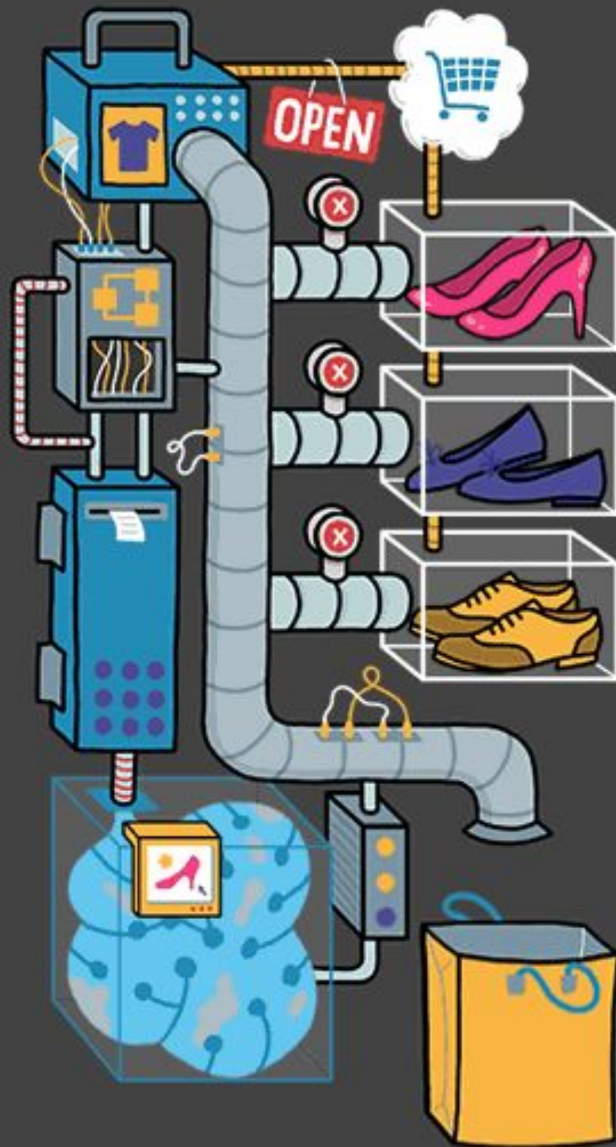




**SKUmatic
DESIGN SPECIFICATIONS
HCDE 518 A
12.10.2018**



	2
Project Overview	4
Background & Problem Statement	4
Design Question	4
Audience for this Document	4
Project Scope	4
In Scope	4
Out of Scope	5
Research	5
Research Approach	5
Methods & Justification	5
Participants	6
Research Findings	6
Pain Points	6
User Worries / Current Barriers	6
Wish List	6
Trends	7
Design Solution	7
Overview	7
Design Decisions	7
Platform	7
Key Task Flows	8
User Process Flow	9
Site Map	10
UI Explanation	11
Annotated Visuals	12
Global Menu	12
Ordered Tab	12
Ordered Tab (After Down Arrow Clicked)	14
Shipped Tab	15
Shipped Tab (After Down Arrow Clicked)	16
Receiving Tab	16
On Shelf Tab	17
On Hold Tab	18
Customer Hold Details	19
Receiving Flow	20
Step 1/3	20
Step 2/3	21

	3
Step 2/3 - Book Problem Dialog	21
Contact Vendor Form	22
Contact Vendor- Success	23
Step 3/3	23
Print Dialog	24
Labels Printing Screen	25
Receiving Flow Confirmation Screen	25

Project Overview

Background & Problem Statement

Having inventory kept up-to-date is crucial for the success of a retail business. However, businesses must juggle many variables – customer holds, damages, and items used for display purposes – that make tracking inventory difficult to manage. The current market contains several tools promising to deliver inventory management solutions, however such tools are costly and contain a feature-set with a steep learning curve.

Our solution aims to provide a low barrier to entry with a pared-down feature set that focuses on delivering value quickly so retailers can take control of their inventories. Our goal is to improve the users' inventory management experience so that they can focus their time and efforts on customer interactions and growing their business.

Design Question

This design question which our solution aims to address is:

“How might we help niche retailers reduce the tedium and manual labor involved in managing the item life cycle so that they can focus on 1:1 customer interactions to grow their business?”

Audience for this Document

The intended audience for this document is developers that are implementing our inventory management solution. This dev team likely would be interested in building a stand alone proprietary inventory system with an eye to link with existing large retail, shipping and inventory management tools that are not able to operate at this level of detail. Since this tool is built on the needs of small retail users, the developers could also consider how this tool could be absorbed into larger existing systems.

Project Scope

In Scope

For the SKUmatic Inventory Management Application, the project scope was to build a simple tablet based tool for small retail bookstores that could easily scale to 5-10 stores and eventually to other retail sectors. The following interactions are included in this iteration application:

- View the status of all items in the following states
 - Ordered: Orders for which a purchase order has been submitted to the vendor
 - Shipped: Orders that have been shipped from the vendor

- Receiving: Orders that have had a shipment received by the store and are ready to go through the receiving process
- On Shelf: Orders/Items that are on the shelf
- On Hold: Items that are on hold for a customer
- View details of items in each state (PO#, Vendor, order type, Title, Author, Date Receiving, Copies available, price, customer hold)
- Execute the receiving process
- Notifications when items are ready to be processed
- Modify a customer hold to add a reminder

Out of Scope

Integrating multiple hardware solutions like cameras, smart bookmarks, smart clipboards were considered but were deemed out of scope. Additionally, interactions initially considered but scoped-out was ability to scale to clothing retailing where the product styles, color and size variations created another scale of complexity. The following items are out of scope for this iteration:

- Registration
- Login/Log Out
- Create or edit orders
- Delete Orders or items
- View more details of orders than what is displayed on each tab
- Create or modify a customer hold
- Search for an item
- Manually move orders/items to different states

Research

Research Approach

Methods & Justification

We conducted both contextual inquiry and 1:1 semi-structured interviews.

Contextual Inquiry: We chose contextual inquiry so that we could see the physical artifacts of inventory management, shadow the actual processes, and experience the environment and context of these processes. Location-based materials and other environmental factors are very important for inventory management, so the opportunity to visit the site was important for our research.

1:1 semi-structured interviews: The weakness of contextual inquiry is that it limits our ability to probe on motivations for tasks, stakeholder values, and other activities which we are not present for. For that reason, we complimented our contextual inquiry with 1:1 semi-structured

interviews. These interviews could be scheduled more flexibly to accommodate our participants in this constrained time frame. Additionally, interviews enabled us to ask targeted, open-ended questions, and to extract valuable findings to enrich our understanding of our users and the domain space.

Participants

We included multiple different types of stakeholders over the course of our research. Our participants had varying levels of experience in independent retail. They represented different sectors of retail, including clothing, outdoor gear, bikes, books, and wine. Our participants included:

- Jane, owner, Bookstore
- Jay, sales floor staff, Cycling speciality store
- Josh, retail manager, Bookstore
- Kay, tasting room staff, Winery
- Ramona, owner, StudioRA Boutique
- Tina, store manager, Eileen Fisher
- Jon, bike buyer, evo

Research Findings

Pain Points

- Reliance on manual data entry
- Reordering stock is major pain due to strategy involved (do we phase out a certain item once it's sold, is surge purchasing a passing trend?) and manual process of receiving restocking once arrived.
- Items are shipped in multiple boxes, making it difficult to "receive" shipments all in one go.
- Multiple doc types are generated between systems and do not "talk" to each other
- Diversity of inventory item types = difficult to create a taxonomy that works for all item attributes
- Different vendors provide different UPC codes, making it difficult to unify
- Knowing the dollar value of inventory is important for financial bookkeeping, restocking and growth

User Worries / Current Barriers

- Worried about human error rendering the inventory tool useless
- Concerned that onboarding is difficult and time-consuming
- Worried that software quickly goes "out-of-date"

Wish List

- Want customization
- System could suggest "next best item" if something's unavailable
- Visibility of the dollar value of the inventory in the store

- Automated recurring purchases
- Want visibility of how many times items are sold and reordered - help with reordering strategy

Trends

- Restocking is a major pain
- Users complain about manual data entry
- Users are very spatially-aware. They know their store layout very well
- Inventory software is seen as intimidating / difficult
- Desire to know \$ value of inventory
- Desire to have customization for unique item types
- Desire to have systems talk to each other nicely

Design Solution

Overview

SKUmatic is designed to alleviate the user pain points identified from our research with local shopkeepers and retail associates. Our design solution seeks to improve the experience of 3 key user flows:

- 1) Moving newly received product into the store inventory so that it's ready to sell
- 2) Helping a user locate a specific item in the inventory
- 3) Identifying when a customer has put an item on hold, and helping the user identify it amongst the rest of the inventory items

Design Decisions

Platform

SKUmatic is an application designed for use on tablet and desktop. One reason for this is that users will be accessing a potentially complex data-set that lends better to viewing on larger devices and manipulating data with a mouse. Another retail aspect we considered is that inventory management processes are often physically co-located with a POS terminal so a larger, more permanent screen will be present. Our team would like to expand and optimize views for mobile in the future, however mobile was deemed out of scope for this version.

Bridging the physical and digital worlds typically requires some method to translate physical properties into data that can be manipulated. We decided to propose the use of a somewhat 'smart' scale that would weigh books during receiving. This seemed within the credible limits of feasibility as books most likely have a finite and recorded weight, and a quick calculation with some computing intelligence could deduct from a small set of possibilities which books were in an order.

Key Task Flows

The key tasks were defined in equal part by user value and technical feasibility given the amount of time our team had to complete the initial prototype and test. We believe that the following flows provide the most value to the shop owner and give our product the competitive edge our users need.

1. Receive a shipment

It was clear from interviews and contextual inquiry that receiving and reordering shipments was a significant pain point due to the amount of manual entry. While our team was ideating, we devised a solution that could likely eliminate any manual data entry through the use of comparison between the weight of the shipment box and the expected weight of shipment contents per purchase order. We therefore chose to implement this as a key user flow. In this way, the system would store the information of projected weight for a given purchase order, and then prompt the user to make the comparison once the box arrives. To ensure there are no errors, the system will also prompt the user to cross-reference the box contents with the Purchase Order. If there are any errors or damages in what was shipped, the user can contact the vendor directly in the tool. When the user is ready to print labels, the system automatically adds all the items into “available to sell,” effectively bypassing the traditional need to scan every item to receive it into inventory.

2. Locate items that are already in inventory or are in transit via shipment

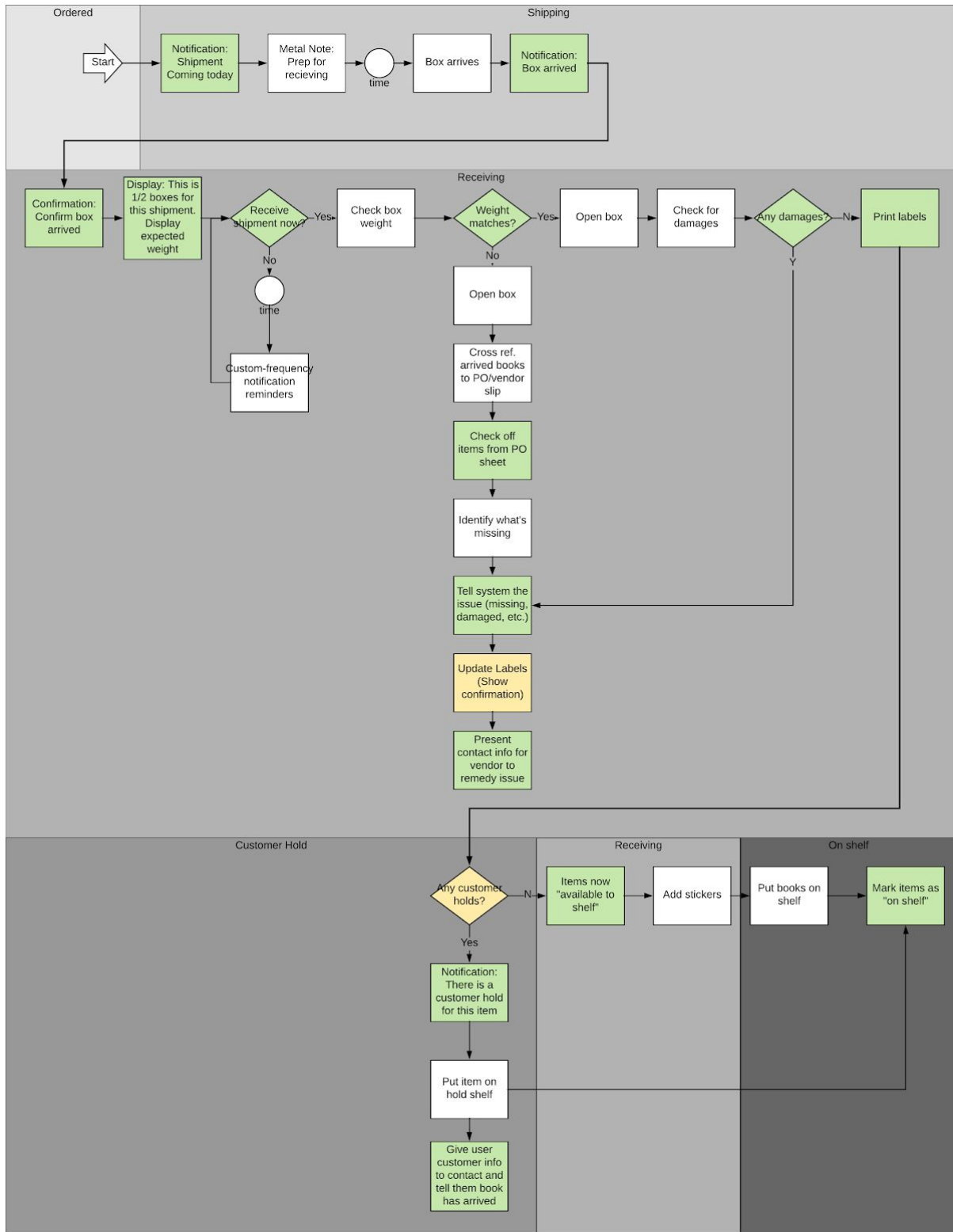
Another key flow is to enable a user to find an item for a customer regardless of whether the item has been “received” into the inventory system yet. Imagine that a customer wants a copy of Food Lab, but that our shop owner has one scheduled to arrive in next week’s shipment. In our tool, the user can look up the item and see when it will be scheduled to arrive. She can then notify the customer of when the item is due to arrive in stock.

3. Easily place and locate a customer hold

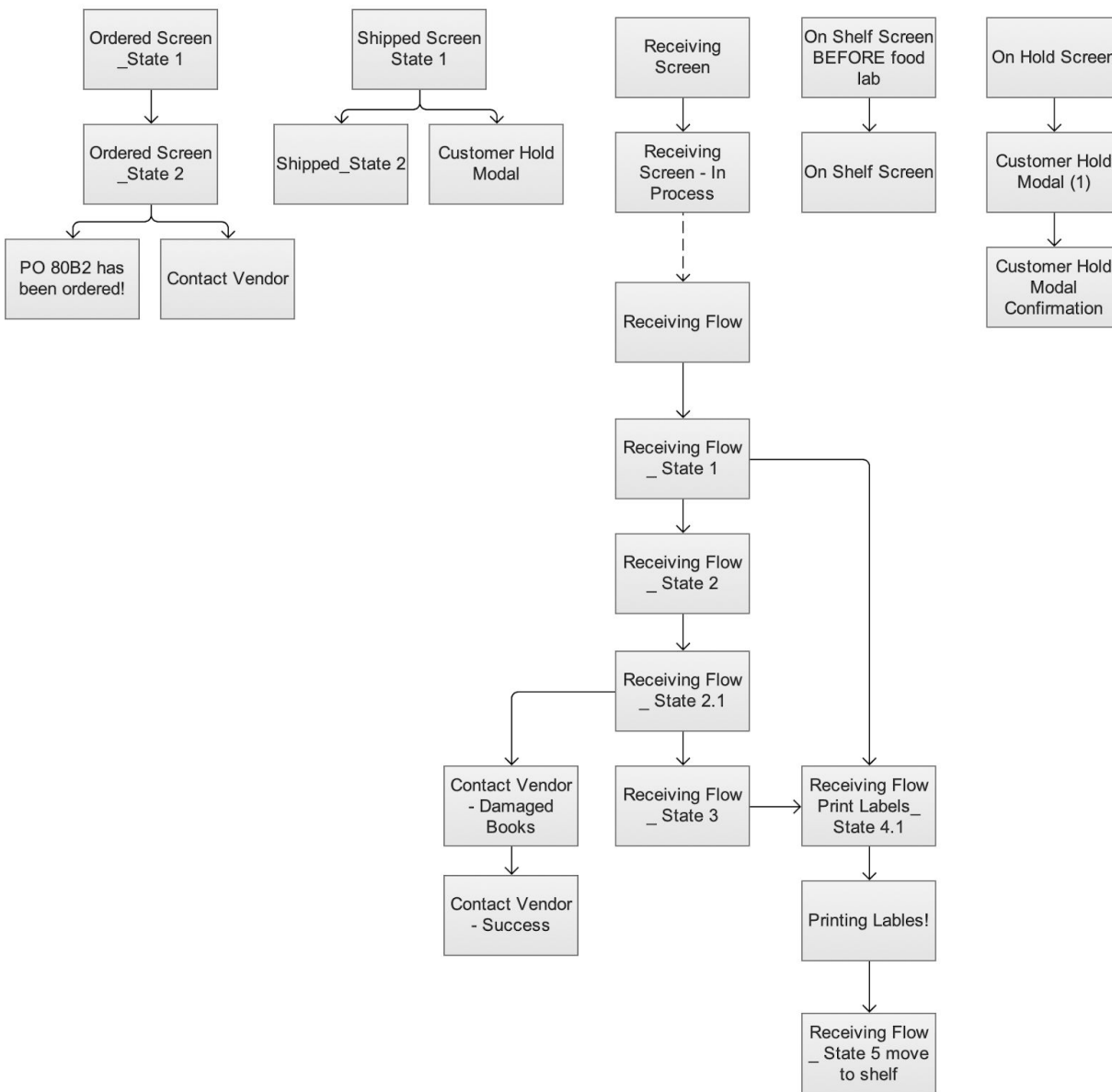
Most inventory management tools that we’ve researched either do not account for customer holds or make the process too cumbersome due to many unnecessary steps and hidden functions. In addition these tools do not enable the retail associate to put an item on hold for a customer before the item has been “received” into the system (when the shipment has been delivered and the items unpacked and scanned into the inventory). By the time this process has taken place, the sales associate has likely forgotten that a customer was interested in the item, and the store loses a potential sale.

Our system offers a solution to this problem by enabling the associate to find the item status (available to sell, ordered, received), and then place the item on hold for the customer regardless of the item status. When the item arrives, the system will notify the user to not only set the item aside, but also to call the customer letting them know the item has arrived. In addition, the system let the user define the length of the customer hold (when the hold should expire), and will notify the user when they can put the item back out on the sales floor.

User Process Flow



Site Map



UI Explanation

This section serves to outline the UI and explain the decisions related to page layout and structure.

The primary function of our tool is **finding items and moving items from one state to another** (received, available to sell, on hold). The structure of our interface reflects this in the following ways:

Tabbed Interface

The interface groups the inventory items by status, enabling the user to quickly identify where items are, whether ordered, shipped, receiving, on shelf, or on hold. The interface follows a tabbed approach, with each tab denoting a different status. So if the user wanted to see which items were on hold, she could just click on the “on hold” tab and see the items contained within.

Search

This function is such a necessary part of the user experience, and thus is visible across all pages of the application. At any moment across the app, the user is able to initiate a new query and find the item they’re looking for.

Notifications

Notification banners are used to inform the user of important updates, while still enabling them to go about their tasks. For instance, when a new shipment is due to arrive, the user will receive a banner notification letting them know when they can expect the box, so that they can make a mental note to allocate time for receiving the shipment. Another example would be a customer hold: when the user is unpacking a new shipment and a customer hold is assigned for one of the items in that box, the system will notify the user to set the item aside, so that it doesn’t get put out on the sales floor by mistake.

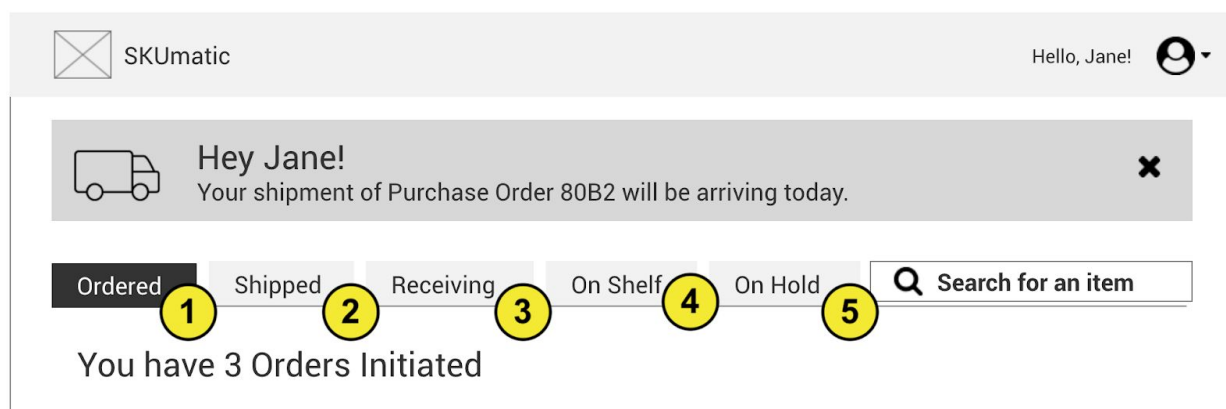
Wizard / Step-by-Step flow

One of our key value propositions for this tool was to improve the receiving flow for the user. To accomplish this we simplified the flow and allowed the user to bypass any manual data entry. Because this is a very new process that users may not be familiar with, we included a wizard experience that steps the user through the process. By giving them access to limited functions (yes, no buttons) we reduce the likelihood of error and the amount of manual and cognitive labor involved in receiving shipments.

Annotated Visuals

Note: Many elements are repetitive across pages. I will not duplicate global elements on each page.

Global Menu



This menu is on every page except guided process flows.

Item	Description	Action
1	Ordered	Open Ordered Tab Orders for which a purchase order has been submitted to the vendor
2	Shipped	Open Shipped Tab Orders that have been shipped from the vendor
3	Receiving	Open Receiving Tab Orders that have had a shipment received by the store and are ready to go through the receiving process
4	On Shelf	Open On Shelf Tab Orders/Items that are on the shelf
5	On Hold	Open On Hold Tab Items that are on hold for a customer

Ordered Tab

SKUmatic Hello, Jane!

Hey Jane!
Your shipment of Purchase Order 80B2 will be arriving today.



Ordered Shipped Receiving On Shelf On Hold


You have 3 Orders Initiated

PO#	Vendor Name	Order type	PO Contents	Scheduled to Arrive
7621	Amazon	New Shipment	The Life-Changing Magic 10 copies	Friday, 11-30-18
3587	Abe's Books	New Shipment	The Giving Tree, Shel Silverstein 2 copies	Tuesday, 12-02-18
3588	Abe's Books	New Shipment	James and the Giant Peach, Dahl, R 2 copies	Tuesday, 12-02-18

Item	Description	Action
1	"Hey Jane!"	Open Receiving Flow
2	X icon	Close Notification
3	Shipped	Go to Shipped Tab
4	Receiving	Go to Receiving Tab
5	On Shelf	Go to "on shelf" tab
6	On Hold	Go to "on hold" tab
7	Order Data	Order details, including PO#, Vendor Name Order Type, PO Contents, and date scheduled to arrive. This row duplicates for all current orders
8	Contact Vendor	Opens contact vendor dialog
9	Down arrow	Expands row to show extra buttons

Ordered Tab (After Down Arrow Clicked)


SKUmatic
Hello, Jane! 


Hey Jane!
✕

Your shipment of Purchase Order 80B2 will be arriving today.

Ordered

Shipped

Receiving

On Shelf

On Hold



🔍


You have 3 Orders Initiated

PO#	Vendor Name	Order type	PO Contents	Scheduled to Arrive	
76Z1	Amazon	New Shipment	The Life-Changing Magic of Tidying Up: The Japanese Art of Decluttering and Organizing	Friday, 11-30-18	▲
<div style="display: flex; justify-content: flex-end; gap: 10px;"> <div style="border: 1px solid #ccc; padding: 2px 10px; border-radius: 4px;">Add a customer hold</div> <div style="border: 1px solid #ccc; padding: 2px 10px; border-radius: 4px;">Contact Vendor</div> <div style="border: 1px solid #ccc; padding: 2px 10px; border-radius: 4px; opacity: 0.5;">Start Receiving</div> </div>					
3587	Abe's Books	New Shipment	The Giving Tree, Shel Silverstein 2 copies	Tuesday, 12-02-18	▼
<div style="border: 1px solid #ccc; padding: 2px 10px; border-radius: 4px; margin-left: auto;">Contact Vendor</div>					
3588	Abe's Books	New Shipment	James and the Giant Peach, Dahl, R 2 copies	Tuesday, 12-02-18	▼
<div style="border: 1px solid #ccc; padding: 2px 10px; border-radius: 4px; margin-left: auto;">Contact Vendor</div>					

Item	Description	Action
1	Add a customer Hold	Open Add customer hold dialog
2	Contact Vendor	Open Contact Vendor Dialog
3	Start Receiving	Open Receiving Flow (If available)

Shipped Tab

 SKUmatic Hello, Jane! 

 **Hey Jane!** ✕
Your shipment of Purchase Order 80B2 will be arriving today.

Ordered **Shipped** Receiving On Shelf On Hold

You have 2 open shipments

PO#	Vendor Name	Order type	PO Contents	Scheduled to Arrive
1 80B2	Amazon	New Shipment	Food Lab by J. Kenji López-Alt 12 copies	Friday, 11-30-18 2
4032	Abe's Books	Reorder	Where the Sidewalk Ends by Shel...	Tuesday, 12-02-18

Item	Description	Action/Details
1	Order Data	Order details, including PO#, Vendor Name Order Type, PO Contents, and date scheduled to arrive. This row duplicates for all current orders
2	Down arrow	Expands row to show extra buttons

Shipped Tab (After Down Arrow Clicked)

SKUmatic Hello, Jane!

Hey Jane!
Your shipment of Purchase Order 80B2 will be arriving today.

Ordered **Shipped** Receiving On Shelf On Hold

You have 2 open shipments

PO#	Vendor Name	Order type	PO Contents	Scheduled to Arrive
80B2	Amazon	New Shipment	Food Lab by J. Kenji López-Alt 12 copies	Friday, 11-30-18
			<input type="button" value="Add a customer hold"/> <input type="button" value="Contact Vendor"/> <input type="button" value="Start Receiving"/>	
4032	Abe's Books	Reorder	Where the Sidewalk Ends by Shel...	Tuesday, 12-02-18

Receiving Tab

SKUmatic Hello, Jane!

Hey Jane!
Your shipment of Purchase Order 80B2 will be arriving today.

Ordered Shipped **Receiving** On Shelf On Hold



You have 1 shipment ready to be received

PO#	Vendor Name	Order type	PO Contents
80B2	Amazon	New Shipment	Food Lab by J. Kenji López-Alt 12 copies


Item	Description	Action/Details
1	Order Data	Order details, including PO#, Vendor Name Order Type, PO Contents, and date scheduled to arrive. This row duplicates for all current orders

2	Begin Receiving	Opens the guided receiving flow
---	-----------------	---------------------------------

On Shelf Tab

 SKUmatic
 Hello, Jane! 

Ordered
Shipped
Receiving
On Shelf
On Hold

 Search for an item

	Date received	Title	Author	Copies available	Price	
1	11-30-18	Food Lab	J Kenji Lopez-Alt	11	\$39.99	NEW
	11-29-18	Harry Potter	JK Rowling	24	\$19.99	
	11-24-18	Junie B Jones	Patrick OLeary	3	\$9.99	
	10-20-18	Marshall's r...	Wesley Bar...	5	\$19.99	
	10-15-18	Once on this...	Prateek Sio...	1	\$3.99	
	11-30-18	Great British..	Mary Berry	65	\$32.50	

Item	Description	Action/Details
1	Order Data	Order details, including Date Received, Title, Author, Copies Available, Price. "New" if it's new. This row duplicates for all current orders

On Hold Tab

SKUmatic Hello, Jane!

Ordered Shipped Receiving On Shelf **On Hold** Search for an item

You have 2 customer holds active [View / Re-shelf Expired Holds](#)

Title	Author	Copies	Hold Expires	Customer Name	Phone #
Food Lab	J Kenji Lopez-Alt	1	12-02-18	Dave Bennett	(206) 259-9122
Where the...	Shel Silverstein	1	12-02-18	Marcus Aurelius	(206) 239-3122

Item	Description	Action/Details
1	Hold Data	Hold details, including Title, Author, Copies on hold, Hold expiry date, customer name, customer phone # This row duplicates for all current holds The row is clickable to open an edit dialog box.
2	View/Re-Shelf Expired Holds	Opens View/Re-Shelf Expired Holds dialog
3	Pencil Icon	This icon will show when the row is hovered over. It is meant to indicate that the information is editable if you click on it.

Customer Hold Details

SKUmatic Hello, Jane!

Ordered Shipped Receiving **On Shelf** **On Hold** Search for an item

You have 1 item on hold for Dave Bennett

PO# 80B2

Customer Hold Details

Name: Dave Bennett

Phone: (206) 259-9122

Book: Food Lab, J Kenji Lopez-Alt

Copies: 1

Hold Expires: 12/02/18

Reminder? Text me Daily Reminders

Save Close Changes Saved

Item	Description	Action/Details
1	X icon	Closes dialog and returns to on hold screen
2	Name	Text field for entering customer name
3	Phone	Numerical text field for entering customer phone number
4	Book	Text string drop down which lists all available books
5	Copies	Numerical drop down listing all quantities from 1-20
6	Hold Expires	Date drop down listing all dates in next 3 months
7	Reminder Check box	Check box which will enable daily text reminders when checked
8	Save	Saves changes
9	Close	Closes dialog and returns to on hold screen
10	Changes Saved	Confirmation message that appears when "save" is clicked and data is successfully saved


Receiving Flow

Step 1/3

SKUmatic Hello, Jane!

< Pause and go back to inventory 1

Receiving PO #80B2 2
From Amazon 3


 Food Lab by J. Kenji López-Alt
 12 copies
 Should weigh: 24.3lbs 4

< Step 1 / 3 5

Check the shipping weight. Does it equal roughly 24.3 lbs?

Yes 6 No 7

Item	Description	Action/Details
1	Pause and go back to inventory	Pauses receiving process, saving state. Returns to Receiving Screen.
2	Receiving PO #	Static text that shows "Receiving PO [# of PO]"
3	From [Vendor]	Static Text that shows "From [Vendor]"
4	Book Details	Static Text that lists book details: Title, # of copies received, estimated weight of shipment
5	Step navigation	Returns to previous step of process (if on step 2 or 3)
6	Yes Button	Confirms weight matches expected weight. Proceeds to next step of receiving.
7	Nope Button	Confirms weight does not match. Opens weight discrepancy branch of receiving flow.

Item	Description	Action/Details
1	Book issue check boxes	Input box for what type of issue was found. Multiple issues could be found
2	Submit and contact vendor	Opens vendor contact form with book issue entered passed to form.

Contact Vendor Form

SKUmatic Hello, Jane!

Ordered Shipped **Receiving** On Shelf On Hold Search for an item

You have 1 item that is damaged

PO# 80B2

Contact Vendor

Fill out the form and select # of books impacted.

Quantity Impacted

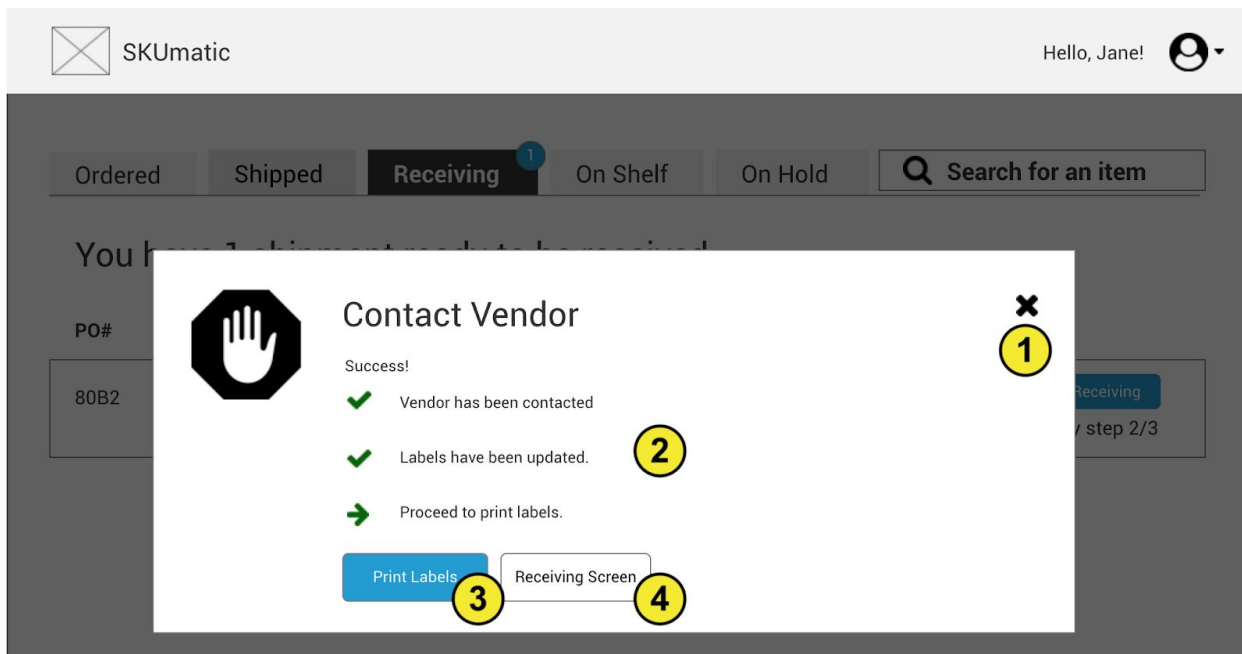
1

Dear Amazon Support,
We received damaged books from our order of "Food Lab" by J. Kenji López-Alt.
Please call us at 1-386-478-3464 at your earliest convenience so we can resolve this issue.

Send Cancel

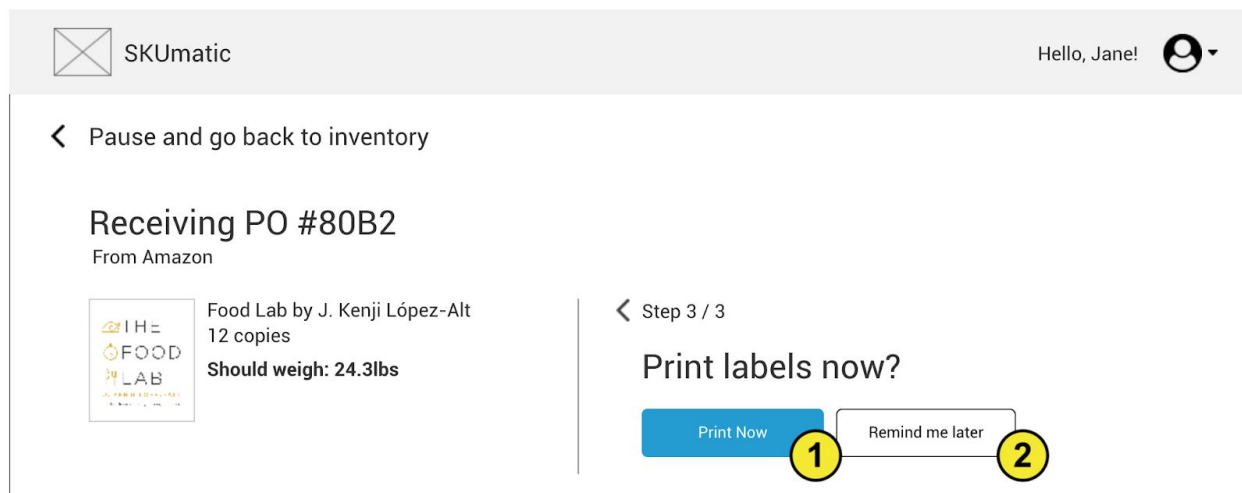
Item	Description	Action/Details
1	X icon	Closes dialog and returns to step 2/3 - book problem dialog
2	Message to vendor	Multi-line text box for entering a message to the vendor. It is pre-populated with information from the previous screen.
3	Quantity	Numerical drop down listing all quantities from 1 to # of items in shipment
4	Send	Sends vendor contact, proceeds to next screen.
5	Cancel	Closes dialog and returns to step 2/3 - book problem dialog

Contact Vendor- Success



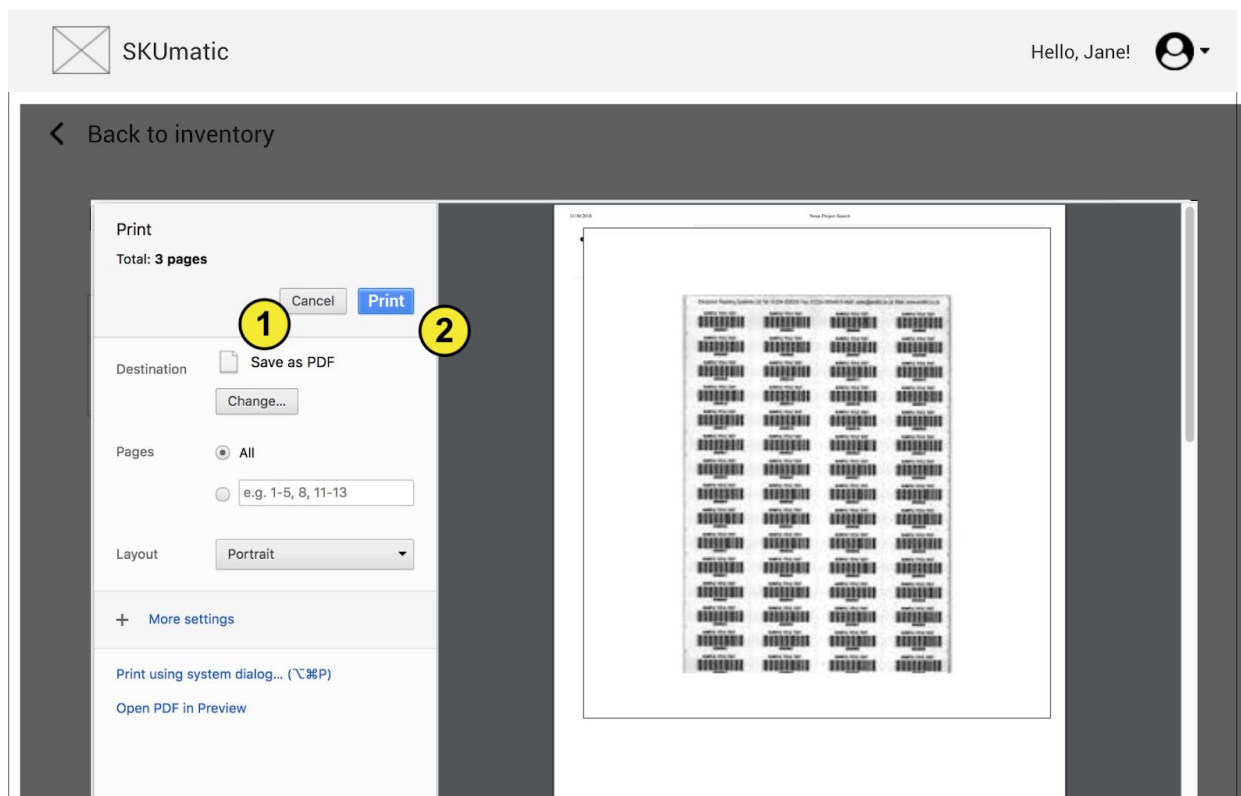
Item	Description	Action/Details
1	X icon	Closes dialog and returns to step 2/3 - book problem dialog
2	Success messages	Static text that indicates vendor contact and labels printed.
3	Print Labels Button	Proceeds to print labels step
4	Receiving Screen Button	Returns to receiving screen

Step 3/3



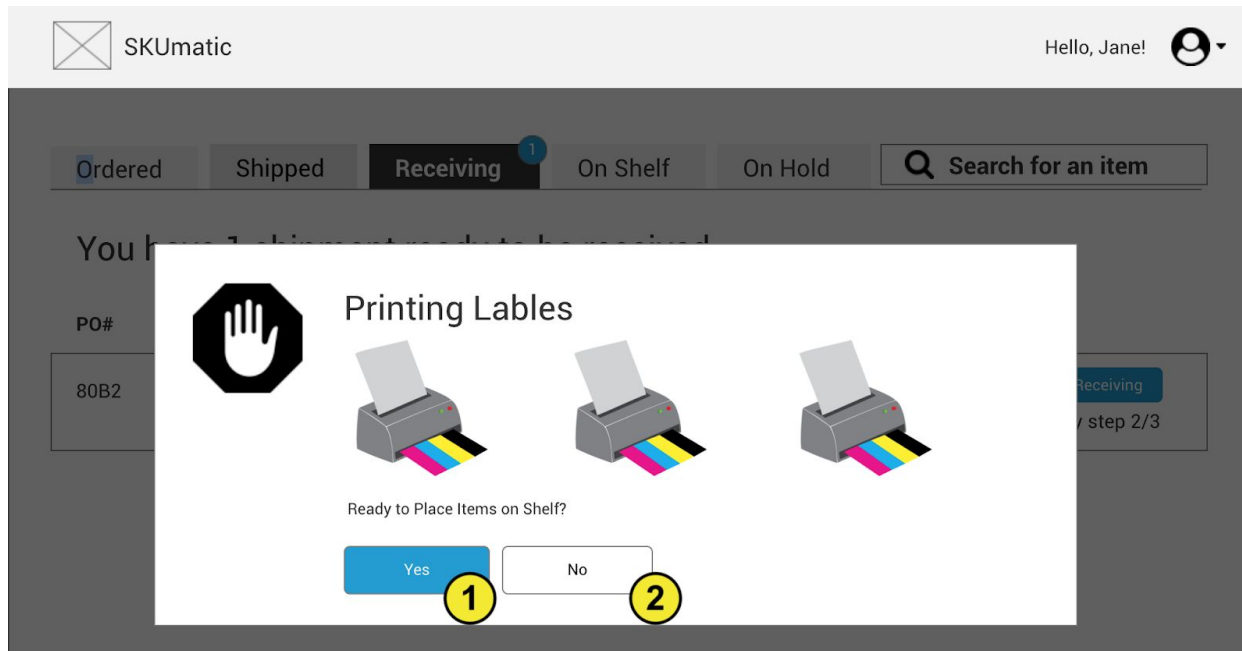
Item	Description	Action/Details
1	Print Now Button	Proceeds to system print dialog
2	Remind me later	Goes back to receiving screen and sets a reminder for later.

Print Dialog



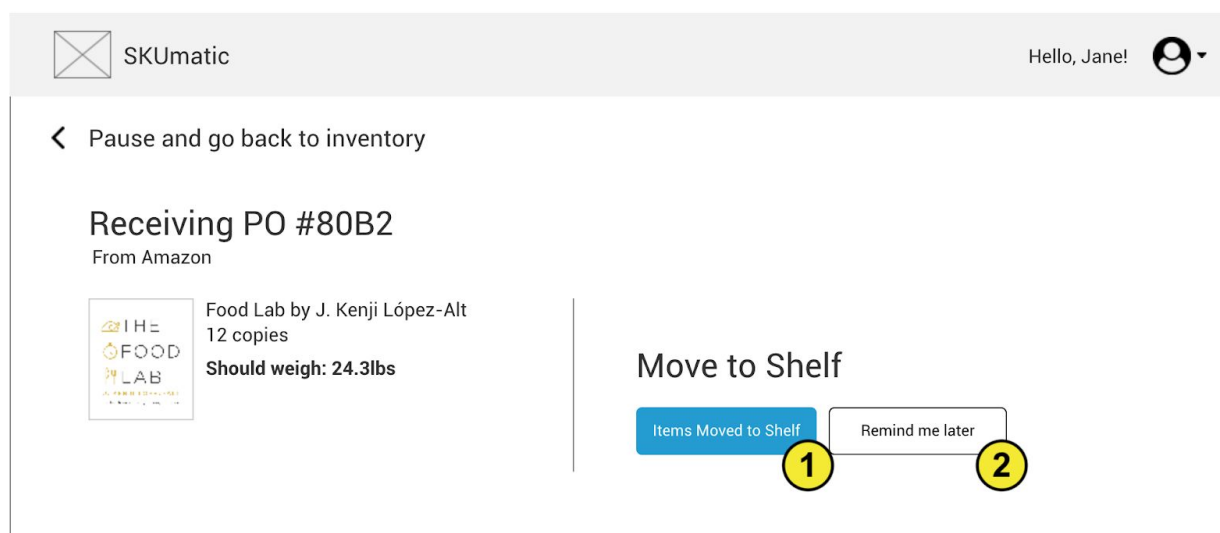
Item	Description	Action/Details
1	Cancel	Returns to Step 3/3
2	Print	Prints labels

Labels Printing Screen



Item	Description	Action/Details
1	Cancel	Returns to Step 3/3
2	Print	Prints labels

Receiving Flow Confirmation Screen



Item	Description	Action/Details
------	-------------	----------------

1	Items Moved to Shelf	Completes Receiving Process, moves items to "On Shelf" Status & the items appear on shelf tab. When button is clicked, "on shelf" screen appears with "new" shipment
2	Remind me later	Goes back to receiving screen and sets a reminder for later.