



TOM GILB & KAI GILB



'Lean' Quality Assurance



by Gilb

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Main Take-away Points

Quality Assurance is far more than 'test',
and it can be far more cost-effective

'Quality' is far more than 'bugs'

You probably have a lot to learn,
if you want real competitive quality

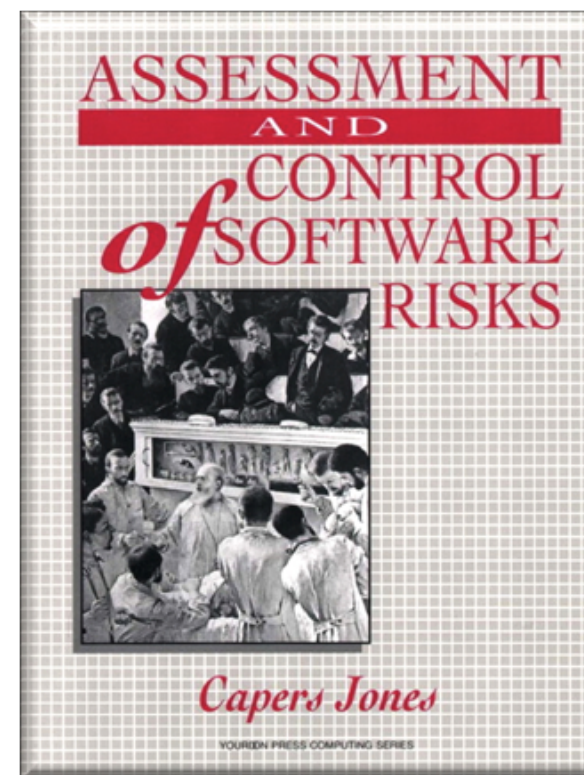
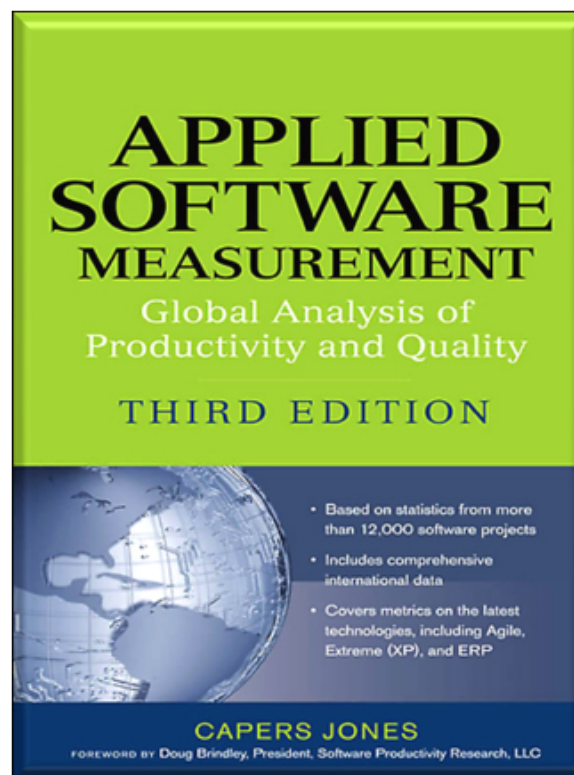
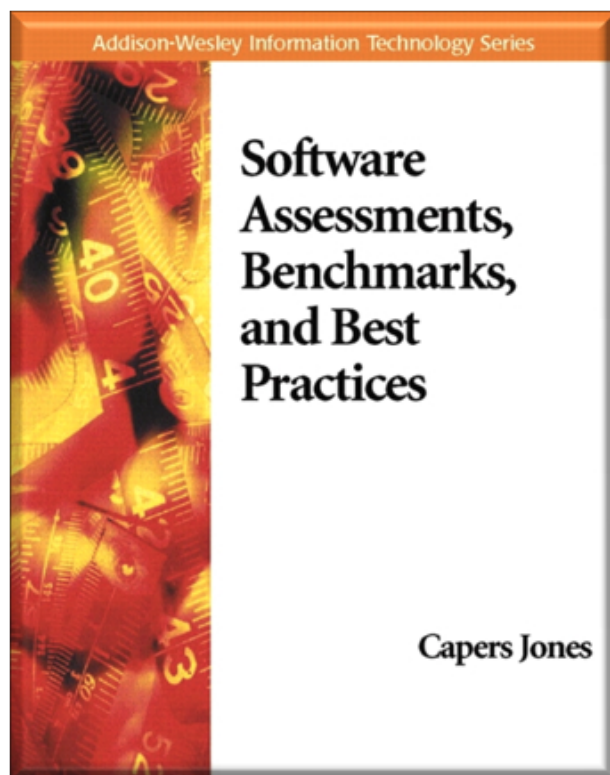
Begin:
Quality Assurance
is far more than 'test'
and it can be far more cost-
effective

a story



Capers Jones

Inspection Effectiveness



Regression test ?

15% to 30%

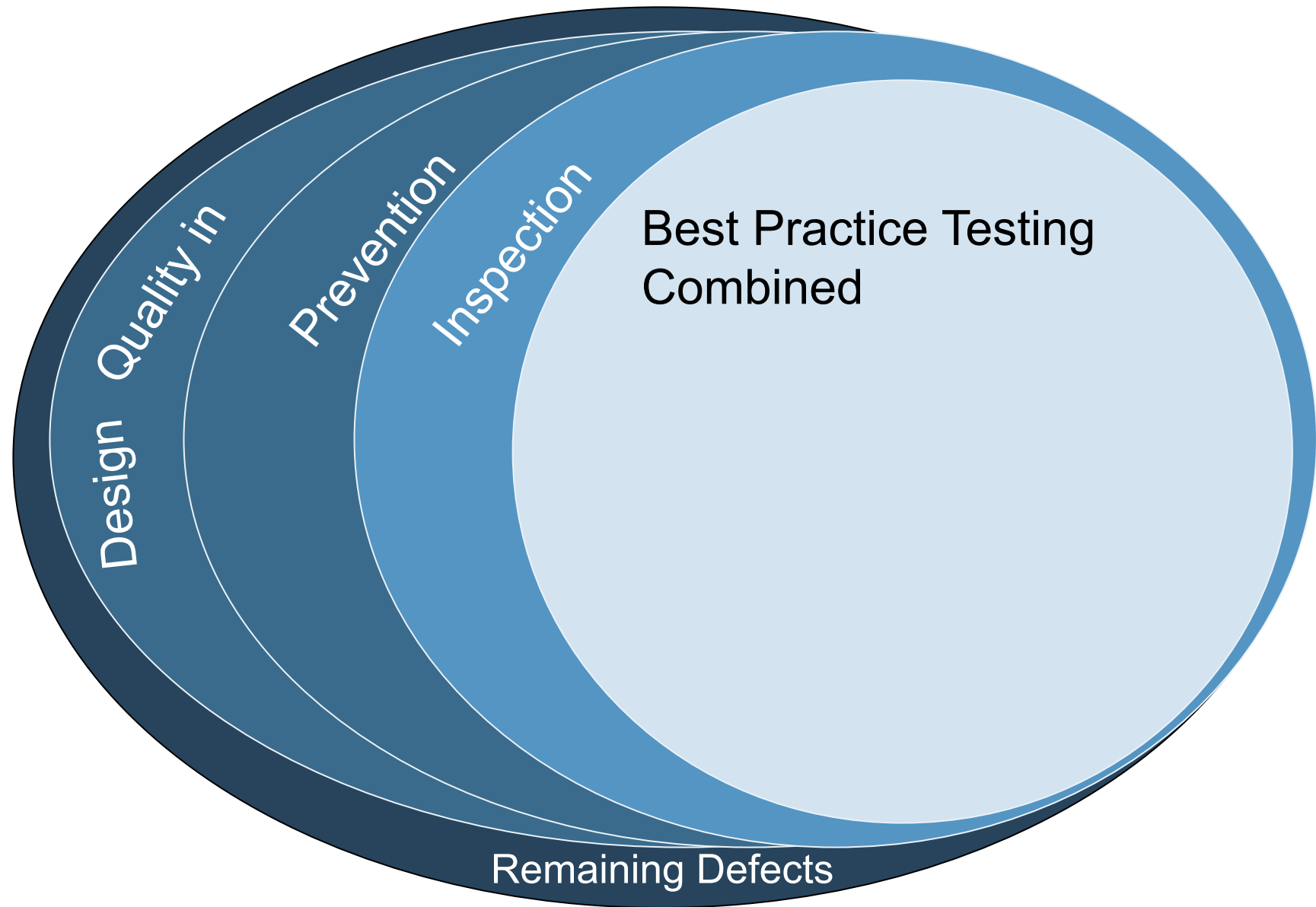
Integration test ?

25% to 40%

Unit test	15% to 50%
New function test	20% to 35%
Performance test	20% to 40%
System test	25% to 55%
Acceptance test (1 client)	25% to 35%
Low-volume Beta test (< 10 clients)	25% to 40%
High-volume Beta test (> 1000 clients)	60% to 85%

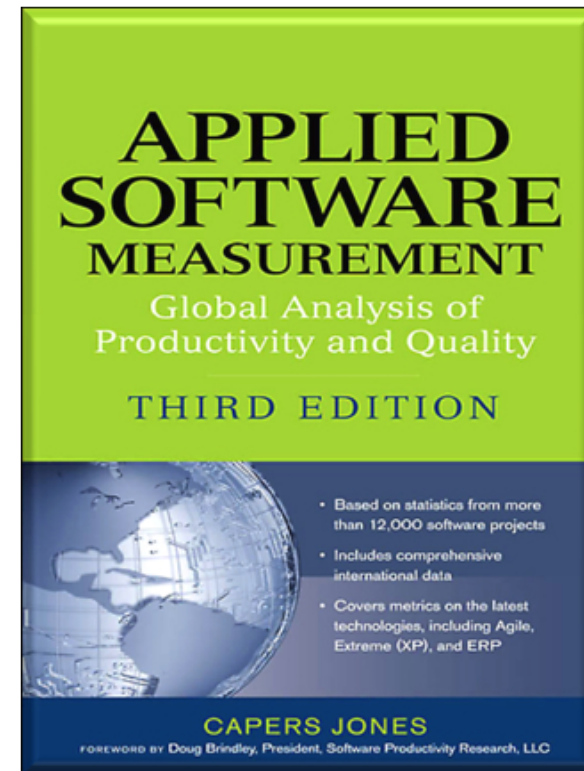
Inspections?

Informal design reviews	25% to 40%
Formal design inspections	45% to 65%
Informal code reviews	20% to 35%
Formal code inspections	45% to 70%

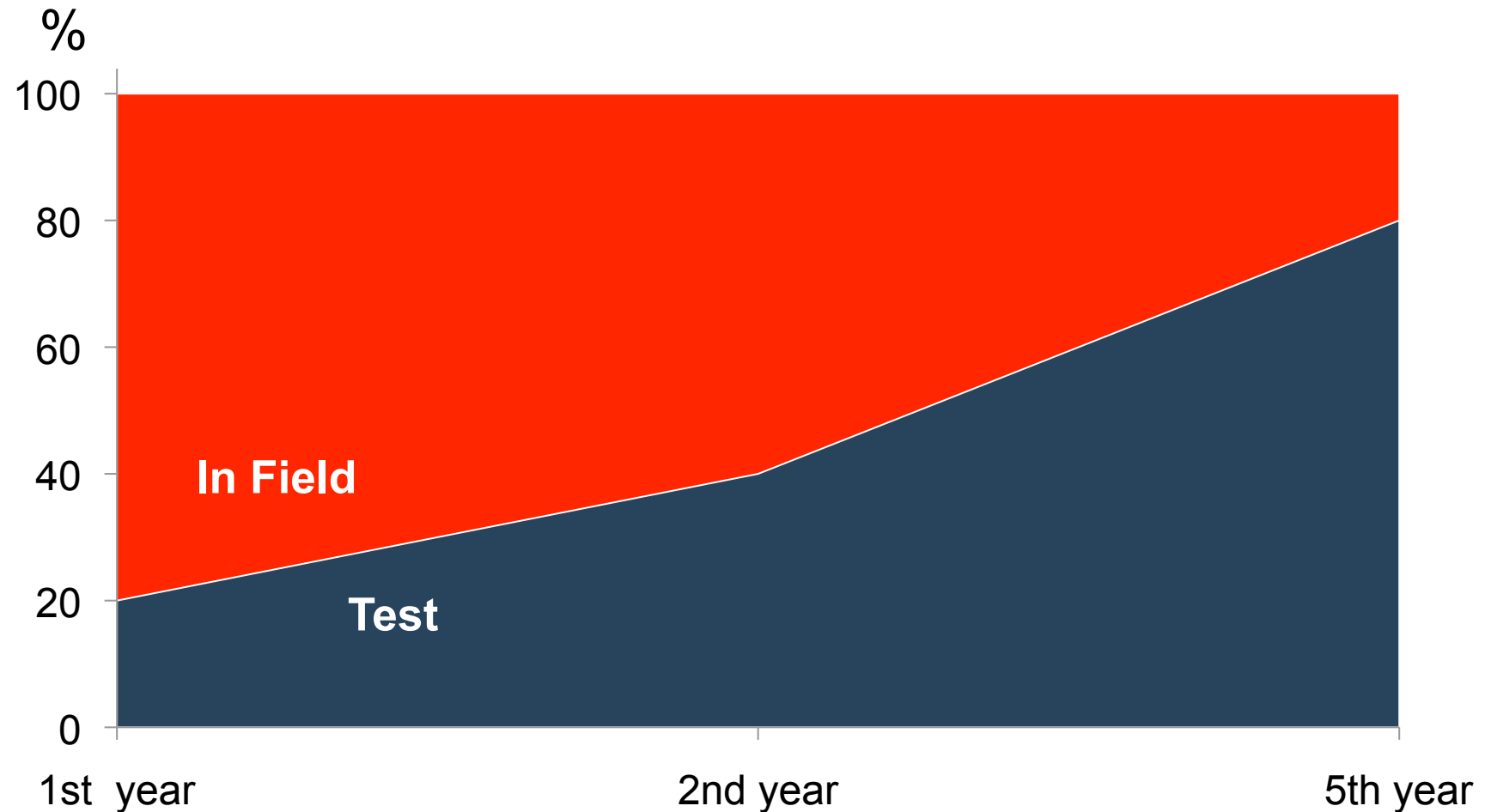


Little hope of 'zero defects'

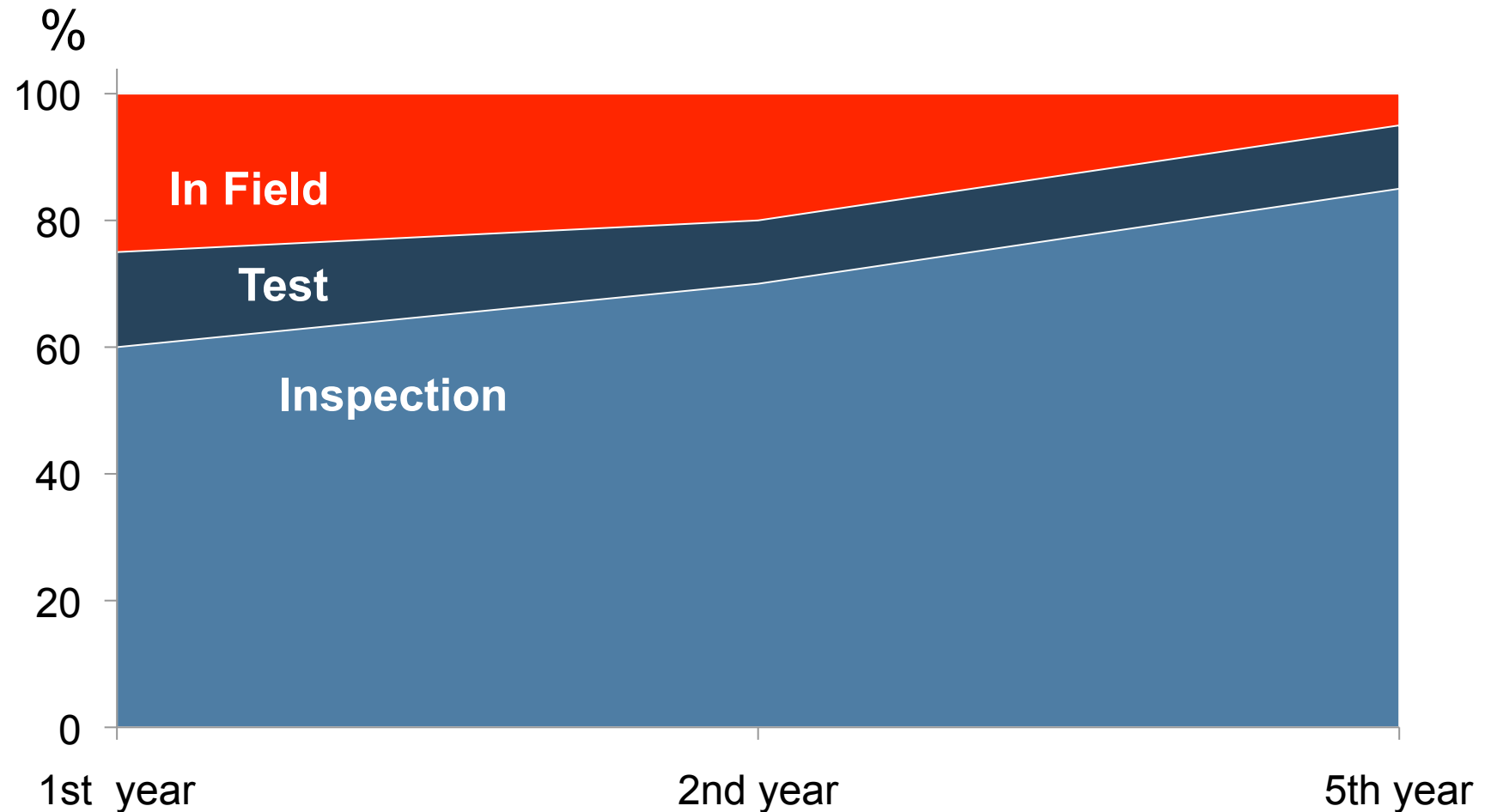
**“Between
8 and 10
defect removal
stages required
to achieve
removal
effectiveness of
95%”**



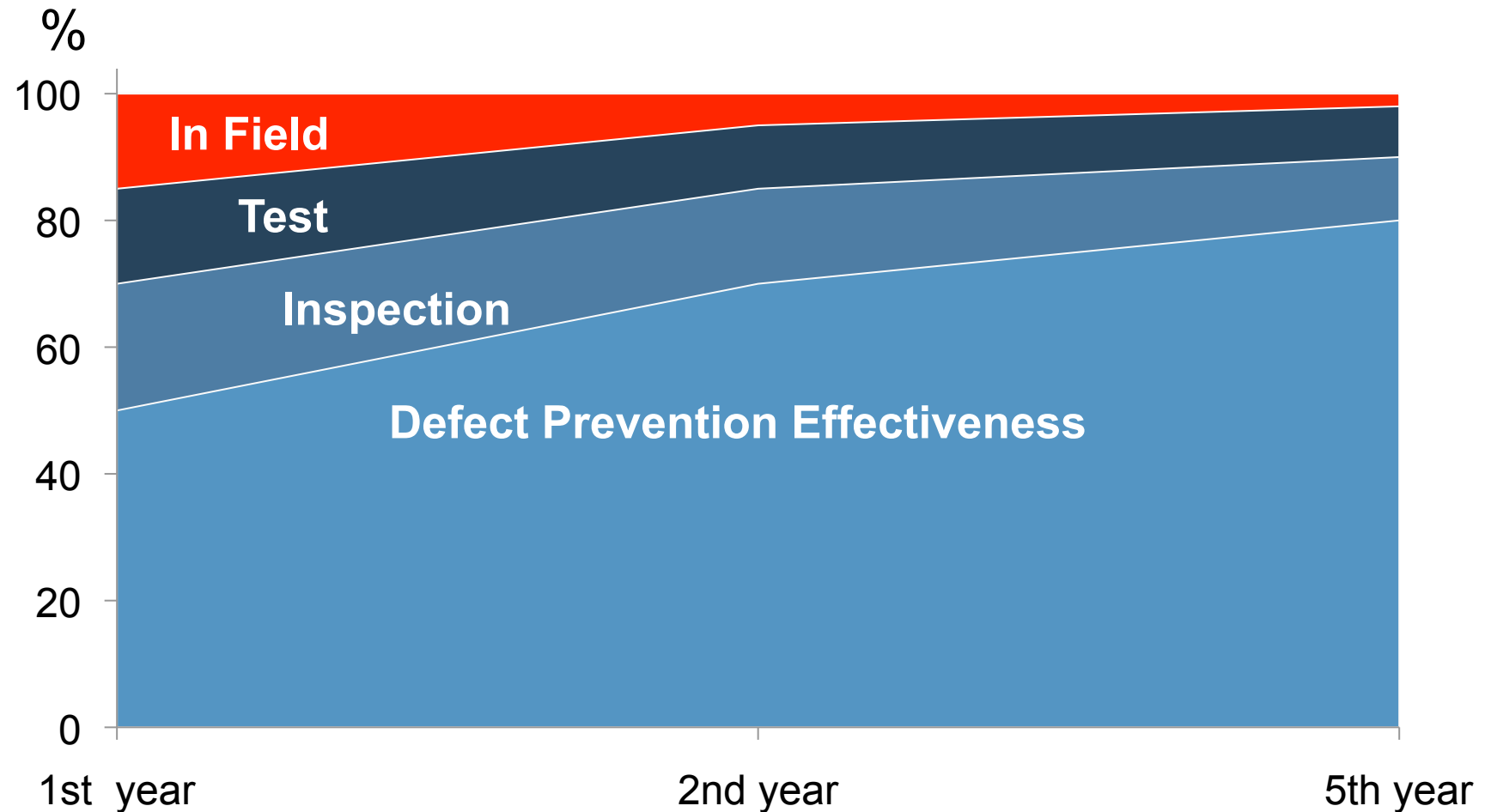
Testing Capability (C. Jones)



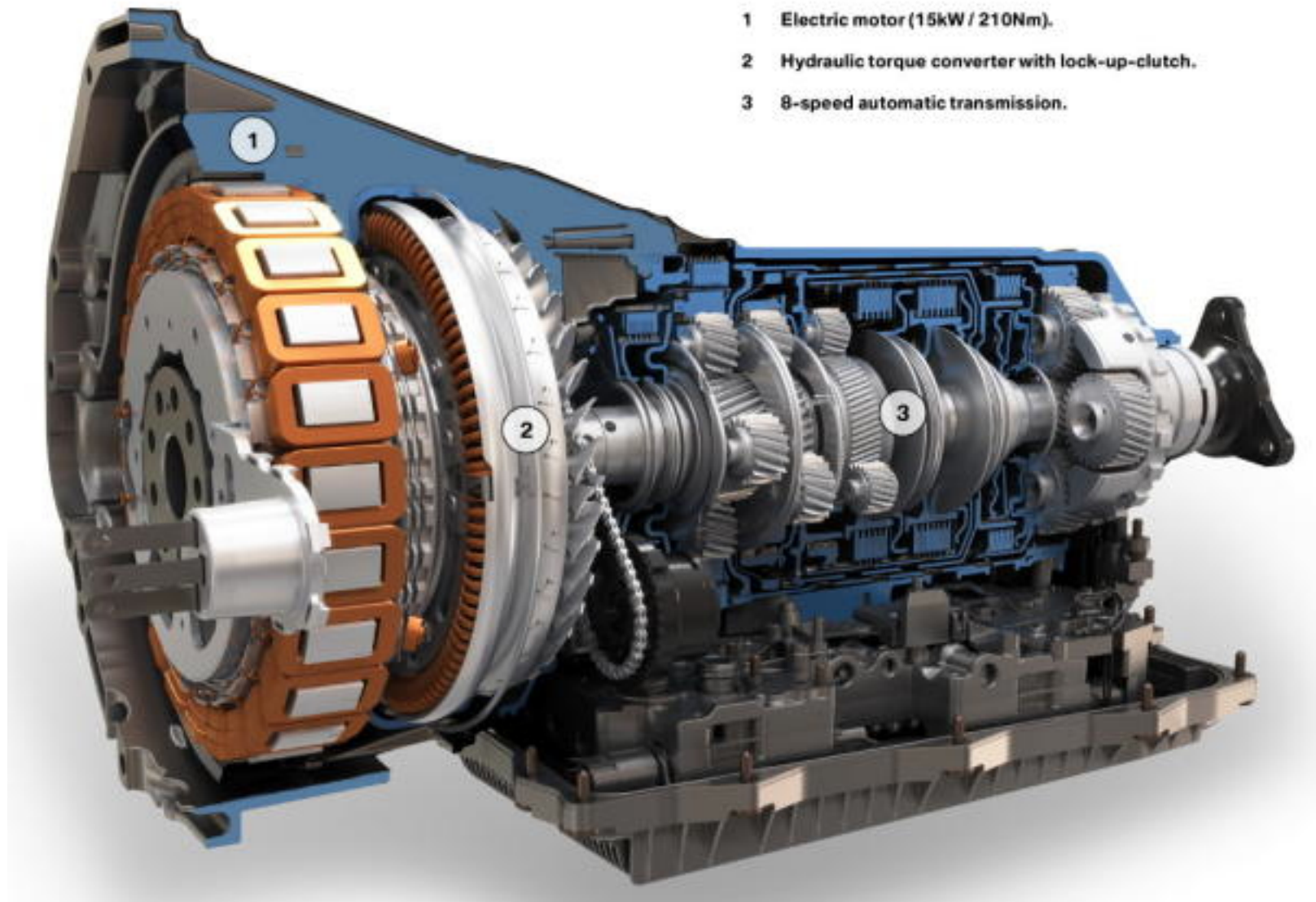
Defect Detection Capability (C. Jones)



IBM Defect Avoidance Experience



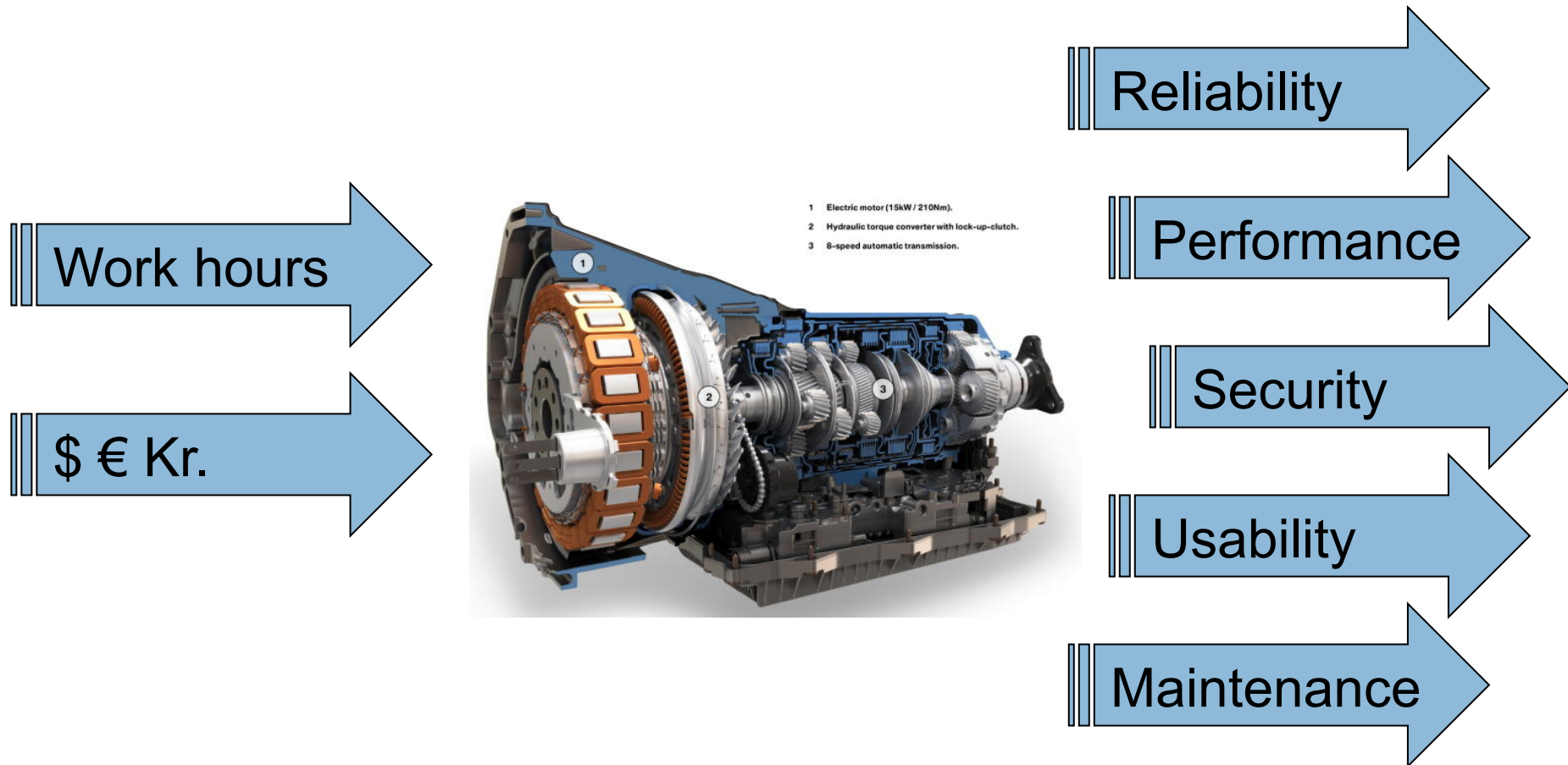
Design Quality In



You don't get quality by testing it in



but by 'Engineering' Quality In



Setting Quality Goals

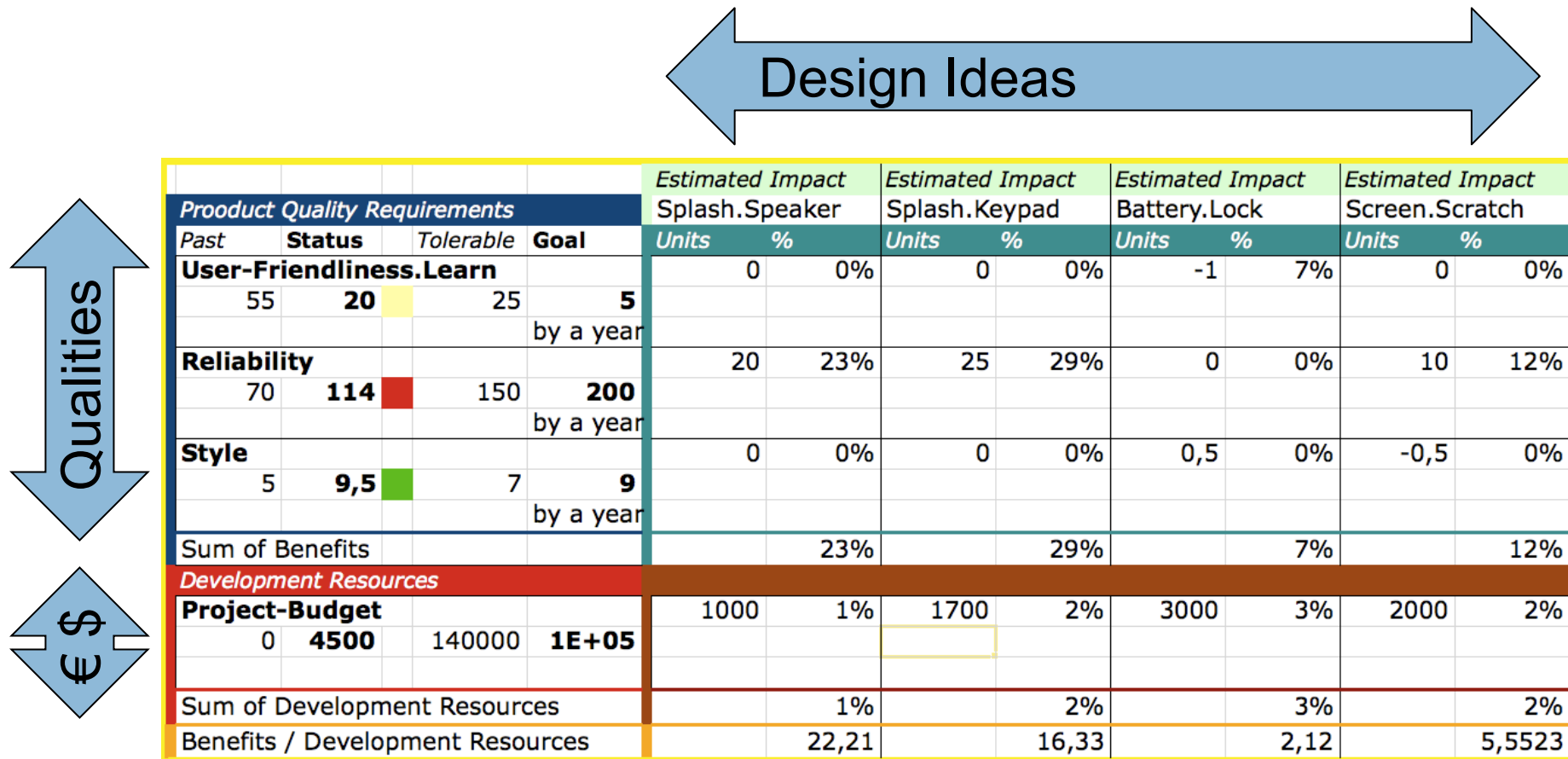
Usability.Learn

Scale: average time to Learn how to operate the computer, from .. to ..

Status [today] 3 hours

Goal [next year] 10 min.

Designing to meet Quality within Costs



					Estimated Impact		Estimated Impact		Estimated Impact		Estimated Impact	
Product Quality Requirements					Splash.Speaker		Splash.Keypad		Battery.Lock		Screen.Scratch	
Past	Status	Tolerable	Goal		Units	%	Units	%	Units	%	Units	%
User-Friendliness.Learn					0	0%	0	0%	-1	7%	0	0%
55	20		25	5								
				by a year								
Reliability					20	23%	25	29%	0	0%	10	12%
70	114		150	200								
				by a year								
Style					0	0%	0	0%	0,5	0%	-0,5	0%
5	9,5		7	9								
				by a year								
Sum of Benefits						23%		29%		7%		12%
Development Resources												
Project-Budget					1000	1%	1700	2%	3000	3%	2000	2%
0	4500	140000	1E+05									
Sum of Development Resources						1%		2%		3%		2%
Benefits / Development Resources						22,21		16,33		2,12		5,5523

End:
Quality Assurance
is far more than ‘test’

and, QA can be far more cost-effective

Start: Quality is far more than 'bugs'



a story

System Performance



Qualities are many and variable

Usability

- Learning
- Doing
- Error Rate

Adaptability

- Portability
- Enhancability
- Compatibility

Integrity

- Threat Type and Frequency
- Security Mitigation

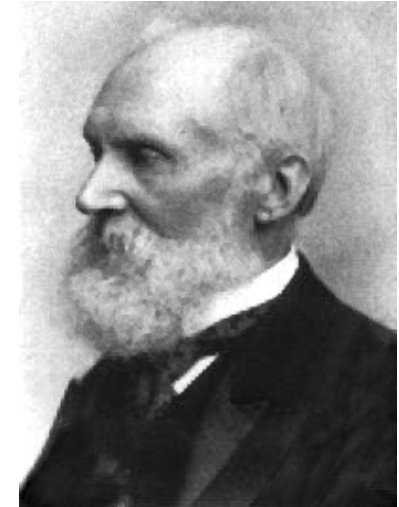
Availability

- Reliability
- Maintainability (fault fix speed)

Quantify the Quality to 'Assure' It

I often say that

when you can **measure**
what you are speaking about,
and **express it in numbers**,
you know something about it;



but when you **cannot measure** it,
when you **cannot express it in numbers**,
your knowledge is of a meagre and unsatisfactory
kind;

- Lord Kelvin, 1893

End: Quality is far more than 'bugs'

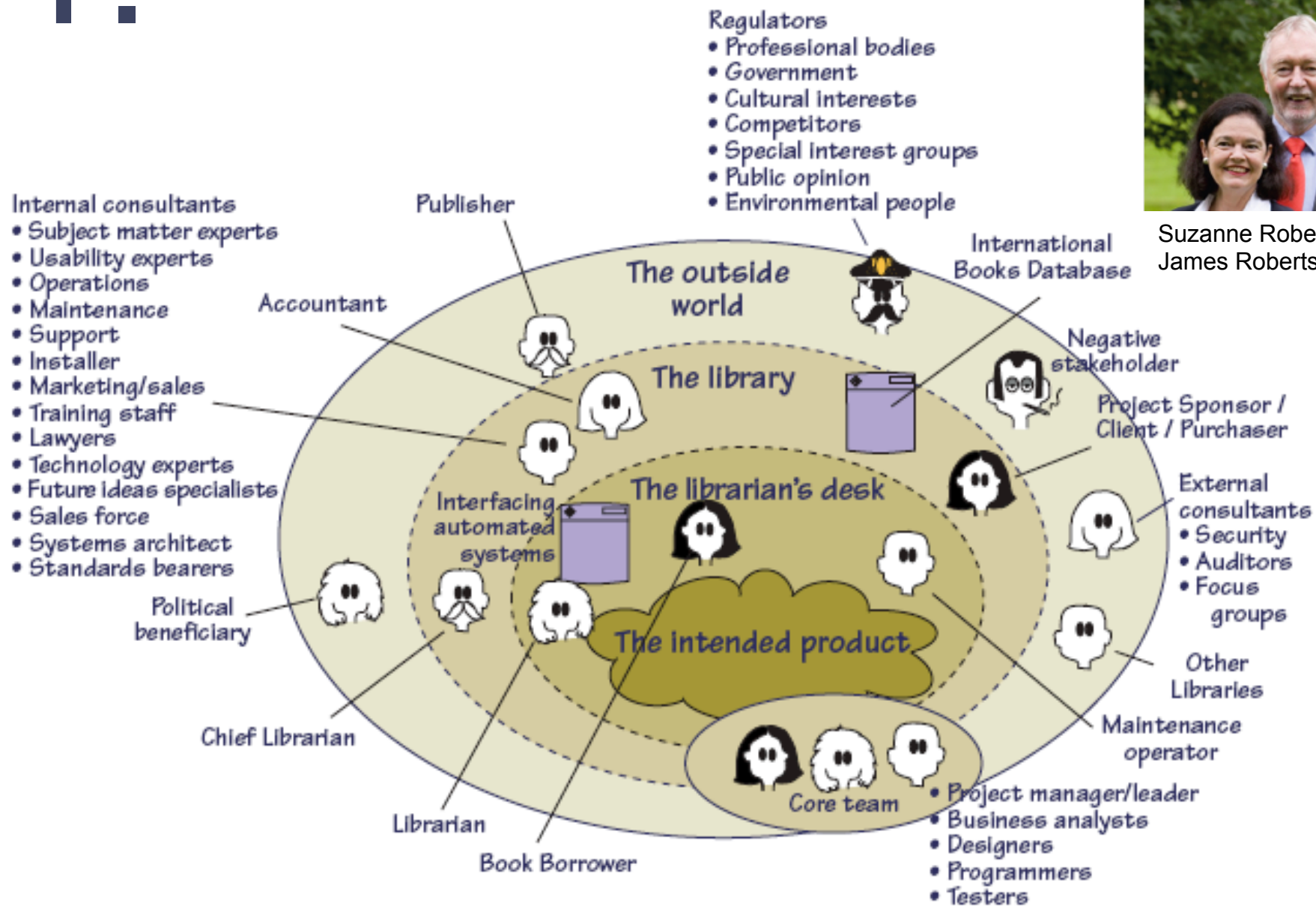


7

Competitive Lean QA methods to Learn



1. Stakeholders Decide Qualities



Suzanne Robertson & James Robertson

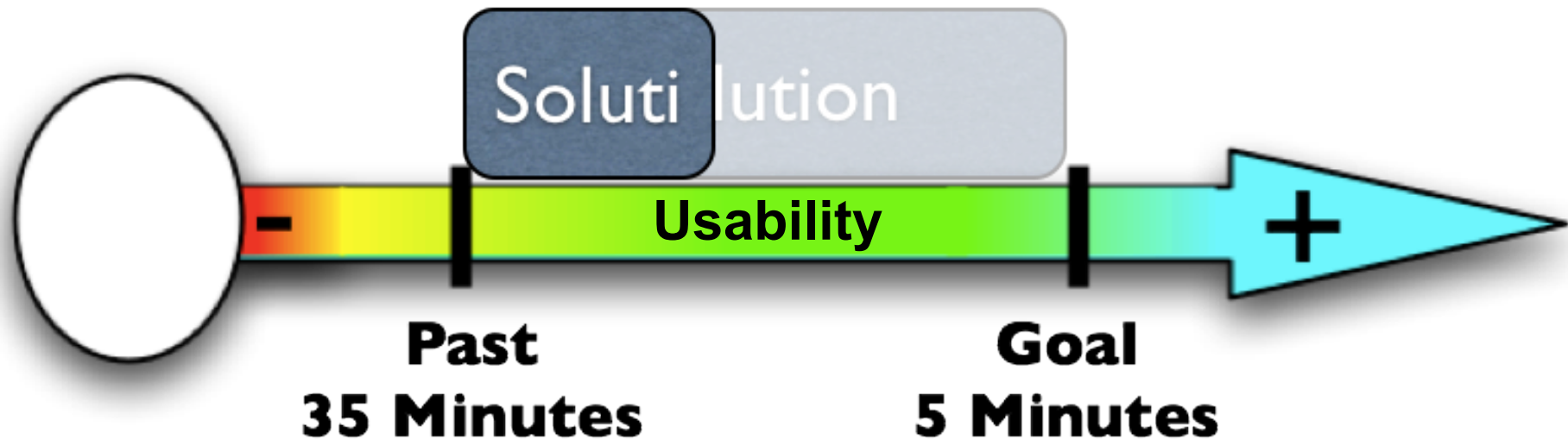
Figure 1: A Stakeholder Map for the Library Loans project

2.



3. Assuring that Designs give Qualities

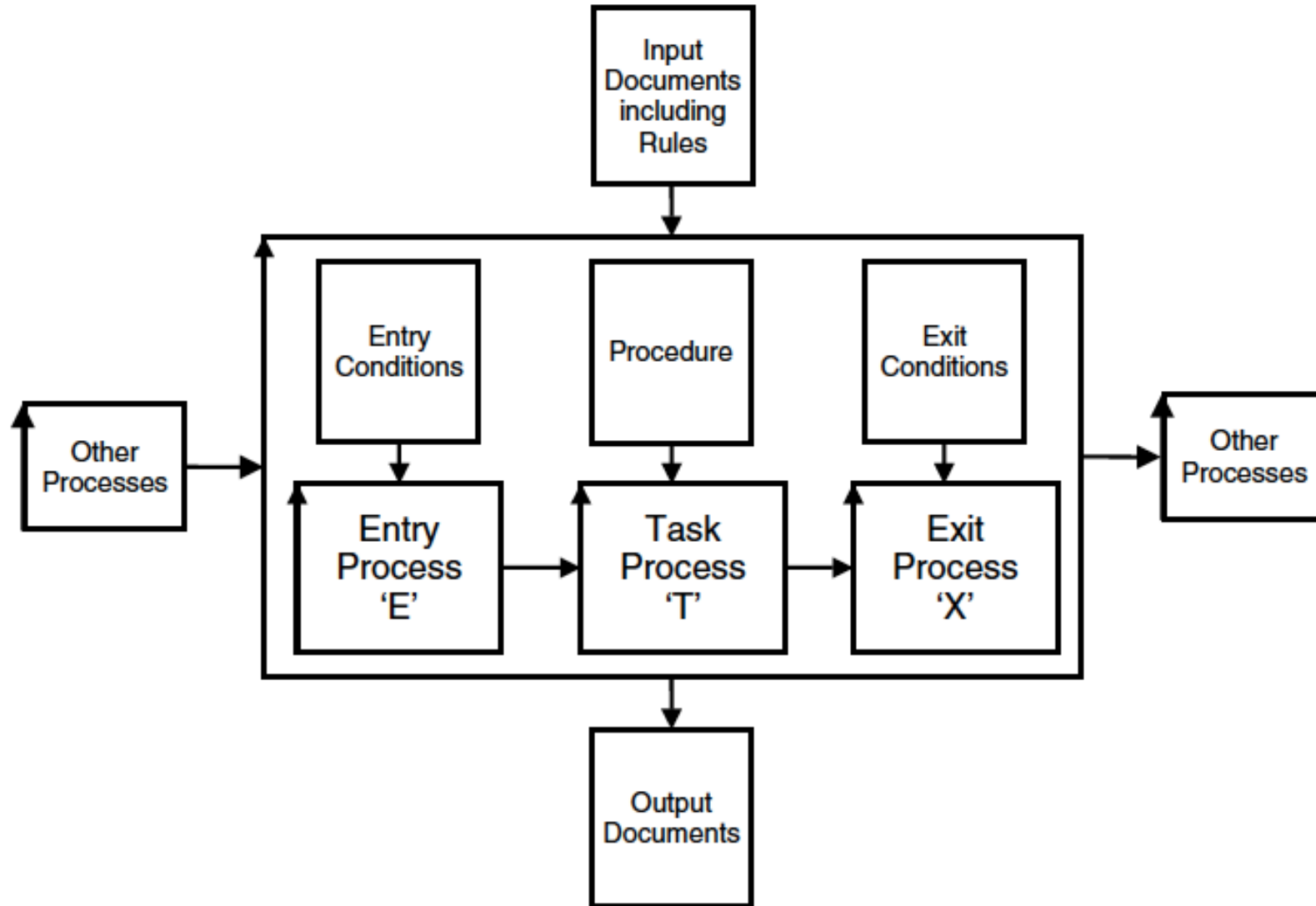
- 10 min. = 33% of total



4. Measure Quality Levels in Specifications with Inspection



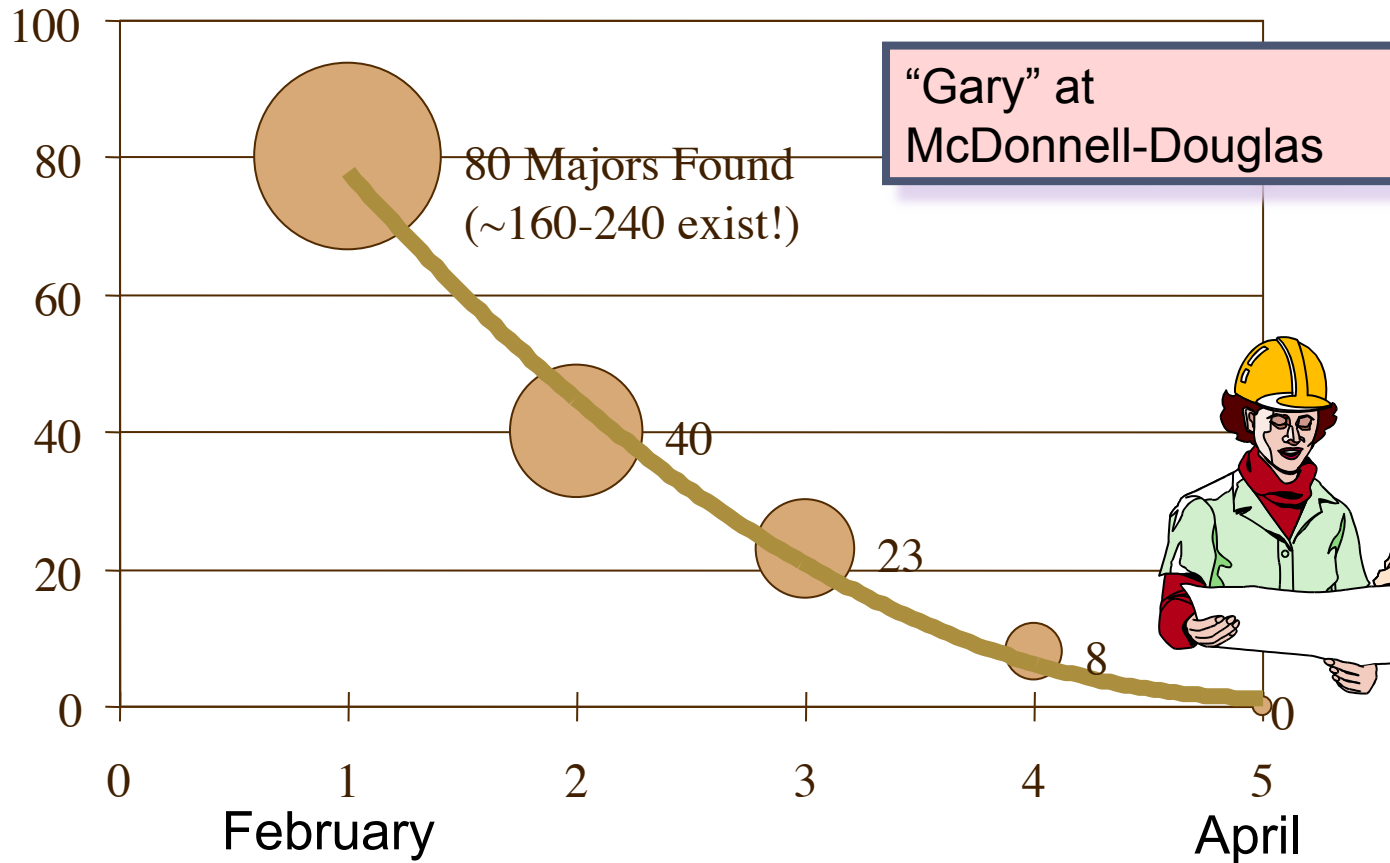
5a. Numeric Quality Gateways



5a.

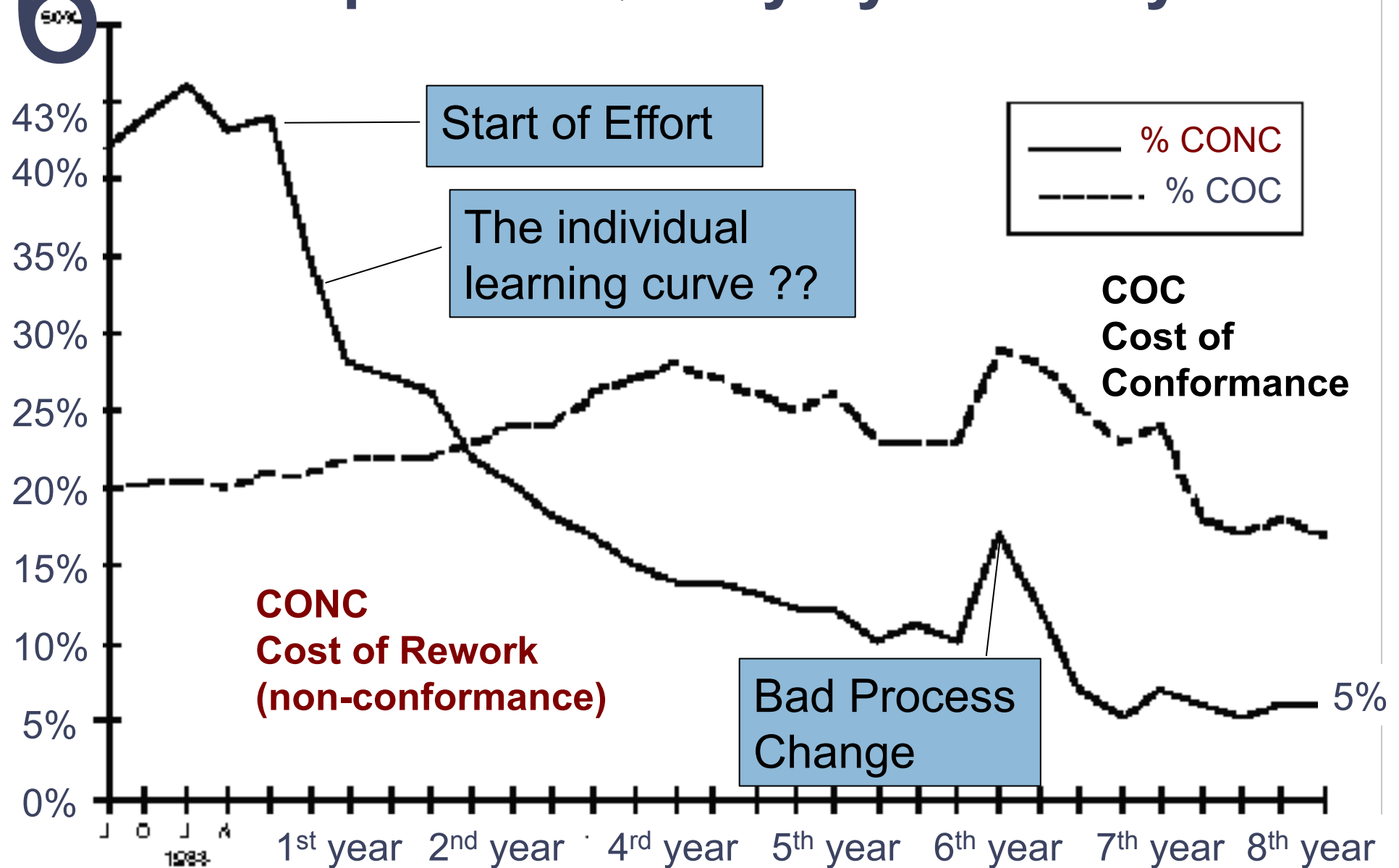
Numeric Quality Gateways Improve Quality of work

Defects/Page

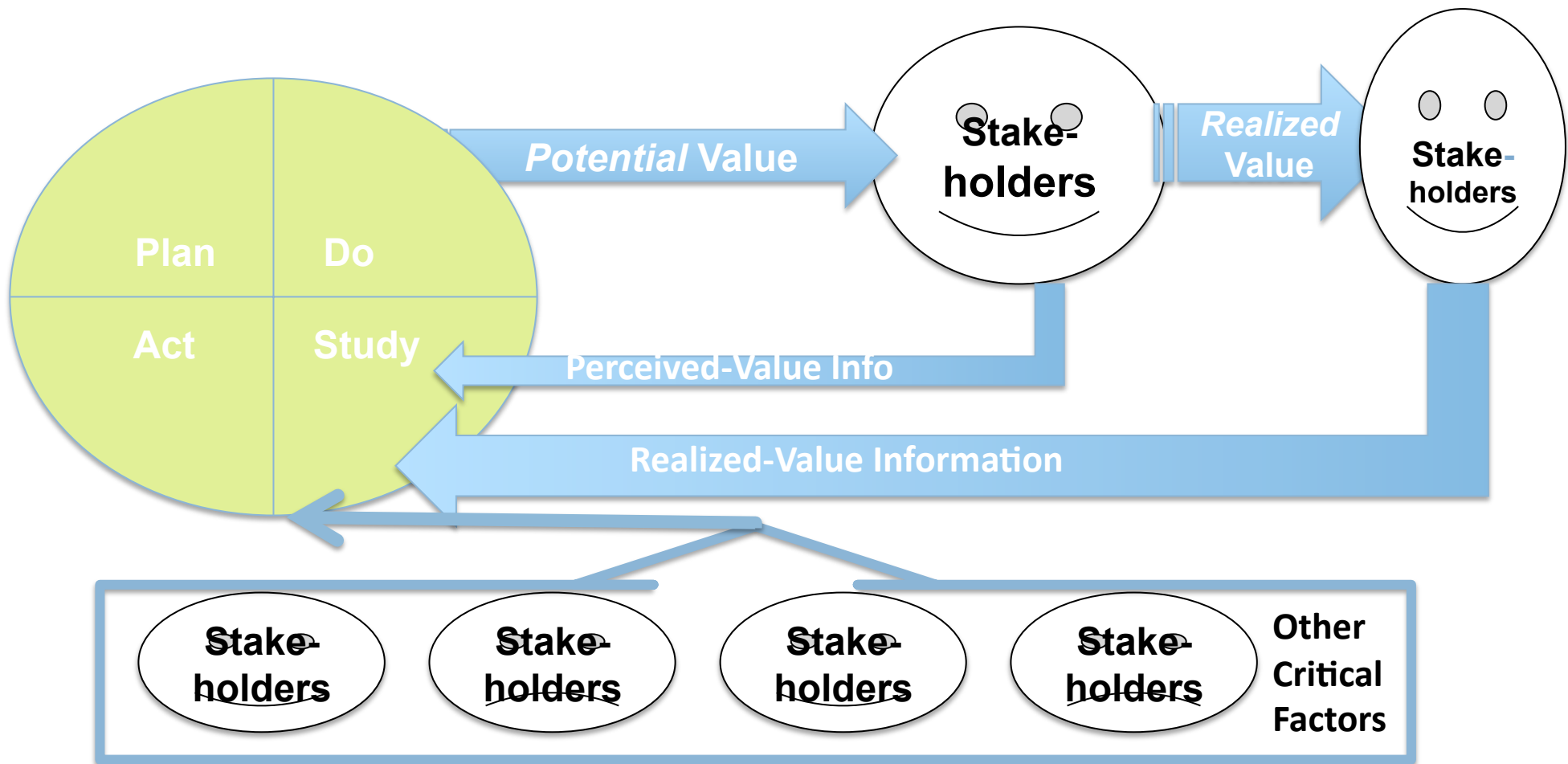


Inspections of Gary's Designs

6 DPP Improves Quality by 10x: Raytheon



7a Frequent feedback and improvement assure quality



- 2 Kinds of Feedback from Stakeholders, when value increment is *really* exploited in practice after delivery.
- Combined with other information from the relevant environment. Like budget, deadline, technology, politics, laws, marketing changes.

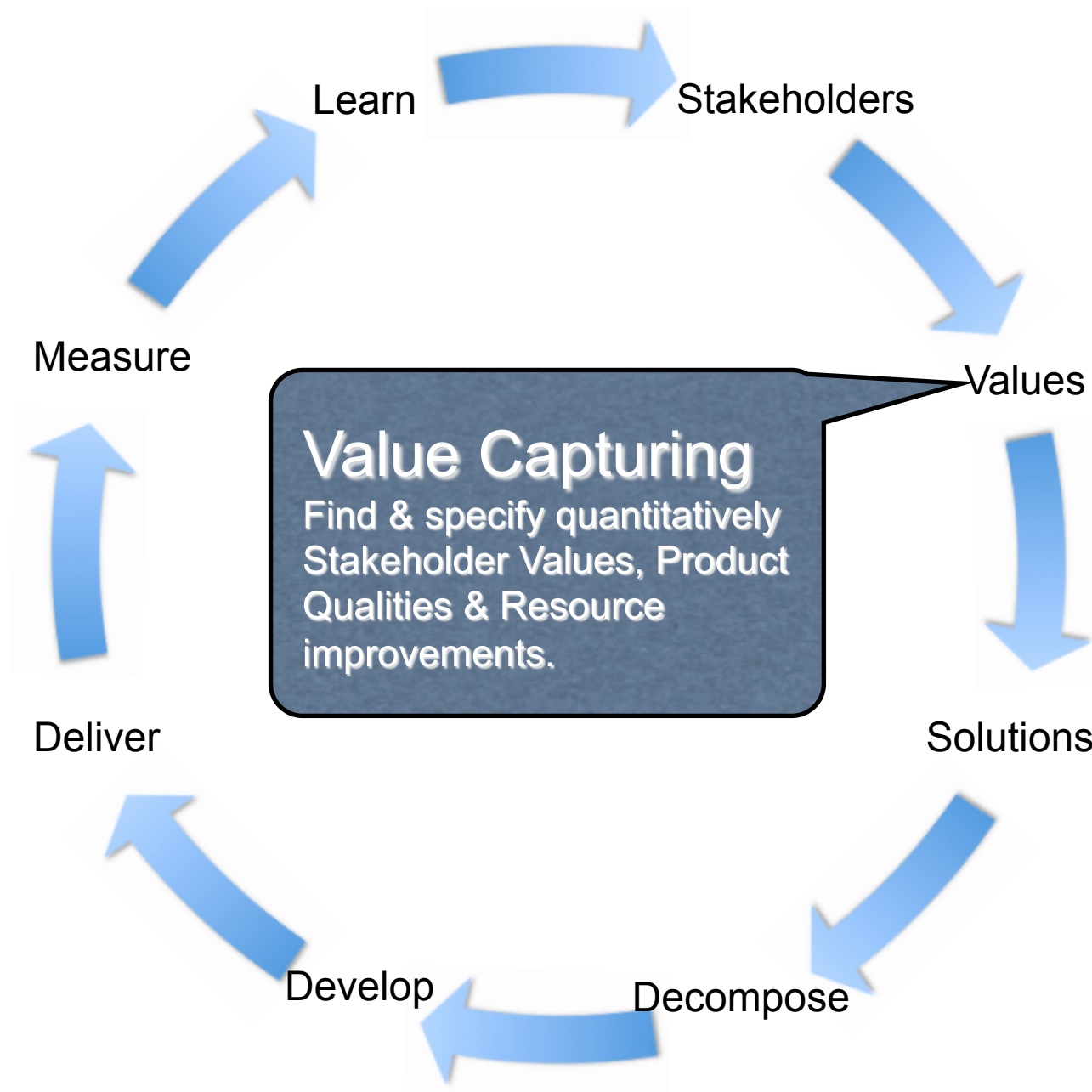
7_b



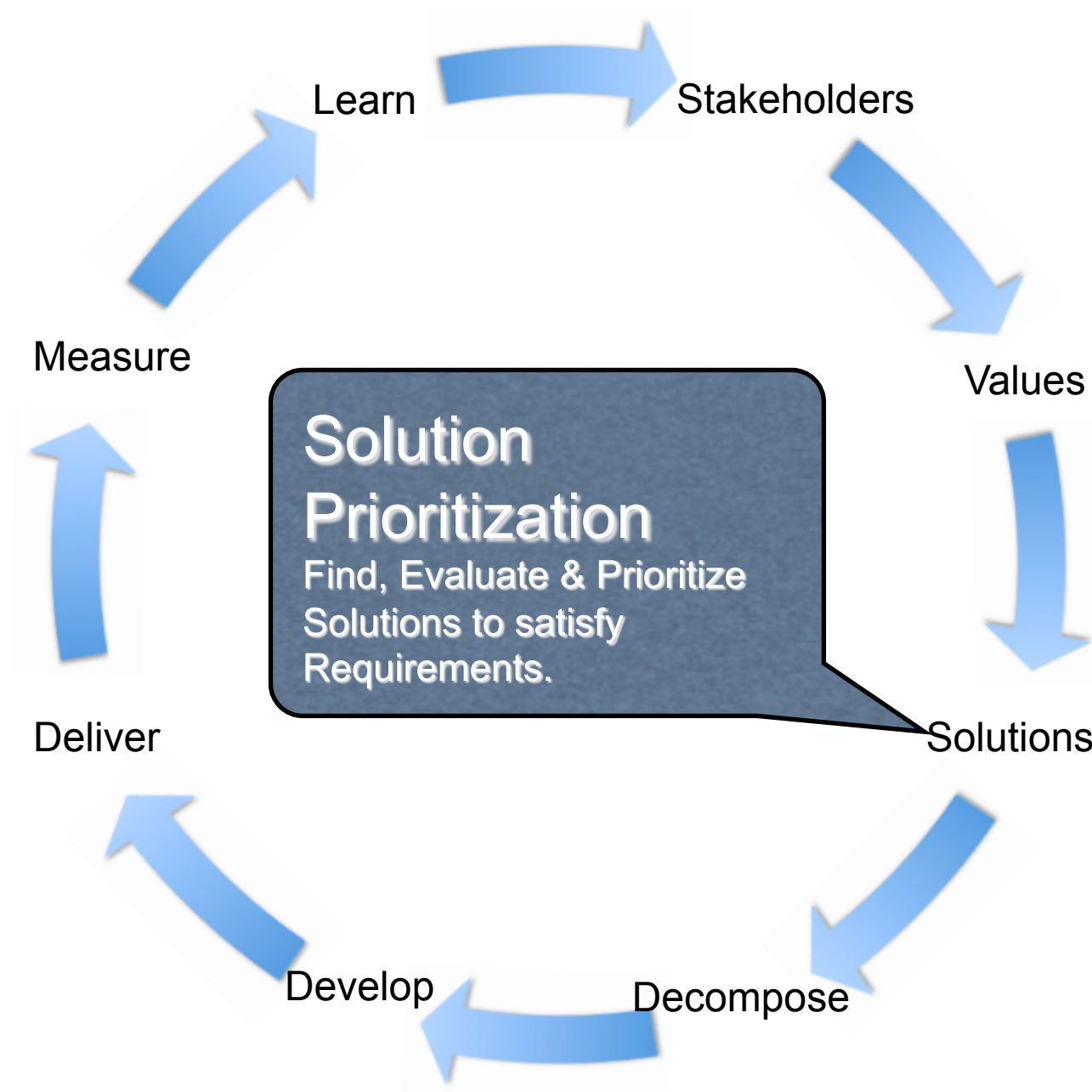
7_b



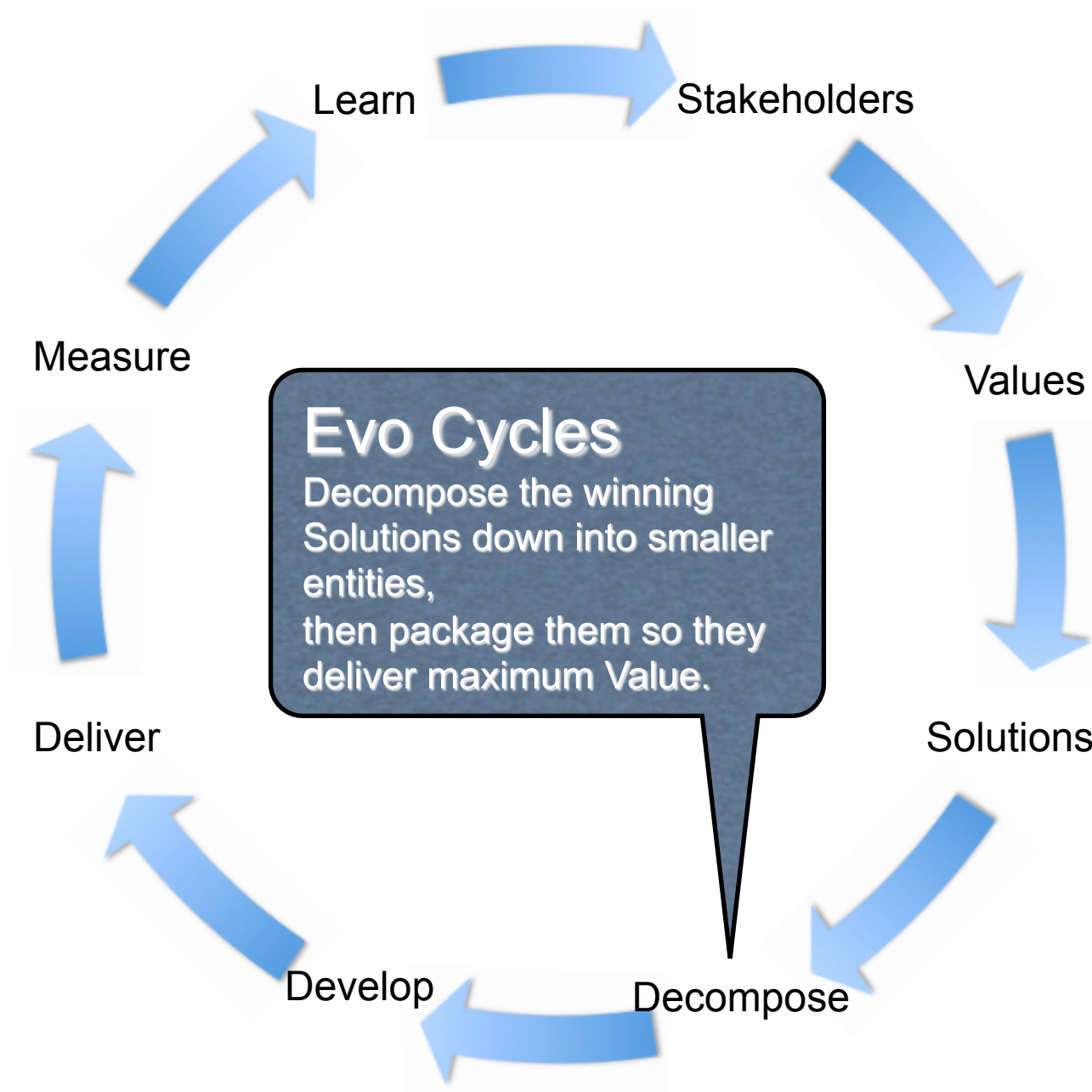
7_b



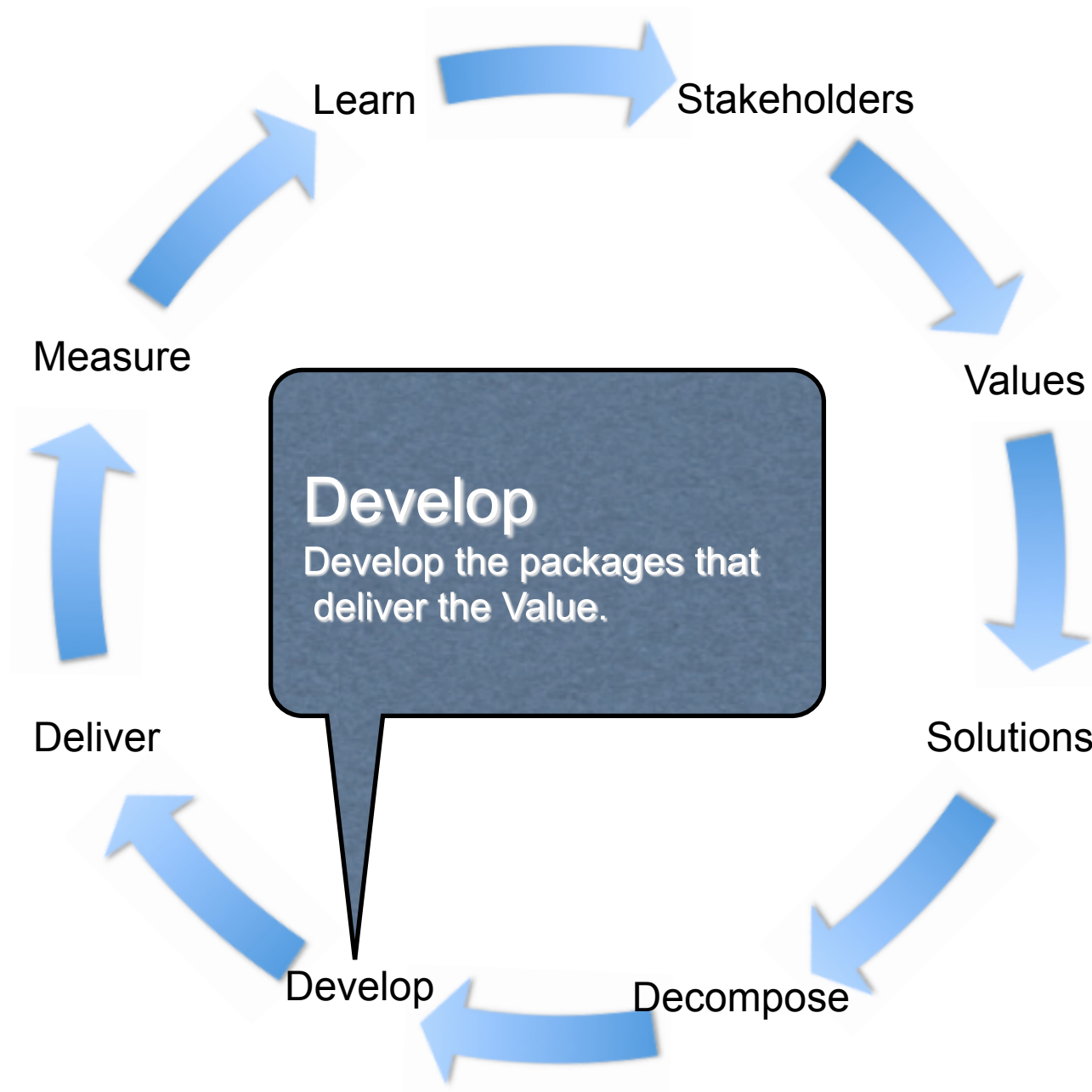
7_b



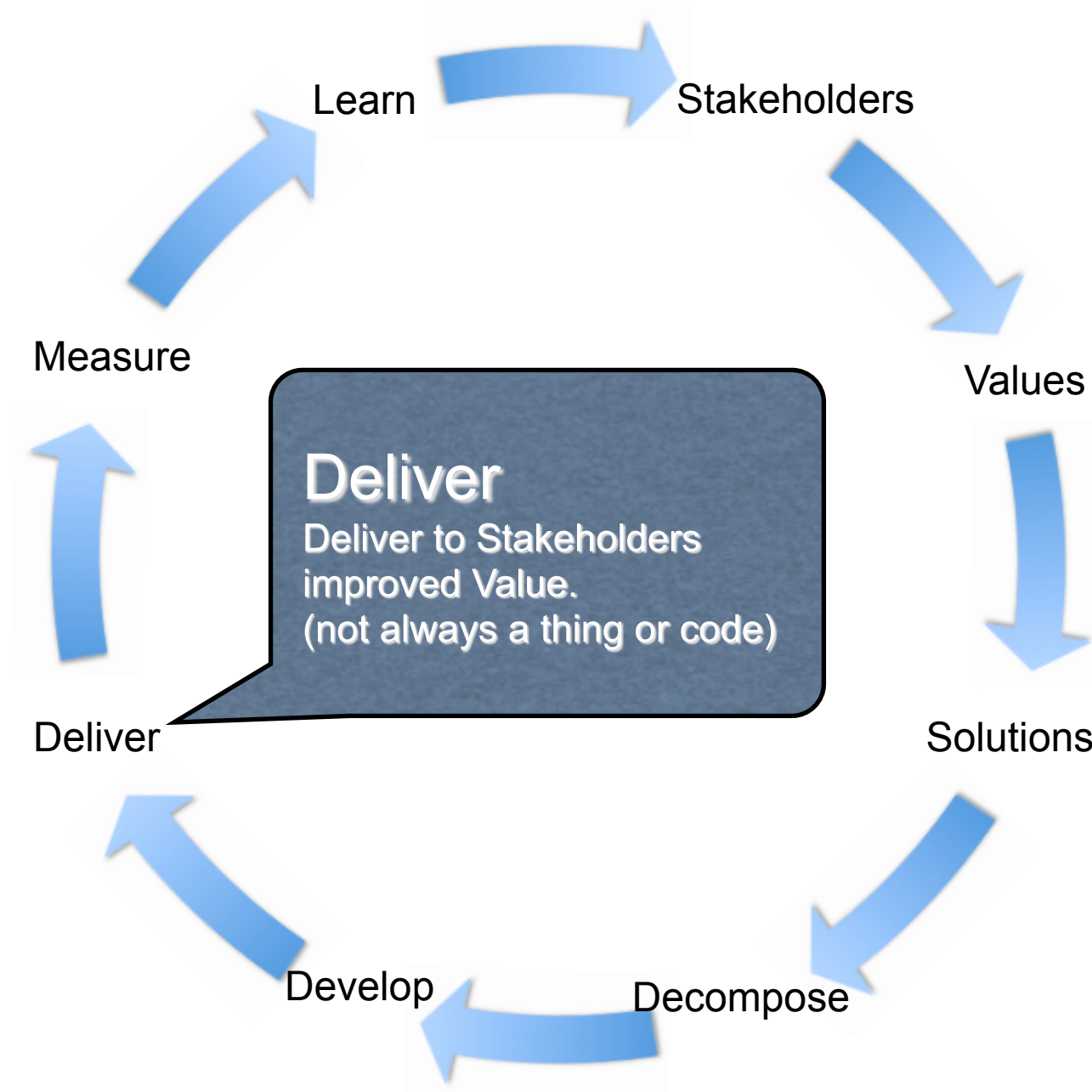
7_b



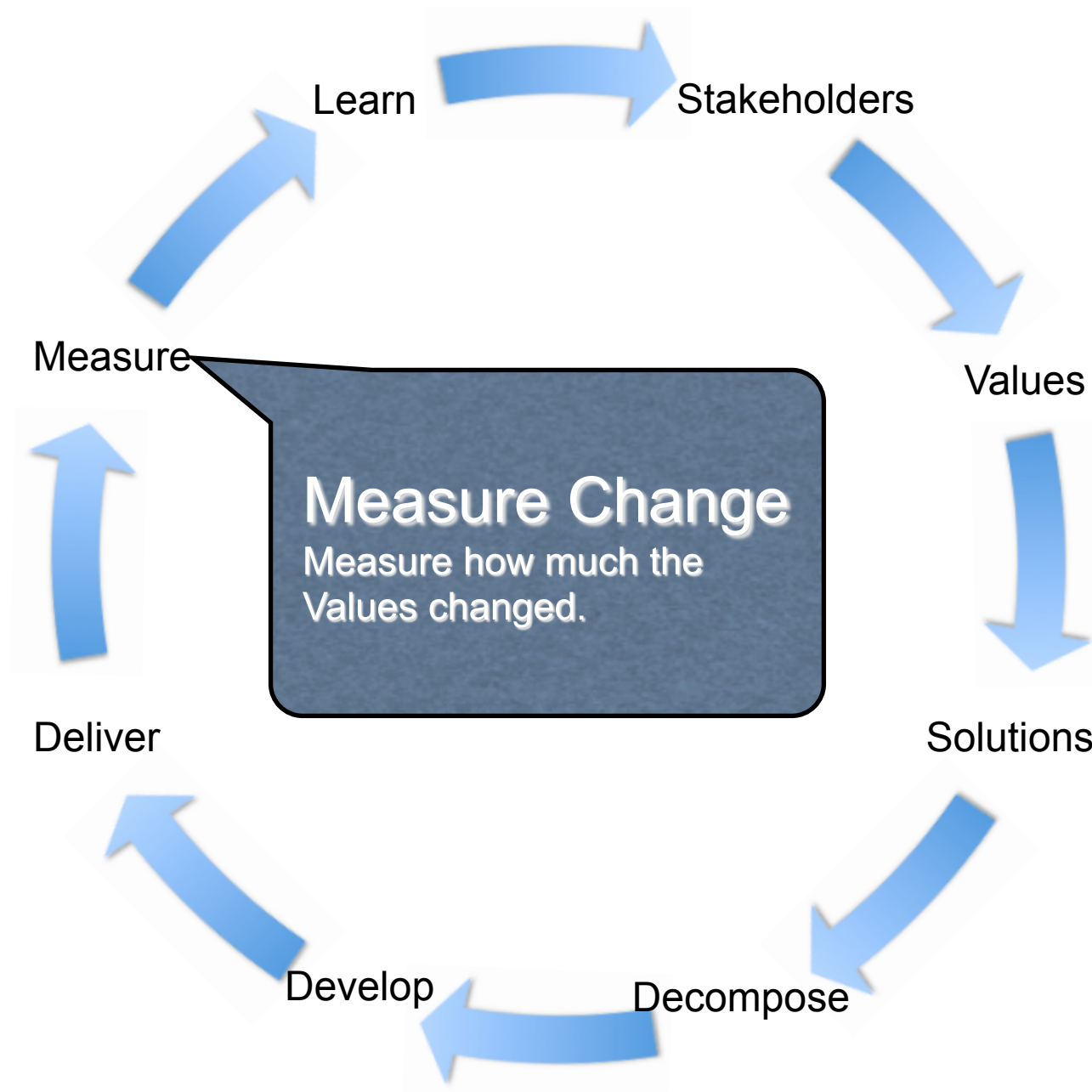
7_b



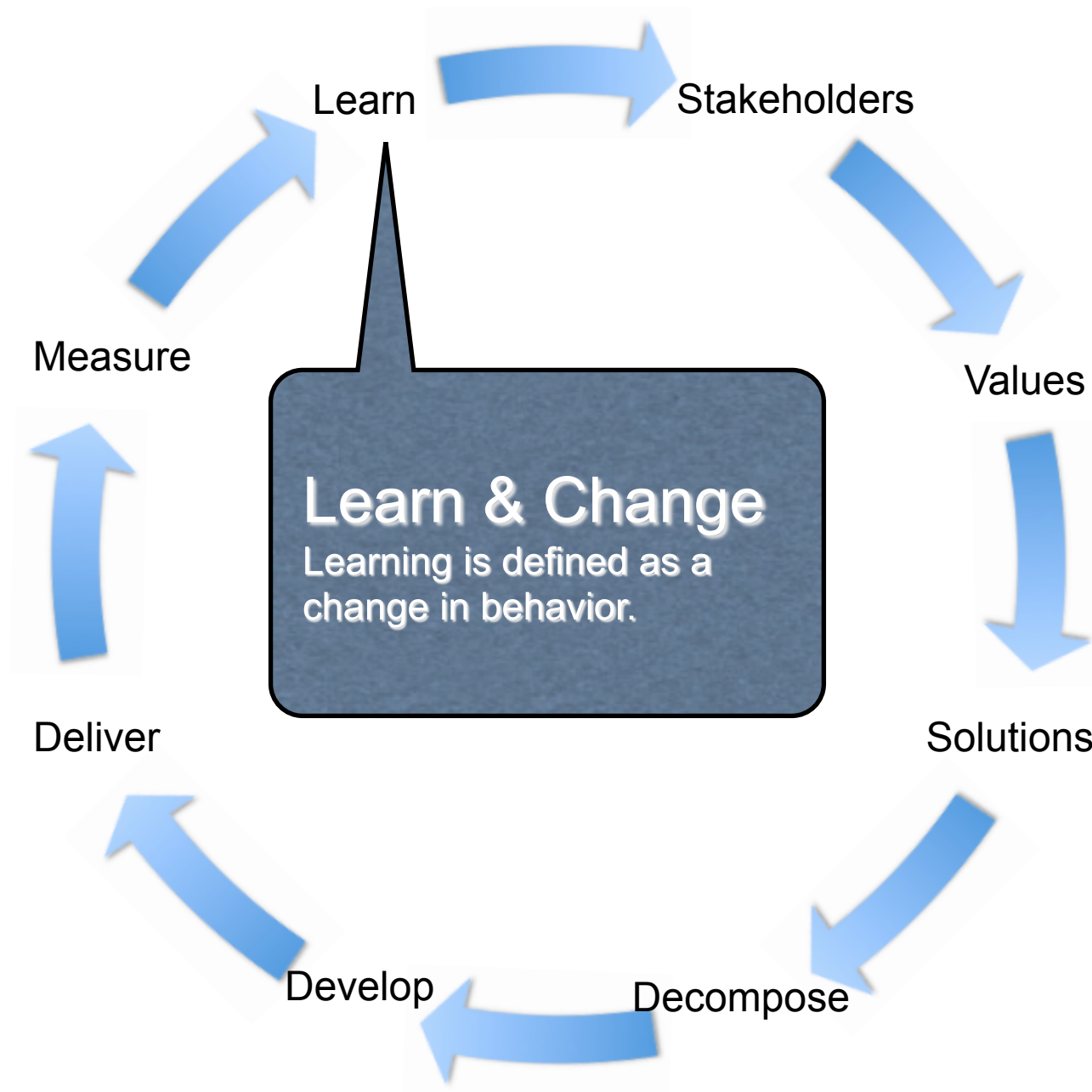
7_b



7_b



7_b



7_b



End

7

**Competitive Lean
QA methods
to Learn**



What you can do immediately

- ① Identify the 5 most critical qualities of your system.
- ② Quantify the 5 qualities.
- ③ For each quality,
 - ① set a Current level
 - ② and a Goal level

Main Take-away Points

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and it can be far more cost-effective

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You probably have a lot to learn,
if you want real competitive quality



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Thanks!

Questions: now, briefly

After lecture, all during the conference.

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The Lean Quality Assurance Methods

- Everything ‘not adding value to the Customer’ is considered to be waste.
 - This includes:
 - unnecessary code and functionality
 - Delay in the software development process
 - Unclear requirements
 - Bureaucracy
 - Slow internal communication
 - Amplify Learning
 - The learning process is sped up by usage of short iteration cycles – each one coupled with refactoring and integration testing. Increasing feedback via short feedback sessions with Customers helps when determining the current phase of development and adjusting efforts for future improvements.
 - Decide as late as possible
 - Deliver as fast as possible
 - Empower the team
 - Build integrity in
 - separate components work well together as a whole with balance between flexibility, maintainability, efficiency, and responsiveness.
 - See the whole
 - “Think big, act small, fail fast; learn rapidly”