1

IIBA Toronto, February 17, 2016

Lessons learned and forgotten

that we need to learn again

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2

Delivering business value

Teaching

Consulting

Facilitation

Requirements Quantification

Modelling

Lunch and Learn

de Koning
ASSOC ATES INC

www.dekoning.ca

This presentation is available at:
www.dekoning.ca/iiba

3

Part 1

Introduction

4

My plea to you

- Please rediscover lessons learned during our past
- Please stop doing things that don't work
- Please read books and articles by historical greats

5

Frederick Brooks

www.cs.unc.edu/~brooks/

The Mythical Man-Month (1975)
(20th anniversary edition, 1995)

No Silver Bullet: Essence and Accidents of Software Engineering (1987)

"The first system is finished, and the architect is ready to build the second system. This second is the most dangerous system a man ever designs, using all the ideas and frills that were cautiously sidetracked on the first one."

6

Historical Patterns

- A tendency to swing the pendulum between opposite extremes
- A tendency to gradually shift focus from substance to form

7

Part 2

Estimating Business Analysis

What is the current status?

8

John McManus

independent.academia.edu/DrJohnMcManus

A Study in Project Failure (2007)
http://www.bcs.org/content/ConWebDoc/19584

"Methodologies used with pathological rigidity tend to insulate the practitioner from risks and uncertainties of actual engagement with people and problems."

9

Trevor Wood-Harper

www.manchester.ac.uk/research/atwh/&usg=AFQjCNHM2CUDjnkr9s1JhFg4jh6AHcaHhg

A Study in Project Failure (2007)
http://www.bcs.org/content/ConWebDoc/19584

"One explanation for the reliance on methodology is the absence of leadership."

"There is little evidence that the reasons for project failure have been fully addressed."

10

From the McManus study…

Number of IS projects examined within European Union

Rank	Sector	No. of projects examined
1	Manufacturing	43
2	Retail	36
3	Financial services	33
4	Transport	27
5	Health	18
6	Education	17
7	Defence	13
8	Construction	12
9	Logistics	9
10	Agriculture	6
Total		**214**

11

From the McManus study…

Project value in millions of Euros

Value range in millions (€)	Number of projects	Percentage (%)	Accumulative (%)
0 – 1	51	23.831	23.831
1 – 2	20	9.346	33.177
2 - 3	11	5.140	38.317
3 - 5	33	15.421	53.738
5 - 10	4	1.869	55.607
10 - 20	87	40.654	96.261
20 - 50	6	2.804	99.065
50 - 80	2	0.935	100.000
Totals	**214**	**100.00**	**100.00**

12

From the McManus study…

Project completions, cancellations and overruns

Waterfall method lifecycle stage	Number of projects cancelled	Number of projects completed	Number of projects overrun (schedule and/or cost)
Feasibility	None	214	None
Requirements analysis	3	211	None
Design	28	183	32
Code	15	168	57
Testing	4	164	57
Implementation	1	163	69
Handover	None	163	69
Percentages	**23.8%**	**76.2%**	

13

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None?! for a political task?

What do we mean by "Done"?

14

BA Commitment Difficulties

- There is no definition of "done"
- Requirements development is a political task
  - Building consensus is the key
  - Estimating how much effort or time is required is difficult
- Business Analysts and Project Managers have different scopes of interest
- Estimating budget and schedule requires understanding the organization's capacity

15

When are the Requirements Done?

- When we run out of time?
- When the template has been filled?
- When all the items in the checklist have been documented?
- When we have contacted all the stakeholder groups?
- When the requirements are approved?
- When the remaining risk level is acceptable?

16

BAs and Project Managers

Business analysts work at the top four levels

Project managers work at the lowest three levels

http://calleam.com/wp-content/uploads/Project_Success_Calleam_Consulting.png

17

Estimating Techniques for More-or-less Routine Projects

- Seilevel uses a three-pronged estimating approach:
  - percentage of total budget
  - ratio of BAs to developers
  - effort estimates for planned BA activities

www.seilevel.com/download/9759/

Joy Beatty, vice-president
Seilevel Inc.
www.seilevel.com

18

Tom DeMarco

www.systemsguild.com/tdm.htm

Controlling Software Projects (1982)

Peopleware (1987) *with Timothy Lister*

The Deadline (1997)

"Ambiguity in a specification is a sign of unresolved conflict among the various stakeholders."

"Nobody will tell you if a specification is lousy. People are inclined to blame themselves."

19

"My early metrics book, *Controlling Software Projects: Management, Measurement, and Estimation* (Prentice Hall/Yourdon Press, 1982), played a role in the way many budding software engineers quantified work and planned their projects. In my reflective mood, I'm wondering, was its advice correct at the time, is it still relevant, and do I still believe that metrics are a must for any successful software development effort? My answers are no, no, and no."

"Why on earth are we doing so many projects that deliver such marginal value?"

–Tom Demarco

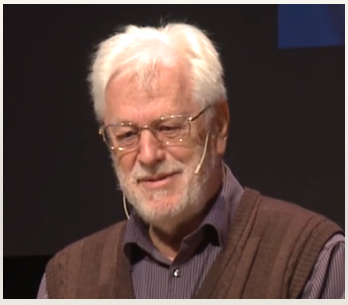
(IEEE Software, July/Aug 2009, p 95)

20

Part 3

Business Analysis and Project Life Cycles

21



Tom Gilb

www.gilb.com

Software Metrics (1976)

Principles of Software Engineering Management (1988)

Software Inspection (1993)

Competitive Engineering (2005)

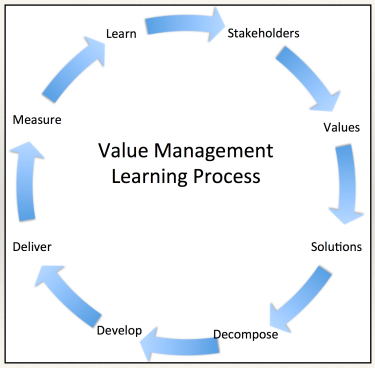
"Qualities can be quantified."

"Evolutionary delivery will help you understand and control complex tasks."

Evolutionary Development

- Tom Gilb calls it "Evo"
- Based on frequent delivery of quantified business value

(from a presentation to BCS London, Dec 15, 2014)



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22

Barry Boehm

csse.usc.edu/new/barry-w-boehm

Software Risk Management (1989)

The Spiral Model (1988)

A Collaborative Spiral Software Process Model… (1994)
(About the win-win spiral model)

"Software projects need a mix of flexibility and discipline."

"Stakeholder commitment to shared system objectives can help people and organizations cope with change."

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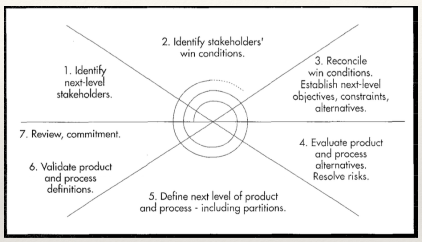
23

Win-win Spiral Model

- Based on long-term view of stakeholder needs and risk reduction cycles.
- Boehm, *Anchoring the Software Process*, IEEE Software, July 1996, p73-82



Barry Boehm's Win-Win Spiral Model (1994)

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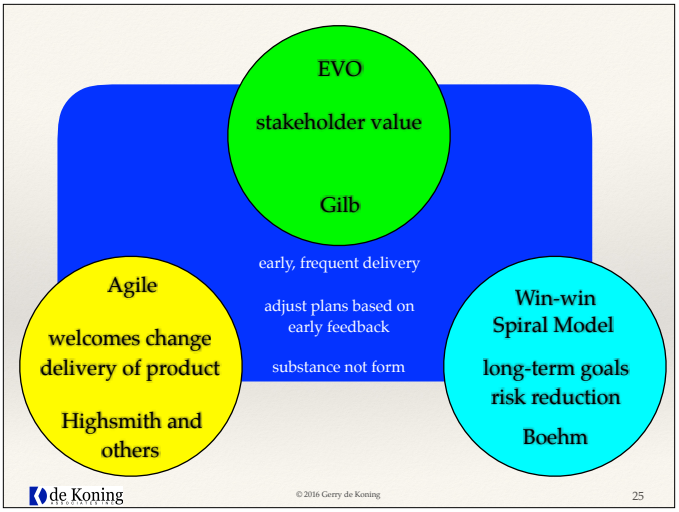
24



25

Life Cycle Model Problems

Problems with Traditional Waterfall Development	Problems with Iterative Development - First Cycle
A prototype is worth 100,000 words	Inflexible point solutions *(solutions cannot scale up)*
Gold plating	High-risk downstream capabilities *(defer all but initial functionality)*
Inflexible, point solutions *(solutions cannot scale up)*	Off-target initial release

Source: Boehm, *Anchoring the Software Process*, IEEE Software, July 1996, pp73-82

26

What's missing?

- Gilb: focus on business and stakeholder value
- Boehm:
  - life-cycle objectives (scope, quality attributes)
  - life-cycle architecture (not a BA concern)
  - initial capability objectives (what to do first)
- Our lesson today:
  - Focus on the quality of service attributes first!

27

28

"Attributes determine solutions."

—*Tom Gilb*

29

Part 4

Measuring Requirements Attributes

What to measure?

How do our measurements relate to reality?

Can everything be quantified?

Can every attribute be captured in a single metric?

30

Gilb's Law

"All critical software [attributes] have at least one practical way of being measured."

"Anything you need to quantify can be measured in some way that is superior to not measuring it at all."

"For any attribute there is always a measurement that is both practical and better than no measurement at all."

31

Barbara Kitchenham

www.keele.ac.uk/scm/staff/professors/barbarakitchenham

Principles of Survey Research (1991-1993)
(ACM SIGSOFT Software Engineering Notes)

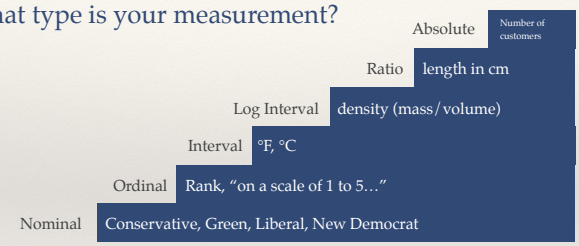
Misleading Metrics and Unsound Analysis (2007)
(IEEE Software)

"Always assess proposed metrics carefully." "Measures are not always as useful as practitioners hope."

32

Types of Measures

What type is your measurement?



More on measurement theory at:
ftp://ftp.sas.com/pub/neural/measurement.html

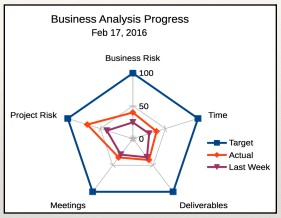
33

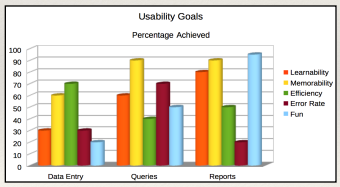
Rules for Measuring Attributes

- Aim high
- Decompose qualitative attributes
  - consider the credibility of the measurement
  - if necessary, use multi-dimensional metrics
- Set two targets to define ranges
  - minimum
  - goal

34

Presenting Multidimensional Attributes





35

Part 5

Finally

36

Summary

- Substance, not merely form
- Stop doing what doesn't work
- Estimating business analysis is hard; manage the risk
  - multiple estimates, iterative life-cycles, focus on value
- Consider business and stakeholder value and risks
- Get consensus about the solution attributes (quality attributes) early
  - define them quantitatively (assess metrics carefully)
- Keep seeking out valuable ideas from past experience

37

Check Out These Videos

- Barry Boehm

  The Incremental Commitment Spiral Model (2013)
  https://www.youtube.com/watch?v=clyLxKtxi8w

- Tom Gilb:

  AgileByExample2013 conference
  https://www.youtube.com/watch?v=70KE8FDT32Q

  TED^{X} Trondheim
  https://www.youtube.com/watch?v=kOfK6rSLVTA

38

Questions?

Thank you for being here tonight.

This presentation is available at

www.dekoning.ca/iiba