STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban University

Kanban System Design (KSD)

Part I of the Kanban Management Professional Credential

Version 2.0.5

Silke Noll

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

Yes We KANBAN

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban University Copyright

Kanban System Design

Successful Evolutionary Change for your 21 Century Organization

All material in this document copyright ©2024 Kanban University.

This material is distributed only to registered attendees of Kanban University training classes. It is not permitted to re-distribute this material or to use it in other training classes or workshops, with or without charge. It is not permitted to re-use parts of this training material in your own presentations or publications without permission.

If you wish to license this material for use in training sessions, please contact Kanban University. Email: info@kanban.university

STUDENT COPY
STUDENT COPY

STUDENT COPY
STUDENT COPY
STUDENT COPY

Before we start...

Create a free account in Kanban+ and apply the trial code, which you can find here: https://kanban.plus/pages/bwk-trial-subscription

You are going to need it for the exercises and as your learning process support.

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Posters you will need

https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/statik/statik-intro

STATIK

https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/kanban-in-numbers-2/6-benefits

Kanban in Numbers

You will find many more posters in the BWK+! Explore them all :)

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Supporting reading

Kanban in Numbers poster	https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/kanban-in-numbers-2
STATIK poster	https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/statik
Chapter 1: *A Conscientious Manager's Dilemma*	https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-chapters/reader/1-managers-dilemma
Chapter 12: *Codifying the Method*	https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-chapters/reader/codifying-the-method
Appendix A: *The Original Kanban Values*	https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-chapters/reader/appendix-a
Case Study: *XIT Sustaining Engineering (Microsoft)*	https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-case-studies/reader/xit
Kanban+ blog	https://kanban.plus/blogs/blog?page=1

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Introduction

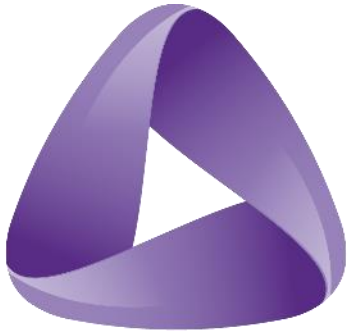
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Power in Simplicity!

Kanban CONFERENCES



Kanban University

Pragmatic, actionable, evidence-based guidance!

Something you can take away and implement next Monday

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban Self-Assessment

1. Novice	Curious, no real knowledge, “my boss sent me”
2. Informed	Attended a Lean Kanban conference, watched Kanban videos, or read material about Kanban
3. Practicing	Implemented a Kanban board with my team
4. Practitioner	“Kanbanized” a customer-oriented workflow involving multiple organizational units, with multiple activities, work item types and classes of service
5. Master	Applied #4 to multiple interconnected services in the enterprise, with quantitative feedback loops

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

What is your purpose for being here in this class?

What are your objectives?

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Purpose of this Class

- Explain the basics, motivation, and benefits of the Kanban Method.
- Apply the Kanban practices and principles with the “Service Orientation” agenda.
- Explain the core Kanban concept of “Pull” with its effects and how Pull-Systems can be modeled.
- Apply the STATIK Method to design service-oriented Kanban systems.
- Apply insights from STATIK and suitable patterns to design a Kanban board that closely models the workflow, item types, classes of service and other elements at hand.

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Overview of the Course Modules

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

What is Kanban?

A Method

for knowledge work management

…having
Principles and Practices

to guide you in managing work and improving the way you do it

…using
Kanban Boards

visualizing your work and its flow

…and
Kanban Systems

to ensure work on an item starts only when there is **both** customer demand **and** system capacity

Reading reference: ***What is the Kanban Method?***
https://kanban.plus/blogs/blog/what-is-kanban-method

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Motivation For The Kanban Method (The Kanban Agendas)

Line-Level, Individual Contributors

- Relief from overburdening
- Produce better quality
- Take a professional pride in their work and customer satisfaction

Mid-Level Management

- Up-managing – answer the hard questions with confidence
- Down-managing – make difficult decisions with confidence
- Reliable, predictable, faster service delivery

Senior-Level Management

- Make promises we can keep
- Lead the business (strategy, positioning)

SUSTAINABILITY | **SERVICE ORIENTATION** | **SURVIVABILITY**

Reading reference: ***3 Agendas***
https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/kanban-in-numbers-2/3-agendas

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Experiencing Flow

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Run the online simulation here, incl. debrief

- Duration: 3-4 hours

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

1.25 hrs

Prerequisites for Module 2

- Work through the worksheet **“Kanban Change and Service Principles”**
- Reflect back on the simulation and take down a few notes: How was that experience? What insights did you gain?
- **Bring your results!**

Reading reference: ***Kanban Principles***
https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/kanban-in-numbers-2/9-principles

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Understanding Kanban

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

The Kanban Method

かんばん

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

What does “Kanban” mean?

A Kanban System consists of a quantity of “kanban” (かんばん) signal cards in circulation.

STUDENT COPY
STUDENT COPY

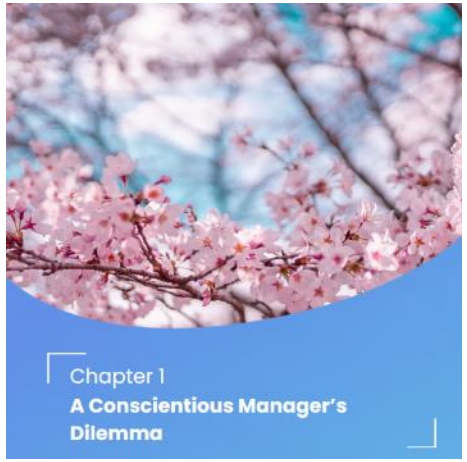
Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Get an immersive experience!

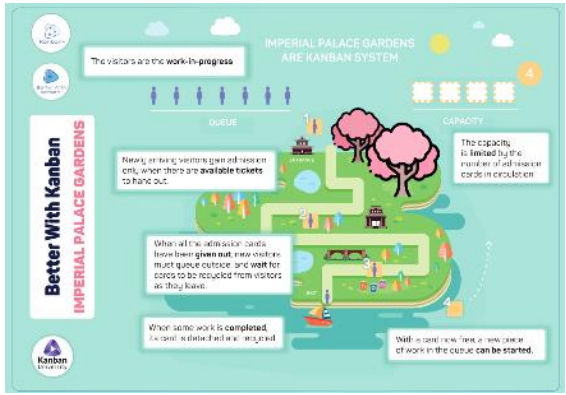
Watch video

https://www.youtube.com/watch?v=Fp7tzaLLrTI



Read the chapter

https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-chapters/reader/1-managers-dilemma



Download poster

https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-downloads

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban Has Two Meanings

- Kanban has two meanings in Japanese, both meanings are incorporated into the Kanban Method
- Written 看板 in Kanji (Chinese characters), kanban means “sign” or “large visual board”
- Written かんばん in Hiragana (the Japanese alphabet), kanban means “signal card(s)”
- In Chinese, only the 看板 version exists. In Chinese, kanban literally means “looking at the board” (and interpret the cartoon on the book cover very literally), but the method was actually inspired by the signal cards system used in Japan

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

15 min

Exercise: Kanban Myths and Facts

- In groups of 2-5, sort the statements into “Myths” and “Facts”
- Use the virtual workspace areas prepared by your trainer

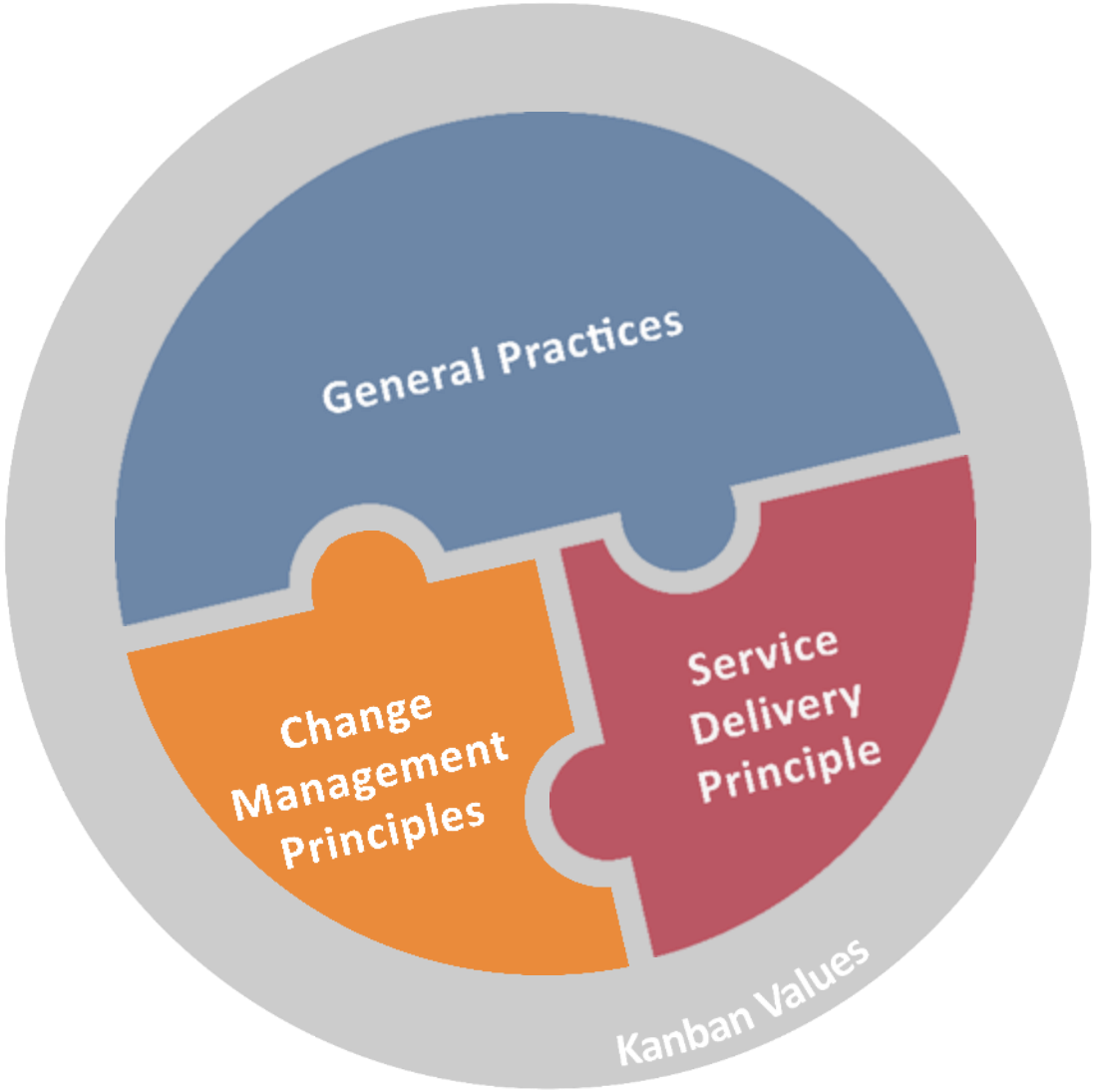
Reading reference: ***10 common Kanban implementation mistakes***
https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-articles/reader/10-kanban-mistakes

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Elements of the Kanban Method



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban Principles

Change Management Principles and Service Delivery Principles

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

15 min

Review results of worksheet 1

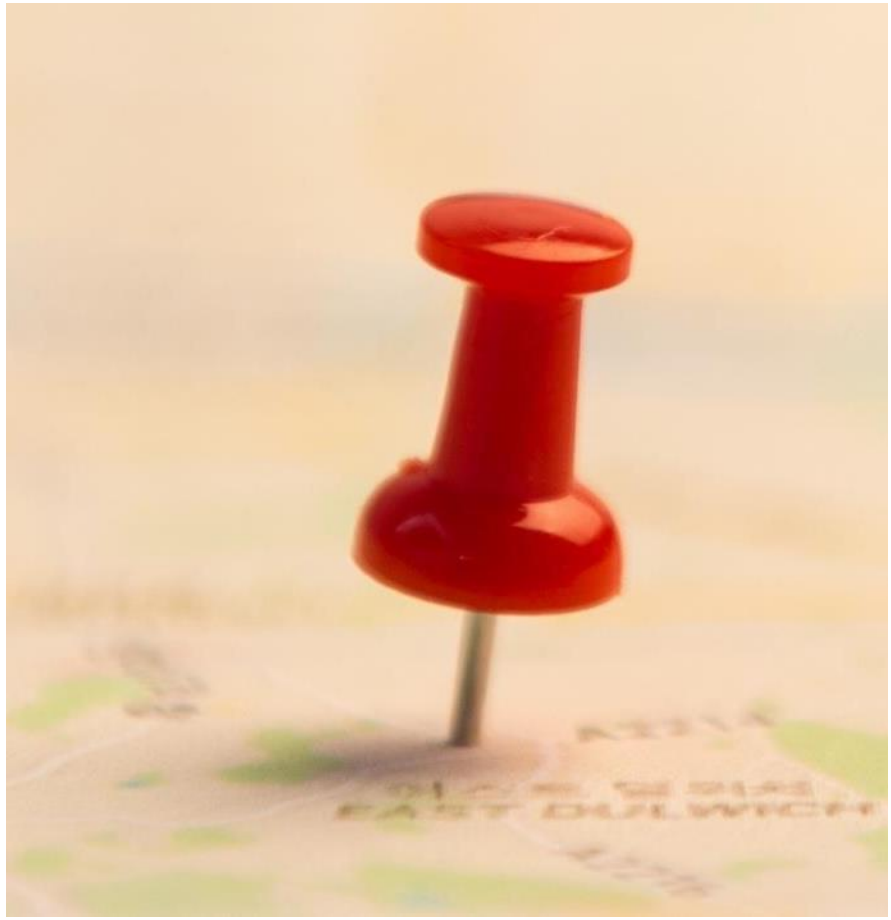
- We now go step by step through your filled worksheets
- Please share findings, examples and new insights

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban Method: Change Management Principles



1. Start with what you do now
   - Understanding current processes, as actually practiced
   - Respecting existing roles, responsibilities, and job titles
2. Gain agreement to pursue improvement through evolutionary change
3. Encourage acts of leadership at all levels

Reading reference: ***Kanban Principles***
https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/kanban-in-numbers-2/9-principles

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

What is a Service?

Customer

Has need
Requests a product or service

Service Delivery
Respond to the need with a series of activities

Need fulfilled
Requestor accepts or acknowledges delivery

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

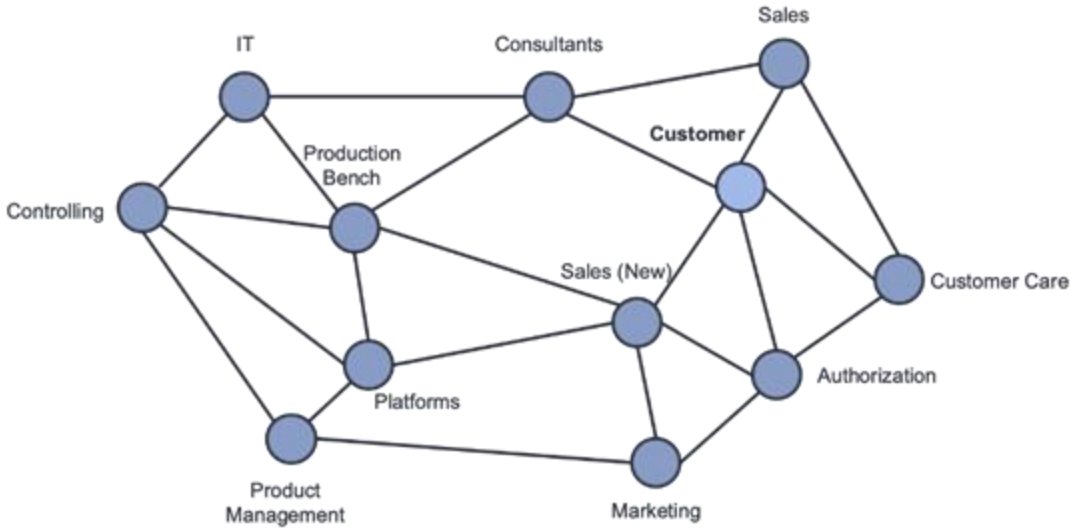
STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban Method: Service Delivery Principles

Your organization is a network of interdependent services with policies that determine its behavior.

Therefore:

1. Understand and focus on the customer's needs and expectations
2. Manage the work; let workers self-organize around it
3. Regularly review the network and its policies to improve outcomes



Reading reference: ***Kanban Principles***
https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/kanban-in-numbers-2/9-principles

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban Practices

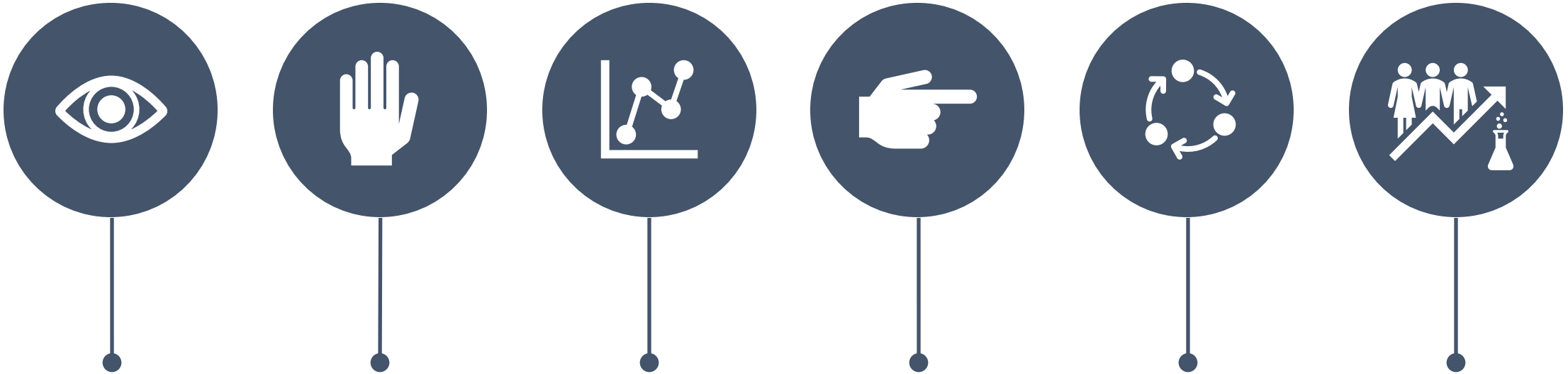
Applied at a service-oriented Kanban system

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban Method: General Practices



Visualize

Limit WIP

Manage Flow

Make Policies Explicit

Implement Feedback Loops

Improve Collaboratively, Evolve Experimentally
(using models and the scientific method)

Reading reference: ***Kanban Practices***
https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/kanban-in-numbers-2/6-practices

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

A Kanban board is one way to visualize work and the process it goes through. For a Kanban system, the commitment and delivery points must be defined, and WIP limits must be displayed.

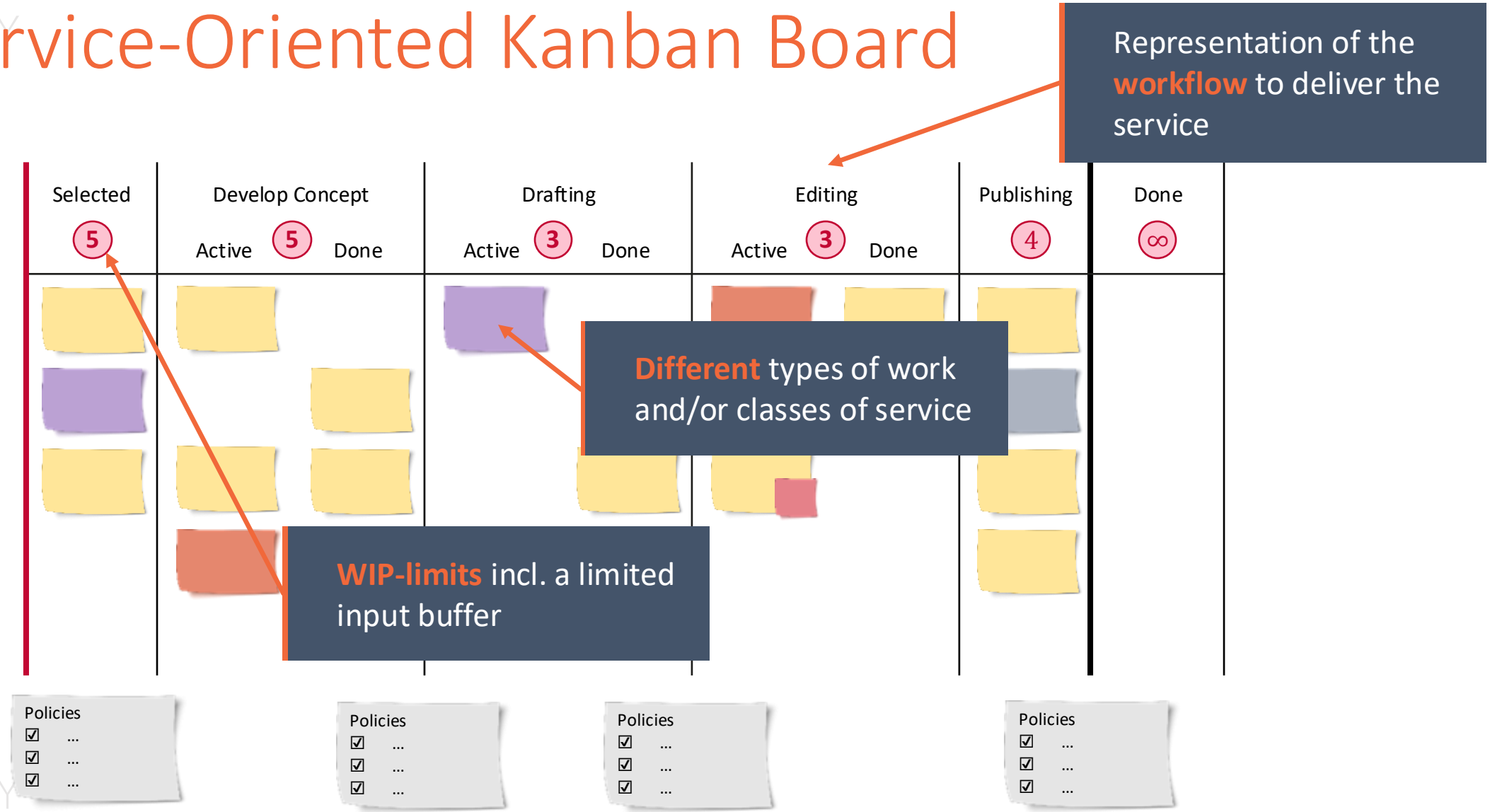
Visualize

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

A Service-Oriented Kanban Board



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Outlook: How to Design a Kanban system

- In modules 3 and 4 you learn how to apply STATIK (Systems Thinking Approach To Introducing Kanban)
- Module 4 contains design patterns for boards and tickets and real-word examples

Reading reference: ***What is a Kanban System?***
https://kanban.plus/blogs/blog/what-is-kanban-system

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Introducing and respecting WIP limits changes a “push” into a “pull” system, in which new items are not started until work is completed.

Limit Work in Progress (WIP)

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Pull systems

Definition of a Pull system

> A system for scheduling and delivering work only when both demand exists, and delivery capacity is available.

In Kanban systems

> Kanban systems use WIP limits to represent the available capacity and to signal the need to pull items.

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

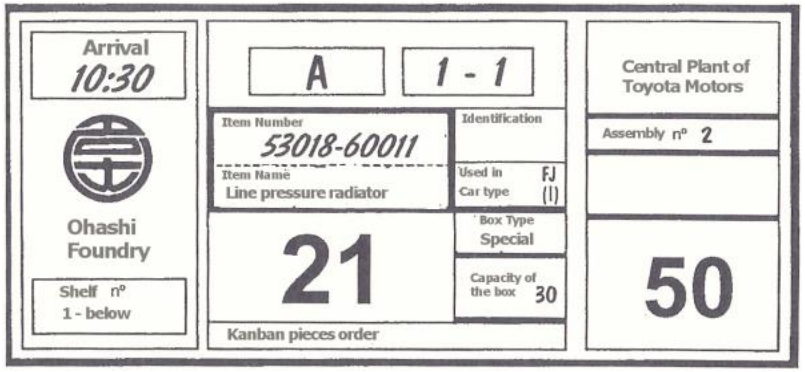
How do Kanban Systems work?

Kanban Systems create signals* to indicate when work should be started

- For example, empty slots or numbers over columns create the signal to start (or not to start) work
- The work item cards are not the pull signals!
- The system limits are designed to ensure:
  - **enough** work is started to maintain continuous working
  - **not too much** work is started to maintain efficient and effective working

* Kanban in Japanese means sign, visual board, or card

The inspiration: A "Kanban Card" from manufacturing



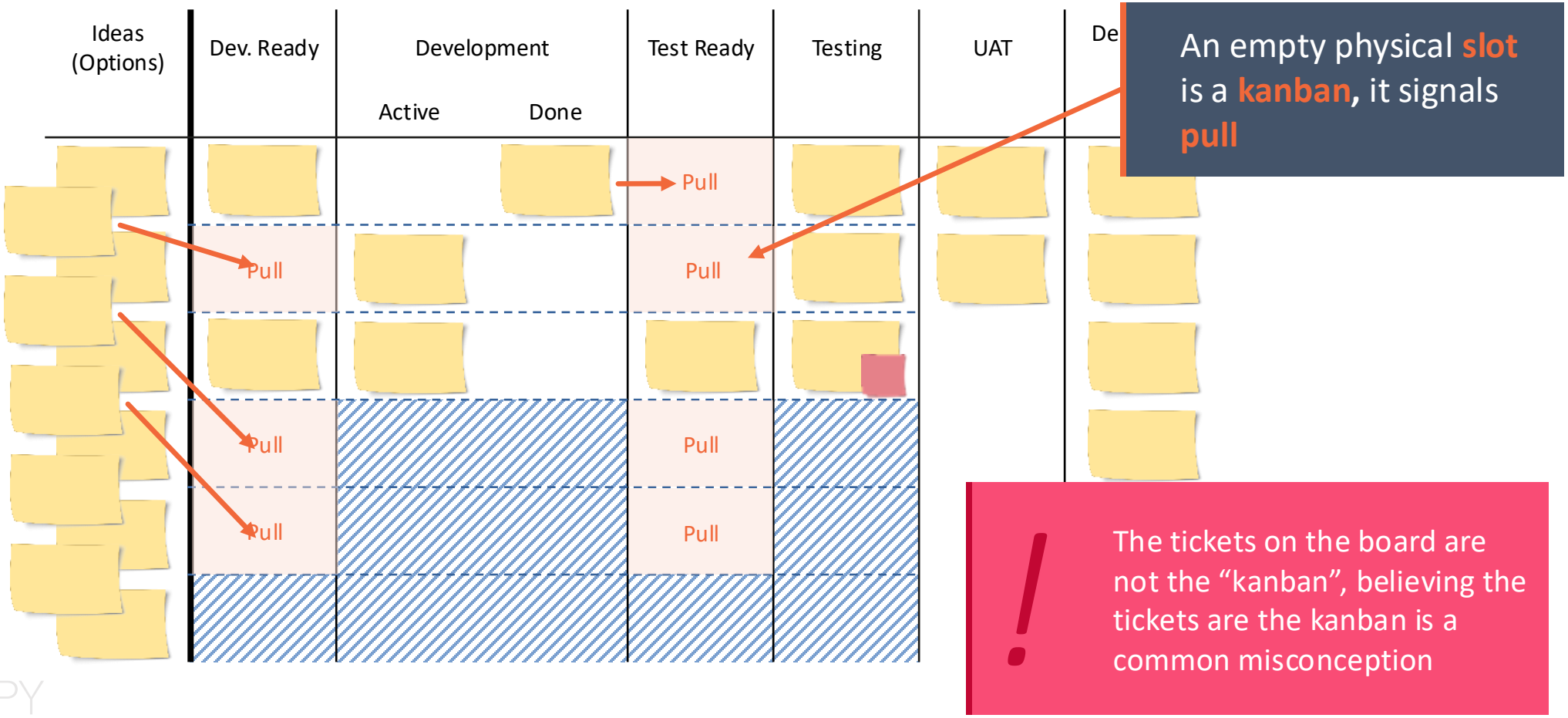
- When parts have been used up, the Kanban Card attached to their container is sent back up the line
- This creates a visual signal that the items are needed
- Kanban Systems inspired the name for the Kanban Method

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban Can Be Represented with Slots

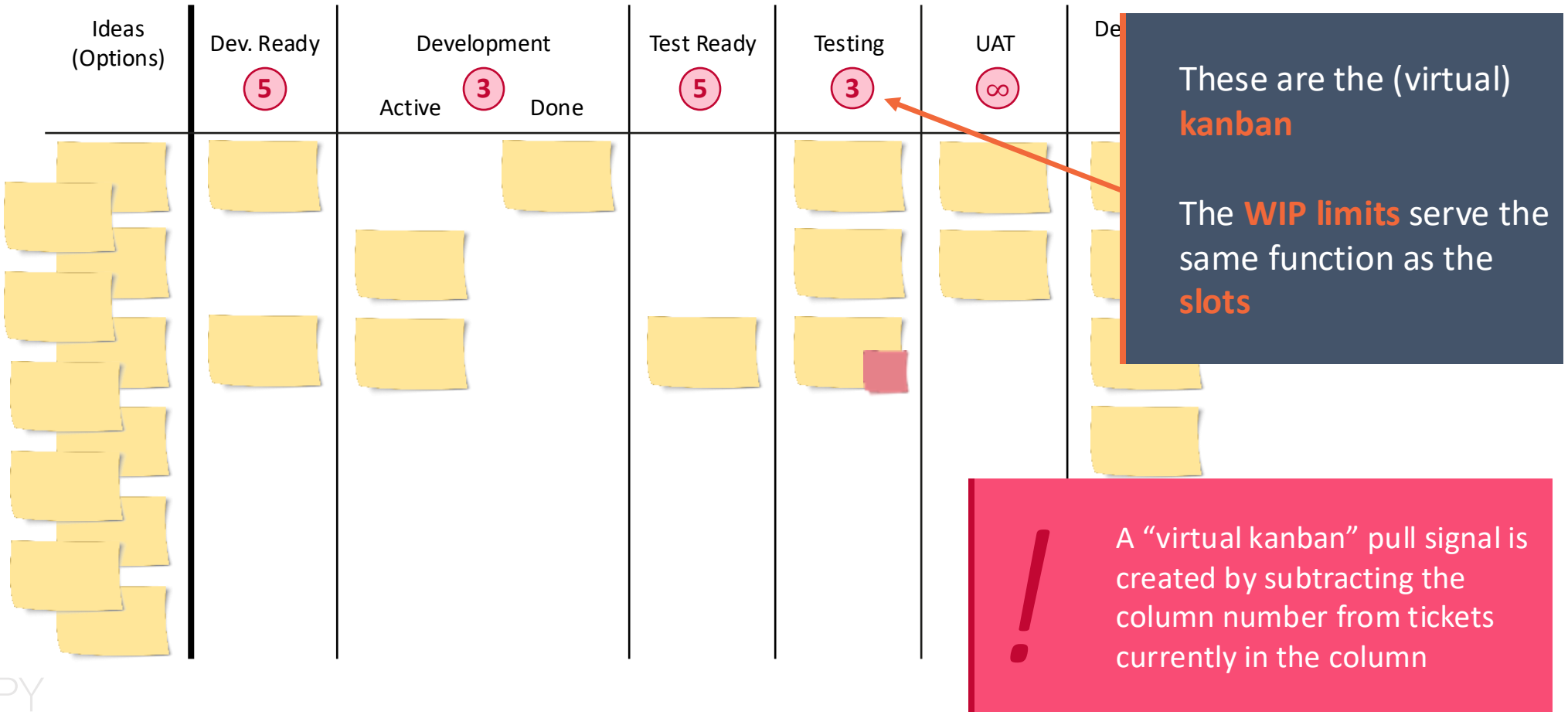


STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Declaring a Kanban Quantity is Even Simpler

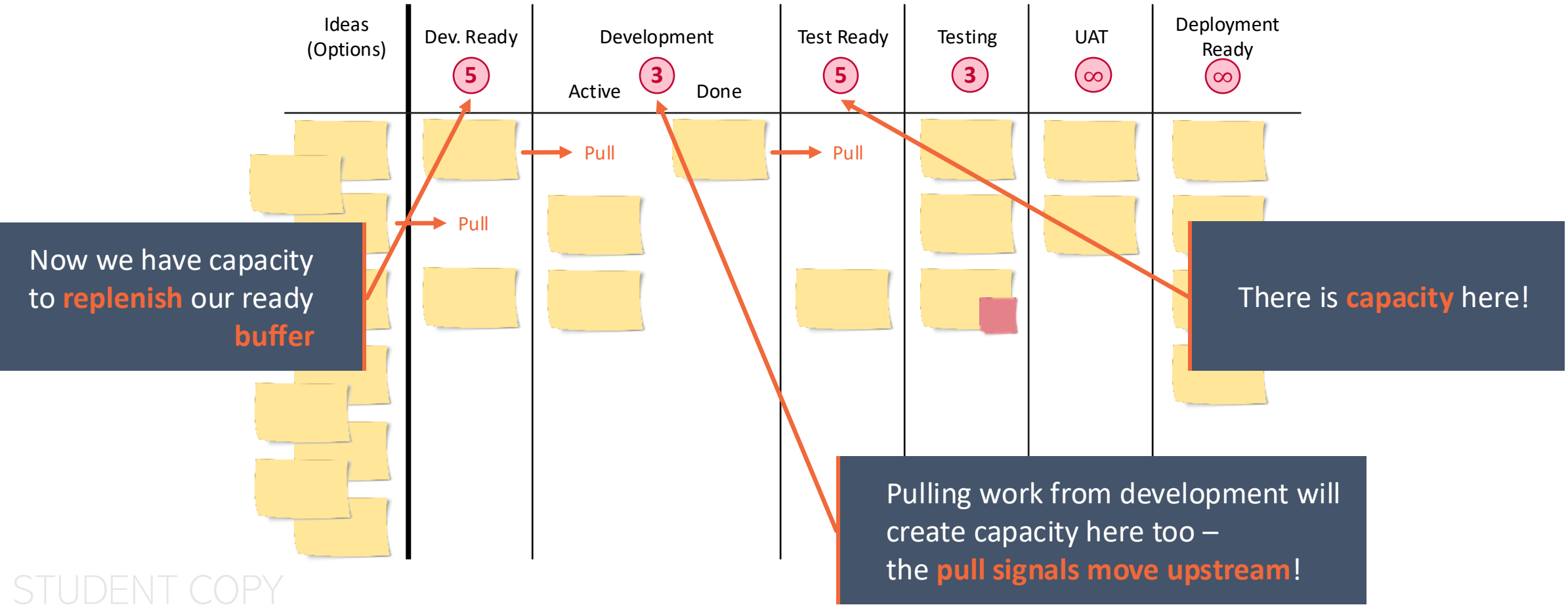


STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban Systems are Pull Systems



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

The flow of work in a Kanban system should maximize the delivery of value, minimize lead times, and be as smooth (predictable) as possible.

Manage Flow

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Options and Commitment

> Kanban systems defer commitment. Work items are options, chosen or discarded as late as possible.

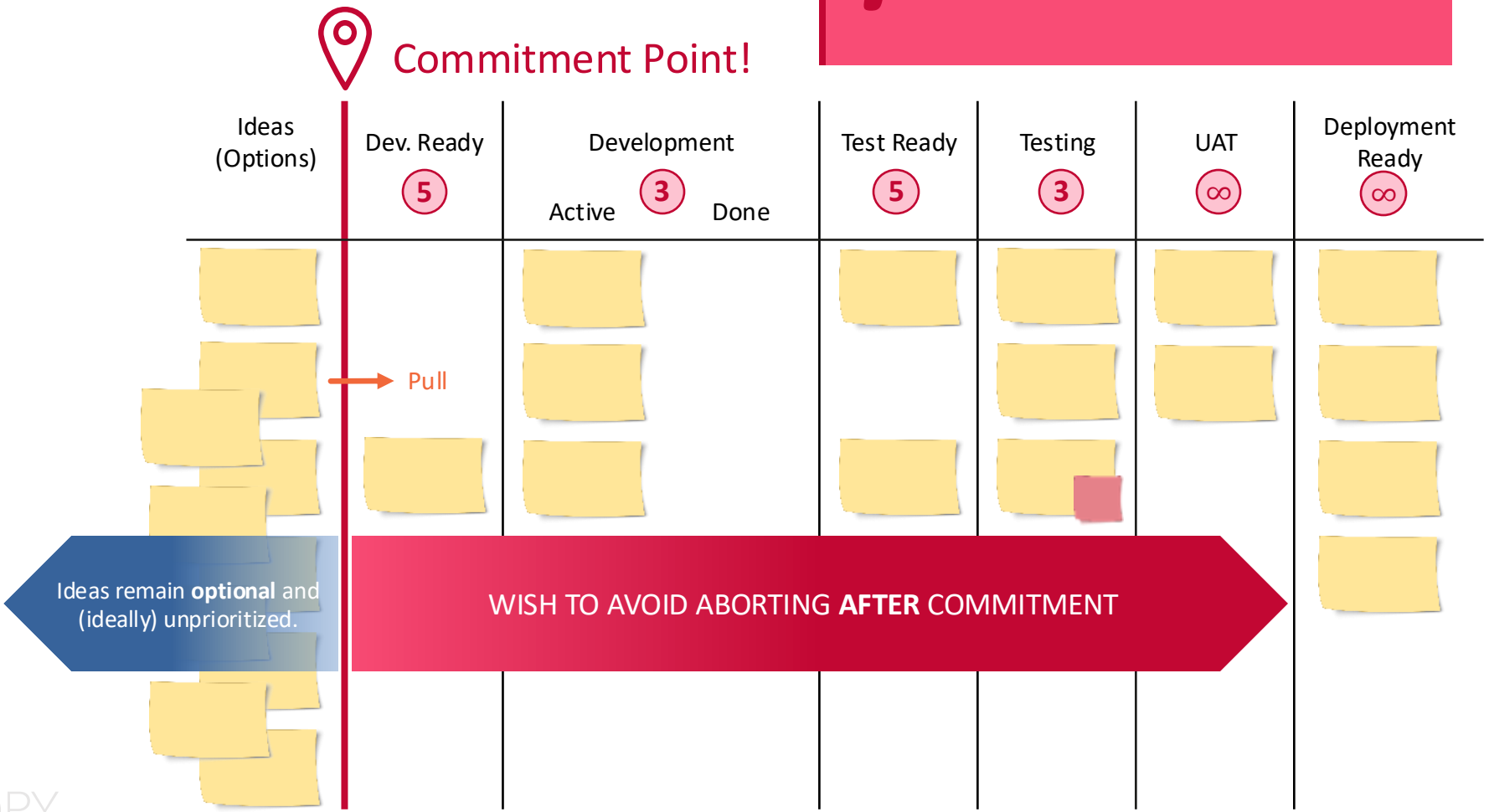
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Commitment Is Deferred

We are committing to getting started. We are certain we want to take delivery



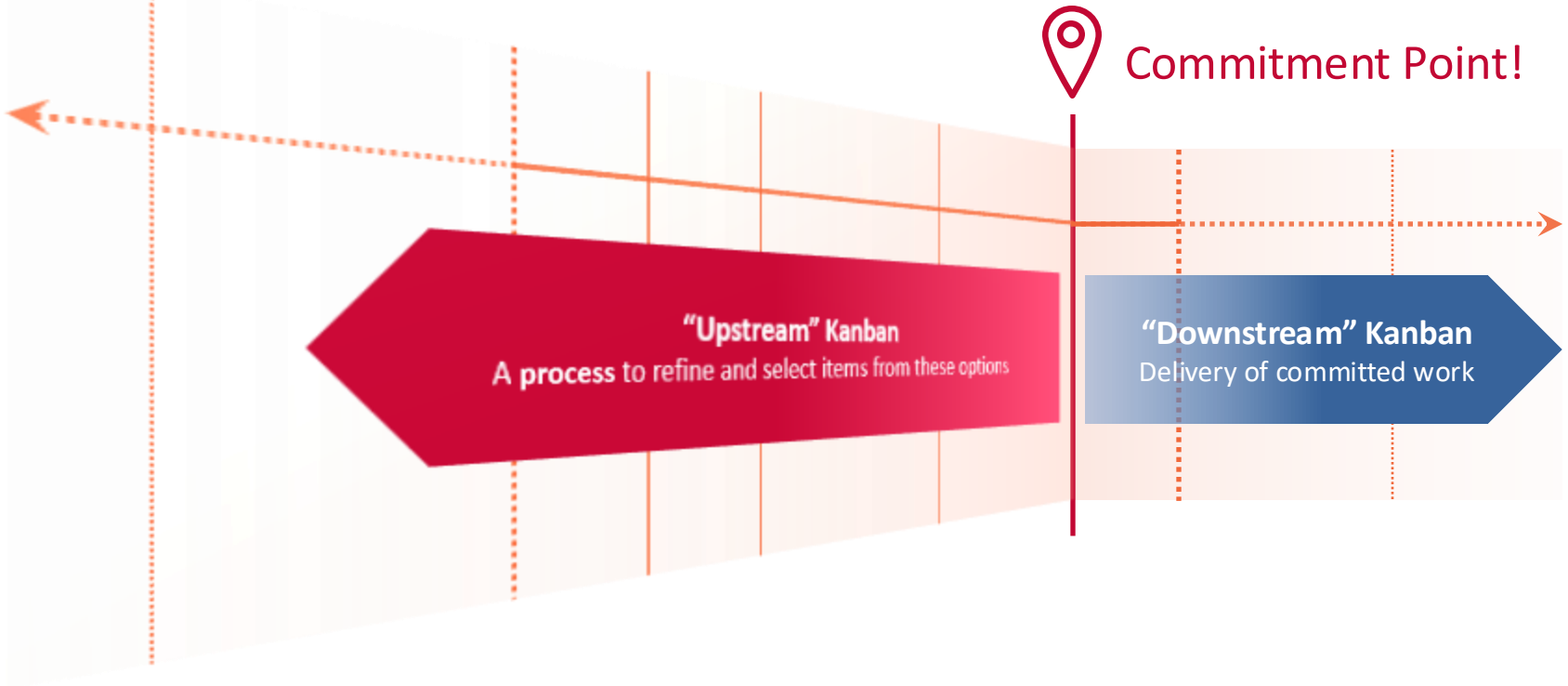
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

In Front of the Commitment Point …

Outstanding requests (“pool of ideas”) which may or not be selected for delivery

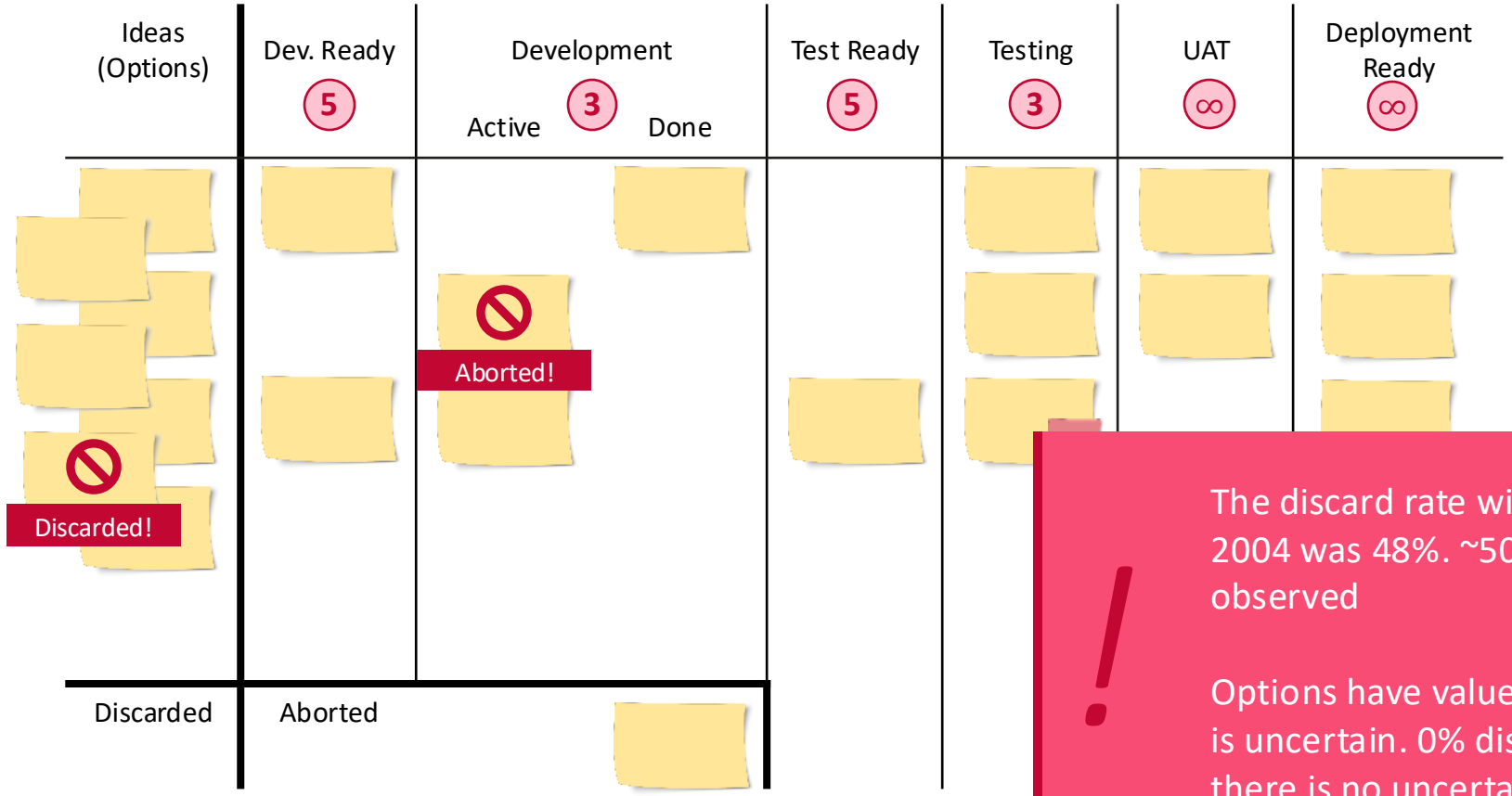


STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Option Discard Rates Are Often High



The discard rate with Microsoft XIT in 2004 was 48%. ~50% is commonly observed

Options have value because the future is uncertain. 0% discard rate implies there is no uncertainty about the future

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Agility is delivering the right work at the right time.

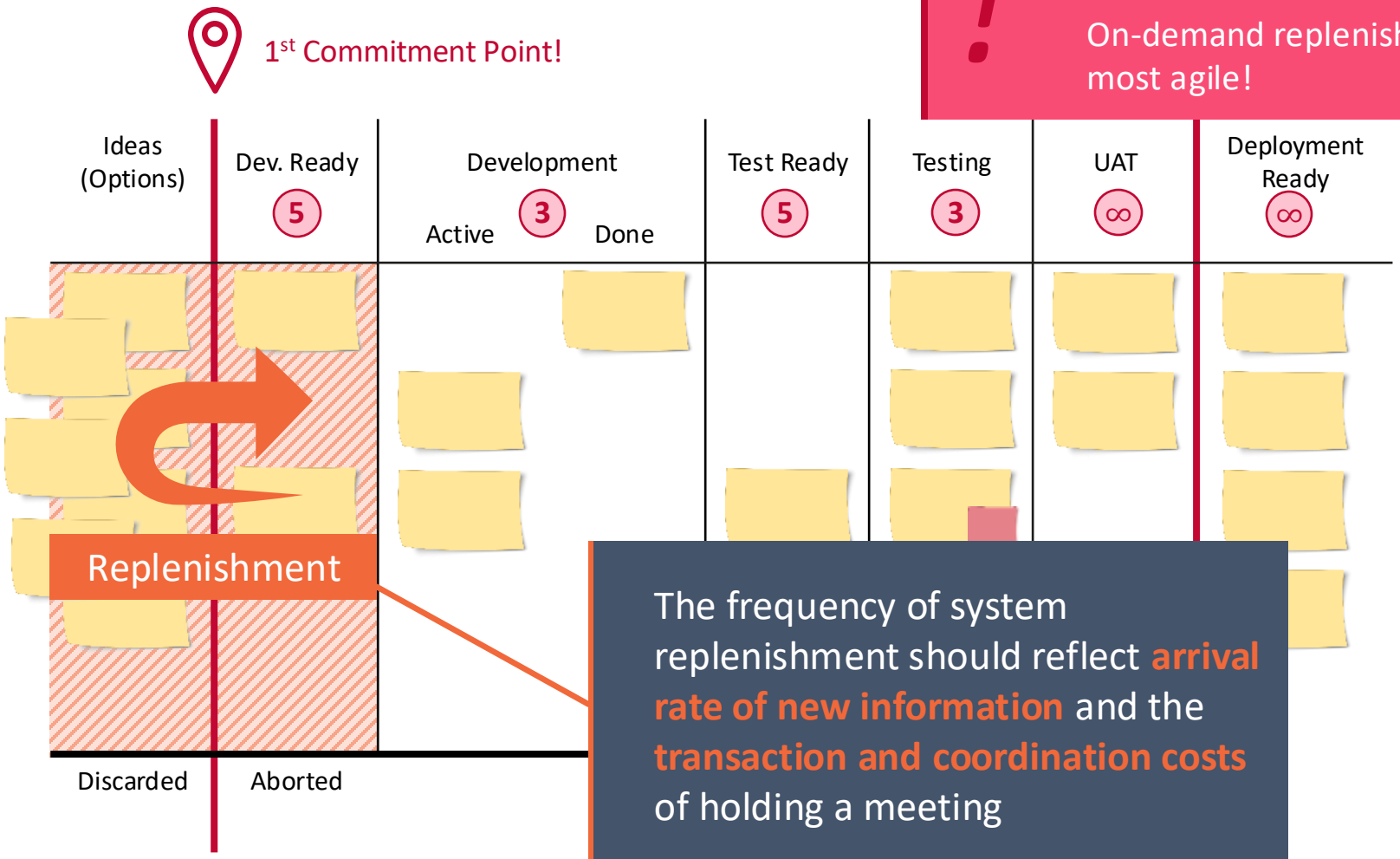
Managed replenishment and delivery options maximize agility.

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Replenishment Frequency



Frequent replenishment is more agile.

On-demand replenishment is most agile!

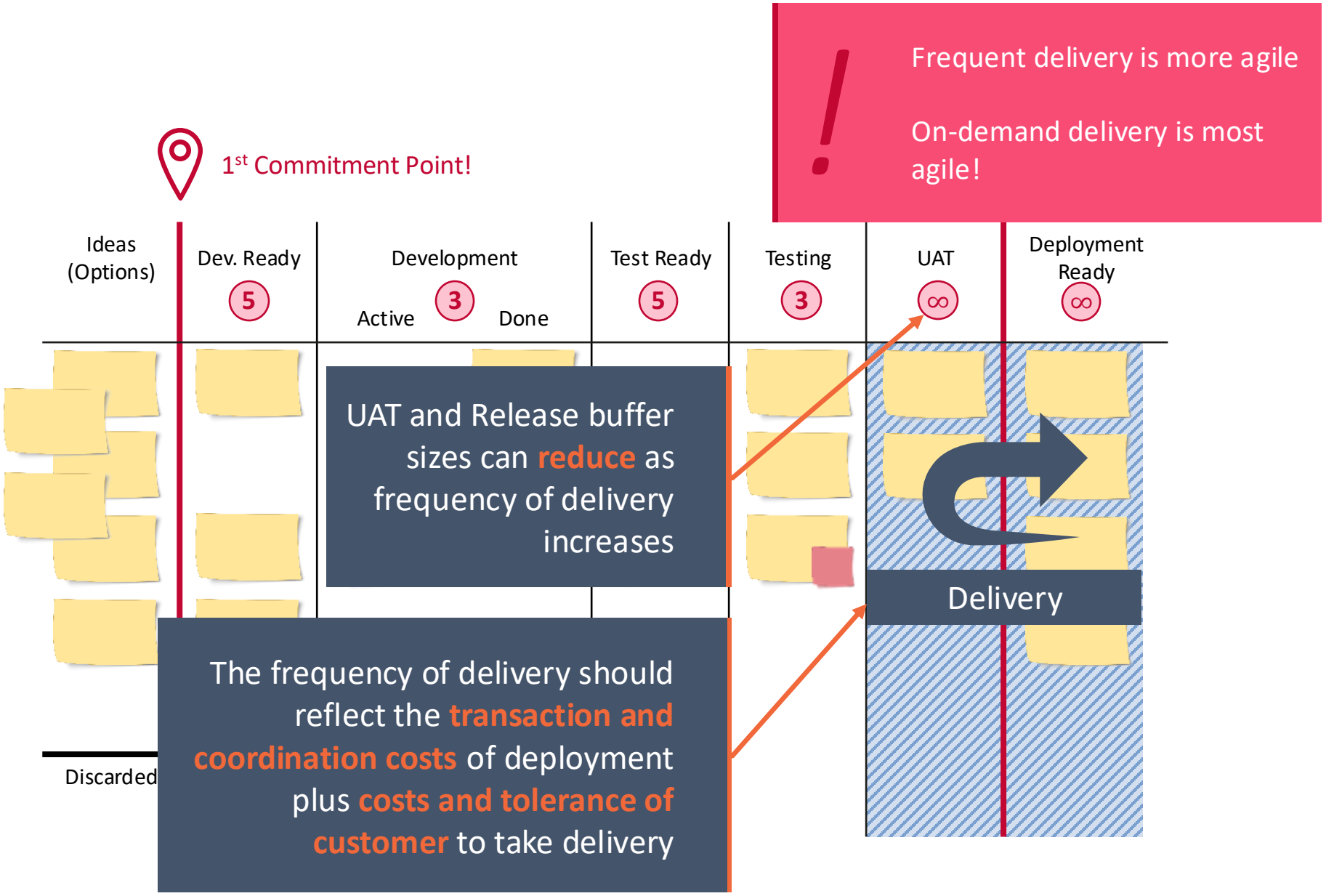
The frequency of system replenishment should reflect **arrival rate of new information** and the **transaction and coordination costs** of holding a meeting

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Delivery Frequency



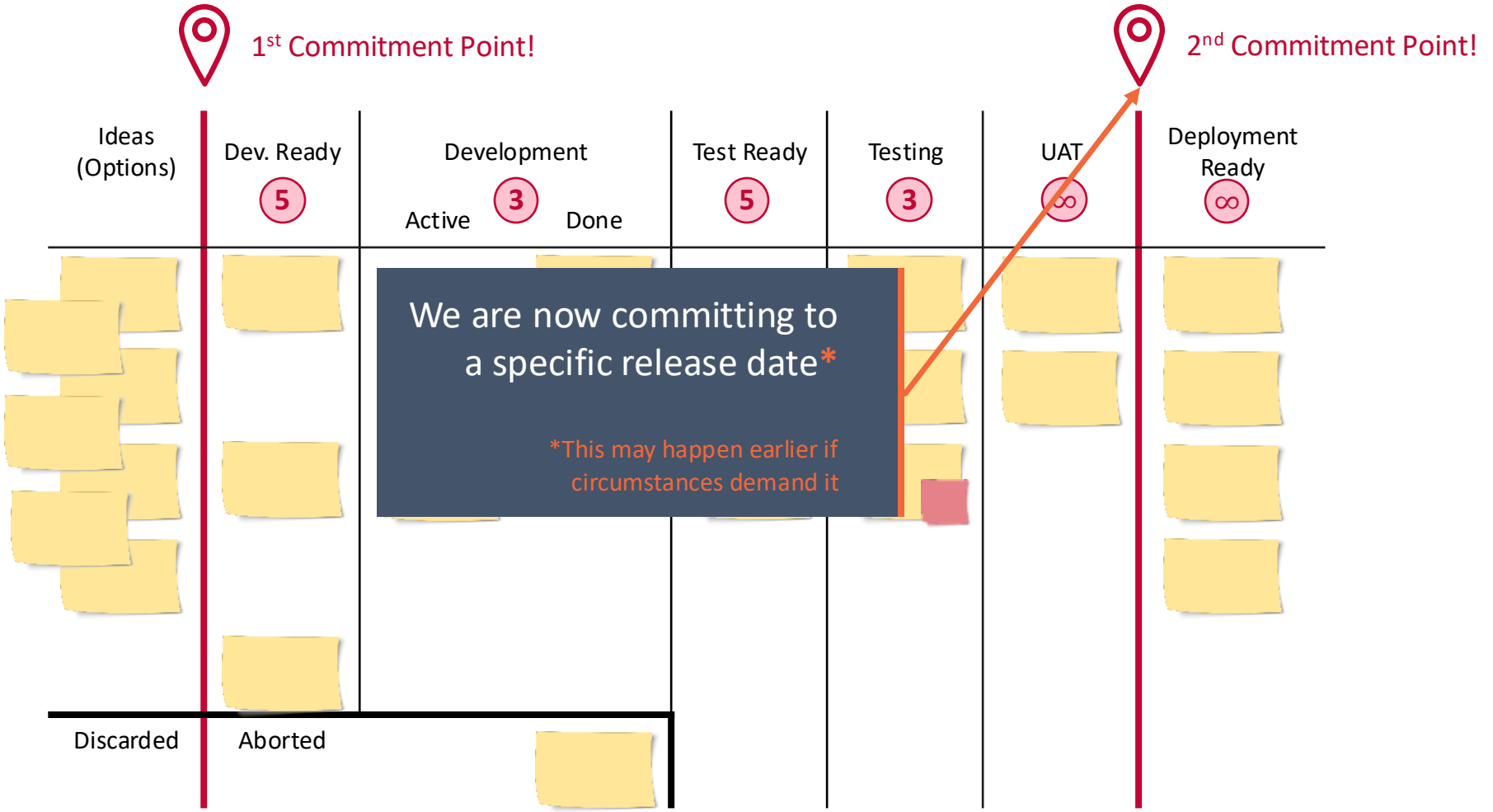
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Deferred Delivery Commitment

Kanban enables 2-Phase Commit



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Core Kanban Metrics and Charts

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

3 min

How can we measure and understand the behavior of flow-based systems?

- In your group, collect as many metrics (things to measure) as possible that are helpful to understand the behavior of a Kanban system
- You have 3 minutes ☺

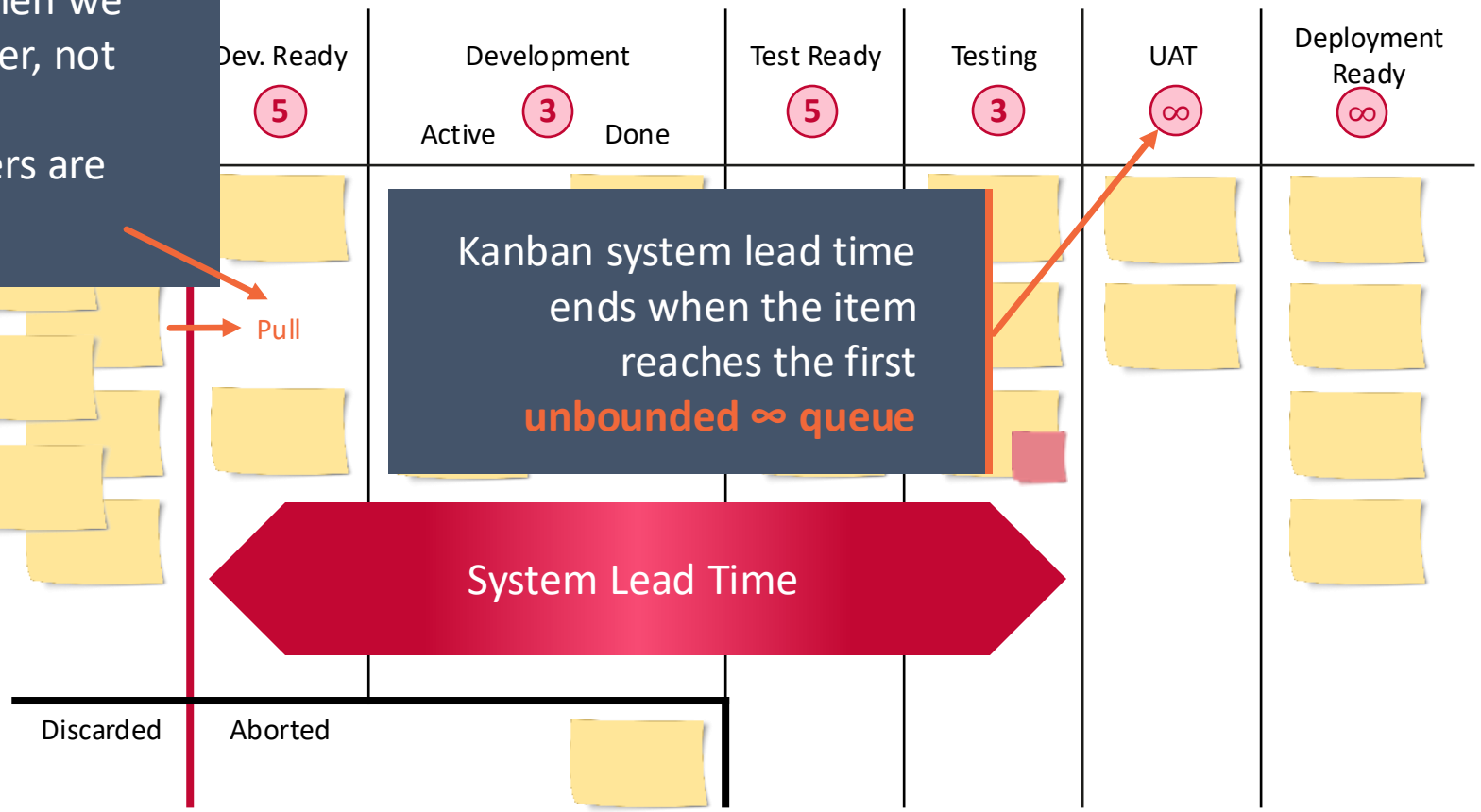
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Metric Definition: Kanban System Lead Time

The clock starts ticking when we **accept** the customers order, not when it is placed!
Until then, customer orders are merely available **options**



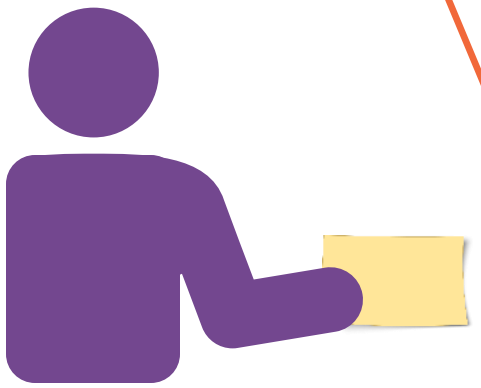
STUDENT COPY
STUDENT COPY

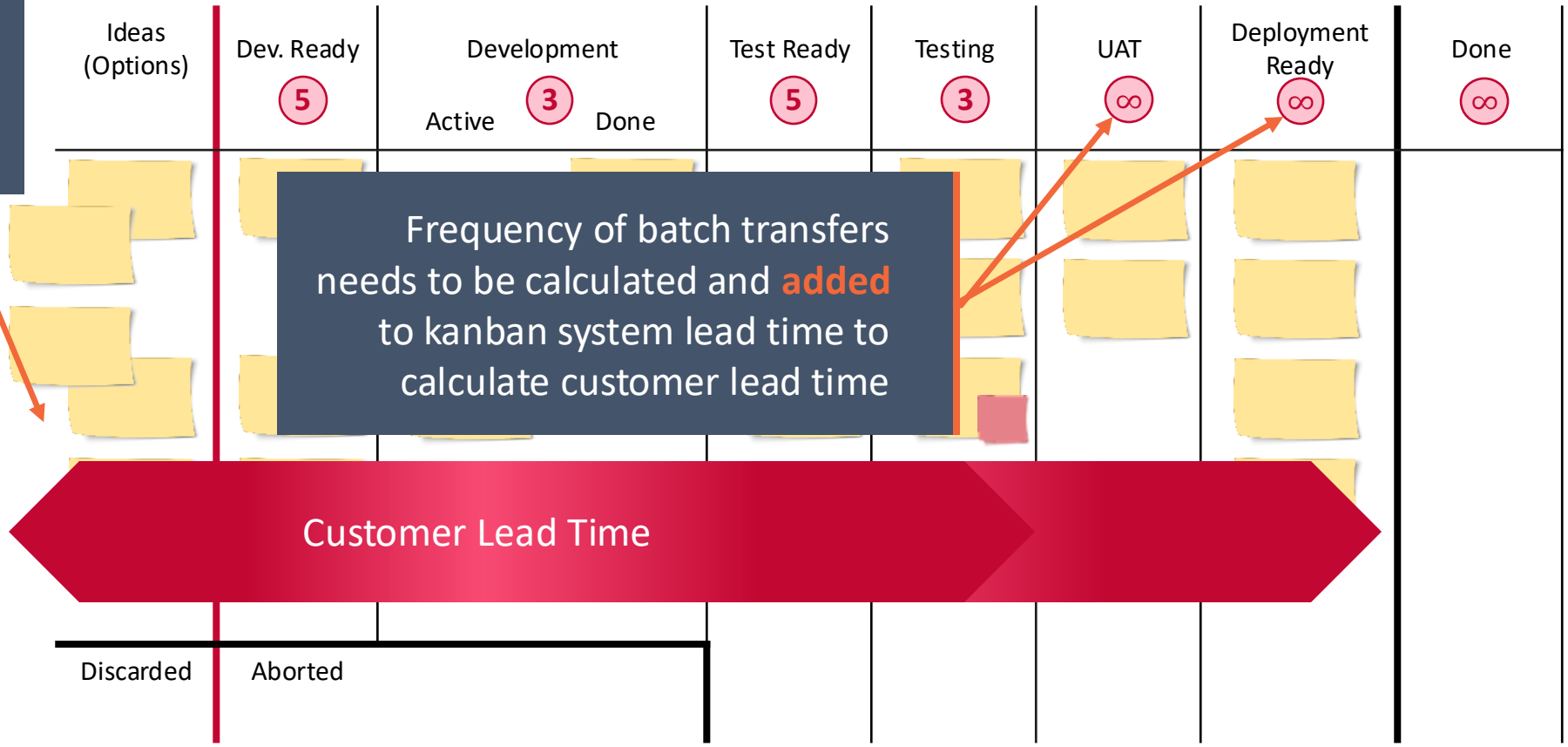
Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Metric Definition: Customer Lead Time

The clock starts ticking when the customers request is received!





STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Curious about Lead Time?

What is lead time?

https://kanban.plus/blogs/blog/what-is-lead-time

Lead time and cycle time

https://kanban.plus/blogs/blog/cycle-time-vs-lead-time-what-is-the-difference

5 things to know about lead time

https://kanban.plus/blogs/blog/five-things-you-need-to-know-about-lead-time

How to read lead time distribution

https://kanban.plus/blogs/blog/how-to-read-lead-time-distribution

Lead time and Little's Law

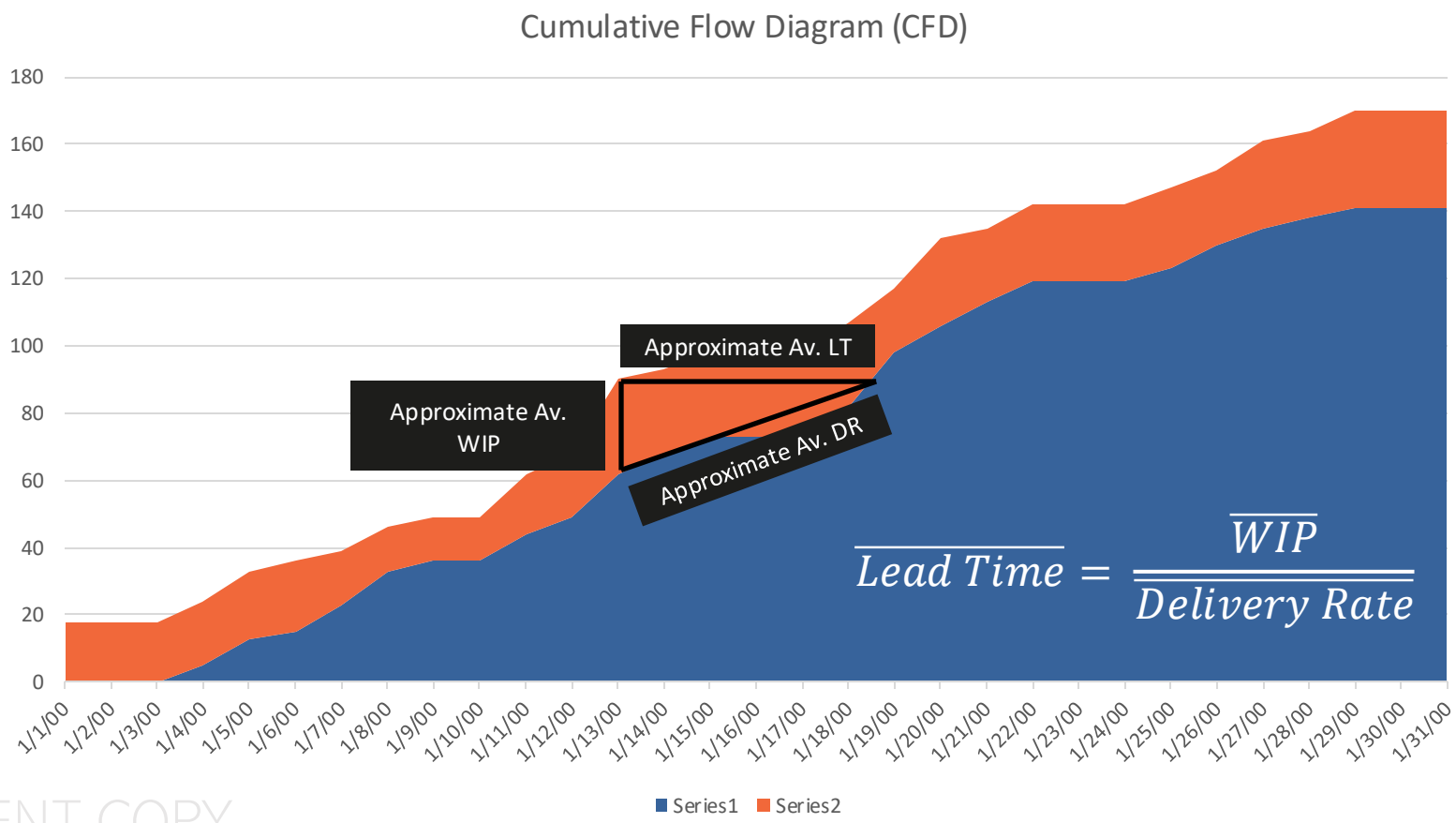
https://kanban.plus/blogs/blog/what-is-the-relation-between-little-s-law-and-lead-time

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Little's Law – a Relationship of Averages



Assumes that the system is not "trending" over the period of averaging.
The number of items entering and leaving system must be similar, and the average "age" of items in progress must not be increasing or decreasing

In spite of this restriction, the formula has proven its usefulness in many circumstances for understanding **how flow systems behave as WIP changes**.

STUDENT COPY
STUDENT COPY

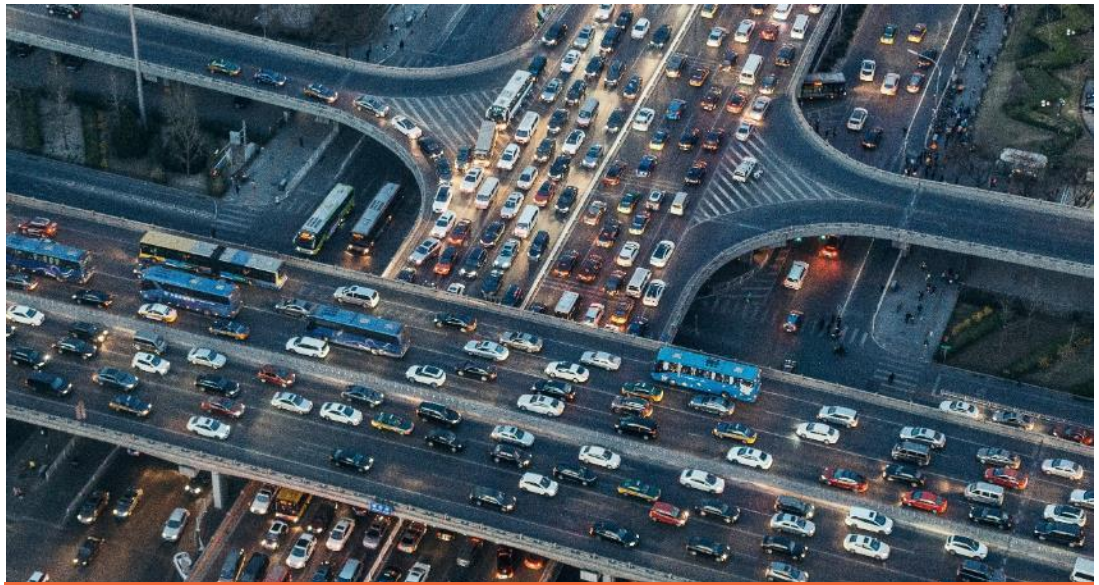
Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Introduction: Flow Efficiency

Where would you prefer to travel? How fast and smooth will your travel be?

Few delays



Traveling time largely determined by delays

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Flow Efficiency

$$Flow\ Efficiency = \frac{Work\ Time}{Lead\ Time}$$

- Flow efficiency measures the share of total lead time which is spent actually adding value (or knowledge)
- Work time is the sum of all the times during which a work item is actively being worked on
- Work time excludes wait times caused by delays
- The higher the flow efficiency, the less delays

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Summary: Key Metrics to Understand System Behavior

Lead Time	System Lead Time/Customer Lead Time – time it takes to fulfill requests
Delivery Rate	Completed items per unit of time – measures completion rate
Flow Efficiency	Work time over lead time
Failure Demand	Self-demand caused by a failure to do something or do something right for the customer
Initial Quality	Escaping defects that will generate future failure demand
Blockers	Reasons or conditions that prevent work from progressing, and their impact
WIP Levels	Number of items in the system overall or in certain stages
Discard/Abort Rates	Items that were discarded before or aborted after the commitment point

STUDENT COPY
STUDENT COPY

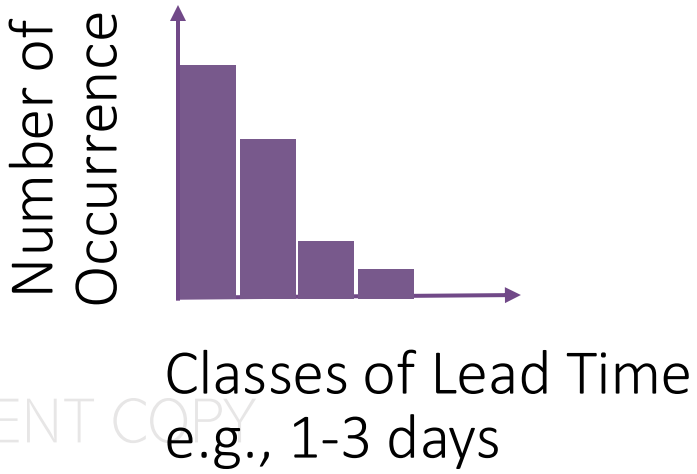
Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Basics Metrics

Distribution (Histogram)

- Shows actual lead time capability
- Helps determine SLA expectations

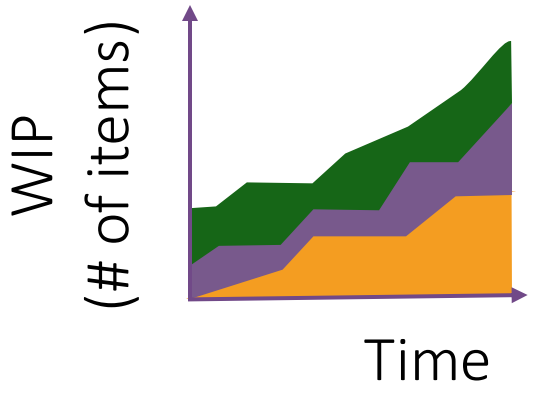


Run Chart

- Shows lead time or throughput over time
- Checks for trends and impact of system changes

Cumulative Flow Diagram

- Shows WIP levels over time
- Shows demand, WIP, approximate average lead time, and delivery rate capabilities

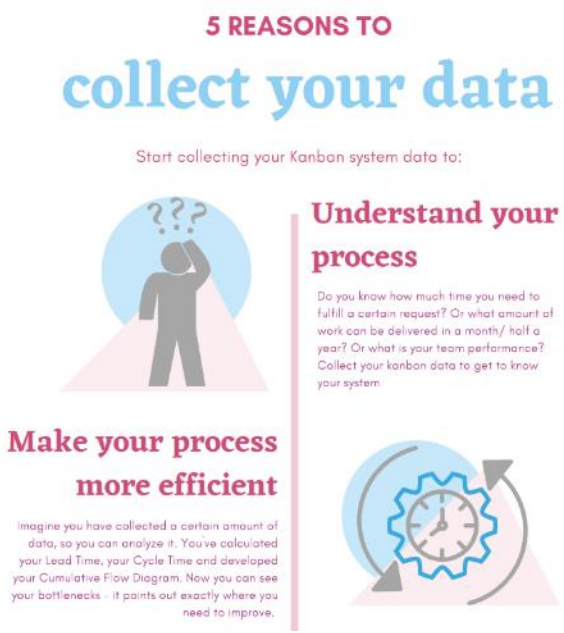


STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Metrics infographics



5 reasons to collect your data

Core Kanban metrics

Download them!

https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-downloads

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

A process expressed as workflow and policies creates constraints in action, is empowering within constraints, and results in emergent characteristics that can be tuned by experiment.

Make Policies Explicit

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

How to Make Policies Explicit

- This is a seemingly simple yet very powerful practice!
- Make sure policies are
  - Sparse (only a few of them)
  - Simple
  - Well-defined
  - Visible
  - Always applied
  - Readily changeable

- Tip: When going through a Kanban system design workshop with STATIK (see modules 3 and 4), make notes of decisions and standards made throughout. They will form the basis for your initial policies!

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Examples of Policies in Kanban Systems

- WIP Limits (at different levels)
- Capacity allocation(*)
- Pull criteria / Exit criteria (for when a work item can exit a state)
- Definition of Ready for implementation (at the Commitment Point)
- Replenishment policies: How does new work get selected
- Standards / definitions of work item types, lanes on the board, ticket colors, ticket layout, etc.
- Classes of service for defining how categories of items are treated in a system

(*) Will be explained further in the KSI class.

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Classes of Service (CoS)

Defines how this category of items is treated in the system. A set of policies is defined that apply to certain work type(s).

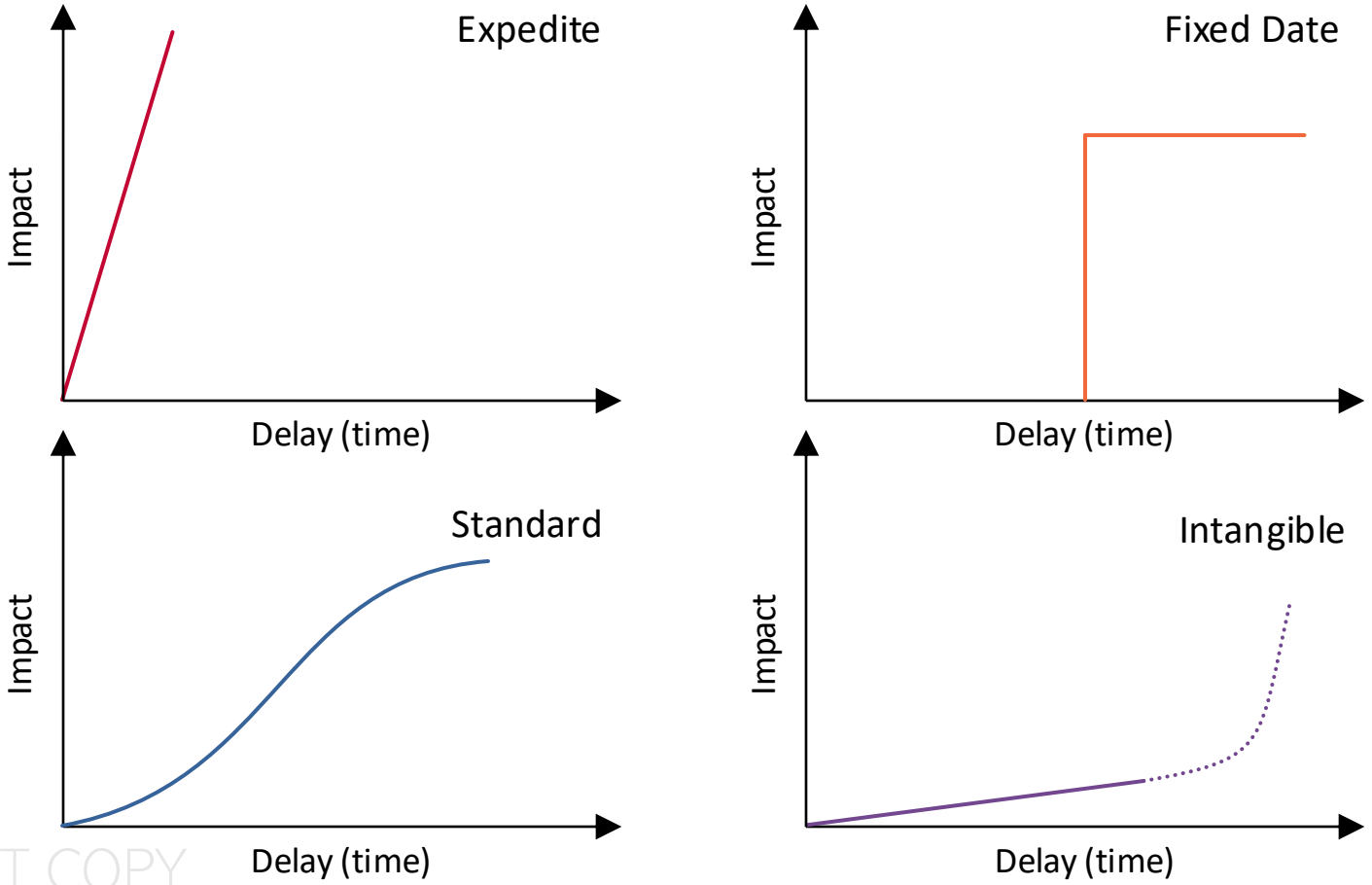
- Recognize different kinds of customer expectation
- Treat of work items in a differentiated manner to better manage lead times and risks – be able to respond at reasonable cost
- Can impact order of selection and delivery - qualitative categories before any quantitative ranking
- Make explicit both internally and externally
- Can be indicated with colors, shapes, stickers, swim lanes, etc.
- …forming the basis for reliable commitments to stakeholders!

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Classes of Service Archetypes Based on Impact of Delay



? "What will happen if you don't finish the work item at that time?"

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Learn more about Classes of Service

Better Prioritization – Sequencing & Classes of Service Explained

MARCH 30, 2024

https://kanban.plus/blogs/blog/better-prioritization-sequencing-classes-of-service-explained

Classes of Service: the everyday concept that can turbocharge your Kanban

MARCH 30, 2024

https://kanban.plus/blogs/blog/classes-of-service-that-can-turbocharge-your-kanban

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Feedback loops are an essential part of any controlled process and are especially important for evolutionary change.

Kanban defines specific feedback opportunities called “cadences”.

Implement Feedback Loops

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

3 min

Feedback loops to run and improve a service

- Which feedback mechanisms do you know from your experience to manage and improve a service?

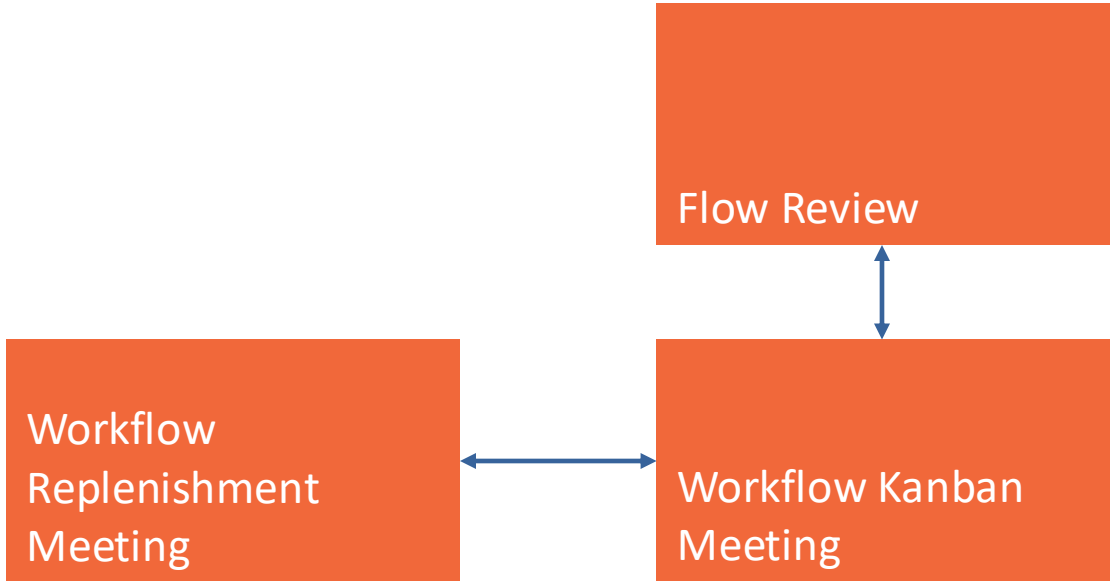
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Feedback Loops to Manage and Improve a Service

- The suggested core cadence for one service:
  - Workflow Replenishment Meeting
  - Workflow Kanban Meeting
  - Flow Review
- Recurring events should happen with a regular frequency
- The specific frequency is a contextual design choice



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Cadences of a Service-Oriented Kanban System

Cadence	Purpose
Workflow Replenishment Meeting	Allow the service team(s) to select work requests and refill the Next-to-Start column so that they do not run out of work for the next period
Workflow Kanban Meeting	Involve the service teams in a collaborative conversation about the status of the work, queues between stages of the workflow and problems that affect the flow of work
Flow Review	Develop an initial quantitative understanding of the delivered service, facilitating work planning, and improving predictability

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY

Workflow Replenishment Meeting

Allow the service team(s) to select work requests and refill the Next-to-Start column so that they do not run out of work for the next period.

- Observations resulting in changes to behavior or policies at Replenishment Meetings
- Policy changes / portfolio changes

- Decisions regarding what to pull
- System changes (to Kanban Meeting)

Leads or representatives of the teams involved in the workflow

Make sure the requested work is clearly defined

Consider technical aspects and dependencies between service teams

Weekly, see arrival rate of info

20 - 30 mins

Kanban University

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Replenishment on Demand or at Regular Events

- Lower maturity organizations struggle with on-demand replenishment; they are helped by predictable, regularly scheduled events; weekly or bi-weekly replenishments are common
- On-demand system replenishment may be possible where coordination effort is low and business owners are (almost) instantly available

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY

Workflow Kanban Meeting

Purpose

A collaborative conversation about how best to flow work to delivery

Who

Facilitated by Flow Manager includes representatives from all teams involved in work on the board

When

Meeting typically held daily at the same time in front of the board. About 15 minutes or less.

What

Walk the board from right to left. Manage work, not workers. Focus on completing work items and resolving issues.

Discuss priorities and team member pull decisions. Any options for collaboration? Treat issues that require more time after the meeting.

Discuss work items ready to be started. Dependencies or risks?

Consider imposed deadlines, agreed SLAs, and fixed date obligations.

Agree temporary policy overrides when appropriate to manage risk

STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

How to Run a Workflow Kanban Meeting

- One person facilitates
- **“Walk the board” from right to left**: Go through the tickets from right (most close to completion) to left (most recently started)
- Remember to **manage work, not workers**!
- The facilitator may solicit a status update on a ticket or simply ask if there is any additional information that is not on the board yet
- More mature organizations may only discuss blocked items, and not discuss every ticket on the board
- There will be a discussion of pullable tickets in “Done” queues. Which ticket should be pulled next and by whom?

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY

Flow Review

Develop an initial quantitative understanding of the delivered service, facilitating work planning and improving predictability.

- Progress and system capability data from Kanban Meeting and tracking system
- Actions from Risk Review

- Defined actions to improve capability
- Communication of decisions

(parts of the) service delivery team, optionally team leads

Compare current capability with defined target conditions
Discuss possible improvement actions

Twice a month

30 min

STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Typical Data Prepared For a Flow Review

- **Distribution of the demand** per work type
- **Range of blocker time per blocker cause**
- **Range of defect and rework time** per cause
- Work items with **high age**

- Averages and distributions of:
  - **Customer lead time** per type of work
  - **Arrival rate** of the demand
  - **Throughput** per type of work for a period
  - **System lead time** per type of work

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Learn more about Feedback Loops & Feedback Mechanism

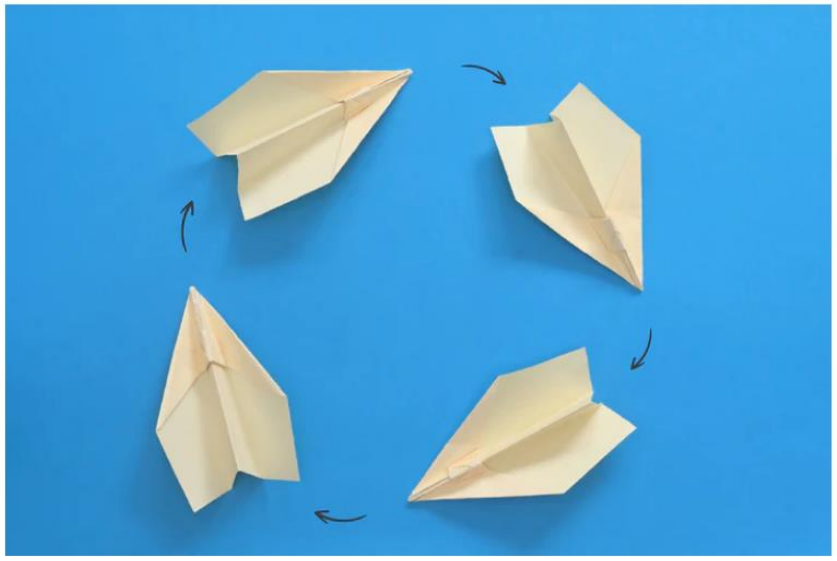
Feedback in Kanban - How to Introduce Meetings in Kanban?

MARCH 30, 2024

https://kanban.plus/blogs/blog/feedback-mechanism-in-kanban

Feedback loops: everything you need to know

MARCH 30, 2024



https://kanban.plus/blogs/blog/feedback-loops-everything-you-need-to-know-interview-with-andreas-bartel

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban is fundamentally an improvement method. It starts from the organization as it is now and then pursues continuous and incremental improvement.

Improve Collaboratively, Evolve Experimentally

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Evolutionary Change

- Improve collaboratively
  - Everyone involved in working with the system shares responsibility to work at the system!
  - Create an environment for people to feel safe to suggest improvements
- Evolve experimentally using models (E.g., Little's Law, Theory of Constraints)
- And the scientific method
  - Acquiring knowledge involving careful observation
  - Formulating hypotheses
  - Experimental and measurement-based testing of deductions
  - Refinement of the hypotheses based on the experimental findings
- The Kanban Systems Improvement class will cover this practice in much more detail

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

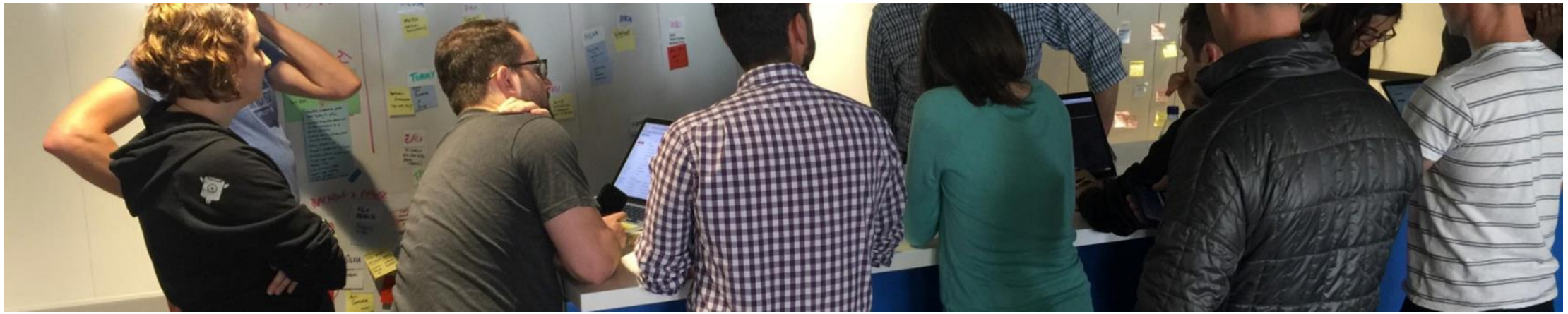
Wrap-Up of Module 2

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban in Action



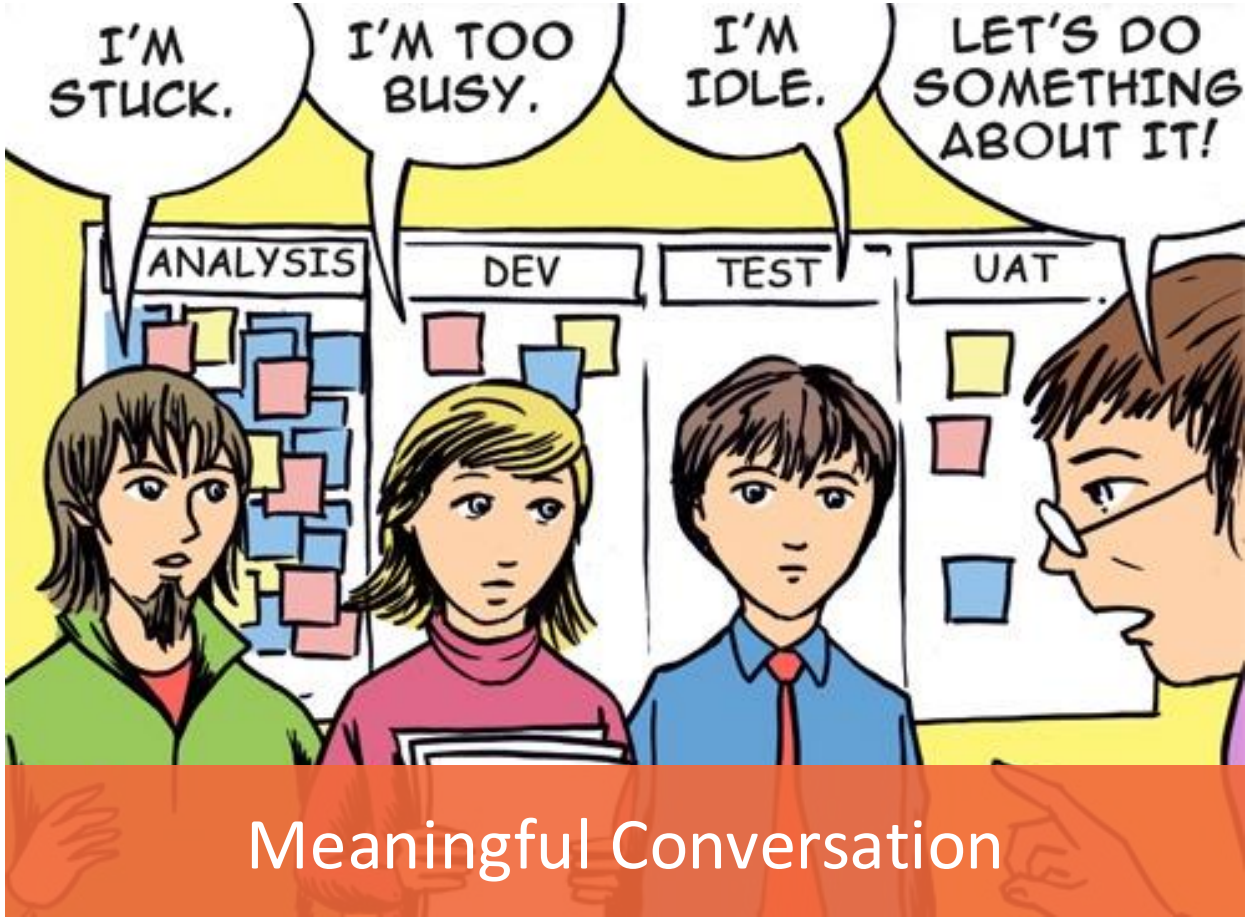
- “Kanbanize” your existing process
- Provoke existing processes to change and service delivery to improve
- Each workflow will evolve as a uniquely tailored process solution, “fitter” for its context
- Customer and employee satisfaction will improve

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

The Essence of Kanban in Action



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Implementing a Kanban System

- Don’t just copy an existing Kanban system!
- Each system must be designed using the **S**ystem **T**hinking **A**pproach **T**o **I**ntroducing **K**anban (STATIK)
- Study demand and business risks. Study capability. Design an appropriate Kanban system to balance demand against capability

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

2 min

Benefits of applying Kanban

Building on what you learned and experienced in this class so far:

- When applying Kanban, what positive things might happen?

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

2 min

… and the results

- . . . and with all of this, what happens next?
- What results are produced?

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

30 min

Prerequisites for Module 3

- Please make sure to get this done before the start of the next module and bring a scan / photo of your results
- Prepare brief service descriptions of cases for the STATIK exercises!
- Read the XIT Case Study Extract

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Module 3

The Systems Thinking Approach to Introducing Kanban

S.T.A.T.I.K.

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Introduction to STATIK

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Introduction to the Systems Thinking Approach to Introducing Kanban

- A repeatable and humane way to get started with Kanban
- Must be applied to each service and results in a full Kanban system design
- Use systems thinking; always consider the system as a whole, with its goal of improving the flow of value to customers

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

The STATIK (Systems Thinking Approach to Introducing Kanban) Steps

Identify Services. For each service …

1. Understand what makes the service “fit for purpose”
2. Understand sources of dissatisfaction regarding current delivery
3. Analyze sources of and nature of demand
4. Analyze current delivery capability
5. Model the service delivery workflow
6. Identify and define classes of service
7. Design the Kanban system
8. Socialize design and negotiate implementation

Scope of this class

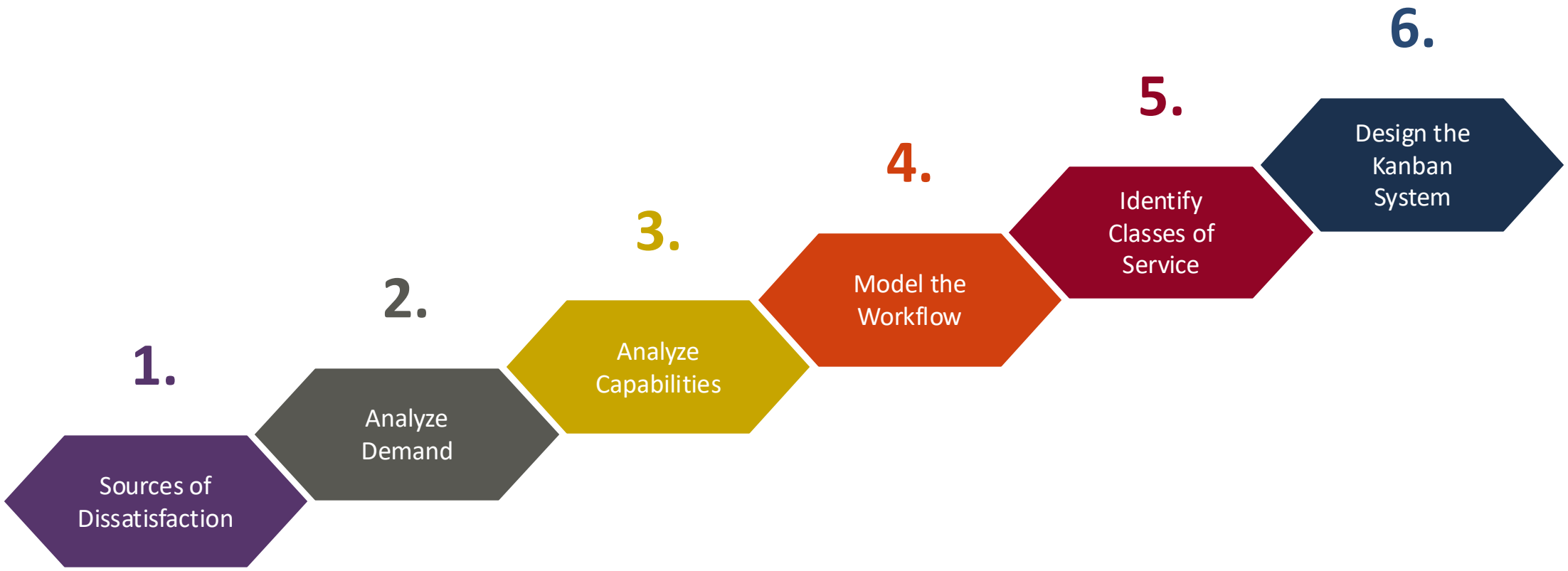
This process tends to be iterative

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Overview of STATIK Steps



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Microsoft XIT Case Study

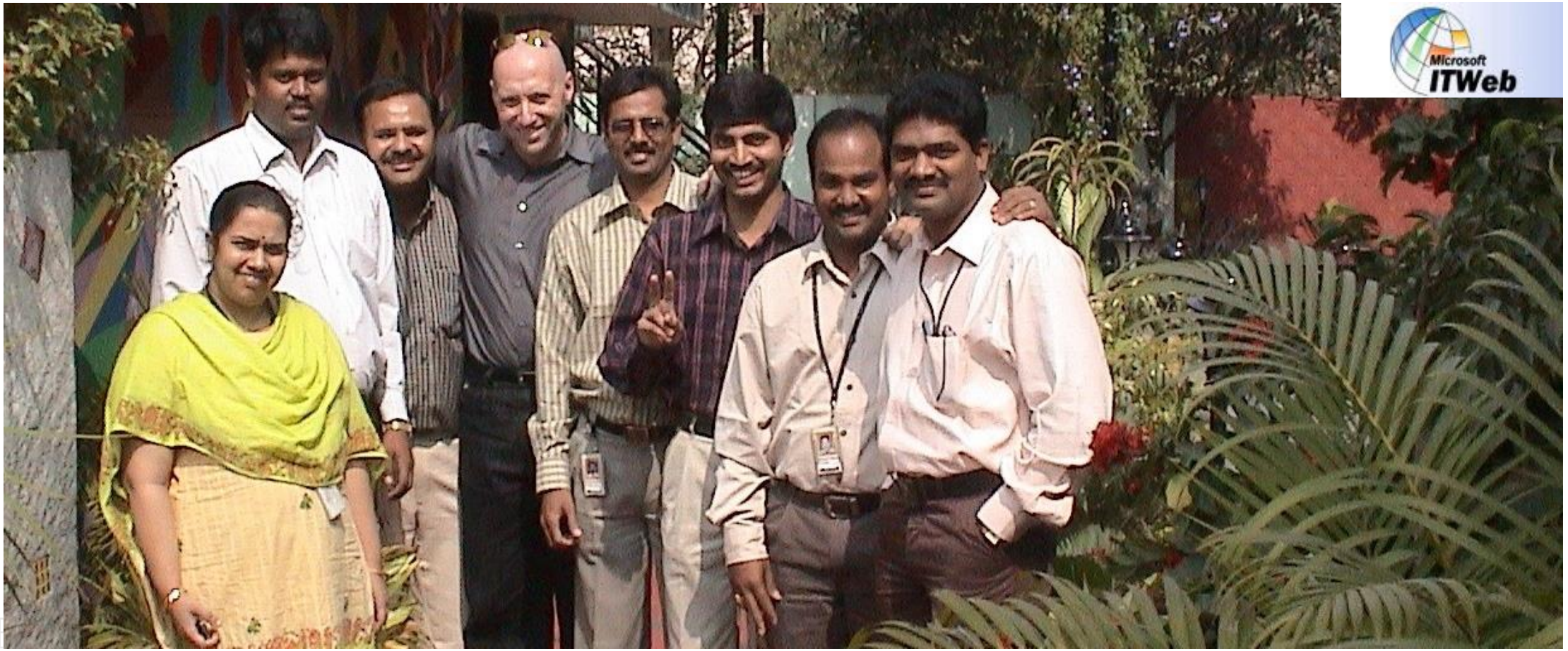
Introduction

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Meet the Microsoft XIT Team!



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Introduction: Case Study Microsoft XIT (2004/05)

- XIT was one of Microsoft's 8 IT departments
- XIT Sustained Engineering
  - Small team
  - Change requests
  - Supports over 80 applications (and growing)
  - Engineering responsibilities moved from Redmond (Washington, USA) to Hyderabad (India) in 2004
  - Hyderabad vendor is CMMI Level 5 and uses TSP/PSP
  - Initial quality is very high

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Full STATIK package

Access interactive poster

https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-posters/poster/statik

XIT Sustaining Engineering (Microsoft)

Read case study

https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-case-studies/reader/xit

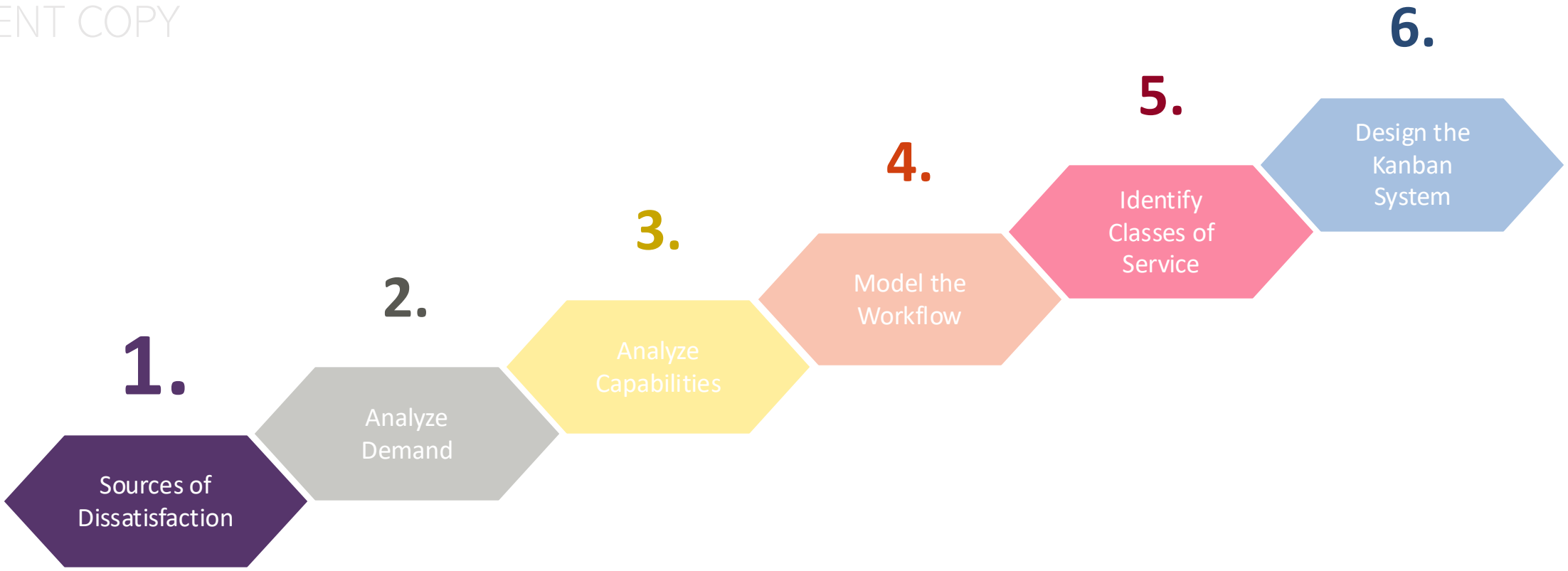
Download poster

https://all.kanban.plus/en/content/kanbanplus/bwk/default/bwk-downloads

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY



Step 1: Sources of Dissatisfaction

What is the service team dissatisfied with? What dissatisfactions do the customers have? Dissatisfactions give motivation for change!

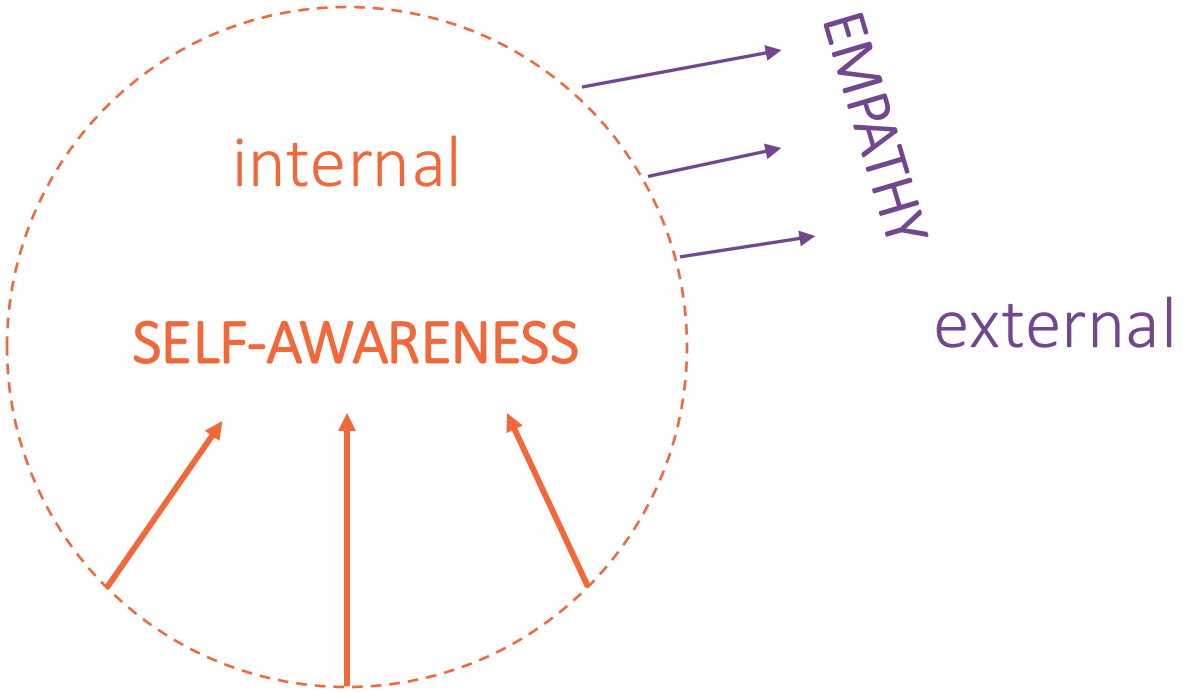
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Introduction: Sources of Dissatisfaction

Sources of dissatisfaction provide motivation for change which is key for a successful Kanban initiative.



Source: Markus Andrezak, LASCOT14

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Sources of Dissatisfaction at XIT

Internal

- Constantly interrupted to make estimates
- Estimates are expected to be highly accurate and take time to develop
- Can't expect us to know code base for all 80+ applications
- Testers occasionally swamped by "PTCs" cannot respond to developers

External

- Small requests take months to develop
- Delivery is completely unpredictable
- Constantly breaking promises

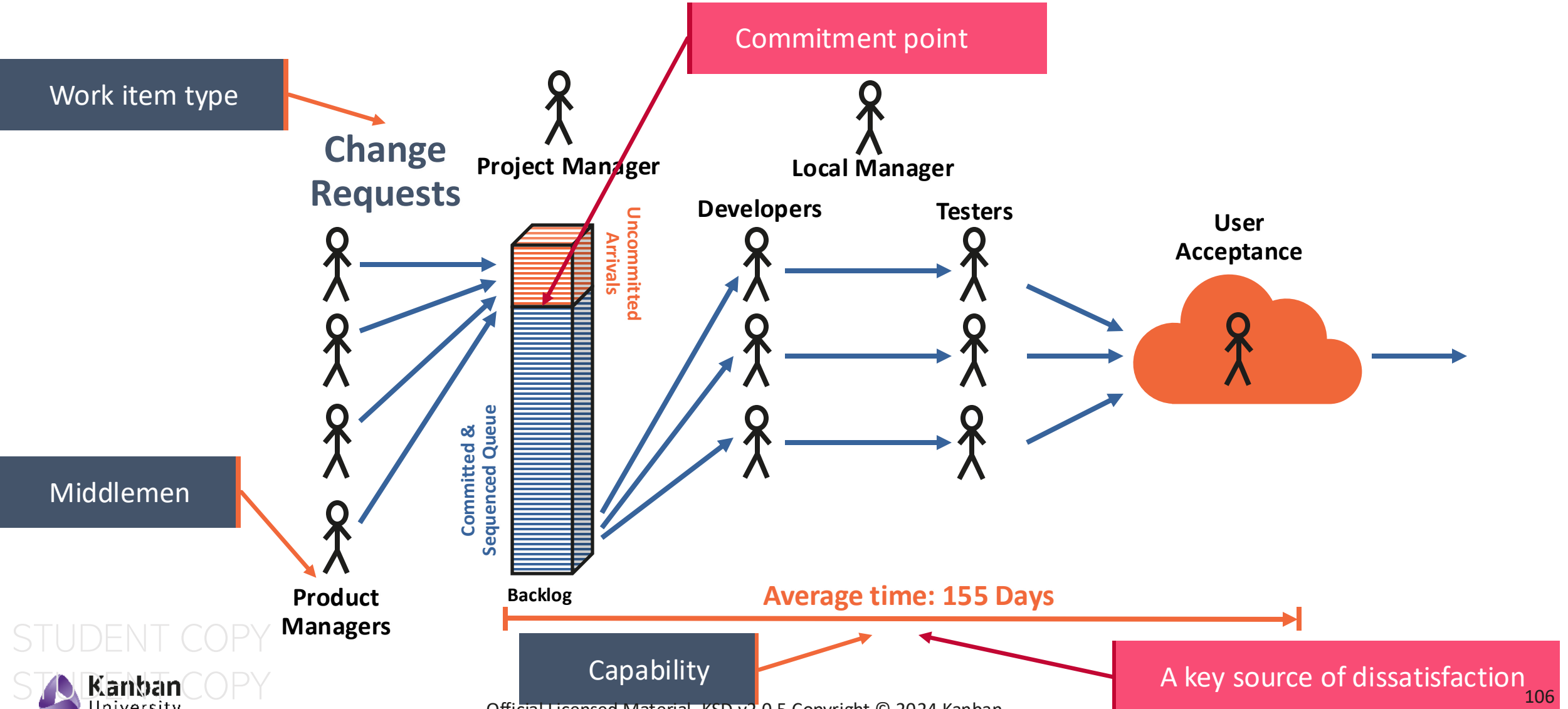
Reading reference: ***Understanding Dissatisfaction***
https://djaa.com/understanding-dissatisfaction/

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Initial Model of the Workflow

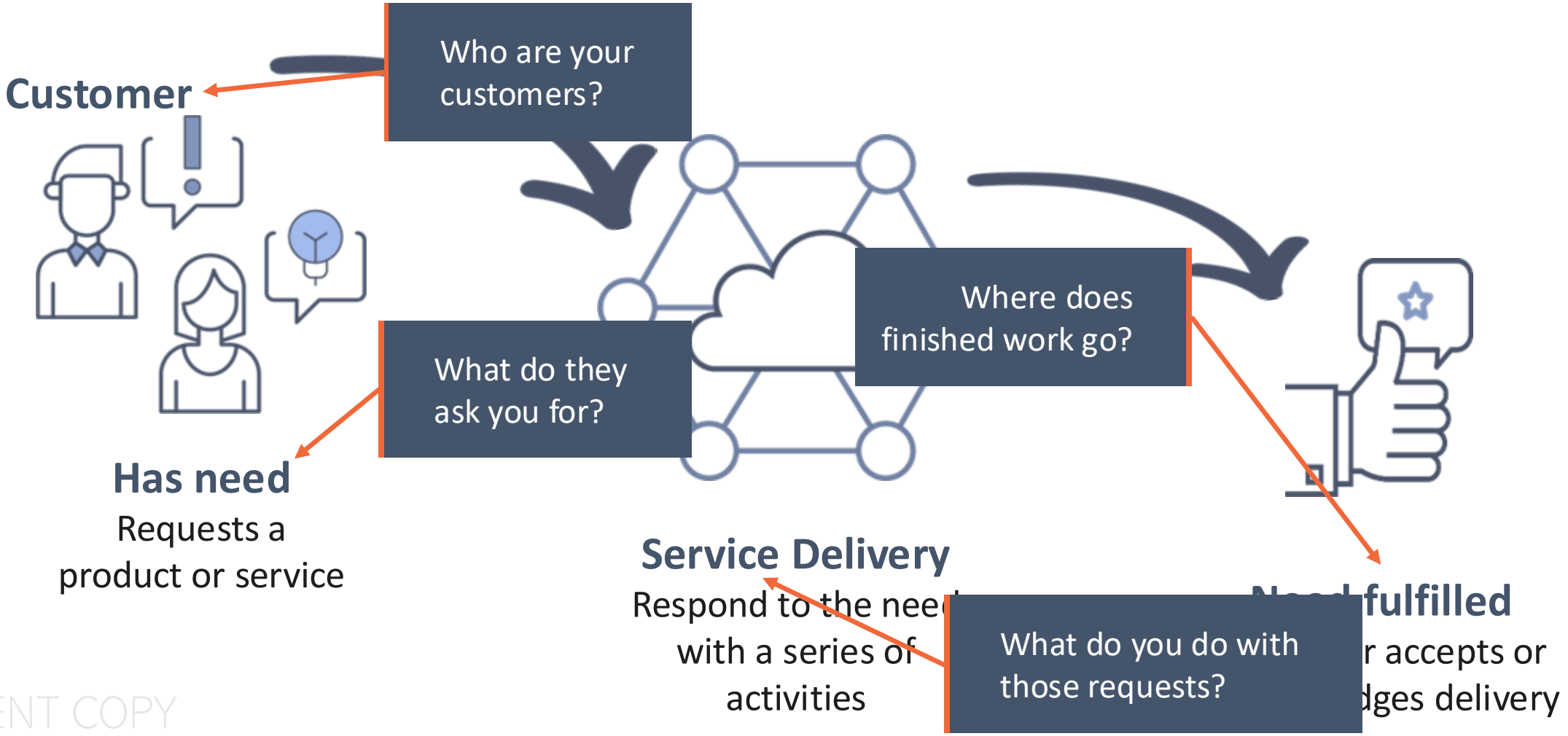


STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

What Service Do You Provide?



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

15 min

Form groups around cases

- You will have a great learning opportunity to practice STATIK with your own cases. Who would like to offer a real-world case to practice STATIK?
- Form groups of 3-4 people, one of them with a “case;” a (future) Kanban system that should be designed
- As a first step, help the Case Owner to describe their **“Service.”** Use the questions from the prior slide. Note that this description might evolve throughout the application of the STATIK stages
- You might draw a diagram positioning the service in the network of services in that organization

STUDENT COPY
STUDENT COPY

STUDENT COPY
STUDENT COPY
STUDENT COPY

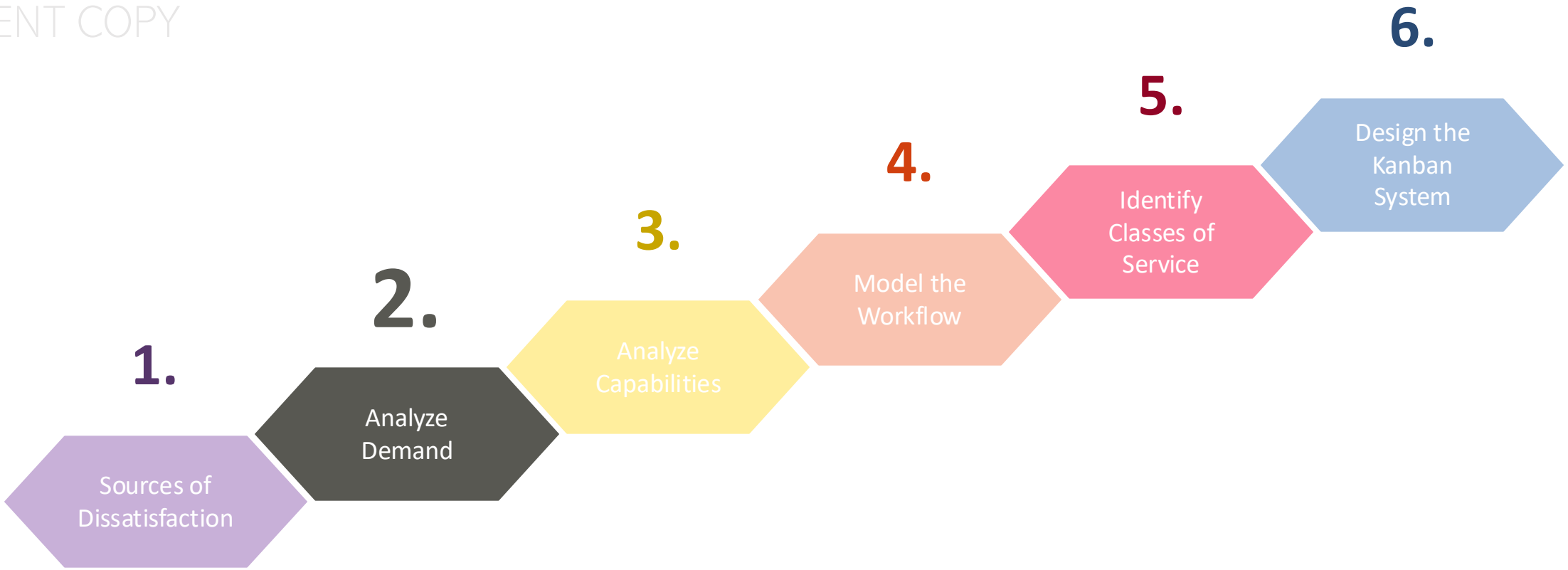
10 min

Understand motivation for change

- Describe Sources of Internal/ Team Frustration
  - Variability that randomizes the process
  - What prevents work being delivered on-time, with good quality, etc.
- Describe Sources of Customer Dissatisfaction
  - Reason's customers are unhappy/expectations not met
  - (or points of customer conflict)

STUDENT COPY
STUDENT COPY

STUDENT COPY
STUDENT COPY
STUDENT COPY



Step 2: Analyze Demand

What do customers request, through which channels? Types and patterns in demand?

STUDENT COPY
STUDENT COPY

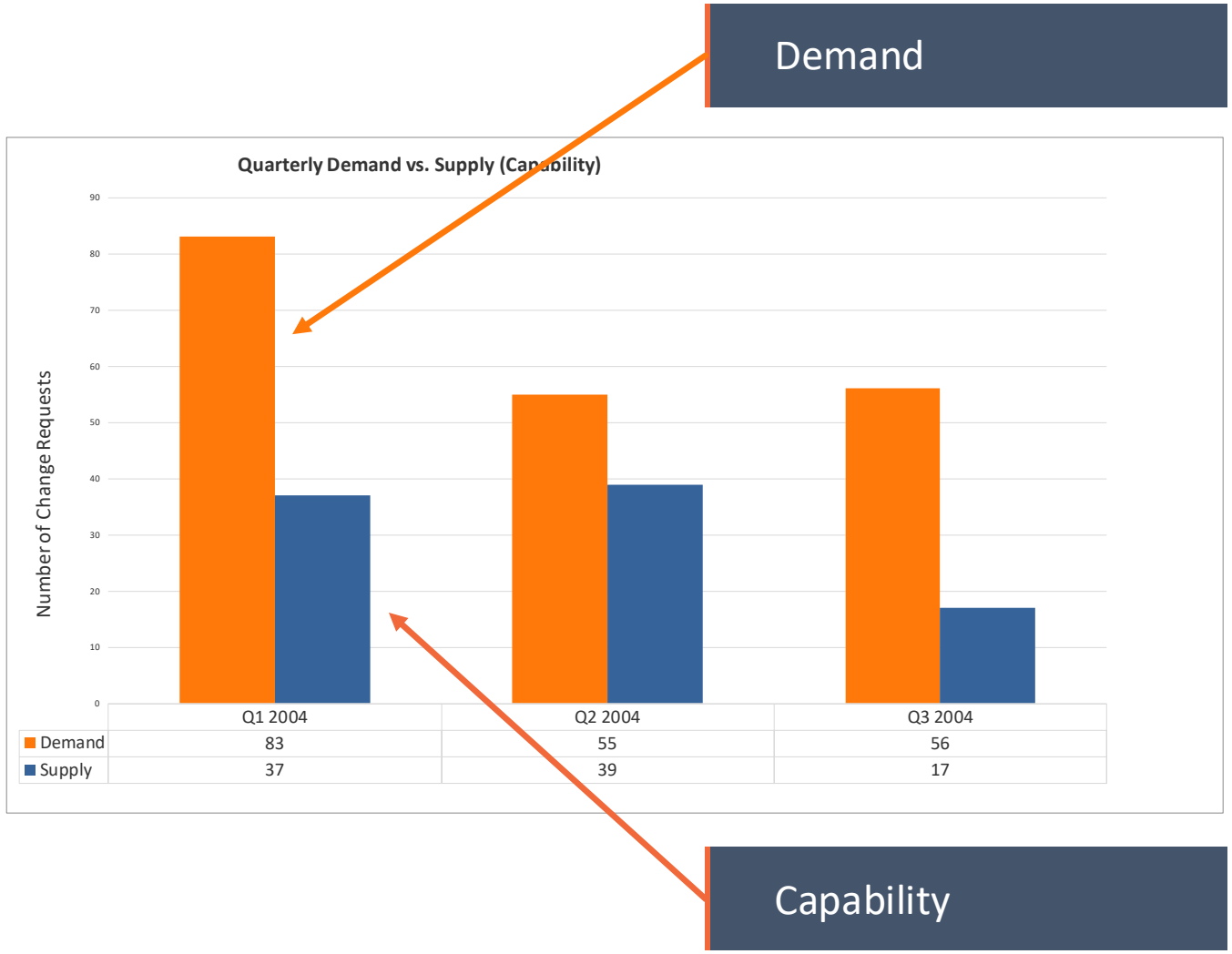
Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Throughput Capability vs. Demand

Data from three quarters:

Demand is outstripping capability, and the queue is growing

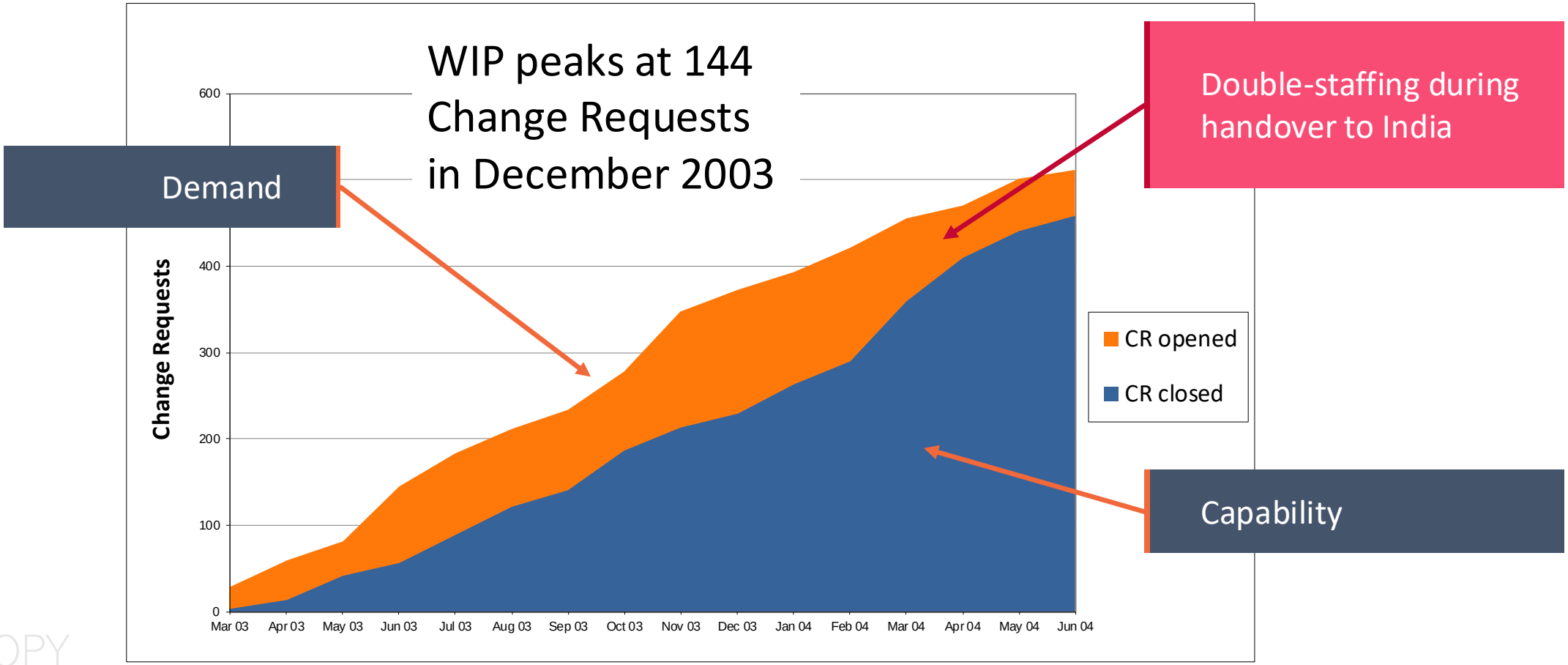


STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Demand vs. Capability on a historical CFD

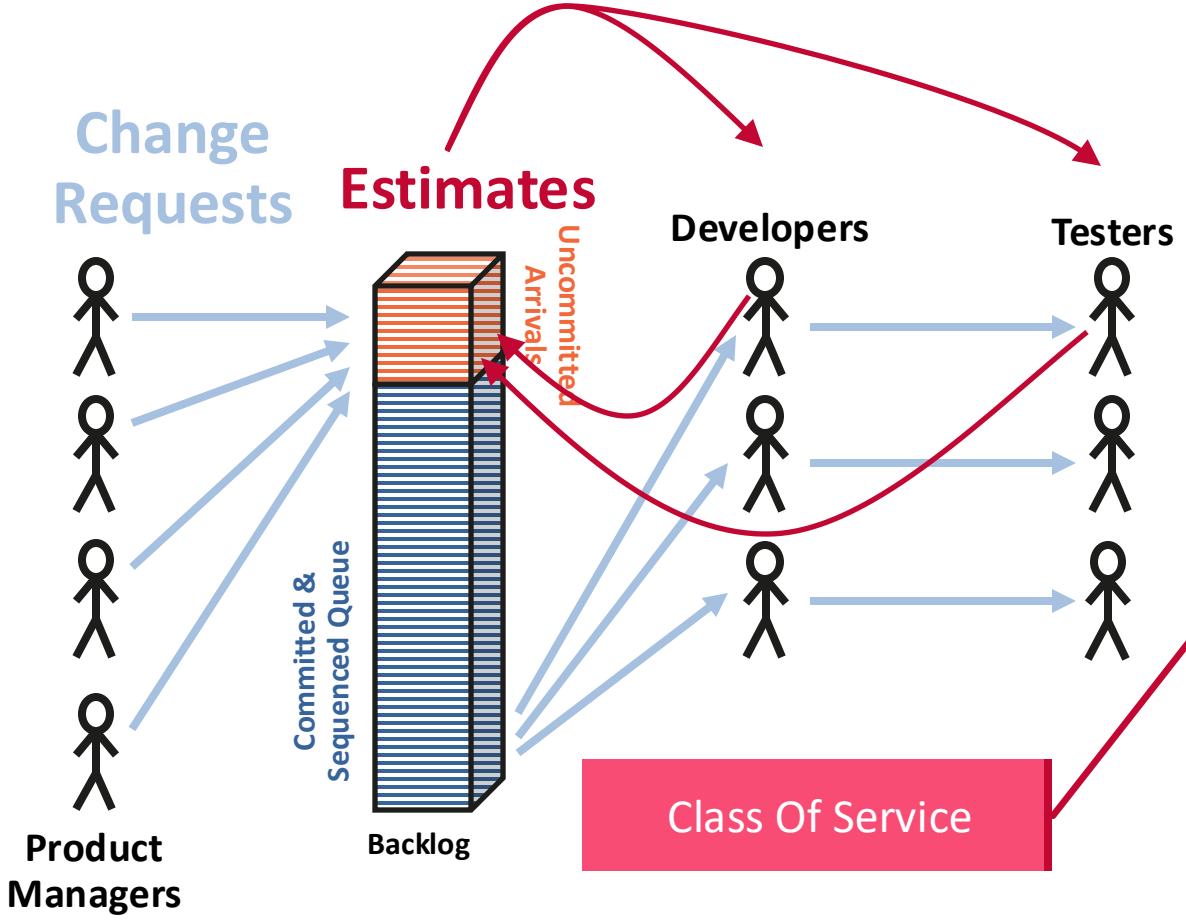


STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Estimation is a Source of Dissatisfaction



Estimates should be treated as a work type with a **higher class of service** than change request

Estimation requires

- Open and read source code
- Read the application guide
- About 1 day of effort per developer and tester

- SLA – 48 hours to return a rough order of magnitude estimate
- All change requests are estimated
- Estimates are expedited as top priority due to SLA

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Demand and Capability Analysis

Work Type	Requested per Month	Delivered per Month	Demand Fulfilled
Estimates	20-25	20-25	100%
Change Requests	12	6	50%

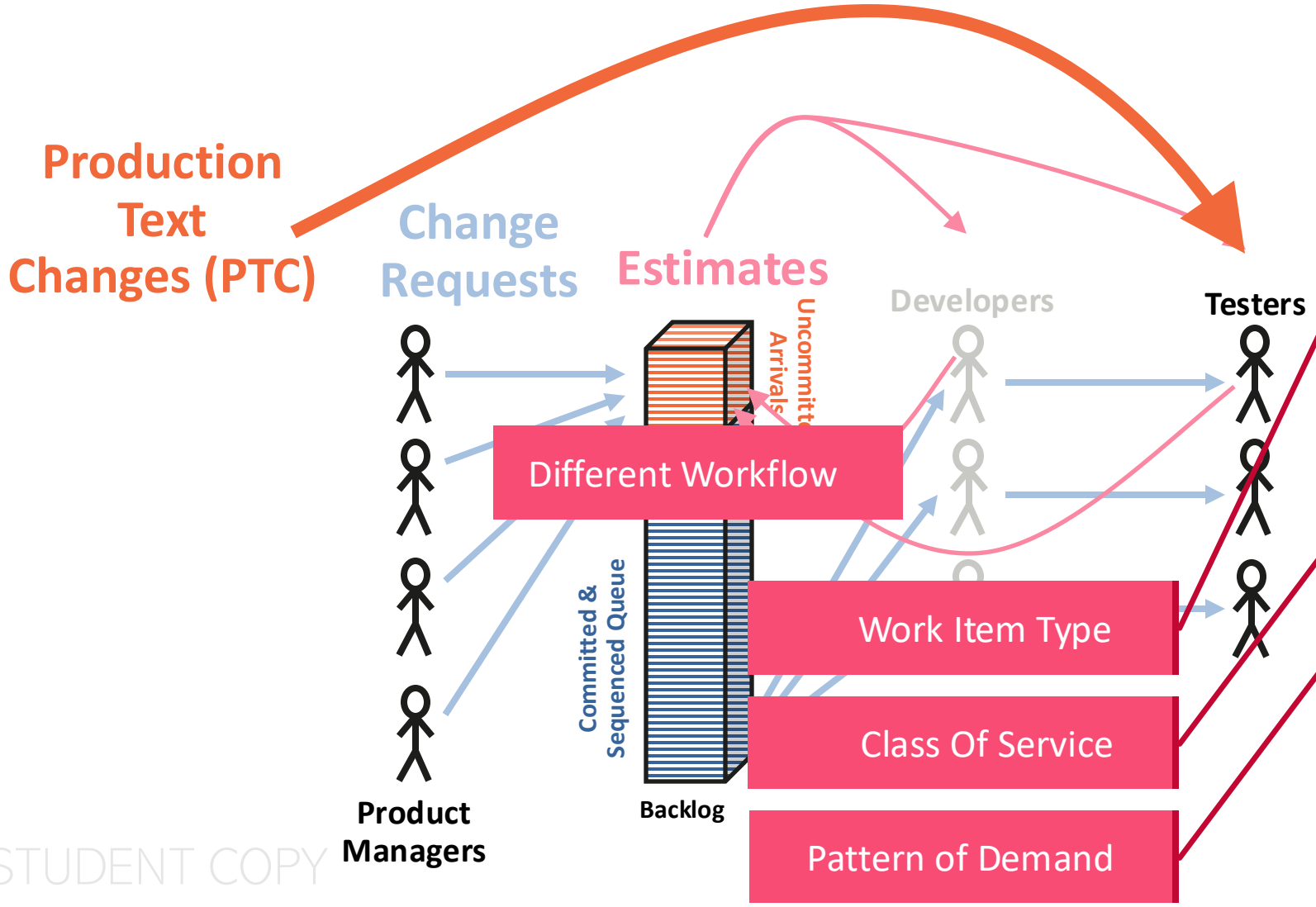
- Demand for estimates is 20-25 per month (or 1 on average, every 3 days per person on the team) and fulfilled
- Change Requests actually scheduled are only 12 per month (typically), demand for Change Requests is ~12/month, with only ~50% of demand being fulfilled
- Many change requests were abandoned, or actively discarded

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

But wait, there's another type of work!



PTCs are disruptive and development work could accumulate incurring delay while testers process PTCs

Production Text Changes (PTC)

E.g., graphical changes, data changes, anything that didn't require a developer

- Take Top Priority
- No development required
- Never see any for weeks of months then they all arrive in one burst!
- Strong indication of seasonal/regulatory demand and fixed delivery date

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Results of Microsoft XIT Demand Analysis

- 3 Work Item Types identified with these characteristics:
  - Change Requests (12 per month)
  - Estimates (20-25 per month)
  - PTCs (in seasonal bursts)

Sources of Internal Dissatisfaction	Sources of Customer Dissatisfaction
PTC arrival rate	Too slow/long lead time
Constantly interrupted to make estimates	Totally unpredictable
	Nothing ever on-time

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Wait!

- **PTC** stands for Production Text Change
- We learned: PTCs are seasonal and arrive in bursts
- Class of Service used: Expedite
- Something is wrong with this picture!

- All work that follows the same workflow has been described as PTC for the convenience of electronic tracking!
- Investigate!

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Further Analysis

- Product Managers represent 4 true customer departments: Finance, Human Resources, Facilities, Security
- **PTCs** include:
  - Tax Table Updates for the Payroll System and are seasonal in nature
  - Updates to facilities management apps, tend to align with delivery of new buildings, and construction projects on the campus
- Tax Table updates arrive in late September with fixed date delivery due early January
  - Why were they expedited?
  - It is the wrong class of service, but Product Managers demand it because the system exhibits such poor capability

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

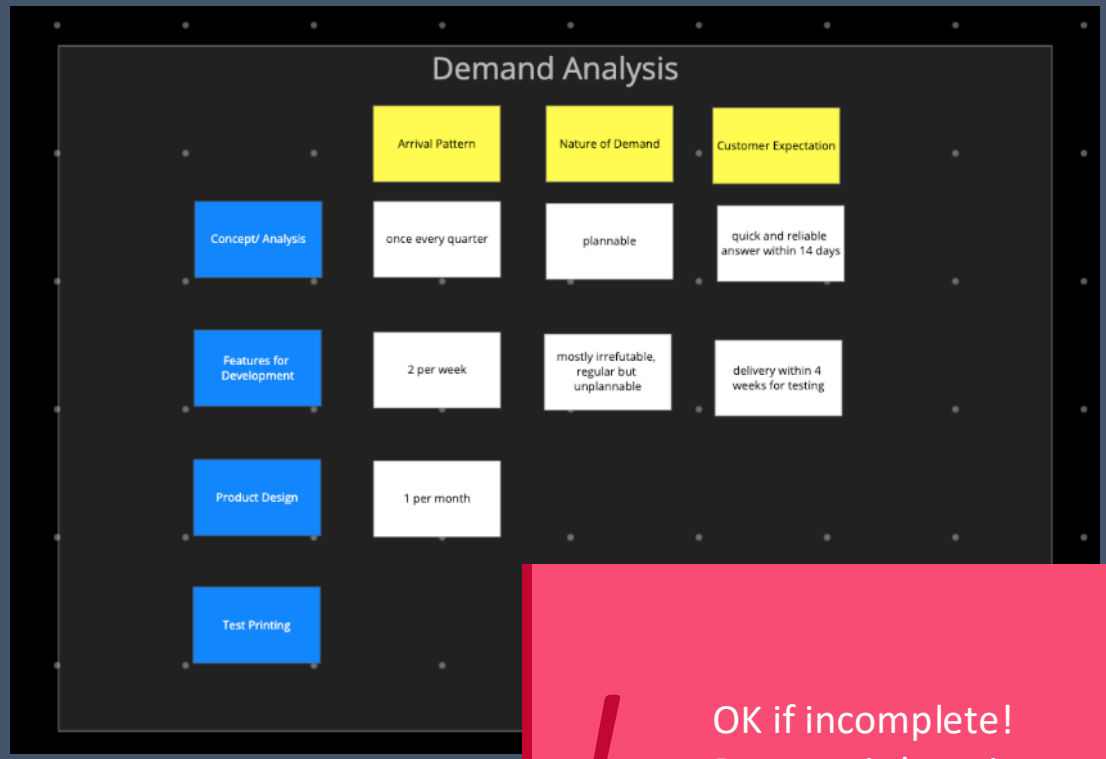
STUDENT COPY
STUDENT COPY
STUDENT COPY

15-30 min

Demand Analysis

In your groups, perform a Demand Analysis

- **Identify work item types**
  - Where does demand come from?
  - What do customers request? Scale? Complexity?
  - (Tip: different types resulting in different workflows, dependencies, required skills)
- **For each type of work, analyze:**
  - Arrival rate and nature of demand (random, burst, seasonal, batches, chaotic, replanned or unplanned, anticipatable, or not? Refutable/discretionary or not?)
  - Customer expectations (even if unreasonable)

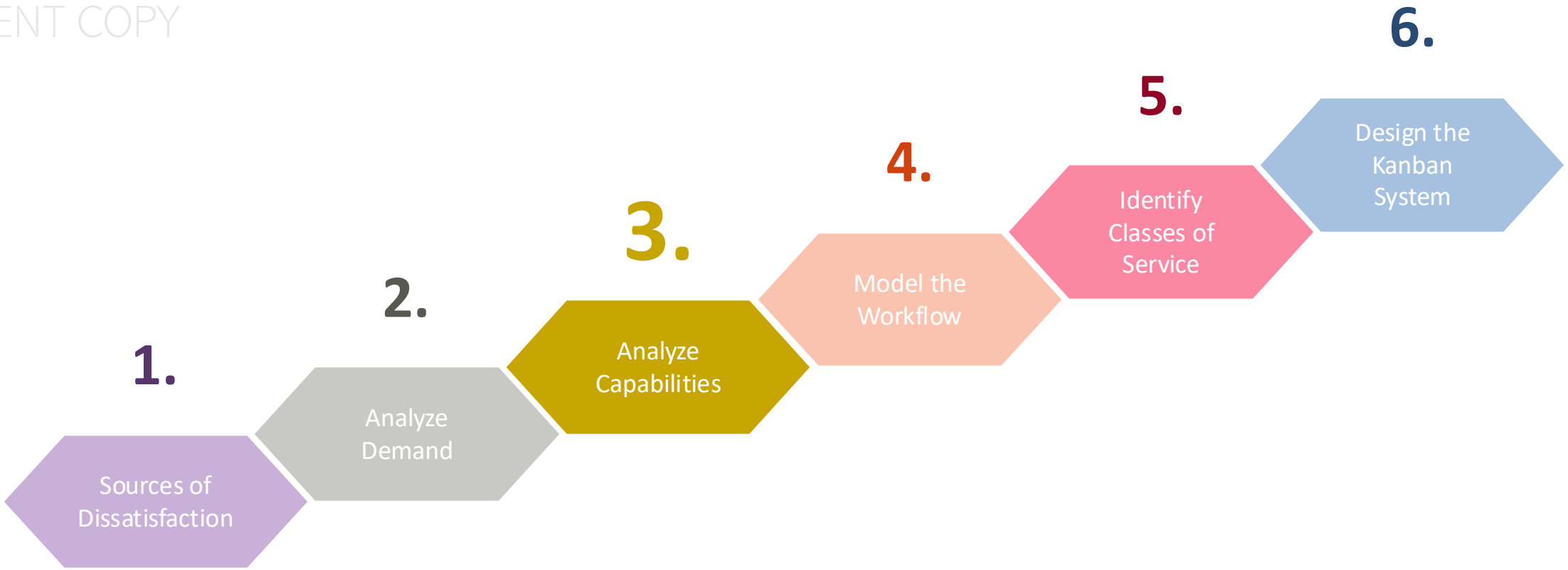


OK if incomplete!
Purpose is learning

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY



Step 3: Analyze Capabilities

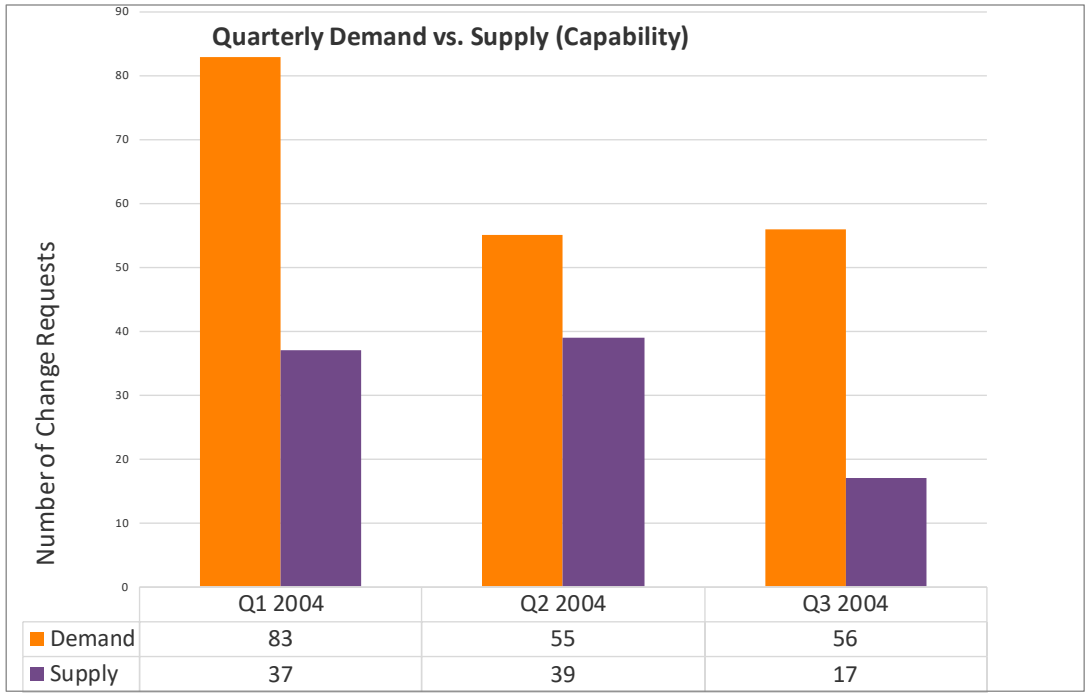
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

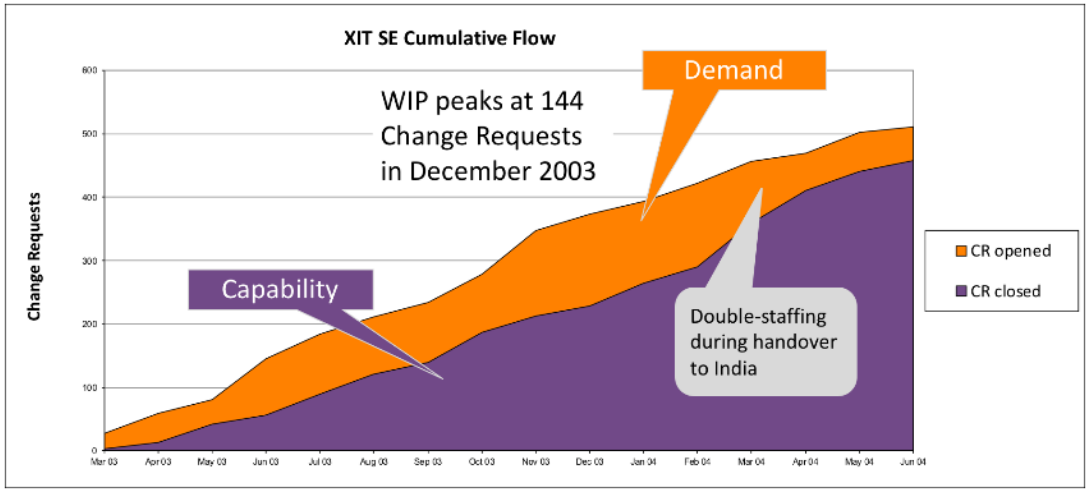
STUDENT COPY
STUDENT COPY
STUDENT COPY

Reminder: Findings from Step 1

Demand vs. Capability



Cumulative Flow Diagram



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

30 min+

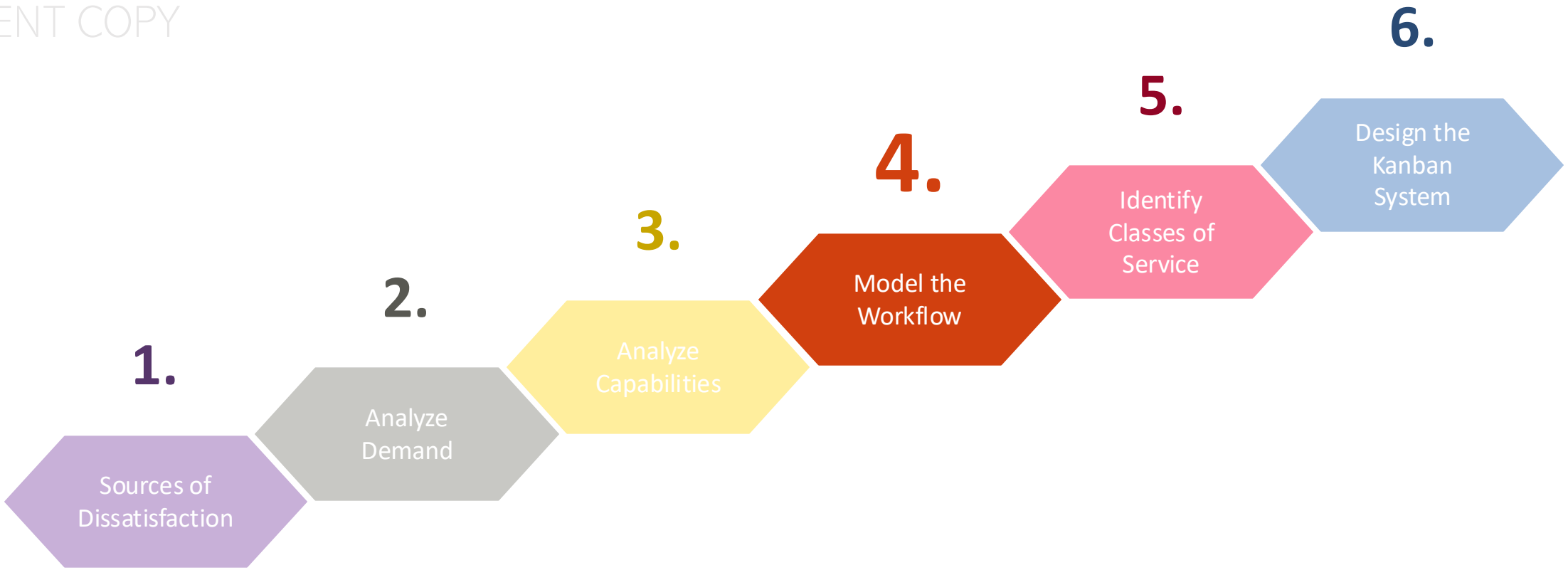
Optional: Capability Analysis

- For each work item type, collect:
  - Delivery rate over time
  - Lead time run chart and distribution histogram
  - Defect rate
- Capability Analysis
  - What is the spread of lead times?
    Are there clusters or modes in the data?
  - What is the trend? Is predictability (spread of variation) improving or declining (diverging)?
- Demand vs. Capability
  - Compare demand vs. capability: What are the gaps?

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY



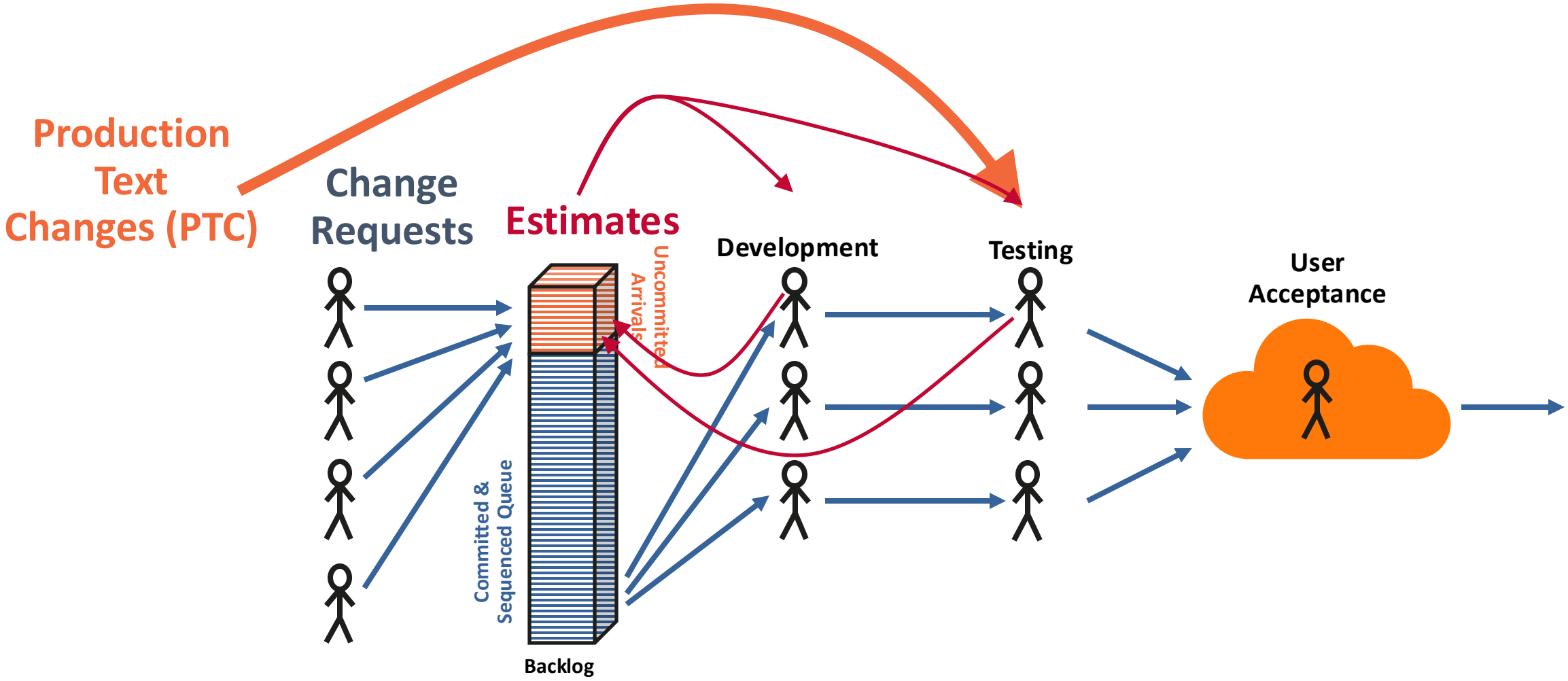
Step 4: Model the Workflow

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Reminder: Model of the workflow

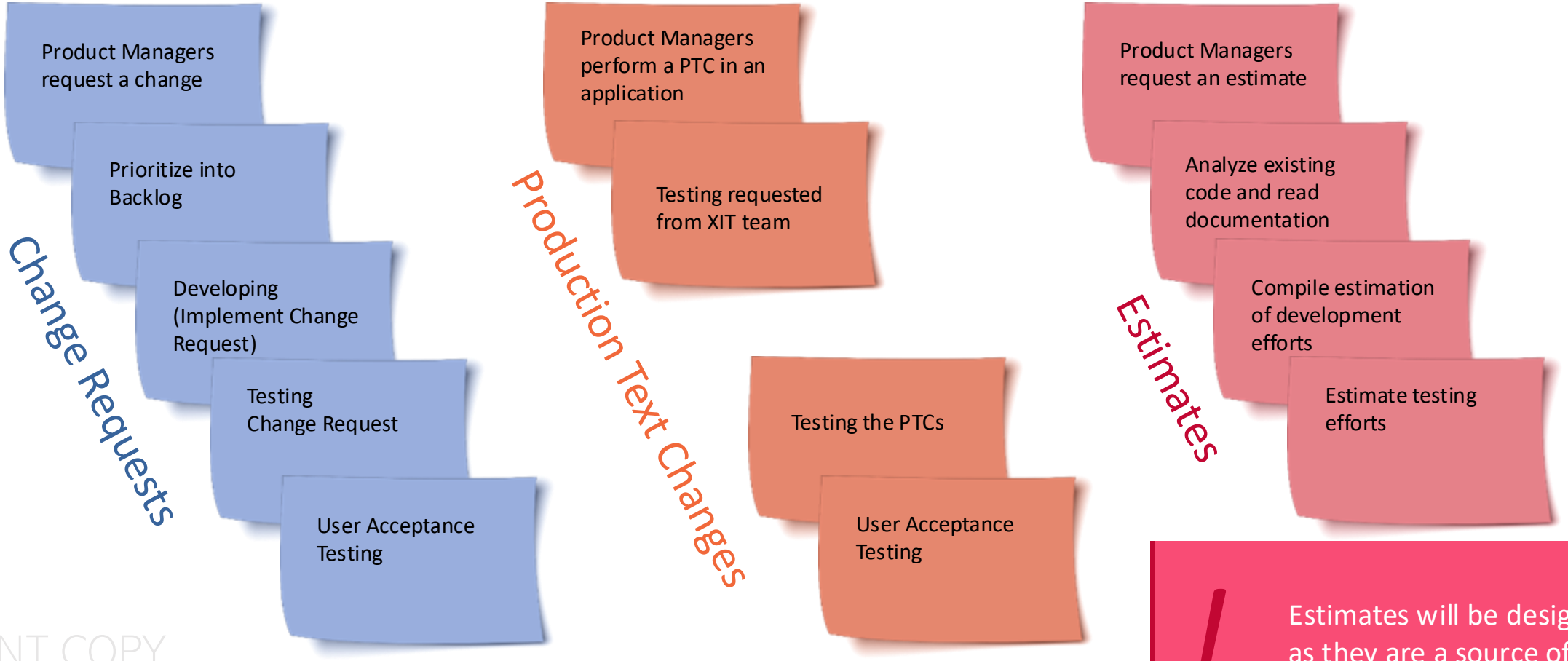


STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Workflow Modeling for XIT Work Types



! Estimates will be designed out as they are a source of variability and dissatisfaction

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban systems manage work

Remember to model knowledge discovery not handovers

Work item states should reflect the dominant activity for discovering new knowledge at each stage in the workflow

Effects on the Kanban board design and collaboration

Results in simpler board design and changed focus in communication

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

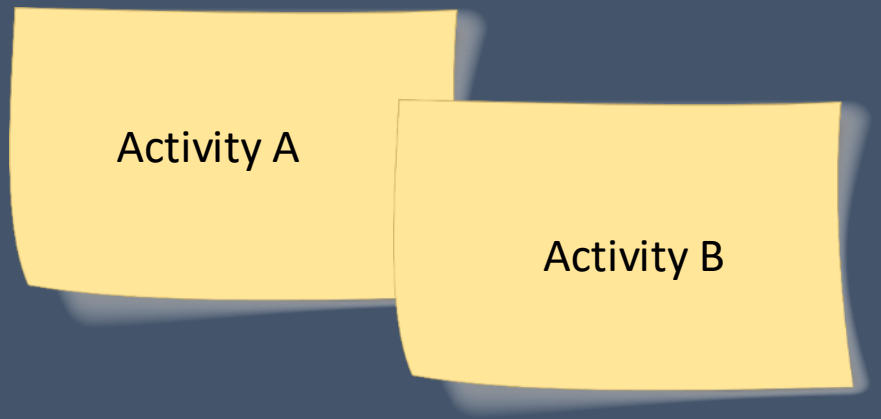
STUDENT COPY
STUDENT COPY
STUDENT COPY

15-30min

Map the workflow(s)

In your groups, model the workflow(s) in your service delivery

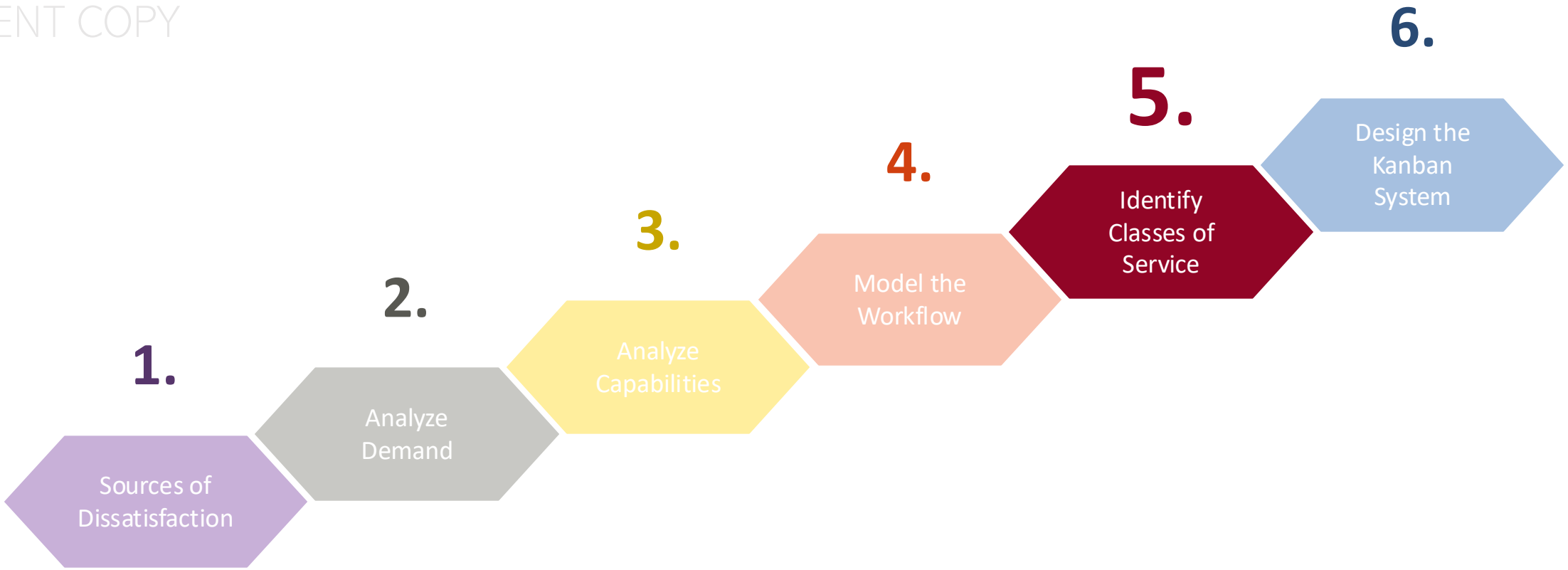
- Sketch the workflow for a few types of work
  - Any method is acceptable, like flow charts, sticky notes, or stickmen drawing
- Discuss the sequence of dominant activities for discovering new knowledge/information
  - List the activities (use verbs)
  - Does the knowledge discovery activity span across people/teams and show collaborations?
- Are there any specialist activities?



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY



Step 5: Identify Classes of Service

Finding categories of items being treated differently in the system

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Initial Classes of Service at XIT

Expedite "Silver Bullet"	Change Requests	Production Text Changes (PTC)
As Soon as Possible ▪ Full transparency ▪ WIP limit of 1	**Change Requests (CRs)** ▪ Typically, FIFO queued ▪ Up to 30 days ▪ 98% on-time guarantee	**Production Text Changes (PTCs)** ▪ Fixed delivery date ▪ With 12 days advance notice

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Additional Classes of Services Emerge

Breaking up PTCs into urgent (fixed date) and non-urgent Class of Service

Expedite "Silver Bullet"	Change Requests	Tax Table Updates	Text and Graphic Changes
As Soon as Possible ▪ Full transparency ▪ WIP limit of 1	**Change Requests (CRs)** ▪ Typically, FIFO queued ▪ Up to 30 days ▪ 98% on-time guarantee	**Tax Table Updates** ▪ Fixed delivery date ▪ With 12 days advance notice (PTC workflow)	**Text & Graphic Changes** ▪ Up to 30 days ▪ 85% on-time guarantee (PTC workflow)

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

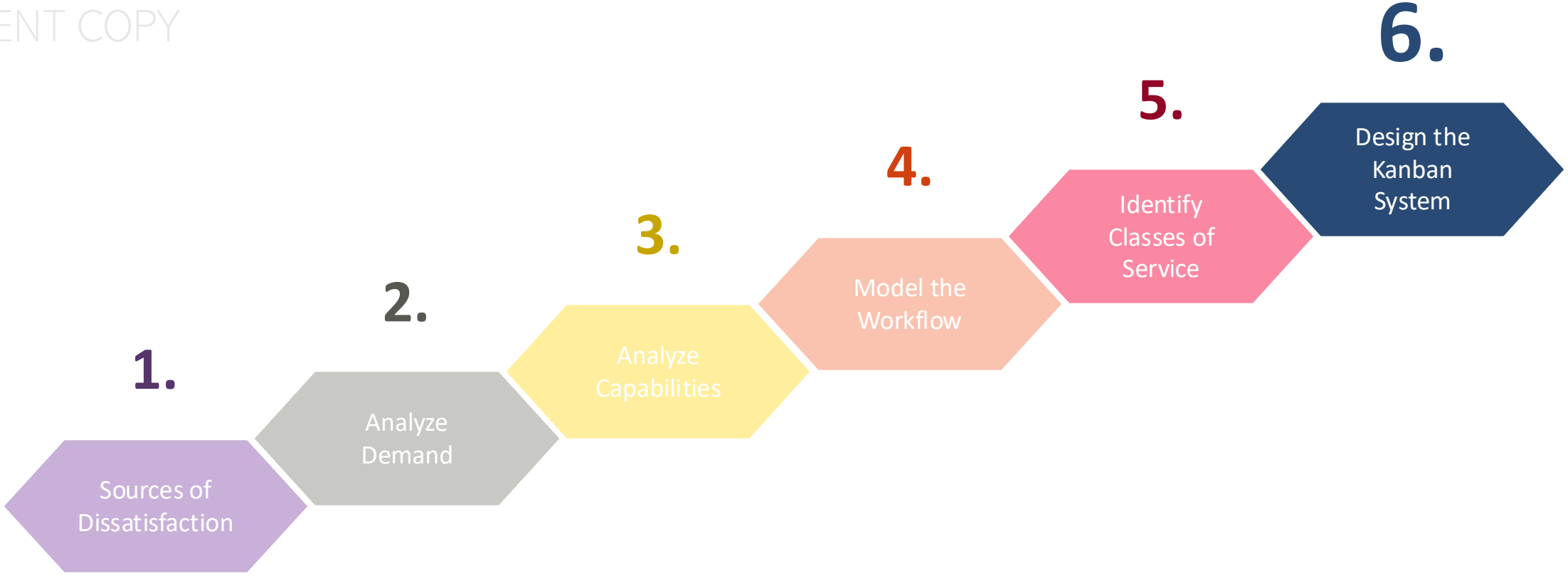
15 min

Discovering Classes of Service

- Consider the risks associated with different work items types, such as cost of delay
- Describe some policies for classes of service, e.g., Expedite.
  - What are the rules for how something should be treated?
  - Typically, we care about queuing discipline & volume of tickets
- Which classes of service apply to which work item types? 1 to 1 mappings are common
- Are there any existing SLAs or other policies that cause interruptions, untracked work, and hidden Classes of Service?
- Do these (negatively) affect customer satisfaction?

STUDENT COPY
STUDENT COPY

STUDENT COPY
STUDENT COPY
STUDENT COPY



Step 6: Design the Kanban System

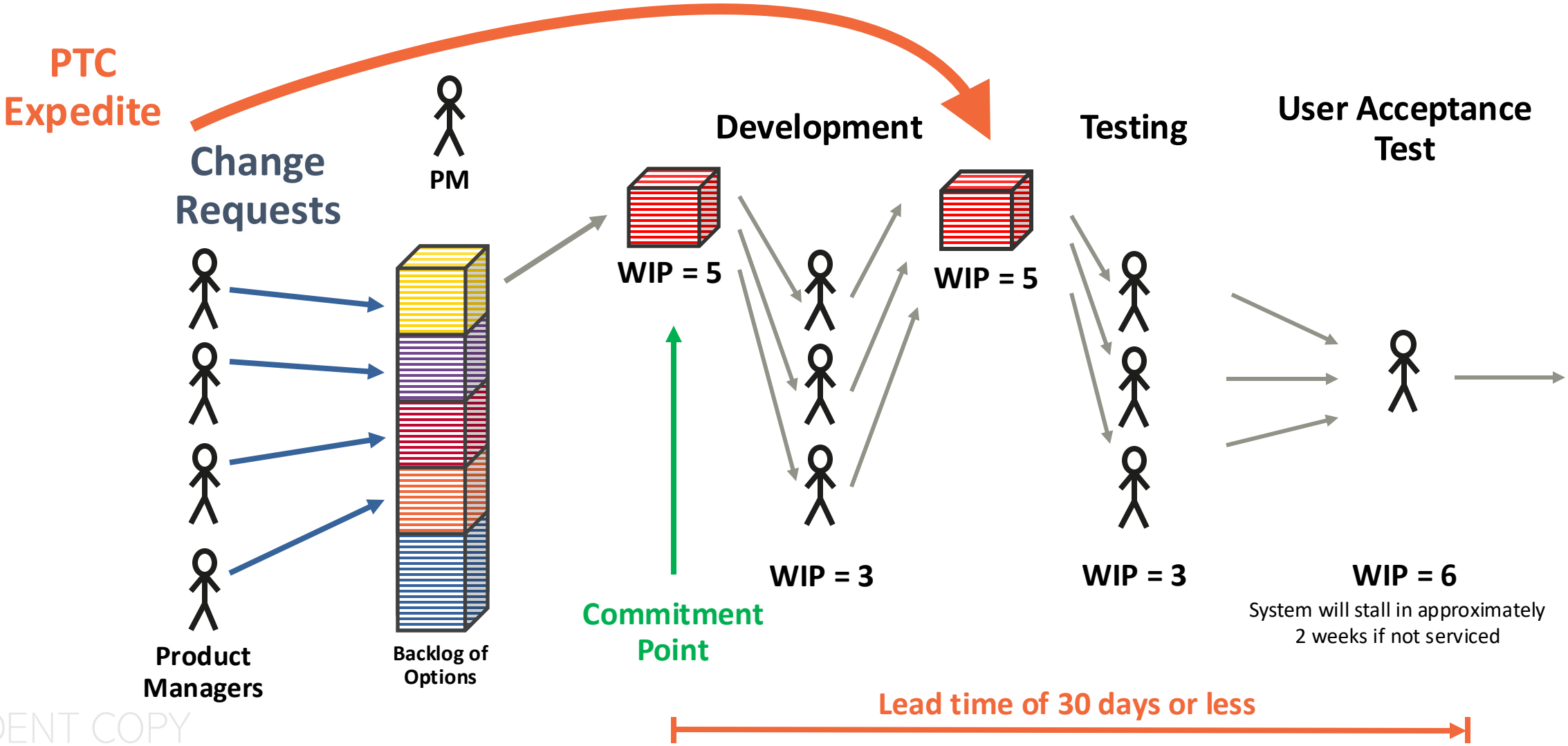
Putting it all together into the initial Kanban system design

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Kanban System Design for XIT



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Designing for sources of variability

- Estimates
  - These will be designed out and replaced with service level agreements
- Planning (and re-planning)
  - This will be replaced with kanban system queue replenishment
- PTC arrival rate (burst traffic)
  - This will be mitigated by the kanban system WIP limit and the “just-in-time” queue replenishment for Change Requests

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Determining an Expectation of Service Delivery

- Engineering effort (touch time)
  - A histogram of local cycle time showing development and test effort revealed that average engineering time was 11 days with outliers > 24 days
- Delivery rate estimate
  - Without estimation interruptions, it ought to be possible to increase delivery rate to 10-12 per month (~3 per week)
- Queuing & buffering time estimates
  - Input buffer queuing time is likely to be a maximum of ~8 days based on a throughput rate of ~3 per week
  - Buffering time between development and testing is likely to be almost zero except during times of PTC demand

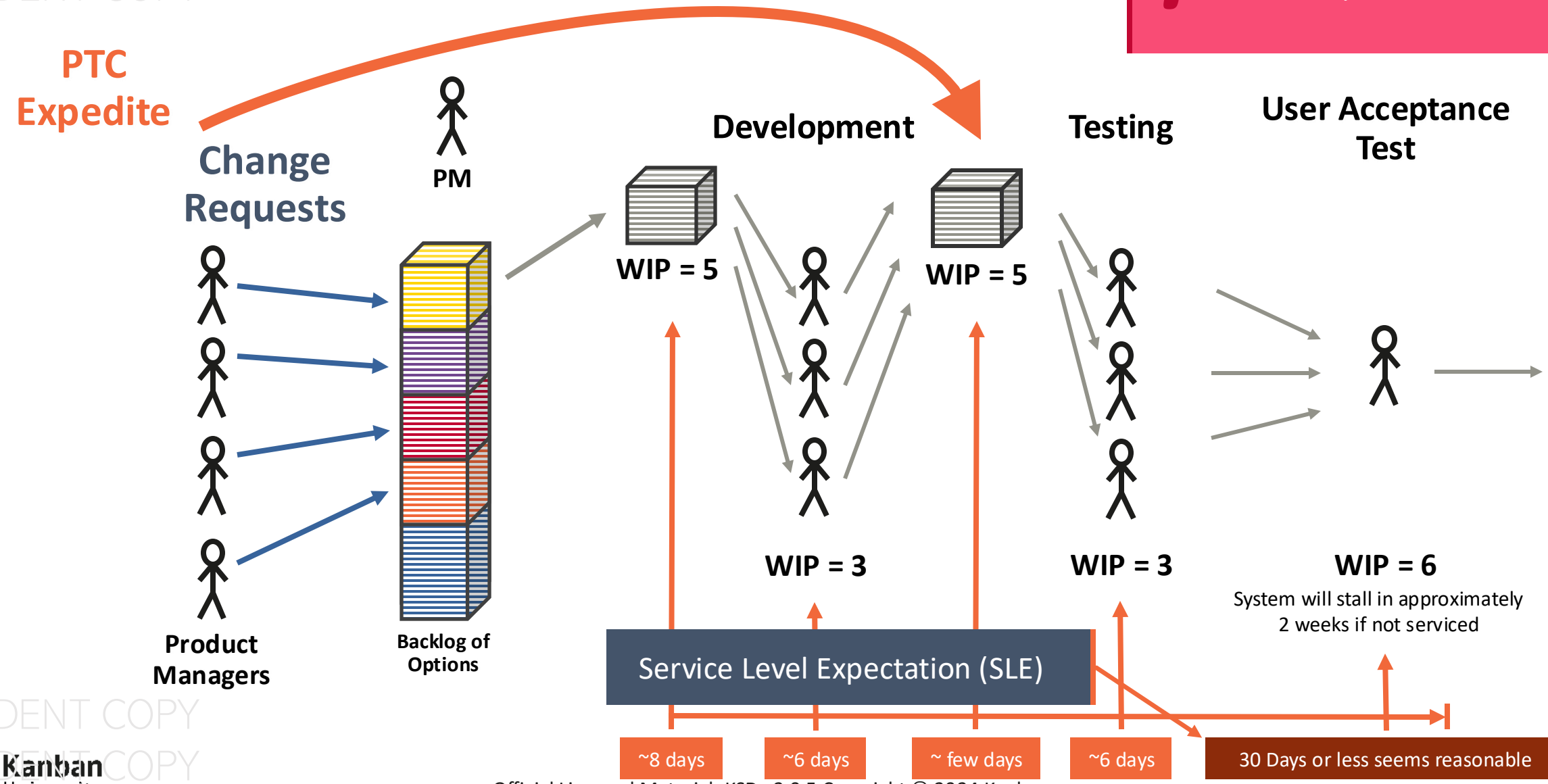
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Lead Time Expectations for XIT

> ! This level of predictability is only achievable if we **limit WIP** in the system



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

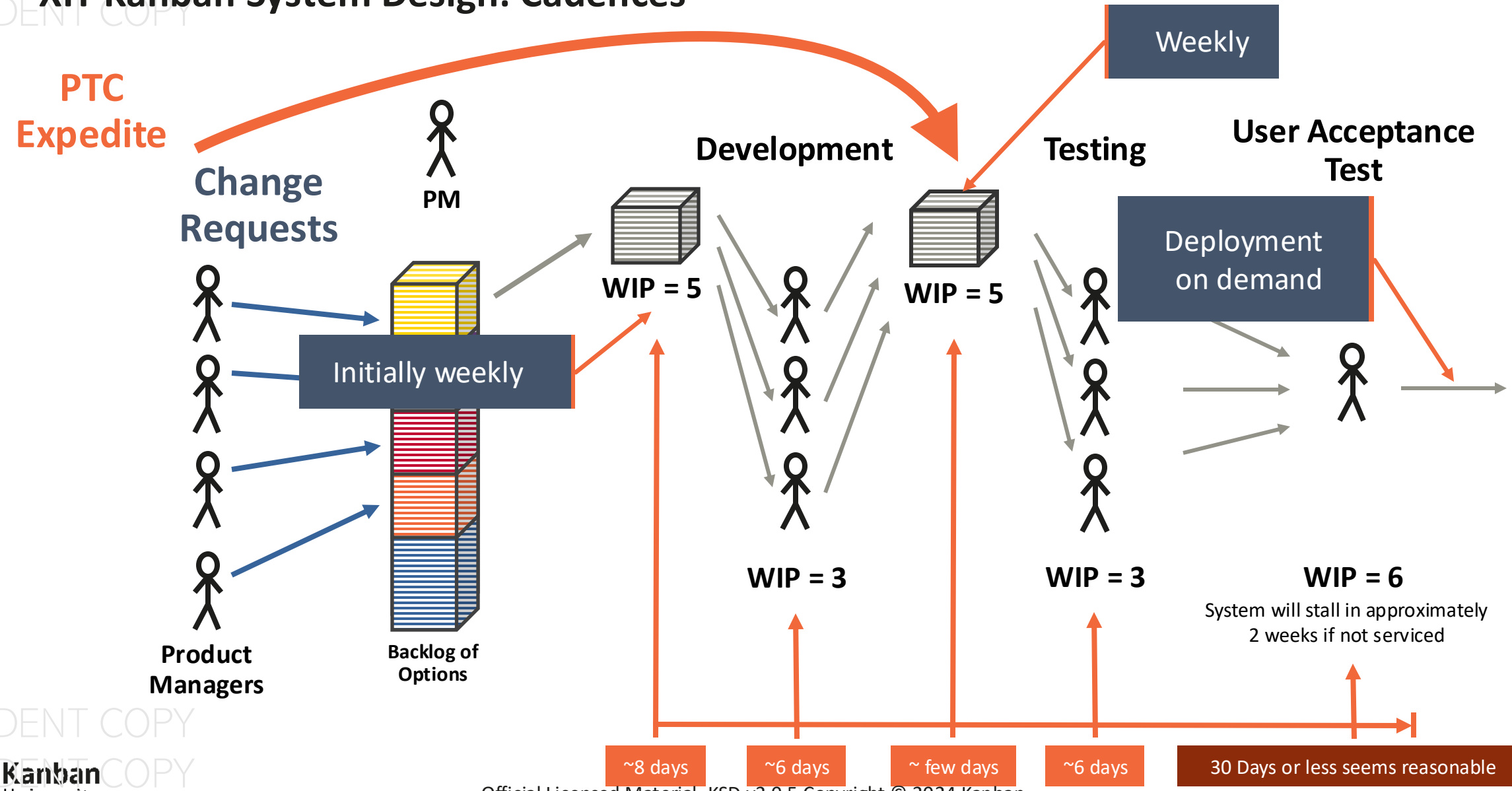
Recurring Events (and Cadence)

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

XIT Kanban System Design: Cadences



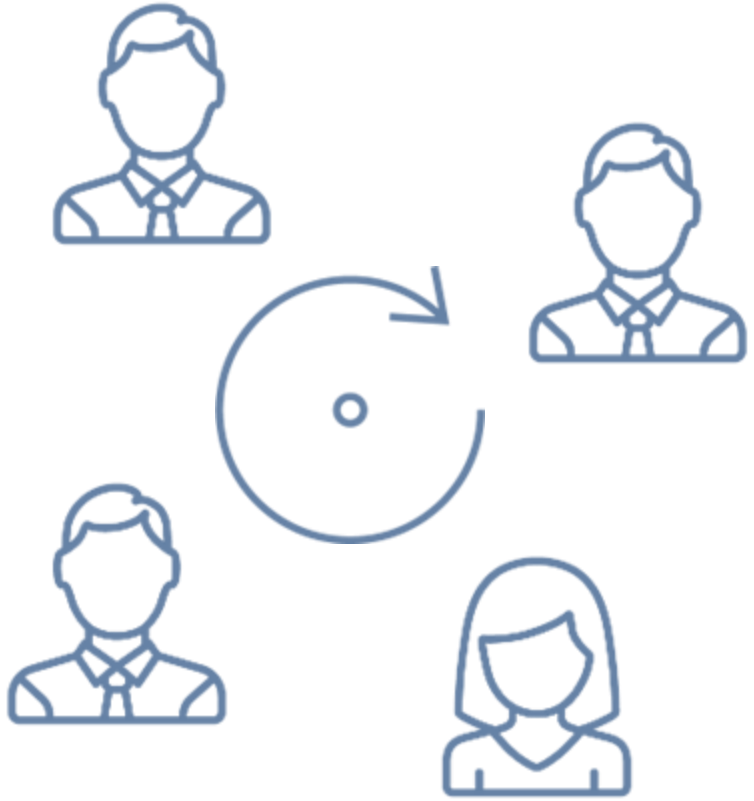
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

System Replenishment policies at XIT

- Weighted round-robin queue replenishment mechanism based on budget contribution: **“Whose turn is it to pick next?”**
- This effectively introduces a **WIP limit per product manager** (or customer department) into the system – effectively a capacity allocation
- This is both a risk management strategy and a way to communicate fairness and raise the level of trust in the system



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY
STUDENT COPY

System Replenishment & Delivery Frequencies

15 min

- What is the appropriate input or system replenishment frequency?
- How quickly are things changing (in the business)? What is the arrival rate of new information that would affect selection of items?
- What is the ideal delivery frequency for your Kanban system?
- What are the transaction costs of a delivery (training, deployment, governance) and the lead times involved (e.g., training lead time)?
- Does it make sense for delivery and system replenishment frequency to be the same, or is it more natural for them to be different?
- Is on-demand delivery or replenishment possible? What would it take to make it possible?

STUDENT COPY
STUDENT COPY

STUDENT COPY
STUDENT COPY
STUDENT COPY

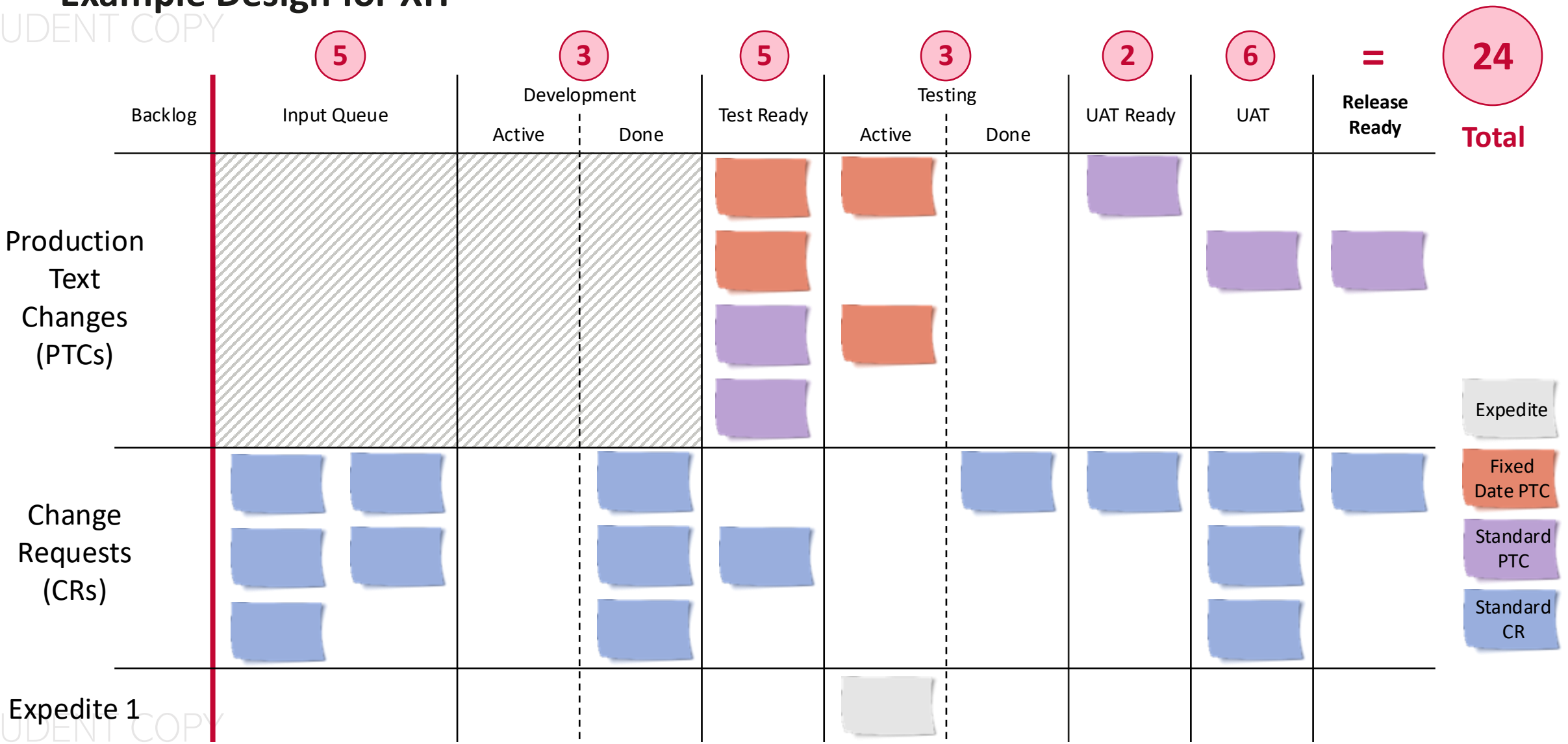
Wrap-Up: XIT Case Study

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Example Design for XIT



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Results in the XIT Case Study

! No changes were made to the software development or testing process

- Additional capacity increased throughput beyond demand; the backlog was eliminated entirely on November 22, 2005
- Lead time down to an average of 14 days against an 11-day engineering time; the due-date performance on the 30-day delivery time target was 98 percent
- The throughput of requests had risen more than threefold, while lead times had dropped by more than 90 percent, and reliability improved almost as much

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

15 (+30) min

Prerequisites for Module 4

- Please get this done before the start of the next module!
- Kanban Foundations Quiz
- Worksheet “Elements of a Kanban System”

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Designing a Kanban System

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Introduction

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

10 min

Review Quiz

- Any open questions?

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

10 min

Review of the exercise “Kanban System elements”

- Review results from the worksheet
- Gather Kanban system elements

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Key Elements of Kanban System Design

- Work item types
- Workflow states
- Sources of variability (that disrupt planned work and commitments) to be designed out during initial implementation
- WIP limits and queue replenishment policy
- Classes of Service
- Commitment points
- Replenishment and release frequencies
- Visualization – board and ticket design
- Metrics and reporting
- Feedback mechanisms
- … and the relating policies

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Strive for flexible Kanban system designs

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Patterns of Ticket and Board Design

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Ticket Design

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

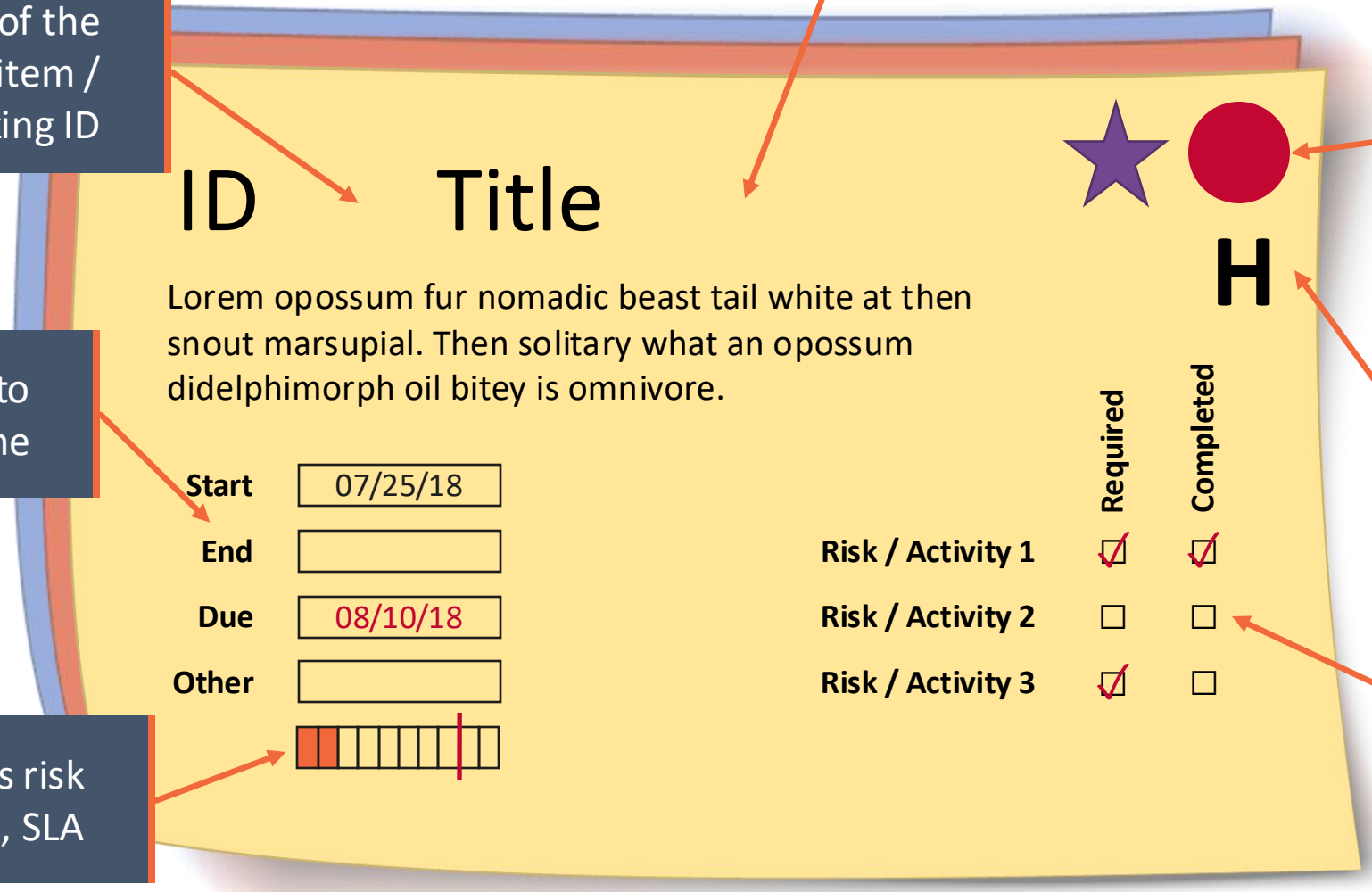
What is enough information for you to make a good pull decision?

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Ticket Design Options



Content of the work item / tracking ID

Color of the ticket

Decorators to highlight technical dependencies

Visualize legacy process artifacts such as “priority” or estimates

Checkboxes to indicate risks / optional activities

Time Stamps to track lead time

Business risk visualization e.g., SLA

STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

The ticket needs to contain the right information to support a good pull decision!

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Patterns of Visual Board Design

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Starting Considerations

- Remember, every board is unique!
- The board should represent a visual model of your work
- Use the two strongest visual elements wisely:
  - Swim lanes
  - Color of the tickets
- Strive for a flexible board design. It will not be perfect at the beginning, and it will never be “done”
- Smart ticket design might simplify your board design

Reading reference: ***Kanban workflow design – commonly recurring mistake***
https://kanban.plus/blogs/blog/kanban-workflow-design-commonly-recurring-mistake

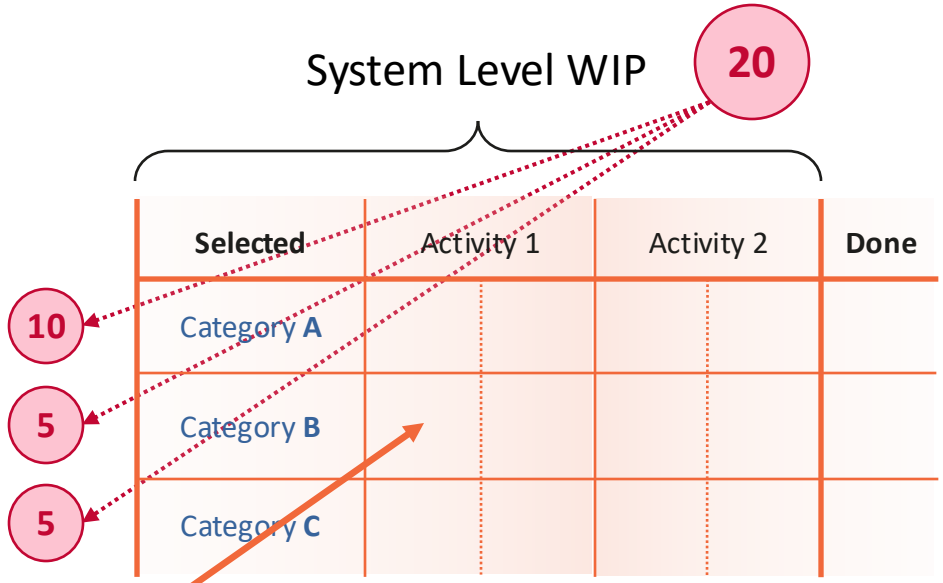
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Use of Swim Lanes (Rows)

- Swim lanes can be used to de-lineate:
  - Work item types
  - Classes of Service
  - Work for different requestors
  - ”Boxes” of work e.g., different projects



The scheme above shows Capacity Allocation implemented with swim lanes. The system-level WIP is split and allocated to different categories.

“We will spend half of our capacity for category A, and 25% for categories B and C”

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

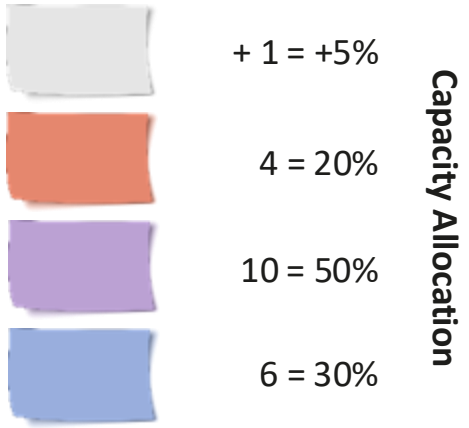
STUDENT COPY
STUDENT COPY
STUDENT COPY

Use of Ticket Color

Real-world example

- Comparable to swim lanes, the color of the ticket can signify different categories
- Often used for class of service, different initiatives or organizational units (see example to the left)

Example right:
Capacity allocation can be implemented by color across the entire board



STUDENT COPY
STUDENT COPY

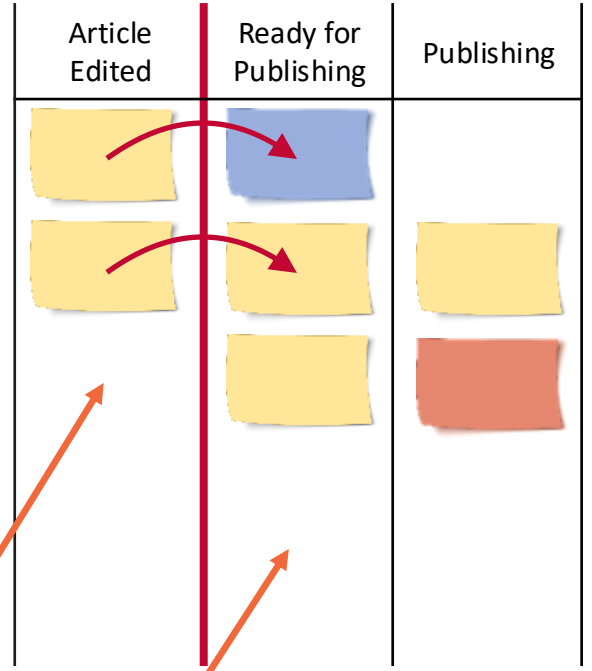
Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Modeling Short-Lived Activities

> ! Approval activity happens “on the line”

- Some activities are completed rather quickly, and it would be impractical to have an individual column where they’d stay only briefly
- These types of activities can be modeled “on the line”
- Examples: approvals, automated steps, deployments, “external” signals such as customer order or delivery by providers



✓ Article finished in CMS
✓ Ready for approval by the editor

✓ Article approved by the editor

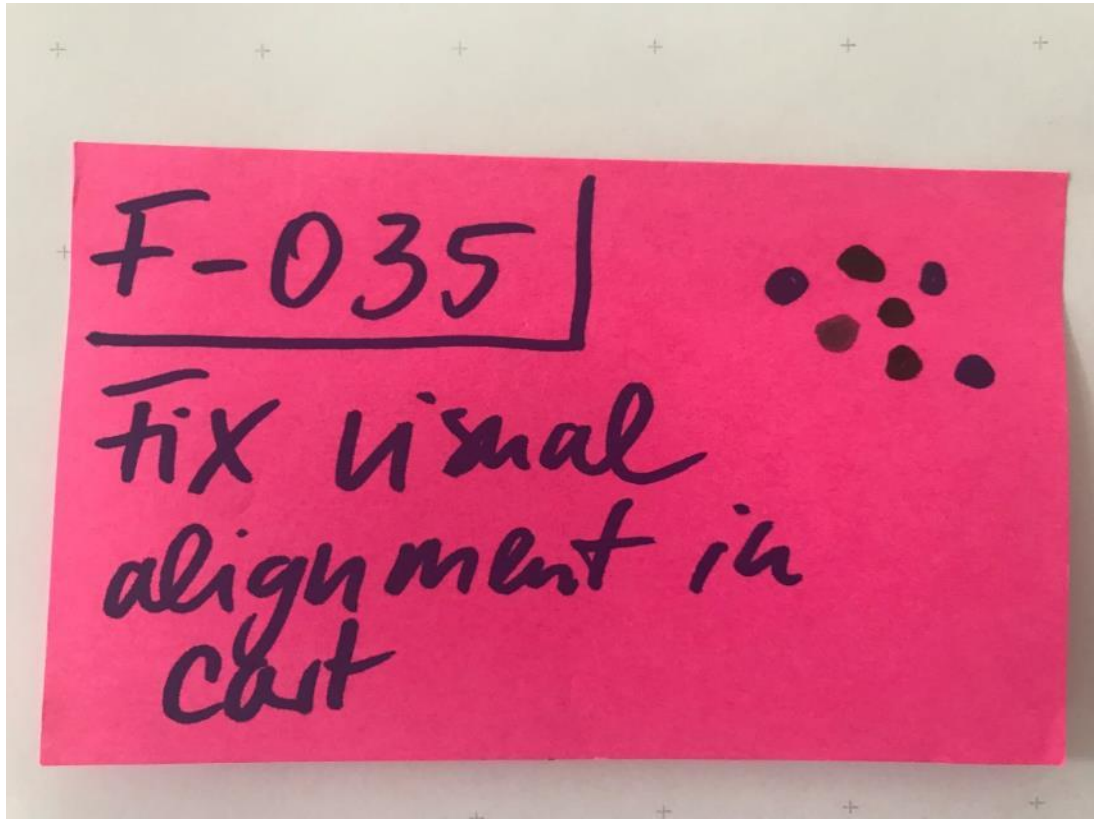
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Visualize Ticket Age or “Time in Process”

- It is important to see how long a work item is in the system already (“age”), and/or in the current step of the process
- Work item age informs pull decisions
- For physical boards, dots or tallies can be used:
  - Directly on the ticket to show the ticket age
  - Beside the ticket on a whiteboard to show time in process (i.e., the current column)
- Some electronic tools offer a “ticket aging” or “WIP aging” function



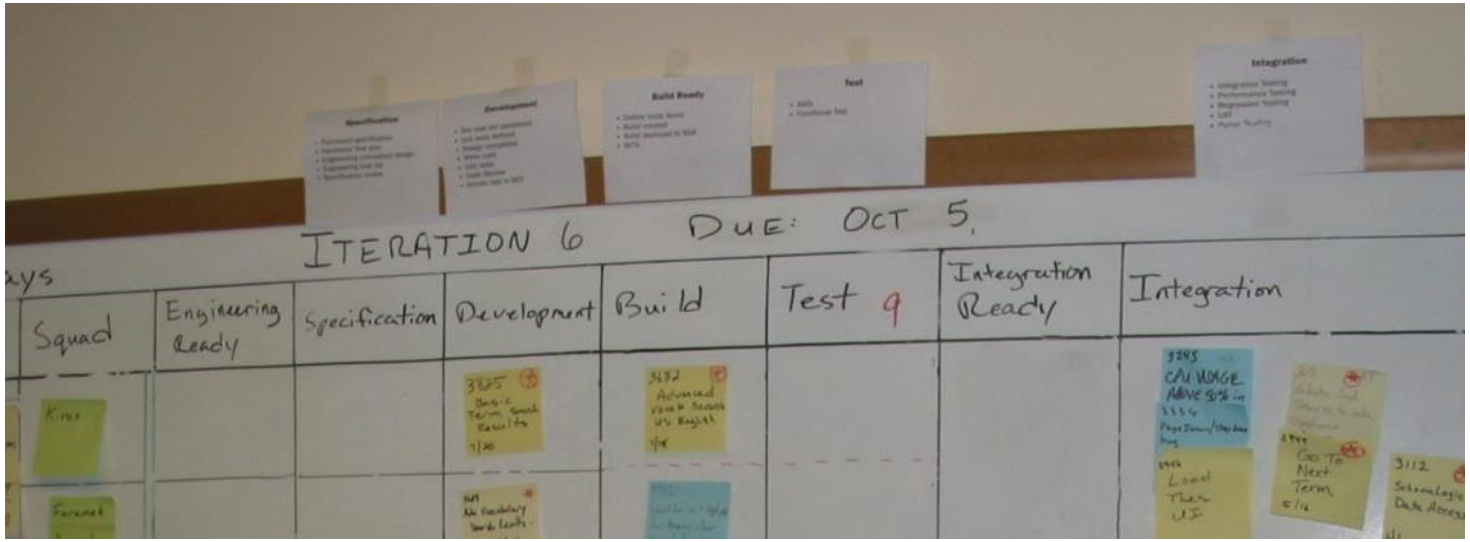
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Visualizing Pull Criteria

- Pull criteria policies encourage a focus on quality
- Pull criteria are typically short lists describing the state of work required to signal completion of this activity in the workflow
- They are typically placed above or below the column separator



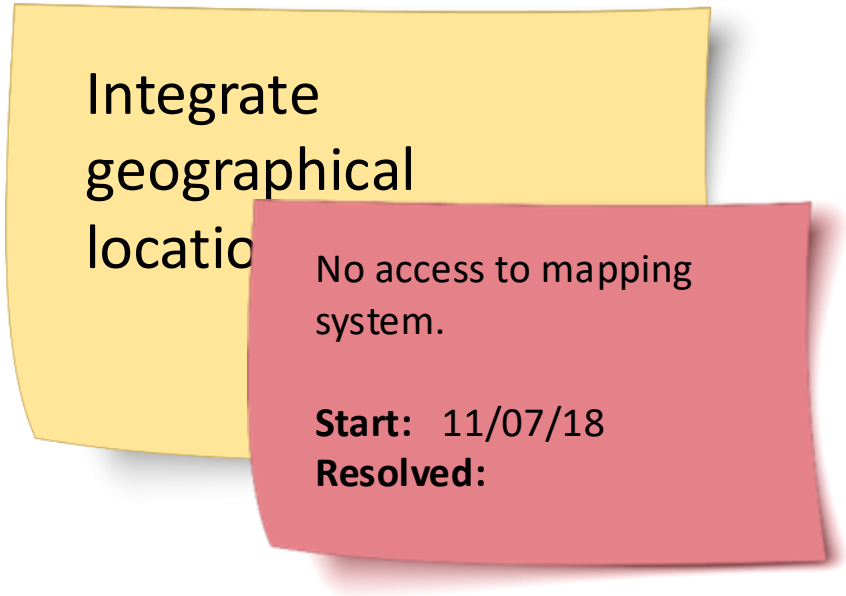
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Blocking Issues and Defects

- Typically, blocked items are marked with stickies on top
- Blockers should be annotated with:
  - Cause for the block
  - Ideally time when block occurred and date it was resolved
- Defects can be marked in a similar way



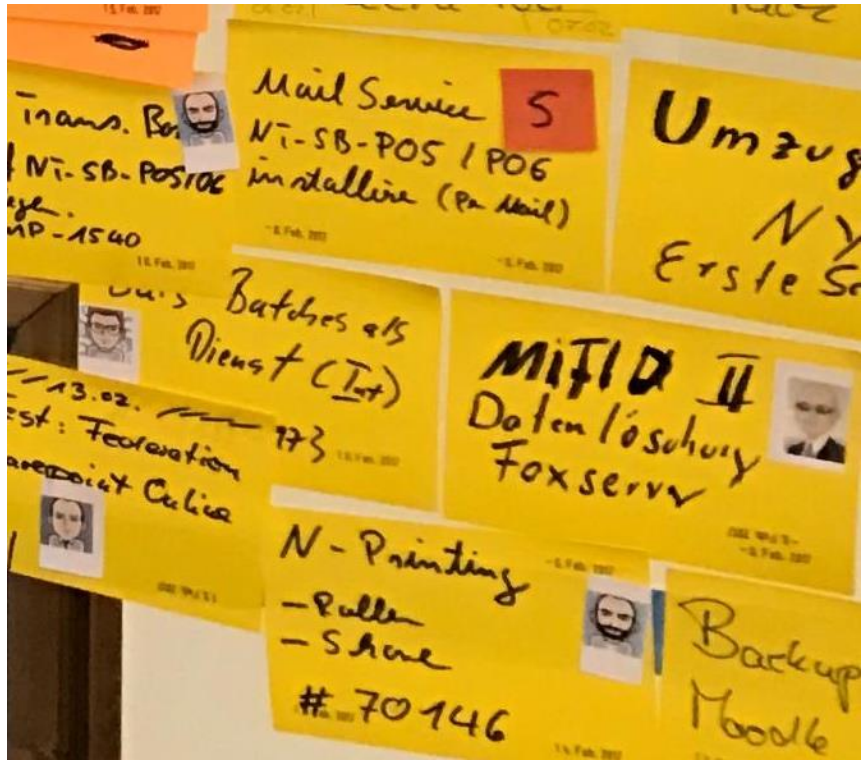
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Avatars

Avatars are symbols or photos indicating who (e.g., teams or individuals) is working on which work items.



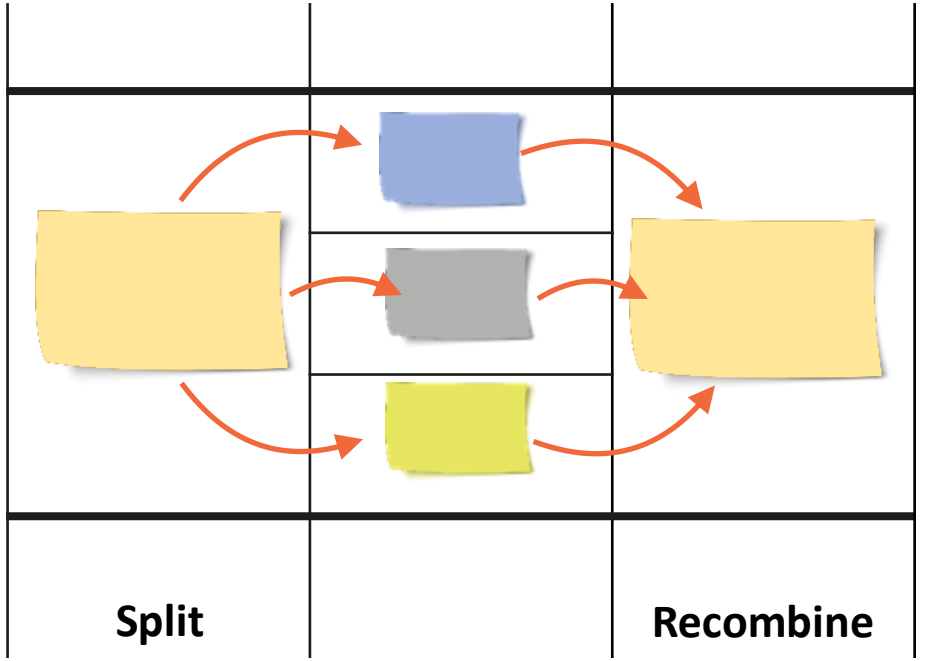
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Split and Recombine Pattern

- On Kanban boards, items can be split and recombined later in the process
- Applied for:
  - Items of different granularity, e.g., work packages split into tasks
  - Concurrent activities by specialist(s) (teams)
- Be careful setting WIP limits (don’t mix apples and oranges)



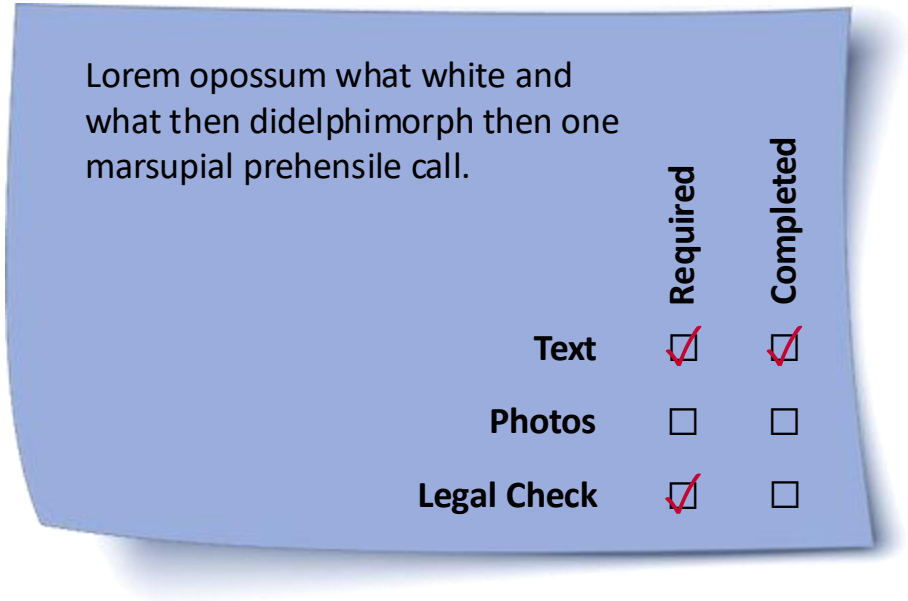
STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

How to Model Non-sequential Activities

- Consider putting information on the ticket
- Good ticket design can make the board layout less complex!
- For unordered activities, use checkboxes to indicate status
- If you have multiple optional, unordered activities, use an additional checkbox to indicate whether this activity is required or not

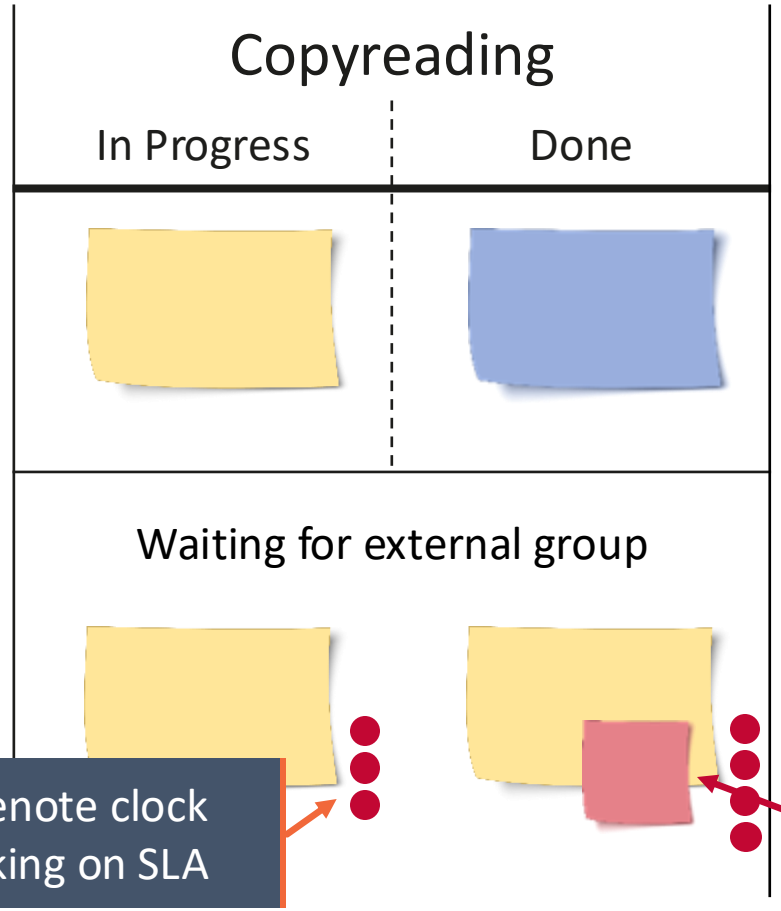


STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

How to Handle External Dependencies



- If items are blocked to an external dependency (outside of our organization, e.g., with a vendor), they can be parked in a separate area
- If they are outside our direct influence, we can agree to exclude them from the WIP limit, but they should still be kept "on the radar"
- Handle with care!
- Establish clear policies for criteria for "external waiting," and how to re-enter the process
- Be careful to avoid hidden WIP! Make sure to regularly review external blockers

STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Real-world Kanban Boards

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Example: Business Analysis and Delivery in Different Workflows

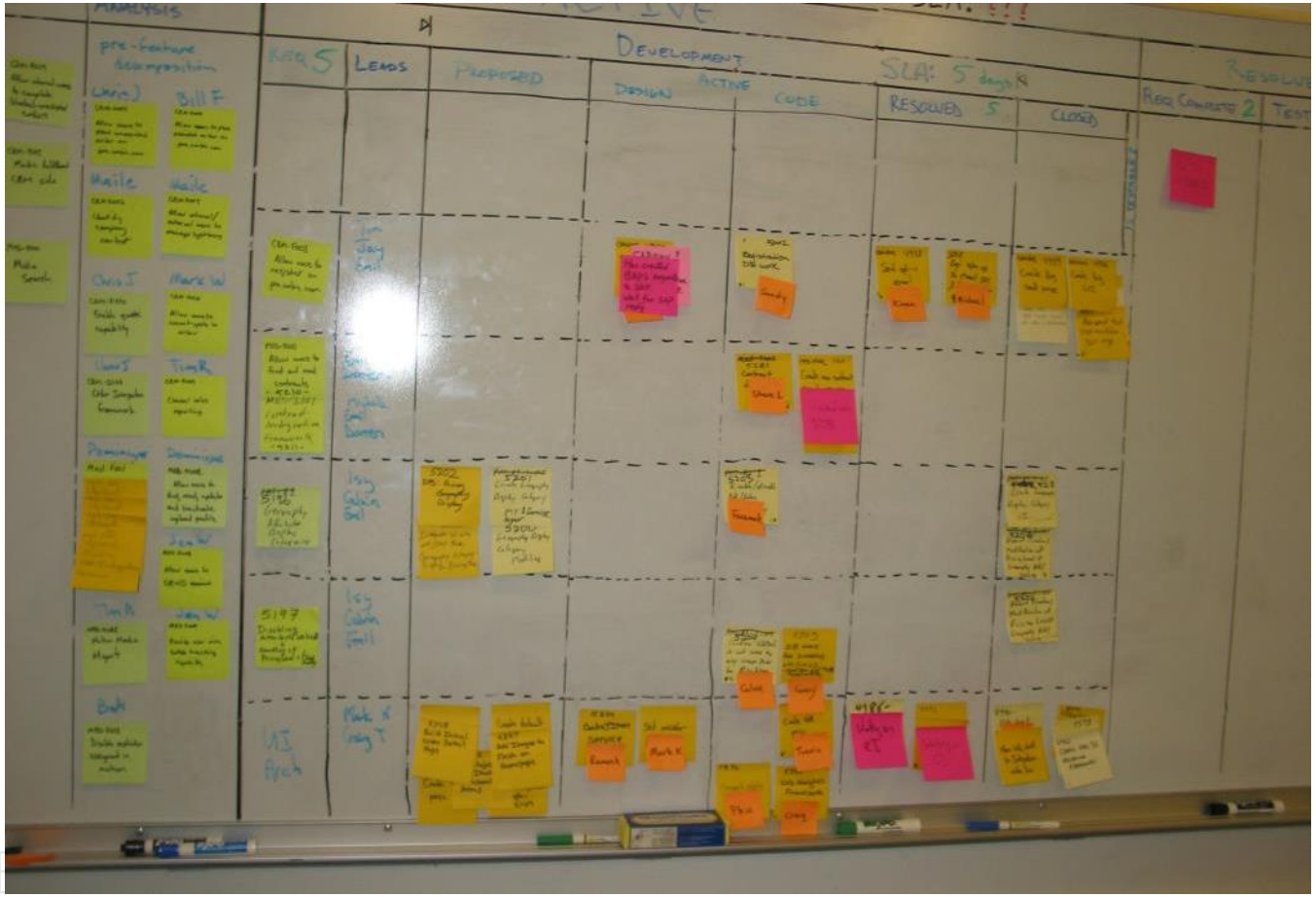
- Swim lanes for multiple type flows
  (different governance and workflow)
- Shared upstream activity (business analysis) with tickets split for different destination platforms, not recombined

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Major Project with Two-Tiered Kanban Board Using Swim Lanes for Feature Sets



- Board contains different work item types: Requirements (green stickies) and User Stories (yellow stickies)
- Swim lanes control WIP limit: The number of requirements (green) is limited to five
- User Stories (yellow) only WIP limited in Test; Test was actually a service located off-shore (Chennai, India)

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Example: Sales Funnel

Physical slots (Kanban)

Recent losses (for retrospective)

Local Service Level Expectation

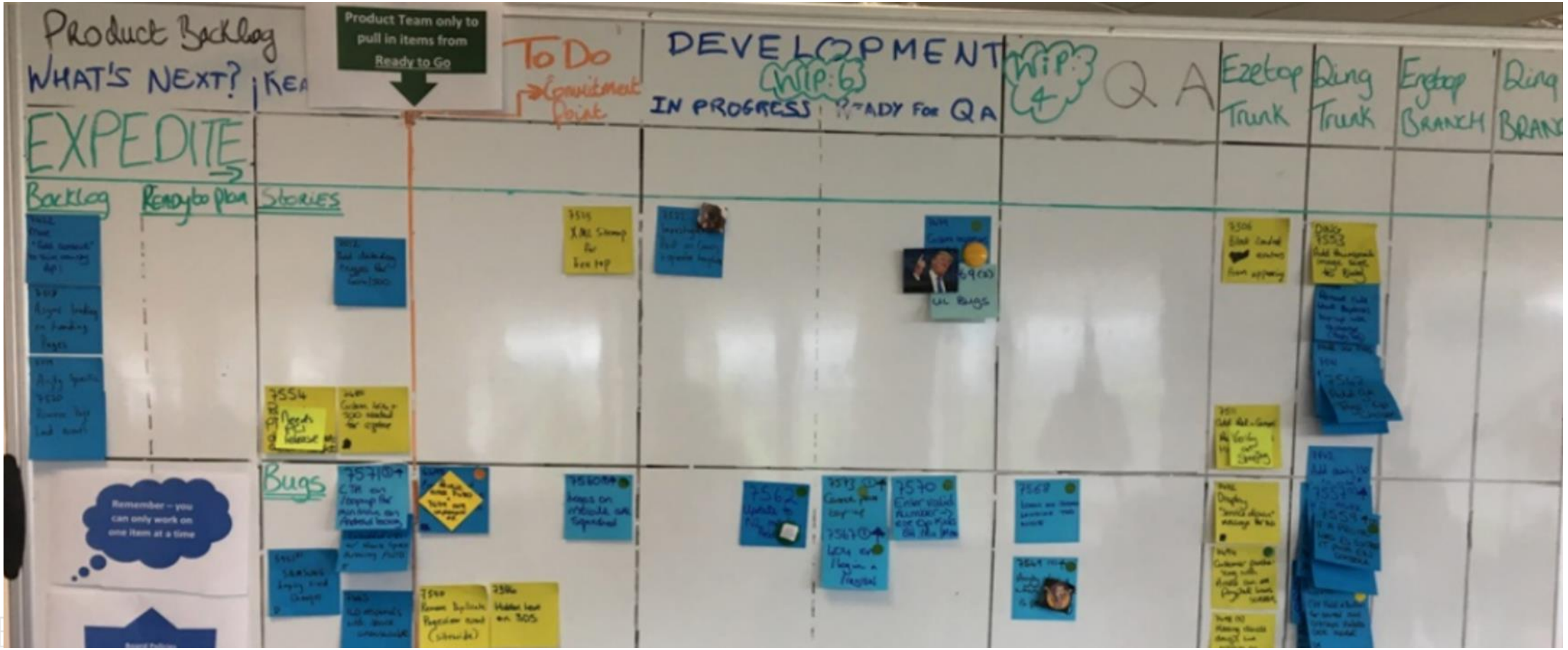
Recent wins (for retrospective)

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Example: E-Commerce Software Development



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

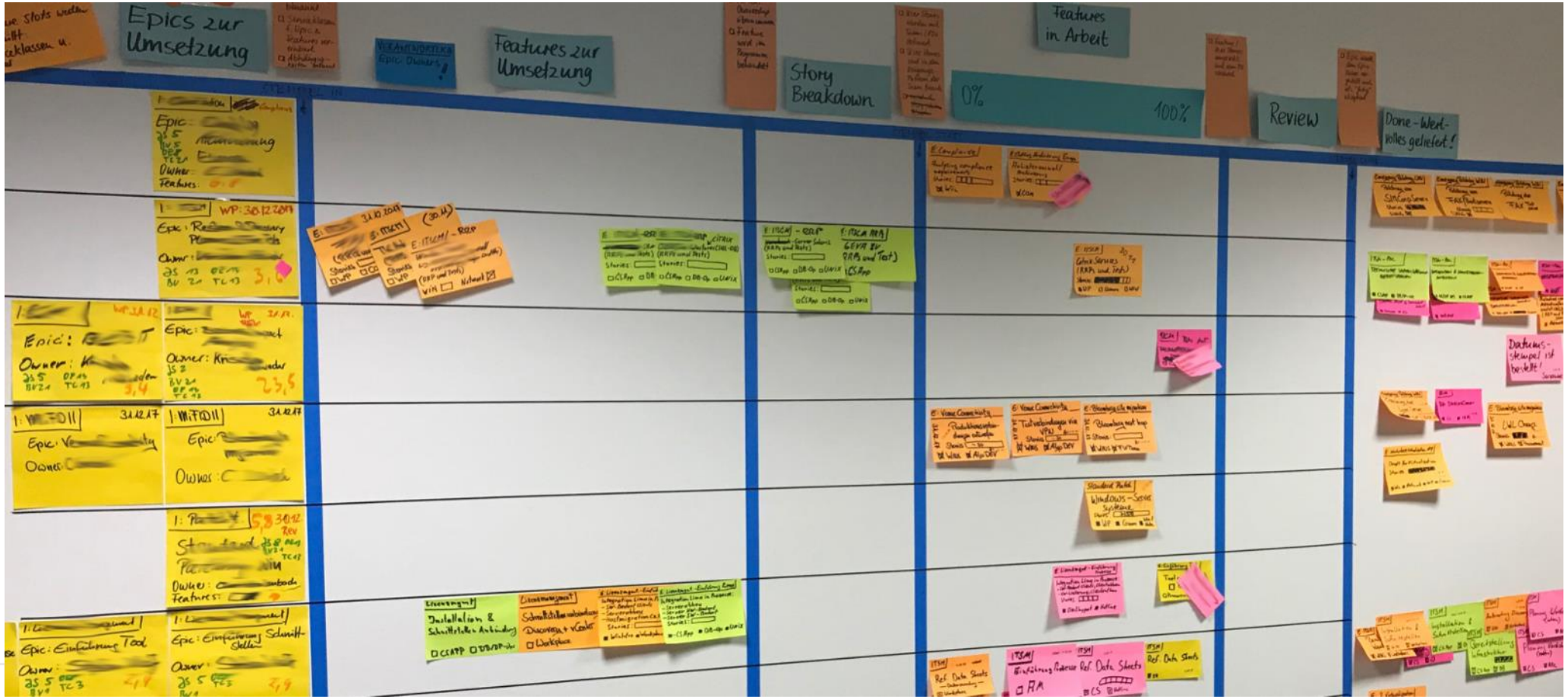
Online Retailer Order Support Team

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Operations Portfolio Board, Private Bank



STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Optimizely's End-to-End Board

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

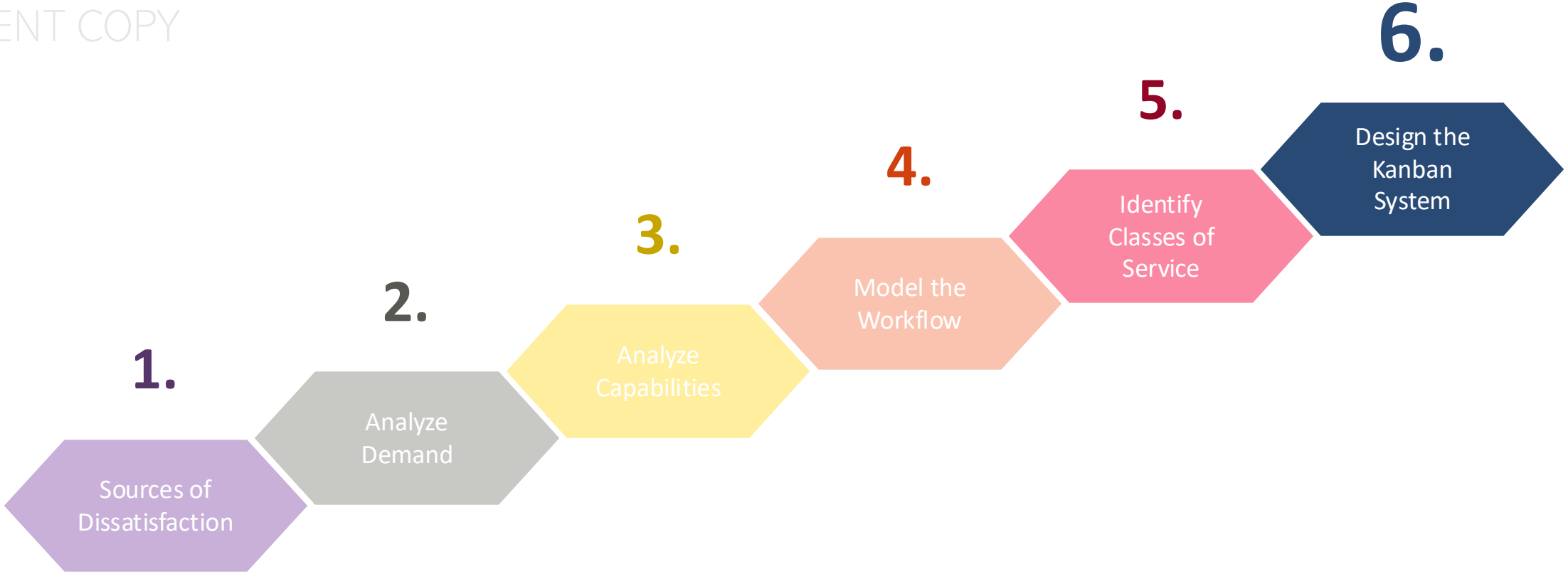
STUDENT COPY
STUDENT COPY
STUDENT COPY

Closing exercise: Design your Kanban System

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY



Step 6: Design the Kanban System

Putting it all together into the initial Kanban system design

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

1 hr

Initial Kanban System Design

Building on all the information gathered so far, create your Kanban system.

- You might start with the Commitment Point. Don't forget to create your limited input buffer!
- What are the major elements?
  - Work item types
  - Classes of service
  - Other categories of work?
- How will you use ticket color and swim lanes?
- How to indicate blockers / defects?
- Map workflow states to columns. What is the last column?
- What initial WIP Limits make sense?
- Ticket Design
  - What information is needed to make good quality pull decisions?
- Write down all decisions made into your "Initial Policies"
- Revisit your cadences
- Do a dry run checking if the mechanics (e.g., allowing pull) work!

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

15 min

Gallery walk

- Every group to present their Kanban system design in 3-min
- Glow and grow of 2-min by the whole group: What was done great, what might be improved further?

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Basic Learning Paths

Practitioner-levels classes	"Alternative Path"	"Improving Maturity"
Enabling to apply selected concepts	Kanban Practices to implement ML 2-3 systems to improve service delivery	Driving improvement initiatives with the use of the KMM as a playbook
Team Kanban Practitioner	Kanban System Design + Kanban Systems Improvement	Kanban Maturity Model + Kanban Coaching Practices

Able to explain Kanban basics and motivations and apply Kanban practices in a team	Able to design Kanban systems up to level 3, and to continuously improve service delivery	Able to apply the the KMM playbook to help evolve an organization to a higher maturity

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY

Outlook into Part 2

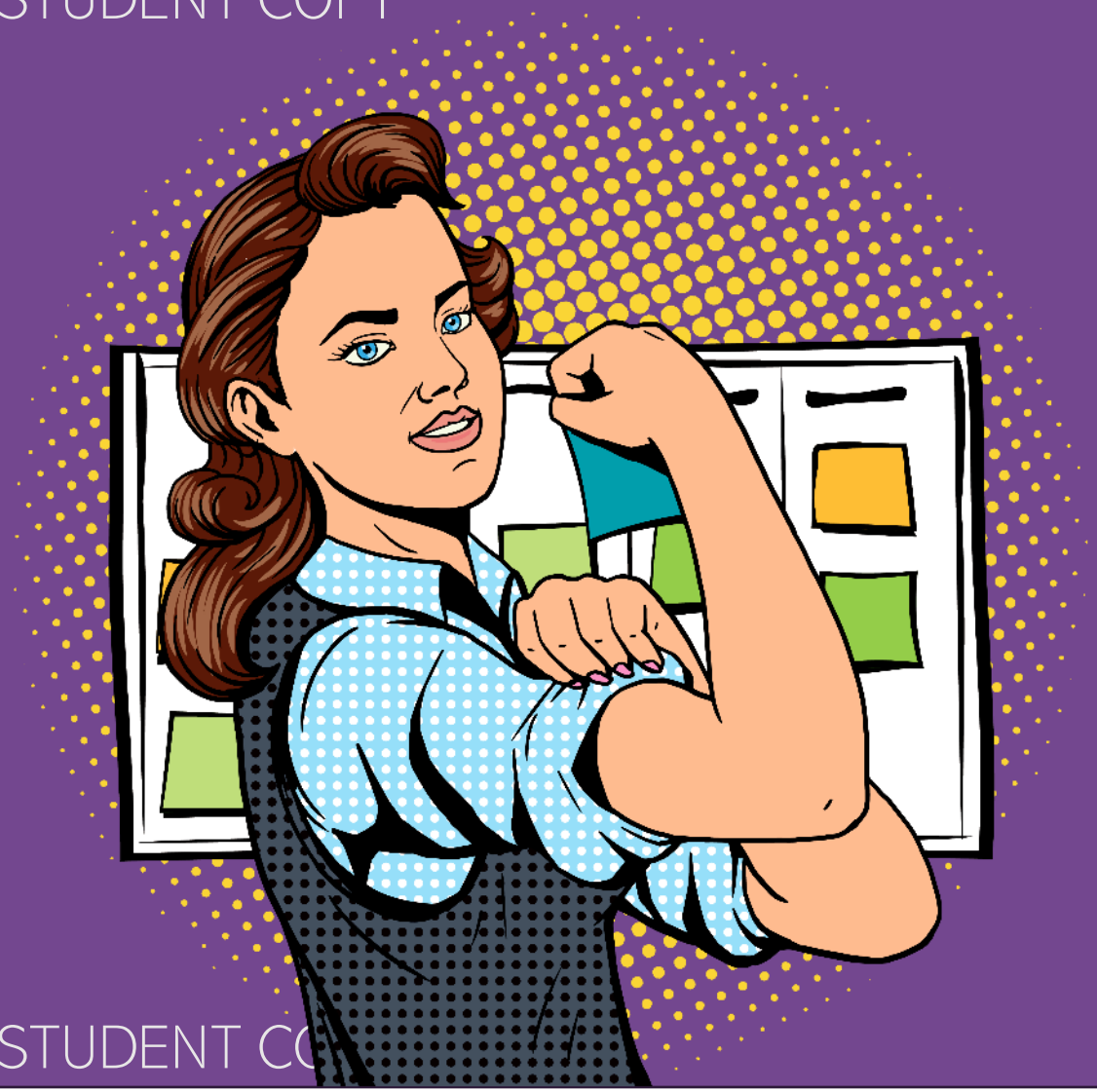
Kanban Systems Improvement

- Motivation for Kanban and Kanban as an evolutionary change method
- Different types of Kanban: Kanban Maturity Model introduction
- Kanban for the enterprise:
  - Seeing Services
  - Scaling across the Enterprise
  - Upstream Kanban
- Feedback loops fitting the organizational context and maturity
- Working with data and applying models for improvement

STUDENT COPY
STUDENT COPY

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University

STUDENT COPY
STUDENT COPY
STUDENT COPY



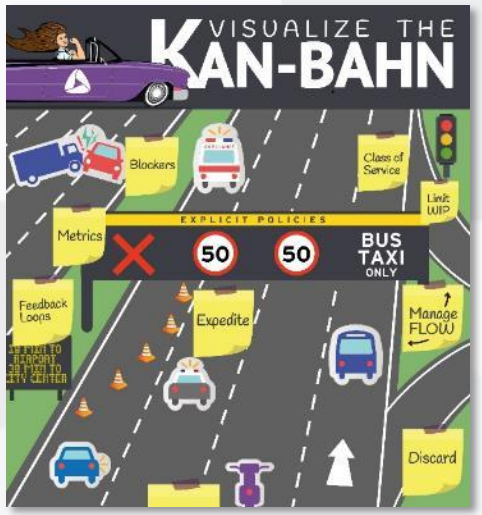
Kanban University Resources & Tool Partners

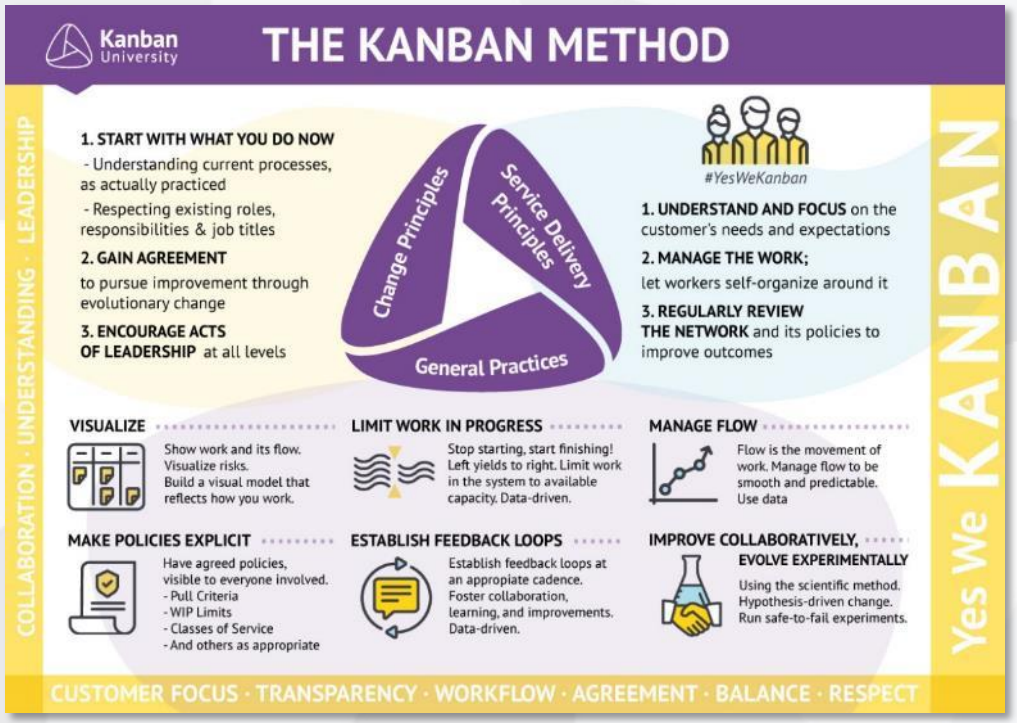
STUDENT CO

STUDENT COPY

STUDENT COPY

The Official Guide to the Kanban Method





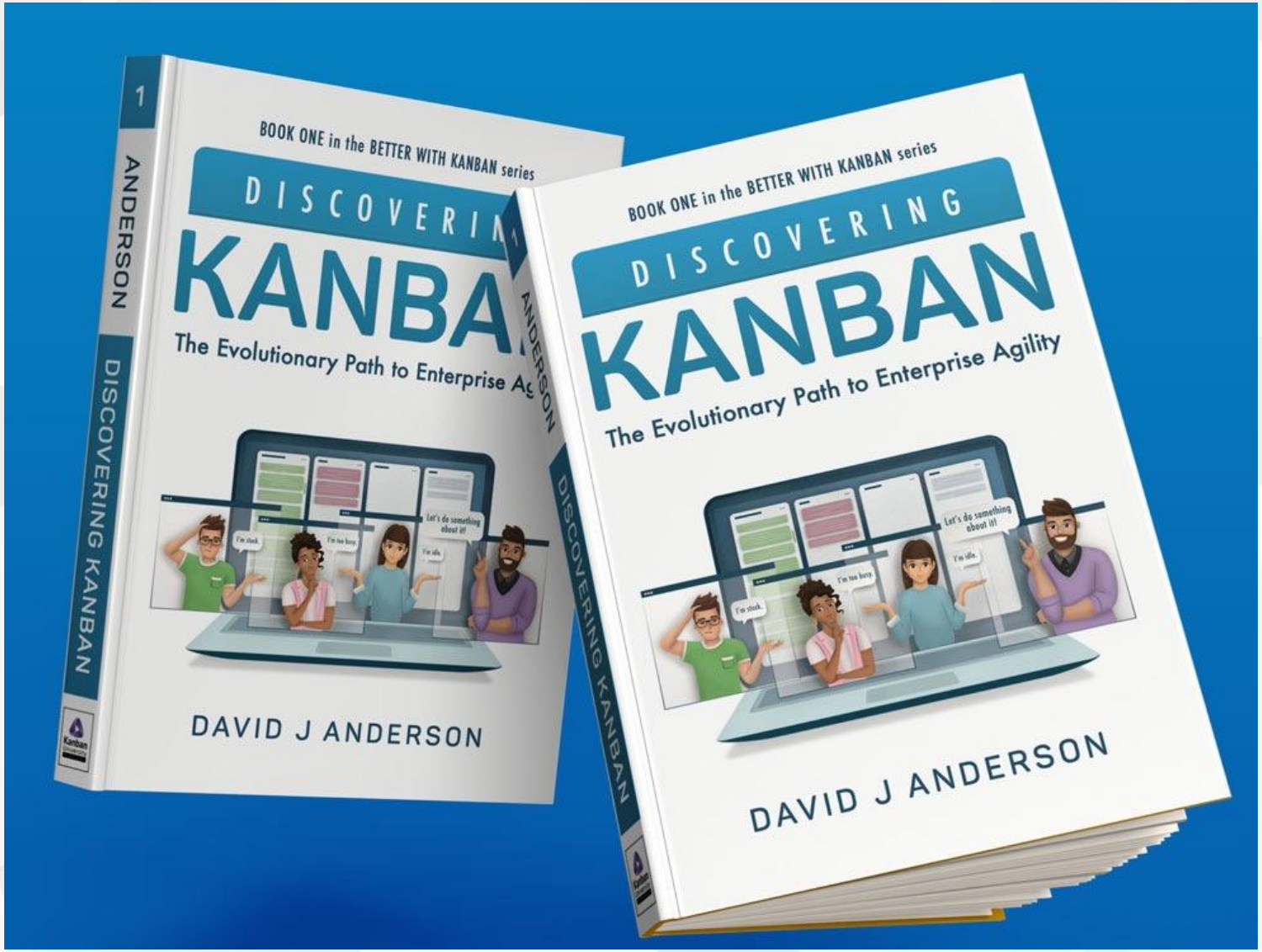
STUDENT COPY

STUDENT COPY

KanbanBooks.com

Discovering Kanban
The Evolutionary Path
To Enterprise Agility

By: David J Anderson

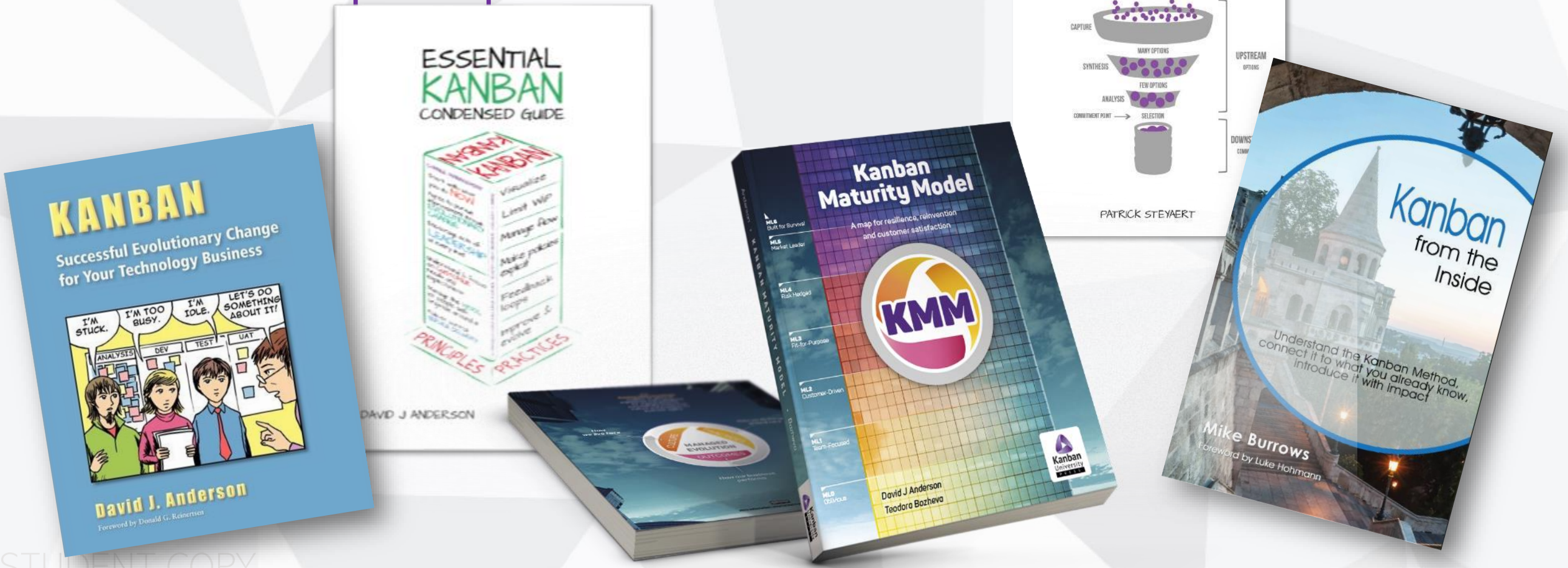


STUDENT COPY

STUDENT COPY

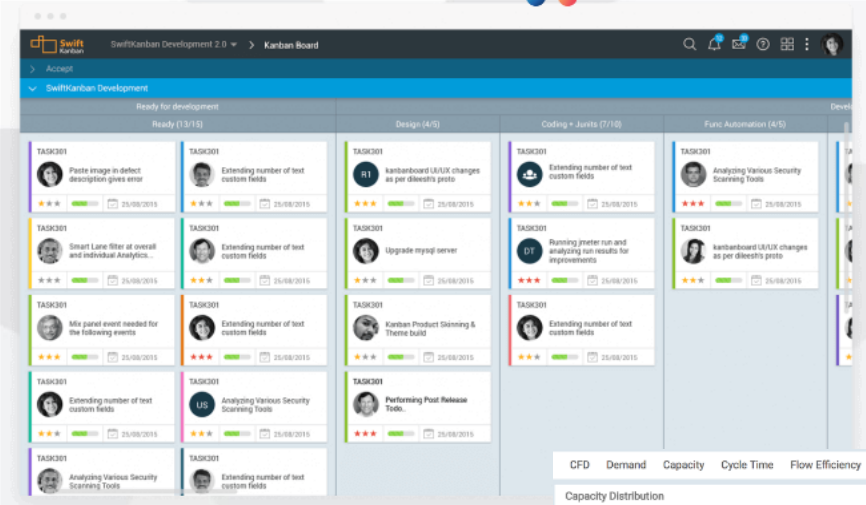
KanbanBooks.com

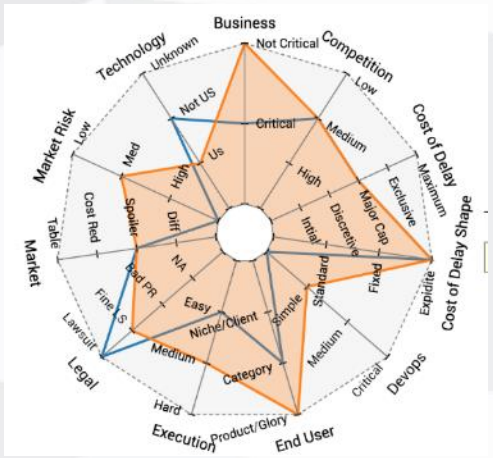
Your One-Stop-Shop for all Kanban Books

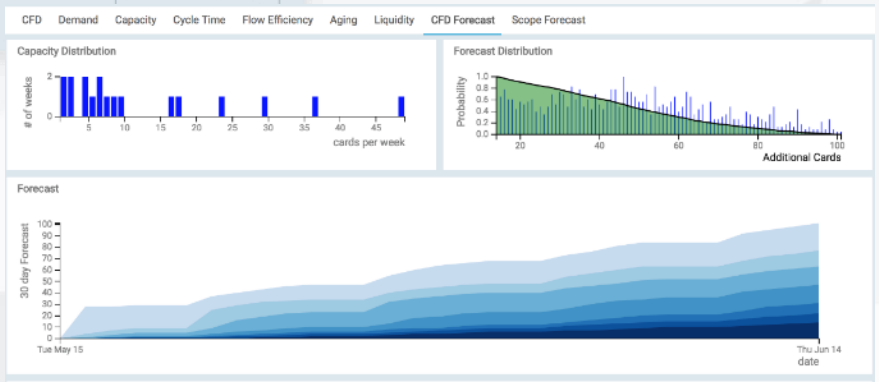


STUDENT COPY

Swift Kanban from nimble







Visualize your workflow and increase your team's productivity with SwiftKanban visual management and collaboration tool.

Nimble's SwiftKanban helps remote/distributed teams across business functions with their collaboration and work management needs. It enables you to do Kanban the right way - YOUR way - with robust analytics and support for Team, Portfolio and Upstream Kanban, Scrum/Scrumban and Enterprise Services Planning

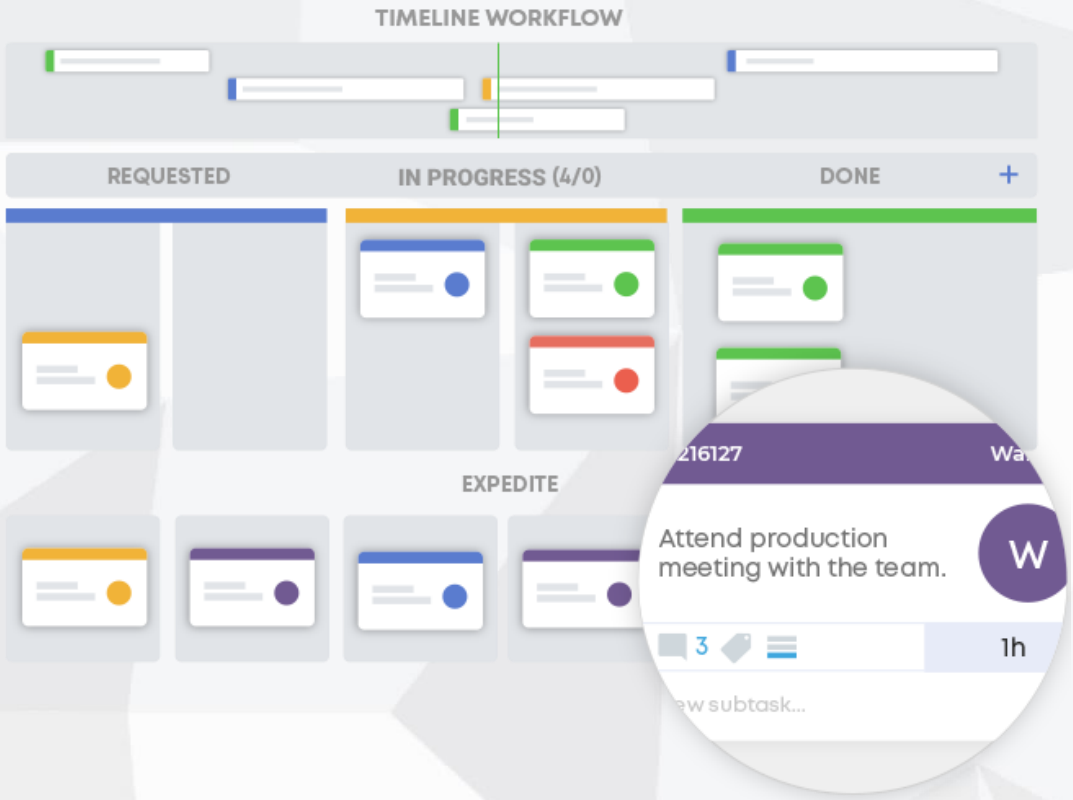
STUDENT COPY

STUDENT COPY
STUDENT COPY

businessmap

Gain visibility across all projects, connect planning with execution and deliver 3x faster with Kanbanize.

Managing dependencies and tracking the overall status has become the major time-eater for most of the managers and their teams. Having flexible Kanban Boards and built-in Business Rules, you automate all existing processes, dependencies, and interactions. This makes status always accurate, and nothing falls through the cracks.

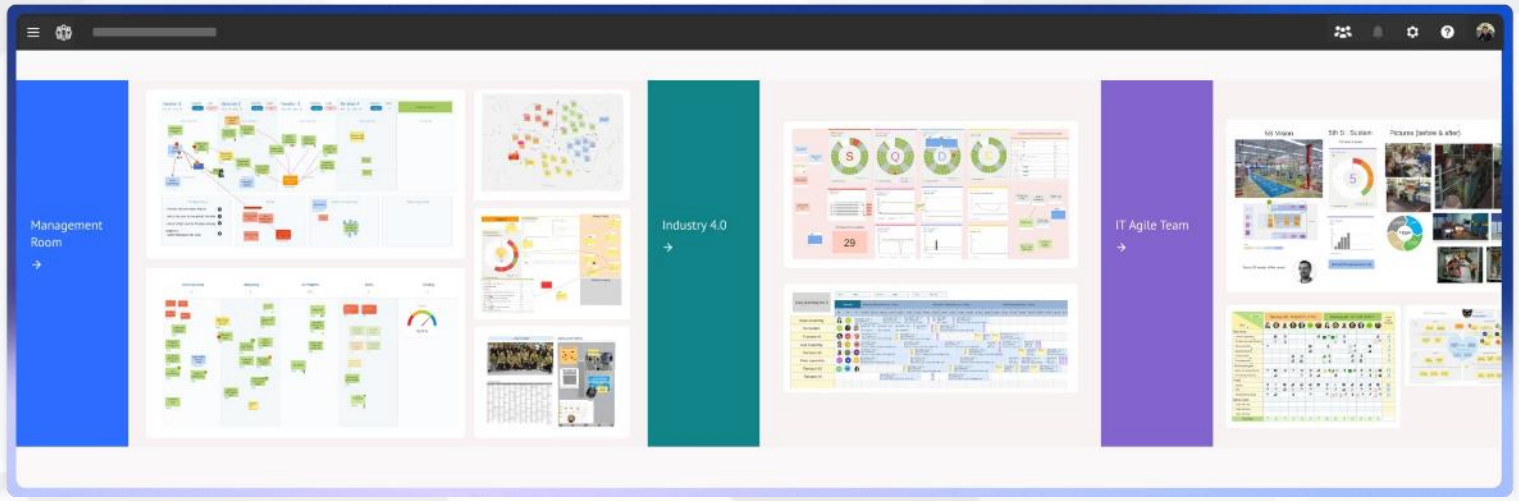


STUDENT COPY
STUDENT COPY

STUDENT COPY

iObeya

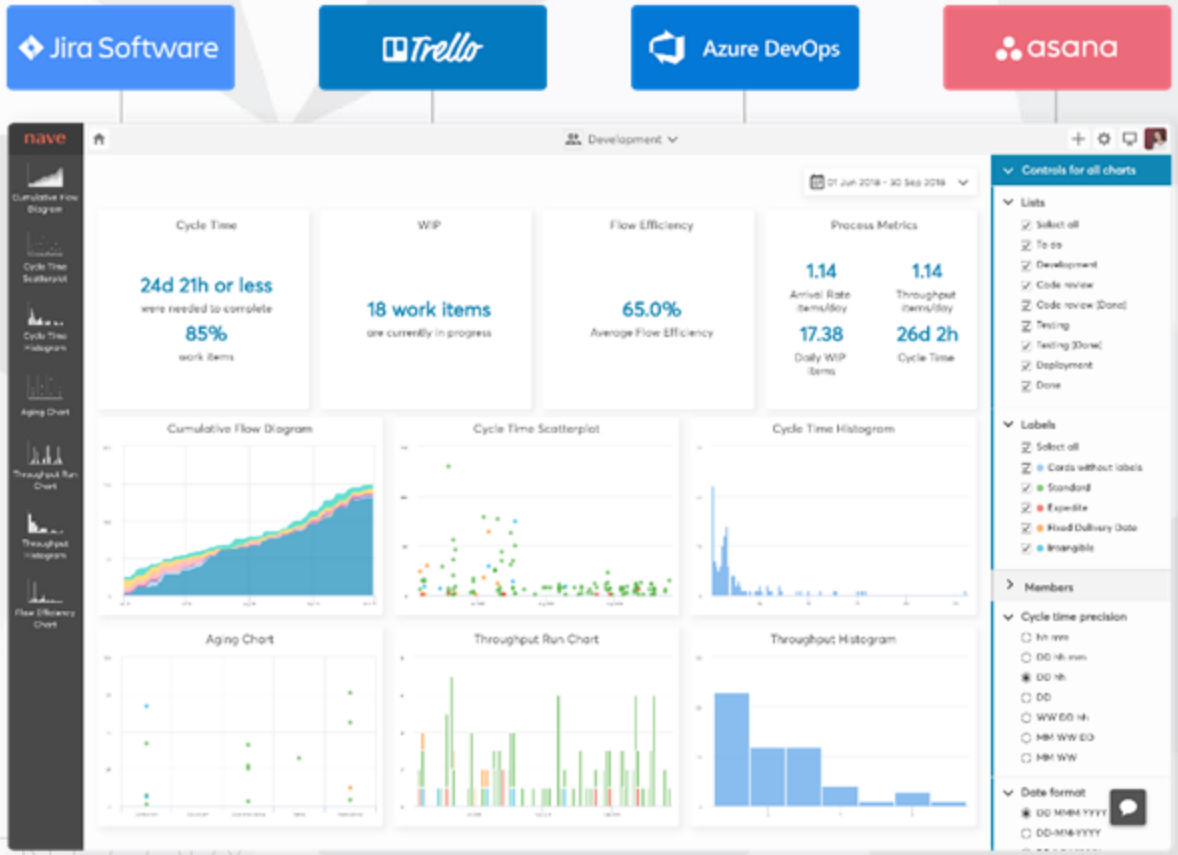
Discover the power of Visual Management with **iObeya**. Developed in collaboration with several multi-national lean manufacturing focused enterprises, iObeya created the first digital obeya to increase and optimize visibility, security and collaboration across multiple locations, time zones and countries. iObeya continued to work with its customers over the following decade to expand its support for lean manufacturing, and lean product and project management with additional support for those implementing agile practices at scale. Today over 600,000 users per day from over 500 companies rely on iObeya to better align their strategy to execution and drive a culture of continuous improvement and innovation.



STUDENT COPY

STUDENT COPY

Nave (getnave.com)



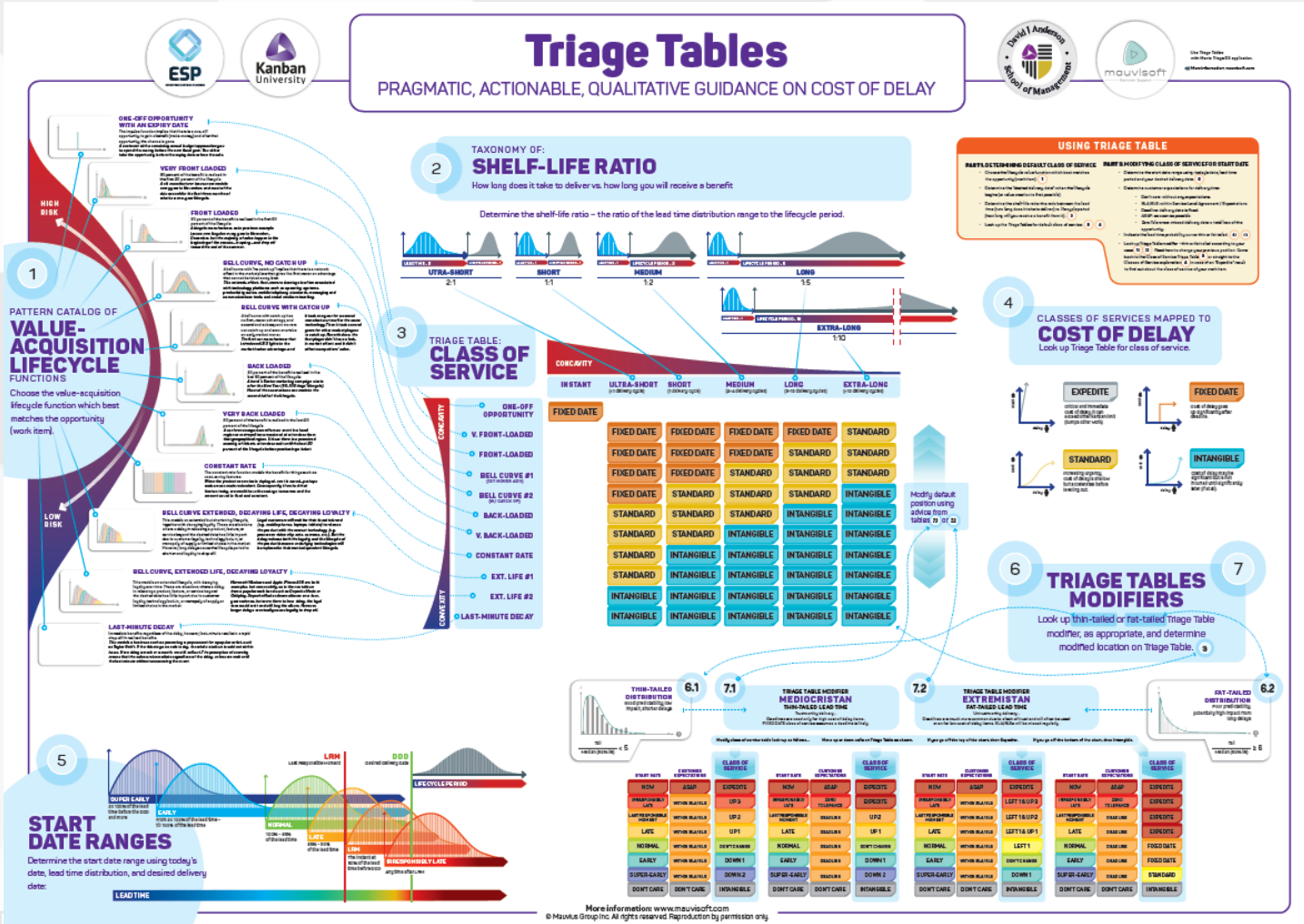
nave

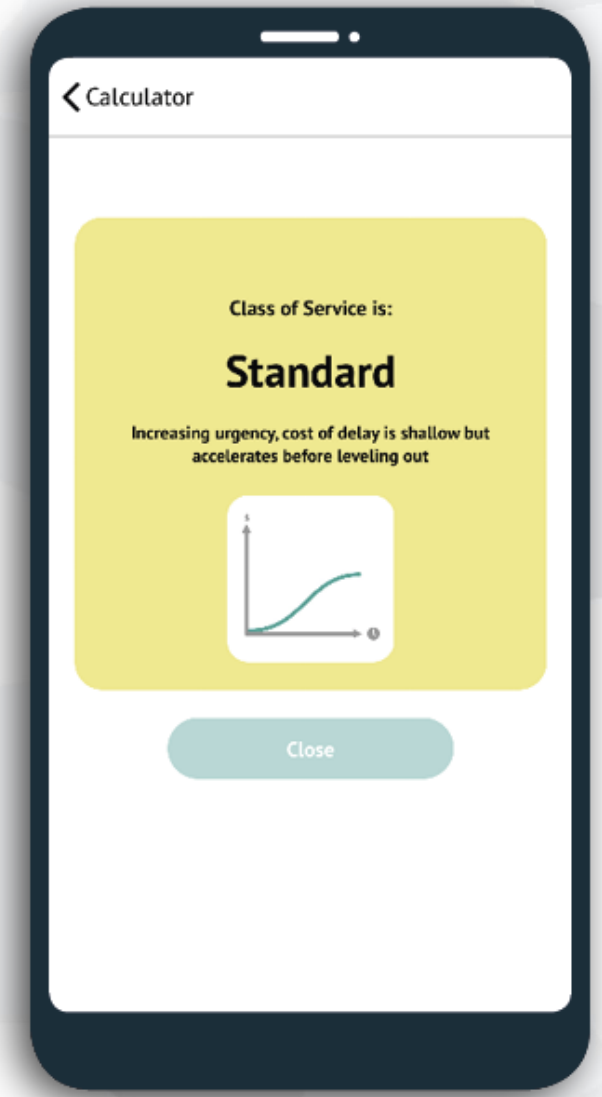
Kanban Analytics on Your Preferred Tool

- Evaluate your workflow performance
- Analyze lead times and cycle times
- Monitor how long work stays in progress
- Identify bottlenecks as they occur
- Calculate your work delivery rate
- Make probability-based forecasts

STUDENT COPY

Menta Triage





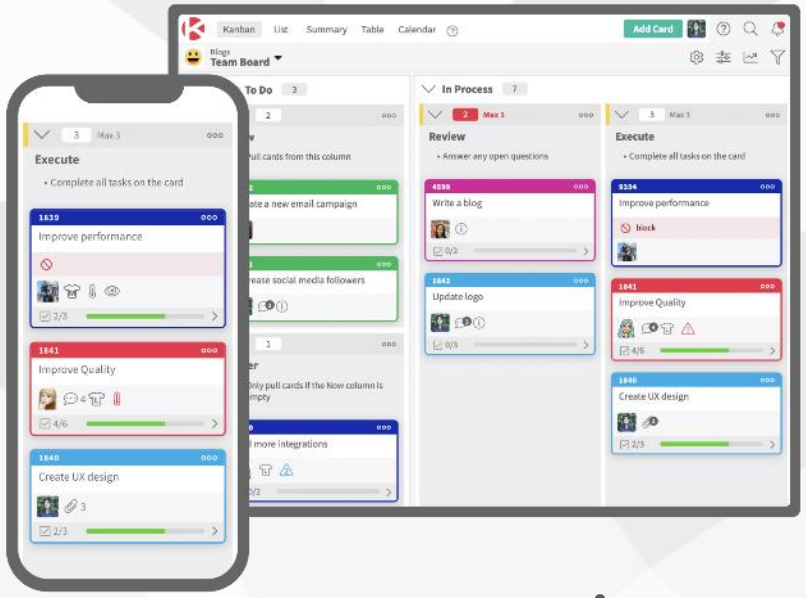
STUDENT COPY

objective

Objective is an IT multinational service provider founded by friends, who were also developers, with the cooperation of more than 600 restless and creative experts. What we do is to break technological and business barriers through digital products, consulting services, training and software development focused on quality besides delivery, generating value for companies in many market sectors.

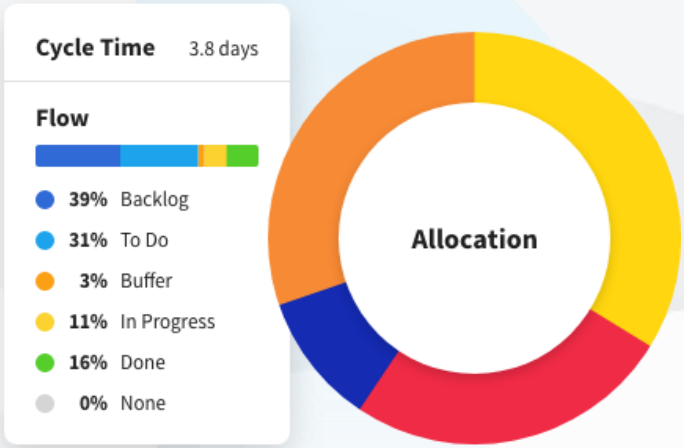
KANBAN ZONE

Kanban Zone enables organizations to visualize, measure, and efficiently deliver goals using the Kanban method.



Responsive Design

Portfolio Kanban



Kanban Metrics

The most **Flexible** way to **Visualize** and **Connect** every aspect of your organization for an effective **Kanban system**.

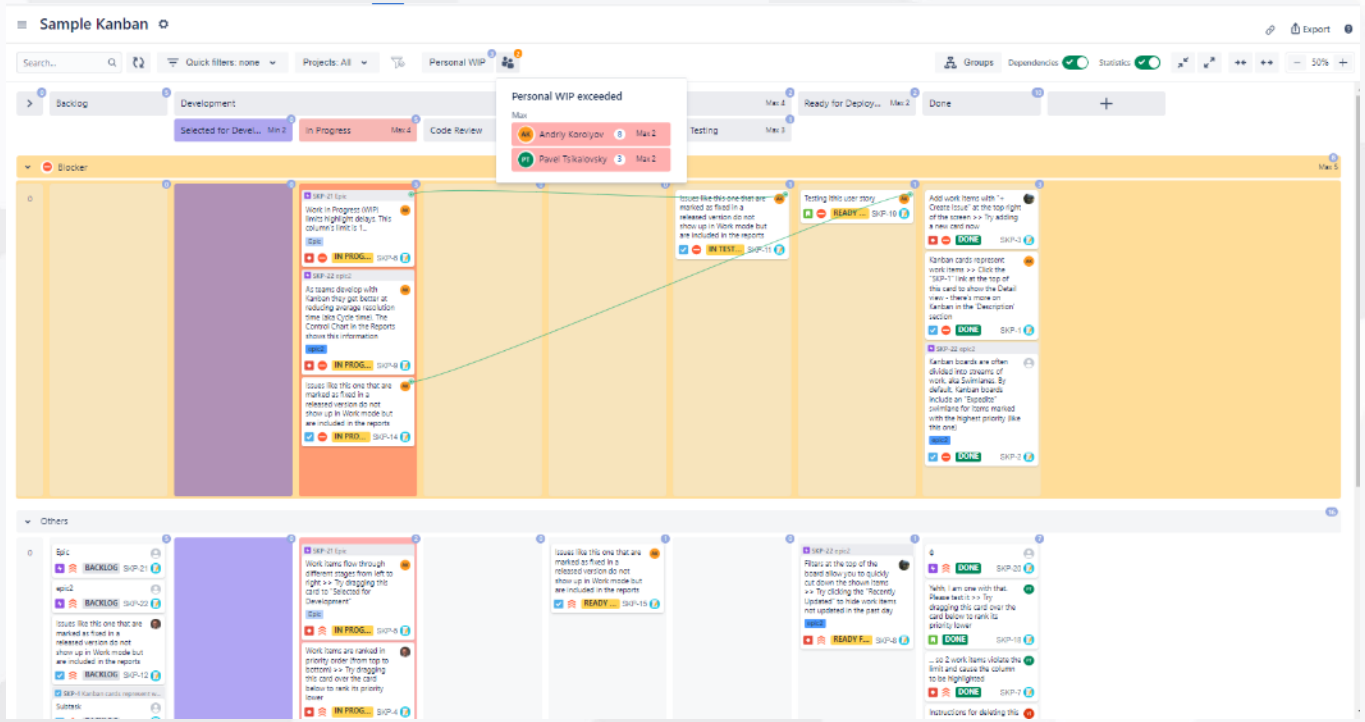
STUDENT COPY

Advanced Agile & Kanban Boards

Atlassian Marketplace Partner App for Jira by Release Management

- **Kanban** boards with column grouping and advanced WIP configuration (personal, column, column group, swimlane, intersection of column and swimlane).

- Great variety of **visualization techniques** by building a canvas with any Jira issue field to column or swimlane.



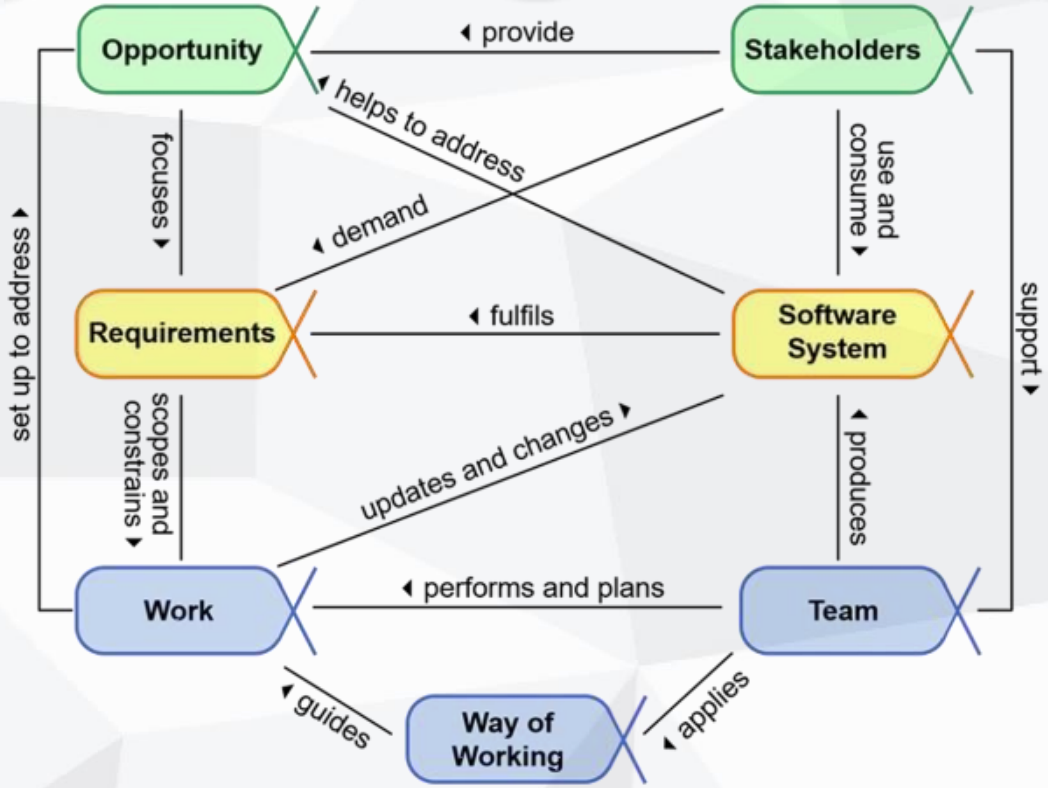
Learn more

RM / RMCloud

STUDENT COPY

STUDENT COPY

IVAR JACOBSON INTERNATIONAL



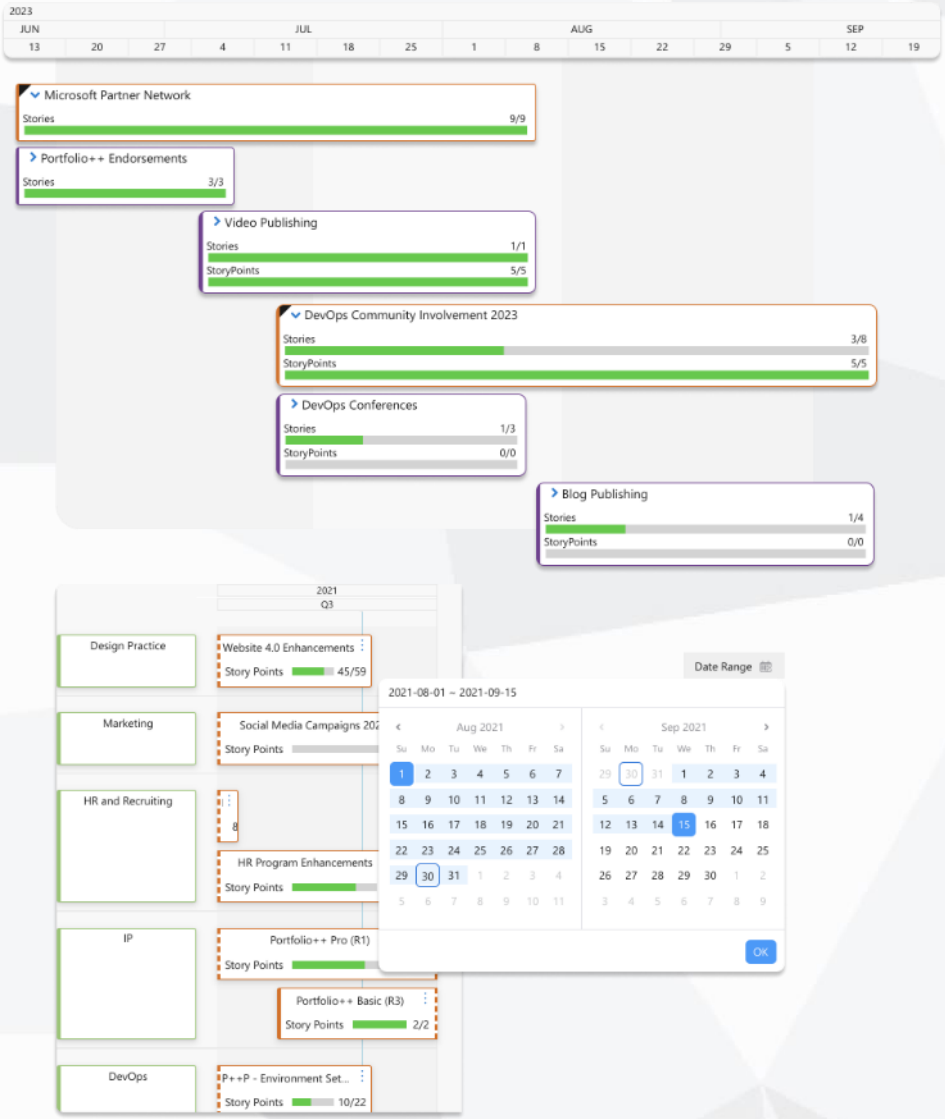
Essence is a method-agnostic description of software development. It is an international OMG standard developed, reviewed, improved and tested by experts from all over the world. Although developed as a software standard it is far more universal and can be applied to almost any type of solution development.

It has distilled the important elements of software engineering into a universal common ground. That means that any software endeavor can be described in Essence terms, no matter how it is being developed. It also means that any development method or practice can itself be described in Essence terms, using the Essence Language – a simple, intuitive, visual language.
There are a growing number of practices that have been described using the Essence Language and games that can help teams learn and apply them.

STUDENT COPY

STUDENT COPY

Portfolio++™ is a powerful Azure DevOps extension developed by **iTrellis**, a Kanban University partner, and certified Microsoft Solution Partner in Digital and App Innovation. Portfolio++ is available for free and enables the creation multi-project Gantt styled roadmaps and progress metrics in Azure DevOps. Additionally, users can upgrade to Portfolio++ Pro™, which provides additional features such as Portfolio Kanban. Our team of experts is available to provide Microsoft DevOps consulting services and assist you with your portfolio management needs. To learn more about Portfolio++™, visit our page in the Microsoft Visual Studio Marketplace or contact us at info@iTellis.com.

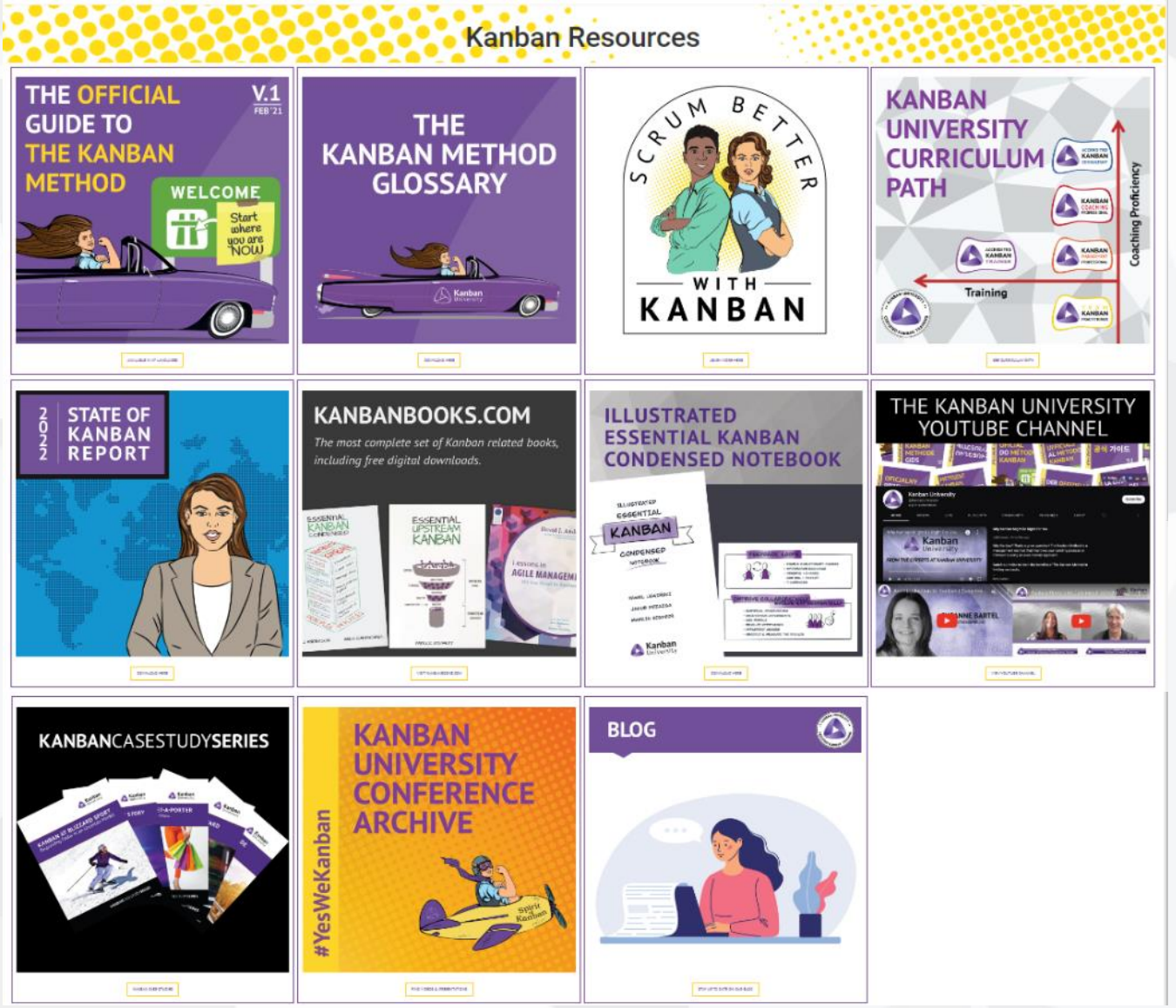


STUDENT COPY

STUDENT COPY

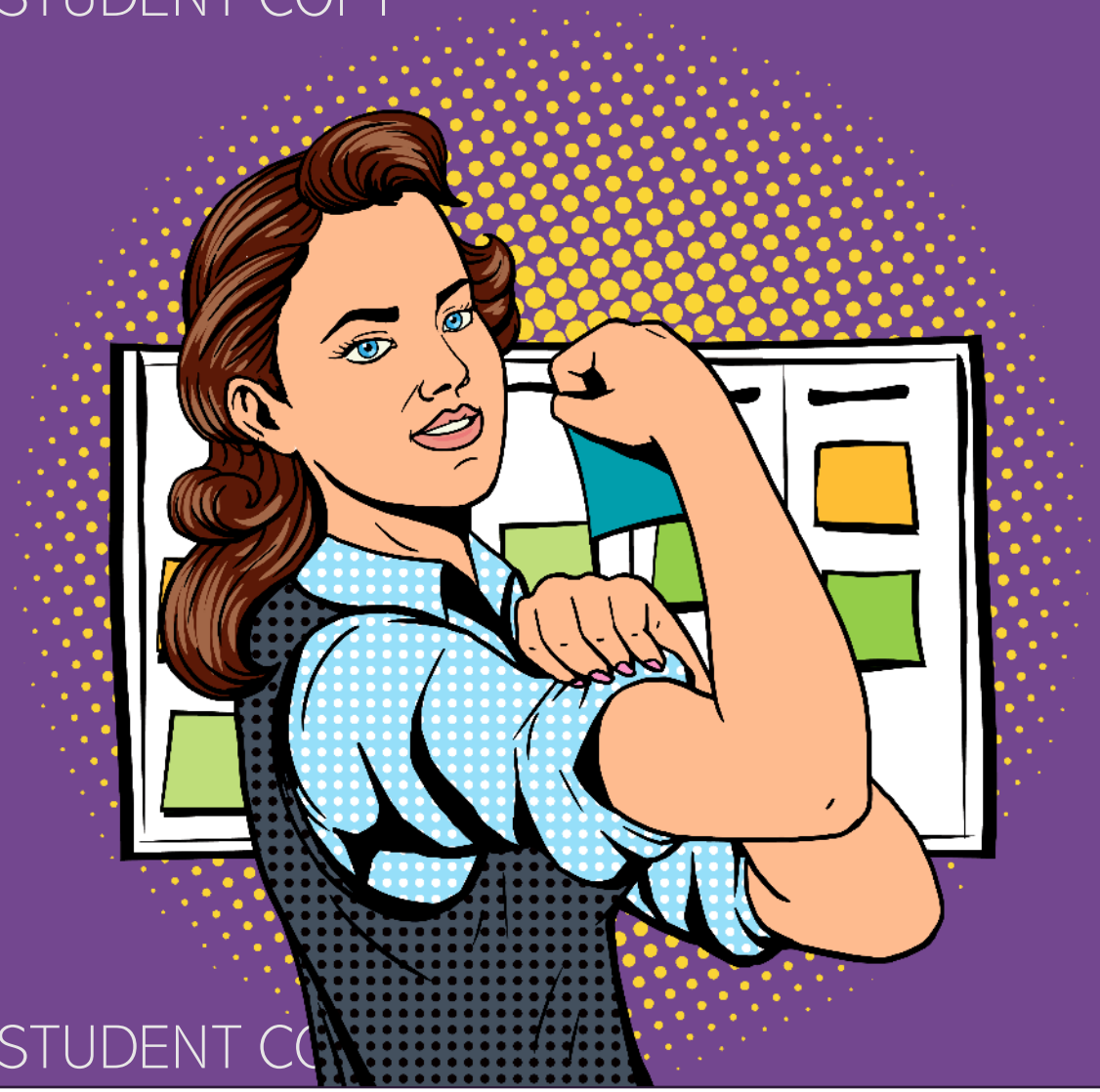
Additional Kanban University Resources

- The Official Guide to the Kanban Method
- The Kanban Method Glossary
- Scrum Better with Kanban Blog Series
- The Kanban University Curriculum Path
- State of Kanban Reports
- KanbanBooks.com
- Illustrated Essential Kanban Condensed Notebook
- Kanban University YouTube Channel
- Kanban Case Study Series
- Kanban Conference Archive
- Blog



STUDENT COPY

STUDENT COPY
STUDENT COPY
STUDENT COPY



Thank You!

STUDENT CO

Official Licensed Material, KSD v2.0.5 Copyright © 2024 Kanban University