



AGILE ARCHITECTURE: RED PILL OR BLUE PILL

TRAVELOCITY, NEW YORK, 14 APR 2009

"The Relentless Pursuit of Perfection"

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Jeff Sutherland, Ph.D.



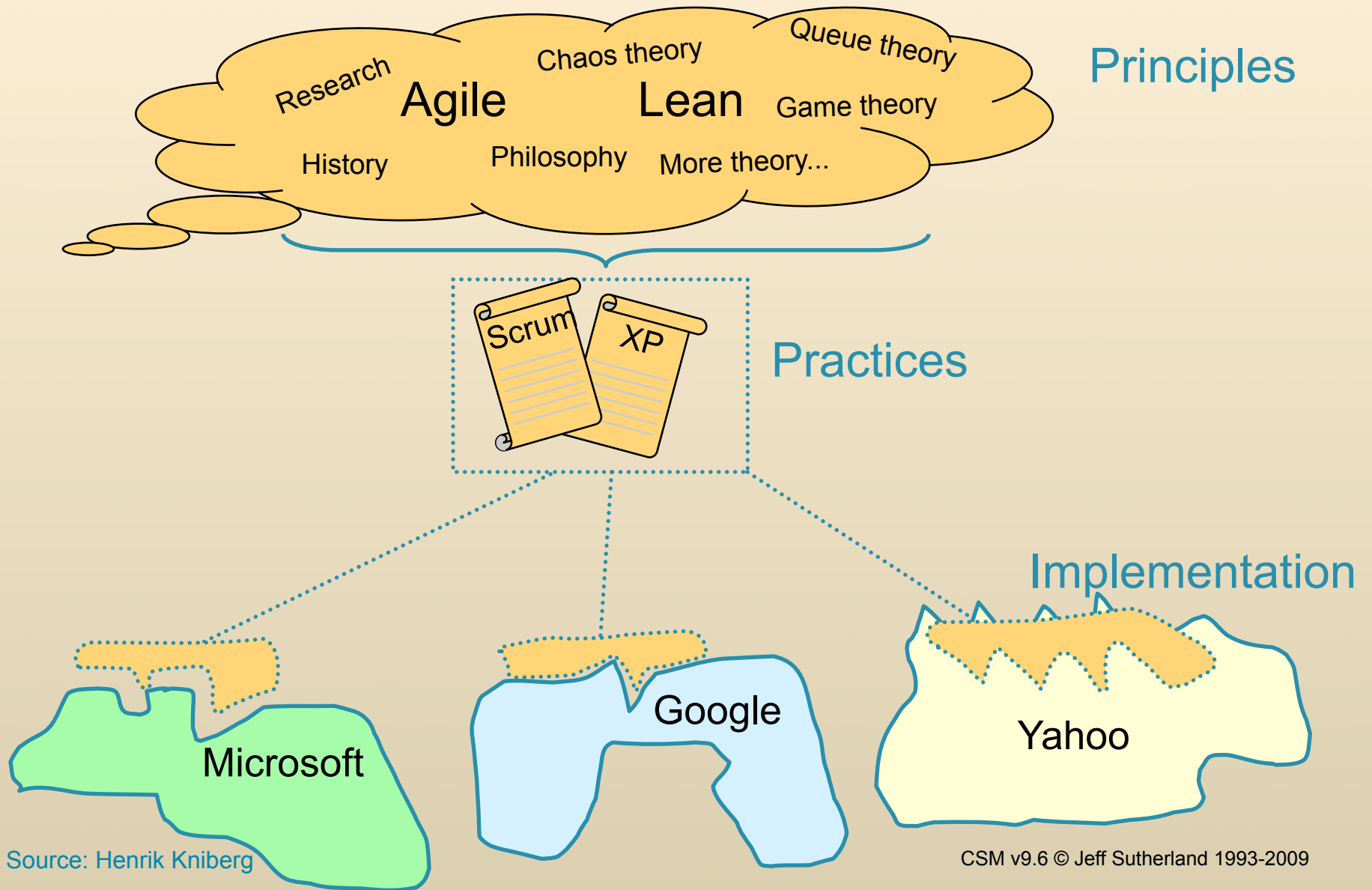
- 🕒 **Chairman, Scrum Training Institute**
- 🕒 **CEO Scrum, Inc. and Senior Advisor, OpenView Venture Partners**
 - 🕒 **Agile coach for OpenView Venture Partners portfolio companies**
 - 🕒 **CTO/VP Engineering for 9 software companies**
 - 🕒 **Created first Scrum at Easel Corp. in 1993. Rolled out Scrum in next 5 companies**
 - 🕒 **Achieved hyperproductive state in all companies. Signatory of Agile Manifesto and founder of Agile Alliance**
- **<http://jeffsutherland.com/scrum>**
- **jeff@scruminc.com**



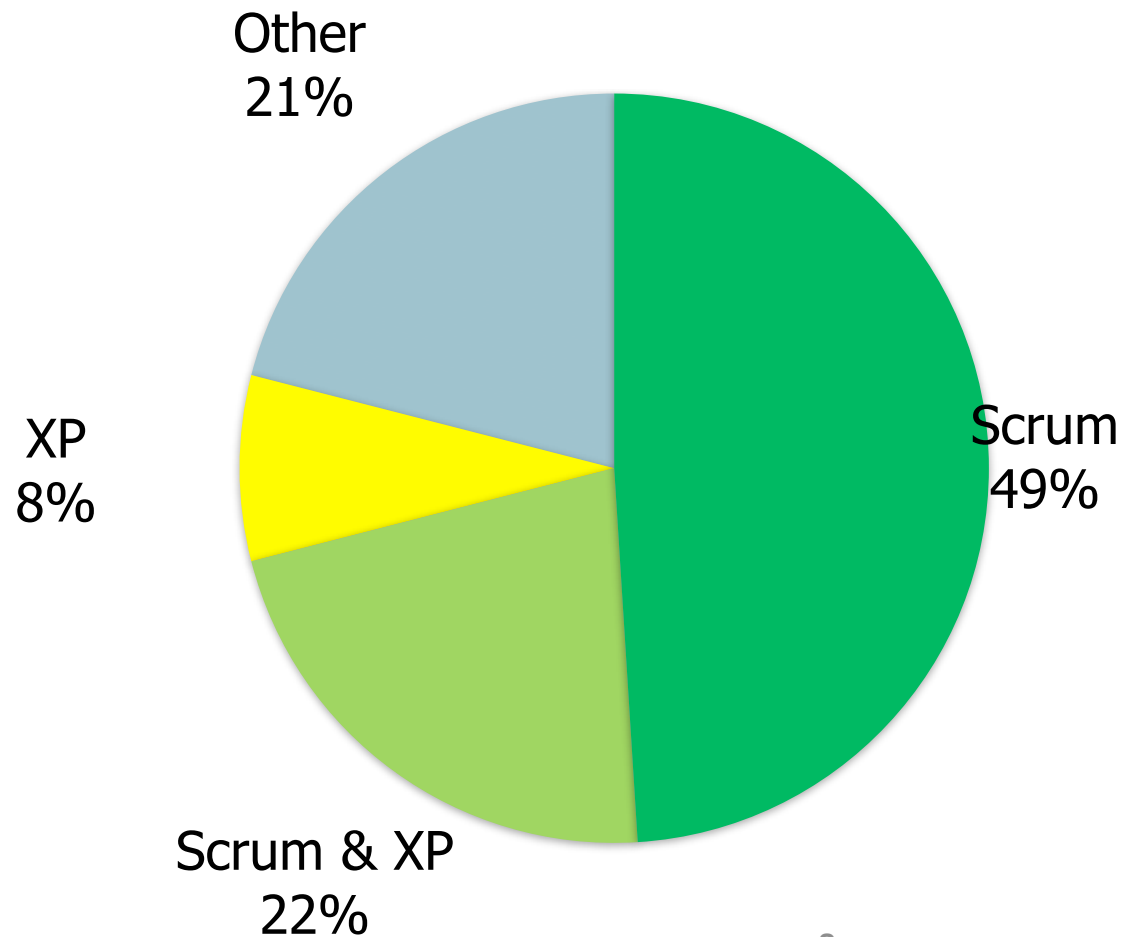
Agile 2009 Papers

- **Take No Prisoners: How a Venture Capital Group Does Scrum**
 - Jeff Sutherland and Igor Altman
- **Scrum in Church**
 - Rev. Arline Conan Sutherland and Jeff Sutherland
- **Scrum and CMMI: Going from Good to Great**
 - Carsten Jakobsen and Jeff Sutherland
- **Shock Therapy: Bootstrapping a Hyperproductive Scrum**
 - Jeff Sutherland, Scott Downey, and Bjorn Granvik
- **Fully Distributed Scrum: A Report on Linear Scalability of a Team in San Francisco and India**
 - Jeff Sutherland, Guido Schoonheim

Topic: The big picture



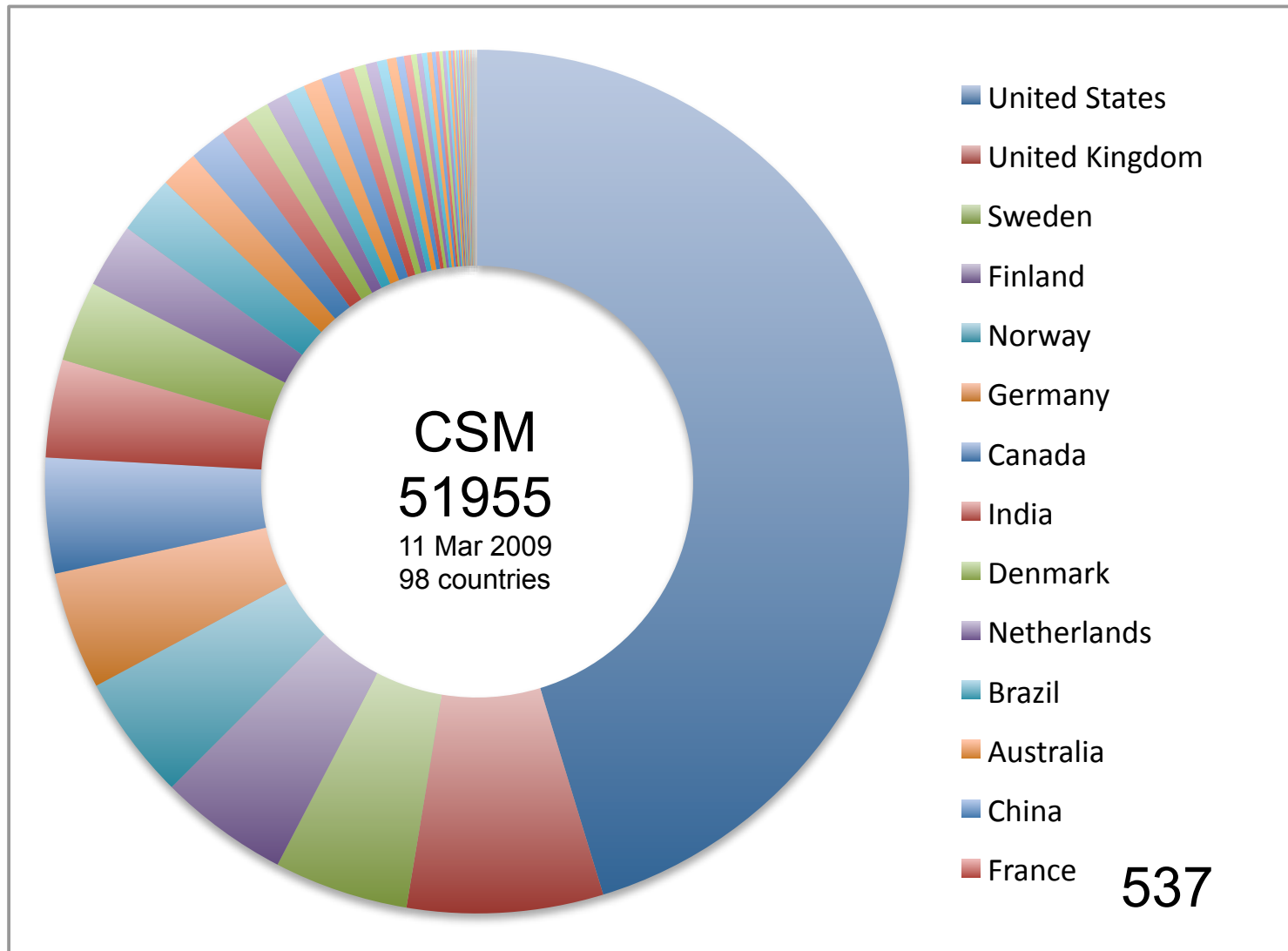
Which processes do agile companies use?



Sources:

- 3rd Annual "State of Agile Development" Survey June-July 2008
- 3061 respondents
- 80 countries

Certified ScrumMasters



Scrum Gathering 2009 Orlando



Keynote speakers

-  Scrum Research at Carnegie Mellon: Dr. Mark Paulk (developed CMMI at SEI)
-  View from PMI: Gregory Balestrero, President & CEO, Project Management Institute

New ScrumTrainers



- **Dr. Jim Coplien - founder of the patterns movement**
- **Alistair Cockburn - Crystal process**
- **Ron Jeffries - founder of XP**
- **and many others ...**



Collaborating with the dark side of force?

Jeff Sutherland - Co-Creator of Scrum

Greg Balestrero - CEO Project Management Institute (PMI)

- **PMI is over 40 years old with over 500000 members**
- **Scrum Alliance is less than 5 years old with over 55000 members**
- **Almost half of people at Scrum Gathering were PMI Certified.**
- **Leadership message was to go forth and collaborate and see how we can best work together to improve the profession of value creation worldwide!**

Conway's Law

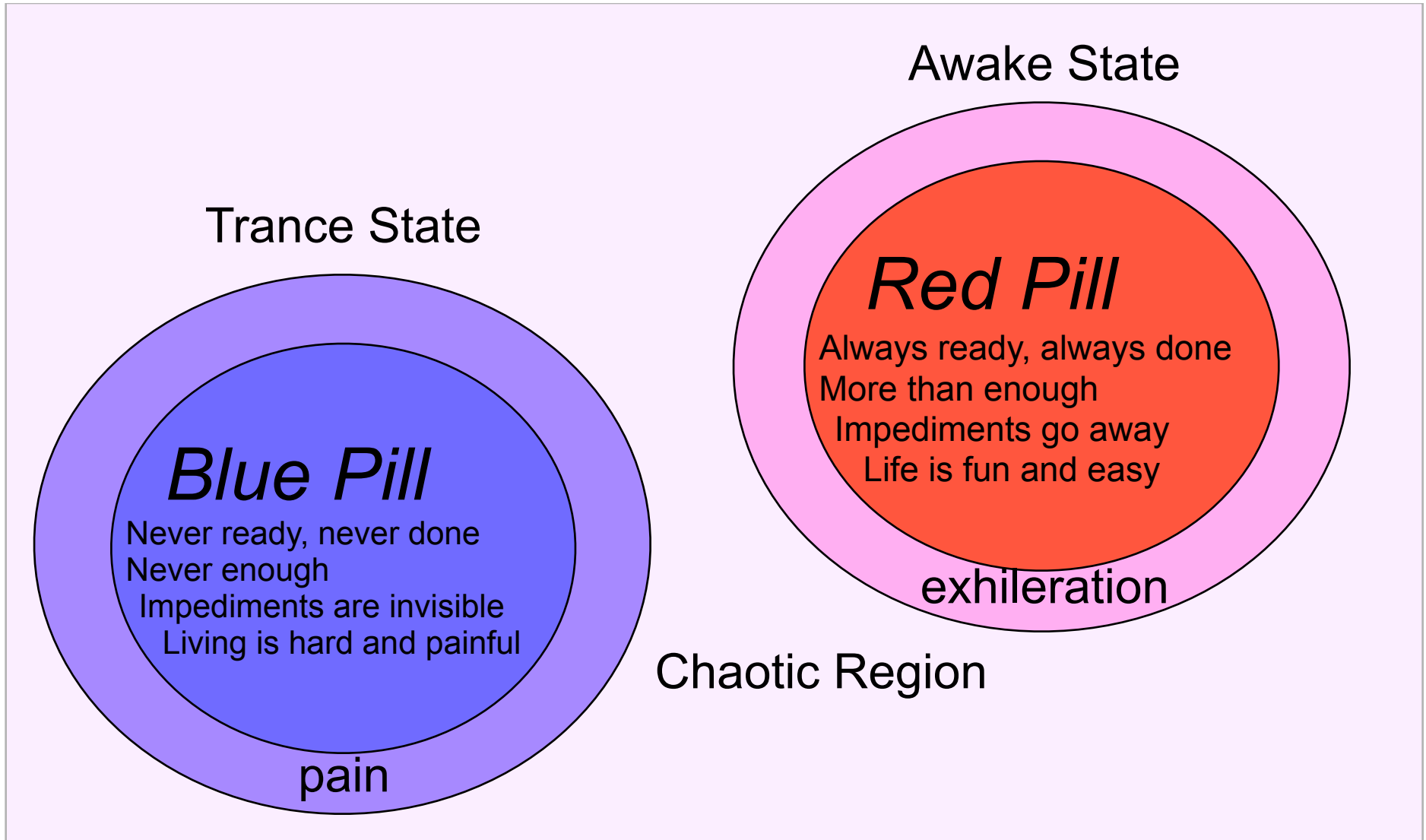
- **Hierarchy needs a plan to command and control**
 - Slow, costly, high failure rates, low value
- **Scrum needs a team to self-organize**
 - Fast, inexpensive, high success, high value
- **Conway's law says the architecture of the code will reflect the architecture of the organization**
 - Organization must change to get better code
- **Change is hard!**
 - 50% of Scrum teams do not have working code at the end of a Sprint
 - 90% of Scrum teams have problems with the Nokia test

What is Scrum?

- **Not a methodology**
- **Not a defined process**
- **Not a set of procedures**

- **Scrum as an open development framework with a simple set of rules.**
- **The rules are constraints on behavior that cause a complex adaptive system to self-organize into an intelligent state.**
- **It enables an average team to self-organize into a super-intelligent team that works 10 times better than normal teams.**

Chaos Theory - Attractor States



Your focus determines your reality! *Jedi Master* CSM v9.6 © Jeff Sutherland 1993-2009

"You take the blue pill, the story ends, you wake up in your bed, and believe whatever you want to believe. *Morpheus*



Red pills appear to have either seen "glitches" within the Matrix, or question their lives within the Matrix, refusing to dismiss strange events. These are the people most likely to recognize the Matrix as an illusion.

According to Morpheus, leaving the Matrix can be traumatic, particularly to those who have lived in it too long. As a rule, crews only offer the red pill to those younger than 18. After that, the risk of denial and psychotic episodes from the reality of separation is much higher. The exception to this rule is Neo, whose age is around 30 when he is released by Morpheus.

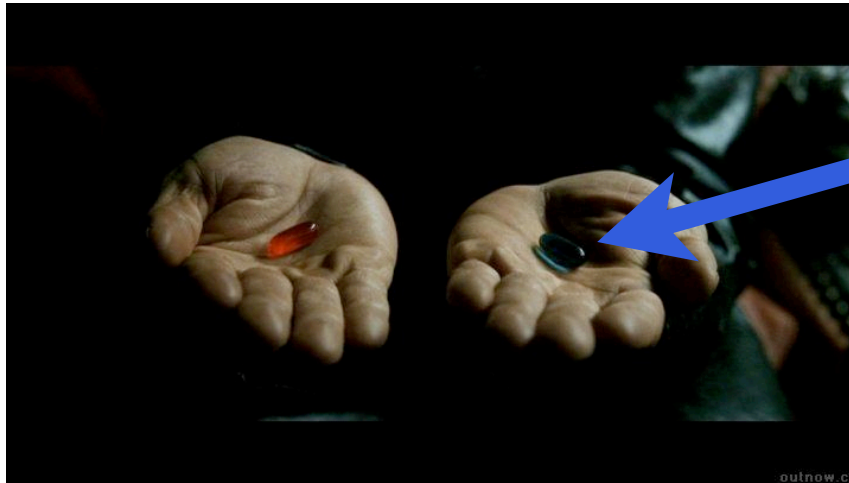
Choose the Red Pill or Blue Pill



- 🕒 **Blue pill means 10-100% improvement with minimal organizational change (ScrumButt)**
- 🕒 **Red pill means 500-1500% improvement with full involvement of management in removing impediments and building a new organization.**

Believe what you want to believe

- 🌐 **Developers can choose any task they want in the Sprint backlog**
- 🌐 **Architecture will just emerge**
- 🌐 **Not ready, not done is normal**
- 🌐 **We don't know our velocity and it's OK**
- 🌐 **We are doing Scrum, but ...**



Blue pill

Red pill is wake up call ...

- 🍀 In reality the ship is old and plumbing is bad
- 🍀 Things are broken everywhere, people are bleeding
- 🍀 You have to fix things you don't want to fix
- 🍀 Thought police are everywhere in the matrix



Taking Architecture into the Agile World

- **Architecture is the essence of structure**
 - Structure obfuscates form!
- **Lean architecture: just-in-time delivery of functionality, just-in-time pouring material into the forms**
- **Agile architecture: one that supports change, end-user interaction, discovery, and ease of comprehension (of functionality)**

Source: MVC to DCI: The Other Shoe Drops
Taking Architecture into the Agile World - Scrum Gathering, Orlando, 16 Mar 2009
James O. Coplien, Scrum Training Institute
Gertrud&Cope, Mørdrup, Denmark
Jeff Sutherland, Scrum Training Institute

What is the value of architecture?

- **Architecture supports “what happens there”**
- **Habitable code — by the people who develop it and the people who use it**
- **Architecture is what makes code feel familiar**
- **A good architecture reduces waste and inconsistency — muda and mura**
 - Less rework
 - System consistency

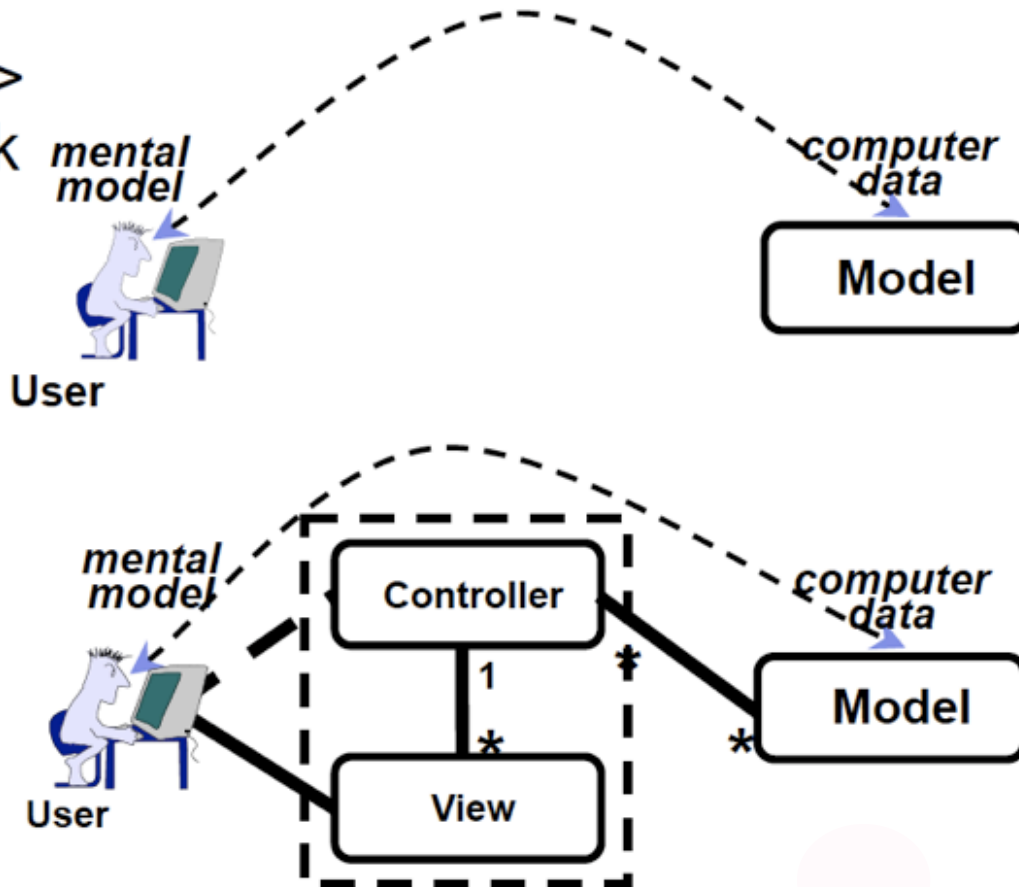
Architecture and OO

- **OO is a paradigm — a way of talking about form**
- **OO's foundations: to capture the end user's mental models in the code**
- **OO captures**
 - The entities (objects) that users know about
 - The classes that serve as sets of such objects
- **Customer collaboration and embracing change**

MVC: The Embodiment of the OO Vision

- User model -> into the code -> presented back to the user
- The goal of *views* is direct manipulation

The goal of the *controller* is to coordinate multiple views



From an Agile perspective, architecture:

- **Allows me to connect with the user mental model**
 - Users & interactions instead of processes and tools
- **Can employ shared customer vocabulary**
 - Customer collaboration, not contracts
- **Can reason about form of task sequencing**
 - More likely to deliver working software
- **Exposes the changing part for ready update**
 - Embracing change

From the Red Pill view:



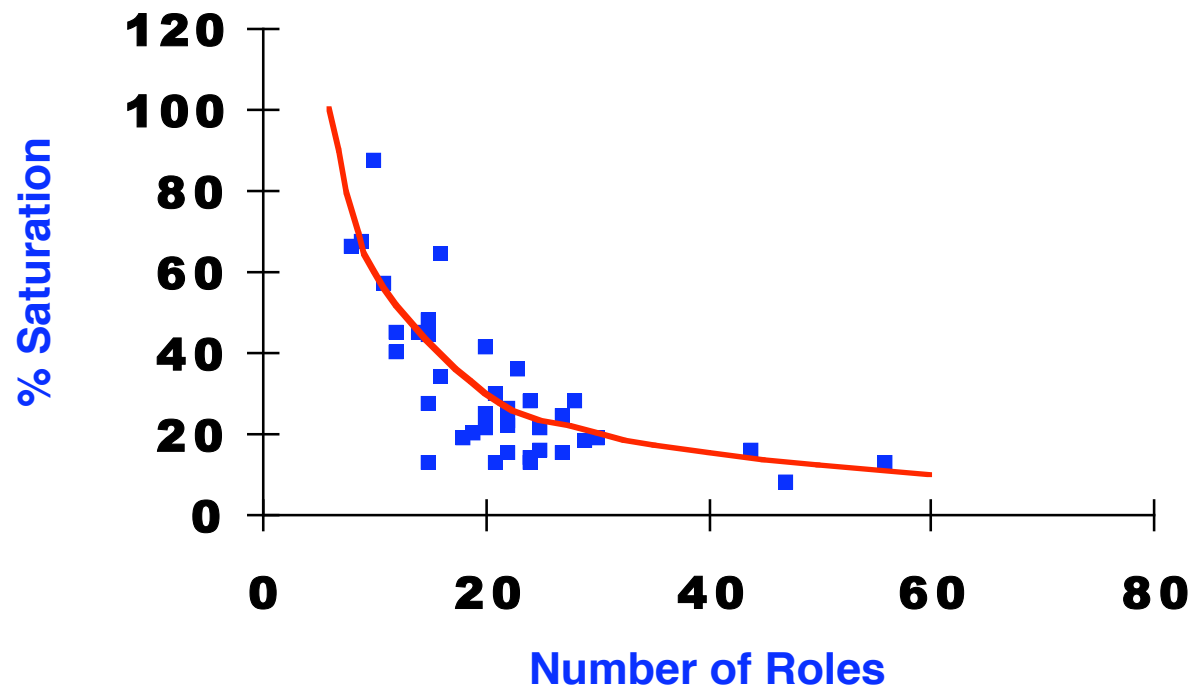
- **Customer collaboration is embedding the mind of the user in the software**
- **Transparency is when the user feels like software is an extension of mind**
- **Empowerment is when the user experiences the exhilaration of being able to do what s/he only dreamed of doing**

The impact ...

- **The first Scrum team built a component architecture that everyone understood**
- **In the daily meeting they argued about where to implement the next task in the architecture**
- **The team would only allow a team member to take the next task if it would produce the most rapid appearance of a testable feature.**
- **Instead of implementing it in their code the developer often implemented it in someone's else code with someone else's help**
- **In one sprint, velocity increased 400%**
- **And kept on increasing ...**

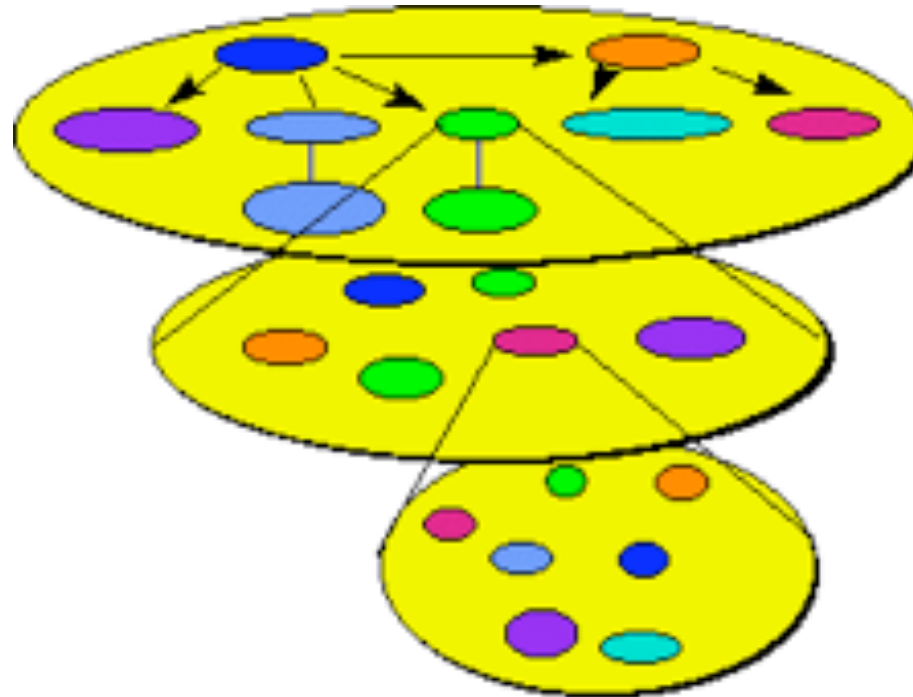
It is all about communication saturation

Jim Coplien and the Borland Quattro Pro Project



Organizational Patterns of Agile Software Development by Coplien and Harrison (2004)

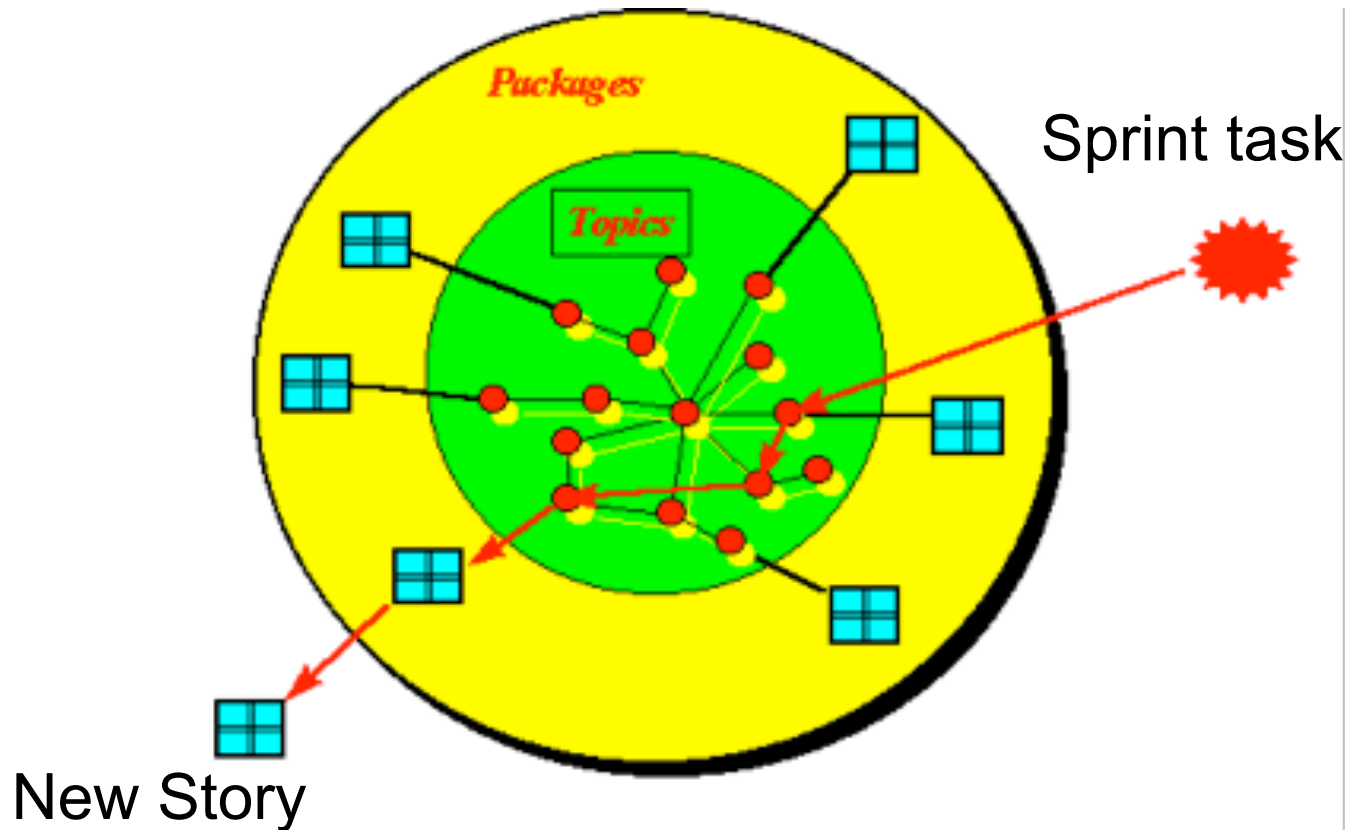
Scrum Team Organization Mirrors System Component Model



Business Object Component Architectures: A Target Application Area for Complex Adaptive Systems Research

[Jeff Sutherland](#), SVP Engineering & Product Development, IDX Systems Corp., 1998

Developer chooses next task to maximize probability of user seeing new feature (allows early feature testing)



Dennett, D. C. *Darwin's Dangerous Idea: Evolution and the Meanings of Life*. Simon & Shuster, 1995.

Sutherland, Jeff. *Agile Can Scale: Inventing and Re-Inventing Scrum in Five Companies*.

The Scrum Papers, 208.

© Jeff Sutherland 1993-2008

The Road to Hyper-Productivity

- Based on Complex Adaptive Systems theory
- Need an architectural metaphor which allows rapid refactoring at all levels of granularity without introduction of defects
- Make the right changes to the right components in the right order to maximize the speed of appearance of new features - punctuated equilibrium
- Next step requires team to know the architecture and to implement next story to change the architecture

It's all about the architecture!

Self-Organization: The Secret Sauce for Improving your Scrum team

<http://www.youtube.com/watch?v=M1q6b9JI2Wc>



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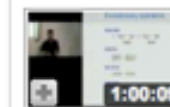
Google Tech Talks September 4, 2008 ABSTRACT
High performance depends on the self-organizing capability of teams. Understanding how this works and how to avoid destroying self-organization is a c...

URL <http://www.youtube.com/watch?v=M1q6b9JI2Wc>

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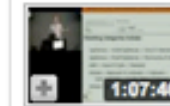
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At the end of the day it is all about architecture!



Rugby players demonstrate emergent architecture



