

Lean & Kanban 2009 Miami



May 6th-8th MANDARIN ORIENTAL

The Next Wave in Software Process

Net Objectives



Strategic End-to-End HR, Payroll, and Talent Management Solutions



David J Anderson & Associates
Management Consulting for Knowledge Workers



Ranked #1
Best Medium Company
to Work for in America

Kanban, Flow and Cadence

Karl Scotland

Kanban

- Controlled Work

Flow

- Effective Work

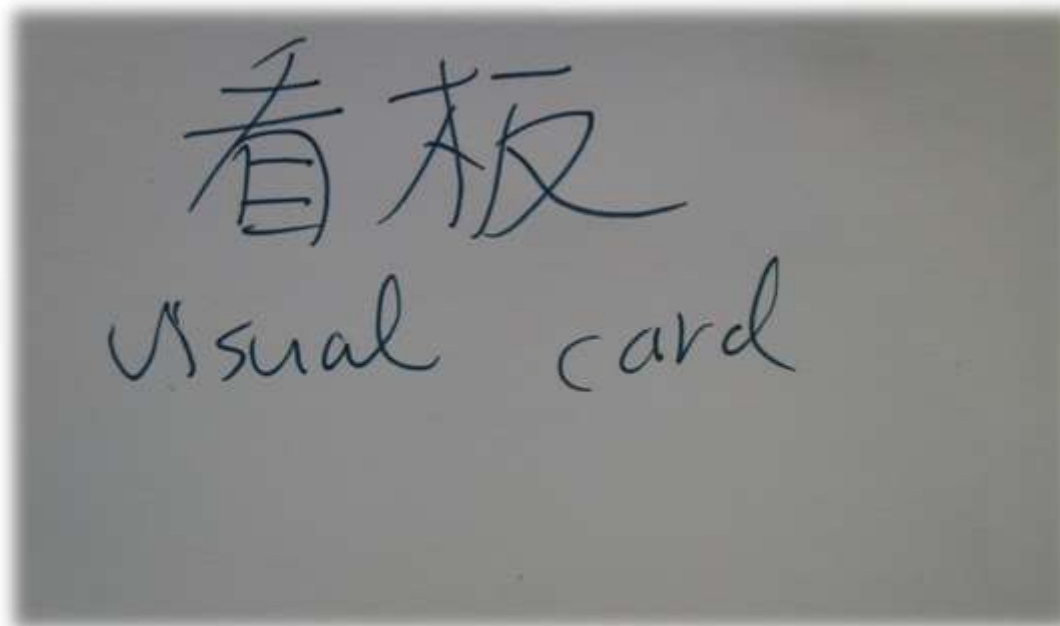
Cadence

- Reliable Work

Kanban

Controlling the Workflow

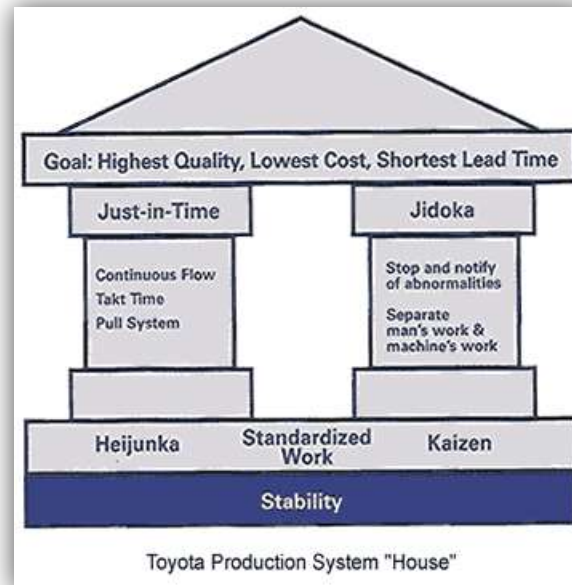
Kanban (in kanji 看板 also in katakana
カンバン, where *kan*, 看 カン, means
"visual," and *ban*, 板 バン, means "card"
or "board")



Toyota Production System

“The two pillars of the Toyota production system are just-in-time and automation with a human touch, or automation. The tool used to operate the system is kanban.”

Taiichi Ohno, Toyota Production System (adopted 1962)

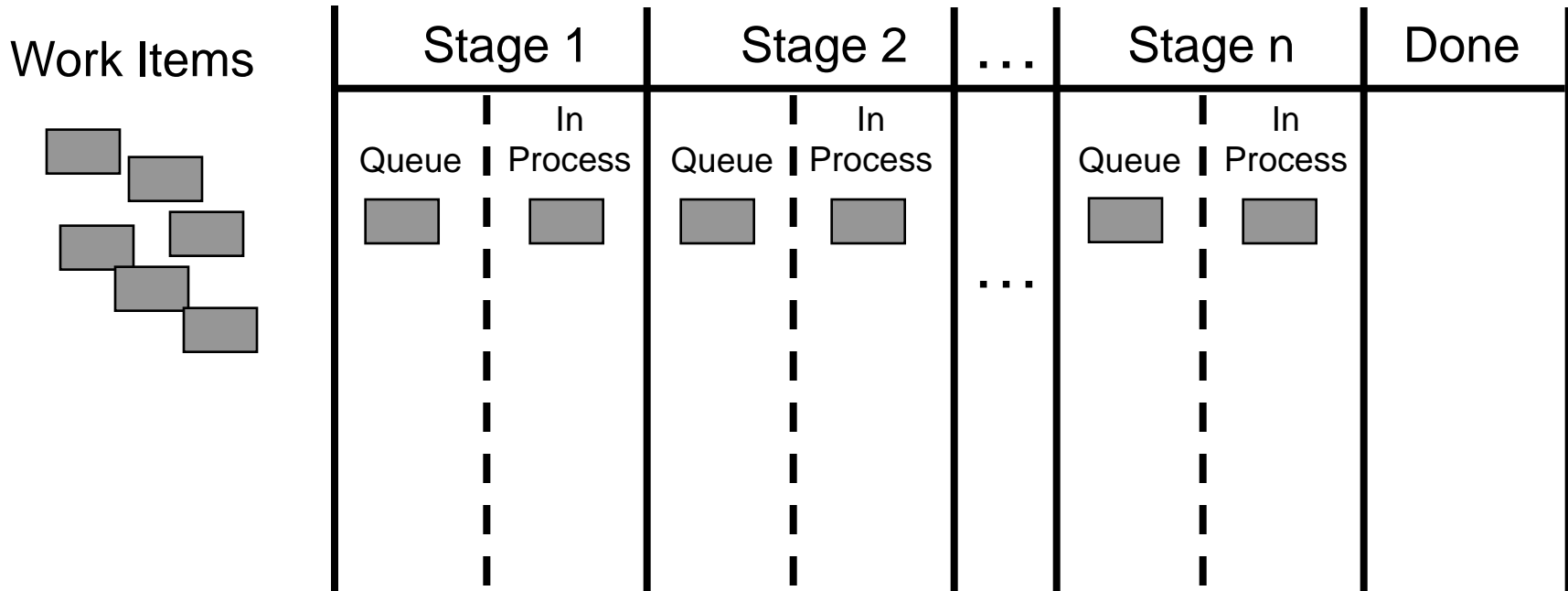


Visual Scheduling (Heijunka Box)

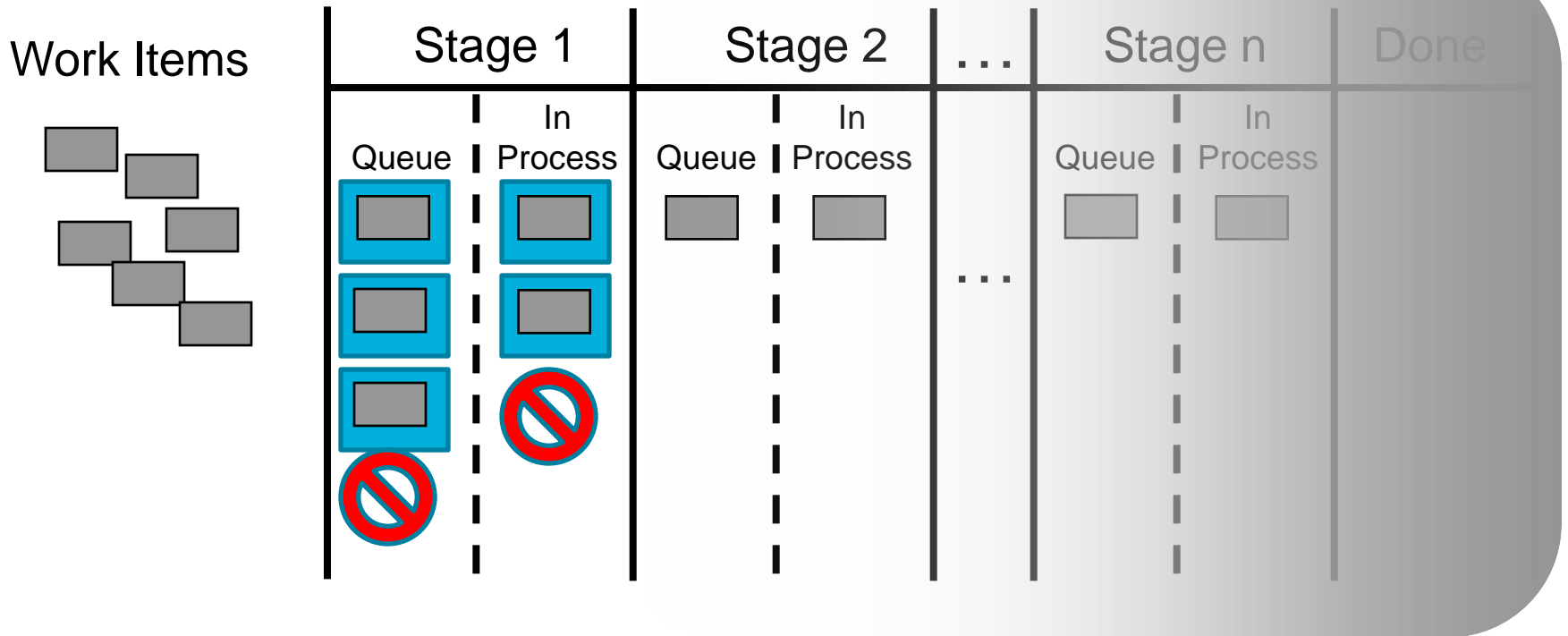


<http://www.flickr.com/photos/jnywong/2222481466/>

Kanban Pull



Kanban Pull – With Limits



Work In Progress



**Improve
Productivity**



**Reduce
Inventory**



**Enhance
Teamwork**

Productivity

EMC²
where information lives®



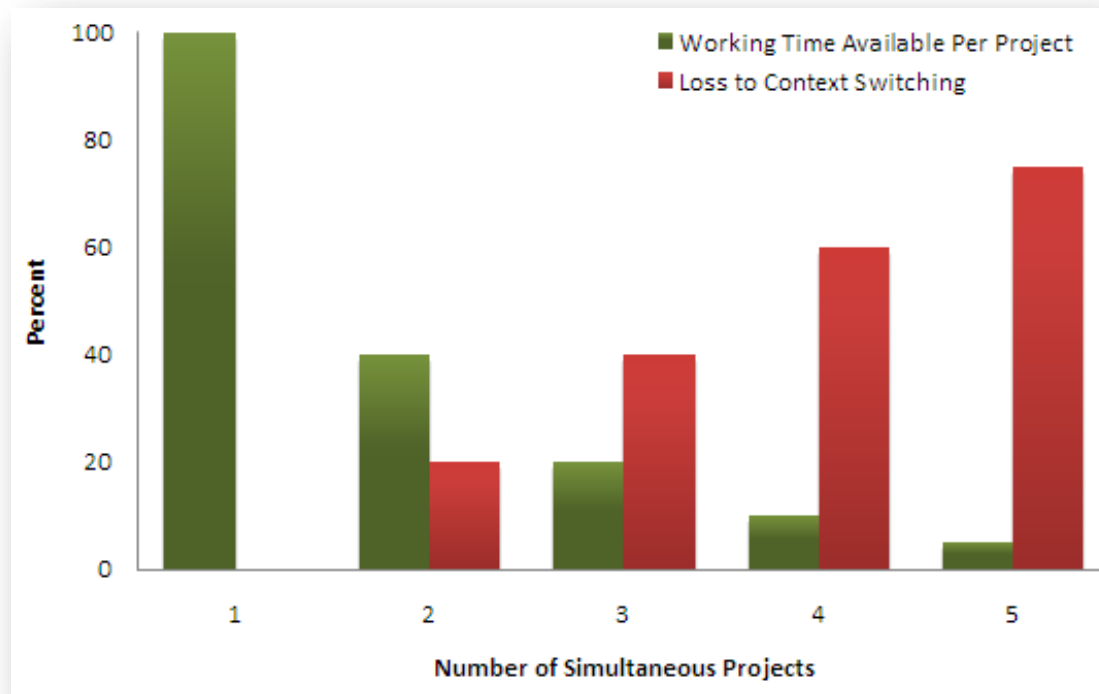
Little's Law for Queuing Theory

$$\text{Total Cycle Time} = \frac{\text{Number of Things in Process}}{\text{Average Completion Rate}}$$

Therefore, to improve cycle time

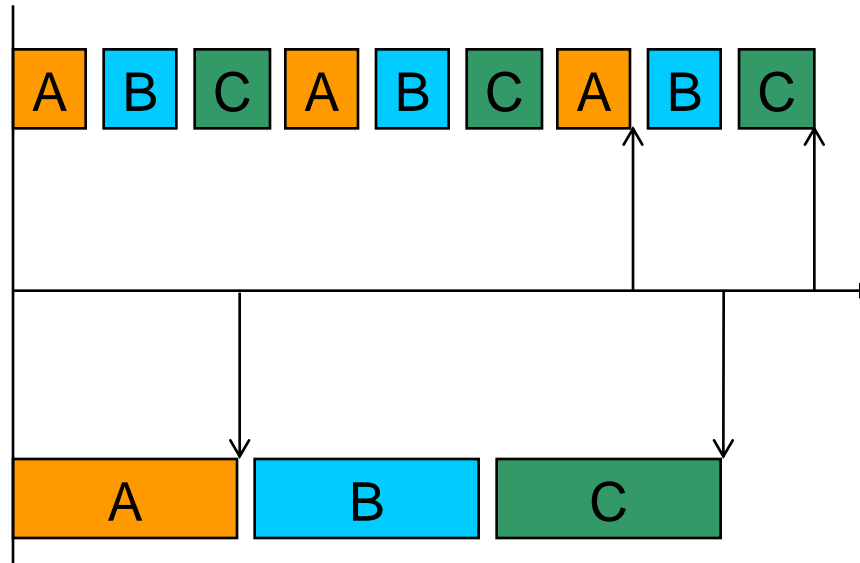
1. Reduce Number of Things in Process
2. Improve Average Completion Rate

20% time lost to context switching per 'task'



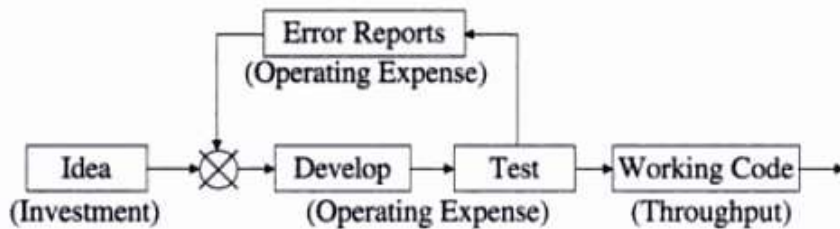
Gerald Weinberg, Quality Software Management: Systems Thinking

Sequential yields results sooner



Throughput Accounting

- Increase Throughput
- Decrease Operating Expense
- Decrease Inventory



Unit of Inventory = Idea
Value of Inventory = Investment to Create the Idea
Investment = Value_{Input}
Value_{Output} = Sales Price - Direct Costs
Value Added = Value_{Output} - Value_{Input}
Throughput = Value_{Output}

$$\text{Net Profit} = \text{Throughput} - \text{Operating Expense}$$
$$\text{Return on Investment} = \frac{\text{Net Profit}}{\text{Investment}}$$

Enhances Teamwork

- Team focus on goals that add value not individual tasks

Encourages Swarming



What are you going to work on?

1. Work directly on an existing kanban to progress it
2. Collaborate with team members on an existing kanban to remove a bottleneck or constraint
3. Begin working on a new kanban if a slot is available
4. Find some other useful work

Lower priority work...

- Spikes
- Analysis

Other interesting work...

- Refactoring
- Tool Automation
- Personal Development
- Innovation

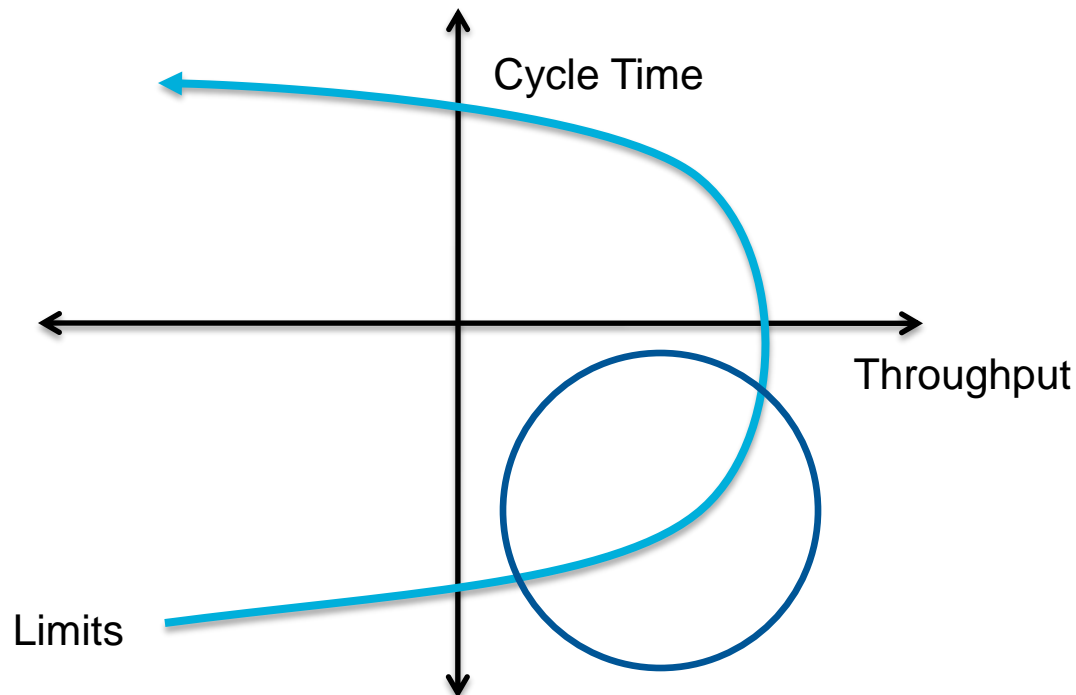
But NOT

- Anything which will create work downstream

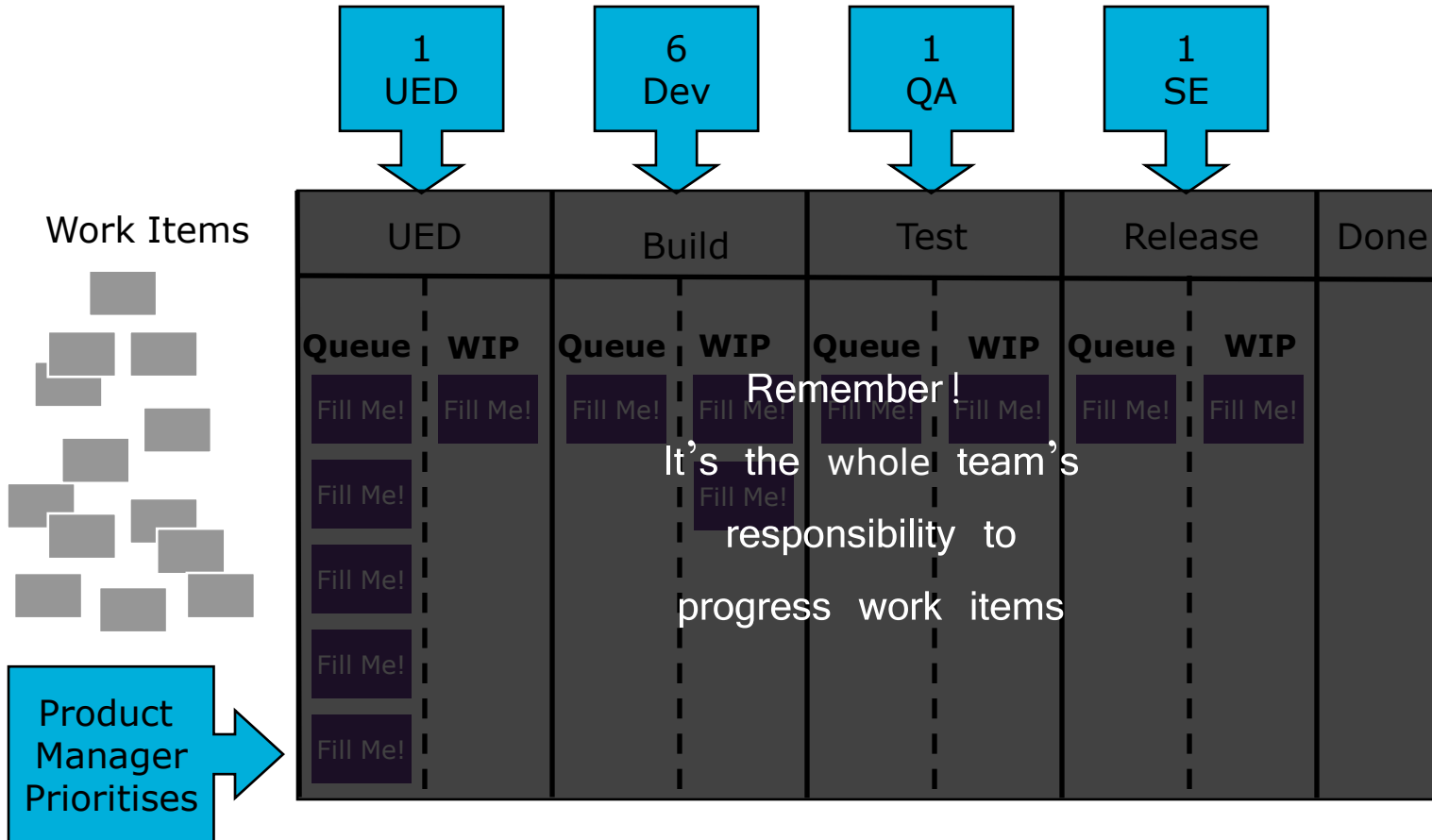
- Depends on type of work and size of team
- Should be adjusted to achieve maximum flow

Queue limits help to keep the flow smooth by:

- Keeping the team busy
- Avoiding premature prioritisation



Example



Why Kanban?

If you spend time managing large, complex backlogs, they could be eliminated

If you find the ceremony of time-boxing interrupts your work they could be eliminated

If estimation is not helping planning, it could be eliminated



Flow



The Work in the System

“In lean enterprises, traditional organizational structures give way to new team-oriented organizations which are centred on the flow of value, not on functional expertise.”

<http://www.poppendieck.com/papers/LeanThinking.pdf>

Moving one piece at a time between stages in a workflow

as opposed to

Moving batches of work between stages in a workflow

“A minimal marketable feature is a chunk of functionality that delivers a subset of the customer’s requirements, and that is capable of returning value to the customer when released as an independent entity”

M Denne & H Cleland-Huang, Software by Numbers

As small as possible

- Progressive delivery (realise product sooner)
- Reduce feature bloat (the core features are the most important)
- A feature has a cost to a user (added complexity)

I will be able to write an entry
in our product blog about this
new feature



Kano Model



Table Stakes

- Parity to the competition
- Minimum needed to be in the game

Differentiator

- Differentiates from the competition
- Delights the customer

Spoiler

- A competitors differentiator
- Raises the bar for parity

Cost Reducer

- Reduces cost
- Improves the margin



Distinct, Deliverable, Observable

Fits the INVEST acronym

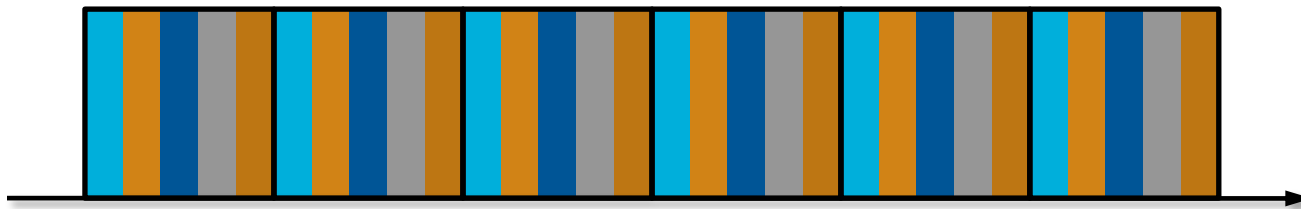
- Independent
- Negotiable
- Valuable
- Estimable
- Sized Appropriately
- Testable

Large Batch

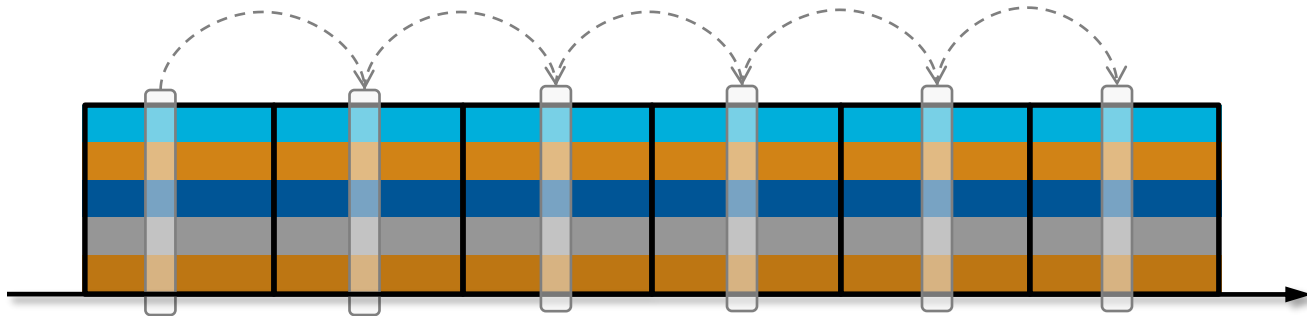


-  Analysis
-  Design
-  Build
-  Test
-  Release

Smaller Batches

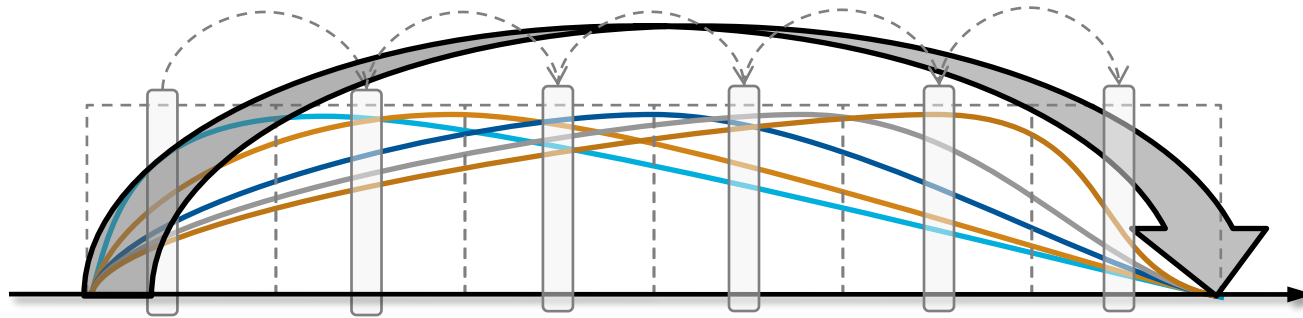


- Analysis
- Design
- Build
- Test
- Release

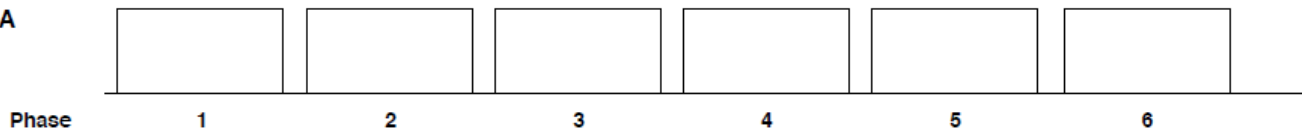


-  Analysis
-  Design
-  Build
-  Test
-  Release

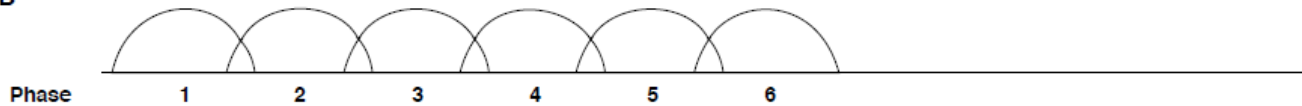
One Piece Flow



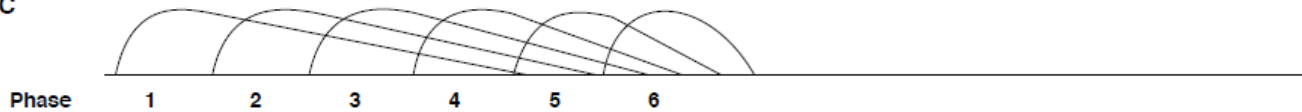
Type A



Type B



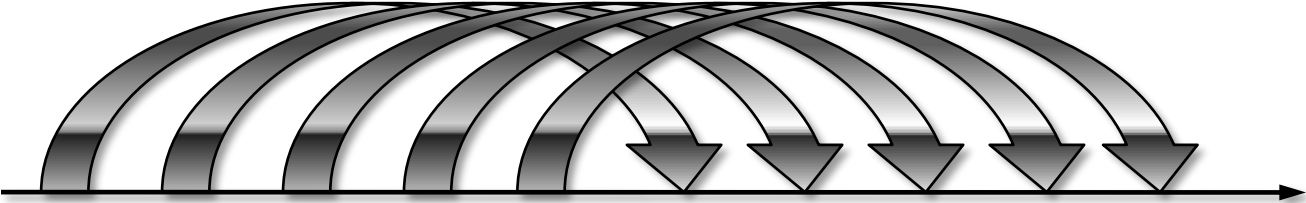
Type C



-  Analyze
-  Design
-  Implement
-  Demonstrate
-  Re-evaluate

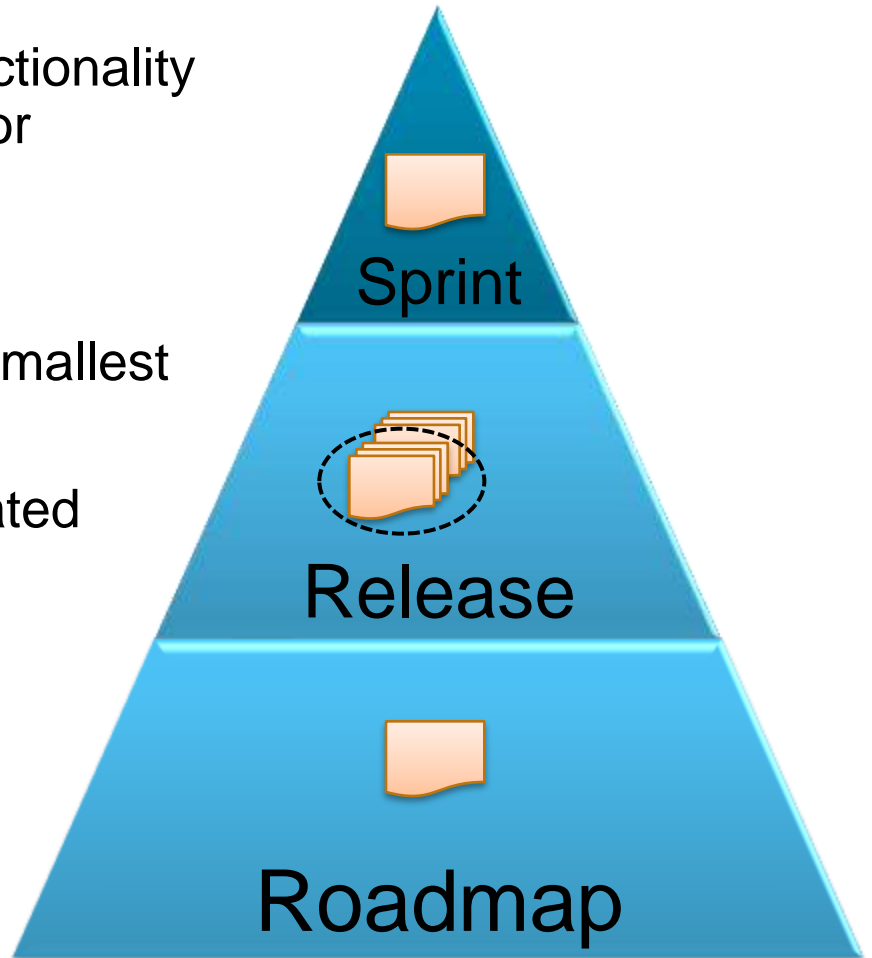
The New New product Development Game, Hirotaka Takeuchi and Ikujiro Nonaka

Continuous Flow

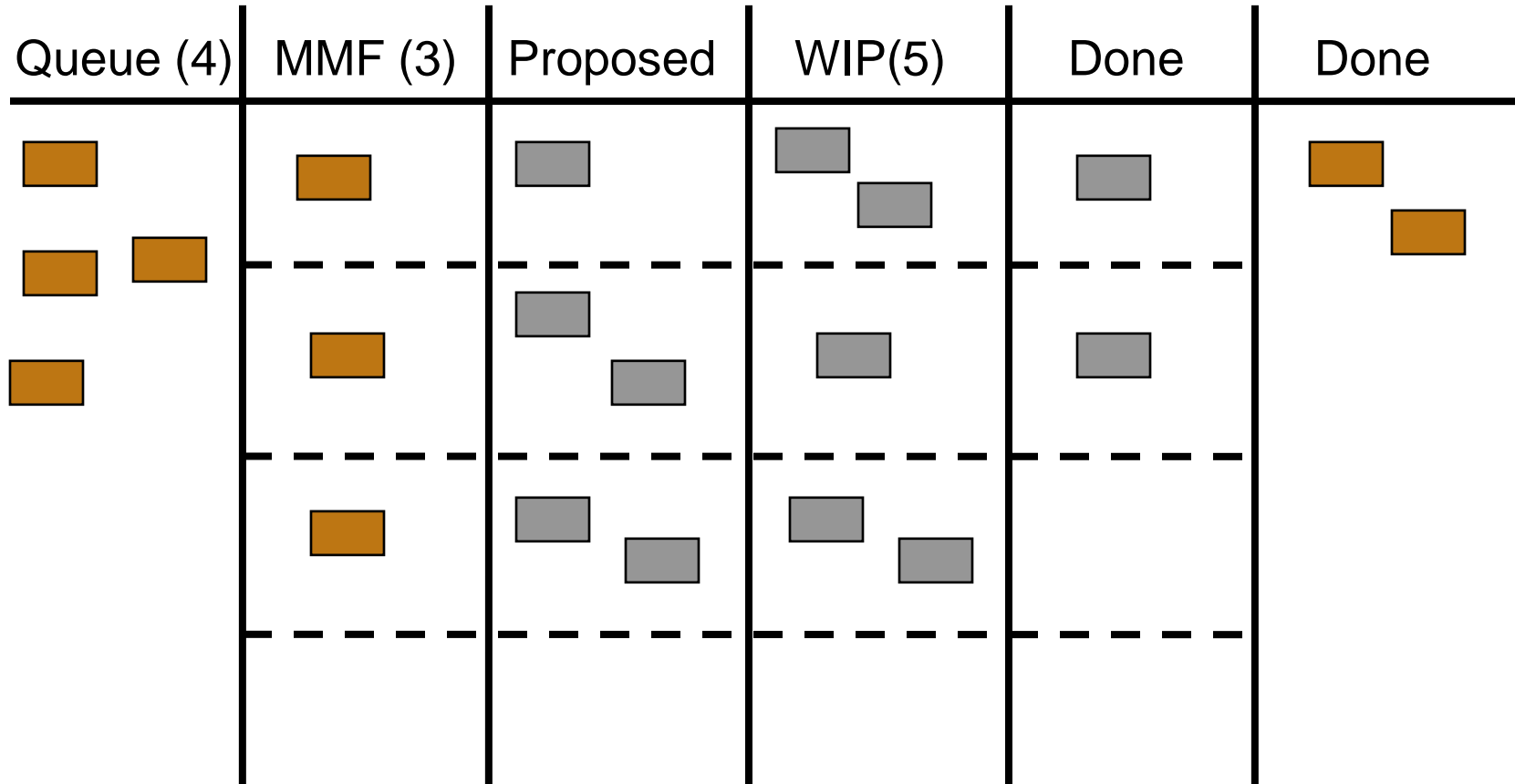




The Backlog Iceberg

- Story – a description of desired functionality told from the perspective of a user or customer
- Minimal Marketable Feature – the smallest valuable set of Stories in a Theme
- Theme – a collection of smaller related Stories
- Epic – a large Story



Two Tier Kanban




 MMF  User Story

If you struggle to break down functionality into time-box sized increments, then you could just focus on larger MMFs.

If you deliver frequent User Stories, but struggle to deliver business value, then you could focus on delivering larger MMFs.



Cadence



Commitment and Reliability

“If the team isn’t estimating or planning with fixed time-boxes, how can it make reliable commitments?”

Anonymous(es)

“A regular cadence, or ‘heartbeat,’ establishes the capability of a team to reliably deliver working software at a dependable velocity. An organization that delivers at a regular cadence has established its process capability and can easily measure its capacity.”

<http://www.poppendieck.com/pipeline.htm>

twitter

@marick Iteration-based agile is like a metronome where we seek feedback at every tick, Kanban is like a drummer who feels the rhythm



06:59 PM November 28, 2008 from Syrinx in reply to marick



andypalmer

Andy Palmer

- Input (Planning/Prioritisation)
- Output (Release)
- Review
 1. Stop the Line for special cause problems
 2. Monthly Retrospectives with Operations Reviews for common cause problems
 3. Quarterly Value Stream Mapping to re-assess the whole value stream
- Operational

- Throughput - the amount of output of a process in a given period of time
- Cycle Time - the length of time to complete a process

$$\text{Throughput} = \text{WIP} / \text{Cycle Time}$$

Throughput allows forecasting of future capability

Cycle Time allows appropriate prioritisation

Cycle Time becomes an SLA with the business

- *“When we agree to take on a work request, we intend to deliver it within n days”*

<http://leansoftwareengineering.com/2007/09/10/striking-a-different-bargain-with-the-business/>

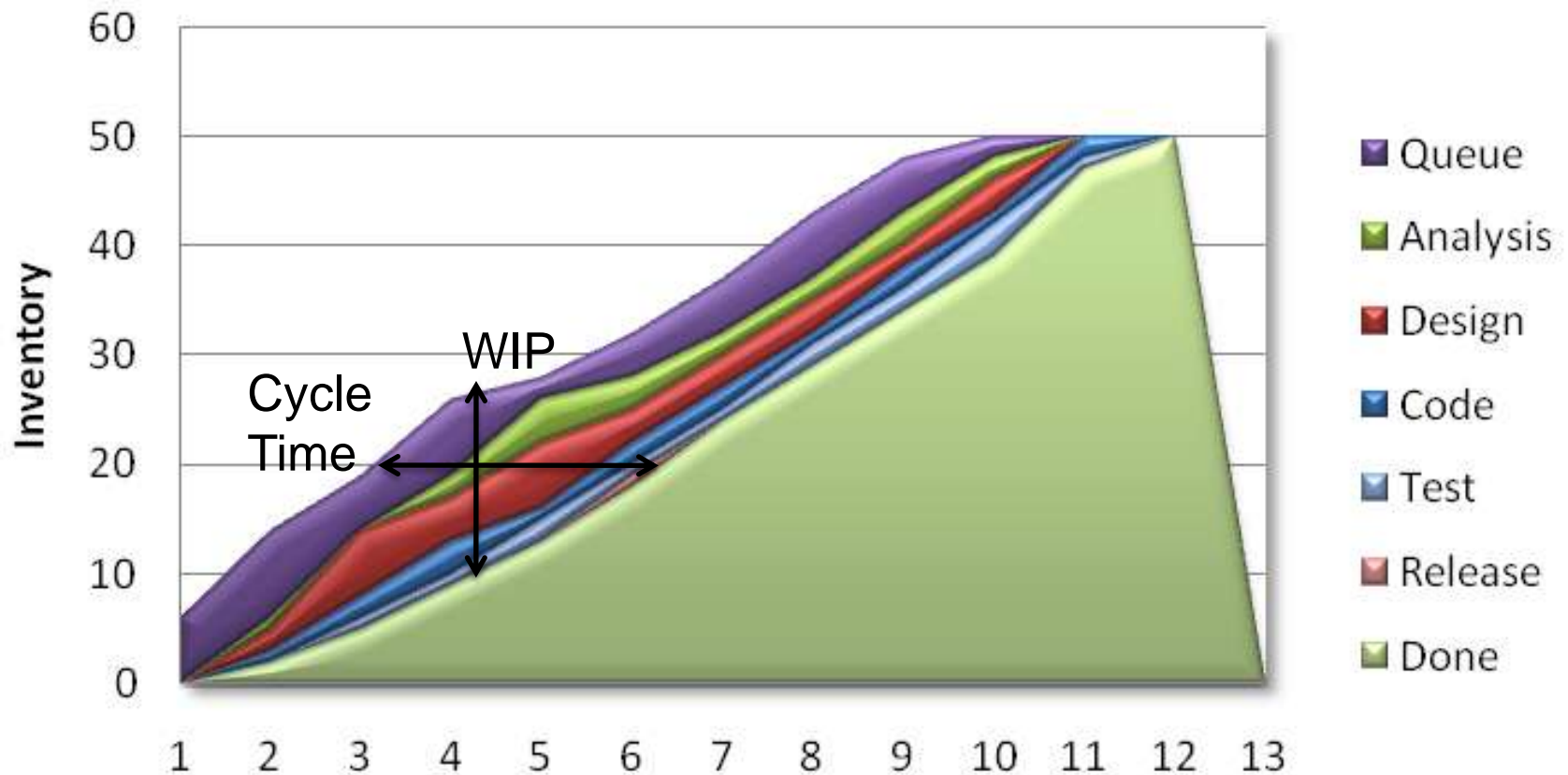
May need to size and/or classify MMFs where there is variation

Due Date Performance (DDP) is the percentage of MMFs delivered with the SLA

- Forecast quarterly goals and objectives
- Prioritise MMFs to meet those goals and objectives
- Release regularly
- Build trust that the team is working to its full capacity

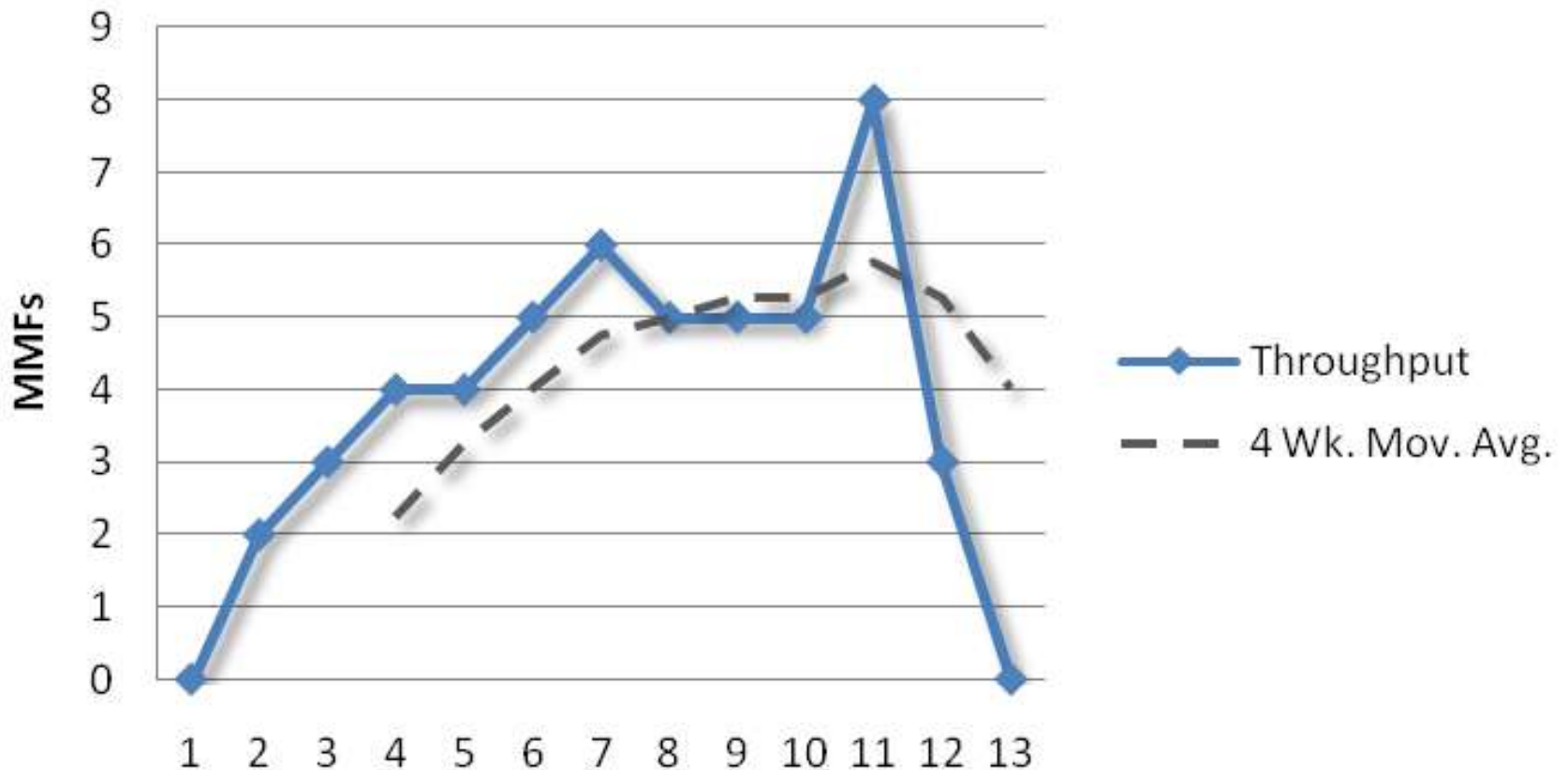
Cumulative Flow Diagram

Cumulative Flow



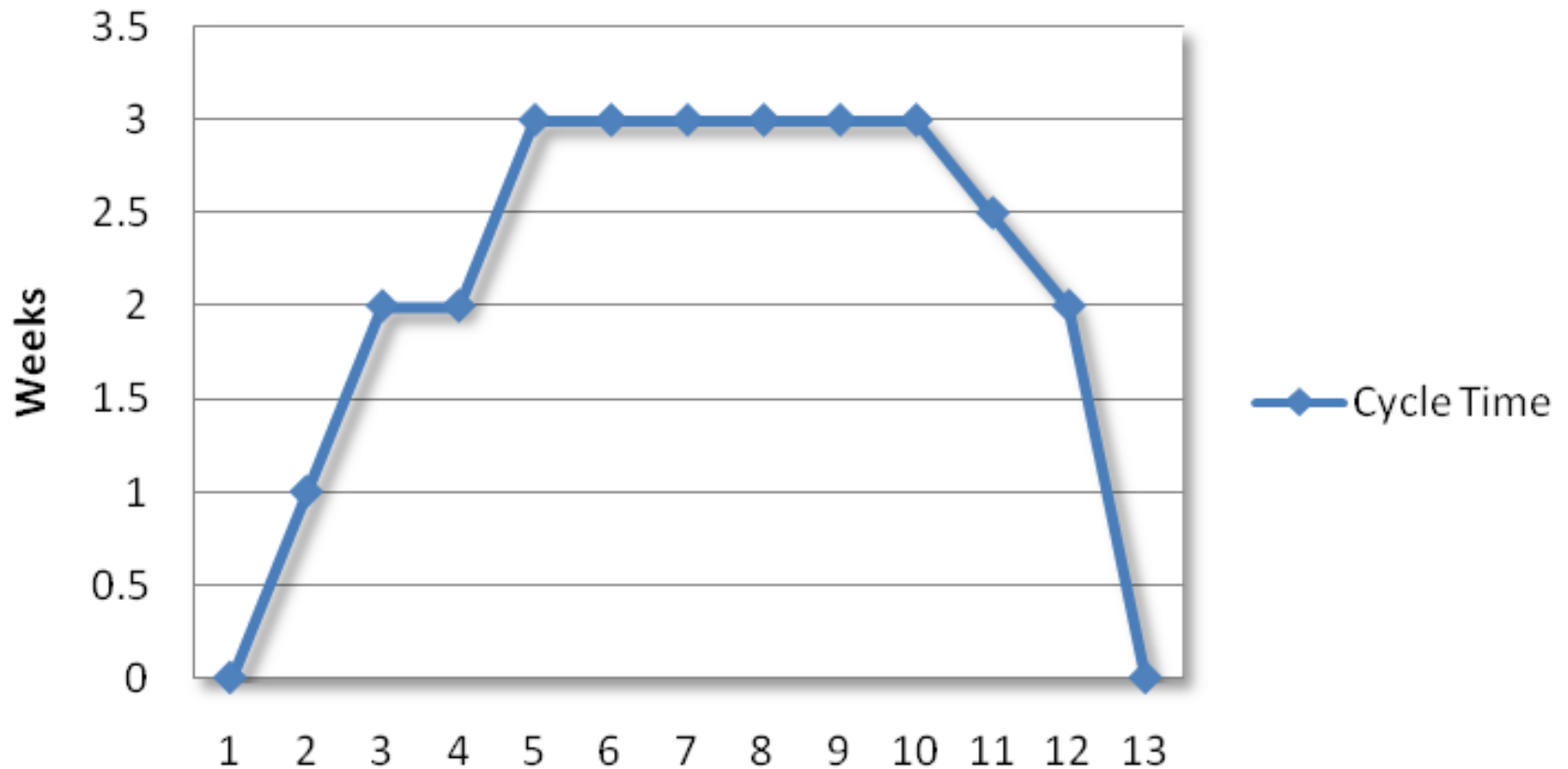
Throughput Chart

Throughput



Cycle Time Chart

Cycle Time



Why Cadence?

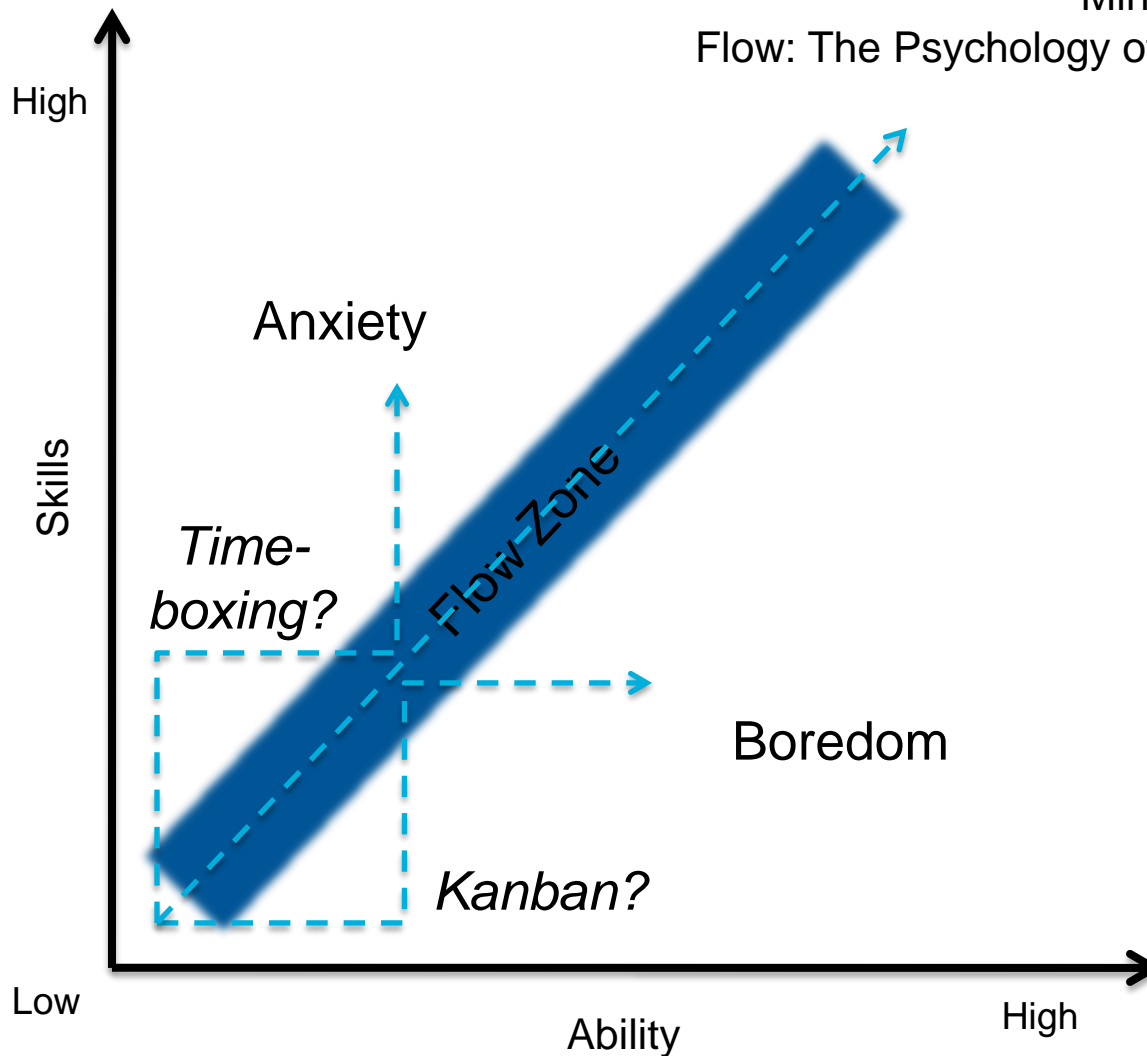
If you find the time-box ceremonies too restricting, or unproductive, then they can be de-coupled to allow a more natural rhythm

If your estimation and planning is not accurate or reliable, then it can be replaced with measurements to forecast capability



Summary

Mihalyi Csikszentmihalyi,
Flow: The Psychology of Optimal Experience



Kanban is an alternative, not a replacement

However, rather than focusing on being Agile which *may* (and *should*) lead to being successful, Kanban focuses on becoming successful, which *may* lead to being Agile.

Therefore, Kanban can sit on top of any existing process

Thank You

karl.scotland@emc.com

<http://availagility.wordpress.com>

<http://groups.yahoo.com/group/kanbandev/>

UK Lean & Kanban Conference
September 27-29 2009

<http://ukleanconference.com/>

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