'06

# JavaPolis

11 - 15 DECEMBER ■ ANTWERP ■ BELGIUM

Adobe

JBoss
a division of Red Hat

ORACLE

Sun
microsystems
*The Network is the Computer*

# Scrum

## Getting Started without Getting Burned

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# Overall Presentation Goal

Learn about Scrum and how to get started with it avoiding some common mistakes.

# My Qualifications

- Software Developer
- Agile practitioner since 2000
- Certified Scrum Master
- Member of the Agile Alliance
- Chair of London XPDay6 conference
- Reviewer for Agile2006 and Agile2007 conferences experience reports

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# Agenda

- What's in it for you?
- The Agile Manifesto and Agile Development
- Process activities and tools
- Why Scrum works
- Getting started
- Problems and solutions
- Questions

# What's In It For You? 1/3

If you are a Project Manager…

- Control and visibility
  - ➲ Progress (or lack of) is easily assessed
- Flexibility
  - ➲ Easily adapted to the needs of the project
- Scalability
  - ➲ Used in projects with up to 800 developers

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# What's In It For You? 2/3

If you are a Customer…

- Control and visibility
  - Progress (or lack of) is easily assessed
- Early return on investment
- Control
  - You get what you **really** want
  - You can change your mind

# What's In It For You? 3/3

If you are a Developer…

- Involvement
  - You get a bigger stake in the project
- Learning
  - The team is cross-functional
- Achievement
- Fun

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# Despite its simplicity, Scrum is not easy to implement

# Agile Manifesto

- **Manifesto for Agile Software Development**
- We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:
- **Individuals and interactions** over processes and tools
  **Working software** over comprehensive documentation
  **Customer collaboration** over contract negotiation
  **Responding to change** over following a plan
- **That is, while there is value in the items on the right, we value the items on the left more.**

# What Is Agile Development? 1/2

- The "people factor"
  - Accountability
  - Responsibility
  - Involvement
  - Self-motivation
  - Communication

# What Is Agile Development? 2/2

- Waste avoidance
- Feedback
- Clear goals
- Discipline
- Flexibility
- Adaptation
- Quality

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# Scrum: The Beginnings...

- "The new product development game" in Harvard business review, 1986

- *Wicked Problems, Righteous Solutions* by DeGrace and Stahl, 1990
  - ➲ First mention of Scrum in a software context

- Jeff Sutherland and Ken Schwaber at Easel Corp in 1993

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# Scrum Fundamentals 1/5

Methodology

- Iterative

    - The product is developed in a sequence of self contained mini-projects called iterations (**sprints)**

- Incremental

    - The product functionality grows incrementally at each iteration

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# Scrum Fundamentals 2/5

- No specific engineering practices prescribed
  - Up to the development team to decide
- Time-boxing

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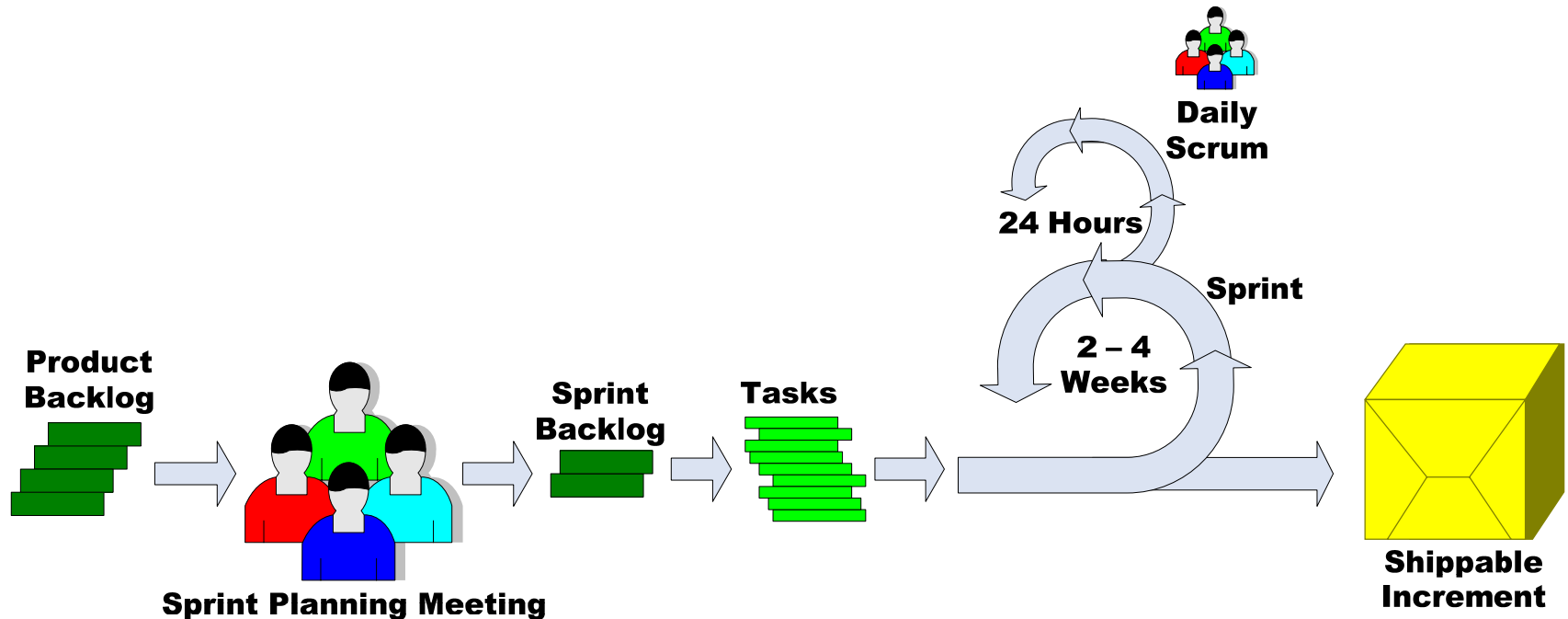# Scrum Fundamentals 3/5

## Release Cycle

| | | | | | | |
|---|---|---|---|---|---|---|
| **Sprint 1** | **Sprint 2** | ... | **Sprint n**<br>**Release 1** | ... | **Sprint m**<br>**Release 2** | ... |

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# Scrum Fundamentals 4/5

Only Three Roles

- Product Owner
- Team Member
- Scrum Master

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# Scrum Fundamentals 5/5

## Sprint Overview

# Product Owner

- Decides the functionality of the product
- Responsible for prioritization
- Represents the interests of all stakeholders
  - Customers
  - Users
  - Etc.

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# Scrum Team

- Cross-functional
- Self-organizing
- No titles
- Members should be full-time
  - Sometimes not possible (e.g., DBAs, System Administrators)
- Ideally 7 ± 2 members

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# Scrum Master

- Represents management to the project
- Responsible for enacting Scrum values and practices
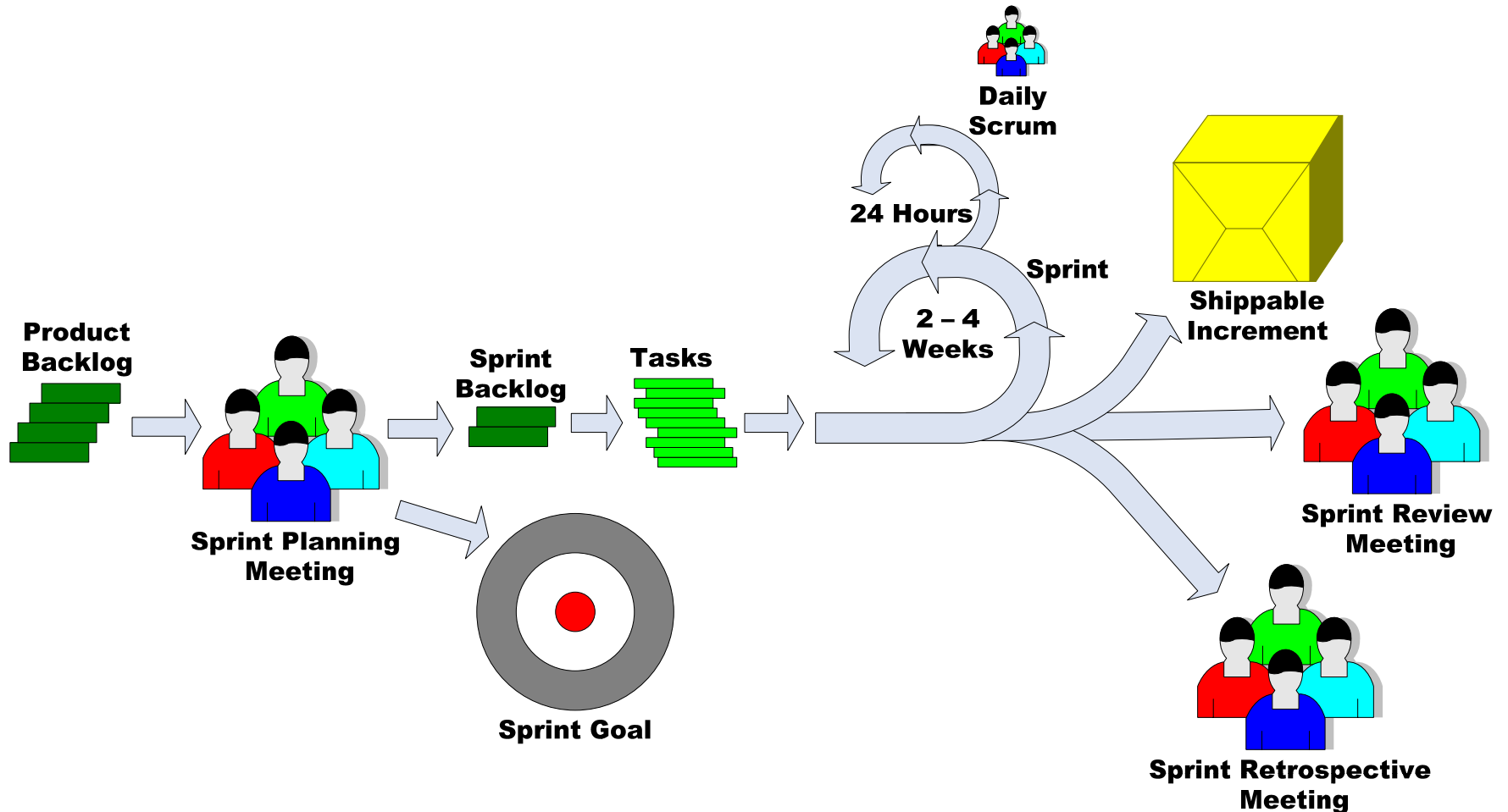- Main job is to remove impediments

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# Multiple Roles Warning

- Avoid one individual covering more than one role at the same time
  - Each role comes with a different set of responsibilities
- This separation is not always possible
  - Dealing with conflicts is left to the common sense of the people involved

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# Process Activities and Tools



Product Backlog

Sprint Planning Meeting

Sprint Backlog

Sprint Goal

Tasks

24 Hours

Daily Scrum

2 – 4 Weeks

Sprint

Shippable Increment

Sprint Review Meeting

Sprint Retrospective Meeting

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# Sprint 1/2

- It's just another word for iteration
- Lasts around 30 days (± 2 weeks)
  - It's better to keep the duration constant
- Plan Sprint durations around how long you can commit to keeping change out of the sprint
- Changes to the Sprint Backlog allowed only in exceptional situations…

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# Sprint 2/2

- Abnormal termination
  - ➲ If the goal doesn't make any sense anymore
  - ➲ If the project is not viable anymore
  - ➲ Called by the Product Owner or the Scrum Master

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# Product Backlog 1/2

- Prioritized list of all envisioned features of the product
- Maintained by Product Owner
- Anybody can contribute to it
  - ➲ Only the Product Owner can decide priorities
- May change over time

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# Product Backlog 2/2

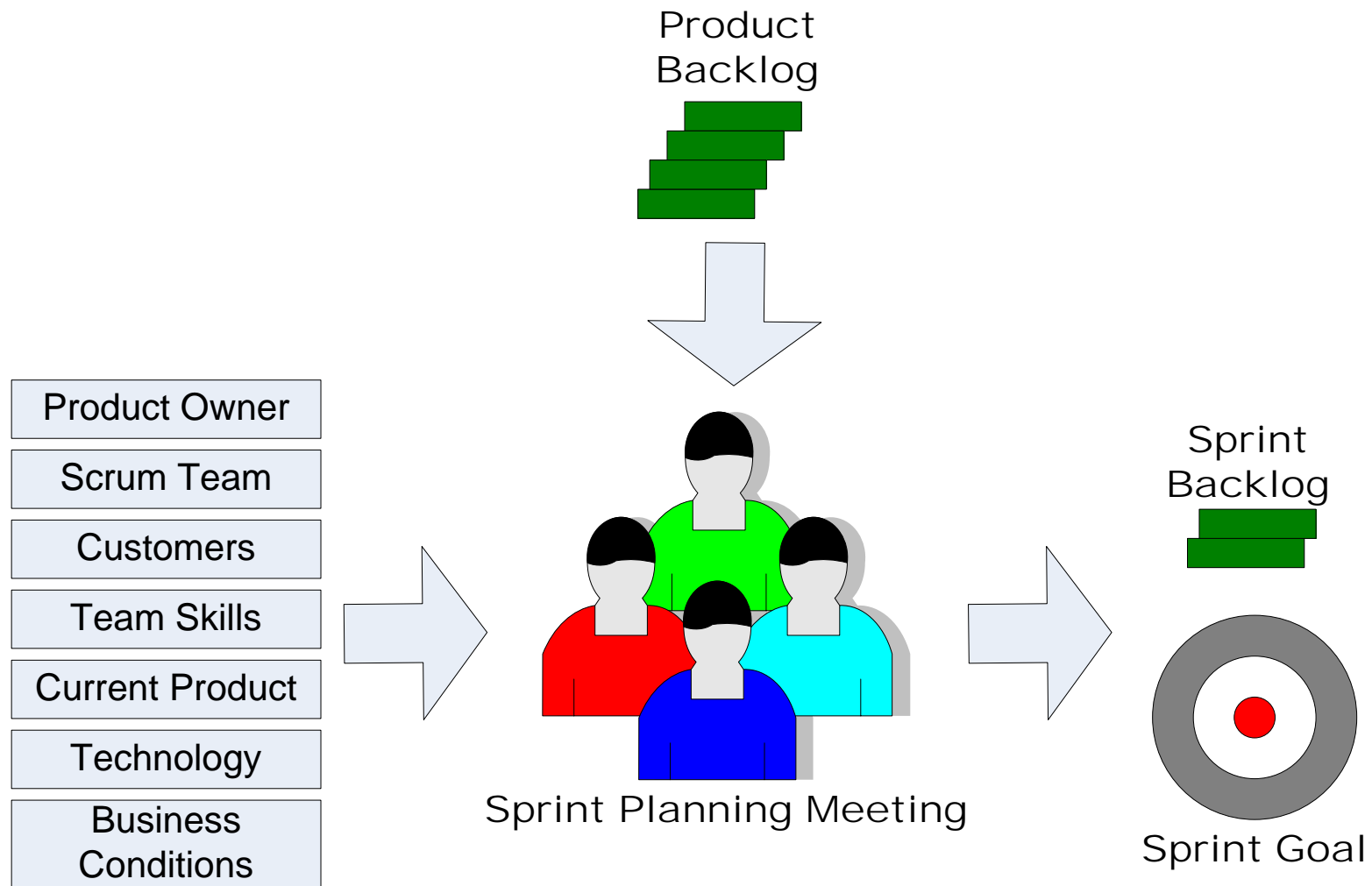| | Item # | Description | Est | By |
|---|---|---|---|---|
| **Very High** | | | | |
| | 1 | **Finish database versioning** | 16 | KH |
| | 2 | **Get rid of unneeded shared Java in database** | 8 | KH |
| | - | **Add licensing** | - | - |
| | 3 | Concurrent user licensing | 16 | TG |
| | 4 | Demo / Eval licensing | 16 | TG |
| | | **Analysis Manager** | | |
| | 5 | File formats we support are out of date | 160 | TG |
| | 6 | Round-trip Analyses | 250 | MC |
| **High** | | | | |
| | - | **Enforce unique names** | - | - |
| | 7 | In main application | 24 | KH |
| | 8 | In import | 24 | AM |
| | - | **Admin Program** | - | - |
| | 9 | Delete users | 4 | JM |
| | - | **Analysis Manager** | - | - |
| | 10 | When items are removed from an analysis, they should show up again in the pick list in lower 1/2 of the analysis tab | 8 | TG |
| | - | **Query** | - | - |
| | 11 | Support for wildcards when searching | 16 | T&A |
| | 12 | Sorting of number attributes to handle negative numbers | 16 | T&A |
| | 13 | Horizontal scrolling | 12 | T&A |
| | - | **Population Genetics** | - | - |
| | 14 | Frequency Manager | 400 | T&M |
| | 15 | Query Tool | 400 | T&M |
| | 16 | Additional Editors (which ones) | 240 | T&M |
| | 17 | Study Variable Manager | 240 | T&M |
| | 18 | Haplotypes | 320 | T&M |
| | 19 | **Add icons for v1.1 or 2.0** | - | - |
| | - | **Pedigree Manager** | - | - |
| | 20 | Validate Derived kindred | 4 | KH |
| **Medium** | | | | |
| | - | **Explorer** | - | - |
| | 21 | Launch tab synchronization (only show queries/analyses for logged in users) | 8 | T&A |
| | 22 | Delete settings (?) | 4 | T&A |

Source: Mike Cohn

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# Sprint Planning Meeting 1/4

- The next Sprint is planned
- Split in two parts
  - First one attended by the Product Owner, the team and the Scrum Master
  - Second one attended by the team and the Scrum Master
- Each part time-boxed to 4 hours

# Sprint Planning Meeting 2/4



**Product Backlog**

Product Owner
Scrum Team
Customers
Team Skills
Current Product
Technology
Business Conditions

**Sprint Planning Meeting**

**Sprint Backlog**

**Sprint Goal**

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# Sprint Planning Meeting 3/4

## First Part

- The Product Owner creates the Sprint Backlog
  - As many high priority items as the team can commit to deliver
  - Negotiation with the Team due to dependencies between items
- The Product Owner and the team define the Sprint Goal

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# Sprint Planning Meeting 4/4

## Second Part

- The team creates the list of tasks
  - Duration between 4 and 16 hours
  - Not exhaustive
- Product Owner is available to answer questions

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# Sprint Backlog 1/3

- Product backlog subset developed during the current iteration

- Managed by the team
    - Nobody else can add or remove items when the Sprint is started

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# Sprint Backlog 2/3

- Changes
  - Team adds new tasks whenever necessary
  - Team can remove unnecessary tasks
  - It can only be updated by the team
- Estimates are updated whenever there's new information available

# Sprint Backlog 3/3

| Who | Description | Days Left in Sprint: 15 7/22/2002 | 13 7/24/2002 | 10 7/26/2002 | 8 7/31/2002 | |
|---|---|---|---|---|---|---|
| | **Total Estimated Hours:** | 554 | 458 | 362 | 270 | 0 |
| - | **User's Guide** | - | - | - | - | - |
| SM | Start on Study Variable chapter first draft | 16 | 16 | 16 | 16 | |
| SM | Import chapter first draft | 40 | 24 | 6 | 6 | |
| SM | Export chapter first draft | 24 | 24 | 24 | 6 | |
| | **Misc. Small Bugs** | | | | | |
| JM | Fix connection leak | 40 | | | | |
| JM | Delete queries | 8 | 8 | | | |
| JM | Delete analysis | 8 | 8 | | | |
| TG | Fix tear-off messaging bug | 8 | 8 | | | |
| JM | View pedigree for kindred column in a result set | 2 | 2 | 2 | 2 | |
| AM | Derived kindred validation | 8 | | | | |
| | **Environment** | | | | | |
| TG | Install CVS | 16 | 16 | | | |
| TBD | Move code into CVS | 40 | 40 | 40 | 40 | |
| TBD | Move to JDK 1.4 | 8 | 8 | 8 | 8 | |
| | **Database** | | | | | |
| KH | Killing Oracle sessions | 8 | 8 | 8 | 8 | |
| KH | Finish 2.206 database patch | 8 | 2 | | | |
| KH | Make a 2.207 database patch | 8 | 8 | 8 | 8 | |
| KH | Figure out why 461 indexes are created | 4 | | | | |

Source: Mike Cohn

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# Sprint Goal 1/4

- business delivered regardless of functionality implemented
- Focuses the team
- Measurable

# Sprint Goal 2/4

Examples

- **Some good goals**
  - "Handle two times more connections than version 2.0"
  - "Give the user the possibility of searching the book list"
- **And a bad one**
  - "Make the application faster"

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# Sprint Goal 3/4

## Examples: Going Slower Than Planned

- When removing items from the Sprint Backlog keep the same goal
  - "Give the user the possibility of searching the book list"
  - Remove "bells and whistles", e.g. the capability of searching by author name

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# Sprint Goal 4/4

## Examples: Going Faster Than Planned

- When adding items to the Sprint Backlog keep the same goal
  - "Give the user the possibility of searching the book list"
  - Add the capability of searching by author name

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# Daily Scrum 1/3

- Mandatory for Team Members
- Every day at same time same place
- Three questions
  - What did you do yesterday?
  - What will you do today?
  - What obstacles are in your way?
- 15 minutes maximum

# Daily Scrum 2/3

- For synchronization purposes only (not for problems solving)
- Any issues are dealt with after the meeting is finished

# Daily Scrum 3/3

- Attendance open to everybody interested
- Chickens and pigs rule
  - Only the Scrum Team members (pigs) can talk
  - Everybody else (chickens) must stay silent

# Shippable Increment 1/2

- The implemented backlog items are fully functional
  - Either 0% or 100% done
- The software is "production ready"
  - No hacks
  - Fully tested
  - Etc.

# Shippable Increment 2/2

- Includes…
  - Developed software
  - Tests
  - Necessary documentation
  - Installation scripts
  - Etc.

# Sprint Review Meeting

- The team demonstrates its achievements
  - Running software
  - No PowerPoint presentations
- The Product Owner decides if the Sprint Goal has been met
- Time-boxed to four hours

# Sprint Retrospective Meeting

- The team and the Scrum Master talk about the last Sprint
  - What went well
  - What can be improved
- The Product Owner does **not** attend this meeting.
- Time-boxed to three hours

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# Tracking Progress 1/3: Burndown Chart
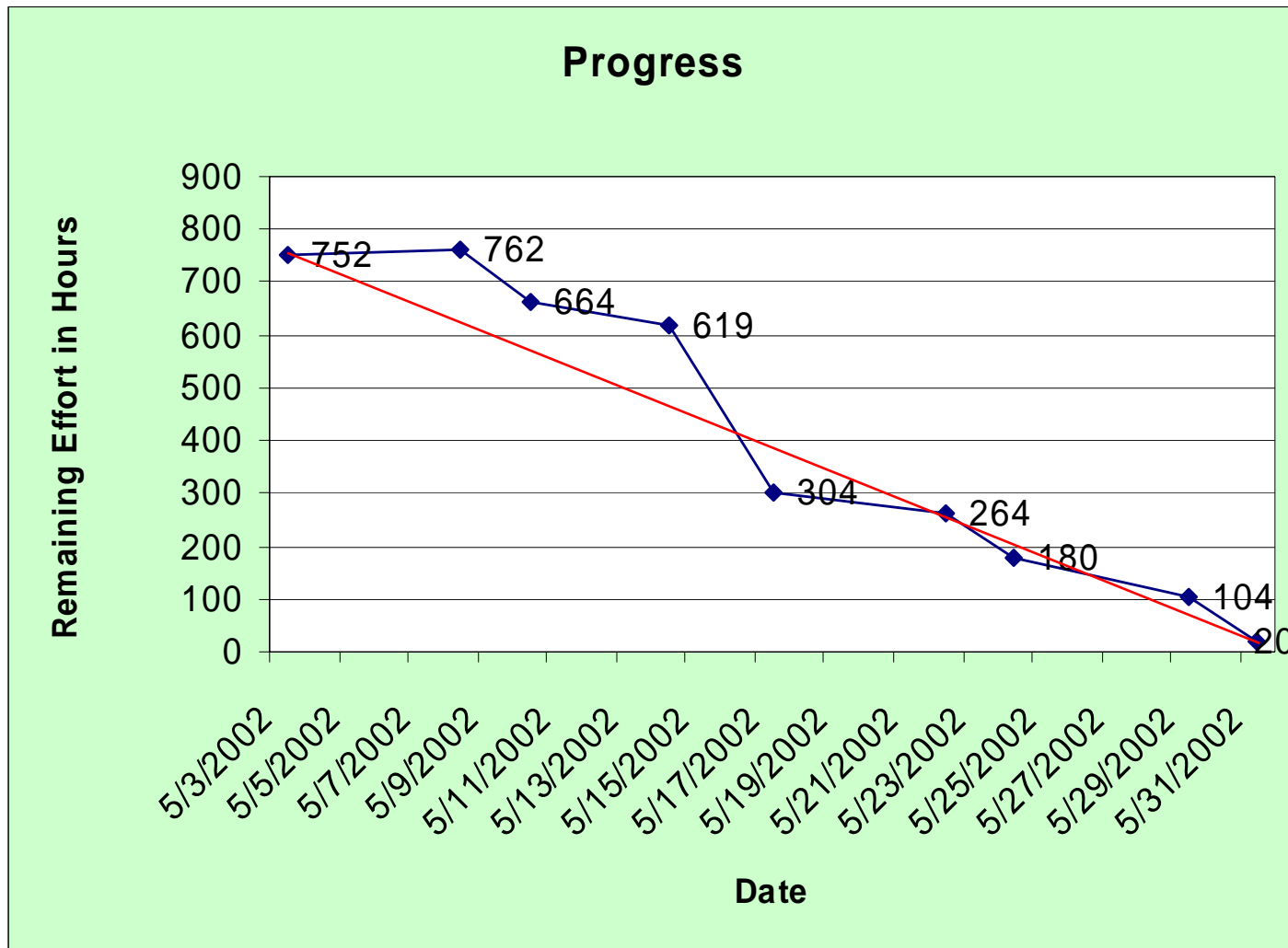
**Progress**



Source: Mike Cohn

# Tracking Progress 2/3: Burndown Chart

- Updated at the end of each work day by the team members
  - Put the time remaining for each task
  - Add new tasks with estimates
  - Remove unnecessary tasks

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# Tracking Progress 3/3

- There are no mechanisms in Scrum for tracking the amount of time that a team works

- Teams are measured by meeting goals, not by how many hours they take to meet the goal
  - Scrum is results oriented, not effort driven

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# Scrum: Summary



Product Backlog

Sprint Planning Meeting

Sprint Backlog

Tasks

Sprint Goal

Daily Scrum

24 Hours

2 – 4 Weeks

Sprint

Shippable Increment

Sprint Review Meeting

Sprint Retrospective Meeting

# Questions so far?

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# Why Scrum Works

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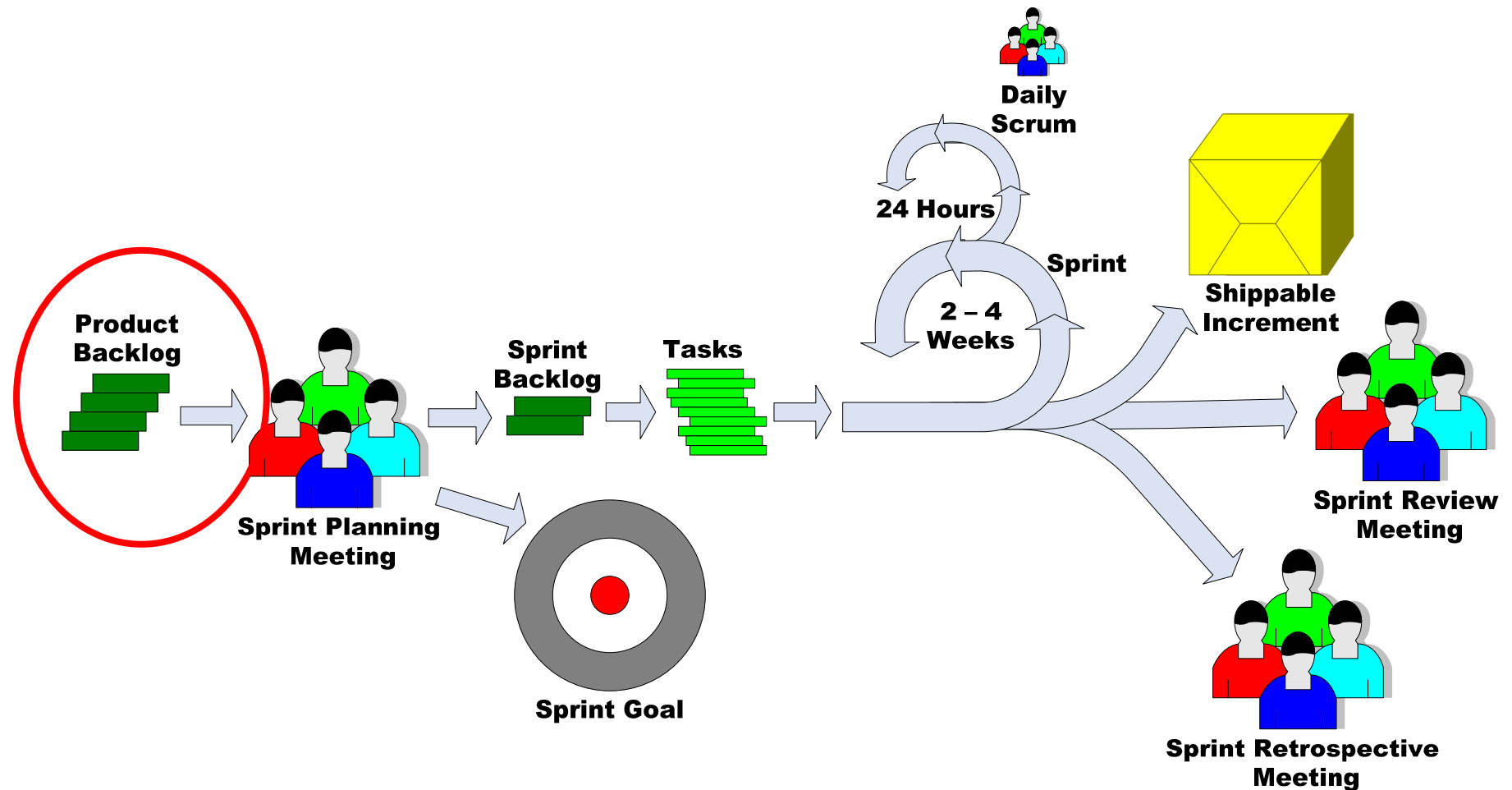
# Why Scrum Works 1/5: Project Complexity



Far from certainty

Anarchy

Complicated

Complex

Requirements

Simple

Complicated

Close to certainty

Technology

Far from certainty
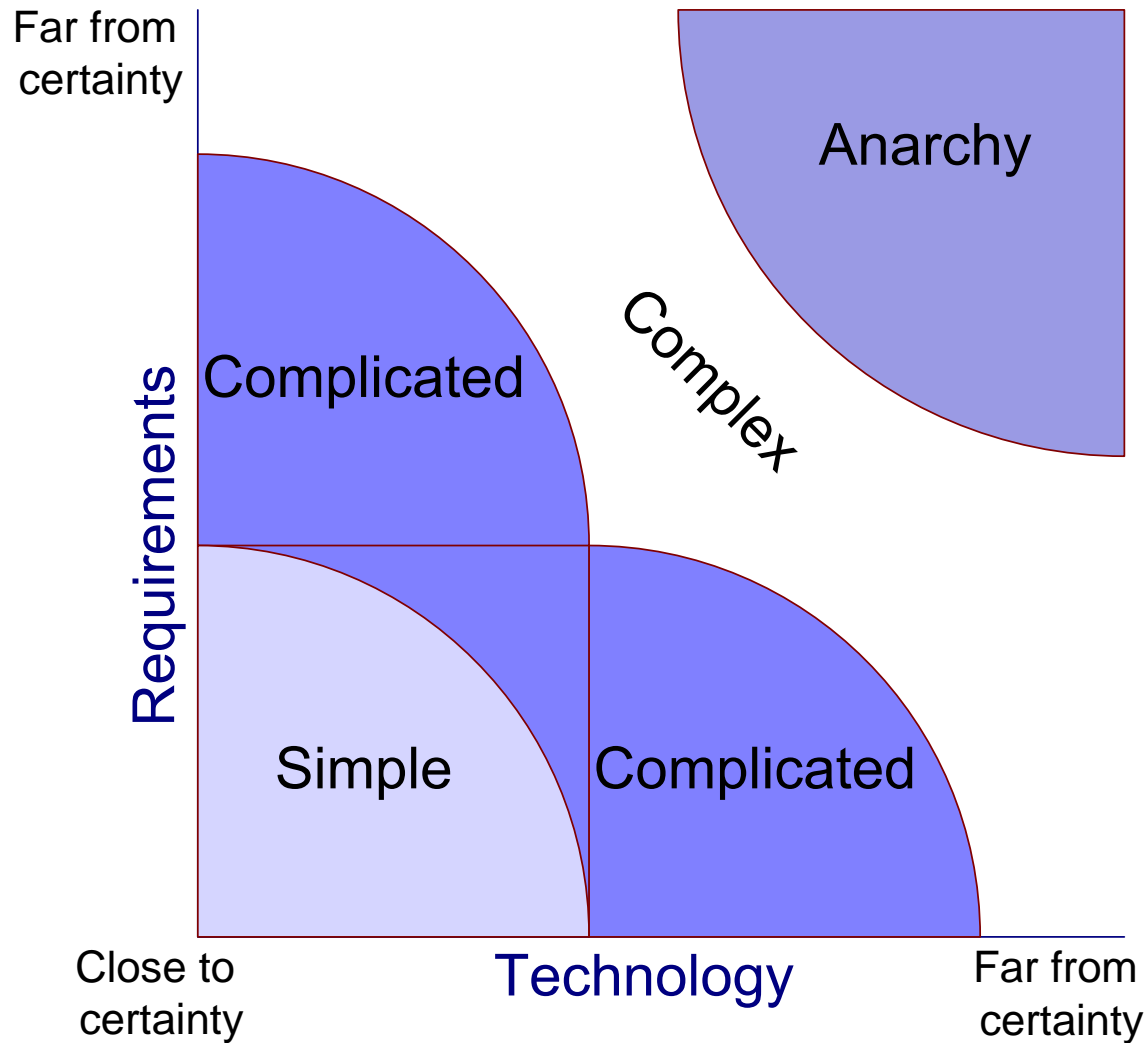
Source: *Strategic Management and Organizational Dynamics* by Ralph Stacey in *Agile Software Development with Scrum* by Ken Schwaber and Mike Beedle.

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*It is typical to adopt the defined (theoretical) modelling approach when the underlying mechanisms by which a process operates are reasonably well understood. When the process is too complicated for the defined approach, the empirical approach is the appropriate choice.*
**Process Dynamics, Modeling, and Control, Ogunnaike and Ray, Oxford University Press, 1992**

# Why Scrum Works 2/5

- Project complexity indicates the best approach to use for managing the project
  - ➲ Simple ➜ Defined
  - ➲ Complicated and Complex ➜ Empirical

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# Why Scrum Works 3/5

Process Control Model

- Defined
  - ➲ Predictable
  - ➲ Repeatable
  - ➲ Known in every detail
- Empirical
  - ➲ Unpredictable
  - ➲ Non repeatable
  - ➲ Inspect and adapt

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# Why Scrum Works 4/5

## Defined Management Model

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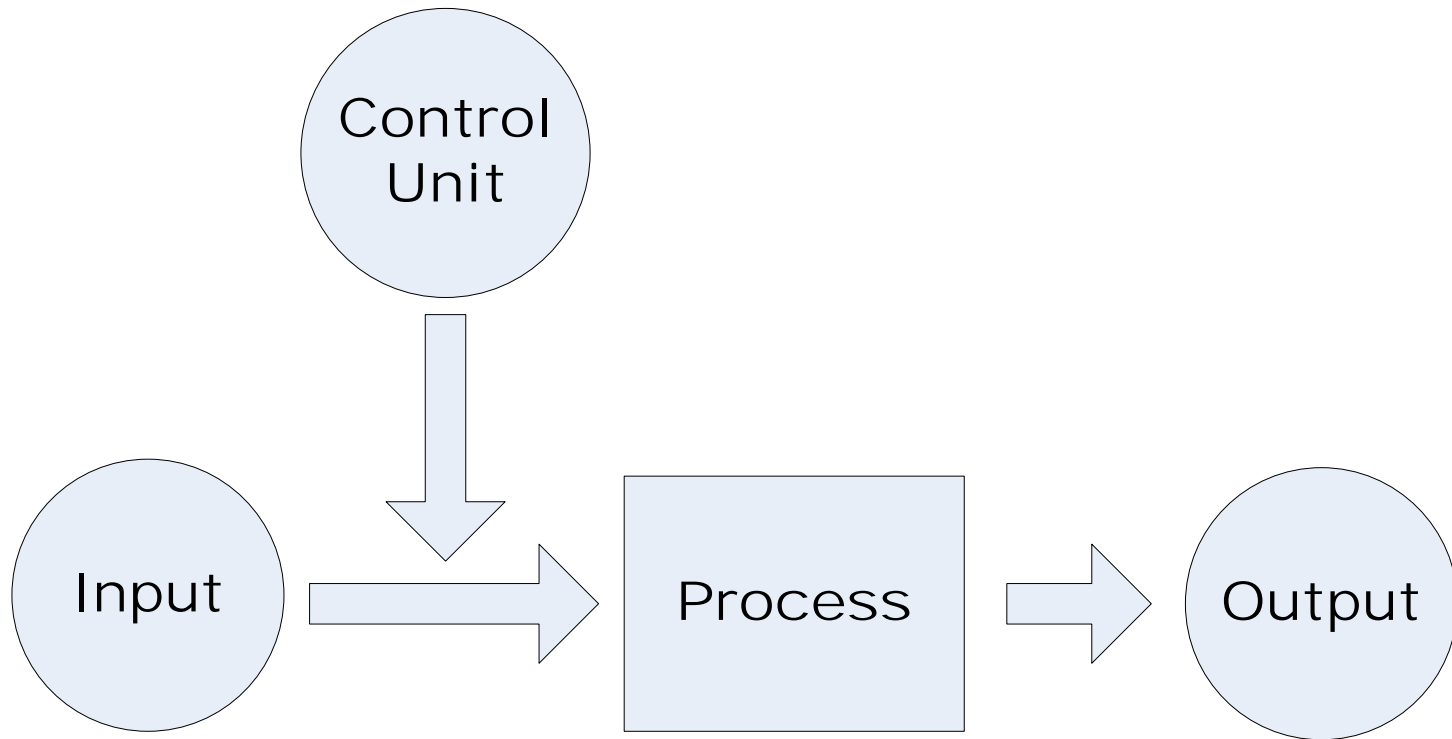
# Why Scrum Works 5/5

Empirical Management Model
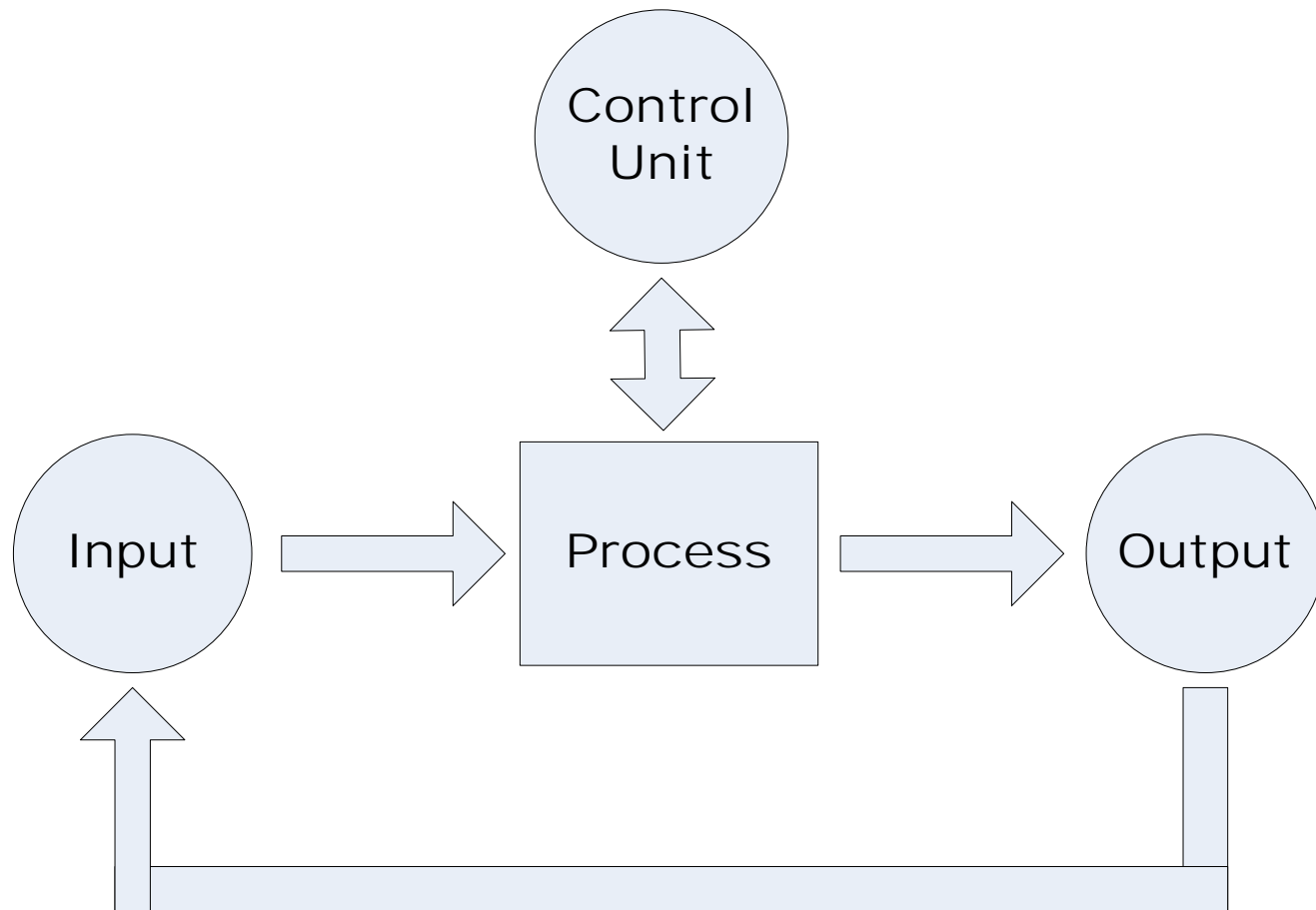
# Scaling Up: Scrum of Scrums



Source: Mike Cohn

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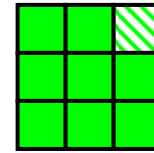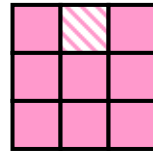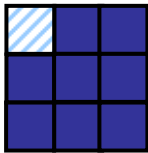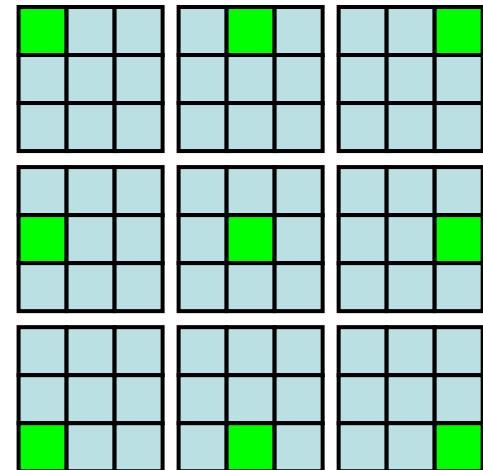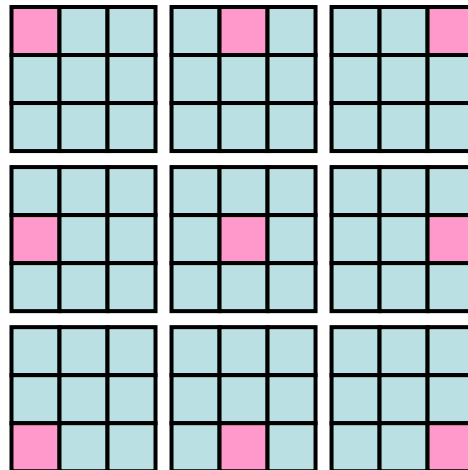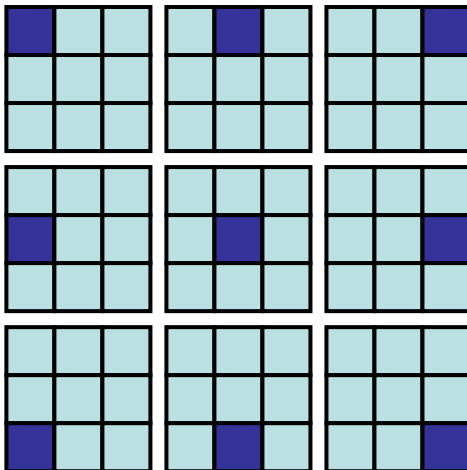
# Scrum Has Been Used For…

- FDA-approved, life-critical software for x-rays and MRIs
- Enterprise workflow systems
- Financial payment applications
- Biotech
- Call center systems
- Tunable laser subsystems for fiber optic networks
- Application development environments
- 24x7 with 99.99999% uptime requirements
- Multi-terabyte database applications
- Media-neutral magazine products
- Web news products

Source: Mike Cohn

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# Getting Started: Ideal Situation

- The Product Owner defines an initial a Product Backlog, a release plan, funding, etc.

- The Team along with the Scrum Master, and the Product Owner decide an iteration length (and stick to it)

- Plan the first iteration: define the Sprint Backlog, the Sprint Goal, the tasks

- Start!

*Design and programming are human activities; forget that and all is lost.*
**Bjarne Stroustrup**

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# Getting Started: The Reality

- The process is the easy part!
- Expect problems due to…
- …People!

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# Scrum Values 1/3

- Trust
- Courage
- Respect
- Openness
- Communication
- Focus
- Commitment

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# Scrum Values 2/3

- Values cannot be enforced
- They need an appropriate environment to flourish
- Coherent management behaviour
  - Talk the talk and walk the walk
- Protect the team
- Reward the team not the person

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# Scrum Values 3/3

- Safety
  - Possibility of making mistakes
  - Freedom of expression
  - No blame culture
- Appropriate rewards
  - Money is never a good motivator
  - Job satisfaction is a better one

# Some Common Problems

- Mandating the methodology from above
- Lack of trust
- Thinking that merely implementing a process will improve the quality of the product
- Focusing too much on the process and not enough on the product

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# Mandating The Methodology From Above

- This happens when a manager imposes a methodology on the team
- If the project manager is lucky this approach might actually work
  - Team members already think it is the way to go
- Consider involving the programmers and the other stakeholders right from the start

# Lack Of Trust

- Trust is an essential component of any agile process
  - If missing, honest communication becomes very difficult and so is keeping control of the project
- Unfortunately, creating a climate of trust is easier said than done
  - There are not sure recipes for this

# Process = Product Quality?

- A process is just another tool in your toolset
  - It can be useful only if used wisely
  - Product quality is more dependant on the quality of the people involved

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# Focusing Too Much On The Process

- Typical of a team using a specific process for the first time

  - To a certain extent it is normal and healthy

- However, when too much time is spent thinking about the process, there is something wrong

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# Team Dynamics 1/3

- Power struggle in newly formed teams
  - Forming, storming, norming, performing
- The team must find the balance on its own
  - No intervention from Product Owner or Scrum Master
- Company culture plays a fundamental role
- The Team has to have the power of taking **real** decisions

# Team Dynamics 2/3

Dysfunctional behavior

- Groupthink
  - No real communication
  - Fear of being singled out
  - Total lack of conflict
  - 100% of (apparent) agreement all the time

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# Team Dynamics 3/3

- Scrum is not for everybody
  - Some people just don't like to be stripped of their title
  - The high level of interaction required may make the most introverted developers feel uncomfortable
  - Some developers are quite territorial with their own code

# Organizational Change

- Many organizations resist change
- Some people may feel threatened…
  - Fear of losing power
- …Some others are just too used to what they do

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# Management Style

- Many companies have a command-and – control structure

- Scrum is possible only with delegation of authority and trust

- The two models are incompatible with each other

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# Scrum Master Challenges

- Resist the temptation to manage the Team
  - even when the team members ask for it
- Has to have enough authority to be able to solve problems

# Product Owner Challenges 1/2

- Resist the temptation to manage the team
  - It can organize itself differently from what he expects
- Resist the temptation of adding work to the sprint backlog after a sprint started
  - If he tries to do so, the Scrum Master and the Team should refuse
  - He can always call for an abnormal termination of the Sprint, if necessary

# Product Owner Challenges 2/2

- Prioritization of backlog items
  - ➲ Deciding what goes into a Sprint and putting a priority on it is a big responsibility
  - ➲ Needs the help from the Scrum Master and the Team
- Has to have enough authority to have the final say on the product

# General Management Challenges

- Perceived lack of control

- Delegating authority, and trusting others is difficult

  - Fear of loosing visibility, control, and personal power

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# OK I understand the problems, but what can I do to solve them?

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# Getting Started Reloaded 1/6

- Overcoming those problems is never simple
  - ➲ Requires time and hard work
  - ➲ No sure recipes for success

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# Getting Started Reloaded 2/6

- Why do you want to change?
  - Analyze current situation
  - Gather data
  - Focus your efforts
- Be prepared to answer hard questions
  - Why? We are making loads of money
  - But we are different…
  - But in the real world…

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# Getting Started Reloaded 3/6

- Be prepared to negotiate and compromise
  - A dead Scrum Master is an useless Scrum Master
- Set expectations properly
  - Be honest
  - Be courageous
- Don't give up!

# Getting Started Reloaded 4/6

- Show what there is in Scrum that may be **personally** useful to the people involved
  - ➲ Programmers love learning new stuff
  - ➲ Managers love feeling in control
  - ➲ Product Owners want visibility and the ability to change their minds

# Getting Started Reloaded 5/6

- Ask for help and opinions
  - ⮑ It is a good way to get people buy into the approach
- Listen to the sceptics
  - ⮑ You may be missing something
- "Fearless Change" by Mary Lynn Manns and Linda Rising

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# Getting Started Reloaded 6/6

- Trial run
  - Try it for a limited period on a small assignment
- Introduce changes incrementally
  - The Daily Scrum Meeting is an easy thing to start with…
  - …And it will make several problems immediately visible

# Summary

- Scrum Fundamentals
- Why Scrum Works
- Getting Started
  - Some Problems…
  - …And Some Suggestions for solving them

Scrum may not be easy to implement, but the results are well worth the effort

# Q&A

# Question

How can It work for us? We need long
term plans

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# Answer

Scrum teams make long term plans, but they are willing to change them as necessary

# Question

Should we use Scrum or eXtreme Programming?

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# Answer

Use both! They complement each other

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# Question

Is it true that, for Agile Development to work, you need very good programmers?

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# Answer

Do you think that, by using Waterfall, you can deliver good software by hiring baboons as programmers?

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# Question

Is it possible to use Scrum in a big distributed project?

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# Answer

Yes

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# Other questions?

# The End…Thanks!

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# References

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Thank you for your attention!