Lean Transformation Summit 2015
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Why Delivering Products Customers Actually Want Requires **Great Process Creation**

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Agenda

- What is *LPPD?*
- Why is this Important?
- Case Study Introduction
- Barriers to Great Process Creation (Exercise)
- What's the Process to Get Better?
- Case Study Observations & Results
- Reflection

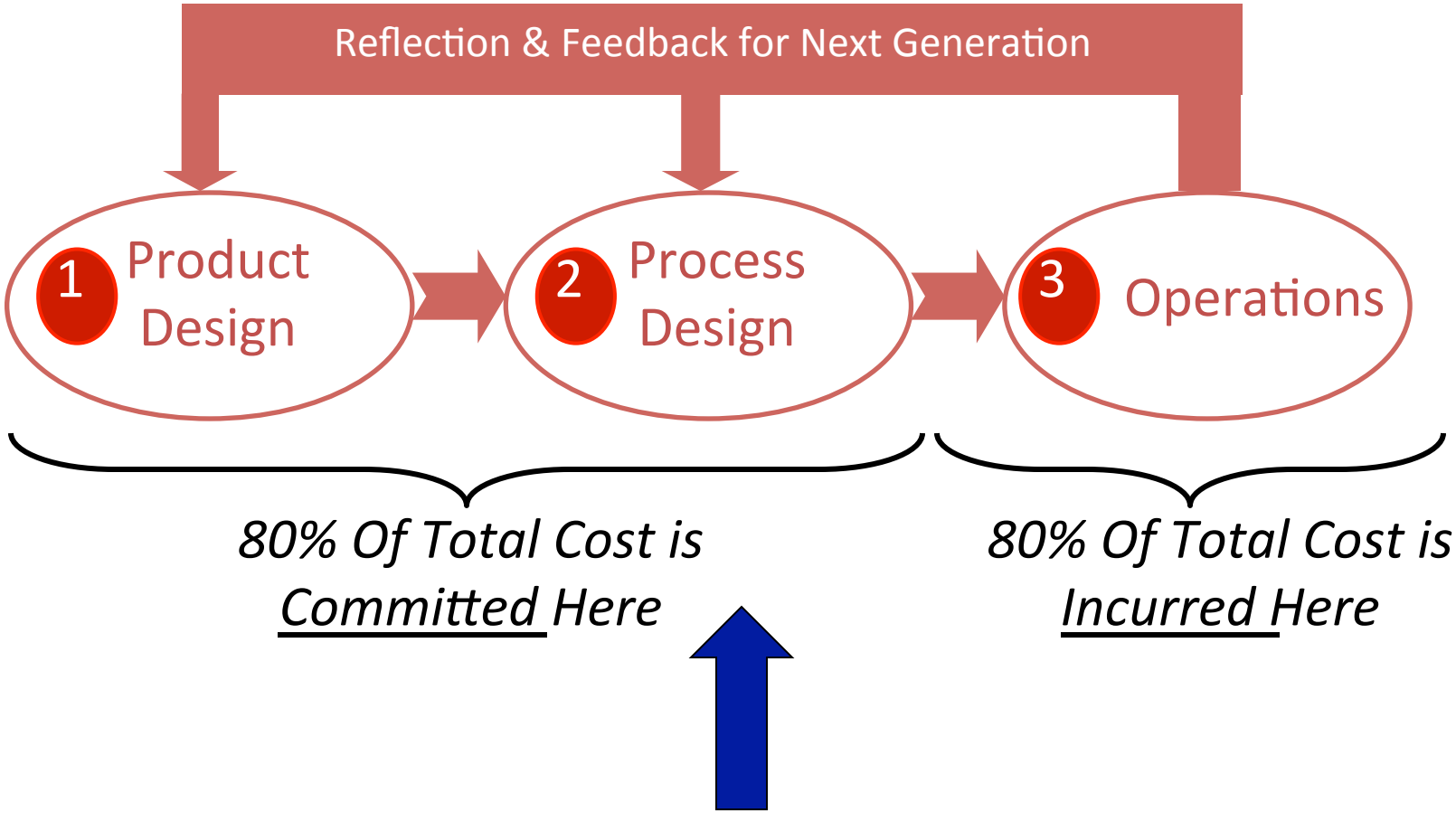
Kaizen…..*or Engineering Rework?*

Process Example	*vs.*	*Alternative Process*
• Hospital Patient Discharge having *250 hand-offs*	→	*…63 hand-offs*
• Hospital Blood Sample Testing taking *309 steps and >24 hours*	→	*…57 steps and <3 hours*
• Auto Electronics Assembly Line with $2.8 million capital and 17 people	→	*…$0.4 million capital and 13 people*
• Industrial Machining Value Stream with *74 days system lead time*	→	*…21 days system lead time*

How do you feed the lessons learned up front?

What is *LPPD*?

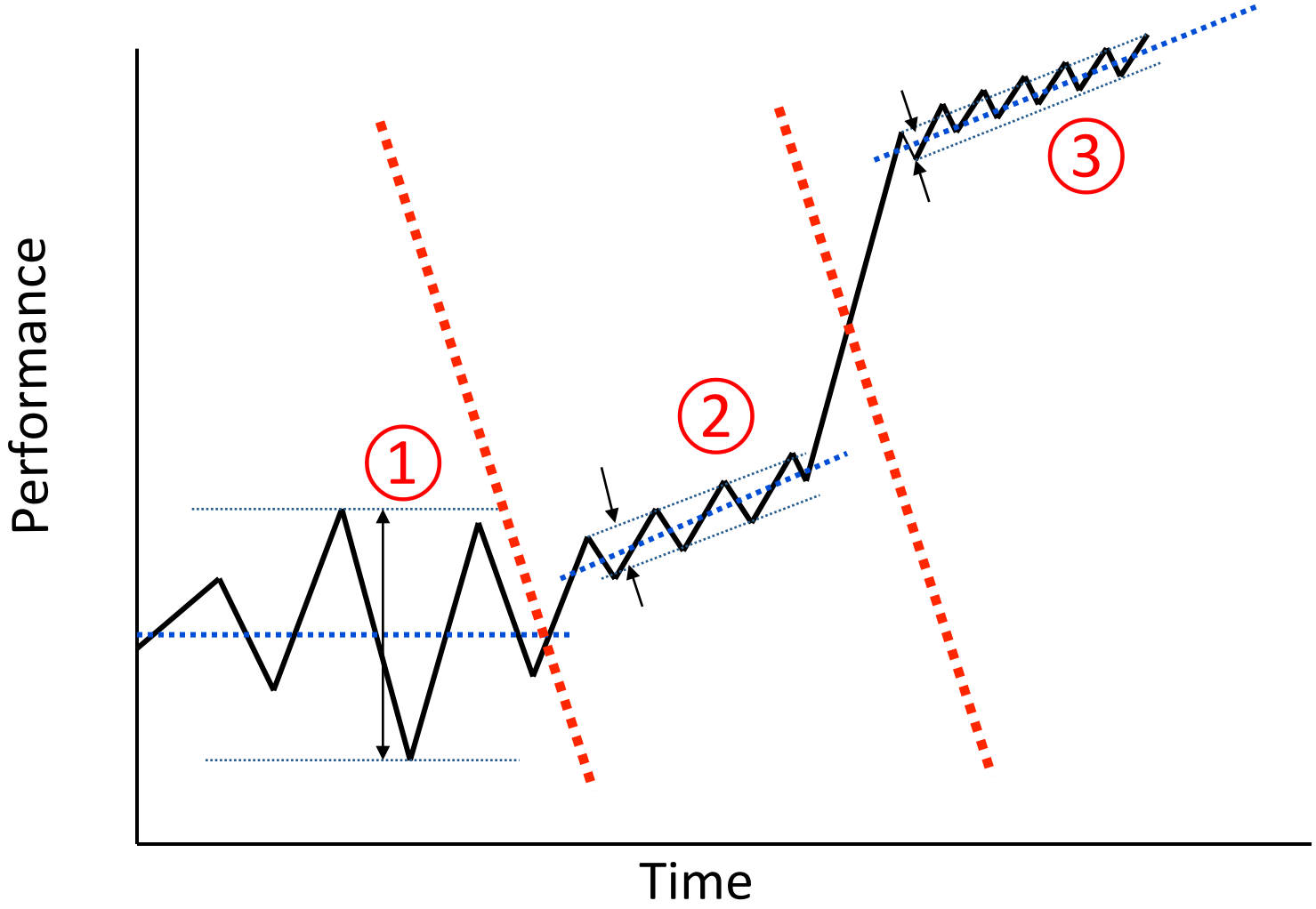
LPPD *should* consider this entire cycle



Today's focus

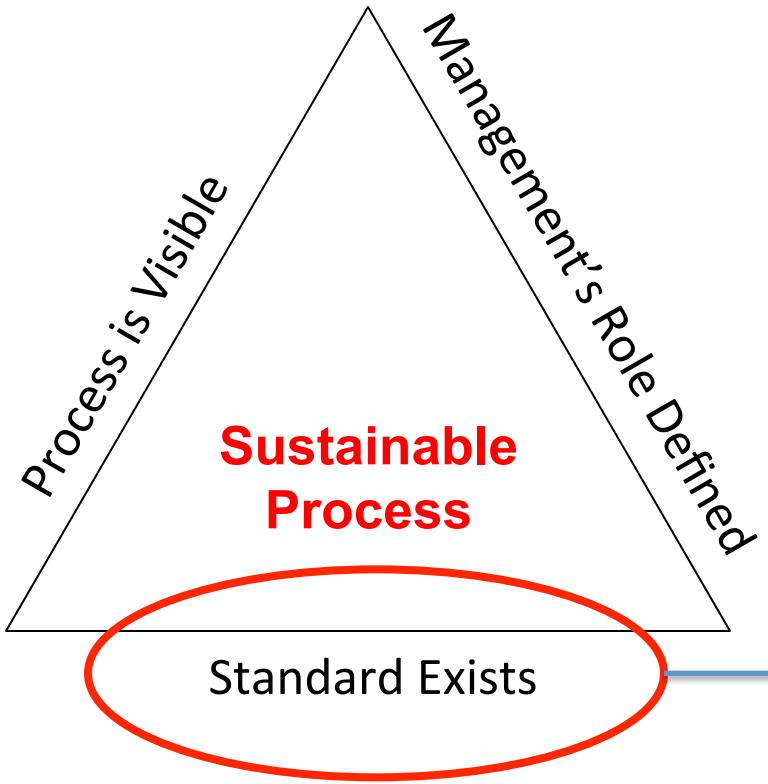
Why is this Important?

Where do you want to Launch? ①? ②? ③?



Is moving from ① to ③ after launch really kaizen?

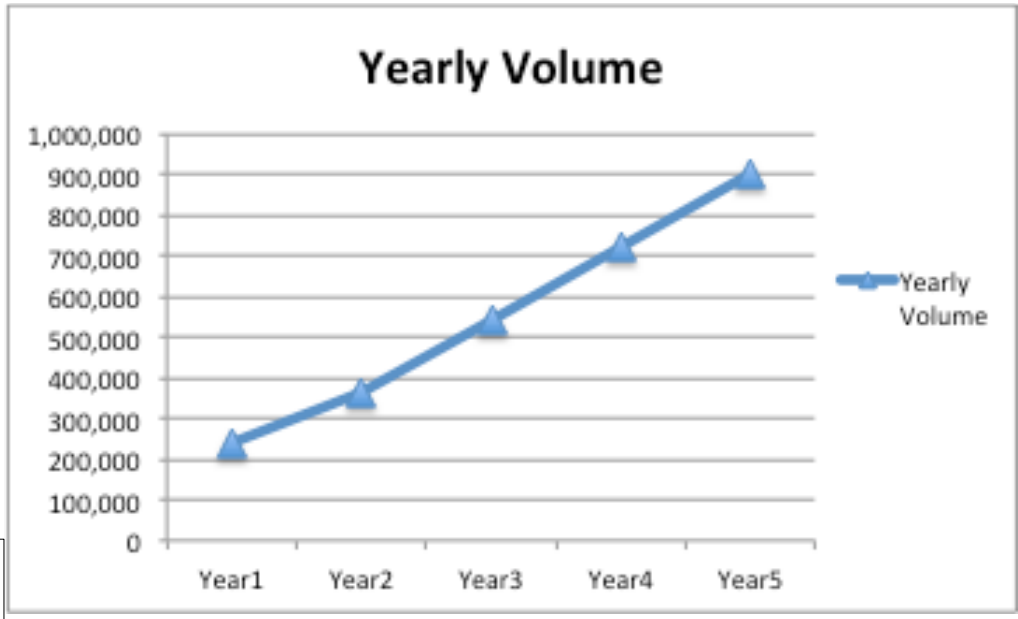
What can we accomplish in 90 minutes?

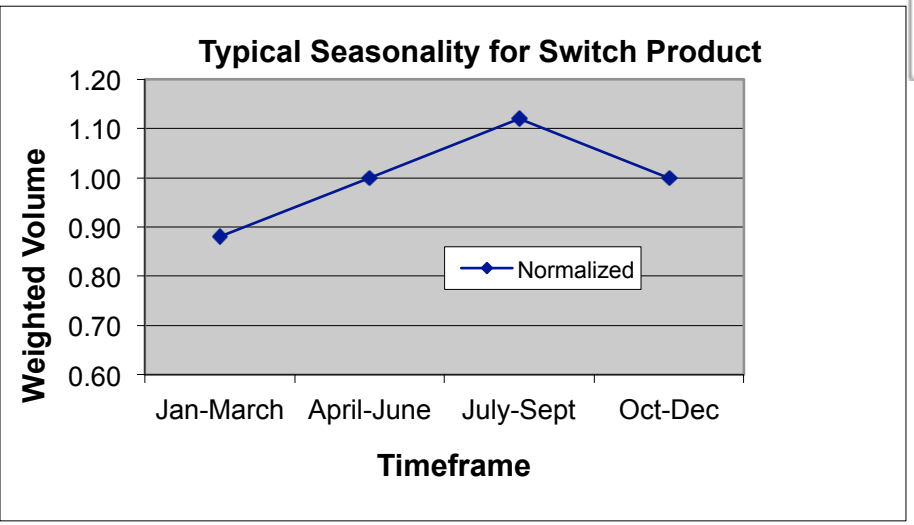


A Countermeasure to the barriers of creating great processes

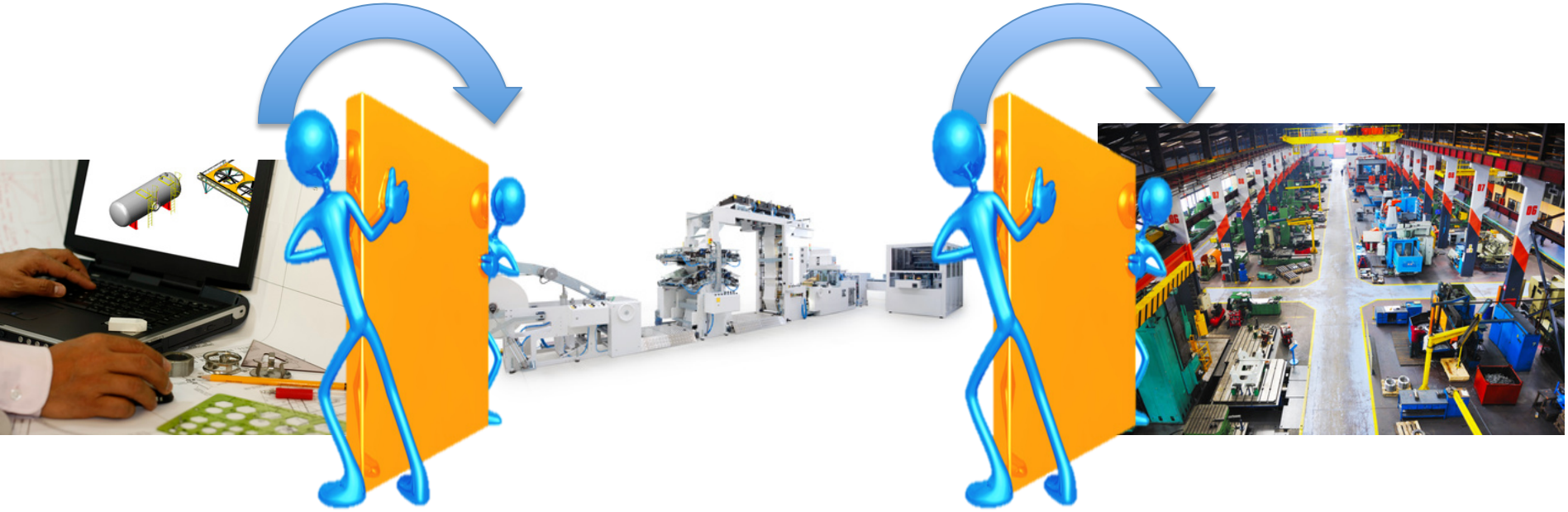
Case Study Introduction: Acme Devices

The High Voltage Switch (HVS) at ACME





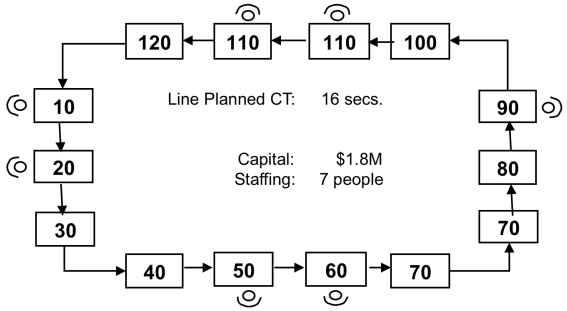
Process “Design” As Usual

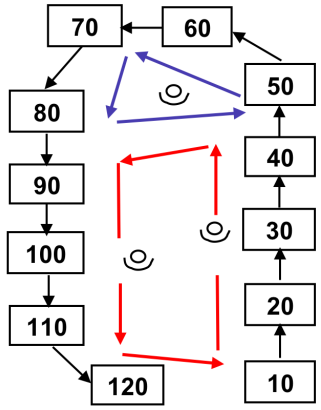


Product Design **Process Selection** **Operations**

Who is thinking about designing a profitable value stream?

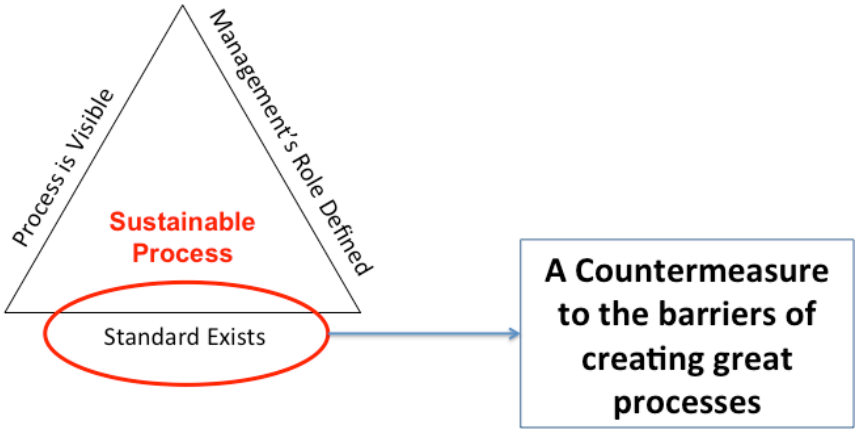
Difference of Opinions





Metric	Product Team's Proposal	Operational Team's Counterproposal
Cost per unit	$2.26	$1.88
Labor Efficiency	51%	86%
Capital Spend	$3.6 Million	$2.5 Million

Barriers to Great Process Creation



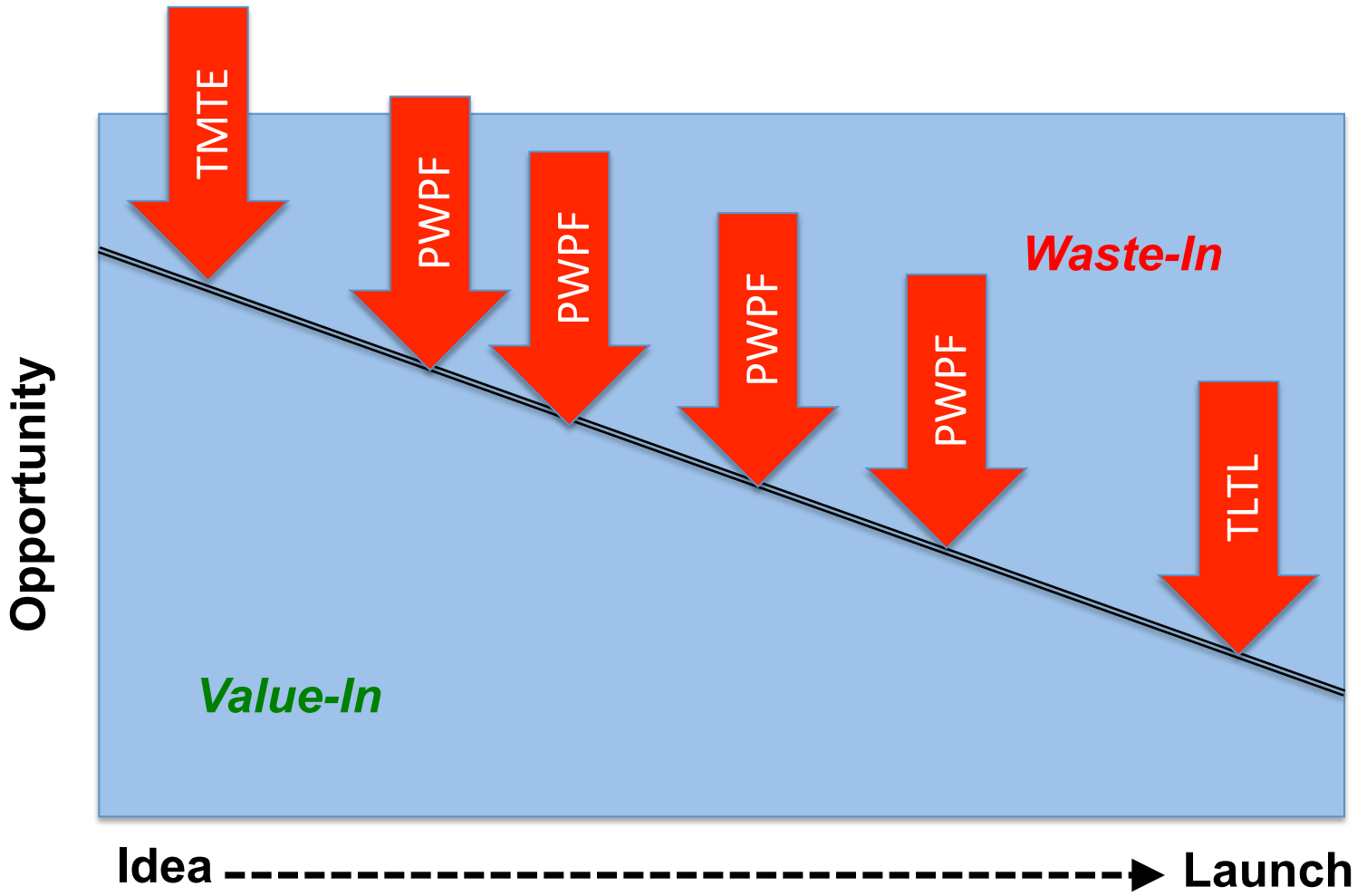
Barriers

- TOO MUCH, TOO EARLY (TMTE)
  - Critical decisions are made too far in advance
  - Knowledge incomplete
  - Prematurely locks-in the process design
- PENNY-WISE, POUND-FOOLISH (PWPF)
  - Short-sighted decisions are made for local optimization throughout the design cycle
  - Results in overall performance reduction
- TOO LITTLE, TOO LATE (TLTL)
  - Insufficient upfront design activity before launch
  - Creates a flurry of rework after launch

Barriers: Examples

- TOO MUCH, TOO EARLY (TMTE)
  - In an effort to eliminate conveyors, an organization purchased 2500 carts and configured the next generation operation accordingly
  - It was discovered that the $2.5 million of carts were too large, driving large batch flow and extra operator motions
- PENNY-WISE, POUND-FOOLISH (PWPF)
  - Machine designers combined two operations into one station to minimize space, handling and number of employees
  - This resulted in a bottleneck station and underutilized resources throughout the value stream
- TOO LITTLE, TOO LATE (TLTL)
  - During the final phases of construction, a hospital decided to commonize room configuration to support standard work and patient experience
  - It was determined to be cost prohibitive due to changes to the building's physical structure

Barriers, Timing and (Lost) Opportunity



Example for Exercise

Process:
Building a New House

Barriers	What was Observed?	What was the Impact?
Too Much, Too Early	Owner early-on decides on geothermal heating & cooling system	Final house plan square footage requires 50% larger lot to enable the geothermal system or supplemental heating / cooling system
Penny-Wise, Pound-Foolish	Owner selects lower quality window to save on construction costs (and to put toward a bigger lot!)	Owner experiences significantly higher on-going utility costs (and an increased load on the geothermal system!)
Too Little, Too Late	Main electrical panel is placed into unfinished lower level space. Owner decides to partially finish lower level and include another bedroom.	Main electrical panel is in middle of bedroom space

Exercise Handout

Process:

Barriers	What was observed?	What was the impact?
Too Much, Too Early *(Upfront Operational Decisions)*		
Penny-Wise, Pound-Foolish *(Decisions throughout Lifecycle)*		
Too Little, Too Late *(Late-Stage Operational Actions)*		

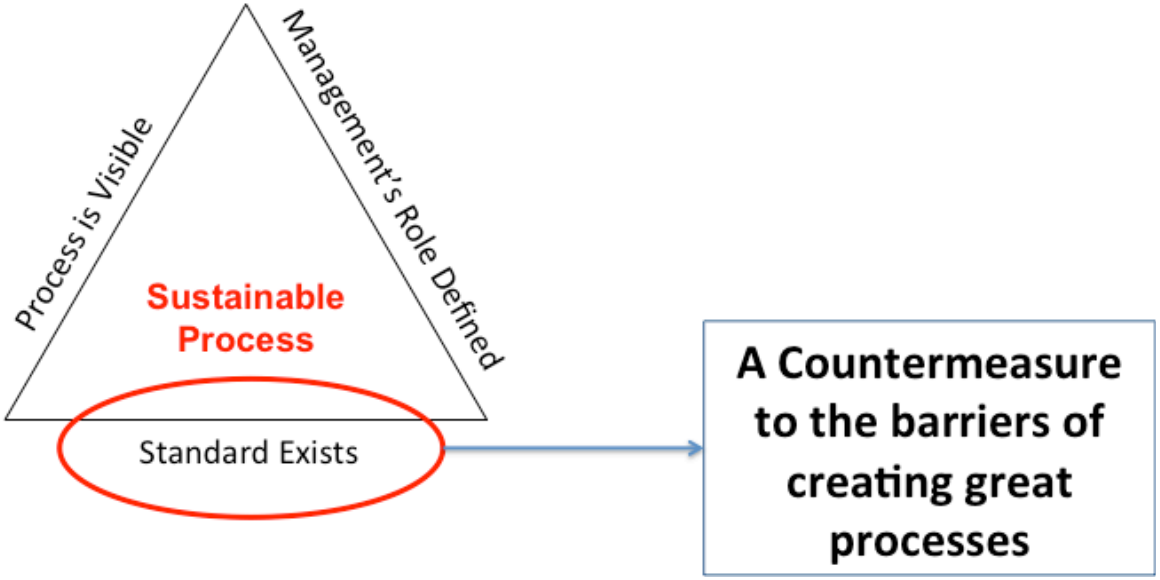
Exercise Instructions

- Think of a new process launched in your organization

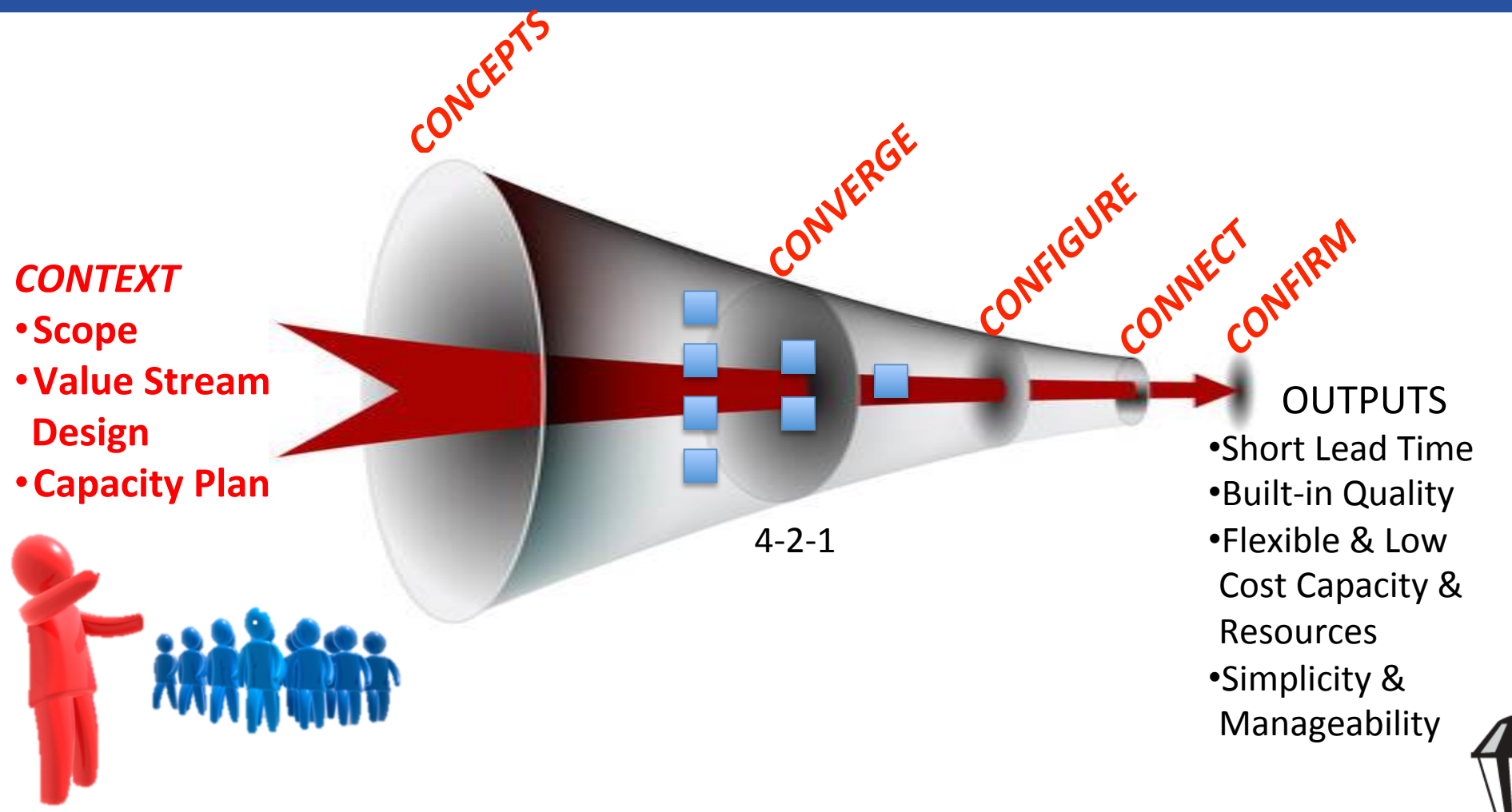
- Fill out the handout based on your understanding / experience with your new process
  - 10 minutes
- As a table, briefly share one barrier example per person
  - 1 minute takt time per person
- Focusing on the potential causes, discuss as a table how you would countermeasure these barriers in the future
  - 5 minutes

- We will wrap up the exercise with a group debrief

What's the Process to Get Better?



Lean Process Creation within Development



The Power of Purpose

The Future of Lean

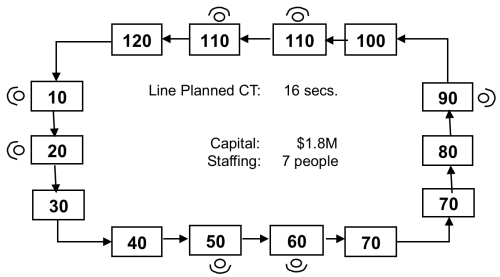
Case Study
Observations & Results

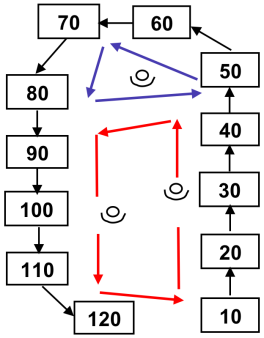
Observations from Acme Devices

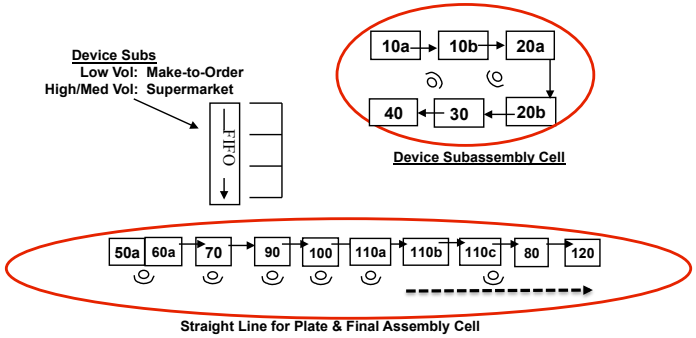
Process:
Acme Devices High Voltage Switch

Barriers	What was Observed?	What was the Impact?
Too Much, Too Early	HVS Project Team designs a semi-automated conveyor line to meet their goal of minimizing direct labor	10 Year Lifecycle Cost Difference = ***$5.6 Million*** between Concept 1 & 8
Penny-Wise, Pound-Foolish	HVS Project Team decides to combine Overweld and Leak Test to save space on their conveyor concept	Bottleneck of 28 sec vs 15 sec would have required investing in a second line
Too Little, Too Late	HVS Project Team hands-off the process design to the Chicago plant without any input from the Operational Team	Concept 1 is 20% more costly than Concept 2, and 138% more costly than Concept 8

Results



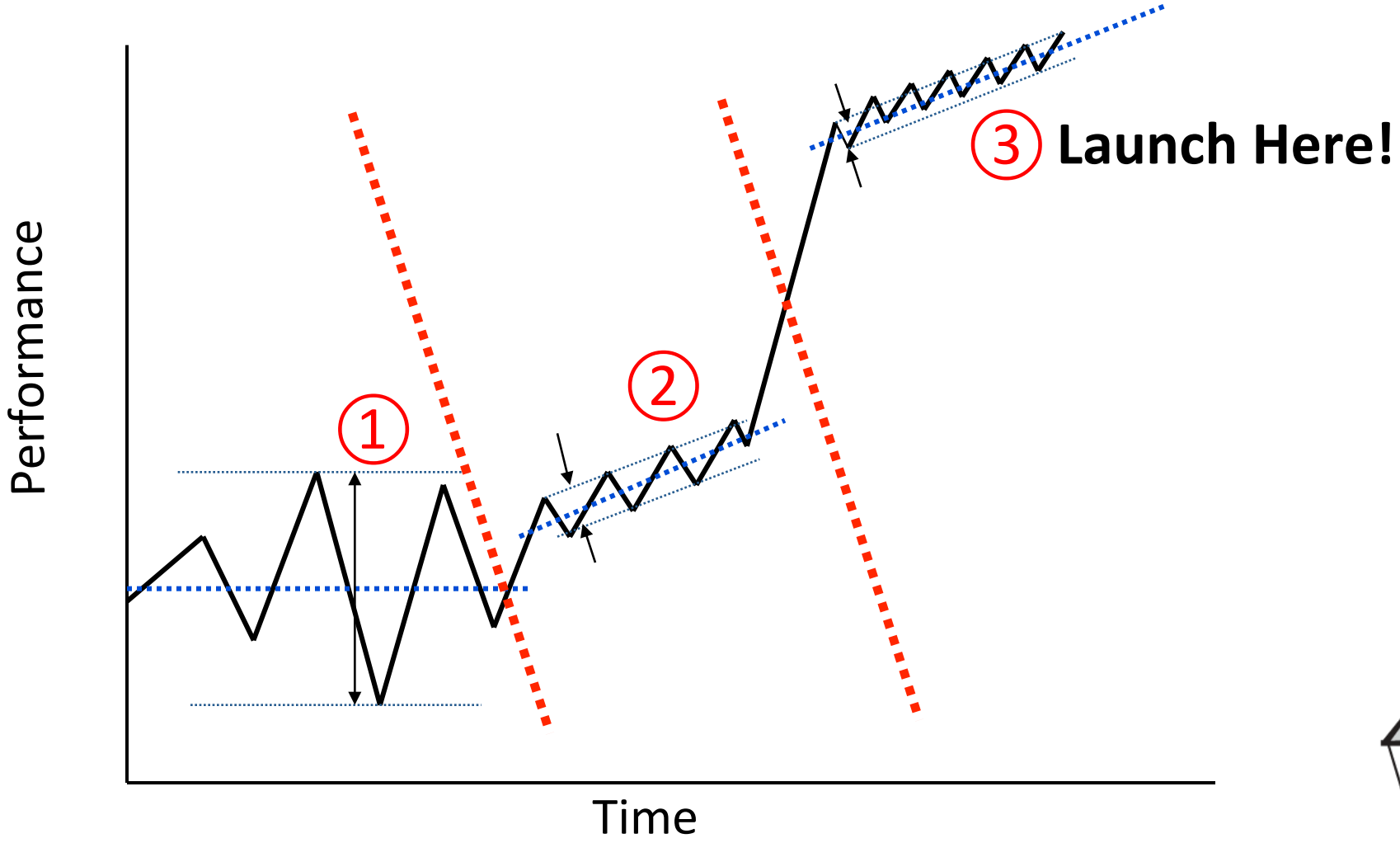




Metric	Product Team's Proposal (Concept 1)	Operational Team's Counterproposal (Concept 2)	Lean Process Creation Team's Final Proposal (Concept 8)
Cost per unit	$2.26	$1.88	$0.95
Labor Efficiency	51%	86%	84%
Capital Spend	$3.6 Million	$2.5 Million	$0.5 Million
Total Lifecycle Cost	$9.8 Million	$8.1 Million	$4.1 Million

Reflection

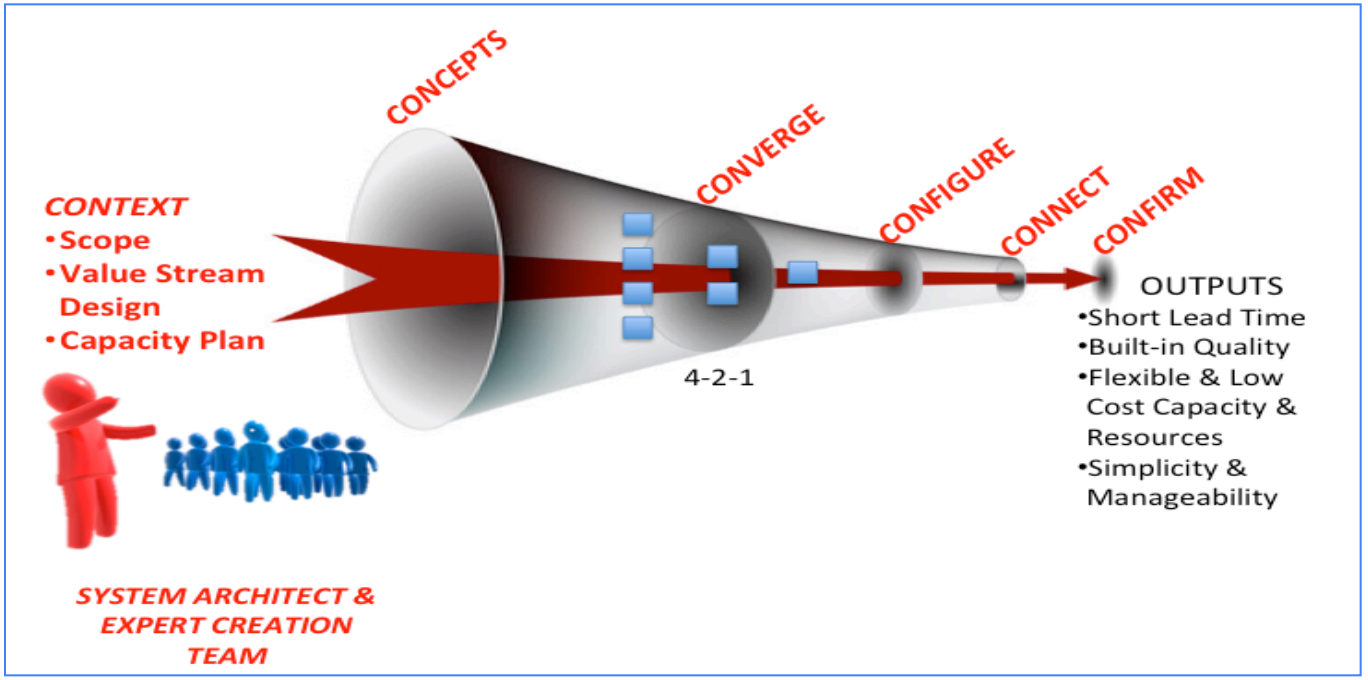
Where do you want to Launch? ①? ②? ③?



“Monday Morning”

- Pick a new product / process
- Nominate a system architect
  - Take responsibility
- Identify your responsible experts
  - Be prepared to collaborate
- Take a value stream view
- Consider these phases
  - 6Cs
  - 4:2:1
- Focus on the work
  - It SHOULD define the process

Q&A


CONCEPTS
CONVERGE
CONFIGURE
CONNECT
CONFIRM
CONTEXT
•Scope
•Value Stream Design
•Capacity Plan
4-2-1
OUTPUTS
•Short Lead Time
•Built-in Quality
•Flexible & Low Cost Capacity & Resources
•Simplicity & Manageability
SYSTEM ARCHITECT & EXPERT CREATION TEAM