Quantifying the Value of Business Requirements

...and other lessons learned in the trenches of business application development

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Research completed at
IAG Consulting

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If you know what you want to build…

it should be cheaper and faster to build it.

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About Keith Ellis

- Author of The Business Analysis Benchmark
- Example projects I've lead:
  - Modernization of UI Tax and Benefit Systems:
    4 states simultaneously needing over 100 business and 50 technical stakeholders to create a DOL standard
  - Implementing Centers of Excellence
  - Mentoring analyst leadership
- Built and sold a requirements definition and management (RDM) company
- Something in excess of 60,000 people have listened to my webinars on aspects of RDM
- Msc in Computer Science from Lancaster University as a result of research in RDM

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Agenda

- Why measure the value of business requirements?
- What are the issues that drive measurable value?
- Share with you some FACTS about RDM value
- Talk about my own experiences in capturing RDM benefits
- Discussion

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WHY MEASURE THE VALUE OF KNOWING WHAT YOU WANT?

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Researchers have tried to measure the impact of requirements before…

- **Empirical RDM studies:**
  - Paech, Koenig, Borner, & Aurum, 2005: *"It has been established that RE makes a difference for project success."*
  - Paulk, Curtis, Chrissis, & Weber, 1993: *It makes a difference by improving other down stream processes in development*
- **Empirical software development or process improvement (SPI):**
  - Herbsleb and Goldenson, 1996 *"CMM-based SPI pays off"*
- **Empirical Studies in Estimation**
  - Boehm, et al., 2000 – *Low capability is 205.6% more expensive?*
- **SPI and RDM improvement frameworks**
  - *"… many SPI programs do not adequately address the requirements problems that underlie poor product quality… achievable improvement is capped by flaws in the requirements process."* Sawyer et. al. p79 as this work references Hutchings & Knox (Hutchings & Knox, 1995)
  - *Sommerville & Sawyer, 1997: "it is reasonable to aim for a 20 percent reduction in the number of reworked requirements"*

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THE PRESS!

- “Flawed Requirements Trigger 70% of Project Failures.” (Kerton, 2006)
- “Requirements Errors account for 70% to 85% of rework.” (Leffingwell, 1997)
- “Between 40 and 60 per cent of all software defects can be attributed to bad requirements.” (Abbott, 2001)
- “We estimate that about 48 per cent of the federal government's major IT projects have been rebaselined .... [The] most commonly cited reason for rebaselining was changes in project requirements, objectives, or scope — 55 per cent.” (United States Government Accountability Office, 2008)
- “Deficient requirements are the single biggest cause of software project failure.” (Jones, 1996)

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Good ideas, into actionable ideas.... more efficiently than competitors

WHAT IF RDM IS A STRATEGIC PROCESS?

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Some Issues in Measuring RDM Benefit…

- You have to define ‘good’ requirements

good /go͝od/

Adjective:	To be desired or approved of.
Noun:	That which is morally right; righteousness.
Adverb:	Well: "my mother could never cook this good".
Synonyms:	*adjective.* nice - kind - fine *noun.* benefit - profit - advantage - avail - welfare - use *adverb.* well - nicely - fine - right - okay

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Some Issues in Measuring RDM Benefit…

- You have to define ‘good’ requirements

- You have to decide where good requirements are ‘important’

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Some Issues in Measuring RDM Benefit…

- You have to define ‘good’ requirements
- You have to decide where good requirements are ‘important’
- You have to decide what is a ‘meaningful impact’

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One Final Issue…

The approach has to be:

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1. Good'?
2. Where 'important'?
3. 'Impact'?

THE IAG Maturity Model

MY APPROACH TO MEASUREMENT

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Good Requirements Are…

1. A Mature *SERVICE*:
   i.e., reliably repeatable

2. Development method agnostic

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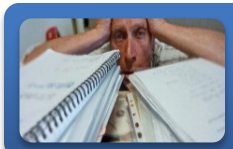
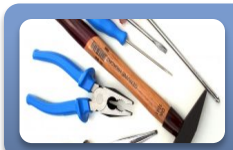
IAG's Requirements Maturity Model

	Level 1	Level 2	Level 3	Level 4	Level 5
 Process				✓	
 Deliverables & Work Products			✓		
 Practices & Techniques	✓				
 Staff Competency		✓			
 Organization	✓				
 Technology			✓		

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Where are Good Requirements Important?

- IT Application Development
- I believe requirements are important when there is application complexity:
  - **Focus:** Strategic applications
  - **Eliminate:** the tiny, the mundane maintenance, or requirements for a hardware buy
- I believe requirements are important when there is organizational complexity:
  - **Focus:** Doing a larger number of projects and spending a lot of money on projects
  - **Eliminate:** small spenders

MY SURVEY CRITERIA:

1. Describe an organization that spends over $1 million, net of hardware, annually in development of CAs and other software,
2. was filled by an individual with experience with RDM and project management for CAs and other software that has added new functionality to the organization's business.
3. described an organization that has run at least four projects each costing at least $250,000 in the last 12 months.

How do we measure benefit?

- **Look at EVERYTHING:**
  - On time
  - On budget
  - On function
  - Deemed successful
- **Be careful to capture MAGNITUDE of gap**
  - % on time AND
  - If not on time, % over time

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SURVEY SAMPLING

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A Summary of the Methodology

- **Two surveys (2008, 2009) with different survey questions:**
  - 2008 = 110 qualifying responses
  - 2009 = 439 qualifying responses
- **Yielding essentially the same results:**
  - Magnitude of impact by maturity level is very similar
  - Validity testing (test/retest): Got a correlation between the surveys of .63 on project success rates

Want more on the demographics? look at Quantifying the Impact of Requirements Definition and Management Process Maturity on Project Outcome in Business Application Development, 2012

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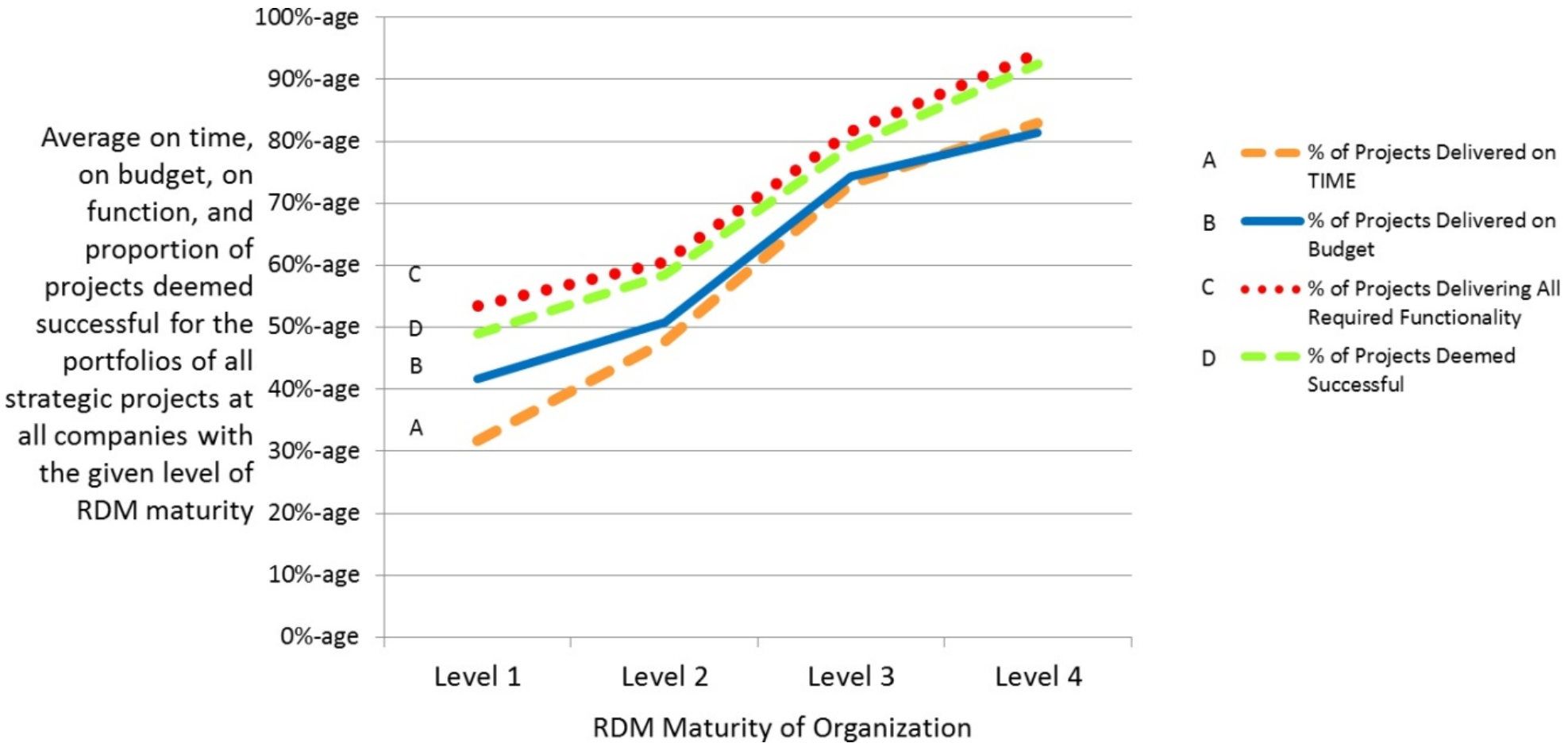
FINDINGS

Every Measure of Benefit Improves as RDM Maturity Rises



Source: Business Analysis Benchmark 2009

Incremental Improvement Delivers Incremental Value

- We're 99.99999% confident the means are different
- The standard deviation of mean performance drops strongly at level 3 and precipitously at level 4
- We're 'pretty sure' performance is different at each level of maturity

Source: Business Analysis Benchmark 2009

Confidence Levels that Performance Will be Higher at Level N than at Level N - 1

Maturity Level	Number of Surveys	On Time	On Budget	On Function	Success
Level 1	57	N/A	N/A	N/A	N/A
Level 2	135	99.98%	97.3%	91.2%	98.7%
Level 3	87	99.999999995%	99.999998985%	99.9999997%	99.99999998%
Level 4	7	99.6%	94.8%	99.995%	99.6%

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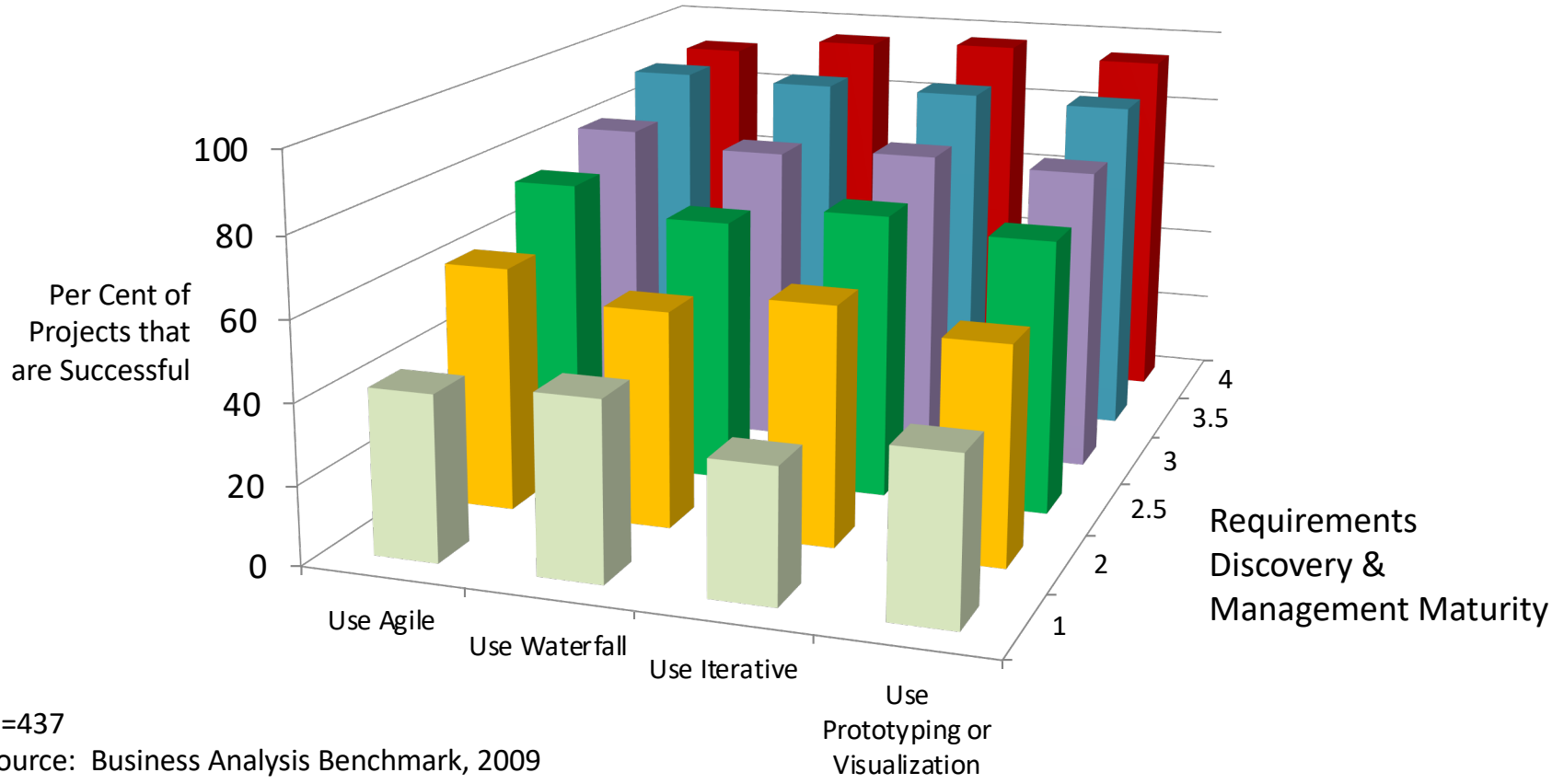
We investigated other variables to see if those were impacting the results



N=437
Source: Business Analysis Benchmark, 2009

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Some Elaborations

- There is evidence that the homogeneity of a company's IT portfolio effects results
- Evidence that larger projects have a steeper benefit curve
- There is anecdotal support for RDM maturity positively effecting financial measures of management productivity (ROA) when comparing a respondent to the average of their comparative community

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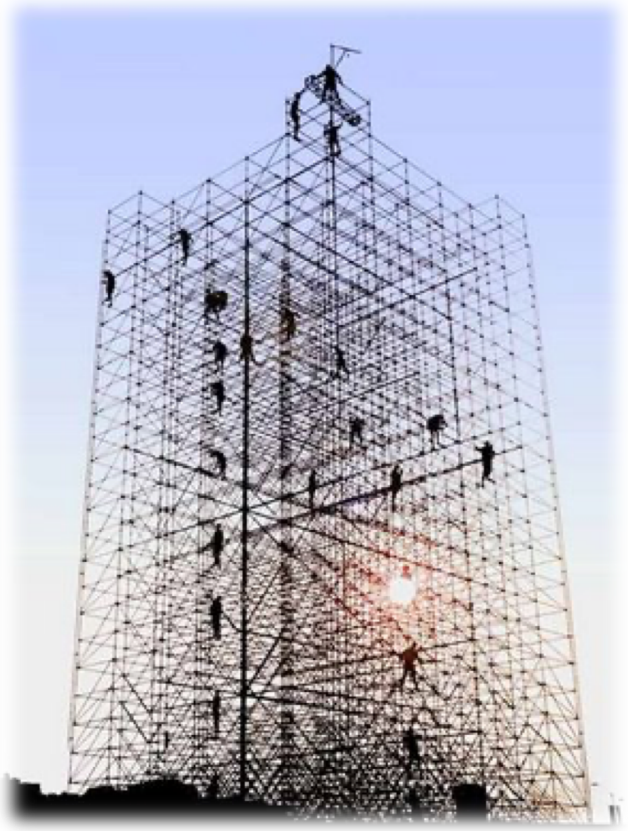

IMPLEMENTING IMPROVEMENT

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Key Success Factors in Implementing Improvement:

To summarize, the key elements of the assumed framework are that:

- requirements are a process, the RDM process;
- a high quality RDM process must not only be defined, but it must also be supported by capabilities that allow the process to be implemented; and,
- a RDM process must be implemented and mature to have value.

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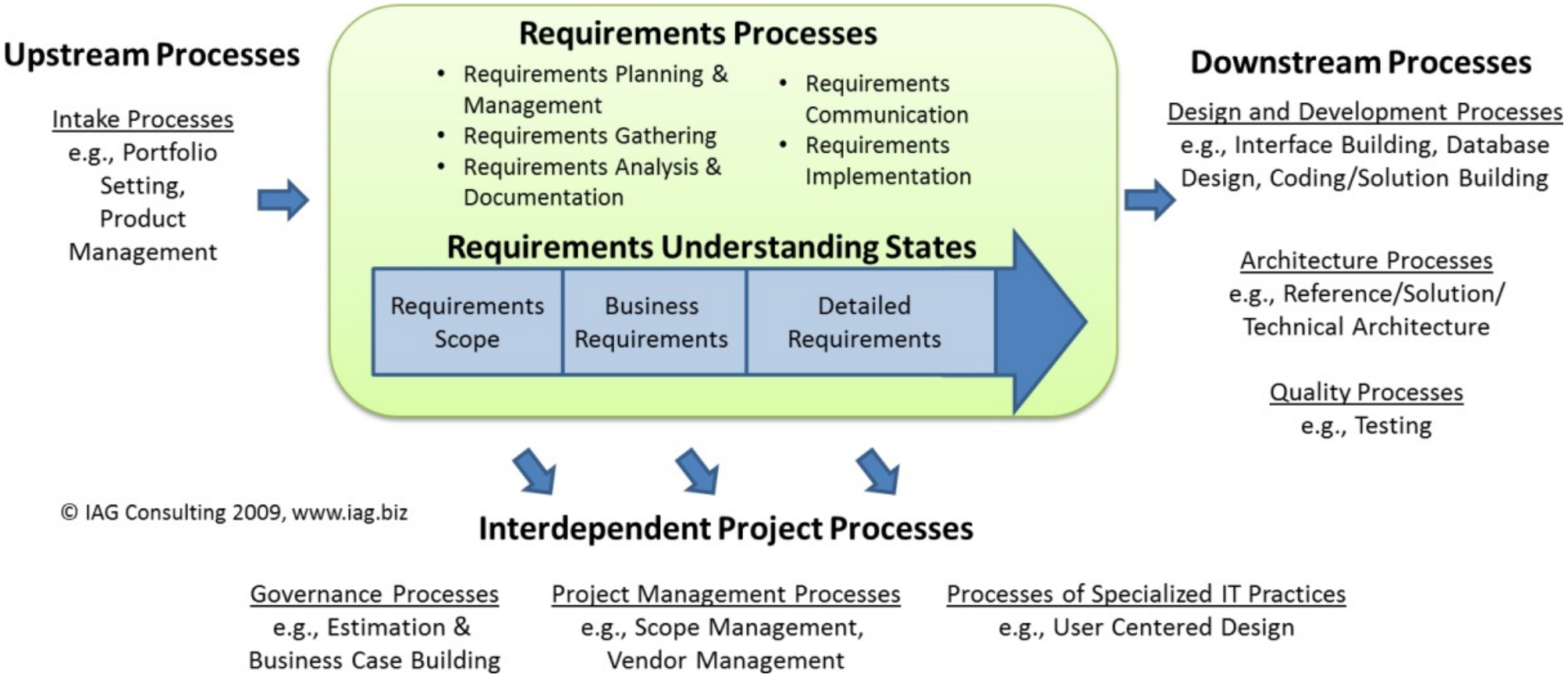
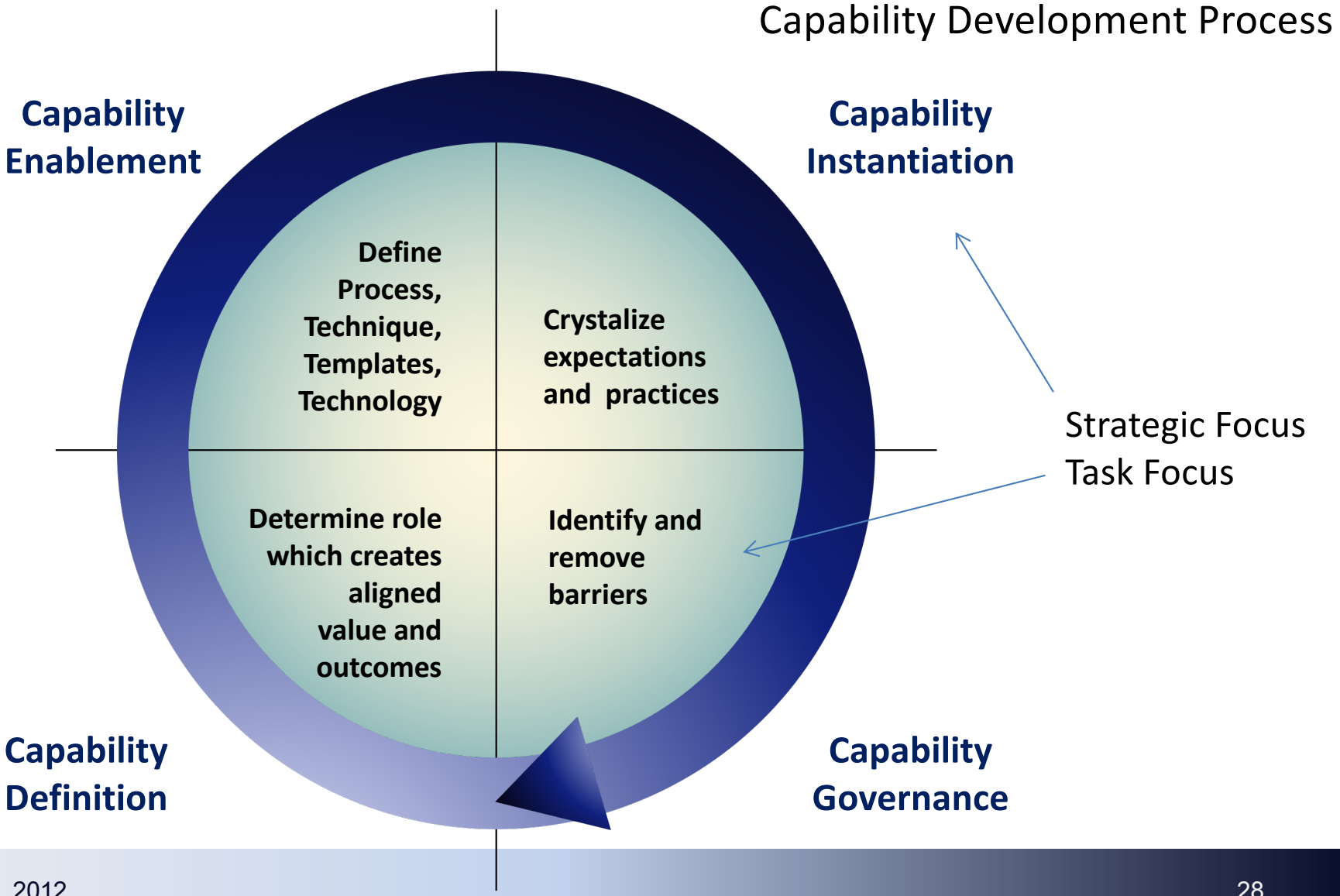
Requirements are a PROCESS



Supported by Capabilities



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a RDM process must be implemented and mature to have value…

- **You cannot assume people UNDERSTAND**
  - Most organizations fail to use the right techniques to properly set expectations and common understanding
- **You cannot assume people WANT to change**
  - Most organizations fail to crystalize the value of doing requirements properly
- **You cannot assume perfect is RIGHT**
  - Requirements experts shudder when a packaged software is foisted on the organization without consideration for requirements … right.

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A FEW CLOSING THOUGHTS

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Wrap-up – Did we get everything?

- Why measure the value of business requirements?
- What are the issues that drive measurable value?
- Share with you some FACTS about RDM value
- Talk about my own experiences in capturing RDM benefits

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DISCUSSION

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Methodology-Centric Bundling

PHASE 1

Project Intake
- Outcome clarification
- Context setting

Organizing teams
- Briefing
- Concept training

WORKSHOP
- Build bottom layer of toolbox
- Frame middle layer
- High level plan and milestones

Work Management
- Alignment of work program elements to people
- Scheduling
- Prioritization

PHASE 2

Identify Team Milestone States
- V0.5, V1.0, V1.5, V2.0

Elaborate Process
- Detail middle layer of toolbox
- V0.5 Playbook
- RASCI
- Context detail

Frame Enablers
- Frame Instruments
- Frame Artifacts
- Frame reference models
- Frame Patterns and templates

PHASE 3

Elaborate Enablers
- Instruments
- Artifacts
- Reference Model
- Patterns and templates

Frame Accelerators
- Frame Capability change plan
- Service evolution plan elaboration
- Align capabilities and services to milestones

Set Management Practices
- Rubric
- Oversight timing
- Determine value measures
- Build learning plan

PHASE 4

Execution Oversight Support
- Key point performance review
- Progress reporting

Barrier Identification and removal
- Triage execution issues
- Review point guidance
- Gauging tempo
- Training coordination

Learning plan execution
- Learning module delivery

- Characteristics:
  - Linked to a project flow and customer maturity
  - You sell the first, then the next, and next, etc

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ROLL UP THE SLEEVES TIME