A task column may include an identifier of an assignee, a color coding indicating a status triggered by an assignee action, the status, and the status date.

Advantageously, the workflow user interface may be presented together with an item detail page corresponding to the collaboration object. For example, the item detail page may include multiple distinct sections (which may be referred to as panes). A product image section may display images of the collaboration object (a product in this example), and may contain controls enabling the upload of new collaboration object images, the management or deletion of existing images, and may enable the addition of notes/comments about the collaboration object. A collaboration object section may display significant relevant product information, such as brand name, size, material, color, weight, pricing, MOQ, lead time, product components, origin, freight rate, freight cost, duty, estimated landed cost, margin, and/or other information. Tools, such as a pricing calculator, may be provided. Tracked changes to the collaboration object may be listed (e.g., change in cost, material, color, etc.), including an identification of the person and/or team that made the change (e.g., name and/or image), date/time of the change, and a description of the change.

Thus, the example user interface enables users to interact with a collaboration object (e.g., a product), and communicate with other users across one or more teams at one or more entities, while also tracking the status of the collaboration object in one or more workflows with users (e.g., from one or more teams) at one or more entities via an integrated user interface.

Referring now to FIG. **7**E, an example user interface is illustrated that displays entries for multiple collaboration objects (e.g., products) from a related group (e.g., a quote in this example, a showcase, a program, a project, an order, etc.) positioned in tables with associated workflows. A given workflow may be associated with one or more corresponding collaboration objects (e.g., a group of products), corre-

sponding workflow tasks, task assignees (e.g., individual users and teams, groups, or other sets of users) responsible for the workflow task, attributable dates, and multiple available statuses. Optionally, assigned users/sets of users, task due dates/times, and statuses for each collaboration object (e.g., a product) and task combination can be designated by authorized users who have the proper permissions, by a user defined algorithm, and/or by an artificial intelligence engine.

Different workflow task statuses may be visually indicated using different colors to provide efficient and clear visualization of workflow task statuses. A communication user interface is provided that enables multi-entity communication regarding a collaboration object, workflow, and/or workflow task (e.g., using real time chat, text messaging service, video communication, recorded audio messages, and/or the like).

Referring now to FIG. **7**F, an example user interface is illustrated that displays information regarding a multi-object, multi-entity workflow. A desired workflow may be accessed from a menu workflows (listed on the left hand side of the example user interface). As similarly discussed above, the menu may be dynamically generated to only display the workflows that the current user is authorized to access (e.g., as determined using user authentication data). A given listed workflow may be associated with one or more collaboration objects, such as a group of products from several different entities (suppliers). Controls are provided via which a selected workflow can be filtered, sorted, or grouped by one or more variables such as the entity (supplier), product, task, status, due date, assignee identifier, and/or the like. Controls may be provided via which a user may add or remove collaboration objects (e.g., products) from a workflow, select a task from the selected workflow, edit the selected task status, and/or add comments to a task.

As discussed herein, the disclosed system may enable a multi-entity, multi-hierarchy implementation that provides for cross-entity and intra-entity collaboration and communication. Optionally, users assigned to a given hierarchy at a given entity share common permissions assigned to that particular hierarchy. Such users may be collectively referred to as a hierarchy team or simply as a team. For example, buyers and all assistant buyers of a given retailer's (e.g., Acme Furniture) indoor furniture buying team may be assigned to the following hierarchy: Acme>Furniture>Indoor Furniture. Optionally, a user may be assigned to multiple teams and be granted corresponding different sets of permissions to access information under several hierarchies to which the user is assigned. Different teams within the same entity may be granted different permissions to interact with different collaboration objects and teams at different entities.

Referring now to FIG. **7**G, an example process is illustrated of inter-entity and intra-entity communications regarding collaboration objects in one or more workflows. In this example, an individual or a team (Team 1) at a first entity (Entity 1) is collaborating regarding a first collaboration object (Object A1) with a second entity (Entity 2). Object A1 may be an input to Collaboration Object A2 (Object A2). For example, Object A1 may be a component in a product corresponding to Object A2. Entity A2 may have multiple internal teams (intra-entity teams Entity 2 Team 1, and Entity 2 Team 2) that collaborate regarding the workflow for Object A2. Entity 1 may collaborate with Entity 3 with respect to a third collaboration object (Object A3). Object A2 may be an input to Object A3. As similarly discussed elsewhere herein, communication channels are provided via which both inter-entity and intra-entity communications may be performed regarding respective collaboration objects and associated workflows (e.g., wherein the communications may include data, discussions, notes, comments, text messages, multimedia messages (still images, video images, sound files, and/or the like), emails, and/or the like). When a collaboration object interface is presented, the associated entity communications may be accessed from memory and presented.

Further, as illustrated in FIG. **7**G, Entity 2 Team 2 may opt to share Collaboration Object A2 with Entity 3 Team 1 by deriving Collaboration Object A3 (which may be similar to Object A2 but with modified attributes, such as material or color. Additionally, Entity 2 Team 2 may choose to share updates regarding Collaboration Object A3 as updates to Collaboration Object A1. In the illustrated example architecture, a collaboration object shared by Entity 1 and Entity 2 may be used to derive variant collaboration objects shared by Entity 2 and Entity 3, and the collaboration objects shared by Entity 2 and Entity 3 may be used to update collaboration objects shared by Entity 1 and Entity 2. This scenario (simplified for illustrative purposes) may also be applicable from the perspective where Entity 2 Team 1 and Entity 2 Team 2 simultaneously collaborate with multiple entities.

As similarly discussed elsewhere herein, communication channels may be provided via which both inter-entity and intra-entity communications may be performed regarding respective collaboration objects and associated workflows (e.g., wherein the communications may include data, discussions, notes, comments, text messages, graphics, emojis, multimedia messages (still images, video images, sound files, graphic files, and/or the like), emails, and/or the like). When a collaboration object interface is presented, the associated entity communications may be accessed from memory and presented.

Thus, with respect to intra-entity communications, a team (or individual user) from one entity can provide communications with respect to a collaboration object (e.g., an intra-entity collaboration object or an inter-entity collaboration object) with other teams (or individual users) inside of their own entity.

With respect to inter-entity communications, a team (or individual user) from one entity can provide communications with respect to a collaboration object (e.g., an inter-entity collaboration object) with other teams (or individual users) at different entities.

Thus, teams within one or more entities are enabled to conveniently share collaboration objects with teams within the same entity and with teams in different entities via the multi-entity, multi-hierarchy system without requiring users to download and/or manually re-enter data from and among multiple disparate systems.

FIG. **7**H illustrates an example user interface providing inter-entity and intra-entity communications regarding a collaboration object. In the illustrated example, a communications pane is presented on the right side of the user interface. Optionally, inter-entity communications (e.g., between a retailer and a supplier) may indicatively be color-coded (e.g., using a neutral/white background) using a first color coding, and intra-entity communications may indicatively be color-coded (e.g., using a grey or primary color background) using a second color coding. In addition, collaboration data may be presented in association with the related communications. For example, the collaboration data may include one or more images of the collaboration object (e.g., still images and/or video images), collaboration object attributes (e.g., size, color weight, dimensions, MOQ, lead time, quoted data rate, place of origin, pricing, etc.).

FIG. 7I illustrates an example user interface providing inter-entity communications (displayed on the right side) between users from multiple entities (e.g., retailers and a supplier) regarding a collaboration object (e.g., a quote) together with information regarding the collaboration object (e.g., images, identifiers, attributes, pricing of a product corresponding to the collaboration object, and/or other attributes described herein). Controls may be provided via which the user can specify that: only communications from the team(s) internal to the user's entity are to be presented; only communications from the team(s) external to the user's entity are to be presented; or both communications from the team(s) internal to the user's entity and from the team(s) external to the user's entity are to be presented. The user interface may enable a user of a team of a given entity to select one or more collaboration objects and specify one or more teams within the user's entity (e.g., who may not otherwise have access to the selected collaboration objects) and/or with one or more teams one or more external entities with whom the selected collaboration objects are to be shared.

FIG. 7J illustrates another example user interface providing intra-entity communications (displayed on the right side) regarding a collaboration object, together with information regarding the collaboration object (e.g., images, identifiers, retailer name, and/or the like). In this example, the collaboration object is a quote. The collaboration object contains multiple sub or related collaboration objects (e.g., multiple products for which a quote is being requested). A user in a team at one entity can select collaboration objects (the two circled products in this example), and transmit communications regarding the selected collaboration objects to a different group or team of users in the user's own entity (e.g., a product development (PD) team, a sales team, a purchasing team, an accounting team, etc.) by activating a corresponding control (e.g., a send to PD control, which may cause the send user interface illustrated in FIG. 7K to be presented on the user device). The status of a given collaboration object may be displayed in association with an image of the collaboration object (e.g., "Send to PD"), where the status may optionally be highlighted using a corresponding color.

Authorized users at a given entity may opt to share collaboration objects internally within its team(s), including with teams within the entity who may not otherwise have access to the collaboration objects. Optionally, authorized users at a given entity may opt to share collaboration objects with users or teams at other entities.

For example, the disclosed system provides teams/sets of users (or individuals) within one or more entities the appropriate visibility to both teams (or individuals) within their own entity and teams (or individuals) at external entities with respect to developments and statuses that affect (e.g., adversely or positively affect) their collaboration regarding an object without requiring an entity to manually export data and without requiring manual data re-entry. This is achieved by enabling users utilizing the disclosed multi-entity multi-hierarchy system to select, via a corresponding user interface, collaboration objects from other inter-entity collaboration or intra-entity collaboration to share with intra-entity users or inter-entity users respectively.

Referring now to FIG. 7K, an example user interface is illustrated that enables inter-entity and/or intra-entity communications to be created. The user interface optionally comprises a form, such as a modal form (where no input (keyboard, touch, or mouse click) can occur except to objects on the modal form), where a user may select one or more teams of users (within and/or external to an entity) that have been granted the appropriate permission (e.g., within the corresponding category selected via the user interface) to share selected collaboration objects (e.g., selected in the using the interface illustrated in FIG. 7I or 7J). The user may optionally include communications via in-app chat messages, via an app pop-up alert, via a webpage hosted by a server and accessed by a user device browser, via an email, via a short/instant messaging service, and/or otherwise to provide additional context regarding the selected collaboration objects.

Referring now to FIG. 7L, an example user interface is illustrated that enables sharing, by a user in a first team at a given entity, of a collaboration object with users at a different team within the same entity. The user interface further enables sharing of the selected collaboration object with teams at different entities that are connected with the foregoing different team within the same entity (although the teams at the different entities may not have any direct connections with the first team at the first entity). The collaboration object in this example is a product (a couch). Quotes from multiple entities/companies (in the form of landed cost quotes in this example) are listed. The user may select a given quote and transmit the selected quote to an internal team (e.g., an internal sales team for review). Thus for example, when users at Team 1 in Entity 1 choose to share a collaboration object, such as a product, with users at a different team with different permissions within the same entity, the selected collaboration object can also be shared with teams at other entities that are connected with the second team at the first entity (even if the first team at the first entity does not have a direct connection with the other teams at other entities).

In the illustrated example user interface, a collaboration object (a product) has been shared between teams at the same entity and is now shared again with teams at different entities. This is depicted by a table in the top middle of the user interface listing multiple entities to whom the collaboration object has been sent to with a request for quotation updates.

A form may be provided that enables a user to select a version (from multiple versions) of a collaboration object (that has been shared with one or more teams at one or more entities) to update the original team at the first entity that originally defined the collaboration object, and had shared the collaboration object with the second team at the first entity. When a user shares a selected version of the collaboration object to update another team within their entity, this form will show the selected version.

Referring now to FIG. 7M, an example user interface is illustrated comprising a form via which users can share updates to a collaboration object between teams (and users at such teams) at the same entity. This form may be enabled when a user selects a version of a collaboration object to share with teams in the user's own entity (e.g., from a dropdown list of collaboration objects presented via the user interface illustrated in FIG. 7L, where the dropdown list may be populated with collaboration objects that the user has permissions to share or update). The form provides a selectable list of users within other teams at the entity (e.g., automatically populated with the names of users assigned to the collaboration object) that may be notified of the updates to the collaboration object, and includes a message input field via which the user sending the collaboration object updates may provide additional context to the users receiv-

ing the updates. Optionally, a "select all" control is provided via which the user may select all of the listed users to whom updates are to be sent to.

Referring now to FIG. **7**N, an example user interface is illustrated that enables updating of a collaboration object with a separate collaboration object. The user interface depicts a collaboration object, such as a quote, with subsequent/related collaboration objects, such as products, where one or more of the collaboration objects has been shared by a team (e.g., the team that defined the collaboration object) with one or more teams within the same entity, and provides status and updates from one or more of those teams that are available for review by users on the team that originally shared the collaboration object. For example, with reference to the circled couch, a "read to review" notification is presented, which when clicked on, may cause the updates to be presented. By way of further example, the status of a given collaboration object may be displayed in association with an image of the collaboration object (e.g., "Send to PD"), where the status may optionally be highlighted using a corresponding color.

Referring now to FIG. **7**O, an example user interface is illustrated that may be launched in response to the user selecting a collaboration object with new updates to review (e.g., via the user interface illustrated in FIG. **7**N). The user interface enables users of a team to review updates, suggestions/changes, or comments with respect to a collaboration object that has been shared with one or more teams within the team's own entity. Such updates/changes, suggestions, or comments may assist the team's interactions and collaborations with one or more other teams at one or more other entities. The user interface enables the user to review and accept or reject (via corresponding controls provided via the user interface) updates and suggestions to the collaboration object while contextualizing notes, communication, and/or requests from users at one or more other teams from one or more other entities. Changes and suggestions may be identified via color coding, cross-outs, bolding, italics, boxes/ellipses, and/or otherwise. In the example user interface, changes/suggestions include price, size, weight, and materials. As discussed elsewhere herein, such updates, comments, acceptances or rejections may be reported to one or more users via status reports (e.g., provided via various user interfaces described herein, via an app pop-up alert, via an email, via a short/instant messaging service, and/or otherwise).

Example user interfaces may enable entities to add inter-entity user defined fields. For example, a given entity typically has information that may be unique and that is useful, valuable, and proprietary to their business operations. For example a given entity may have used an identifier system that enables its employees to identify product attributes based on the identifier value. Corresponding user defined data fields may be added to certain user interfaces.

Just as there is value in collecting, managing and tracking these fields within a system for a single entity, there is also value in collecting, managing, and tracking these fields as they relate to multi-entity collaboration regarding a collaboration market. Corresponding user defined data fields may be added to certain user interfaces for many different types of collaboration objects such as products, quotes, orders, projects, purchase programs, documents, transactions, and/or other types of collaboration objects.

Using the disclosed multi-entity, multi-hierarchy communication system, user defined fields from a first entity may be associated with collaboration objects shared internally and/or with related or other entities based on the designated relationships of those entities and/or an identification of those entities by the first entity. Optionally, the custom user-defined fields and corresponding data are distinct from common fields (that are accessible by multiple entities sharing a collaboration object). For example, optionally, the custom user-defined fields and corresponding data are only shareable within the entity that defined the custom fields, and are not accessible by other entities.

Similarly, custom user-defined functions may be created by a given entity that perform desired programming tasks (e.g., that may be unique and valuable to the creating entity). For example, a user-defined function may be implemented using modular and/or reusable code to perform one or more repeatable tasks (e.g., queries, calculations, etc.) related to one or more custom, user-defined fields and/or common data fields (and associated data). Optionally, only the entity whose user defined a given function may access and use the entity's user-defined function (as opposed to common functions to which entities are generally granted access). Optionally, the entity may share/grant access to the entity's user-defined functions with other specified entities.

Optionally and advantageously, the disclosed multi-entity, multi-hierarchy communication system enables a user to define attributes associated with an object, such as a collaboration object. For example, referring to FIG. **1**P, within the context of a software system shared by multiple entities, data governance around collaboration objects (e.g., a product, a quotation, a purchase order, etc.) is important in transmitting appropriate data between collaborating users and organizations. Aligning expectations around data field types may reduce or eliminate miscommunications and may greatly facilitate transacting data with third party systems (e.g., purchasing systems of retailers, systems of manufacturers selling products to retailers, other systems described herein, and/or other systems) that interface with the communication/collaboration system.

By way of example, differences in units of measurements may often be a source of miscommunication, which can result in the wrong items being manufactured, sold, and purchased. By way of illustration, a given entity may specify an attribute/data field of a given collaboration object, such as the size of a shirt, in centimeters whereas a partner entity (e.g., a shirt manufacturer) may expect to provide the same measurement in inches. By way of further illustration, even when two entities utilize the same units of measurement, a given entity may want to place restrictions on the length or value of data that is attributed to a given field on a collaboration object. For example, a given entity may be configured to input data from a data field that briefly describes a collaboration object (e.g., a shirt) with values such as "Blue Shirt". The given entity may have a desire to limit the number of characters in the values for these fields, such as 12 characters, since they may use the data from this data field to print on physical tags that can only physically accommodate a limited number of clear, human readable characters (e.g. 12 characters in Time New Roman, with a font size of 12).

To address the foregoing technical challenges, optionally the disclosed multi-entity, multi-hierarchy communication system may preconfigure common data fields with field types, length limitations, and other attributes, that may be generally accepted by relevant third party systems. Optionally, in addition, the system may provide enhanced flexibility by enabling users to create fields with different field types, length limitations, and/or other attributes. Certain processes and user interfaces will now be described that enable users to create field types and define maximum field

lengths, and/or other attributes for User Defined Fields (UDF) to enhance with other entities and other entity systems. The User Defined Fields may also enable data grooming (e.g., deleting old or stale data to reduce the total database size and memory utilization) and/or governance that facilitate migrating data from or through the communication/collaboration system to other systems controlled by a given entity that may not be shared with other entities.

Referring to FIG. **7**P, user-defined fields and user defined functions are sometimes collectively referred to herein as User Defined Fields and Functions ("UDFF"). Common data fields and common functions (that are generally available to all participating entities) are sometimes collectively referred to herein as Common Fields and Functions ("CFF").

FIG. **7**P provides a representation of how, in a multi-entity multi-hierarchy system, a set of UDFF and CFF (and associated data) under one or more hierarchies may be selected and shared with one or more hierarchies of one or more entities via one or more collaboration objects (e.g., a product, a product offer, a Request for Quote (RFQ), a quote, a Purchase Order (PO), a project, a purchase program, a document, a transaction, and/or the like). The User Defined Fields and Functions (UDFF) and Common Fields and Functions (CFF), including fields/functions with applied data types, values, and/or restrictions, may be applied to collaboration objects within the communication/collaboration system. FIG. **7**P further illustrates the data interface between collaboration objects within the multi-entity, multi-hierarchy communication system and third party systems of third party entities that may define the data types, values, and restrictions of the UDFF applied to collaboration objects.

In the illustrated example, a first set of user defined fields (and associated field data) and user defined functions (UDFF1) and common fields (and associated field data) and functions (CCF1) under a hierarchy (of users) of Entity 1 may be selected and shared via Collaboration Object 1 with a hierarchy of Entity 2.

A second set (UDFF2 and CFF2), which may include fields and functions that are also in the first set (UDFF1 and CFF1), are under a different hierarchy of Entity 1. UDFF2 and CFF2 may be selected and shared via Collaboration Object 2 with a hierarchy of Entity 4.

A third set (UDFF3 and CFF3) under a hierarchy of Entity 2 may be selected and shared via Collaboration Object 1 with a hierarchy of Entity 1. A fourth set (UDFF 7 and CFF7) under a hierarchy of Entity 4 may be selected and shared via Collaboration Object 2 with a hierarchy of Entity 1.

The data sharing enables via the UDFF provides real-time data interchange between various entities in a multi-entity multi-hierarchy system, significantly improving data flow while removing or reducing the need for maintaining multiple siloed systems across multiple disconnected entities and lengthy data mapping during system integrations. Such an approach enables a reduction in the amount of memory that would otherwise be needed to store duplicative siloed data, and further enables data to be shared more quickly as the number of data stores that need to be accessed and the number of systems that need to be traversed are reduced.

Further, UDFFs defined by a given entity that are not shared with other entities will remain private UDFFs of the given Entity and may be privately managed by users within the given Entity, thereby further enhancing security and data privacy.

Referring now to FIG. **7**Q, an example user interface is illustrated that comprises a modal form that enables users of a given entity to configure data fields that may be unique in form or requirement for the given entity (a UDFF). There may be predefined fields from which the user may select and/or an interface may be provided via which the user can define entirely new form fields (e.g., by entering a field name, field type, expected data type, etc.). The illustrated form may also enable users at a given entity to specify whether a given field (UDFF) is to be "private" (and so only available to users at the given entity) or "not private," whereby the corresponding fields and field data are to be made available to users at other entities based on a predetermined relationship permissions hierarchy structure specified by the given entity.

Referring now to FIG. **7**R, an example user interface is illustrated that enables users to configure a set of UDFFs and CFFs via page/interface views. The user interface enables users to select a set of UDFF and CFF (e.g., via the table in the middle section) from a list of page views in the left section and assign the set of selected fields to one or more hierarchies of the given entity listed in the right section. Users may further sort and rearrange the order of UDFF and CFF in the middle section via sort controls. The user interface enables an entity user to specify select which relationships to other entities the user wants to share the entity's UDFF. The user interface enables users to create groupings or "Page Views" of one or more fields, including unique user defined fields, and then select or otherwise specify relationships subjected to a multi-entity, multi-hierarchy permissions structure to adopt the set of fields assigned to those relationships. Controls are provided via which a user may specify field position (e.g., first, second, third, etc.), field name, field type (e.g., standard, custom), data type (e.g., integer, floating value, character, image, graphic, etc.). Controls may be provided via which a user may delete corresponding fields. The user interface may enable a field entry to be dragged and dropped to change the field positioning. A control may be provided via which a user can add fields. Controls may be provided via which the user may specify to which entity departments/groups and/or catalog categories the settings are to be applied.

Referring now to FIG. **7**S, an example user interface is illustrated that displays a collaboration object and that enables users from one or more entities to view and update in real-time a selected shared UDFF, selected as a part of product attributes (e.g., the circled attributes). In particular, the user interface depicts a collaboration object from a first entity, where user defined fields from a second entity are available to interact with for the depicted collaboration object. Users may select which set of related entity fields they want to interact via a drop down form positioned above the lower table in the interface. In this example, both the entities and sets of fields may be subject to pre-determined permissions both for the individual users as well as between the related entities and hierarchies.

FIG. **1**Q illustrates an example user interface enabling a user of an entity to create new user defined fields to apply to collaboration objects with which the user's entity and partner entities can interacts. The user interface includes controls (e.g., fields, dropdown and/or other menus, and/or the like) where a user may specify a field name (e.g., via a menu of predefined field names, a field name entered as text by the user, etc.), a data type for the field (e.g., short text, long text, inter value, floating point value, yes/no, date, etc.) and constraints (e.g., "Private", "Default Value", "Maximum Character Length", "Minimum Character Length", "Forbidden Characters, etc.) on values for a user defined field. A

control may be provided in association with a given field that enables the position of a given field to be moved up or down in the list of fields.

FIG. **1**R illustrates an example user interface configured to enable a user to create new user defined fields and choose the field type (e.g., from a menu of field type options). This technique of specifying field types, in combination with an interface that enables the selection of pre-defined options for field values, advantageously enables users from a given entity to enforce data standardization when compiling data on one or more collaboration objects. Data standardization is particularly important to the supply chain industry where an entity wants to share crucial data sets (e.g., via a shared user defined field and function) with other entities (e.g., upstream and/or downstream throughout the industry), where if data is not accurately communicated, the wrong item may be manufactured, the wrong quantity of items may be delivered, the item may be delivered to the wrong destination, etc.

FIG. **1**S illustrates an example user interface configured to enable a user to create a user defined field and specify default value and/or range. For example, a field is provided via which the field name and data type may be specified, a default value field is provided via which a field default value may be specified, and a maximum value field is provided via which a maximum permitted field value may be specified, further facilitating the collection of well-governed data by a given entity. Advantageously, the use of a prespecified default value and range helps users from a given entity quickly and accurately compile information regarding collaboration objects and significantly reduces data errors.

FIG. **1**T illustrates an example user interface configured to enable detection of user-entered values for a given field that violate a field type specification and/or constraints (e.g., specified using the user interface illustrated in FIG. **1**S). In response to detecting that a user entered value for a given field that violates a field type specification and/or constraints, the user interface generates visual, audible, and/or haptic warnings and alerts that indicate to a user that a value entered in one or more fields violates the field type specification and/or constraints. This feature advantageously aids users in standardizing data when initially collecting such data and enforces an efficient non-obstructive way of grooming/governing data, thereby reducing system conflicts and the use of computer resources that would otherwise be needed to resolve such conflicts. In this example, a color-coded textual alert is provided indicating that the number entered in the WM Item Number field violates the maximum number of permitted characters.

FIG. **1**U illustrates an example user interface that enables the bulk editing of values of a given user defined field of one or more collaboration objects (e.g., multiple products) at the same time, while restricting field types and value ranges of the user defined field to those permitted. For example, the user interface may access and depict images of various collaboration objects, such as products (e.g., dresses in this example). A given collaboration object may be displayed in association with a selection control (e.g., a checkbox). A user can select the collaboration objects that are to have respective field values modified for a given field type. The user may select the field whose values are to be edited and a corresponding field value editing user interface may be displayed that depicts the selected collaboration objects and that includes a field that enables an existing field value to be edited or a new field value to be entered.

An aspect of the present disclosure relates to collaboration workspaces that may be shared amongst registered and unregistered entities, users, and/or groups of users, with respect to one or multiple collaboration objects.

In particular, within a multi entity/multi hierarchy system such as the communication/collaboration system described herein, it would be advantageous to enable users to utilize the hierarchies, collaboration objects, and collaboration tools of the disclosed system to collaborate on collaboration objects with external users and entities who have not yet registered for access to the system as well as with those who are registered users and entities.

For example, an external entity may encounter practical hurdles to registering for access to the multi-entity/multi-hierarchy system (e.g., because of a lack of technical resources, purchasing authority, and/or financial resources). To facilitate the utilization of the multi-entity/multi-hierarchy system beyond its registered user base, it may be advantageous to remove gateways and friction in providing access to the system by non-registered users and/or entities (e.g., companies).

Consider a first set of users within a first entity that is registered on the multi-entity/multi-hierarchy system, where the first set of users shares collaboration objects with a second set of external users (that are not part of the first entity) and entities who have not yet registered/signed up or signed into the multi-entity/multi-hierarchy system. The system may enable the first set of registered users to transmit a communication (e.g., an email, a short messaging service message, and/or other type of communication) comprising a unique network resource link containing or providing access to secured browser tokens to a second set of external non-registered users and entities. Through the link and tokens, the second set of external non-registered users and entities may access the shared collaboration objects as specified by the first set of registered users.

FIG. **1**V illustrates a representation of users granted hierarchical permissions within a registered entity (Entity 1) sharing a collaboration object with a non-registered user via the system disclosed herein.

FIG. **1**W illustrates a representation of users granted hierarchical permissions within a registered entity (Entity 1) sharing multiple different collaboration objects with respective different non-registered users via the system disclosed herein.

FIG. **1**X illustrates a representation of users granted hierarchical permissions within a registered entity (Entity 1), sharing multiple different collaboration objects (Collaboration Object 1, Collaboration Object 2) with different non-registered users where one or more non-registered users have access to one or more collaboration objects via the disclosed system. In this example, a given collaboration object may be shared with multiple non-registered users.

FIG. **1**Y illustrates a representation of users granted hierarchical permissions within a registered entity (Entity 1), sharing multiple different collaboration objects (Collaboration Object 1, Collaboration Object 2) with respective different groups of non-registered users (Group 1, Group 2), where individual non-registered users with a given group of non-registered users may have access to one or more collaboration objects via the system disclosed herein.

FIG. **1**Z illustrates a representation of multiple users granted hierarchical permissions within multiple registered entities (Entity 1, Entity 2) sharing respective different collaboration objects (Collaboration Object 1, Collaboration Object 2) with the same non-registered user, where the non-registered user may access both collaboration objects and interact with one or more users from one or more registered entities via the disclosed system. The system may

provide the non-registered user with access to the different collaboration objects (Collaboration Object 1, Collaboration Object 2) from different registered entities (Entity 1, Entity 2) via a single interface (e.g., where access is provided via unique keys such the non-registered user's email address, phone number, security tokens, or IP data).

FIG. **1**AA illustrates a representation of multiple users granted hierarchical permissions within multiple registered entities (Entity 1, Entity 2) sharing multiple different collaboration objects (Collaboration Object 1, Collaboration Object 2) via the disclosed system with the same group of non-registered users (group 1) where the non-registered users within the group (Group 1) may access both collaboration objects (Collaboration Object 1, Collaboration Object 2) and interact with one or more users from one or more registered entities (Entity 1, Entity 2). The system may provide the non-registered user within the group (Group 1) access to the different collaboration objects (Collaboration Object 1, Collaboration Object 2) from different registered entities (Entity 1, Entity 2) via a single interface (e.g., where access is provided via unique keys such the non-registered user's email address, phone number, security tokens, or IP data)

FIG. **1**BB illustrates an example user interface enabling one or more users at a registered entity to define access to a collaboration object for one or more non-registered users or user groups using email addresses. A message may be transmitted to the email address, where the message may contain a link to a unique web address with secured tokens, IP information, group IDs, and/or otherwise. The example user interface may identify a default team (e.g., a default set of users within a given entity that has access permissions to a corresponding collaboration object), and a "my team" set of users (e.g., a customized, user-specified set of users within a given entity that has access permissions to a corresponding collaboration object). An "add participants" user interface may be provided via which the user at the given entity may specify non-registered users (e.g., via corresponding email addresses) that are to be granted permission to access the collaboration object. The corresponding email address may then be used to transmit the foregoing message.

FIG. **1**CC illustrates an example representation of users (Entity 1 Team 1, Entity 1 Team 2) granted hierarchical permissions within a registered entity (Entity 1) sharing a collaboration object (Collaboration Object 1) with a non-registered user. In this representation, another collaboration object (Collaboration Object) may also be shared within separate users/teams/hierarchies at the registered entity (Entity 1) via the disclosed system. The collaboration object (Collaboration Object) shared with teams (Entity 1 Team 1, Entity 1 Team 2) within the registered entity (Entity 1) may be based on, but a modified version of the collaboration object (Collaboration Object 1) shared with the non-registered user.

FIG. **1**DD illustrates a representation of users granted hierarchical permissions within a registered entity (Entity 1) sharing multiple different collaboration objects (Collaboration Object 1, Collaboration Object 2) with respective different non-registered users via the disclosed system. In this example, the collaboration objects (Collaboration Object 1, Collaboration Object 2) may also be shared within separate users/teams/hierarchies (Entity 1 Team 1, Entity 1 Team 2) at the registered entity (Entity 1). The collaboration objects shared with teams within the registered entity may be based on, but a modified version of the collaboration object (Collaboration Object 1, Collaboration Object 2) shared with the non-registered users.

FIG. **1**EE illustrates a representation of users granted hierarchical permissions within a registered entity sharing multiple different collaboration objects (Collaboration Object 1, Collaboration Object 2) with different non-registered users via the disclosed system, where one or more non-registered users have access to one or more collaboration objects, and where multiple non-registered users may access the same collaboration object. In this representation, the collaboration objects may also be shared within separate users/teams/hierarchies at the registered entity. The collaboration objects shared with teams within the registered entity may be based on, but a modified version of the collaboration object (Collaboration Object 1, Collaboration Object 2) shared with the non-registered users.

FIG. **1**FF illustrates a representation of users granted hierarchical permissions within a registered entity (Entity 1) sharing multiple different collaboration objects (Collaboration Object 1, Collaboration Object 2) with different groups of non-resident users (Group 1, Group 2) via the disclosed system, where individual non-registered users may have access to one or more collaboration objects (Collaboration Object 1, Collaboration Object 2) if they are a member of a group of non-registered users to whom access has been granted via the system. In this representation, the collaboration objects may also be shared within separate users/teams/hierarchies at the registered entity. Separately the collaboration objects shared with teams within the registered entity (Entity 1) may be modified versions of the collaboration object shared with the non-registered user groups (Group 1, Group 2).

An aspect of the present disclosure relates to sharing data amongst entities and users, such as via product data syndication.

In a system, such as that disclosed herein, where entities create and store large amounts of data (e.g., in the terabytes), it becomes computer resource-intensive (e.g., with respect to processor, memory, and network utilization) and time consuming for such entities to share a large set of data from a given system with other computer systems (which may have their own restrictions on data formatting), where such other systems may either be controlled by the same entity or controlled by one or more separate external entities. For example, collaboration object data, such as product data and order data, created in a multi-entity multi-hierarchy collaboration system, such as that disclosed herein, may be shared with other software applications and/or computer systems such as accounting, inventory management, and/or ecommerce systems controlled by the given entity or its external business partners.

The disclosed techniques for syndicating such data overcome the disclosed technical challenges in sharing large amounts of data. Syndicated data may be an aggregated collection of the same set of data across multiple internal and external systems and platforms. The real-time and/or scheduled transmission (e.g., over a network via a network interface) and sharing of a set of syndicated data (such as product, order and inventory data which may be associated with collaboration objects) among multiple internal and external systems may be referred to herein as product data syndication.

FIG. **1**GG Illustrates a representation of an example data syndication architecture within a multi-entity multi-hierarchy system, such as that disclosed herein. The multi-entity multi-hierarchy system may include a syndication platform. The syndication platform may include an external systems

authentication module, an object mapping module, and an object data transaction service module. The syndication platform, and one or more of its modules, may access data from and store data (e.g., collaboration object data disclosed herein) to a collaboration object database.

The external systems authentication module may receive and verify external system authentication credentials from external systems (e.g., External System **1**, External System **2**) and users. For example, authentication may be provided using an access key ID, a secret access key, double factor authentication, a token, and/or otherwise. The object data mapping module may receive data requirements/specifications from external systems (e.g., External System **1**, External System **2**) and/or from users. The object data transaction service module may receive and/or transmit object data and transaction responses with external systems (e.g., External System **1**, External System **2**).

An example product data syndication process executed using the syndication platform may perform some or all of the following tasks:

1) Enable users of the multi-entity multi-hierarchy collaboration system to provide authentication credentials to one or more external target systems (e.g., using the external systems authentication module);
2) Gather data requirements or specifications from one or more external target systems (e.g., using the object data mapping module);
3) Map or translate data between collaboration objects in the multi-entity multi-hierarchy collaboration system and external target system(s) by field/attribute names and/or predefined rules and conditions (e.g., using the object data mapping module);
4) Transmit and share collaboration object data across various systems using a transaction engine (sometimes referred to herein as a job scheduler) in real-time and/or on a preset schedule (e.g., using the object data transaction service module); and/or
5) Monitor (e.g., using the object data transaction service module) data transaction status (e.g., success, failure, pending, errors, event logs, etc.) and maintain data accuracy (e.g., detect the transmission or receipt of faulty data, and cause data to be retransmitted if faulty data is detected).

FIG. **1**NN illustrates an example multi-layer service architecture that enables a multi-hierarchy multi-enterprise system to transact authentication data via one or more external authentication platforms. For example, an authorization protocol or framework may be utilized that provides applications the ability for secure designated access. By way of illustration the authentication protocol may utilize authorization tokens to prove an identity between a person/user and service providers. The authentication protocol may enable a user to approve a given application interacting with another application without providing a password. Optionally, in the multi-layer service architecture, a multi-hierarchy multi-enterprise system may transact collaboration object data from a database layer with one or more external platforms (e.g., through data attribution mapping).

The user may interact with the syndication platform via a client layer, such as a web application. The syndication platform may include a publish request handler, and an external platform adapter configured using specified categories and configurations. The syndication platform may access syndication data from and store syndication data (and/or other data) to a storage layer that may include a syndication database.

The syndication platform may communication with a product lifecycle management service, which may be hosted on a dedicated server or via a cloud system. The product lifecycle service may communication with a database that stores some or all of the data disclosed herein. The external platform adapter may be configured to communicate with one or more external platforms, such as an authentication platform that provides authentication services using the authentication platform described above, a catalog system, a pricing system, and/or other external platform system.

FIG. **1**HH illustrates an example user interface that enables users of the multi-entity multi-hierarchy system to provide authentication credentials for external systems, to thereby establish connections between the multi-entity multi-hierarchy system and one or more external systems. In this example, fields are configured to receive a platform identifier (e.g., selected via a dropdown menu prepopulated with platform identifiers or otherwise), an access key ID, a secret access key, and country (e.g., selected via a dropdown menu prepopulated with county identifiers).

FIG. **1**II illustrates an example user interface that enables users of the multi-entity multi-hierarchy system to specify a channel name to be used in publishing a product data syndication, a connection, and object classifications from a specified connected external system (as illustrated in the example depicted in FIG. **1**GG). Such object classifications (e.g., corresponding product types) may be retrieved via an application programming interface and used to populate a category menu. The object classifications may differ from one external system to another. A "create channel" control may be activated to initiate the syndicated data channel generation.

A channel (e.g., an accessories channel) may be specified via a channel name menu of channels or an editable field. A menu of external system connections may be provided via which a user may select a desired connection (e.g., of an entity, such as a purchasing retailer named Acme) that will be associated with the channel. The object classifications may determine the set of available data attributes and requirements with which a user of the multi-entity multi-hierarchy system may use to map between the data in the multi-entity multi-hierarchy system and one or more external systems (see, e.g., FIG. **1**JJ).

A search field may be provided that enables a user to enter a search query for categories. In response to a user search query (e.g., specified using text and/or images), a search engine returns matching categories which may be displayed via the user interface.

FIG. **1**JJ illustrates a depiction of an example object data mapping service provided via a multi-entity multi-hierarchy system, such as that described herein. Users may utilize a set of data attributes and requirements/specifications retrieved from one or more external systems and create mappings by setting rules and/or conditions. The user interface facilitates and enhances data mapping accuracy performed by users.

Fields are provided via which a user can specify a product identifier code (e.g., an ASIN, UPC, EIN and/or other product identifier code), an item number, and a description. Controls are provided via which images and text may be mapped from one entity's schema to another entity's schema. A control may be provided via which a user can specify that the user interface is to be automatically populated with images from a source entity. The user may then map a primary image of a first entity to a primary image of a second entity, a second image of the first entity to a second image of a second entity, a first field of the first entity to a first field of a second entity, etc. Controls may be provided

in association with unmapped images and fields of the first entity via which a user may add a mapping of images and fields of a first entity to images and fields of a second entity. The number of mapped fields and/or images may be determined and displayed. A search field may be provided that enables a user to enter a search query for fields of the second entity. In response to a search query (e.g., specified using text and/or images), a search engine returns matching fields and/or images which may be displayed via the user interface.

Users who have permissions to perform such mappings for a given entity may be determined and have their names, images, and/or titles displayed via the user interface.

The system may be configured to predict which fields of the second entity (the target entity) correspond to files of the first entity. The prediction may be performed based on the field labels using pattern matching, dictionary lookups, and/or learning engines. For example, a learning engine may be trained with respect to a corpus of words to identify synonyms for a current word by using nearest neighbors or by based on a defined notion of "similarity". Optionally, a database of synonyms may be utilized to predict a field match. The predicted matching fields may then be used to prepopulate the user interface. The user interface may enable the user to edit the prepopulated matching fields (e.g., in the event the prediction is wrong the user can select a different field of the second entity). In the event no match is found, a corresponding "no match" notification may optionally be provided to the user (e.g., via text, graphic, and/or sound). In the event a match is found, a corresponding "match found" notification may optionally be provided to the user (e.g., via text, graphic, and/or sound).

FIG. **1**KK illustrates an example user interface that enables users of a multi-entity multi-hierarchy system to publish/transact data of one or more collaboration objects to one or more external systems, such as via syndication of a channel of product data. The user interface may also be configured to access and display transaction status (e.g., success, failure, errors, non-attempt, event logs, etc.) with one or more external systems. The user interface may also be configured to display an identifier for the target external system or systems that the collaboration object is to be transacted. In addition, the user interface may access and display feedback on the translation of collaboration object data as viewed by the multi-entity multi-hierarchy system and as the data translation will be received by one or more target external systems.

The example user interface may display the corresponding connection (the target external system), the corresponding channel, the status (e.g., published, unpublished), and the match status (e.g., matches, does not match, etc.). The user interface may display required fields (e.g., item number, description, unit price, etc.) of a source entity, corresponding matching target entity fields (e.g., product name, product description, price, etc.), and corresponding field values. The user interface may similarly display media (e.g., still and/or video images, audio recording, etc.) of a source entity and corresponding identifiers, matching identifiers of the target external system, corresponding media, and controls via which media may be selected.

FIG. **1**LL illustrates an example user interface that enables users of a multi-entity multi-hierarchy system to publish/transact data of multiple collaboration objects between one or more external systems. A menu may be provided via which the user can select a desired connection and a desired channel. The example user interface accesses and displays, in accordance with the selected connection and channel, the status of transactions (success, failure, errors, non-attempt, event log, etc.) of one or more collaboration objects. The example user interface may also display the target external system or systems with which the collaboration objects are to be transacted. In addition, the user interface may provide feedback on the translation of data from the collaboration objects as viewed in the multi-entity multi-hierarchy system and as it will be received in one or more target external systems.

The user interface may display the corresponding connection, the corresponding channel, and a table of the collaboration objects (e.g., products). The table may have a media column that displays one or more still or video images of the collaboration object, a publishing status column displaying the current publication status (e.g., unpublished, pending, published, etc.), a last published column (e.g., indicating the date and time of the last publication of the collaboration object data), a collaboration object description column, a brand column displaying the brand of the collaboration object, a size column displaying the size of the collaboration object, a color column displaying the color of the collaboration object, and a material column displaying the material of the collaboration object.

The user interface provides a publish control, which when activated, causes the collaboration objects to be published to the user-specified channel for the user-specified connection.

FIG. **1**MM illustrates an example user interface (which may be displayed in response to a user selecting a "published" tab) that enables users of a multi-entity multi-hierarchy system to access and view records and statuses of more multiple collaboration objects that have been transacted between the multi-entity multi-hierarchy system and one or more external systems. The user interface accesses and displays the status of transactions (e.g., success, failure, errors, non-attempt, event log, etc.) of multiple collaboration objects.

The user interface may include a pane identifying different entities, and channels associated with the different entities, from which a user can select. Filter controls may be provided via which the user can specify which statuses are to be displayed and which are to be filtered out and not displayed. For example, the user may specify that collaboration objects with the status of published, pending, and/or rejected are to be displayed. Further, a control may be provided via which the user can specify that a specified matching status is to be displayed and a different matching status be filtered out and not displayed. For example, a user may specify that those collaboration objects associated with a matching status of matching and/or non-matching be displayed. In accordance with the filter specifications, the collaboration objects may accordingly be filtered so that only the selected type of collaboration objects (e.g., matching or non-matching) are displayed.

The example user interface includes a table. The table may have a media column that displays one or more still or video images of the collaboration object and an associated publication date, a product number column displaying a corresponding product number, a publishing status column displaying the current publication status (e.g., unpublished, pending, published, etc.), a matching status column displaying the match status (e.g., published, pending, unpublished), a last refreshed column (e.g., indicating the date and time of the data was last refreshed), a collaboration object description column, a brand column displaying the brand of the collaboration object, a size column displaying the size of the collaboration object, a color column displaying the color of the collaboration object, and a material column displaying the material of the collaboration object. A given collabora-

tion object may be selected (e.g., via a checkbox) and a desired operation may be performed on all the selected collaboration objects in a batch mode. A refresh control may be provided which when activated causes the table to be refreshed with the most recent collaboration object data and attributes.

Thus, methods and systems are disclosed for facilitating communication among users at different entities. It is understood that although certain examples are described with respect to retailer and supplier collaboration, the methods and systems may be used for service collaboration, content collaboration, design collaboration, and other collaboration applications.

The various illustrative logical blocks, modules, routines and algorithm steps described in connection with the embodiments disclosed herein can be implemented as electronic hardware, computer software, or combinations of both. To clearly illustrate this interchangeability of hardware and software, various illustrative components, blocks, modules and steps have been described above generally in terms of their functionality. Whether such functionality is implemented as hardware or software depends upon the particular application and design constraints imposed on the overall system. The described functionality can be implemented in varying ways for each particular application, but such implementation decisions should not be interpreted as causing a departure from the scope of the disclosure.

Depending on the embodiment, certain acts, events, or functions of any of the processes or algorithms described herein can be performed in a different sequence, can be added, merged, or left out altogether (e.g., not all described operations or events are necessary for the practice of the algorithm). Moreover, in certain embodiments, operations or events can be performed concurrently, e.g., through multi-threaded processing, interrupt processing, or multiple processors or processor cores or on other parallel architectures, rather than sequentially.

The steps of a method, process, routine, or algorithm described in connection with the embodiments disclosed herein can be embodied directly in hardware, in a software module executed by a processor, or in a combination of the two. A software module can reside in RAM memory, flash memory, ROM memory, EPROM memory, EEPROM memory, registers, hard disk, a removable disk, a CD-ROM, or any other form of a non-transitory computer-readable storage medium. An exemplary storage medium can be coupled to the processor such that the processor can read information from, and write information to, the storage medium. In the alternative, the storage medium can be integral to the processor. The processor and the storage medium can reside in an ASIC. The ASIC can reside in a user terminal. In the alternative, the processor and the storage medium can reside as discrete components in a user terminal.

User interfaces described herein are optionally presented (and user instructions may be received) via a user computing device using a browser, other network resource viewer, or otherwise. For example, the user interfaces may be presented (and user instructions received) via an application (sometimes referred to as an "app"), such as an app configured specifically for building plan-related activities, installed on the user's mobile phone, laptop, pad, desktop, television, set top box, or other terminal. Various features described or illustrated as being present in different embodiments or user interfaces may be combined into the same embodiment or user interface. While the disclosure may make reference to a user hovering over, pointing at, or clicking on a particular item, other techniques may be used to detect an item of user interest. For example, the user may touch the item via a touch screen, or otherwise indicate an interest. Further, while certain interfaces may be described for selecting an item, such as a checkbox, other selection interfaces may be used, such as a link, radio button, or voice command input. Similarly, while certain references may be made to a user interface pane, the user interfaces may be utilized using other sectioning technologies (e.g., pop-up interfaces) or no sectioning technology may be used within a given user interface.

While the foregoing discussion and figures may illustrate various types of menus, other types of menus may be used. For example, menus may be provided via a drop down menu, a tool bar, a pop up menu, interactive voice response system, or otherwise.

Conditional language used herein, such as, among others, "can," "could," "might," "may," "e.g.," and the like, unless specifically stated otherwise, or otherwise understood within the context as used, is generally intended to convey that certain embodiments include, while other embodiments do not include, certain features, elements and/or steps. Thus, such conditional language is not generally intended to imply that features, elements and/or steps are in any way required for one or more embodiments or that one or more embodiments necessarily include logic for deciding, with or without author input or prompting, whether these features, elements and/or steps are included or are to be performed in any particular embodiment. The terms "comprising," "including," "having," and the like are synonymous and are used inclusively, in an open-ended fashion, and do not exclude additional elements, features, acts, operations, and so forth. Also, the term "or" is used in its inclusive sense (and not in its exclusive sense) so that when used, for example, to connect a list of elements, the term "or" means one, some, or all of the elements in the list.

Conjunctive language such as the phrase "at least one of X, Y and Z," unless specifically stated otherwise, is to be understood with the context as used in general to convey that an item, term, etc. may be either X, Y, or Z, or a combination thereof. Thus, such conjunctive language is not generally intended to imply that certain embodiments require at least one of X, at least one of Y and at least one of Z to each be present.

While the above detailed description has shown, described and pointed out novel features as applied to various embodiments, it can be understood that various omissions, substitutions and changes in the form and details of the devices or algorithms illustrated can be made without departing from the spirit of the disclosure. As can be recognized, certain embodiments of the inventions described herein can be embodied within a form that does not provide all of the features and benefits set forth herein, as some features can be used or practiced separately from others.

What is claimed is:

1. A communication and collaboration system, comprising:

one or more processing devices;

a network interface;

non-transitory memory that stores instructions that when executed by the one or more processing devices are configured to cause the communication and collaboration system to perform operations comprising:

provide an interface that enables a first user at a first entity having a first permission to define a first collaboration object;

receive a definition of the first collaboration object via the interface that enables the first user at the first entity having the first permission to define a first collaboration object;

provide an interface that enables the first user to specify a mapping of a plurality of fields of a first entity, corresponding to data of the first collaboration object of a first entity, to a plurality of fields of a second entity;

receive a first user-specification of the mapping of the plurality of fields of the first entity, corresponding to data of the first collaboration object of the first entity, to the plurality of fields of the second entity;

provide a user interface enabling the first user to specify a product data syndication channel for a plurality of products;

receive a first user-specification of the product data syndication channel for the plurality of products;

provide collaboration object data for at least the first collaboration object via the first user-specified product data syndication channel in accordance with the first user-specification of the mapping of the plurality of fields of the first entity, corresponding to data of the first collaboration object of the first entity, to the plurality of fields of the second entity;

maintain a log of communications regarding a collaboration between a first user of the first entity and a second user of the second entity on the first collaboration object;

maintain a log of communications regarding the first collaboration object between the first user and one or more other users at the first entity;

maintain a log of communications regarding the first collaboration object between the second user and one or more other users at the second entity;

enable a first computer system of the first user to display the log of communications regarding the collaboration between the first user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity, and excluding from display on the first computer system the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity; and

enable a second computer system of the second user to display the log of communications regarding the collaboration between the second user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity, and excluding the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity.

2. The communication and collaboration system as defined in claim **1**, the operations further comprising:

establish a virtual private network to communicate with a first computer system of the first entity;

use a secure transfer tunnel to encrypt communications to the first computer system of the first entity; and

store communications from the first computer system using file encryption in a cloud-based data store.

3. The communication and collaboration system as defined in claim **1**, the operations further comprising:

provide a user interface configured to enable the first entity to define custom fields associated with at least one collaboration object, define default values for the custom fields, define data types for the custom fields, and define rules that data entered into the custom fields need to satisfy.

4. The communication and collaboration system as defined in claim **1**, the operations further comprising:

provide a user interface configured to enable the first entity to define at least one custom field associated with at least one collaboration object, and specify a maximum permitted character length and/or a maximum permitted value default values for the at least one custom field.

5. The communication and collaboration system as defined in claim **1**, the operations further comprising:

wherein the user interface that enables the first user to specify the mapping of the plurality of fields of the first entity, corresponding to data of the first collaboration object of the first entity, to the plurality of fields of a second entity, further enables a user to provide mapping of a primary image of the first entity to a primary image of the second entity.

6. The communication and collaboration system as defined in claim **1**, the operations further comprising:

generating a table comprising a media column that displays one or more still or video images of the first collaboration object, a publishing status column displaying a current publication status of the first collaboration object, and a collaboration object description column that displays a description regarding the first collaboration object.

7. The communication and collaboration system as defined in claim **1**, the operations further comprising:

attempting to predict, for a first field of the first entity, a matching field of the second entity;

at least partly in response to predicting a matching field of the second entity, prepopulating a mapping user interface with an indication that the predicting matching field is a match for the first field of the first entity.

8. The communication and collaboration system as defined in claim **1**, the operations further comprising:

enable a first user at the first entity to access a first set of data related to the first collaboration object, the first user at a position higher than a second user at the first entity in a first hierarchy and associated with greater access rights than those granted to the second user; and

enable the second user at the first entity to access only a subset of the first set of data related to the first collaboration object.

9. The communication and collaboration system as defined in claim **1**, the operations further comprising:

receive a first communication regarding the first collaboration object from the second entity directed to the first entity, the first communication comprising chat text;

receive separate from the first communication a first image and/or first video from the second entity directed to the first entity;

cause the first communication to be displayed in a chat pane by a first computer system of the first entity, cause the first image and/or first video to be displayed at the same time in a second pane, and cause details regarding the first collaboration object to be displayed at the same time in a third pane.

10. The communication and collaboration system as defined in claim **1**, the operations further comprising:

provide for display a user interface indicating one or more first entity tasks associated with processing the first collaboration in association with corresponding color-

coded task statuses, an assignee identifier, and a timing associated with the one or more first entity tasks.

11. The communication and collaboration system as defined in claim **1**, the operations further comprising:

provide for display a user interface indicating corresponding statuses of one or more first entity tasks associated with processing the first collaboration object and on one or more second entity tasks associated with processing the first collaboration object.

12. The communication and collaboration system as defined in claim **1**, further comprising a neural network configured to perform workflow object collaboration analysis to identify potential risks to workflow object collaboration tasks becoming accomplished.

13. A communication system:

one or more processing devices;

a network interface;

non-transitory memory that stores instructions that when executed by the one or more processing devices are configured to cause the communication system to perform operations comprising:

detect a first user of a first entity accessing the communication system;

access permissions associated with the first user;

enable the first user to define a first collaboration object;

enable the first user to invite a second entity to collaborate on the first collaboration object in accordance with the permissions associated with the first user;

in response to receiving over a network via the network interface from the first user an invite instruction for the second entity, the invite instruction regarding collaboration on the first collaboration object, transmit the invitation to collaborate on the first collaboration object to the second entity, the second entity associated with a second user;

provide an interface that enables the second user to collaborate on the first collaboration object in accordance permissions associated with the second user;

maintain a log of communications regarding the collaboration between the first user and the second user on the first collaboration object;

maintain a log of communications regarding the first collaboration object between the first user and one or more other users at the first entity;

maintain a log of communications regarding the first collaboration object between the second user and one or more other users at the second entity;

enable a first computer system of the first user to display the log of communications regarding the collaboration between the first user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity, and excluding from display on the first computer system the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity; and

enable a second computer system of the second user to display the log of communications regarding the collaboration between the second user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity, and excluding the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity.

14. The communication system as defined in claim **13**, the operations further comprising:

establish a virtual private network to communicate with the first computer system of the first user;

use a secure transfer tunnel to encrypt communications to the first computer system of the first user; and

store communications from the first computer system using file encryption in a cloud-based data store.

15. The communication system as defined in claim **13**, the operations further comprising:

provide a user interface configured to enable the first entity to define custom fields associated with a given collaboration object and define whether the custom fields are to be private and not to be shared with other entities, or not private and shareable with other entities.

16. The communication system as defined in claim **13**, the operations further comprising:

provide a user interface configured to enable the first entity to define custom functions and enable the custom functions to be shared with specified levels of hierarchy within the first entity.

17. The communication system as defined in claim **13**, the operations further comprising:

generate a virtual page associated with the first collaboration object, the virtual page comprising a plurality of modules, the plurality of modules comprising:

a first module configured to access and render the log of communications regarding the collaboration between the first user and the second user;

a second module configured to access and render the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity;

a third module configured to access and render the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity;

cause a first user interface to be displayed by the first computer system using the first module and the second module, and excluding the third module; and

cause a second user interface to be displayed by a second computer system using the second module and the third module, and excluding the first module.

18. The communication system as defined in claim **13**, the operations further comprising:

enable the first user to invite a plurality of respective different entities to collaborate on the first collaboration object in accordance with a first hierarchy;

receive communications from one or more of the plurality of entities;

determine which of the communications have not been responded to; and

cause a presentation of the received communications to be displayed by the first computer system of the first user wherein the communications that have not been responded to are emphasized.

19. The communication system as defined in claim **13**, the operations further comprising:

enable the first user to invite a plurality of respective different entities to collaborate on the first collaboration object in accordance with a first hierarchy;

receive communications from one or more of the plurality of entities, the communications including images, the images comprising still images, animations, videos, and/or emojis;

cause at least a portion of the images received from the plurality of entities to be displayed together in association with respective selection controls; and

filter the display of images based on least in part on the first user's interaction with one or more of the respective selection controls.

20. The communication system as defined in claim **13**, the operations further comprising:

receive a first communication from the second user directed to the first user, the first communication comprising chat text;

receive separate from the first communication a first image and/or first video file from the second user directed to the first user; and

cause the first communication to be displayed by the first computer system of the first user in a chat interface and cause the first image and/or first video file to be rendered at the same time separate from the chat interface.

21. The communication system as defined in claim **13**, further comprising a neural network configured to identify trends with respect to at least a first item using data related to a plurality of collaboration objects, the neural network comprising an input layer, an output layer, and one or more levels of hidden layers between the input and output layers, wherein the neural network is configured as a feed forward network.

22. The communication system as defined in claim **13**, the operations further comprising:

detect that a first event has occurred;

in response to detecting that the first event has occurred, perform a synchronization of data store in a data store of the first computer system with a data store of the communication system; and

in response to detecting a first conflict type while performing the synchronization, cause a first action to occur.

23. A computer-implemented method, the method comprising:

providing an interface that enables a first user at a first entity to define a first collaboration object;

providing an interface that enables the first user to assign one or more sets of users at the first entity to one or more first entity tasks associated with processing the first collaboration object;

providing an interface that enables the first user to assign timing data corresponding to the one or more first entity tasks associated with processing the first collaboration object;

enabling the first user to invite a second entity to collaborate on the first collaboration object;

in response to receiving over a network via a network interface from the first user an invite instruction for the second entity, the invite instruction regarding collaboration on the first collaboration object, causing the invitation to collaborate on the first collaboration object to be transmitted to the second entity, the second entity associated with a second user;

enabling the second user to collaborate on the first collaboration object with the first user;

maintaining a log of communications regarding the collaboration between the first user and the second user on the first collaboration object;

maintaining a log of communications regarding the first collaboration object between the first user and one or more other users at the first entity;

enabling a first computer system of the first user to display the log of communications regarding the collaboration between the first user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity; and

enabling a second computer system of the second user to display the log of communications regarding the collaboration between the second user and the second user on the first collaboration object, together with the log of communications regarding the first collaboration object between the second user and one or more other users at the second entity, and excluding the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity.

24. The computer-implemented method as defined in claim **23**, the method further comprising:

establishing a virtual private network to communicate with the first computer system of the first user;

using a secure transfer tunnel to encrypt communications to the first computer system of the first user; and

storing communications from the first computer system using file encryption in a cloud-based data store.

25. The computer-implemented method as defined in claim **23**, the method further comprising:

providing a user interface configured to enable the first entity to define custom fields associated with a given collaboration object and define whether the custom fields are to be private and not to be shared with other entities, or not private and shareable with other entities.

26. The computer-implemented method as defined in claim **23**, the method further comprising:

providing a control that enables the first user to cause only one of:

the log of communications regarding the collaboration between the first user and the second user,

the log of communications regarding the first collaboration object between the first user and one or more other users at the first entity to be displayed.

27. The computer-implemented method as defined in claim **23**, the method further comprising:

enabling a third user at the first entity to access a first set of data related to the first collaboration object, the third user at a position higher than the first user in a first hierarchy and associated with greater access rights than those granted to the first user; and

enabling the first user at the first entity to access only a subset of the first set of data related to the first collaboration object.

28. The computer-implemented method as defined in claim **23**, the method further comprising:

enabling the first user to invite a plurality of respective different entities to collaborate on the first collaboration object in accordance with a first hierarchy;

receiving communications from one or more of the plurality of entities;

determining which of the communications have not been responded to; and

causing a presentation of the received communications to be displayed by the first computer system of the first user wherein the communications that have not been viewed are emphasized.

29. The computer-implemented method as defined in claim 23, the method further comprising:

enabling the first user to invite a plurality of respective different entities to collaborate on the first collaboration object in accordance with a first hierarchy;

receiving communications from one or more of the plurality of entities, the communications including images, the images comprising still images, animations, videos, and/or emojis;

causing at least a portion of the images received from the plurality of entities to be displayed together in association with respective selection controls; and

filtering the display of images based on least in part on the first user's interaction with one or more of the respective selection controls.

30. The computer-implemented method as defined in claim 23, the method further comprising:

receiving a first communication from the second user directed to the first user, the first communication comprising chat text;

receiving separate from the first communication a first image from the second user directed to the first user; and

causing the first communication to be displayed by the first computer system of the first user in a chat interface and cause the image to be displayed at the same time separate from the chat interface.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 11,895,169 B2
APPLICATION NO. : 18/054128
DATED : February 6, 2024
INVENTOR(S) : Luojia Wang

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Drawings

On Sheet 14 of 128, (Reference Numeral 218N), (FIG. 1N), and on the title page, the illustrative print figure, Line 2: Delete "A ON" and insert -- 'A' ON --.

In the Specification

On Column 9, Line 1: Delete "If" and insert -- if --.

On Column 12, Line 48: Delete "FIG." and insert -- FIGS. --.

On Column 12, Line 62: Delete "1128," and insert -- 112B, --.

On Column 13, Line 8: Delete "nonSQL" and insert -- NoSQL --.

On Column 13, Line 12: Delete "nonSQL" and insert -- NoSQL --.

On Column 13, Line 19: Delete "nonSQL" and insert -- NoSQL --.

On Column 13, Line 50: Delete "1148" and insert -- 114B --.

On Column 16, Line 63: Delete "1108" and insert -- 110B --.

On Column 17, Line 56: Delete "1128" and insert -- 112B --.

On Column 17, Line 63: Delete "1148" and insert -- 114B --.

On Column 21, Line 37: Delete "the" and insert -- The --.

On Column 24, Line 12: Delete "CA'" and insert -- 'A' --.

Signed and Sealed this
Sixteenth Day of April, 2024

Katherine Kelly Vidal

Katherine Kelly Vidal
Director of the United States Patent and Trademark Office

On Column 24, Line 14: Delete "CA'" and insert -- 'A' --.

On Column 24, Line 15: Delete "CA'" and insert -- 'A' --.

On Column 24, Line 20: Delete "220A" and insert -- 220A, --.

On Column 24, Line 21: Delete "CA'" and insert -- 'A' --.

On Column 24, Line 23: Delete "CB'." and insert -- 'B'. --.

On Column 24, Line 28: Delete "CA'." and insert -- 'A'. --.

On Column 25, Line 47: Delete "CA'" and insert -- 'A' --.

On Column 25, Line 48: Delete "CA'" and insert -- 'A' --.

On Column 29, Line 7: Delete "sms" and insert -- SMS --.

On Column 34, Line 13: Delete "3K" and insert -- 3K, --.

On Column 37, Line 49: Delete "and or" and insert -- and/or --.

On Column 38, Line 10: Delete "(That" and insert -- (that --.

On Column 38, Line 11: Delete "4E." and insert -- 4E). --.

On Column 39, Line 65: Delete "4Q1" and insert -- 4Q --.

On Column 49, Line 16: Delete "order- associated" and insert -- order-associated --.

On Column 61, Line 36: Delete "(CCF1)" and insert -- (CFF1) --.

On Column 61, Line 46: Delete "(UDFF 7" and insert -- (UDFF7 --.

On Column 65, Line 24: Delete "data)" and insert -- data). --.

In the Claims

On Column 77, Line 4, in Claim 19: Delete "based on least in part" and insert -- based at least in part --.

On Column 79, Line 13, in Claim 29: Delete "based on least in part" and insert -- based at least in part --.