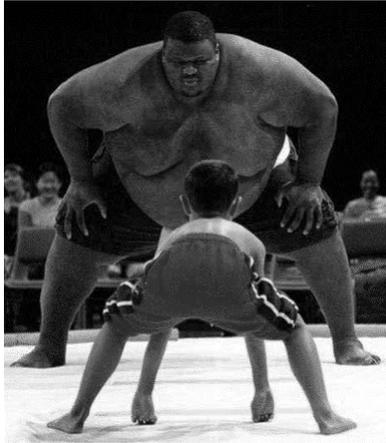# Rightsizing Your Projects
In a Down Economy

Software Quality Group
of New England
December, 2009

Michael Mah
Managing Partner
QSM Associates, Inc.
75 South Church Street
Pittsfield, MA 01201
413-499-0988
e-mail: michael.mah@qsma.com
Website: www.qsma.com
Blog: www.optimalfriction.com

12/4/2009

Industry Data from the QSM SLIM-Metrics Database

❑ Spans 20+ years

❑ Large, worldwide heterogeneous database contains 8,000+ projects

❑ Represents over 685+ million SLOC, 7+ million function points, over 600 languages, from 500+ organizations in 18 countries

❑ Adding 200 – 400 projects/year

The QSM Software Almanac
Application Development Series

2006 IT Metrics Edition

Application Development
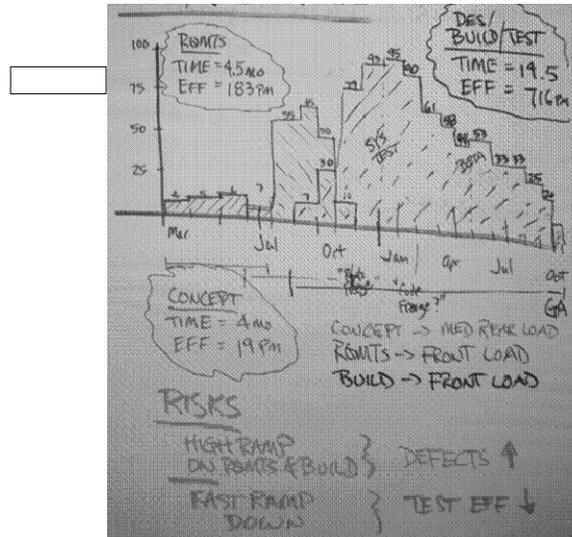Data and Research for
the Agile Enterprise

Partial List of Clients

- British Telecom
- SAP
- Microsoft
- Intel
- BellSouth
- BMC Software
- Motorola
- VerizonWireless
- Computer Sciences Corp

- IBM Global
- Progressive Insurance
- Misys Healthcare
- JPMorganChase
- Boeing
- Bank of New York Mellon
- Lockheed Martin
- Siemens Medical
- DirecTV

A Project That Has Been "Wrongsized"

WrongSized in Two Dimensions

Project ID 18:   Release Suite 9.5   (Record 18 of 21)

Basic Information | Application | Sizing | Accounting | Custom Fields | Environment | Quality | Review

Project Information

Project Name	Release Suite 9.5
Status	Estimate
Confidence	Moderate
Preparer Name	Michael Mah
Record Creation Date	7/5/2006
Date Last Modified	7/20/2006

Predominant Application Type

- Facility Mgmt
- Financial Mgmt
- Materials Mgmt
- Flow Control
- Network Support
- Order Entry
- Database Mgmt

Description

Release 9.5 moves Vision product functionality to Windows and Electronic Medical Records (EMR) to MS SQL Server from Informix 4GL, Stored Procedures and Java. It includes enhancements to fill Tiger Vision functionality gaps, rounds out GUI functionality for Vision and EMP products.

Sizing

Source Lines of Code

New	686000
Modified	
Unmodified	

Code Size

Requirements

Defects

System Integration to Delivery	
First Month after Delivery	

Team Size

	Phase	Start Date	End Date	Months	PM	1000 $	Peak Staff	Staffing Shape
1.	PLAN	3/1/2006	7/1/2006	4.03	19	108.02	6	
2.	REQ	6/15/2006	11/1/2006	4.57	183	1728.24	65	Medium Front Load Rayleig
3.	DC&T	8/1/2006	10/15/2007	14.48	716	6173.91	95	Front Load Rayleigh
4.	P_Mnt							
	Life Cycle	3/1/2006	10/15/2007	19.5	918.0	8010	95.00	PI = 21.3 MBI = 4.4

Time   Effort

Delete | First | Prior | Next | Last | Add | OK | Cancel | Help

Build Phase Staffing - Wrong

Main Build Phase Staff vs Size

Larger Teams

AB Rel 9.0

AB Rel 9.5

AB Rel 10

DC&T Peak Staff (People)

Effective SLOC (thousands)

■ AB Medical All   ● AB Medical Systems   ■ Special Project   ▬▬ Company – All Projects   — Avg. Line Style   ------- 1 Sigma Line Style

Build Phase Schedule - Wrong

Main Build Phase Schedule vs. Size

Impossible Zone

AB Rel 1.0

AB Rel 9.0

AB Rel 9.5

DC&T Duration (Months)

Effective SLOC (thousands)
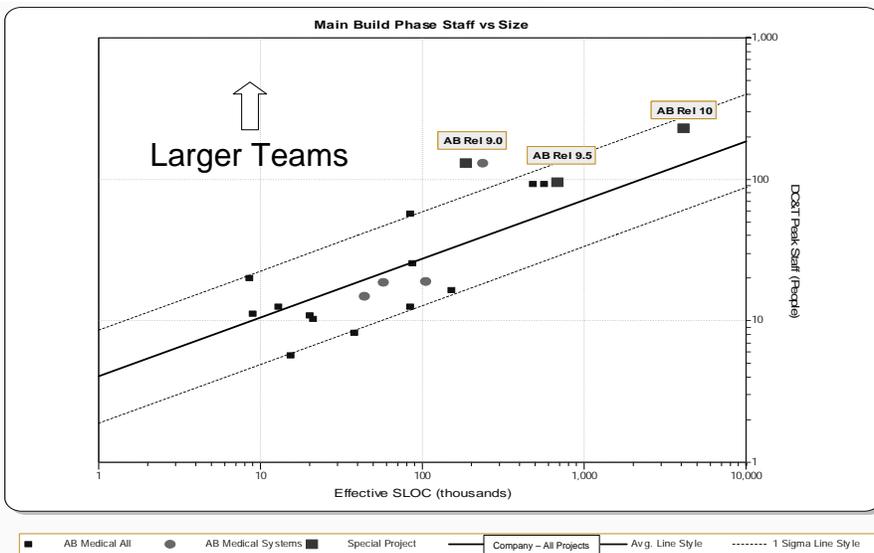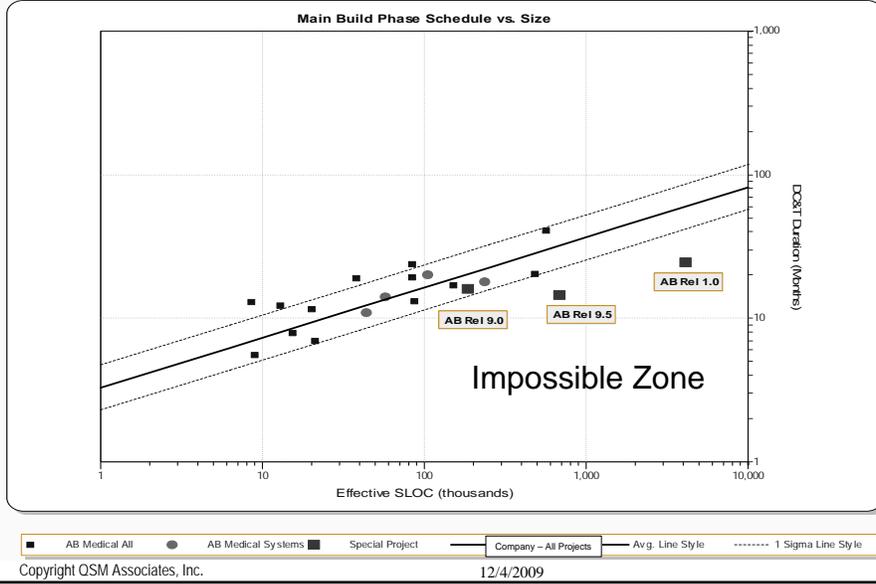
Defects/Quality – Where Will This Be? (Hint…)

Defects During Test vs Size

Errors (Sys Int-Del) (thousands)

Effective SLOC (thousands)

QSM ASSOCIATES
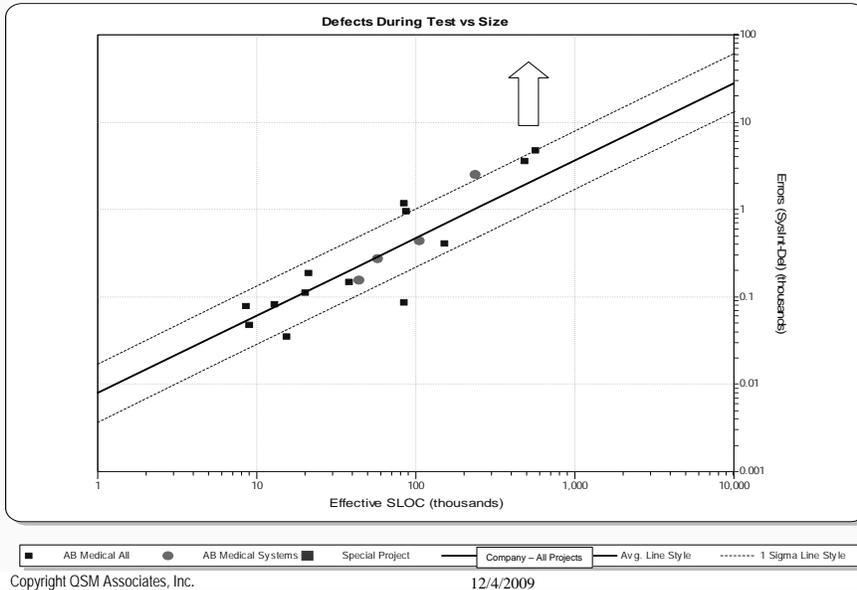
Defects vs. Industry Average

Defects Found

The "System" Is Wrong…

Defects

05/17 06/28 08/09 09/20 11/01 12/13 01/24 03/06 04/17 05/29 07/10 08/21 10/02 11/13 12/25 02/05
'03   '04   '05

● — Current Plan   ■ — Actuals   Green Control Bound   Yellow Control Bound   Project: CEP

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QSM ASSOCIATES
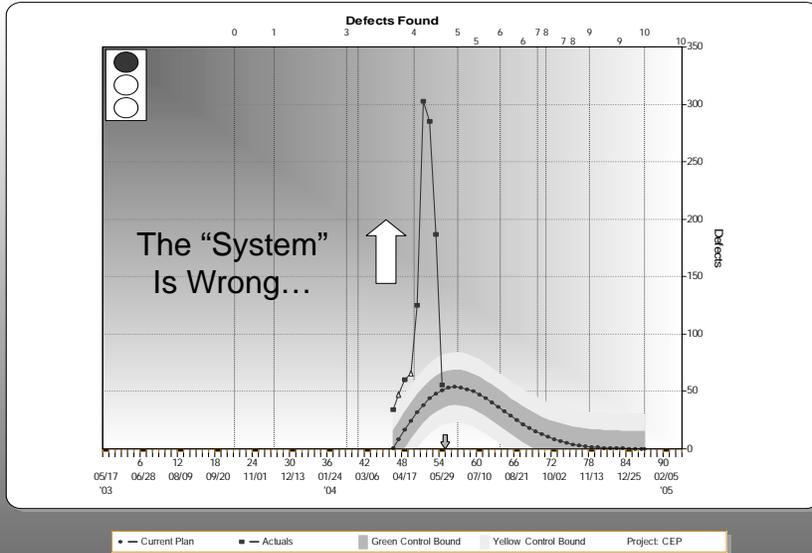
Defects Cost You Precious Time…

Defects Found

The Date Is Wrong…   4 Month Slip

Defects

05/17 06/28 08/09 09/20 11/01 12/13 01/24 03/06 04/17 05/29 07/10 08/21 10/02 11/13 12/25 02/05
'03   '04   '05

● — Current Plan   ■ — Actuals   Green Control Bound   Yellow Control Bound   Project: CEP

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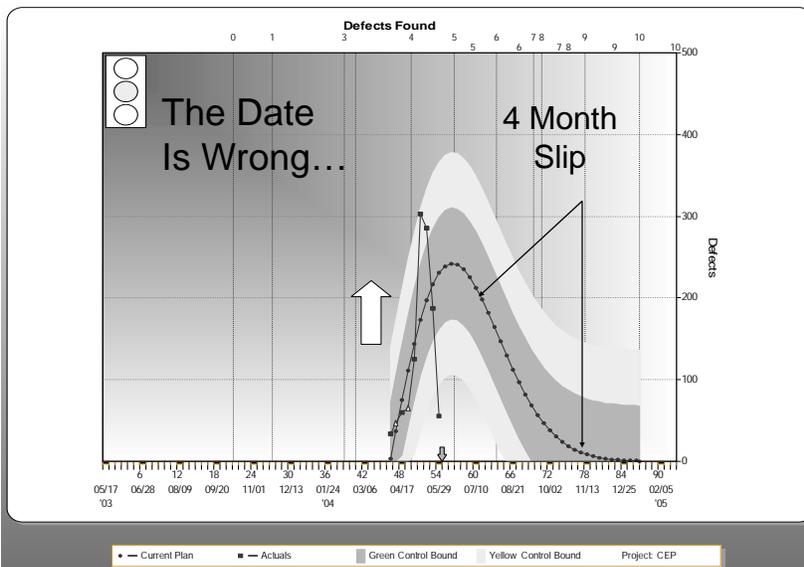
We Call This:
*Self Defeating Behavior
Through "WrongSizing"*

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12/4/2009
14
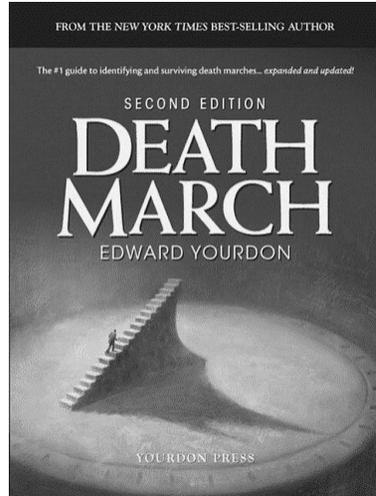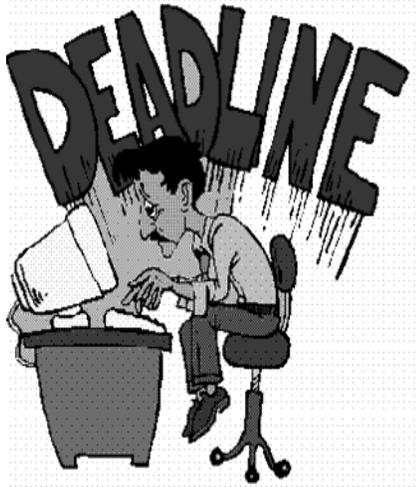
A Consultant's Nightmare

-----Original Message-----
From: Tom DeMarco
[mailto:tdemarco@systemsguild.com]
To: Michael Mah

Michael,

[We need to contend with] a fairly angry CFO of the Nicholas Carr school who is demanding to [know] that he's not paying for a bunch of software dunderheads…
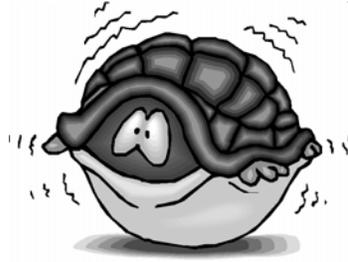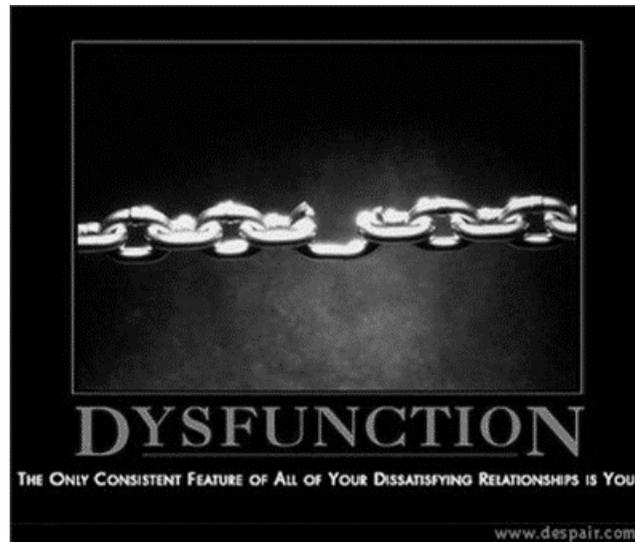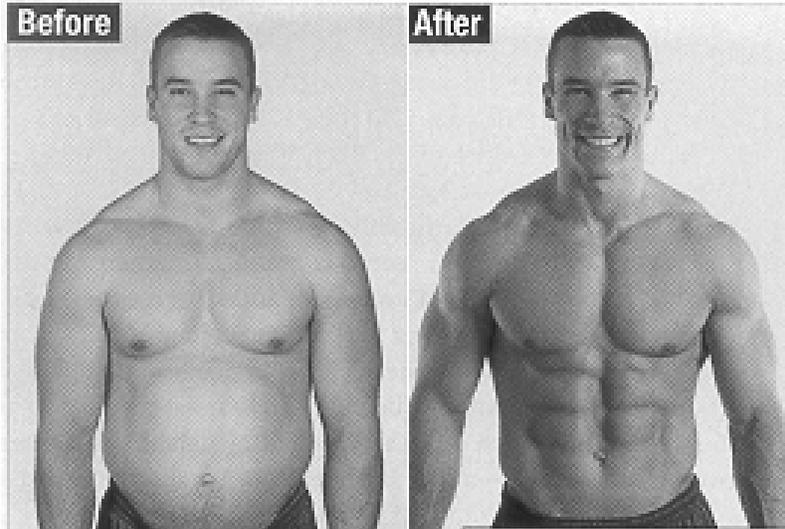
Best,

t

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12/4/2009 20

- ❑ **Scarcity Thinking**
  - ❑ Feeling Quality: Fear
  - ❑ Insecurity, Anger
  - ❑ Action: Cost Cutting
  - ❑ Contraction

- ❑ **Abundance**
  - ❑ Feeling Quality: Safety
  - ❑ Security, Confidence
  - ❑ Action: Innovation
  - ❑ Growth

DYSFUNCTION

THE ONLY CONSISTENT FEATURE OF ALL OF YOUR DISSATISFYING RELATIONSHIPS IS YOU.

www.despair.com

Are You "Lean/Agile?"

If Agile Works Best With Small to Medium Sized Teams…

All Systems   QSM 2008 Business   Avg. Line Style   1 Sigma Line Style
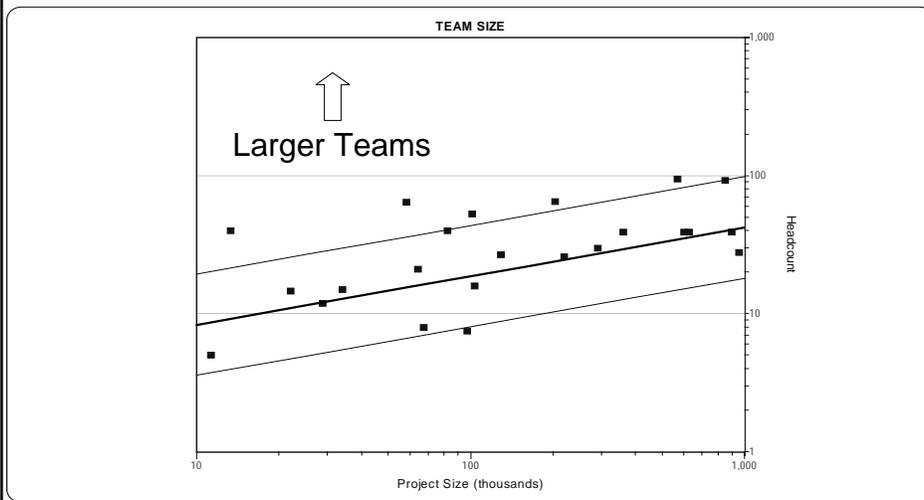
Knowledge vs. Routine Work

- ❑ Expert Thinking: Requiring creativity and expert problem solving, design of new products.
- ❑ Complex Communication: High paying jobs in design, innovation, and management of others with face-to-face interaction.

Domain Knowledge
High-Bandwidth Communication

- ❑ Routine Cognitive Tasks: Work that follows well-defined logical rules, such as call center and data processing. Some routing software coding.
- ❑ Routine manual tasks: Physical labor jobs such as blue-collar assembly line work.
- ❑ Nonroutine manual tasks: Physical labor jobs difficult to automate requiring optical recognition, fine motor control, including a range of factory jobs.

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We Have to "Think Systems..."

12/4/2009 26
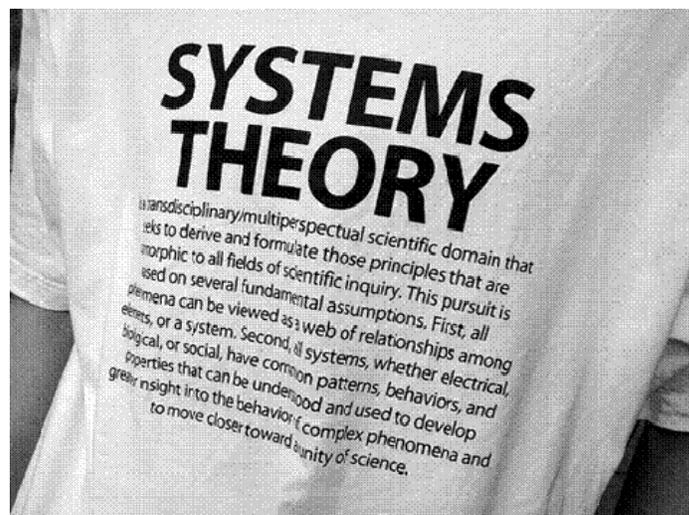
Agile As Short Feedback Loops (Pair Programming, Iterations)
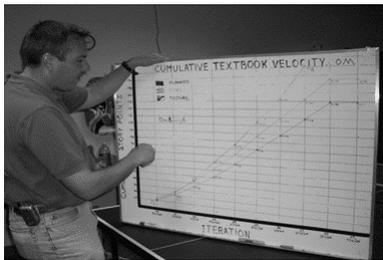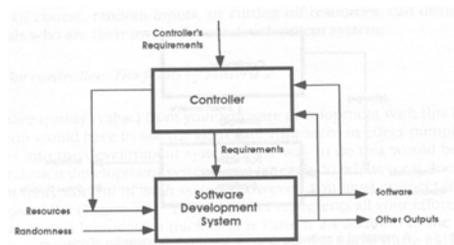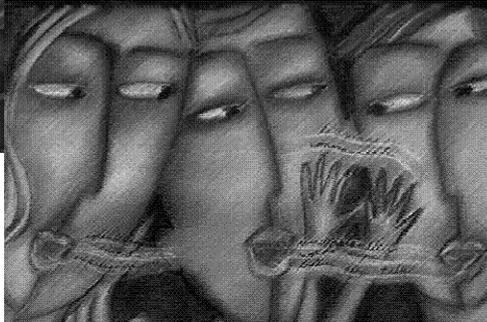
A People Intensive Agile Environment

12/4/2009 29

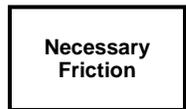12/4/2009 30
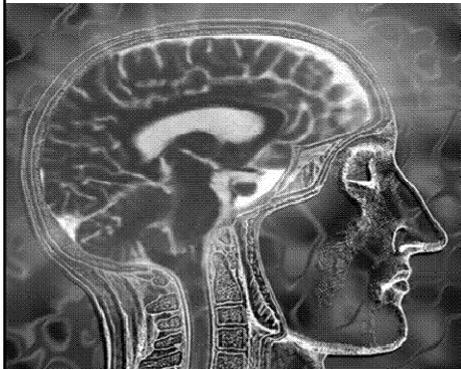
...nt is About Interactions

A Systems View - Real Work, Necessary Friction, and Optional Chaos for Teams

Real Work — **Effort that goes directly into transcribing knowledge you already have into the system being built**

Necessary Friction — **The work necessary to _discover_ knowledge you do not already have**
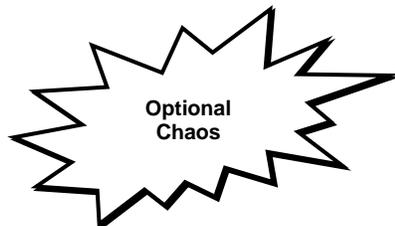
Optional Chaos — **The "Brownian Motion" of the project. It is waste**

Source:
Armour, Phillip G. "Real Work, Necessary Friction, Optional Chaos"
Communications of the ACM
Vol 47 No 6 June 2004

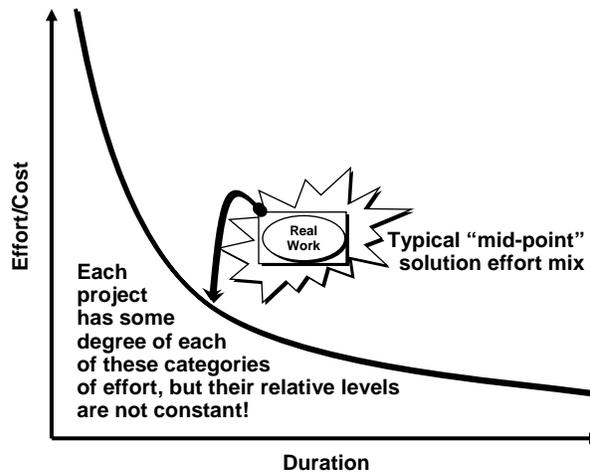# Extended Schedule
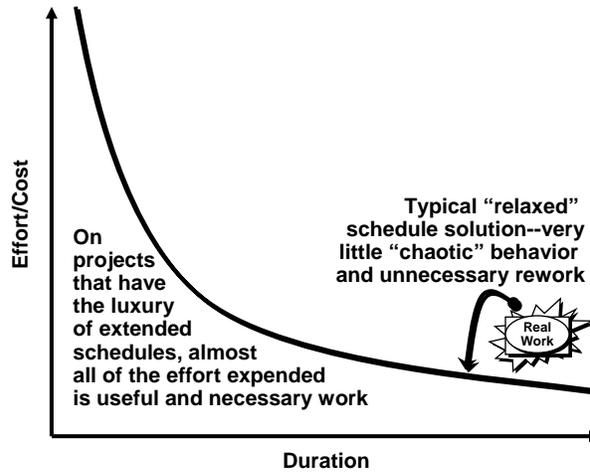
Effort/Cost

On projects that have the luxury of extended schedules, almost all of the effort expended is useful and necessary work

Typical "relaxed" schedule solution--very little "chaotic" behavior and unnecessary rework

Real Work

Duration

Source:
**Armour, Phillip G.
"Real Work, Necessary Friction,
Optional Chaos"**
*Communications of the ACM
Vol 47 No 6*

The Mix of Work

Effort/Cost

Real Work

Typical "mid-point" solution effort mix

Each project has some degree of each of these categories of effort, but their relative levels are not constant!

Duration

Source:
**Armour, Phillip G.
"Real Work, Necessary Friction,
Optional Chaos"**
*Communications of the ACM
Vol 47 No 6*

Short-Cycle Chaotic Projects
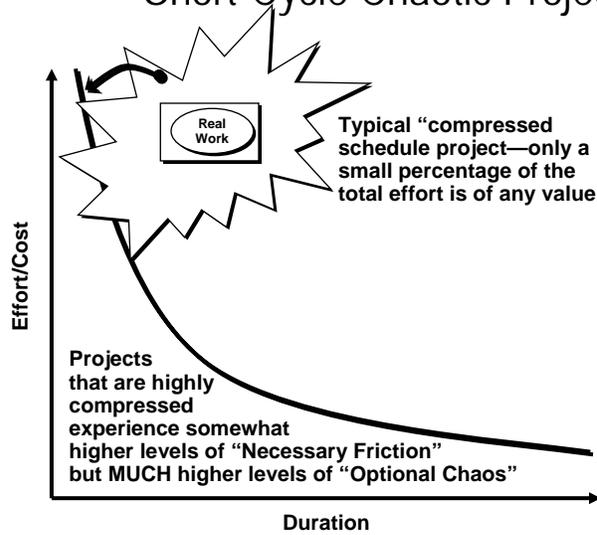
Real Work

Effort/Cost

Typical "compressed schedule project—only a small percentage of the total effort is of any value

Projects that are highly compressed experience somewhat higher levels of "Necessary Friction" but MUCH higher levels of "Optional Chaos"

**Source:
Armour, Phillip G.
"Real Work, Necessary Friction, Optional Chaos"
Communications of the ACM
*Vol 47 No 6***

Duration

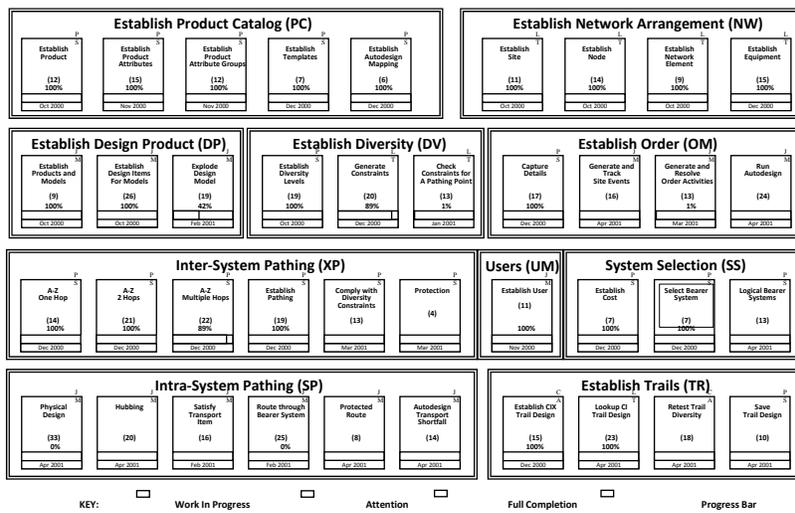# A Parking Lot Diagram As a Way to Rightsize Scope

Courtesy Jeff DeLuca

Highly Functioning Individuals and Teams

❑ Optimizing Interactions between Individuals

❑ Optimizing Interactions between Groups

❑ Dealing with Differences, Emotions, and Identity issues with my peers

❑ Understanding Organizational Dynamics between Members of the Group

❑ Recognizing Pressures within and Upon my Peers

❑ Recognizing Pressures within and Upon the Group

❑ Seeing Triggers that Set Off Personal Defense Mechanisms

❑ Seeing Triggers that Set Off Group Defense Mechanisms

❑ Recognizing How to Manage Individual Relationships

❑ Recognizing How to Manage Group Relationships

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FREE STUFF

❑ Special report … "Understanding Productivity in Agile Development; How Agile Measures Up and What It Means to You"

❑ Article: "If Agile Were to Go Mainstream"

Just Leave a Card in the Basket at the Back

12/4/2009

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Contact Me At:

❑ **Michael Mah**
email: michael.mah@qsma.com
website: www.qsma.com
blog: www.optimalfriction.com
Tel: 413-499-0988

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Slide 1

SQGNE Software Quality Group of New England

SQGNE is made possible by the support of our sponsors:

ASQ American Society for Quality
Software Division

SOFTWARE QUALITY CONSULTING
consulting • training • auditing

Slide 2

Welcome to our **16th** season!

- An all-volunteer group with no membership dues!
- Supported entirely by our sponsors...
- Over 700+ members
- Monthly meetings - Sept to July on 2nd Wed of month
- E-mail list - contact John Pustaver **pustaver@ieee.org**
- **NEW SQGNE Web site: www. sqgne.org**

Slide 3

Volunteers / Hosts / Mission

Volunteers	Our gracious Hosts
John Pustaver - Founder and Director	Paul Ratty - room, copies, cookies
Steve Rakitin – Programs and web site	Tom Arakel - room, copies, cookies
Gene Freyberger – Annual Survey	Margaret Shinkle - room, copies, cookies
Dawn Wu – our new greeter!!	Jack Guilderson – A/V equipment

Mission
- To promote use of engineering and management techniques that lead to delivery of high quality software
- To disseminate concepts and techniques related to software quality engineering and software engineering process
- To provide a forum for discussion of concepts and techniques related to software quality engineering and the software engineering process
- To provide networking opportunities for software quality professionals

---

Slide 4

ASQ Software Division

- Software Quality Live - for ASQ SW Div members...
- Software Quality Professional Journal www.asq.org/pub/sqp/
- CSQE Certification info at www.asq.org/software/getcertified
- SW Div info at www.asq.org/software

Slide 5

SQGNE 2009-10 Schedule

Speaker	Company/Affiliation	Date	Topic
Eric Lotter	Surgient	9/9/09	Using Virtualization to Accelerate Quality/Test Cycles
Steve Rakitin	Software Quality Consulting	10/14/09	Software Quality Assurance Turns 50 A Critical Look at the Profession
Howie Dow and Steve Rakitin		11/11/09	Interactive Requirements Exercise...
Michael Mah	QSM Associates	12/9/09	Rightsizing Your Project in a Down Economy
Robin Goldsmith	GoPro Management	1/13/10	I went to a Testing Conference and all they talked about was Requirements
Stan Wrobel	CSC	2/10/10	To be announced...
Billie Bell	Intuit	3/10/10	End-to-End Testing in a SaaS environment: Extending the Definition of Quality
Linda McInnis		4/14/10	Metrics: The Where, How and Why?
Urvashi Tyagi	Microsoft	5/12/10	A day in the life of a tester at Microsoft...
Brian LeSuer	Star Quality	6/9/10	To be announced...
Everyone		7/14/10	Annual Hot Topics Night...

Slide 6

Tonight's Speaker...

Interactive Requirements Exercise
Howie Dow and Steve Rakitin

Requirements are the most important information a software project team needs. Developers and testers all depend on clear, unambiguous requirements to do their work. Yet, few projects have such requirements. Most requirements are written in English. Good requirements are hard to write because English is an inherently vague and ambiguous language and because we don't train people in how to write good requirements using English. In this talk, we will review several graphical alternatives to English that are much less ambiguous. Small groups will work on a expressing requirements using different techniques so that we can see first hand the benefits of graphical techniques...

1