KANBAN FUNDAMENTALS

Long Q Truong

Agenda

I. A Pizza Simulation Game

II. Kanban Fundamentals

III. An Improved Pizza Simulation Game

IV. Kanban vs. Scrum

V. Q & A

A Pizza Simulation Game

Preparation

- Team of at least 4 people
- 2 Supervisors

- Materials
  - 2 Scissors, glues, masking tape
  - Pizza base, Ham, Pineapple, Rocket Salad (paper)
  - Oven plate
  - Pen brush

- Objective
  - Produce as many pizza slices as you can while trying to avoid waste

Hawaiian Pizza Ingredients & Cooking Instruction

- A slice of pizza base with
  - Tomato sauce
  - 3 slices of ham
  - 3 slices of pineapple
- The tomato sauce covers the pizza bottom nicely and the toppings are carefully cut and distributed evenly across the pizza
- Each pizza must be baked at least 30 seconds in an oven
- There can be a maximum of three pizza slices in the oven at one time
- No adding or removing of slices while baking

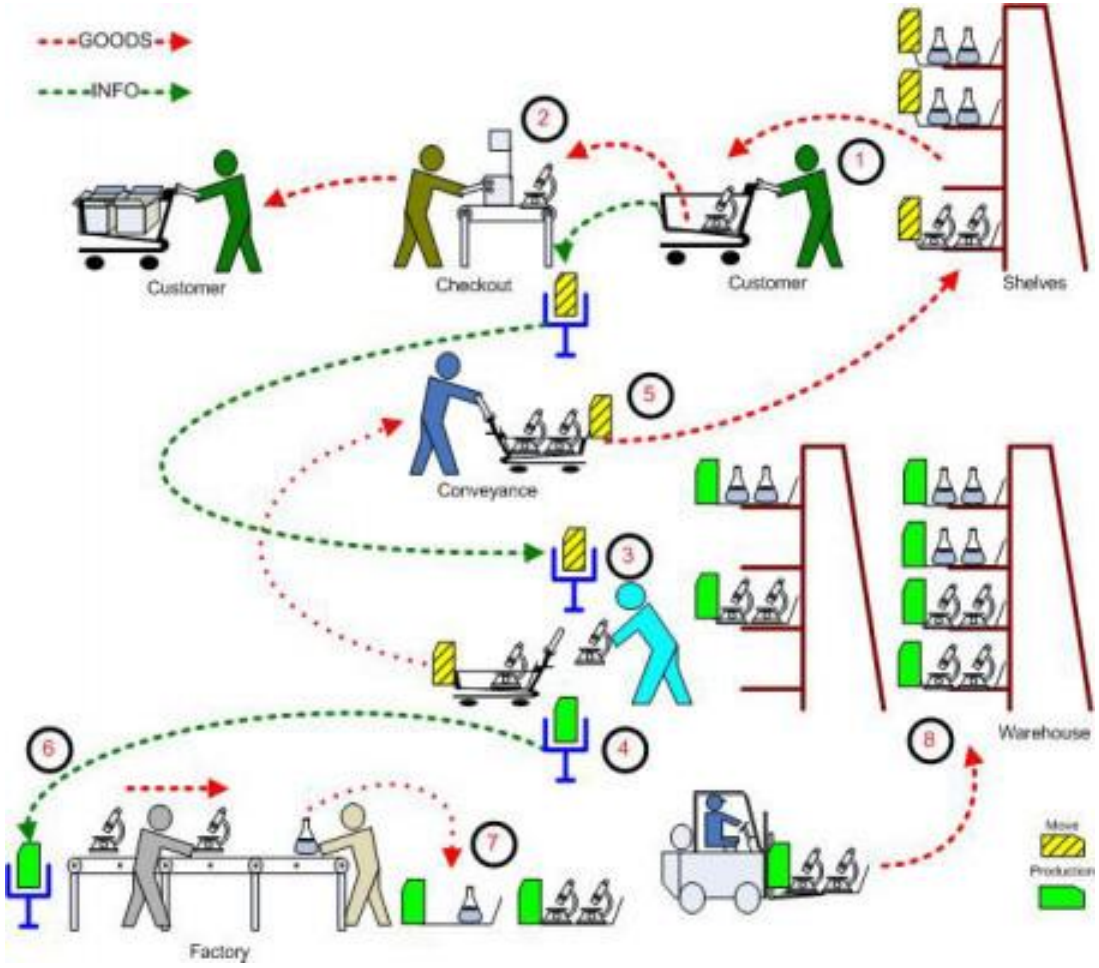
Scoring System

- Each piece counts negative until the slice is 100% done
  - Finished slice of pizza — 10 points / each
  - Pizza base (with or without sauce) — -4 point / each
  - Toppings — -1 point / piece

Kanban Fundamentals

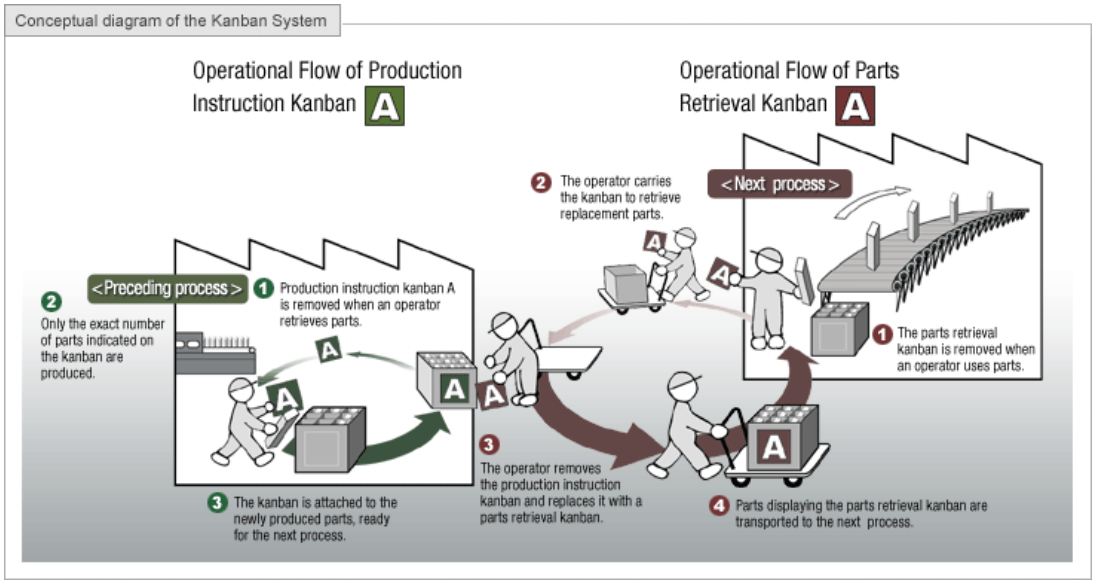
Kanban History

- In the late 1940s, Toyota found a better engineering process from an unlikely source: the supper market



Kanban History...

- In Japanese, the word “Kan” means “signal” and “ban” means “card” or “board”
- A Kanban is a signal that is supposed to trigger action
- Kanban has spread to the manufacturing industry all over the world as a tool of Lean Manufacturing
- Kanban in manufacturing is the inspiration behind what we now call Kanban for Software Engineering

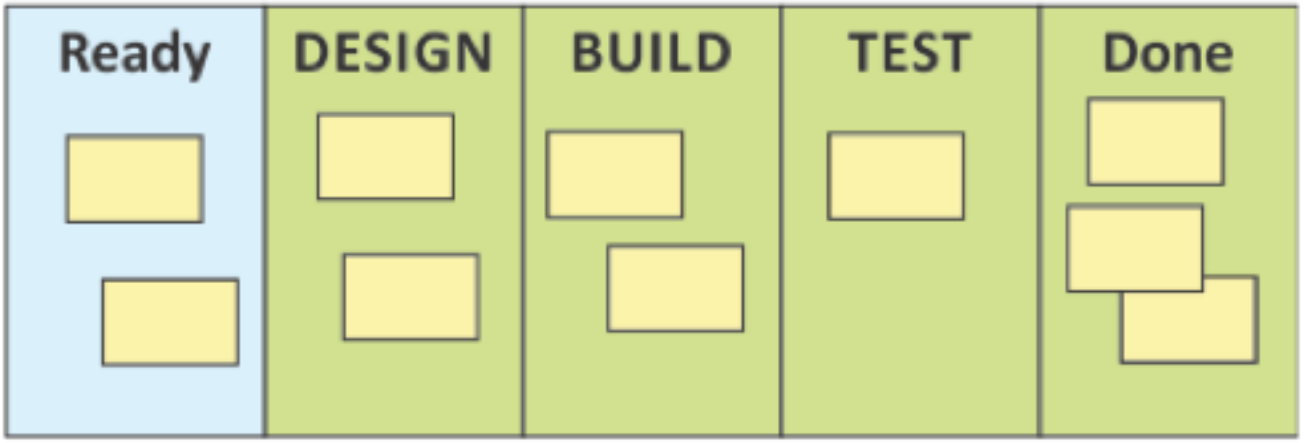


Kanban Practices

1. Visualize the Workflow
2. Limit Work-in Progress (WIP)
3. Make Process Policies Explicit
4. Measure and Manage Flow
5. Improve Collaboratively

Visualize the Workflow

- The workflow must be visible to the team so that everyone can see incoming requests, the backlog, and the flow phases (so they can identify opportunities of improvement in the flow)

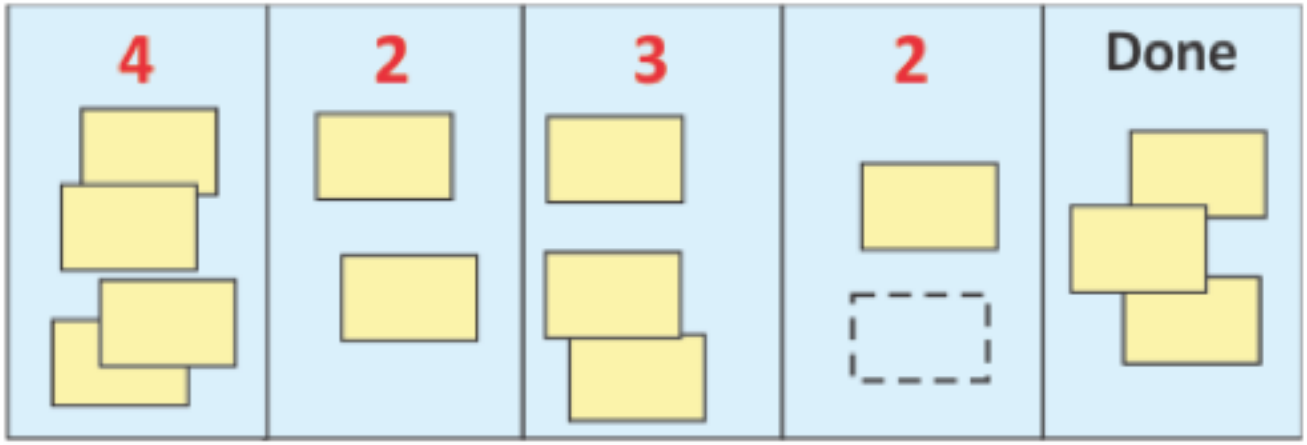


Limit Work-in Progress (WIP)

- There is a linear relationship between the amount of work in progress and the lead time

  → Amount of concurrent work being done should be limited in each stage of the flow

  → The lower the WIP, the better



Make Process Policies Explicit

- The process needs to be defined, published, and socialized
- It is common to have policies for each state, as well as overall policies or working agreements inside the team and with stakeholders

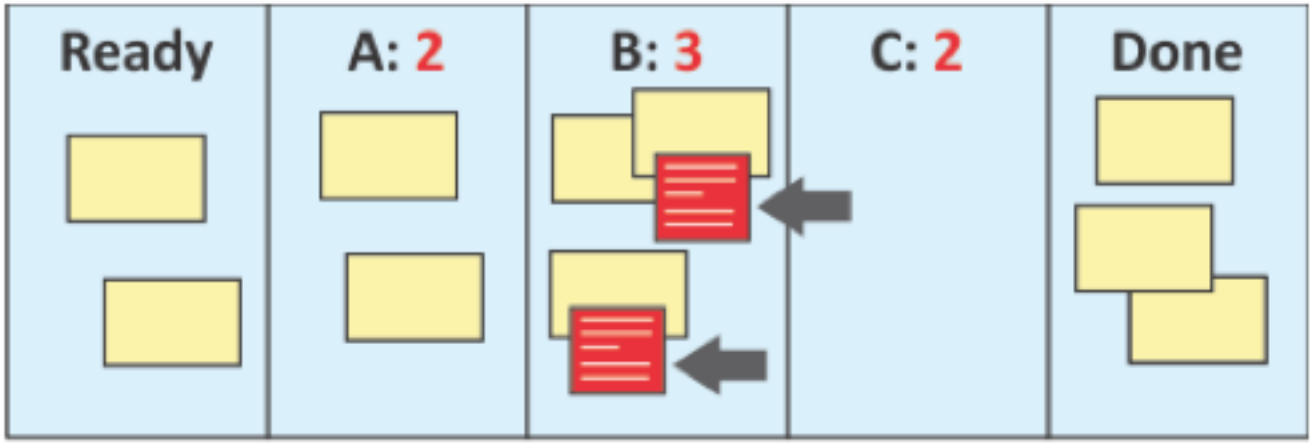
Measure and Manage Flow

- Teams use data they gather on average cycle time and other metrics, along with information from the current state of work on the board, to manage the work in a way that delivers the maximum value the fastest

- Some metrics:
  - **Cycle Time (CT):** It is the time (in working days) an item spends on the board, from Ready to Done
  - **Throughput (TP):** This is the number of items that the team reliably completes in some specific span of time (Productivity)
  - **Little's Law:** CT and TP by a simple formula known as Little's Law, which states that $TP = \frac{\overline{WIP}}{\overline{CT}}$
  - **Quality:** This is often something like initial or escaped defects per time period

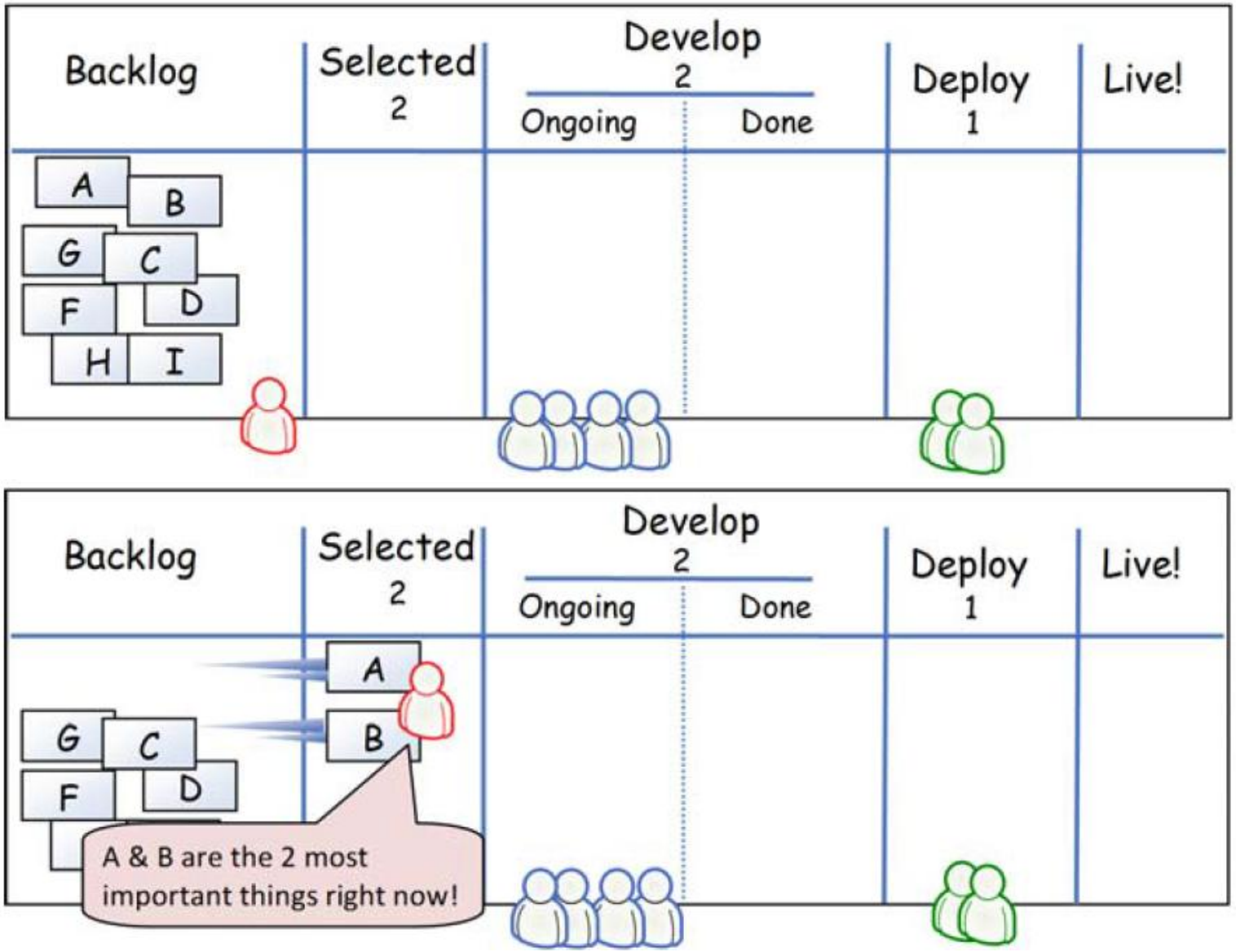
Improve Collaboratively

- A Kanban system highlights the most critical opportunities for improvement
- Teams work on these opportunities for improvement as a group and apply problem-solving methods to get to causes and to hypothesize and test solutions



This board has items blocked (shown with red flags). Column C has no work, and A is stuck because both A and B are at their WIP limit.

One day in Kanban-land



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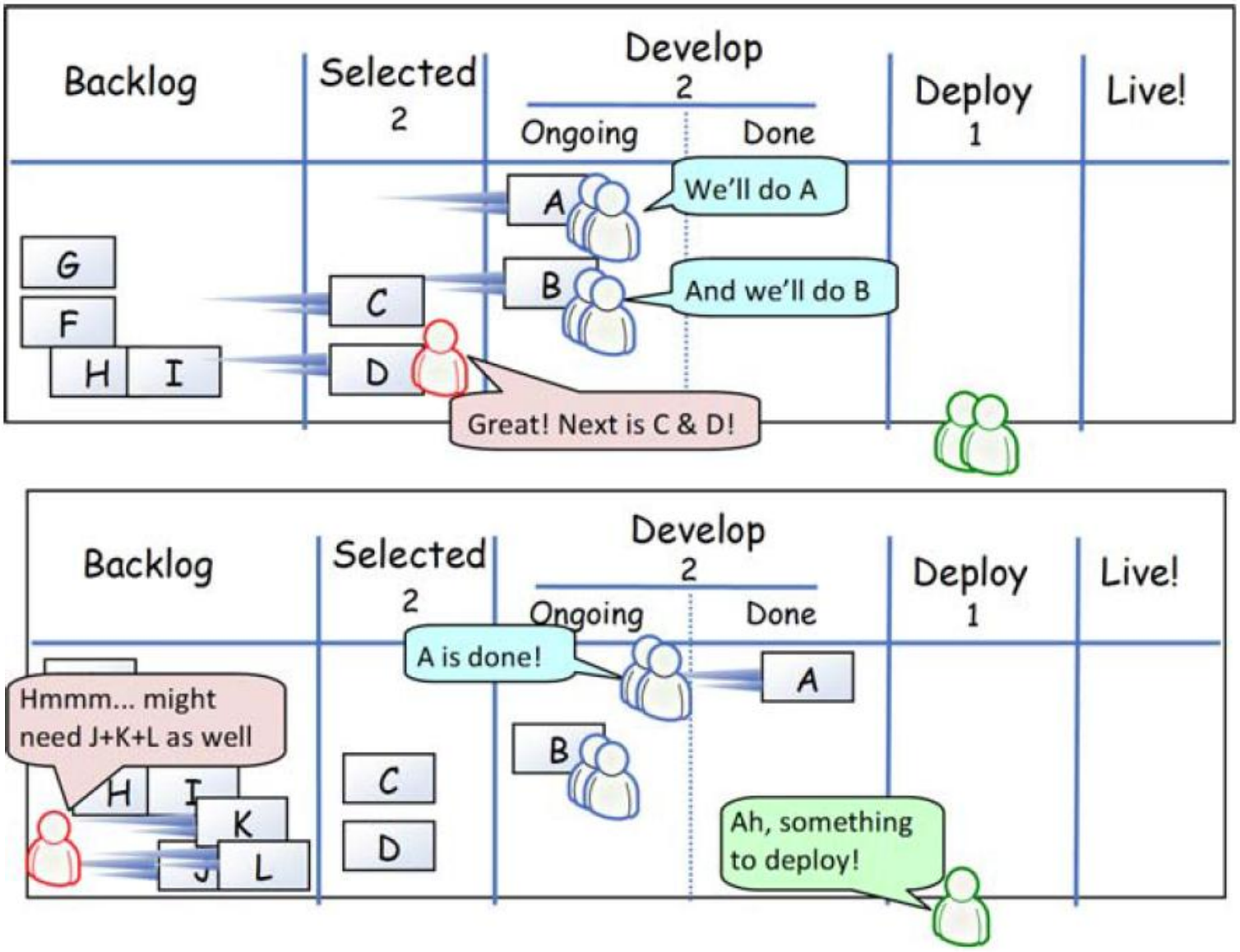

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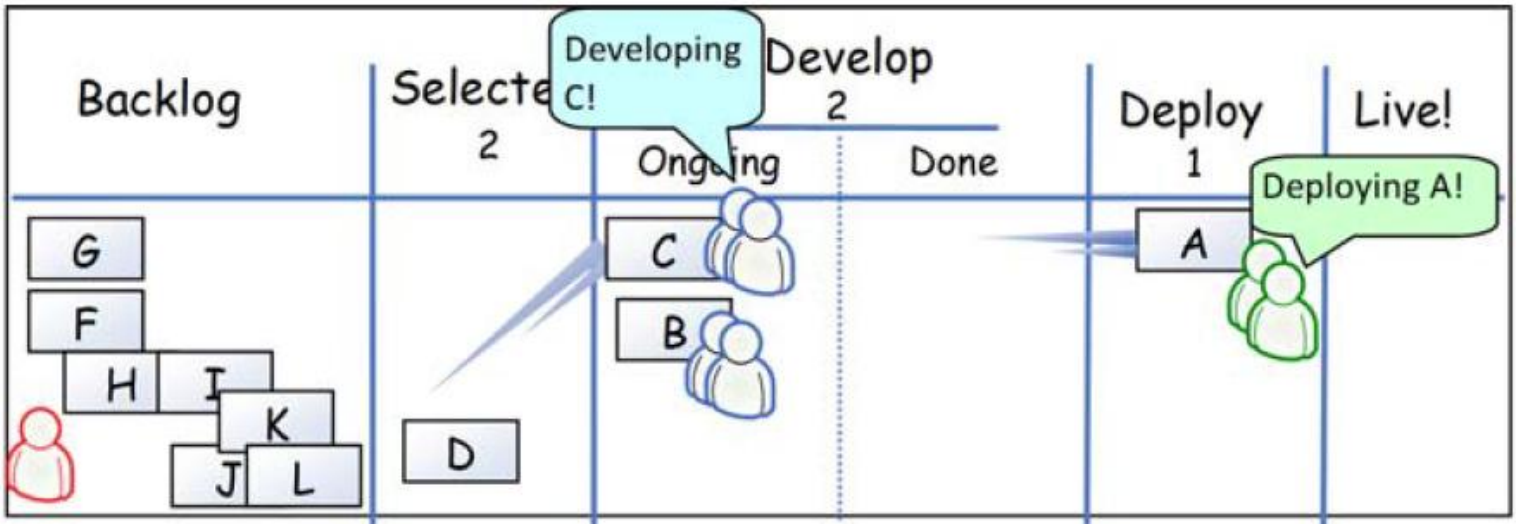

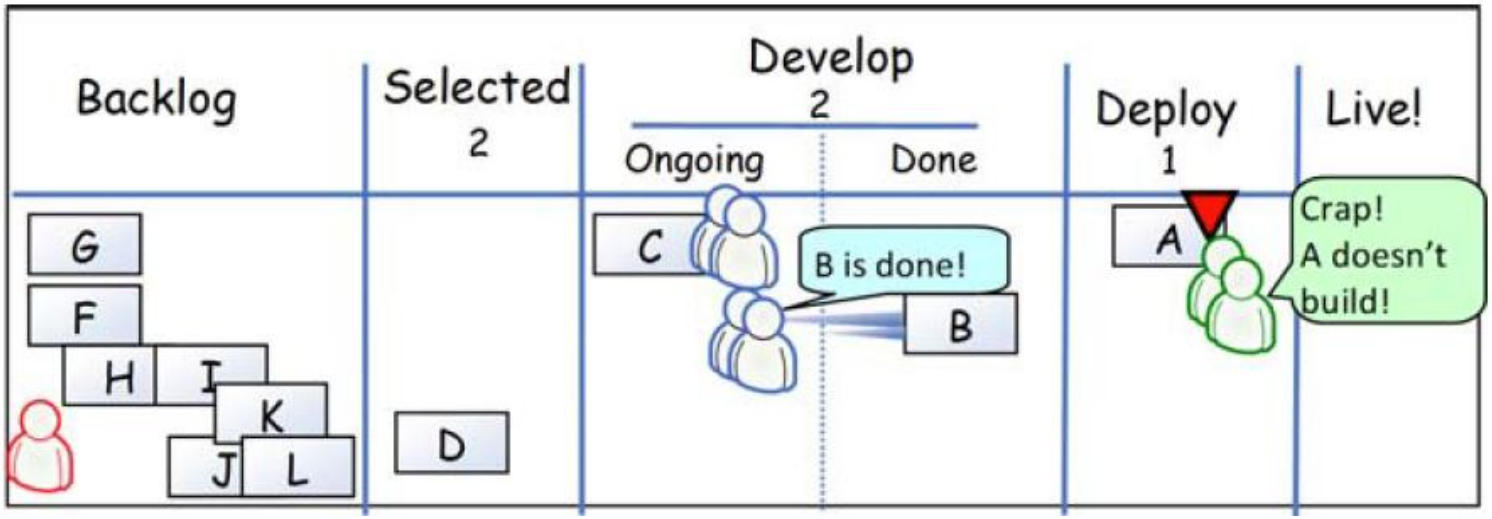

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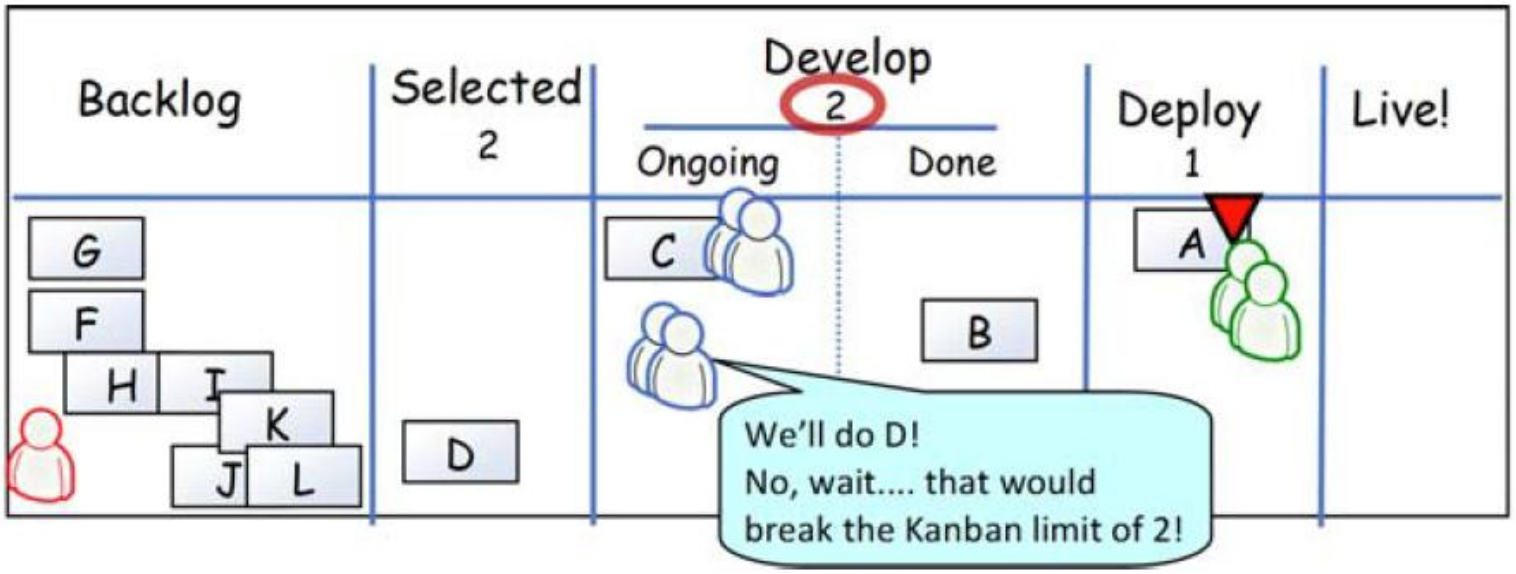

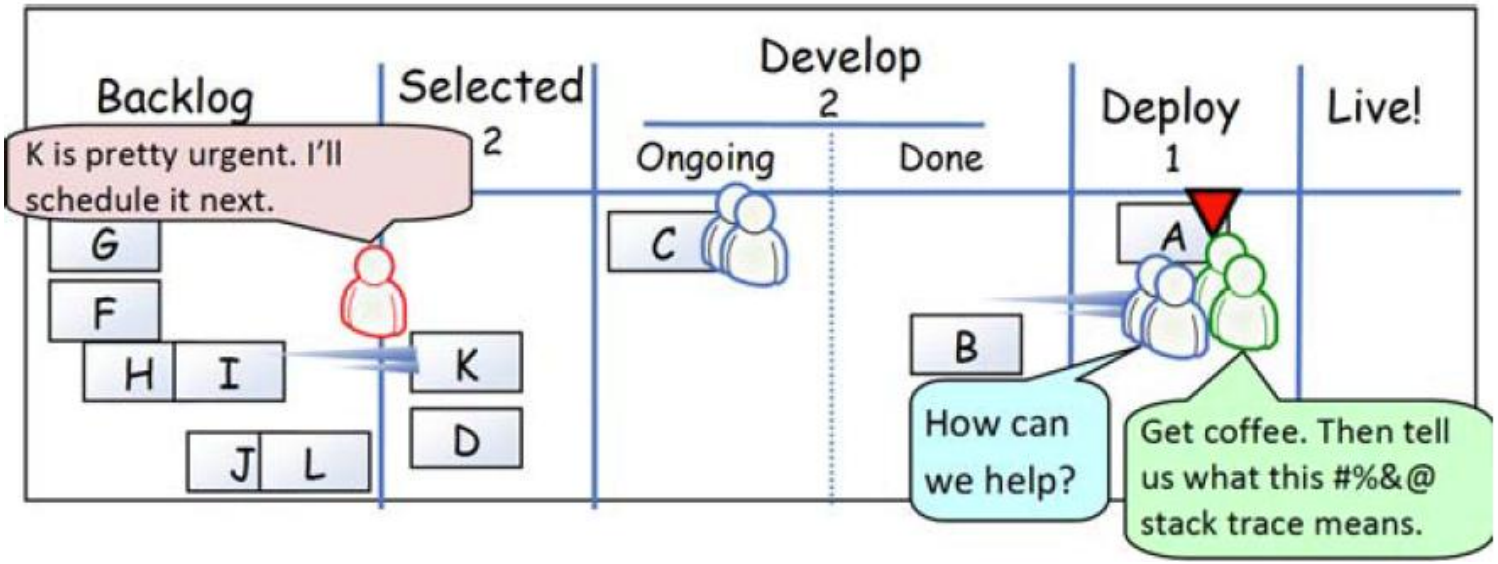

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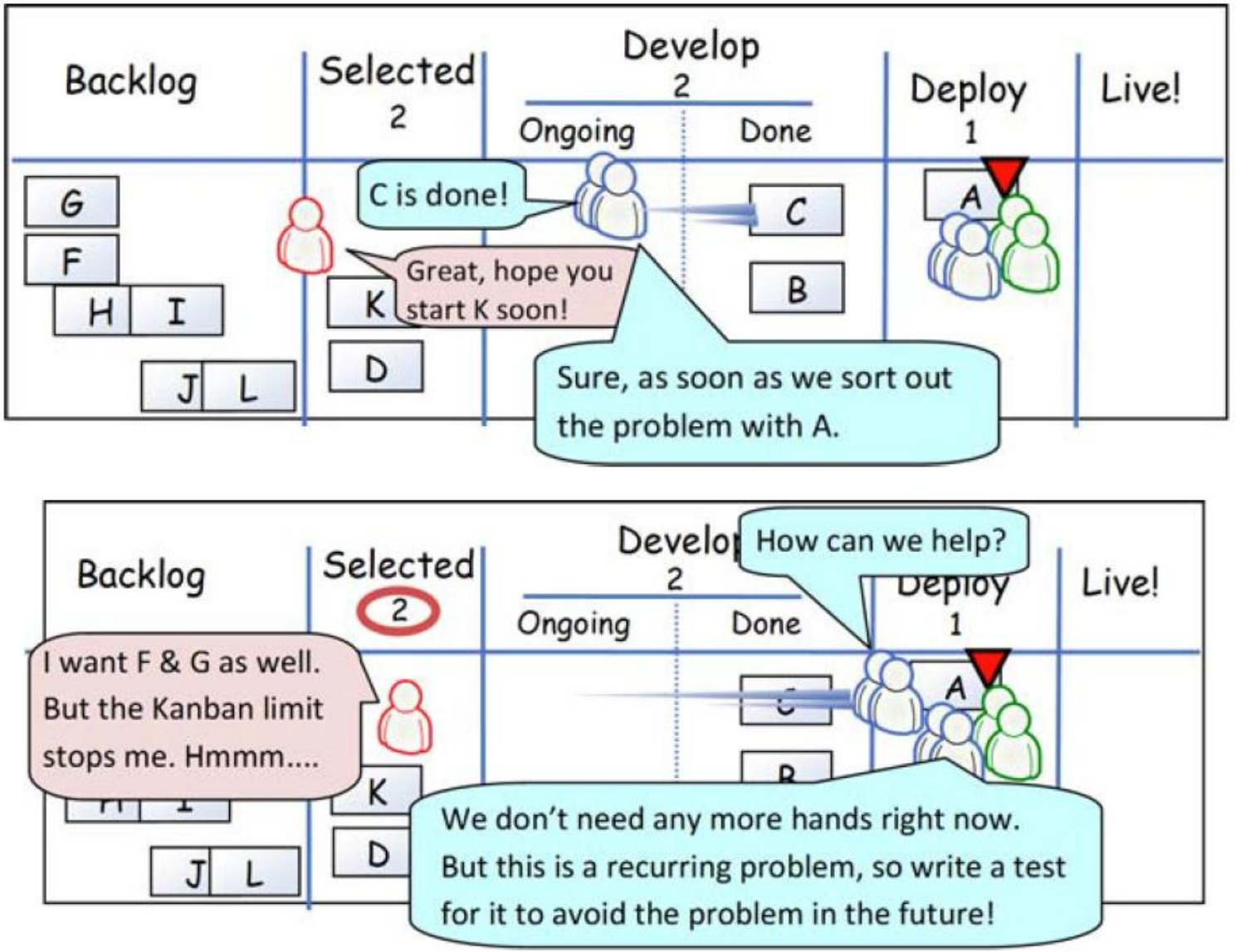

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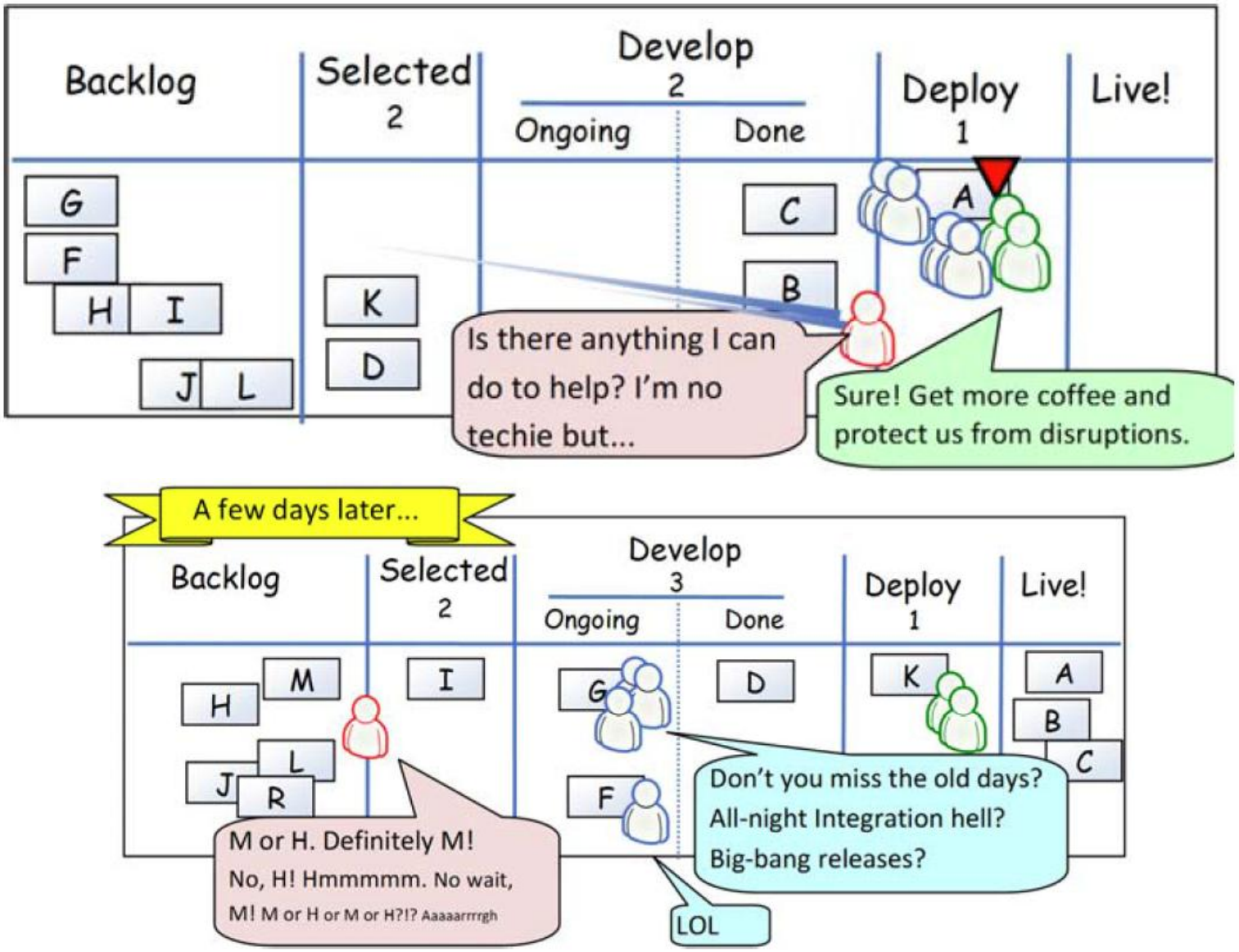

An Improved Pizza Simulation Game

Preparation

- Team of at least 4 people
- 2 Supervisors

- Materials
  - 2 Scissors, glues, masking tape
  - Pizza base, Ham, Pineapple, Rocket Salad (paper)
  - Oven plate
  - Pen brush

- Objective
  - Complete as many orders as you can while trying to avoid waste

Rucola Pizza Ingredients & Cooking Instruction

- A slice of pizza base with
  - Tomato sauce
  - 7 pieces of rocket salad
- The tomato sauce covers the pizza bottom nicely and the toppings are carefully cut and distributed evenly across the pizza
- Each pizza must be baked at least 30 seconds in an oven
- There can be a maximum of three pizza slices in the oven at one time
- No adding or removing of slices while baking
- Rocket salad burns easily and should be added only after the pizza has been taken out from the oven

Scoring System

- One order can contain more than one piece and type of pizza
- The team gets points only when the order is fulfilled
- Each piece counts negative until the order is fulfilled
  - Finished slice of pizza in the order — 10 points / each
  - Finished slice of pizza — -10 points / each
  - Pizza base (with or without sauce) — -4 point / piece
  - Toppings — -1 point / piece

Kanban vs. Scrum

Similarities

- Be Lean and Agile
- Use pull scheduling
- Limit Work-In-Progress (WIP)
- Use transparency to drive process improvement
- Focus on delivery releasable software early and often
- Base on self-organizing teams
- Require breaking work into pieces
- Optimize release plan based on empirical data (velocity / cycle time)

Differences

Kanban		Scrum
No prescribed roles	⟷	Pre-defined roles of Scrum master, Product owner and team member
Continuous Delivery	⟷	Timeboxed sprints
Work is ‘pulled’ through the system (single piece flow)	⟷	Work is ‘pulled’ through the system in batches (the sprint backlog)
Changes can be made at any time	⟷	No changes allowed mid-sprint
Cycle time	⟷	Velocity
Meetings are optional that can be avoided entirely or agreed upon on a regular or on demand basis	⟷	Several meetings are used
More appropriate in operational environments with a high degree of variability in priority	⟷	More appropriate in situations where work can be prioritized in batches that can be left alone


Q & A


Thank You


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