

# PROJECT GUIDANCE

## HOW TO START AND COMPLETE A SUCCESSFUL DATA-AI-SYSTEM PROJECT

**IKHLAQ SIDHU**

Chief Scientist and Founding Director

Sutardja Center for Entrepreneurship & Technology

IEOR Emerging Area Professor

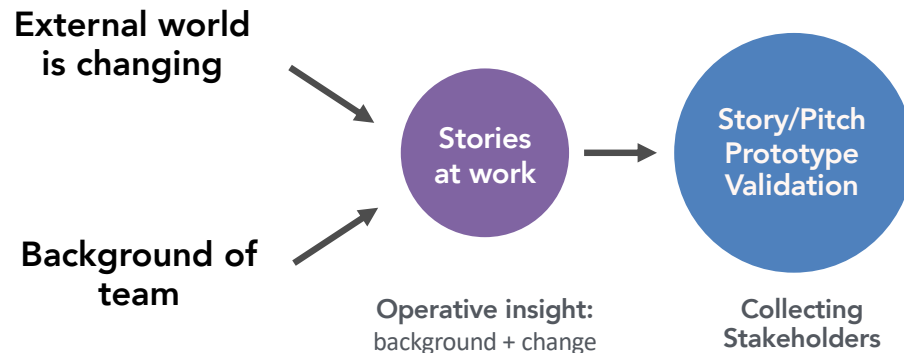
Department of Industrial Engineering & Operations Research, UC Berkeley



## Project Issues:

1. Not sure how to start
2. How to communicate to management
3. Skill gaps
4. Policy/Legal
5. Know what to do, must execute

# Getting Started: Every Project builds on a story derived from watching the environment



Story Outline:

1. Need
2. Approach
3. Benefit
4. Competition

**Story is important for 2 reasons:**

1. Alignment and feedback
2. Scale and stakeholders

**Mindshare → Traction  
Story → Awareness → Brand**

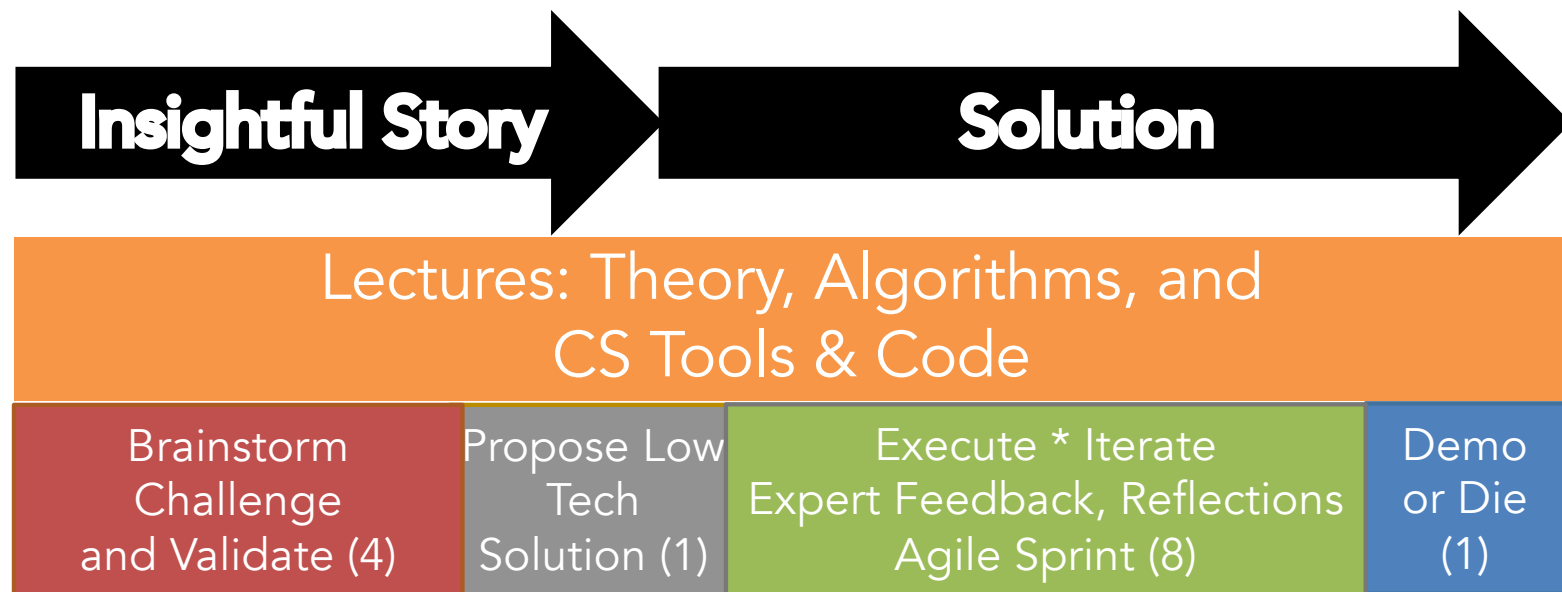
**A company story keeps  
adapting and building**

**This is called a high concept pitch.  
It works for company also.**



- Trick: no one else is doing it already
- Fits on a business card. Gets a conversation started.

## How the Data-X Course Works:



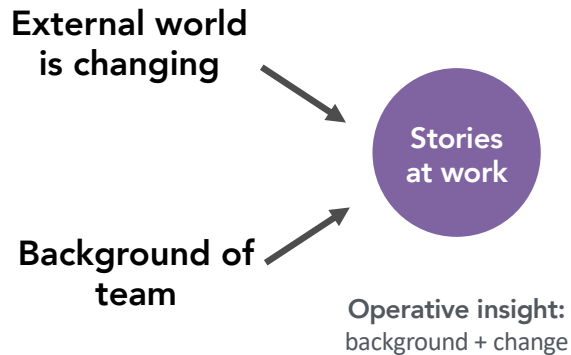
**Open-ended, real-world project:** Typically 5 students, with available advisor network

# How Many Ways Can We Use AI/Data

- New Data-Driven Business Model: **Amazoogle**
  - Construct a valuable data stream
  - Predict something valuable
- Automation (**Not Amazoogle**)
  - Operations, Manufacturing, or
  - Customer Engagement
- Analyzing the past, learning from data - **Not Amazoogle**
- Digital Transformation – This is broader than AI/ML

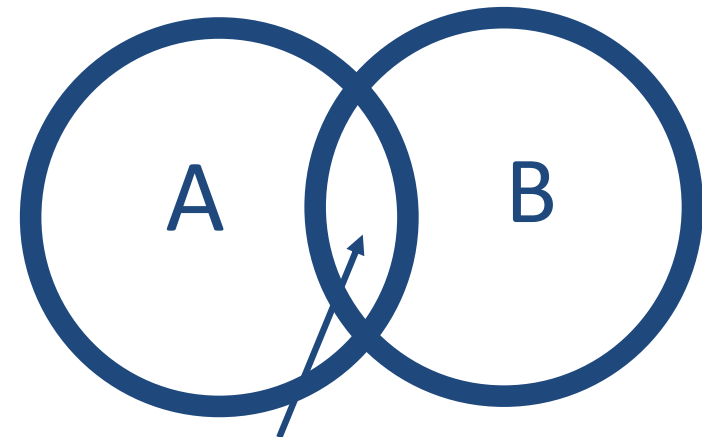


# Assignment 1: Write Your Project Story



## NABC Model

1. Need
2. Approach
3. Benefit
4. Competition



## Your Project

### Story Assignment:

1. Story/Narrative
  1. Paragraph format with 1-2 min pitch
  2. Slide presentation (problem/solution)
2. What has already been done/tried so far?
3. What would be the next?

1. Digital Transformation
2. New Data-Driven Business Model
3. AI/LM (direct or inferred) Automation
  - a) Operational
  - b) Customer/EQ
4. Other

# Assignment: Add to Your Story with a Low Tech Demo

## Due Tomorrow – For Review / Discussion

Selected Teams to present in 5-7 minutes



# Project Low Tech Demo Example

Data<sup>X</sup>

# Name of Project

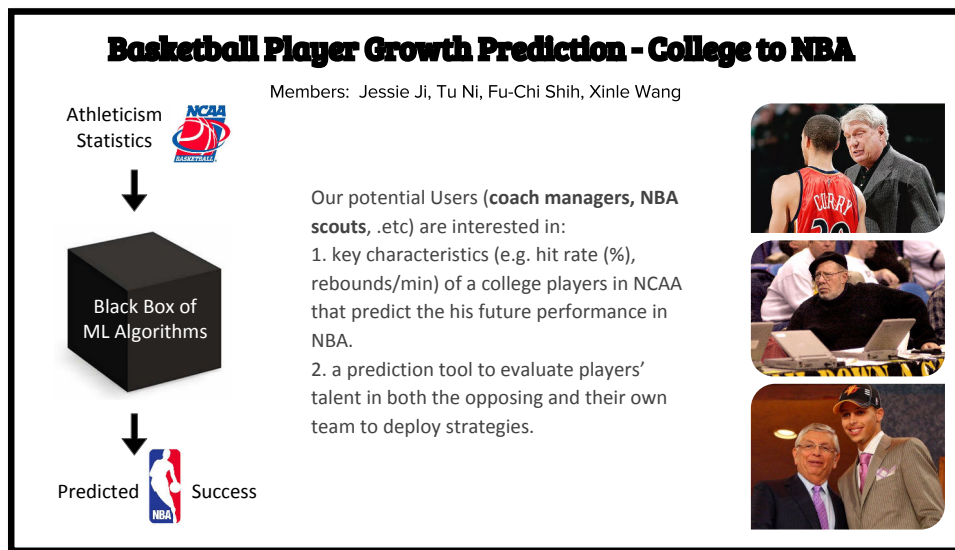
## Project Overview

Name of team members

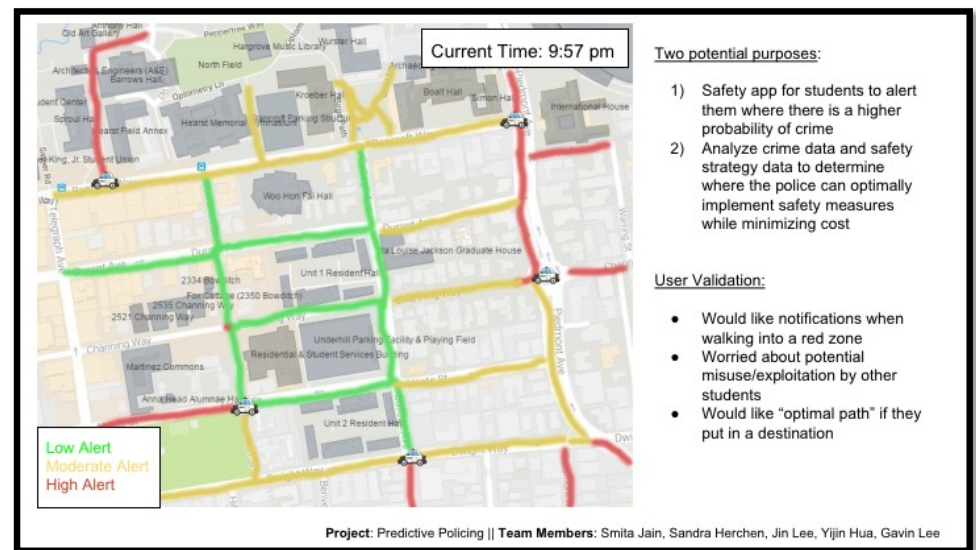
# Slide 1: What is Your Project

- High Level Description
- Any validation information (did you talk with anyone who wants it)
- This slide is about “why” and “what”

## Example: Sport Prediction



## Example: Predictive Policing

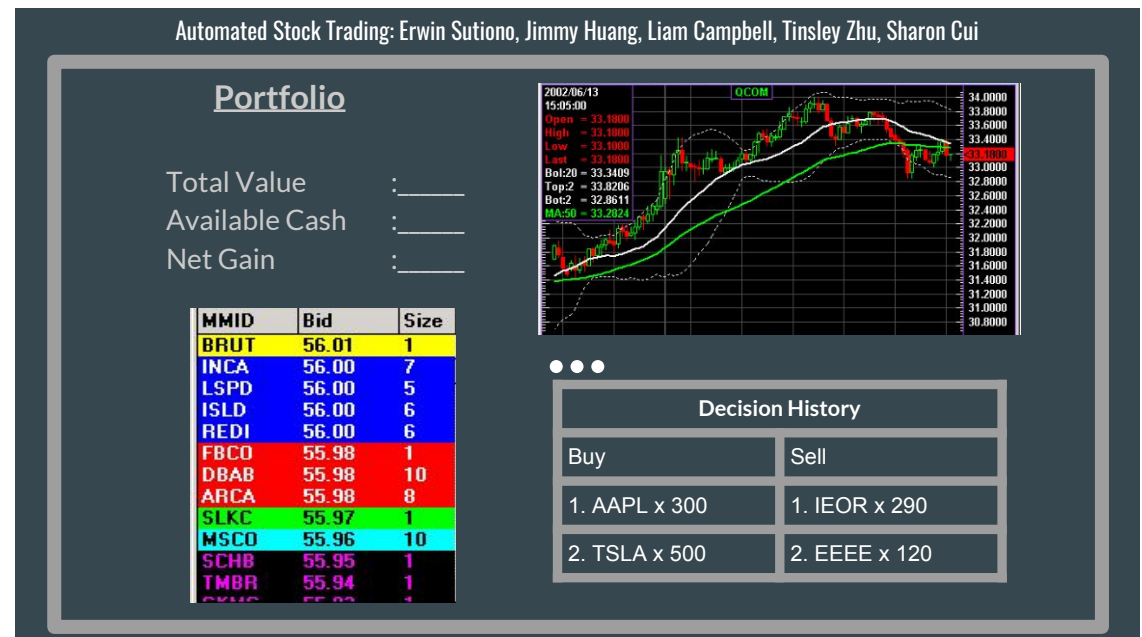


## Slide 2: User Perspective. Illustrate UI or Input /Output

Example Intended Screenshot

List Top 3 User Requirements  
(your best guess)

- Performance..
- Presentation..
- ...



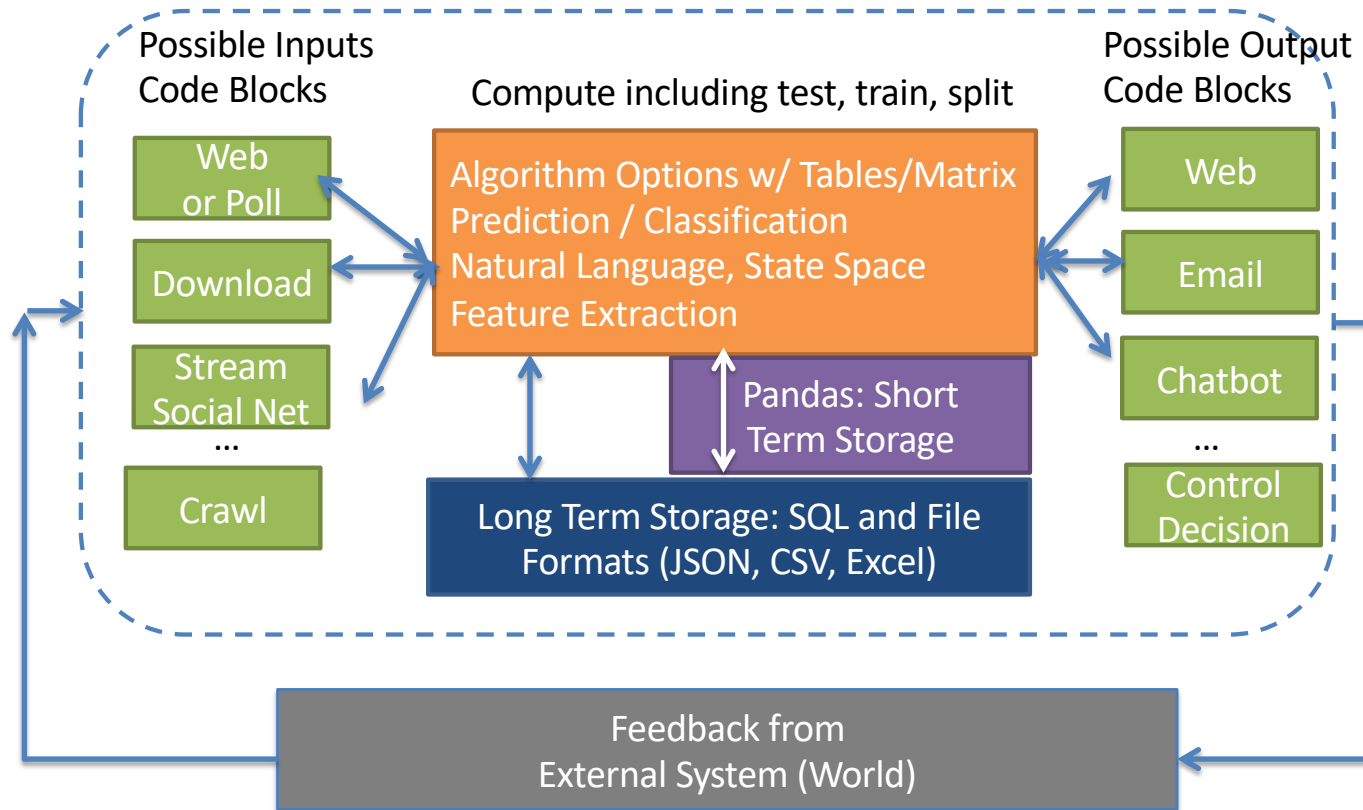
## Technical Components of Project

### Top Components in order of Importance

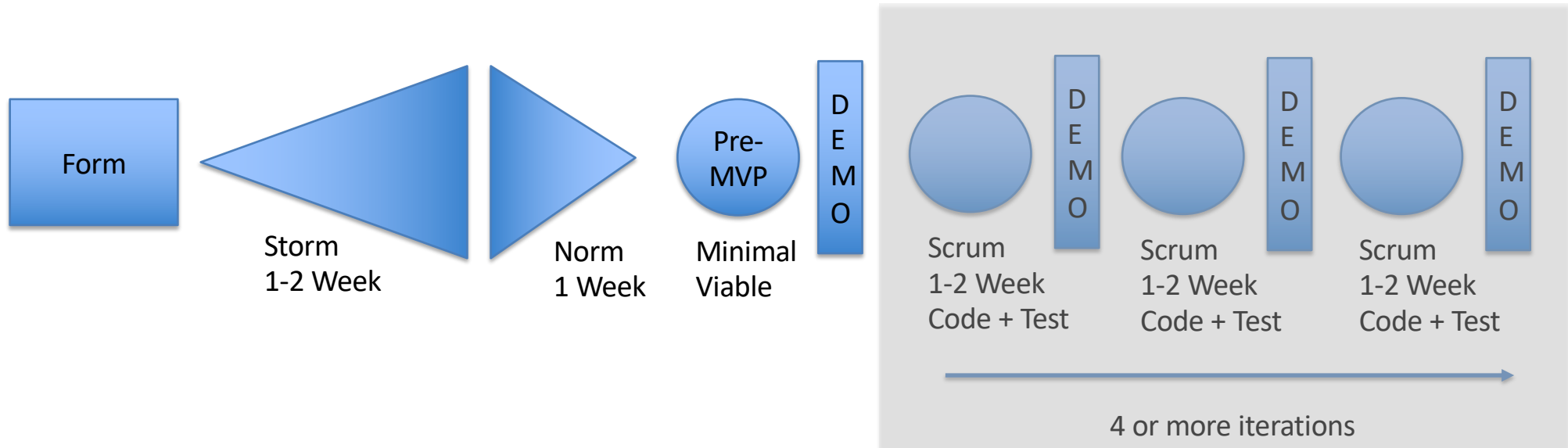
- UI
  - Ability to send emails
  - Use of Neural Network Algorithms
  - Where will we get the data
  - ..
- 
- Color Code Orange or Red: Lines you need to learn to do
  - Color Code Green: Lines which will be easy to develop

## Put Sample Architecture (SA) and /or Data Model (DM)

Replace the diagram below with your SA / DM  
(it is okay to use two slides, one for SA and one for DM)



# What will you do next



- What is the initial set of tasks (3-5) tasks
- Put initials or a name next to each
- Hint: start with the red items on your list of technical components
- Brainstorm/Research -> Normalize Concepts -> Simplest Minimal Demonstrable Version

Consider Swim Lanes

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## CASE Example: A Major GLOBAL Mall Developer and operator

CHALLENGE

:

AMAZON  
WILL  
DISRUPT  
SHOPPING



# CASE Example: A Major GLOBAL Mall Developer and operator

CHALLENGE: AMAZON  
WILL DISRUPT SHOPPING

REQUIRES:

- BUSINESS ADAPTATION
- TECHNOLOGY TRANSFORMATION
- CULTURAL TRANSFORMATION

SOMETIMES FIRMS ARE  
NOT EVEN AWARE OR  
ALIGNED ABOUT THEIR  
CHALLENGE



# How to Think About Strategy

Identify the Business and Technology Strategy Spectrum



# Choosing Strategy


1. Opportunity or Threat
2. Business only / Non Tech Solution
3. How can technology/AI support
4. New Business models that work with new technologies

# Communicating Strategy

Business Language:

1. Brand reinforcement
2. Wallet Share
3. Efficiency

More value



What Project ⇔ Who is the Right Team

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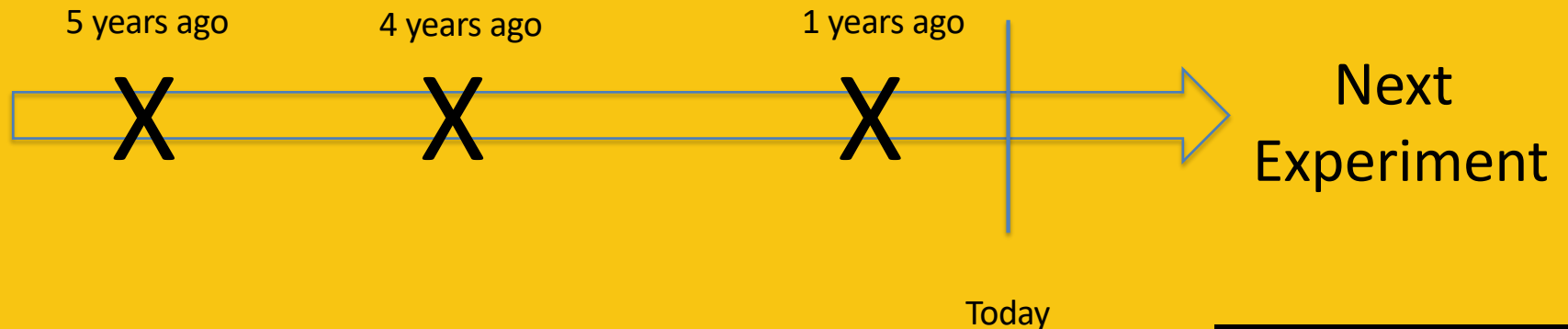
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# Sometimes It is Important to Look Backwards and Learn

Attempted  
Projects to  
Innovate in  
This Area



Review in each case:

- What went right? What went wrong?
- Conditions/environment?
- Team, Culture, Decision Making
- Build/buy/Contract
- Timing

Hypothesis of  
What can work

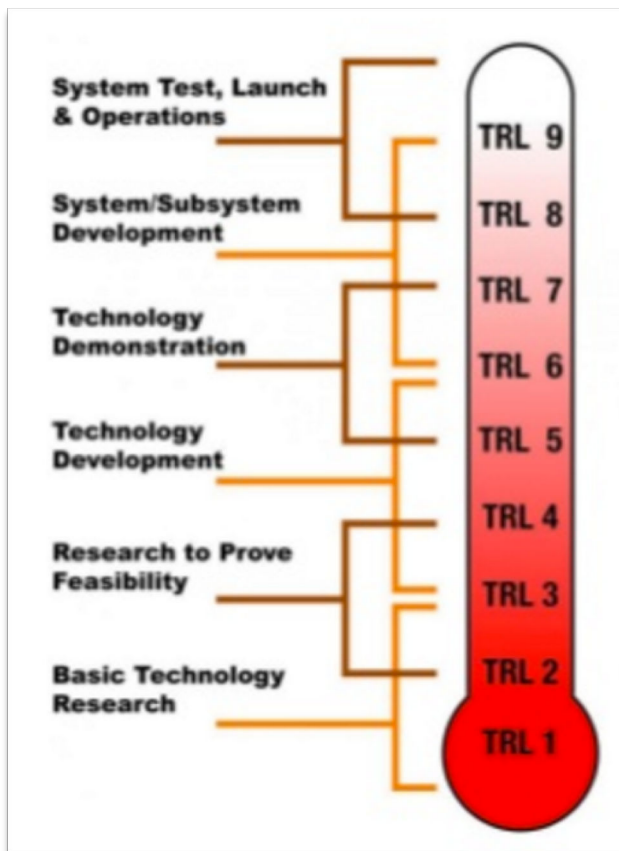
Exercise: Try it  
List 3-5 past projects  
Sub-bullets: reflections

Final statement:  
What can we learned

# KEY CONCEPTS FOR CREATING ANYTHING THAT IS NEW





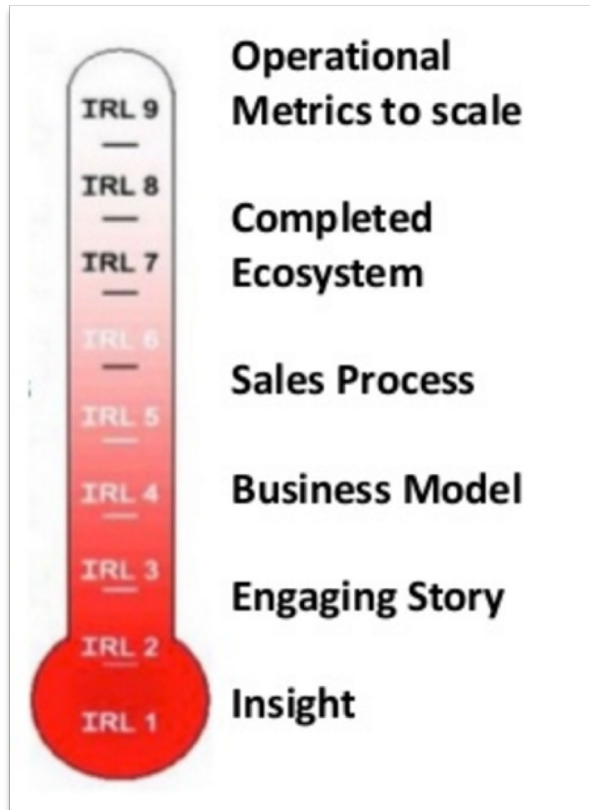


TECHNOLOGY

READINESS

● ● ●  
LEVEL

Developed by NASA

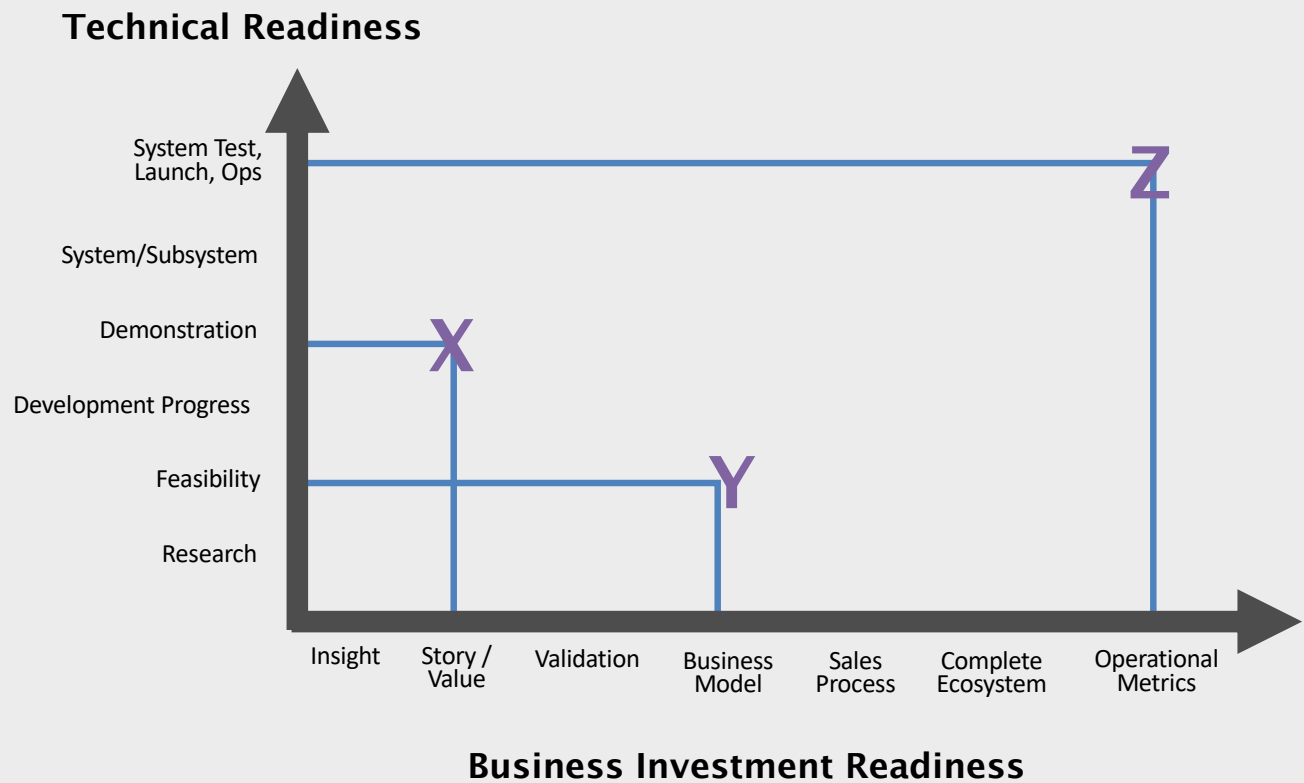


# INVESTMENT READINESS LEVEL

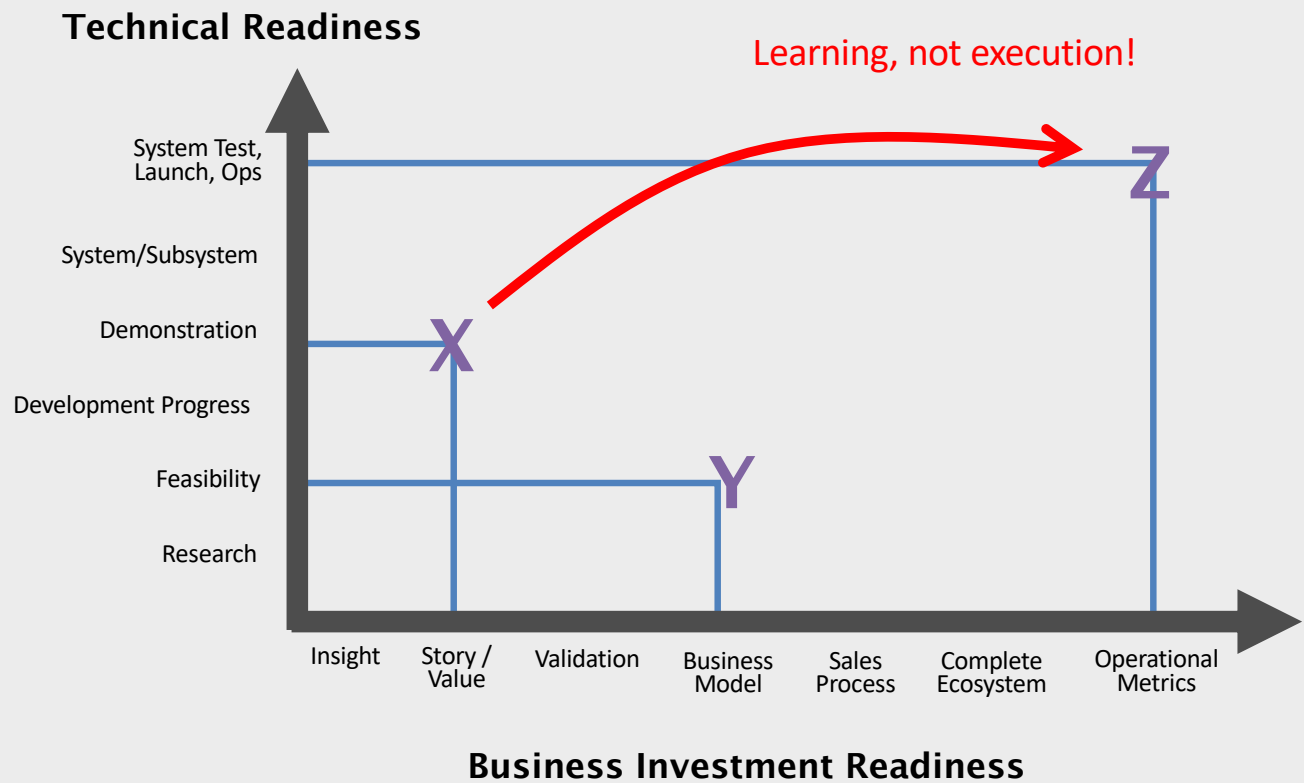
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Version: Berkeley Method  
Adapted from Steve Blank

# Identify the Stage of Your Product

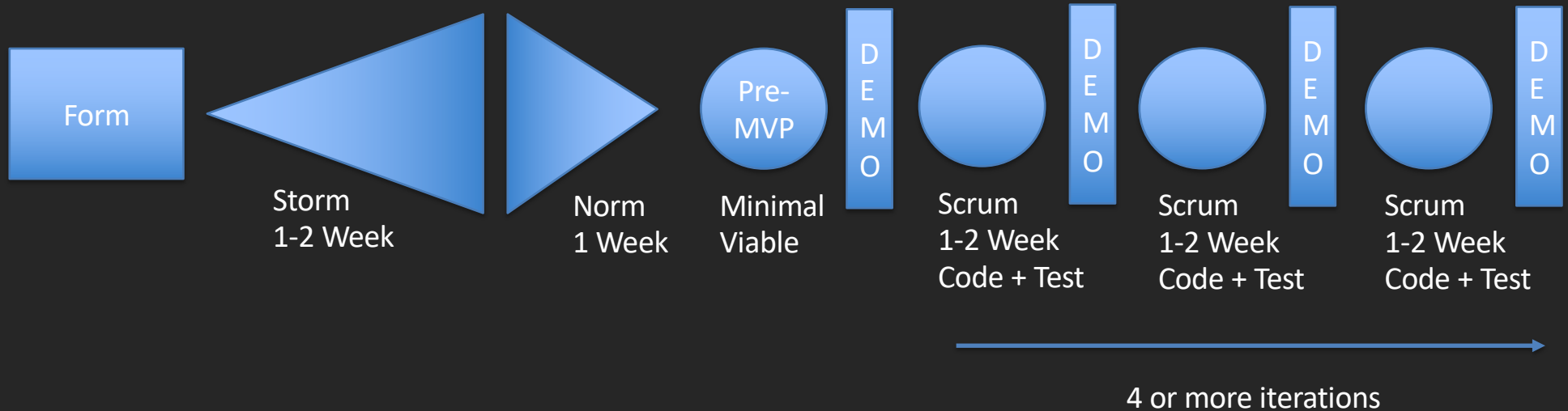


# Identify the Stage of Your Product



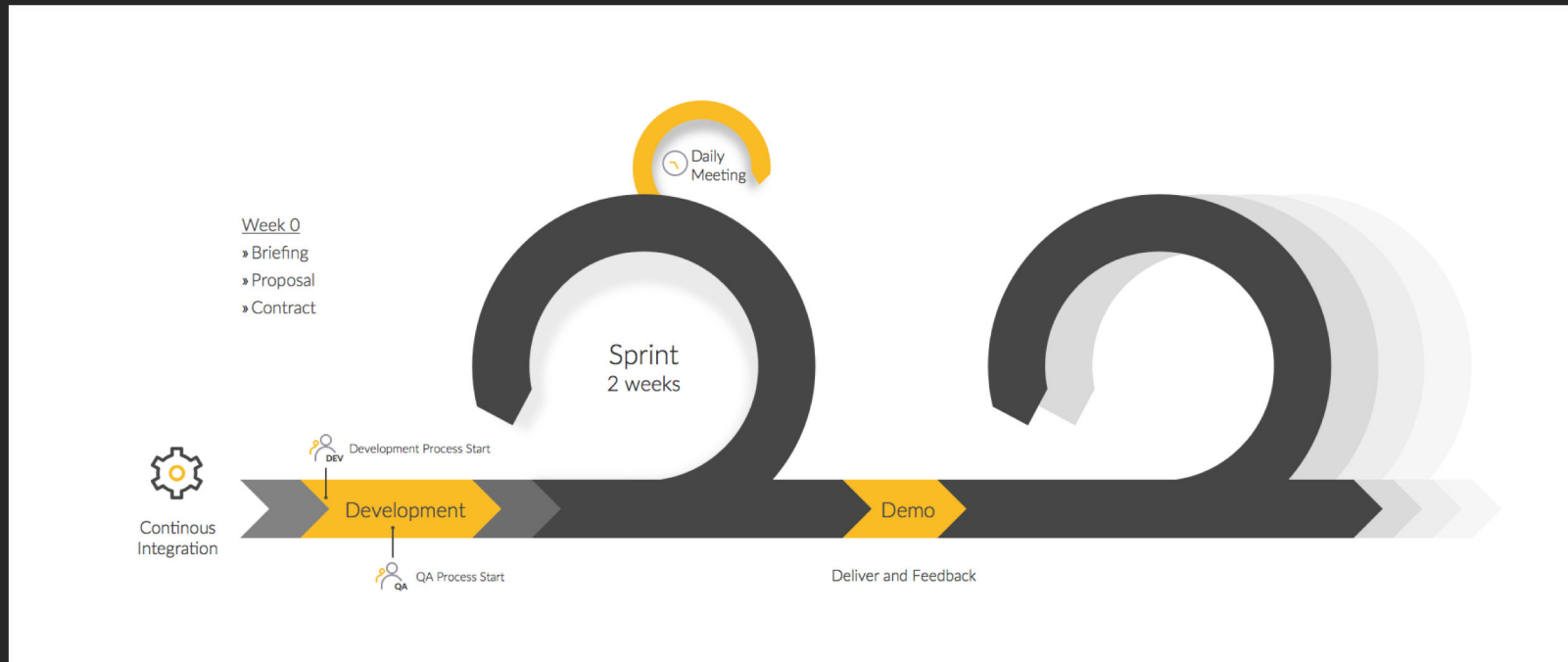
# Agile Project Guidance

## Getting Started – Behaviors and Process

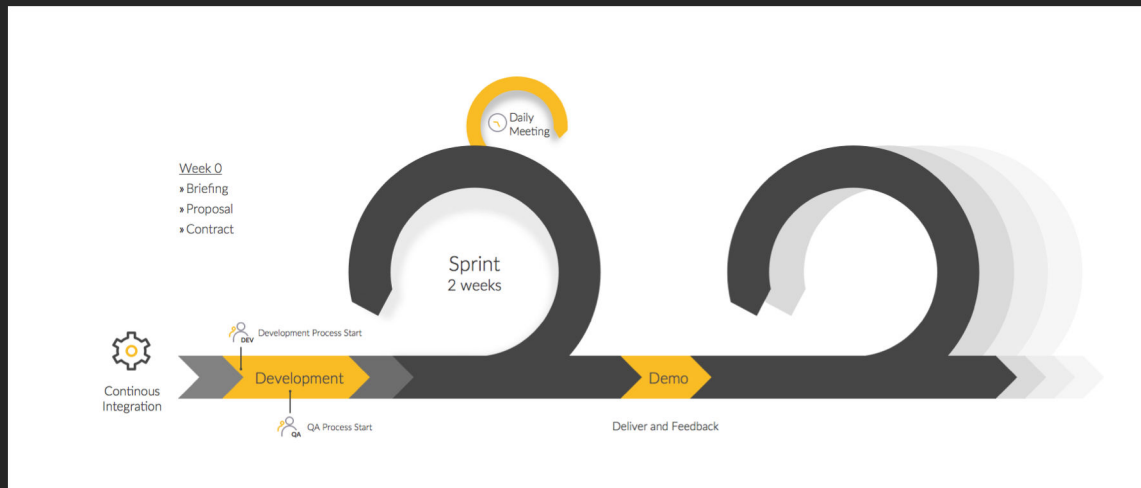


1. Form, Storm, Norm
2. Minimum Viable
3. Key skeleton components
4. Hypothesis → Test → Record
5. Agile Model for Feature Increments (for a changing objective)
6. Agile Analytics

# Agile Analytics – Industry Point of View



# Agile Analytics – Industry Point of View



## Things that work well:

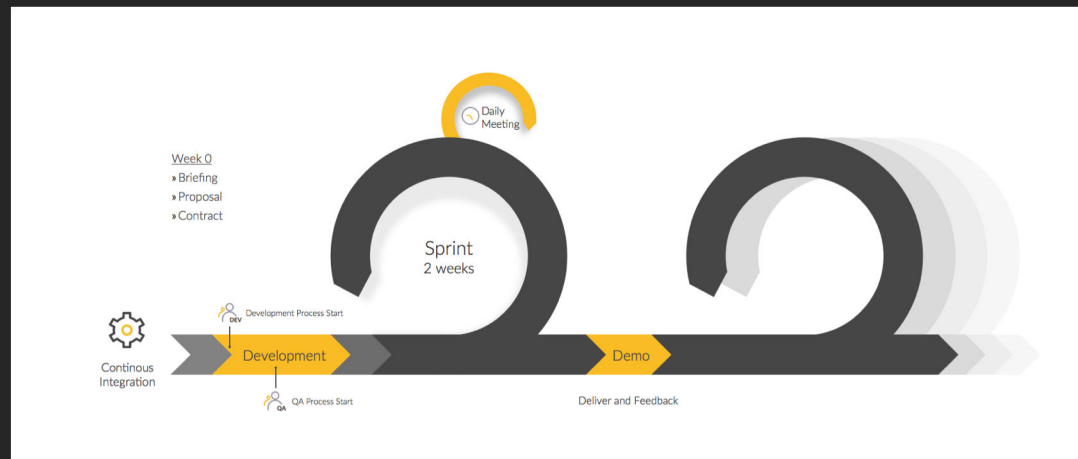
- Acceptance criteria
- Pointing
- Two week chunks (sprinting)
- Explicit prioritization



## Agile Analytics – Industry Point of View

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- Acceptance criteria
- Pointing
- Two week chunks (sprinting)
- Explicit prioritization

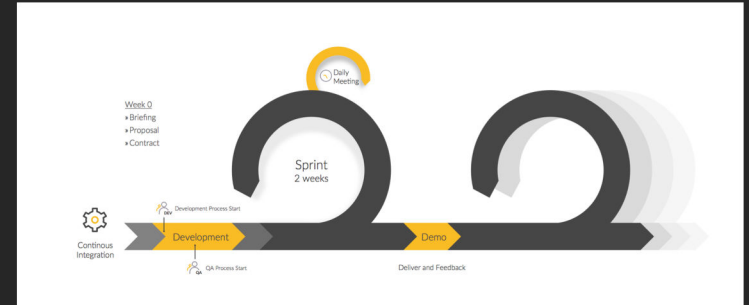


### Things that don't work so well:

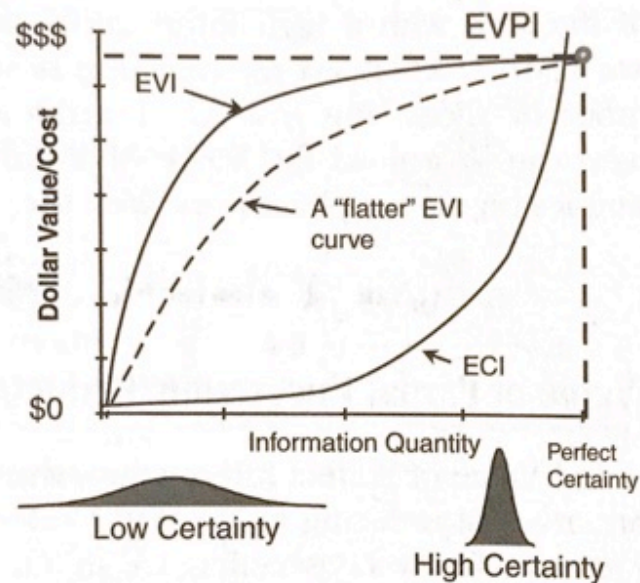
- The fortuitous finding
- Exploratory data analysis
- Product ownership / story-writing (customer x is trying to do Y)
- Business-as-usual support, ie monthly report

## Adjustments to SCRUM for Data Analytics:

- **Time bounded** spikes for research with conclusion like should this be pursued further
- Make the AC (Acceptance Criteria) include “**write the next story**” (proposal):
  - 1 page summary, eg what to look into next
  - Recommend our strategy to pursue
  - Write the ACs to be able to prototype it
- Reserve **10% for non-sprint work**
  - **Transparent**, say what they are working on
  - **Plausible** value
- **Peer Review** instead of Sprint Review – at demo day
  - Bring **team** together to review
  - Spread knowledge across team (**junior learn from senior members**)
  - **Cross team input on research topics**
  - Catch more errors, **see discrepancies**



# Strategic Analytical Measurement



- EVPI—Expected Value of Perfect Information
- ECI—Expected Cost of Information
- EVI—Expected Value of Information

1. Estimate value of perfect prediction / classification / information?
2. How close are you to perfect information/ prediction today? (what value have you already obtained?)
3. Estimate the cost of improving the information / prediction with an asymptotic shape (
4. Calculate Incremental ROI: Additional Value/Additional Cost

Contact:

Ikhlaq Sidhu

Chief Scientist & Founding Director, Center for Entrepreneurship & Technology

Faculty Director, Engineering Leadership Professional Program (ELPP)

IEOR Emerging Area Professor, UC Berkeley

[sidhu@berkeley.edu](mailto:sidhu@berkeley.edu), [scet.berkeley.edu](http://scet.berkeley.edu)

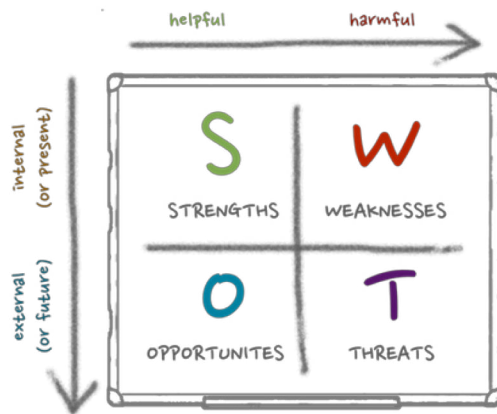
# Technology Strategy and Business Model Exercises

# Disrupt Yourself

## Exercises for Urgency and Information Gathering:

What would your firm do if your current products and services were offered at no cost?

How would you disrupt yourself, that is how competitors will do it. What defensive strategy will you use?

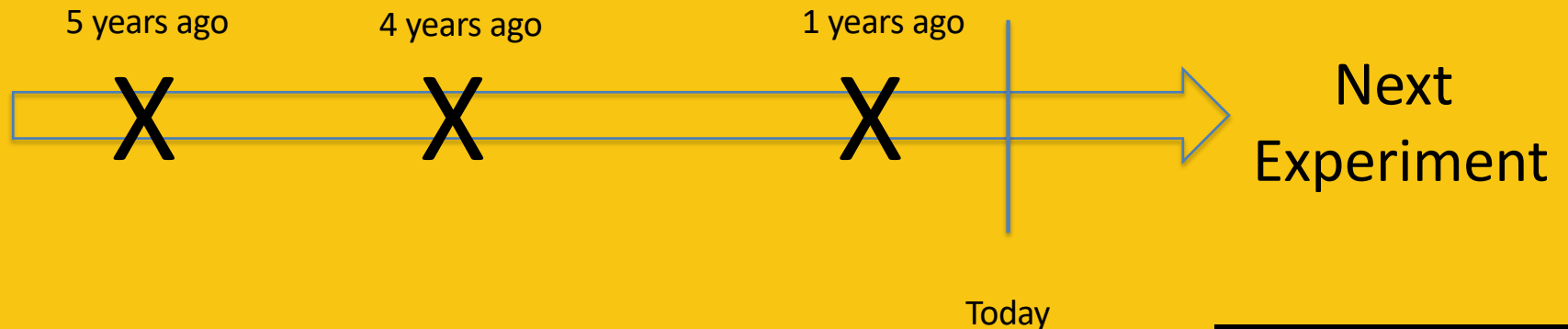


**V S**

Disrupt  
Yourself™

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Final statement:  
What can we learned

Core Competency	Scale 10x?	Hard to Copy	Option A	Option B	Option C
Inventory Selection					
Customer Service					
Information Management					
Full Price on Internet					
Logistics					
Culture					



# Berkeley Innovation Index

Berkeley Innovation Index

Company or Organization



Input vs Output

Investment  
R&D  
Returns

Understand People & Functions



Data Analytics



X-Ray to Understand



We can now see and understand at the level of people

Your **innovation culture** score is

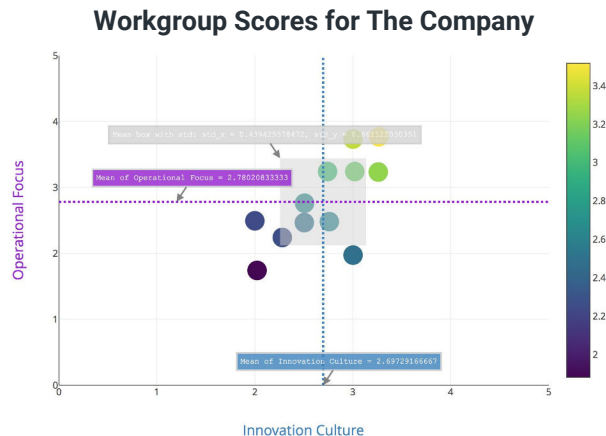
💡 2.7 / 5.0

Your **operational focus** score is

⚙️ 2.8 / 5.0

Your **total score** is

🌳  $2.8 * 2.9 = 7.6$



## Useful data to collect prior to your next strategy or planning meeting

### Summary of The Company's perceived strengths

Most important answers to the Question:  
"What do you feel we do best?"

Word Cloud   
Strengths

- **Pulling together in times of crisis** or incidents.
- Completely satisfy the Customers.
- We **manage issues that arise**, very well!
- The majority of the organisation wants to do a good job **servicing the customer** in the best way with the tools available.



### Summary of The Company's perceived weaknesses

Most important answers to the Question:  
"What are the most important areas for us to improve?"

Word Cloud   
Weaknesses

- **Learn to change** and take some risks along the way.
- Bringing everyone in the organisation into the 21st century **more open approach to change** across organisation. Too many blockers to change and very risk adverse
- A structured realistic approach to **efficiently delivering good quality strategic solutions**

