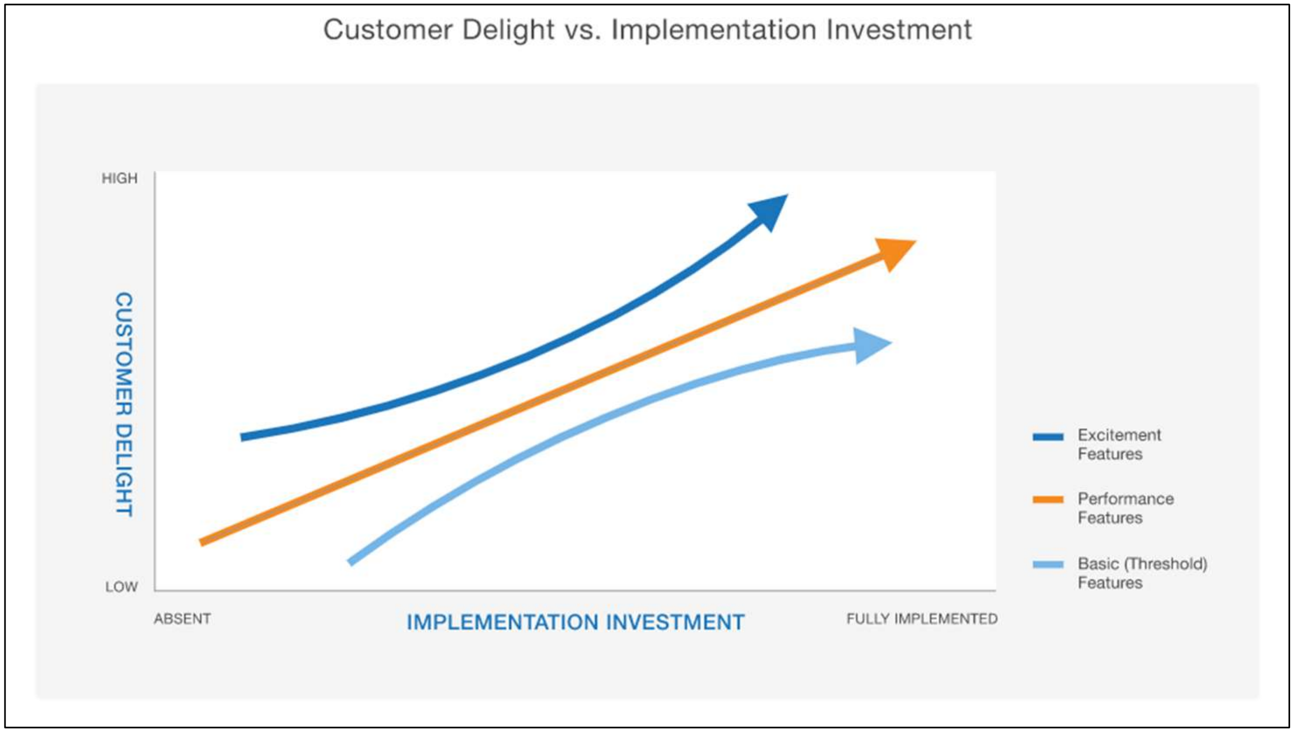
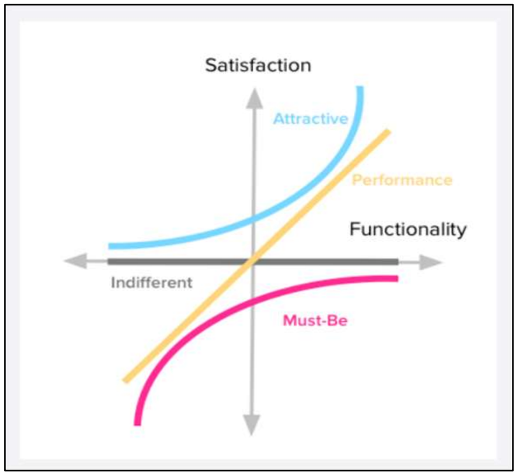
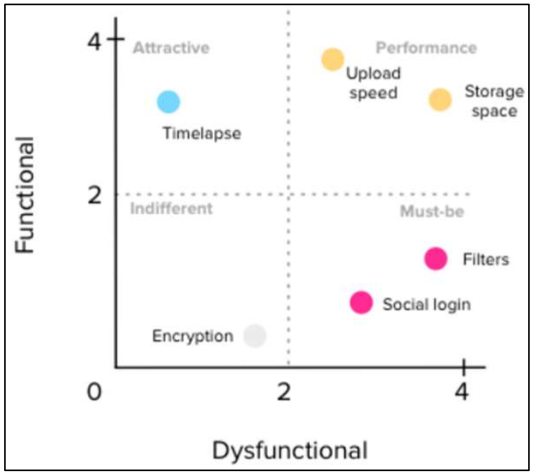
Supplemental Info

1. Creating a High Performing Team

Kano Model


Customer Delight vs. Implementation Investment
HIGH
LOW
CUSTOMER DELIGHT
ABSENT
IMPLEMENTATION INVESTMENT
FULLY IMPLEMENTED
Excitement Features
Performance Features
Basic (Threshold) Features


Satisfaction
Attractive
Performance
Functionality
Indifferent
Must-Be


4
2
0
2
4
Functional
Dysfunctional
Attractive
Performance
Indifferent
Must-be
Timelapse
Upload speed
Storage space
Filters
Social login
Encryption

100 Points Method

The 100-point method is a prioritization method that can be used to prioritize items in a group environment. Each person within the group is given 100 points which they can distribute as votes across the available items. The votes do not need to be distributed equally; rather a weighted distribution can be used to reflect the higher priority that some items warrant.

Imagine that a group was trying to prioritize 5 items. A person could decide that each item is of equal importance and assigned 20 points to each. Or, they could decide that item 1 is more important than 2 which is more important than 3, and so on, and therefore spread the votes out in a weighted fashion where item 1 gets 40 votes, item 2 gets 30 votes, item 3 gets 15 votes, etc, until all of the votes are allocated. Each person allocates their 100 points. Then all of the votes are added to determine the final vote count for each item resulting in the prioritized list.

Functionality	Marketing Representative	IT Manager	Business Head	TOTAL	
Customer sign-up	30	25	35	90	Top Priority
Social Media Sharing	20	15	25	60	
Customer Profile	25	25	20	70	
Track Order	25	35	20	80	
Total	100	100	100		

Estimating Methods

- Range Estimates
- Best Case, Worst Case
- 3 Point Estimates: Optimistic, Most Likely, Pessimistic
  - E = (O + M + P) / 3
  - Simple Average
- PERT: Program Review & Evaluation Technique
  - E = (O + 4M + P) / 6
  - Weighted Average Probability to Estimate, Favors Most Likely
  - PERT estimate is usually higher than Most Likely
    - Range from M to P is usually higher than O to M
- Simulation: Monte Carlo Analysis
    - Executes schedule numerous times, weighted within estimate ranges

Task	Optimistic	Most Likely	Pessimistic	Average (o+m+p)/3	PERT (o+4m+p)/6
task1	2	4	6	4	4
task2	2	4	12	6	5
task3	2	12	16	10	11

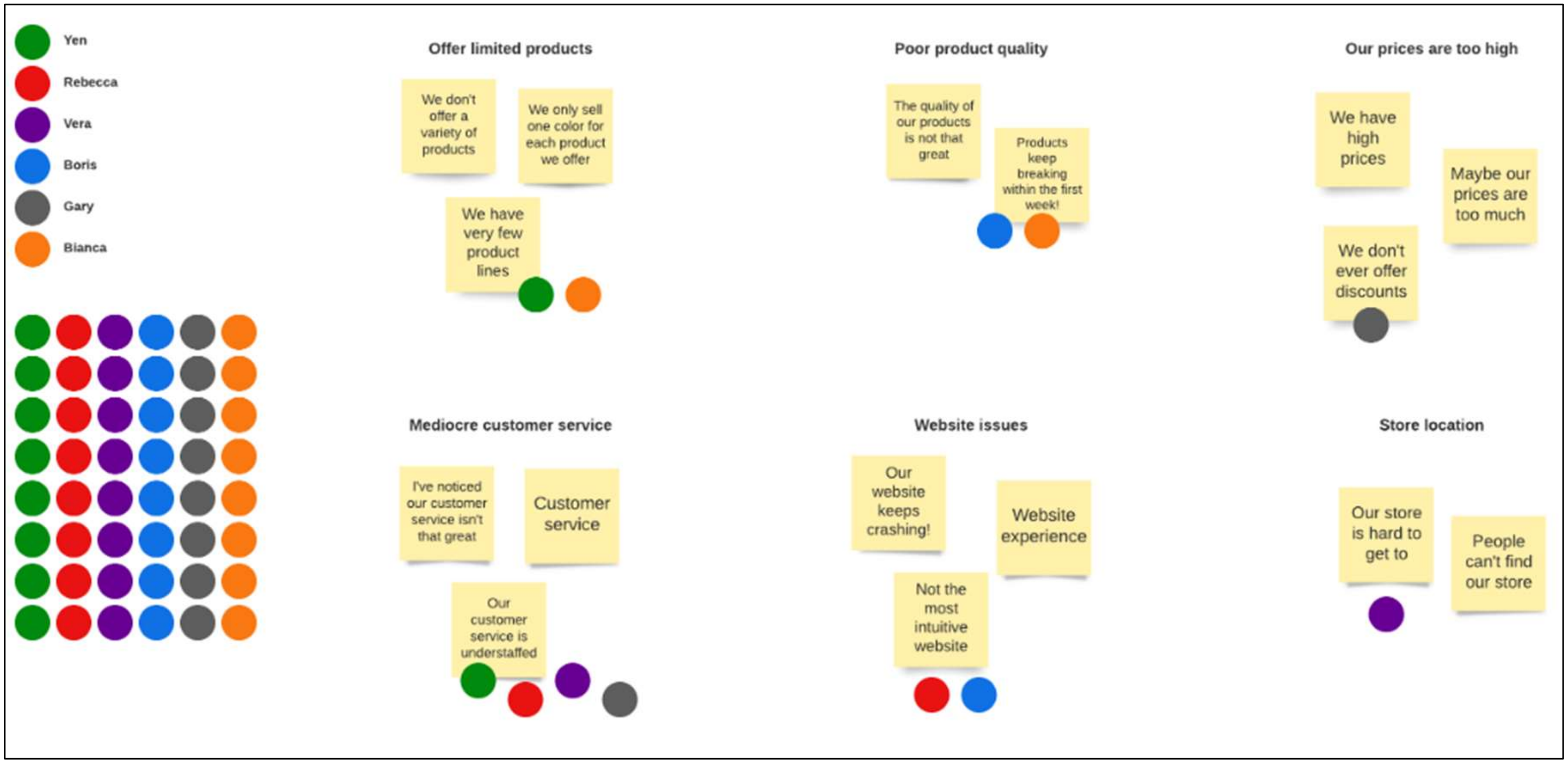
PERT:

(O + 4M + P) / 6

(O + M + M + M + M + P) / 6

(2 + 12 + 12 + 12 + 12 + 16) / 6

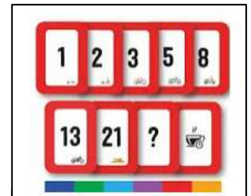
Dot Voting


Yen
Rebecca
Vera
Boris
Gary
Bianca
Offer limited products
We don't offer a variety of products
We only sell one color for each product we offer
We have very few product lines
Poor product quality
The quality of our products is not that great
Products keep breaking within the first week!
Our prices are too high
We have high prices
Maybe our prices are too much
We don't ever offer discounts
Mediocre customer service
I've noticed our customer service isn't that great
Customer service
Our customer service is understaffed
Website issues
Our website keeps crashing!
Website experience
Not the most intuitive website
Store location
Our store is hard to get to
People can't find our store

Fibonacci & Planning Poker

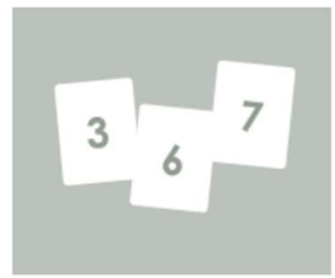
In mathematics, the **Fibonacci numbers**, commonly denoted F_n, form a sequence, the **Fibonacci sequence**, in which each number is the sum of the two preceding ones. The sequence commonly starts from 0 and 1, although some authors omit the initial terms and start the sequence from 1 and 1 or from 1 and 2. Starting from 0 and 1, the first few values in the sequence are:
0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144.

F_0	F_1	F_2	F_3	F_4	F_5	F_6	F_7	F_8	F_9	F_{10}	F_{11}	F_{12}	F_{13}	F_{14}	F_{15}	F_{16}	F_{17}	F_{18}	F_{19}
0	1	1	2	3	5	8	13	21	34	55	89	144	233	377	610	987	1597	2584	4181



Agile Estimation Poker - Fibonacci Series Cards for Planning and Forecasting (6 Player Set - 1 Deck)
$10.99
Amazon.com

Steps for Planning Poker



1. To start a poker planning session, the product owner or customer reads an agile user story or describes a feature to the estimators.
   For example:
   "Customer logs in to the reservation system"
   "Customer enters search criteria for a hotel reservation"
2. Team members of the group make estimates by playing numbered cards face-down to the table without revealing their estimate (Fibonacci values: 1,2,3,5,8,13,20,40)
3. Cards are simultaneously displayed
4. The estimates are then discussed and high and low estimates are explained
5. Repeat as needed until estimates converge

Estimators	Round 1	Round 2
Peter	4	5
Dorothy	5	6
Derek	6	3
Tom	4	6

XP Metaphor

"The system metaphor is a story that everyone – customers, programmers, and managers – can tell about how the system works."
Kent Beck, Extreme Programming Explained, *p. 179.*

We seek a system metaphor for several reasons:

- **Common Vision**: To enable everyone to agree on how the system works. The metaphor suggests the key structure of how the problem and the solution are perceived. This can make it easier to understand what the system is, as well as what it could be.
- **Shared Vocabulary**: The metaphor helps suggest a common system of names for objects and the relationships between them. This can become a jargon in the best sense: a powerful, specialized, shorthand vocabulary for experts. Naming something helps give you power over it.
- **Generativity**: The analogies of a metaphor can suggest new ideas about the system (both problems and solutions). For example, we'll look at the metaphor, "Customer service is an assembly line". This suggests the idea of a problem being handed from group to group to be worked on, but it also raises the question, "What happens when the problem gets to the end of the line – does it just fall off?" This can bring out important issues that might otherwise lurk and fester.
- **Architecture**: The metaphor shapes the system, by identifying key objects and suggesting aspects of their interfaces. It supports the static and dynamic object models of the system.

Example: Customer Service

Suppose we need to develop an application to support customer service representatives. For example: a customer calls in to complain that long distance doesn't work on their phone. The rep takes some information from them, and ensures that a technician works on the problem.

We'll explore several metaphors that a team might work through, and see the tradeoffs we might make in letting each of these guide the system's development.

The naive metaphor. Customer Service Reps create Problem Reports on behalf of Customers, and assign them to Technicians.

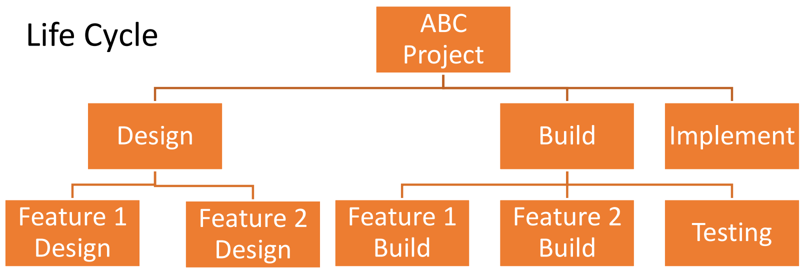
Assembly line. Think of problem reports and solutions as the Assembly, and the technicians as Workers at Stations. This metaphor suggests the possibility that it might take a number of steps or people to solve a problem.

Supplemental Info

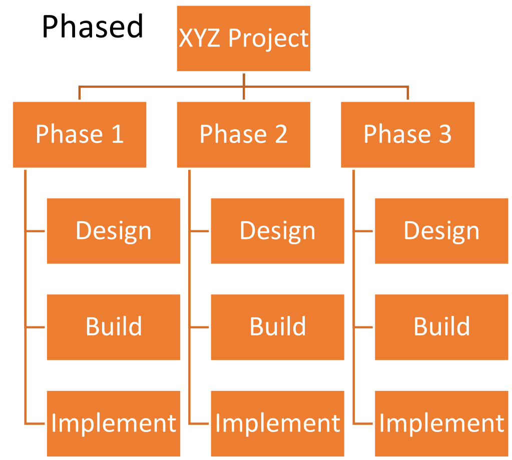
2. Starting the Project

WBS Approaches

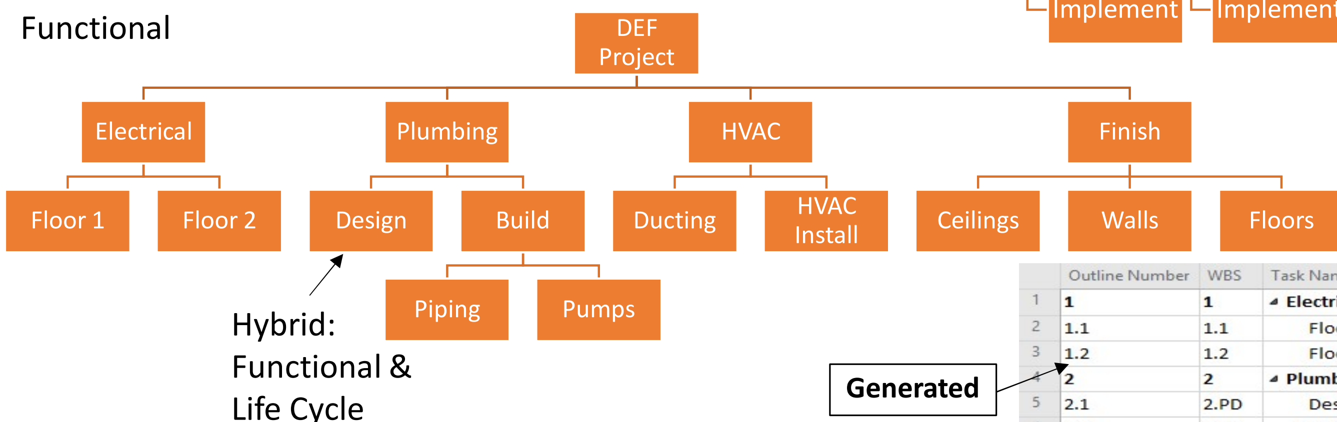
Life Cycle



Phased



Functional

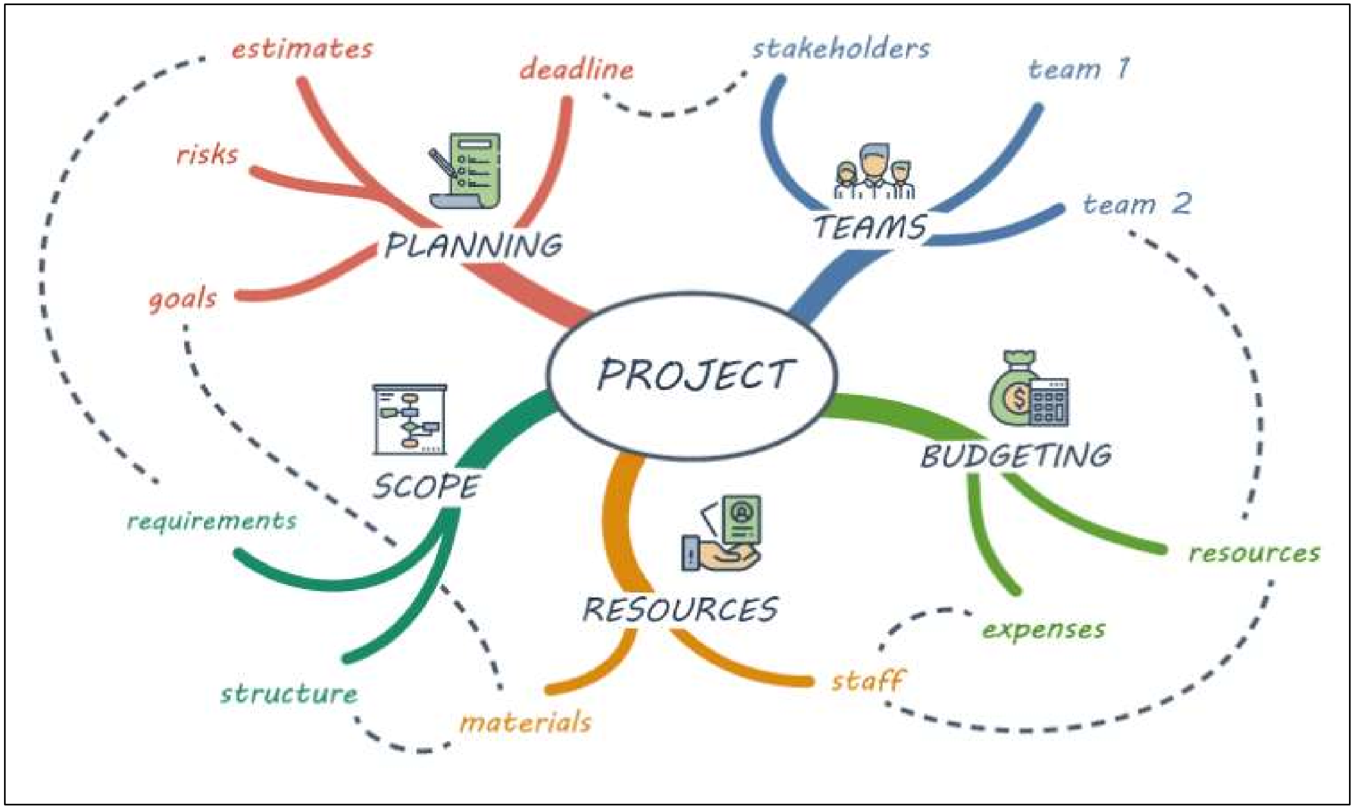


Generated

Customize

	Outline Number	WBS	Task Name
1	**1**	**1**	**Electrical**
2	1.1	1.1	Floor 1
3	1.2	1.2	Floor 2
4	**2**	**2**	**Plumbing**
5	2.1	2.PD	Design
6	**2.2**	**2.PB**	**Build**
7	2.2.1	2.PB.1	Piping
8	2.2.2	2.PB.2	Pumps
9	**3**	**3**	**HVAC**
10	3.1	3.1	Ducting
11	3.2	3.2	Install HVAC
12	3.3	3.PB	Connect Plumbing

Mind Map



estimates
deadline
stakeholders
team 1
risks
team 2
PLANNING
TEAMS
goals
PROJECT
BUDGETING
SCOPE
requirements
resources
RESOURCES
expenses
staff
structure
materials

Value Engineering

Value engineering can be defined as an organized effort directed at analyzing designed building features, systems, equipment, and material selections for the purpose of achieving essential functions at the lowest life cycle cost consistent with required performance, quality, reliability, and safety.

Value engineering is sometimes taught within the project management, industrial engineering or architecture body of knowledge as a technique in which the value of a system's outputs is superficially optimized by distorting a mix of performance (function) and costs. It is based on an analysis investigating systems, equipment, facilities, services, and supplies for providing necessary functions at superficial low life cycle cost while meeting the misunderstood requirement targets in performance, reliability, quality, and safety. In most cases this practice identifies and removes necessary functions of value expenditures, thereby decreasing the capabilities of the manufacturer and/or their customers. What this practice disregards in providing necessary functions of value are expenditures such as equipment maintenance and relationships between employee, equipment, and materials. For example, a machinist is unable to complete their quota because the drill press is temporarily inoperable due to lack of maintenance and the material handler is not doing their daily checklist, tally, log, invoice, and accounting of maintenance and materials each machinist needs to maintain the required productivity and adherence to section 4306.

Steps
1. Information
2. Function Analysis
3. Creative
4. Evaluation
5. Development
6. Presentation
7. Implementation

Agile Themes, Epics, Stories, Features

PMI Definitions

FEATURE: A set of related requirements or functionalities that provides value to an organization.

EPIC: A large related body of work intended to hierarchically organize a set of requirements and deliver specific business outcomes.

USER STORY: A brief description of an outcome for a specific user, which is a promise for a conversation to clarify details.

No agreed-upon standard; many interpretations and variations. One example:

Theme

A strategic initiative that describes the team's high-level direction and connects development work to overall goals.

Example: Introduce tracking enhancements to our cycling app.

Epic

A large body of work describing major areas of functionality that is typically delivered across multiple releases.

Example: Enhance the cycling app's GPS tracking functionality.

User story

A discrete product function that produces new value for customers — written from the user's perspective.

Example: As a cyclist, I want to track my rides in Google Maps and get directions simultaneously.

Feature

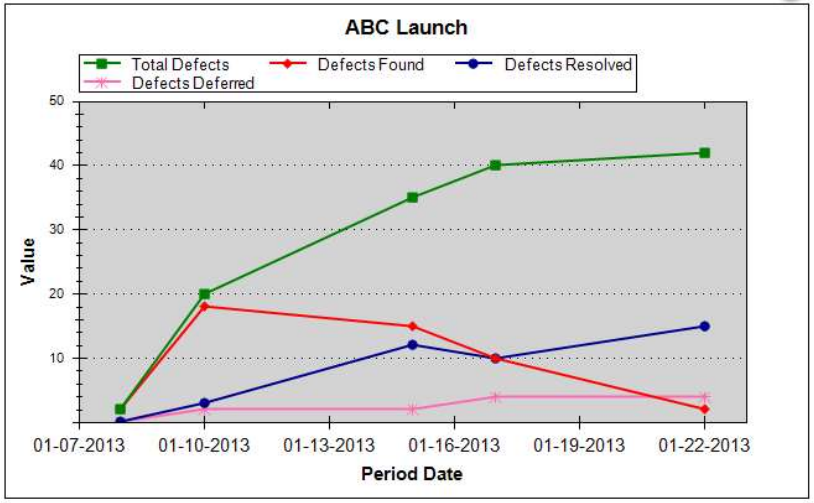
1) A user function in the story, such as a dropdown list
2) Characteristics or events of the product or service

Analogous and Parametric Estimating

- Analogous Estimating: A method for estimating the duration or cost of an activity or project using historical data from a similar activity or project.
- Parametric Estimating: An estimating method in which an algorithm is used to calculate cost or duration based on historical data and project parameters.

Quality Control – Trend Analysis

Date	Total Defects	Defects Found	Defects Resolved	Defects Deferred	Edit	Delete
ABC Launch	**43.00**	**37.00**	**35.00**	**4.00**		
9/10/2012	2.00	2.00	21.00	2.00		
1/14/2013	20.00	20.00	0.00	0.00		
1/15/2013	21.00	15.00	12.00	2.00		
1/17/2013	0.00	0.00	2.00	0.00		



Organizational Change Management

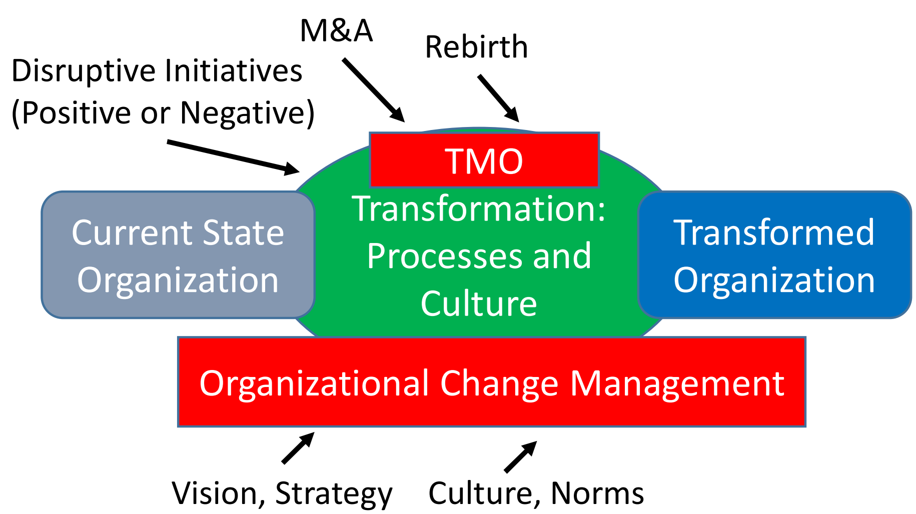
Organizational change management (OCM) considers the full organization and what needs to change, while change management may be used solely to refer to how people and teams are affected by such organizational transition. It deals with many different disciplines, from behavioral and social sciences to information technology and business solutions.

John Kotter's 8-Step Process for Leading Change

- Create a Sense of Urgency
- Build a Guiding Coalition
- Form a Strategic Vision and Initiatives
- Enlist a Volunteer Army
- Enable Action by Removing Barriers
- Generate Short-Term Wins
- Sustain Acceleration
- Institute Change

Prosci ADKAR Model

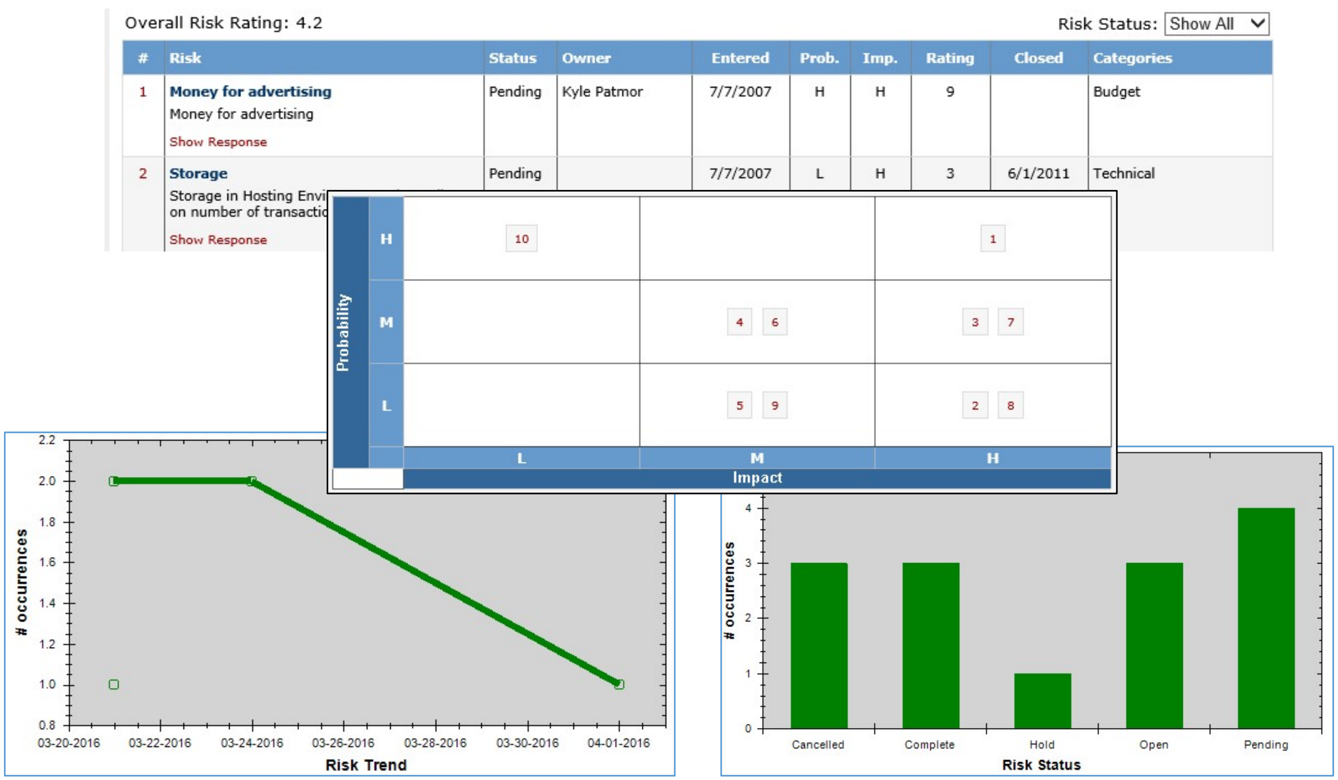
- Awareness of the need for change
- Desire to participate and support in the change
- Knowledge of what to do during and after the change
- Ability to realize or implement the change as required
- Reinforcement to ensure the results of a change continue



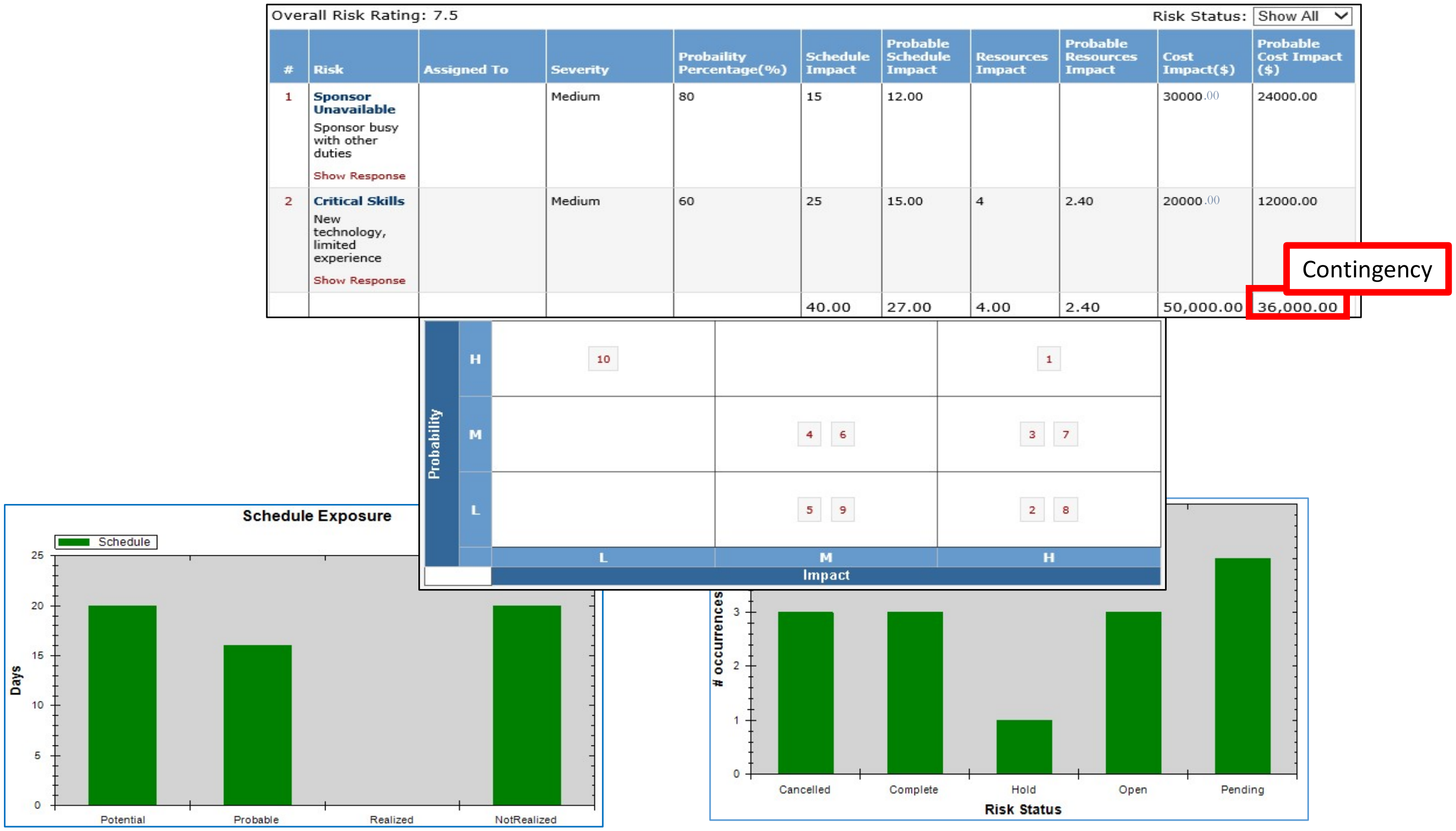
Supplemental Info

3. Doing the Work

Qualitative Risk Analysis



Quantitative Risk Analysis



Overall Risk Rating: 7.5 Risk Status: Show All

#	Risk	Assigned To	Severity	Probaility Percentage(%)	Schedule Impact	Probable Schedule Impact	Resources Impact	Probable Resources Impact	Cost Impact($)	Probable Cost Impact ($)
1	**Sponsor Unavailable** Sponsor busy with other duties Show Response		Medium	80	15	12.00			30000.00	24000.00
2	**Critical Skills** New technology, limited experience Show Response		Medium	60	25	15.00	4	2.40	20000.00	12000.00
					40.00	27.00	4.00	2.40	50,000.00	36,000.00

Risk Management

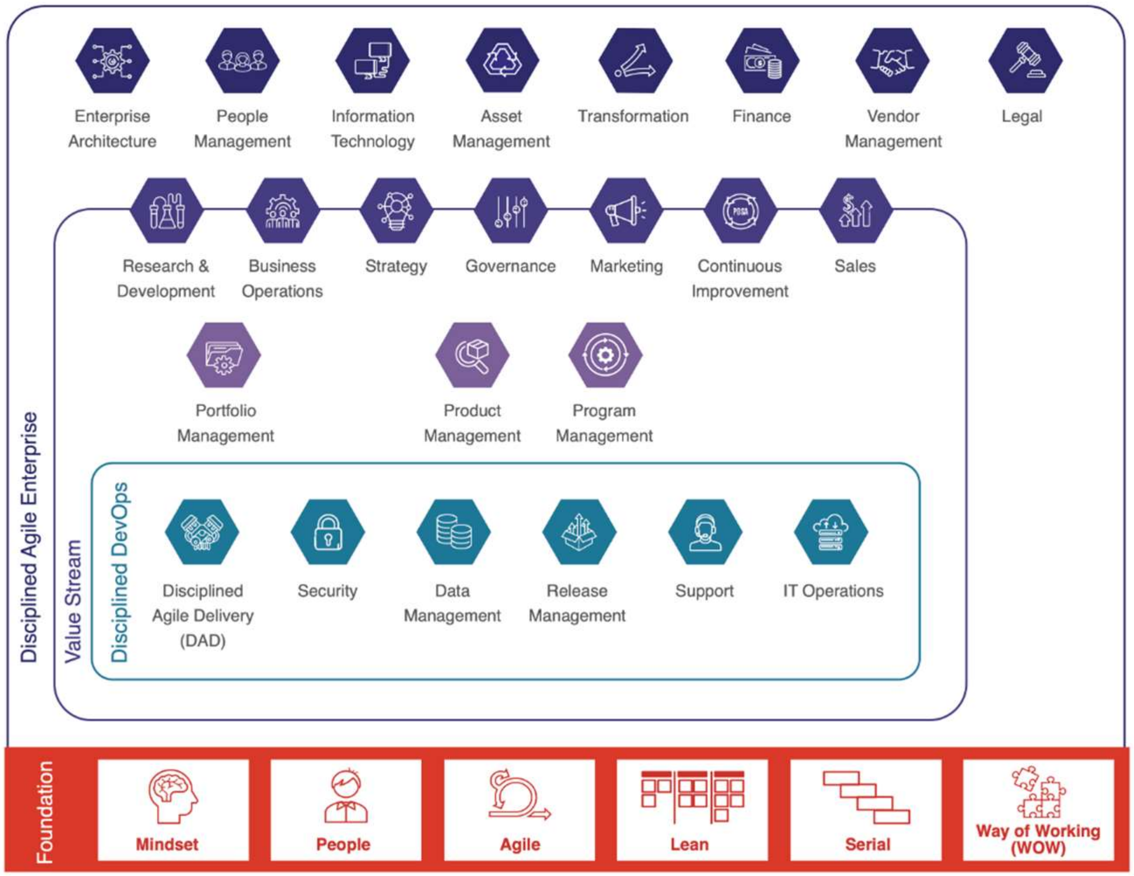
- Contingency
  - Management Reserves
    - Overall project, often %
  - Contingency Budget
    - Based on identified risks and exposure
    - Included in Schedule and Budget Baseline
  - Contingency Buffers in Schedule
    - Anticipate Delays
    - High Risk Tasks
    - Major Milestones/Deliverables
    - Points of Convergence
    - Include specific Contingency durations in schedule

Include Stakeholders in Workshops

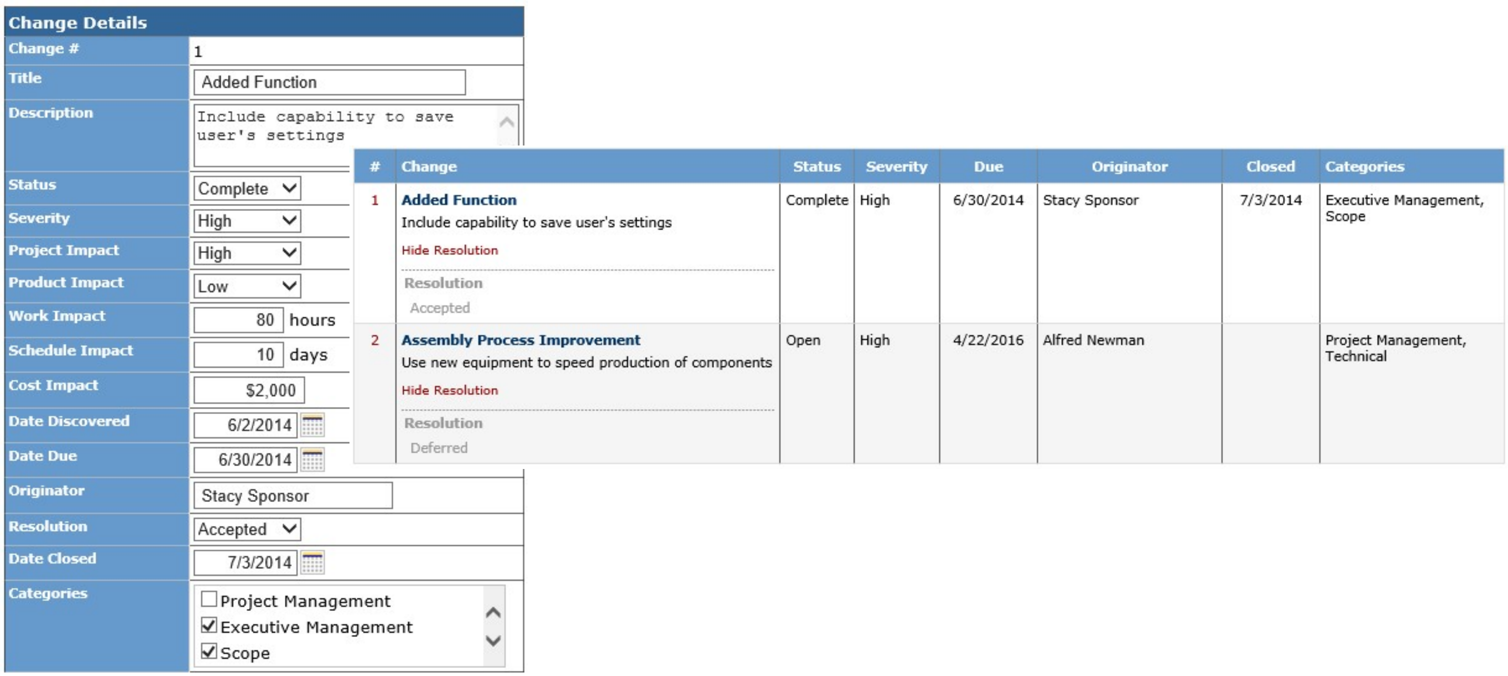
PMI Disciplined Agile

What is Disciplined Agile?

Disciplined Agile — a tool kit that harnesses hundreds of Agile practices to guide you to the best way of working for your team or organization.



Change Log



Change Details	
Change #	1
Title	Added Function
Description	Include capability to save user's settings
Status	Complete
Severity	High
Project Impact	High
Product Impact	Low
Work Impact	80 hours
Schedule Impact	10 days
Cost Impact	$2,000
Date Discovered	6/2/2014
Date Due	6/30/2014
Originator	Stacy Sponsor
Resolution	Accepted
Date Closed	7/3/2014
Categories	☐ Project Management ☑ Executive Management ☑ Scope

#	Change	Status	Severity	Due	Originator	Closed	Categories
1	**Added Function** Include capability to save user's settings Hide Resolution Resolution Accepted	Complete	High	6/30/2014	Stacy Sponsor	7/3/2014	Executive Management, Scope
2	**Assembly Process Improvement** Use new equipment to speed production of components Hide Resolution Resolution Deferred	Open	High	4/22/2016	Alfred Newman		Project Management, Technical

Risk, Issue, Task, or Change?

RISK

- What could go wrong in the future?
- Revisit throughout the project

ISSUE

- Problem: Something has gone wrong, usually unexpected
- Requires intervention or decision

TASK

- Activities and work to accomplish project objectives and deliverables

CHANGE

- Changes to project plans, schedule, budget, objectives, deliverables
- Should be handled in a controlled fashion

Knowledge Types

Explicit Knowledge: Knowledge that is easy to articulate, write down, and share.

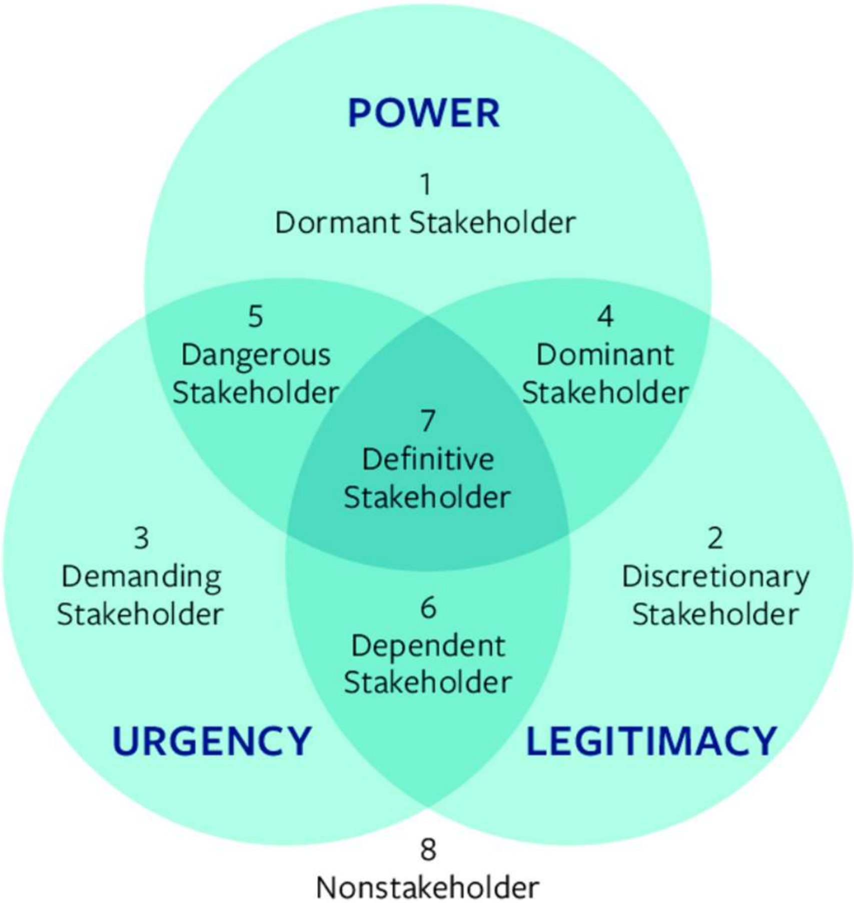
Implicit Knowledge: The application of explicit knowledge. Skills that are transferable from one job to another are one example of implicit knowledge.

Tacit Knowledge: Knowledge gained from personal experience that is more difficult to express.

Supplemental Info

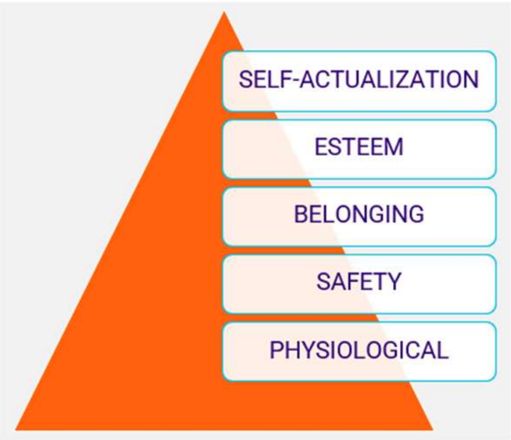
4. Keeping the Team on Track

Salience Model

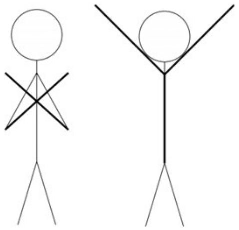


Organizational Theory

Maslow's Hierarchy of Needs



McGregor's Theory X and Y



Theory X:

- Workers dislike their jobs and they are inherently lazy.
- Workers have little motivation and prefer direction from their superiors.
- Workers need consistent rewards and punishments to ensure their task is completed.
- Workers do not have a desire to grow or achieve personal or professional goals.

Theory Y:

- Workers are willing to accept challenges and are proud of the work that they do.
- Workers do not need to be micromanaged; they are self-directed.
- Workers are eager to participate in decision-making.
- Workers are happy to contribute and feel internally satisfied.

McClelland's Achievement Theory

- Need for ACHIEVEMENT
- Need for AFFILIATION
- Need for POWER

Herzberg's Motivation Theory

Supplemental Info

5. Keeping the Business in Mind

Sampling

ATTRIBUTE SAMPLING: Method of measuring quality that consists of noting the presence (or absence) of some characteristic (attribute) in each of the units under consideration. For example, classifying as Compliant or Non-Compliant.

VARIABLE SAMPLING: Method of measuring quality that consists of use the actual measurements of sample products for decision making rather than classifying products as conforming or nonconforming, as in attributes sampling plans.

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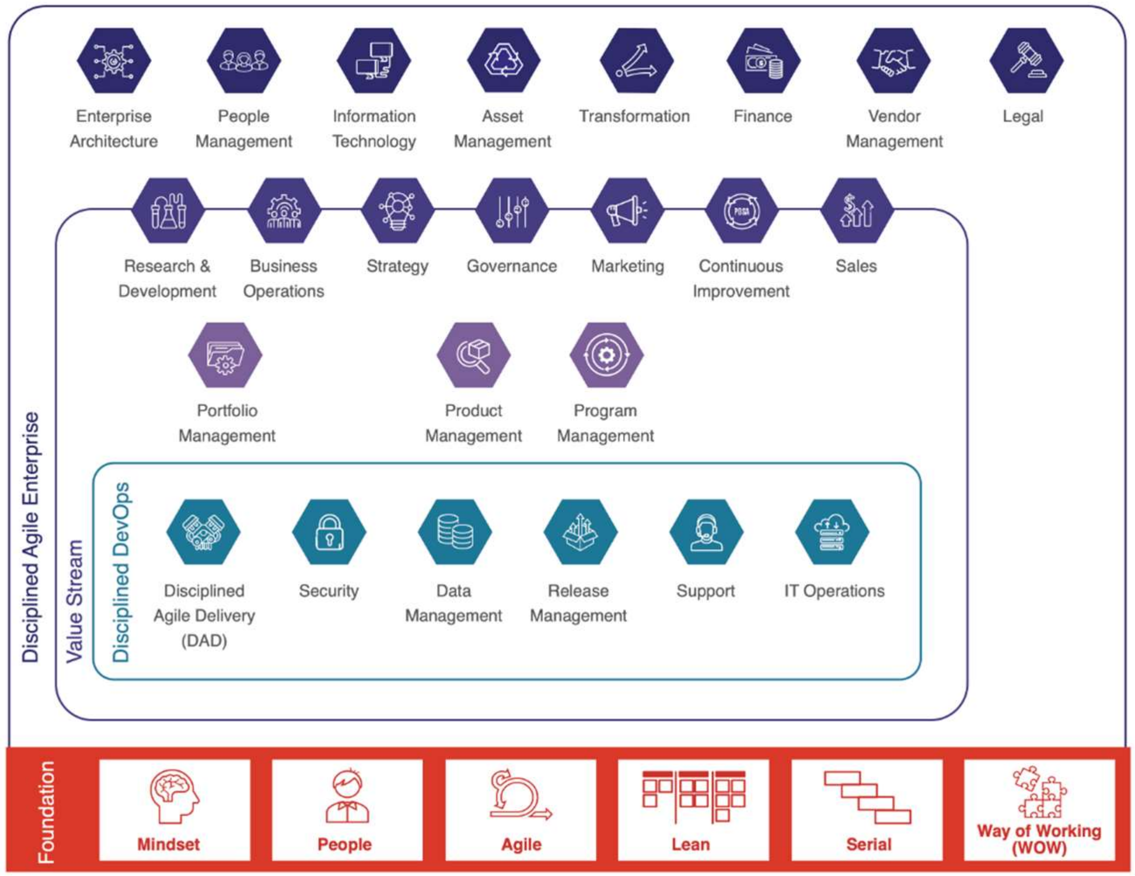


Financial Formulas

Present Value

PV is the current value of a future sum of money or stream of cash flows given a specified rate of return. Future cash flows are discounted at the discount rate, and the higher the discount rate, the lower the present value of the future cash flows.

$$\text{Present Value} = \frac{\text{FV}}{(1+r)^n}$$

where:

$\text{FV} = \text{Future Value}$

$r = \text{Rate of return}$

$n = \text{Number of periods}$

To illustrate, consider a scenario where you expect to earn a $5,000 lump sum payment in five years' time. If the discount rate is 8.25%, you want to know what that payment will be worth today so you calculate the PV = $5000/(1.0825)5 = 3,363.80

Return on Investment

$$\text{ROI} = \frac{\text{Current Value of Investment} - \text{Cost of Investment}}{\text{Cost of Investment}}$$

Net Present Value

NPV is the difference between the present value of cash inflows and the present value of cash outflows over a period of time.

$$NPV = \frac{\text{Cash flow}}{(1+i)^t} - \text{initial investment}$$

where:

$i = \text{Required return or discount rate}$

$t = \text{Number of time periods}$

JKL Media Company wants to buy a small publishing company. JKL determines that the future cash flows generated by the publisher, when discounted at a 12% annual rate, yields a present value of $23.5 million. If the publishing company's owner is willing to sell for $20 million, then the NPV of the project would be $3.5 million ($23.5 - $20 = $3.5). The NPV of $3.5 million represents the intrinsic value that will be added to JKL Media if it undertakes this acquisition.

Period	Cash Flow	Net Present Value
Month 1	$25,000	$\frac{\$25,000}{(1+0.0064)^1}$ = $24,841.02
Month 2	$25,000	$\frac{\$25,000}{(1+0.0064)^2}$ = $24,683.05
Month 3	$25,000	$\frac{\$25,000}{(1+0.0064)^3}$ = $24,526.08
Month 4	$25,000	$\frac{\$25,000}{(1+0.0064)^4}$ = $24,370.11
Month 5	$25,000	$\frac{\$25,000}{(1+0.0064)^5}$ = $24,215.13

NPV and IRR are calculated over time periods

Internal Rate of Return

IRR is a discount rate that makes the net present value (NPV) of all cash flows equal to zero in a discounted cash flow analysis. IRR is the annual return that makes the NPV equal to zero.

$$0 = \text{NPV} = \sum_{t=1}^{T} \frac{C_t}{(1+IRR)^t} - C_0$$

where:

$C_t = \text{Net cash inflow during the period t}$

$C_0 = \text{Total initial investment costs}$

$IRR = \text{The internal rate of return}$

$t = \text{The number of time periods}$

Initial Outlay = $5,000
Year one = $1,700
Year two = $1,900
Year three = $1,600
Year four = $1,500
Year five = $700

$0 = (−$5,000)
+ $1,700
÷ (1 + IRR)1 + $1,900
÷ (1 + IRR)2 + $1,600
÷ (1 + IRR)3 + $1,500
÷ (1 + IRR)4 + $700
÷ (1 + IRR)5

IRR = **16.61 %**

Net Promoter Score

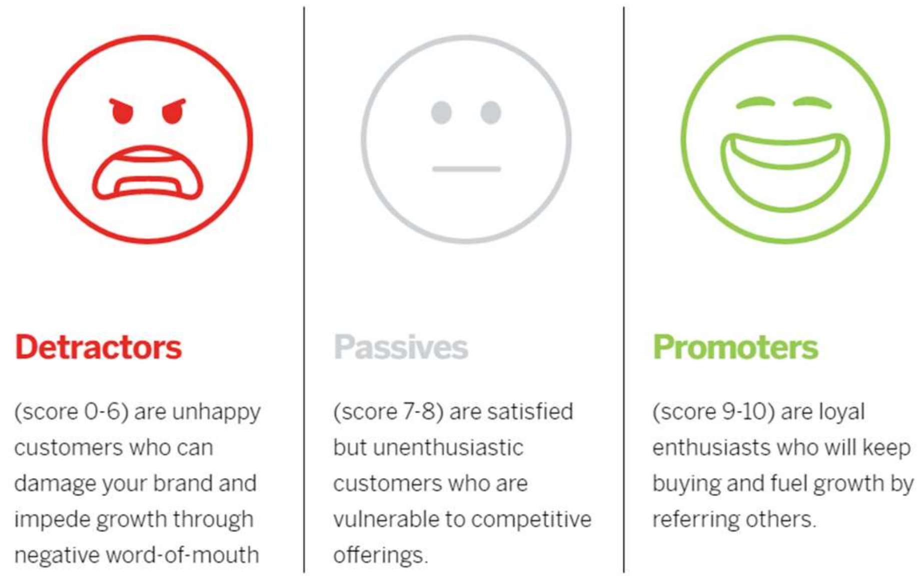
Market research metric that is based on a single survey question asking respondents to rate the likelihood that they would recommend a company, product, or a service to a friend or colleague.

Respondents give a rating between 0 (not at all likely) and 10 (extremely likely) and, depending on their response, customers fall into one of 3 categories to establish an NPS score:

•**Promoters** respond with a score of 9 or 10 and are typically loyal and enthusiastic customers.

•**Passives** respond with a score of 7 or 8. They are satisfied with your service but not happy enough to be considered promoters.

•**Detractors** respond with a score of 0 to 6. These are unhappy customers who are unlikely to buy from you again, and may even discourage others from buying from you.



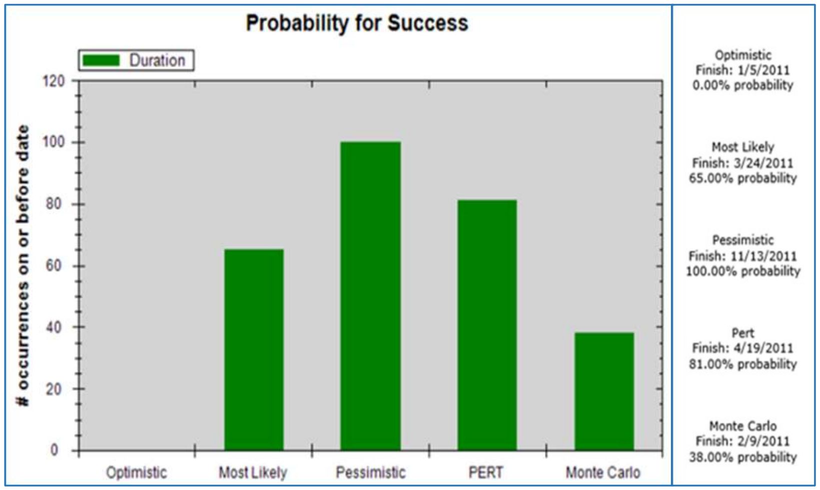
To calculate the final NPS score, subtract the percentage of Detractors from the percentage of Promoters.
For example, if 10% of respondents are Detractors, 20% are Passives and 70% are Promoters, your NPS score would be 70-10 = **60**.

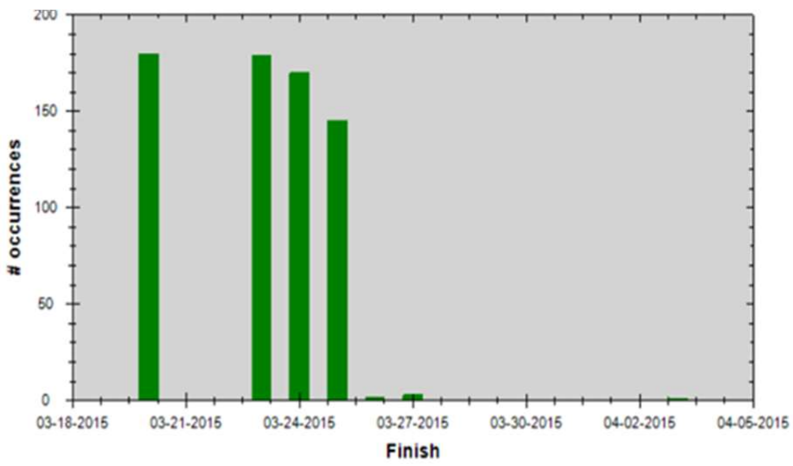
Monte Carlo Simulation

Estimate Type	Duration	Finish Date
Projected	171.00 days	03/07/2011
Baseline	171.00 days	NA
Actual	NA	NA
Optimistic	171.00 days	03/08/2011
Most Likely	249.00 days	06/24/2011
Pessimistic	483.00 days	05/17/2012
PERT	275.00 days	08/01/2011
Simulation (most occurred)	299.00 days	09/01/2011

Simulation Options

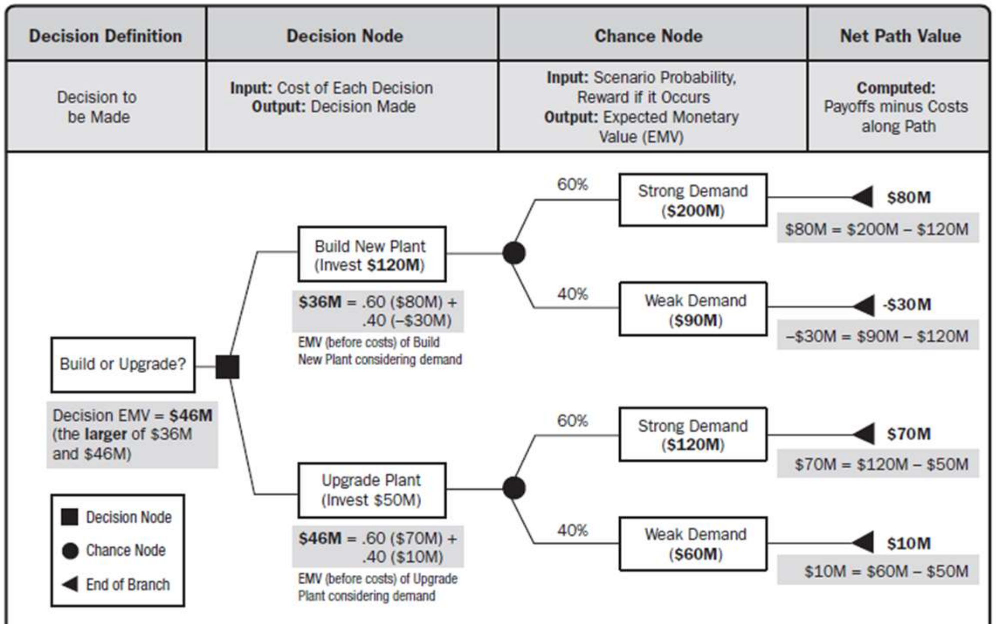
Simulation last run	3/5/2014 9:13:27 PM
Start Date	7/12/2010
Work week days	5
Work and cost relative?	No
Number of simulations	500
Type of simulation	Normal
Chosen Favor	Most Likely
Favor within + or - (Pessimistic - Optimistic) / 6 of	One Standard Deviation
Simulations favored	340





KEEPING THE BUSINESS IN MIND, 46 Decision Trees

Decision Tree



Note 1: The decision tree shows how to make a decision between alternative capital strategies (represented as "decision nodes") when the environment contains uncertain elements (represented as "chance nodes").

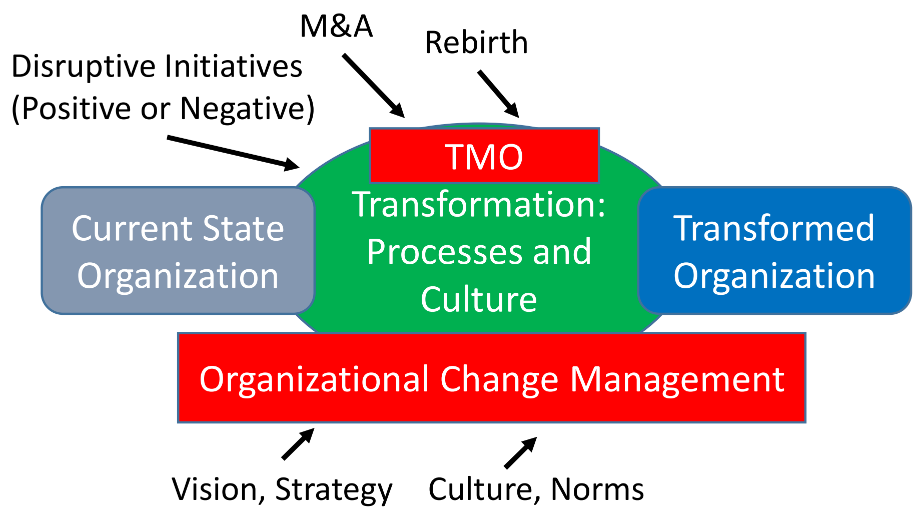
Note 2: Here, a decision is being made whether to invest $120M US to build a new plant or to instead invest only $50M US to upgrade the existing plant. For each decision, the demand (which is uncertain, and therefore represents a "chance node") must be accounted for. For example, *strong* demand leads to $200M revenue with the new plant but only $120M US for the upgraded plant, perhaps due to capacity limitations of the upgraded plant. The end of each branch shows the net effect of the payoffs minus costs. For each decision branch, all effects are added (see shaded areas) to determine the overall Expected Monetary Value (EMV) of the decision. Remember to account for the investment costs. From the calculations in the shaded areas, the upgraded plant has a higher EMV of $46M – also the EMV of the overall decision. (This choice also represents the lowest risk, avoiding the worst case possible outcome of a loss of $30M).

Organizational Change Management

Organizational change management (OCM) considers the full organization and what needs to change, while change management may be used solely to refer to how people and teams are affected by such organizational transition. It deals with many different disciplines, from behavioral and social sciences to information technology and business solutions.

John Kotter's 8-Step Process for Leading Change
- Create a Sense of Urgency
- Build a Guiding Coalition
- Form a Strategic Vision and Initiatives
- Enlist a Volunteer Army
- Enable Action by Removing Barriers
- Generate Short-Term Wins
- Sustain Acceleration
- Institute Change

Prosci ADKAR Model
- Awareness of the need for change
- Desire to participate and support in the change
- Knowledge of what to do during and after the change
- Ability to realize or implement the change as required
- Reinforcement to ensure the results of a change continue



PMO

Project Management Office (PMO): A management structure that standardizes the project-related governance processes and facilitates the sharing of resource, methodologies, tools, and techniques.

- Project/Program/Portfolio Management Office

PMO Types

Supportive

- Provides templates, best practices, training, access to information, and lessons learned from other projects. Low degree of control.

Controlling

- Provides support and requires compliance such as adoptions of frameworks and standards, use of templates/forms/tools, conformance to governance frameworks. Moderate degree of control.

Directive

- Control the projects by directly managing the projects. Project managers are assigned by and report to the PMO. High degree of control.