Lean Overview
Agile Ukraine Gathering keynote
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Innovel Lean & Agile Services

Innovel’s staff are experts at Lean and Agile consulting and training. Our approach starts from understanding where your organization is, and working to achieve outcomes for the business and the people in it.

Management Consulting
• Agile Maturity Assessment
• Organizational Agile Adoption
• IT Delivery Acceleration
• Agile Implementation Strategy
• Lean Process Redesign
• Project Turnaround

Training
• Certified Scrum Master (CSM)
• Product Owner - From Idea to Implementation
• Introduction to Lean & Agile
• Agile Management and Project Leadership
• Agile Team Discovery
• Advanced Agile Coaching – Making Experienced Teams Even Better
• Lean Concepts
• Taking Agile Beyond IT

Coaching
• Start-up a Scrum Project
• Agile Project Coach/Scrum Master
• Agile Skills Mentoring
• Agile Engineering Practices
• Software Development Process Improvement
• Agile Project Management using the PMBOK
Beginner’s Mind

- One of the most profound secrets of learning anything new is keeping what has been called a "Beginner's Mind".
- To begin, we should empty our thoughts of all the preconceived ideas, concepts, techniques and methods that prevent us from receiving the new. This seems like a simple thing to do, but can be quite difficult in practice.
- At first we think we are being open, but as we drink from the new knowledge we detect residual tastes of the "old". Sometimes this new mixture can be sweet, like adding honey to tea, but sometimes even a little residue can curdle the whole mix, like adding lemon juice to milk.
- Another important part of developing the beginners mind concerns getting rid of the "Been There, Done That" concept that seems so prevalent in today's society. It may be true that you have been there, and you may have done that, but perhaps your conception of reality was not the whole concept, "the big picture" if you will.

Summary

Lean

Lean is a way of thinking and a systematic approach to running enterprises and businesses. The goal of Lean is simple: minimize the time between customer request and fulfillment by continually improving the whole process and reducing non-value added work.

Agile

Agile is also a way of thinking and a systematic approach for the rapid delivery of complex products and services. Agile minimizes risk by incremental delivery, emphasizes real time collaboration, automation, mistake proof development practices, and uses business value as the primary measure of progress.

Scrum

Scrum is a style of Agile that provides a project management wrapper for incremental delivery of projects, independent of technology used. Scrum can be used with non-IT projects (i.e. Lean process improvement, marketing, compliance) as well.
### What companies are using Lean and Agile?

<table>
<thead>
<tr>
<th>Top Lean Companies</th>
<th>Large Agile Implementations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toyota and their suppliers</td>
<td>Adobe (S/W tools)</td>
</tr>
<tr>
<td>Cisco</td>
<td>AMD (CPUs, memory)</td>
</tr>
<tr>
<td>Hermann-Miller</td>
<td>British Telecom</td>
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<tr>
<td>Ventana Med Systems</td>
<td>Google</td>
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<tr>
<td>Deere Co.</td>
<td>Keybank (Financial Services)</td>
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<tr>
<td>Parker Hannifin</td>
<td>Patient Keeper (Records S/W)</td>
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<tr>
<td>Intel</td>
<td>BMC Software (ERP provider)</td>
</tr>
<tr>
<td>Nike</td>
<td>Nokia (Telco equipment)</td>
</tr>
<tr>
<td>Textron</td>
<td>State Farm (Insurance)</td>
</tr>
<tr>
<td>Boeing</td>
<td>Xerox</td>
</tr>
</tbody>
</table>

In 2007, the Superfactory 20 Average outperformed the S&P 500 by 22.66%.

### Lean Agile Scrum relationship

- Lean is the best known and most mature process improvement method
- Agile and Lean have many principles in common
- Agile is more prescriptive about human behavior because of its S/W origins
- Scrum is the most popular of the Agile methods
- **Scrum is easy to understand but can be hard to implement in part because of the transparency Scrum creates within the business**
History of Lean

- Lean is a generic term for the Toyota Production System (TPS)
- A response to conditions in post world war II Japan:
  - High cost scarce materials,
  - a small market that demanded variation in low cost product (small cars),
  - history of respecting workers who built complex looms, engineering culture.
- Toyota studied and combined ideas from North American grocery supply chains, Ford’s belt systems for moving work materials, and Toyota’s respectful engineering culture.
- The Toyota Production System has been refined over 60 years
- Understood as a total work system outside of Japan in the 90s
- The reason Toyota is the dominant automotive maker.

Lean and Agile methods provide a different way to look at business issues

- **Lean** Faster business processes
  - Relentless removal of waste from a process
  - Enhance and expedite flow of value to the customer

- **Agile** Faster capability delivery
  - Software development and project management approach
  - Based on Iterative Incremental Development, adaptive planning, collaboration, and co-location

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What do you know about speed?

Q: How long does it take to do the final assembly of a Boeing 737? (wings, tail, wheels & fuselage, engines, interior seats and wiring, cockpit controls)

1. 1-3 Weeks
2. 4-7 Weeks
3. 8-11 Weeks
4. 12-15 Weeks
5. 15+ Weeks

A: #1 -- 3 Days...throughput is 1 per day

What do you know about speed?

Q: How long did it take to build the Empire State Building?

1. < 1 Year
2. 1 – 2 Years
3. 3 – 4 Years
4. 4 – 5 Years
5. 5+ Years

A: #2--410 days...1 year, 65 days
Innovation speed can create competitive advantage

On average it takes The Gap nine months to get a new clothing line into its stores.

Q: How fast does it take Zara?

1. < 1 Month
2. 1 – 2 Months
3. 3 – 4 Months
4. 4 – 5 Months
5. 6 – 7 Months

A: 2 – 3 weeks (93% Faster!)

Lean Overview

1. Define ‘Value’
   Who is the customer, what is ‘value’ and how is value added?

2. Define the Value Stream
   What is the value stream, where is the waste, and how is it managed?

3. Make the Value Flow
   Ensure work in progress is managed and flow is continually optimized.

Continuous Improvement
   Utilize various lean tools, kaizen events, and management by walking around to continually improve the value stream.
Who is the customer?

A customer is a person paying for the product or service being delivered.

A stakeholder is anyone else.

Customer Defined Value – Looking With a Lean Lens

**Customer Value Add (CVA)**

Optimize

Adding form, fit, or function to a product or service. An activity the customer would be willing to pay for.

Examples: writing code, implementing new features

**Business Value Add (BVA)**

Reduce

An activity that is required to operate the business but the customer is unwilling to pay for.

Examples: compliance, budgeting, code documentation

**Non Value Add (NVA)**

Eliminate

An activity that is not required by the business nor is the customer willing to pay for.

Examples: waiting, requirements documentation

90-95% of tasks in a typical value stream are NVA.

World Class Lean operations achieve 50% NVA
Eight forms of waste

**Intelect**
Do we fully utilize the talents of our people? Can developers do other tasks?

**Over-production**
Do we code more features than are actually used?

**Transportation (data/materials)**
Do we re-key the same information into more than one system or database?

**Motion (people)**
If we co-located work teams, would we spend less time chasing each other down?

**Inventory**
How many different projects do we work on at the same time?

**Defects**
How much time/effort do we spend making changes or correcting errors?

**Over-processing**
How many approval steps / sign offs would our customers be willing to pay for?

**Waiting**
Is any value added to a project while it waits for resources?

Why focus on the NVA waste?

Time

- **NVA**
- **BVA**
- **CVA**

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Time Depends On Your Perspective

- **Customer’s Perspective**: The total lead time from when service or product is requested to when it is delivered.
- **Process Perspective**: The total cycle time from when work begins to when product or service is delivered.
- **Worker Perspective**: The total touch time when working on a task in the process.
- **Lean Perspective**: The total customer value added time when working on a value producing task in the process.

Process Cycle Efficiency (PCE) is the ratio of value add time to total cycle time. World class PCE is 50% for most processes.

A long-term goal for a process is 2x the theoretical minimum

- **Multiple of TMCT**: The total cycle time from when work begins to when product or service is delivered.
- **World Class**: The total customer value added time when working on a value producing task in the process.
- **Lean Process Improvement**: The total lead time from when service or product is requested to when it is delivered.

Today

Mature in Lean

World Class

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What is the process from customer request to fulfillment and value delivered?

A Value Stream describes your business process with a specific point of view - the customers.

A Value Chain is a collection of value streams that represent the entire process.

What would be the Value Stream for the going from request to working software in your current world?

You cannot manage a Lean Agile operation without understanding Value Stream maps, they are the keys for process improvement.

Value Stream maps make your organization’s waste clearly visible.

The value stream for Aluminum soft drink cans is over 300 days, but value added from mining to sales of a manufactured can is only 6 hours. The rest is transportation and shipping, inventory, etc.

Creating your own Value Stream Map

- How do we go from Customer request to request fulfilled today?
- Map the process from beginning to end for one feature
- What artifacts can we gather from our current process? Requirements docs, test plans, etc.
- Once we have the basic process, we can add data:
  - Who does that step in the process?
  - How long does it take?
  - Is the step in the process CVA, BVA, or NVA?
Making a process flow

Does a smooth highway guarantee a rapid trip?

More work in process drives a longer cycle time. **More work in process does not increase throughput or efficiency.**

Work in process (WIP), cycle time and production completion rate are all interrelated:

- \[ WIP = \text{Rate} \times \text{Cycle time} \]
- \[ \text{Cycle time} = \frac{WIP}{\text{Rate}} \]
Flow is a Key Concept in Lean

Standardized work that is sized appropriately

Only allow stories that are ready to work into the iteration

Single piece flow - work on one thing at a time until done.

Working on stories in priority order.

Flow of continuous value into the marketplace

Continuous integration, automated deployment scripts

Lean Tools and Practices

Kaizen Event (Dedicated resources focused on improvement)

Mistake Proofing (Prevention not detection)

Visual Management (Transparency and information sharing)

Work Balancing (Leveling work across multiple steps and skills)

Pull Systems - Kanbans and simple demand based flow (Customer demand prompts action)

Kanbans - simple tools to manage work (Visible record or sign)

Gemba - going to where the work is happening (Place of truth)

5 S (Sort, Set in Order, Shine, Standardize, Sustain)
**Principles of Lean product development**

- Eliminate waste
- Amplify learning
- Decide as late as possible
- Deliver as fast as possible
- Empower the team
- Build integrity in
- See the whole

*Lean Software Development, An Agile Toolkit, Mary and Tom Poppendieck*

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**The eight forms of Waste**

**Manufacturing**
- Transportation / handoffs
- Inventory / work-in-progress
- Motion
- Waiting time
- Over processing / excess quality
- Overproduction
- Defects
- Intellect

**Product Development**
- Task Switching
- Partially done work
- Motion
- Waiting Time
- Excess quality in product or process
- Extra Features
- Defects
- Intellect

*How about re-learning?*
The Lean and Agile Organization

- Lean Principles
- Agile Principles
- Scrum for Projects

- Lean process design: Kaizen, Value stream maps, Cycle time, etc.
- Agile engineering practices: Test Driven Development, Refactoring, Continuous integration