Design Review #2
Healthcare Supply Chain Dashboard

Ishita H, Michelle C, Vedant B, Tommy N

CONTENTS

01
OVERVIEW

02
UPDATE

03
REQUIREMENTS

04
CONCEPTUAL MODEL

05
IDEATION

06
NEXT STEPS

01

Overview & Recap

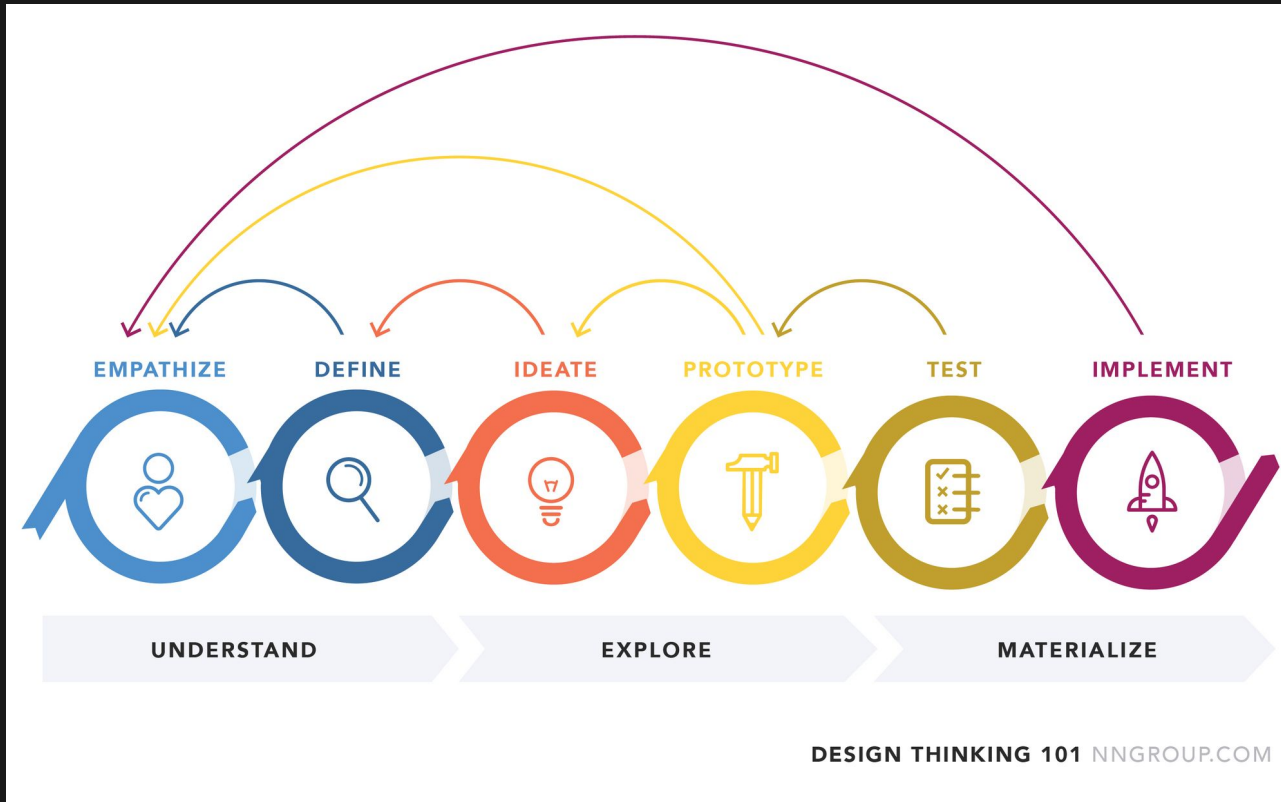*Background & Design Approach*

Problem Statement

- Pandemic highlighted supply distribution & disruption concerns
    - PPE heightened demand
    - Increased workforce movements
- Strong healthcare system to tackle future black swan events like COVID-19

How we left things

- Empathize
  - 6 main stakeholders
    i. *Purchasing*
    ii. *Contracting*
    iii. *Clinical Advisory*
    iv. *Clinical End Users*
    v. *Supply Operations*
    vi. *Data Management*
  - Mapping of *(initial understand)* of current disruption management process

- To Define
  - To determine operating fields in **current tracker**
  - To work with Partners to get more detailed info of respective stakeholders
  - To finalize requirements

- To Ideate

Design Thinking Framework

DESIGN THINKING 101 NNGROUP.COM

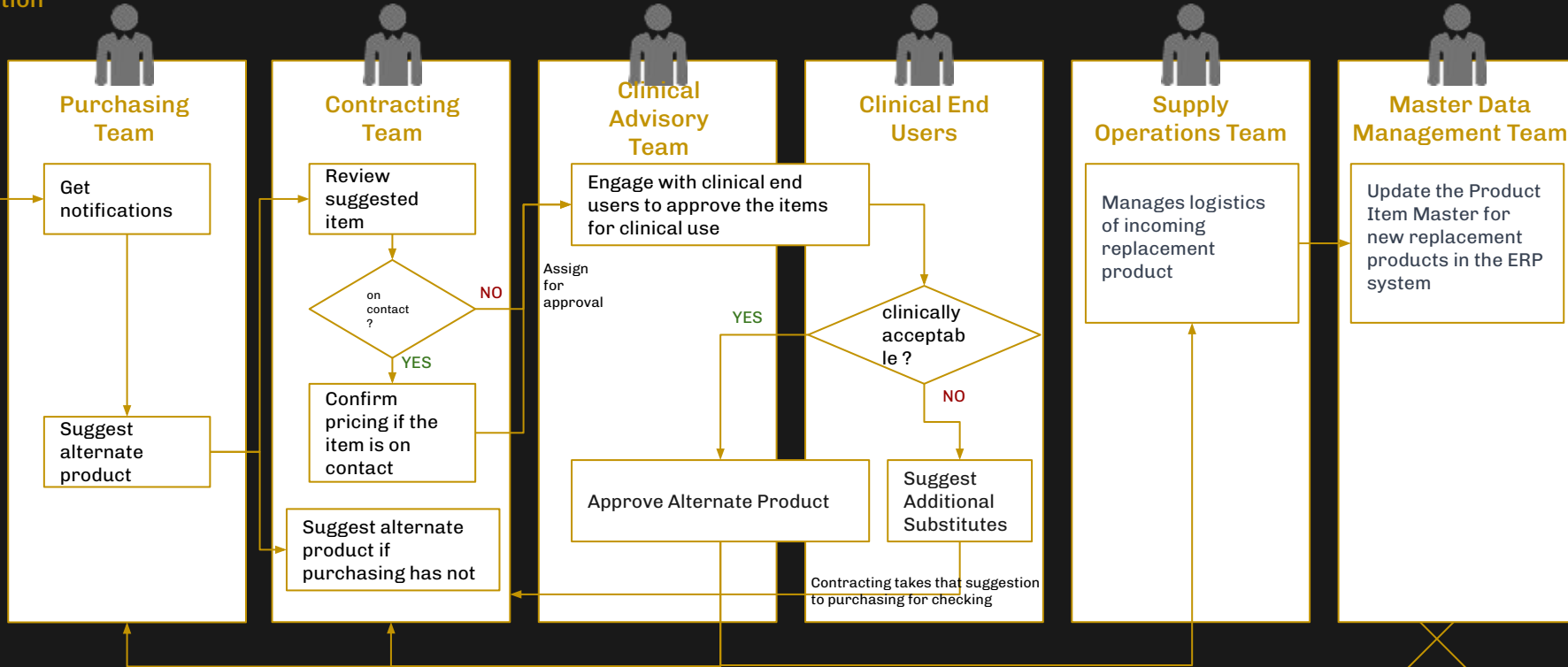Ishita H, Michelle C, Tommy N, Vedant B | Team 4: Supply Chain Dashboard | 2022WT2 | CPSC 554K

02

Update

What's new?

Previous Process Diagram

Ishita H, Michelle C, Tommy N, Vedant B | Team 4: Supply Chain Dashboard | 2022WT2 | CPSC 554K

Modification of process flow

- Why?

  - Define phase was still incomplete - we needed more information

  - New info were uncovered about the process

  - Need for better understanding of process to finalize requirements

- Sources:

  - Fields used in current tracker/dashboard

  - Multiple rounds of discussion with project partners

Modified Process Flow Diagram

Ishita H, Michelle C, Tommy N, Vedant B | Team 4: Supply Chain Dashboard | 2022WT2 | CPSC 554K
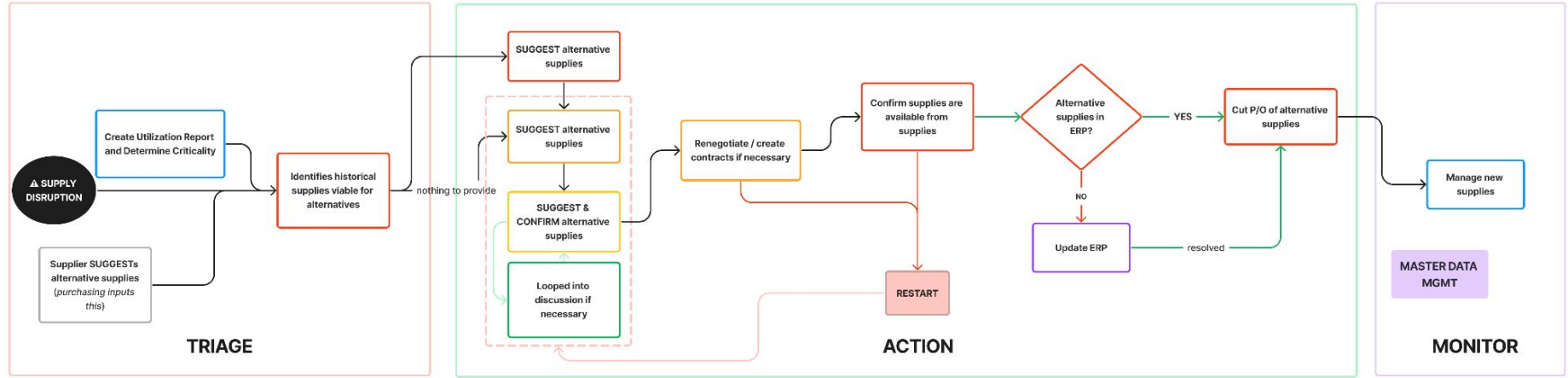
Task example

- Why?

  - The process flow diagram is high-level

  - Our process is fairly complicated, a task example will help to conceptualize the process

Task analysis diagram

- Why?

  - For more granularity of the process flow
  - To pinpoint the problematic tasks in the process
  - To pinpoint how our proposed dashboard fits in the process and improves functionality

Task Example

During a routine check John (SOT) found out that Product A (cardiology) supplied by Supplier A got backordered. He ran a utilization report and called Alencia (PT) about this backordered SD and its priority. Alencia called Supplier A by phone and asked for a set of suggestions for alt items from them. After 3 days, Supplier A emailed details of Product A as an alt item. Alencia creates a tracker entry for this SD. She also looks up the history of replacement items and suggests Product B with Product A in the tracker. Alencia assigns Edward, Janet, Paul, and Jonah in an email thread. After calling several people in different teams, Alencia finds John (CT) who is specialized into cardiology product contracts. She adds him in email thread.
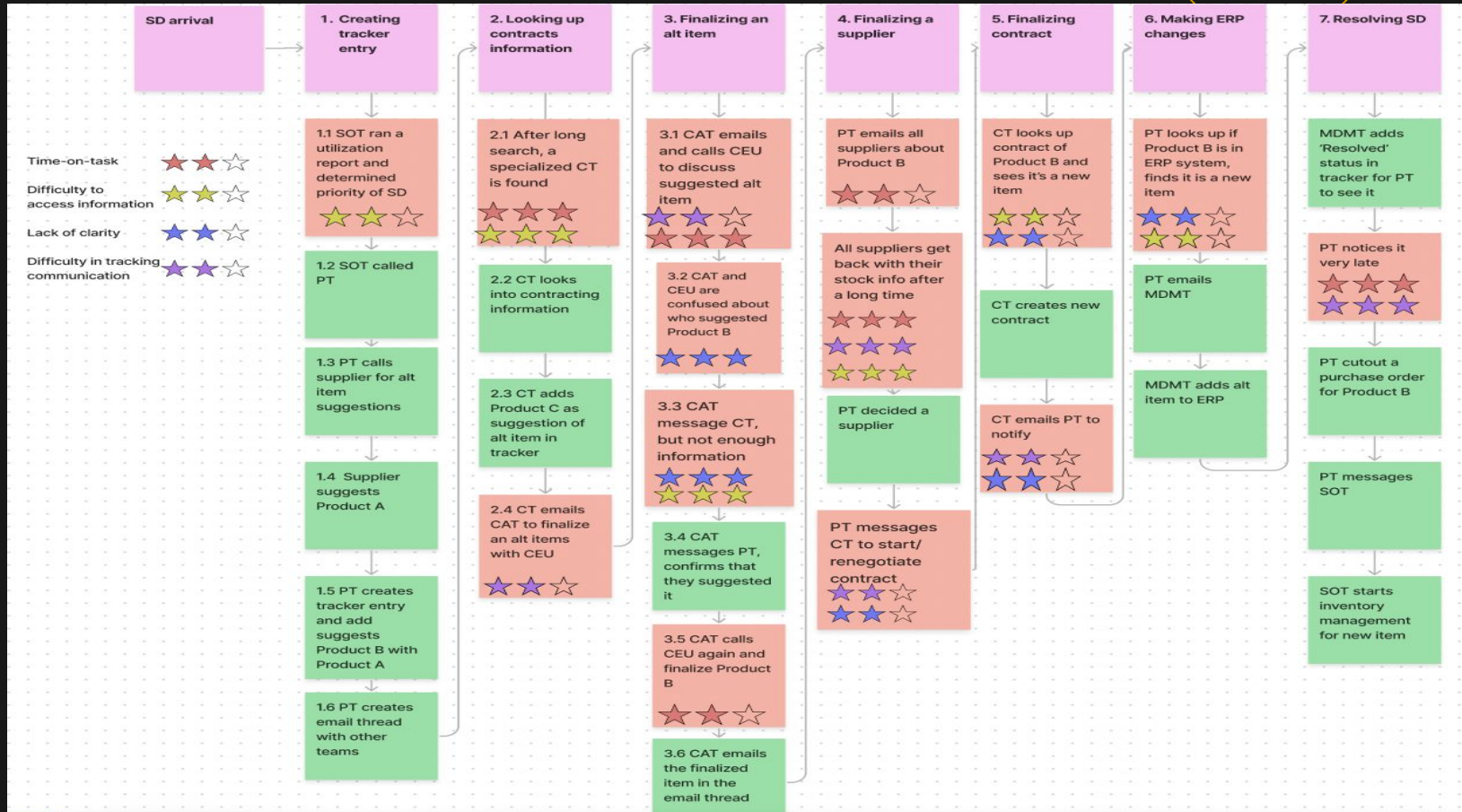
John (CT) looks into contracts of suggested alternatives and replacement items used before, and suggested another item, Product C, in the tracker. He emailed Janet (CAT) to discuss with Paul (CEU) and finalize an alt item.
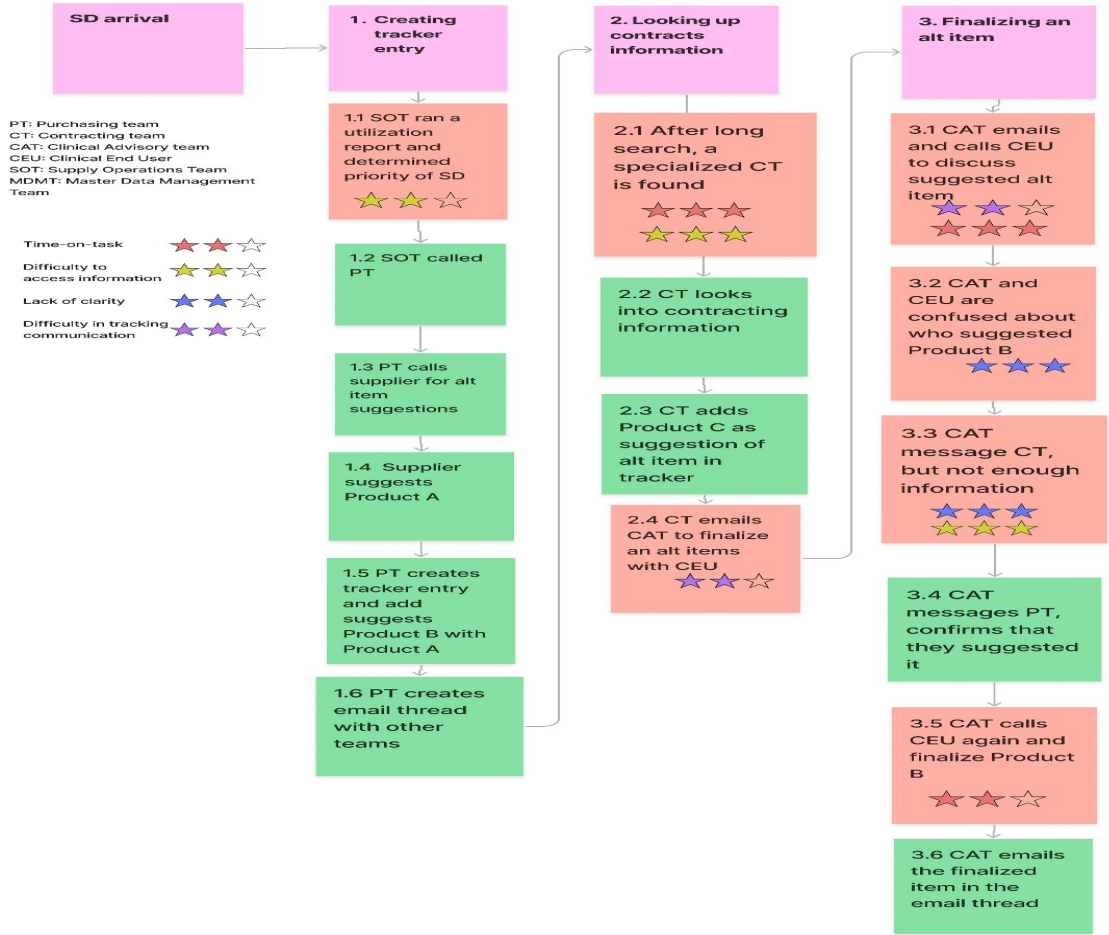
Janet (CAT) emailed Paul(CEU) but since he is a busy nurse he is late with emails. After several days, Janet tries again and calls by phone (Confusion, Difficulty tracking). They discuss about Product A, B, and C and have a question about B, but are confused which team actually suggested the product, as that info is not in the tracker. Janet sends a chat msg to John again, who replies that he didn't. Janet sends another msg to Alencia, who clarifies the confusion. Janet calls Paul again (Time-on-task), and they discuss and finalize Product B. Janet sends an email about it in the email thread.

Alencia emails all suppliers they have contacts of, asking whether they have Product B in stock. They all get back after a long time. Valencia decides Supplier B and emails John. John looks up the contract for B and sees it is a new item. He creates the contract. Then he sends an email to Alencia to notify her. Alecia looks up if the Product B is in the ERP system. Since it's a new product, it's not in ERP. So Alencia emails Jonah in the email thread. Jonah (MDMT) adds the alt item in the ERP system.

onah adds a resolved status for this SD in the tracker, but Alencia only notices this during her weekly review of trackers 3 days later (Time-on-task: delay, level of confusion: high). Then Alencia put out a purchase order for that item. Alencia sends a message to John in MS teams, and John starts inventory management tasks to receive the alt item.

Task Analysis Diagram

SD arrival	1. Creating tracker entry	2. Looking up contracts information	3. Finalizing an alt item	4. Finalizing a supplier	5. Finalizing contract	6. Making ERP changes	7. Resolving SD

Time-on-task ★★☆
Difficulty to access information ★★☆
Lack of clarity ★★☆
Difficulty in tracking communication ★★☆

1.1 SOT ran a utilization report and determined priority of SD ★★☆ ★★★

1.2 SOT called PT

1.3 PT calls supplier for alt item suggestions

1.4 Supplier suggests Product A

1.5 PT creates tracker entry and add suggests Product B with Product A

1.6 PT creates email thread with other teams

2.1 After long search, a specialized CT is found ★★★ ★★★

2.2 CT looks into contracting information

2.3 CT adds Product C as suggestion of alt item in tracker

2.4 CT emails CAT to finalize an alt items with CEU ★★☆

3.1 CAT emails and calls CEU to discuss suggested alt item ★★★ ★★☆

3.2 CAT and CEU are confused about who suggested Product B ★★★

3.3 CAT message CT, but not enough information ★★★ ★★★

3.4 CAT messages PT, confirms that they suggested it

3.5 CAT calls CEU again and finalize Product B ★★☆

3.6 CAT emails the finalized item in the email thread

PT emails all suppliers about Product B ★★★

All suppliers get back with their stock info after a long time ★★★ ★★★ ★★★

PT decided a supplier

PT messages CT to start/ renegotiate contract ★★☆ ★★☆

CT looks up contract of Product B and sees it's a new item ★★☆ ★★☆

CT creates new contract

CT emails PT to notify ★★☆ ★★☆

PT looks up if Product B is in ERP system, finds it is a new item ★★☆ ★★☆

PT emails MDMT

MDMT adds alt item to ERP

MDMT adds 'Resolved' status in tracker for PT to see it

PT notices it very late ★★★ ★★★

PT cutout a purchase order for Product B

PT messages SOT

SOT starts inventory management for new item

Ishita H, Michelle C, Tommy N, Vedant B | Team 4: Supply Chain Dashboard | 2022WT2 | CPSC 554K

SD arrival

1. Creating tracker entry

2. Looking up contracts information

3. Finalizing an alt item

PT: Purchasing team
CT: Contracting team
CAT: Clinical Advisory team
CEU: Clinical End User
SOT: Supply Operations Team
MDMT: Master Data Management Team

Time-on-task ★★☆
Difficulty to access information ★★☆
Lack of clarity ★★☆
Difficulty in tracking communication ★★☆

1.1 SOT ran a utilization report and determined priority of SD
★★☆

1.2 SOT called PT

1.3 PT calls supplier for alt item suggestions

1.4 Supplier suggests Product A

1.5 PT creates tracker entry and add suggests Product B with Product A

1.6 PT creates email thread with other teams

2.1 After long search, a specialized CT is found
★★★
★★★

2.2 CT looks into contracting information

2.3 CT adds Product C as suggestion of alt item in tracker

2.4 CT emails CAT to finalize an alt items with CEU
★★☆

3.1 CAT emails and calls CEU to discuss suggested alt item
★★☆
★★★

3.2 CAT and CEU are confused about who suggested Product B
★★★

3.3 CAT message CT, but not enough information
★★★
★★★

3.4 CAT messages PT, confirms that they suggested it

3.5 CAT calls CEU again and finalize Product B
★★☆

3.6 CAT emails the finalized item in the email thread

4. Finalizing a supplier

PT emails all suppliers about Product B
⭐⭐☆ (red)

All suppliers get back with their stock info after a long time
⭐⭐⭐ (red)
⭐⭐⭐ (purple)
⭐⭐⭐ (yellow)

PT decided a supplier

PT messages CT to start/ renegotiate contract
⭐⭐☆ (purple)
⭐⭐☆ (blue)

5. Finalizing contract

CT looks up contract of Product B and sees it's a new item
⭐⭐⭐☆ (yellow)
⭐⭐☆ (blue)

CT creates new contract

CT emails PT to notify
⭐⭐☆ (purple)
⭐⭐☆ (blue)

6. Making ERP changes

PT looks up if Product B is in ERP system, finds it is a new item
⭐⭐☆ (blue)
⭐⭐☆ (yellow)

PT emails MDMT

MDMT adds alt item to ERP

7. Resolving SD

MDMT adds 'Resolved' status in tracker for PT to see it

PT notices it very late
⭐⭐⭐ (red)
⭐⭐⭐ (purple)

PT cutout a purchase order for Product B

PT messages SOT

SOT starts inventory management for new item

PT: Purchasing team
CT: Contracting team
CAT: Clinical Advisory team
CEU: Clinical End User
SOT: Supply Operations Team
MDMT: Master Data Management Team

Time-on-task ⭐⭐☆ (red)

Difficulty to access information ⭐⭐☆ (yellow)

Lack of clarity ⭐⭐☆ (blue)

Difficulty in tracking communication ⭐⭐☆ (purple)

Ishita H, Michelle C, Tommy N, Vedant B | Team 4: Supply Chain Dashboard | 2022WT2 | CPSC 554K

03

Requirements

What's needed?

16

Pain Points and Requirements

<Which Pain Point>
Can Be Solved By *<What Requirement>*

User Profiles	Current Pain/Frustrations	Requirements
Purchase	Manual entry of information from supplier/SD notification	View all SD notifications in a compact and informative manner
	Lengthy process of manually matching backorder reports from suppliers to existing supply disruptions	Generate report
Contracting	Priorities of SDs are difficult to determine from trackers	Priority of SD
	Time-consuming to determine the availability of new supply in the marketplace for product replacements	Embedded communication channel
	Requires manual review process to get the contract information(e.g., pricing) in the master item catalog	Integrate external systems to dashboard
	No cross-reference table of products available in the market that could be functional equivalents	Find alternate products easily
Clinical (Advisor)	Priorities of SDs are difficult to determine from trackers	Priority of SD
	Engagement with end users and supplier discussions is a manual process (email,chat,phone)	Embedded communication channel
	No cross-reference table of products available in the market as potential replacements	Find alternate products easily
Clinical (End User)	Finding alternate product is a manual process	Find alternate products easily
	Engagement with clinical advisory team (phone, email, chat communication) is time-consuming	Embedded communication channel
Supply operations	The current tracker only reflects the initial estimate from discussions with backordered suppliers and purchasing, so it is hard to determine the updated ETA of backordered product and flag tracker records for future review that have ETA's past their estimates where product has not recovered.	Generate report
		Priority of SD
	Not enough information about currently available stock from the incoming supplier in the tracker	Generate report
	There is no live view of the currently available stock in inventory for the backordered product to determine how many days of stock on hand (SOH) is available to rank the urgency of the supply disruptions.	Integrate external systems to dashboard
	There is no workflow tracking or adequate status to bucket the various phases of each supply disruption record.	View all SD notifications in a compact and informative manner
		Embedded communication channel

Ishita H, Michelle

17

Requirement Lists & Ideated Features

1. **View all Supply Disruption(SD) notifications in a compact way**

Show progress of SD	Show currently assigned team and team member	Feature to filter assigned SD's of a team/team member	Show concentration of work for each team/ team member (e.g.,badge)	An overview table that shows information about all supply disruption entries

2. **Priority of SD**

Set/change the priority of SD and notify stakeholders	Filtering feature(e.g., by priority, the concentration of work, etc.) in the SD table

3. **Embedded communication channel**

Track and display communication history for each SD	Track history of changes made for each SD	Show email addresses of suppliers to contact them	Assign a team member to an SD	Feature to note interactions among stakeholders for each SD
Search for team member by concentration of work	Color-code interaction of each team	Manage access to certain information, depending on the team	Notify involved stakeholders of any changes made for each SD	Send out a form to suppliers to fill alt items and their available stock they can offer

4. **Integrate external systems to dashboard**

Add a database for alternative products and search directly from dashboard	Integrate ERP system and contract database with the dashboard to automatically pull data into the dashboard

5. **Find alternate products easily**

Integrate a database for alternative products and search directly from dashboard

6. **Generate report**

Feature to generate routine reports to easily find critical SDs	Feature to generate report for matching backorder	Feature to generate report for currently available stock

18

Ishita H, Michelle C, Tommy N, Vedant B | Team 4: Supply Chain Dashboard | 2022WT2 | CPSC 554K

MoSCoW Matrix

Must have

Filtered Views for user profiles and/or specialized roles

User Profile for data/history tracking & manage work/ notifications

Manage access to certain information, depending on the team

Progress & Status of work, and tasks (*Active, On-Hold, Blocked, Contracting...*)

An overview table that shows information about all supply disruption entries

Filtering feature(e.g., by priority, the concentration of work, etc.) in the SD table

Show currently assigned team and team member

Assign/Tagging for disruption and task

Manual Priority override to fine-tune work priority

Should have

Save point (*notes?*) in communication for Progress & Status (*from external communication tools*)

Internal SME index for easy lookup/handoff

Badge to identify specialized roles per profile

Changelog of modifications, edits, etc. for update & progress tracking

Add a database for alternative products and search directly from dashboard

Could have

Modular dashboard components for user-customizations

Supplier-facing form to optimize internal data collection and work (*stock, ETA*)

Supplier contact index for easy lookup and handoff

Colour-coded components/ interactions for visual ease

Stock insight from all profiles

Notify involved stakeholders of any changes made for each SD

Won't have

Integrate a database for alternative products and search directly from dashboard
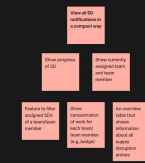
Computer-Generated Priority to assess

Feature to **generate report** for matching backorder

Feature to **generate report** for currently available stock

Integrate ERP system and contract database with the dashboard to automatically pull data into the dashboard

---

View all SD notifications in a compact way

View all SD notifications in a compact way

Show progress of SD

Show currently assigned team and team member

Feature to filter assigned SD's of a team/team member

An overview table that shows information about all supply disruption entries

Priority of SD

Priority of SD

Filtering features e.g., by priority, the concentration of work, etc.) in the SD table

Set/change the priority of SD and notify stakeholders

Embedded communication channel

Embedded communication channel

Track and display communication history for each SD

Track history of changes made for each SD

Notify involved stakeholders of any changes made for each SD

Feature to note interactions among stakeholders for each SD

Assign a team member to an SD

Search for team member by concentration of work

Color-code interaction of each team

Show email addresses of suppliers to contact them

Send out a form to suppliers to fill at items and their available stock they can offer

Manage access to certain information, depending on the team

Integrate external systems to dashboard

Integrate external systems to dashboard

Add a database for alternative products and search directly from dashboard

Integrate ERP system and contract database with the dashboard to automatically pull data into the dashboard

FInd alternate products easily

Find alternate products easily

Integrate a database for alternative products and search directly from dashboard

Generate report

Generate report

Feature to generate routine reports to easily find critical SDs

Feature to generate report for matching backorder

Feature to generate report for currently available stock

Ishita H, Michelle C, Tommy N, Vedant B | Team 4: Supply Chain Dashboard | 2022WT2 | CPSC 554K
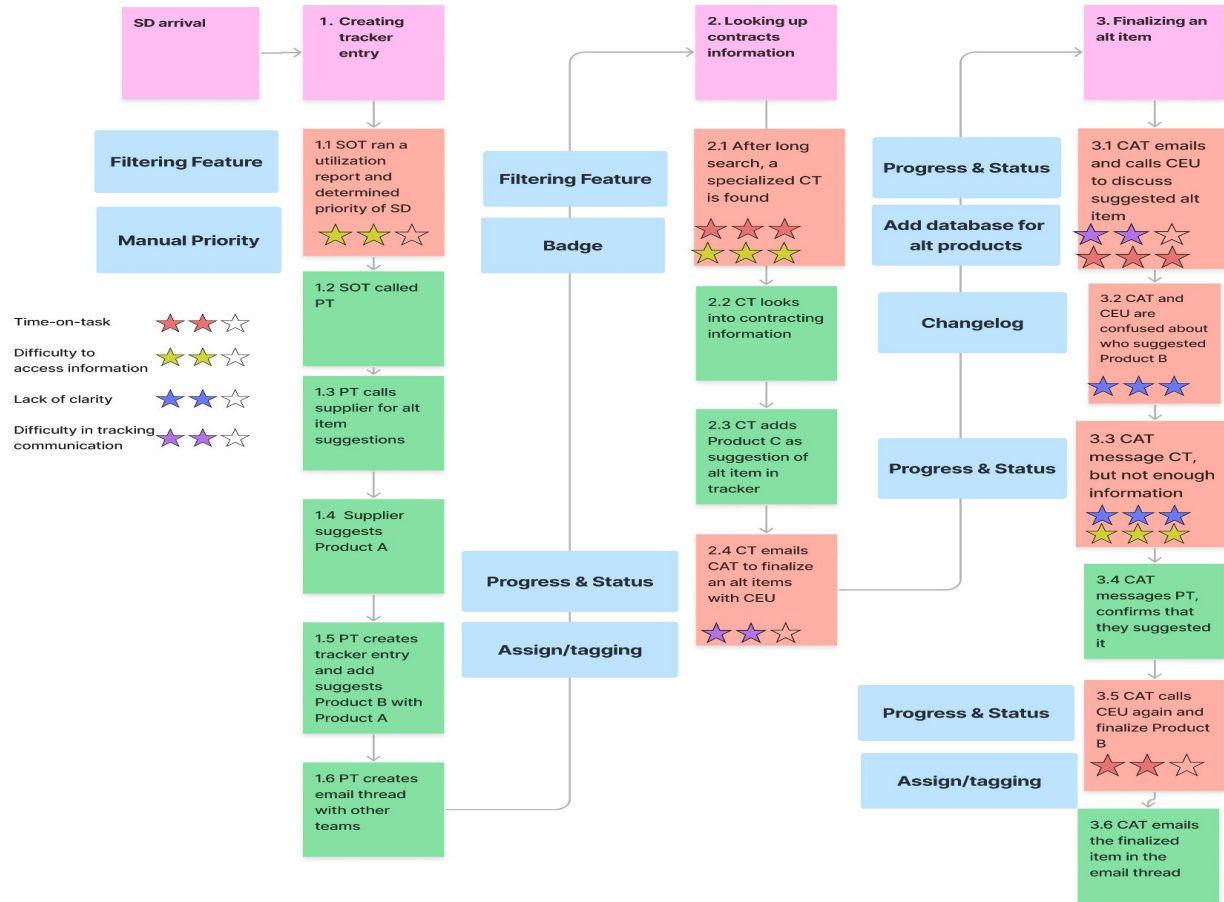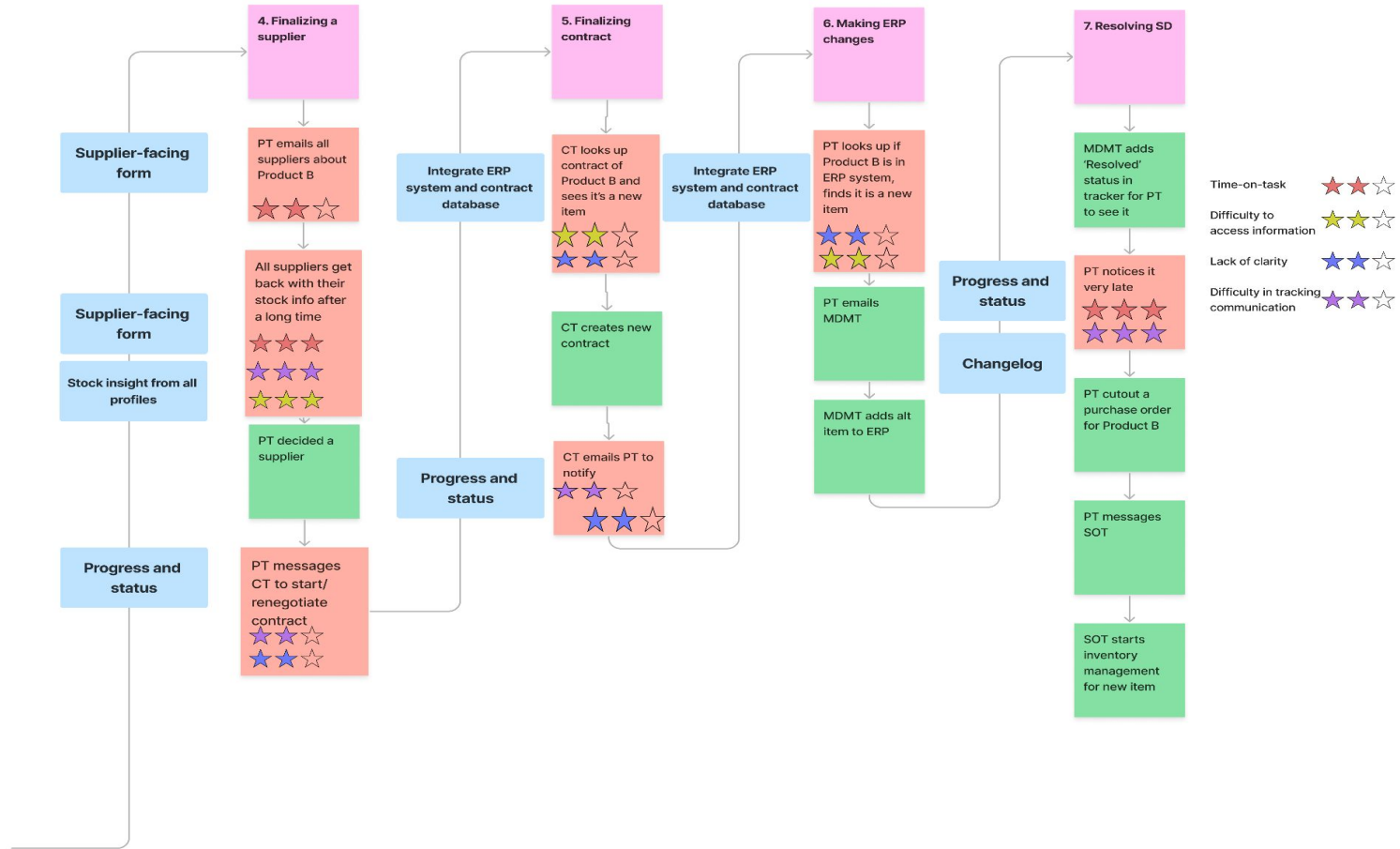
04
Conceptual Model

What are we working with?

Conceptual Model

Metaphors

- *Source-of-truth Dashboard*
- *Co-editing sheet*

DASHBOARD
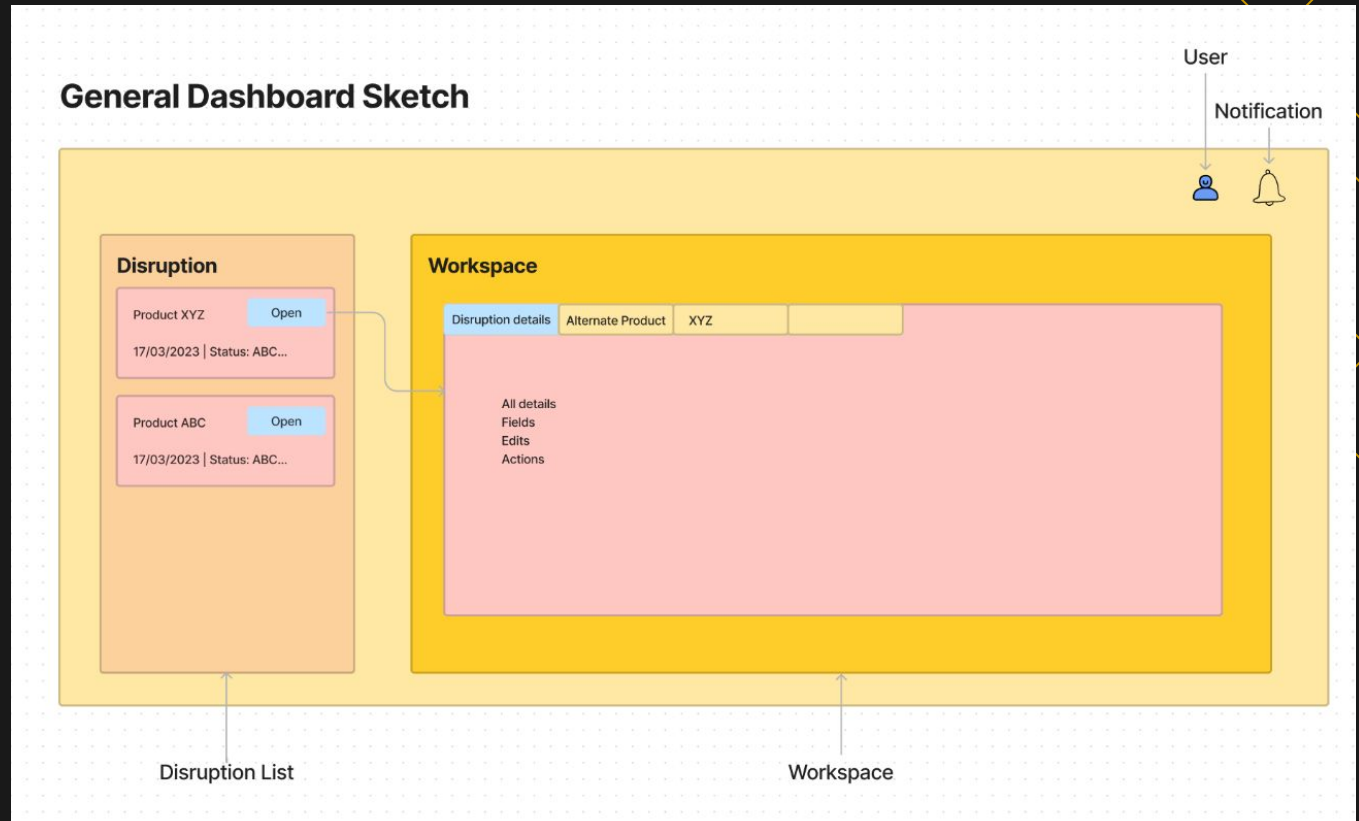
USER PROFILE
- contact info
- SME / role / badges
- various permissions
- filtered views

DISRUPTION LIST
- filter & sort
  - progress/status
  - priority

DISRUPTION
- type
- ETR (*recovery*)
- impacted inventory
- utilization report
- progress/status
- priority
- assignment
- changelog

ALTERNATIVES
- inputter
- suppliers
- discussion notes
- suggested by profile

APPROVED SUPPLIES
- internal correspondents
- suppliers
- disruption(s)

INTERNAL COMM.
- progress
- notes
- discussions

SUPPLIERS
- contact info
- supplying products
  - stock

ERP SYSTEM
- system data
- stock
- usage
- supply purchases

CONTRACT
- status (*expired?*)
- price
- suppliers
- internal correspondents

EXTERNAL COMM.
- telephone
- email
- conversations
- virtual video-calls
- Microsoft Teams

Relationships: assess work · approved by · supplied by · supplied by · created by · associates / tasked to · resolved via · sync info · aims to secure · resolved via · requires · updated to · track relevant communication for progress

05

Further Ideation

What are we thinking?

Ishita H, Michelle C, Tommy N, Vedant B | Team 4: Supply Chain Dashboard | 2022WT2 | CPSC 554K

UI dependent conceptual sketch

Some ideas:

- *Simplistic (No clutter)*
- *Co-editing sheet*
- *User*
- *Notifications*

General Dashboard Sketch

User
Notification

Disruption

Product XYZ — Open
17/03/2023 | Status: ABC...

Product ABC — Open
17/03/2023 | Status: ABC...

Workspace

Disruption details | Alternate Product | XYZ

All details
Fields
Edits
Actions

Disruption List

Workspace

UI dependent conceptual sketch

Some ideas:

- *Progress, Details*

Supply Disruption Notification (Overview)	Supply Disruption ID	Type of Disruption	Parameters	Priority	Current Supplier	Purchasing	Contracting	Progress
	D101	Discontinuation		1	ABC company	suggested product	suggested product	🛒-⊙-🔋-⬜-✂
	D102	Back-Order		3	DEF company	(Blank-Not yet suggested)	(Blank-Not yet suggested)	🛒-⊙-🔋-⬜-✂
	D103	Back-Order		2	GHI company	(Blank-Not yet suggested)	(Blank-Not yet suggested)	🛒-⊙-🔋-⬜-✂
	....							

06

Next Steps

What's the plan?

Ishita H, Michelle C, Tommy N, Vedant B | Team 4: Supply Chain Dashboard | 2022WT2 | CPSC 554K
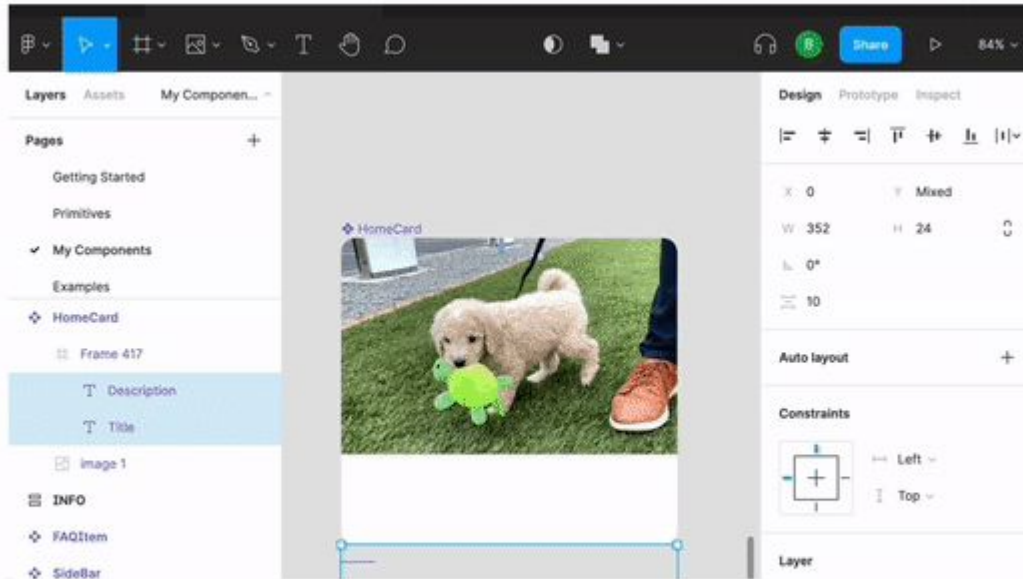
Next steps

- Moving into prototyping phase (Draft early wireframes sketches of low-fi prototype)
- Converting the conceptual model into LoFi prototype
- Keeping in loop with project partners to check with meticulous progress on prototype

- Testing: Stakeholders, proto-testers?

Next steps

1. Create components in Figma

Q&A

We would love some feedback!

- Owing to our unique constraints, testing would be difficult for us.
  - *With limited access to the stakeholder, testing out such a model which has multi-user roles will be difficult.*
  - *Is "proto-testing" a good method?*
  - *What else can we do?*