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SYSTEMS, METHODS AND APPARATUS FOR ONE TOUCH ORDERING

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Systems, methods and apparatus of the present disclosure provide a generic reordering approach for a wide range of repetitive reordering problems across a wide range of industries. Entities such as companies, organizations, or users may repeatedly order items or commodities. In many cases, the items may be low value or non-essential in nature, which may lead to a perception that using an inventory management system to track the reorder the items may yield a low return on investment. While the items may be low value, the cost of not having the item may be significant over time. Thus, it may be challenging to efficiently, repeatedly reorder a wide variety of low value items.

In some cases, the present disclosure can include a low cost, network enabled device having a display and a button. The device can be configured to communicate with a server that can facilitate ordering the items. The device can be associated with an identifier, barcode, signal, or other indication that maps to a product or type of product, such as an office stationary product (e.g., paper, pens, pencils, folders, or elastic bands), medical supplies (e., bandages, gauze, or gloves), food staples (e.g., milk, bread, or eggs), or household consumable items (e.g., soap, laundry detergent, or paper towels). The device can be attached, affixed positioned, placed, coupled to, or otherwise provided near or at the location of the item. For example, the device can be attached to the office stationary cabinet storing pens. When the number of pens falls below a predetermined threshold number, the device can provide an indication to a server to order pens. For example, a user may push a button on the device, which may cause the device to transmit a request to the server to order more pens. The request can include the identifier of the item and location information for the device. The server, responsive to receiving the request, can automatically order the item and indicate to send the item to the address corresponding to the location information received via the request. In some cases, the device can monitor the number of items remaining, and automatically send the order request to the server responsive to determining that the number of items is less than or equal to the predetermined threshold. Thus, the technology can facilitate repeatedly reordering products.

With reference to Fig. 1 below, the system 1 can include a data processing system 12. The system 1 can include one or more ordering devices 20, 34 or 36. The system 1 can also include a computing device 2. For example, the computing device 2 can access the data processing system 12 via network 10 to configure the one or more ordering devices 20, 34 or 36 in order to facilitate reordering items.

Still referring to Fig. 1, and in further detail, the data processing system 12 can include one or more servers, processors, computing devices, and memory. The data processing system 12 can include an order engine 14 or some other mechanism that can receive an order request from an ordering device, identify a product corresponding to the order request, and generate an indication or instruction to send the product to a location corresponding to the ordering device that generated the order request. The data processing system 12 can include a device configuration module 16 or other mechanism that can provide an interface via which a user can configure the one or more ordering devices 20, 34 or 36. The data processing system 12 can include a data repository 18 stored, for example, in memory, a hard disk, or a file server. The data repository 18 or some other mechanism can include or provide access to stored data structures or data records such as an identifier associated with an ordering device 20, a location associated with the ordering device 20, a product associated with the identifier or the ordering device 20, or a predetermined threshold number that can be used to determine when to reorder an

item. The data processing system 12 can include any type of circuitry, logic elements, software modules, or processors configured to facilitate ordering items.

The data processing system 12 can include cloud based management software system which can be designed and configured to control, monitor or manage the ordering devices 20, 34 or 36. The data processing system 12 (e.g., via device configuration module 16) can assign the ordering device a unique identifier (e.g., a barcode) identifier of the product to be reordered, a physical address location and WIFI access credentials. Via the data processing system 12 or a computing device 2, a user can review the number of items remaining at each ordering device's location and set a numerical reorder threshold. When this reorder threshold is reached, the data processing system 12 (e.g., via order engine 14) can generate a query and query a search feed for a list of possible fulfillment options. The data processing system 12, order engine 14 or an ordering manager can choose whether to automatically purchase the top ranked result, or manually review and select another result. Once ordering is confirmed, then the order can b be automatically dispatched to the selected merchant that provides the item, along with the ordering device's physical address so it can be delivered and fulfilled. Thus, the data processing system 12 can automate product related search query traffic.

The system 1 can include one or more computing devices, such as computing device 2. The computing device 2 can access or interact with the data processing system 12 or an ordering device via network 10. The computing device 2 can include, for example, mobile computing devices, mobile telecommunications devices, smartphones, personal digital assistants, laptop computers, notebooks, tablet computers, smart watches, or wearable devices. The network 10 can include one or more of any type of computer network such as the Internet, cellular network, WIFI network, WiMAX network, mesh network, Bluetooth, near field communication, satellite network, or other data network that facilitates communications between the data processing system 12, computing device 2 and ordering device 20.

The system 1 can include one or more ordering devices, such as ordering device 20, ordering device 34 or ordering device 36 (referred generally herein as ordering device). In some cases, the ordering device 20 can include a display or output interface 22, an input interface 24, a network module 26, a processor 28, a power source 30 or a database 32.

The ordering device 20 can include a display 22. The display 22 can include a liquid crystal display, light emitting diode (LED) based display, organic light emitting diode based display, bitmap display, pixel display, electronic ink display, or other display configured to visually output content including text, characters, strings, symbols, images, or multimedia content. The display 22 can include a lower power display. The display 22 can display information about the product (e.g., name, brand, type, image of the product, instructions for using the product, last order date or amount, estimated date of reorder, shipment information, estimated delivery date of order, or status of order of item).

In some cases, the ordering device 20 can include an output interface in addition to or instead of a display interface 22. The output interface 22 can include, for example, an optical indicator such as a light source, light bulb, LED, switch, or color. In some cases, the output interface 22 can include an audio interface that outputs an audio signal, such as a beep, tone, ring, music, or other audio-based indicator that can indicate information regarding item inventory or information that otherwise facilitates ordering an item.

The ordering device 20 can include an input interface 24 designed and constructed to receive input. In some cases, the input interface can include a mechanical button configured with a spring mechanism and an electrical contact or sensor. When the button is mechanically pressed or actuated, the electrical contact or sensor can detect that the button has been pressed or actuated. In some cases, the input interface 24 can include a touch input interface, capacitive touch interface, toggle, or switch. In some cases, the input interface 24 can include a camera, a motion sensor, ambient light sensor, proximity sensor, or a load sensor . For example, the input interface 24 can be configured to measure the load or weight of a tray in a cabinet in order to determine the number of pens remaining on the tray. If the load of the tray falls below a threshold weight (e.g., 50 grams which may correspond to approximately 10 pens), the ordering device 20 can automatically generate an order request for pens. In some cases, the input interface 24 can take a picture of an area, and provide the picture to the order engine 14 of the data processing system 12 which can be configured to perform image processing techniques to determine an amount of number of remaining products. The input interface 24 can also be used to configure the ordering device 20 data processing system 12. For example, the input interface 24 can take an image capture or picture of the product or item to be associated with the ordering device 20. The input interface 24 can store the image in the database 22, or provide the image for display via display 22. In some cases, the display 22 can also function as an input interfaced 22, such as a touch display.

In some cases, the input interface 24 can include a location sensor, such as a global positioning system sensor that is configured to provide location information or facilitate determining a location of the ordering device. The location sensor can determine the location of the ordering device using one or more techniques such as global positioning system, WIFI triangulation, IP address, Bluetooth, or cellular tower triangulation. This information can be stored in database 32 along with other configuration information. The location information can be used to facilitate ordering items and delivering the item to a location of the ordering device 20.

In some cases, the input interface 24 can include an NFC module. The NFC module can scan radio frequency identification ("RFID") tags embedded, affixed, attached, or otherwise associated with a product. For example, the input interface 24 configured with an NFC module can scan an RFID tag of or associated with a product. The NFC module can interpret an RFID or product identifier of the product using information determined from the scan. The ordering device 20 can determine the product from the RFID and use this information to determine stock levels of the product, or facilitate ordering the product. The ordering device 20 can determine stock levels at a snapshot, for example, by scanning all RFIDs within a certain area, such as in a cabinet. In some cases, the ordering device 20 can determine stock levels as products are added to the container, or taken out of the container. The ordering device 20 can receive an indication via the input interface 24 as to whether a product is being added or removed from the container.

The ordering device 20 can include a network module 26 designed and constructed to interface, interact, or otherwise communicate with network 10, computing device 2, data processing system 12, or other ordering devices 34 or 36. The network module 26 can include, e.g., a WIFI module, Bluetooth module, Near field communication ("NFC") module, satellite communication module, Ethernet module, cellular data module (e.g., 3G, 4G, LTE), or WiMax. The ordering device 20 can store network access configuration information in database 32. The ordering device can be configured with network access configuration information such as

wireless network name, password, or WAP credentials. The network module 26 can be further configured with authentication or authorization credentials used to log in to or otherwise access or communicate with the data processing system 12, computing device 2, or other ordering devices 2.

The ordering device 20 can include one or more processors, logic arrays, circuitry, software or hardware modules, or digital logic blocks (referred to as processor 28). The processor 28 can be configured to interface, interact with, or otherwise receive input or provide output via one or more of the display/output interface 22, input interface 24, network module 26, or database 32.

The ordering device 20 can include a power source 30 or power supply 30. The power source 30 can include, e.g., a battery, solar cell, hydrogen fuel cell, AC power supply, or DC power source. The power source 30 can be rechargeable or disposable. The power source 30 can be recharged via various electrical connections, including, e.g., a battery charger, USB cable, power/data cable, computing device, or another ordering device. The power source 30 may be a wired or wireless power source. For example, the power source 30 can include a magnetic or inductive charging power source.

The ordering device 20 can be assigned a unique identifier. The unique identifier can uniquely identify the ordering device. The unique identifier can include text, number, alphanumeric characters, strings, symbols, or phrases. The unique identifier can correspond to a predetermined MAC address. The unique identifier can be set by an entity administering the ordering device 20. The ordering device 20 can be configured based on the spark.io framework, such as an Internet of Things framework. The ordering device can be mounted or affixed with self-adhesive or other method onto any type of inventory supply bin, stand, rack, refrigerator or cupboard.

The system 1 can include one or more types of ordering devices, such as ordering device 20, ordering device 24 or ordering device 36. The ordering devices 34 and 36 can include one or more functionality or component of ordering device 20. The ordering devices 20, 34 and 36 may all be the same type of ordering device. Each ordering device can be configured for a different product or different location. The ordering devices 20, 34 and 36 can all be linked to a same account of an entity. For example, the ordering device 34 can include a rectangular, circular, or square LED display 22. The ordering device 34 can include a circular button 24 as the input interface. The ordering device 34 can have a low power consumption display 22 that displays a picture of the single item to be reordered, and a count number of items remaining.

In another example, ordering device 36 can be a postage stamp or smaller sized device that is battery powered and WIFI enabled. The ordering device 36 can include an output interface 22 such as an indicator light 22. The primary feature of the ordering device 36 can be a large (relative to the total size of the ordering device) input interface 22 is a single button. The ordering device 36, due to its minimal components (e.g., lacking a display interface) may have a relatively low power consumption (e.g., relative to ordering device 34 that includes an LED display).

One or more components of system 1 (e.g., data processing system 12, computing device 2, or ordering device 20) can perform the process 40 illustrated by the flow chart in Fig. 2. In brief overview, the process 40 includes a data processing system or computing device configuring the ordering device at step 42. At step 44, the data processing system can receive an

order request from the ordering device. At step 46, the data processing system can map the identifier provided in the order request with a product mapping data structure to generate a search query. At step 48, the data processing system can select an item to purchase from the search results responsive to the search query. At step 50, the data processing system can send or deliver the purchased selected item to an address corresponding to a location provided via the order request.

In further detail, the process 40 includes a data processing system or computing device configuring the ordering device at step 42. The data processing system can configure the ordering device with an identifier, location information, product information, quantity thresholds, or network configuration. A user of a computing device may access data processing system to configure the ordering device. The location information an include a mailing address, a room address within a building, an indication of a location of a cupboard, cabinet, rack, or other storage container or physical storage device configured to store the product corresponding to the identifier.

At step 44, the data processing system can receive an order request from the ordering device. For example, a user of the ordering device can provide an indication (e.g., push a button on the ordering device) to generate the order request. In some cases, the ordering device can automatically keep track of the quantity of items. For example, each time an item is consumed or otherwise removed, the ordering device can decrement a counter. The ordering device can automatically decrement the counter responsive to identifying or determining that the item was consumed or removed. The ordering device can automatically decrement the counter responsive to receiving an indication that the item was consumed or otherwise removed. The ordering device can include one or more sensors configured to monitor or track item inventory, such a load sensor, optical sensor, image sensor, proximity sensor, or motion sensor. The data processing system can receive the order request generated or provided by ordering device via a network. The order request can include one or more of the identifier of the ordering device, item information, quantity information, location information, or account log in information.

At step 46, the data processing system can map the identifier provided in the order request with a product mapping data structure to generate a search query. The data processing system can include a mapping data structure that links, associates, or otherwise relates the identifier of the ordering device to a product, location, or account. The data processing system can use the identifier to perform a lookup in the data structure to identify the product, location or account. The data processing system can further identify a quantity or other profile or account information associated with the identifier that facilitates ordering the item. Using the mapped information, the data processing system can generate a search query. The search query can include search terms, such as keywords, terms or phrases associated with the product data mapped to the identifier. The search query can be generated based on historic reorder information associated with the account, or account profile settings, or configuration information associated with the ordering device (e.g., quantity, price, or type of pens to order). For example, a search query can include “blue ballpoint pens”, “cheap blue ballpoint pens”, “luxury blue ballpoint pens”, “100 blue ballpoint pens”, “retractable blue ballpoint pens”, or “pens model # ABC123”.

At step 48, the data processing system can select an item to purchase from the search results responsive to the search query. In some cases, the data processing system can automatically generate the search query, identify search results, and select a top ranking search

result. The top ranking search results can be ranked highest based on relevancy to the search query, ratings, score, price, delivery time, customer satisfaction, or number of reorders. The rank settings or preferences can be set in the account profile, and used by the data processing system to automatically select the search result. In some cases, the search results can be presented for display via a computing device, and the user of the computing device can manually select the product from the search result to purchase.

At step 50, the data processing system can send or deliver the purchased selected item to an address corresponding to a location provided via the order request. For example, the order request can include location information (e.g., an address or latitude and longitude information). In some cases, the order request may not include location information. The order request may only include an identifier, and the data processing system can use the identifier to perform a lookup to determine the location information and product information. The data processing system can provide the location information at the time of purchase to the online merchant selling the selected product. The online merchant can then mail the product to the corresponding address. In some cases, the account profile information can further include delivery preferences, such as method of delivery (e.g., overnight, 2-day, ground 3-5 business days, no preference, least expensive). In some cases, the ordering device may be configured to receive input regarding ordering the product. For example, the ordering device can receive input regarding the quantity of the product to order or shipment method, and provide this information with the order request.

Thus, systems, methods and apparatus of the present disclose can facilitate ordering products using an ordering device located at or near where the product is stored that can generate an order request for the product.

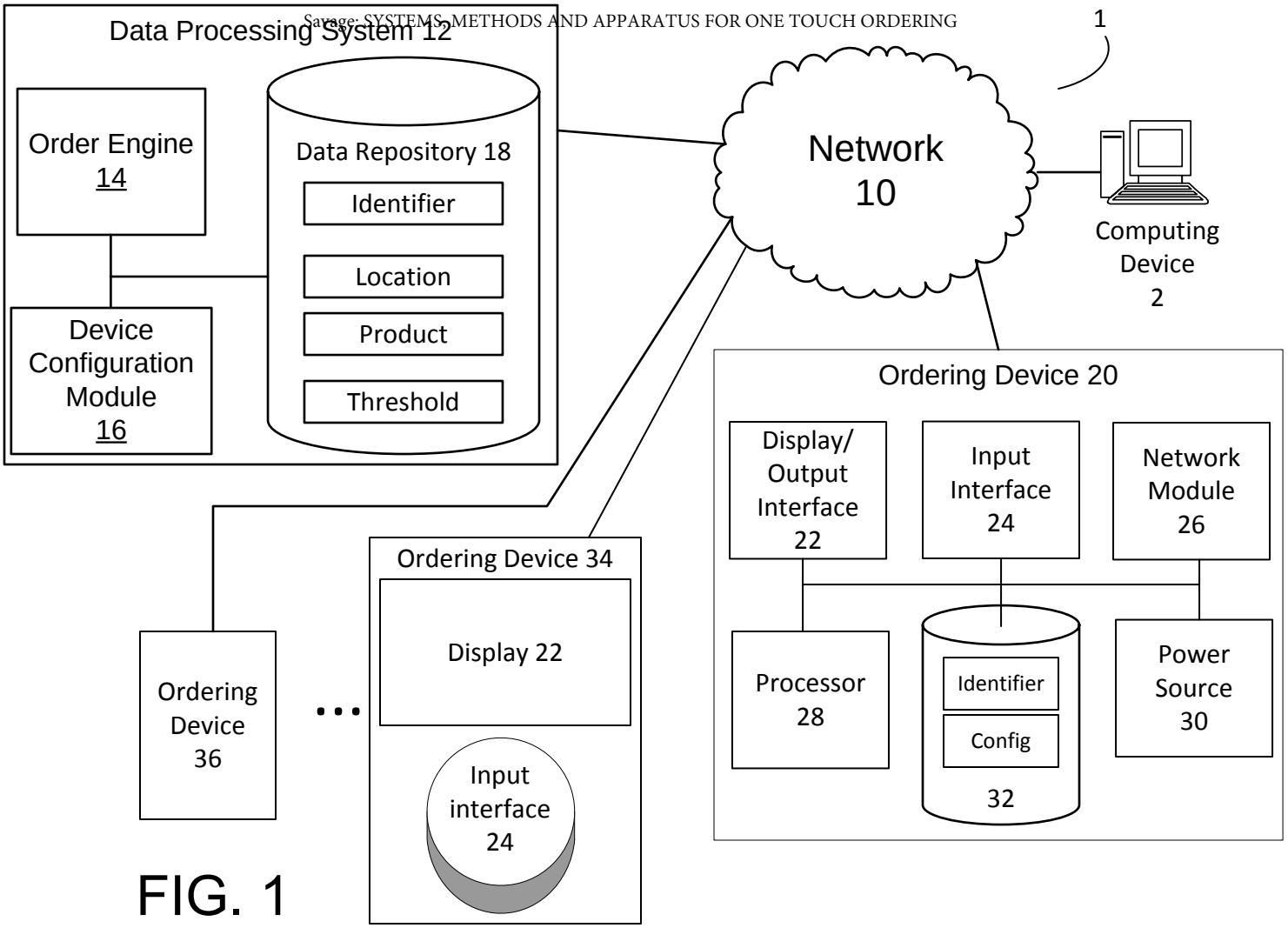
Data Processing System 12
Order Engine 14
Data Repository 18
Identifier
Location
Product
Threshold
Device Configuration Module 16
1
Network 10
Computing Device 2
Ordering Device 20
Display/ Output Interface 22
Input Interface 24
Network Module 26
Processor 28
Identifier
Config
32
Power Source 30
Ordering Device 34
Display 22
Input interface 24
Ordering Device 36

FIG. 1

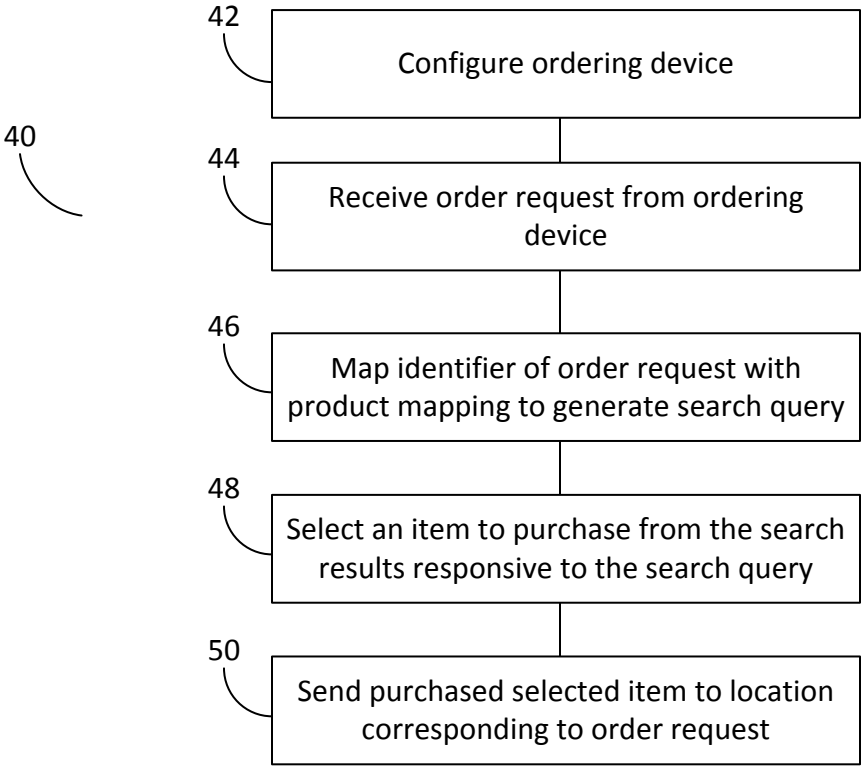
40
42
Configure ordering device
44
Receive order request from ordering device
46
Map identifier of order request with product mapping to generate search query
48
Select an item to purchase from the search results responsive to the search query
50
Send purchased selected item to location corresponding to order request

FIG. 2