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(54) **ELECTRONIC MESSAGING TO DISTRIBUTE ITEMS BASED ON ADAPTIVE SCHEDULING**

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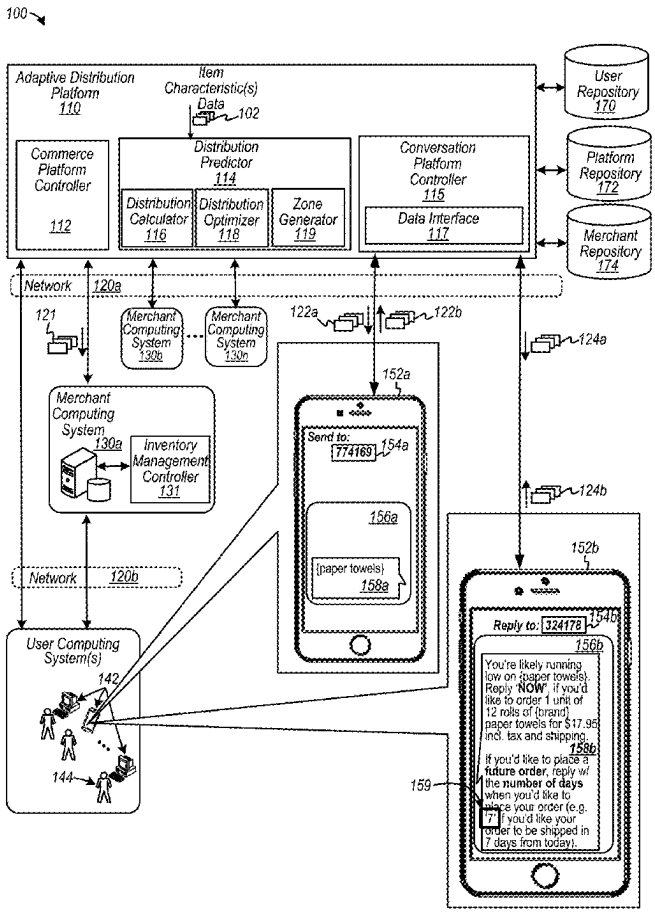
(57) **ABSTRACT**

A method, for example, may include receiving multiple requests for a consumable item, predicting a zone of time in which depletion of the consumable item, monitoring a usage rate, generating a first electronic reminder message, transmitting the first electronic message as a function of the zone of time, receiving a second electronic message as a response message, monitoring the consumer ordering or reordering patterns, applying the machine learning or deep learning algorithms to automatically update the predictive model, and implementing an inventory management software application using an aggregate number of predicted distribution events derived by application of the machine learning or deep learning algorithms to refine amounts of inventory dynamically to ensure the merchants associated with the multiple networked merchant computing system entities optimally determine a quantity of items for fulfillment in an inventory at a storage facility.



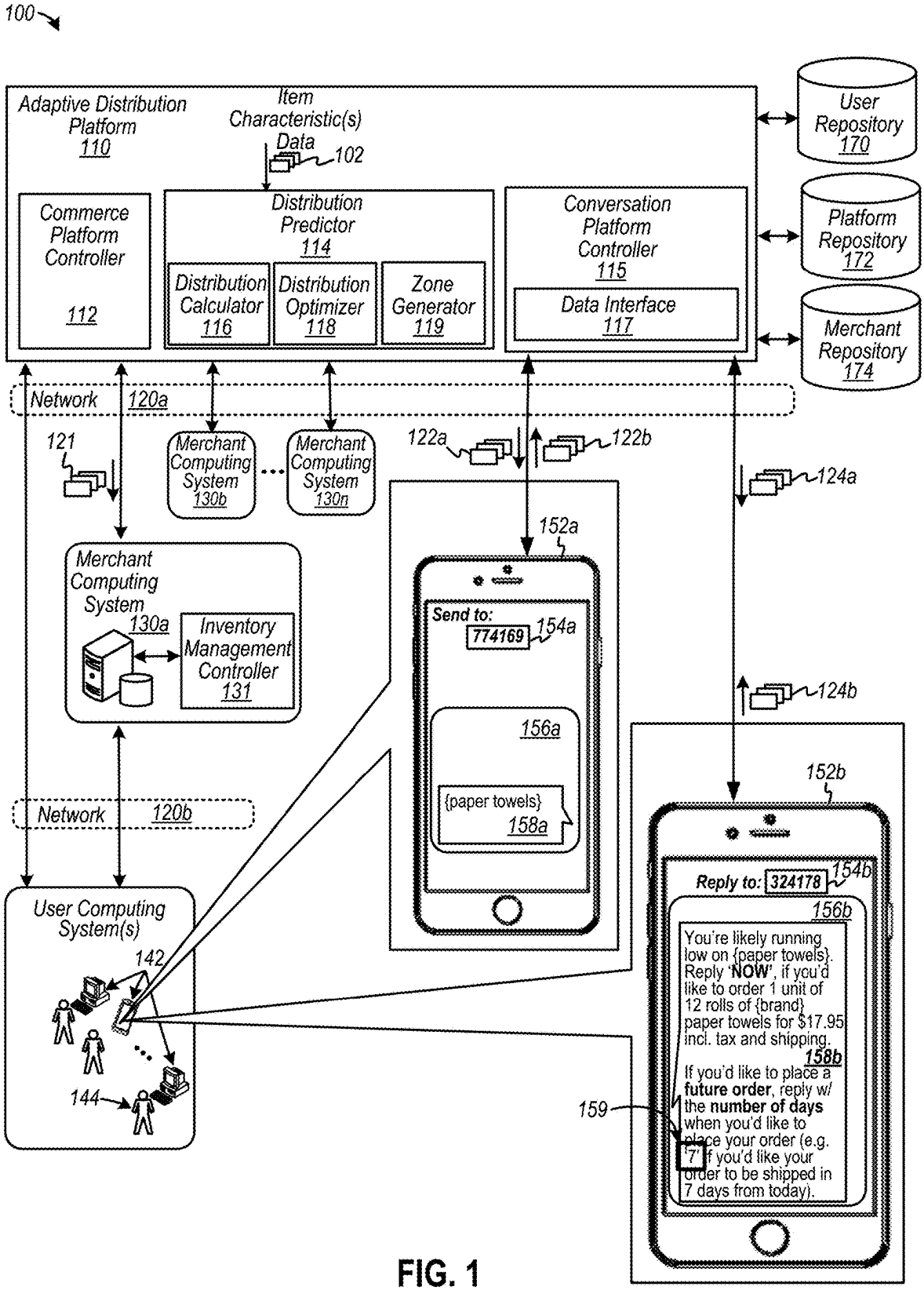

100
Adaptive Distribution Platform 110
Item Characteristic(s) Data 102
User Repository 170
Commerce Platform Controller 112
Distribution Predictor 114
Distribution Calculator 116
Distribution Optimizer 118
Zone Generator 119
Conversation Platform Controller 115
Data Interface 117
Platform Repository 172
Merchant Repository 174
Network 120a
121
Merchant Computing System 130b
Merchant Computing System 130n
122a
122b
124a
152a
Merchant Computing System 130a
Inventory Management Controller 131
Send to:
774169
154a
156a
{paper towels}
158a
124b
152b
Network 120b
User Computing System(s)
142
144
Reply to: 324178
154b
156b
You're likely running low on {paper towels}. Reply 'NOW', if you'd like to order 1 unit of 12 rolls of {brand} paper towels for $17.95 incl. tax and shipping.
158b
If you'd like to place a future order, reply w/ the number of days when you'd like to place your order (e.g. '7' if you'd like your order to be shipped in 7 days from today).
159

FIG. 1

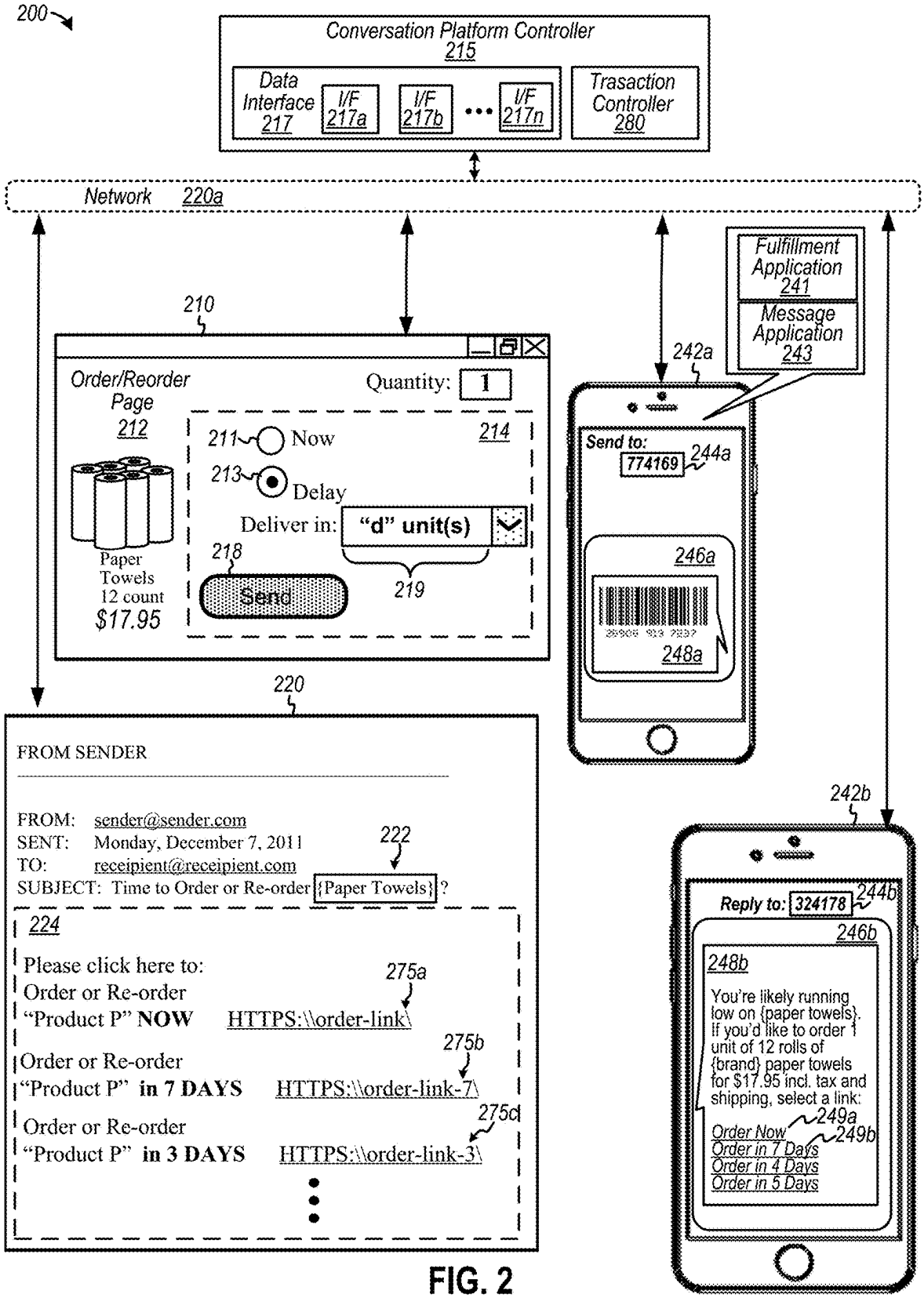

200
Conversation Platform Controller
215
Data Interface 217
I/F 217a
I/F 217b
I/F 217n
Trasaction Controller 280
Network 220a
Fulfillment Application 241
Message Application 243
210
Order/Reorder Page 212
Quantity: 1
211 Now
214
213 Delay
Deliver in: "d" unit(s)
218
Send
219
Paper Towels 12 count $17.95
242a
Send to:
774169
244a
246a
248a
220
FROM SENDER
FROM: sender@sender.com
SENT: Monday, December 7, 2011
TO: receipient@receipient.com
SUBJECT: Time to Order or Re-order {Paper Towels} ?
222
224
Please click here to:
Order or Re-order "Product P" NOW HTTPS:\\order-link\
275a
Order or Re-order "Product P" in 7 DAYS HTTPS:\\order-link-7\
275b
Order or Re-order "Product P" in 3 DAYS HTTPS:\\order-link-3\
275c
242b
Reply to: 324178
244b
246b
248b
You're likely running low on {paper towels}. If you'd like to order 1 unit of 12 rolls of {brand} paper towels for $17.95 incl. tax and shipping, select a link:
Order Now
Order in 7 Days
Order in 4 Days
Order in 5 Days
249a
249b

FIG. 2

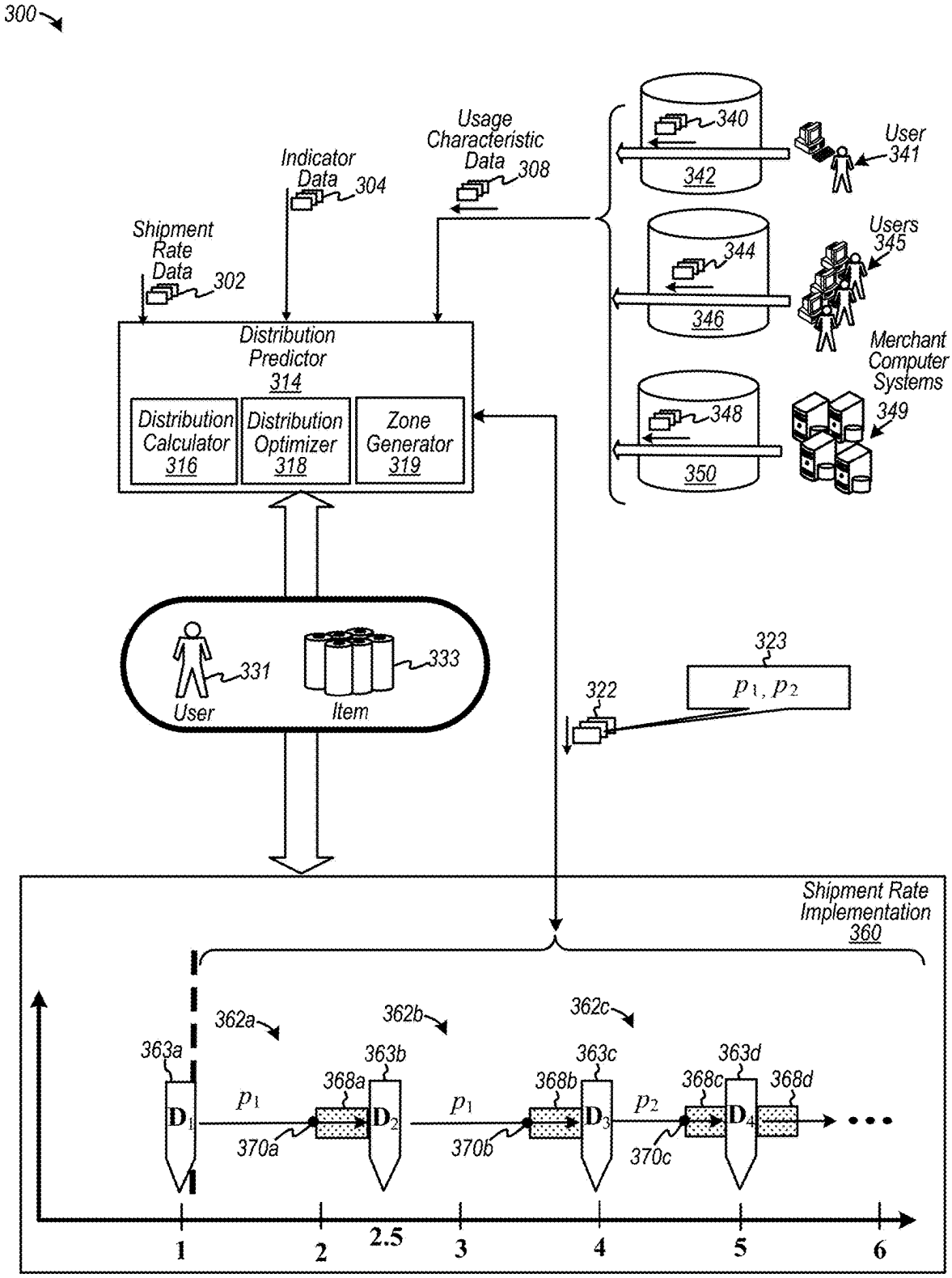

300
Usage Characteristic Data 308
Indicator Data 304
Shipment Rate Data 302
340
342
User 341
344
346
Users 345
348
350
Merchant Computer Systems 349
Distribution Predictor 314
Distribution Calculator 316
Distribution Optimizer 318
Zone Generator 319
331
User
333
Item
323
322
p_1, p_2
Shipment Rate Implementation 360
362a
362b
362c
363a
363b
363c
363d
368a
368b
368c
368d
D_1
D_2
D_3
D_4
p_1
p_1
p_2
370a
370b
370c
1
2
2.5
3
4
5
6

FIG. 3

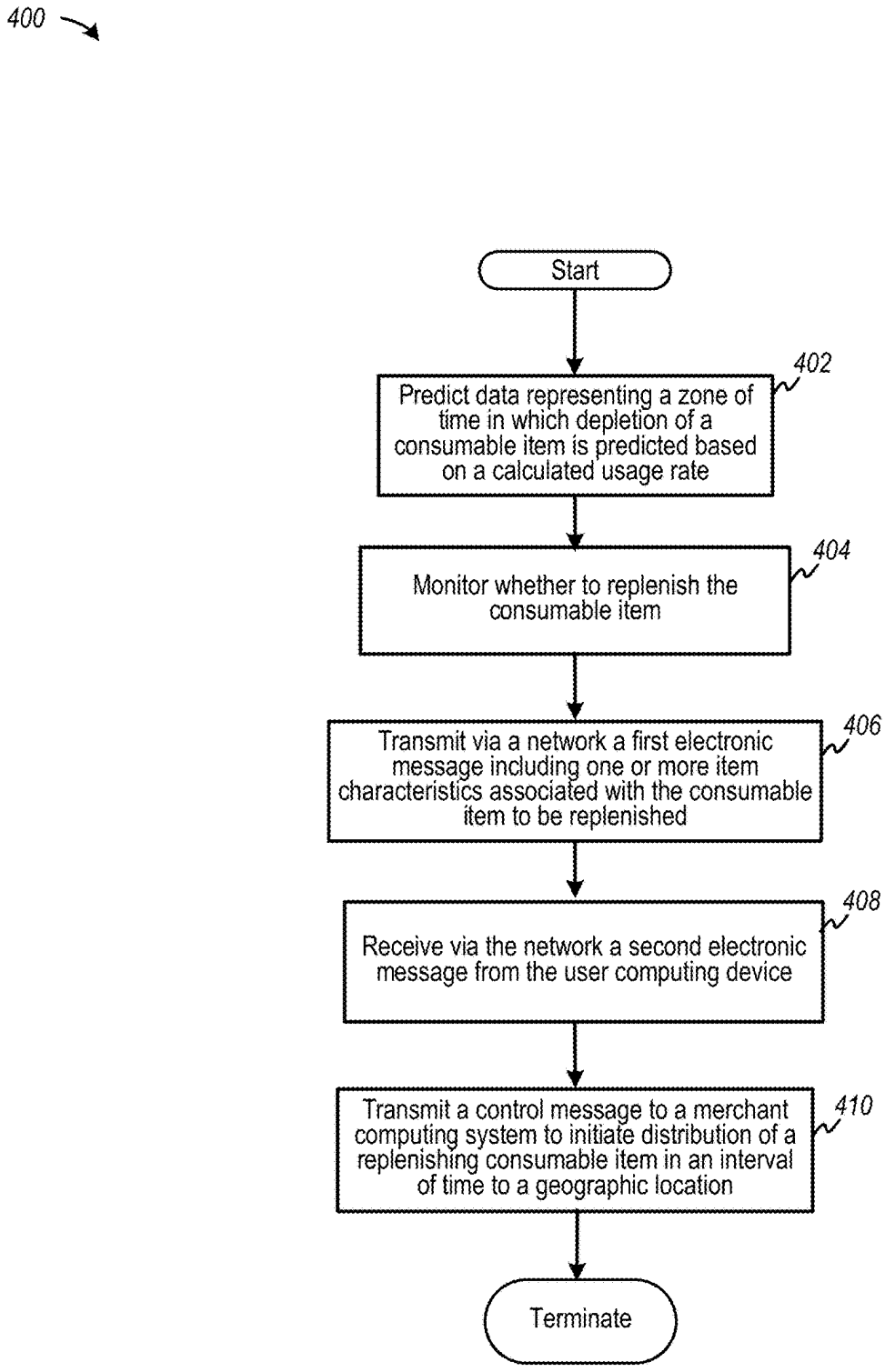

400
Start
Predict data representing a zone of time in which depletion of a consumable item is predicted based on a calculated usage rate
402
Monitor whether to replenish the consumable item
404
Transmit via a network a first electronic message including one or more item characteristics associated with the consumable item to be replenished
406
Receive via the network a second electronic message from the user computing device
408
Transmit a control message to a merchant computing system to initiate distribution of a replenishing consumable item in an interval of time to a geographic location
410
Terminate

FIG. 4

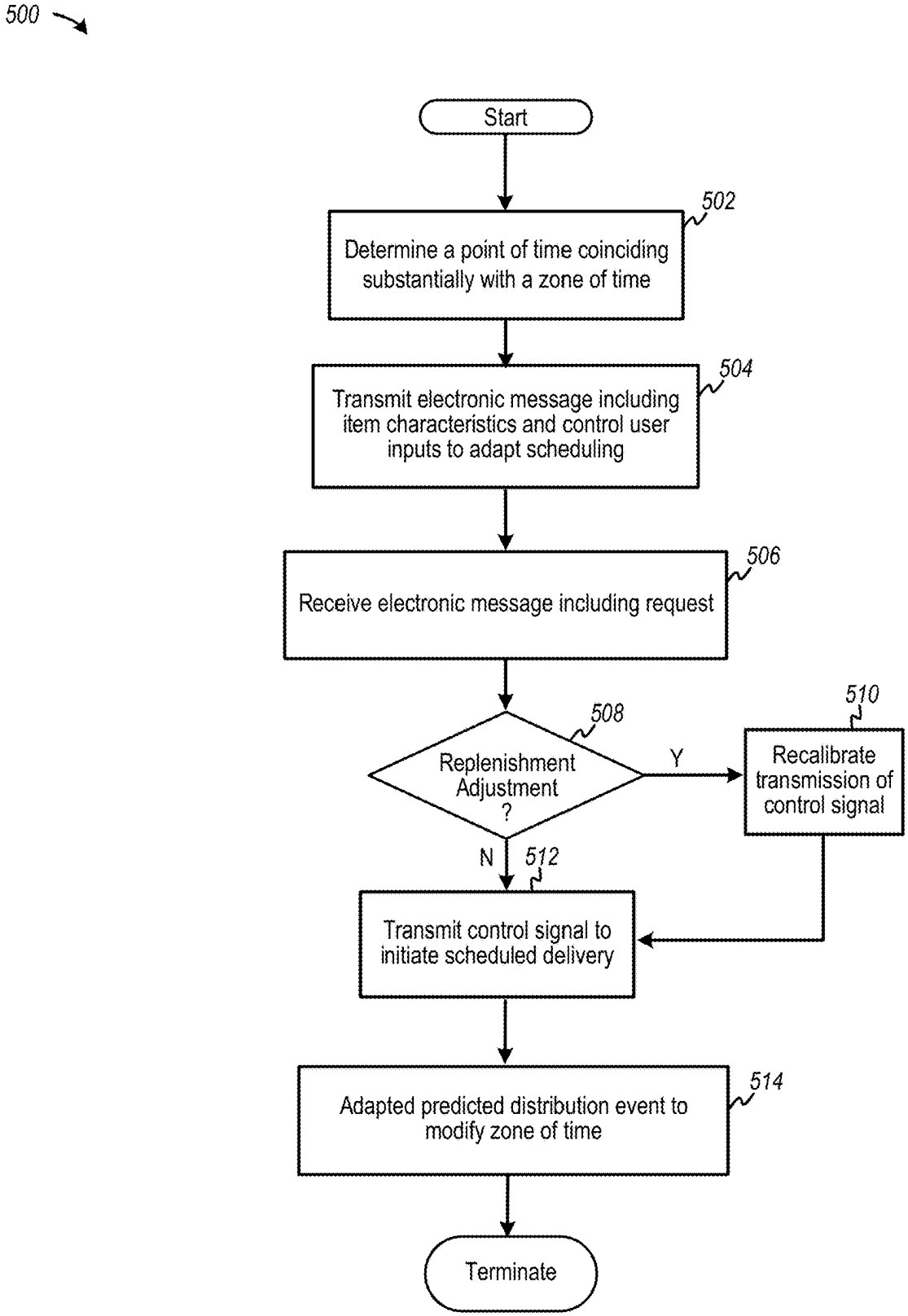

500
Start
502
Determine a point of time coinciding substantially with a zone of time
504
Transmit electronic message including item characteristics and control user inputs to adapt scheduling
506
Receive electronic message including request
508
Replenishment Adjustment ?
Y
510
Recalibrate transmission of control signal
N
512
Transmit control signal to initiate scheduled delivery
514
Adapted predicted distribution event to modify zone of time
Terminate

FIG. 5

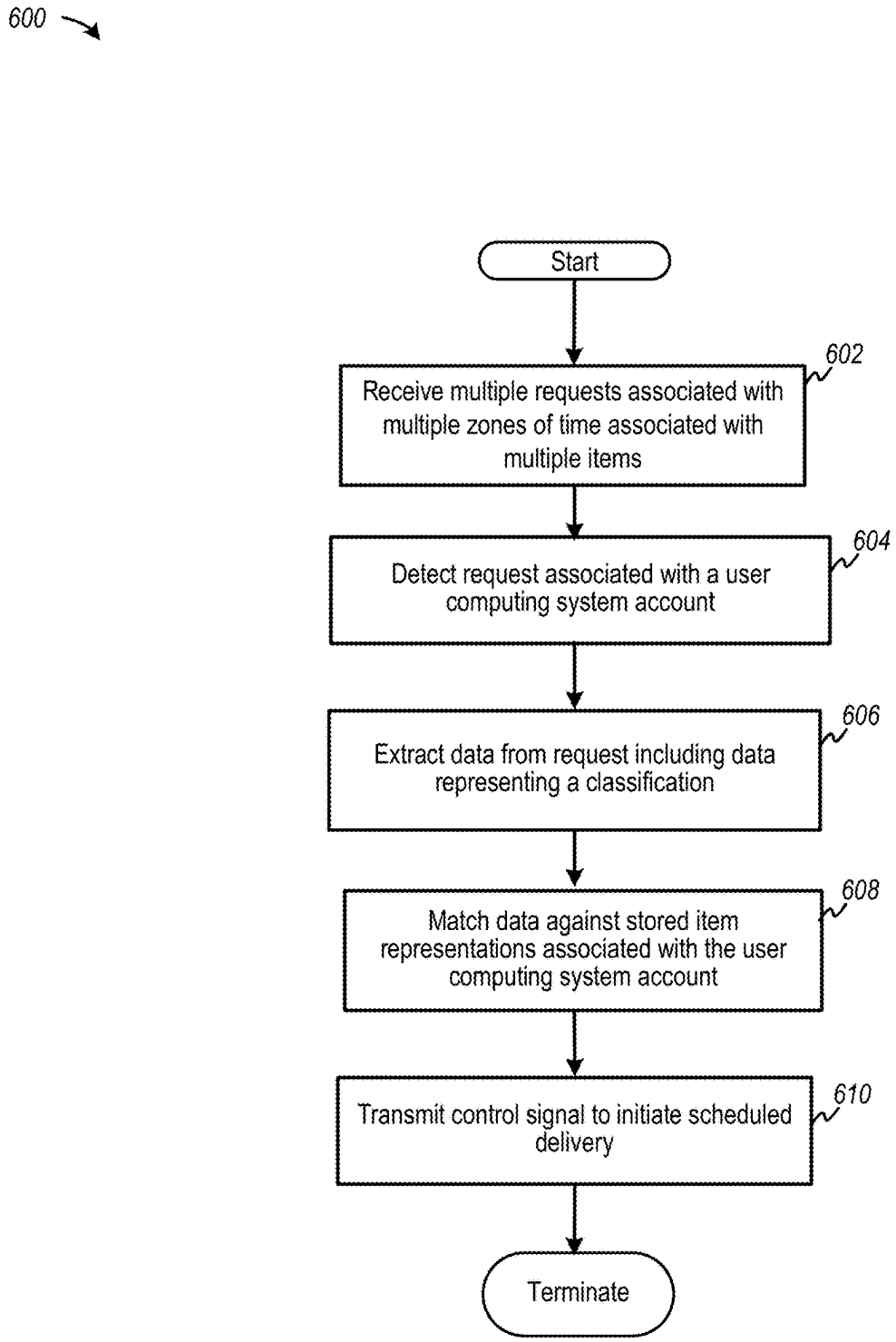

600
Start
Receive multiple requests associated with multiple zones of time associated with multiple items
602
Detect request associated with a user computing system account
604
Extract data from request including data representing a classification
606
Match data against stored item representations associated with the user computing system account
608
Transmit control signal to initiate scheduled delivery
610
Terminate

FIG. 6

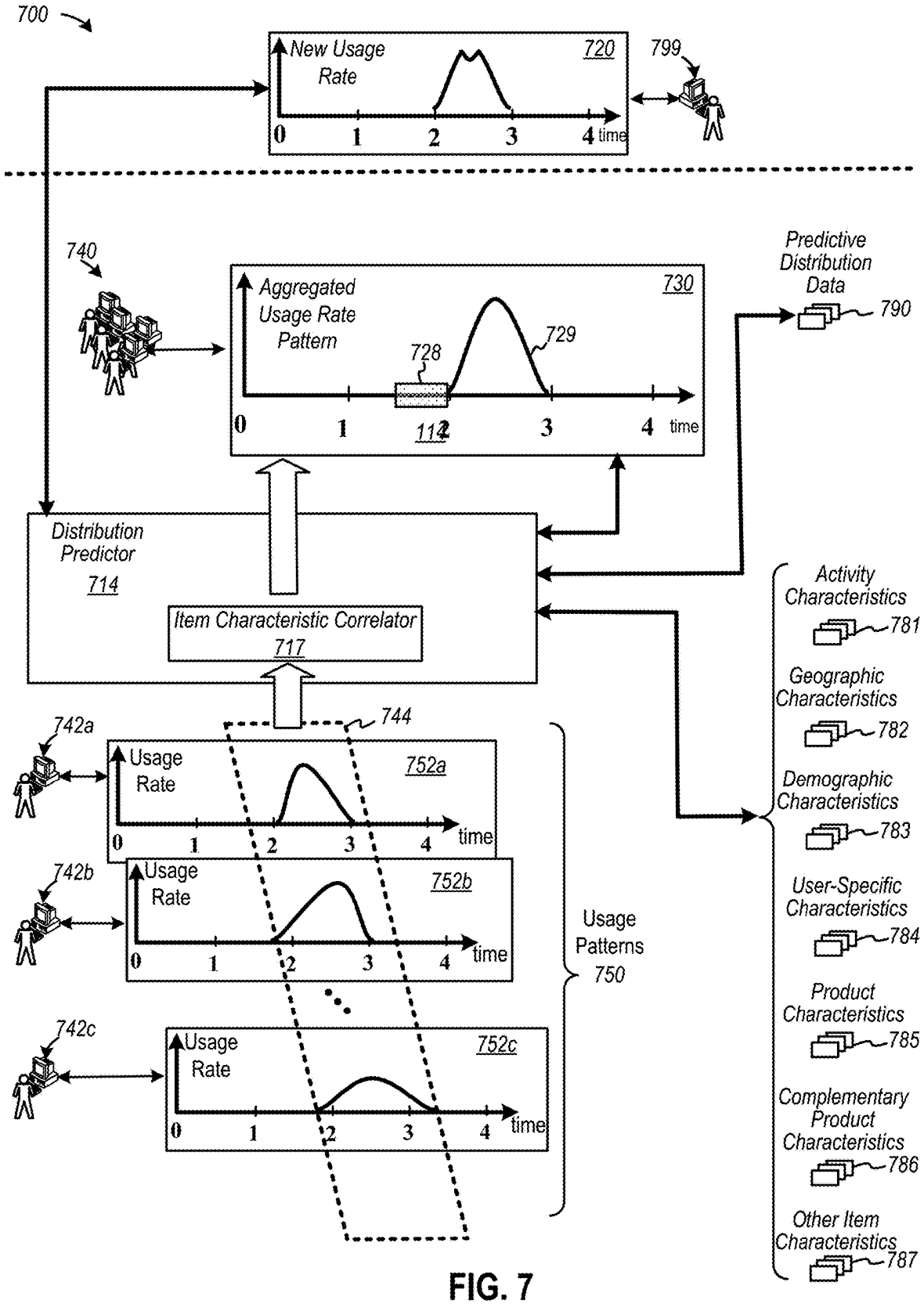

700
New Usage Rate
720
799
0 1 2 3 4 time
740
Aggregated Usage Rate Pattern
730
728
729
0 1 112 3 4 time
Predictive Distribution Data
790
Distribution Predictor
714
Item Characteristic Correlator
717
744
742a
Usage Rate
752a
0 1 2 3 4 time
742b
Usage Rate
752b
0 1 2 3 4 time
742c
Usage Rate
752c
0 1 2 3 4 time
Usage Patterns
750
Activity Characteristics
781
Geographic Characteristics
782
Demographic Characteristics
783
User-Specific Characteristics
784
Product Characteristics
785
Complementary Product Characteristics
786
Other Item Characteristics
787

FIG. 7

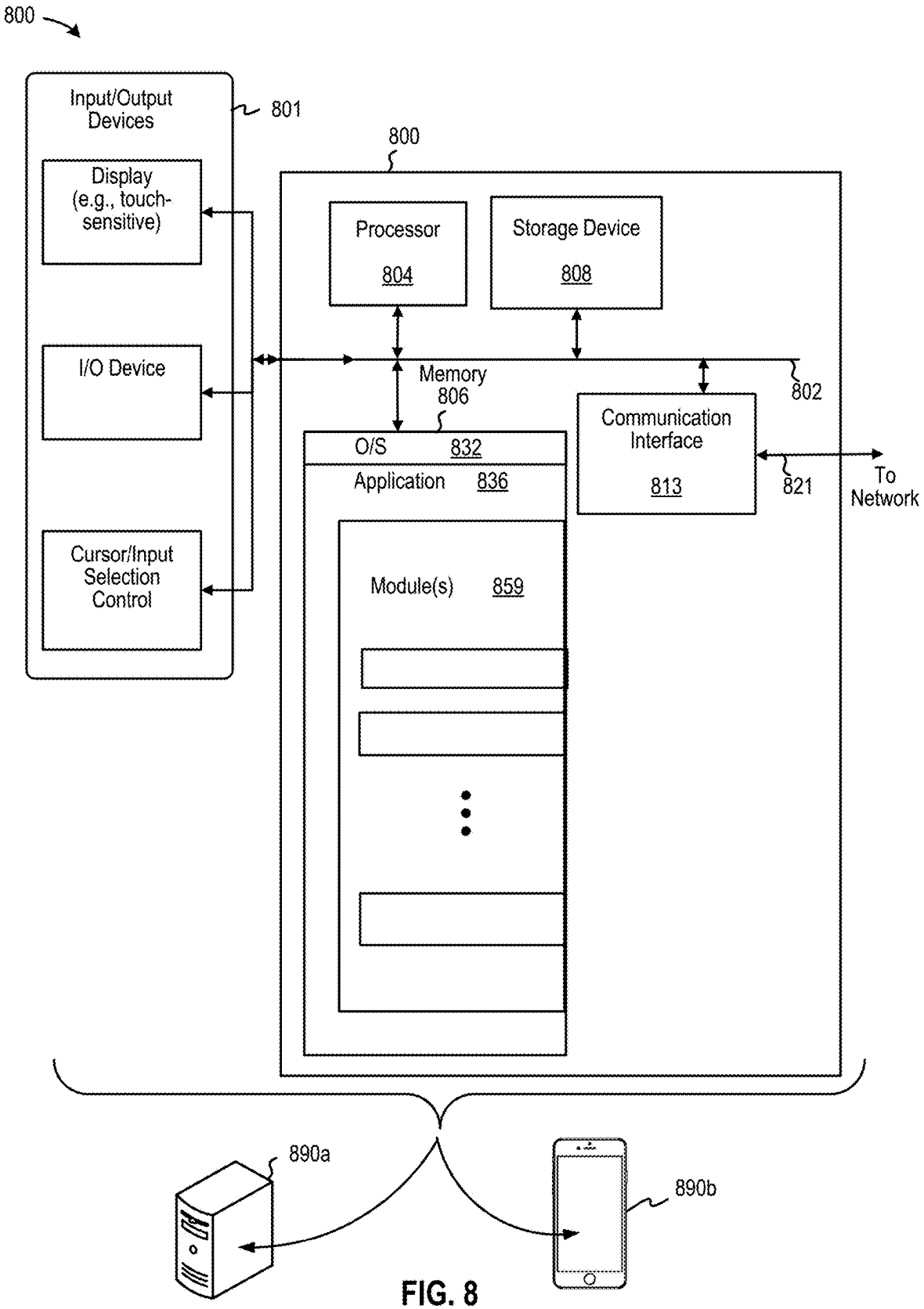

800
Input/Output Devices
801
Display (e.g., touch-sensitive)
I/O Device
Cursor/Input Selection Control
800
Processor
804
Storage Device
808
Memory
806
802
O/S
832
Application
836
Module(s)
859
Communication Interface
813
821
To Network
890a
890b

FIG. 8

ELECTRONIC MESSAGING TO DISTRIBUTE ITEMS BASED ON ADAPTIVE SCHEDULING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation patent application of copending U.S. patent application Ser. No. 18/387,435, filed Nov. 6, 2023 and titled, "ELECTRONIC MESSAGING TO DISTRIBUTE ITEMS BASED ON ADAPTIVE SCHEDULING," U.S. patent application Ser. No. 18/387,435 is a continuation patent application of U.S. patent application Ser. No. 17/887,756, filed Aug. 15, 2022, now U.S. Pat. No. 11,810,066 and titled, "ELECTRONIC MESSAGING TO DISTRIBUTE ITEMS BASED ON ADAPTIVE SCHEDULING," U.S. patent application Ser. No. 17/887,756 is a continuation application of U.S. patent application Ser. No. 15/479,230, filed Apr. 4, 2017, now U.S. Pat. No. 11,416,810 and titled, "ELECTRONIC MESSAGING TO DISTRIBUTE ITEMS BASED ON ADAPTIVE SCHEDULING," all of which are hereby incorporated by reference in their entirety for all purposes.

FIELD

[0002] Various embodiments relate generally to data science and data analysis, computer software and systems, and control systems to provide a platform to facilitate implementation of an interface, and, more specifically, to a computing and data storage platform that implements specialized logic to facilitate distribution of items in accordance with an automatically adaptive schedule.

BACKGROUND

[0003] Advances in computing hardware and software, as well as computing networks and network services, have bolstered growth of Internet-based product and service procurement and delivery. For example, online shopping, in turn, has fostered the use of "subscription"-based delivery computing services with an aim to provide convenience to consumers. In particular, a user becomes a subscriber when associated with a subscriber account, which is typically implemented on a remote server for a particular seller. In exchange for electronic payment, which is typically performed automatically, a seller ships a specific product (or provides access to a certain service) at periodic times, such as every three (3) months, every two (2) weeks, etc., or any other repeated periodic time intervals. With conventional online subscription-based ordering, consumers need not plan to reorder to replenish supplies of a product.

[0004] But conventional approaches to provide subscription-based order fulfillment, while functional, suffer a number of other drawbacks. For example, traditional subscription-based ordering relies on computing architectures that predominantly generate digital "shopping cart" interfaces with which to order and reorder products and services. Traditional subscription-based ordering via shopping cart interfaces generally rely on a user to manually determine a quantity and a time period between replenishing shipments, after which the quantity is shipped after each time period elapses. Essentially, subscribers receive products and services on "auto-pilot."

[0005] So while the conventional approaches to implementing shopping cart interfaces may be functional for stable rates of consumption, such approaches are not well-suited to facilitate timely reordering of products and services with which consumers may use at rates that vary from the fixed periods of time between repeated deliveries. Thus, conventional approaches to reordering or procuring subsequent product and services deliveries are plagued by various degrees of rigidity that interject sufficient friction into reordering that cause some users to either delay or skip making such purchases. Unfortunately, such friction causes some users to supplement the periodic deliveries manually if an item is discovered to be running low more quickly than otherwise might be the case (e.g., depleting coffee, toothpaste, detergent, wine, or any other product more quickly than normal).

[0006] Examples of such friction include "mental friction" that may induce stress and frustration in such processes. Typically, a user may be required to rely on one's own memory to supplement depletion of a product and services prior to a next delivery (e.g., remembering to buy coffee before running out) or time of next service. Examples of such friction include "physical friction," such as weighing expending time and effort to either physically confront a gauntlet of lengthy check-out and shopping cart processes, or to make an unscheduled stop at a physical store.

[0007] Typical online approaches, including conventional shopping cart interfaces, suffer from less than optimal means with which to reconcile the different rates of product and service usage of different users. One prevalent consequence of mismatches between time periods for delivering subscribed products or services and consumption rates by consumers is that, over time, the supply of a subscribed item is either over-delivered or under-delivered. An oversupply of subscribed product or service typically degrades consumer experience due to a number of reasons. For example, subscribers may believe that a seller is "over-billing" the customer for unneeded products or services. Similarly, an under-supply of subscribed product may give to frustration and friction that an expected subscribed product or service is scarce or unavailable.

[0008] Online retailers and merchants may experience similar consequences due to mismatching of delivery times and consumption rates, such as at an aggregate level of subscribers. In the aggregate, the mismatches may cause either overstocking or understocking of inventory of the online retailers and merchants. Fluctuations in inventory may cause non-beneficial consumption of resources and time. Note, too, that the computing systems of online retailers and merchants are not well-adapted to address the above-described mismatching phenomena when ordering, shipping, and performing inventory management. These types of subscription models, therefore, are not generally well-suited for application to usual consumption rates of depletable products and services (e.g., product usage that depletes some or all of the product or service).

[0009] Thus, what is needed is a solution to facilitate techniques of automatically distributing items according to an adaptive schedule, without the limitations of conventional techniques.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Various embodiments or examples ("examples") of the invention are disclosed in the following detailed description and the accompanying drawings:

[0011] FIG. **1** is a diagram depicting an adaptive distribution platform, according to some embodiments;

[0012] FIG. **2** is a diagram depicting an example of a conversation platform controller, according to some embodiments;

[0013] FIG. **3** is a diagram depicting an example of operation of a distribution predictor, according to some embodiments;

[0014] FIG. **4** is a diagram depicting an example of a flow, according to some embodiments;

[0015] FIG. **5** depicts an example of another flow, according to some embodiments;

[0016] FIG. **6** depicts an example of yet another flow, according to some embodiments;

[0017] FIG. **7** is a diagram depicting an example of operation for a distribution predictor to generate predictive distribution data based on derived usage data, according to some embodiments; and

[0018] FIG. **8** illustrates examples of various computing platforms configured to provide various functionalities to predict a time of distribution of an item relative to an adaptive schedule, according to various embodiments.

DETAILED DESCRIPTION

[0019] Various embodiments or examples may be implemented in numerous ways, including as a system, a process, an apparatus, a user interface, or a series of program instructions on a computer readable medium such as a computer readable storage medium or a computer network where the program instructions are sent over optical, electronic, or wireless communication links. In general, operations of disclosed processes may be performed in an arbitrary order, unless otherwise provided in the claims.

[0020] A detailed description of one or more examples is provided below along with accompanying figures. The detailed description is provided in connection with such examples, but is not limited to any particular example. The scope is limited only by the claims, and numerous alternatives, modifications, and equivalents thereof. Numerous specific details are set forth in the following description in order to provide a thorough understanding. These details are provided for the purpose of example and the described techniques may be practiced according to the claims without some or all of these specific details. For clarity, technical material that is known in the technical fields related to the examples has not been described in detail to avoid unnecessarily obscuring the description.

[0021] FIG. **1** is a diagram depicting an adaptive distribution platform, according to some embodiments. Diagram **100** depicts an example of adaptive distribution platform **110** that may be configured to facilitate automatic distribution of items in accordance with an adaptive schedule. For example, adaptive distribution platform **110** may be configured to initiate electronic messaging (e.g., as reminder messages) of pending exhaustion of an item, which may be any good or service, to facilitate replenishment. The timing of the distribution may be adapted to a specific user **144** (or group of users **144**). In the example shown, adaptive distribution platform **110** may include a commerce platform controller **112**, a distribution predictor **114**, and a conversation platform controller **115**. Adaptive distribution platform **110** and any of its elements, such as commerce platform controller **112**, distribution predictor **114**, and conversation platform controller **115**, may include logic, whether implemented in hardware or software, or a combination thereof.

[0022] Commerce platform controller **112** may be configured to perform functions to support the initiation of the distribution (e.g., shipment) of an item, among other things. For example, commerce platform controller **112** may be configured to facilitate financial-related transactions with one or more merchant computing systems **130***a*, **130***b*, and **130***n*, including, but not limited to, credit card transactions or the like. In some cases, commerce platform controller **112** may also control participation by users and their electronic interactions with adaptive distribution platform **110**. For example, commerce platform controller **112** may manage enrollment of a user to form an electronic account that enables access via a computing device, such as one of mobile computing devices **152***a* and **152***b*, to adaptive distribution platform **110**.

[0023] Distribution predictor **114** may be configured to predict a point in time (or a range of time) at which an item may be exhausted, and based on the prediction, adaptive distribution platform **110** may be further configured to determine a zone of time (not shown) in which depletion and near exhaustion of an item is predicted. Further, distribution predictor **114** may be configured to determine the zone of time relative to a distribution event. In some cases, a zone of time is determined as a range of time preceding the distribution event. Distribution predictor **114** may be configured to associated a point in time with the zone of time, the point in time defining a moment at which an electronic message may be transmitted to a computing device **142**, **152***a*, or **152***b* to inform a user of a pending exhaustion of an item and to provide an opportunity to replenish the item in a configurable manner.

[0024] Conversation platform controller **115** may be configured to facilitate an exchange of electronic messages and data, as a "conversation," between adaptive distribution platform **110** and any of user computing devices **142**, which may include mobile computing devices **152***a* and **152***b*. According to some examples, conversation platform controller **115** may be configured to monitor whether to replenish an item, for example, by determining whether a particular date coincides with a zone of time. If the particular date coincides with a date range of the zone of time, conversation platform controller **115** may transmit data representing an electronic message **124***a* via one or more networks **120***a* and **120***b* to mobile computing device **152***b* to cause presentation of a reminder message in an interface **156***b*. In response, mobile computing device **152***b* may transmit data representing an electronic message **124***b* to initiate distribution (e.g., shipment) of an item.

[0025] In some examples, conversation platform controller **115** may be configured to receive an electronic message **122***b* originating at user computing device **152***a* as conversation platform controller **115** monitors whether to replenish an item. Electronic message **122***b* may include data representing an item characteristic (e.g., a product classification, such as "paper towels," or a product type, such as a brand name (e.g., "Brand 'X'")). In this example, a user **144** may enter a product classification ("paper towels") **158***a* as displayed in a user interface **156***a*. Also, conversation plat-

form controller **115** may be configured to initiate transmission of a control message (e.g., via commerce platform controller **112**) to one of merchant computing systems **130***a*, **130***b*, and **130***n* to initiate distribution of an item for replenishment, whereby a merchant computing system may initiate distribution, shipment, delivery, etc. of the item, by any known means, to a geographic location (e.g., an address) associated with an account (e.g., a user account associated with user **144**). Thus, conversation platform controller **115** may be configured to control replenishment of an item regardless of whether an electronic message that initiates a conversation originates at adaptive distribution platform **110** or at user computing device **142**, **152***a*, or **152***b*.

[0026] Adaptive distribution platform **110** may be configured to facilitate "adaptive" scheduling services via a computing system platform for multiple online or Internet-based retailers and service providers, both of which may be referred to as merchants. In this example, a merchant may be associated with a corresponding one of merchant computing systems **130***a*, **130***b*, or **130***n* that includes one or more computing devices (e.g., processors, servers, etc.), one or more memory storage devices (e.g., databases, data stores, etc.), and one or more applications (e.g., executable instructions for performing adaptive subscription services, etc.). Examples of merchant computing systems **130***a*, **130***b*, or **130***n* may be implemented by any other online merchant. Accordingly, adaptive distribution platform **110** can be configured to distribute items in accordance with predicted distribution events (e.g., a predicted time of distribution), any of which may be adaptively derived to optimize delivery of items.

[0027] In view of the foregoing, the structures and/or functionalities depicted in FIG. **1** may illustrate an example of adaptive scheduling to automatically facilitate the optimal replenishment and distribution of items, such as shipping an item that is ordered or reordered in accordance with various embodiments. According to some embodiments, adaptive distribution platform **110** may be configured to facilitate online ordering and shipment of a product responsive to an electronic message **122***b*, **124***b*, whereby at least one electronic message **122***b*, **124***b* may be sufficient to complete a transaction with at least one of merchant computing systems **130***a*, **130***b*, and **130***n*. Thus, consumption of resources and time for both users and merchant, as well as associated computing systems, may be reduced such that "friction" of replenishment is reduced or negated, at least in some cases. In the example shown, computing device **152***a* may include an application (e.g., a text messaging application) configured to receive input via a user interface, such as an input ("paper towels") **158***a* and a destination account identifier ("774169") **154***a* via interface **156***a*. Computing device **152***b* may also include an application to receive, for example, a user input "NOW" (or any other input) responsive to displayed message **158***b* via interface **156***b*. Further to this example, electronic messages **122***b* and **124***b* may be text messages that each includes sufficient information and data to initiate and complete replenishment of an item as a transaction. In some cases, data representing an identification of a product classification (or type) and an associated account identifier (e.g., a mobile phone number) in text messages **122***b* and **124***b* may be sufficient. In some examples, adaptive distribution platform **110** may provide replenishment services for multiple entities (e.g., for multiple merchant computing systems **130**), thereby reducing resources that otherwise may be needed to perform replenishment services individually at each merchant computing system **130***a*, **130***b*, and **130***n*.

[0028] According to various examples, a distribution event may be predicted automatically or manually to form an adaptive schedule (e.g., an adaptive shipment schedule). A "distribution event" may refer, at least in some examples, to an event at which a shipment is to occur (or is likely to occur), or at which an item (e.g., a depletable item) is predicted to be exhausted. For example, a distribution event (e.g., either depletion or shipment) may be timed to occur at the 30th day after a user has purchased a bottle of vitamin supplements having 30 tablets that are taken once a day (e.g., at a depletion rate of 1 tablet per day). In some examples, a distribution event (e.g., a time of distribution) may be predicted as a "predicted distribution event" (e.g., a "predicted time of distribution") based on any number of sources of information and/or item characteristics, including, but not limited to, as a usage rate of item by a particular user **144** or a population of users **144** associated with one or more merchant computing systems **130***a*, **130***b*, and **130***n*. In some examples, a usage rate may be a function of a depletion rate. Further, a "predicted distribution event" may be optimized based on, for example, feedback or results of various data analyses. For example, a value representing a predicted distribution event or date may be optimized by including a user's monitored preference in predicting a modified distribution event. A particular user may prefer to deviate from a predicted distribution event by delaying or expediting a shipment (e.g., repeatedly pushing back or pulling forward shipment dates). Thus, a reminder message may be generated in accordance with the user's preference.

[0029] According to some examples, a term "order" may be used interchangeably with "reorder." In some cases, an "order" may refer to a first transaction for a good or service, and a "reorder" may refer to subsequent transactions. During a first transaction, such as a text requesting an order to a merchant via adaptive distribution platform **110**, a prior relationship may not exist with a merchant. If a prior relationship has yet to exist between user **144** and a merchant computing system **130***a*, payment information and shipping address information may not be available to a merchant with which user **144** is engaging. In some examples, adaptive distribution platform **110** may determine user **144** has a prior relationship with any other networked merchant computing systems (e.g., systems **130***b* and **130***n*). Thus, payment information and shipping address information may be used from prior orders with merchant computing systems **130***b* and **130***n*. In one case, however, if no relationship exists with either adaptive distribution platform **110** or any merchant computing systems **130***a*, **130***b*, and **130***n*, adaptive distribution platform **110** may generate an electronic message requesting payment information and shipping address information. The payment information and shipping address information may be transmitted via any medium (e.g., website, via phone, email, text messaging, etc.).

[0030] In some embodiments, data representing a predicted distribution event or any other data described herein may be implemented by an inventory management controller **131** to manage an amount of inventory to enhance optimally the efficacy of fulfilling and replenishing items for an aggregate number of users **144**. A merchant computing system, such as merchant computing system **130***a*, may

include an inventory management controller **131**, which may be implemented as a known inventory management software application. The inventory management software application may be adapted to receive an aggregate number of predicted distribution events for group of users **144** (or an aggregated representation thereof) to refine, for example, amounts of inventory at a storage facility prior to dispatch or replenishment. Adaptive distribution platform **110** may be configured to provide a subset of predicted distribution events (e.g., predicted shipment dates) for an item for respective users. Alternatively, platform **110** may provide an optimal value for a predicted distribution event for an item to inventory management controller **131**. Accordingly, inventory management controller **131** may be configured to determine an inventory amount (e.g., dynamically) based on the values representing one or more predicted distribution events. Therefore, a merchant associated with merchant computing system **130***a* may be configured to optimally determine an amount or quantity of items for fulfillment in an inventory based on, for example, a predicted shipment date and/or a predicted date of exhaustion.

[0031] As described, commerce platform controller **112** may facilitate financial-related transactions and enrollment of user accounts. According to some examples, commerce platform controller **112** may be configured to enroll user **144** and form a corresponding electronic account as a data arrangement, which may include data representing an indication that user **144** has interacted at least one time with at least one of merchant computing systems **130***a*, **130***b*, and **130***n* (i.e., a consumer has purchased previously a product from a merchant, and a data relationship between the merchant and the consumer may exist). Based on a previous purchase, commerce platform controller **112** may access data to facilitate reordering, such as data representing a geographic location (e.g., a shipping address), a payment instrument (e.g., a credit card number, a debit card number, a PayPal™ number, or any other type or form of payment, etc.) and a list of products previously ordered. A user computing device identifier, such as a user's mobile phone number, email address, etc., may also be included as data in the electronic account, which may be formed during an enrollment process or upon initiation of the distribution of an item (e.g., during reordering). An enrollment process may be implemented as an algorithm that may be executed during a check-out process so user **144** may opt to include the above-described data, including authorization to receive electronic messages (e.g., text messages), at a mobile computing device. Further, the enrollment process may be performed at a merchant or a point of sale. For example, a customer of a health food establishment may be presented with an opportunity to enroll (e.g., provide payment and shipping information). In some cases, the opportunity to avail oneself of the various features described herein may be integrated or supplemented with the merchant's loyalty or member program.

[0032] In at least one example, data relating to a user profile acquired in a previous transaction may be disposed in a merchant repository **174**, which may include data generated by one or more of merchant computing systems **130***a*, **130***b*, and **130***n*. User profile and account data may be stored in user repository **170**, which may include data relating to one or more users **144**, or stored in a platform repository **172**, which may include data relating to any aspect of data transactions among users **144** and merchant computing systems **130***a*, **130***b*, and **130***n* used to facilitate operability of adaptive distribution platform **110**.

[0033] Commerce platform controller **112** may be configured to facilitate financial-related transactions and need not perform a financial transaction. For example, commerce platform controller **112** may receive a control message to initiate distribution of an item. In response, commerce platform controller **112** may transmit transaction-related data (e.g., credit card information, destination address, etc.) to one of merchant computing systems **130***a*, **130***b*, and **130***n*, which, in turn applies payment (e.g., receives credit card authorization) and distributes an item. Hence, commerce platform controller **112** may provide data transfer of information so that each of merchant computing systems **130***a*, **130***b*, and **130***n* may be a merchant of record.

[0034] Distribution predictor **114** may include a distribution calculator **116**, a distribution optimizer **118**, and a zone generator **119**. Distribution calculator **116** may be configured to calculate one or more predicted distribution events or replenishment-related data to form an adaptive schedule (e.g., an adaptive shipping schedule). Distribution optimizer **118** may be configured to optimize values of predicted distribution events to, for example, adapt scheduling of distributed items (i.e., product shipments) to conform (or substantially conform) to delivery or usage preferences of user **144** or a group of users **144**.

[0035] For example, distribution optimizer **118** may be configured to analyze data representing purchasing patterns related to a particular item for a specific user **144**. Based on the results of such an analysis, distribution optimizer **118** may be configured to emphasize certain item characteristics (or values thereof) that may align more closely to a user's ordering or reordering patterns. For example, replenishment of an exact brand name at a later date may be preferred by user **144** over substitution of a comparable other brand at an earlier date. Zone generator **119** may be configured to define a zone of time, which may be configurable or adjusted based on, for example, one or more of user preferences, an amount of time since a prior distribution (e.g., a prior purchase), one or more usage rates, units of depletion or depletion rate, etc. An example of a depletion rate is the rate at which 2 units of a product are depleted per unit time. To illustrate another example, consider that a bottle of vitamins has 180 tablets and is reordered or depleted every 72 days. Thus, a predicted rate of depletion may be 2.5 per day (e.g., 180 units/72 days). For example, a user may consume 2 to 3 tablets per every other day).

[0036] Distribution calculator **116** may be configured to receive data representing item characteristics data **102**, according to some embodiments, and may be configured further to determine (e.g., identify, calculate, derive, etc.) one or more distribution events based on one or more item characteristics **102**, or combinations thereof (e.g., based on derived item characteristics). For example, distribution calculator **116** may compute a projected date of depletion for a particular product, such as a vitamin product, based on usage patterns and/or ordering patterns of a specific user **144**. Note, however, a projected date of depletion may also be based on usage patterns and/or ordering patterns of other users **144** over any number of merchant computing systems **130***a*, **130***b*, and **130***n*. In some examples, a projected data of depletion may be correlated to, or used interchangeably

with, the terms a "predicted distribution event," a "predicted shipment date," a "predicted time of distribution," or the like.

[0037] In at least one example, distribution calculator **116** may be configured to operate on data representing an item characteristic **102**, which may be derived or calculated based on one or more other item characteristics **102**. Examples of item characteristics data **102** may include, but are not limited to, data representing one or more characteristics describing a product, such as a product classification (e.g., generic product name, such as paper towels), a product type (e.g., a brand name, whether derived from text or a code, such as a SKU, UPC, etc.), a product cost per unit, item data representing a Universal Product Code ("UPC"), item data representing a stock keeping unit ("SKU"), etc., for the same or similar items, or complementary and different items. Item characteristics **102** may also include product descriptions associated with either a SKU or UPC. Based on a UPC for paper towels, for example, item characteristics **102** may include a UPC code number, a manufacture name, a product super-category (e.g., paper towels listed under super-category "Home & Outdoor"), product description (e.g., "paper towels," "two-ply," "large size," etc.), a unit amount (e.g., **12** rolls), etc. Item characteristics **102** also may include any other product characteristic, and may also apply to a service, as well as a service type or any other service characteristic. In some examples, data representing item characteristics **102** may be accessed from and/or stored in any of repositories **170**, **172**, and **174**.

[0038] A predicted distribution event for an item may be based on a usage rate of the item (e.g., a calculated usage rate), whereby a usage rate may be a rate at which a product or service is distributed (e.g., ordered or reordered), consumed, or depleted. In one example, predicted distribution of an item for a user **144** may be based on a predicted time of exhaustion, such as exemplified in the above example in which a distribution event for a bottle of 30 vitamin tablets is predicted to occur at the 30th day (e.g., relative to a previous delivery). In another example, predicted distribution of an item for user **144** may be based on the user's pattern of purchasing, using, ordering, or reordering the item (or generically similar or complementary items). For example, a predicted time of distribution to replenish an item, such as a bottle of ketchup, may be based on a user's past rates of replenishment (e.g., shipment rates), such as a median or average time between successive requests to distribute reordered items. A distribution event may be predicted or supplemented by predicting a time of distribution for ketchup based on rates of past replenishment of mustard, a complementary product having a usage rates that may correlate to that of ketchup as both items may be used together (and thus consumed at similar depletion rates). Other users' patterns of purchasing, using, ordering, or reordering of the same item (e.g., same brand of vitamin A at the same merchant) or equivalent item (e.g., different brands of vitamin A at the same or different merchants) may also be used to predict a time of distribution. For example, consider that user **144** is replenishing an item, such a vitamin A tablets, at a merchant X. However, there may be negligible information to predict a usage rate (or a time of distribution) for that item at merchant X. Therefore, other users' patterns of reordering vitamin A at another merchant, merchant Y, may be used to form a predicted time of distribution for use in purchasing vitamin A tablets at merchant X.

[0039] In some examples, a usage rate to determine a predicted time of distribution may be based on identifying distribution rates of an item relative to one or more other accounts associated with one or more other users or other user computing systems to form an aggregate usage rate. An aggregated usage rate for an item may express, for example, a nominal usage rate that may be used (at least initially) to ascertain predicted time of reorder with a relatively high degree of confidence. Thus, the aggregated usage rate may be used to generate a predicted time of distribution. According to one implementation, usage rates associated with other users may originate from item characteristic data accessed from one or more merchant computing systems **130***a*, **130***b*, and **130***n*. The usage rates received from merchants may be to determine a predicted time of distribution for an item. As an example, usage rates may be derived by analyzing shipment rates of an item to identify time periods between deliveries (i.e., time intervals between order and reorder) relative to one or more merchant computing systems **130***a*, **130***b*, and **130***n*. Thereafter, a usage rate may be used to calculate a predicted time of distribution.

[0040] Distribution optimizer **118** may be configured to optimize values of predicted times of distribution, for example, by adapting scheduled distribution of items to conform (or substantially conform) to, for example, usage preferences of user **144** or a group of users **144**. Distribution optimizer **118** may configured to receive data representing distribution-related data from distribution calculator **116**, including predicted times of distribution, usage rates, etc., as well as item characteristics data **102**, to determine one or more optimized times of distribution, according to some embodiments. In at least one example, distribution optimizer **118** may be configured to determine an optimal default predicted times of distribution with which to establish a time frame to deliver an item. In some examples, distribution optimizer **118** may be configured to modify a value of predicted time of distribution relative to, for example, a prior shipment, or a receipt of a reminder message, etc. A value of predicted time distribution may be modified, for example, by an adjustment factor that may be derived through computation or determined empirically. To illustrate, consider that user **144** receives electronic messages **124***a* at computing system **152***b* over multiple periods of time, whereby user **144** responds via electronic messages **124***b* to request a shipment delay of seven ("7") days rather than ordering at time of that message **158***b* is initially received. In this example, the adjustment factor may have a value of "7" that may modify a value of predicted time of distribution to form a modified value of predicted time of distribution (e.g., modified to 37 days after a last order of 30 vitamin tablets rather than 30 days). According to some embodiments, distribution calculator **116** and/or distribution optimizer **118** may be configured to monitor and update the one or more values of the item characteristics. As such, distribution optimizer **118** may be configured to dynamically determine a modified time of distribution with which to associate with a specific item (e.g., for specific user **144**), among other parameters. Further, distribution optimizer **118** may be configured to derive an adjustment factor value in accordance with any number of processes or techniques described herein or that are otherwise known.

[0041] Zone generator **119** may be configured to determine a zone of time as a function of an item and/or a user, among other parameters, according to various examples.

Zone generator **119** may form a zone of time (not shown) in which depletion or near exhaustion of an item is predicted. A zone of time may be relative to a distribution event (e.g., a time of distribution). In some cases, zone generator **119** may generate a zone of time as a range of time either preceding a distribution event, or subsequent thereto, or both. To illustrate, consider an example in which an item of paper towels may be exhausted in eight (8) days from generation of a reminder electronic message **124***a*. A zone of time may include a range of seven (7) days during which user **144** may select to delay delivery of the item by any day from seven days to one (1) day prior to the day of exhaustion. Optionally, a zone of time may also include another range of seven (7) days extending after the day of exhaustion. Thus, a user may delay or postpone replenishment of an item with any time during a range of 14 days. Note that the above-described values defining the example of a zone of time are not intended to be limiting, but may be of any value or number of days in accordance with various examples.

[0042] Conversation platform controller **115** may include a data interface **117**, and may be configured to facilitate an exchange of electronic messages and data via data interface **117** between adaptive distribution platform **110** and mobile computing devices **152***a* and **152***b* to replenish a consumable item (e.g., a depletable product). Adaptive distribution platform **110** may be configured to replenish an item responsive to one of electronic messages **122***b* and **124***b*, according to some examples. In at least one implementation, adaptive distribution platform **110** may facilitate a complete transaction, from online ordering to shipment, of a product responsive to a unitary electronic message, such as electronic messages **122***b* or **124***b*. In at least one example, electronic messages **122***b* or **124***b* are text messages configured to include 160 characters or fewer.

[0043] Conversation platform controller **115** further may include logic, whether implemented in hardware or software, or a combination thereof, configured to control one or more exchanges of data to identify or determine one or more of a user account (and associated user or consumer), one or more item characteristics, and a destination account identifier. According to various examples, adaptive distribution platform **110** may initiate item replenishment. To illustrate, consider the following example. Conversation platform controller **115**, or any other element of adaptive distribution platform **110**, may include logic configured to monitor values of data representing predicted distribution events for user computing systems **142** and corresponding users **144**. The logic may also monitor values of data representing a zone of time associated with a predicted distribution event. For example, conversation platform controller **115** may compare a point of time (e.g., a date and/or time, such as Dec. 7, 20XX at 5:00 pm) against a zone of time (e.g., a date range from December 7, 20XX to Dec. 14, 20XX) associated with a predicted time of distribution for an item, such as "paper towels." If conversation platform controller **115** detects that a point of time, such as 5:00 pm on Dec. 7, 20XX, coincides with a zone of time for an item "paper towels," conversation platform controller **115** may initiate transmission of an electronic message **124***a* via data interface **117** to, for example, user computing device **152***b*. Further to the example, Dec. 14, 20XX may coincide with a predicted date of exhaustion, whereby message **124***a* is transmitted at a point of time that is 7 days prior. Thus, a user has an opportunity to conveniently replenish an item prior to exhaustion.

[0044] Data interface **117** may be configured to adapt data transmission to a particular communication medium and application, as well as data protocol, to form electronic message **124***a*. For example, data interface **117** may adapt electronic messages to implement short message service ("SMS"), as a text messaging service for reception by a mobile computing device, including mobile phones, or any other networked computing device. An example of SMS is described in one or more standards, including RFC 5724 maintained by the Internet Engineering Task Force ("IETF"), among others. According to some embodiments, electronic messages **124***a* need not be initiated as a function of predicted times of distribution. In some cases, electronic messages **124***a* (and **122***a*) may be manually-generated (e.g., other than algorithmically triggered).

[0045] Electronic message **124***a* transmitted to computing device **152***b* may include data configured to present via user interface **156***b* the following reminder message **158***b* to user **144**, who is associated with a pending exhaustion of paper towels: "You're likely running low on {PAPER TOWELS}. Reply 'NOW', if you'd like to order 1 unit of 12 rolls of {BRAND X} paper towels for $17.95 incl. tax and shipping. If you'd like to place a future order, reply with the number of days when you'd like to place your order (e.g., text '7' if you'd like your order to be shipped in 7 days from today)." Data representing a destination account identifier **154***b* may also be transmitted in electronic message **124***a*, and, as such, user interface **156***b* need only receive at least one user input by user **144** to effect replenishment. In this example, destination account identifier ("324178") **154***b* may be implemented as a "shortcode" (e.g., five- or six-digit SMS-based shortcode) associated with either adaptive distribution platform **110** or one or more of merchant computing systems **130***a*, **130***b*, and **130***n*. Destination account identifier **154***b* may also be implemented as a phone number or as any other type of identifier.

[0046] If user **144** desires to ensure a supply of paper towels is not exhausted at or around the projected date of exhaustion, interface **156***b* may be configured to receive an input "NOW," which, in turn, may be transmitted as electronic message **124***b* to adaptive distribution platform **110**. Conversation platform controller **115** generates a control message **121** to, for example, merchant computing system **130***a* to initiate completion of the transaction. Optionally, conversation platform controller **115** may generate a confirmation electronic message for transmission to user computing device **152***b* to confirm acceptance of order. Control message **121** may include financial data associated with user **144** (e.g., credit card information) to initiate authorization at merchant computing system **130***a*, which, in turn, ships the item and optionally sends shipping confirmation to user computing device **152***b* to notify user **144** of an item in transit.

[0047] If user **144** desires to modify a distribution event (e.g., a shipment), interface **156***b* may be configured to receive an input "#," which may represent a value with which to delay the distribution event relative to a predicted distribution event. For example, a user input "7" may be received into user interface **156***b*. Computing device **152***b* then may transmit data indicated an amount of delay as via electronic message **124***b*. According to some examples, a

value **159** may be presented that is adapted to particular user **144** or item. For example, if user **144** historically postpones delivery by 7 days for this or other items, a value of "7" may be presented. Alternatively, a value **159** may be based on other users' patterns of postponement. Conversation platform controller **115** generates control message **121** for transmission to, for example, merchant computing system **130***a*, which, in turn, initiates authorization of the transaction, but with a hold on shipment (until an amount of delay expires). For example, control message **121** may include financial data to enable authorization at merchant computing system **130***a*. Optionally, conversation platform controller **115** may generate a confirmation electronic message for transmission to user computing device **152***b* to confirm a "future" order. Subsequently, conversation platform controller **115** may detect that an amount of delay has elapsed (e.g., 7 days), and, in response, may generate control message **121** to cause merchant computing system **130***a* to generate an order, charge the credit card, ship the item, and optionally send shipping confirmation.

[0048] In other examples, a user computing device **152***a* may initiate item replenishment. For example, user interface **156***a* may receive a user input **158***a* of "paper towels," and, optionally, a destination account identifier ("774169") **154***a*, such as a shortcode (or a phone number, an email address, a URL, etc.). User computing device **152***a* may be configured to transmit data representing user input **158***a* as electronic message **122***b*, which may also include data representing an account identifier (e.g., a mobile phone number) associated with user **144**. Conversation platform controller **115** includes logic configured to extract data representing a portion of text, "paper towels," and analyzes the extracted data to determine that the text entered correlates to a specific item requested for replenishment. Conversation platform controller **115**, for example, can compare text "paper towels" (or alternatively texted as "papr towls," or other like short-hand or erroneous entries) to data stored in one or more repositories **170**, **172**, and **174** to confirm that user **144** is requesting paper towels.

[0049] Once the item is identified, conversation platform controller **115** may be configured to match "paper towels" against data representing UPC information, SKU information, and other information, as well as any other associations to user **144** based on data linked to the user's account identifier. A mobile phone number can be used to link or identify item characteristics associated with past purchases of paper towels by user **144**. In situations in which user **144** has historically purchased paper towels with different item characteristics (e.g., different SKUs, UPCs, etc.), conversation platform controller **115** may select an item based on the latest purchase. According to at least one example, the above-described actions may be sufficient to complete a transaction with at least one of merchant computing systems **130***a*, **130***b*, and **130***n*.

[0050] Item replenishment may proceed as follows, according to some further examples. Conversation platform controller **115** may transmit a summary electronic message **122***a* (not shown) of the item to be replenished, such as "If you would like to order 1 unit of 12 rolls of {BRAND X} paper towels for $17.95 including tax and shipping, please reply 'YES.'" In response, user interface **156***a* may receive a user input "YES," thereby causing user computing device **152***a* to transmit order affirmation as electronic message **122***b*. Responsive to receiving "YES," conversation platform controller **115** may generate a control message **121** for transmission to, for example, merchant computing system **130***a* to initiate completion of the transaction. Optionally, conversation platform controller **115** may generate a confirmation electronic message **122***a* for transmission to user computing device **152***a*. An example of such a confirmatory message is as follows: "Your order has successfully been placed. Thank you. You'll receive another text once your order has been shipped. In case of questions or problems, please call 1-800-555-1234." Control message **121** may include financial data (e.g., credit card information) associated with user **144** to initiate authorization at merchant computing system **130***a*, which, in turn, ships the item and optionally sends shipping confirmation to user computing device **152***a* to notify user **144** of an item in transit. Merchant computing system **130***a* may be configured to generate an order, charge the credit card, ship the item, and optionally send shipping confirmation.

[0051] User-initiate replenishment may be implemented as follows, at least in some examples. Destination account identifier ("774169") **154***a* may be displayed in advertising media (e.g., including printed ads, such as in newspapers and magazines, billboards, and the like), product packing, etc. so a user can review a package of, for example, Brand V protein powder to identify shortcode "774169" (or phone number) and the text to be entered (entry "V powder") to initiate a replenishment of Brand V protein powder (based on linking data related to the mobile phone number of user **144**, such as shipping address, billing information, etc.). Alternatively, destination account identifier **154***a* may encode the product to replenish. For example, a package or other media (e.g., printed or online advertisements) may include the following: "Reorder Brand V protein powder by texting 'NOW' to 7741," whereby shortcode 7741 may be reserved to order Brand V protein powder at a merchant computing system **130**. Other examples include According to various other examples, short codes, phone numbers (to text replenishment requests), etc. may encode any type of information to, for example, uniquely identify one or more of the following: a specific product, a specific merchant, and a specifically-configured shipment date and time, among other things.

[0052] FIG. **2** is a diagram depicting an example of a conversation platform controller, according to some embodiments. Diagram **200** depicts a conversation platform controller **215** including a data interface **217**, which, in turn, may include any number of specific interfaces **217***a* to **217***n*, and a transaction controller **280**. Each of specific interfaces **217***a* to **217***n* may be configured to facilitate differently formatted exchanges of data via network **220***a* (e.g., the Internet) among conversation platform controller **215**, other components of an adaptive distribution platform (not shown), and a computing device. In this example, conversation platform controller **215** may be configured to automatically facilitate optimal replenishment and distribution of items, which may include goods or services, based on an adaptive schedule using text messages or any other communication medium. Thus, electronic messages may be text messages, electronic mail messages, audio messages, web page messages, or any other messaging technique that provide sufficient information and data in a message to initiate and complete replenishment of an item. According to some examples, elements depicted in diagram **200** of FIG. **2**

may include structures and/or functions as similarly-named or similarly-numbered elements depicted in other drawings.

[0053] Specific interfaces **217***a* to **217***n* may be implemented in hardware or software, or a combination thereof. In some cases, one of specific interfaces **217***a* to **217***n* may be implemented as an applications programming interface ("API"). For example, interface **217***a* may be configured to exchange data via HTML, HTTPS, or any other communication service/protocol between conversation platform controller **215** and web page **210**. As another example, interface **217***b* may be configured to exchange data via POP, SMTP, IMAP, or any other communication service/protocol between conversation platform controller **215** and electronic mail message **220**. Interface **217***n* may be configured to exchange data via SMS, EMS, MMS ("Multimedia Messaging Service") services, or any other communication service/protocol between conversation platform controller **215** and text message application in computing device **242***b* or a proprietary fulfillment application **241** disposed, for example, in computing device **242***a*. Thus, conversation platform controller **215** may be agnostic regarding the various forms of communication channels or media for which data interface **217** provides specialized interfacing.

[0054] Various structures and/or methods described herein may be applied to web pages **210**, emails **220**, multi-media text messages **248***a* and **248***b*, among other forms of communicating request to replenish an item. Web page **210** includes an order or reorder page as a user interface **212** to order or reorder an item (e.g., paper towels) by selecting in interface portion **214** either immediate delivery via input **211** or delayed delivery via input **213** and input **219** (a pull-down menu to select an amount of delay). Data received into interface **212** via inputs **211**, **213**, and **219** may be stored until input ("send") **218** is activated, after which the data may be transmitted contemporaneously (or substantially contemporaneously) to conversation platform controller **215** to initiate an order.

[0055] An electronic message to remind a user of imminent exhaustion of an item may be communicated as an email **220**, which is shown to include an item characteristic **222** in a subject line so a user readily may discern the action required for such a communication. In email body **224**, various delivery options may be embedded as hypertext links to enable a user to order or reorder an "Product P" "now," by selecting link **275***a*, or postponing shipment by 7 days with the selection of link **275***b*. According to some embodiments, the presentation of a link for a "7 day" delay, as a first link, may be due to its relatively high degree of compatibility with user **144** (based on probabilistic determinations at a distribution predictor, which is not shown). The presentation of a link **275***c* for a "3 day" delay, as a yet another link, may be due to its second-highest degree of compatibility. Thus, an adaptive distribution platform including conversation platform controller **215** may adapt presentation of user inputs to accommodate user purchasing and scheduling patterns and preferences to enhance, among other things, users' experiences.

[0056] User computing device **242***a* may include any messaging application **243** configured to transmit electronic messages based on, for example, SMS, MMS, or any other type of messaging service application. For example, FACEBOOK™ Messenger, TWITTER™, TWILIO™, WHATSAPP™, or any other like application may be suitable for implementation as messaging application **243**, or in support of fulfillment application **241**. In some examples, user computing device **242***a* may include executable instructions constituting a fulfillment application **241**, which may be integrated with, or disposed on (e.g., built on), a messaging application layer (including messaging application **243**) to provide enhanced functionality.

[0057] Further to user computing device **242***a*, consider that a user may initiate distribution of an item by capturing an image **248***a* of product label or code (e.g., UPC), such as by using a camera of user computing device **242***a*, to import into interface **246***a*. User computer device **242***a* may transmit image **248***a* as an electronic message to an adaptive distribution platform using shortcode ("774169") **244***a*, whereby the adaptive distribution platform may implement image processing, such as optical character recognition or other similar processes to identify an item to replenish based on an image. In some cases, transmitting image **248***a* from a known mobile phone number may be sufficient to complete the transaction to ensure that a supply of an item is replenished.

[0058] An adaptive distribution platform may initiate distribution of an item by transmitting message **248***b* for presentation in user interface **246***b* of user computing device **242***b*. As shown, multiple user inputs **249***a* and **249***b* are presented to receive different user inputs to activate a transaction. Selection of link **249***a* generates an electronic message requesting an immediate order for transmission to a destination account identifier **244***b*, whereas selection of link **249***b* generates an electronic message that requests an order at a delayed time, as defined by the link (e.g., 7 days). According to various embodiments, certain amounts of delay may be presented in descending order from highest probability or likelihood (e.g., 7 days) to a lowest probability (e.g., 5 days), whereby the probabilities may be determined based on a user's preferences and purchasing patterns. Thus, a user likely can find its top three most probable preferences for the amounts of postponement (e.g., 7, 4, and 5 days) with less expended time than otherwise might be the case.

[0059] Transaction controller **280** may include logic configured to control the exchange of data to identify items for replenishment and other actions associated with an order. In text-based requests, transaction controller **280** may operate to parse text submitted as an order to determine a requested product. According to some examples, transaction controller **280** may operate in accordance with a predictive model (e.g., decision tree) that operates on XML formatted messages to generate control messages to replenish an item. Transaction controller **280** may implement deep learning, machine learning, neural networks, fuzzy logic, regression techniques, or other computer-based artificial intelligence techniques to identify a user's request from various types of electronic messages. Note that the above-described implementation for FIG. **2**, as well as other figures, may be applicable to services in accordance with some examples. For example, a user may, as an SMS text messaging service, receive a curated or personalized recommendation as to, for example, a particular shirt or clothing. Personalization may be based on user characteristics and preferences, including item characteristics of past purchases (e.g., shirt motifs, such as Hawaiian shirts, colors, sizes, etc.). A user need only reply "Yes" to order apparel from the curated SMS service. As another example, a user may receive an SMS text message asking whether the user is interested in delivery of a food item for

lunch by responding to a text to a food delivery service, a food truck, or any other source.

[0060] FIG. **3** is a diagram depicting an example of operation of a distribution predictor, according to some embodiments. As shown, diagram **300** includes a distribution predictor **314** configured to predict a point in time (or a range of time) at which an item may be exhausted or otherwise ought to be distributed to replenish a supply of an item, which may be any good or service. A good may be a durable good (e.g., goods that do not wear out quickly or are not depletable per use, such as vehicles, jewelry, appliances, etc.) or disposable goods (e.g., goods that may be used up after purchase, such as food, toiletries, clothes, and the like). A prediction may be determined periodically, aperiodically, in real-time, substantially in real-time, at any time, etc. Distribution predictor **314** may include a distribution calculator **316**, a distribution optimizer **318**, and a zone generator **319**. According to some examples, elements depicted in diagram **300** of FIG. **3** may include structures and/or functions as similarly-named or similarly-numbered elements depicted in other drawings.

[0061] In the example shown, distribution calculator **316** is shown configured to generate predicted times of distribution subsequent to, for example, an initial order and distribution (i.e., shipment) at time ("D**1**") **363***a*. Examples of predicted times of distribution, as shown shipment rate implementation **360**, may include a predicted time ("D**2**") **363***b* of distribution, a predicted time ("D**3**") **363***c* of distribution, predicted time ("D**4**") **363***d* of distribution. Predicted times **363***b*, **363***c*, and **363***d* of distribution are predicted distribution events that may be a function of a user **331** (e.g., a user's usage rates and consumption patterns) or an item **333** and its characteristics (e.g., based on usage rates and consumption patterns of a group of users over one or more merchant computer systems). Note that predicted times **363***b*, **363***c*, and **363***d* of distribution need not be predicted as if under a subscription. That is, the depiction of predicted times **363***b*, **363***c*, and **363***d* of distribution is for purposes of discussion, and a predicted time of distribution need not be predicted beyond a next shipment that replenishes an item nearing exhaustion.

[0062] Predicted times **363***b*, **363***c*, and **363***d* of distribution may be correlated to a period of time, such as periods of time p**1** and p**2**, based a rate of depletion of an item. For example, a period of time, p, may define an amount of time (e.g., a time interval) between an initial supply level (e.g., a full supply on date of initial purchase, such as time ("D**1**") **363***a*) and a predicted date of exhaustion, such as time ("D**2**") **363***b*, which may coincide with a predicted time of distribution (e.g., time of delivery). To illustrate, a distribution event at time ("D**2**") **363***b* may be timed to occur at the 30th day after a user has purchased at time ("D**1**") **363***a* a bottle of vitamin supplements having 30 tablets that are taken once a day. Thus, distribution predictor **314** may generate data **322** representing periods **323** of time, such as periods of time ("p**1**") **362***a* and **362***b*, both of which are depicted as 1.5 units of time, and period of time ("p**2**") **362***c* is depicted as 1 unit of time. In some examples, distribution optimizer **318** may receive feedback relating to ordering patterns of user **331** (e.g., user **331** typically requests shipments prior to a date of exhaustion). Based on the feedback, distribution optimizer **318** may be configured to adjust a predicted distribution event at time **363***d* and a period **362***c* of time, which is shorter than periods **362***a* and **362***b* of time.

[0063] Zone generator **319** may be configured to determine a zone of time in which depletion of an item is predicted. A zone of time, and its duration, may be adapted relative to a distribution event or a period of time since, for example, a known supply level of an item (e.g., a full supply at a previous purchase). As shown, zone generator **319** may be configured to determine a zone **368***a* of time associated with time **363***b*, a zone **368***b* of time associated with time **363***c*, and a zone **368***c* of time associated with time **363***d*, each of which may be a range of time preceding a distribution event. In some cases, zone generator **319** may be configured to determine a zone **368***d* of time that succeeds a distribution event at time **363***d*. Zone **368***c* of time may be different (e.g., shorter) than zones **368***a* and **368***b* of time based on respective periods of time, according to some examples.

[0064] Distribution predictor **314** also may be configured to associate a point in time with a zone of time, the point in time defining a moment at which an electronic message may be transmitted to a computing device (e.g., a mobile phone) to inform a user of the pending exhaustion of an item and to provide an opportunity to replenish the item in a configurable manner. As shown, distribution predictor **314** may associate a point **370***a* to zone **368***a* of time, a point **370***b* of time to a zone **368***b* of time, and a point **370***c* to zone **368***c* of time, whereby an adaptive distribution platform (not shown) may generate electronic reminder messages at points **370***a*, **370***b*, and **370***c* of time. Thus, an electronic reminder message transmitted at, for example, point **370***a* of time is associated with a zone **368***a* of time. Consider an example in which an electronic message is sent at point **370***a* of time, which may be eight (8) days prior to time **363***b*. Thus, zone **368***a* of time may be subdivided into, or otherwise include, various times at which to delay initiation of an order. For example, an electronic reminder message may be sent to a user eight (8) days prior to time **363***b*, whereby the electronic reminder message may provide user inputs to delay distribution by "7," "6," "4," "2," days, or any other amount of delay, within zone **368***a* of time.

[0065] According to some embodiments, distribution predictor **314** may be configured to receive and/or determine data for one or more item characteristics that may include, but are not limited to, data representing one or more characteristics of an item, shipment rate-related data **302**, indicator-related data **304**, and usage-related data **308**, and the like. Note that data **302**, **304**, and **308** may be referred to as examples of item characteristics, according to various examples. Examples of some item characteristics may include a product or product type, a service or service type, SKU data, UPC data, etc. for the same or similar items, or complementary and different items (e.g., complementary or correlatable products may be predicted to have similar predicted times of distribution or rates of consumption and/or depletion). Examples of shipment rate-related data **302** may include a number of purchases or orders per user, per group of users, or per item, a number of shipments, etc. Examples of indicator-related data **304** may include data representing items characteristics that may be correlatable to, for example, order and shipment rate-related data (e.g., a "take rate," a "cancellation rate," etc., or any other data type, such as an "adoption rate" of platform-initiated or user-initiated reordering, a "conversion rate" of responding to reminder messages as a function of user and item, etc.), which, in turn, may be used to derive a predicted time of

distribution. The term "take rate" may include data representing a rate at which users "take" or implement a presented value of delay (e.g., delay by "7" days) as a default amount of delay, according to some examples. The term "cancellation rate" may include data representing a rate at which users "cancel" an order (e.g., based on, for example, frustrations of over-supplied or under-supplied amounts), according to some examples.

[0066] Examples of usage-related data **308** may include data representing attributes specifying contextual-related information associated with an item, such as, but not limited to, user-related characteristics, such as demographic information, purchasing-related data (e.g., purchase patterns), and the like. In some cases, usage-related data may include attributes **340** describing items historically purchased by a user **341** (e.g., patterns of a parent), as well as attributes **344** describing items historically purchased by associated users **345** (e.g., patterns of a grandparent) or a subpopulation or a population of which a user belongs. Also, usage-related data may include sale-related and shipment-related attributes **348** provided by merchant computer systems **349**. Data representing attributes **340**, **344**, and **348** may be stored in repositories **342**, **346**, and **350**, according to some examples.

[0067] FIG. **4** is a diagram depicting an example of a flow, according to some embodiments. At **402** of flow **400**, data representing a zone of time in which depletion of an item (e.g., a consumable item) may be predicted. In some examples, the zone of time may be associated with a predicted distribution event (e.g., a predicted time of distribution), which may be based on a calculated usage rate related to any of a user, a group of users, and one or merchant computer systems. At **404**, a predicted time of distribution may be monitored relative to a time at which to replenish a consumable item, for example, prior to exhaustion of an item, which may be any good or service. At **406**, a first electronic message may be transmitted via a network to a user computing device. The first electronic message may include one or more item characteristics associated with a consumable item to be replenished. Further, data representing the first electronic message may be configured to present at least one item characteristic (e.g., a product type or brand, a product classification (e.g., paper towels), a price, an indication to delay an order, etc.) at a display portion of a user interface. According to various examples, the first electronic message may be a reminder message if replenishment is platform-initiated, or a confirmatory message if user-initiated. At **408**, a second electronic message from the user computing device may be received into, for example, an adaptive distribution platform. In some examples, the second electronic message may be sufficient to initiate an order, with or without a delay, including payment and shipment. At **410**, a control message may be transmitted to a merchant computing system to initiate distribution of a replenishing consumable item. For example, the distribution of an item may be to a geographic location (e.g., address) associated with an account (e.g., a user account having, for example, data representing a shipping address).

[0068] FIG. **5** depicts an example of another flow, according to some embodiments. Flow **500** may apply to platform-initiated replenishment, according to various examples. At **502**, a point of time coinciding (or substantially coinciding) with a zone of time may be determined. For example, data representing a point of time may represent a date (e.g., as defined by year, month, day and time) that may be compared against a date range associated with a zone of time. When the point of time falls within the zone of time, replenishment may be initiated by, for example, and an adaptive distribution platform. At **504**, an electronic message reminding a user may be transmitted. The electronic message may include data representing one or more item characteristics. Further, the electronic message may include one or more control user inputs to adapt scheduling of distribution of the item. A control user input, or user input, may include specifying ordering "NOW," or at any number of delayed units of time (e.g., delay by 3 days). At **506**, an electronic message that includes a request for replenishment may be received into, for example, an adaptive distribution platform.

[0069] At **508**, a determination is made whether replenishment may be adjusted. If no adjustment is detected, flow **500** continues to **512**, otherwise flow **500** continues to **510**. For example, if no delay in replenishment is detected at **508**, then flow **500** continues to **512**, at which a control signal may be transmitted (e.g., to a merchant computing system) to initiate scheduled delivery of an item, which may be any good or service. For example, a confirmation electronic message may be optionally generated at **512** for transmission to a user computing device to confirm acceptance of order. The control message may include financial data (e.g., credit card information) to initiate authorization of payment at a merchant computing system. If delay in replenishment is detected at **508**, then flow **500** continues to **510**, at which transmission of the control signal may be recalibrated. For example, a control signal may be generated for transmission to a merchant computing system to initiate authorization of the transaction with a hold on shipment. Thus, the recalibrated control signal may provide financial data for authorization of payment, but may postpone or withhold authorization to complete the transaction, including shipment. After an amount of delay has elapsed (e.g., 7 days), as determined at **510**, another control message may be released for transmission to cause the merchant computing system to generate an order, charge the credit card, ship the item, and optionally send shipping confirmation.

[0070] At **514**, a predicted distribution event may be adjusted, which, in turn, may modify a zone of time. For example, a predicted distribution event may be optimized based on feedback or analysis of data trends associated with users and merchants. A value representing a predicted distribution event or date may be optimized by including a user's monitored shipment delay preference, whereby the optimized predicted time of distribution may be a modified distribution event. For example, a particular user may prefer to deviate from a predicted distribution event by delaying or expediting shipping (e.g., repeatedly). Thus, a reminder message may be generated in accordance with the user's preference, which may be embodied in presented amounts of delay or in a modified date of predicted exhaustion.

[0071] According to various examples described herein, the structures and/or processes set forth to replenish items may apply to one or more items (e.g., a single item, or multiple items). In some examples, a point of time at **502** may be determined that substantially coincides with a zone of time for multiple items, such as a vitamin regimen in which a user consumes different vitamin supplement tablets (e.g., vitamins A, B, D, E, etc.) at a daily rate. In some examples, a user may set up via a user computing device a list of vitamins to be shipped at a recurring date, or predicted

dates based on predicted dates of depletion or exhaustion (e.g., a time of distribution). The list may be entered via mobile phone, email, phone, webpage, etc., whereby and adaptive distribution platform may manage the tracking and delivering of multiple bottles of vitamins either in accordance with a list, or by calculating predicted times of distribution or delivery (e.g., based on computed or projected usage rates for each of the vitamins). For example, bottles of 30 vitamin tablets may be included in a list every month, whereas bottles of 60 vitamin tablets may be included in the list every other month.

[0072] At **504**, an electronic message, such as a text message, and may be transmitted from adaptive distribution platform to a user computing device, whereby the electronic message may include a list of items associated with a predicted optimal point in time at which one or more items in the list are depleted or substantially depleted. For example, the electronic message may indicate: "The following is a list of items that you may wish to replenish. Reply 'Yes' if you wish to replenish each item in the list, or reply with a corresponding number for those items you wish to replenish. For vitamin A enter '1,' for vitamin B enter '2,' for vitamin Center '3,' for vitamin E enter '4,' and cod liver oil tablets enter '5' (separated by space or comma)." A user desiring to replenish vitamins C and E then would enter and text "3 4" in reply at **506**. At **508**, one or more items (e.g., bottles of vitamins) may be delayed by any amount of time. For example, a user may enter "1p7d," "2p1m," and "5p1y," where "p" indicates an instruction to "postpone" delivery by an amount of time expressed by "d" (day), "m" (month), or "y" (year). In this example, the user is requesting to postpone delivery of vitamin A by 7 days ("1p7d, where 1=vitamin A, p=postpone, 7=number of time units to delay, and d=time units), postpone delivery of vitamin B for one month, and postpone delivery of cod liver oil tablets by one year. The delivery of vitamins A and B, as well as cod liver oil, may be recalibrated at **510** to comply with the user's requested delivery postponements. At **512**, a control signal to ship vitamins C and E may be transmitted to, for example, a merchant computing system.

[0073] FIG. **6** depicts an example of yet another flow, according to some embodiments. Flow **600** may apply to user-initiated replenishment, according to various examples. At **602**, multiple requests for replenishment for various items may be monitored by, for example, an adaptive distribution platform. Such requests may be associated with various zones of time associated with various items. At **604**, a request associated with a user computing system account for a particular item may be detected. In some examples, data encapsulated in an electronic request message at **604** may be sufficient to complete an order for item replenishment. At **606**, data from electronic messages including a request for item replenishment may specify, for example, data representing an item characteristic (e.g., a classification, such as "paper towels," or product type, such as a brand name). For example, a request for replenishment may include the text "paper towels." Thus, the text "paper towels" may be extracted for analysis to determine or confirm that the text entered correlates to a specific item requested for stored item representations associated with a user computing system account. For example, an account identifier, such as a mobile phone number (or email address, etc.), may be associated with a user computing device. A merchant computing system may include data representing mobile phone number, which may be accessible by an adaptive distribution platform. Thus, logic in the adaptive distributions platform may be configured to link the mobile phone number to data representing a consumer profile, including, but not limited to, a default shipping address, payment instrument, etc. The mobile phone number may also be used to identify the user's past order history to identify past items that may be relevant to the item identified in the extracted data. At **610**, a control signal may be transmitted to a merchant computing system (e.g., via a commerce platform controller) to initiate scheduled delivery.

[0074] FIG. **7** is a diagram depicting an example of operation for a distribution predictor to generate predictive times of distribution based on derived usage data, according to some embodiments. Diagram **700** depicts a distribution predictor **714** including an item characteristic correlator **717**, which may be configured to identify one or more item characteristics **744** with which to correlate to determine or derive data that may be further used to derive or predict distribution events, times of distribution, zones of time, and associated points of time, any of which may as encapsulated in predictive distribution data **790**. In some examples, item characteristic correlator **717** may be configured to generate (or characterize) an aggregated item characteristic **729** that may specify attributes of a particular aggregated item characteristic aggregated for a number of users **740** (over users **742***a*, **742***b*, and **742***c*).

[0075] To illustrate, consider that item characteristic correlator **717** is configured to identify usage rates **752***a* to **752***c* (e.g., a rate at which a product or service is reordered, or consumed or depleted) for corresponding user accounts **742***a* to **742***c* (e.g., associated with user phone numbers). In this example, consider that users **742***a* to **742***c* purchase a "laundry detergent" having usage rates **752***a* to **752***c*. Usage rates between "0" and "1" (e.g., usage amounts during a spring season), usage rates between "1" and "2" (e.g., usage amounts during a summer season), and usage rates between "2" and "3" (e.g., usage amounts during a fall season). It may be that users **742***a* to **742***c* play football during the fall, and consequently use more laundry detergent due to football practices and games in inclement weather (e.g., due to muddy fields, etc.) Thus, distribution predictor **714** may be able to discern patterns **750** of usage. Further, distribution predictor **714** may aggregate the usage rates to form an aggregated usage rate pattern **730** for a group of users **740**. Based on aggregated usage rate pattern **730**, distribution predictor **714** may be able to generate or predict an aggregated distribution event or an aggregated time of distribution **790**.

[0076] Distribution predictor **714** may also use other types of data with which to evaluate when calculating a predicted time of distribution. Examples of such data are shown in diagram **700** and may include activity characteristics data **781** (e.g., characteristics indicative of participation in a sport or task), geographic characteristic data **782**, demographic characteristic data **783** (e.g., aggregated user data), user-specific characteristic data **784** (e.g., history of purchases by a user, etc.), product characteristics data **785**, complementary product characteristics data **786**, and other item characteristics data **787**.

[0077] Based on the above, distribution predictor **714** may be configured to identify a usage rate **720** of a new user **799**, and further configured to match the new usage rate **720**

against aggregated usage rate **729** of aggregated usage rate pattern **730** to predict, for example, that user **799** "plays football," as well as other characteristics of the user with which to derive an optimized predicted time of distribution. According to some examples, distribution predictor **714** may predict future participation in an activity or an increase in usage rate during interval **728**. Thus, distribution predictor **714** may adapt a predicted time of distribution so as to prepare a user for increased usage rates by adjusting the periods of time prior to a modified time of distribution to reflect an increased laundry detergent amount or a decreased amount of time between shipments. Note that the example described in diagram **700** is not intended to be limiting to laundry detergent, but may be applicable to any characteristic of an item or other items.

[0078] FIG. **8** illustrates examples of various computing platforms configured to provide various functionalities to predict a time of distribution of an item relative to an adaptive schedule, according to various embodiments. In some examples, computing platform **800** may be used to implement computer programs, applications, methods, processes, algorithms, or other software, as well as any hardware implementation thereof, to perform the above-described techniques.

[0079] In some cases, computing platform **800** or any portion (e.g., any structural or functional portion) can be disposed in any device, such as a computing device **890***a*, mobile computing device **890***b*, and/or a processing circuit in association with implementing any of the various examples described herein.

[0080] Computing platform **800** includes a bus **802** or other communication mechanism for communicating information, which interconnects subsystems and devices, such as processor **804**, system memory **806** (e.g., RAM, etc.), storage device **808** (e.g., ROM, etc.), an in-memory cache (which may be implemented in RAM **806** or other portions of computing platform **800**), a communication interface **813** (e.g., an Ethernet or wireless controller, a Bluetooth controller, NFC logic, etc.) to facilitate communications via a port on communication link **821** to communicate, for example, with a computing device, including mobile computing and/or communication devices with processors, including database devices (e.g., storage devices configured to store any types of data, etc.). Processor **804** can be implemented as one or more graphics processing units ("GPUs"), as one or more central processing units ("CPUs"), such as those manufactured by Intel® Corporation, or as one or more virtual processors, as well as any combination of CPUs and virtual processors. Computing platform **800** exchanges data representing inputs and outputs via input-and-output devices **801**, including, but not limited to, keyboards, mice, audio inputs (e.g., speech-to-text driven devices), user interfaces, displays, monitors, cursors, touch-sensitive displays, LCD or LED displays, and other I/O-related devices.

[0081] Note that in some examples, input-and-output devices **801** may be implemented as, or otherwise substituted with, a user interface in a computing device associated with a subscriber or user account identifier in accordance with the various examples described herein.

[0082] According to some examples, computing platform **800** performs specific operations by processor **804** executing one or more sequences of one or more instructions stored in system memory **806**, and computing platform **800** can be implemented in a client-server arrangement, peer-to-peer arrangement, or as any mobile computing device, including smart phones and the like. Such instructions or data may be read into system memory **806** from another computer readable medium, such as storage device **808**. In some examples, hard-wired circuitry may be used in place of or in combination with software instructions for implementation. Instructions may be embedded in software or firmware. The term "computer readable medium" refers to any tangible medium that participates in providing instructions to processor **804** for execution. Such a medium may take many forms, including but not limited to, non-volatile media and volatile media. Non-volatile media includes, for example, optical or magnetic disks and the like. Volatile media includes dynamic memory, such as system memory **806**.

[0083] Known forms of computer readable media includes, for example, floppy disk, flexible disk, hard disk, magnetic tape, any other magnetic medium, CD-ROM, any other optical medium, punch cards, paper tape, any other physical medium with patterns of holes, RAM, PROM, EPROM, FLASH-EPROM, any other memory chip or cartridge, or any other medium from which a computer can access data. Instructions may further be transmitted or received using a transmission medium. The term "transmission medium" may include any tangible or intangible medium that is capable of storing, encoding or carrying instructions for execution by the machine, and includes digital or analog communications signals or other intangible medium to facilitate communication of such instructions. Transmission media includes coaxial cables, copper wire, and fiber optics, including wires that comprise bus **802** for transmitting a computer data signal.

[0084] In some examples, execution of the sequences of instructions may be performed by computing platform **800**. According to some examples, computing platform **800** can be coupled by communication link **821** (e.g., a wired network, such as LAN, PSTN, or any wireless network, including WiFi of various standards and protocols, Bluetooth®, NFC, Zig-Bee, etc.) to any other processor to perform the sequence of instructions in coordination with (or asynchronous to) one another. Computing platform **800** may transmit and receive messages, data, and instructions, including program code (e.g., application code) through communication link **821** and communication interface **813**. Received program code may be executed by processor **804** as it is received, and/or stored in memory **806** or other non-volatile storage for later execution.

[0085] In the example shown, system memory **806** can include various modules that include executable instructions to implement functionalities described herein. System memory **806** may include an operating system ("O/S") **832**, as well as an application **836** and/or logic module(s) **859**. One or more logic modules **859** may each be configured to perform at least one function as described herein.

[0086] The structures and/or functions of any of the above-described features can be implemented in software, hardware, firmware, circuitry, or a combination thereof. Note that the structures and constituent elements above, as well as their functionality, may be aggregated with one or more other structures or elements. Alternatively, the elements and their functionality may be subdivided into constituent sub-elements, if any. As software, the above-described techniques may be implemented using various types of programming or formatting languages, frameworks, syn-

tax, applications, protocols, objects, or techniques. As hardware and/or firmware, the above-described techniques may be implemented using various types of programming or integrated circuit design languages, including hardware description languages, such as any register transfer language ("RTL") configured to design field-programmable gate arrays ("FPGAs"), application-specific integrated circuits ("ASICs"), or any other type of integrated circuit. According to some embodiments, the term "module" can refer, for example, to an algorithm or a portion thereof, and/or logic implemented in either hardware circuitry or software, or a combination thereof. These can be varied and are not limited to the examples or descriptions provided.

[0087] In some embodiments, modules **859** of FIG. **8**, or one or more of their components, or any process or device described herein, can be in communication (e.g., wired or wirelessly) with a mobile device, such as a mobile phone or computing device, or can be disposed therein.

[0088] In some cases, a mobile device, or any networked computing device (not shown) in communication with one or more modules **859** or one or more of its/their components (or any process or device described herein), can provide at least some of the structures and/or functions of any of the features described herein. As depicted in the above-described figures, the structures and/or functions of any of the above-described features can be implemented in software, hardware, firmware, circuitry, or any combination thereof. Note that the structures and constituent elements above, as well as their functionality, may be aggregated or combined with one or more other structures or elements. Alternatively, the elements and their functionality may be subdivided into constituent sub-elements, if any. As software, at least some of the above-described techniques may be implemented using various types of programming or formatting languages, frameworks, syntax, applications, protocols, objects, or techniques. For example, at least one of the elements depicted in any of the figures can represent one or more algorithms. Or, at least one of the elements can represent a portion of logic including a portion of hardware configured to provide constituent structures and/or functionalities.

[0089] For example, modules **859** of FIG. **8** or one or more of its/their components, or any process or device described herein, can be implemented in one or more computing devices (i.e., any mobile computing device, such as a wearable device, such as a hat or headband, or mobile phone, whether worn or carried) that include one or more processors configured to execute one or more algorithms in memory. Thus, at least some of the elements in the above-described figures can represent one or more algorithms. Or, at least one of the elements can represent a portion of logic including a portion of hardware configured to provide constituent structures and/or functionalities. These can be varied and are not limited to the examples or descriptions provided.

[0090] As hardware and/or firmware, the above-described structures and techniques can be implemented using various types of programming or integrated circuit design languages, including hardware description languages, such as any register transfer language ("RTL") configured to design field-programmable gate arrays ("FPGAs"), application-specific integrated circuits ("ASICs"), multi-chip modules, or any other type of integrated circuit.

[0091] For example, modules **859** of FIG. **8**, or one or more of its/their components, or any process or device described herein, can be implemented in one or more computing devices that include one or more circuits. Thus, at least one of the elements in the above-described figures can represent one or more components of hardware. Or, at least one of the elements can represent a portion of logic including a portion of a circuit configured to provide constituent structures and/or functionalities.

[0092] According to some embodiments, the term "circuit" can refer, for example, to any system including a number of components through which current flows to perform one or more functions, the components including discrete and complex components. Examples of discrete components include transistors, resistors, capacitors, inductors, diodes, and the like, and examples of complex components include memory, processors, analog circuits, digital circuits, and the like, including field-programmable gate arrays ("FPGAs"), application-specific integrated circuits ("ASICs"). Therefore, a circuit can include a system of electronic components and logic components (e.g., logic configured to execute instructions, such that a group of executable instructions of an algorithm, for example, and, thus, is a component of a circuit). According to some embodiments, the term "module" can refer, for example, to an algorithm or a portion thereof, and/or logic implemented in either hardware circuitry or software, or a combination thereof (i.e., a module can be implemented as a circuit). In some embodiments, algorithms and/or the memory in which the algorithms are stored are "components" of a circuit. Thus, the term "circuit" can also refer, for example, to a system of components, including algorithms. These can be varied and are not limited to the examples or descriptions provided.

[0093] Although the foregoing examples have been described in some detail for purposes of clarity of understanding, the above-described inventive techniques are not limited to the details provided. There are many alternative ways of implementing the above-described invention techniques. The disclosed examples are illustrative and not restrictive.

1. (canceled)

2. A computer-implemented method comprising:

receiving multiple requests for a consumable item from multiple network computing devices associated with multiple usage rates;

predicting at the adaptive distribution platform data representing a zone of time in which depletion of the consumable item as a predicted distribution event is predicted automatically based on a calculated usage rate, the adaptive distribution platform including a processor and memory and configured to provide replenishment services for multiple networked merchant computing system entities, wherein predicting the data representing the zone of time is based on an aggregated calculated usage rate comprises calculating the multiple usage rates based on execution of instructions to apply machine learning or deep learning algorithms to implement a predictive model and to generate a personalized recommendation based on user characteristics;

monitoring a usage rate associated with a consumer associated with the consumable item based on the aggregated usage rate;

generating based on the predicted distribution event a first electronic reminder message including data represent-

ing instructions to cause presentation of one or more user inputs at a user interface of a computing device, the one or more user inputs being configured to receive input data signals associated with the automatically predicted distribution event, the user interface structured at the computing device to include at least a first user interface portion configured to activate a first user input to ship the consumable item immediately and a second user interface portion configured to activate a second user input to adjust an interval of time in which to ship the consumable item without requiring access to an account associated with the consumer;

transmitting via a network the first electronic message as a function of the zone of time based on the aggregated usage rate, the zone of time being a range of time either preceding the predicted distribution event, or subsequent thereto, or both, the one or more user inputs being associated with different units of time, the first electronic message including one or more item characteristics associated with the consumable item to be replenished, data representing the first electronic message being configured to present at least one item characteristic at a display portion of the user interface at the computing device, the first electronic message being a reminder message responsive to platform initiation, wherein the at least one item characteristic includes either a product or service classification or a product or service type, or both;

receiving a second electronic message from the computing device as a response message to the reminder message, the response message including data representing a selected input from the one or more user inputs, wherein each user input is configured to represent a unit of time to modify a shipment date to form a modified ship date, the selected input representing at least one unit of time as an adjustment factor to adjust the interval of time;

monitoring the consumer ordering or reordering patterns based on the adjustment factor;

applying the machine learning or deep learning algorithms to automatically update the predictive model to adapt the predicted distribution event to form an adapted predicted distribution event; and

implementing, at an inventory management software application, the predicted distribution event and other predicted distribution events to form an aggregate number of predicted distribution events, the aggregate number of predicted distribution derived by application of the machine learning or deep learning algorithms to refine amounts of inventory dynamically to ensure the merchants associated with the multiple networked merchant computing system entities optimally determine a quantity of items for fulfillment in an inventory at a storage facility.

3. The method of claim **2** wherein the adapted predicted distribution event is associated with a modification of the zone of time to form a modified zone of time to comport with the consumer ordering or reordering patterns.

4. The method of claim **2** wherein the modified zone of time includes one or more of a first amount of time prior to the adapted predicted distribution event and a second amount of time subsequent to the adapted predicted distribution event.

5. The method of claim **2** wherein the modified ship date includes an expedited shipment date as a function of the response message.

6. The method of claim **2** wherein the modified ship date includes a delayed shipment date as a function of the response message.

7. The method of claim **2** further comprising:

transmitting a control message, responsive to the second electronic message, to a merchant computing system entity including another processor and another memory, the merchant computing system entity included in the multiple networked merchant computing system entities, the control message including data configured to initiate control of distribution of a replenishing consumable item in an interval of time to a geographic location associated with the account, the control message also comprising other data from a conversation platform controller configured to initiate the transmitting of the control message to the merchant computing system entity and to control electronic data exchange between the adaptive distribution platform to of responsive to the adjustment factor, the merchant computing system entity, the computing device, and the conversation platform controller using a data interface configured to transmit and receive the other data by using logic configured to monitor one or more data values associated with the predicted distribution event for the computing device.

8. The method of claim **2** further comprising:

detecting an amount of delay relative to transmitting the first electronic message, the amount of delay being associated with on the adjustment factor.

9. The method of claim **2** further comprising:

generating automatically another control message independent of receiving the response message to the reminder message to cause the merchant computing system entity to generate an order, charge a credit card, and ship the consumable item.

10. A system comprising:

a memory including executable instructions; and

a processor, responsive to executing the executable instructions, is configured to:

receive multiple requests for a consumable item from multiple network computing devices associated with multiple usage rates;

predict at the adaptive distribution platform data representing a zone of time in which depletion of the consumable item as a predicted distribution event is predicted automatically based on a calculated usage rate, the adaptive distribution platform including a processor and memory and configured to provide replenishment services for multiple networked merchant computing system entities, wherein predicting the data representing the zone of time is based on an aggregated calculated usage rate comprises calculating the multiple usage rates based on execution of instructions to apply machine learning or deep learning algorithms to implement a predictive model and to generate a personalized recommendation based on user characteristics;

monitor a usage rate associated with a consumer associated with the consumable item based on the aggregated usage rate;

generate based on the predicted distribution event a first electronic reminder message including data representing instructions to cause presentation of one or more user inputs at a user interface of a computing device, the one or more user inputs being configured to receive input data signals associated with the automatically predicted distribution event, the user interface structured at the computing device to include at least a first user interface portion configured to activate a first user input to ship the consumable item immediately and a second user interface portion configured to activate a second user input to adjust an interval of time in which to ship the consumable item without requiring access to an account associated with the consumer;

transmit via a network the first electronic message as a function of the zone of time based on the aggregated usage rate, the zone of time being a range of time either preceding the predicted distribution event, or subsequent thereto, or both, the one or more user inputs being associated with different units of time, the first electronic message including one or more item characteristics associated with the consumable item to be replenished, data representing the first electronic message being configured to present at least one item characteristic at a display portion of the user interface at the computing device, the first electronic message being a reminder message responsive to platform initiation, wherein the at least one item characteristic includes either a product or service classification or a product or service type, or both;

receive a second electronic message from the computing device as a response message to the reminder message, the response message including data representing a selected input from the one or more user inputs, wherein each user input is configured to represent a unit of time to modify a shipment date to form a modified ship date, the selected input representing at least one unit of time as an adjustment factor to adjust the interval of time;

monitor the consumer ordering or reordering patterns based on the adjustment factor;

apply the machine learning or deep learning algorithms to automatically update the predictive model to adapt the predicted distribution event to form an adapted predicted distribution event; and

implement, at an inventory management software application, the predicted distribution event and other predicted distribution events to form an aggregate number of predicted distribution events, the aggregate number of predicted distribution derived by application of the machine learning or deep learning algorithms to refine amounts of inventory dynamically to ensure the merchants associated with the multiple networked merchant computing system entities optimally determine a quantity of items for fulfillment in an inventory at a storage facility.

11. The system of claim **10** wherein the adapted predicted distribution event is associated with a modification of the zone of time to form a modified zone of time to comport with the consumer ordering or reordering patterns.

12. The system of claim **10** wherein the modified zone of time includes one or more of a first amount time prior to the adapted predicted distribution event and a second amount time subsequent to the adapted predicted distribution event.

13. The system of claim **10** wherein the modified ship date includes an expedited shipment date as a function of the response message.

14. The system of claim **10** wherein the modified ship date includes a delayed shipment date as a function of the response message.

15. The system of claim **10** further comprising:

transmitting a control message, responsive to the second electronic message, to a merchant computing system entity including another processor and another memory, the merchant computing system entity included in the multiple networked merchant computing system entities, the control message including data configured to initiate control of distribution of a replenishing consumable item in an interval of time to a geographic location associated with the account, the control message also comprising other data from a conversation platform controller configured to initiate the transmitting of the control message to the merchant computing system entity and to control electronic data exchange between the adaptive distribution platform to of responsive to the adjustment factor, the merchant computing system entity, the computing device, and the conversation platform controller using a data interface configured to transmit and receive the other data by using logic configured to monitor one or more data values associated with the predicted distribution event for the computing device.

16. The system of claim **10** further comprising:

detecting an amount of delay relative to transmitting the first electronic message, the amount of delay being associated with on the adjustment factor.

17. The system of claim **10** further comprising:

generating automatically another control message independent of receiving the response message to the reminder message to cause the merchant computing system entity to generate an order, charge a credit card, and ship the consumable item.

18. A non-transitory computer readable medium having one or more computer program instructions configured to perform a method, the method comprising:

receiving multiple requests for a consumable item from multiple network computing devices associated with multiple usage rates;

predicting at the adaptive distribution platform data representing a zone of time in which depletion of the consumable item as a predicted distribution event is predicted automatically based on a calculated usage rate, the adaptive distribution platform including a processor and memory and configured to provide replenishment services for multiple networked merchant computing system entities, wherein predicting the data representing the zone of time is based on an aggregated calculated usage rate comprises calculating the multiple usage rates based on execution of instructions to apply machine learning or deep learning algorithms to implement a predictive model and to generate a personalized recommendation based on user characteristics;

monitoring a usage rate associated with a consumer associated with the consumable item based on the aggregated usage rate;

generating based on the predicted distribution event a first electronic reminder message including data representing instructions to cause presentation of one or more user inputs at a user interface of a computing device, the one or more user inputs being configured to receive input data signals associated with the automatically predicted distribution event, the user interface structured at the computing device to include at least a first user interface portion configured to activate a first user input to ship the consumable item immediately and a second user interface portion configured to activate a second user input to adjust an interval of time in which to ship the consumable item without requiring access to an account associated with the consumer;

transmitting via a network the first electronic message as a function of the zone of time based on the aggregated usage rate, the zone of time being a range of time either preceding the predicted distribution event, or subsequent thereto, or both, the one or more user inputs being associated with different units of time, the first electronic message including one or more item characteristics associated with the consumable item to be replenished, data representing the first electronic message being configured to present at least one item characteristic at a display portion of the user interface at a computing device, the first electronic message being a reminder message responsive to platform initiation, wherein the at least one item characteristic includes either a product or service classification or a product or service type, or both;

receiving a second electronic message from the computing device as a response message to the reminder message, the response message including data representing a selected input from the one or more user inputs, wherein each user input is configured to represent a unit of time to modify a shipment date to form a modified ship date, the selected input representing at least one unit of time as an adjustment factor to adjust the interval of time;

monitoring the consumer ordering or reordering patterns based on the adjustment factor;

applying the machine learning or deep learning algorithms to automatically update the predictive model to adapt the predicted distribution event to form an adapted predicted distribution event; and

implementing, at an inventory management software application, the predicted distribution event and other predicted distribution events to form an aggregate number of predicted distribution events, the aggregate number of predicted distribution derived by application of the machine learning or deep learning algorithms to refine amounts of inventory dynamically to ensure the merchants associated with the multiple networked merchant computing system entities optimally determine a quantity of items for fulfillment in an inventory at a storage facility.

19. The method of claim **18** wherein the adapted predicted distribution event is associated with a modification of the zone of time to form a modified zone of time to comport with the consumer ordering or reordering patterns.

20. The method of claim **18** further comprising:

transmitting a control message, responsive to the second electronic message, to a merchant computing system entity including another processor and another memory, the merchant computing system entity included in the multiple networked merchant computing system entities, the control message including data configured to initiate control of distribution of a replenishing consumable item in an interval of time to a geographic location associated with the account, the control message also comprising other data from a conversation platform controller configured to initiate the transmitting of the control message to the merchant computing system entity and to control electronic data exchange between the adaptive distribution platform to of responsive to the adjustment factor, the merchant computing system entity, the computing device, and the conversation platform controller using a data interface configured to transmit and receive the other data by using logic configured to monitor one or more data values associated with the predicted distribution event for the computing device.

21. The method of claim **18** further comprising:

generating automatically another control message independent of receiving the response message to the reminder message to cause the merchant computing system entity to generate an order, charge a credit card, and ship the consumable item.

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