

System Leverage in Agile Projects

Locating improvement points of big impact in Agile Projects



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*Looking for Sustainability in
Software Development*

The three Agile challenges

#1

remove
the
cultural
peel



make it work

#2



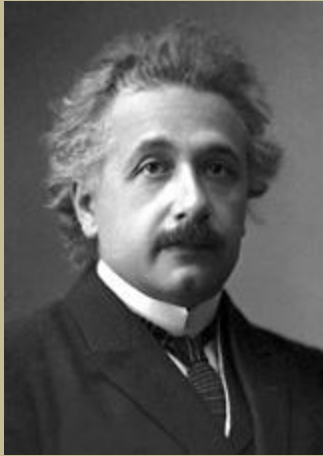
understand why
things work the
way they do





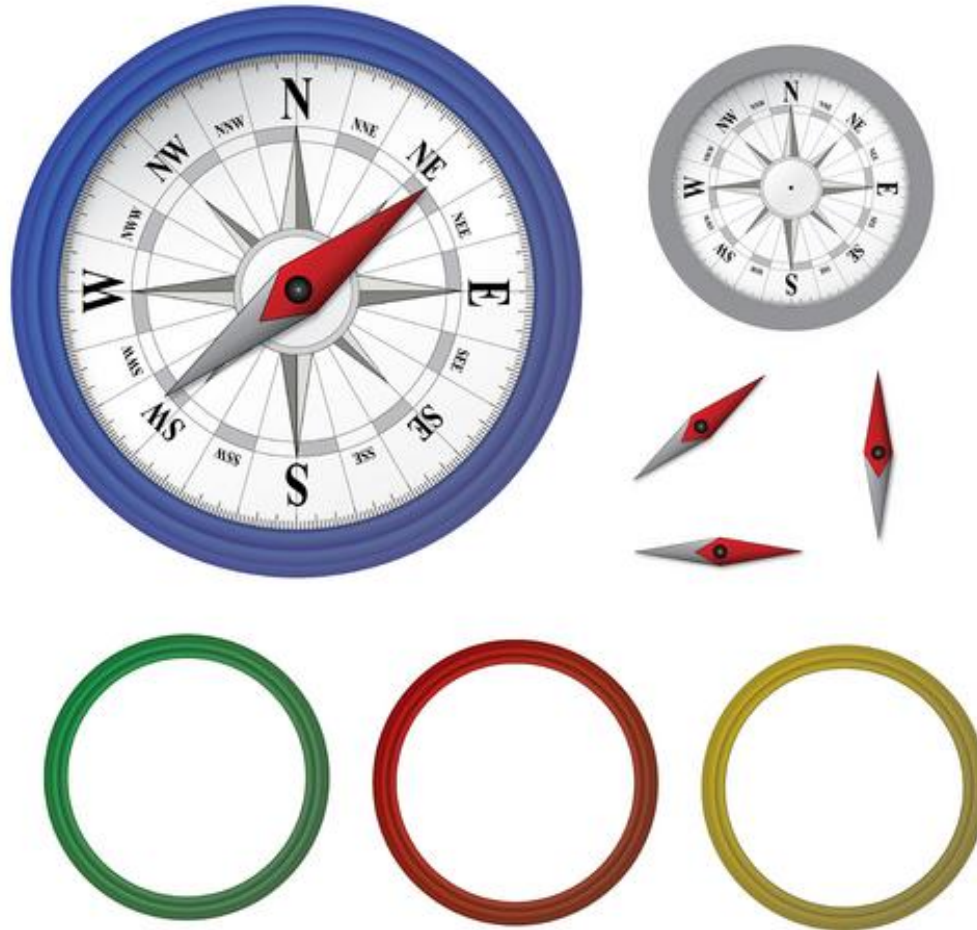
gain this
understanding
demands a new
way of thinking





**“We can't solve problems by
using the same kind
of thinking we used
when we created them”
Albert Einstein**

the analytical thinking



#1

Identify the parts that an object contains.



#2

Identify the properties and behaviours of each one of these parts.

#3

Aggregate the acquired knowledge of each part to gain knowledge about the whole.

the analytical thinking: analysis

analytical thinking results

**Rigid and
prescribed
processess**

Cost accounting

**Top-Down
Management**

**Pyramidal
Organization**

**People are
resources**

Waterfall

**Management
by time and
activities**

**Command and
Control**

**Promote local
optimization**

**Scientific
Management
Theory**

System Thinking is the base
for the new cultural revolution
which Agile is part of



#1

Identify the container that holds the object in study



#2

Identify properties and behaviours of the container which the object is part of

#3

disagreggate the understanding of the container to identify the rule or functional behaviour for each one of its parts

system thinking: syntesis

system thinking results

**Adaptive
processes**

**Throughput
Accounting**

Self-Management

Flat Organizations

People are essential

Agile

**Throughput
Management**

**Collaboration and
Leadership**

Lean, TOC

**Promote
Optimization of the
Whole**



“Analytical Thinking doesn’t produce understanding, it produces knowledge. Because the product of analysis is how things work, not why they work the way they do. System Thinking produces understanding.”
Russel Ackoff



The key to System Leverage is to understand why the system works the way it does.

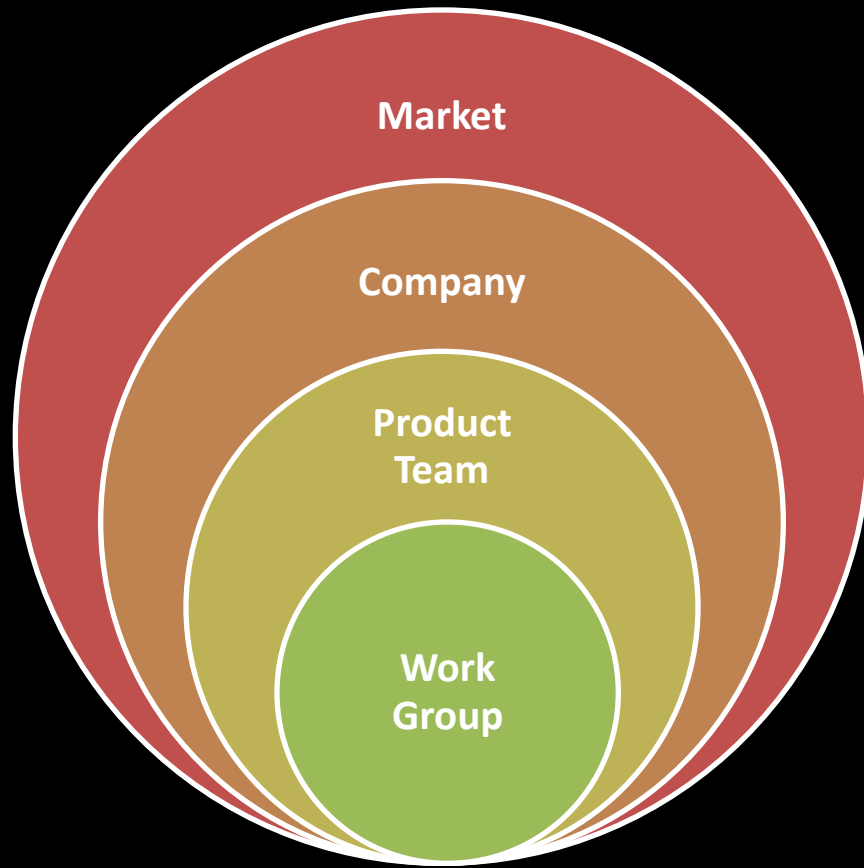
It's about getting explanations, not just knowledge.

“Explanations lie outside of the
systems, never inside.”

Russel Ackoff

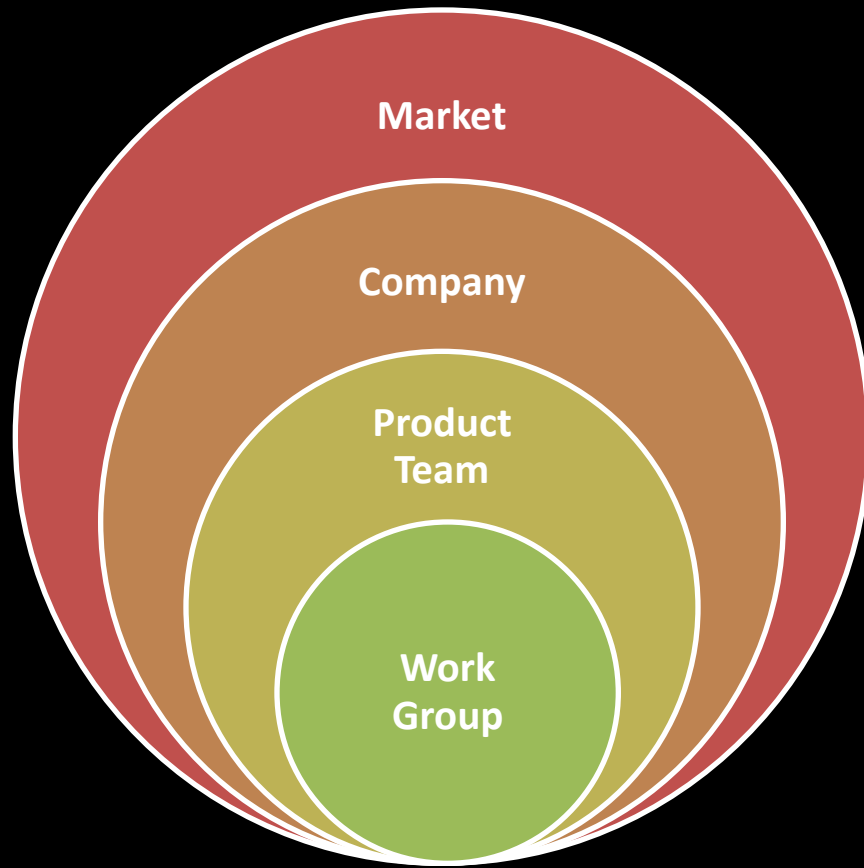


systems



A system is defined by its function in relation to a larger system which it is part of.

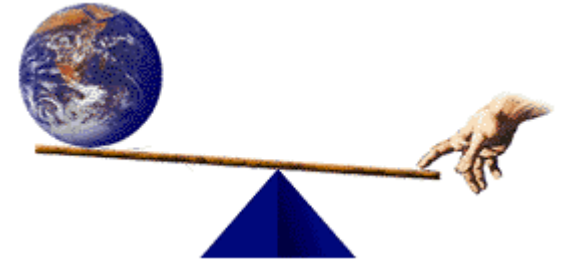
Every system is subordinated to the context of a larger system.



A system is the product of the interactions of its parts, not the sum of them.

Its behaviour is a result of the interactions between the parts, not the result of what every part does individually

Leverage points



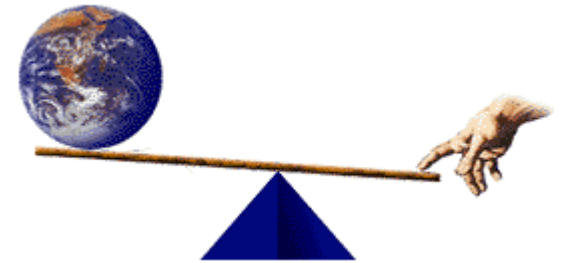
Donella Meadows

“These are places within a complex system (a corporation, an economy, a living body, a city, an ecosystem) where a small shift in one thing can produce big changes in everything.”

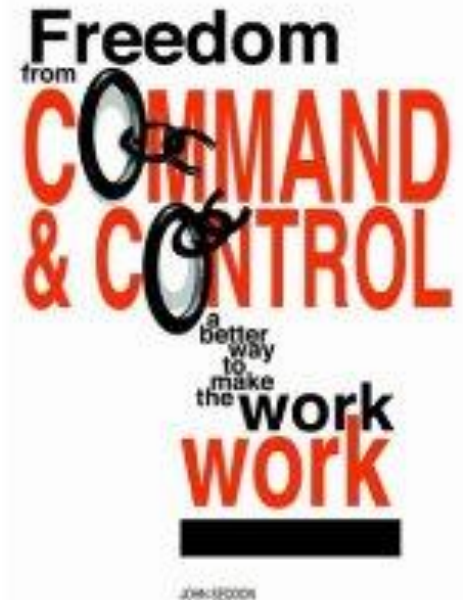


Leverage points

- Purpose
- Demand
- Capability
- Flow
- Condition



John Seddon



system
purpose

A black and white soccer ball sits on a green grass field. In the background, a soccer goal is visible, slightly out of focus. The scene is outdoors with trees and a building in the distance.

**What is the
real goal of the
system?**

just score or win the game?

Make the process more rigid changes the purpose of the system



functional measures change the purpose of the system

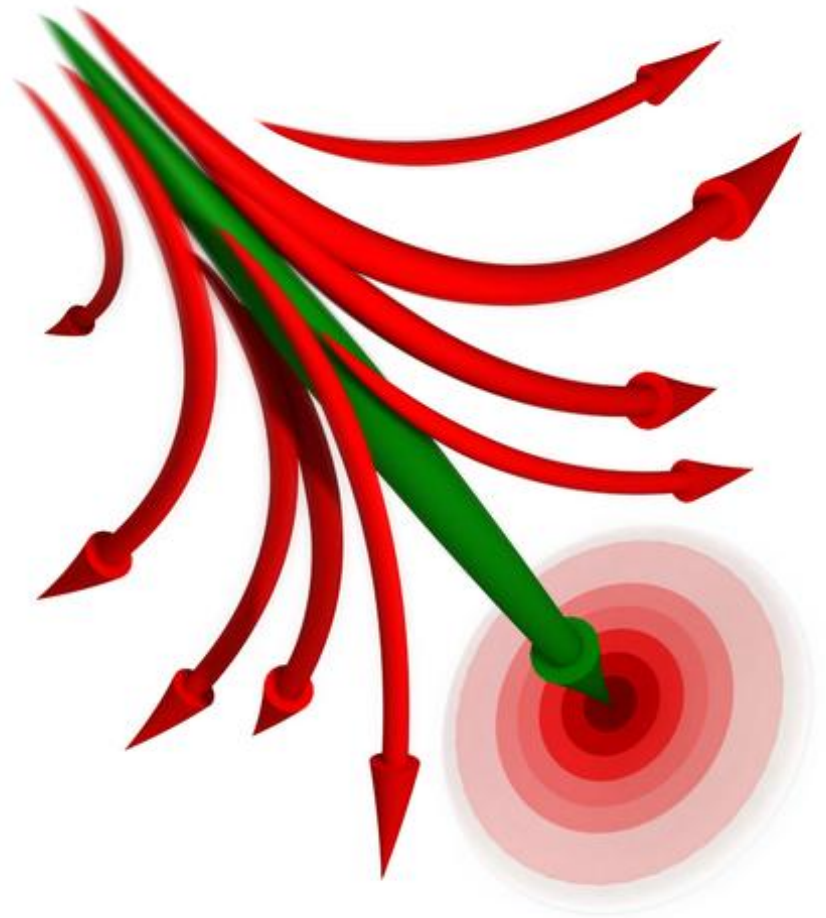
OVERALL PERFORMANCE RATING

	Exceeds Job Expectation	Meets Job Expectation	Partially Meets Job Expectation	Does Not Meet Job Expectation	N/A
COMMUNICATION	X	X			
WRITTEN		X			
ORAL	X				
PRODUCTIVITY	X				
ACCURACY	X				
VOLUME			X		
TIMELINESS	X				
SELF-MANAGEMENT	X		X		
JOB KNOWLEDGE		X			
CUSTOMER FOCUS		X			
TECHNOLOGY SKILLS		X			
PROBLEM SOLVING		X			
INTERPERSONAL RELATIONS		X			
TEAMWORK		X			
FLEXIBILITY		X			
CREATIVITY/INNOVATION		X			
DEPENDABILITY		X			
LEADERSHIP		X			
DEVELOPMENT OF STAFF		X			
PERFORMANCE MANAGEMENT		X			
RESOURCE MANAGEMENT		X			
CONTRIBUTION		X			

The more powerful weapon of a leader is the power of intervene in the purpose of the system



Purpose adherence should be the first criteria
when considering the adoption of new
practices, techniques or process changes

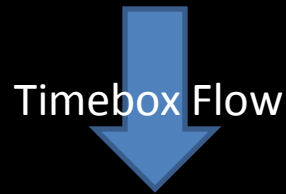


system
demand

Many leverage points can be found on the understanding of your demand



Planning the Demand or Managing the Demand?

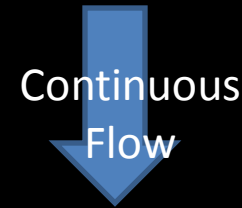


Planning = Schedule +
Preparation

Focus on quantity of
scope that could be
produced in fixed
quantity of time
(Velocity)

More controlled changes on
the programmed schedule
for delivering

Competition by system
resources demands
negotiation of its capacity



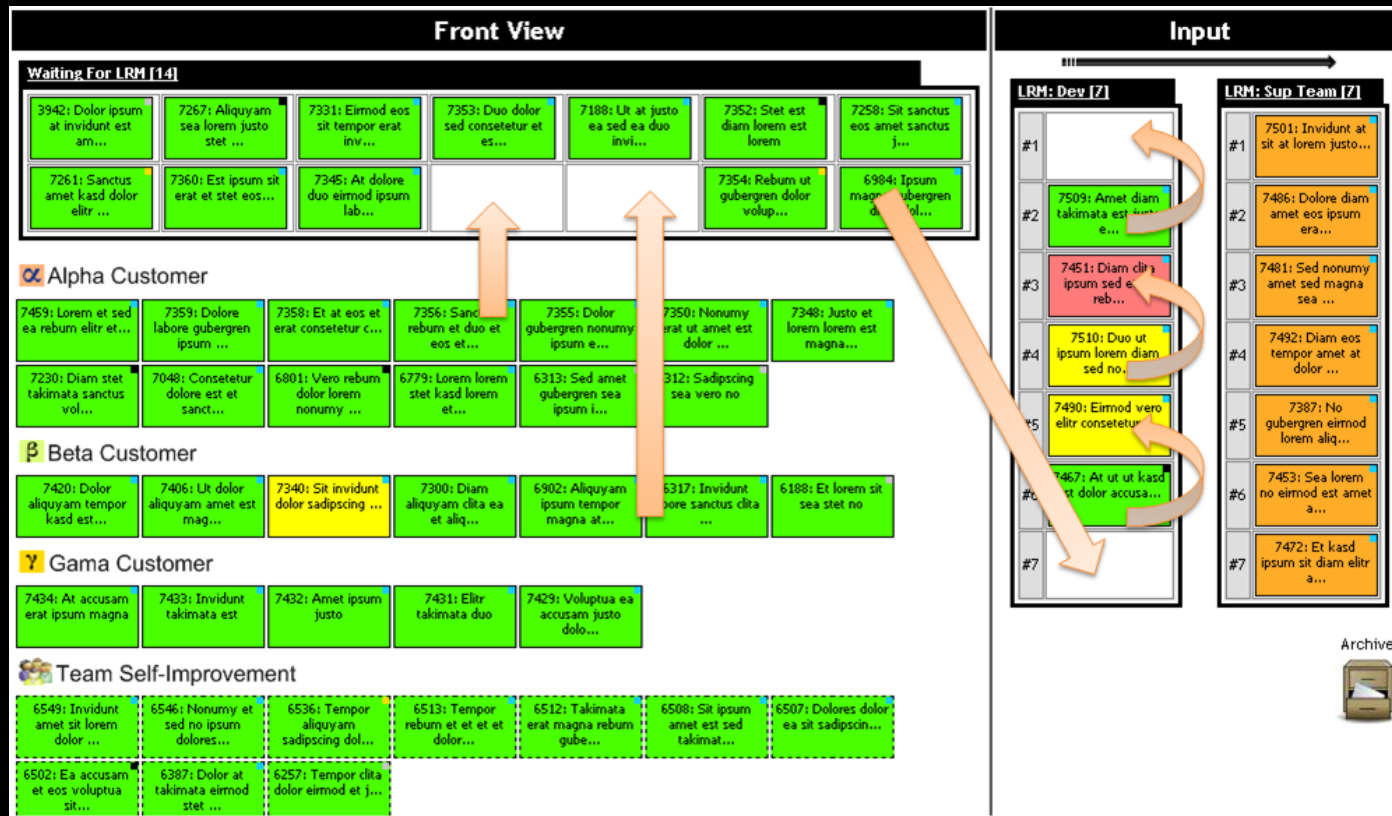
Planning = Options +
Preparation

Focus on quantity of time it
takes to produce a fixed-sized
scope
(SLA / Cycle Time)

Changes on the
programmed schedules are
absorbed by the system

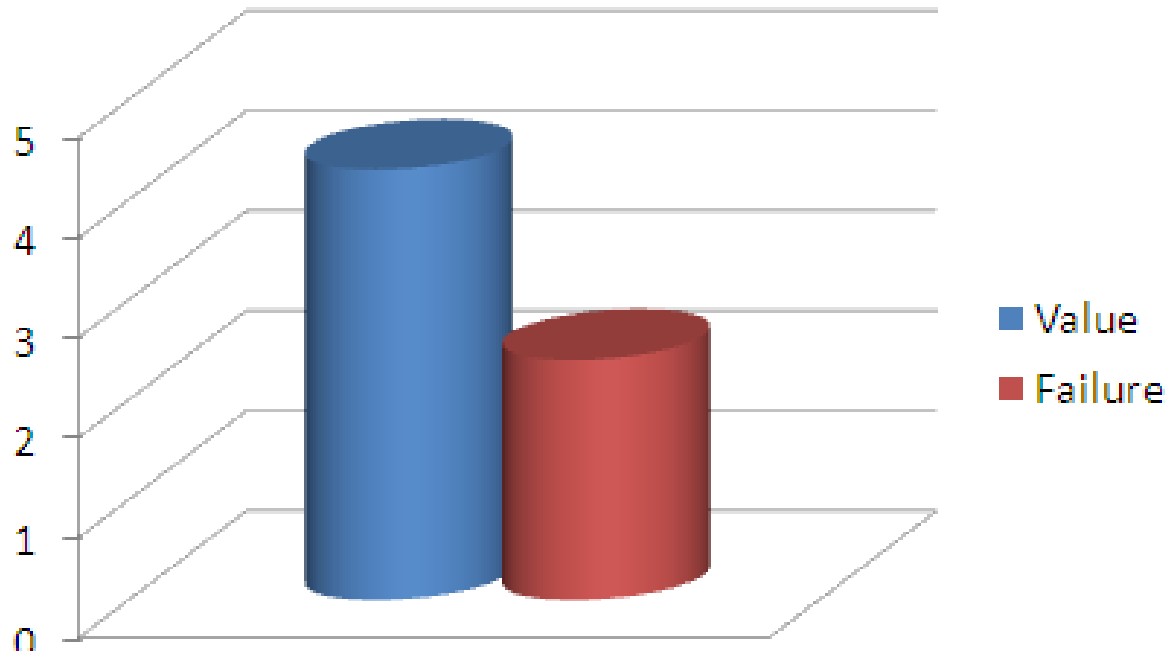
Competition by system
resources demands
subordination to its
capacity

The Demand will be always larger than the supply
JIT Priorization and options allow subordination of
the system demand to its capacity



Priority Filter

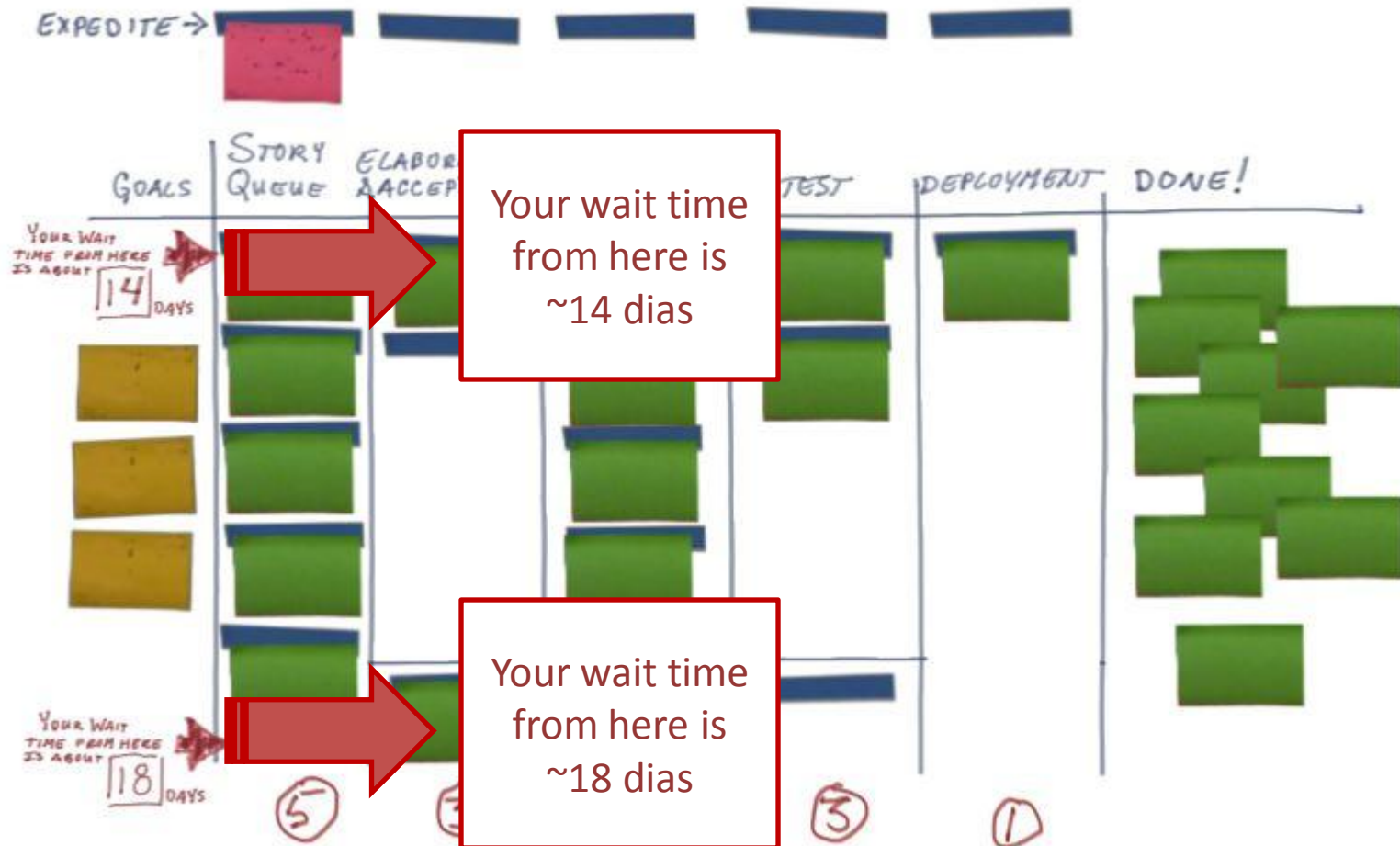
Failure Demand vs Value Demand



Failure demands are not always bugs or problems. Know how to identify them allow you to eliminate Failure Demand instead of manage them

system
capacity

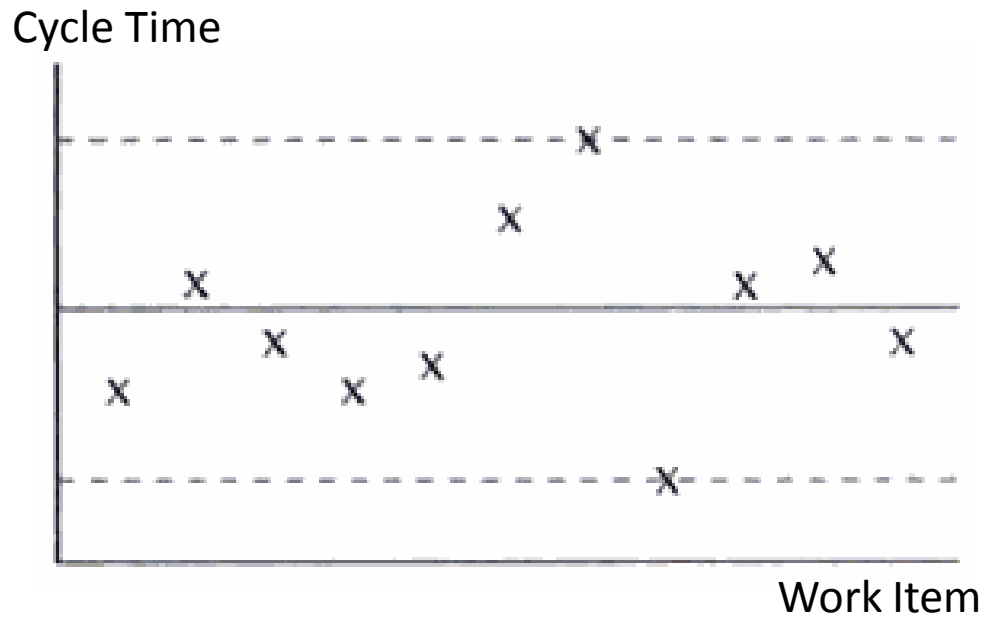
Promote measurements that help in understanding system capability (end-to-end time)



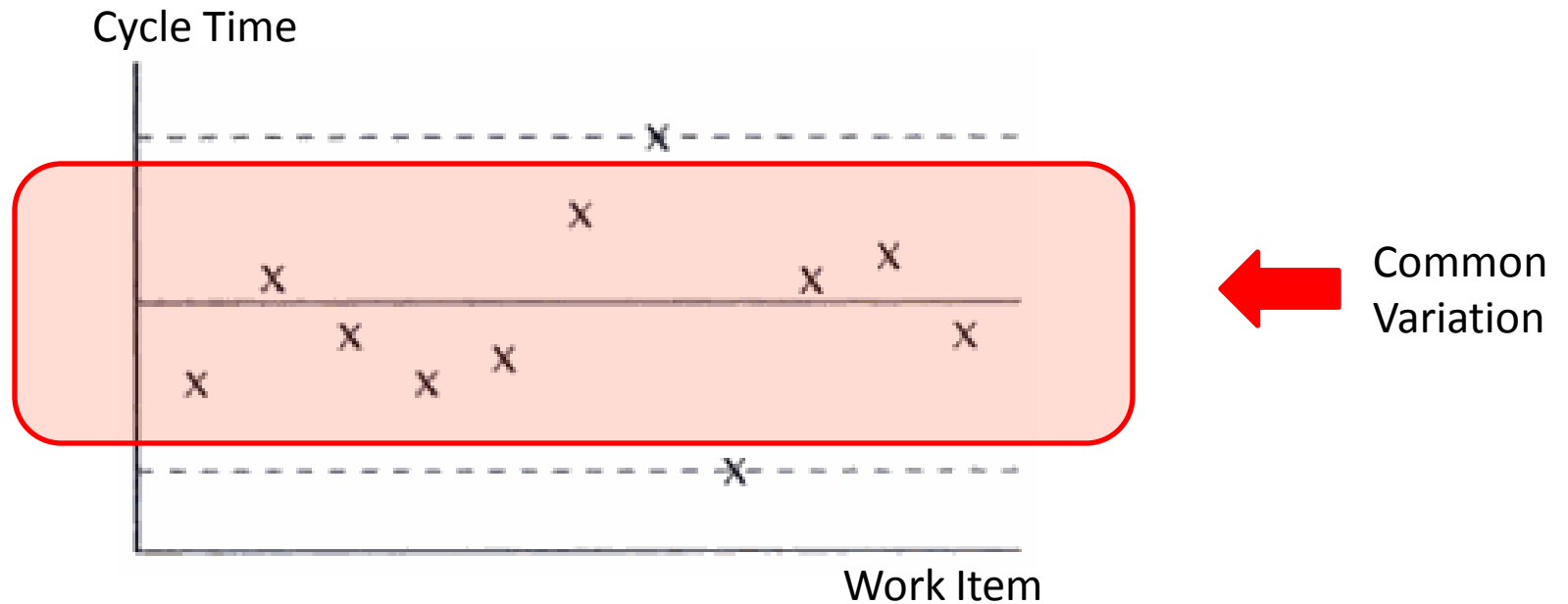
Fonte: Jeff Patton on http://www.agileproductdesign.com/blog/2009/kanban_over_simplified.html

Know the Capability →
Predictability

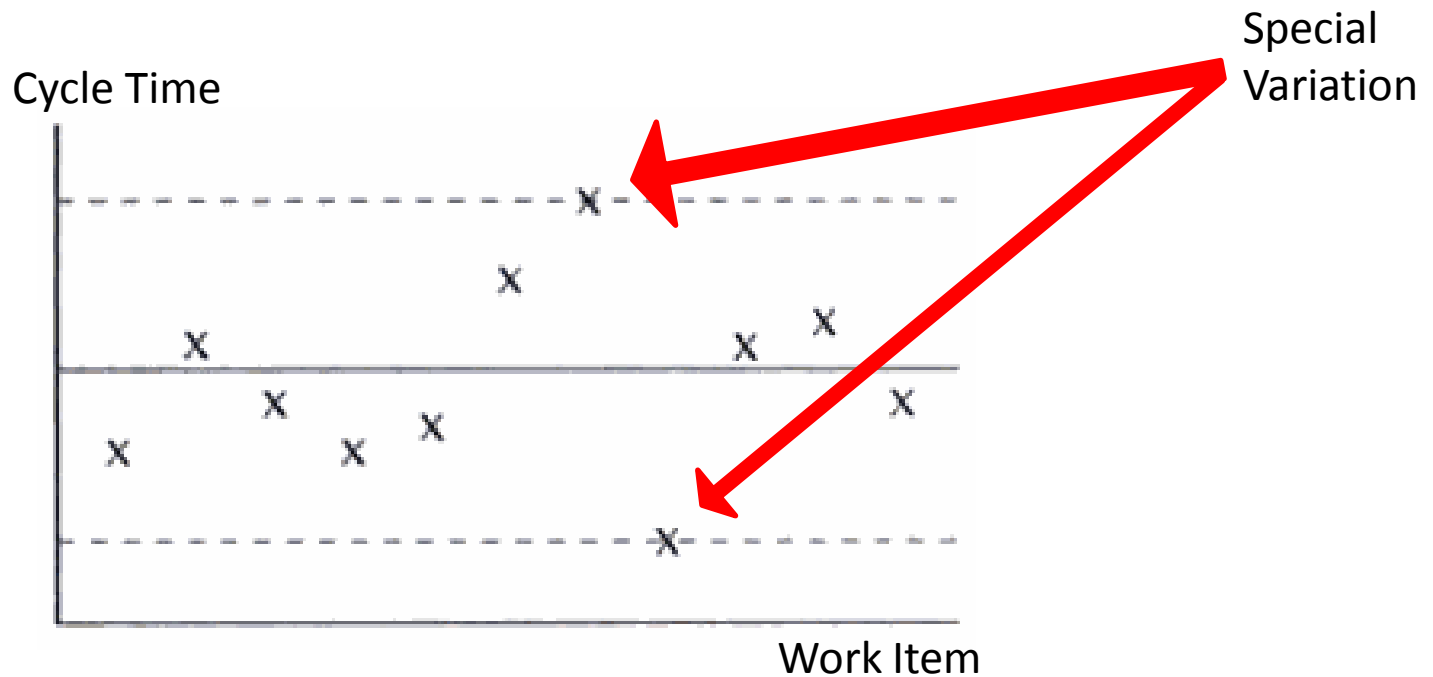
Capability and Variation



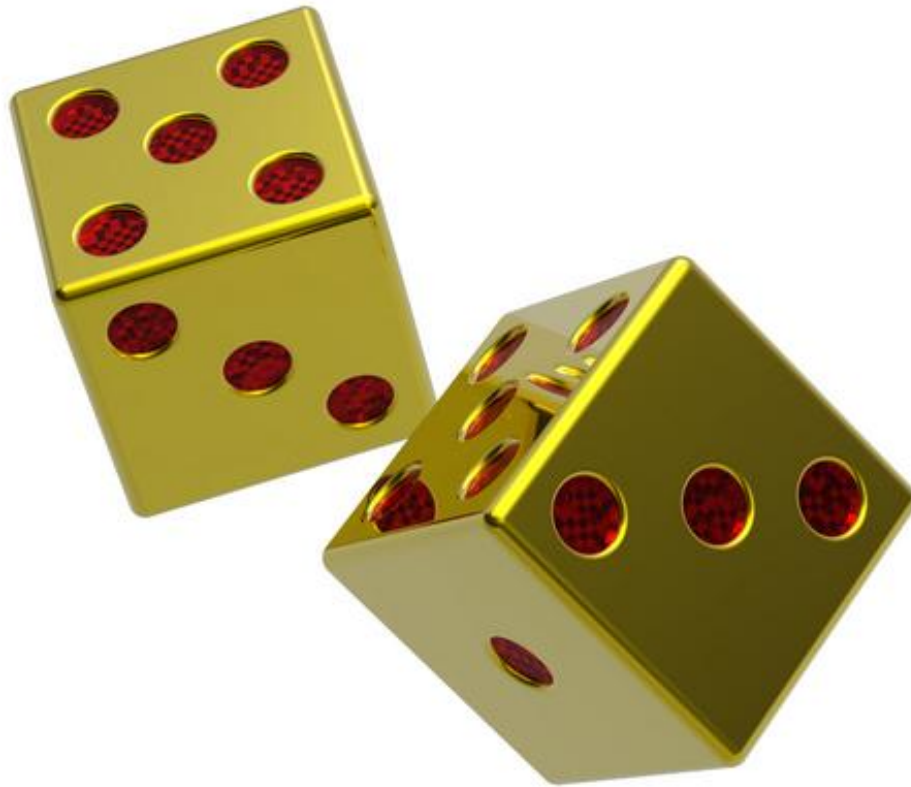
Capability and Variation



Capability and Variation



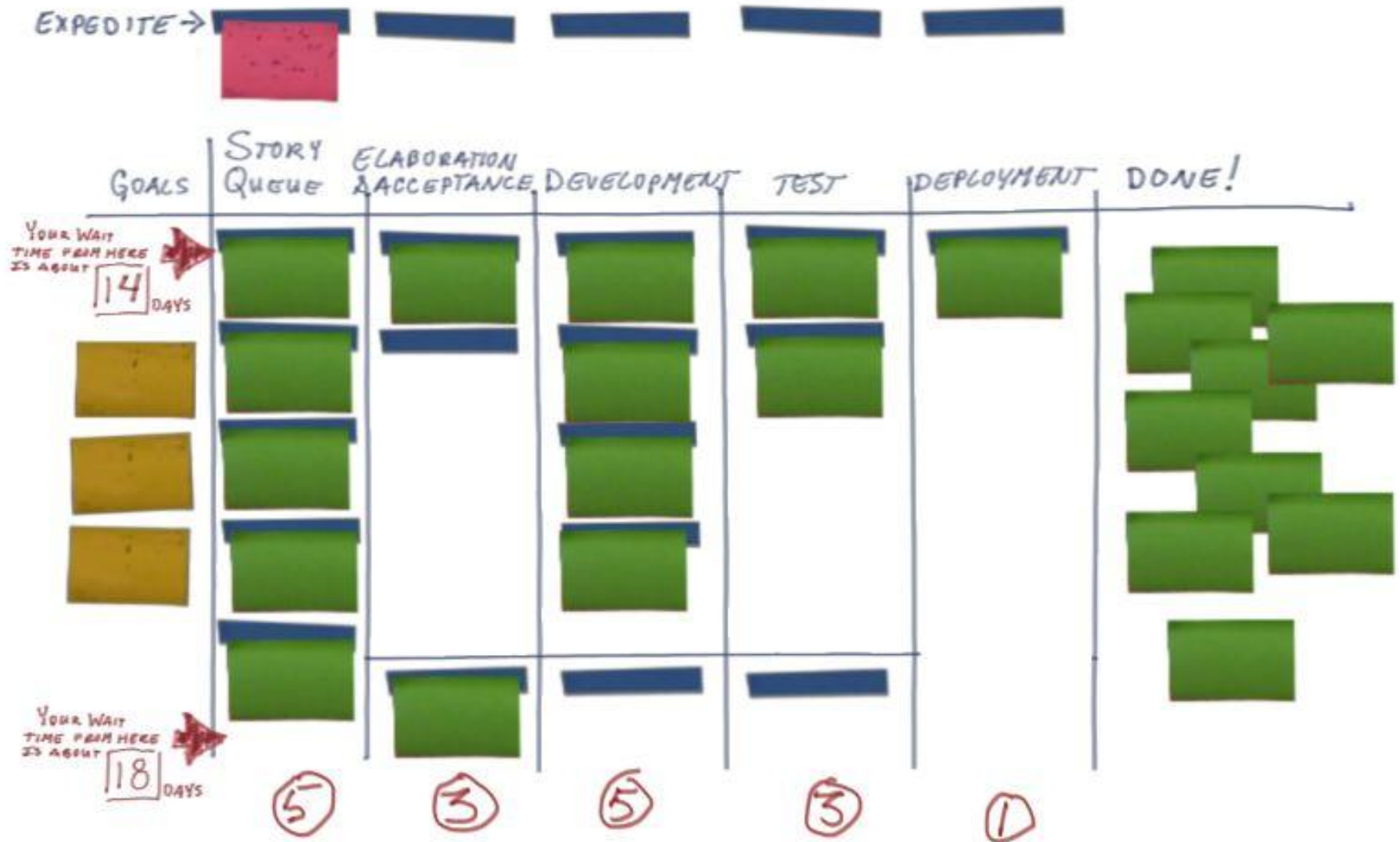
Minimize the variation can lead to more predictability





The best way to understand your capability is to subordinate the system to limits

Kanban limits WIP to subordinate the system to its capacity and show bottlenecks



Source: Jeff Patton on http://www.agileproductdesign.com/blog/2009/kanban_over_simplified.html

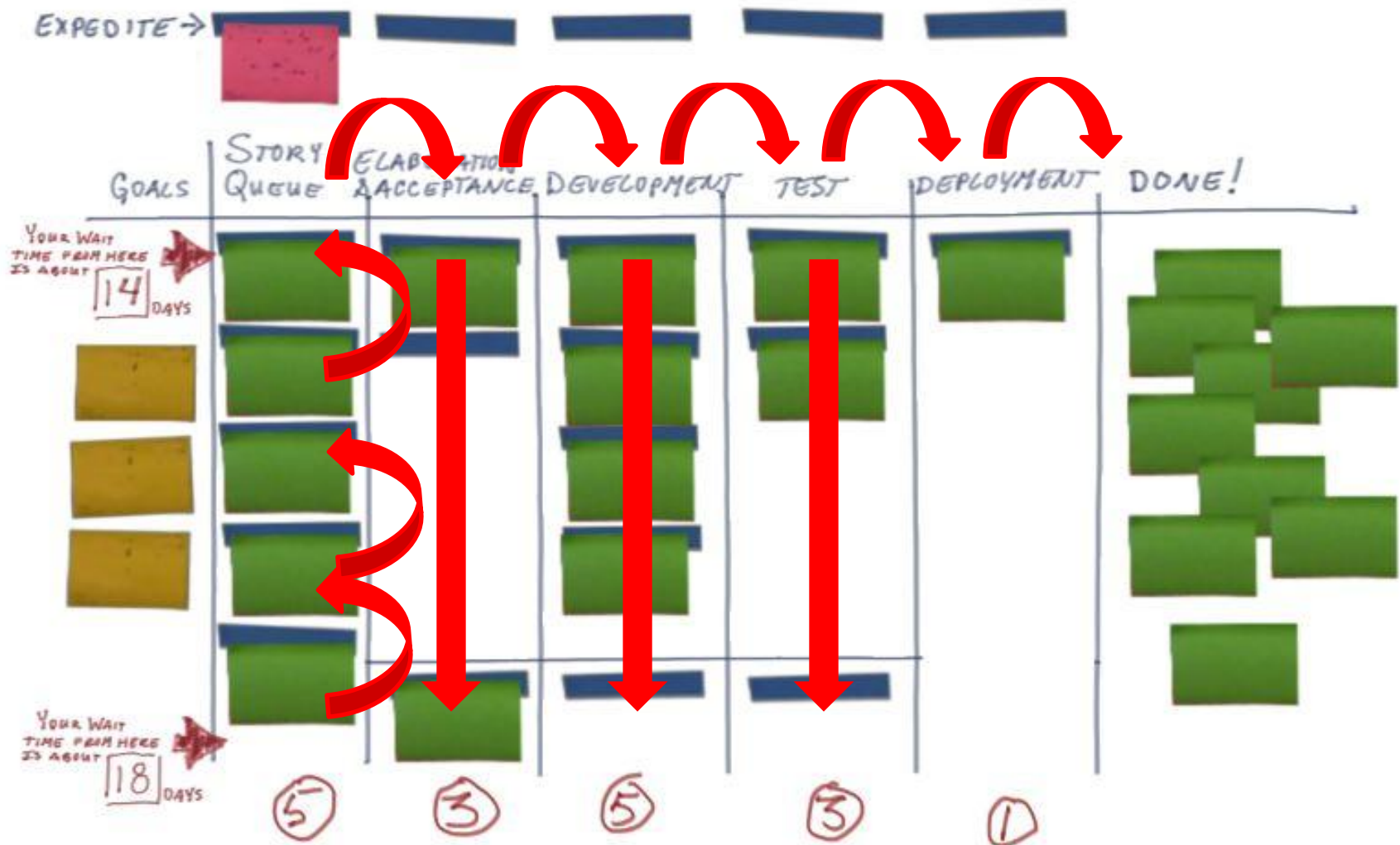
system flow

Flow exemplified in Kanban Development Oversimplified by Jeff Patton



Source: Jeff Patton on http://www.agileproductdesign.com/blog/2009/kanban_over_simplified.html

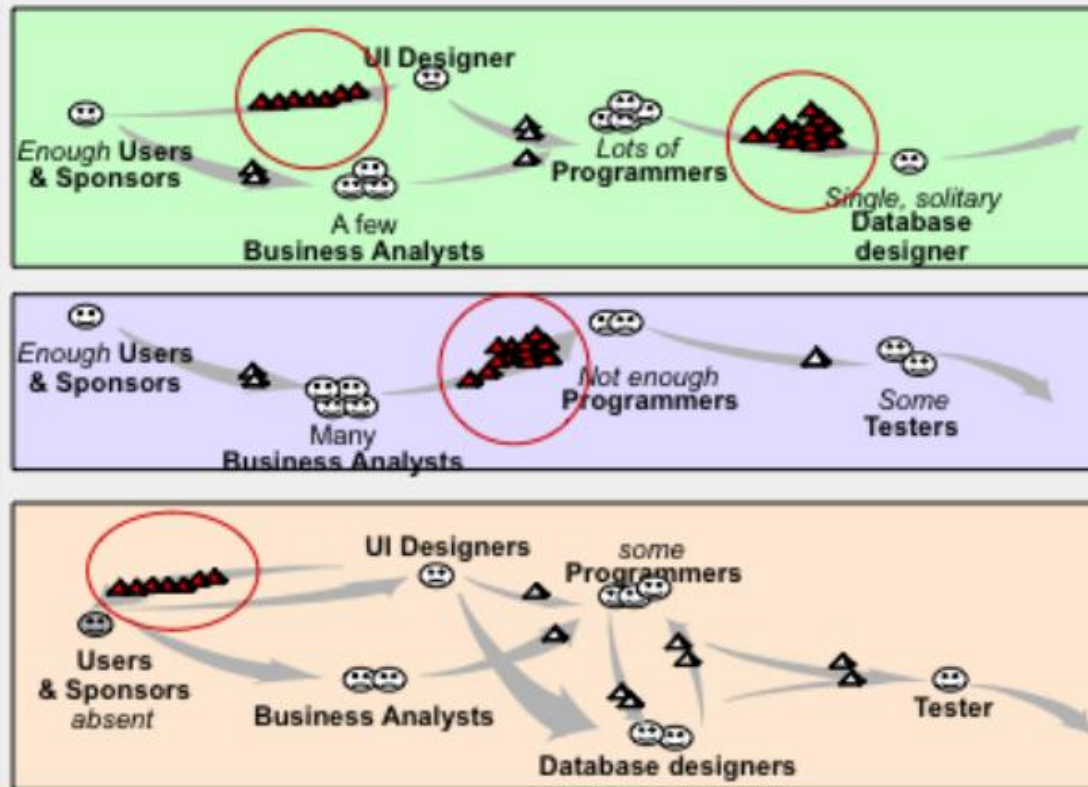
Flow identifies the position and possible paths that each demand can move through the process



Source: Jeff Patton on http://www.agileproductdesign.com/blog/2009/kanban_over_simplified.html

Flow reveals bottlenecks and conduce the team to self-organize to eliminate them or reduce its influence on the whole system

*Lean Manufacturing strategies apply directly:
watch for backed-up queues*



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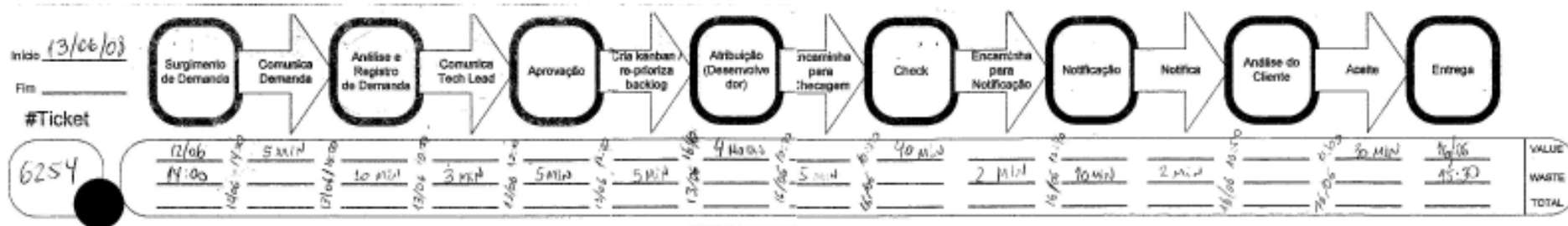


Cockburn's Software Engineering in the 21st Century:

<http://alistair.cockburn.us/Software+engineering+in+the+21st+century.ppt>

Value Stream Map/Process Map

It is easier to understand the behaviour of a process when it is mapped and measured



flow optimization

leadership





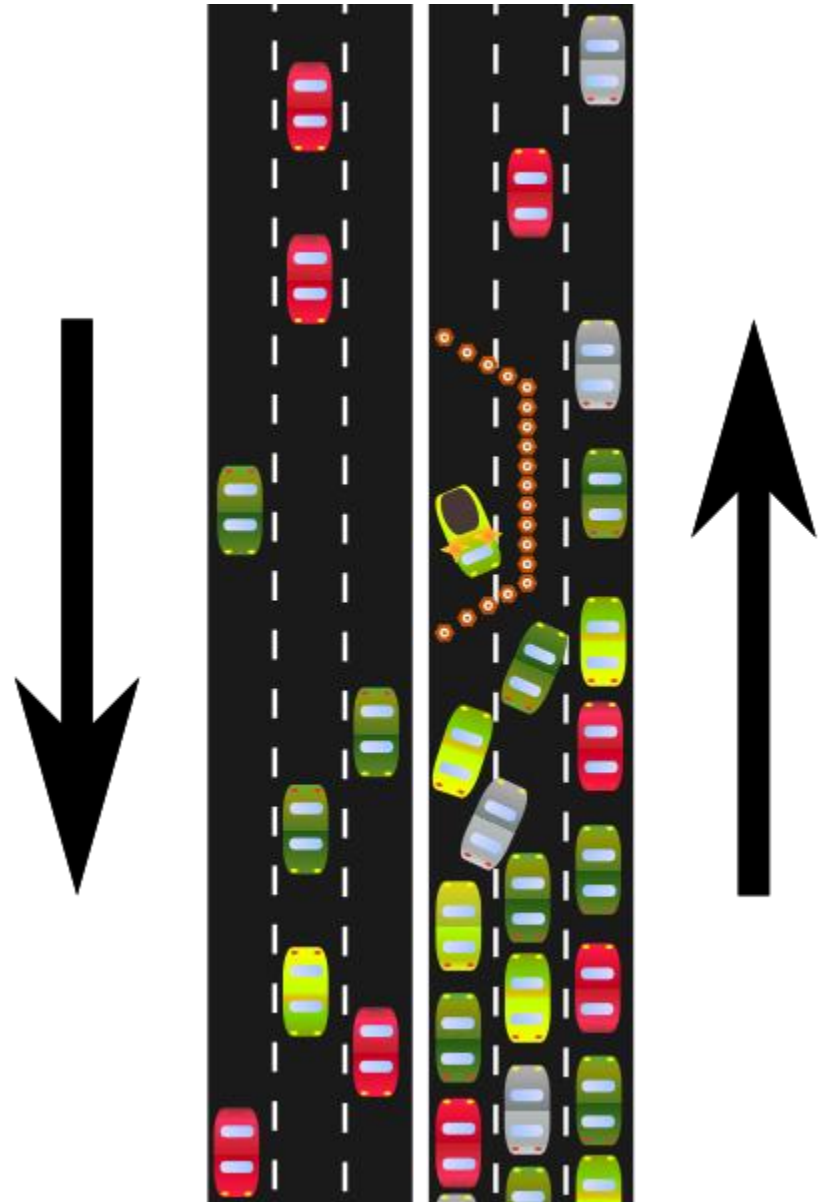
Collaborative Work

the generalist-specialist

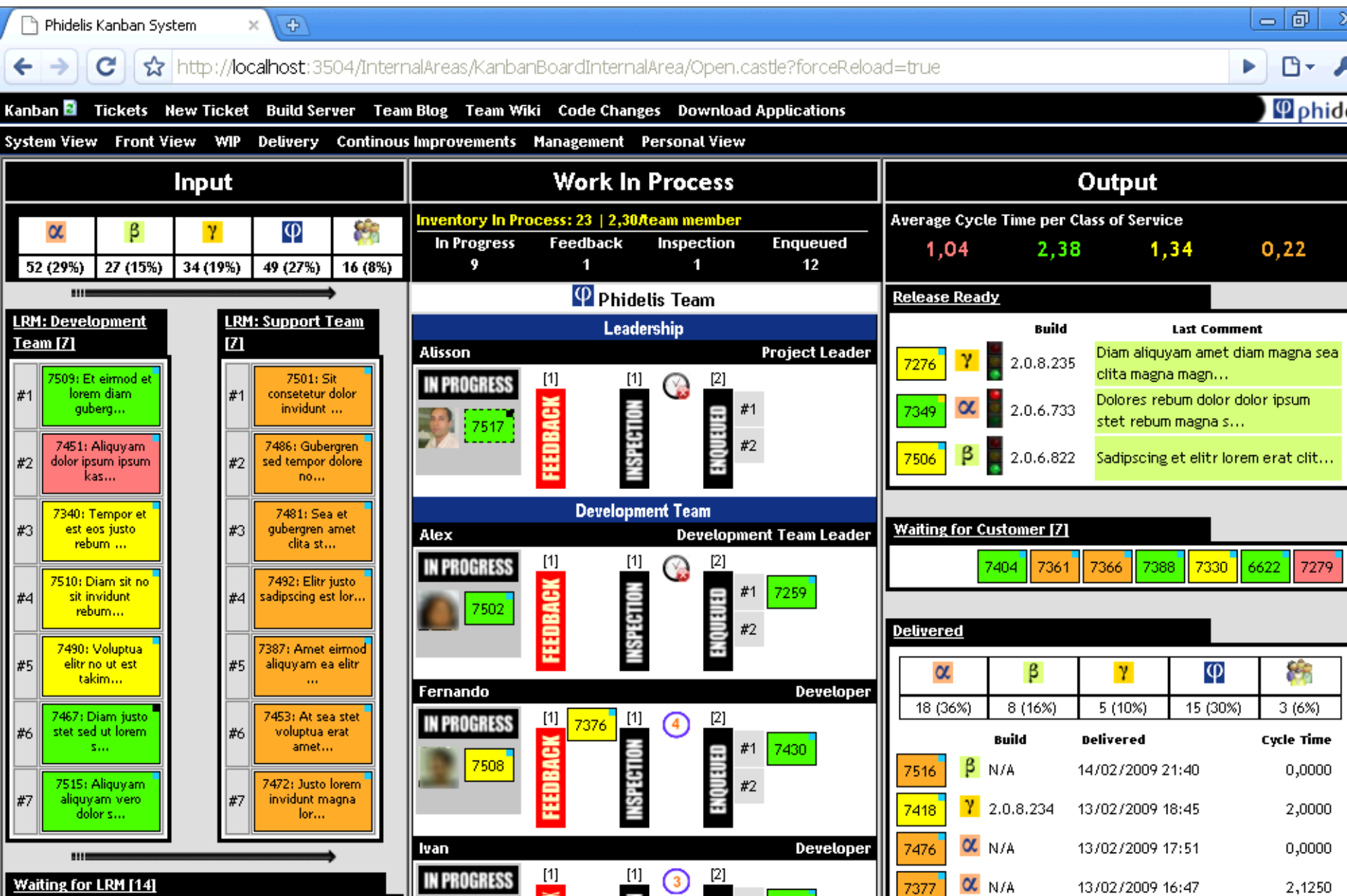
Versatility



Focus on
identification
and
elimination of
bottlenecks

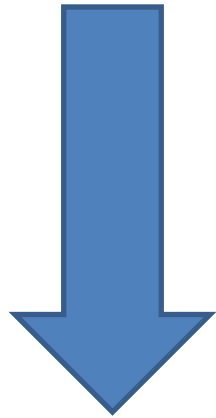


Visualization and Signalizations



waste

main sources



process design



product design

every error has source in a problem
that is essentially about “Design”

design

Design for
Testability

Design for
Extensibility

Design for
Change

Design for
Self-
Management

Design for
Deploy

Design for
Documentation

Design for
Self-
Improvement

Design for
Usability

Design for flow
optimization

investments in
“Design” naturally reduce
waste

Refactor your process as you
do with your code

improvement of
the system

Retrospectives can
produce leverage from
inside to outside



Systemic problems and
improvement
opportunities are more
visible from outside



“Slack” is essential to
support actions for
continuous improvement



Summary of leverage points...

Limit WIP

Establish purpose focus

Manage the demand

Reduce Variability

Invest in Design

Flow end-to-end

Promote leadership in several levels

Promote team work

Measure cycle time

Promote slack

Promote generalists-especialists

Remove bottlenecks

Simplify the process

Promote versatility

Automate

Make the work always visible

Thanks!

Read more...

Blog Articles

<http://alissonvale.com/englishblog>

Kanban: When Signalization Matters

alissonvale.com/englishblog/post/Kanban-When-Signalization-Matters.aspx

A História de um Sistema Kanban (Portuguese)

<http://alissonvale.com/englishblog/post/A-Historia-de-um-Sistema-Kanban.aspx>

Proceeding of Lean & Kanban 2009

<http://www.wordclay.com/BookStore/BookStoreBookDetails.aspx?bookid=50764>

Interview on InfoQ Brazil (Portuguese)

<http://www.infoq.com/br/news/2009/01/brasil-representacao-conferencia>

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