



**AccuRev**

**QSIM<sup>®</sup>**

**Shifting to Agile Methods –  
The Keys for Long-Term Success**

**February 16, 2012**

# Logistics for Today's Webinar

- All callers are muted for the best audio quality
- If you are using the web-based audio and experience drops or lags, the dial-in conference line may be of better quality
- You can resize your display window by clicking and dragging the lower-right corner, or by right-clicking on the window icon on the bottom right and selecting “auto fit”
- Please feel free to submit questions using the question panel to the right

# Introduction to Today's Speakers

## Chris Lucca, Technical Evangelist, AccuRev

About the Speaker: Chris is a methodology and process improvement expert helping companies to discover and implement their ideal process.

Chris' experience dates back to his days as a build / release specialist and software engineer for IBM-Rational. He has also filled the roles of developer, release engineer and SCM consultant for numerous organizations. In addition Chris is a certified scrum master and a frequent speaker at the AccuRev seminar series.

Now Chris brings the experience and knowledge he has acquired to help keep others in the industry up-to-date on the latest developments, and how they can impact them directly.



# Introduction to Today's Speakers

## Larry Putnam, Jr., Co-CEO, QSM, Inc.

Larry has 25 years of experience using the Putnam-SLIM Methodology. He has participated in hundreds of estimation and oversight service engagements, and is responsible for product management of the SLIM-Suite of measurement tools and customer care programs.



Since becoming Co-CEO, Larry has built QSM's capabilities in sales, customer support, product requirements and most recently in creating a world class consulting organization. He has been instrumental in getting QSM product integrations validated as "Ready for Rational" as an IBM Business partner.

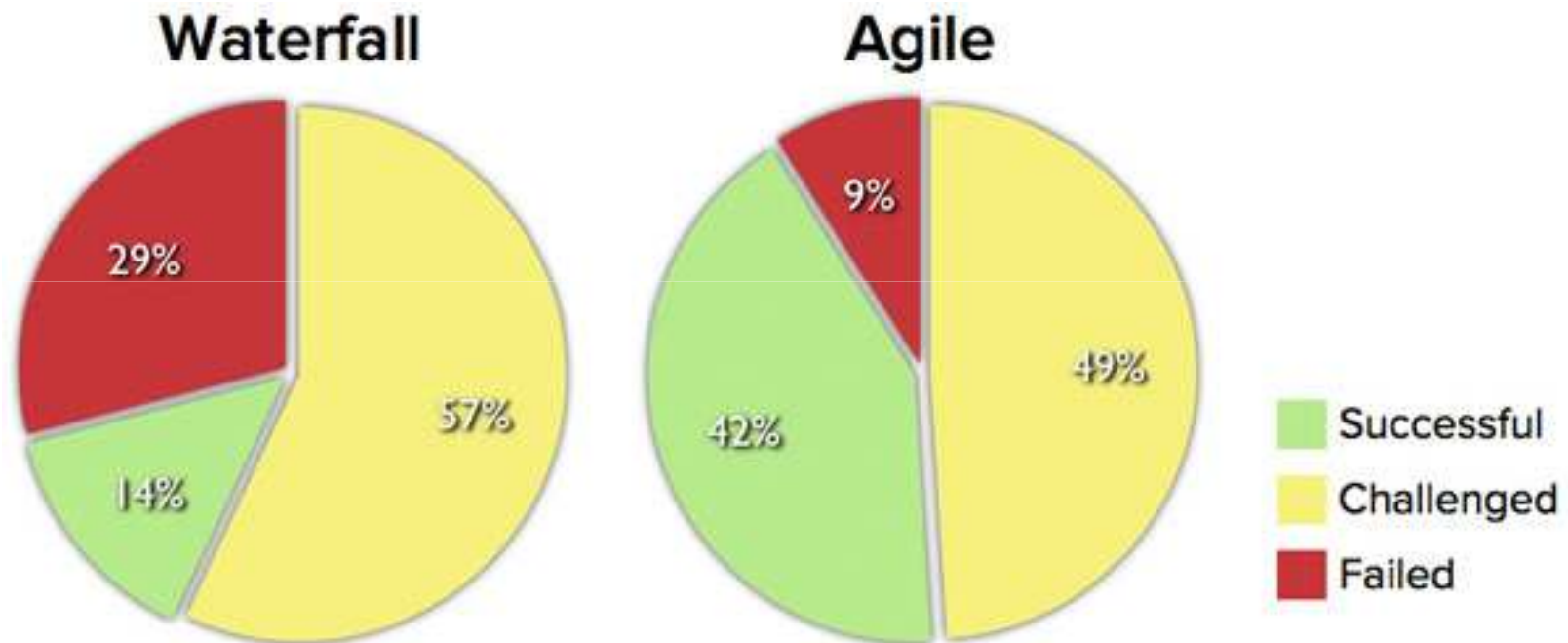
Larry has delivered numerous speeches at conferences on software estimation and measurement, and has trained – over a five-year period – more than 1,000 software professionals on industry best practice measurement, estimation and control techniques and in the use of the SLIM-Suite.

# Tips For Long Term Success

- Software Projects Yesterday vs Today
- Getting to Done With Measurement
- Predictable and Repeatable Processes
- Measurement & Benchmarking
- Estimation & Plan Optimization
- Control & Adaptive Forecasting

# Agile Project Success Rate

The Standish Group defines project success as on time, on budget, and with all planned features.

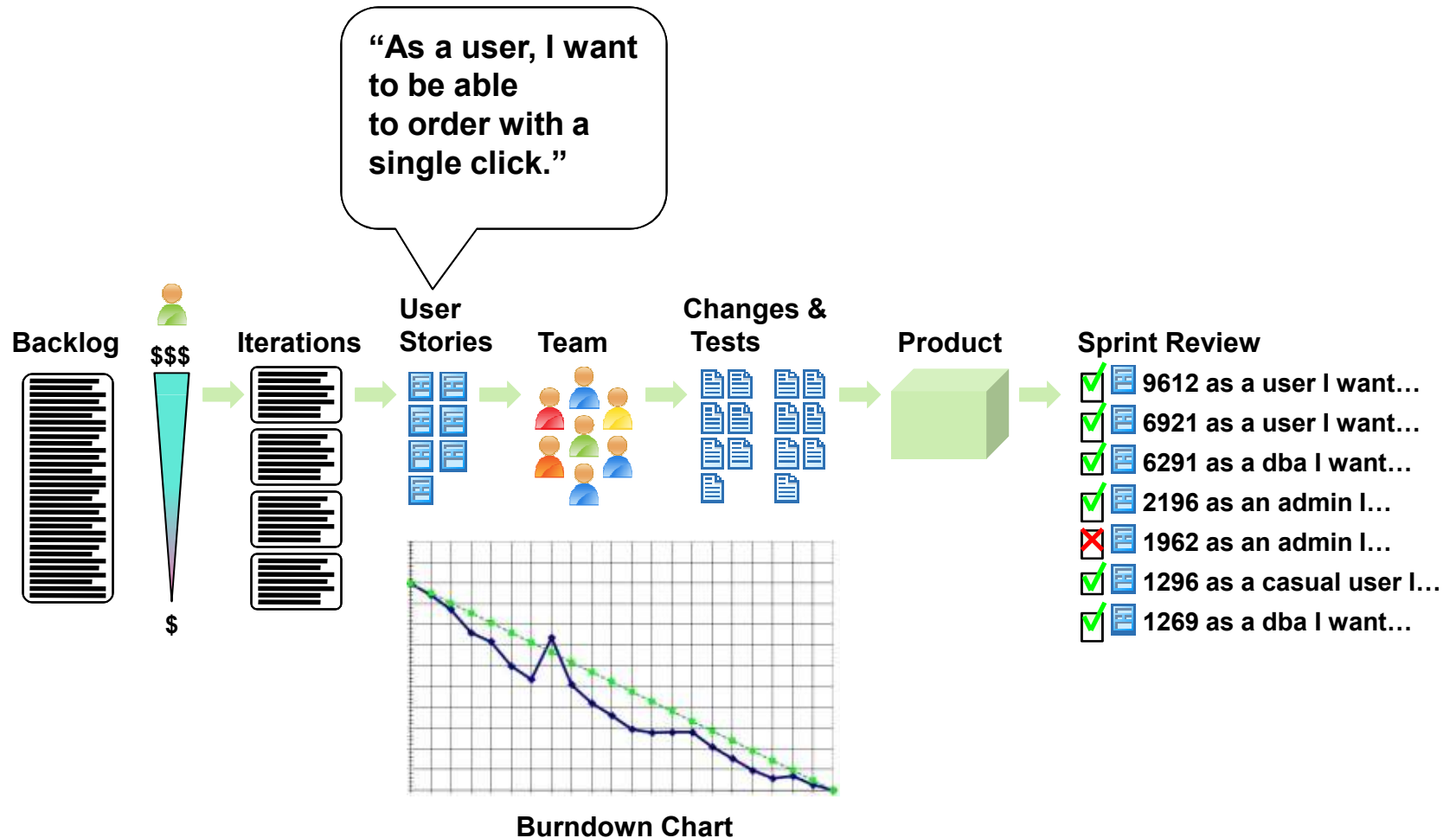


Source: The CHAOS Manifesto, The Standish Group, 2012.

# Software Projects: Yesterday vs. Today

- Rapidly changing requirements
  - Slow to respond to customer/market demand
- Shorter lifecycles, requiring faster time to market
  - Months for a new release versus years
- Extremely difficult to accurately predict
  - Typically underestimate by a factor of 2
- Quality challenge increasing
  - You might have low defects, but do you meet customer expectations?
- Highly Distributed Teams
  - All local versus support for on-shore and off-shore teams

# What Goes on Inside a Typical Iteration?

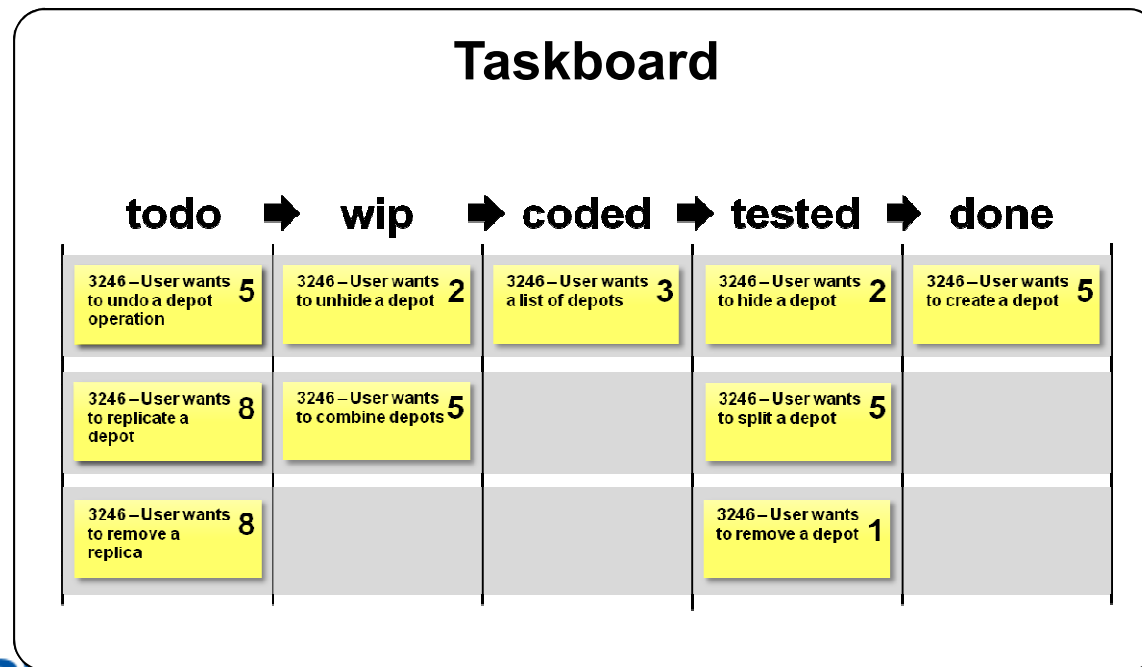


# Typical Agile Process Problems

- Codebase is most stable near the end of iteration; hard to stay stable during the iteration
  - Testers want to test completed stories, but need stable configurations to do so
  - Developers delay committing changes to prevent breaking the build
  - Identifying what changed since the build worked
- Ability to keep the status of a story and the development on the codebase in sync
- Need to manage work that doesn't fit in the iteration
- Managing remote development teams working together on Agile projects

# Agile Process with Legacy SCM

- A user story may go through many phases while on the way to “done”
- Legacy SCM systems are designed around single branches for large releases



# Agile Process Overview

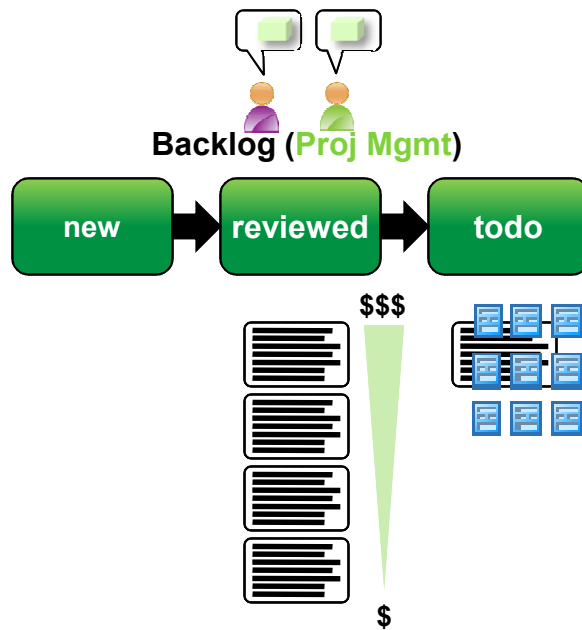
Issue	Story	Points	Effort Remaining	State	Assignment
432	User wants layout pleasing to the eye	2		PLANNED	-
420	User wants example templates to choose from	3		PLANNED	-
419	Admin wants zero installation	5		PLANNED	-
612	Manager wants dashboard view	5		PLANNED	-
599	Admin wants LDAP integration	5		PLANNED	-
831	Admin wants self-serve password reset	2		PLANNED	-
692	User wants automatic todo list generation	2		PLANNED	-
432	User wants easy task entry	1		PLANNED	-
119	User wants subscrip			PLANNED	-
332	Marketing wants fan			reviewed	-
516	Admin wants 1-click license update	2		reviewed	-
533	User wants app to be ready in 3 seconds or less	5		reviewed	-
619	User wants app to work using Chrome	5		reviewed	-

Backlog

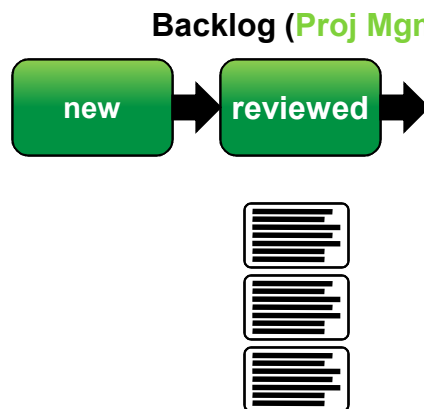
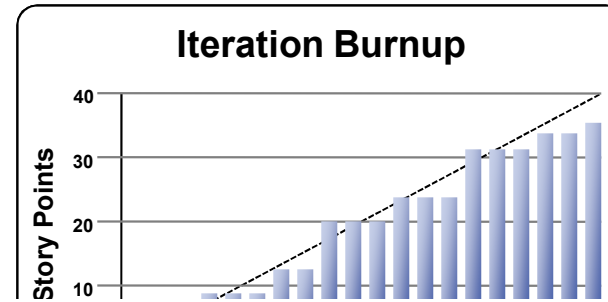
new

Product Backlog

# Agile Process Overview



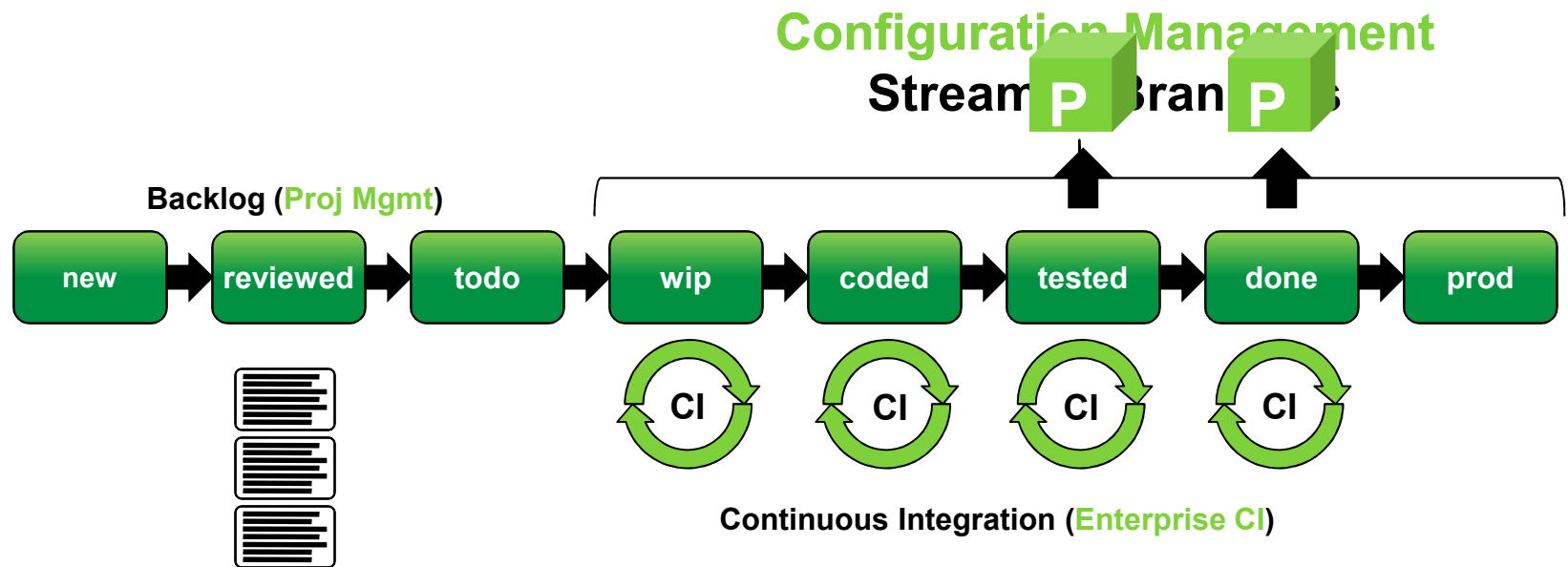
# Agile Process Overview



Issue	Story	Points	Effort Remaining	State	Assignment
432	User wants layout pleasing to the eye	2		DONE	-
420	User wants example templates to choose from	3		WIP	-
419	Admin wants zero installation	5		DONE	-
612	Manager wants dashboard view	5		DONE	-
599	Admin wants LDAP integration	5		TESTED	-
831	Admin wants self-serve password reset	2		DONE	-
692	User wants automatic todo list generation	2		DONE	-
432	User wants easy task entry	1		DONE	-
119	User wants subscription-based e-mail notification	5		DONE	-
332	Marketing wants fancy splash screen	3		reviewed	-
516	Admin wants 1-click license update	2		reviewed	-
533	User wants app to be ready in 3 seconds or less	5		reviewed	-
619	User wants app to work using Chrome	5		reviewed	-

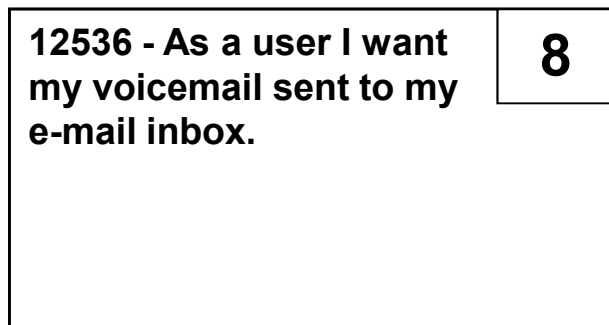
**Iteration Review**

# Agile Process Overview

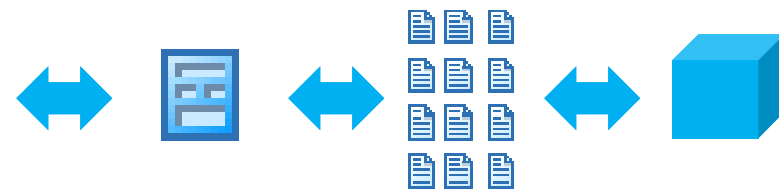


# User Story Management

- Support for linking code changes, and other artifacts, to user stories is called a Change Package
- Fully managing by stories requires all defects/requirements/stories to be in one place



**User Story**

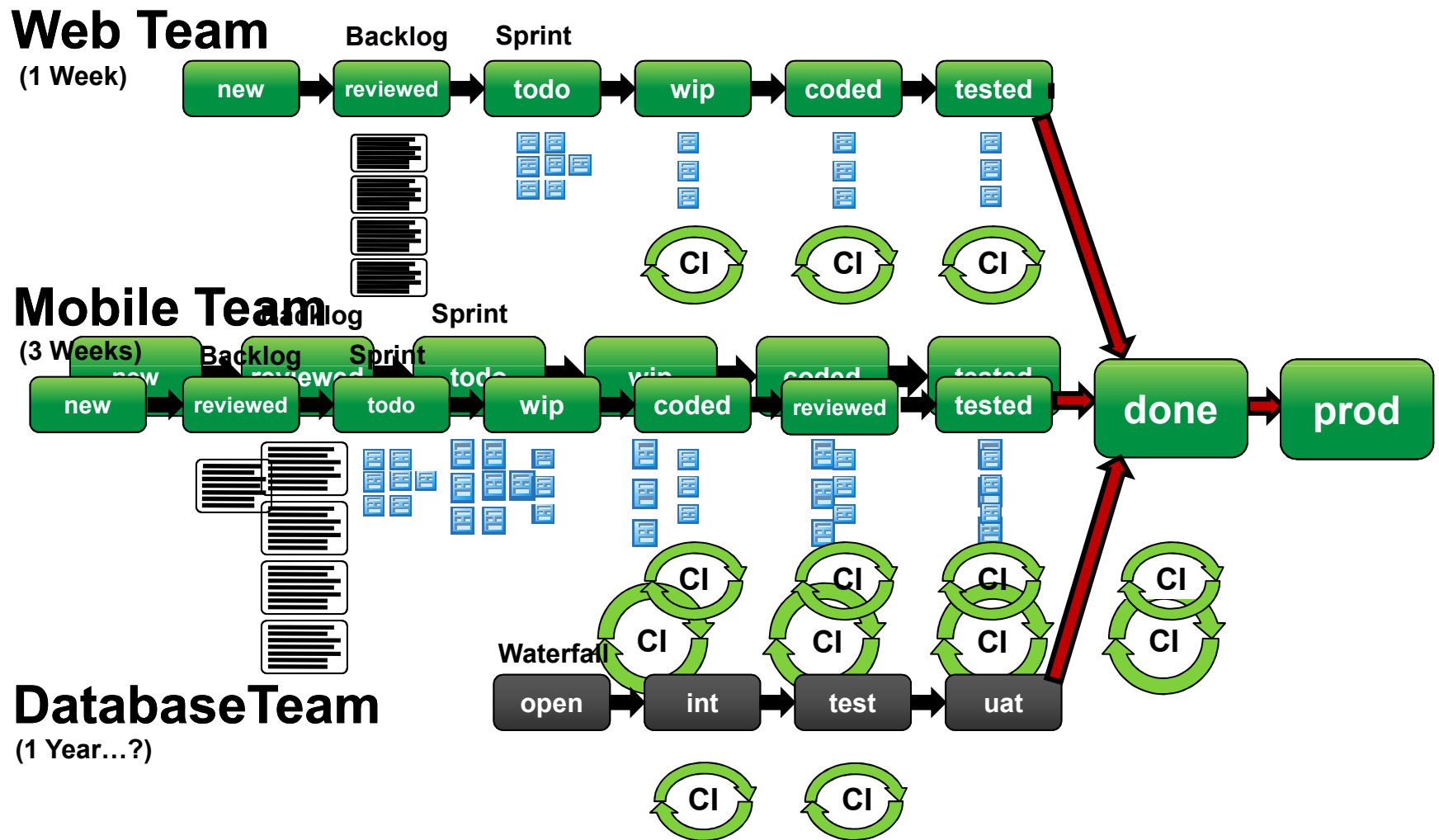


**Change Package Files & Tests Product**

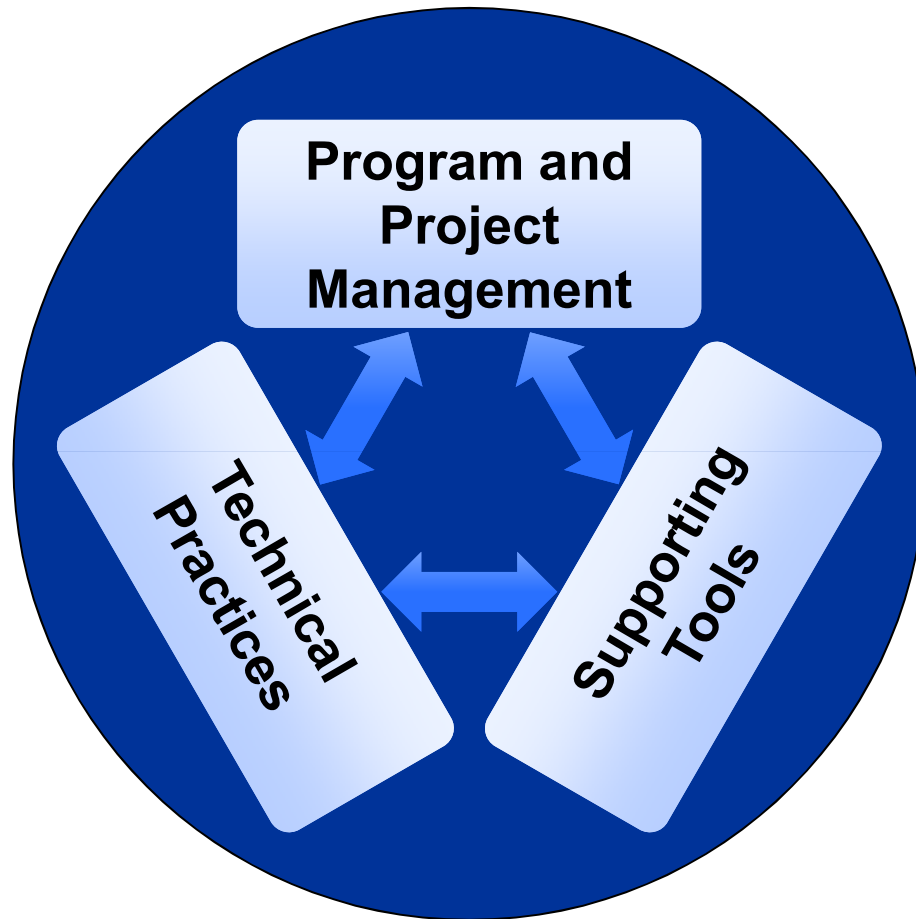
# Agile SCM Allows for Complex Development

- Creating a development hierarchy to map and manage solves this problem
- Completed stories are pushed from one stage to the next
- Code grows increasing stable at each stage of the hierarchy
- Automatic Merging of “Done” code to other Scrum Teams
- Makes merging on a frequent basis easy and straightforward

# A Predicable Repeatable Process



# Why Process Is Important

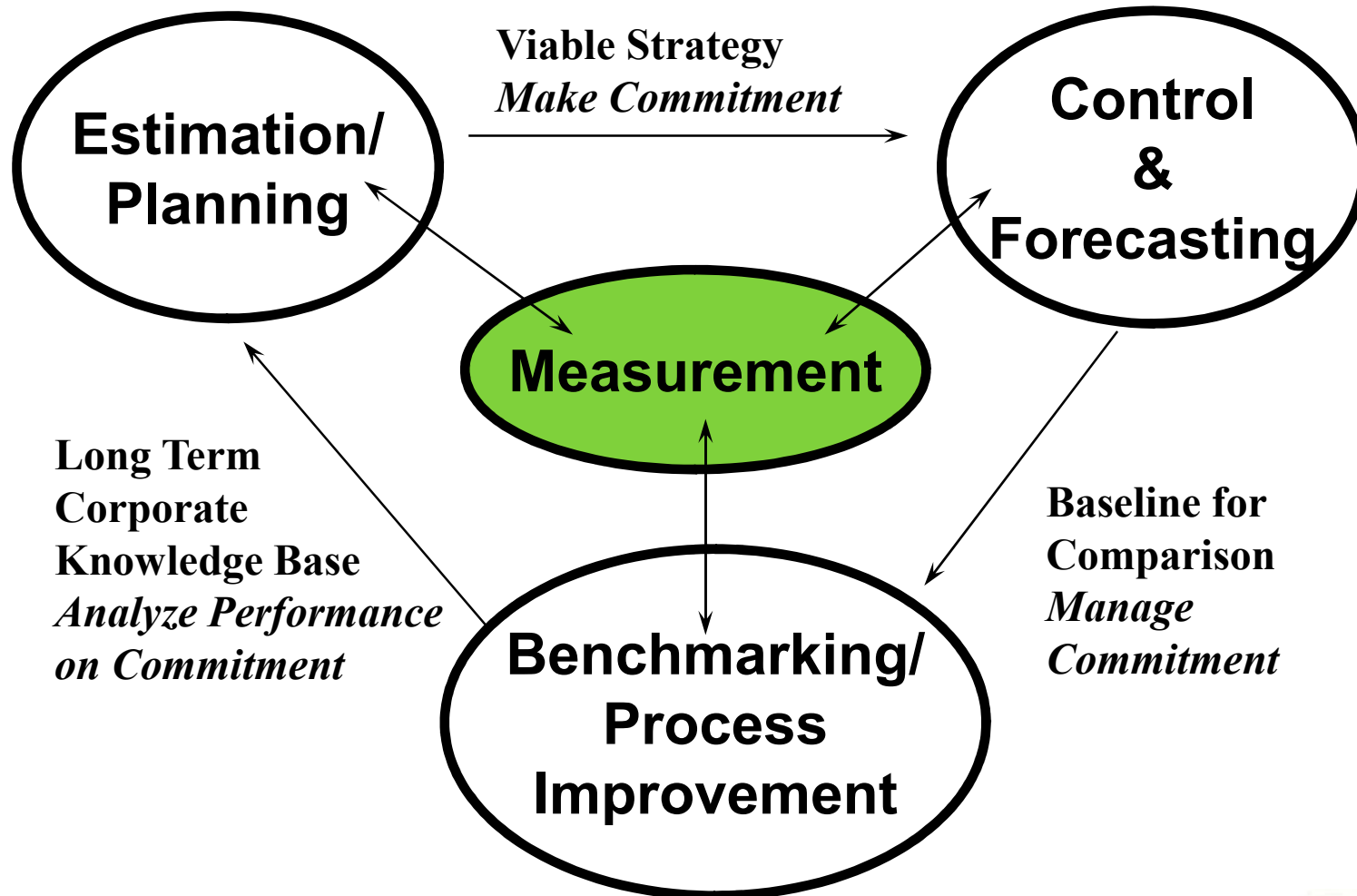


- Mature Processes are predictable and repeatable
- Practices are more complex than ever with Agile, Scrum, CI, etc...
- Measuring and Benchmarking
- Estimation and Plan Optimization
- End to end process improvement

# Foundation of the QSM Techniques

- Founded in 1978
- Historic data base of 10,000+ development projects
  - Understand the fundamental relationships at play in software
- Over 30 Years of research and development
  - Collecting industry data
  - Developing measurement and estimating methods
  - Developing comprehensive measurement & estimation tools
- Experience working with numerous clients and hundreds of consulting engagements
  - Many application domains (IT, Engineering, Real-time)
  - Many industry sectors (finance, telecom, medical, aerospace, defense, etc...)
  - New technology & methods (SOA, COTS/ERP, RAD, Iterative/Agile, etc...)

# Project Intelligence Requires a Mature Software Measurement Process

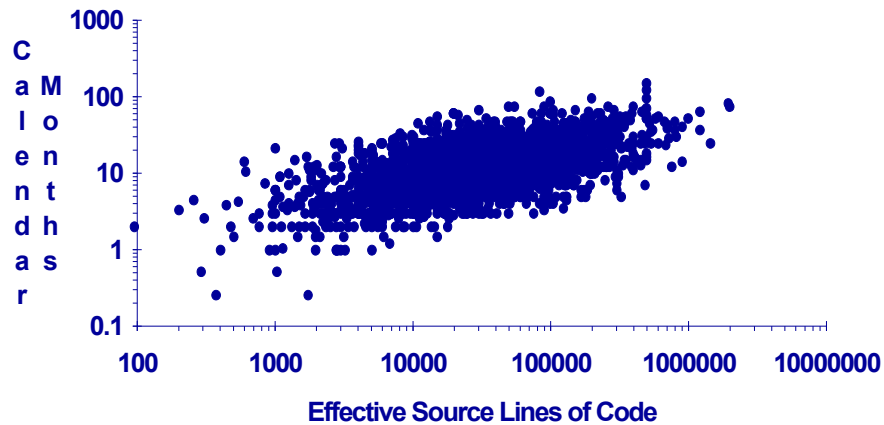


# Best Practices Core Metrics

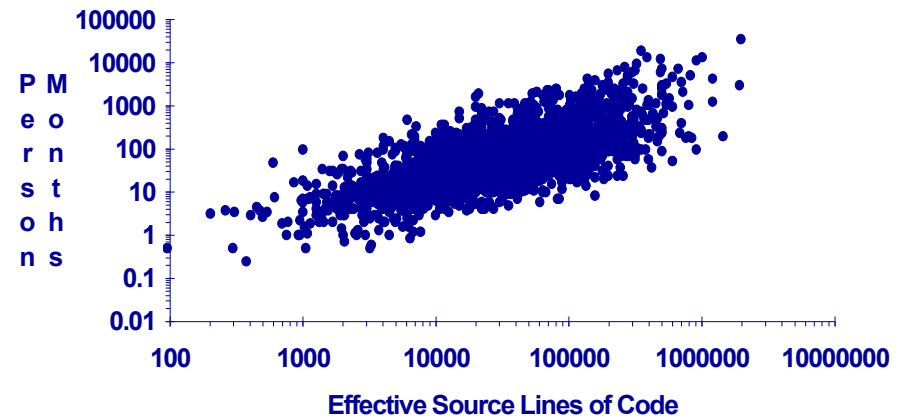
- **Size and Scope**
  - Abstraction of measurements change depending on where you are in the lifecycle
  - Tells you the overall size of system
  - Tells how much of the product is completed at different points in time
- **Schedule**
  - Measured in calendar time like days, weeks, months or years
  - Overall duration of the project
  - Tells how much of the overall schedule has been consumed and identifies key task/milestone completion dates
- **Effort**
  - Measured in labor units like person days, person weeks, person months or person years
  - Proportional to the overall cost
  - Tells how labor/money is being spent
- **Defects**
  - Deviations from specification usually measured by severity level
  - Tells you how many defects you are likely to find and when
  - Tells how stable the product is at different points in time and helps project when the product will be reliable enough deploy

# Software's Non-linear Behavior

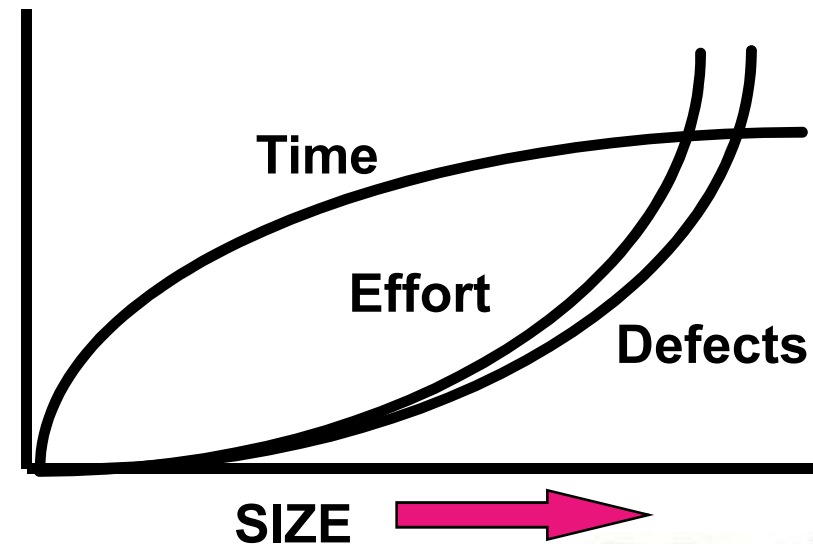
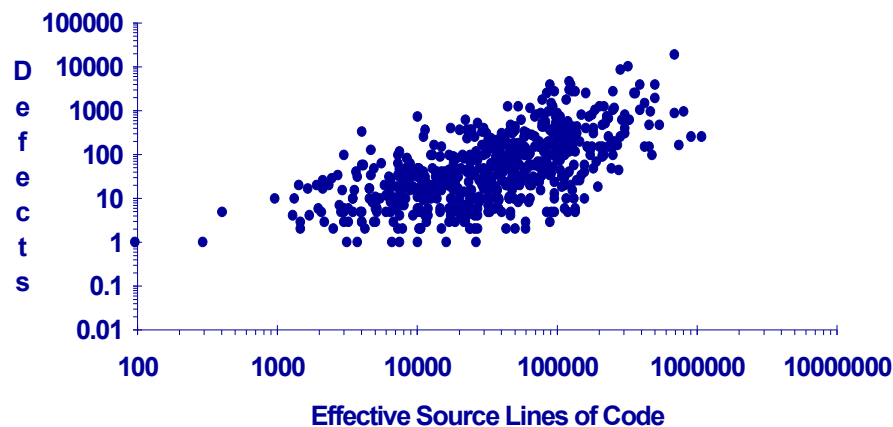
QSM Mixed Application Data Base



QSM Mixed Application Data Base



QSM Mixed Application Data Base



# What is “Size”?

- A proxy for the value and knowledge content of the delivered system—what the system is worth
- Size can be tailored to the process or development technology being used:

## Front end: Unit of Need

*Based on characteristics of the statement of needs*

- Requirements
- Function Points/Object Points
- IO Counts
- States/Events/Actions
- Use Cases
- Stories/Story Points
- Objects/Classes
- Components
- Design Pages
- Web Pages

## Back end: Unit of Work

*Based on the characteristics of the system when built*

- Lines of Code
- Statements
- Actions
- Modules
- Subsystems
- GUI Components
- Logic Components
- Logic Gates
- Tables
- Business Process Configurations

# Production Equation



**Delivered  
System  
Size**

proportional  
to

**Effort**

over

**Time**

at some

**Productivity**

A measure of  
**Value Delivered**

A measure of  
**Resources  
Expended**

A measure of  
**Duration Required**

A measure of  
**Capability and  
Difficulty of the  
task**

# Determining Development Team Efficiency



**Developer Efficiency (PI)**

**=**

**Functionality Developed**

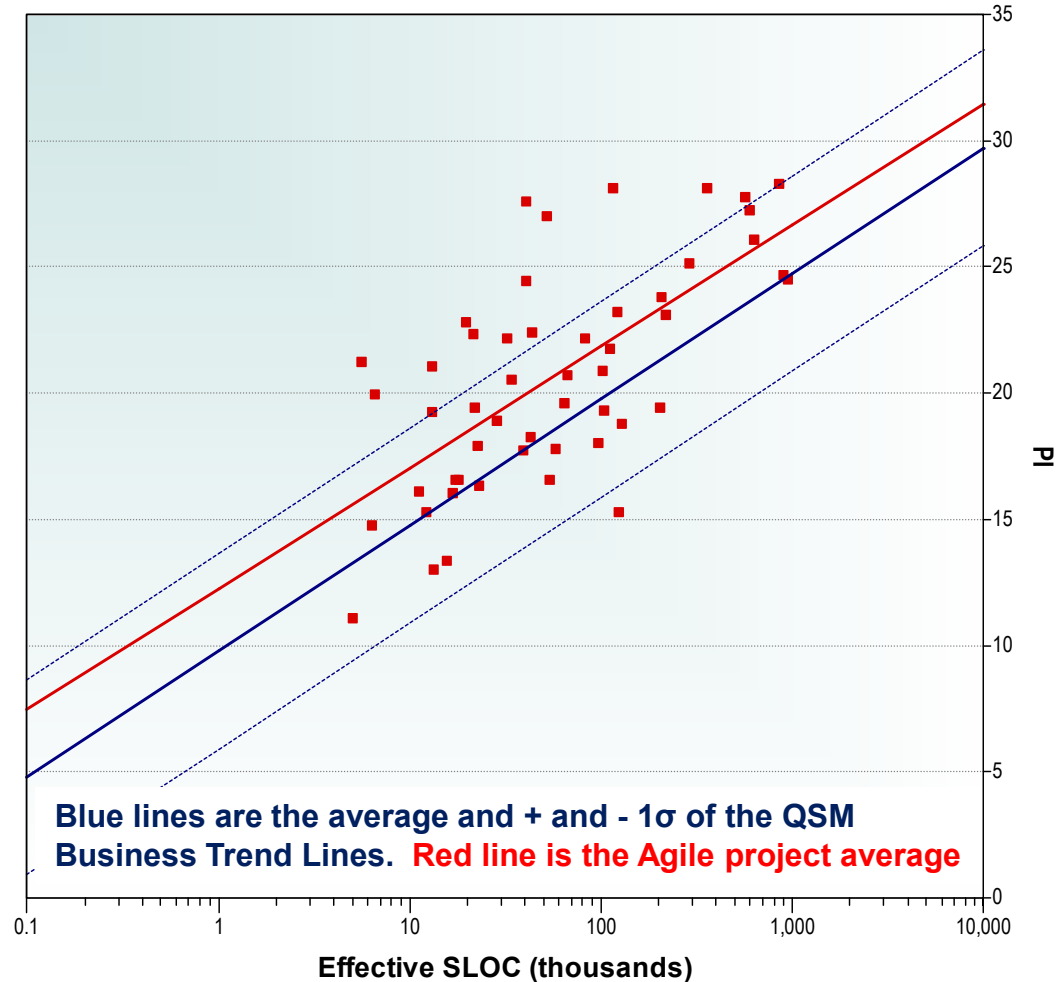
**Effort x Time**



**A Higher value means less time and effort**

# Productivity Benchmarking of Projects

PI vs Effective SLOC



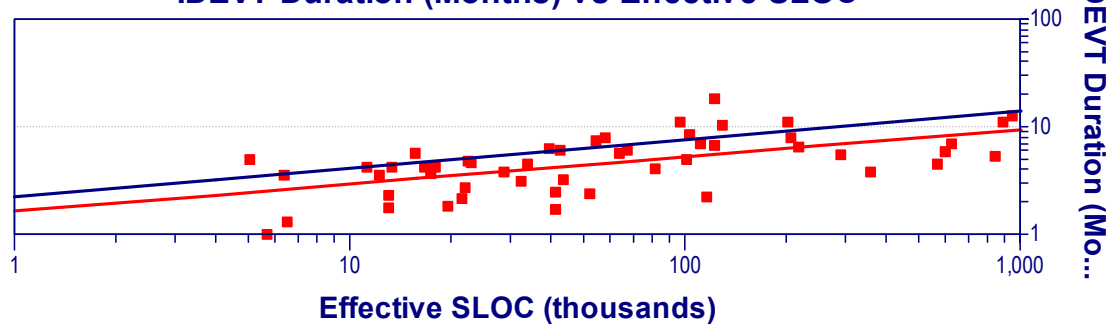
PI's of Agile projects are 2 higher than QSM Business systems

One integer change in PI is worth a 10% reduction in schedule and a 25-30% reduction in cost

# Performance Metric Benchmarking - Duration

## Dataset Comp - Phase 3 Duration

IDEVT Duration (Months) vs Effective SLOC



**Agile projects have shorter durations than QSM Business systems**

Comparison of QSM Agile Projects to QSM Business IDEVT Duration (Months) vs. Effective SLOC

	IDEVT Duration (Months) Values				
	at Min Effective SLOC: 5040	at 25% Quartile Effective SLOC: 18000	at Median Effective SLOC: 43320	at 75% Quartile Effective SLOC: 122888	at Max Effective SLOC: 952614
Benchmark Reference Group: QSM Business	3.45	4.84	6.12	8.08	13.94
Comparison Data Set: QSM Agile Projects	2.48	3.42	4.28	5.57	9.36
Difference From Benchmark	-0.97	-1.42	-1.84	-2.51	-4.58

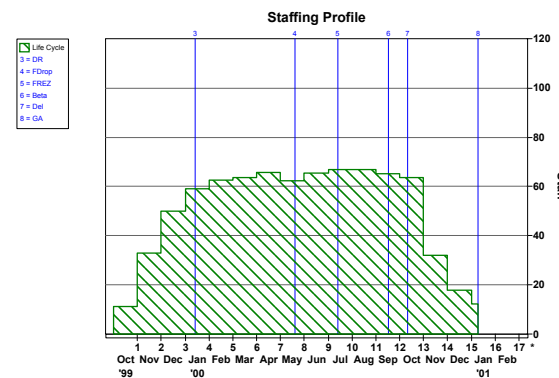
Comparison breakpoints based on min, max, median and quartile values for the data set: QSM Agile Projects

■ QSM Agile Projects — QSM Business — Avg. Line Style

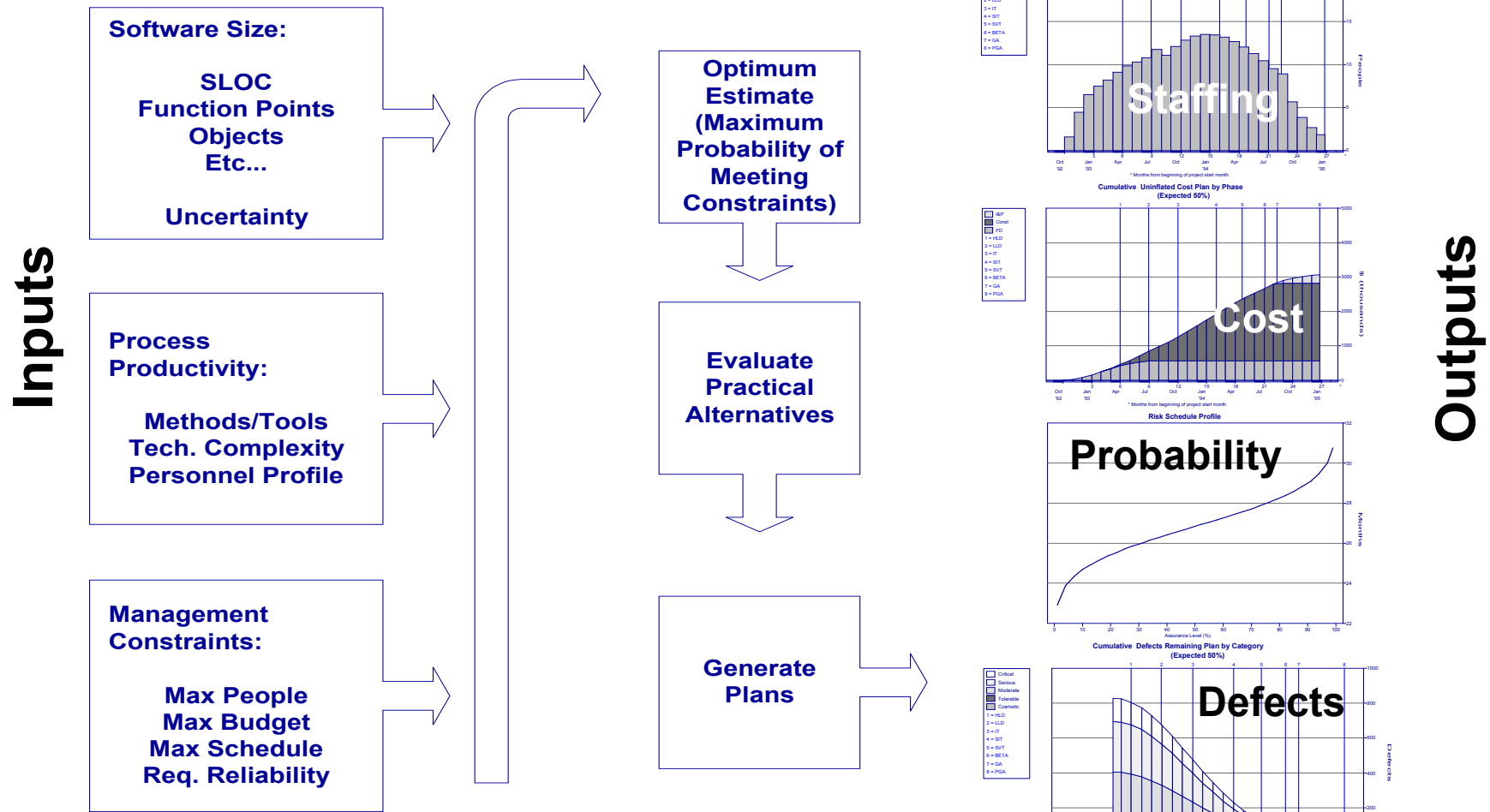
# Using Benchmarks to Estimate New Work

- Many popular software estimation techniques model the way people solve design intensive problems
  - Software production equation
  - Resource allocation equation (time based distributions - staffing, defects, product construction)

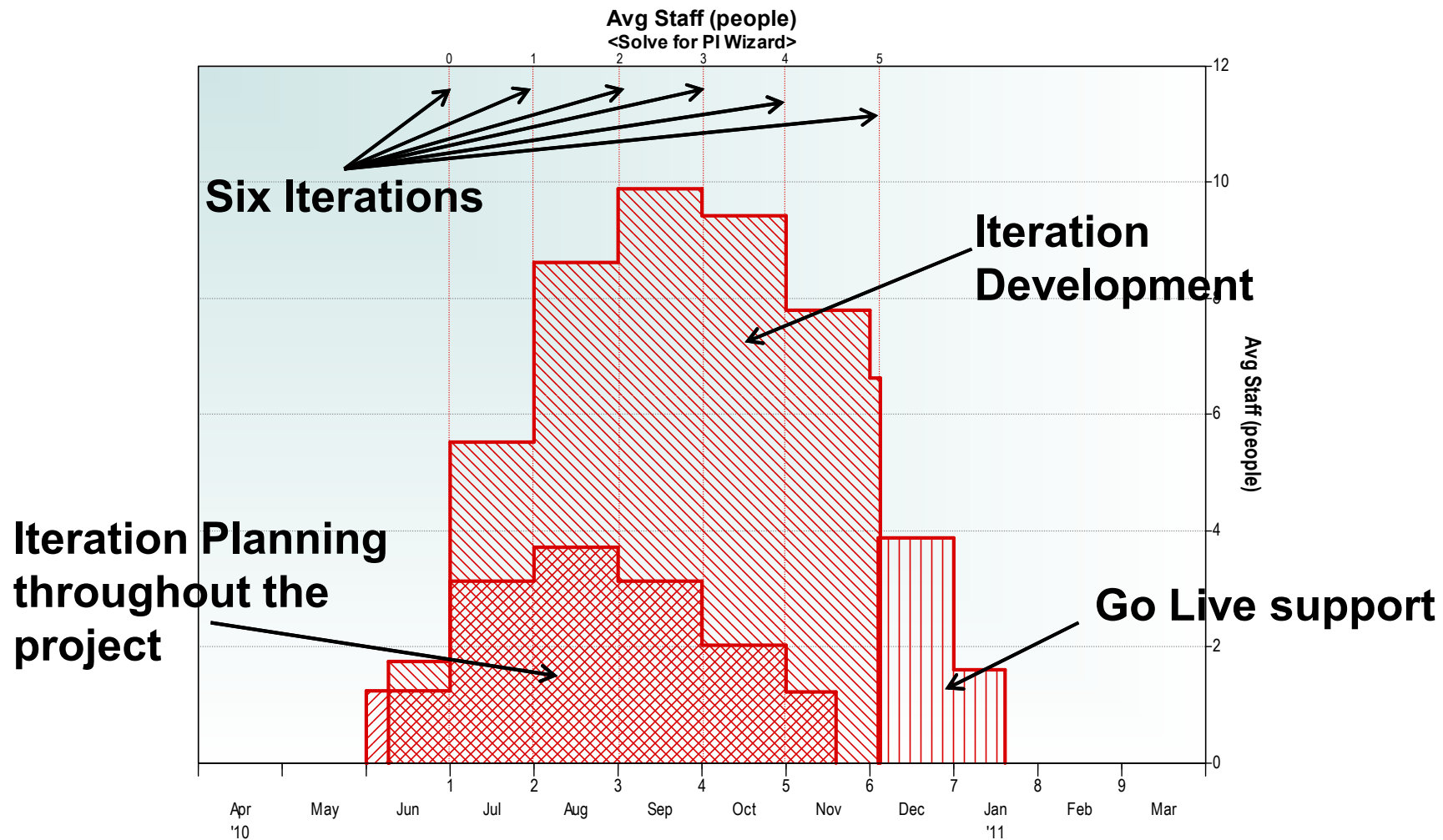
$$\frac{\text{Functionality}}{\text{Efficiency}} = \text{Effort}^x \times \text{Time}^y$$



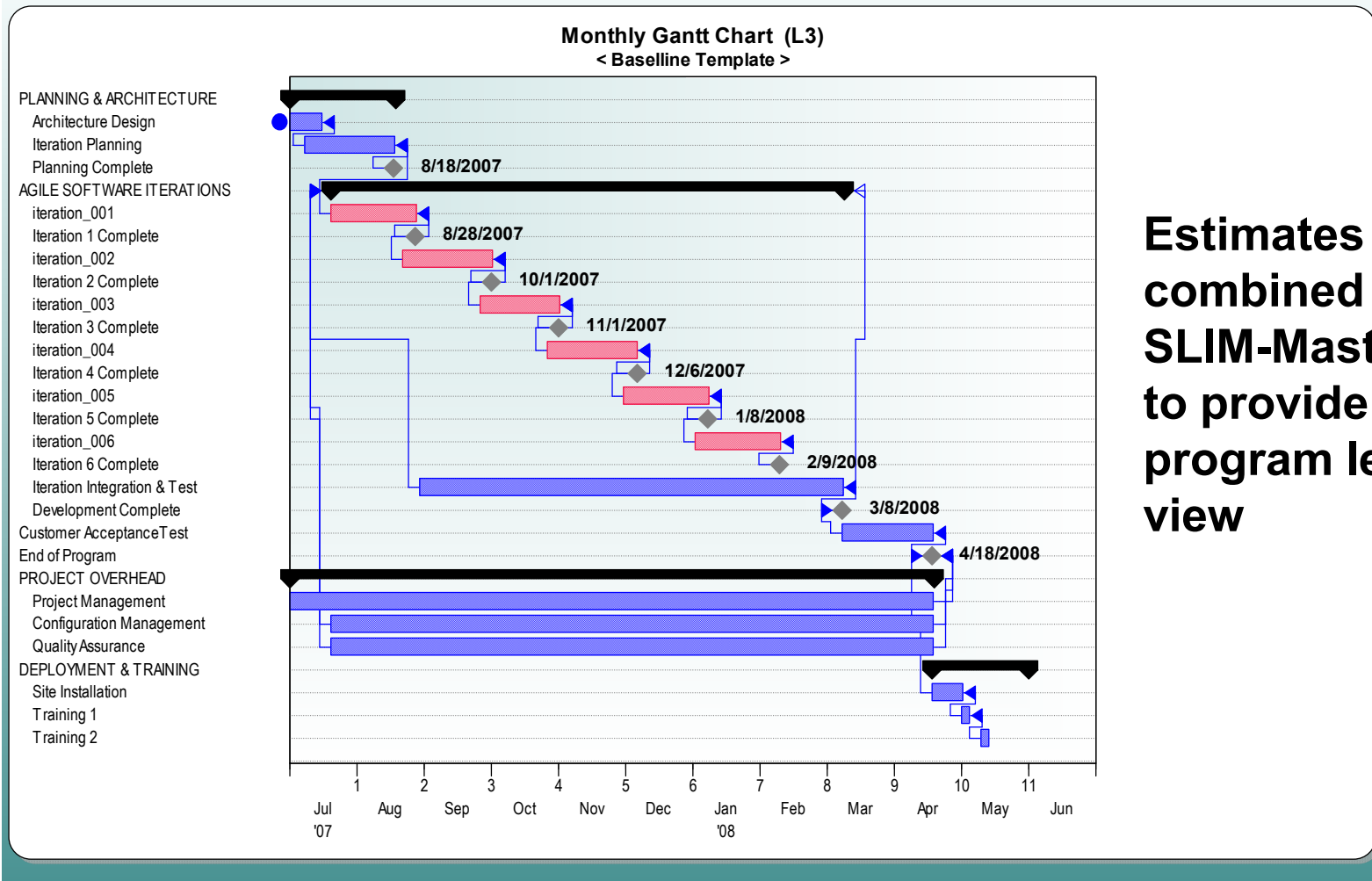
# SLIM Estimation Process



# Estimating One Project Multiple Iterations



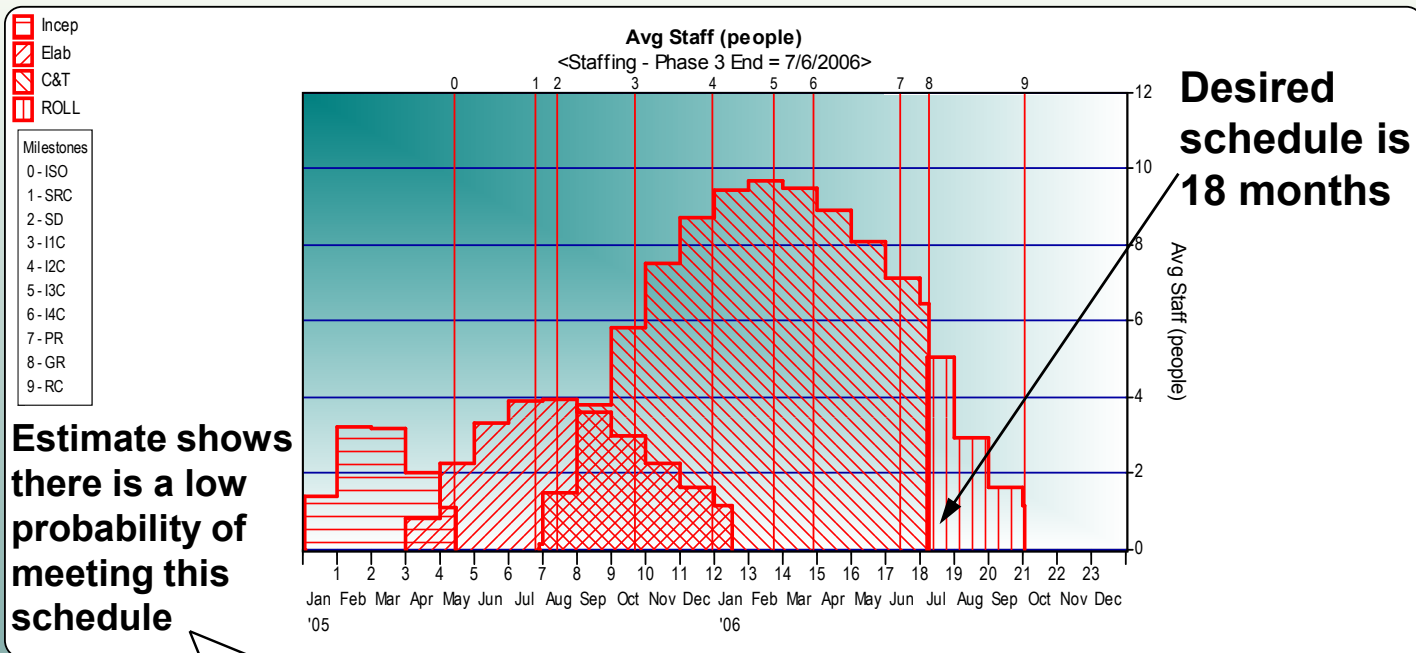
# Estimating One Estimate per Iteration



**Estimates are combined in SLIM-MasterPlan to provide a program level view**

# Evaluating Alternatives

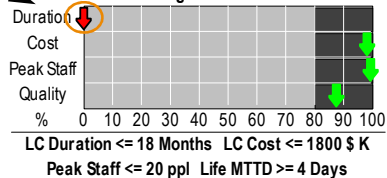
## Staffing & Probability Analysis



### SOLUTION PANEL <Staffing - Phase 3 End = 7/6/2006>

	C&T	Life Cycle	
Duration	11.4	21.0	Months
Effort	14	22	PHR (K)
Cost	751	1157	\$(K)
Peak Staff	9.8	9.8	people
MTTD	1.3	5.7	Days
Start Date	7/28/2005	1/2/2005	
PI=15.1 MBI=2.4 Eff SLOC=55607			

### RISK GAUGE <Staffing - Phase 3 End = 7/6/2006>



**When our initial estimate doesn't fit within schedule or cost goals we need to look at alternative planning scenarios**

# Evaluating Alternative Plan Choices

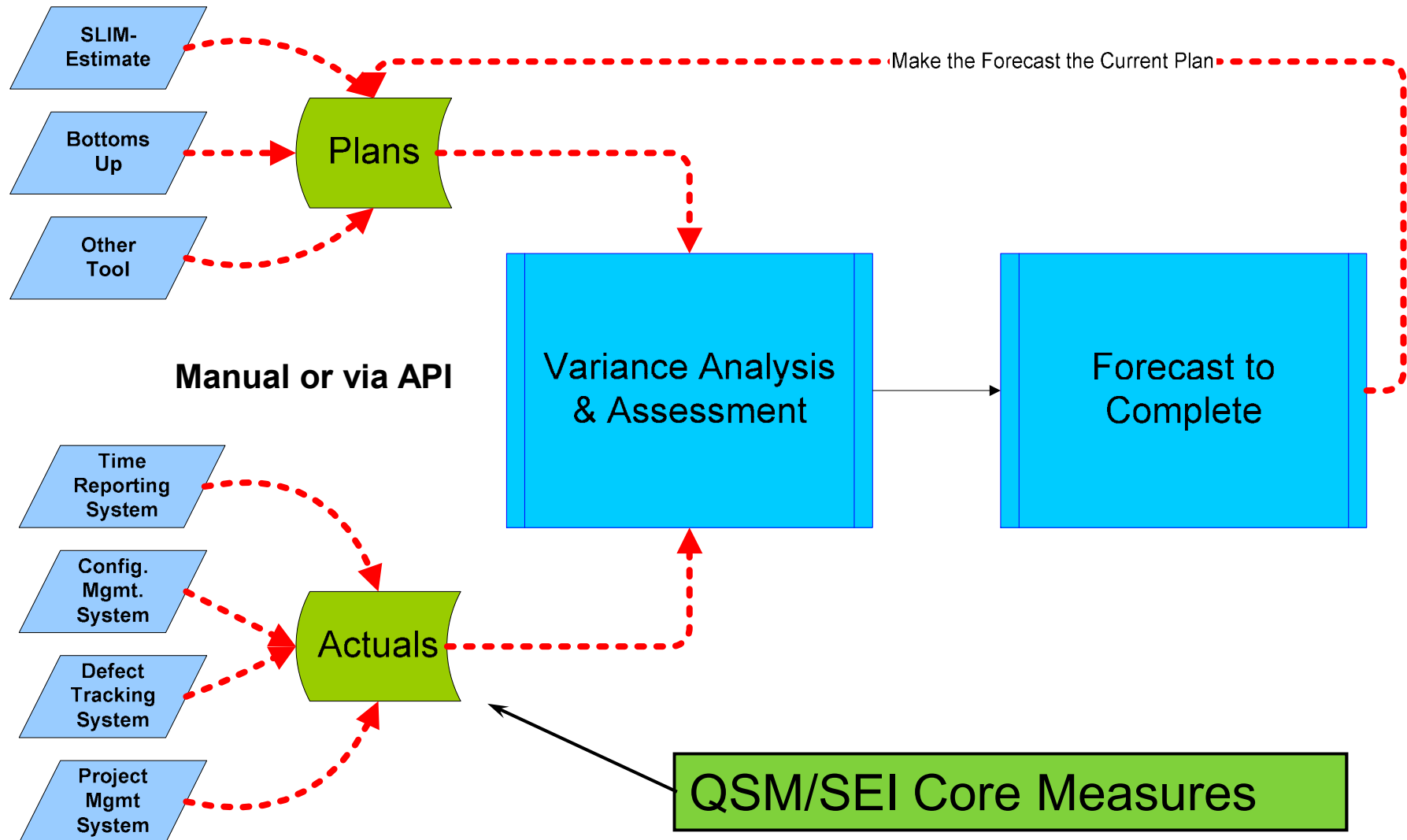
When we cannot meet our schedule and cost constraints what options are available?

There are a finite number of options to explore:

1. Reduce scope to meet schedule and cost goals
2. Increase staffing to meet schedule
  - Decreases probability of meeting cost and lowers reliability
3. Negotiate for more schedule and budget
  - Historic data can help backup your case
4. Increase productivity
  - Usually not able to influence much in the short term
  - Should be backed up by data
5. Combination of the above

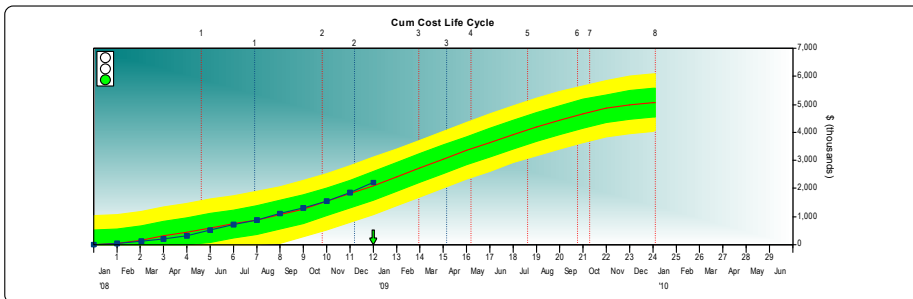
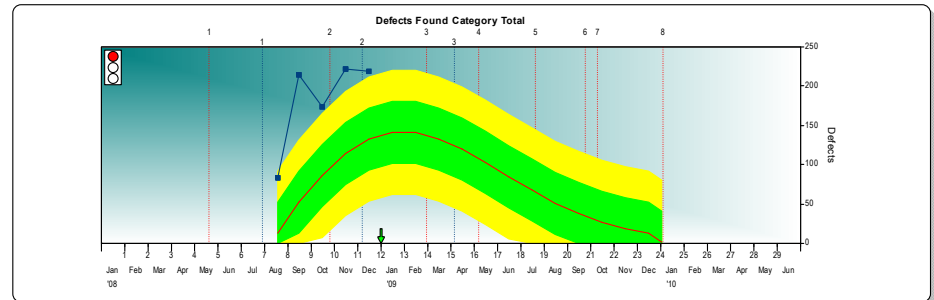
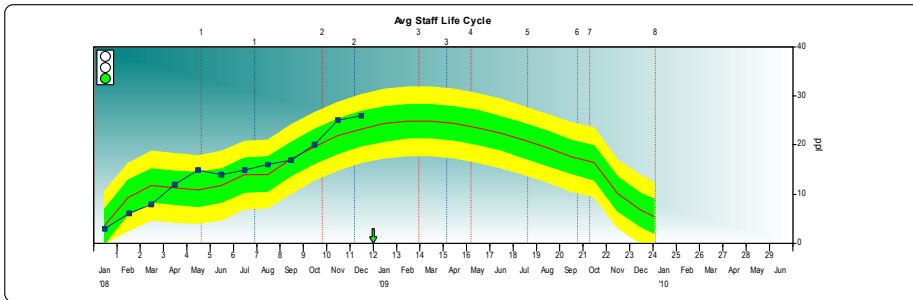
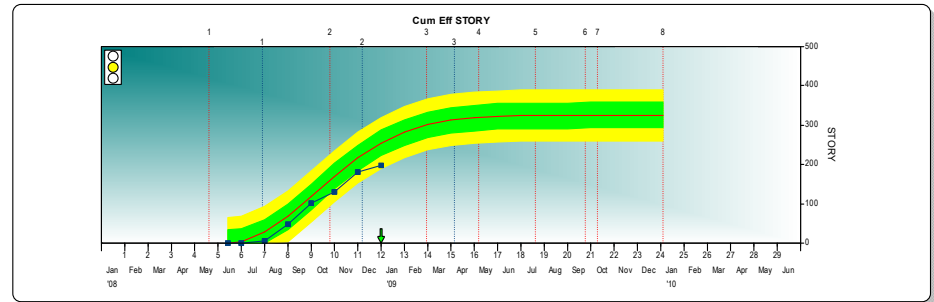
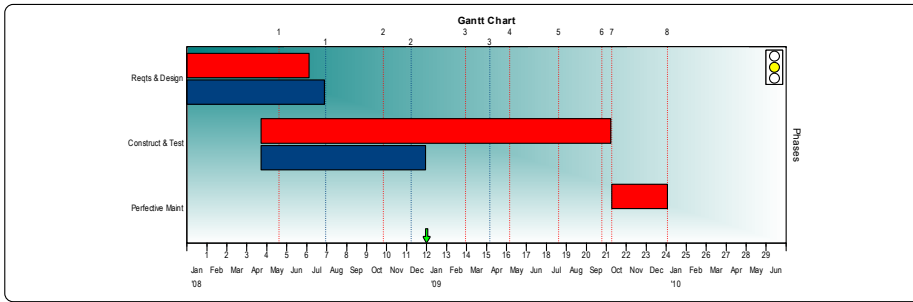


# Dynamic Monitoring & Control



# Use Metrics to Assess Progress

Core Metric Variance Analysis - Web Gateway

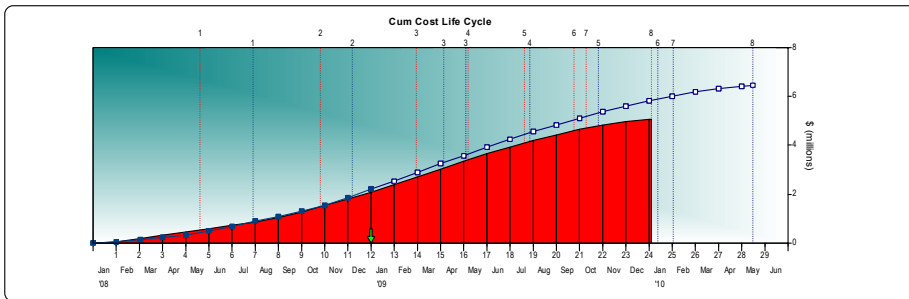
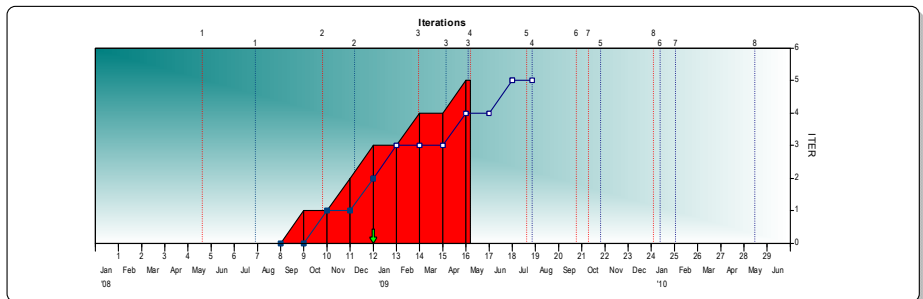
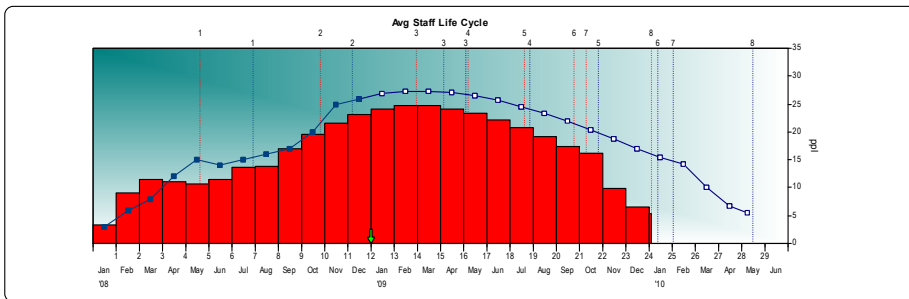
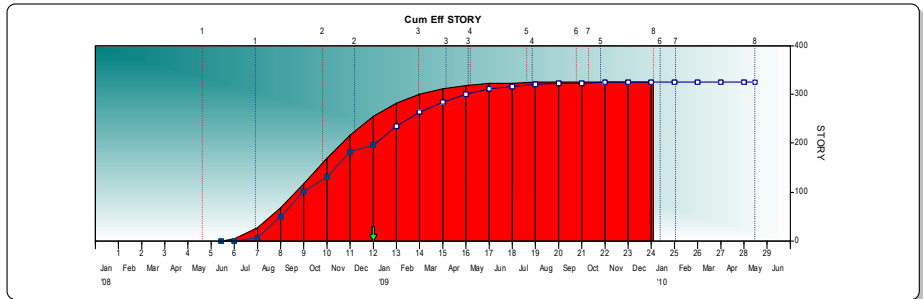
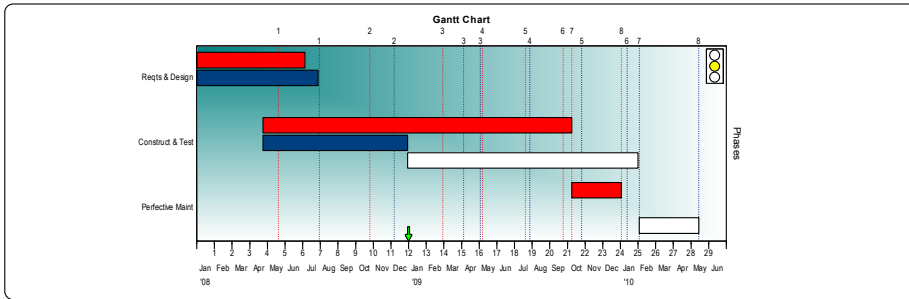


**By applying statistical process control concepts to software projects we can assess how much variance is normal and when corrective action is needed.**

■ Current Plan   
 ■ Actuals   
   Green Control Bound   
   Yellow Control Bound

# And... Predict Arrival

Forecast Summary - Web Gateway

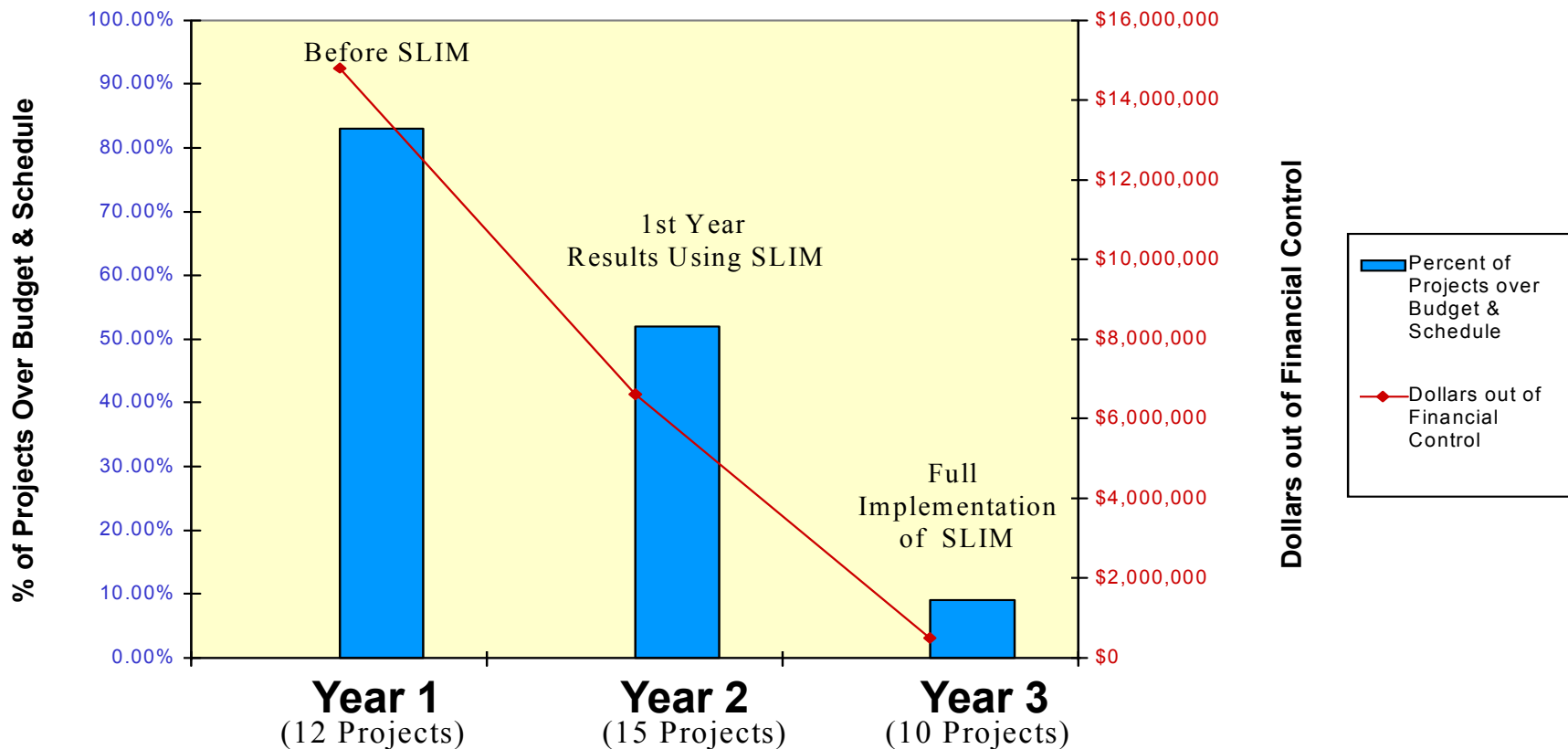


**Forecast to completion lets us dynamically manage the project. As assumptions change for scope, productivity or resource availability we can see the implications and react effectively**

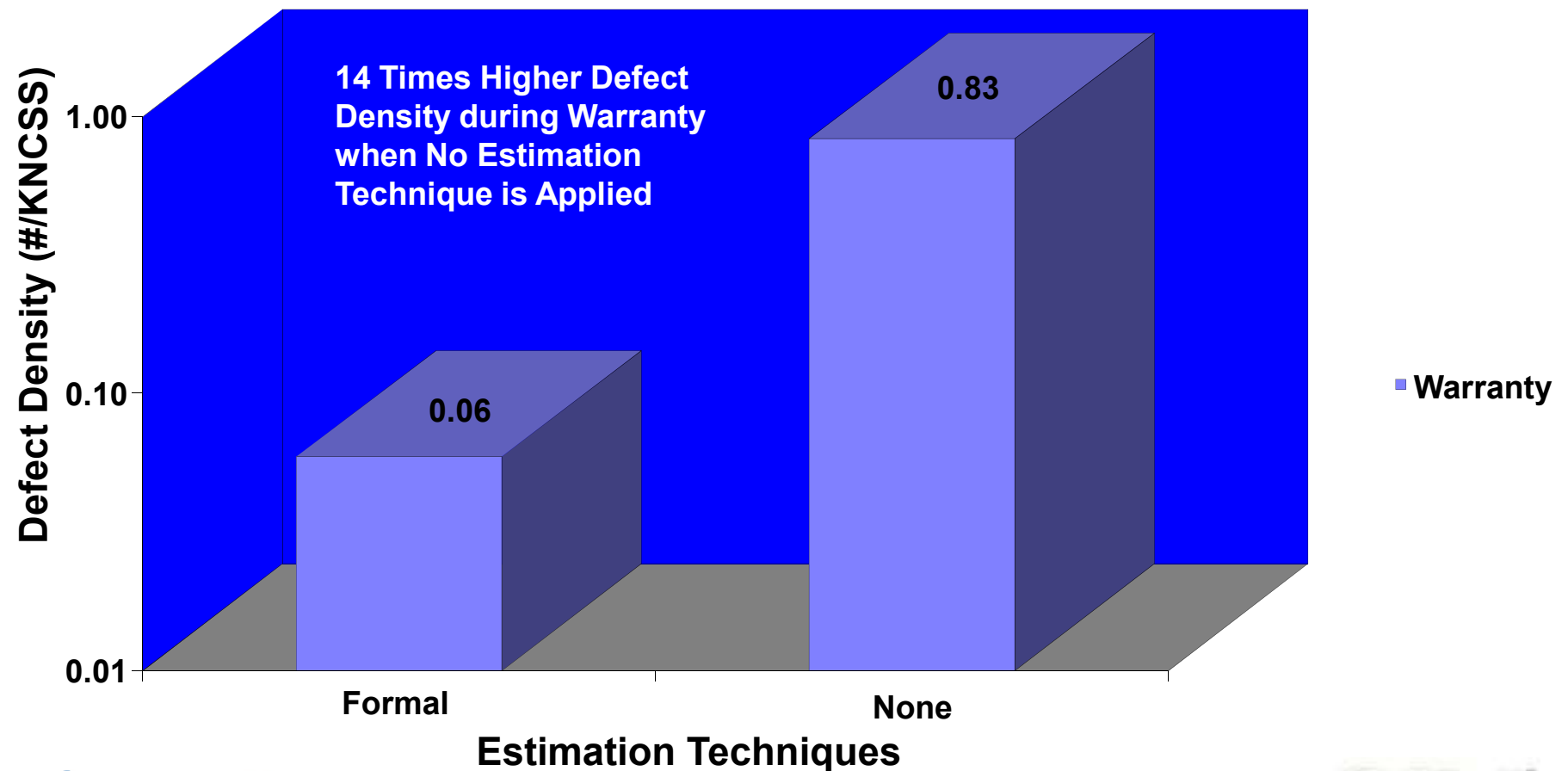
■ Current Plan ■ Actuals □ Current Forecast

# Client Results

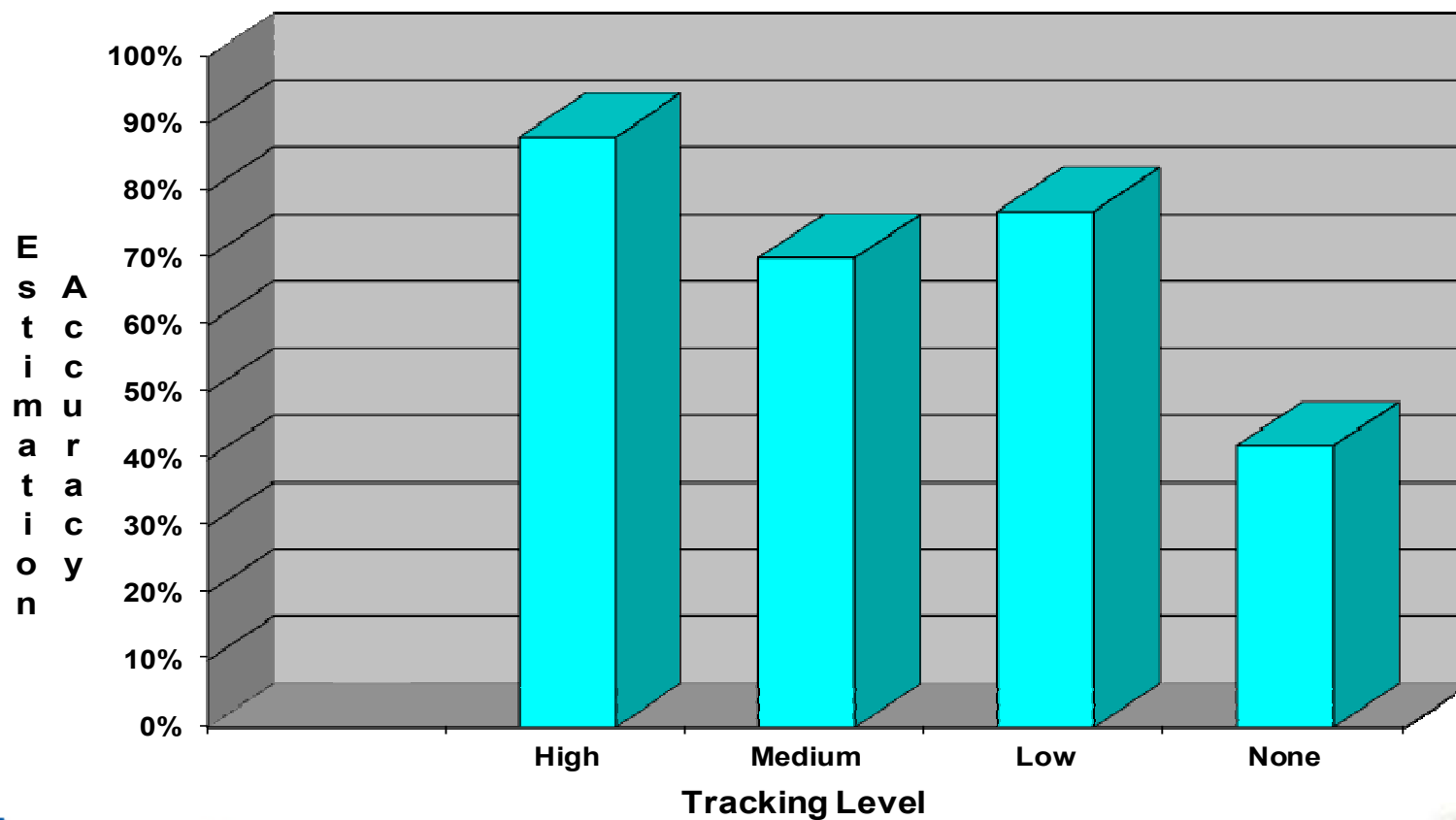
## Experience of a Large Telecommunications Supplier



# Large Computer Services Company finds that Formal Estimation Improves Quality & Reduces Technical Debt



# Predictability Improves with use of Measurement & Estimation



# Additional Agile Resources



## Report:

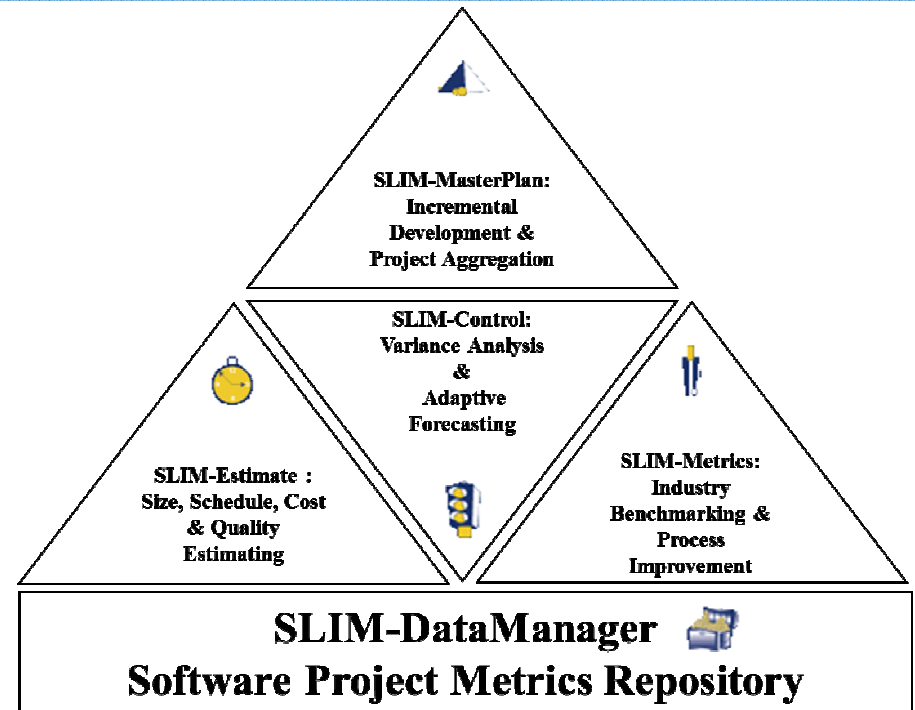
[http://www.forrester.com/rb/Research/determine\\_business\\_and\\_its\\_impact\\_of\\_agile/q/id/61043/t/2?src=Alert%20RSS\\_CustomFeed&cm\\_mm\\_c=Research\\_Alert\\_-email\\_-02\\_09\\_12\\_-61043](http://www.forrester.com/rb/Research/determine_business_and_its_impact_of_agile/q/id/61043/t/2?src=Alert%20RSS_CustomFeed&cm_mm_c=Research_Alert_-email_-02_09_12_-61043)

## Webinar Feb 29th:

[http://www.forrester.com/rb/teleconference/increasing\\_business\\_impact\\_with\\_agile\\_and\\_lean/q/id/8361/t/1](http://www.forrester.com/rb/teleconference/increasing_business_impact_with_agile_and_lean/q/id/8361/t/1)

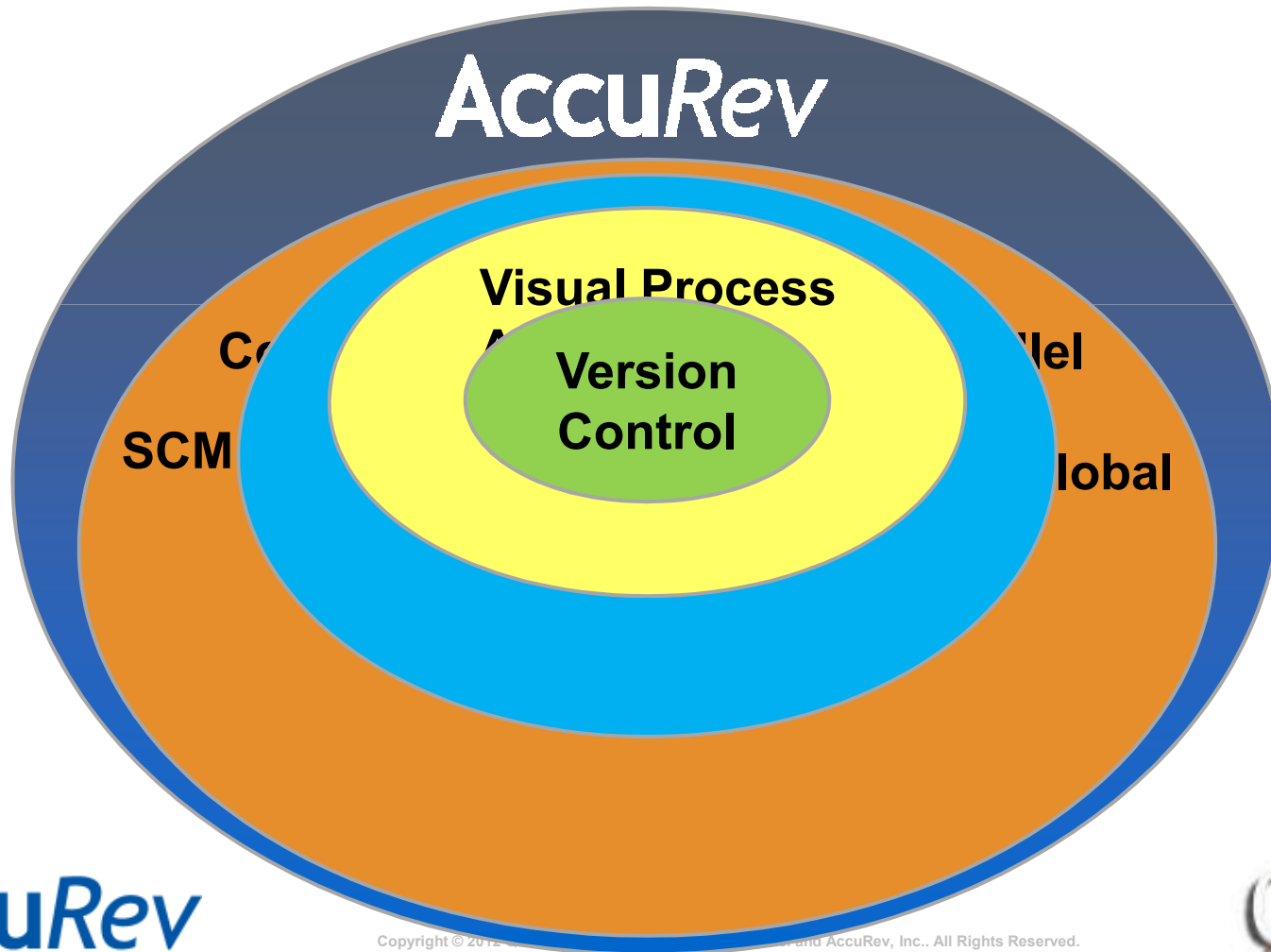
# QSM Products & Services

- The SLIM-Suite®
- Consulting Services
  - Product Mentoring
  - Benchmarking
  - Function Point Analysis
  - Independent Estimates
  - Bid Assessments
  - Software based Expert Witnessing
  - Project Monitoring & Adaptive Forecasting
- Training & Education



# What is AccuRev?

**Much more than Version Control...  
AccuRev enables Software Process Automation**



# Q&A

## AccuRev

Call: 1-800-383-8170 or  
+1-781-861-8700

Email: [sales@accurev.com](mailto:sales@accurev.com)

Visit: [www.accurev.com](http://www.accurev.com)

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## QSM<sup>®</sup>

Call: 1-800-424-6755  
1-703-790-0055

Email: [info@qsm.com](mailto:info@qsm.com)

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