

Agile Development: How to Define a Lean, Mean Software Process

Phil Robinson
Lonsdale Systems
lonsdale@iinet.net.au
www.iinet.net.au/~lonsdale/

Some Definitions

Agile

1. Characterised by quickness, lightness, and ease of movement; nimble
2. Mentally quick or alert: an agile mind

Lean

1. Containing little excess or waste; spare
2. Thrifty in management; economical

Mean

1. Excellent; skillful (slang)

www.dictionary.com

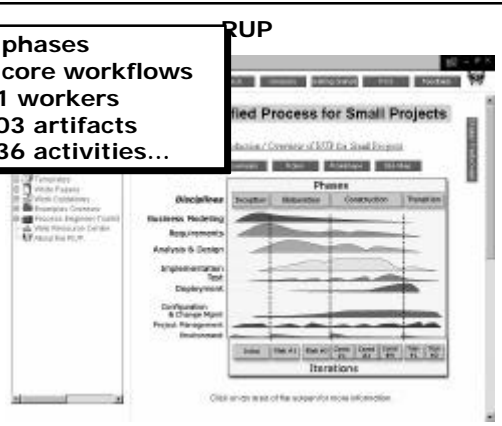
Current Sources of Process Wisdom

- 'Classic' methodologies
- Process improvement frameworks
- The new, 'agile' approaches

'Classic' Methodologies

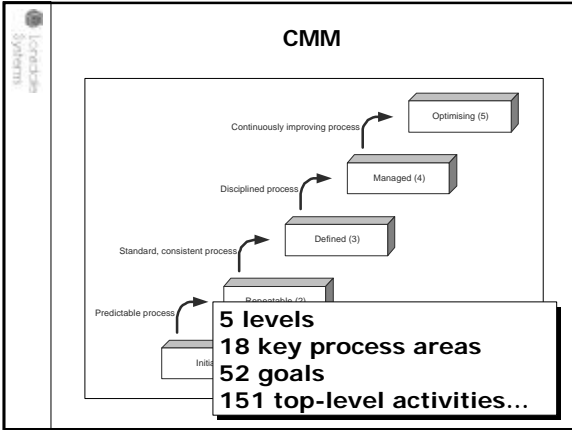
- **Rational Unified Process (RUP)**
www.rational.com/rup
- **V-Model (Vorgehensmodell)**
www.informatik.uni-bremen.de/gdpa
- **APT**
www.aptsystems.com.au

4 phases
9 core workflows
31 workers
103 artifacts
136 activities...



Process Improvement Frameworks

- **Software Engineering Institute (SEI)**
www.sei.cmu.edu
 - Capability Maturity Model (CMM)
 - Personal Software Process (PSP)
 - Team Software Process (TSP)
- **Software Process Improvement and Capability dEtermination (SPICE)**
<http://www.sqi.gu.edu.au/spice/>



- 'Agile' Approaches**
- **Agile Alliance**
www.agilealliance.org
 - **Various 'lightweight' RUPs**
 - **Extreme Programming**
www.extremeprogramming.org

The Agile Alliance Manifesto

Manifesto for Agile Software Development

17 gurus
12 principles
62 signatories...

...ing better ways of developing
... it and helping others do it
... we have come to value:

...ractions over processes and tools
...over comprehensive documentation

Customer collaboration over contract negotiation
Responding to change over following a plan

That is, while there is value in the items on
the right, we value the items on the left more.

But Do They Really Help?

- Is it OK to leave out activity 104?
- Do I really need artifact 97?
- Is key process area 7 relevant to this particular project?
- Should I follow the advice of guru number 5 or guru number 13?

But Do They Really Help?

- What do I do about conflicting or confusing advice?
 - RUP states that 'roles are not individuals; instead, they describe how individuals should behave in the business and the responsibilities of an individual'
 - The CMM seeks to remove the effect of 'innate skills, knowledge, and motivations' of individuals
 - The Agile Manifesto values 'individuals and interactions over process and tools'

But Do They Really Help?

- Process or shelf-ware?
 - A process is used to plan and control real software projects
 - Shelf-ware? Well, it just sort of sits on the shelf!
- If you need shelf-ware, try the V-Model
 - Its comprehensive, on-line and impressive
 - Its based on open standards
 - Its free!



Project Managers Do It With a Body of Knowledge

- The Project Management Institute (PMI)
- A Guide to the Project Management Body of Knowledge (PMBOK) www.pmbok.com
- Describes a subset of the total PMBOK which is generally accepted



What Does 'Generally Accepted' Mean?

- 'The knowledge and practices described are applicable to most projects most of the time, and that there is widespread consensus about their value and usefulness.'
- 'Generally accepted does not mean that the knowledge and practices described are or should be applied uniformly on all projects; the project management team is always responsible for determining what is appropriate for any given project.'



But Wait! Software Engineers Have One Too!

- Joint IEEE and ACM initiative
- Software Engineering Body of Knowledge (SWEBOK) www.swebok.org
 - Defines a 'generally accepted' body of knowledge
 - Provides topical access to the body of knowledge
 - Provides a consistent view of software engineering
 - Sets the boundary with respect to other disciplines

**But Wait!
Software Engineers Have One Too!**

- Joint IEEE and ACM initiative
- **Software Engineering Body of Knowledge (SWEBOK)**
www.swebok.org
 - Defines a 'general knowledge
 - Provides topical knowledge
 - Provides a consistent engineering
 - Sets the boundaries of disciplines

Specialised Practices only used for certain types of software	<u>Generally Accepted</u> Established traditional practices recommended by many organisations.
	<u>Advanced and Research</u> Innovative practices tested and used only by some organisations and concepts still being developed and tested in research organisations.

SWEBOK Knowledge Areas

- Requirements
- Design
- Construction
- Testing
- Maintenance
- Configuration Management
- Software Engineering Management
- Software Engineering Process
- Software Engineering Tools and Methods
- Software Quality

SWEBOK Related Disciplines

- Project Management (PMBOK)
- Computer Science
- Mathematics
- Computer Engineering
- Cognitive Science and Human Factors
- Systems Engineering
- Management and Management Science

Are These Really BOKs Masquerading as Processes?

RUP
CMM
SPICE
APT
PSP
TSP
V-Model
Extreme Programming

Three Questions

- Can a BOK describe how to be agile, lean and mean?
- Probably Not!

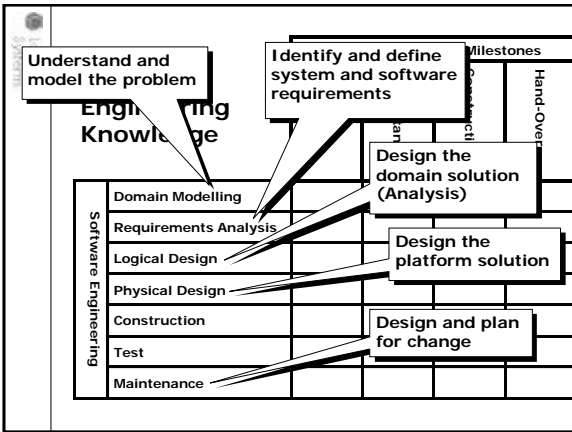
- Can a process framework be separated from its underlying BOK?
- Should Be Possible!

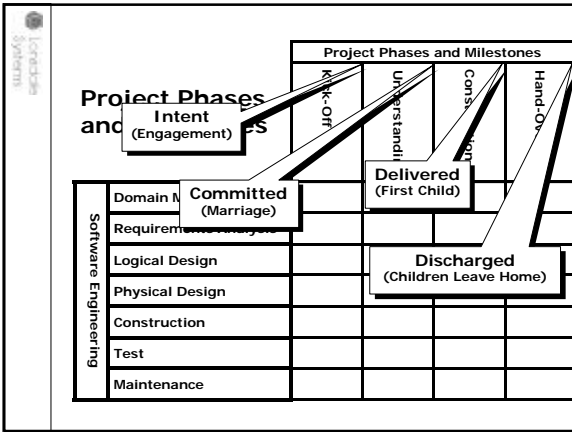
- Would such a framework allow individuals the freedom to be agile, lean and mean?
- Hopefully...

An Example Process Framework Based on Two Bodies Of Knowledge

- **SEBOK**
 - Requirements
 - Domain Modelling
 - Requirements Analysis
 - Design
 - Logical Design
 - Physical Design
 - Construction
 - Test
 - Maintenance
- **PMBOK**
 - Phases
 - Milestones
 - Management

Software Engineering Knowledge		Project Phases and Milestones			
		Kick-Off	Understanding	Construction	Hand-Over
Software Engineering	Domain Modelling				
	Requirements Analysis				
	Logical Design				
	Physical Design				
	Construction				
	Test				
	Maintenance				





		Management			
		Project Phases and Milestones			
		Kick-Off	Understanding	Construction	Hand-Over
Software Engineering	Domain Modelling				
	Requirements Analysis				
	Logical Design				
	Physical Design				
	Construction				
	Test				
Project Management	Maintenance				
	Configuration Management				
	Quality Management				
	Project Management				
	Facilities Management				

		Management			
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Software Engineering	Domain Modelling				
	Requirements Analysis				
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	Project Management				
	Facilities Management				

Manage process quality (Software Quality Assurance)
Manage product quality (Verification and Validation)

Manage the product (Scope, configuration and changes)

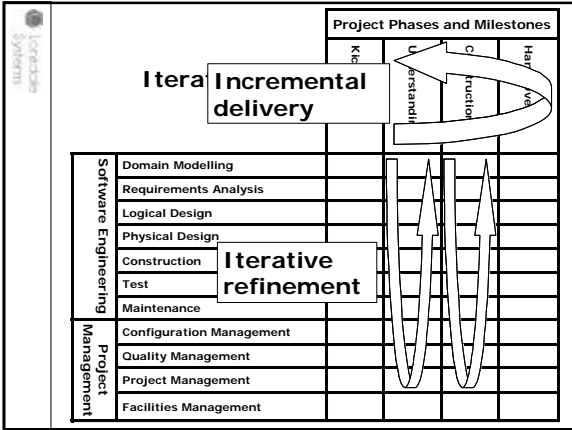
Manage the process (People, time and cost)

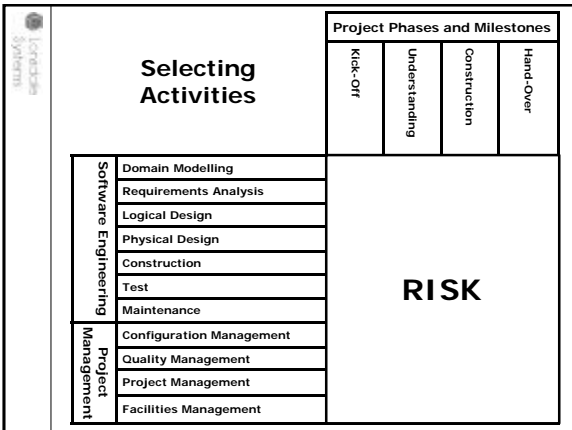
Manage the hardware and software environment (Development and production)

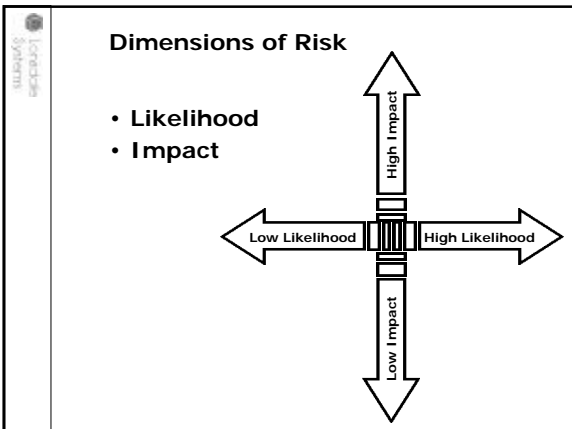
		The Minimum Process			
		Project Phases and Milestones			
		Kick-Off	Understanding	Construction	Hand-Over
Software Engineering	Domain Modelling				
	Requirements Analysis				
	Logical Design				
	Physical Design				
	Construction				
	Test				
Project Management	Maintenance				
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	Facilities Management				

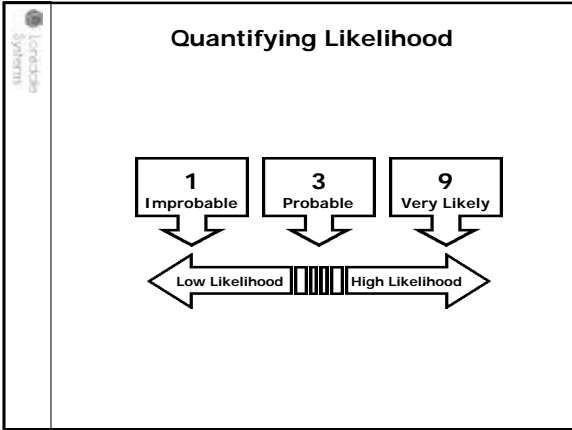
Code and fix

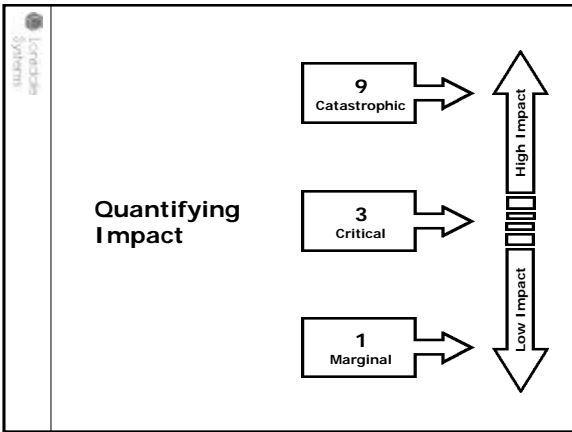
Or possible test first followed by code...

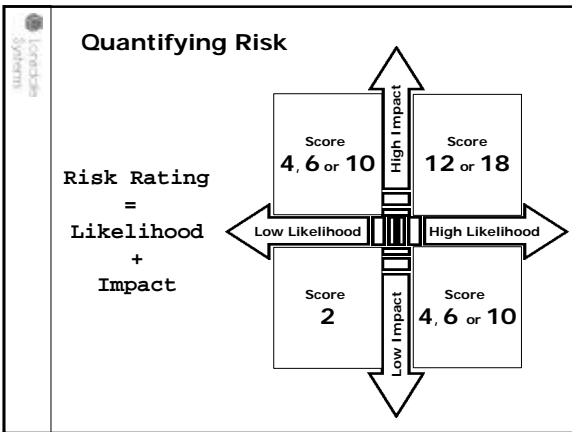


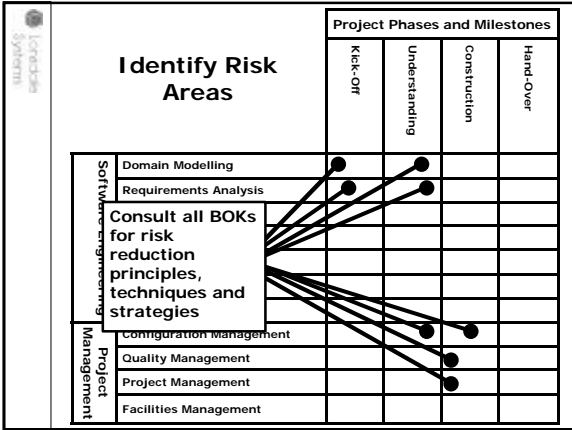


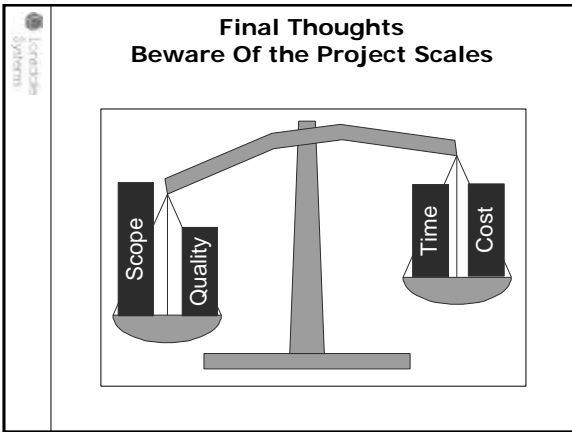


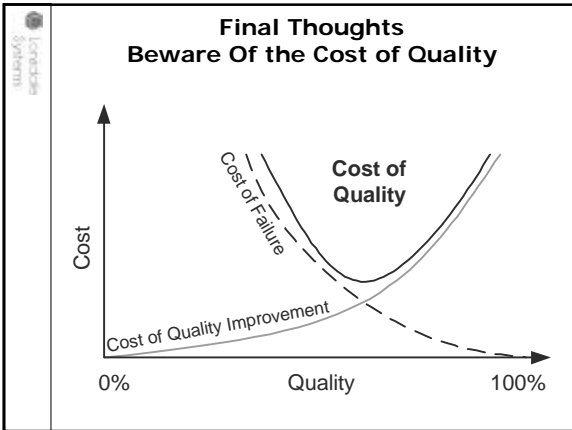














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Questions?

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Phil Robinson
Lonsdale Systems
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www.inet.net.au/~lonsdale/
