Increasing the Speed of Innovation

LEAN PRODUCT & PROCESS

DEVELOPMENT EXCHANGE

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Point in Little's Law

WHY INCREASE THE SPEED OF INNOVATION?

- Faster return on Investment
- Closer to the Customer
- Fundamental Control







WHY INCREASE THE SPEED OF INNOVATION?

• Faster return on Investment



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WHY INCREASE THE SPEED OF INNOVATION?

• Close to the Customer



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WHY INCREASE THE SPEED OF INNOVATION?





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Racing Adage: 'Slow is Smooth Smooth is Fast'

Improvement Principle: 'Reduce Variability Then go Fast'



There are three interrelated variables that govern the Product Development and Innovation Value Stream:

Throughput (TH) – The number of products created in a given time interval. This needs to be considered against the number and type of products the organization needs.

Work in Process (WIP) – The number and type of products (Value Streams) being worked on at any given time. The WIP is determined by the product plan and is the balancing element between the throughput and the cycle time.

Cycle Time (CT) – The time it takes to create or modify a value stream to introduce a new product or service.

INDEPENDENT VARIABLES Work In Process

DEPENDENT VARIABLE

Innovation Rate

Innovation Speed





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Let's look at development improvement through a real example



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(Actual Customer example)

The Problem

- Our customer was unpredictable in delivery of projects to their customers (High Variability)
- Lack of meeting customer delivery dates on new products was causing customers to switch to competitors
- Not only were they unpredictable, but they also took a very long time to develop products

The Approach

Institute lean practices

- Project binning to standardize work
- Visual Management to see issues and address issues in real time
- Visible & Reusable knowledge to reduce issues (rework & redesign)





(Actual Customer example)

The Results

- \$160 Million Annual revenue increase
- 42% reduction in average project Time-to-Market
- 39% Increase in Projects delivered.
- 65% reduction in std dev.
 - Variation reduction leads to predictable delivery
- # of projects (WIP) was held constant

 duration reduction is relational to
 throughput increase
- **3% reduction in workforce** due to Industry Conditions





How this is accomplished







How we help companies improve

Little's Law: WIP=Th * Ct Th=WIP/Ct	Connection to the Business	Manufacture Customers	Cadence, Pull, Bins, & Flow	Set-Based Development	Reusable Knowledge	Visual Management
	MATCH THROUGHPUT Product Product ent Throughout SALES DECAY Time	Manufacture customers	Rutfilo calence & flow		Reusable knowledge	Visual management
Work In Process						
WIP is a function of: How we load the system						
Cycle Time <i>Ct is a function of:</i>						
Variability						
Utilization						
Individual process time						
Rework						

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How we help companies improve

Portfolio Cadence, Pull, & Flow



Optimizing the portfolio and the Development System

Standardize the Work; Scope, Schedule, & Resources

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How we help companies improve

The key objective for the principle "Cadence, Pull, & Flow" is to organize (standardize) the work and establish a cadence for the work drivers, and align work/pull events (Bins)

Actions:

- 1. Obtain PD project overview, and results Data:
 - a. Quantity, types, duration 3 to 5 yrs.
 - b. Eng. hours, main disciplines by project
 - c. Share current PM process, challenges
 - d. Identify key work drivers (eg. safety ..)
- 2. Compile the data in form of charts for:
 - a. PD Projects overview (types, size etc.)
 - b. Key work driver overview (regulatory etc.
 - c. Draft bin structure, learning cycles
- 3. Analyze internally, then align w/ client
 - a. Are the work drivers accurate / understood
 - b. Draft bin structure & learning cycles
 - c. Engineering hours / bin loads



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How we help companies improve

VISUALIZING PROJECTS TO FIND BINS

Plotting current / past projects in terms of duration, hours, and cost helps to visualize projects to start seeing possible trends and groupings.



Projects 2017 - 2019

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How we help companies improve

Cadence, Pull, and Flow builds connections from the data compiled from '*Link to Business*' to align throughput to needs of business.

- This concept is sometimes difficult for companies who are not used to saying "no" to a project.
 - By having better regulation on pulling projects through firewall and using set bins to create a cadence, we free up capacity, reduce time-to-market, and increase throughput
 - It's not saying no to a project, it is fitting it in when you have capacity available.
- Bins are a way to align marketing needs to development capacity through projects. This does not mean that all projects will be completely interchangeable if project type or scope changes.
 - By adding complexity to bin definitions to include resources
 - If a project doesn't fit a specific bin, we 'right-size' to help projects fit into one better.
- We want to understand the peaks and valleys of utilization and address that variation. What's our running rate (capacity) and how much flexibility do we want to add into that?
- Our development capacity needs to be understood to be able to pull projects effectively.



How we help companies improve



- Past, Current, and Future Project Data on a Project Level (hours, cost, revenue, duration, etc.) from Link to Business
- Data on department hours and utilization over past three years, to gage workload over time

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- Create Bins and Cadence from Past Projects using Concept -> Draft -> Final methodology through working group workshops
- Pressure test Current and Future Projects and run pilot to determine a Final Bin & Cadence Structure
- Discuss portfolio requirements based on business needs and engineering capability to determine pull criteria



- Create a Working Bin and Cadence Structure
- Develop pull criteria and integration events
- Use principle to align future project intake using project portfolio and project selection criteria
- Set the Development Cadence for the organization



How we help companies improve

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Visual Management



One of the greatest challenges in a development organization involves the dynamics of the ever-changing work environment

See the Work & See the Issues

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How we help companies improve

4 Habits of Highly Effective Organizations

- Design & Operate systems that show abnormalities.
- Quickly solve problems & Improve the System.
- Create learning & share learning.
- Leadership responsible for system & development of people.





VISUAL MANAGEMENT



Leadership Board



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Obeya room



Engine Asset Global Board



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Engine Asset Global Board





How Does the System Work between the Boards?



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THANK YOU:

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