# Creating Pull in Knowledge work

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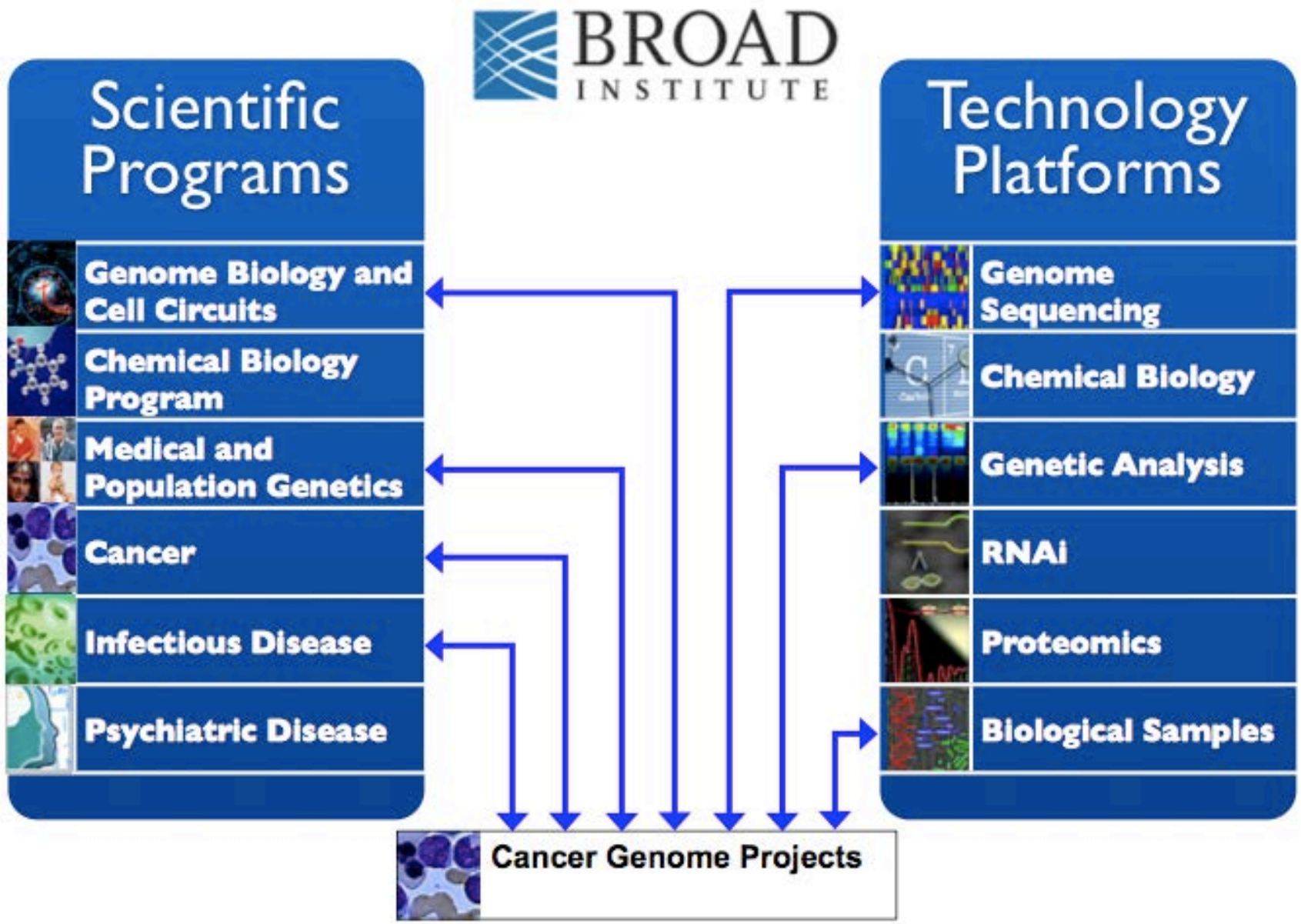
# Do you have too much to do?

- The costs of overload are well documented.

- Overloaded organizations :
  - **are less innovative**
  - **develop fewer products**
  - **have higher turnover**
  - **are more prone to accidents and warranty problems**

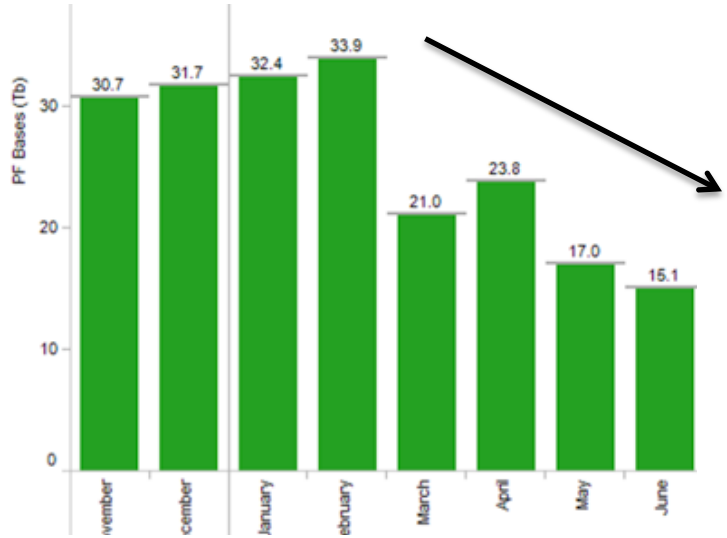
- Overload is expensive, but it is ubiquitous…

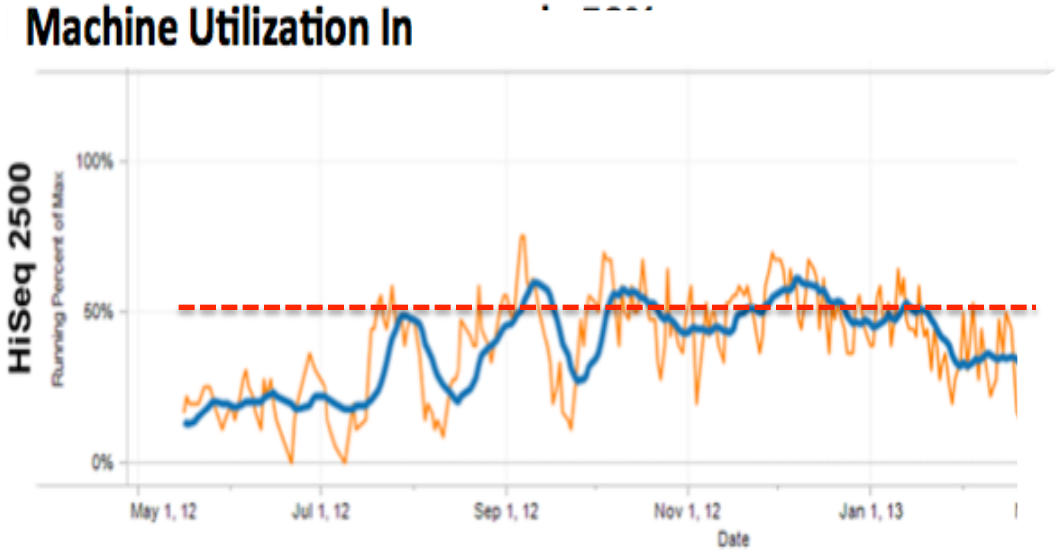

BROAD INSTITUTE
Scientific Programs
Genome Biology and Cell Circuits
Chemical Biology Program
Medical and Population Genetics
Cancer
Infectious Disease
Psychiatric Disease
Technology Platforms
Genome Sequencing
Chemical Biology
Genetic Analysis
RNAi
Proteomics
Biological Samples
Cancer Genome Projects

## Turnaround Time

120+ days

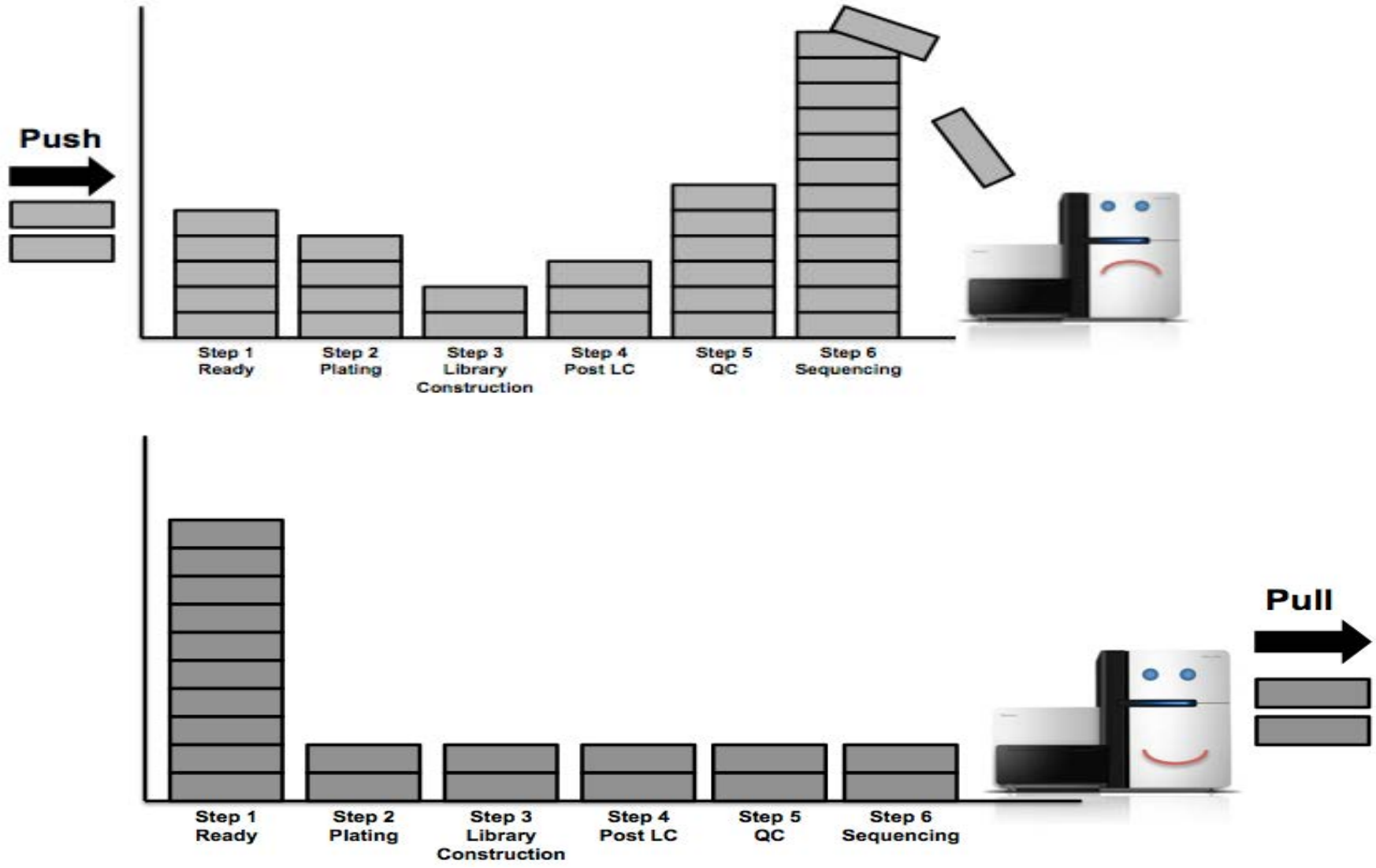
## Declining Demand



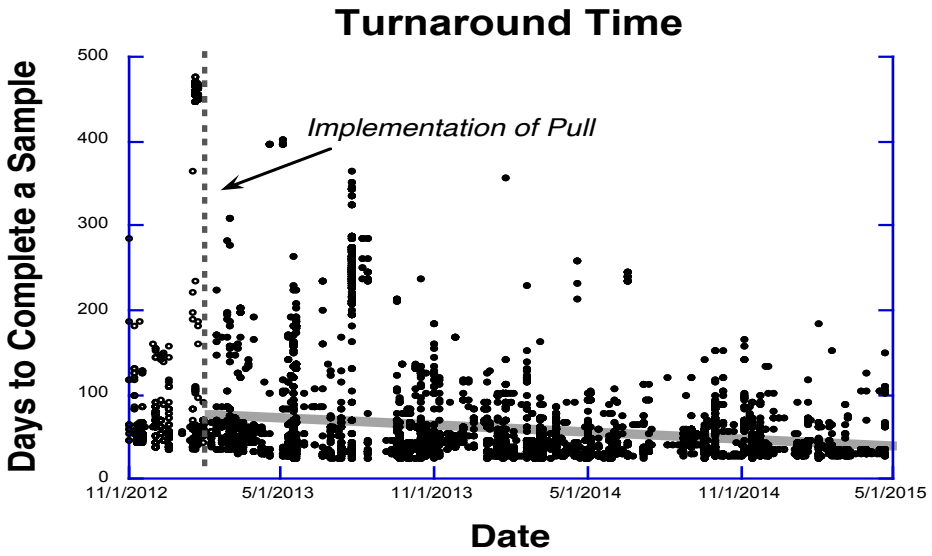



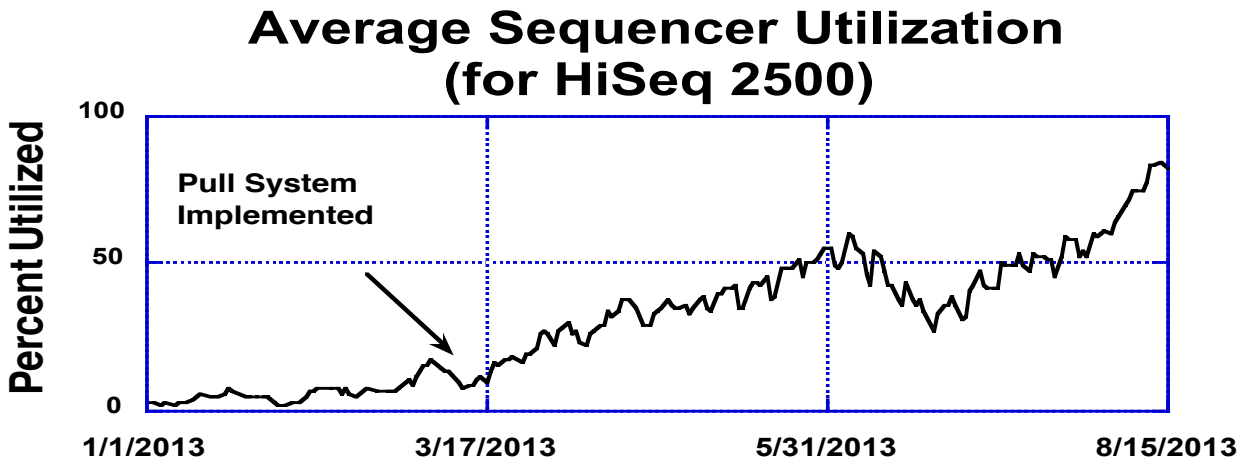

50%

# Push vs. Pull


Push
Step 1
Ready
Step 2
Plating
Step 3
Library
Construction
Step 4
Post LC
Step 5
QC
Step 6
Sequencing
Step 1
Ready
Step 2
Plating
Step 3
Library
Construction
Step 4
Post LC
Step 5
QC
Step 6
Sequencing
Pull

BEFORE



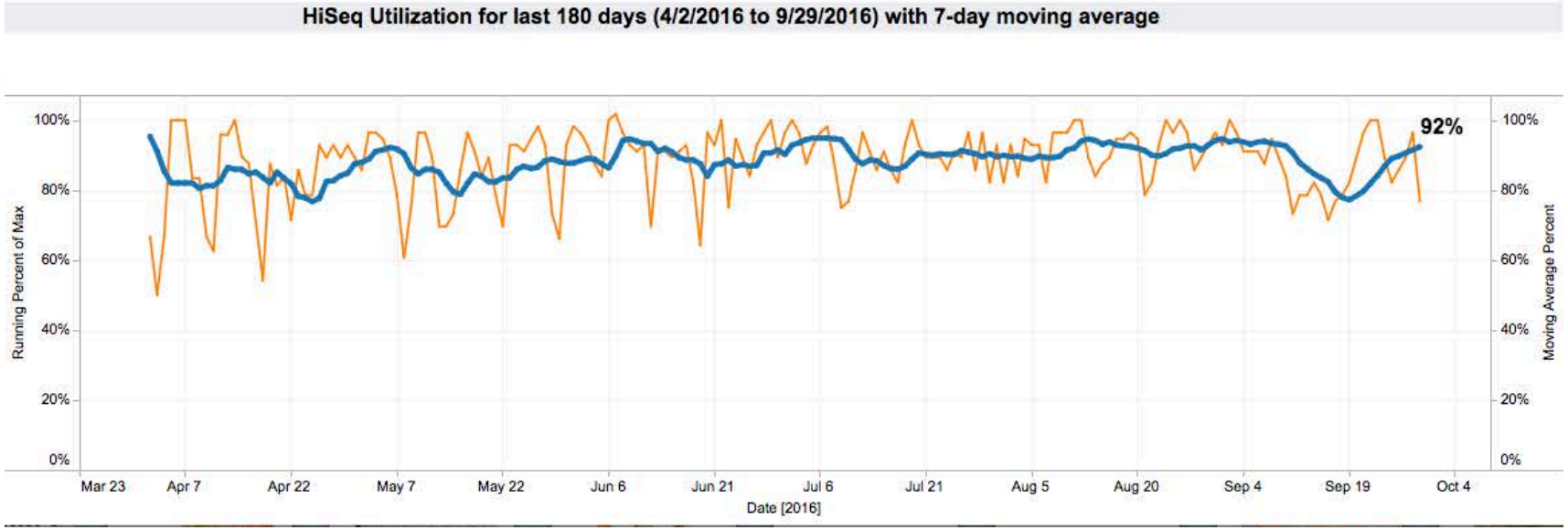



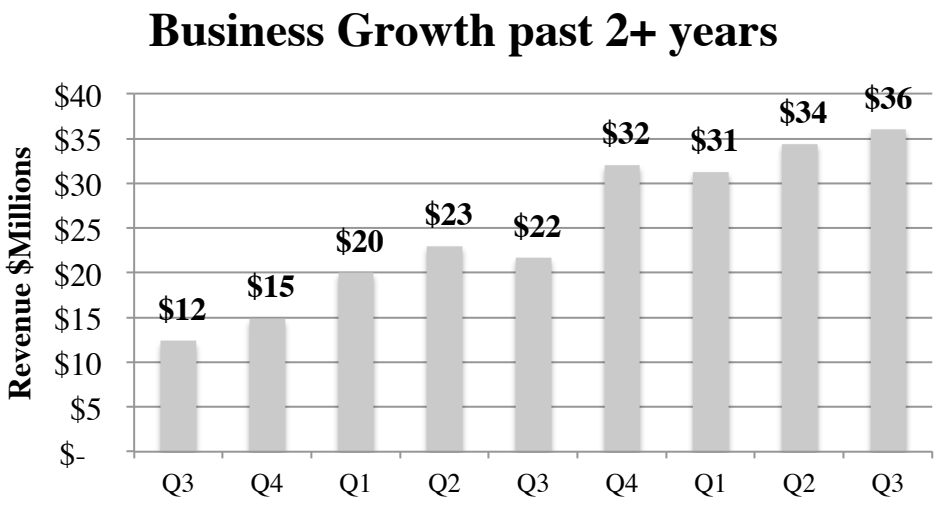

**Mean turn around time has fallen by more than 50%**

**And the variance is *much* lower**

**Utilization now over 90%**

# Business Results Follow Good Work Design

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# So how do you “pull” knowledge work?

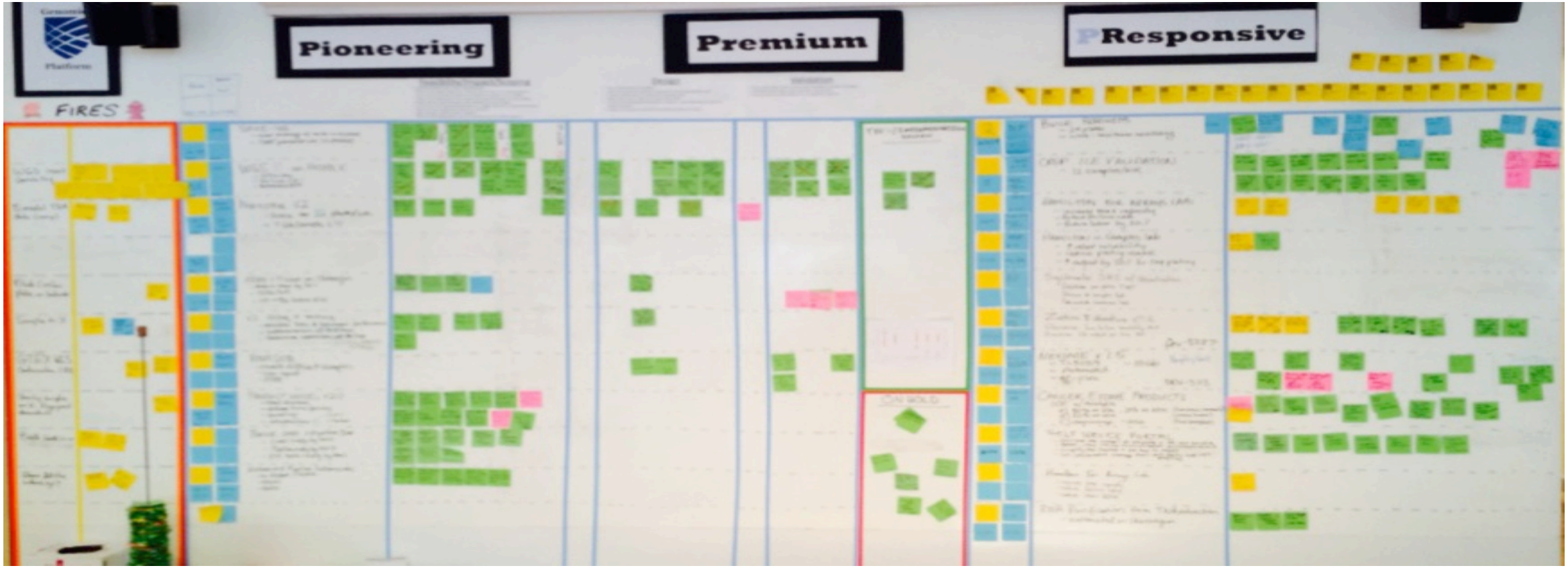
# “Mental Scaffolding” and Visualization

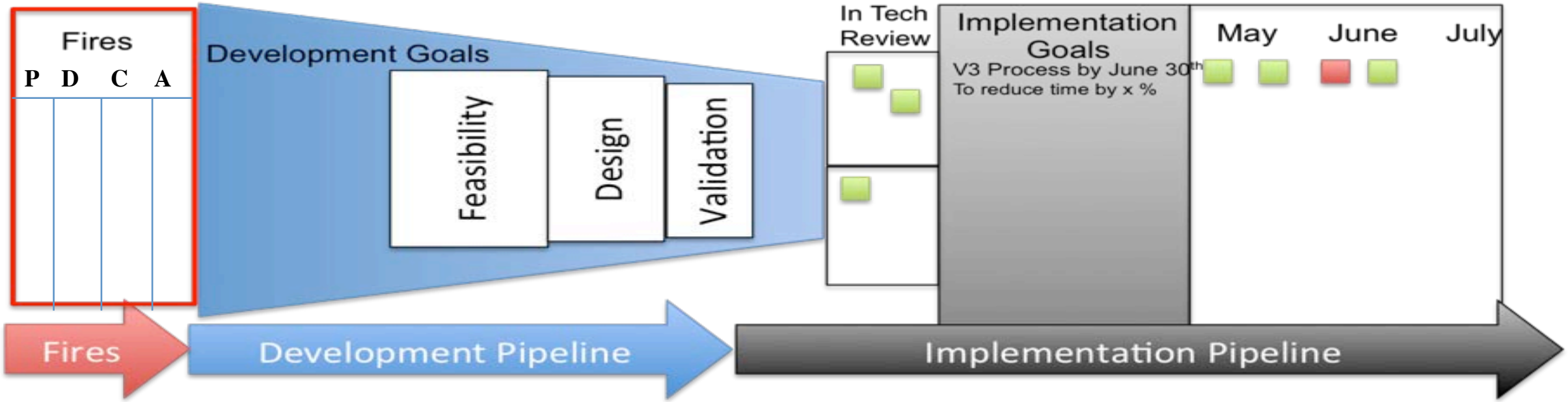
- Recent work in psychology suggests that our understanding of abstract concepts is built on the “scaffolding” provided by physical experience (see Ackerman, Huang and Bargh)
  - **Interviewers holding a cup of coffee rate job candidates as “warmer”**
  - **Interviewers holding a heavier clipboard rate candidates as being more “serious”**
  - **Touching hard objects led subjects to be more rigid in negotiation exercises**

- Factories are easy (relatively speaking), because you can see the work
  - **When the line stops, it’s obvious to everyone**

# Visual Management is “Pull” for knowledge work

Visual Activity Management System






The board:

-- **connects activity to intent by representing each activity as a post-it**

-- **gives clear signals when activities are not progressing**

-- **enforces structured problem solving**

-- **facilitates optimal challenge by allowing the amount of work in the system to be clearly visualized and controlled**

PLANNING
EXECUTION
THEMES
DATA DELIVERY
COST REDUCTION
AND
OPERATIONAL IMPROVEMENTS
NEW PRODUCT
NEW SAMPLE TYPE
NEW TECHNOLOGY
QUALITY & COMPLIANCE ACTIVITIES
DESIGN
IMPLEMENT
VERIFY
FIRES
STOP

**Have executed over *3,000* activities in the sequencing platform in 4 years**

**Becoming the "NUMMI" of sequencing**
**-- ten tours per week!**

**More importantly, enabling more rapid and cost-effective science on a variety of important fronts**

**Zika**

**customized work design for clinical trials for drug development (example: blood cancers)**

**diagnosing rare diseases in children**

**large scale population studies (>50,000 samples) to study the underlying mechanisms of disease in Type 2 Diabetes, Autism, Schizophrenia, Cancer**

Inputs
Agreed & Ready
High
Medium
Express
Initiate Sourcing Approach
Scope
Approach Supply Market
RFX
Negotiation
Implement Supply Contractual Arrangements
Contract Approval
Executed Contract

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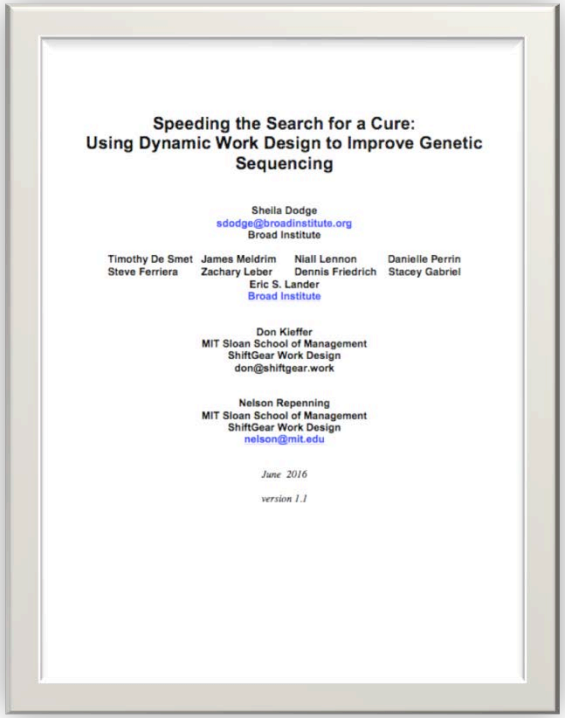

Speeding the Search for a Cure:
Using Dynamic Work Design to Improve Genetic Sequencing


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HOW TO MAKE YOUR COMPANY SMARTER: PROBLEM FORMULATION

# The Most Underrated Skill in Management

There are few management skills more powerful than the discipline of clearly articulating the problem you seek to solve before jumping into action.

BY NELSON P. REPENNING, DON KIEFFER, AND TODD ASTOR

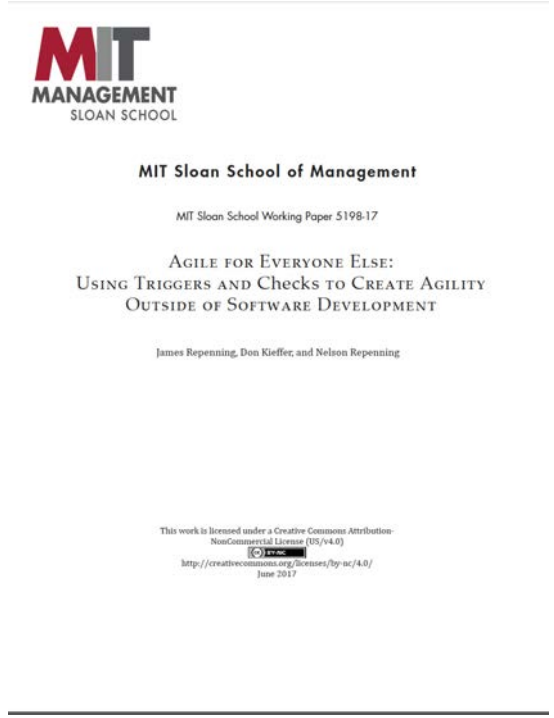
THE LEADING QUESTION
How can executives lead organizational change more effectively?

FINDINGS
- Articulate a clear statement of the problem you are trying to solve before initiating changes.
- Break big problems into a series of smaller ones that can each be tackled quickly.
- Follow a structured approach to problem-solving using the A3 form originally developed by Toyota Motor Corp.

IT'S HARD TO pick up a current business publication without reading about the imperative to change. The world, this line of argument suggests, is evolving at an ever-faster rate, and organizations that do not adapt will be left behind. Left silent in these arguments is which organizations will drive that change and how they will do it. Academic research suggests that the ability to incorporate new ideas and technologies into existing ways of doing things plays a big role in separating leaders from the rest of the pack,[1] and studies clearly show that it is easier to manage a sequence of bite-sized changes than one huge reorganization or change initiative.[2] But, while many organizations strive for continuous change and learning, few actually achieve those goals on a regular basis.[3] Two of the authors have studied and tried to make change for more than two decades, but it was a frustrating meeting that opened our eyes to one of the keys to leading the pack rather than constantly trying to catch up.

In the late 1990s, one of the authors, Don Kieffer, was ready to launch a big change initiative: implementing the Toyota production system in one of Harley-Davidson Inc.'s engine plants. He hired a seasoned consultant, Hajime Oba, to help. On the appointed day, Mr. Oba arrived, took a tour of the plant, and then returned to Don's office, where Don started asking questions: When do we start? What kind of results should I expect? How much is it going to cost me? But, Mr. Oba wouldn't answer those questions. Instead he responded repeatedly with one of his own: "Mr. Kieffer, what problem are you trying to solve?" Don was perplexed. He was ready to spend money and he had one of the world's experts on the Toyota production system in his office, but the expert (Mr. Oba) wouldn't tell Don how to get started.





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MIT Sloan School Working Paper 5198-17

AGILE FOR EVERYONE ELSE:
USING TRIGGERS AND CHECKS TO CREATE AGILITY OUTSIDE OF SOFTWARE DEVELOPMENT

James Repenning, Don Kieffer, and Nelson Repenning

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Making the Numbers? "Short Termism" and the Puzzle of Only Occasional Disaster

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Recent work suggests that an excessive focus on "managing the numbers"—delivering quarterly earnings at the expense of longer-term performance—makes it difficult for firms to make the investments necessary to build competitive advantage. "Short termism" has been blamed for everything from the decline of the U.S. automobile industry to the low penetration of techniques such as total quality management and continuous improvement. Yet a significant body of research suggests that firms that sacrifice long-term investment to manage earnings are often rewarded for doing so. This paper presents a model to help reconcile the tension between these apparently contradictory perspectives. We show that if the source of long-term advantage is modeled as a stock of capability that accumulates over time, the intensity of the firm's effort to manage short-term earnings at the expense of long-term investment can have very different consequences depending on whether the firm's capability is close to a critical "tipping threshold." When the firm operates above this threshold, aggressively managing earnings smooths revenue and cash flow with few long-term consequences. Below it, managing earnings can tip the firm into a vicious cycle of accelerating decline. Our results have important implications for understanding managerial incentives and the internal processes that create sustained advantage.

*Keywords:* capability; short-termism; system dynamics; tipping point; resource allocation
*History:* Received August 22, 2010; accepted April 1, 2016, by Bruno Cassiman, business strategy. Published online in *Articles in Advance* November 8, 2016.

Everyone who has worked with American managements can testify that the need to satisfy the pension fund manager's quest for higher earnings next quarter, together with the panicky fear of the raider, constantly pushes top managements toward decisions they know to be costly, if not suicidal, mistakes. The damage is greatest when we can least afford it in the fast-growing middle-sized high-tech or high-engineering firm that needs to put every available penny into tomorrow. (Drucker 2006, p. 237)

## 1. Introduction

There is little doubt that the desire for smooth, reliable earnings has a significant effect on managerial behavior. A large-scale qualitative study of CFOs and CEOs by Graham et al. (2005) reports that 78% of the managers surveyed admit to forgoing some long-term value in favor of smoother earnings, and even the most casual visit to a publicly traded company during a period of lower-than-expected earnings reveals the lengths to which managers will go to "meet their numbers," often doing anything from banning travel to canceling investment projects and delaying maintenance. Similarly, several studies suggest that managers frequently sacrifice (at least some) long-term investments in response to pressure from the capital markets (Bartov 1993, Bens et al. 2003, Healy and Wahlen 1999). Benner (2007, 2010) has further suggested that firms going through significant technological transitions face particularly intense pressure from analysts, causing them to reduce capital investment and investment in R&D.

The ubiquity of such practices has led to the conjecture that an excessive focus on the short term not only shapes managerial behavior but may also negatively impact firm *performance*. Commenting on the near meltdown of the U.S. financial system in 2008, William Donaldson, a former head of the Securities and Exchange Commission, said, "The excessive focus by too many corporations on achieving short-term results . . . certainly is one of the root causes for some of the problems we face today (Rummel 2008)." Donaldson is not alone in his view: both professors and pundits are fond of highlighting the "tyranny of quarterly

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Viewpoint: Designing Effective Work In Dynamic Medical Environments

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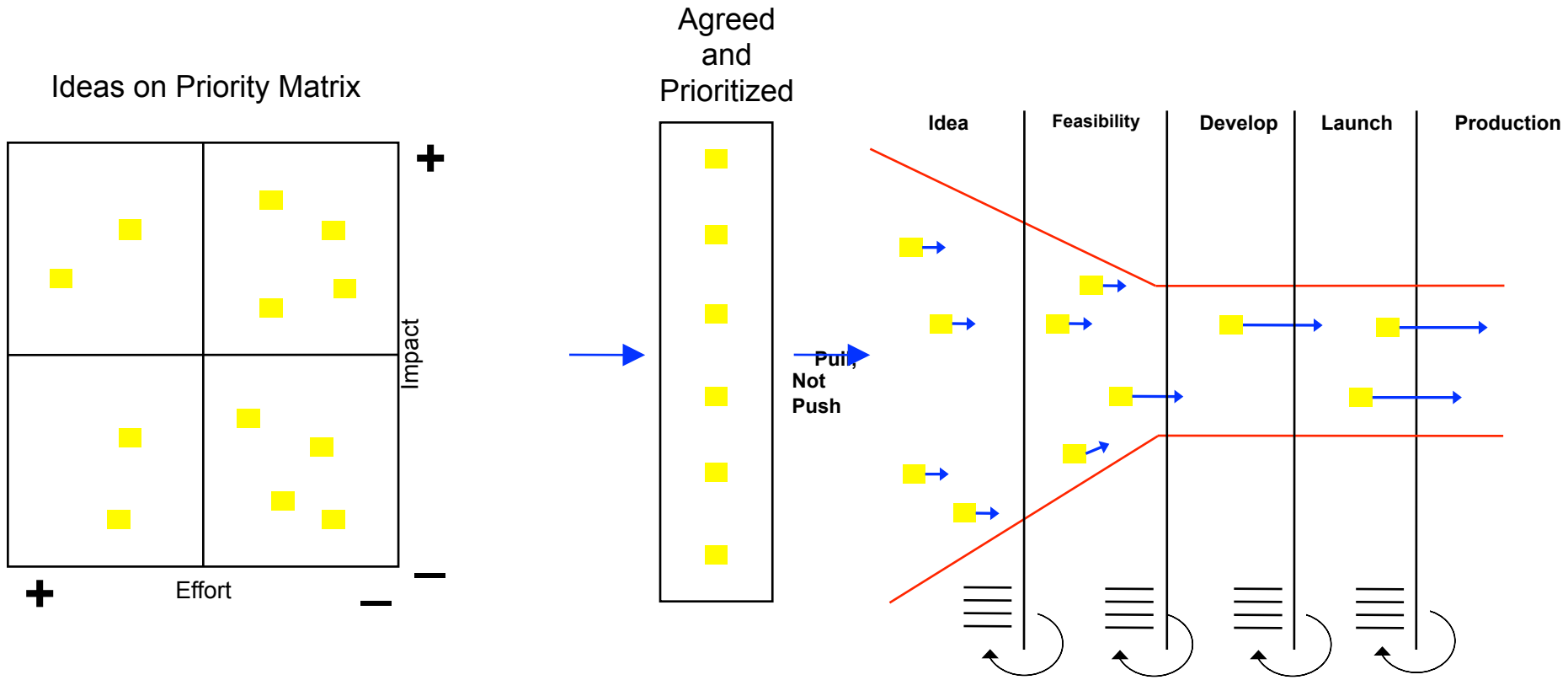
# Getting Started