CLAIMS

What is claimed is:

1. A computerized system for managing product inventory of a plurality of different entities at ~~one or more of~~ a plurality of facilities comprising ~~one or more~~ storage structures served by robotic handlers, the computerized system comprising:

~~a network interface coupled to a communication network;~~

~~one or more storage devices~~ at least one storage device storing a database containing product ownership information, the product ownership information comprising information necessary for identification of the ~~plurality of~~ different entities; ~~and~~

~~one or more processors coupled to the network interface and the one or more storage devices, the one or more processors configured to execute a plurality of computer program instructions loaded from the one or more storage devices, the plurality of computer program instructions, which when executed by the one or more processors, cause the one or more processors to:~~

~~activate a first subset of the robotic handlers at one of the facilities to physically store a first product of a particular product type into a storage location in a first storage structure;~~

~~before or after activating the first subset of the robotic handlers, update the database to record that the first product is owned by a first entity included among the plurality of different entities identified in the database;~~

~~receive, via the communication network, an order of the particular product type from a second entity included among the plurality of different entities identified in the database; the second entity being different than the first entity;~~

~~update the database to record a transfer of ownership of the first product stored at the storage location in the first storage structure from the first entity to the second entity; and~~

~~activate a second subset of the robotic handlers to retrieve the first product~~

~~from the storage location in the first storage structure for use in fulfilling, the order of the particular product type for the second entity;~~

said computerized inventory management system configured to facilitate a one-to-one (1:1) exchange of storage bins at each of the plurality of facilities and transport vehicles traveling between said plurality of facilities, and thereby enable a continuous and equivalent flow of the storage bins in a forward direction and a reverse direction, such that a forward flow of the storage bins is equivalent to a reverse flow of the storage bins.

2. The computerized system of claim 1, wherein said computerized system includes a processor, said processor communicably coupled to said storage device via a communication network, said processor configured to:

activate a first subset of the robotic handlers at one of the facilities to physically store a first product of a particular product type into a first storage bin located within a first storage structure, said first product being a content of the first storage bin;

assign ownership of said first product to a first entity included among said plurality of different entities identified in said database;

receive, via the communication network, an order for the first product of said particular product type from a second entity included among the plurality of different entities identified in the database;

activate a second subset of the robotic handlers to retrieve the first product from the first storage bin located within the first storage structure to fulfill the first order of said particular product type from the second entity;

update said database to record a transfer of said ownership of said first product from said first entity to said second entity;

activate a third subset of the robotic handlers to physically store a second product of said particular product type into a second storage bin located within a second storage structure, said second storage structure located at a different facility than said first storage structure, and assign ownership of said second product to said second entity, said second product being a content of the second storage bin; and

update said database to record a transfer of said ownership of said second product from said second entity to said first entity, whereby said ownership of said first product and said second product is swapped between said first entity and said second entity;

and wherein the computerized system ~~the one or more processors are configured to~~ update~~s~~ the database to record the transfer of the ownership of the first product ~~at the storage location in the first storage structure~~ from the first entity to the second entity, in response to determining that the second entity has an inventory shortfall of the particular product type and is unable to fulfill the order of the particular product type.

3. The computerized system of claim ~~1~~ 2, wherein the ~~one or more processors are~~ processor is further configured to update the database to record the transfer of the ownership of the first product ~~at the storage location in the first storage structure~~ from the first entity to the second entity, by verifying that the second entity is purchasing the first product from the first entity, said processor further configured to ~~and updating~~ update the database to record the second entity as purchasing the first product from the first entity.

4. The computerized system of claim ~~1~~ 2, wherein the ~~one or more processors are~~ processor is further configured to:

~~activate a third subset of the robotic handlers that is different from the first subset of the robotic handlers and the second subset of the robotic handlers to physically store a second product of the particular product type into a storage location in a second storage structure, the second storage structure being at a different one of the facilities than the first storage structure;~~

~~before or after activating the third subset of the robotic handlers,~~ update the database i~~n the one or more storage devices~~ to record that the second product stored ~~at the storage location~~ in the second storage structure is owned by the second entity; and

activate a fourth subset of the robotic handlers to retrieve the first storage bin from the first storage structure and thereby fulfill the order of the particular product type for the second entity.

~~after receiving the order, update the database to record a transfer of ownership~~

~~of the second product at the storage location in the second storage structure from the second entity to the first entity, whereby the ownership of the first product and the second product is swapped between the first entity and the second entity.~~

5. The computerized system of claim 4 2, wherein:

the ~~one or more processors are~~ database is ~~further~~ configured to enable assignment of multiple vendor IDs to a multi-compartment storage (MCS) bin at a 1:1 ratio to number of individual compartments in the MCS bin, said database further configured to assign the multiple vendor IDs to a non-compartmentalized storage bin, said database further configured to enable reassignment of only a portion of contents of the non-compartmentalized storage bin or the individual compartments of the MCS bin, without segregating reassigned contents into a second non-compartmentalized storage bin or a second compartment within the MCS bin, thereby denoting inventory reassignment on a product basis instead of bin-wide basis or compartment-wide basis;

and wherein the ~~one or more processors are~~ processor is further configured to:

~~when activating the first subset of the robotic handlers to store the first product in the storage location in the first storage structure,~~ activate the first subset of the robotic handlers to physically store the first product in the first storage structure within ~~a~~ the first storage bin;

~~when activating the third subset of the robotic handlers to store the second product in the storage location in the second storage structure,~~ activate the third subset of the robotic handlers to physically store the second product in the second storage structure within ~~a~~ the second storage bin;

after receiving the order, update the database to record a transfer of ownership of the content of the first storage bin from the first entity to the second entity and ownership of the content of the second storage bin from the second entity to the first entity, whereby the ownership of the content of the first storage bin and the ownership of the content of the second storage bin are swapped between the first entity and the second entity. ~~and~~

~~activate a fourth subset of the robotic handlers to retrieve the first storage bin from the first storage structure and thereby fulfill the order of the particular product type for the second entity.~~

6. The computerized system of claim ~~5~~ 2, wherein the ~~one or more processors are~~ processor is further configured to execute the transfer of the ownership of the content of the first storage bin from the first entity to the second entity, and the ownership of the content of the second storage bin from the second entity to the first entity at any time ~~corresponding to the activation of the robotic handlers and~~ after ~~the~~ fulfillment of the order of the particular product type for the second entity.

7. The computerized system of claim ~~5~~ 2, wherein the ~~one or more processors are~~ processor is further configured to:

before receiving the order, ~~and before or after activating the first subset of the robotic handlers,~~ update the database ~~in the one or more storage devices~~ to record that the content of the first storage bin is owned by the first entity; and

before receiving the order, ~~and before or after activating the third subset of the robotic handlers,~~ update the database ~~in the one or more storage devices~~ to record that the content of the second storage bin is owned by the second entity.

8. The computerized system of claim ~~5~~ 2, wherein the ~~one or more processors are~~ processor is further configured to:

query the database to determine whether the content of the first storage bin is equal to the content of the second storage bin; and

after receiving the order, update the database to record swapping of the ownership of the content of the first storage bin and the content of the second storage bin between the first entity and the second entity, ~~being swapped at least partly~~ in response to determining that the content of the first storage bin is equal to the content of the second storage bin;

in response to a determination that the content of the first storage bin and the content of the second storage bin are not equal, perform at least one of the following:

(a) activate a robotic worker at the one of the facilities to equalize the content of the first storage bin relative to the content of the second storage bin;

(b) activate, at the one of the facilities:

(i) a fifth subset of the robotic handlers to deliver the first storage bin to a human-attended workstation; and

(ii) a human-machine interface to instruct a human worker of the human-attended workstation to equalize the content of the first storage bin relative to the content of the second storage bin;

(c) activate a robotic worker at the different facility to equalize the content of the second storage bin relative to the content of the first storage bin; and

(d) activate, at the different facility:

(i) a sixth subset of the robotic handlers to deliver the second storage bin to a human-attended workstation; and

(ii) a human-machine interface of the human-attended workstation to instruct a human worker of the human-attended workstation to equalize the content of the second storage bin relative to the content of the first storage bin.

~~9. The computerized system of claim 5 , wherein the one or more processors are further configured to, in response to a determination that the content of the first storage bin and the content of the second storage bin are not equal, perform at least one of the following:~~

~~(a) activate a robotic worker at the one of the facilities to equalize the content of the first storage bin relative to the content of the second storage bin;~~

~~(b) activate, at the one of the facilities:~~

~~(i) a fifth subset of the robotic handlers to deliver the first storage bin to a human-attended workstation; and~~

~~(ii) a human-machine interface to instruct a human worker of the human-attended workstation to equalize the content of the first storage bin relative to the content of the second storage bin;~~

~~(c) activate a robotic worker at the different one of the facilities to equalize the content of the second storage bin relative to the content of the first storage bin; and~~

~~(d) activate, at the different one of the facilities:~~

~~(i) a sixth subset of the robotic handlers to deliver the second storage bin to a human-attended workstation; and~~

~~(ii) a human-machine interface of the human-attended workstation to instruct a human worker of the human-attended workstation to equalize the content of the first storage bin relative to the content of the second storage bin.~~

~~9~~10. The computerized system of claim ~~4~~ 2, wherein the ~~one or more processors are~~ processor is further configured to activate another subset of the robotic handlers to retrieve the second product from the second storage structure for relocation of the second product to the one of the facilities, after updating the database to record the transfer of the ownership of the second product ~~at the storage location in the second storage structure~~ from the second entity to the first entity.

~~11. The computerized system of claim 4, wherein the first storage structure and the second storage structure are in different cities.~~

~~12~~ 10. The computerized system of claim ~~1~~ 2, wherein the ~~one or more processors are~~ processor is further configured to:

receive a reservation message from the second entity requesting that the particular product type be reserved prior to receiving the order for the particular product type from the second entity;

query the database to confirm that the first product is available for reservation;

reserve the first product for the second entity by recording in the database an indication that the first product is reserved for the second entity after confirming that the first product is available; and

start a reservation period during which the first product is exclusively held for the second entity, such that the first product is unavailable for reservations by other ~~of the different~~ entities;

update the database by reversing the indication that the first product is reserved and making the first product available for reservation by the other of the different entities, when no order corresponding to the first product is received from the second entity within the reservation period.

~~13. The computerized system of claim 12, wherein the one or more processors are further configured to charge a reservation fee to the second entity for reserving the first product.~~

~~14. The computerized system of claim 12, wherein the one or more processors are~~

~~further configured to update the database by reversing the indication that the first product is reserved and making the first product available for reservation by the other of the different entities, when no order corresponding to the first product is received from the second entity within the reservation period.~~

~~15~~ 11. The computerized system of claim ~~1~~ 2, wherein the ~~one or more processors are~~ processor is further configured to:

receive a product availability request for the particular product type from the second entity;

parse the product availability request for ~~one or more~~ requirements associated with the product availability request;

search the database for ~~one or more~~ products that match the ~~one or more~~ requirements associated with the product availability request, and wherein a result from the search at least shows an availability of the first product owned by the first entity; and

to a requestor from which the product availability request was received, send information about the first product.

~~16~~ 12. The computerized system of claim ~~15~~ 11, wherein the ~~one or more processors are~~ processor is further configured to:

restrict the search for the ~~one or more~~ products to only include available products owned by ~~one or more~~ entities identified in a whitelist associated with the second entity;

restrict the search for the products to not include in-stock products owned by the entities identified in a blacklist associated with the second entity;

restrict the search for the products to only include available products with a selling price that is less than or equal to a preferred maximum purchase price defined by the second entity in the product availability request;

restrict the search for the products to only include available products that are within a predetermined radius of a preferred destination defined in the product availability request; and

restrict the search for the products to only include available products that are

deliverable within a preferred delivery timeline specified in the product availability request.

~~17. The computerized system of claim 15, wherein the one or more processors are further configured to restrict the search for the one or more products to not include in-stock products owned by one or more entities identified in a blacklist associated with the second entity.~~

~~18. The computerized system of claim 15, wherein the one or more processors are further configured to restrict the search for the one or more products to only include available products with a selling price that is less than or equal to a preferred maximum purchase price defined by the second entity in the product availability request.~~

~~19. The computerized system of claim 15, wherein the one or more processors are further configured to restrict the search for the one or more products to only include available products that are within a predetermined radius of a preferred destination defined in the product availability request.~~

~~20. The computerized system of claim 15, wherein the one or more processors are further configured to restrict the search for the one or more products to only include available products that are deliverable within a preferred delivery timeline specified in the product availability request.~~

~~21~~ 13. A computer-implemented method for managing product inventory of a plurality of different entities at ~~one or more of~~ a plurality of facilities comprising ~~one or more~~ storage structures served by robotic handlers, the computer-implemented method employing an inventory management system comprising ~~one or more storage devices~~ at least one storage device and ~~one or more processors~~ at least one processor operably coupled to the storage device, ~~one or more storage devices, the one or more processors configured to execute computer program instructions defined for performing~~ the method comprising:

storing, in the storage device, a database containing product ownership information ~~by the one or more storage devices~~, the product ownership information comprising information necessary for identification of the ~~plurality of~~ different entities;

~~activating a first subset of the robotic handlers at one of the facilities by the~~

~~inventory management system to physically store a first product of a particular product type into a storage location in a first storage structure;~~

~~before or after activating the first subset of the robotic handlers, updating the database, by the inventory management system, to record that the first product is owned by a first entity included among the plurality of different entities identified in the database;~~

~~receiving, by the inventory management system via a communication network, an order of the particular product type from a second entity included among the plurality of different entities identified in the database, the second entity being different than the first entity;~~

~~updating the database, by the inventory management system, to record a transfer of ownership of the first product stored at the storage location in the first storage structure from the first entity to the second entity; and~~

~~activating a second subset of the robotic handlers, by the inventory management system, to retrieve the first product from the storage location in the first storage structure, for use in fulfilling the order of the particular product type for the second entity.~~

facilitating, by said inventory management system, a one-to-one (1:1) exchange of storage bins at each of the plurality of facilities and transport vehicles traveling between said plurality of facilities, thereby enabling a continuous and equivalent flow of the storage bins in a forward direction and a reverse direction through the inventory management system, such that a forward flow of the storage bins through the inventory management system is equivalent to a reverse flow of the storage bins through the inventory management system.

~~22~~ 14. The computer-implemented method of claim ~~21~~ 13, wherein the method includes the following steps:

activating, by said inventory management system, a first subset of the robotic handlers at one of the facilities to physically store a first product of a particular product type into a first storage bin located in a first storage structure, said first product being a content of the first storage bin;

responsive to activating the first subset of the robotic handlers, updating the database, by the inventory management system, to record that the first product is owned by a first entity included among the plurality of different entities identified in the database;

receiving, by the inventory management system via a communication network, an order of the particular product type from a second entity included among the plurality of different entities identified in the database, the second entity being different than the first entity;

updating the database, by the inventory management system, to record a transfer of ownership of the first product stored at the first storage bin located in the first storage structure from the first entity to the second entity;

activating a second subset of the robotic handlers, by the inventory management system, to retrieve the first product from the first storage bin located in the first storage structure, for use in fulfilling the first order of the particular product type for the second entity;

activating, by said inventory management system, a third subset of said robotic handlers to physically store a second product of said particular product type into a second storage bin located within a second storage structure, said second storage structure located at a different facility than the first storage structure, and wherein ownership of said second product is assigned, by said inventory management system, to said second entity, said second product being a content of the second storage bin; and

updating said database, by said inventory management system, to record a transfer of said ownership of said second product from said second entity to said first entity, whereby said ownership of said first product and said second product is swapped between said first entity and said second entity;

updating, by the inventory management system, ~~of~~ the database to record the transfer of the ownership of the first product ~~at the storage location in the first storage structure~~ from the first entity to the second entity ~~is performed by the inventory management system~~, in response to determining that the second entity has an inventory shortfall of the particular product type and is unable to fulfill the order of the particular product type.

~~23~~ 15. The computer-implemented method of claim ~~21~~ 14, wherein the updating of the database to record the transfer of the ownership of the first product ~~at the storage location in the first storage structure~~ from the first entity to the second entity is performed by the inventory management system by verifying that the second entity is purchasing the first product from the first entity and by updating the database to record the second entity as purchasing the first product from the first entity.

~~24~~ 16. The computer-implemented method of claim ~~21~~ 13, further comprising the following steps:

configuring said database to enable assignment of multiple vendor IDs to a multi-compartment storage (MCS) bin at a 1:1 ratio to number of individual compartments in the MCS bin, and configuring said database to assign the multiple vendor IDs to a non-compartmentalized storage bin; and

configuring said database to enable reassignment of only a portion of contents of the non-compartmentalized storage bin or the individual compartments of the MCS bin, without segregating reassigned contents into a second non-compartmentalized storage bin or a second compartment within the MCS bin, thereby denoting inventory reassignment on a product basis instead of bin-wide basis or compartment-wide basis.

~~activating a third subset of the robotic handlers that is different from the first subset of the robotic handlers and the second subset of the robotic handlers by the inventory management system to physically store a second product of the particular product type into a storage location in a second storage structure, the second storage structure being at a different one of the facilities than the first storage structure;~~

~~before or after activating the third subset of the robotic handlers, updating the database in the one or more storage devices by the inventory management system to record that the second product stored at the storage location in the second storage structure is owned by the second entity; and~~

~~after receiving the order, updating the database by the inventory management system to record a transfer of ownership of the second product at the storage location in the second storage structure from the second entity to the first entity, whereby the ownership of the first product and the second product is swapped~~

between the first entity and the second entity.

25 17. The computer-implemented method of claim 24 14, further comprising the following steps:

when activating the first subset of the robotic handlers to store the first product in the storage location in the first storage structure, activating the first subset of the robotic handlers by the inventory management system to physically store the first product in the first storage structure within a the first storage bin;

when activating the third subset of the robotic handlers to store the second product in the storage location in the second storage structure, activating the third subset of the robotic handlers by the inventory management system to physically store the second product in the second storage structure within a the second storage bin;

after receiving the order, updating the database to record a transfer of ownership of the content of the first storage bin from the first entity to the second entity and ownership of the content of the second storage bin from the second entity to the first entity, whereby the ownership of the content of the first storage bin and the ownership of the content of the second storage bin are swapped between the first entity and the second entity; and

activating a fourth subset of the robotic handlers, by the inventory management system, to retrieve the first storage bin from the first storage structure and thereby fulfill the order of the particular product type for the second entity.

26. The computer-implemented method of claim 25, wherein:

the transfer of the ownership of the content of the first storage bin from the first entity to the second entity and the ownership of the content of the second storage bin from the second entity to the first entity is executed by the inventory management system at any time corresponding to the activation of the robotic handlers and the fulfillment of the order of the particular product type for the second entity.

27 18. The computer-implemented method of claim 25 14, further comprising:

before receiving the order, and before or after activating the first subset of the robotic handlers, updating the database in the one or more storage devices

storage device, by the inventory management system, to record that the content of the first storage bin is owned by the first entity; and

before receiving the order, ~~and before or after activating the third subset of the robotic handlers,~~ updating the database in the ~~one or more storage devices~~ storage device, by the inventory management system, to record that the content of the second storage bin is owned by the second entity.

~~28~~ 19. The computer-implemented method of claim ~~25~~ 14, further comprising:

querying the database, by the inventory management system, to determine whether the content of the first storage bin is equal to the content of the second storage bin; and

after receiving the order, updating the database, by the inventory management system, to record the ownership of the content of the first storage bin and the second storage bin as being swapped between the first entity and the second entity, ~~at least partly~~ in response to determining that the content of the first storage bin is equal to the content of the second storage bin;

in response to a determination that the content of the first storage bin and the content of the second storage bin are not equal, performing at least one of the following:

(a) activating a robotic worker at the one of the facilities, by the inventory management system, to equalize the content of the first storage bin relative to the content of the second storage bin;

(b) activating, by the inventory management system, at the one of the facilities:

(i) a fifth subset of the robotic handlers to deliver the first storage bin to a human-attended workstation; and

(ii) a human-machine interface to instruct a human worker of the human-attended workstation to equalize the content of the first storage bin relative to the content of the second storage bin;

(c) activating a robotic worker at the different facility, by the inventory management system, to equalize the content of the second storage bin relative to the content of the first storage bin; and

(d) activating, by the inventory management system, at the different facility:

(i) a sixth subset of the robotic handlers to deliver the second storage bin to a human-attended workstation; and

(ii) a human-machine interface of the human-attended workstation to instruct a human worker of the human-attended workstation to equalize the content of the second storage bin relative to the content of the first storage bin.

~~29. The computer-implemented method of claim 25, further comprising, in response to a determination that the content of the first storage bin and the content of the second storage bin are not equal, performing at least one of the following:~~

~~(a) activating a robotic worker at the one of the facilities, by the inventory management system, to equalize the content of the first storage bin relative to the content of the second storage bin;~~

~~(b) activating, by the inventory management system, at the one of the facilities:~~

~~(i) a fifth subset of the robotic handlers to deliver the first storage bin to a human-attended workstation; and~~

~~(ii) a human-machine interface to instruct a human worker of the human-attended workstation to equalize the content of the first storage bin relative to the content of the second storage bin;~~

~~(c) activating a robotic worker at the different one of the facilities, by the inventory management system, to equalize the content of the second storage bin relative to the content of the first storage bin; and~~

~~(d) activating, by the inventory management system, at the different one of the facilities:~~

~~(i) a sixth subset of the robotic handlers to deliver the second storage bin to a human-attended workstation; and~~

~~(ii) a human-machine interface of the human-attended workstation to instruct a human worker of the human-attended workstation to equalize the content of the first storage bin relative to the content of the second storage bin.~~

~~26~~ 20. The computer-implemented method of claim ~~24~~ 14, further comprising activating another subset of the robotic handlers, by the inventory management system, to retrieve the second product from the second storage structure for relocation of the second product to the one of the facilities after updating the database to record the transfer of the ownership of the second product ~~at the storage location in the second storage structure~~ from the second entity to the first entity.

~~31. The computer-implemented method of claim 24, wherein the first storage structure and the second storage structure are in different cities.~~

~~32~~ 21. The computer-implemented method of claim ~~21~~ 14, further comprising:

receiving a reservation message from the second entity, by the inventory management system, requesting that the particular product type be reserved, prior to receiving the order for the particular product type from the second entity;

querying the database, by the inventory management system, to confirm that the first product is available for reservation;

reserving the first product for the second entity by the inventory management system, by recording in the database an indication that the first product is reserved for the second entity after confirming that the first product is available; and

starting a reservation period by the inventory management system during which the first product is exclusively held for the second entity, such that the first product is unavailable for reservations by other ~~of the~~ different entities; and

updating the database, by the inventory management system, by reversing the indication that the first product is reserved, and making the first product available for reservation by the other of the different entities, when no order corresponding to the first product is received from the second entity within the reservation period.

~~33. The computer-implemented method of claim 32, further comprising charging a reservation fee to the second entity, by the inventory management system, for reserving the first product.~~

~~34. The computer-implemented method of claim 32, further comprising updating the~~

~~database, by the inventory management system, by reversing the indication that the first product is reserved, and making the first product available for reservation by the other of the different entities, when no order corresponding to the first product is received from the second entity within the reservation period.~~

~~35~~ 22. The computer-implemented method of claim ~~21~~ 14, further comprising:

receiving a product availability request, by the inventory management system, for the particular product type from the second entity;

parsing the product availability request, by the inventory management system, for ~~one or more~~ requirements associated with the product availability request;

searching the database, by the inventory management system, for ~~one or more~~ products that match the ~~one or more~~ requirements associated with the product availability request, wherein a result from the search at least shows an availability of the first product owned by the first entity; and

to a requestor from which the product availability request was received, sending information about the first product, by the inventory management system.

~~36~~ 23. The computer-implemented method of claim ~~35~~ 22, further comprising:

restricting the search, by the inventory management system, for the ~~one or more~~ products to only include available products owned by ~~one or more~~ entities identified in a whitelist associated with the second entity;

restricting the search, by the inventory management system, for the products to not include in-stock products owned by the entities identified in a blacklist associated with the second entity;

restricting the search, by the inventory management system, for the products to only include available products with a selling price that is less than or equal to a preferred maximum purchase price defined by the second entity in the product availability request;

restricting the search, by the inventory management system, for the products to only include available products that are within a predetermined radius of a preferred destination defined in the product availability request; and

restricting the search, by the inventory management system, for the one or

more products to only include available products that are deliverable within a preferred delivery timeline specified in the product availability request.

~~37. The computer-implemented method of claim 35, further comprising restricting the search, by the inventory management system, for the one or more products to not include in-stock products owned by one or more entities identified in a blacklist associated with the second entity.~~

~~38. The computer-implemented method of claim 35, further comprising restricting the search, by the inventory management system, for the one or more products to only include available products with a selling price that is less than or equal to a preferred maximum purchase price defined by the second entity in the product availability request.~~

~~39. The computer-implemented method of claim 35, further comprising restricting the search, by the inventory management system, for the one or more products to only include available products that are within a predetermined radius of a preferred destination defined in the product availability request.~~

~~40. The computer-implemented method of claim 35, further comprising restricting the search, by the inventory management system, for the one or more products to only include available products that are deliverable within a preferred delivery timeline specified in the product availability request.~~

~~41~~ 24. A non-transitory, computer-readable storage medium having embodied thereon, computer program instructions executable by ~~one or more processors~~ at least one processor for managing product inventory of ~~a plurality of~~ different entities at ~~one or more of~~ a plurality of facilities comprising ~~one or more~~ storage structures served by robotic handlers, the computer program instructions, when executed by the ~~at least one~~ processor, cause the ~~at least one~~ processor to:

store, in a storage device, a database containing product ownership information ~~in one or more storage devices~~, the product ownership information comprising information necessary for identification of the ~~plurality of~~ different entities;

facilitate a one-to-one (1:1) exchange of storage bins at each of the plurality of facilities and transport vehicles traveling between said plurality of facilities, and thereby enable a continuous and equivalent flow of the storage bins in a forward direction and a reverse direction, such that a forward flow of the storage bins is

equivalent to a reverse flow of the storage bins.

~~activate a first subset of the robotic handlers at one of the facilities to physically store a first product of a particular product type into a storage location in a first storage structure;~~

~~before or after activating the first subset of the robotic handlers, update the database to record that the first product is owned by a first entity included among the plurality of different entities identified in the database;~~

~~receive, via the communication network, an order of the particular product type from a second entity included among the plurality of different entities identified in the database, the second entity being different than the first entity;~~

~~update the database to record a transfer of ownership of the first product stored at the storage location in the first storage structure, from the first entity to the second entity; and~~

~~activate a second subset of the robotic handlers to retrieve the first product from the storage location in the first storage structure for use in fulfilling the order of the particular product type for the second entity.~~

~~42. The non-transitory, computer-readable storage medium of claim 41, wherein the one or more processors are configured to update the database to record the transfer of the ownership of the first product at the storage location in the first storage structure from the first entity to the second entity, in response to determining that the second entity has an inventory shortfall of the particular product type and is unable to fulfill the order of the particular product type.~~