



Thinking, Fast and Slow...

With Software Development

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Think More Deliberately

- Our decision making can be flawed...
- Apply process and models (as appropriate)
- Collaborate more (and better)
- Plan, do, check, act...

Who Am I?



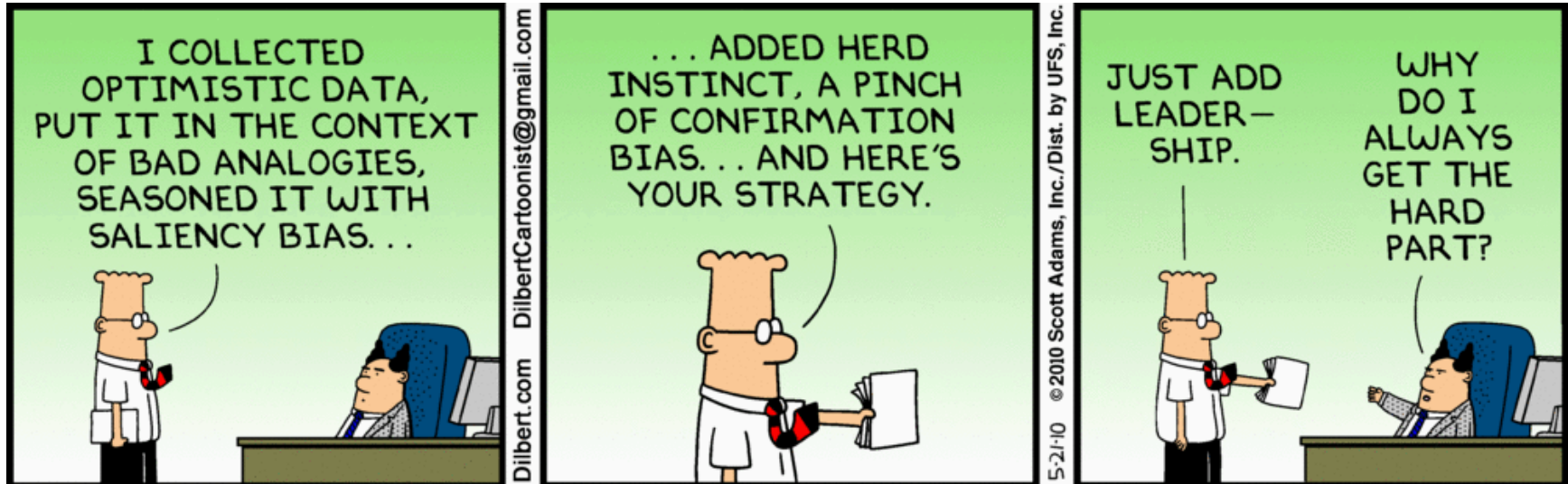
Principal Consultant at OpenCredo

- Technical/digital transformation
- Java, Golang, CI/CD, DevOps
- Microservices, cloud and containers
- PhD in Artificial Intelligence

- London Java Community Associate
- Adopt OpenJDK and JSR
- InfoQ Editor, DZone MVB, Voxxed



Pointy-Haired Decision Making...



dilbert.com/strip/2010-08-24

Our Thinking: A Tale of Two Systems...

System 1:

fast, instinctive, emotional, subconscious

System 2:

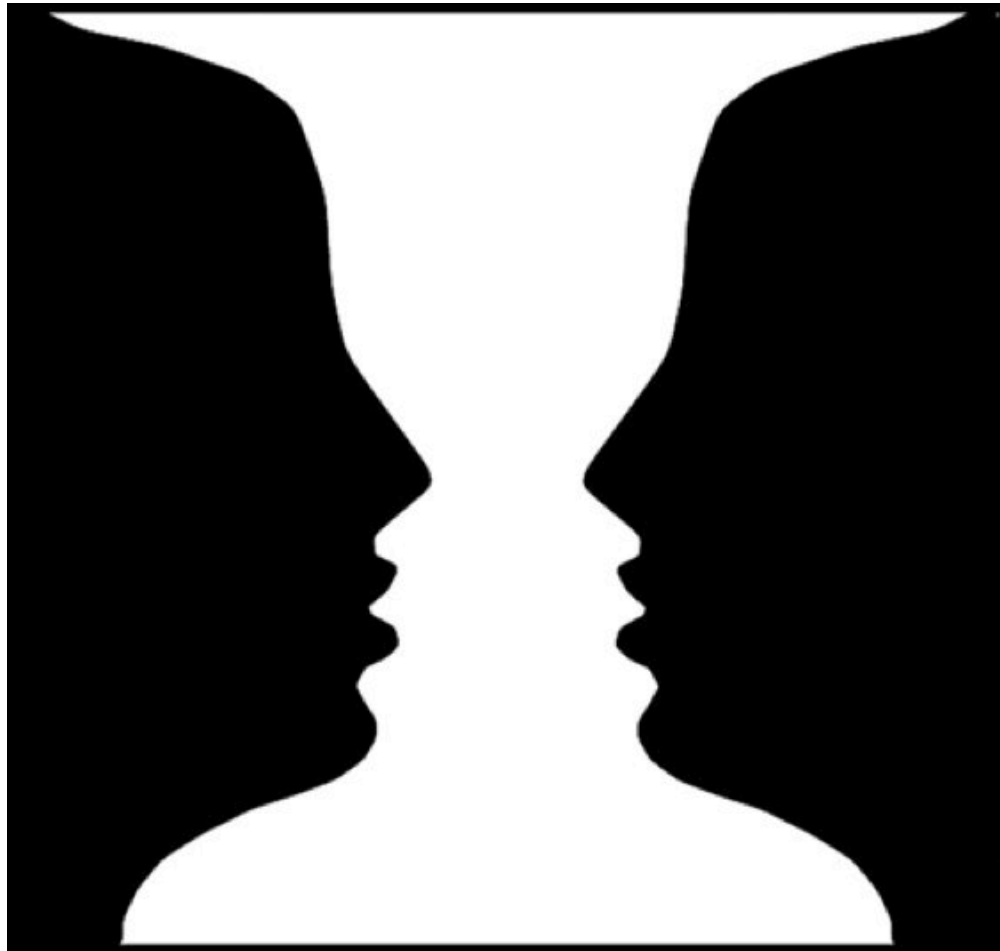
slower, deliberate, reasoning, conscious

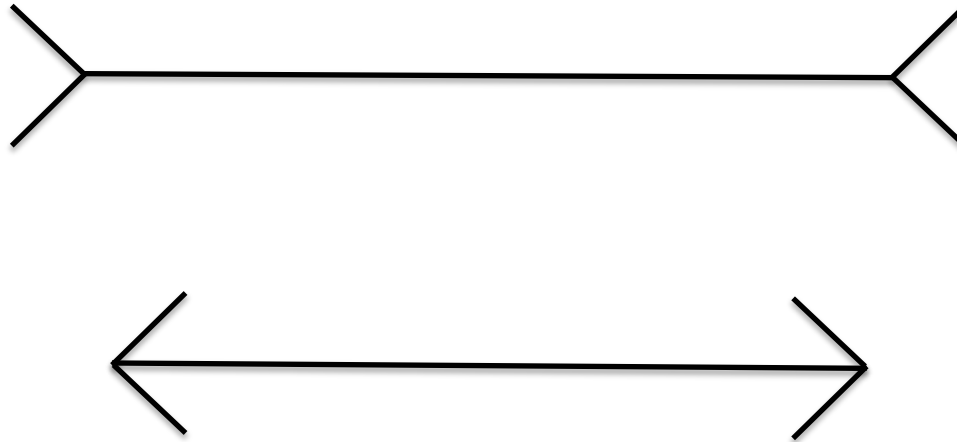
$$2 + 2 = ?$$

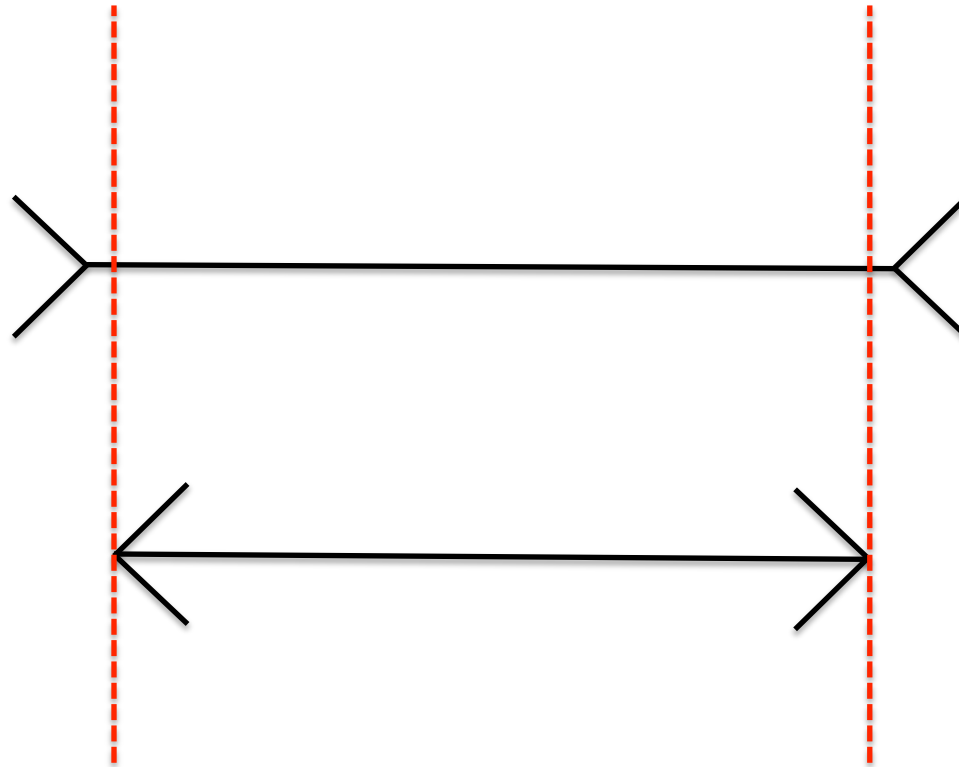
$$(24 / 2) * (1 / 3) = ?$$

$$2 + 2 = 4$$

$$(24 / 2) * (1 / 3) = 4$$





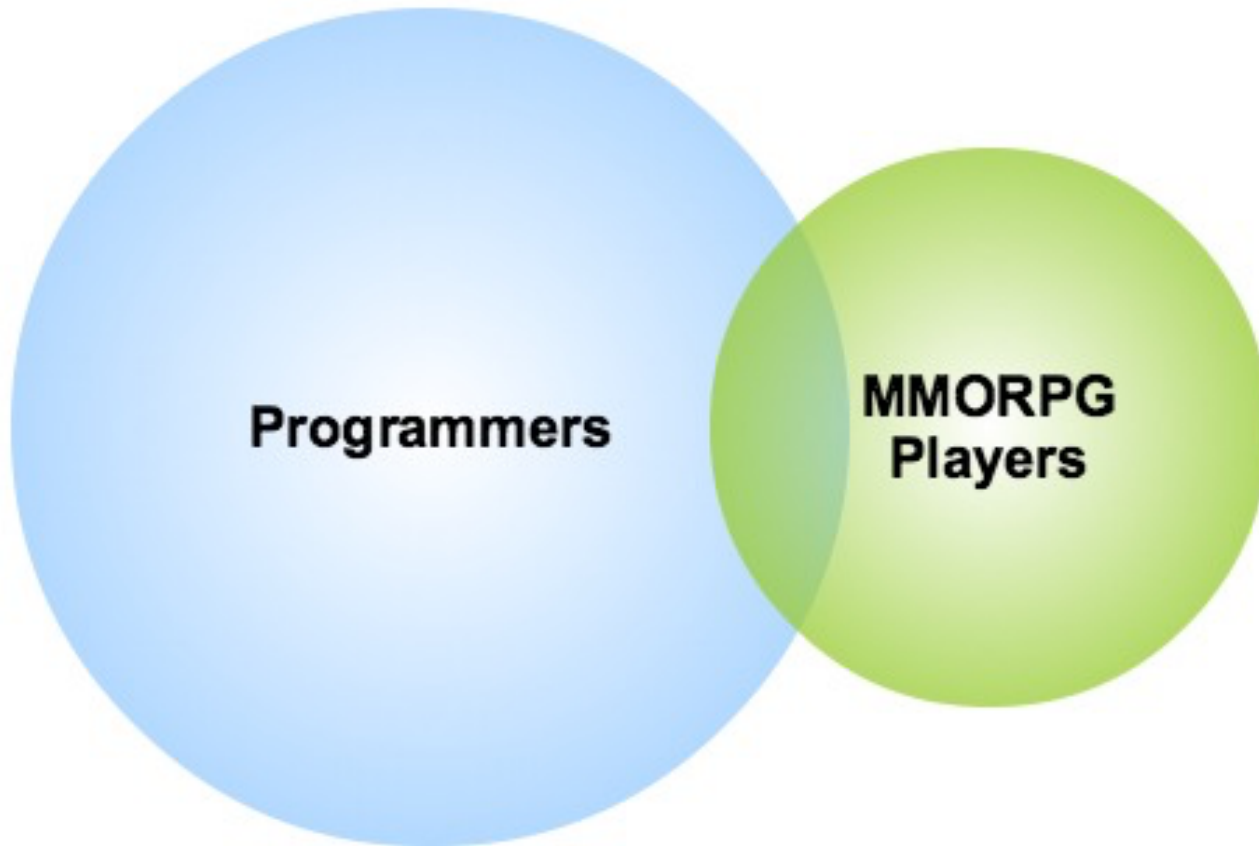


Bob is a single male in his 20's who is bright, quiet, likes science fiction and fantasy, and avoids interacting with people in the real world

Which is more probable?

- Bob is a programmer
- Bob is a programmer and plays MMORPG?

Conjunction Fallacy



Our Thinking: A Tale of Two Systems...

System 1:

fast, instinctive, emotional, subconscious

Rapid, associative, and has systemic errors

System 2:

slower, deliberate, reasoning, conscious

Lazy, and causal (not statistical)

Heuristics / biases affecting software delivery

Availability Heuristic

***“If something can be recalled,
it must be important”***

‘Hipster-itis’

e.g. the ‘best’ architectural style

Microservices

- The current flavour of the month!
 - Great ideas, but dangerously over-hyped
- Frameworks and products emerging
 - Virtuous (vicious?) circle
 - “The bandwagon effect”
 - Have we found the silver bullet?...

Whatever is Available

When all you have is a hammer...

...everything looks like a nail

When all you have is a SOA...

...everything looks like a service

(please avoid creating the toString() service)

When all you have is a Jenkins...

...everything looks like a Jenkins Job

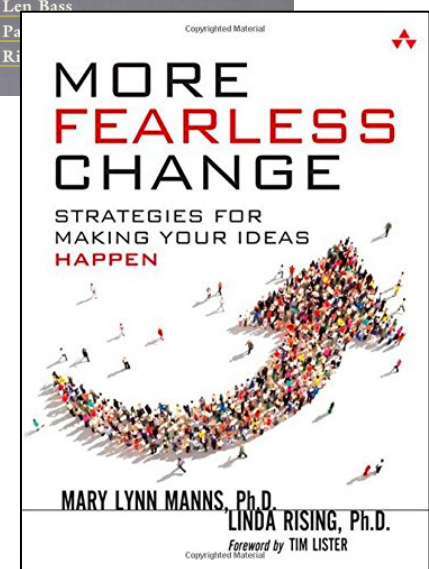
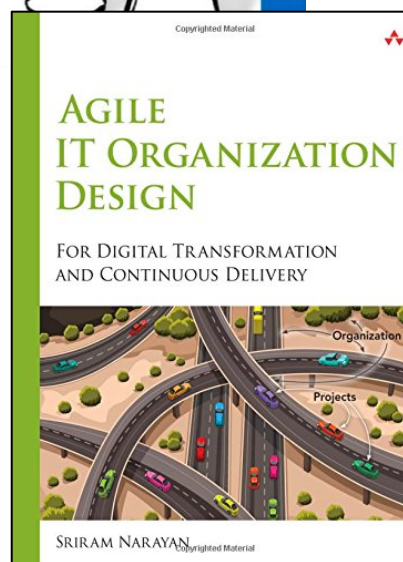
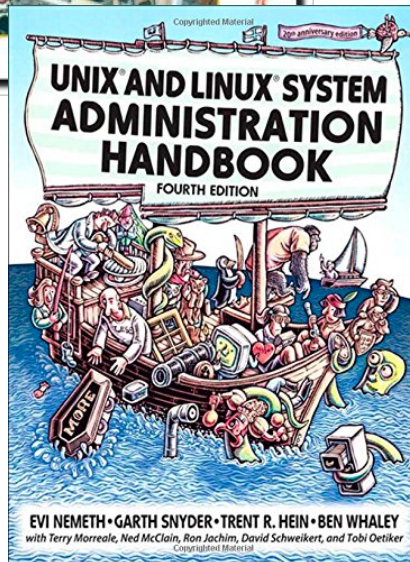
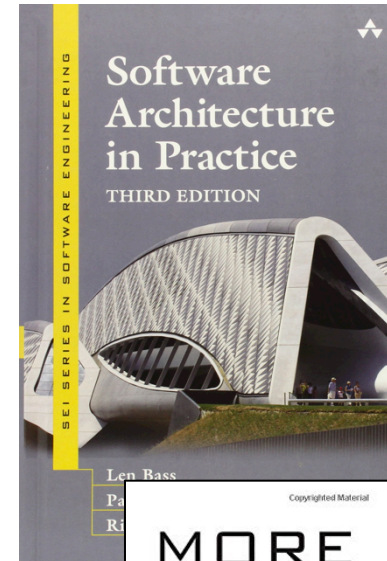
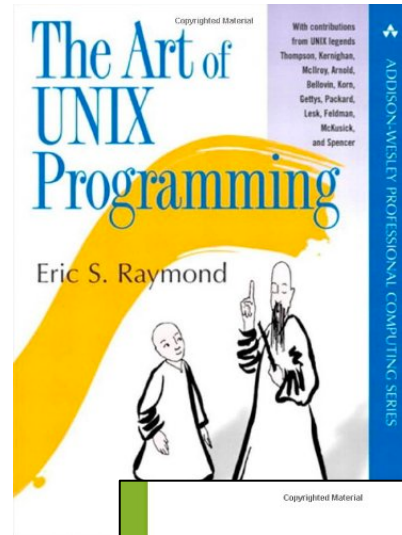
When all you have is a Spring Framework...

...everything looks like an AbstractSingletonProxyFactoryBean

Availability: Think Professionally

- Stop... engage system 2
- Spike/prototype, experiment, evaluate...
- Constant learning
 - Find trusted mentors
 - Cultivate blogs
 - Read the classics

Fundamentals



Evaluation

“I will postpone using this shiny new framework until my peers have validated the proposed benefits with rigorous scientific experiments”

- Said by no programmer
...ever

Raible's Comparison Matrix

Matt Raible comparison matrix (bit.ly/OxUzad)

Criteria	Struts 2	Spring MVC	Wicket	JSF 2	Tapestry	Stripes	GWT	Grails	Rails	Flex	Vaadin	Lift	Play
Developer Productivity	0.50	0.50	0.50	0.50	1.00	0.50	1.00	1.00	1.00	0.00	1.00	0.50	1.00
Developer Perception	0.50	1.00	1.00	0.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Learning Curve	1.00	1.00	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	0.50	1.00
Project Health	0.50	1.00	1.00	1.00	0.50	0.50	1.00	1.00	1.00	0.50	1.00	1.00	1.00
Developer Availability	0.50	1.00	0.50	1.00	1.00	0.50	1.00	0.50	1.00	1.00	0.50	0.00	0.50
Job Trends	1.00	1.00	0.50	1.00	0.50	0.00	1.00	0.50	1.00	1.00	0.00	0.00	0.50
Templating	1.00	1.00	1.00	0.50	1.00	1.00	0.50	1.00	1.00	0.50	0.50	0.50	0.50
Components	0.00	0.00	1.00	1.00	1.00	0.00	0.50	0.50	0.50	1.00	1.00	0.00	0.00
Ajax	0.50	1.00	0.50	0.50	0.50	0.50	1.00	0.50	0.50	0.50	1.00	1.00	0.50
Plugins or Add-Ons	0.50	0.00	1.00	1.00	0.50	0.00	1.00	1.00	1.00	1.00	1.00	0.50	1.00
Scalability	1.00	1.00	0.50	0.50	0.50	1.00	1.00	0.50	0.50	0.50	0.50	1.00	1.00
Testing	1.00	1.00	0.50	0.50	1.00	1.00	0.50	1.00	1.00	0.00	0.50	0.50	1.00
i18n and l10n	1.00	1.00	1.00	0.50	1.00	1.00	1.00	1.00	0.50	0.50	1.00	1.00	1.00
Validation	1.00	1.00	1.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50
Multi-language Support (Groovy / Scala)	0.50	0.50	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.50
Quality of Documentation/Tutorials	0.50	1.00	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Books Published	1.00	1.00	0.50	1.00	0.50	0.50	1.00	1.00	1.00	1.00	0.50	0.50	0.00
REST Support (client and server)	0.50	1.00	0.50	0.00	0.50	0.50	0.50	1.00	1.00	0.50	0.50	0.50	0.50
Mobile / iPhone Support	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	1.00	1.00	1.00
Degree of Risk	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50
Totals	14.5	17	15	13.5	15	14	17	17.5	17	13.5	15.5	11.5	14

Optimistic Bias

***“People tend to be overconfident,
believing that they have substantial
control in their lives”***

I know what our customers want...

...how could I possibly be wrong?

Four Factors of Optimistic Bias

- Desired end state
 - Self-enhancement, perceived control
- Cognitive mechanisms
 - Representativeness heuristic, singular target focus
- Information about self vs target
- Overall mood

Optimism: Think Professionally

- Define (and share) clear goals
- Build, measure, learn...
- Remove uncertainty early (bit.ly/1mAb6o4)
 - “Patterns of Effective Delivery” by Dan North
- Software is inherently collaborative...

The Three Amigos



www.slideshare.net/chassa/2012-1130alm-dayviennaslidehare

Pair Mob Programming

Mob Programming A Whole Team Approach

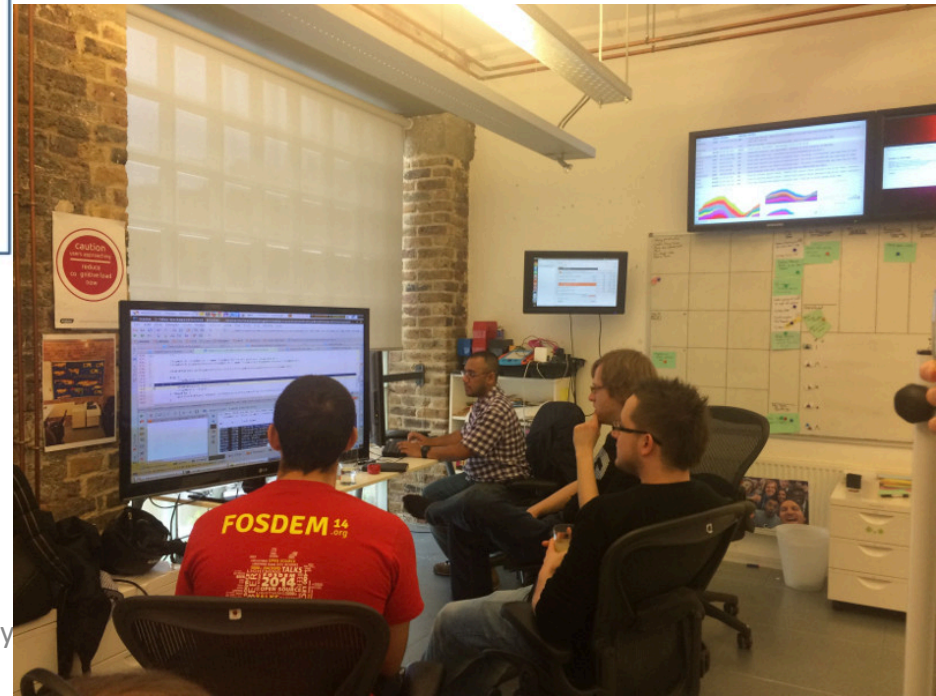


Illustration © 2012 - Andrea Zuill

mobprogramming.org **Twitter: @WoodyZuill**

www.infoq.com/interviews/zuill-mob-programming

benjiweber.co.uk/blog/2014/11/30/the-unruly-mob/
probablyfine.co.uk/papers/mob-programming.pdf



DevOps: Share the Pain...



“Dev-on-call”

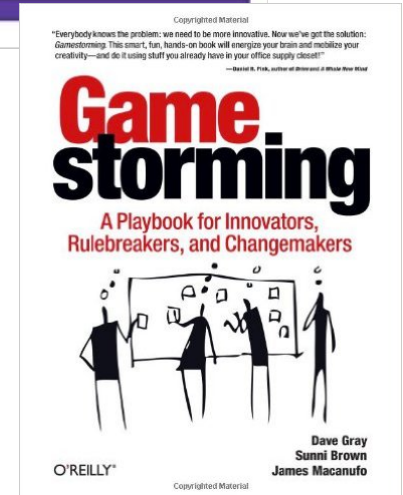
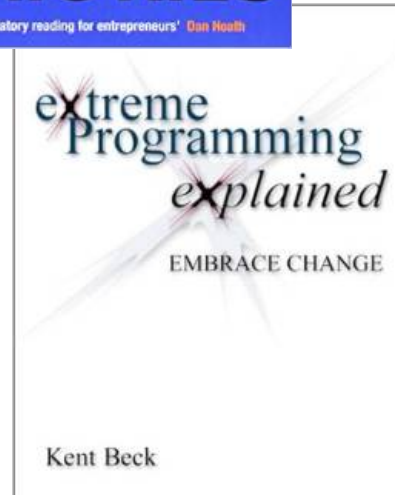
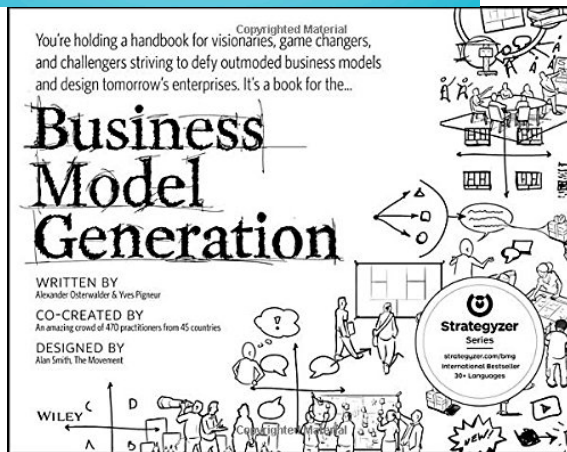
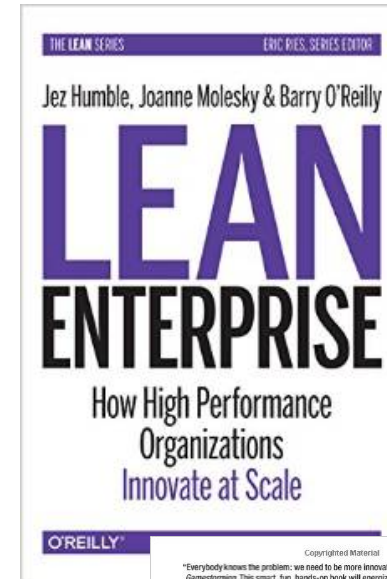


An occasional spike to the head
is a good thing...

...metaphorically speaking

- You build it, you run it
 - Shared responsibility
 - Communication

Remove (or Limit) Uncertainty



Check the HiPPO



bit.ly/1xseeXM

26/11/15

@danielbryantuk

Planning Fallacy

“A phenomenon in which predictions about how much time will be needed to complete a future task display an optimistic bias.”

Was your last project completed on time?

...and on budget?

IT Track Record...

- Sainsbury's Supply Chain Management System
 - \$526m bit.ly/160SnAj
- NHS patient record system
 - £10bn bit.ly/XBzFuV
- HealthCare.gov
 - onforb.es/1k7egyb

Most Common Factors for Failure

- Unrealistic or unarticulated project goals
- Inaccurate estimates of needed resources
- Badly defined system requirements
- Poor reporting of the project's status
- Unmanaged risks
- Poor communication among customers, developers, and users
- Use of immature technology
- Inability to handle the project's complexity
- Sloppy development practices
- Poor project management
- Stakeholder politics
- Commercial pressures

Source spectrum.ieee.org/computing/software/why-software-fails

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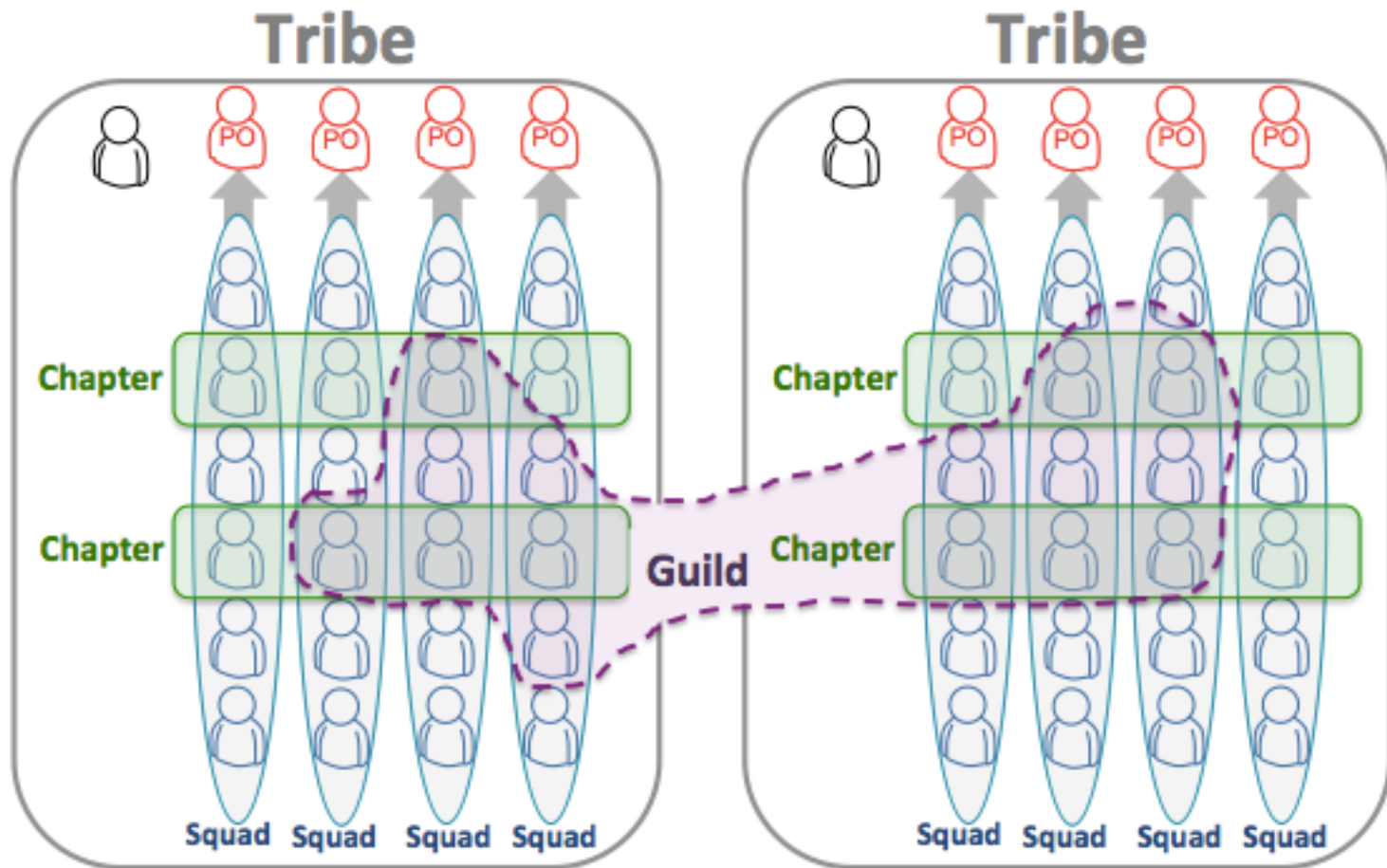
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Source spectrum.ieee.org/computing/software/why-software-fails

At the Start: Feedback & Federation

- Plan, do, check (showcase), act
- Improve estimation (or #noestimates?)
- Divide and conquer
 - SOA, microservices, modules... (systems thinking)
 - Squads, guilds, chapters

Spotify



A Side Note

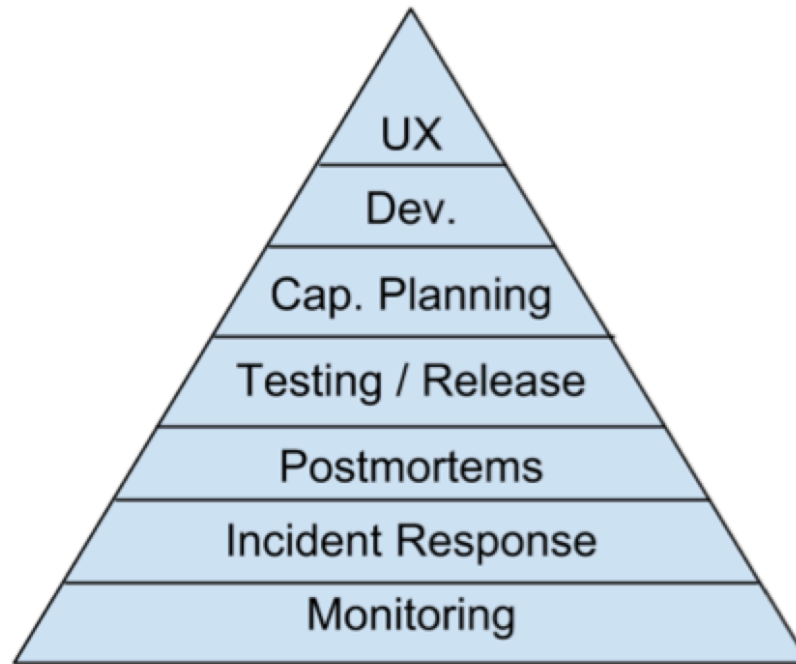
Even if your upfront planning is good...

Things Inevitably Go Wrong...



At the End: It's All About People

Dickerson's Hierarchy of Reliability

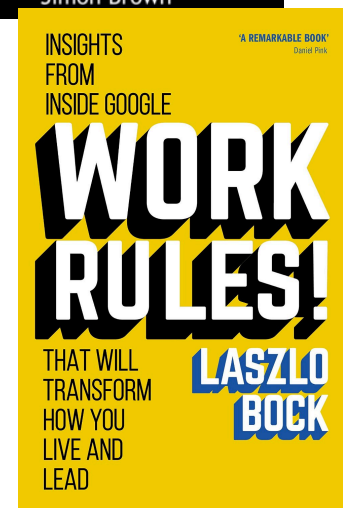
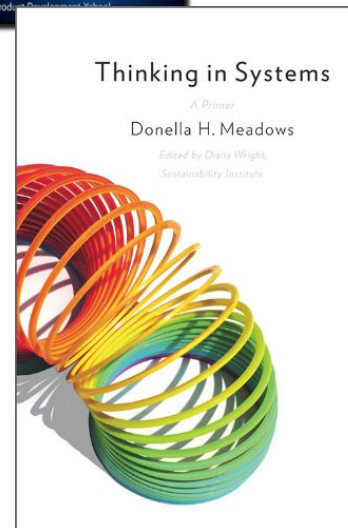
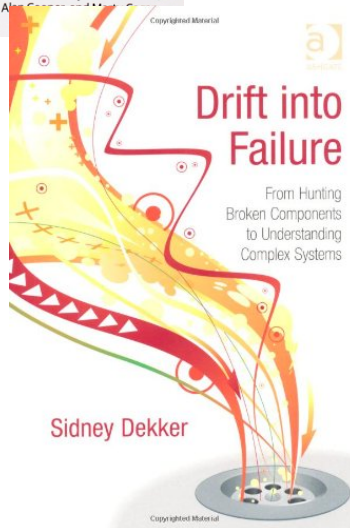
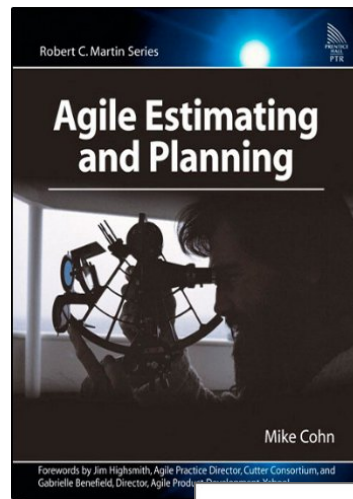
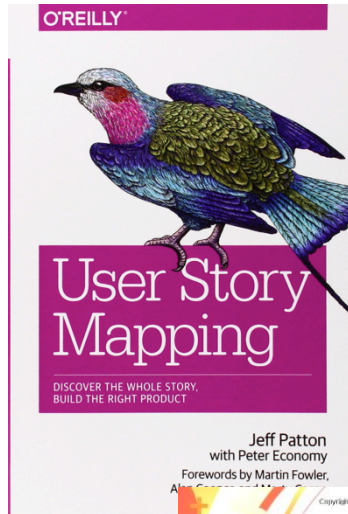


www.infoq.com/news/2015/06/too-big-to-fail

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From Macro to Micro...



Accept Unknown Unknowns...



dilbert.com/strips/comic/1995-11-10/

Sunk Cost Fallacy

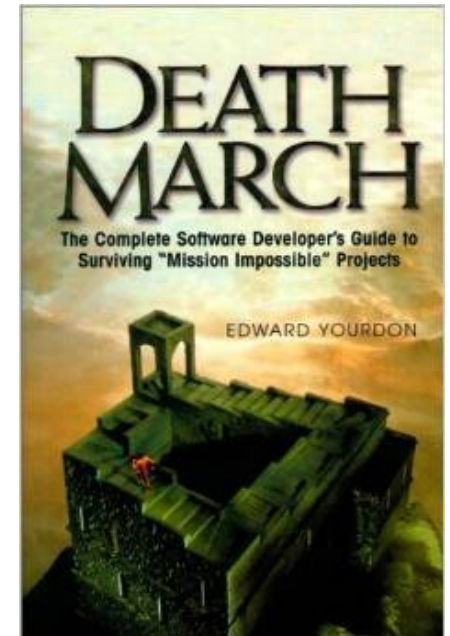
“Any past cost that has already been paid and cannot be recovered should not figure into the decision making process.”

When did you last remove a framework?

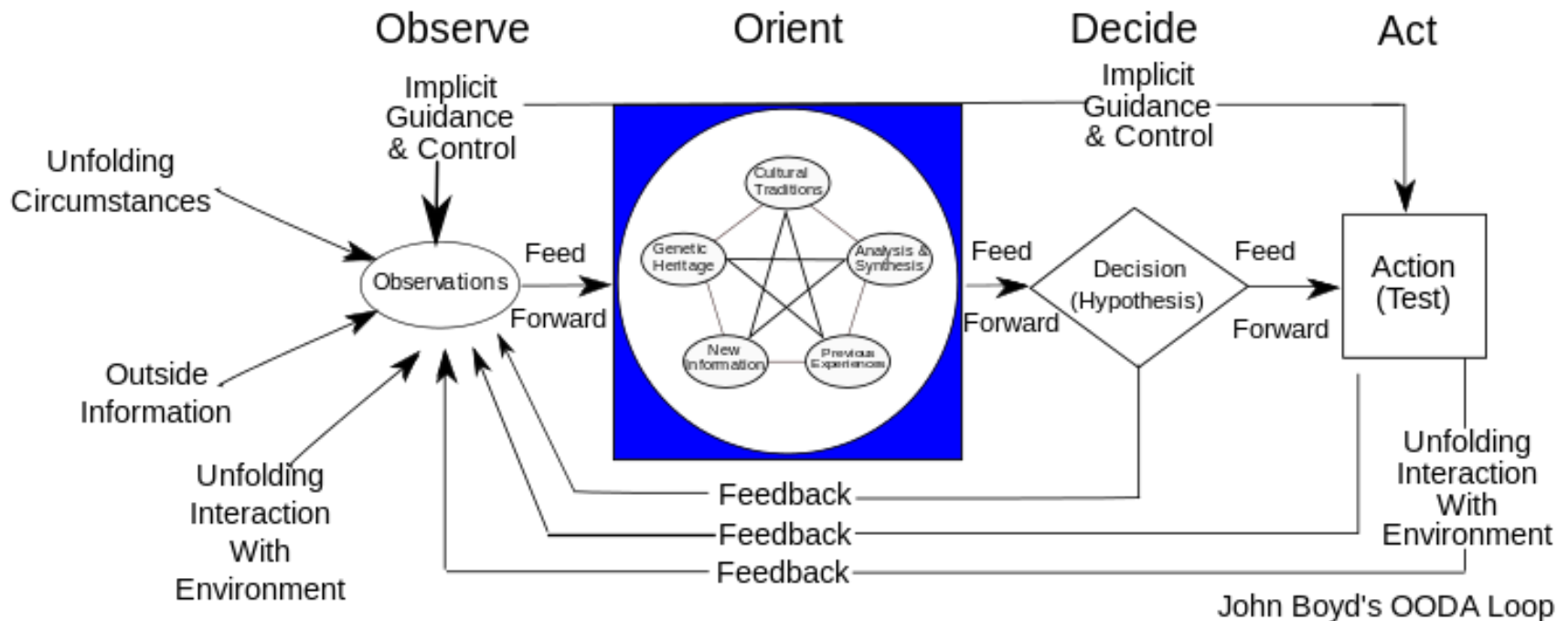
...or a library?

Why Are We Reluctant?

- We don't like being wrong...
- Existing effort appears wasted
 - Endowment effect
- Loss aversion
 - Twice as powerful, psychologically, as gains?

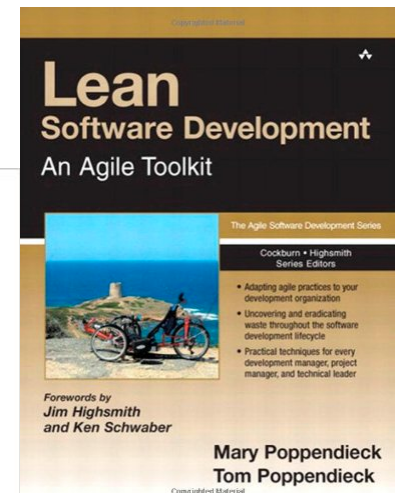
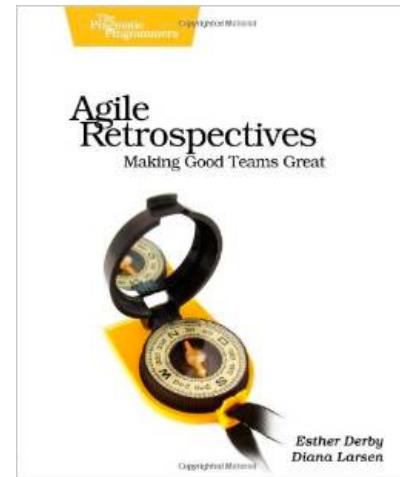


Try Not to 'Sink Costs'



Retrospect Regularly

- Did we make the right choice?
- When was the 'last responsible moment'?
- What can we learn?
- How can we get better?



Anchoring Bias

“Common tendency to rely too heavily on the first piece of information offered when making decisions.”

How does your manager ask for estimates?

...is it an unbiased question?



Anchoring: Learn to “Upwardly Manage”

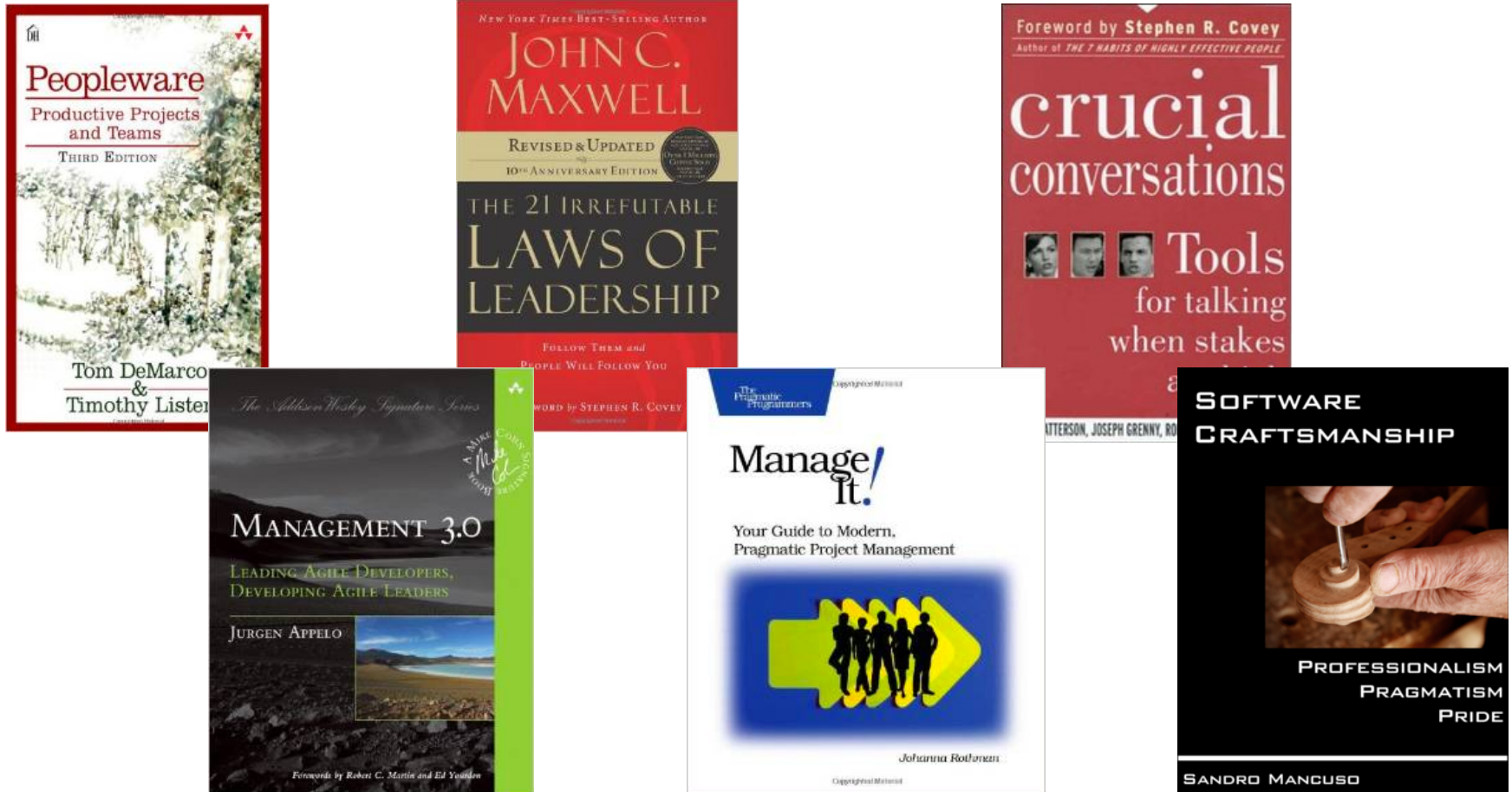
- Learn to say no...
 - Provide explanations and alternatives
- Make sure goals/user stories are well-defined
 - Collaboration
 - Feedback
- Apply PERT estimations (bit.ly/1mGzuoe)

A Little More #NoEstimates



ronjeffries.com/xprog/articles/the-noestimates-movement/

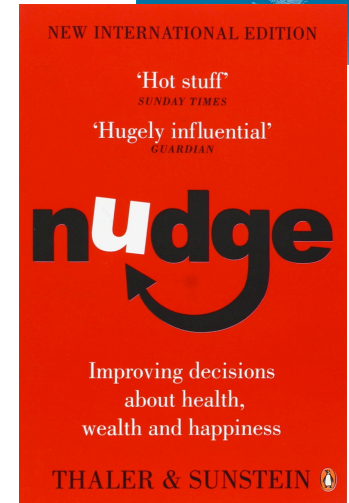
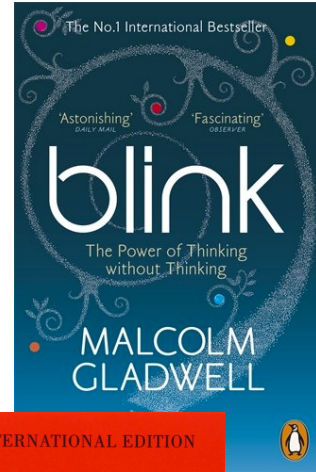
Read Your Way to Tech Leadership (?)



Ok, lets wrap this up...

System 1 is Awesome!

- It saves us from many dangers
- Very valuable in many situations
 - ‘gut feel’, instincts, intuition
 - Expertise plays a role
 - Can be used for good
- But, I see too much System 1 in IT...



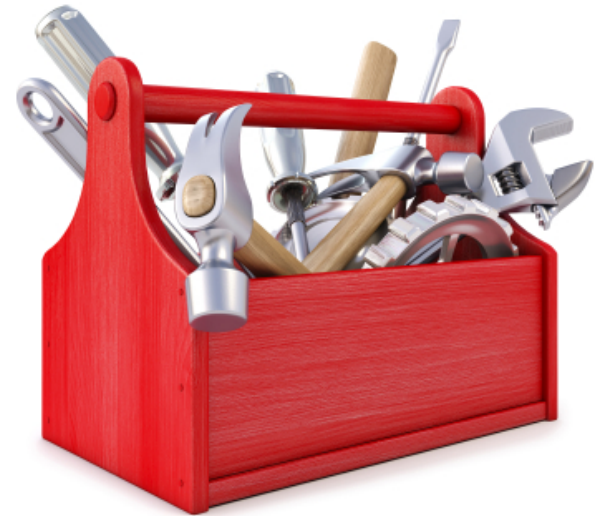
We All Make Mistakes...



26/11/15



@danielbryantuk



 OpenCredo

Have a Little Empathy...



Jason Gay ✓
@jasongay



 **Follow**

There's a guy in this coffee shop sitting at a table, not on his phone, not on a laptop, just drinking coffee, like a psychopath.

RETWEETS

30,457

FAVORITES

31,840



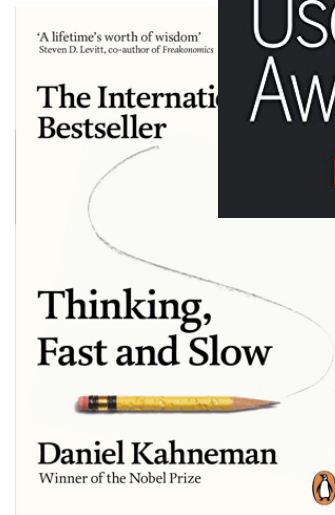
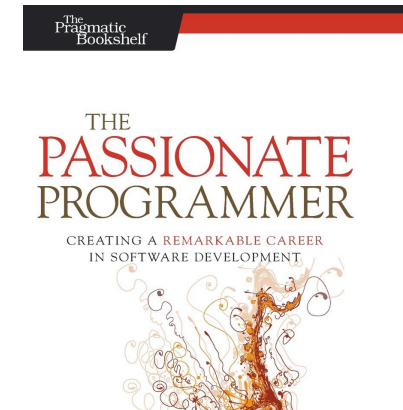
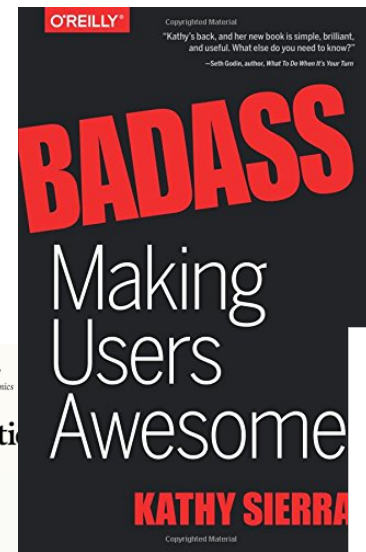
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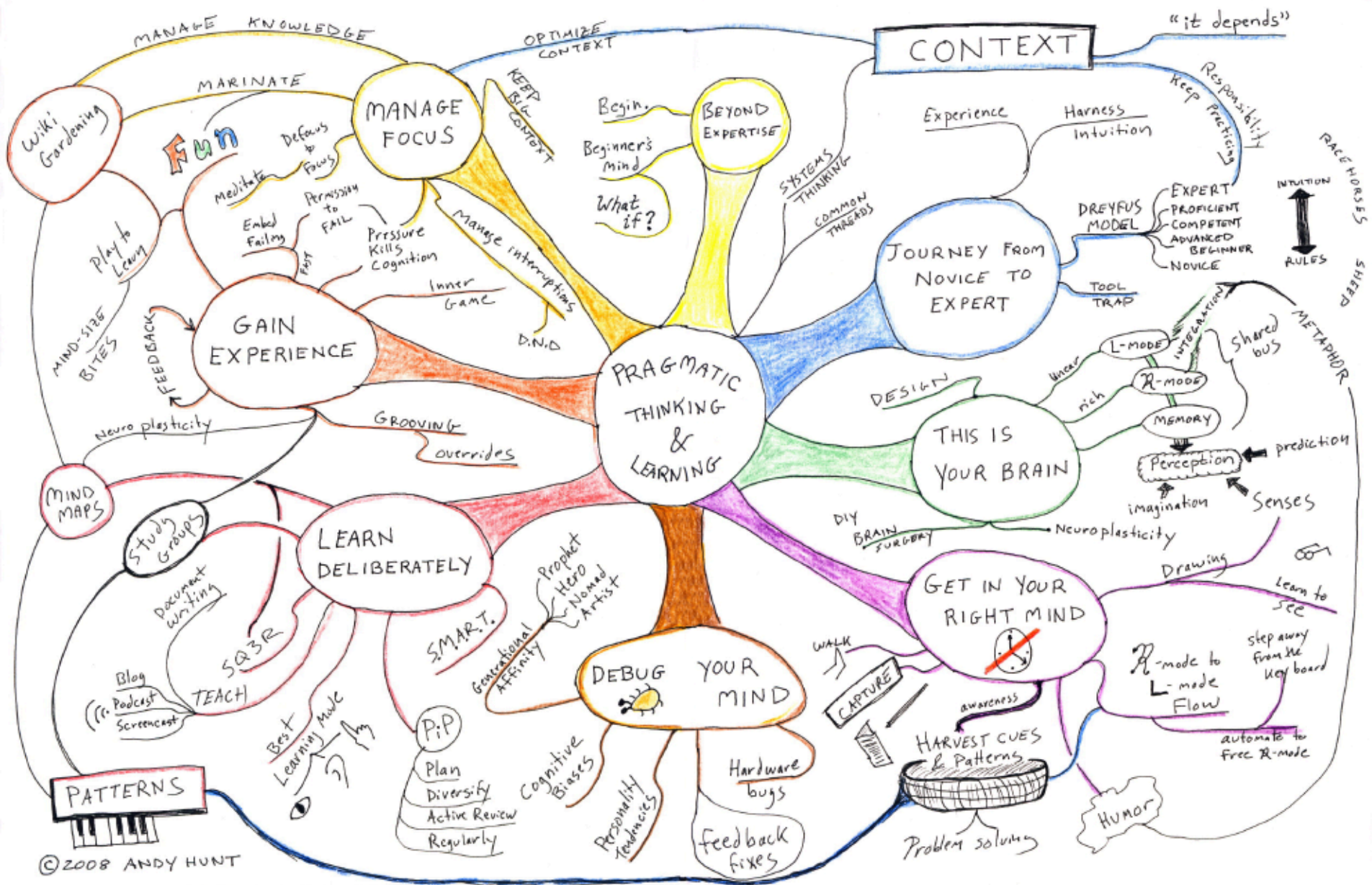


“You will be the same person in five years as you are today except for the people you meet and the books you read.”

- Charlie “Tremendous” Jones
(bit.ly/1LAdQkv)

Awesome Conferences and Books





Summary

- Apply process and models (as appropriate)
 - Listen to system 1, but engage system 2...
- Collaborate more (and better)
- Learn, do, retrospect, (teach,) repeat
 - **“Think” more deliberately** -

Thanks for Listening!

Comments and feedback are welcomed...

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www.parleys.com/author/daniel-bryant

www.muservicesweekly.com