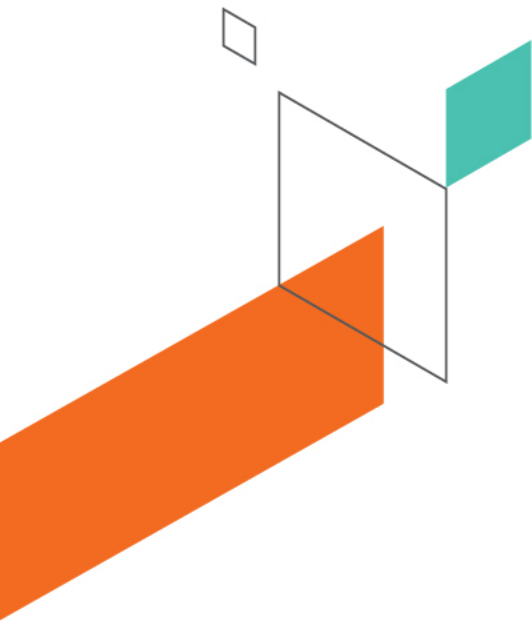


The background of the image is a solid orange color with a white geometric pattern of interlocking cubes or hexagons. A diagonal white line runs from the bottom left towards the top right, separating the patterned area from a plain white area.

MagentoLive

UK | 2017



Multi-Source Inventory



Igor Miniailo

Magento Architect, Multi Source Inventory
Community Engineering Team

Eugene Tulika

Magento Architect,
Community Engineering Team

Omnichannel

TRADITIONAL

The good, old-fashioned bricks and mortar store



E-COMMERCE

Online shopping has skyrocketed in recent years



MULTICHANNEL

Various, disconnected channels for customers to use independently



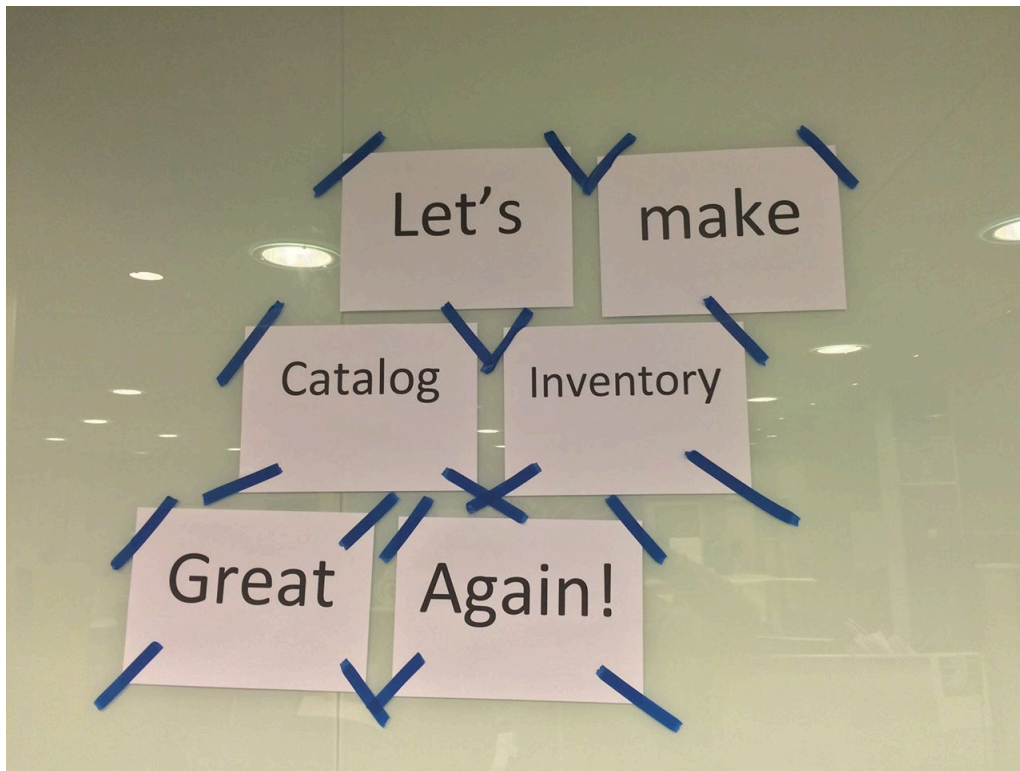
OMNICHANNEL

An integrated, seamless experience across multiple devices and touchpoints



Source: <https://www.sparkpay.com/blog/What-is-omni-channel-retail>

It's impossible to build Omnichannel without Global Inventory



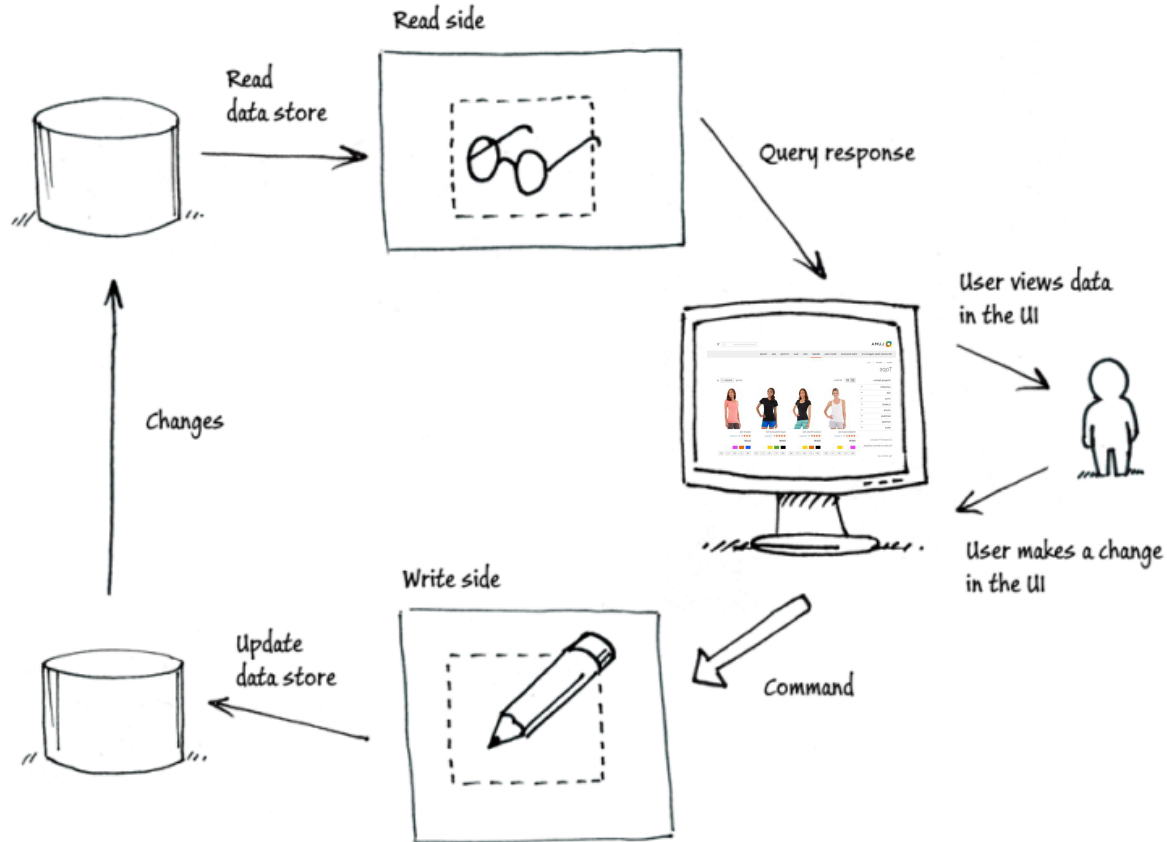


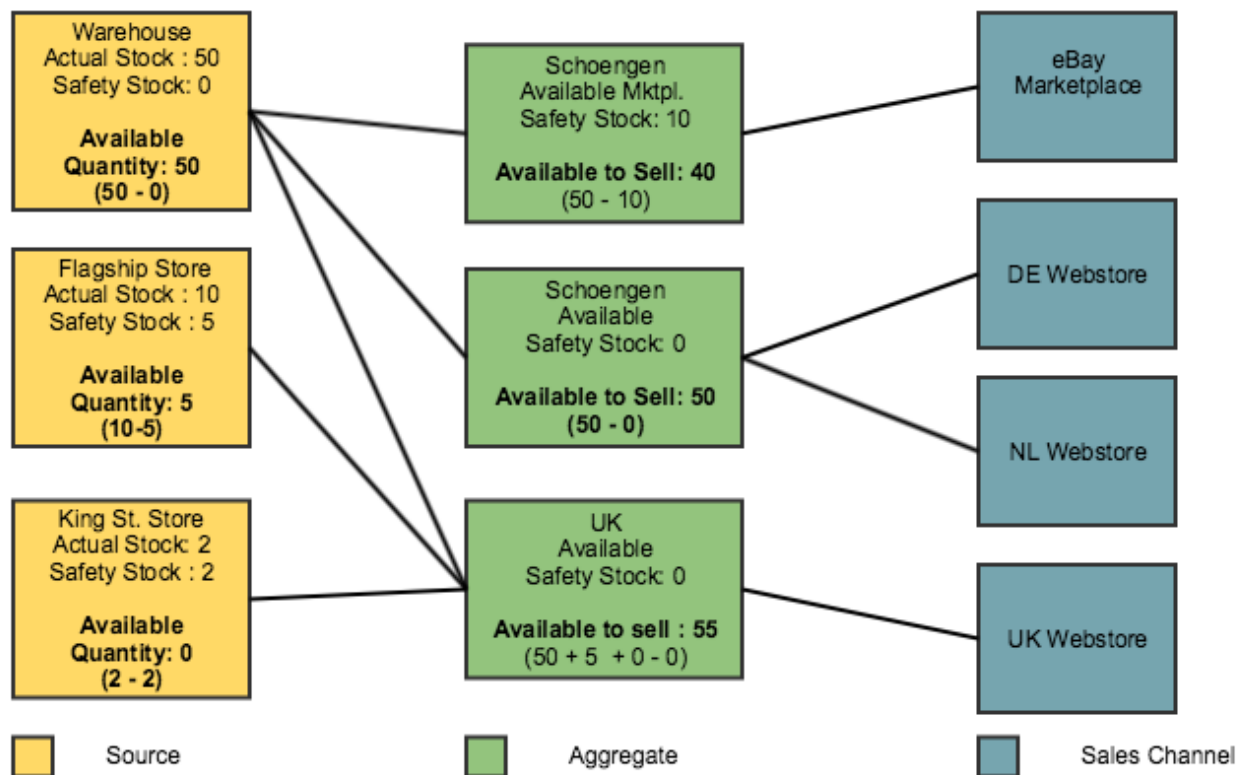
Split the inventory between the sources within one Magento installation.

One Magento Installation

Inventory Architecture

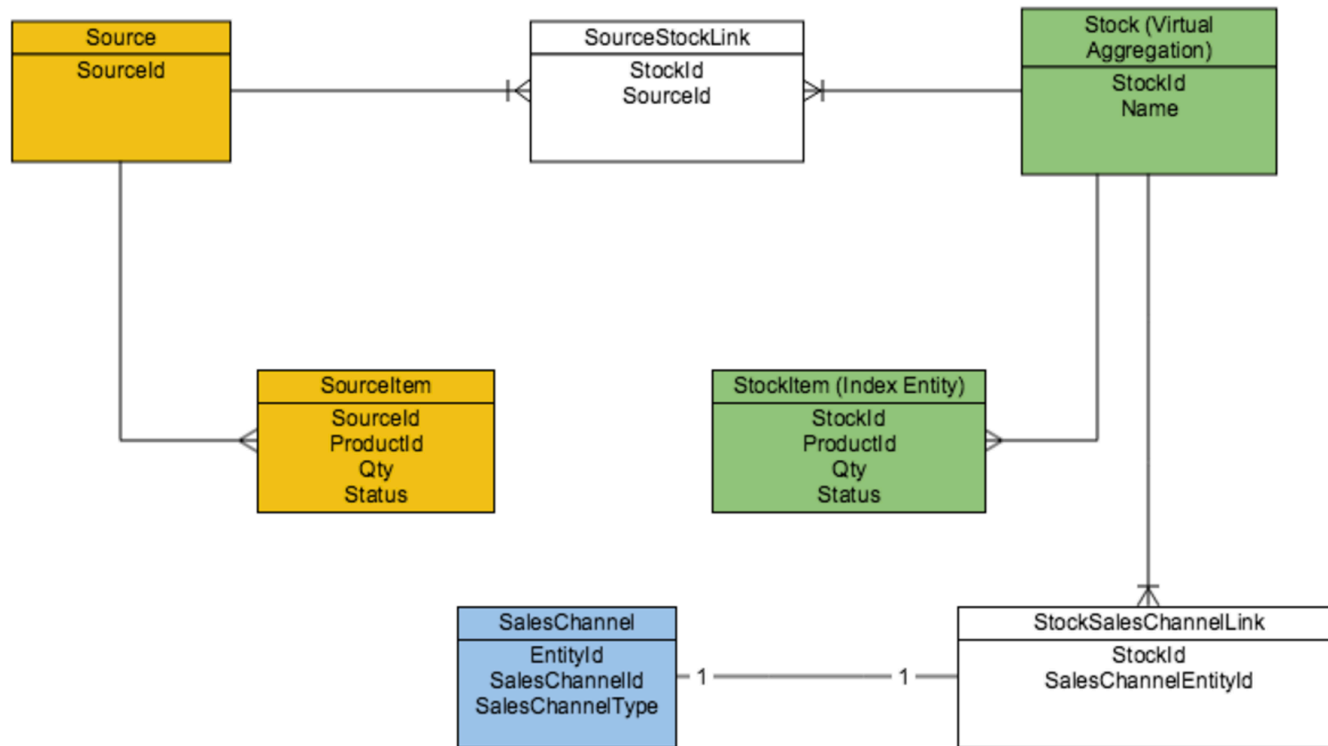
Command/Query Responsibility Segregation (CQRS)





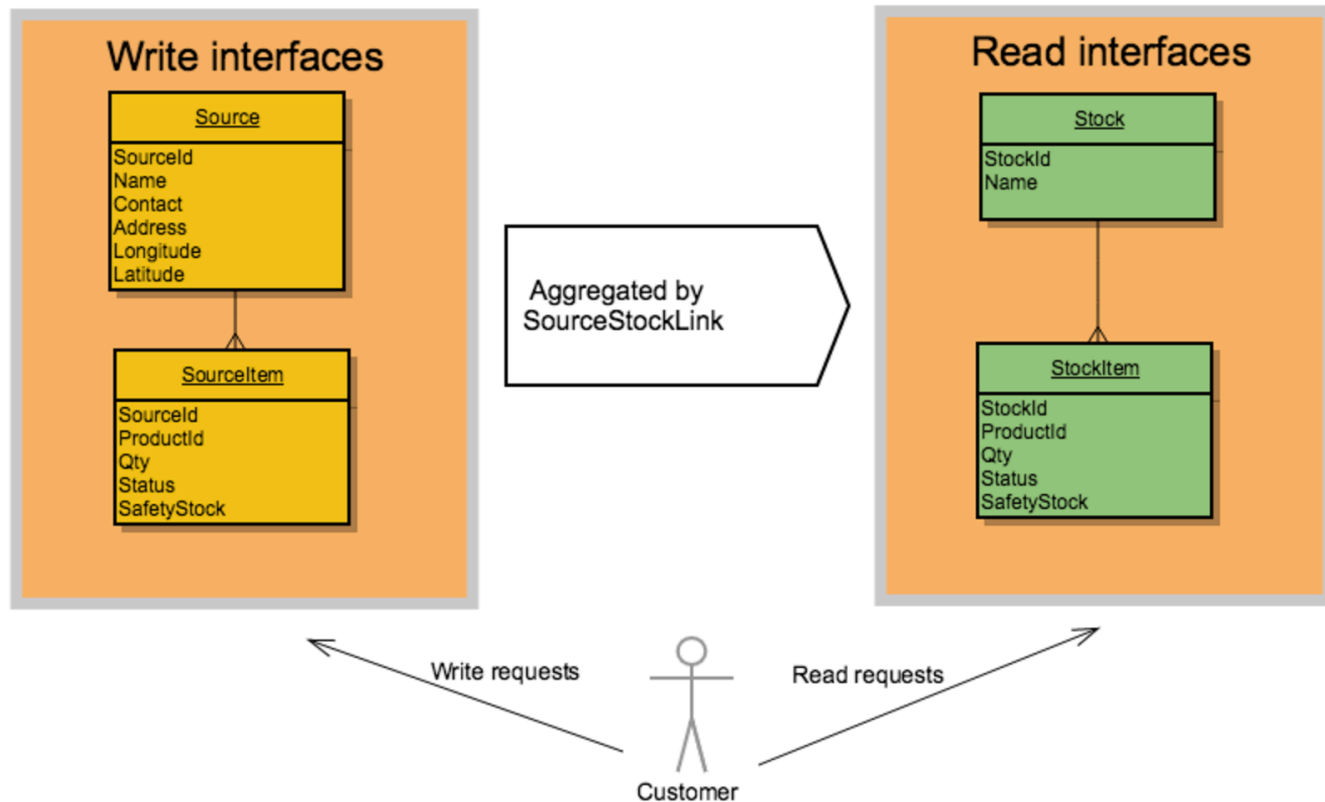


Source » Stock » Sales Channels relation



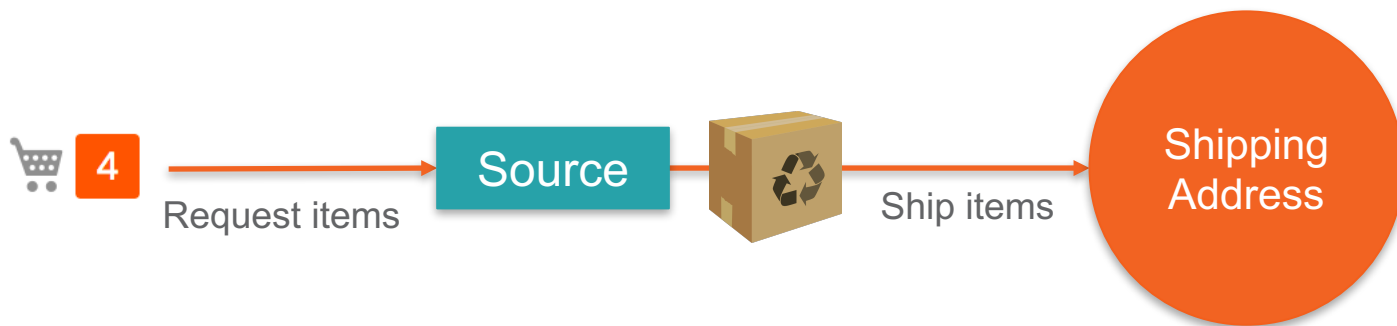


Inventory - CQRS

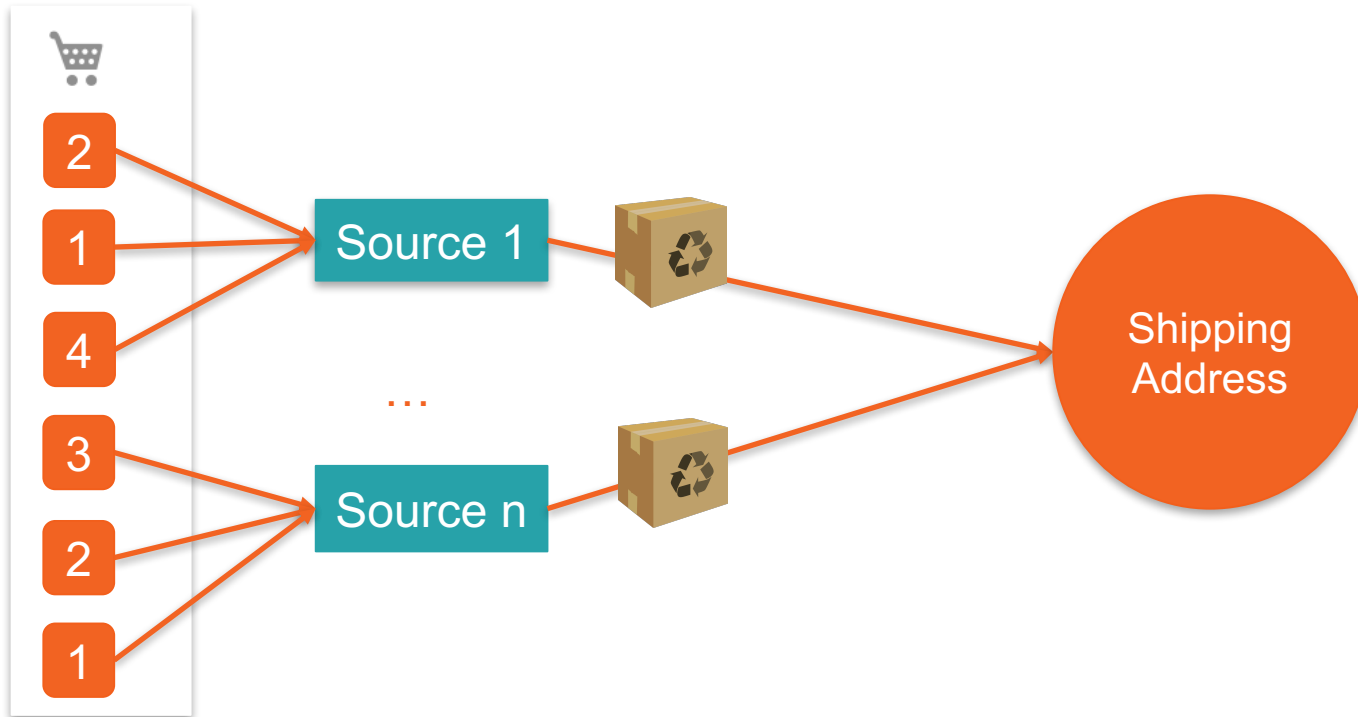


Inventory Source Selection During Checkout

Single Inventory Source Checkout



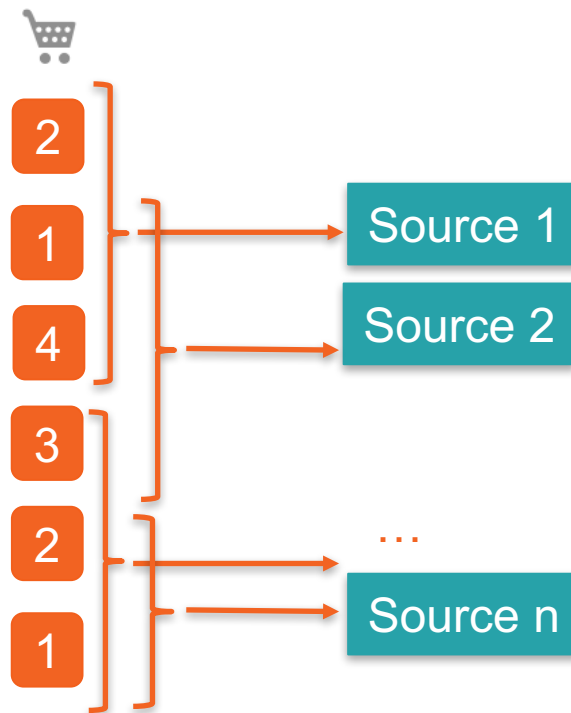
Multiple Inventory Sources Checkout





Selection of Inventory Sources

- Match products to the Inventory Sources in the optimal way
- Extensible and customizable
 - Different strategies possible for optimization



Possible Strategies

First by Priority

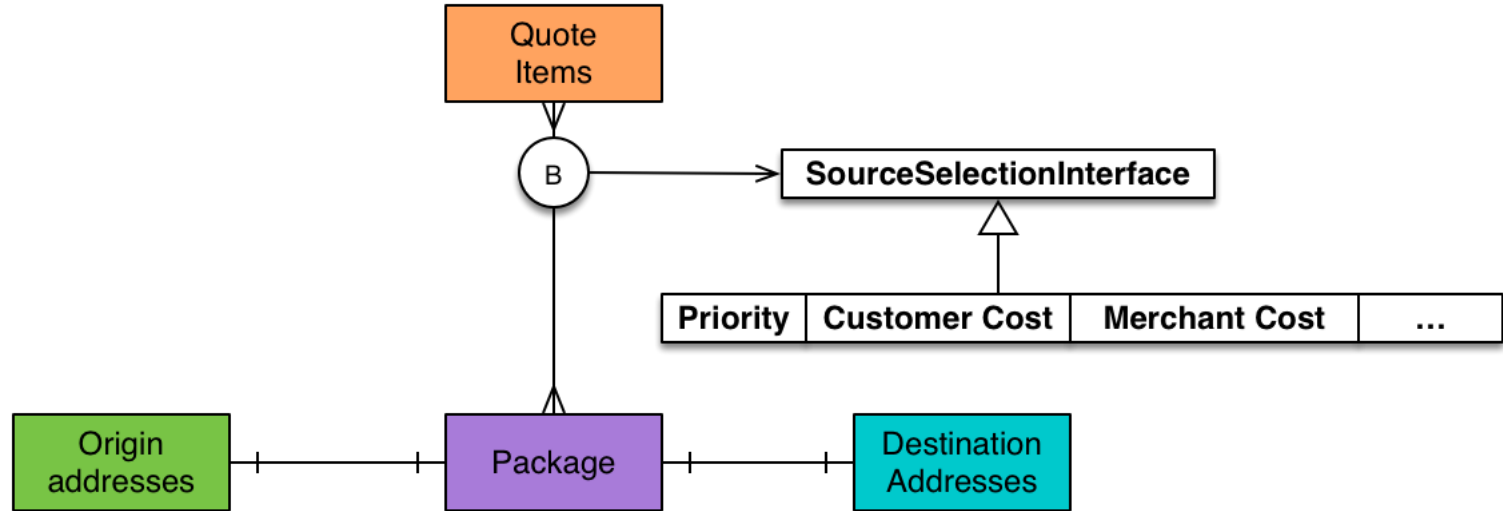
Cheapest

Warehouse Utilization

etc

- Use first Inventory Source which has **enough inventory** to ship all order items
- Use Inventory Source which is **cheapest** way for the customer and/or for the merchant
- Use Inventory Source which will **balance the load** between sources, improve **warehouse utilization**
- etc

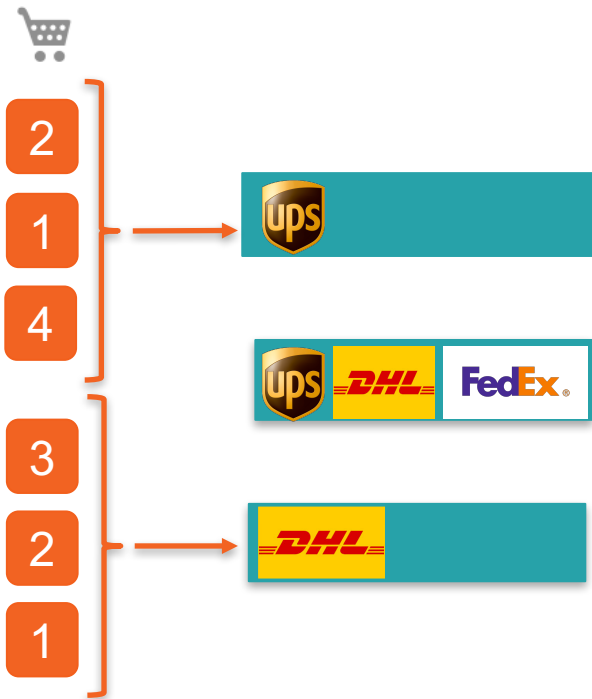
Inventory Source Selection Interfaces





Shipping Rate Calculations

- Every source linked to the carriers.
- Shipping Method available on checkout are determined based on the source carriers
- If there are more than one shipping method needed to ship all items, the price of the shipping is a **sum of all shipping methods**
- It is possible to use with the flat rate shipment



Order Fulfillment With Multiple Sources

Payment & Shipping Method

Payment Information

Check / Money order

The order was placed using USD.

Shipping & Handling Information

United Parcel Service - Ground \$15.00

FedEx - Ground \$10.00

Items Ordered

Product	Item Status	Original Price	Price	Qty	Subtotal	Tax Amount	Tax Percent
Chaz Kangeroo Hoodie	Ordered	\$52.00	\$52.00	Ordered 10	\$52.00	\$0.00	0%

Building Feature With the Community



Community Collaboration

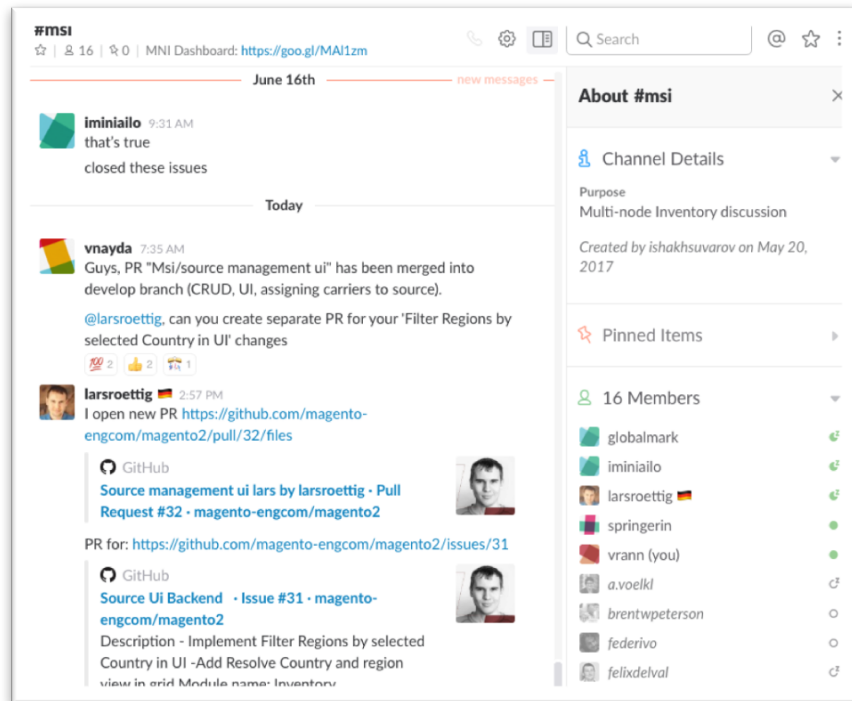
Kanban board and Wiki are on the GitHub

The screenshot shows the GitHub repository page for `magento-engcom/magento2`. The `Projects` tab is selected, displaying a Kanban board for the `Multi-Source Inventory (MSI)` project. The board is divided into three columns: `Backlog`, `Ready for Development`, and `Development In Progress`. Each column contains several cards representing tasks, such as `Implement Delivery Cost Configuration`, `Create Interface for the Source Selection Algorithms`, and `Source Management UI`. Each card includes a title, a description, and a link to the source selection algorithm.

The screenshot shows the GitHub repository page for `magento-engcom/magento2`, specifically the `Wiki` tab. The page is titled `Technical Vision. Catalog Inventory` and is edited by `Ievgen Shakhshuravov`. The page content discusses the release of `Multi Location Inventory` as a part of the `Magento Community Edition`, not as a part of the `Enterprise edition`. It also mentions that `MSI` should be an evolution of the `CatalogInventory` module and interfaces we have there. The page includes a section for `MSI Documentation` with a list of technical designs, such as `Inconsistent saving of Stock Data`, `Source API`, `Source WebAPI`, and `Sources to Sales Channels mapping`.

Slack to Exchange ideas

Write a note to engcom@magento.com to join **#msi** slack channel



Decomposing Stories, guiding Developers

Community Engineering Architects

- Decomposing the large feature into small stories
 - Investigation of the needed APIs
 - Documentation on the integration points and needed refactoring
 - Clarification of the requirements with PO and architecture council
 - Continuous work with the team on tasks and stories
- Guiding Developers:
 - Onboarding on the project
 - Continuous discussions in the slack and web conferences
 - Weekly meetings
 - Status updates

Participating in Community Project

Get engaged: engcom@magento.com

- Fun work with the core platform team
- Feature requested by number of clients
- Different tasks:
 - some are small enough to do in couple days
 - some are big enough to be significant feature by itself
- Footprint in the Magento Core

#MLUK17 Contribution Day

2 pull requests with the new features for MSI

 @davidselo

 davidselo




David Selo

 @anna_styczen

 astyczen



Anna Styczen

 @kieronmthomas

 kieronthomas



Kieron Thomas

 @jonfres

 jonfres



Jose Antonio de
la Cruz



MAGENTO
CONTRIBUTOR



Challenges

- Build CQRS architecture which will segregate Virtual Stocks from Physical ones.
- Efficient Source Selection Algorithms. Algorithm which assigns the particular inventory to the order item. “Minimal Delivery Cost” should not impact checkout performance drastically.
- Performance. Sync vs Async
 - Algorithm
 - Synchronization with PIM and ERP
- Magento as a global inventory control system. Reservation API.

Thanks y'all!

Community Engineering Team:

Igor Miniailo

@iminyaylo 

iminiailo@magento.com

Eugene Tulika

@vrann 

etulika@magento.com

The background of the image is a solid orange color with a white geometric pattern of interlocking cubes or hexagons. A diagonal white line runs from the bottom left towards the top right, separating the patterned area from a plain white area.

MagentoLive

UK | 2017