



Scrum Fundamentals

“Back to Basics” for New and Experienced Teams

Host: Alex Brown
Presenter: Jeff Sutherland

scruminc.: Who We Are

Scrum Inc. is the Agile leadership company of Dr. Jeff Sutherland, co-creator of Scrum. We are based in Cambridge, MA.

We maintain the Scrum methodology by:

- Capturing and codifying evolving best practices,
- Conducting original research on organizational behavior
- Adapting the methodology to an ever-expanding set of industries, processes and business challenges



We also help companies achieve the full benefits of Scrum through our full suite of support services:

- Training (Scrum Master, Product Owner, Agile Leadership, webinars, etc.)
- Consulting (linking Scrum and business strategy, customizing Scrum)
- Coaching (hands-on support to Scrum teams)
- Publishing and new content development

We run our services company using Scrum as the primary management framework, making us a living laboratory on the cutting edge of “Enterprise Scrum”

Find out more at www.scruminc.com.

Agenda

- Why use Scrum?
- The origins of Scrum
- The elements of Scrum
 - What they are
 - How Scrum works
 - Why Scrum works
- Introduce Scrum patterns
- What Scrum allows us to do



The secret of getting ahead is getting started. The secret of getting started is breaking your complex overwhelming tasks into small manageable tasks, and then starting on the first one.

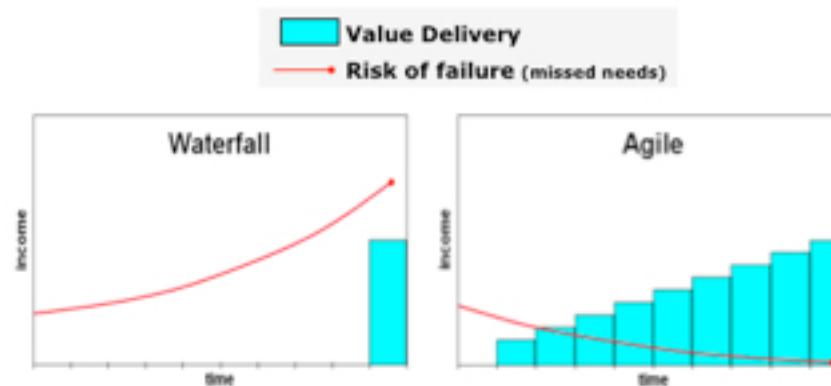
- Mark Twain

Scrum Supports Organizations in 3 Ways

- Faster** Scrum helps teams continuously improve, so that they can produce more in less time
- Better** Scrum puts the customer at the center of design and development, resulting in more commercially successful products
- Happier** Scrum empowers working teams to make decisions and harness their talents, leading to greater employee satisfaction

Origins: Facing a really hard problem

- In 1993 Easel Corporation needed to build a new product in six months. They hired Jeff Sutherland to lead a small development team trusting that he could do it
- Software development projects at that time, kept getting later and later and more and more expensive!
- Convinced there had to be a better way than traditional waterfall development, Jeff and the team researched studies and publications on how the best teams function. They read hundreds of papers.



The New New Product Development Game

Hirotaka Takeuchi and Ikujiro Nonaka

The rules of the game in new product development are changing. Many companies have discovered that it takes more than the accepted basics of high quality, low cost, and differentiation to excel in today's competitive market. It also takes speed and flexibility.

This change is reflected in the emphasis companies are placing on new products as a source of new sales and profits. At 3M, for example, products less than five years old account for 25% of sales. A 1981 survey of 700 U.S. companies indicated that new products

would account for one-third of all profits in the 1980s, an increase from one-fifth in the 1970s.¹

This new emphasis on speed and flexibility calls for a different approach for managing new product development. The traditional sequential or "relay race" approach to product development—exemplified by the National Aeronautics and Space Administration's phased program planning (PPP) system—may conflict with the goals of maximum speed and flexibility. Instead, a holistic or "rugby" approach—where a team tries to go the distance as a unit, passing

In today's fast-paced, fiercely competitive world of commercial new product development, speed and flexibility are essential. Companies are increasingly realizing that the old, sequential approach to developing new products simply won't get the job done. Instead, companies in Japan and the United States are using a holistic method—as in rugby, the ball gets passed within the team as it moves across the field.

This holistic approach has six characteristics: built-in instability, self-organizing project teams, overlapping development phases, "multilearning," subtle control, and organizational transfer of learning. The six pieces fit together like a jigsaw puzzle, forming a fast flexible process for new product development. Just as important, the new approach can act as a change agent: it is a vehicle for introducing creative, market-driven ideas and processes into an old, rigid organization.

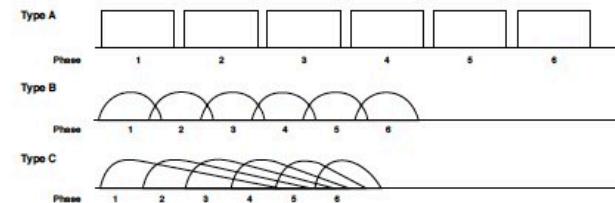
Mr. Takeuchi is an associate professor and Mr. Nonaka, a professor at Hitotsubashi University in Japan. Mr. Takeuchi's research has focused on marketing and global competition. Mr. Nonaka has published widely in Japan on organizations, strategy, and marketing.

Authors' note: We acknowledge the contribution of Ken-ichi Imai in the development of this article. An earlier version of this article was coauthored by Ken-ichi Imai, Ikujiro Nonaka, and Hirotaka Takeuchi. It was entitled "Managing the New Product Development Process: How Japanese Companies Learn and Unlearn" and was presented at the seventy-fifth anniversary.

Colloquium on Productivity and Technology, Harvard Business School, March 28 and 29, 1984.

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EXHIBIT 1
Sequential (A) vs. overlapping (B and C) phases of development



the ball back and forth—may better serve today's competitive requirements.

Under the old approach, a product development process moved like a relay race, with one group of functional specialists passing the baton to the next group. The project went sequentially from phase to phase: concept development, feasibility testing, product design, development process, pilot production, and final production. Under this method, functions were specialized and segmented: the marketing people examined customer needs and perceptions in developing product concepts; the R&D engineers selected the appropriate design; the production engineers put it into shape; and other functional specialists carried the baton at different stages of the race.

Under the rugby approach, the product development process emerges from the constant interaction of a hand-picked, multidisciplinary team whose members work together from start to finish. Rather than moving in defined, highly structured stages, the process is born out of the team members' interplay (see Exhibit 1). A group of engineers, for example, may start to design the product (phase three) before all the results of the feasibility tests (phase two) are in. Or the team may be forced to reconsider a decision as a result of later information. The team does not stop then, but engages in iterative experimentation. This goes on in even the latest phases of the development process.

Exhibit 1 illustrates the difference between the traditional, linear approach to product development and the rugby approach. The sequential approach, labeled type A, is typified by the NASA-type PPP system. The overlap approach is represented by type B, where the overlapping occurs only at the border of adjacent phases, and type C, where the overlap extends across several phases. We observed a type B

overlap at Fuji-Xerox and a type C overlap at Honda and Canon.

This approach is essential for companies seeking to develop new products quickly and flexibly. The shift from a linear to an integrated approach encourages trial and error and challenges the status quo. It stimulates new kinds of learning and thinking within the organization at different levels and functions. Just as important, this strategy for product development can act as an agent of change for the larger organization. The energy and motivation the effort produces can spread throughout the big company and begin to break down some of the rigidities that have set in over time.

In this article, we highlight companies both in Japan and in the United States that have taken a new approach to managing the product development process. Our research examined such multinational companies as Fuji-Xerox, Canon, Honda, NEC, Epson, Brother, 3M, Xerox, and Hewlett-Packard. We then analyzed the development process of six specific products:

- FX-3500 medium-sized copier (introduced by Fuji-Xerox in 1978)
- PC-10 personal-use copier (Canon, 1982)
- City car with 1200 cc engine (Honda, 1981)
- PC 8000 personal computer (NEC, 1979)
- AE-1 single-lens reflex camera (Canon, 1976)
- Auto Boy, known as the Sure Shot in the United States, lens shutter camera, (Canon, 1979)

We selected each product on the basis of its impact, its visibility within the company as part of a "breakthrough" development process, the novelty of the product features at the time, the market success of the product, and the access to and availability of data on each product.

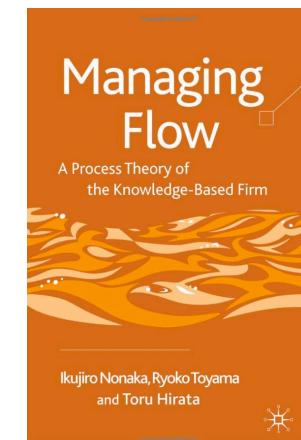
Ikujiro Nonaka: Grandfather of Scrum



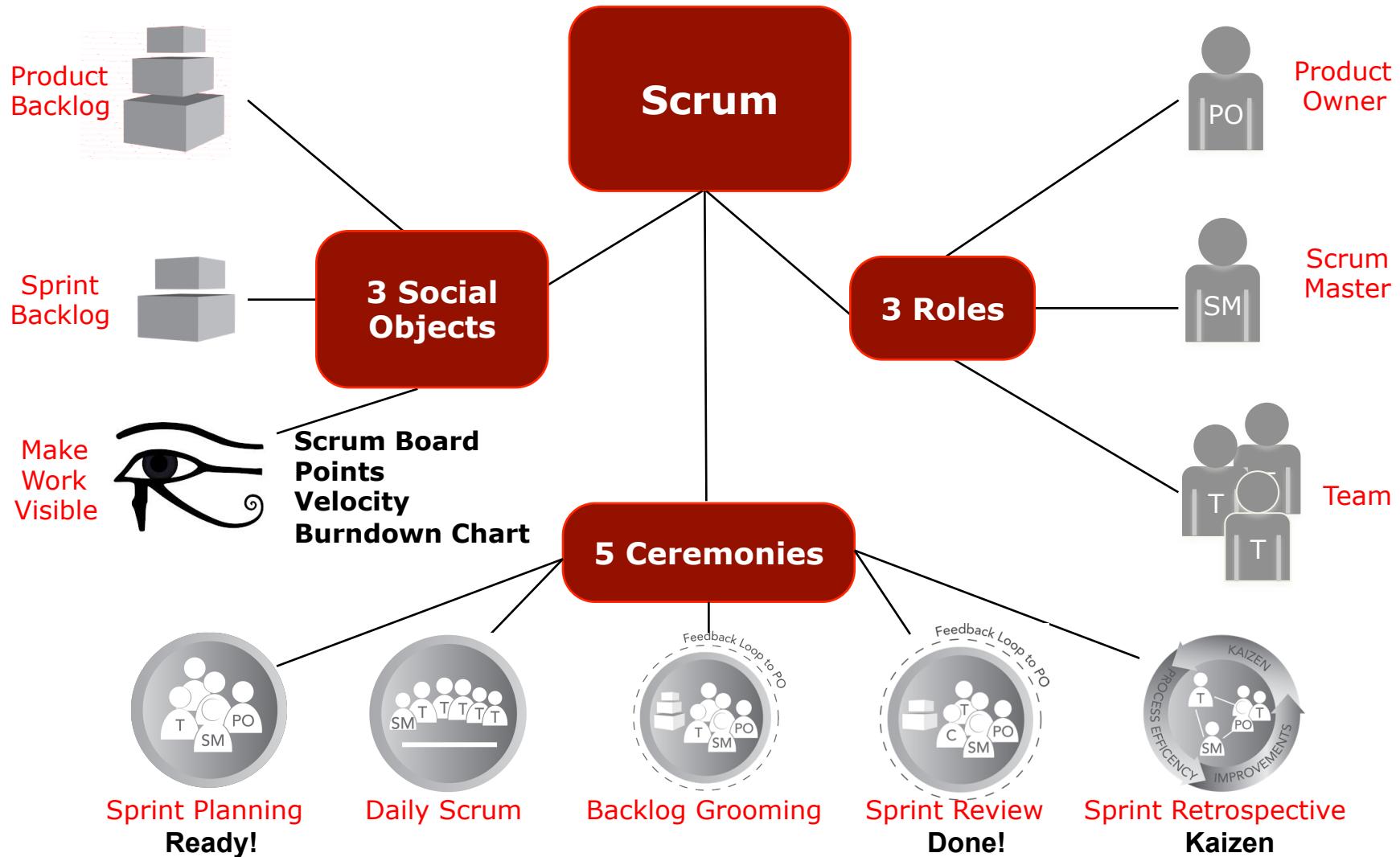
Sutherland, Kenji, Nonaka - Tokyo, Jan 2011

The Japanese view Scrum as:

- A way of doing
- A way of being
- A way of life



The Scrum Framework



A Scrum Team has Three Roles



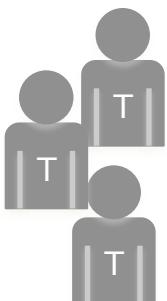
1. Product Owner:

- Define and prioritize the features of the Product Backlog
- Decides on release date and content
- Responsible for the profitability of the product (ROI)



2. ScrumMaster:

- Facilitates the Scrum process and Team self-organization
- Removes obstacles or impediments
- Shields the team from interference



3. Team:

- Cross-functional (incl. testing)
- Self-organizing/-managing group of individuals, autonomy regarding how to achieve its commitments
- Typically 3-9 people

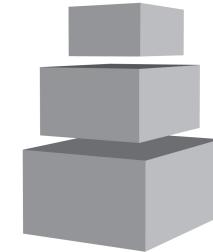
Scrum Team Characteristics

- Scrum formation
 - Autonomy
 - Transcendence
 - Mastery through Cross-fertilization
- Moving the Scrum downfield
 - Built-in instability
 - Self-organizing project teams
 - Overlapping development phases
 - “Multi-learning”
 - Subtle control
 - Organizational transfer of learning

I know this is something Jeff usually covers, but Consider eliminating – This content is covered in “Scrum Principles” slide

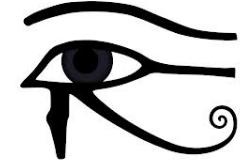
The Product Backlog

- Represents the **product vision** and centerpiece for discussion about project direction
 - There is only one product backlog
 - Composed of individual features in the finished product
- The Product Backlog Evolves over time
 - Everyone encouraged to add items
 - Feedback and learning from each Sprint incorporated back into Product Backlog
- The Product Owner orders the Backlog
 - Ordered to provide maximum return on investment
 - Team provides input on implementation
- Different Backlog Items are defined at different levels of specificity
 - Most important items at the top, will be done next, defined in greater detail
 - Items further down the backlog will be done later and don't need as much detail

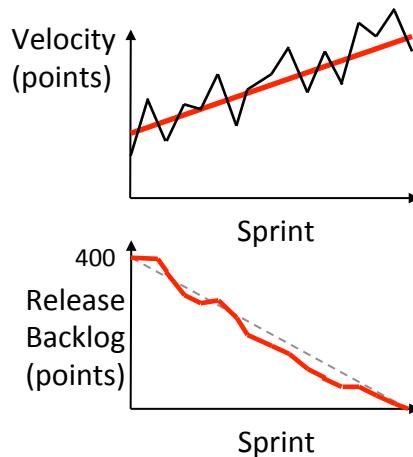
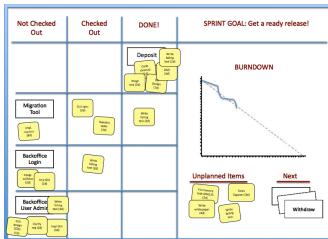


Product Backlog
(Features)

Make Work Visible



Making work visible enables entire team to coordinate easily, move faster, and produce better output



- **The Scrum Board**
 - Central “information radiator” that shows current status of all stories in the Sprint Backlog
- **Points**
 - Consistent measure of team output
 - Used to measure concretely whether team is getting faster over time
- **Velocity**
 - How many points team can produce in each Sprint
 - Used to plan work for coming Sprint and future delivery dates
- **Burndown Chart**
 - Answers the question “given our current progress, are we on track to meet expected delivery dates?”

The Sprint and iterative development

What is it?

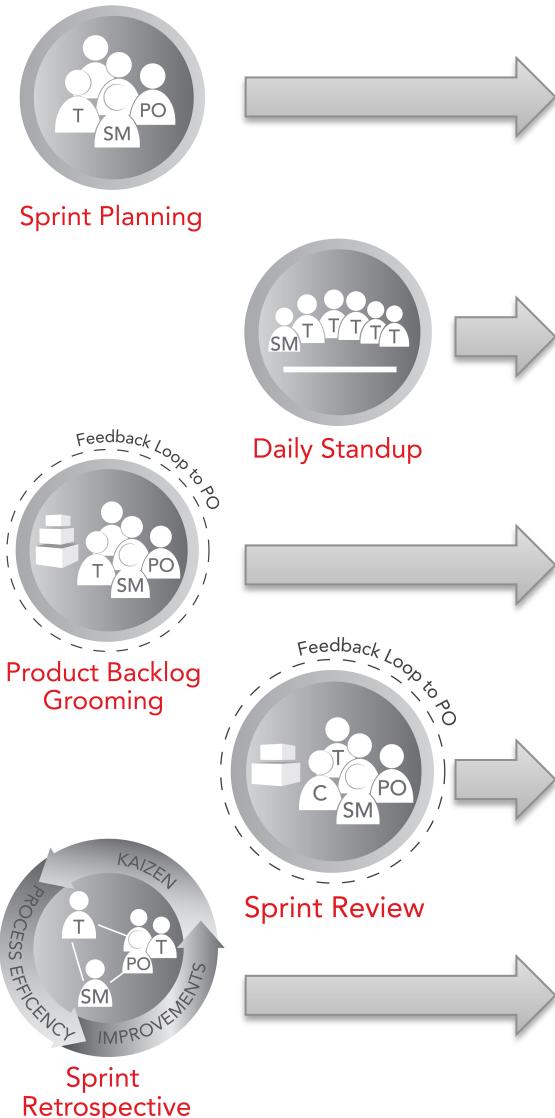
- A cycle of work
- A team-determined length of time in which the team commits to producing a meaningful increment of work
- Time-boxed and usually lasts 1-4 weeks



Why do it?

- A fixed anchor
- A tool that allows a team to calculate velocity
- A period of time in which the team can derive lessons for the future
- A fixed planning horizon

Scrum has Five Meetings



- **Sprint Planning**
 - Get the top items in the Product Backlog READY to pull into Sprint Backlog
 - Commit to work to be completed over next Sprint
- **Daily Scrum**
 - 15-minutes, 3 questions
 - Team self-organizes to increase transparency and improve performance
- **Backlog Grooming**
 - Refine upcoming backlog items to ensure they are READY when needed
- **Sprint Review**
 - Share what is DONE
 - Get feedback on what the team has done
 - Determine Team velocity
- **Sprint Retrospective**
 - Reflect on how the team has worked together
 - Identify the top process improvement for next sprint

Sprint Retrospective

The key to continuous improvement



Source: Henrik Kniberg

How Scrum Works

PO - Product Owner
SM - ScrumMaster
T - Team
C - Customer

Input from End-Users, Customers, Team and Other Stakeholders

PO
Product Owner

Product Backlog (Features)

Sprint Planning
Sprint Backlog (Stories)



Sprint Review



Sprint
1-4 Weeks

24 hrs



Daily Standup

Potentially Shippable Product Increment

Incremental Product Release

Why Scrum Works

- 1 Embracing Change
Change and uncertainty are not an inconvenience, but a source of opportunity. Organizations that manage uncertainty better possess a strategic competitive advantage
- 2 Self-Organization
Everyone, from the CEO to entry-level employees, is responsible for getting work done and empowered to decide how to do it. Any structure more than the minimum needed to work is WASTE
- 3 Business Value Focus
All activities are viewed through the lens of what creates value for the business. Every sprint, we prioritize the work that generates the most business value at that point in time
- 4 Continuous Improvement
Every day and in everything we do, we think about how to work better and then follow-through to remove the top impediment. Our iterative work approach allows us to improve faster
- 5 Non-interruption
We work best when we focus on one thing until it is DONE, all the way thru to a saleable product. Multi-tasking imposes switching costs on us, and is less efficient
- 6 Customer-Centrism
The customer is the core motivation for our work. We are eager to discover what they like, and our highest priority is to satisfy the customer early and often
- 7 Radical Transparency
Having everyone know where we stand in as close to real-time as possible allows us to make better and more responsive decisions

Scrum is easy to understand. Patterns can help avoid problems in implementation.

1. How do you get started? (**Stable Teams**)
2. How do you successfully pull backlog into a sprint?
(**Yesterday's Weather**)
3. How do you get stuff done? (**First Things First**)
4. How do you deal with interruptions during the sprint? (**Illigitimus non Interruptus**)
5. How do get defect free at the end of the sprint? (**Daily Clean Code**)
6. How do you ensure you continuously improve? (**Scrumming the Scrum**)
7. How do you get teams to have fun? (**Happiness metric**)
8. How do you get hyper-productive? (**Teams that Finish Early Accelerate Faster**)

More at scrumplop.org

Scrum helps us reach our greater Potential

“...We hold these truths to be self-evident, that **all men are created equal**, that they endowed by their creator with certain inalienable rights, that among these are **life, liberty, and the pursuit of happiness...**”

- United States Declaration of Independence

All People are **Created Equal**

In Scrum No One is The Boss

- Three roles do not represent a hierarchy
 - Product Owner
 - Scrum Master
 - Team
- Yet key roles are more accountable than in traditional project management

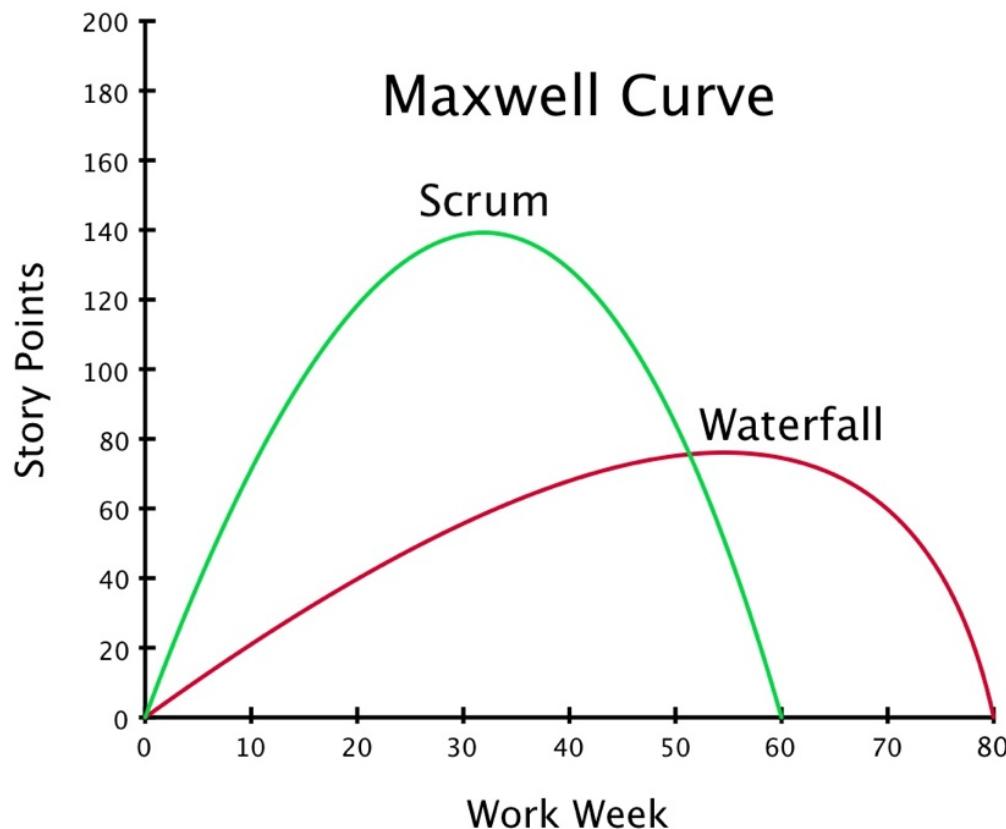


Hamel, Gary. First, Let's Fire All the Managers. Harvard Business Review, Dec 2011

Right to Life

Scrum Gives People a Life!

- No more overtime
- Goal: twice as much production with half the work



Openview Venture Partners

J. Sutherland and I. Altman, "[Take No Prisoners: How a Venture Capital Group Does Scrum](#)," in Agile 2009, Chicago, 2009.

Right to **Liberty**

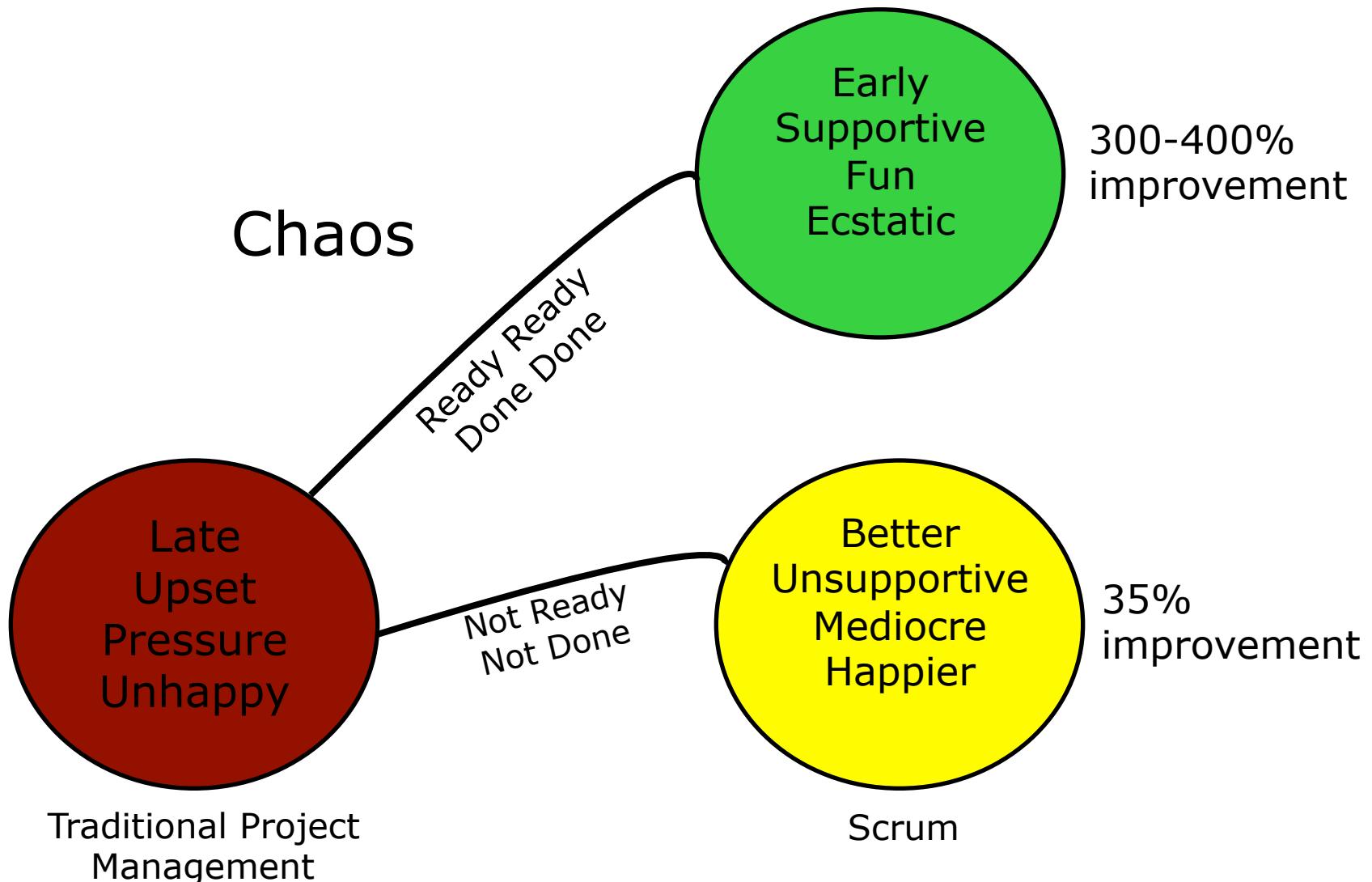
Scrum Gives People Freedom!

- Based on complex adaptive systems
- Self-organization is fundamental
- Teams are autonomous
 - They own the work
 - They choose the work
 - They decide how to do the work
- Teams “pull” work
- Managers do not “push” work



Right to the Pursuit of Happiness

Scrum Makes People Happy (ScrumBut not so much!)





Conclusions: Just Get Started!

- The most important thing about starting a Scrum project is just that, starting.
 - No need for weeks or months of planning and writing specifications and requirements, just enough decent backlog to start the first sprint
 - 80% of the current cost of an average project is detailed upfront planning...wastes valuable resources
- By eliminating detailed planning and embracing that you will learn along the way, you can do five projects for the cost of one
- Just remember to keep continuing focus on the Sprint Retrospective and process improvement...everything else you can self-discover. Continuous assessment of where you are is key!

Questions?



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