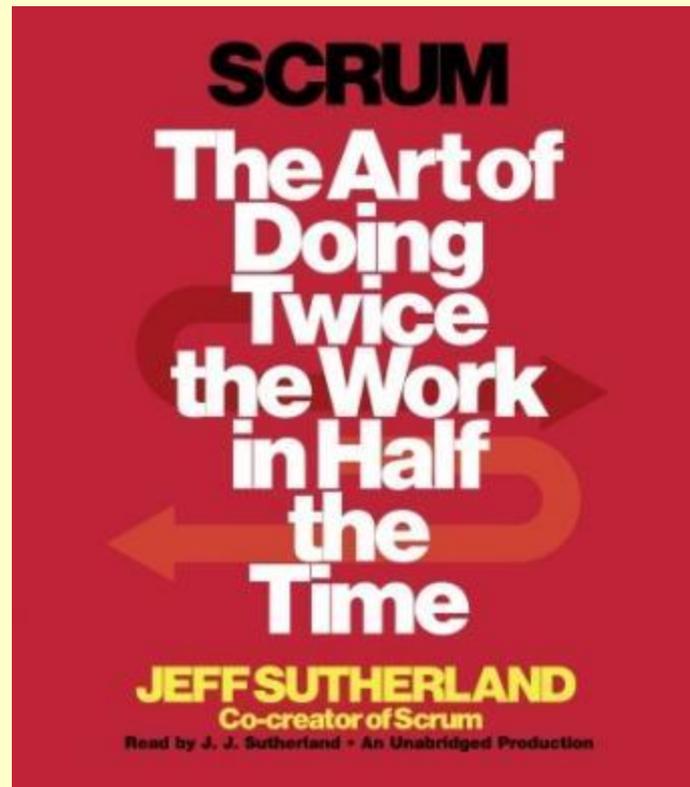


Scrum

The Art of Doing Twice the Work in Half the Time

Jeff Sutherland

Co-creator of Scrum



Virtual Case File

9/11

“The FBI lacked the ability to know what it knew: there was no effective mechanism for capturing or sharing its institutional knowledge.”

Al Qaeda activists entering the country in the weeks and months before 9/11

One office was suspicious of one person

Another wondered why so many suspicious foreigners were getting flight training.

Another had someone on a watch list but never told anyone.

No one in the Bureau ever put it all together

Virtual Case File

When senators started asking uncomfortable questions, the FBI responded with their plan to modernize... **VCF**

Cost: \$70 million on top of the \$100 million already budgeted.

Three years later the program was cancelled.

IBM and Microsoft

2005 FBI announced a new program: **SENTINEL**

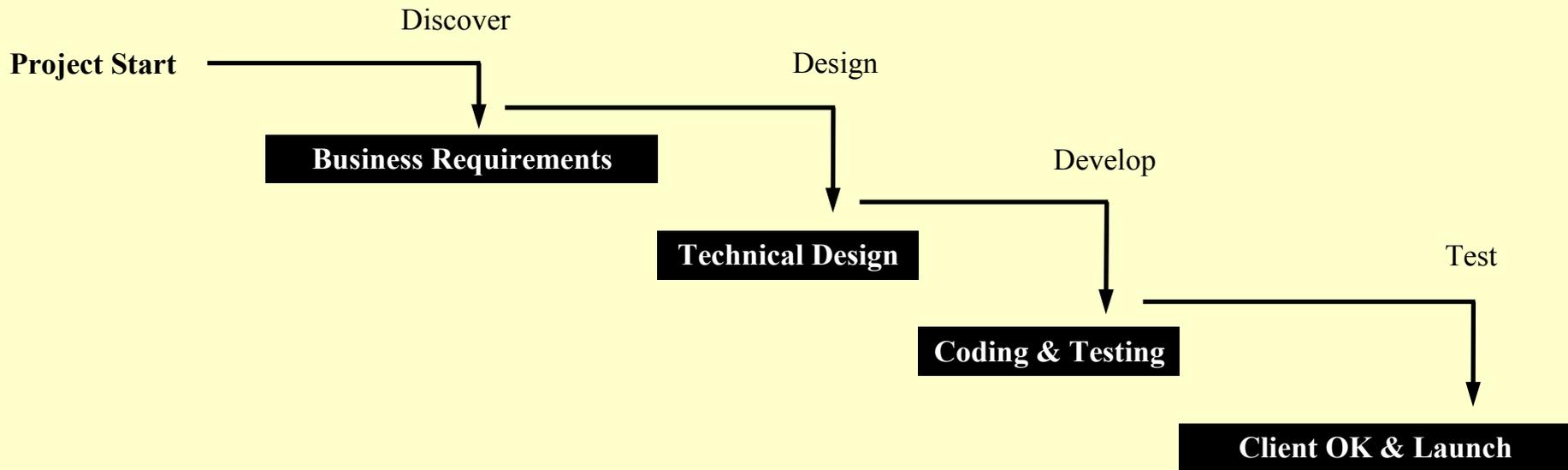
Lockheed Martin: \$451 million, to be operational in 2009

Every change required a contract negotiation

2010. \$405 million spent, “halfway done” and a year late

Estimated 6 to 8 years to completion and an additional \$350 million

Waterfall Gantt Chart



Months in the making...

Charts that showed everything that needed to be accomplished and the time it would take

Every single step in a project is laid out... every milestone, every delivery date

“... they are always, always *wrong*.”

“... once the beautifully elegant plan meets reality, it falls apart.”

“Fixing the FBI”

Restarted... with the development brought “in house”

Months spent unraveling contracts and cutting staff to under 50

Printed all the requirements documents (inches thick)

1,100 requirements documented

Reviewed and prioritized

80 / 20 rule – focused on the 20

Core team was smaller (12)

Go-live completion commitment

12 months with cost of \$20 million (amount remaining in the Sentinel budget)

Fall 2011

A simple idea...

Whenever you start a project...

Why not check in, see if what you are doing is heading in the right direction?

... if it's actually what people want

... and question whether there are any ways to improve how you're doing what you're doing, any ways of doing it better and faster

... and what might be keeping you from doing that.

Inspect and Adapt

Impediment removal...

Management's responsibility

“**Flow**”

Production should flow swiftly and calmly throughout the process... management task is to identify and remove impediments to that flow

Taichi Ohno's *The Toyota Production System*

“Senior management needs to understand in their bones that impediments are nearly criminal.”

Sentinel

Using the “Inspect and Adapt” cycle, the team took roughly three months to figure out how long completing the project would really take.

Sequential goals were set... each required to be completed in a fixed length of time.

The team used “two week cycles” ... Sprints

At the end of each Spring cycle, an increment of product was *finished*

Finished means there was something working that could be shown to anyone who cared... stakeholders (optimally, the people that would be using that increment of product)

Real-time feedback

Is the team headed in the right direction?

Demos. Driving toward a demonstrable product on a frequent basis

Is what they are planning to do next really what they should be doing... given the experience and work during the just completed cycle?

At the beginning of each new Spring cycle...

The team decides how much can be accomplished in the next two weeks

Work items are selected from the prioritized list of things that need to be done

The team decides how many of these items can get done in the next Sprint cycle

“SCRUM is not about developers”

Scrum is about customers and stakeholders.

For the **Sentinel** project...

“Showing the actual product was the most powerful part”

Jeff Johnson

Skepticism infected the FBI

The guys down in the basement are just going to screw it up again

“ ... just one more temporary system that will fail, and we'll have to go back to using paper.”

July of 2012 **Sentinel** was turned on... success!

The Sentinel team

Still working in the basement ... a room without windows

Panels removed from their cubicles so they can see each other

A room without windows

Poster-size copy of “Agile” principles on the wall...

Still making improvements and adding functionality to the system they built...

“Old joke in the Scrum community...”

Chicken and pig are walking down the road

The chicken says, “Hey, pig, I was thinking we should open up a restaurant.”

“What should we call it?” asks the pig.

“How about ‘Ham and Eggs’?”

“No thanks,” says the pig.

“I’d be committed, but you’d only be involved!”

The “pigs” are the ones committed to the project and responsible for the outcome.

The “chickens” are those informed of its progress, the stakeholders.

“Takeaways”

Planning is Useful. Blindly following plans is stupid.

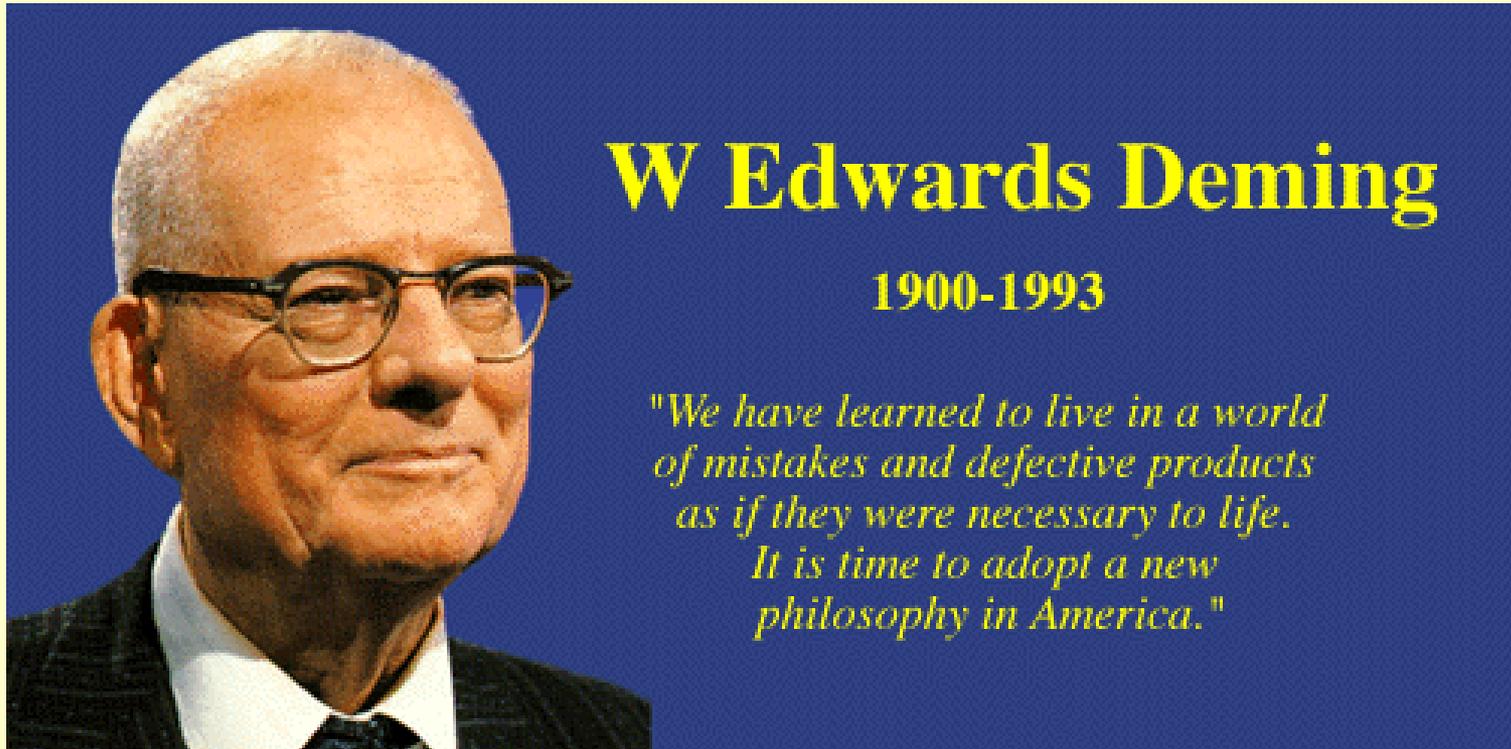
All the work needed on a large project laid out ... with detailed plans... when detailed plans meet reality, they fall apart.

Fail fast so you can fix early.

Corporate culture puts more weight on forms, procedures, and meetings than on visible value creation that can be inspected at short intervals by users.

Work that does not create real value is madness.

Inspect and Adapt



Inspect and Adapt

W. Edwards Deming

Worked for General Douglas MacArthur during the occupation after WW II.

His influence on Japanese manufacturing was dramatic

Trained engineers in “statistical process control”

Measure exactly what is being done

How well... and strive for “continuous improvement”

Constantly creating experiments to see if you can achieve improvement

PDCA cycle (**P**lan, **D**o, **C**heck, **A**ct)

“to act” means to change your way of working based on real results and real environmental input.

Waterfall Method insists that everything can be planned ahead of time, ... and wouldn't change over the course of a multiyear project.

Teams

“Teams are what get things done in the world of work.”

Businesses all too often focus solely on individuals
(performance bonuses, promotions, hiring...)

A big mistake

“You want the best people, and people are different, so focus on
getting the best performers...”

Yale study

Correlation between student time spent on a project and the grade?

None. Fastest students outpaced slowest by ratio of 10:1

Conclusion: Hire A students that earn the A in the shortest amount of time.

But...

IBM study

Looked at team performance data on 3,800 projects

If the best team could perform a task in one week...

assuming members were “A” students... expect a 10:1 ratio in comparing best and not-best teams.

What was the ratio?

It did not take the slow team 10 weeks to do what the best team could do in a week...

It took 2,000 weeks ... 2,000 :1

Characteristics of Best Teams

1. **Transcendent**

The team's sense of purpose is beyond the ordinary. The decision to not be average, but to be great, changes the way they view themselves, and what they're capable of.

2. **Autonomous**

The teams are self-organizing and self managing, they have the power to make their own decisions about how they do their jobs, and are empowered to make those decisions stick.

3. **Cross-Functional**

The teams have all the skills needed to complete the project... planning, design, production, sales, distribution.

Key Concepts in Scrum

Autonomy

Team members decide themselves how they're going to do the work.

It's management's responsibility to set the strategic goals, but it's the team's job to decide how to reach those goals.

Key Concepts in Scrum

Cross-Functional

Team member of the project that designed a revolutionary new camera for Canon:

“When all the team members are located in one large room, someone’s information becomes yours, without even trying.

You start thinking in terms of what’s best or second best for the group at large and not only where you stand.”

Key Concepts in Scrum

Teams have all the skill necessary to get things done.

“soup to nuts”

No separation of roles.

Team diversity ... skill set, thinking *and* experience

Teams that can get a whole project done.

Teams that are unselfish and autonomous

Teams decide how to do the work.

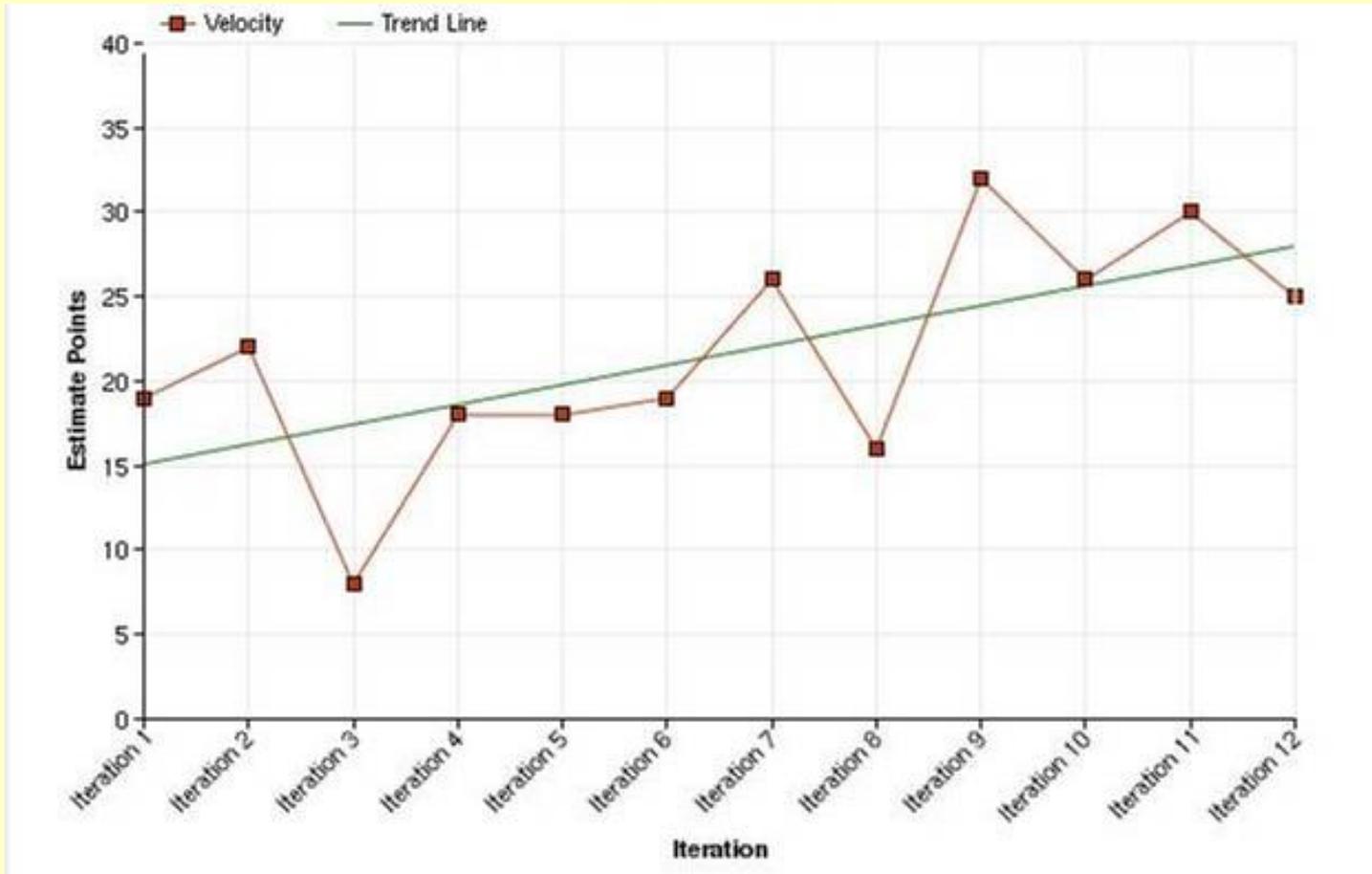
A “characteristics of Best Teams” test:

“When a specialist identifies with their specialty more than with the product they’re actually making...”

“Best” will not happen

Size does matter...

Data shows that team's velocity slows down with more than **9**.



Data

- A large team can take about five times the number of hours that a small team would.
- Study: 491 medium-size-projects at hundreds of different companies.
- Project requiring new products or features
- As teams grew larger than 8, they took dramatically more time.
- Teams of 3 to 7 required 25% of the effort of teams of 9 to 20

Scrum team...

Needed characteristics:

1. Intense focus on the goal
2. Radical collaboration
3. Hunger to crush anything in their way
4. Universal excitement when any team member broke through with the ball



Scrum Master

- Responsible for ensuring process is effective
- Someone between a team captain and a coach
- Facilitator

Make sure there is transparency

Help the team discover what is getting in the way

Guide the team towards “continual improvement”

Continually asking: “How can we do what we do better.”

“What can we change about how we work?”

“What is our biggest sticking point?”

“Fundamental Attribution Error”

A test.

“When you are blaming someone, you are finding fault with them personally.”

“When you are being blamed, you are more aware of the situational factors that led to the problem and why you did what you did.”

“We all see ourselves as responding to a situation, while we see others as motivated by their character.”

Deming’s point:

“It’s the system that surround us, rather than any intrinsic quality, that accounts for the vast majority of our behavior.”

The “lesson”

“... we are all creatures of the system we find ourselves embedded in.

Scrum “... instead of seeking someone to blame, try to examine the system that produced the failure and fix it.”

Blame is Stupid

Don't look for bad people; look for bad systems – ones that incentivize bad behavior and reward poor performance.

The “Sprint”

MIT Media Lab projects... policy

Every 3 weeks each team had to demo to their colleagues what it was working on.

An open demo... anyone could come

If the demo was not both working and “cool”, the directors killed the project.

Sprints

Work for a short period of time and stop and see where you are.

Backlog ... Doing ... Done

Sticky notes (or whiteboard)...

Board is divided into three columns

- Backlog (work that needs to be done)
- Doing (team member undertakes one of the tasks, moving it from Backlog to Doing)
- Done (when it is finished)

Criteria: when it can be used by the customer

Daily Stand-up

Scrum master is in charge

Asks each member:

1. What did you do yesterday to help the team finish the Sprint?
2. What will you do today to help the team finish the Spring?
3. What obstacles are getting in the team's way?

That's it!

15 minutes max!

No assigning of tasks from above – the team is autonomous

1990s Borland

Quattro Pro for Windows

Team met every day to discuss ...

One hour

Self-organized around challenges

SCRUM Rules:

1. Meeting held at the same time every day, everyone had to be there
2. Meeting could not last more than fifteen minutes
3. Everyone had to actively participate

“Passivity is not only lazy, it actively hurts the rest of the team’s performance.”

Sutherland's speech to teams large and small...

“Do you really want to suck forever?

Is that what your motivation is in life?

Because it's your choice, you know – you don't have to
be that way.”

A team has to demand greatness from itself!

Waste is a Crime

Three different types of waste:

1. Waste through unreasonableness
2. Waste through inconsistency
3. Waste through outcomes

Deming's **PDCA** cycle

Plan means avoid unreasonableness

Do means avoid inconsistency

Check means avoid inconsistency

Act means the will, motivation and determination to do all that.

One thing at a time

Multitasking... the research

Those who drive while talking on cell phones – even hands free – get into more accidents than people who don't

Quote:

“... even when participants direct their gaze at objects in the driving environment, they often fail to “see” them when they are talking on a cell phone because attention has been directed away from the external environment and toward an internal, cognitive context associated with the phone conversation.”

“... it appears that the people who are most likely to multi-task and most apt to use a cell phone while driving are those with the most inflated views of their abilities.”

Multitasking

Researchers conclusions:

“People don’t multitask because they are good at it. They have trouble inhibiting the impulse to do another activity.”

“People who multitask the most just can’t focus. They can’t help themselves.”

Sutherland

We all do it. It’s hard not to.

The key thing to remember is that it’s stupid.

Loss to context switching

Quality Software Management, Gerald Weinberg

Number of Simultaneous Projects	Percent of Time Available per Project	Loss to Context Switching
1	100%	0%
2	40%	20%
3	20%	40%
4	10%	60%
5	5%	75%

Half Done Isn't Done at All

Work in Progress

Expended effort, but have not created any value.

Doing half of something is, essentially, doing nothing.

SCRUM... rhythm to the work

Each iteration ends with stuff done

Done means... complete.

A tangible deliverable, ready to be shown to a customer

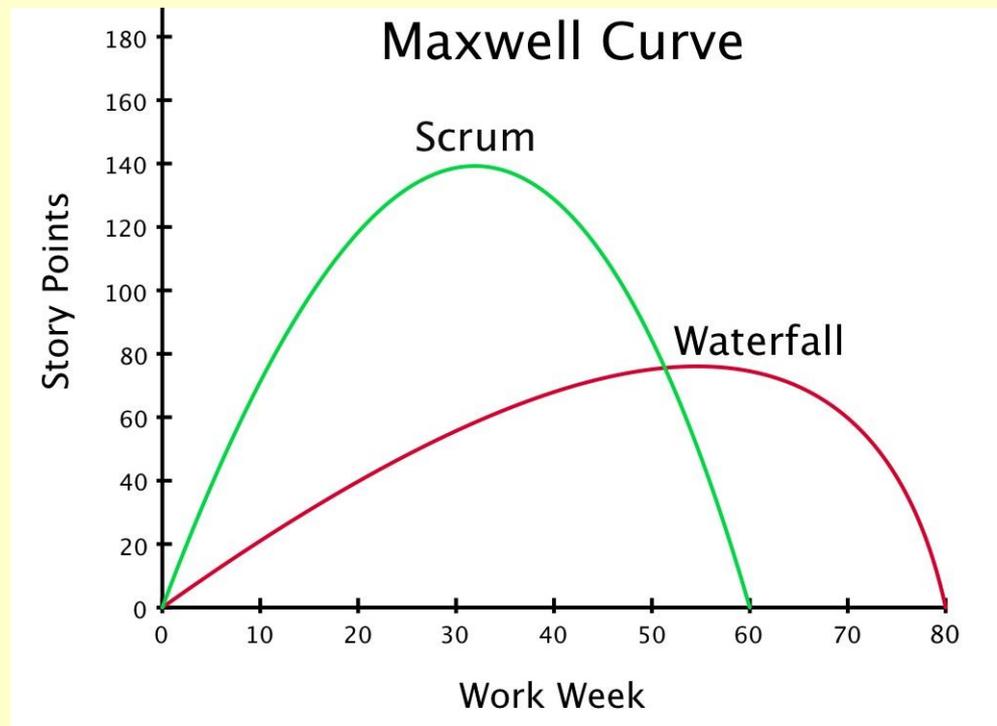
Done means fully tested ... no hand-off to others with their own plans.

Work fewer hours... slacking?

Scott Maxwell (founder of *OpenView* Venture Partners)

Shifted to SCRUM... and looked at comparisons:

- Working more hours produced stopped producing more output
- Peak productivity falls at a little bit less than 40 hours a week.



What about ... waste?

Unreasonableness.. working more hours

Give teams challenging goals, but not requiring them to strive for absurd, impossible goals.

Unreasonableness:

1. Expectations... requiring “heroic efforts” to meet deadlines kills continuous improvement.
2. “Overburdening” the team... the behavior documented in Dilbert cartoons.
3. Behavior... “... waste that is generated when a company has an know-it-all asshole in its midst.”

The goal...

Effortless “flow”

No wasted movement... nothing extraneous
... no longer an effort.

Waste is anything that distracts you from that.
... “Emotional waste” is a distraction

I'm not convinced we've wasted
enough time on this.



Plan Reality, Not Fantasy



(case study)

Kenny Klepper, President (Fortune 500 ~\$38 billion in revenue)

Prescriptions by mail system proposal

Five specialized pharmacies spread across the country

(cardiac, diabetes, asthma, etc.)

4,000 pharmacists processing prescriptions, robots pulling pills,
other robots packaging and mailing

On sight pharmacists have access to patient's condition... would
let doctors know of side effects for various treatments

Customers save money on prescription and overall medical costs

All systems to "talk" to one another

Wall Street was "excited"

Promised system to be in place July 7, 2007

Unreasonable?

6 months to determine they could not deliver on time

Why 6 months?

They were smart, had the right teams in place and had the right technology

\They had the plan... charts, steps

The mistake... planning for everything in advance

How to get from point A to point B... and how long

Wishful thinking.

Company in deadlock

Sutherland and team were enlisted

The first day...

Met with **7 different groups**, each “owned” a piece

None interested in trying something new

They were told, “... you can do things the way you’re doing them, stick with the status quo, and you’ll deliver late...” Not

All gathered in a conference room... key players doing the work

Told to print all documents describing what was needed... physical paper.

Stack... two feet tall

Questioned,

“How many have actually read all of this?” Silence

“... you signed off on this. There’s your signature. Didn’t you actually read it?”

... nobody reads 1,000's of pages

“They’ve set up a system that forces them to endorse a fantasy.”

Went through the documents... cut out everything that needs to be done to complete the project.

Stuck the pieces to the wall

Couple of hours of work... “hundreds and hundreds of notes lining three walls”.

On the wall, manageable tasks

Specified what would be created & how to know when the task was done

For the task to be done... the goals were identified that had to be met

Every team had to meet this level of quality before moving on to the next task

Still on the table... 50% of the two foot tower of docs
Duplication, boilerplate, templates ... waste

Next... they estimated how much work each sticky note represents (not how long)

What to do first?

They prioritized the work

What would bring the most value to the project?

At the end...

6 different rows of sticky notes

Each with a different color representing a different team

The lists stretched the length of three sides of the room

Sutherland, “Now I knew we could at least begin.”

Sutherland... and iterations of work

To begin you need enough detail in your plan to deliver the next increment of value

Estimate the remainder of the project in large chunks

SCRUM

“At the end of each iteration you have something of value that you can see, touch and show to customers.”

You can ask them:

“Is this what you want?”

“Does this solve at least a piece of your problem?”

“Are we going in the right direction?”

If the answer is no... change your plan.

Estimating work

By relative sizing of tasks

Comparing one task to another...

(methodology coming in Ch. 7 and 8, Highsmith text)

First, consider who the task being done for

“**Whose lens** of the world is the one you need to gaze through when you are building anything, making that decision or delivering this piece?”

“**Who** is this task being done for?”

“**What** is to be done in the first place.”

Why does this character want this thing? How is it going to serve and delight this particular customer?

Takeaways

The Map is Not the Terrain

Don't fall in love with your plan. It's almost certainly wrong.

Only plan what you need to do.

Don't project everything out years in advance. Plan enough to keep teams busy

Work is a story

Think first about who will be getting value from something, then why they need it.