Improving Scrum with

Lean Thinking

Nuno Rafael Gomes
@ SGMUN 2016

https://twitter.com/nrgomes
https://www.linkedin.com/in/nrgomes

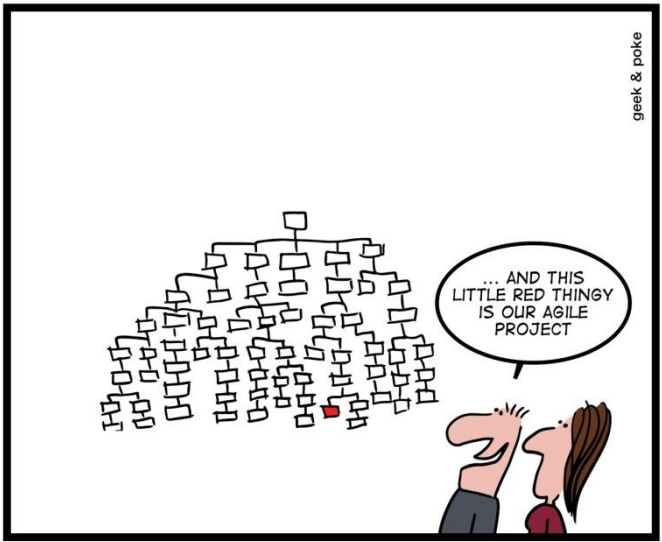
A Product Owner in contact with Industry since 2003...

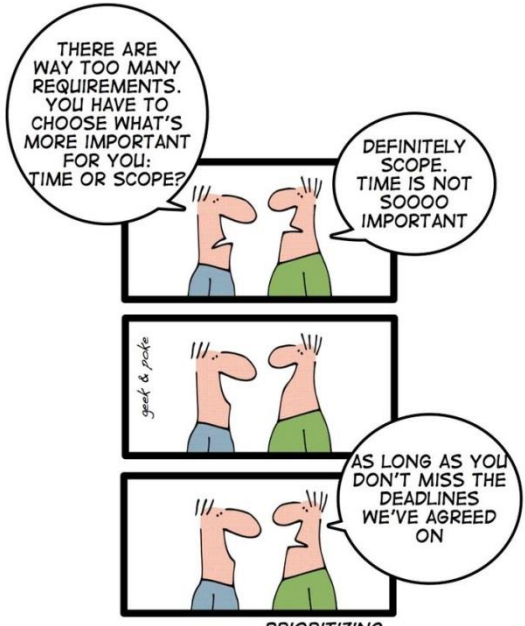

Lean
Thinking
150mg
010101
WARNING
Contains
Common
Sense

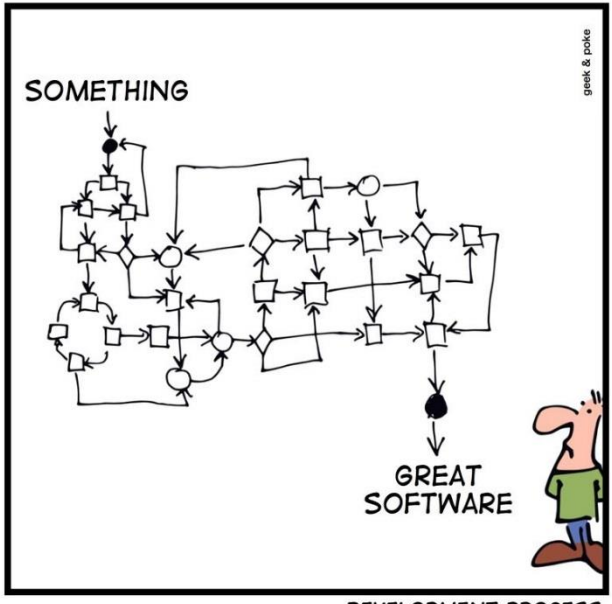
1

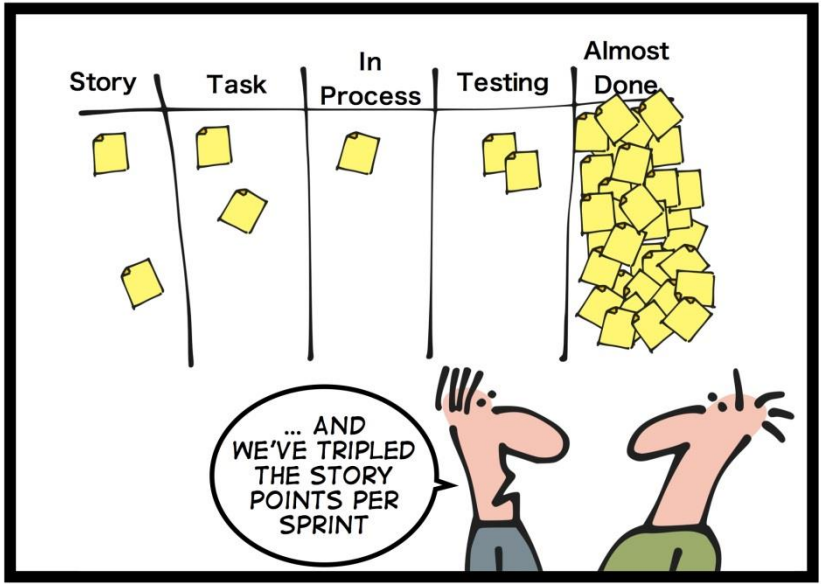
Once upon a time...

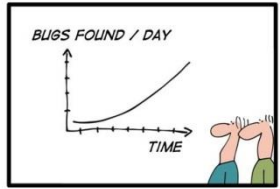
... in a company far, far away...
with the help of Geek & Poke ☺

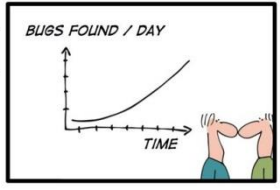

geek & poke
... AND THIS LITTLE RED THINGY IS OUR AGILE PROJECT
FINALLY WE'RE AGILE!

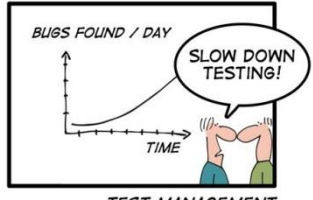

THERE ARE WAY TOO MANY REQUIREMENTS. YOU HAVE TO CHOOSE WHAT'S MORE IMPORTANT FOR YOU: TIME OR SCOPE?
DEFINITELY SCOPE. TIME IS NOT SOOOO IMPORTANT
geek & poke
AS LONG AS YOU DON'T MISS THE DEADLINES WE'VE AGREED ON
PRIORITIZING


SOMETHING
geek & poke
GREAT
SOFTWARE
DEVELOPMENT PROCESS

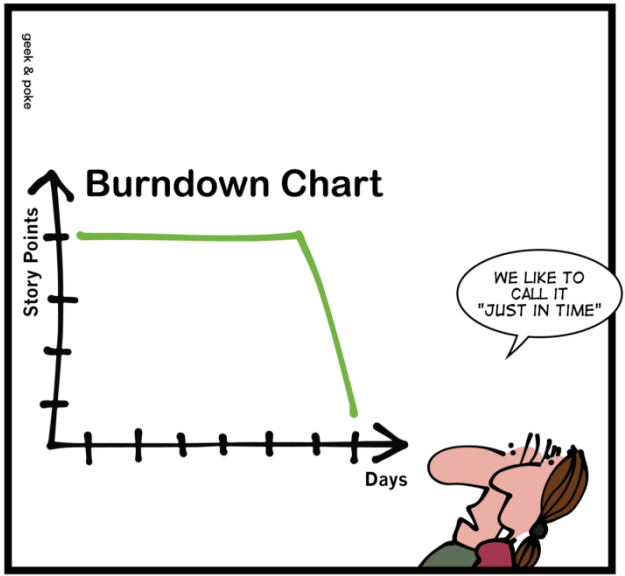

Story
Task
In Process
Testing
Almost Done
... AND WE'VE TRIPLED THE STORY POINTS PER SPRINT
geek & poke
DOAD

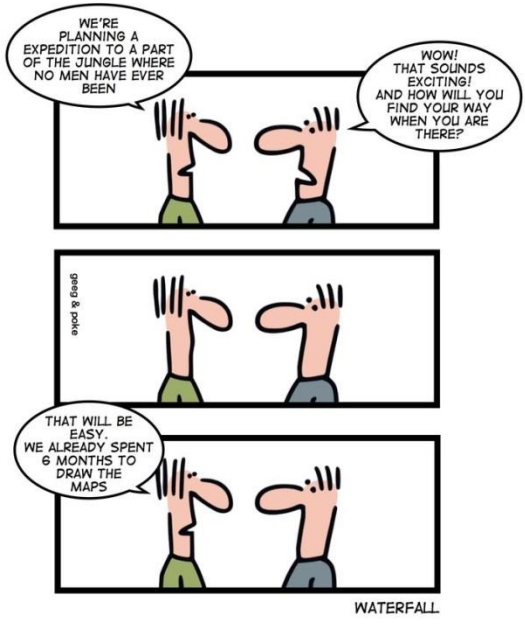


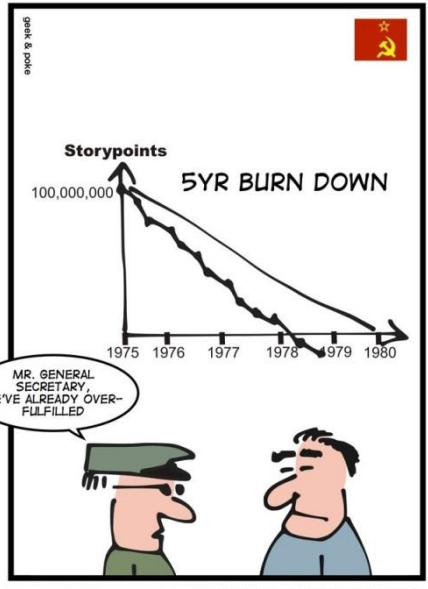




TEST MANAGEMENT


geek & poke
Burndown Chart
Story Points
Days
WE LIKE TO CALL IT "JUST IN TIME"
WATERFALL IS BACK


WE'RE PLANNING A EXPEDITION TO A PART OF THE JUNGLE WHERE NO MEN HAVE EVER BEEN
WOW! THAT SOUNDS EXCITING! AND HOW WILL YOU FIND YOUR WAY WHEN YOU ARE THERE?
geeg & pete
THAT WILL BE EASY. WE ALREADY SPENT 6 MONTHS TO DRAW THE MAPS
WATERFALL


geek & poke
Storypoints
5YR BURN DOWN
100,000,000
1975
1976
1977
1978
1979
1980
MR. GENERAL SECRETARY, WE'VE ALREADY OVER-FULFILLED
TODAY: THE COLD WAR

“Sometimes we win, sometimes we learn.”

Nuno Rafael Gomes, adapted from John Maxwell

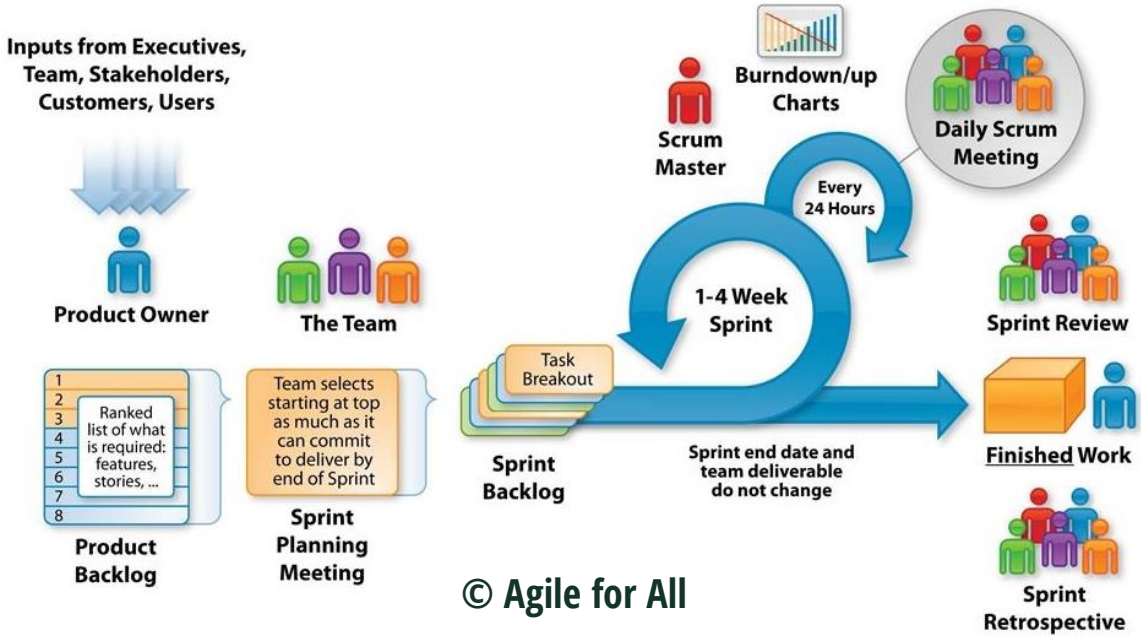
2

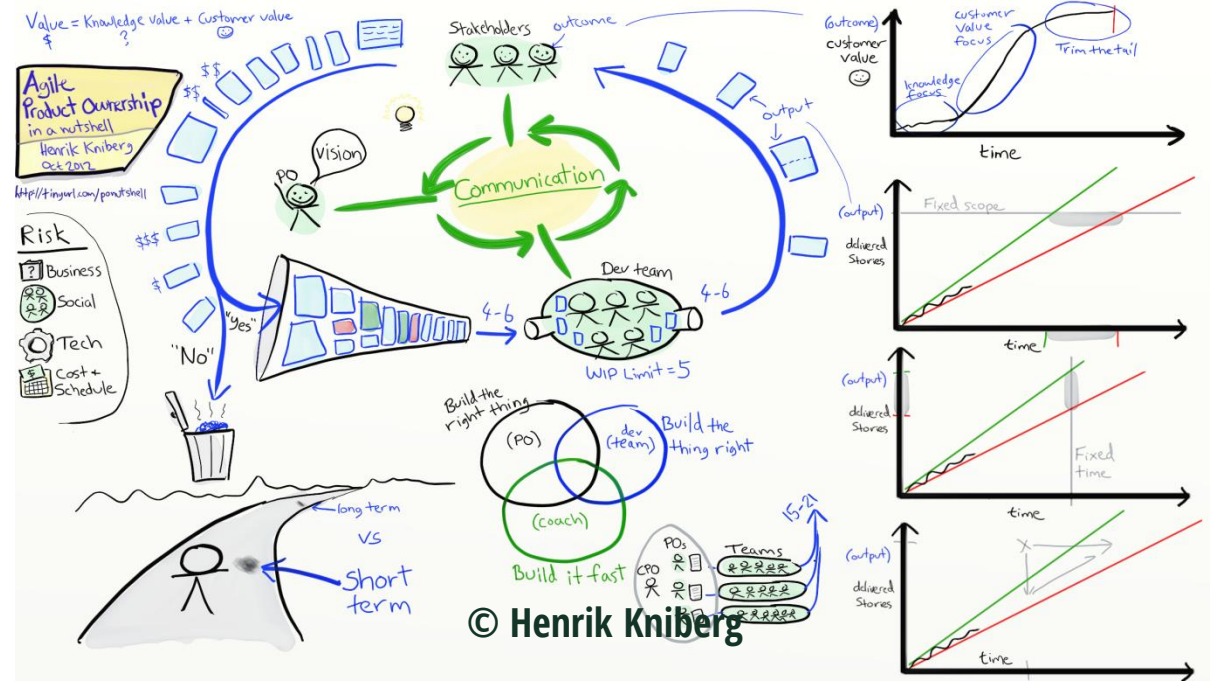
Scrum

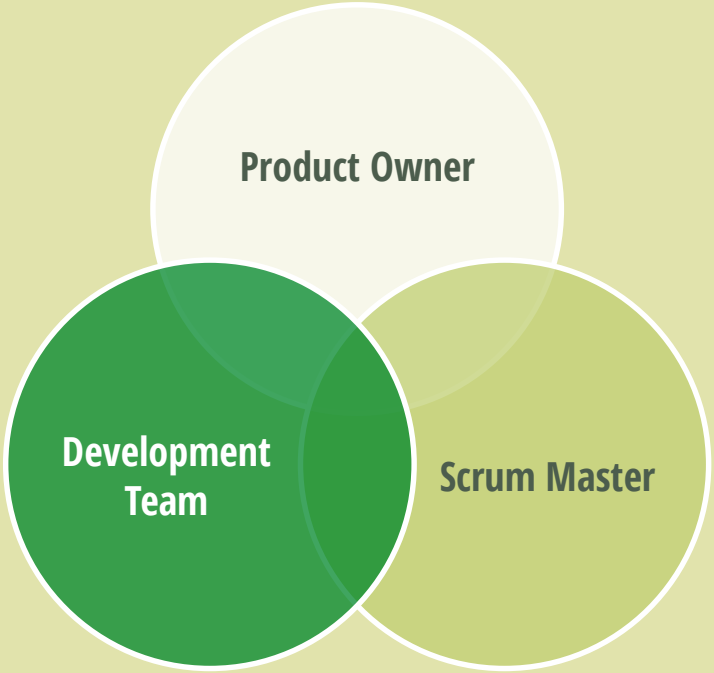
Scrum is simple, but not easy.

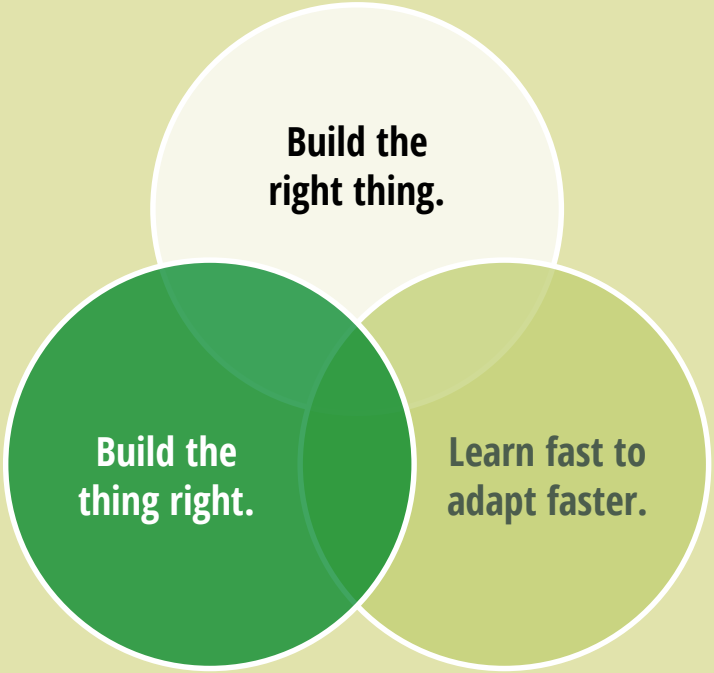
“You have to learn
the rules of the game.”

Albert Einstein


Inputs from Executives, Team, Stakeholders, Customers, Users
Product Owner
The Team
Scrum Master
Burndown/up Charts
Daily Scrum Meeting
Every 24 Hours
1-4 Week Sprint
Sprint Review
Task Breakout
Sprint Backlog
Sprint end date and team deliverable do not change
Finished Work
1
2
3
4
5
6
7
8
Ranked list of what is required: features, stories, ...
Product Backlog
Team selects starting at top as much as it can commit to deliver by end of Sprint
Sprint Planning Meeting
Sprint Retrospective
© Agile for All


Value = Knowledge value + Customer value
$?
Agile Product Ownership in a nutshell
Henrik Kniberg Oct 2012
http://tinyurl.com/ponutshell
Stakeholders
outcome
output
PO
vision
Communication
Dev team
4-6
4-6
WIP Limit = 5
"yes"
"No"
Risk
Business
Social
Tech
Cost + Schedule
Build the right thing
(PO)
dev (team)
Build the thing right
(coach)
Build it fast
long term
vs
short term
POs
CPO
Teams
(outcome)
customer value
customer value focus
Trim the tail
knowledge focus
time
(output)
Fixed scope
delivered Stories
time
(output)
delivered Stories
Fixed time
time
(output)
delivered Stories
time
© Henrik Kniberg


Product Owner
Development Team
Scrum Master


Build the
right thing.
Build the
thing right.
Learn fast to
adapt faster.

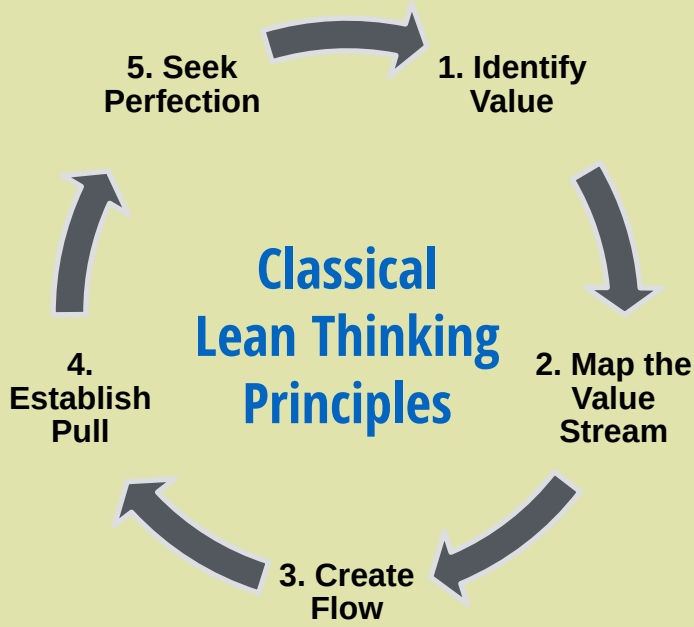
“Any fool can know.
The point is to understand.”

Albert Einstein

3

Lean Thinking Principles

Always start from need.


Classical
Lean Thinking
Principles
1. Identify
Value
2. Map the
Value
Stream
3. Create
Flow
4.
Establish
Pull
5. Seek
Perfection


Lean Thinking Principles (my own)
1. Identify Customers
2. Specify Value(s)
3. Map Value Stream(s)
4. Create Flow(s)
5. Establish Pull
6. Seek Perfection
7. Engage the future (foresight)

#1

Find out who your customers are.

#2

Specify value from the standpoint of the end customer, by product family.

#3

Identify all the steps in the value stream for each product family, eliminating those steps that do not create value whenever possible.

#4

Make the value-creating steps occur in tight sequence, so that the product will flow smoothly towards the customer.

#5

As flow is introduced, let customers pull value from the next upstream activity.

#6

Retrospect frequently with the goal to achieve perfection in which perfect value is created with no waste.

#7

Take time to foresight the future: forecasting, forward thinking, strategic analysis, priority setting…

4

The Toyota Way

A winning Management Philosophy.

Pillars & Values

Learn more about the Toyota Way at Toyota or Wikipedia.

Respect for People

Respect

We respect others, make every effort to understand each other, take responsibility and do our best to build mutual trust.

Respect for People

Teamwork

We stimulate personal and professional growth,
share the opportunities of development
and maximize individual and team performance.

Continuous Improvement

Challenge

We form a long-term vision, meeting challenges
with courage and creativity to realize our dreams.

Continuous Improvement

Kaizen

We improve our business operations continuously,
always driving for innovation and evolution.

Continuous Improvement

Genchi Genbutsu

We go to the source to find the facts to make correct decisions.

5

Toyota Thinking Principles

Thinking People System (TPS)

Toyota 4 P's

Philosophy

- Long Term Thinking

Process

- Elminate Waste

People & Partners

- Respect, Challenge & Grow Them

Problem Solving

- Continuous Improvement & Learning

Long-term Philosophy

Philosophy

Principle #1

Base your management decisions on a long-term philosophy, even at the expense of short-term financial goals.

Philosophy

Principle #1

Base your management decisions on a long-term philosophy, even at the expense of short-term financial goals.

People need purpose to find motivation & stablish goals.


The right process will always
produce the right results.

Process

Principle #2

Create continuous process flow to bring problems to the surface.

Process

Principle #2

Create continuous process flow to bring problems to the surface.

Move toward flow.
Move to ever-smaller batch sizes and cycle times to deliver value fast...
... and to expose weakness and hidden problems.

Process

Principle #3

Use pull systems (JIT, Kanban) to avoid over-production.

Process

Principle #3

Use pull systems (JIT, Kanban) to avoid over-production.

Pull is a Production Order initiated by a Customer Order (JIT).
Kanban is an workflow management system that helps JIT work.
We should only produce what is needed by the Customer.

Watch the baton (work), not the runners (workers).

Process

Principle #4

Level out the workload (Heijunka) for build to order (JIT).
Work like the tortoise, not the hare.

Process

Principle #4

Level out the workload (Heijunka) for build to order (JIT).
Work like the tortoise, not the hare.

This helps achieve the goal of minimizing waste (muda),
not overburdening people or the equipment (muri),
and not creating uneven production levels (mura).

Process

Principle #5

Build a culture of stopping to fix problems (Jidoka), to build quality in (process, product) and get quality right from the first.

Process

Principle #5

Build a culture of stopping to fix problems (Jidoka), to build quality in (process, product) and get quality right from the first.

Quality always takes precedence (Jidoka).
Machines should automatically stop in case of an error (Poka-Yoke)
Any employee has the authority to stop the line to warn for a quality issue using visual signage (Andon).

Process

Principle #6

Standardize work for continuous improvement and employee empowerment (Kaizen).

Process

Principle #6

Standardize work for continuous improvement and employee empowerment (Kaizen).

People doing the work should own their processes.
Give them time (buffer) to improve their processes.
Use the Paretto rule: 80% working, 20% improving.

Process

Principle #7

Use visual controls so that no problems are hidden and to coordinate.

Process

Principle #7

Use visual controls so that no problems are hidden and to coordinate.

Use Kanban boards to visualize the work.
Use Kanban cards to coordinate the supply chain.

Process

Principle #8

Use only reliable, thoroughly-tested technology that serves your people and your processes.

Process

Principle #8

Use only reliable, thoroughly-tested technology that serves your people and your processes.

Technology is pulled by people doing the work not pushed by others. People do work, computers move info: humans are more flexible.


Add value to the organization
by developing your People & Partners.

People & Partners

Principle #9

Grow leaders from within, who thoroughly understand the work, live the philosophy, and teach it to others.

People & Partners

Principle #9

Grow leaders from within, who thoroughly understand the work, live the philosophy, and teach it to others.

Toyota don't go for head hunting: they don't know The Toyota Way.

People & Partners

Principle #10

Develop exceptional people and teams who follow your company's philosophy.

People & Partners

Principle #10

Develop exceptional people and teams who follow your company's philosophy.

Employees must be educated and trained:
they have to maintain a learning organization.

Success is based on the team, not the individual.
Teams should be small (3-7 people).

People & Partners

Principle #11

**Respect your extended network of partners,
by challenging them and helping them improve.**

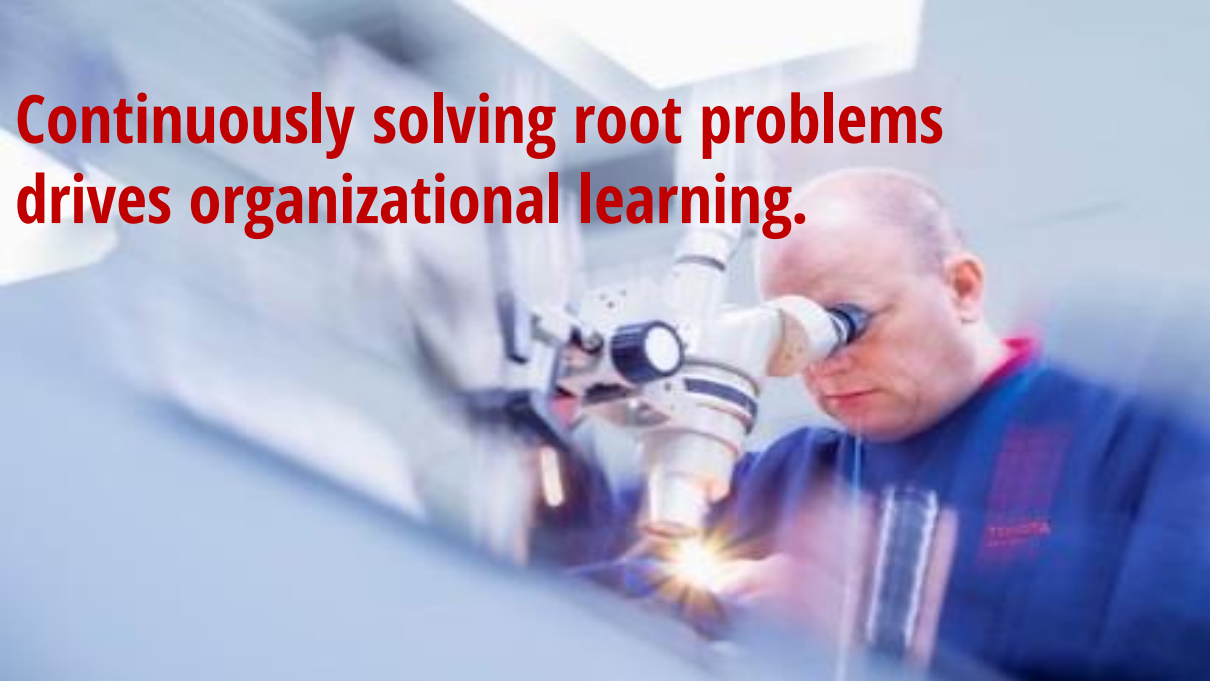
People & Partners

Principle #11

**Respect your extended network of partners,
by challenging them and helping them improve.**

Treat your suppliers much like you treat your employees.
Provide cross functional teams to help them discover and fix problems
so that they can become stronger and better partners.

Continuously solving root problems drives organizational learning.



Problem Solving

Principle #12

Go and see for yourself the real workplace (Genchi Genbutsu) to thoroughly understand the situation and help.

Problem Solving

Principle #12

Go and see for yourself the real workplace (Genchi Genbutsu) to thoroughly understand the situation and help.

Managers are expected to "go-and-see" operations.
Only experiencing the situation firsthand, managers will have an understanding of how operations can be improved.

Problem Solving

Principle #13

Make decisions slowly by consensus, thoroughly considering all options (Nemawashi); implement decisions rapidly.

Problem Solving

Principle #13

Make decisions slowly by consensus, thoroughly considering all options (Nemawashi); implement decisions rapidly.

Always seek for the underlying root cause.
Always consider a broad range of alternatives.
Build consensus around the resolution.

Problem Solving

Principle #14

Become a learning organization through relentless reflection (Hansei) and continuous improvement (Kaizen).

Problem Solving

Principle #14

Become a learning organization through relentless reflection (Hansei) and continuous improvement (Kaizen).

The process of becoming a learning organization involves criticizing every aspect of what one does.
Always clarify the problem first!
Next use a Root Cause Analysis technique (A3 Report).
Finally, countermeasure, evaluate and standardize.

6

Value

Money flows in the direction of Value.

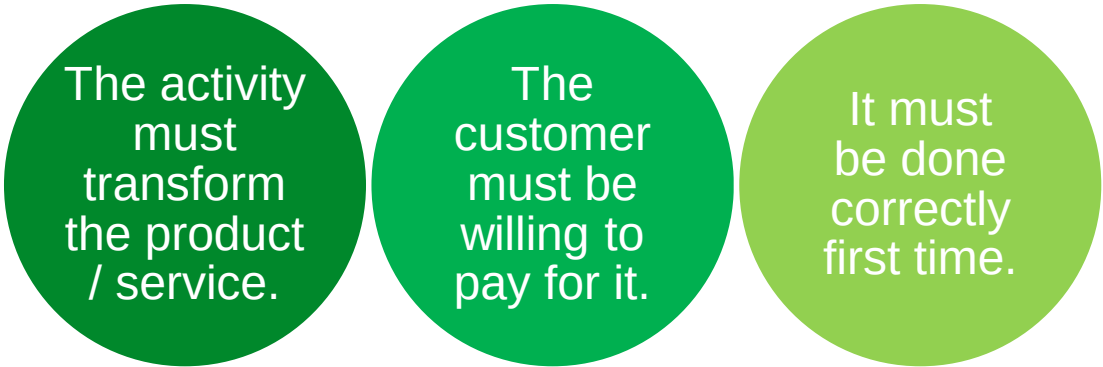
“Price is what you pay.
Value is what you get.”

Warren Buffet

“Lean thinking defines value as providing benefit to the customer; anything else is waste.”

Eric Ries

What is a value-added activity?



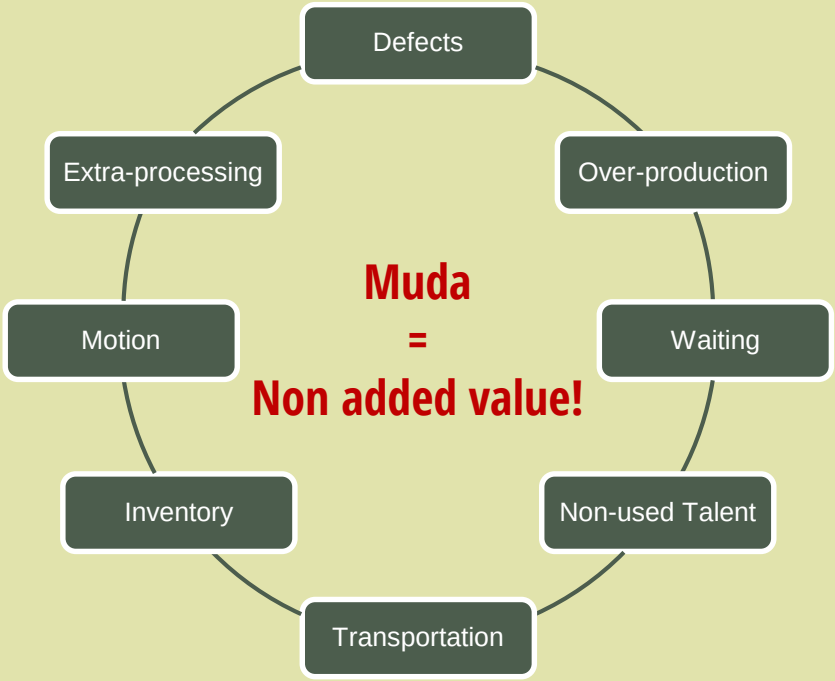
7

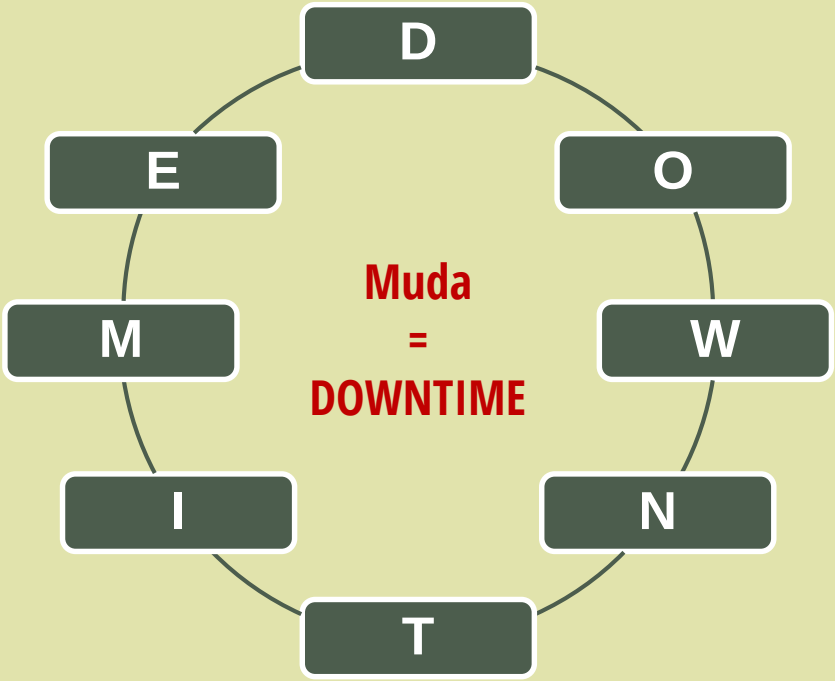
Waste

The most dangerous is the one you don’t see.


Muda
MU
RI
MURA
NON-VALUE ADDING
ACTIVITIES
OVERBURDEN
IMBALANCE,
UNEVEN, IRREGULAR

WASTE


Defects
Over-production
Waiting
Non-used Talent
Transportation
Inventory
Motion
Extra-processing
Muda
=
Non added value!


D
O
W
N
T
I
M
E
Muda
=
DOWNTIME

Defects

The loss involved in rectifying faulty parts or products.

Over-production

Producing more, sooner or faster than is required by the next process or the customer needs/specs.

Waiting

Idle time created when material, information, people or equipment is not ready.

Non-used Talent

Employee knowledge/skills not being used to their full potential, either on producing value added work, or on identifying waste.

Transportation

Moving products around without making any transformation the customer is willing to pay for.

Inventory

Having more than the minimum stocks necessary for a precisely controlled pull system.

In other words:

Inventory represents a capital outlay that has not yet produced an income, either by the producer or for the consumer.

Motion

People making movements that are straining or unnecessary to add value, causing damage to products/people and associated transaction costs.

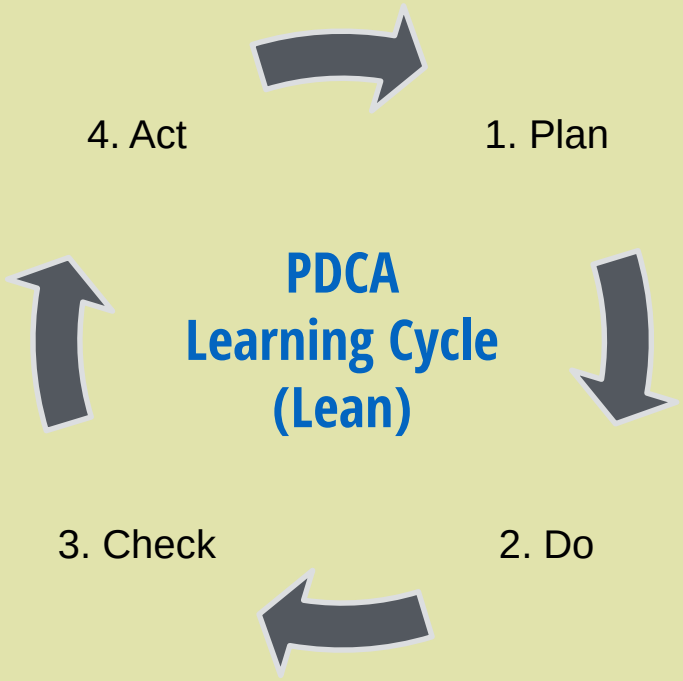
Extra-processing

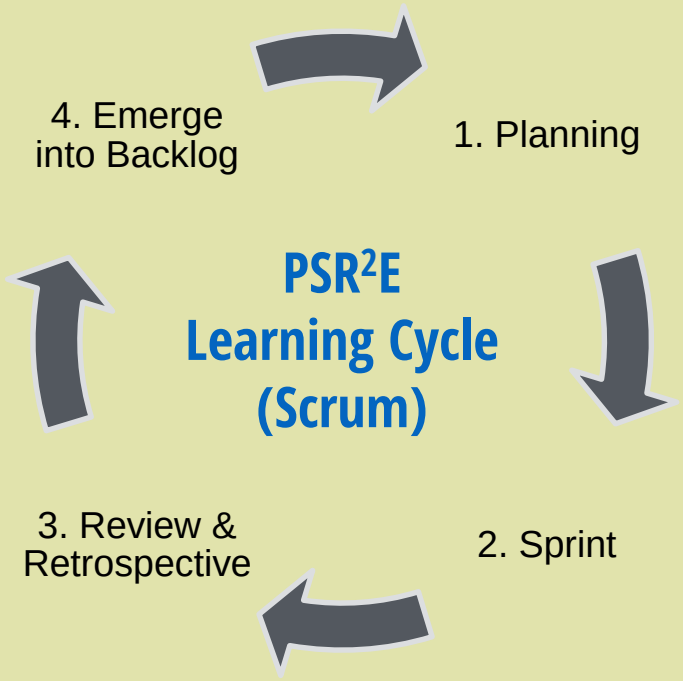
Performing unnecessary or incorrect processing.

8

Learning Cycles

Scrum or Lean, they are all the same.


PDCA
Learning Cycle
(Lean)
1. Plan
2. Do
3. Check
4. Act


PSR²E
Learning Cycle
(Scrum)
1. Planning
2. Sprint
3. Review &
Retrospective
4. Emerge
into Backlog

9

Scrum

A proposal for a fresh perspective ☺

“Start from Need.”

Taiichi Ohno

“Don't find customers for your products, find products for your customers.”

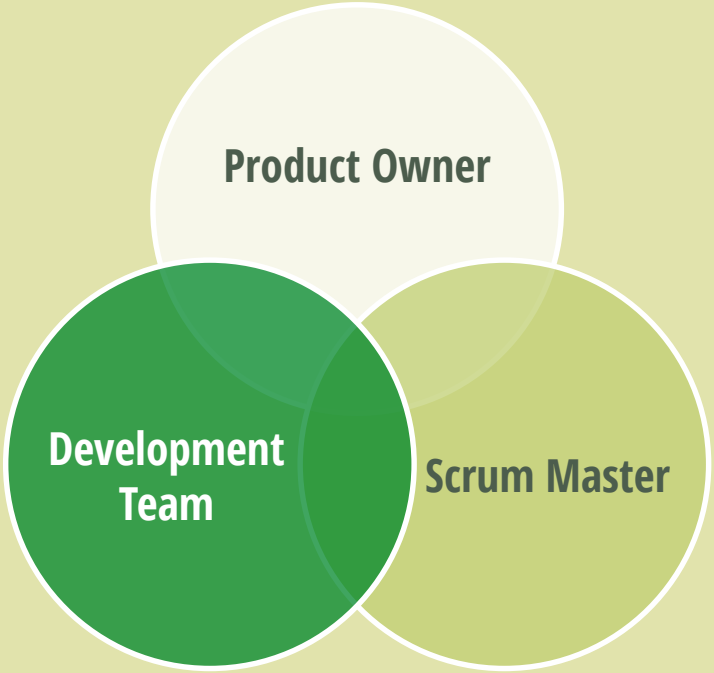
Seth Godin

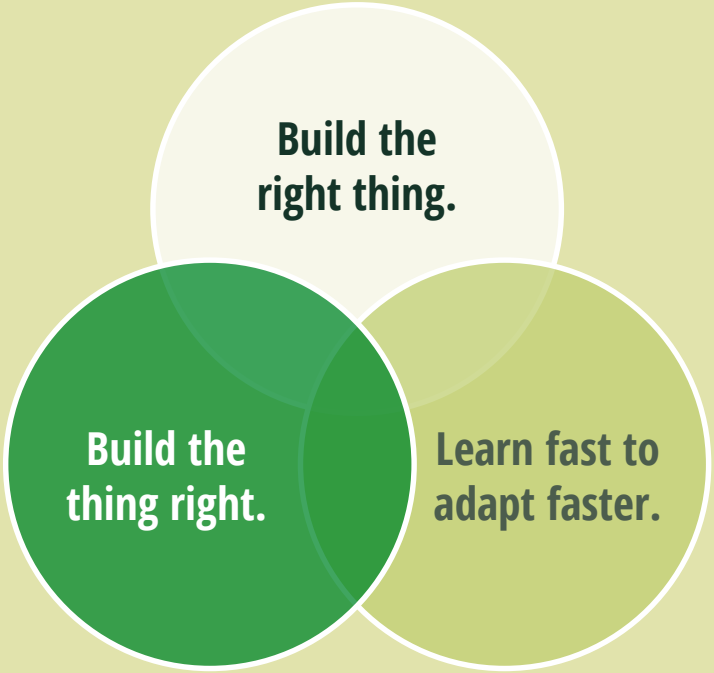
“Scrum is a framework for developing and sustaining complex products.”

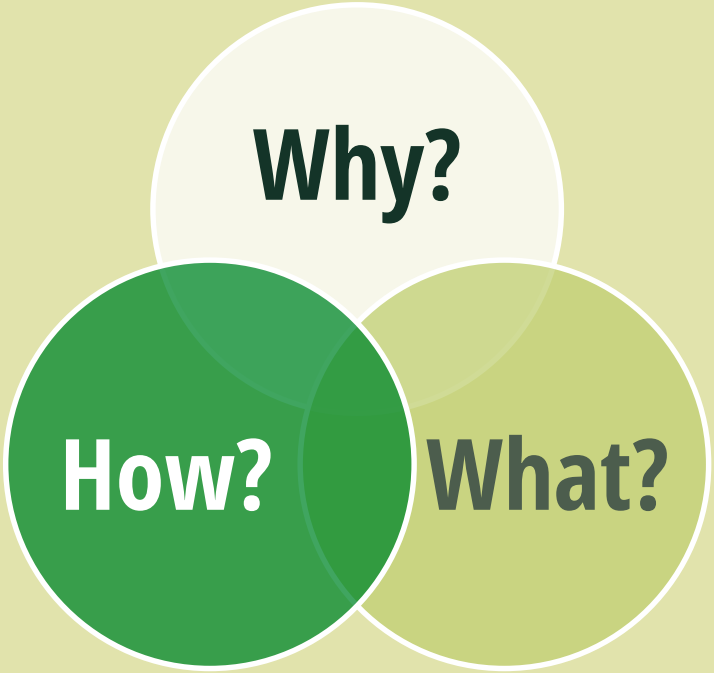
Ken Schwaber & Jeff Sutherland

“You've got to start
with the customer experience
and work back toward the technology.
Not the other way around.”

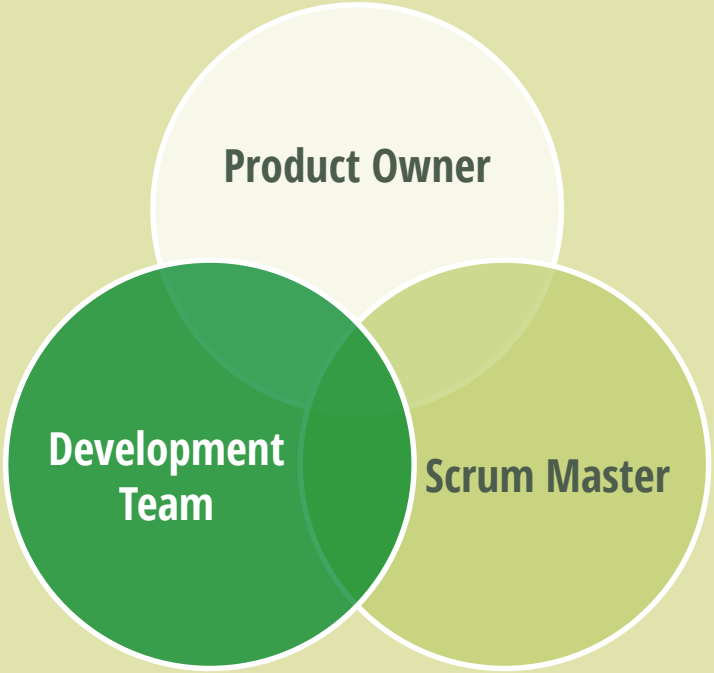
Steve Jobs


Product Owner
Development Team
Scrum Master


Build the
right thing.
Build the
thing right.
Learn fast to
adapt faster.


Why?
How?
What?


Why should we build this product?
How do we build the product with quality?
What do we need to do to deliver a great product?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Development Team
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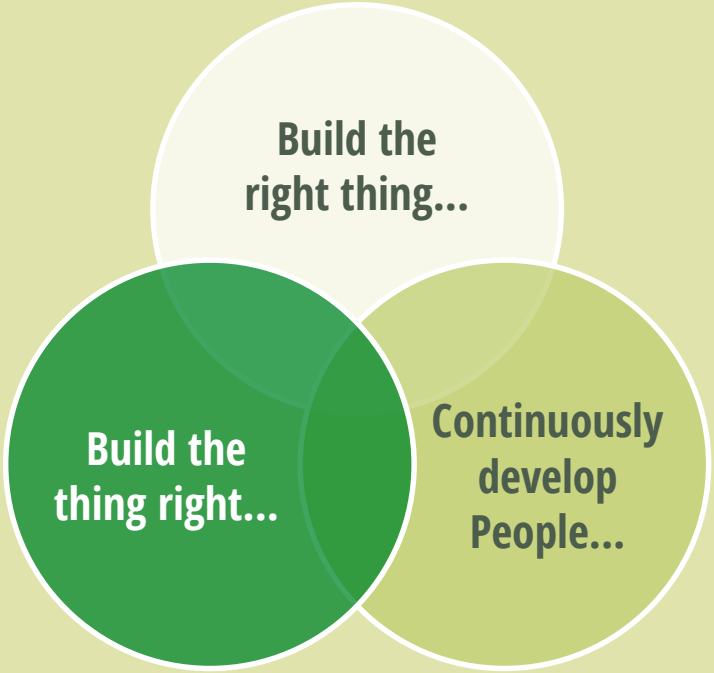

Build the
right thing...
Build the
thing right...
Continuously
develop
People...


... To delight customers.
... To power continuous innovation, aka, Kaizen.
... To enable autonomy, mastery and purpose.

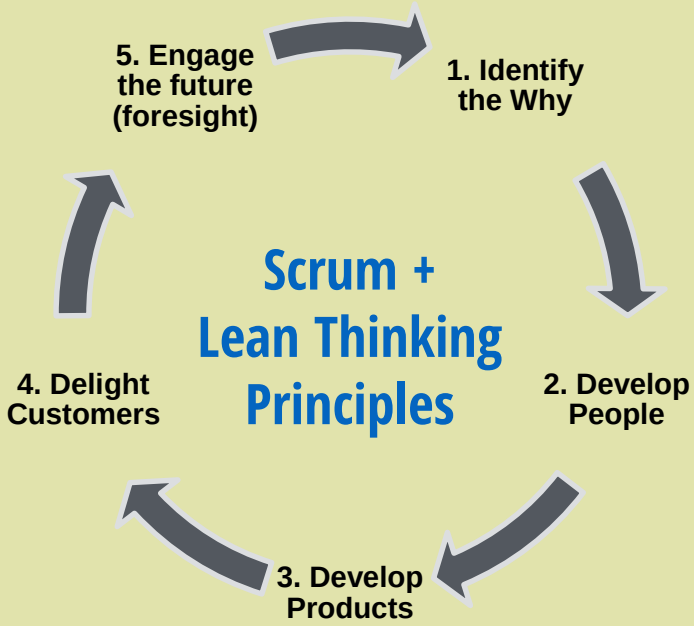
10

Scrum + Lean Thinking

A virtuous circle for sustainable growth ☺

“Develop People First,
and only then, Products.”

Toyota True Mission


Scrum +
Lean Thinking
Principles
1. Identify the Why
2. Develop People
3. Develop Products
4. Delight Customers
5. Engage the future (foresight)


Product Owner
Organization Sustainable Growth
Develop Team
Scrum Master


Win the heart of the customer
Organization Sustainable Growth
Kaizen innovation at all levels
Develop people capabilities

”Scrum is a value-driven framework & Lean Thinking helps boost it.”

Nuno Rafael Gomes

Thank You!

Tweet #SGMUN #Lean #LeanThinking
@nrgomes

11

Muda = Waste

Extra slides with links ☺

Defects

The loss involved in rectifying faulty parts or products.

Defects

The loss involved in rectifying faulty parts or products.

Examples:

Scrap, defects, bugs.

Rework, bug fixing.

Missing parts/features.

Effort involved in inspecting for and fixing defects.

Defects

The loss involved in rectifying faulty parts or products.

Common causes:

Mismatched production rates.
Batch processing, inspect-in quality.
Process failures, machine breakdowns.

Defects

The loss involved in rectifying faulty parts or products.

Countermeasures:

Implement Standard Work.

Use mistake-proofing devices (Poka-Yoke).

Implement a single-piece flow strategy (WIP=1).

Implement automation w/ human intelligence (Jidoka, Autonomation).

Over-production

Producing more, sooner or faster than is required by the next process or the customer needs/specs.

Over-production

Producing more, sooner or faster than is required by the next process or the customer needs/specs.

Examples:

Producing more to avoid setups.
Producing extra functionalities/features.
Batch processing, resulting in extra output.
Producing product to stock, based on sales forecasts.

Over-production

Producing more, sooner or faster than is required by the next process or the customer needs/specs.

Common causes:

Long machine setups.

Too much Forecasting.

“Just-in-case” for breakdowns.

Over-production

Producing more, sooner or faster than is required by the next process or the customer needs/specs.

Countermeasures:

Level/smooth the Production (Heijunka).

Implement SMED (Single-Minute Exchange of Die) on machines.

Implement Just-in-time, aka, JIT, a pull system scheduling strategy.

Waiting

Idle time created when material, information, people or equipment is not ready.

Waiting

Idle time created when material, information, people or equipment is not ready.

Examples:

Waiting for machines to run or cycle.
Waiting for others, for parts, for inspection.
Waiting for information, instructions, decisions.
Waiting for machine maintenance to be performed.
Waiting for emails to be answered, meetings to start...

Waiting

Idle time created when material, information, people or equipment is not ready.

Common causes:

Push Production.

Work imbalance.

Centralized inspection.

Lack of priorities or communication.

Waiting

Idle time created when material, information, people or equipment is not ready.

Countermeasures:

Implement Takt Time on Production.

Level/smooth Production (Heijunka).

Implement Just-in-time, aka, JIT, a pull system scheduling strategy.

Non-used Talent

Employee knowledge/skills not being used to their full potential, either on producing value added work, or on identifying waste.

Non-used Talent

Employee knowledge/skills not being used to their full potential, either on producing value added work, or on identifying waste.

Examples:

High skilled workers doing relatively easy jobs.
Firefighting all the time instead of focusing on Kaizen.
Not inviting Experts to the Value Stream Mapping events.

Non-used Talent

Employee knowledge/skills not being used to their full potential, either on producing value added work, or on identifying waste.

Common causes:

Disrespect for People.
Lack of knowledge/skills.
Control & Command Culture.

Non-used Talent

Employee knowledge/skills not being used to their full potential, either on producing value added work, or on identifying waste.

Countermeasures:

Provide Training to all employees.
Enforce "all employees are Thinkers" mentality!
Implement the 5 Whys technique for problem solving.
Start by building consensus (Nemawashi) on decision making processes.

Transportation

Moving products around without making any transformation the customer is willing to pay for.

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Moving products around without making any transformation the customer is willing to pay for.

Examples:

Task switching.
Handoffs of pieces of work.
Paperwork between departments.
Moving parts in and out of storage.
Product movements between workstations.
Digital processes between multiple individuals.

Transportation

Moving products around without making any transformation the customer is willing to pay for.

Common causes:

Push Production.

Batch Production.

Poor Production layout.

Transportation

Moving products around without making any transformation the customer is willing to pay for.

Countermeasures:

Draw Spaghetti charts to visualize flows.
Implement Flow lines/cells to optimize flows.
Implement the 5S practices on your workplace.
Implement Just-in-time, aka, JIT, a pull system scheduling strategy.

Inventory

Having more than the minimum stocks necessary for a precisely controlled pull system.

In other words:

Inventory represents a capital outlay that has not yet produced an income, either by the producer or for the consumer.

Inventory

Having more than the minimum stocks necessary for a precisely controlled pull system.

Examples:

Raw materials in excess.
Finished goods not yet delivered or sold.
All partially work done, aka, work-in-progress (WIP).

Inventory

Having more than the minimum stocks necessary for a precisely controlled pull system.

Common causes:

Long machine setups.
Long Internal lead times.
Long Supplier lead times.

Inventory

Having more than the minimum stocks necessary for a precisely controlled pull system.

Countermeasures:

Implement Flow lines/cells to optimize flows.
Implement a single-piece flow strategy (WIP=1).
Implement internal and external signboards (Kanban).
Implement SMED (Single-Minute Exchange of Die) on machines.

Motion

People making movements that are straining or unnecessary to add value, causing damage to products/people and associated transaction costs.

Motion

People making movements that are straining or unnecessary to add value, causing damage to products/people and associated transaction costs.

Examples:

Task switching.

Searching for parts, tools, documents.

Sorting through materials or work instructions.

Motion

People making movements that are straining or unnecessary to add value, causing damage to products/people and associated transaction costs.

Common causes:

Missing tools, items.
Unsafe working areas.
Poor workstation design.
Workplace disorganization.

Motion

People making movements that are straining or unnecessary to add value, causing damage to products/people and associated transaction costs.

Countermeasures:

Implement Standard Work.

Draw Spaghetti charts to visualize flows.

Implement the 5S practices on your workplace.

Extra-processing

Performing unnecessary or incorrect processing.

Extra-processing

Performing unnecessary or incorrect processing.

Examples:

Re-learning.
Awkward tools.
Extra validations.
Multiple cleaning of parts.
Poor process or product design.
Over-tight tolerances or quality standards.

Extra-processing

Performing unnecessary or incorrect processing.

Common causes:

Push systems.

Delays between processing.

Customer voice not understood.

Extra-processing

Performing unnecessary or incorrect processing.

Countermeasures:

Draw your Value Stream Maps.

Implement a single-piece flow strategy (WIP=1).

Redesign your processes with 3P (Production Preparation Process).