

# **Scrum**

Essential Vocabulary and Behaviors



# Overview

- Origins of Scrum
- Principles
- The Scrum Model
- Roles
- Artifacts
- Ceremonies
- Activities

# **Origins of Scrum**

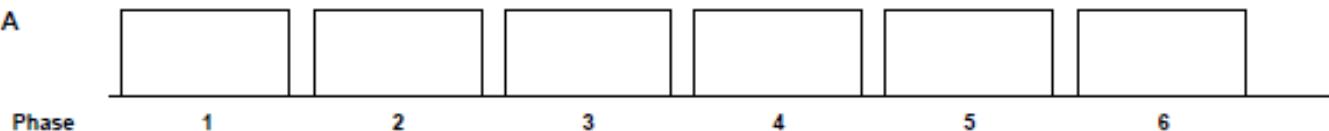
How this got started

# The New New Product Game

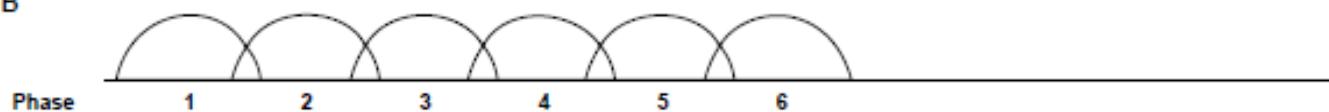
Sequential (A) vs. overlapping (B and C) phases of development

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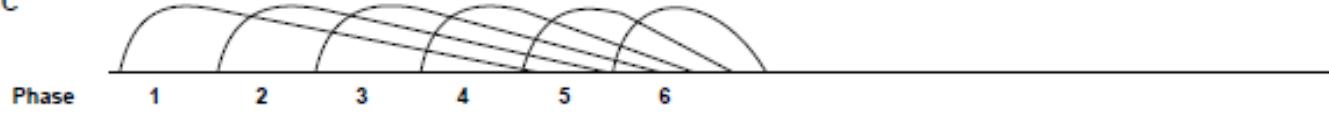
Type A



Type B



Type C



Takeuchi and Nonaka  
Harvard Business Review, January, 1986

# Lean Manufacturing

## The Toyota Production System

### Goals

- Design out overburden (Muri, 無理)
- Design out inconsistency (Mura, 斑 )
- Eliminate waste (Muda, 無駄)



### Techniques

- Continuous Improvement (Kaizen, 改善 )
- Relentless reflection (Hansei, 反省)
- Production Smoothing (Heijunka, 平準化)
- Go see for yourself (Genchi Genbutsu, 現地現物)

Taiichi Ohno  
Father of the  
Toyota Production System

# Learning Organizations

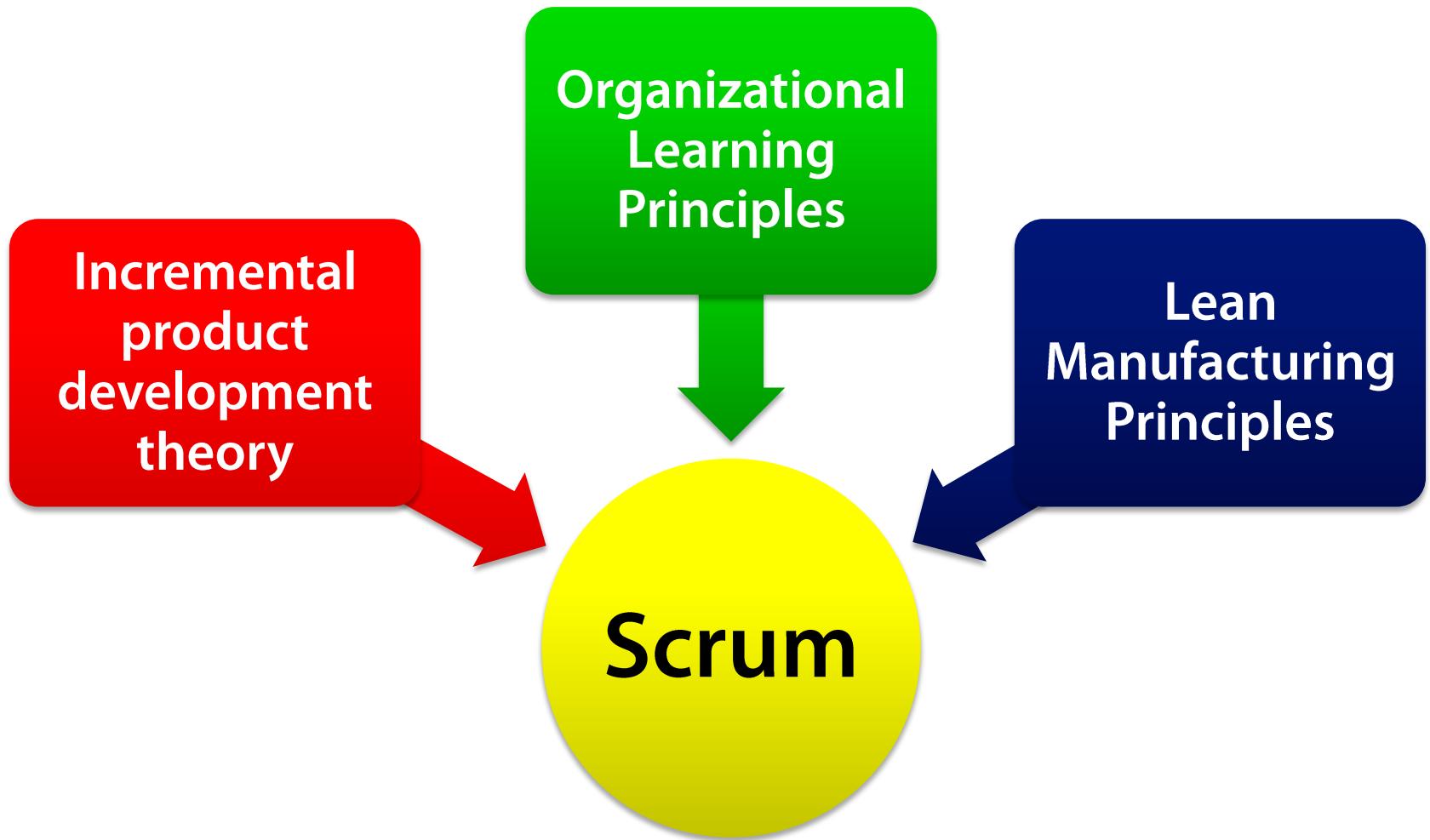


Peter Senge  
*The Fifth Discipline:  
The art and practice  
of the learning organization*

- Are adaptive to their external environment
- Continually enhance their capability to change/adapt
- Develop collective as well as individual learning
- Use the results of learning to achieve better results

“The prevailing system  
of management is ...  
dedicated to mediocrity.”

# Deriving Scrum



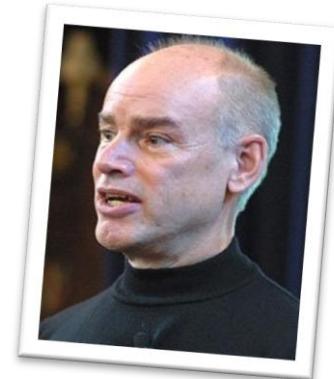
# Enter the Scrum Masters



Jeff Sutherland

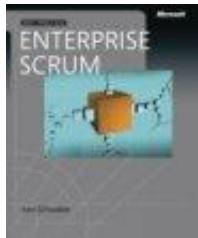
Co-presented Scrum as a formal practice at OOPSLA in 1995.

Today, there are more than 5000 certified Scrum Masters in the US, Europe and in India.



Ken Schwaber

*The Enterprise and Scrum*  
by Ken Schwaber



*Agile Project Management with Scrum*  
by Ken Schwaber



# **Principles**

Characteristics of Scrum

# Scrum Promotes These Principles

- Small working teams
- Embrace changing requirements
- Deliver finished work frequently
- Small batches
- Enable releasing product whenever required

# Characteristics of Scrum

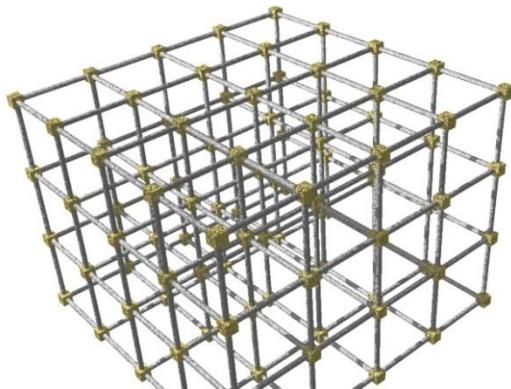
- Activities are time boxed
- All project metrics, reports, and details are prominently displayed
- Multi-disciplinary and self-organizing teams
- No specific engineering practices prescribed

# **Characteristics of Scrum**

- Product progresses in a series of Sprints
- Requirements are captured as items in a Product Backlog
- Continuously test product as it is created

# The Scrum Framework

The high level view



# What is it?

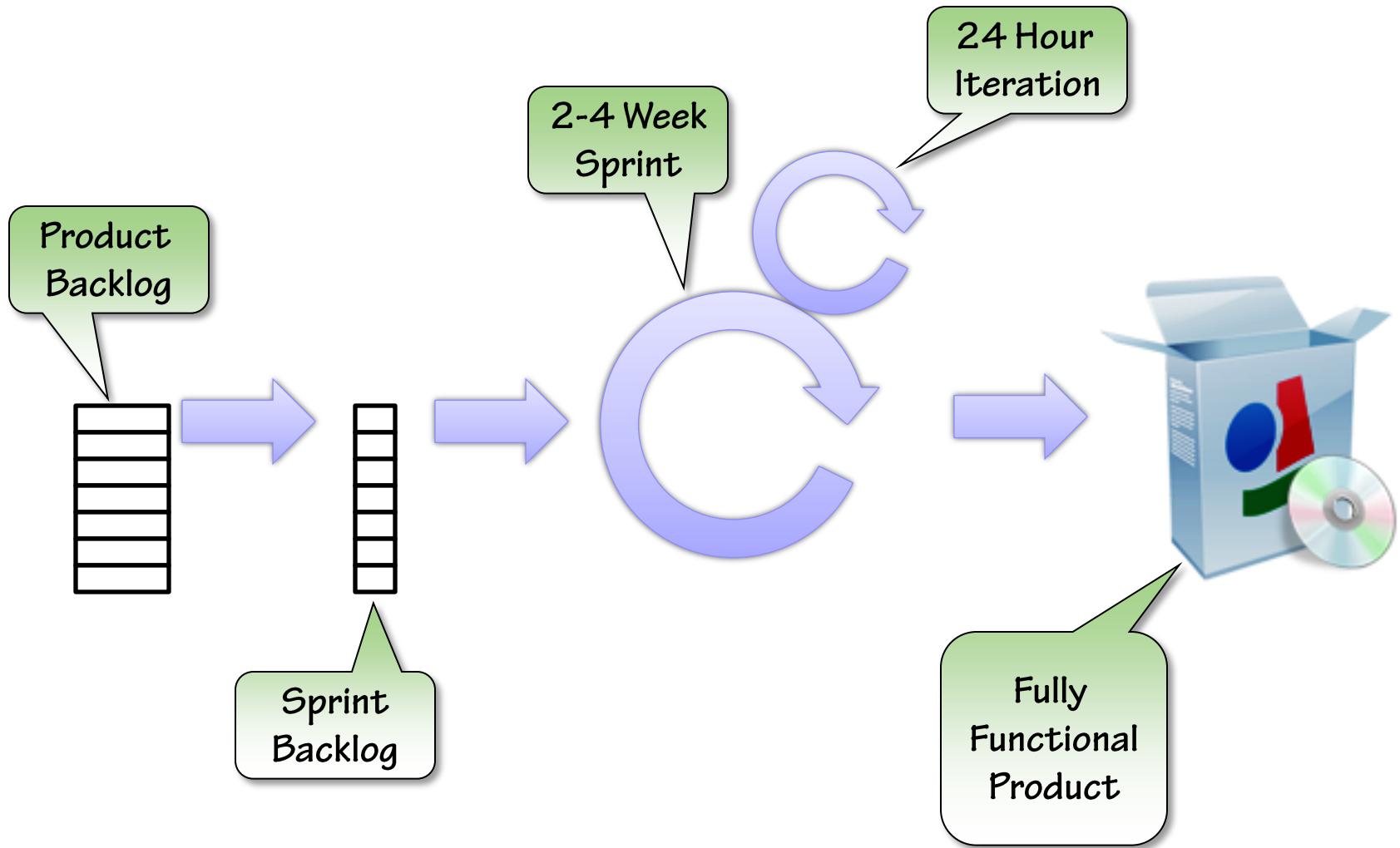
- A project management technique
- One of the Agile practices
- An effective way to deliver products

# **Scrum In a Nutshell**

- 1. Schedule a demo with the customer**
- 2. Make product to show at the demo**
- 3. Get feedback from the demo and use it to guide the next development work**



# The Basic Model



# Scrum is Used By

- Microsoft
- Yahoo
- Google
- Electronic Arts
- High Moon Studios
- Lockheed Martin
- Philips
- Borland
- Siemens
- Nokia
- Capital One
- BBC
- Intuit
- Nielsen Media
- First American Real Estate
- BMC Software
- Ipswitch
- John Deere
- Lexis Nexis
- Sabre
- Salesforce.com
- Sieman's Medical
- Time Warner
- Turner Broadcasting
- Oce
- Intuit

# Scrum Is Used For

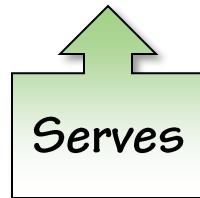
- Software development
- Fixed-price projects
- Financial applications
- ISO 9001-certified applications
- Embedded systems
- 24x7 systems with 99.999% uptime requirements
- Large scale content development
- Some of the largest applications in use
- The Joint Strike Fighter
- Video game development
- FDA-approved, life-critical systems
- Satellite-control software
- Websites
- Handheld software
- Mobile phones
- Network switching applications
- ISV applications

# **Roles**

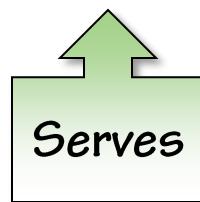
Who does what and why

# Scrum Has These Roles

Product Owner



Team Members



Scrum Master

# Scrum Lore: Chickens and Pigs

Chickens	Pigs
Managers	Team Members
Executives	Scrum Master
Anyone on another team	Product Owner

- Chicken: Let's start a restaurant.
- Pig: What'll we serve?
- Chicken: Ham and Eggs.
- Pig: Are you kidding me?

*Pigs have skin  
in the game.*

*Chickens don't.*

# Product Owner

- Is responsible for the profitability of the product (ROI)
- Defines the features of the product
- Prioritizes features
- Decides on release date and content
- Can change features and priority each iteration
- Accepts or rejects iteration results

# The Scrum Team

- **Typically 5-9 people**
  - Can be fed with 2 large pizzas
- **Cross-functional**
  - Programmers, testers, user experience designers, etc.
- **Members should be full-time**
  - May be exceptions (e.g., database administrator, graphic designer)
- **Teams are self-organizing**
  - Teams pull work
- **Membership changes only between sprints**

# Scrum Master

- Represents management to the project
- Responsible for enacting Scrum values and practices
- Ensure that the team is fully functional and productive
- Removes impediments
- Facilitates team meetings
- Enable close cooperation across all roles and functions
- Shield the team from external interferences

# Scrum Master

Scrum Masters contend with

- Waterfall expectations of inattention
- The illusion of command and control
- The pain of transparency
- Belief in magic



*The Scrum Master  
is a sheepdog*

# **Artifacts**

Things produced by and used in Scrum

# Scrum Artifacts

- Product Backlog
- Sprint Backlog
- Sprint Burndown Chart
- Scrum Team Velocity

# Product Backlog

- A prioritized complete list of desires
- All potential features of the product
- The single source of truth for requirements
- Managed by the product owner
  - Created by
  - Prioritized by
- Reprioritized for each sprint



# A Product Backlog

	Item #	Description	Est	By
<b>Very High</b>				
	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
		<b>Analysis Manager</b>		
	5	File formats we support are out of date	160	TG
	6	Round-trip Analyses	250	MC
<b>High</b>				
	-	<b>Enforce unique names</b>	-	-
	7	In main application	24	KH
	8	In import	24	AM
	-	<b>Admin Program</b>	-	-
	9	Delete users	4	JM
	-	<b>Analysis Manager</b>	-	-
	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
	-	<b>Query</b>	-	-
	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
	-	<b>Population Genetics</b>	-	-
	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	<b>Add icons for v1.1 or 2.0</b>	-	-
	-	<b>Pedigree Manager</b>	-	-
	20	Validate Derived kindred	4	KH
<b>Medium</b>				
	-	<b>Explorer</b>	-	-
	21	Launch tab synchronization (only show queries/analyses for logged in users)	8	T&A
	22	Delete settinas (?)	4	T&A

# Items in the Product Backlog

- Features definitions
- Constraints
- User actions or stories
- Behaviors
- Bugs / Defects
- Use Cases
- Desirements
- Training events
- Other activities

# Product Backlog Item

- The unit of deliverable work
- Has measurable business value
- Estimated by the team
- May reference other artifacts
  - Large specification
  - Mockups
  - Architecture Models
  - Etc.
- Contains criteria for successful completion

# Defining “Done”

Pair with someone you don't know well. Share short answers to the following for 4 minutes:

- **What does “done” mean in your current project?**
- **What issues do you see with this definition of done?**
  - How would you address them?
- **What technical problems do you see with this approach?**
  - How would you rectify them?

# Sprint Backlog

- Created by the Scrum Team
- List of activities the team commits to for a single Sprint
- Drawn from Product Backlog Items
- Often thought of as a To Do List for the team

# Sprint Backlog Item

- **Represents a single deliverable or activity**
- **Estimated in ideal hours**
- **Managed by a single Scrum Team member**
  - The work may be done by others on the Scrum Team
  - Reportable each day of the Sprint
- **Ideally no more than 2 days of work**
- **No minimum size**

# A Simple Sprint Backlog

PBI	Sprint Backlog Item	Hours Remaining
Fetch one day temperature data from the weather provider system	Make our server connect and authenticate to the provider system	4
	Read provider's data directory	2
	Parse the current temperature out of the data	6
Show temperature data to the client	Fetch rain, snow, etc details from the provider	2
	Parse snow/rain data from the provider's data	8
	Push the snow/rain data to the client	12
	Redesign client screen a bit	8
Fix Bug #1372	Fetch several days data from the provider	3
	Parse the weather data in day packs	2
	Push several days data to the client	9
Auto-refresh feature	Make the client ping server once per 4 hours	12
	Make the server update the client	2
<b>Total Hours Remaining</b>		<b>70</b>

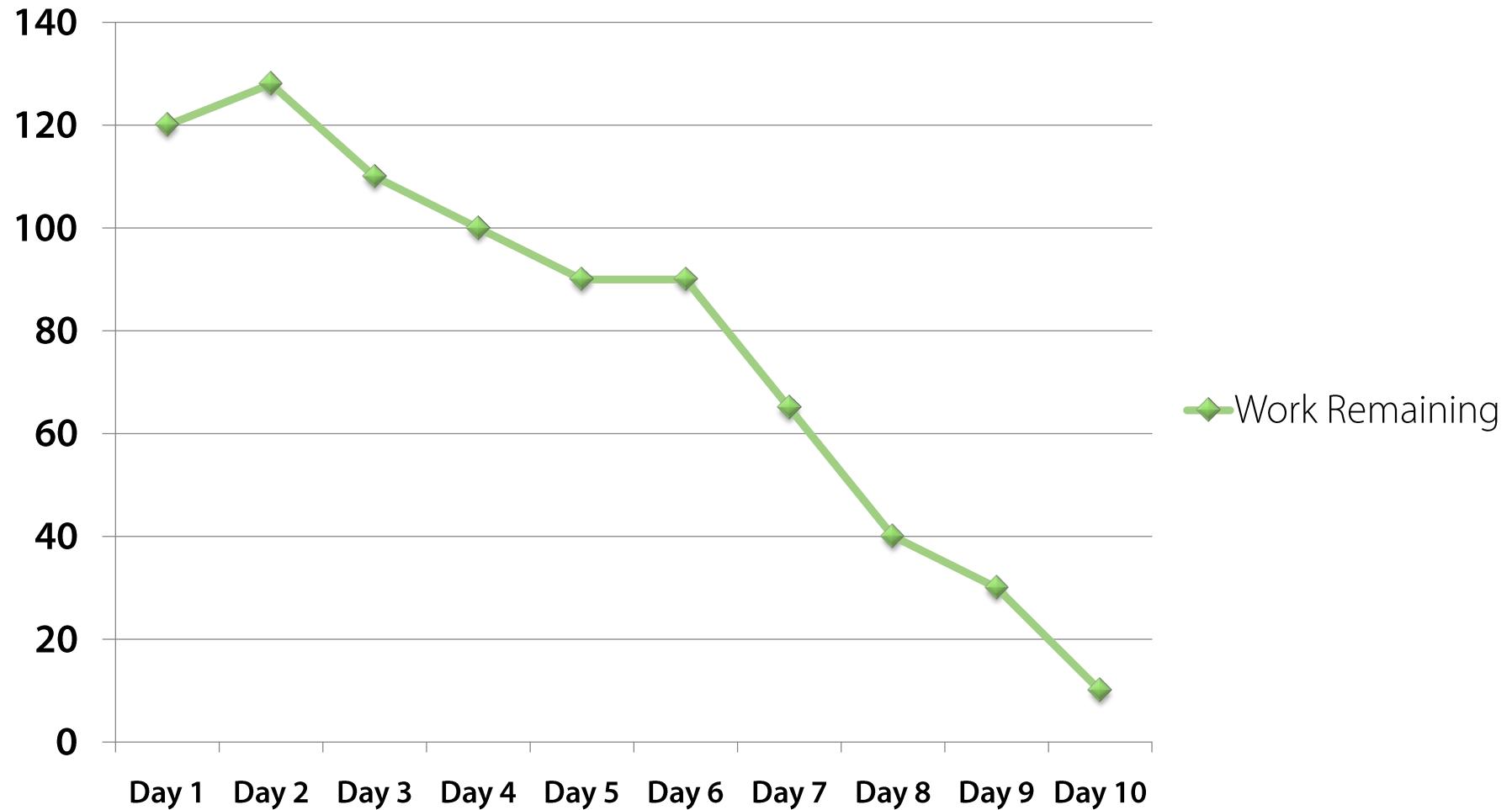
# The Sprint Backlog

- **Individuals sign up for work of their own choosing**
  - Work is never assigned
- **Estimated work remaining is updated daily**
- **Any team member can add, delete or change the sprint backlog**
- **Work for the sprint emerges**
- **If work is unclear, define a sprint backlog item with a larger amount of time and break it down later**
- **Update work remaining as more becomes known**

# Sprint Burndown Chart

- Shows work remaining for the Sprint
- Updated daily
- Used by Team Members to adjust activities
- Use by Scrum Master as the tactical project management tool

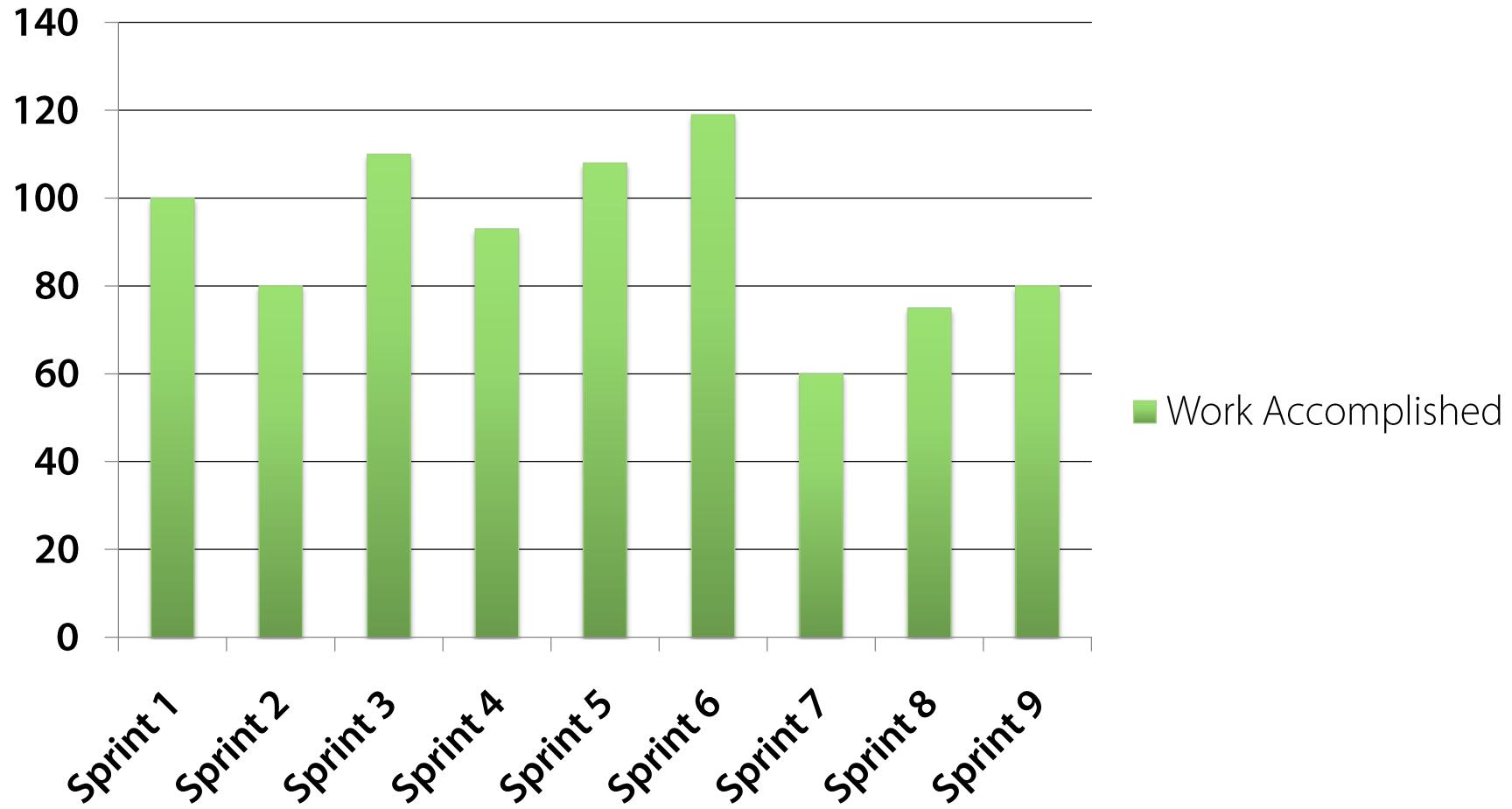
# Sprint Burndown Chart



# Scrum Team Velocity

- A measure of how much value a team delivers
  - Per Sprint
  - Over time
- Used to inform the Team when pulling work
- Used by Product Owner to plan releases and future work
- Will vary significantly from one Sprint to another

# Scrum Team Velocity



# **Ceremonies**

Because it's a better word than meetings

# Scrum Ceremonies

- The Sprint Planning Meeting
- The Daily Scrum
- The Sprint Review
- The Sprint Retrospective

# Sprint Planning Meeting

## What Gets Done

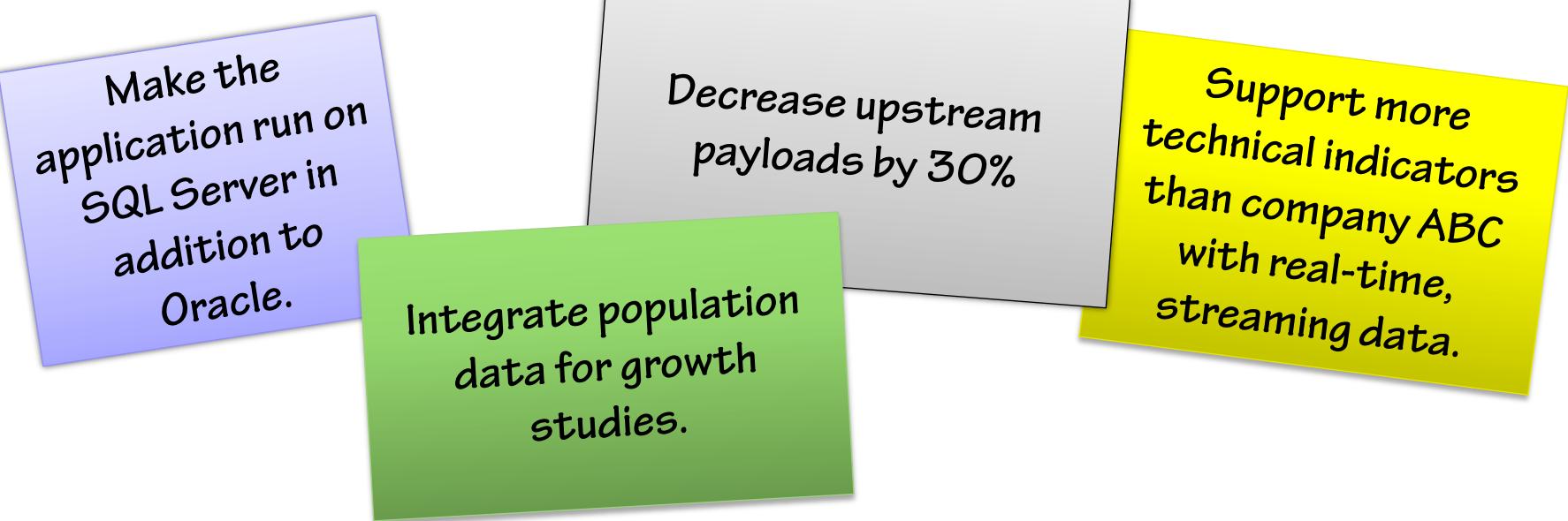
1. Sprint goals are created
2. The Sprint Backlog is created
3. A Burndown chart is initialized



*Sprint Planning is a negotiation*

# Sprint Goals

- High level descriptions of the work to be accomplished in the Sprint
- Agreed to by the Team and Product Owner



# Sprint Planning Meeting

## Who Is There?

- **Product Owner**
  - Brings the estimated, prioritized Product Backlog
  - Defines **Done** for any ambiguity
  - Answers any other questions about the work
- **Scrum Master facilitates the discussion**
- **Team creates the Sprint Backlog**

# Sprint Planning Meeting

- Often the first thing on Monday after the last Sprint
- Time boxed to less than 2 hours
- Team selects items from the product backlog they can commit to completing
- Team discusses details of implementation
- Scrum Master brings food

# Creating the Sprint Backlog

1. Team selects first PBI on top of list they can commit to completing
2. Team identifies all tasks to be completed to deliver PBI
3. Team estimates all tasks identified in ideal hours
4. Does the set of SBIs fit into the Sprint?
  1. If Yes, add the SBIs to the Sprint Backlog
  2. If No, discard the PBI or negotiate what can be delivered from the PBI
5. Repeat from 1 until Sprint Backlog is full

# The Daily Scrum

- Team focuses together once per day
- Ideally in the morning, to set direction for the day
- Same time each day
- Ideally, same place each day
- Time boxed, typically 15 minutes
- Standing up rule helps the time box rule
- Scrum Master facilitates

This actually avoids  
other meetings.  
No, really.



# The Daily Scrum

Each Team member answers

1. What did you do yesterday?
2. What will you do today?
3. What impediments are in your way?

*It is common to update the Sprint Backlog and Sprint Burndown chart at the Daily Standup.*

# Handling Impediments

Impediments belong to the Scrum Master

- The \_\_\_\_\_ team hasn't returned my call.
- The \_\_\_\_\_ server is down and I can't \_\_\_\_\_.
- I need a control library to \_\_\_\_\_.
- No one can sign the contract to get the \_\_\_\_\_.
- The \_\_\_\_\_ we ordered isn't here yet.

*The Scrum Master must therefore be empowered to resolve impediments.*

# The Sprint Review

- Team presents what it accomplished during the sprint
- Typically takes the form of a demo of new features or underlying architecture
- Informal: 2-hour prep time rule
- Whole team participates
- Invite the world
- Feedback informs future work



# The Sprint Review

## Rule #1: Show Your Work!



# The Sprint Retrospective

- This is the Kaizen part (Continuous Improvement)
- Discuss what is and is not working
- Typically 15–30 minutes
- Done after every Sprint Review
- Whole team participates
  - ScrumMaster
  - Product owner
  - Team
  - Possibly customers and others



# Sprint Retrospective

Answer these questions

1. What will we start doing ...
2. What will we stop doing ...
3. What will we continue doing ...  
... in the next Sprint?

Team members  
make **actionable**  
commitments

The brew pub, Friday  
at 4:30 works great

# **Activities**

How we go about it

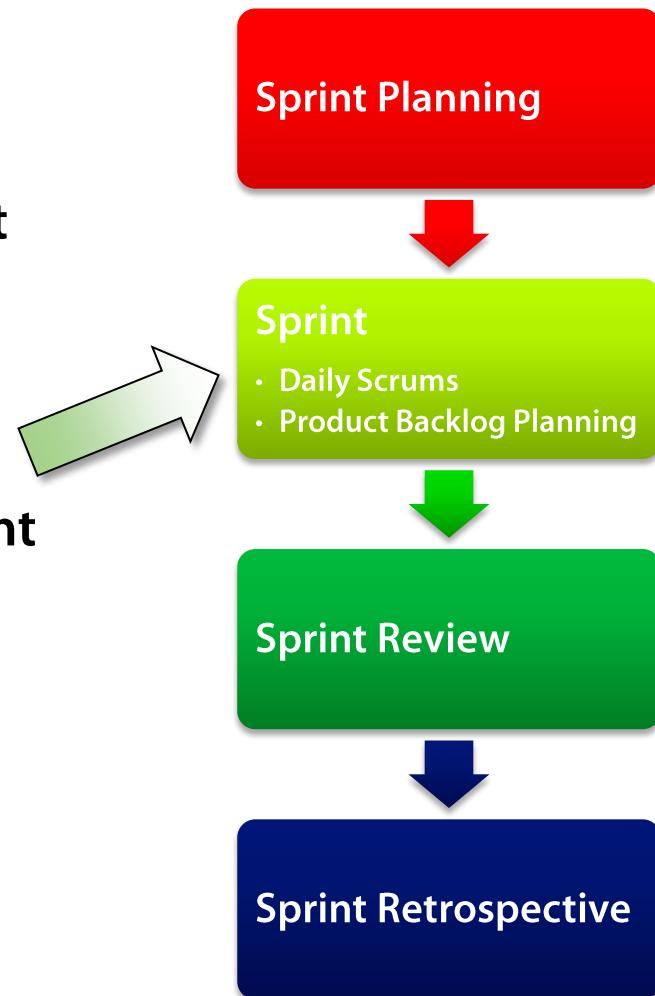
# Scrum Processes

Product Backlog Planning

The Sprint

# Product Backlog Planning

- Typically 5-15% of the Team's time
- Happens continually during the Sprint
- Is facilitated by the Product Owner
- Account for it when planning the Sprint



# Product Backlog Planning

- Used to build the Product Backlog
- Centers around estimating Product Backlog Items
- Often elicits overall system approach or architecture
- Must be facilitated well to avoid digression

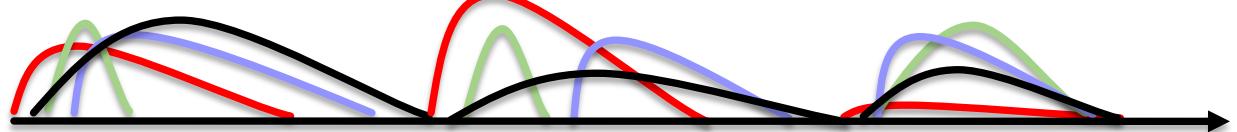
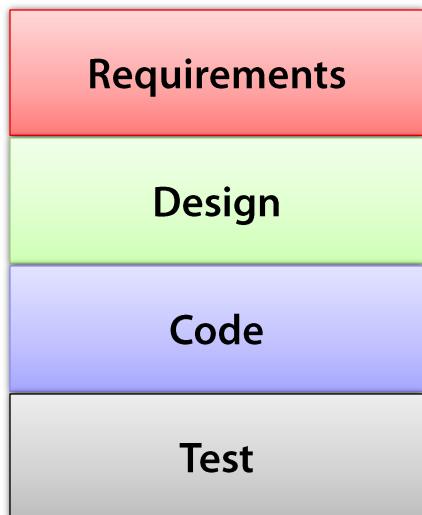
# The Sprint

- **Scrum projects make progress in a series of “sprints”**
  - Analogous to Extreme Programming iterations
- **Typical duration is 2–4 weeks or a calendar month at most**
- **A constant duration leads to a better rhythm**
- **Product is designed, coded, and tested during the sprint**



# The Sprint

- Non Sequential execution is key
- Do a little of everything rather than all of one thing



# Goals Don't Change in the Sprint

- Sprints are sacrosanct
- Commit to keeping change out of the sprint
- Even a high change environment can commit to a single plan for only 2 weeks
- Plan sprint durations around a willingness to commit

# Summary

- Backlog
- Backlog Item
- Burn Down
- Daily Scrum
- Scrum Team
- Sprint
- Sprint Backlog
- Sprint Review
- Task
- Velocity

# **Scrum Simulation Workshop**

Let's Scrum!

# Summary of My Experience

- Fewer defects
- Higher product development throughput
- Quicker market response
- Sustainable pace and enjoyable workplace
- Makes the right thing sooner

# **Required to Start**

- 1. A Product Backlog exists**
- 2. Full-Time Scrum Master is identified**
- 3. Scrum Team agrees to demonstrate working software in no more than 30 days**
- 4. Set the appointment**
- 5. Stakeholders invited to demonstration**

# **On Scaling Scrum**

Moving Up to the Big Time

# Scaling Up with Scrum of Scrums

- A meeting with Scrum Masters and organizational leaders
- Used to coordinate the work of multiple Scrum Teams
- Needs executive sponsorship, ideally attendance
- Executives may own team impediments
- MUST have people in attendance who can make resource decisions
- May not be needed daily

# Scaling Up with Scrum of Scrums

## Answers 4 Questions

1. What has your team done since we last met?
2. What will your team do before we meet again?
3. Is anything slowing your team down or getting in their way?
4. Are you about to put something in another team's way?

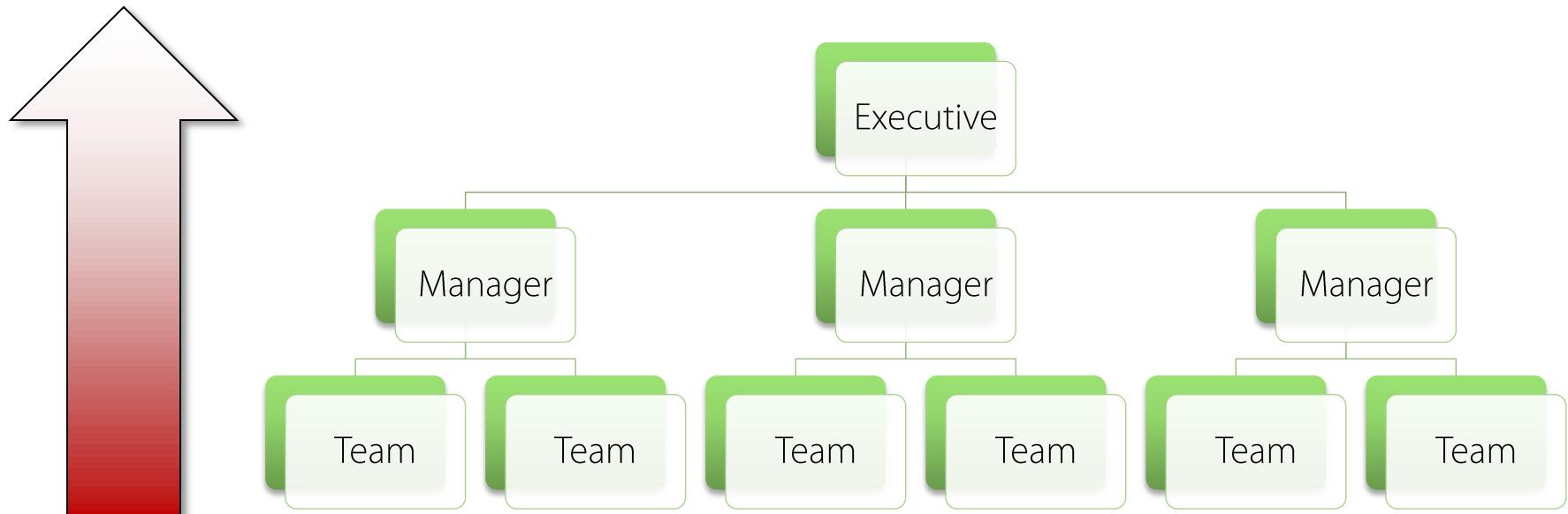
# A Scrum of Scrums Model

Daily at 10

Scrum of Scrum

	Scrum Master 1	Scrum Master 2	Scrum Master 3	Scrum Master 4
Daily at 9:30	Team B	Team D	Team F	Team H
Daily at 9:00	Team A	Team C	Team E	Team G

# This Changes the Executive Service Model



People serve others  
in this direction

# Discussion

# References

- Agile Project Management with Scrum by Ken Schwaber
- Agile Software Development with Scrum by Ken Schwaber and Mike Beedle
- The Enterprise and Scrum by Ken Schwaber
- The Fifth Discipline: The art and practice of the learning organization by Peter Senge
- <http://martinfowler.com/articles/itsNotJustStandingUp.html>
- Agile Estimating and Planning by Mike Cohn
- Scrum and XP from the Trenches by Henrik Kniberg