Best Practices for IT Portfolio Budgeting

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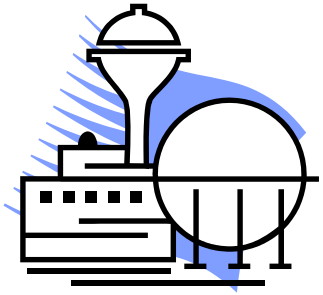
A Difficult Juggling Act in a Complex Environment

Business Demand

Technology & Business
Executive Management

Production Capacity



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IT Budgeting Challenges vs Corporate Needs

Budgeting Challenges	Corporate Needs
▪ Short time fuse with lots of pressure ▪ Minimal information ▪ Results - commitments are locked in ▪ Political sensitivities ▪ No consistent estimation method	Risk Management Resource Management Pipeline Management Financial Management

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IT Portfolio Budgeting Best Practices Overview

- QSM Best Practices Process
  - Step 1. Establish a tooling infrastructure that will support the existing business process
  - Step 2. Develop or Reverse Engineer “initial estimates”
  - Step 3. Identify “at risk” – “wasteful” projects
  - Step 4. Adjudicate outlier estimates
  - Step 5. Portfolio Assessment
    - As planned
    - Adjusted for risk and waste
    - Adjusted for resource capacity or financial constraints
  - Base Line Portfolio/Budget
  - Pass information corporate PPM

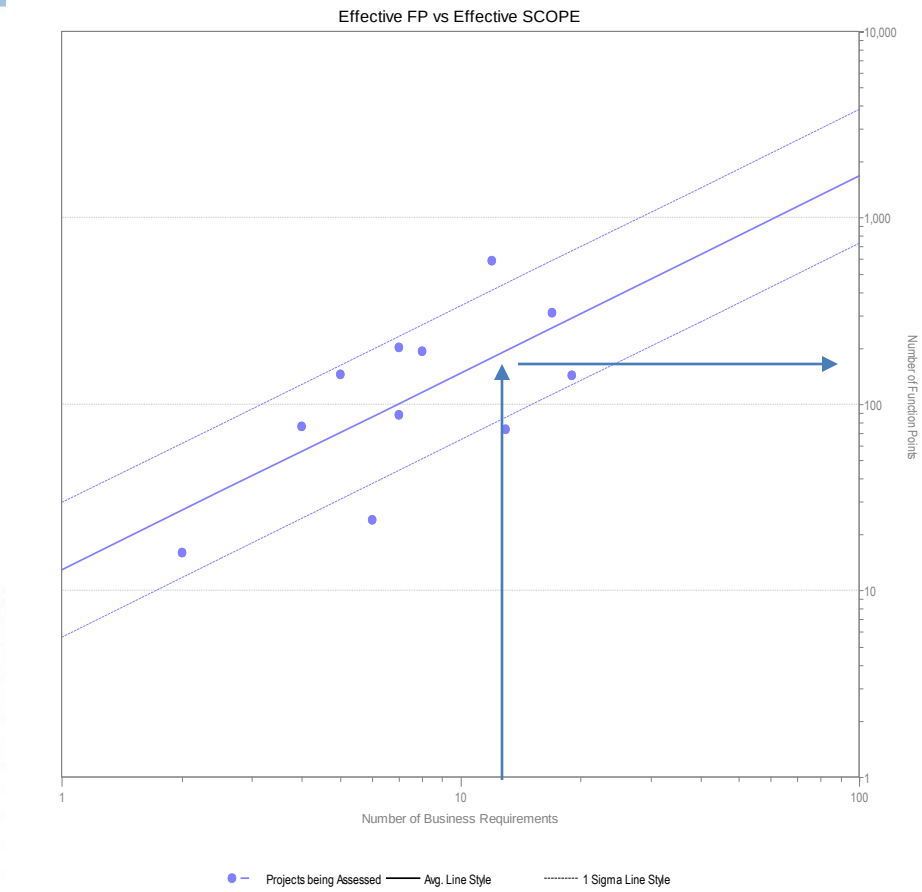
Step 1 Infrastructure Setup

Infrastructure set up

- Our goal is to make the estimation process as objective and fact based as possible in support of the portfolio budgeting process
- We do this by “dialing in” our tooling to the development environment
  - Methods/Platforms/Product Lines/Application Domains
- There are 3 main areas that we need to get a firm handle on
  - Scope (what you have to build to implement the capability)
  - Schedule & Effort Trend lines (what it has taken to produce a certain amount of scope)
  - Skill Resources Allocation (how our skilled labor is applied to a release)
- We collect basic project data from recently completed projects
  - Target 8 – 15 recently completed projects that are “representative”
  - Capture multiple sizing artifacts
  - Capture schedule and effort

Scope Estimates

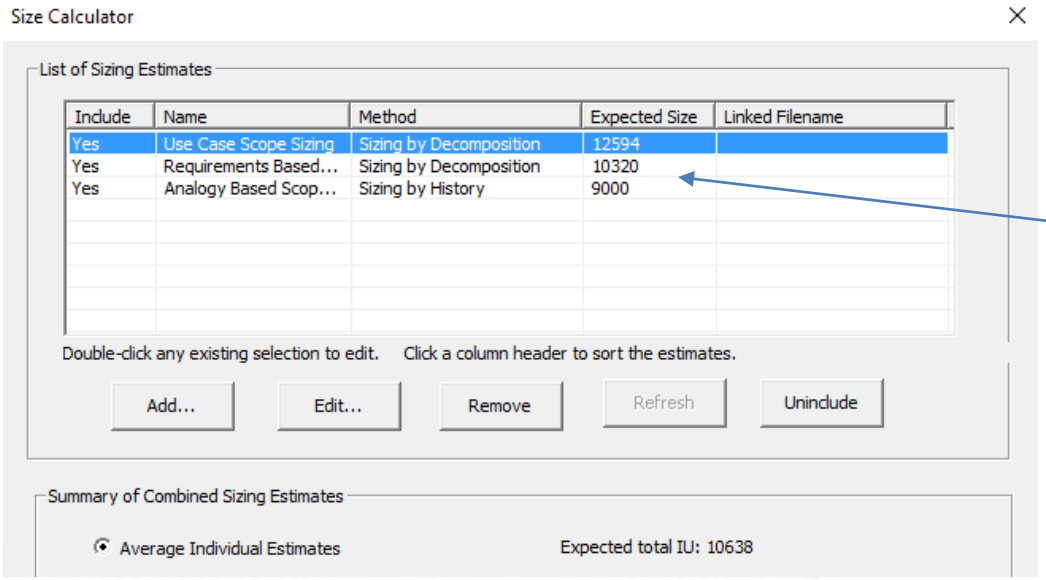
- We determine and collect scope artifacts that are available at the time the budgeting is being done
  - Scope Statements
  - Business Requirements
  - Themes/Epics
  - Technical Requirements
  - Use Cases
  - Function Points
  - SLOC / Implementation Units



We establish the relationships between the scope metrics so any metric available can be used in the estimation process. Multiple metrics are used to "triangulate" the scope size

Scope Sizing Estimator

	Estimated # of Units	Calculated IU's	Calculated FP	Function Point Language Gearing Factor
Use Cases	214	12,496	201	60
Business Requirements	9	10,038	151	
Use Case Determined Function Points		12,067		
Business Requirements Determined Function Points		9,083		
Estimated Average IU's		10,921		
Estimated Low IU's		4,915		
Estimated High IU's		18,566		



Very Large
Large
Medium
Small
Very Small

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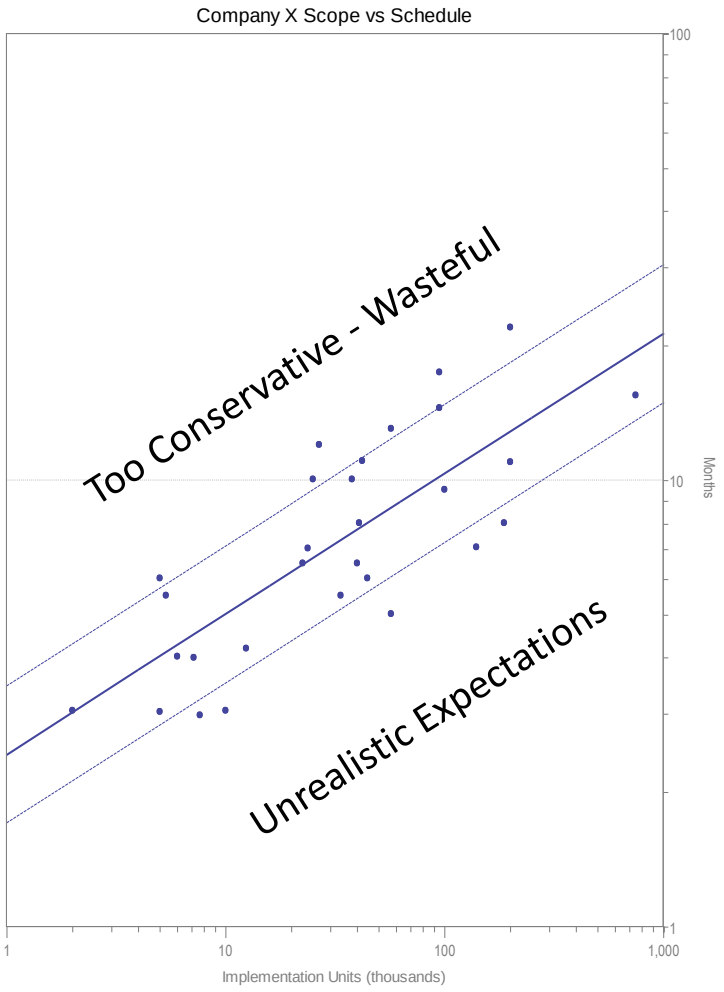
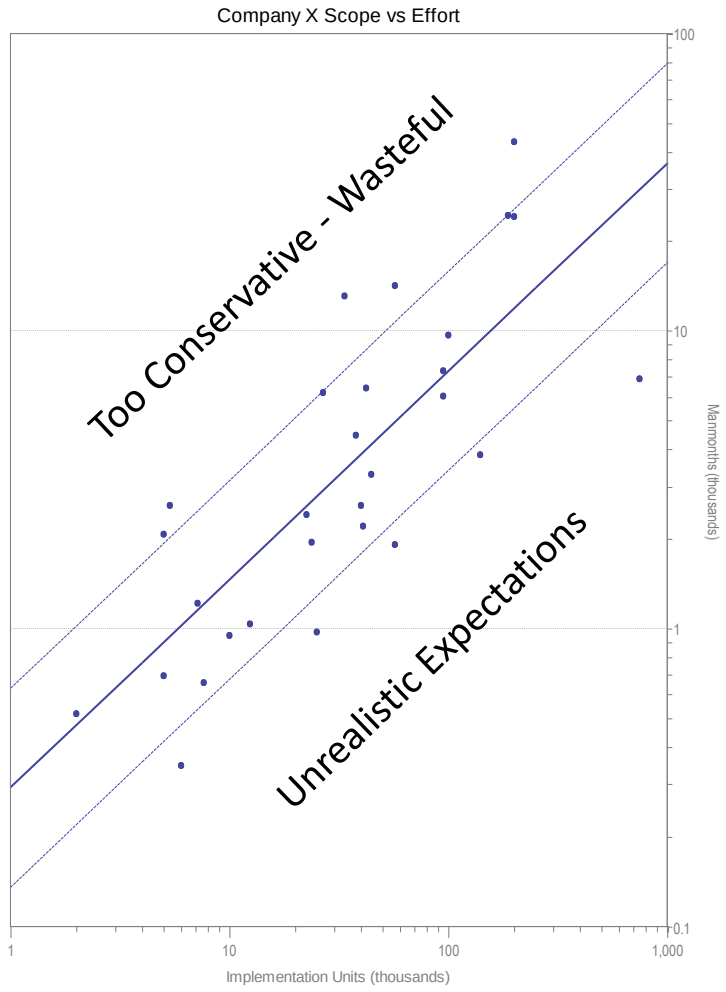
Schedule & Effort Trend Lines – Performance Ground Truth





Business Systems Avg. Line Style 1 Sigma Line Style

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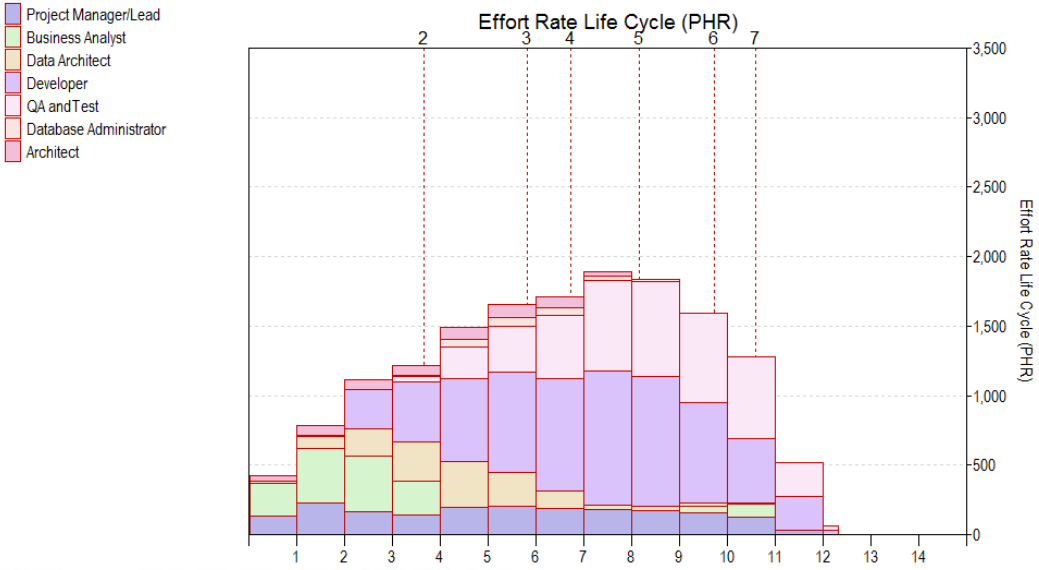
How Skills Flow on-off a Project Release

- Need to understand for any given development methodology how the skilled manpower builds up and rolls off a project.
  - Agile
  - Waterfall
  - Package Implementation
  - Etc.



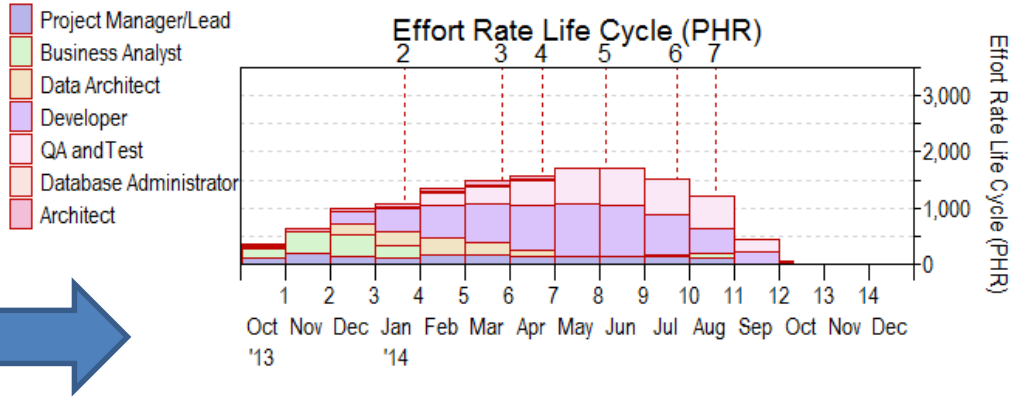
Common Practice vs Best Practice Labor Hour Estimates

Most Common Industry Practice Today

Skill Category	Effort (PHR)	% Effort
Project Manager/Lead	2,076	12.79
Business Analyst	1,461	9.00
Data Architect	1,487	9.16
Developer	6,343	39.08
QA andTest	3,974	24.48
Database Administrator	280	1.72
Architect	611	3.76
Total	16,231	100.00

This approach doesn't help the organization determine when these resources are need as the project progresses.

Best Practice Estimates Breakdown Effort by Skill by Month



Effort Rate Life Cycle (PHR) - Project X

Months*	Month	Project Manager/Lead	Business Analyst	Data Architect	Developer	QA andTest	Database Administrator	Architect
1	10/13	144.41	240.68	48.14	0.00	0.00	0.00	48.14
2	11/13	233.43	402.90	95.12	35.31	0.00	0.00	80.58
3	12/13	175.60	411.24	206.76	302.38	0.00	0.00	82.25
4	01/14	146.30	247.30	286.78	436.35	48.80	17.36	75.50
5	02/14	213.67	0.00	337.84	607.22	238.32	62.09	93.14
6	03/14	217.75	0.00	252.54	730.26	341.20	68.52	102.78
7	04/14	200.37	0.00	133.58	817.28	462.25	59.76	84.36
8	05/14	194.52	0.00	38.90	972.59	661.36	38.90	38.90
9	06/14	188.72	0.00	37.74	943.62	690.73	21.39	5.03
10	07/14	164.90	57.45	32.98	733.54	648.43	11.70	0.00
11	08/14	131.69	101.77	16.96	473.86	592.59	0.00	0.00
12	09/14	55.25	0.00	0.00	248.64	248.64	0.00	0.00
13	10/14	9.24	0.00	0.00	41.60	41.60	0.00	0.00

This approach identifies what skills are needed when and can easily feed a PPM system where specific people can be allocated to the project.

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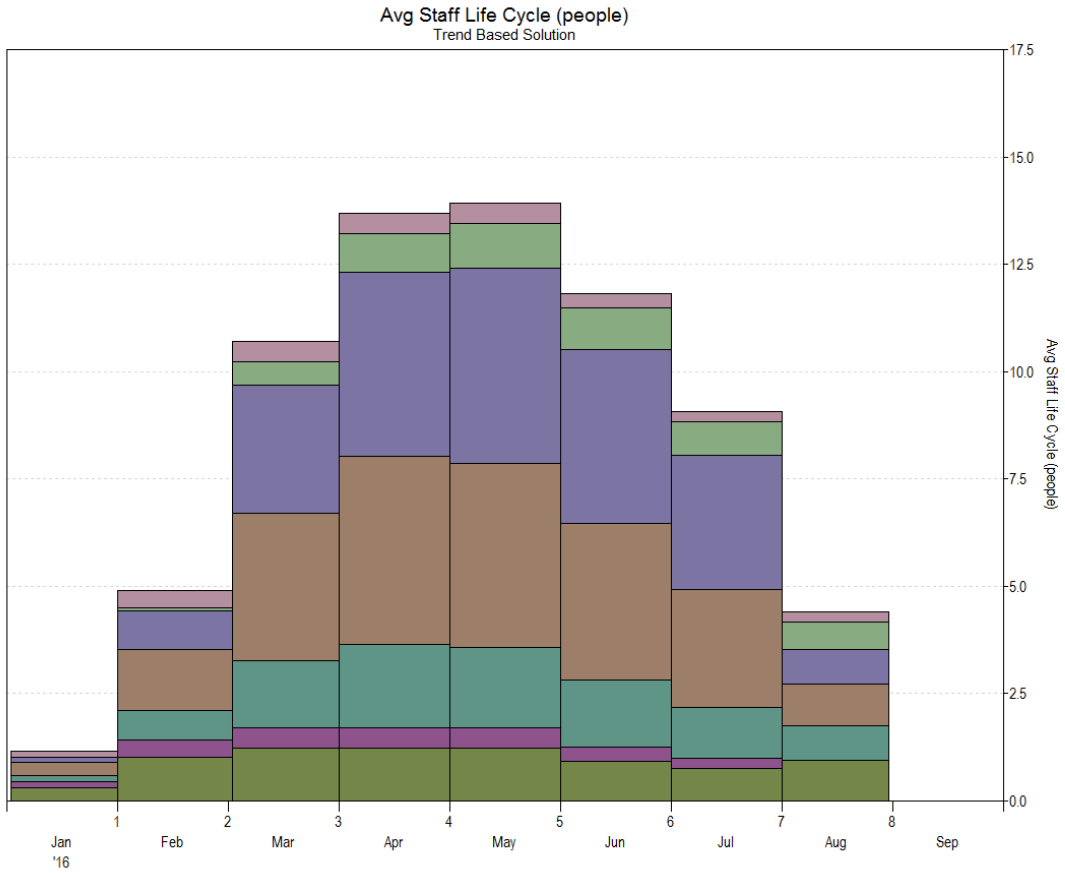
Skills Profile Configuration

Configuration Options | Skill Categories | Skill Allocations

Skill Category Name	Acronym	External ID (optional)	Labor Rate (USD per hour)
Project Management	PM		89
Architect	ARC		83
Technical Lead	TL		77
Business Analyst/Testing	BATST		80
Developer	DEV		33
Application Support	APP		50
Enterprise Services	ENT		50

Skill Category	Phase 1		Phase 2		Phase 3		Phase 4	
Project Management	1.00	F	0.50	F	0.75	F	1.00	F
Architect	0.25	F	0.25	F	0.25	F		%
Technical Lead	50	%	25	%	15	%	25	%
Business Analyst/Testing	50	%	50	%	35	%	30	%
Developer		%	25	%	40	%	25	%
Application Support		%		%	10	%	20	%
Enterprise Services		%	0.25	F	0.25	F	0.25	F



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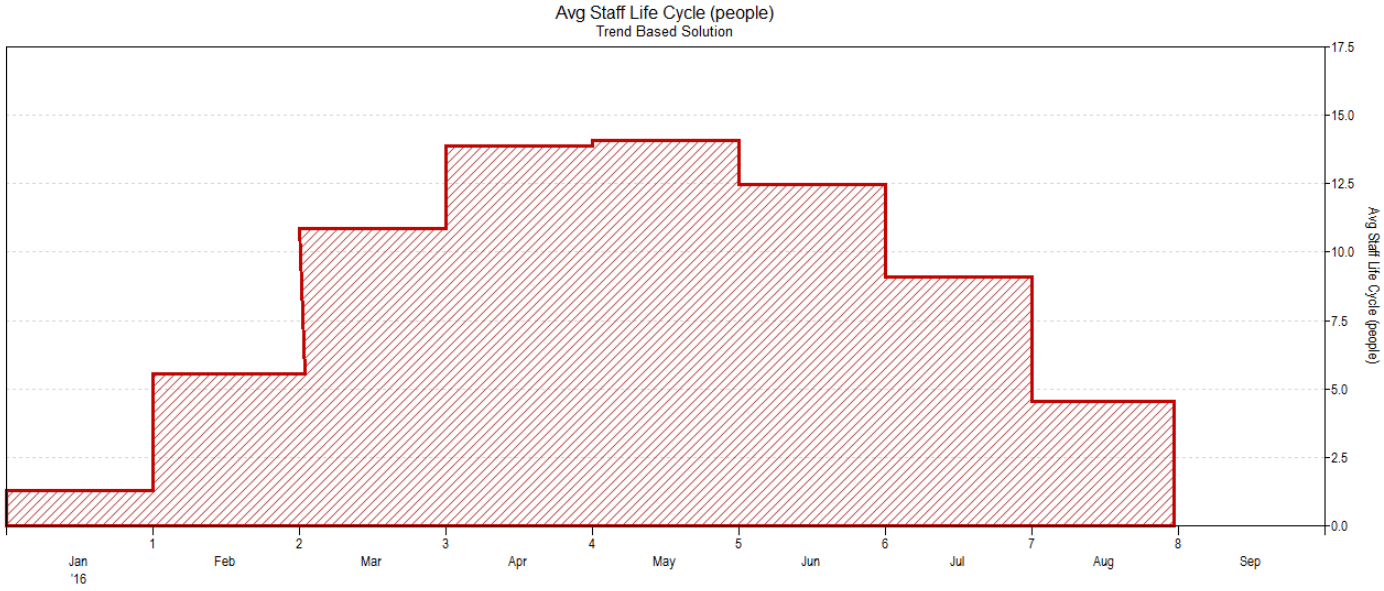
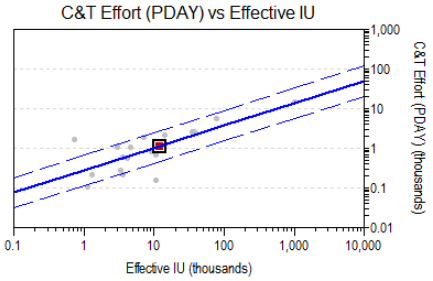
Step 2 Release Estimates

Release Estimates Process

- Business and IT actors discuss and agree on scope
- If IT team has an estimate we reverse engineer it and test for reasonableness
- If no estimate exists create trend-based solution then play out scenarios based on constraints
- Put IT team and tool based estimates under configuration management

A Trend Based Estimate

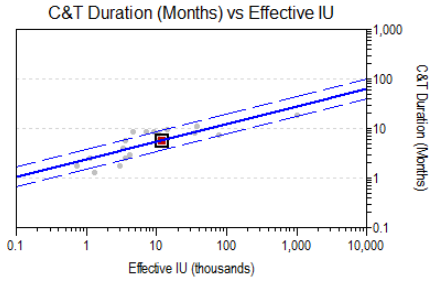




SOLUTION PANEL - Trend Based Solution

	C&T	Life Cycle	
Duration	5.8	8.0	Months
Effort	1,116	1,531	PDAY
Cost	543.3	776.0	USD (K)
Peak Staff	11.9	14.1	people
Average Staff	8.86	8.88	ppl/month
MTTD	1.582	4.133	Days
Start Date	2/7/2016	1/1/2016	

PI=11.9 MBI=5.9 Eff IU=12,000



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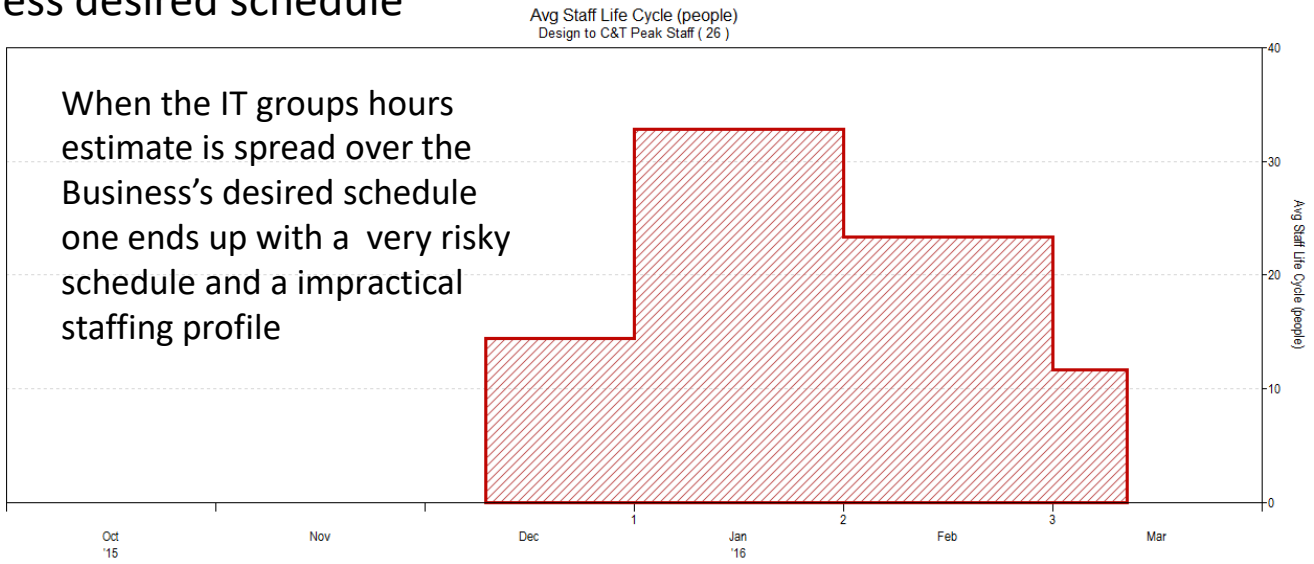
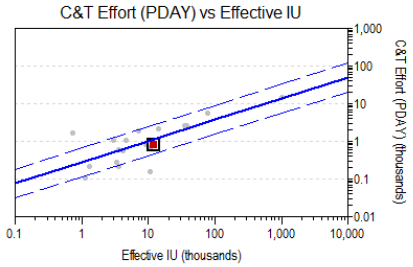
Reverse Engineered Estimate – Identifying Risk Early

1. Agreed scope baseline
2. IT groups role based hour estimate
3. Business desired schedule

When the IT groups hours estimate is spread over the Business's desired schedule one ends up with a very risky schedule and a impractical staffing profile

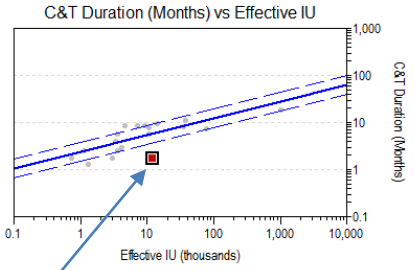




SOLUTION PANEL - Design to C&T Peak Staff (26)

	C&T	Life Cycle	
Duration	1.7	3.1	Months
Effort	837	1,321	PDAY
Cost	394.9	651.2	USD (K)
Peak Staff	26.1	32.8	people
Average Staff	22.37	19.96	ppl/month
MTTD	0.550	27.488	Days
Start Date	12/21/2015	12/10/2015	

PI=19.0 MBI=10.7 Eff IU=12,000



High Risk compared to history

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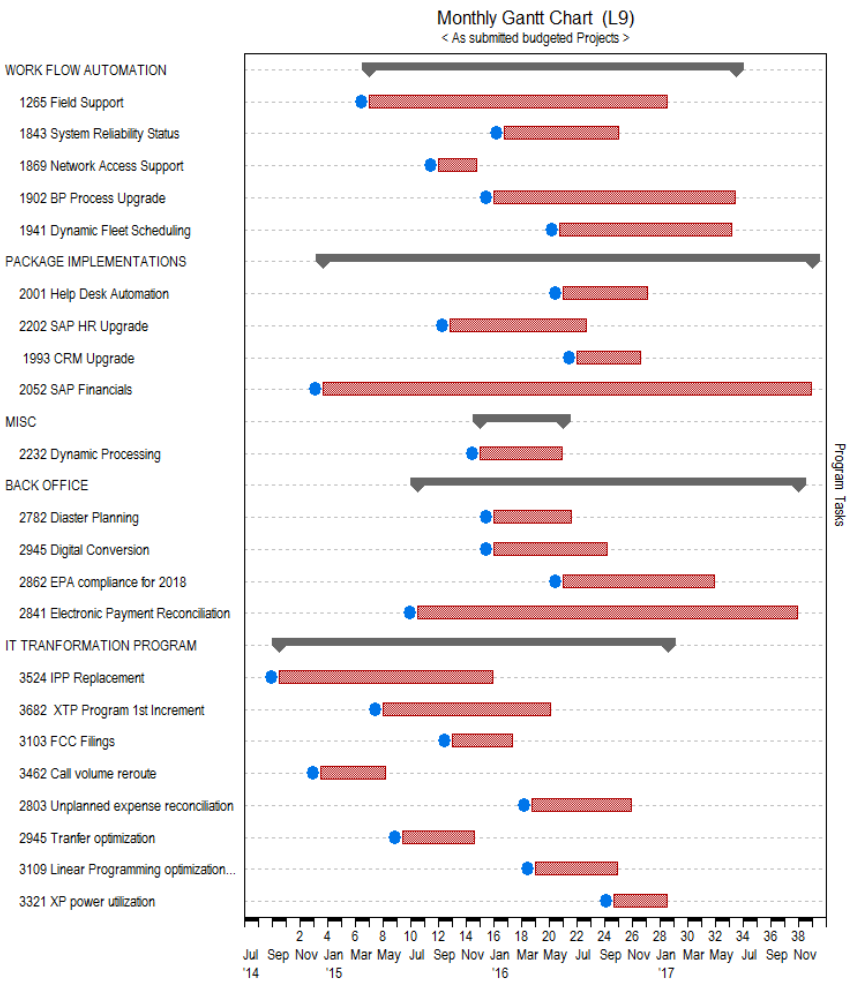
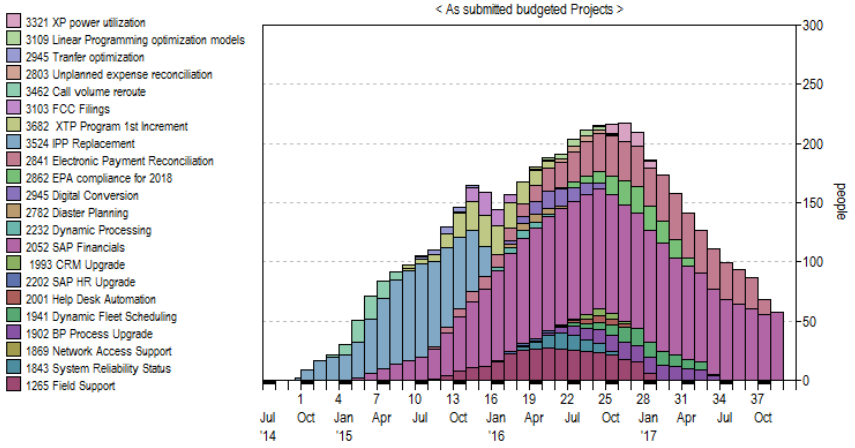
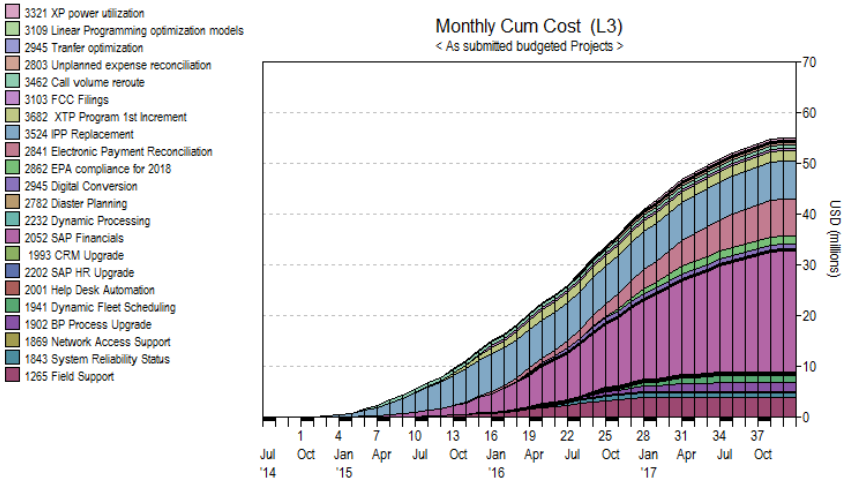
Step 3 – Assessing Risk and Waste at the Portfolio level

10/18/2016

A View at the Portfolio Level







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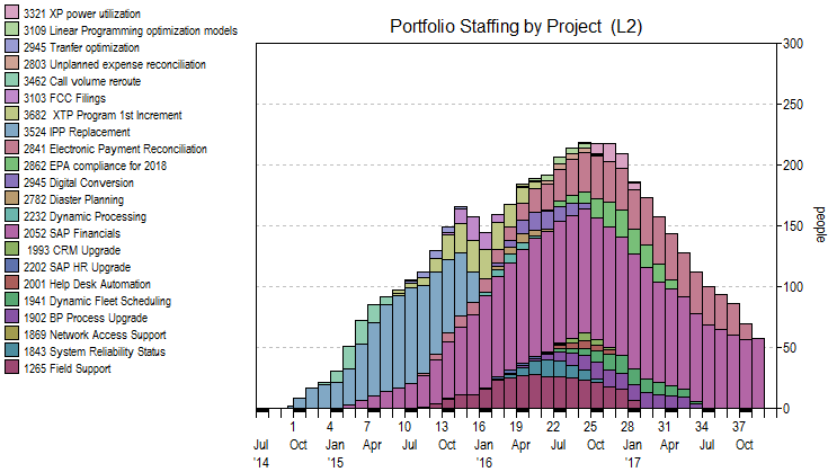
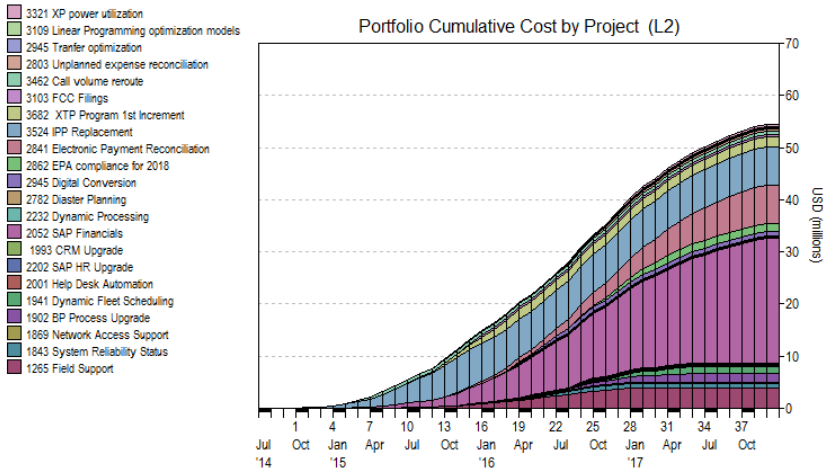
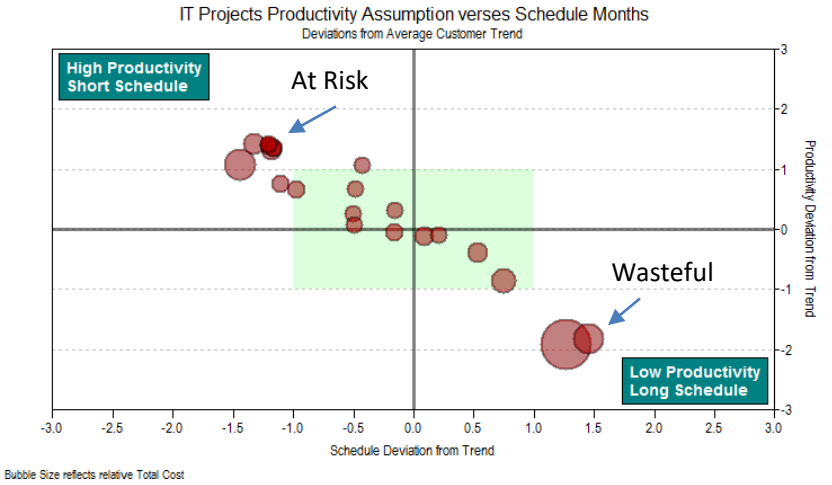
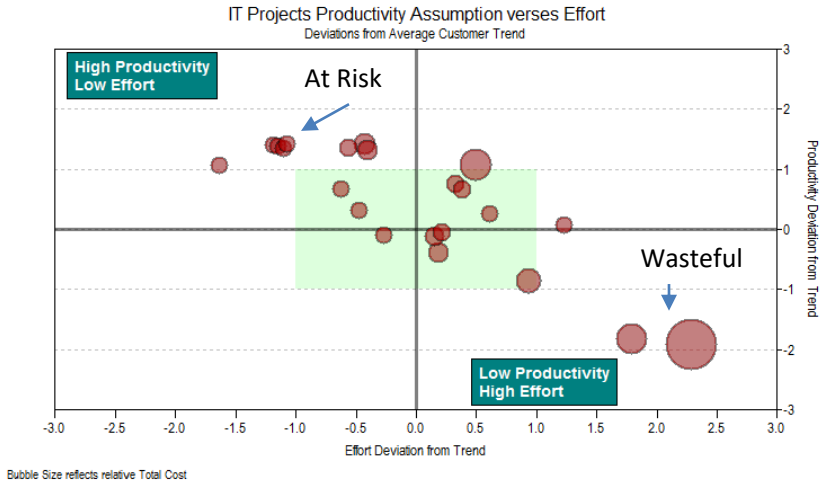
Identifying “at Risk” and “Wasteful” Projects

Portfolio Resource & Risk Quadrant









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Adjudicate Outlier Estimates

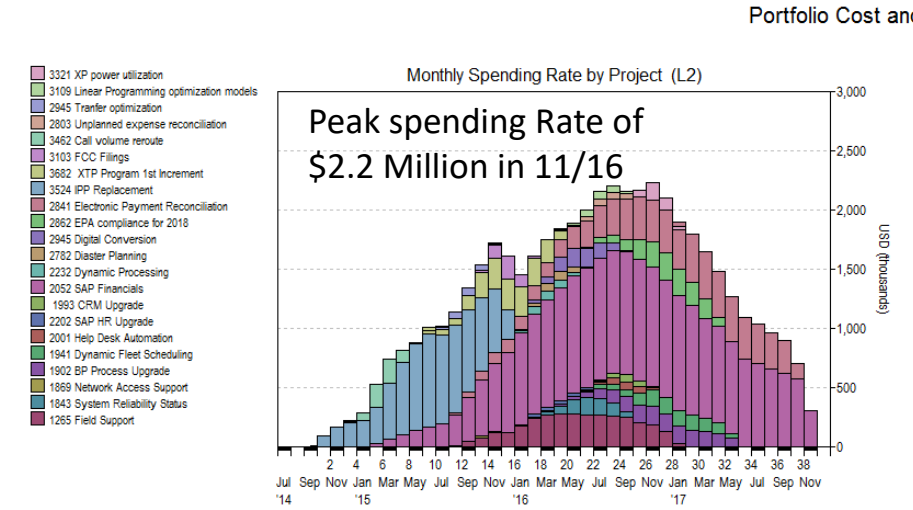
- Reconciliation required when
  - Estimates are outside the “target zone”
  - Significant difference between team and tool based estimates
  - Significant project/program requires deep dive to improve confidence
- Adjustments
  - Are there any justifications for changing productivity assumptions?
    - Relevant Historical data
    - Unique circumstances
  - Is there better information about constraints
    - Budget/Cost/Staffing/Schedule/Release packaging
- Alternatives explored and official position is established

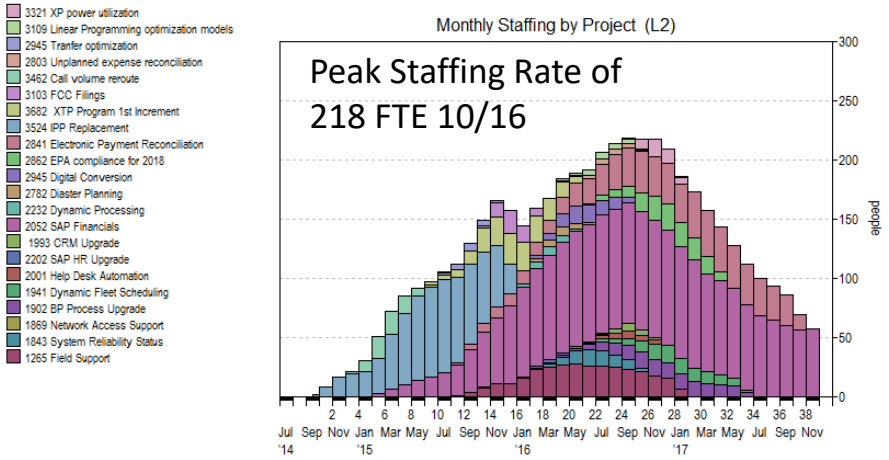
Step 5. Portfolio Assessment

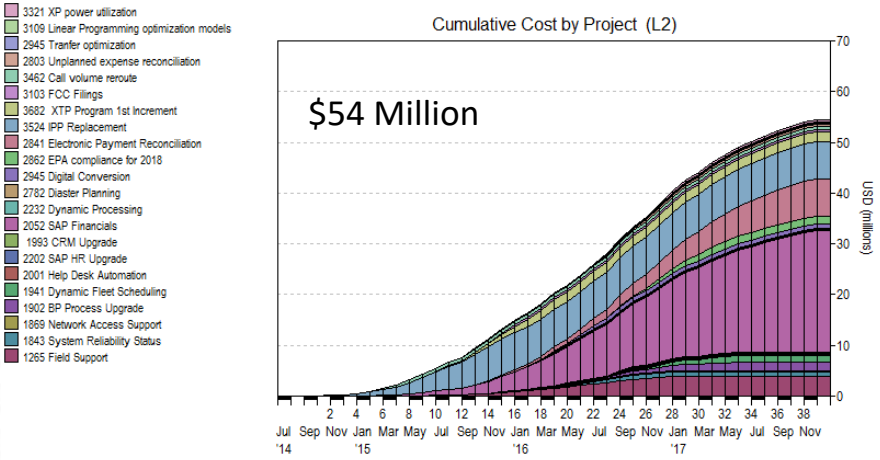
Portfolio Assessment

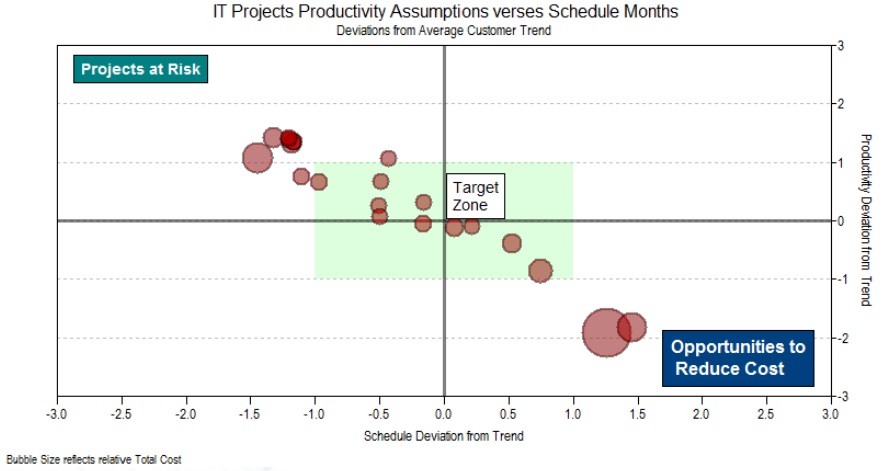
- Typical Scenarios to be Evaluated
  - Portfolio “as submitted” – Identification of risk and potential savings
  - Portfolio adjusted for “risk and waste” - Optimized to the capability of the organization
  - Portfolio adjusted for organization capacity or financial constraints – Optimized to meet the needs of the C level decision makers

“As Submitted” Portfolio

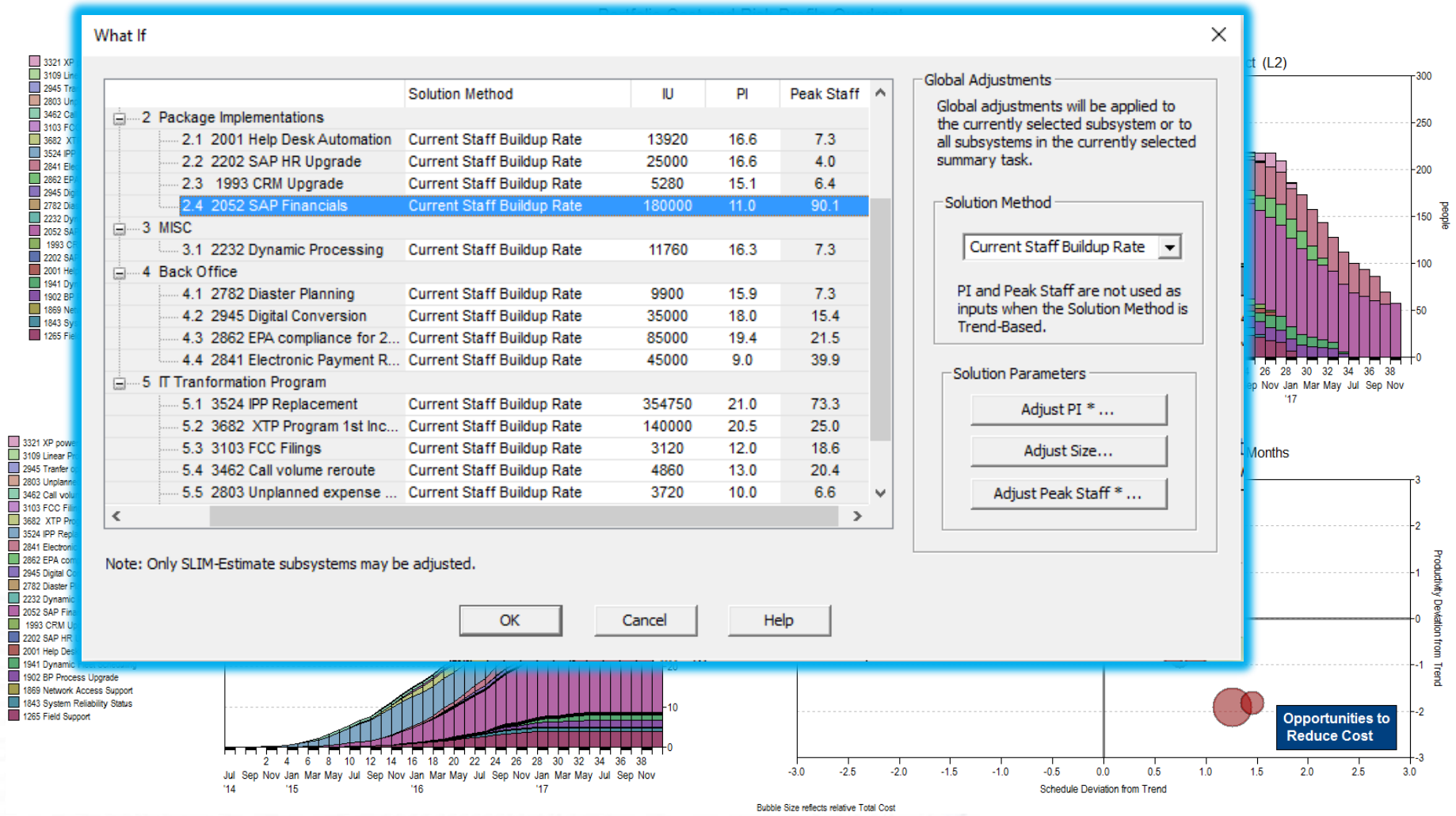






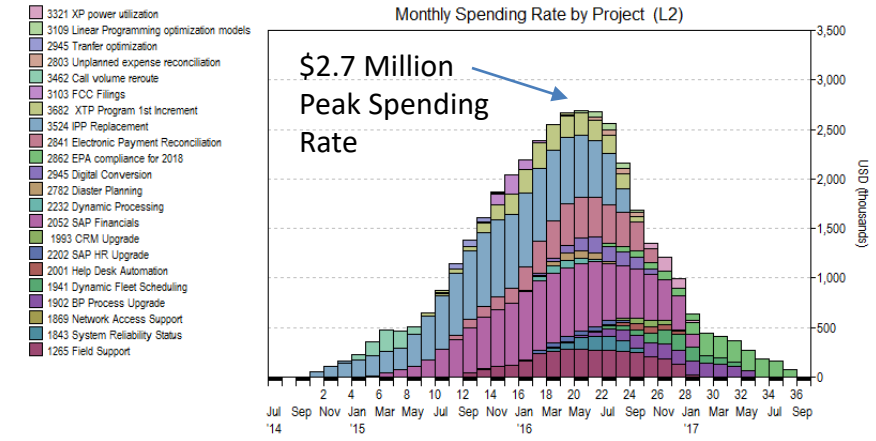


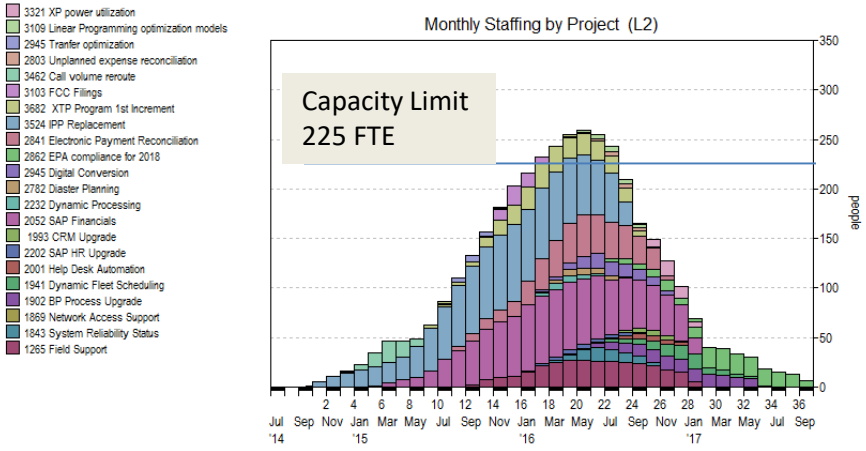
Adjustment Process

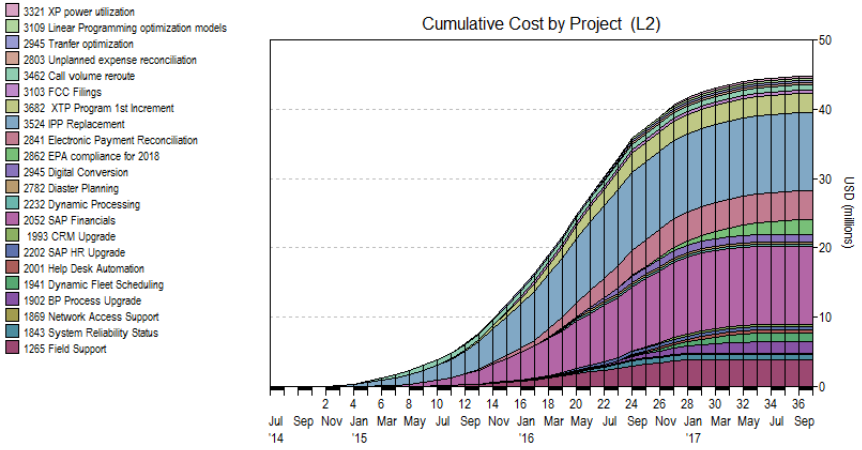


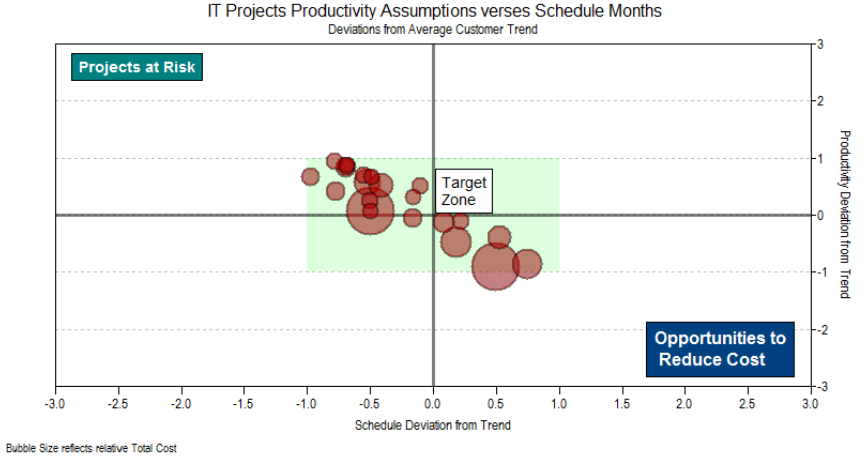
Portfolio Adjusted for Risk and Waste

Portfolio Cost and Risk Profile Quadrant









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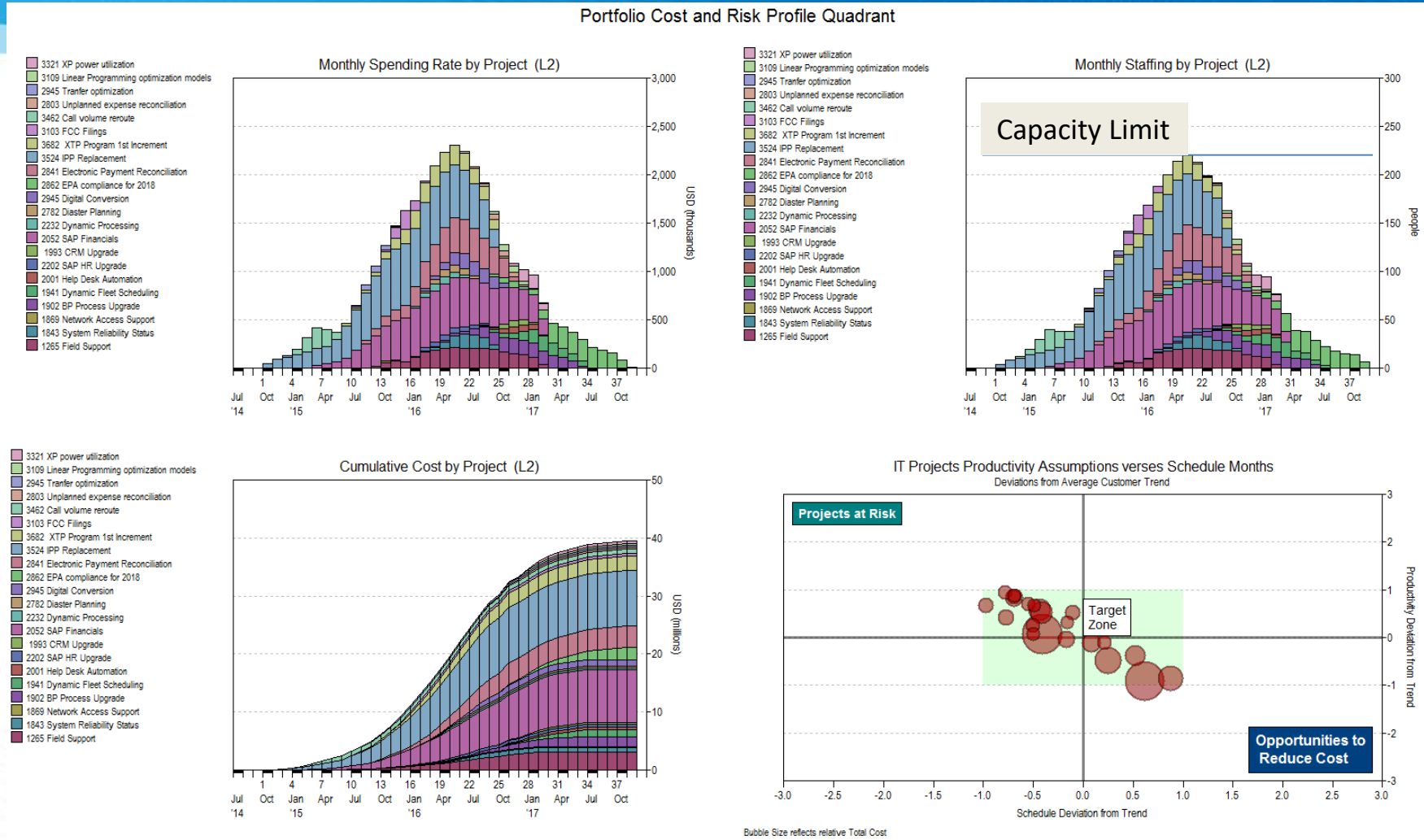
Portfolio Adjustments

- Typical Adjustments
  - Eliminate Projects (usually not an option)
  - Slip start date (provided the project isn't under way)
  - Adjust staffing up or down to accelerate/decelerate
    - Staff Augmentation
    - Outsourcing Partners

Meeting Capacity Limits



To meet the capacity limit
- 5 projects were delayed by 3 months
- 3 projects required staff modest reductions

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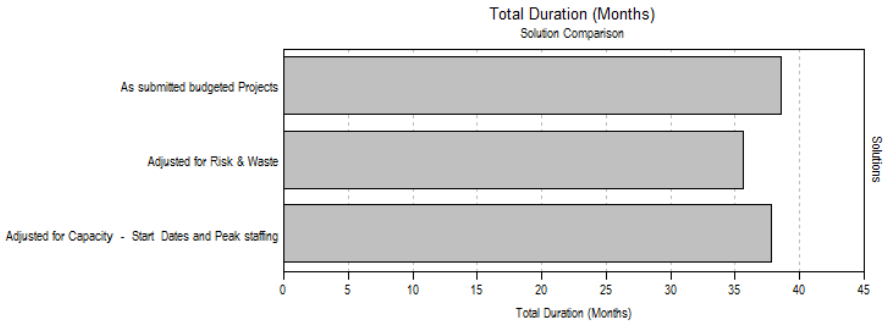
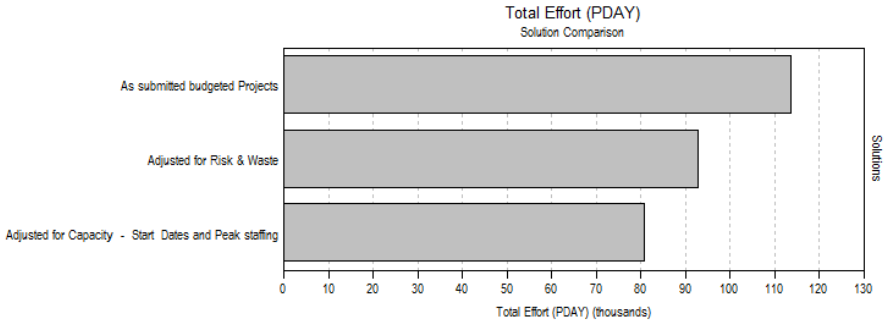
Comparing Portfolio Alternatives

Comparison of Logged Solutions



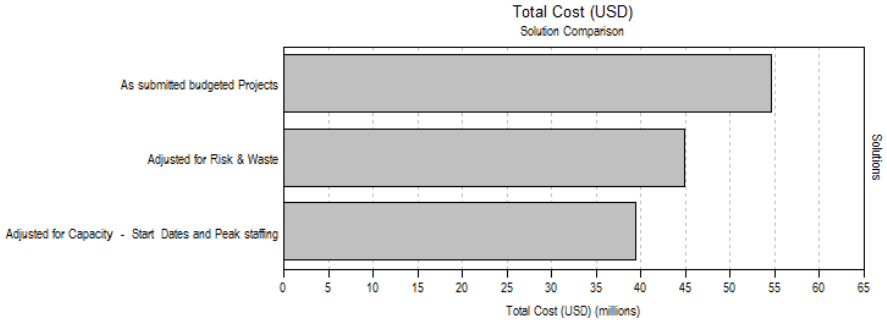
Total Duration (Months)
Solution Comparison

Solution	Total Duration (Months)
As submitted budgeted Projects	38.57
Adjusted for Risk & Waste	35.63
Adjusted for Capacity - Start Dates and Peak sta...	37.77



Total Effort (PDAY)
Solution Comparison

Solution	Total Effort (PDAY)
As submitted budgeted Projects	113,522.92
Adjusted for Risk & Waste	92,683.74
Adjusted for Capacity - Start Dates and Peak sta...	80,809.55



Total Cost (USD)
Solution Comparison

Solution	Total Cost (USD)
As submitted budgeted Projects	54,651,480
Adjusted for Risk & Waste	44,930,766
Adjusted for Capacity - Start Dates and Peak sta...	39,421,485

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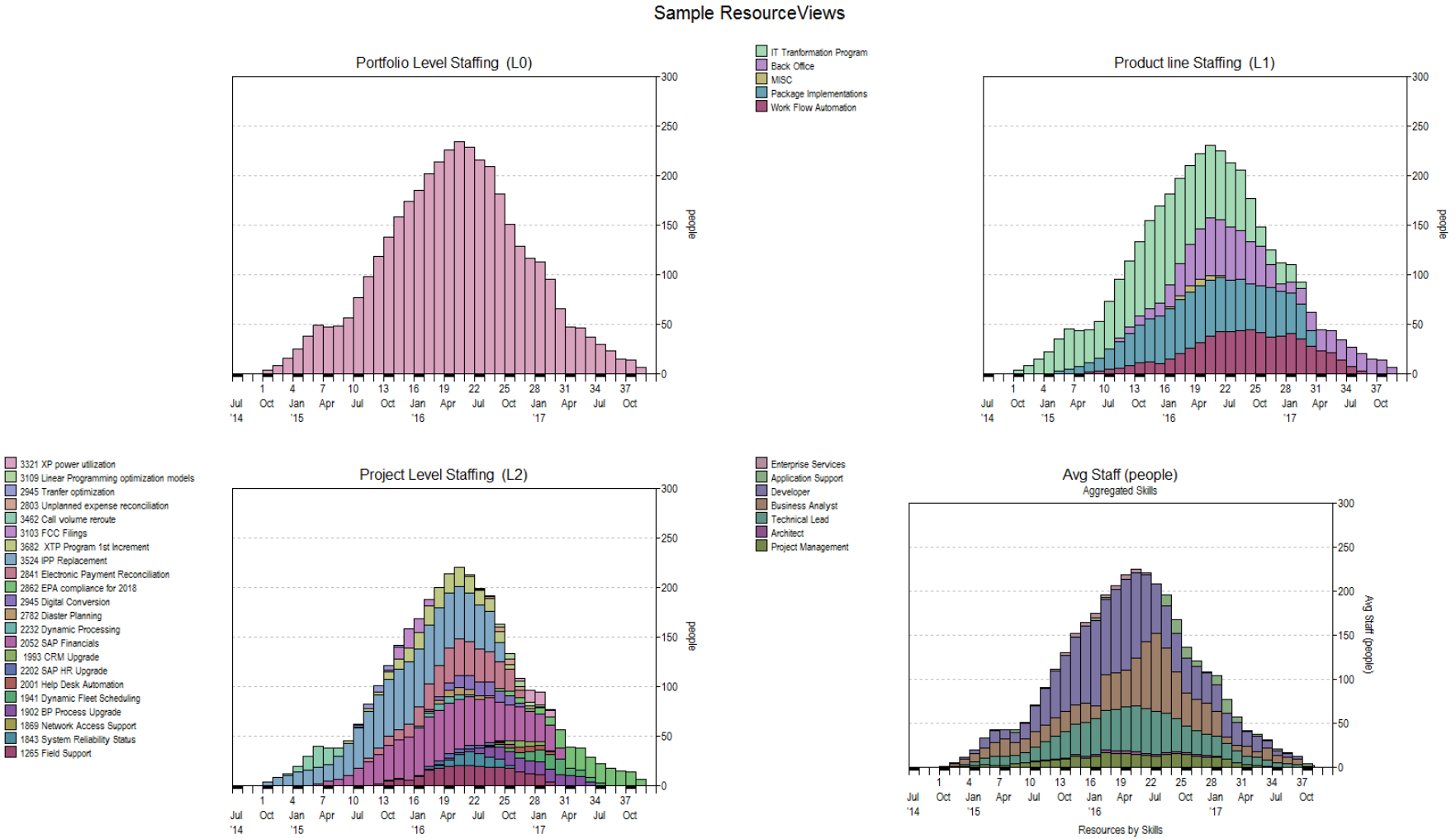
Support for Resource Management

- Ability to identify when resources or various skill types are required
- Ability to play out scenarios that optimize resource allocation
- Provides
  - Staffing & effort by skill categories at project level
  - Staffing & effort by skill categories at product line level
  - Staffing & effort by skill category at the portfolio level

Resource Management Views



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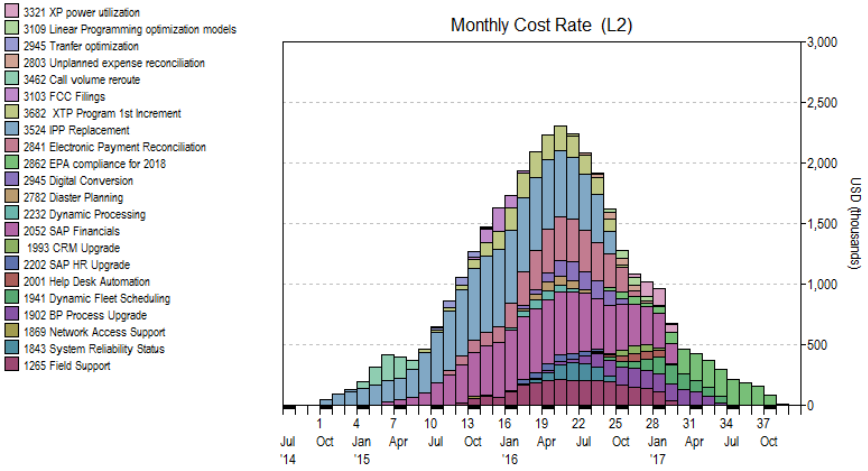
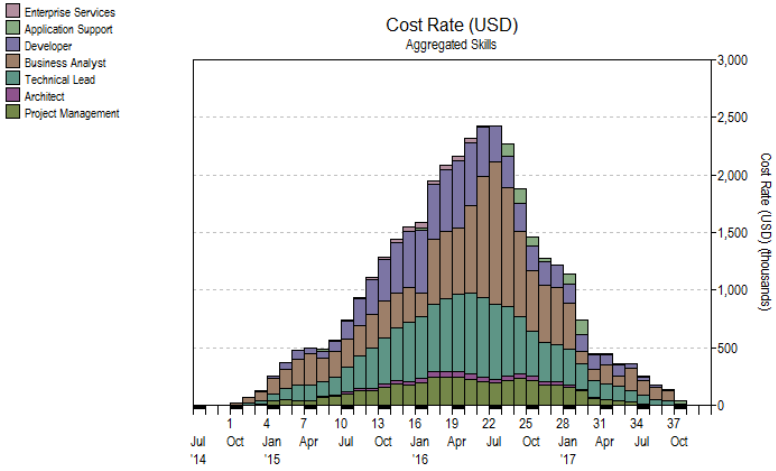
Support for Financial Management

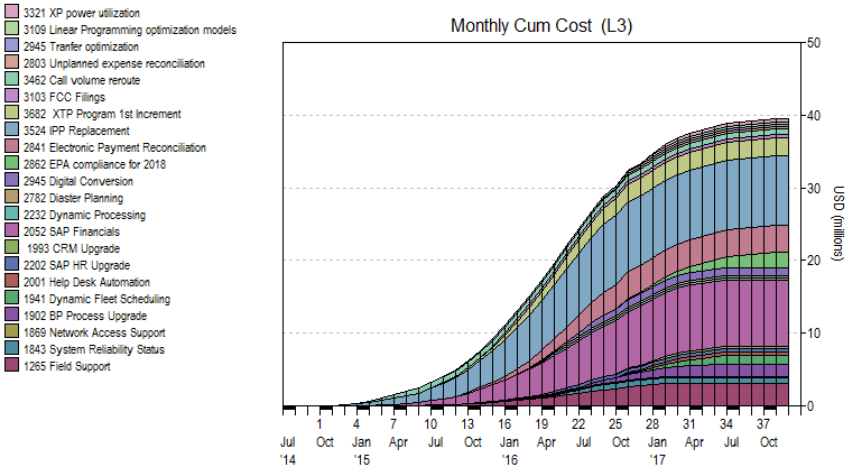
- Ability to quickly play out and compare financial scenarios at the portfolio, product line and project level.
- Provides (at the portfolio/product line or project level)
  - Estimated total cost
  - Estimated total hours
  - Monthly spending rate
  - Hours per month expenditure
  - Estimated total cost by labor skill
  - Monthly cost by labor skill

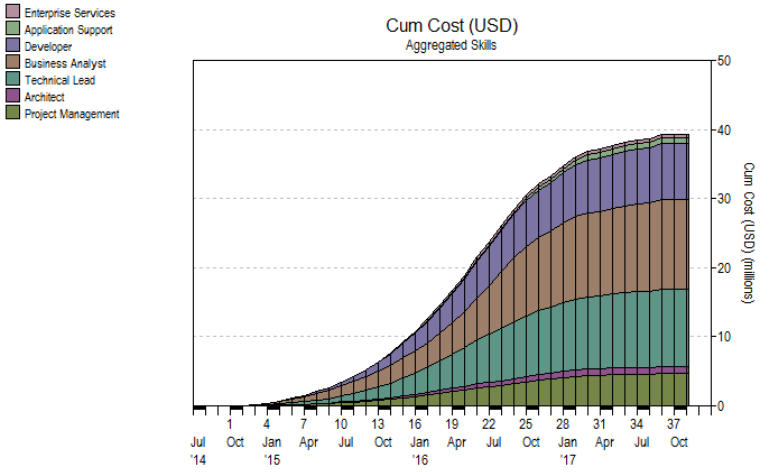
Financial Management Views

Sample Financial Views







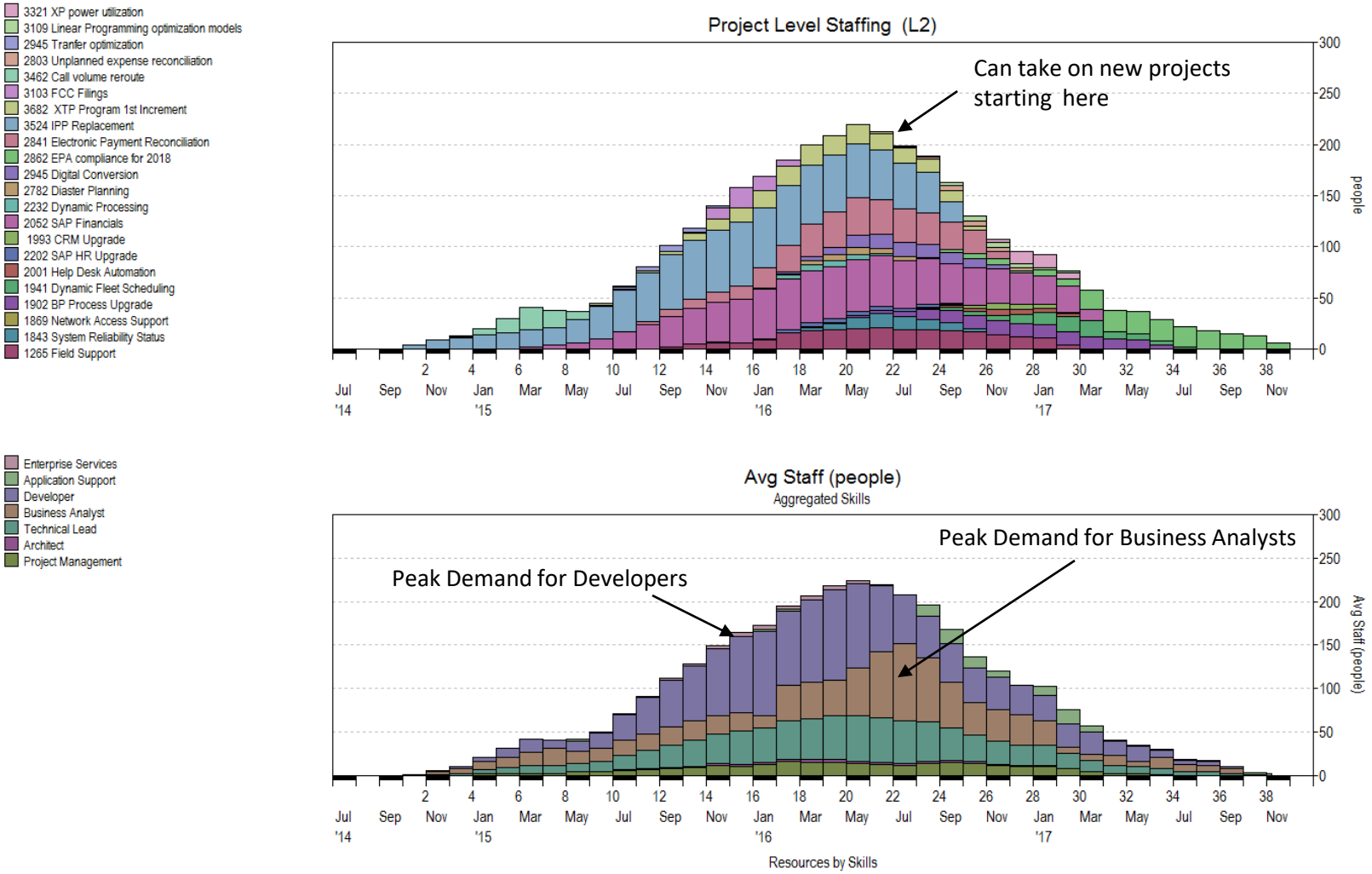


Support for Demand Management

- Ability to predict the demand for IT resources enabling sound capacity planning – balancing
- Provides
  - Demand by staffing and skill level
  - Identifies peak demand
  - Identifies when new project can be added to the pipeline based on capacity constraints
  - Can play out what-if scenarios to balance demand to capacity

Demand Management Views

Sample ResourceViews

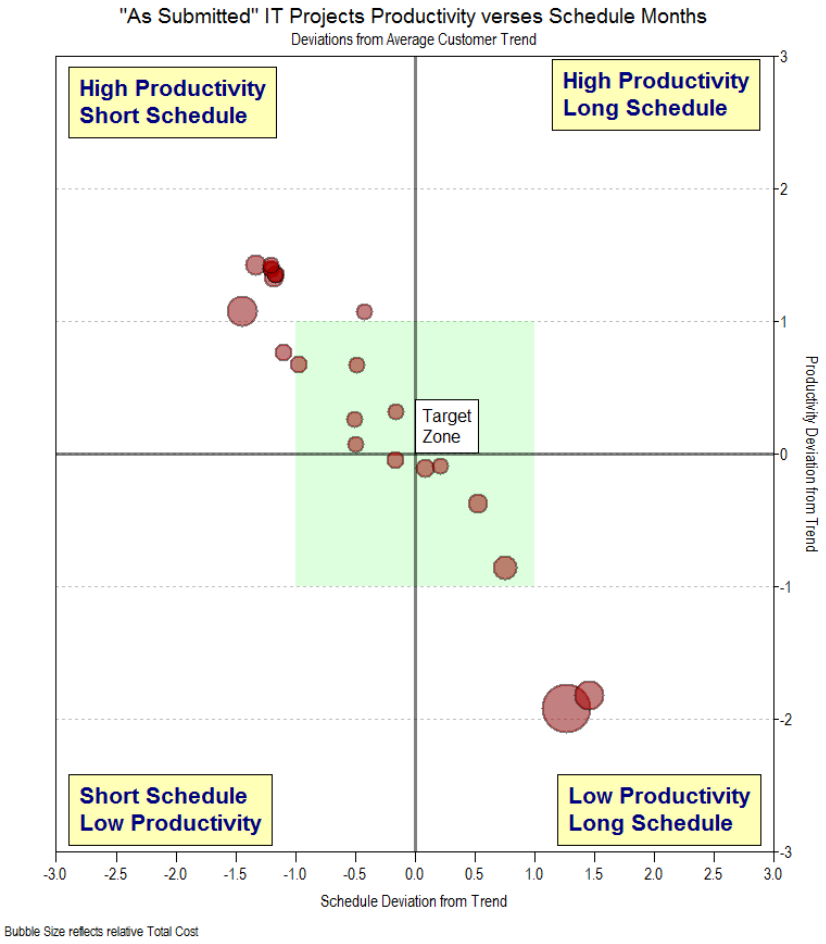


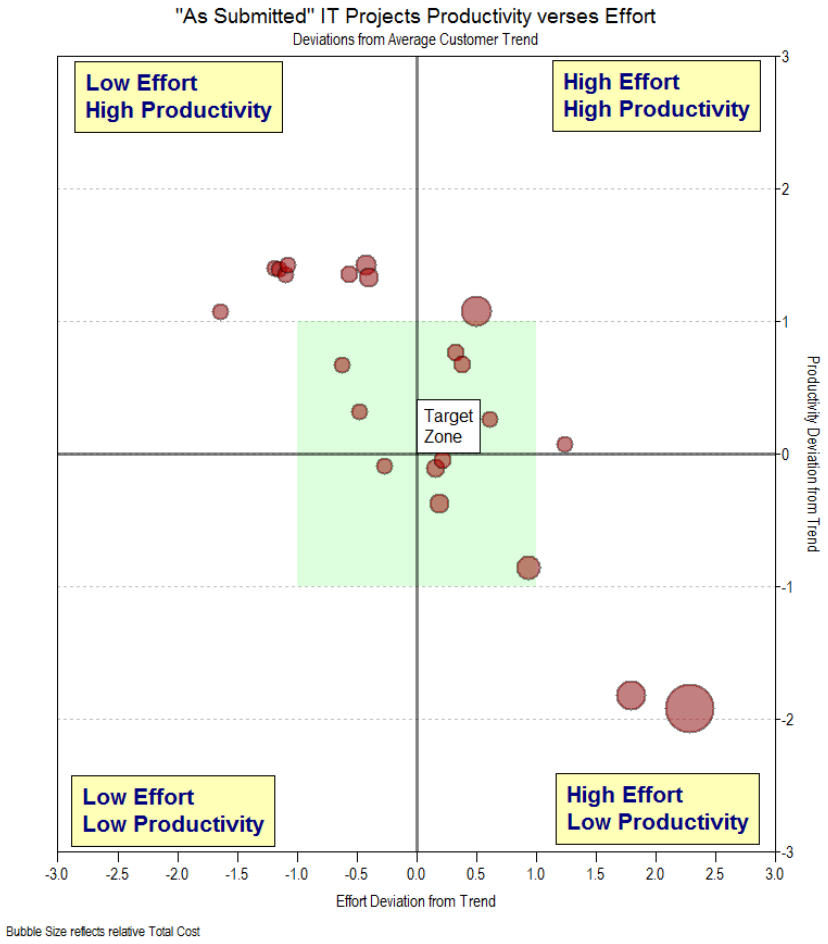
Support for Risk Management

- Early identification of Risky Projects
- Better ability to negotiate unrealistic expectations
- Ability to evaluate the “Risk profile” of the entire portfolio
- Ability to play out scenarios that reduce schedule and cost risk

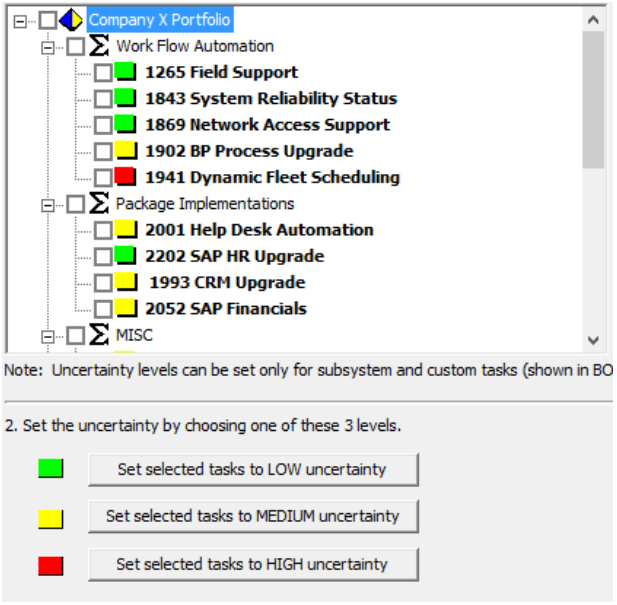
Risk Management Views

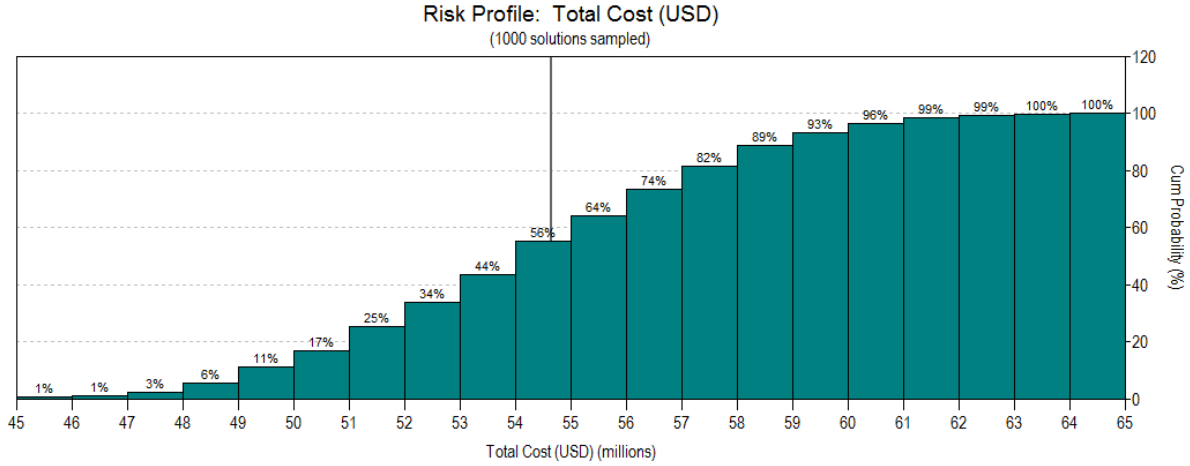
IT Portfolio Projects - Productivity vs Schedule & Effort





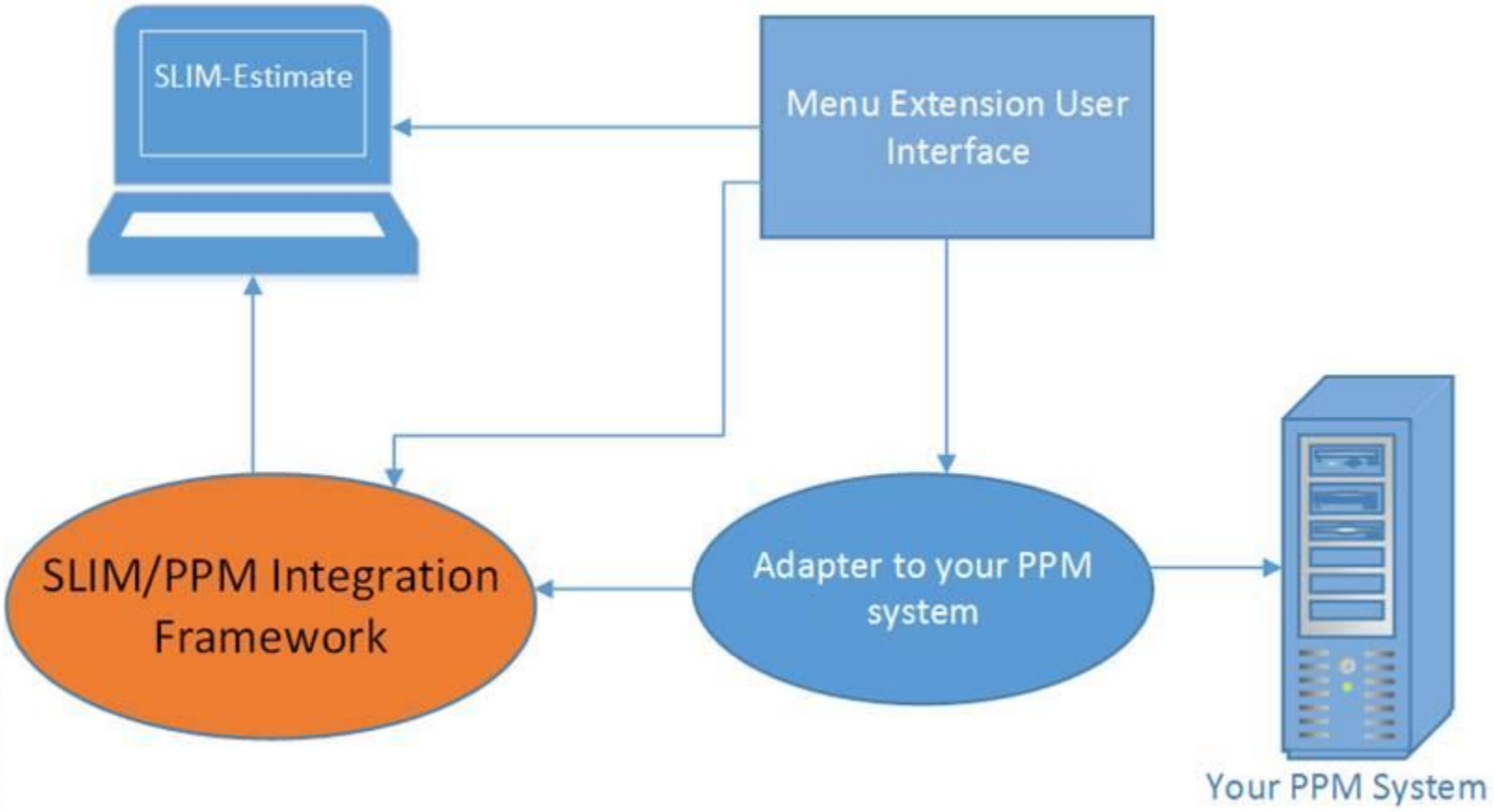
Risk Management View





QSM®

Sharing Data With Corporate Systems



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Benefits of this Approach

- It is efficient with all stakeholders' time
- It focuses on having an objective process
- It has complete transparency
- Allows for rapid analysis of alternative project and portfolio scenarios
- Takes some of the pain out of the budgeting process

Questions ?

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