

# ATTACKING YOUR QUEUES

## Idea in brief

To achieve faster delivery we usually focus on how to make the work being done more efficient. But this approach ignores the real waste in our system – the time that work spends idle – waiting, sitting in queues. By quantifying and controlling queues we can make far more significant gains in efficiency, value and risk management.

Faster delivery comes from improved flow. Delay blocks flow. The major causes of delay in software development are invisible, unmeasured, unmanaged queues.

Queues include both the work waiting to be started and work we have already started, but are not actively dealing with – our work in progress. A project with zero queues will ensure the fastest possible cycle time but would require enormous resources at a very high cost.

The lack of spare capacity in our teams, and the high variation in our work, means that a queue will form at some point. The cumulative nature of delay means that these queues may get larger and larger and may easily spiral out of control.

The first step in controlling our queues is making them visible. Once we have identified our queue we are then able to measure it. We can estimate how long it will take to get to a given item in the queue and how long it will take for a task to cycle through the queue.

By quantifying our queues with a cost of delay we are able to then take decisions toward controlling the queue.

## Ideas in practice



*"The vast majority of the time, features are waiting in a queue."*

Curt Hibbs, Steve Jewett, Mike Sullivan  
*The Art of Lean Software Development*

There are 3 key areas where we normally find queues:

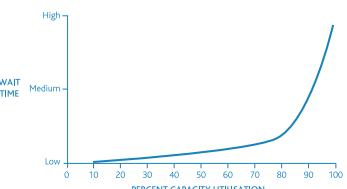
- ① FUZZY FRONT-END
- ② SPECIALISMS
- ③ ENVIRONMENTS

- The fuzzy front-end - the 'ideation phase' - is the most overlooked queue, yet it is where we see the longest periods of inactivity.
- Specialists are often managed for maximum efficiency. Instead a cross-functional team of generalising specialists could deal with the same task without creating a bottleneck.
- Environments are managed for efficiency and utilisation, leading to schedules... or queues.

INVISIBLE  
UNMEASURED  
UNMANAGED queues.

- Identify and visualise your queues.
- Visible queues can be avoided, can evoke anger or can be measured.
- Measuring and managing queues helps reduce their economic impact on the business.

Queues grow VERY QUICKLY when we are busy.



- Even when not working at full capacity, queues still form because our work has high variation (in both its size and the time of its arrival).
- Keeping staff working at 80% capacity for instance would provide spare capacity for this variation - we tend not to because we see this as inefficient.

### Little's Formula

$$\text{WAITING TIME} = \frac{\text{QUEUE SIZE}}{\text{PROCESSING RATE}}$$

- Use Little's Formula to calculate the total wait time to clear all the items in a queue.
- Also use it to estimate how long it will take to complete a task currently in the queue.

Focusing on queues of inactivity is **COUNTER-INTUITIVE** to many organisations

- The longest queues cause the most damage because delay is cumulative.
- By managing queues we can reduce our cycle time and speed up the flow of work along the value stream.