



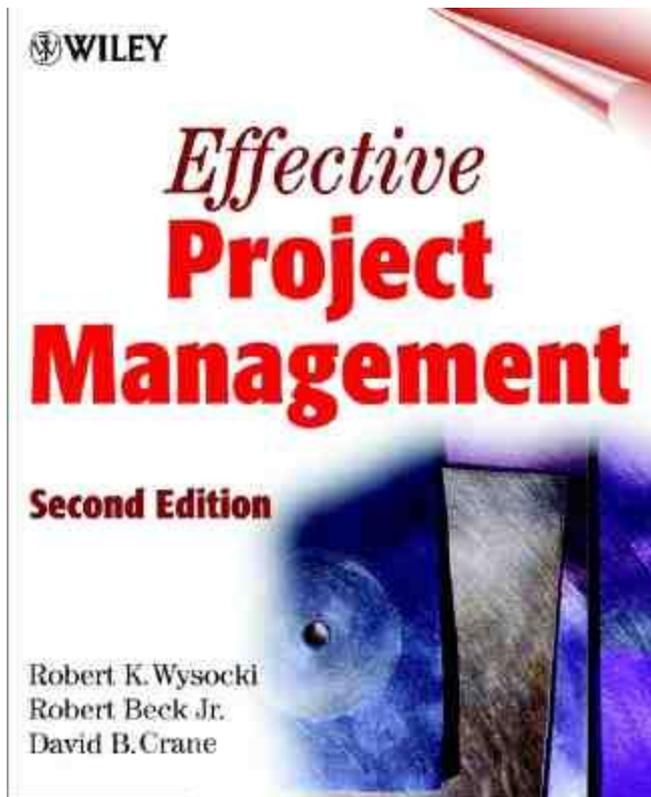
# Light-weight project management for digital development projects

Frank Cervone  
Vice Chancellor for Information Services and Chief Information Officer  
Purdue University Calumet  
January 17, 2012  
CARLI “Anatomy of a Digital Project” webinar series

# Agenda

- An overview and background of project management
  - How information system projects differ from other types of projects
- Light-weight project management methods
- Some tips on ensuring project success

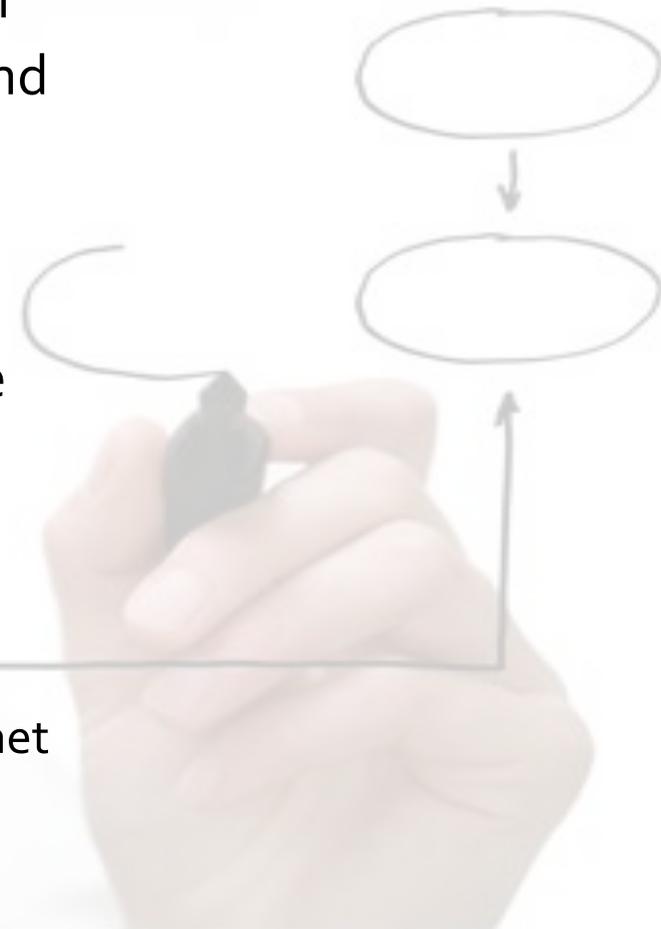
# A formal definition



A project is a **temporary** sequence of **unique**, complex, and **connected** activities having one goal or **purpose** and that must be **completed** by a specific **time**, within **budget**, and according to **specification**.

# So, what is a project?

- **Temporary**
  - Does not necessarily mean “short duration”
  - Have a definite beginning and a definite end
- **Unique**
  - Not a routine activity
- **Connected**
  - Multiple activities that occur in a sequence
- **Purpose**
  - Multiple activities in pursuit of a goal
- **Completed**
  - Objectives have been achieved
  - Becomes clear the objective cannot/will not be met
  - Need no longer exists
  - The project is terminated



# What is project management?

*Project management* is the process of



- scoping (defining the extent ),
- planning,
- staffing,
- organizing,
- directing, and
- controlling

the development of an acceptable system at a minimum cost within a specified time frame

# Why is it so complicated?



Designed to control  
engineering projects

Large-scale projects

Emphasis on things and  
procedure

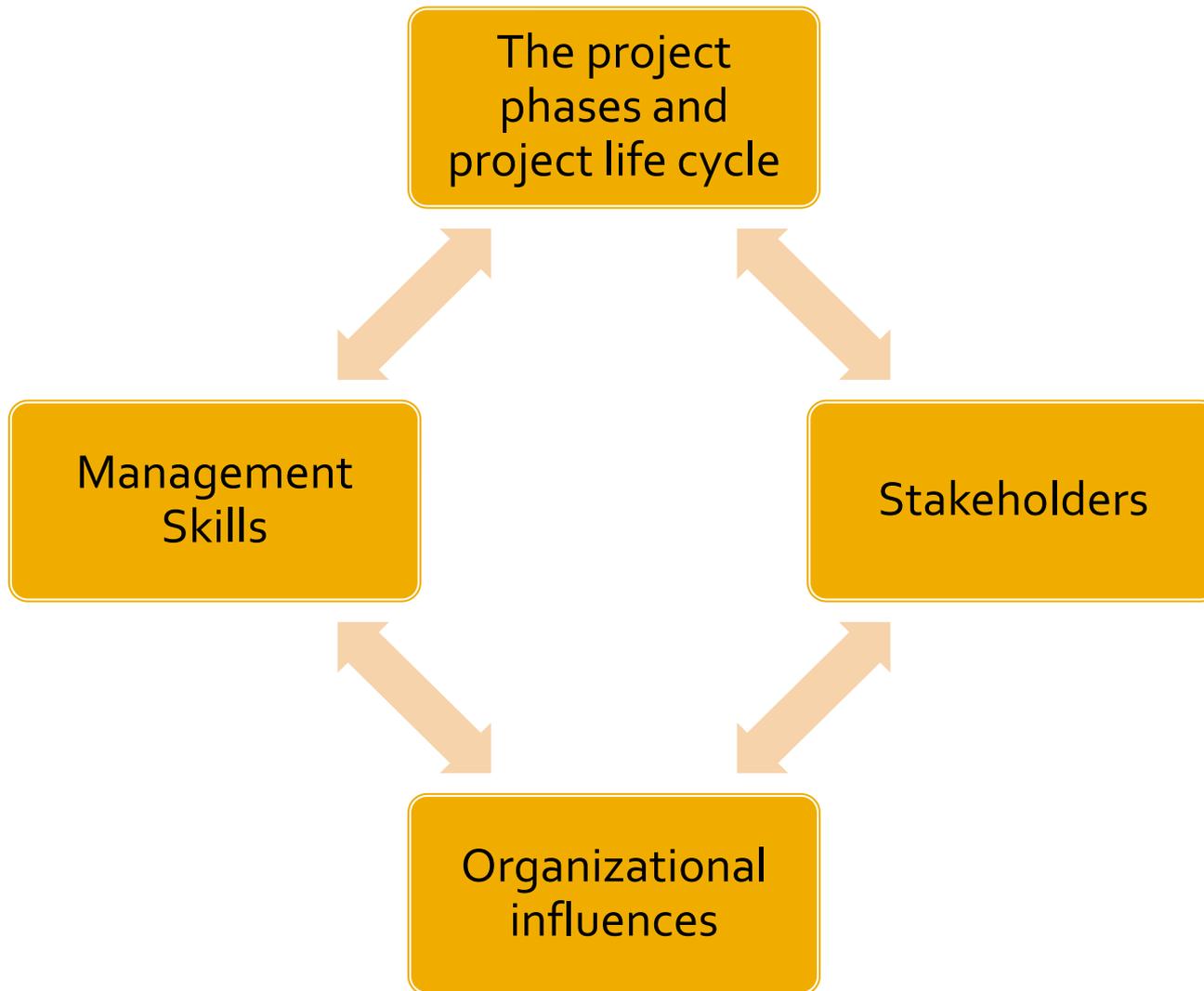
IS is about people and  
process

# PMBOK

- PMBOK
  - Project Management Body of Knowledge
  - Theoretical Framework
    - Context
    - Processes
  - Knowledge Areas

Integration	Scope
Time	Cost
Quality	Human Resources
Communications	Risk
Procurement	

# The project management context

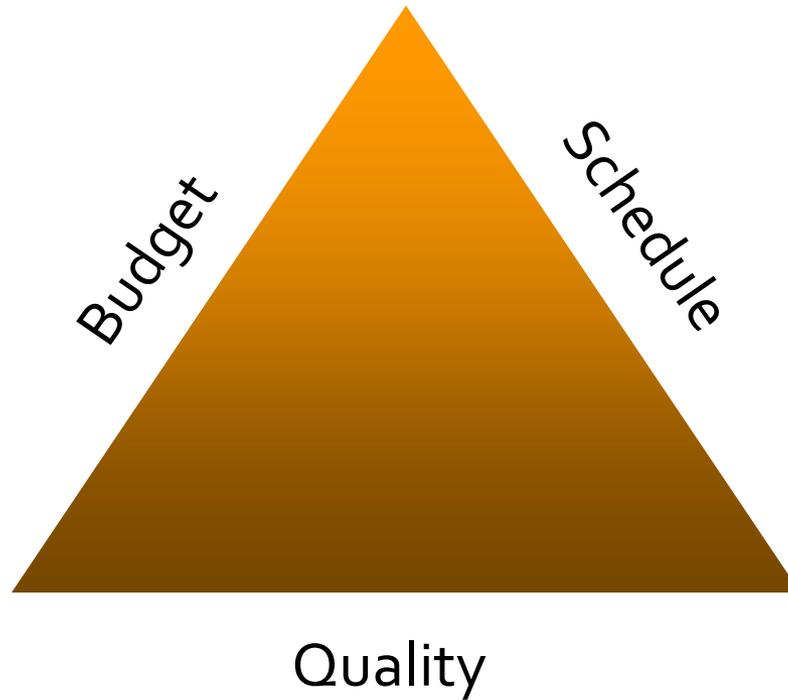


# What is the project manager responsible for?

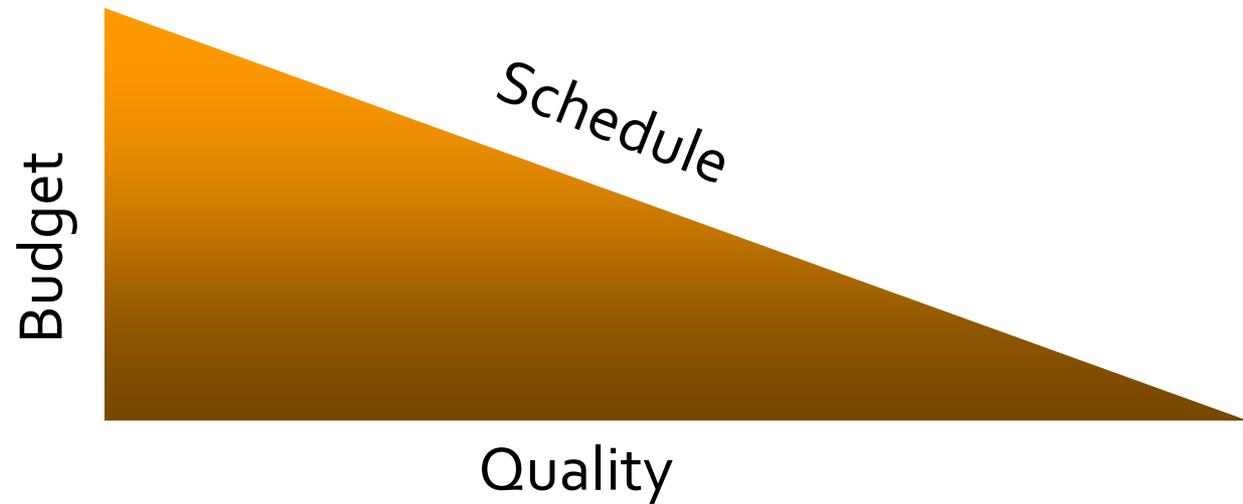
- Knowledge
  - About the organization
  - Skills required for project
- Communications
  - Up, down, across organization
- Documentation
- Quality control
- Development
  - Staff
  - Working practices



# Project dimensions

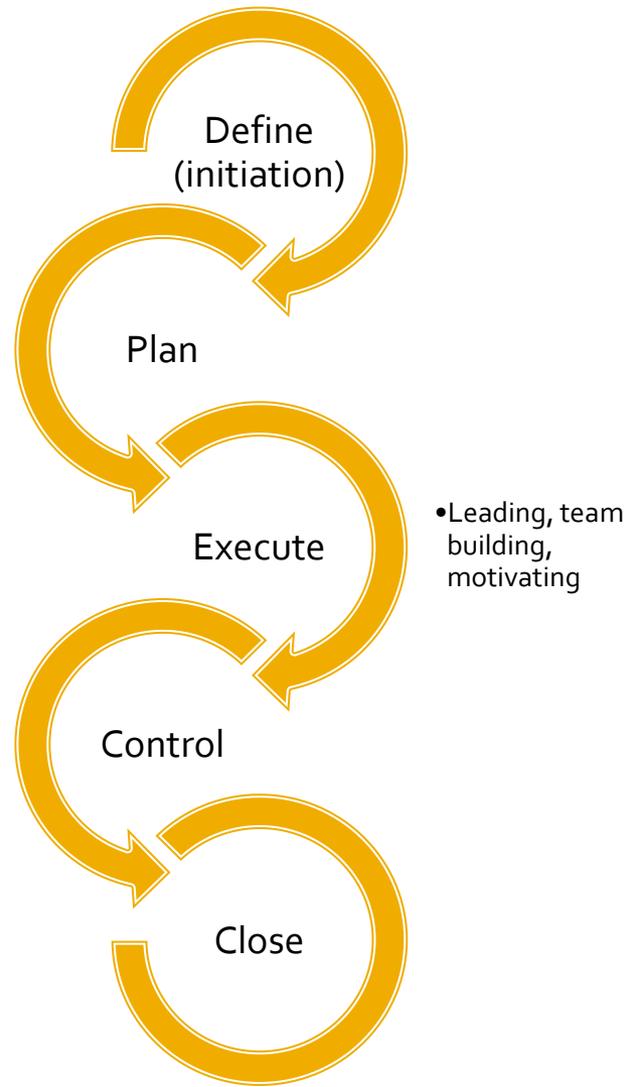


# If you change one...

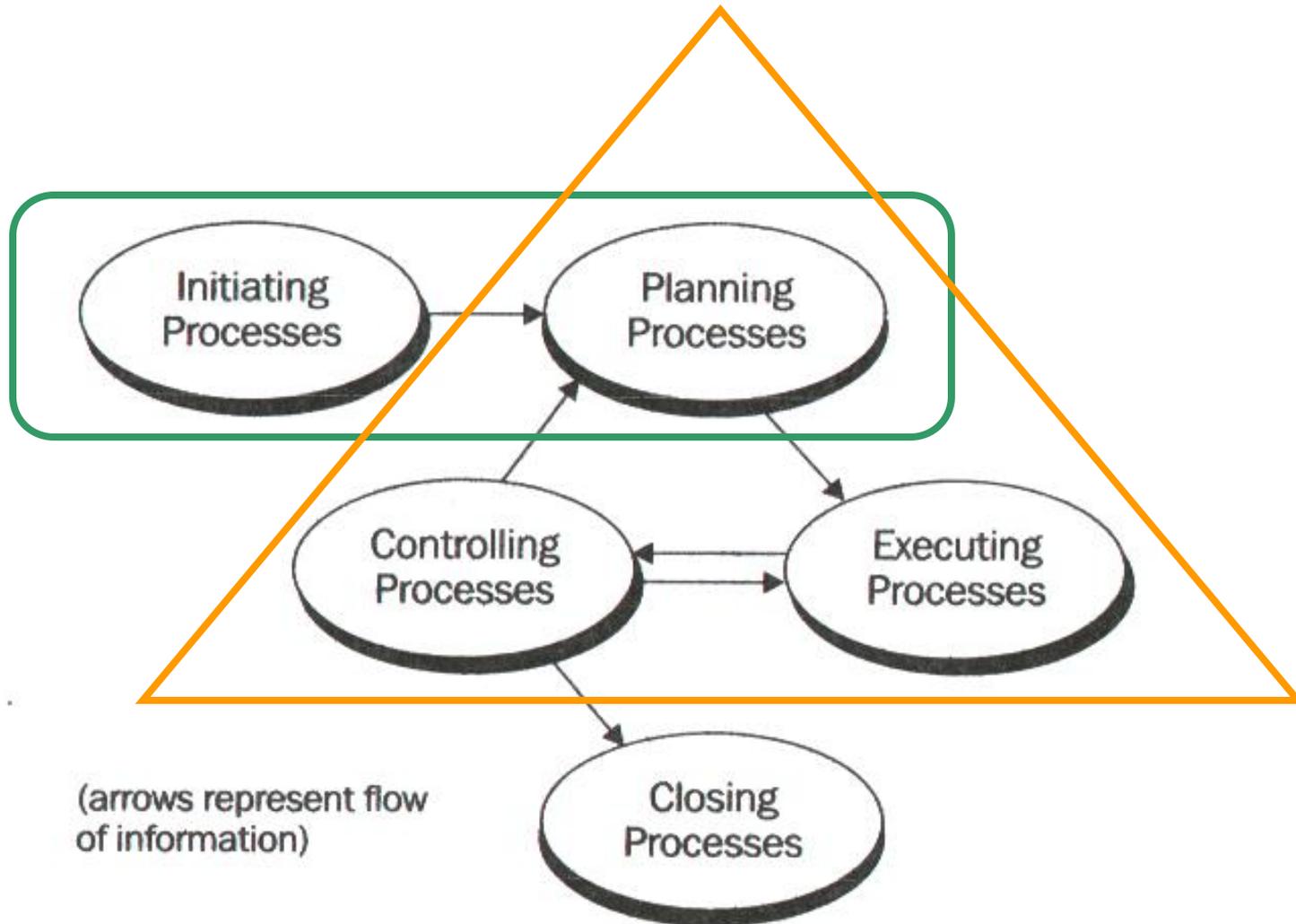


you automatically change the others

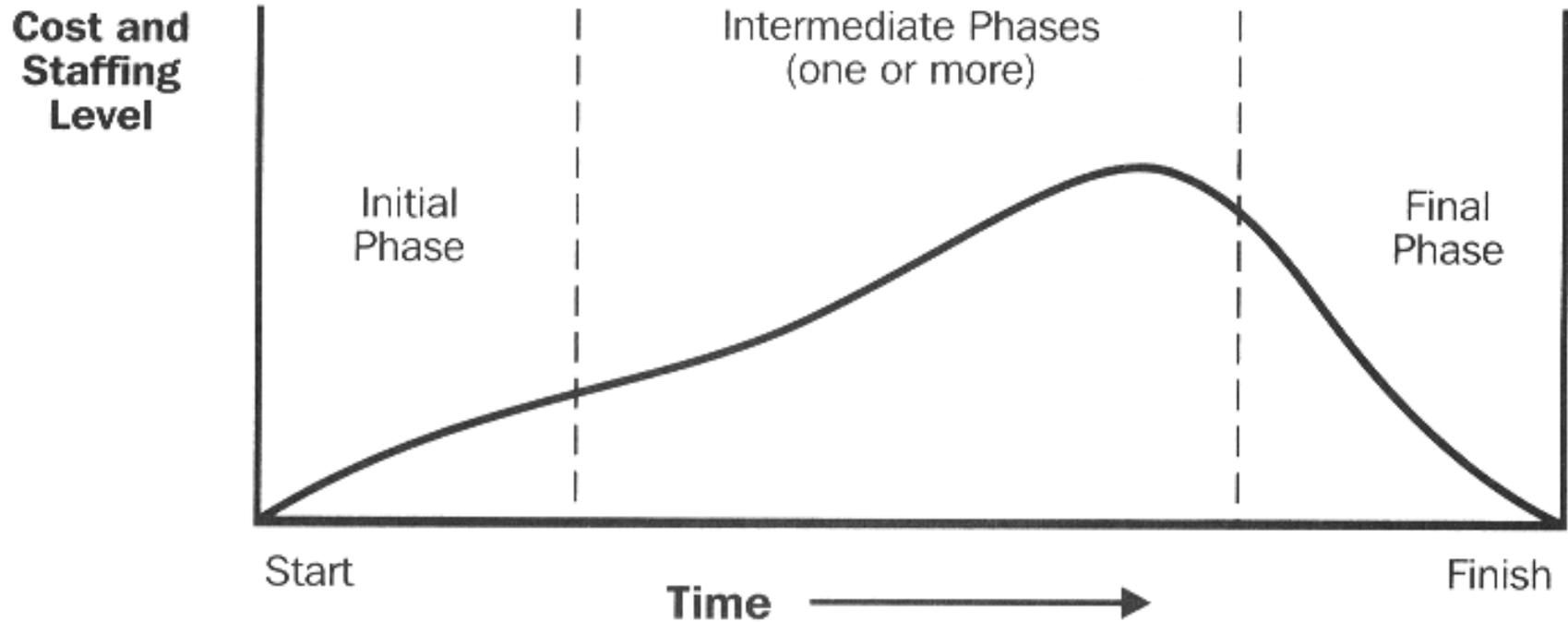
# The traditional project life cycle



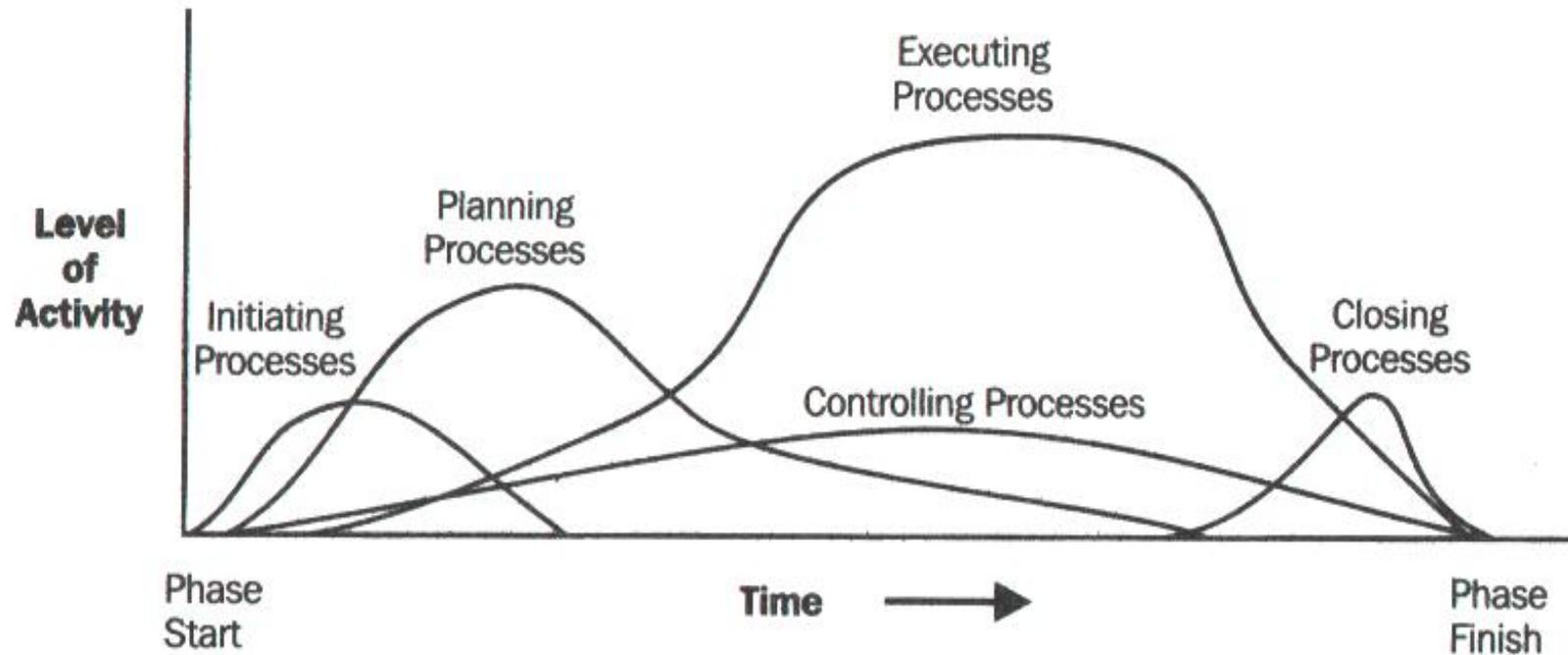
# Project activity interrelationships



# Project phases

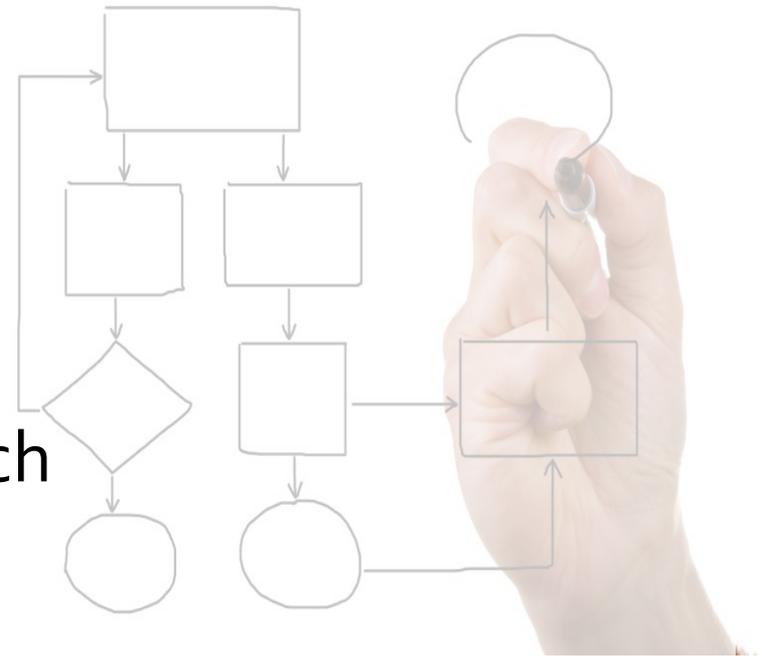


# Resource usage within the project lifecycle



# Traditional project management model

- Define
  - Clarification, definition
- Plan
  - Specification
- Coordinate and control
  - Design, construct, test, launch
- Close
  - Maintenance, evaluation



**Evaluate**

**Identify**

Deploy

Operations and  
Production Support

Test

Evaluation

Evaluation

Unit  
Requirements

Subsystem  
Requirements

System  
Requirements

Risk  
Analysis

Business  
Requirements

Proof of  
Concept

Conceptual  
Design

First  
Build

Logical  
Design

Second  
Build

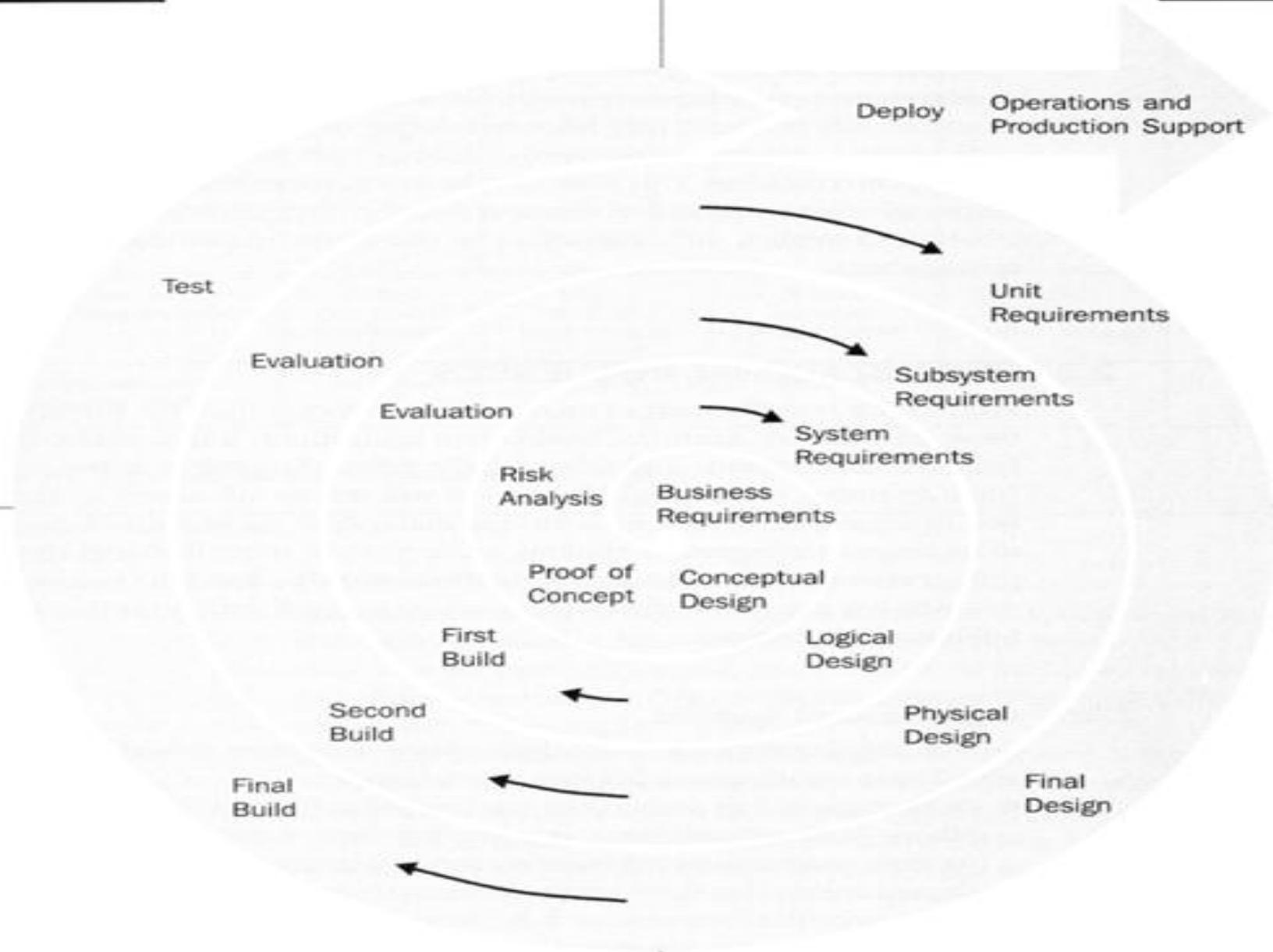
Physical  
Design

Final  
Build

Final  
Design

**Construct**

**Design**

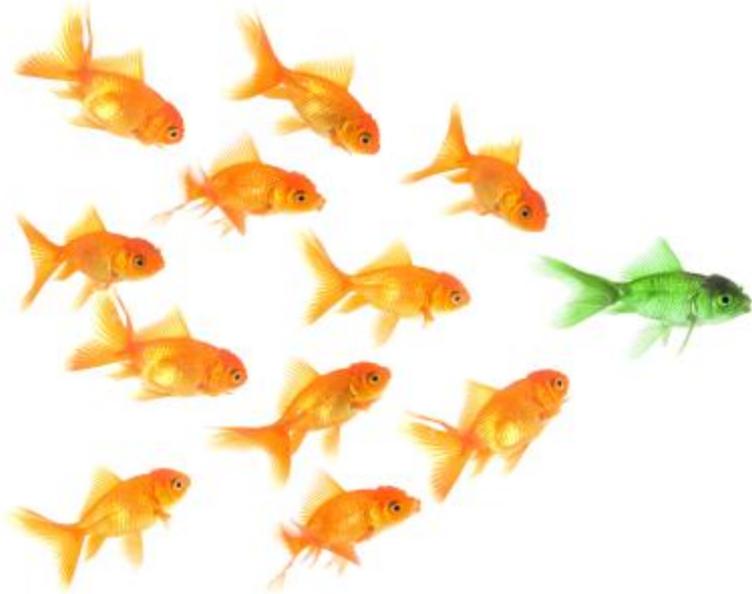


# Core principles of agile methods



- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

# Major schools of thought



- Scrum
- Extreme Project Management
- Adaptive Project Management
- Dynamic Project Management Method

# Scrum

Way to restart a rugby game after an interruption



# Agile project management scrums

- Intentionally iterative, incremental processes
- Predicated on a team-based approach
- Helps control conflicting interests and needs
- Enable improvement in communication
- Maximize cooperation
- Protect the team from disruptions and impediments

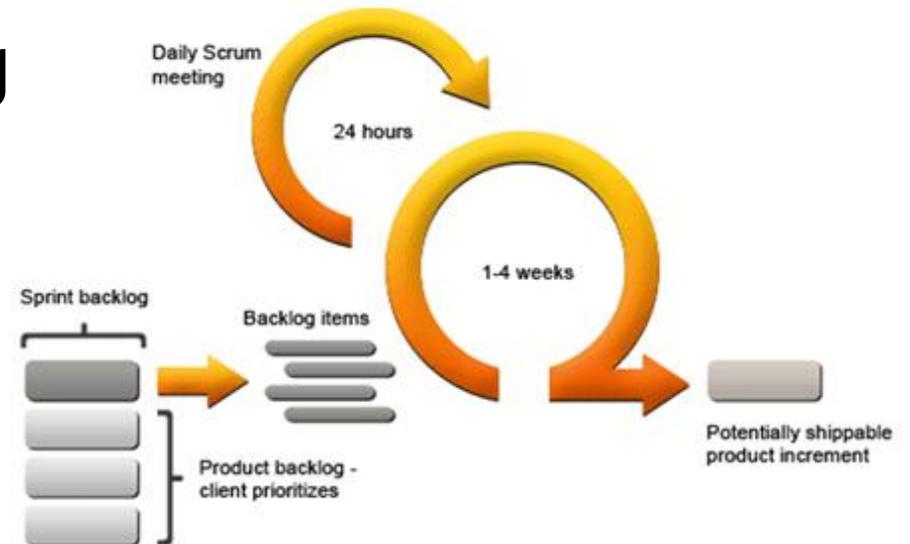


# Three major components

- Roles
  - *Scrum Master* - team leader
  - *Scrum Team* - cross-functional team
    - Self-organizing
      - Leadership role within the team is not fixed
      - Changes depending on the needs of the specific iteration
  - *Product Owner* - functional unit manager
    - Knows what needs to be built
- Process
- Artifacts

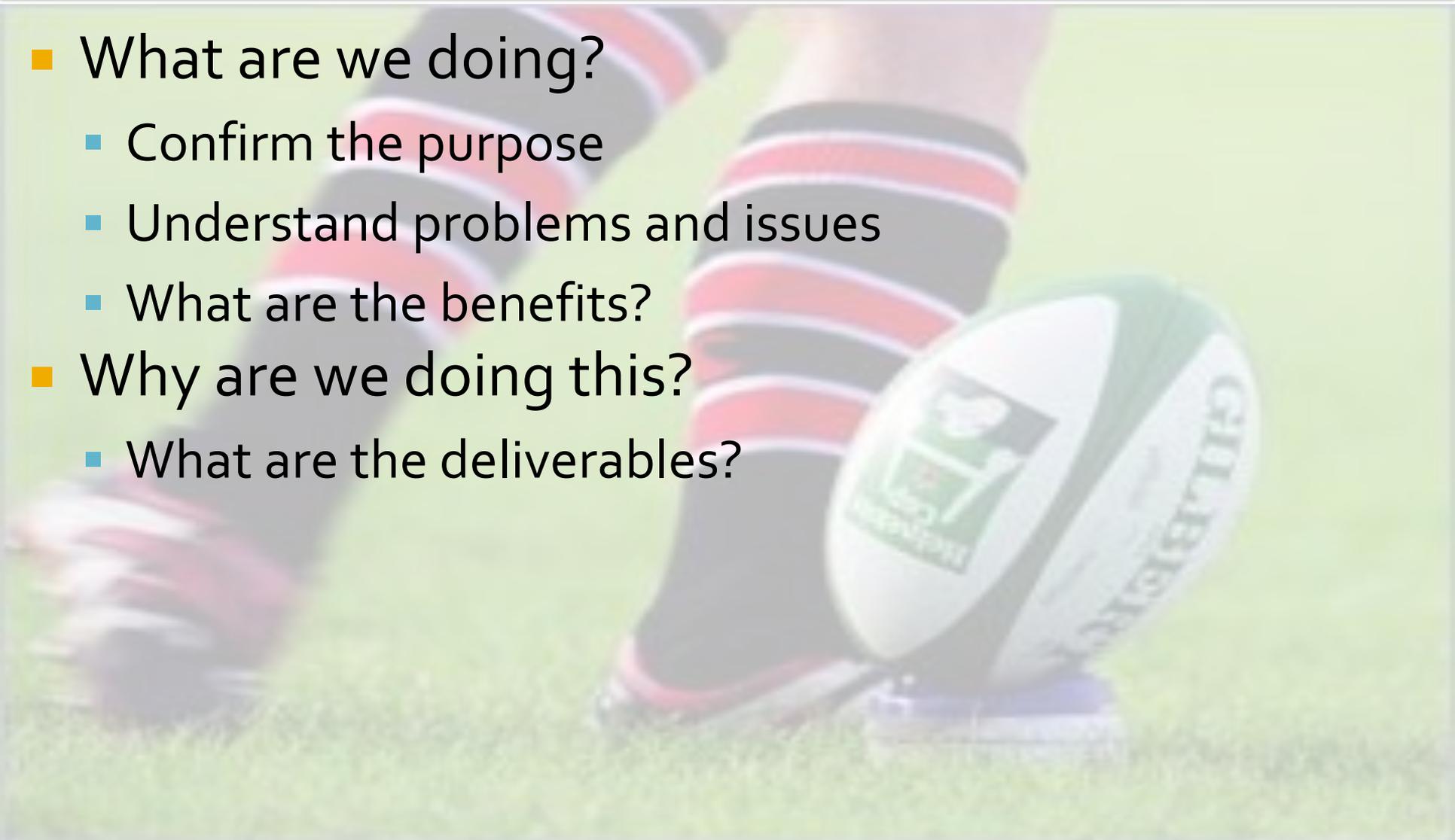
# Scrum process

- Kickoff
- Sprint planning meeting
- Sprint
- Daily Scrum
- Sprint review meeting



# Kickoff

- What are we doing?
  - Confirm the purpose
  - Understand problems and issues
  - What are the benefits?
- Why are we doing this?
  - What are the deliverables?



# Planning elements

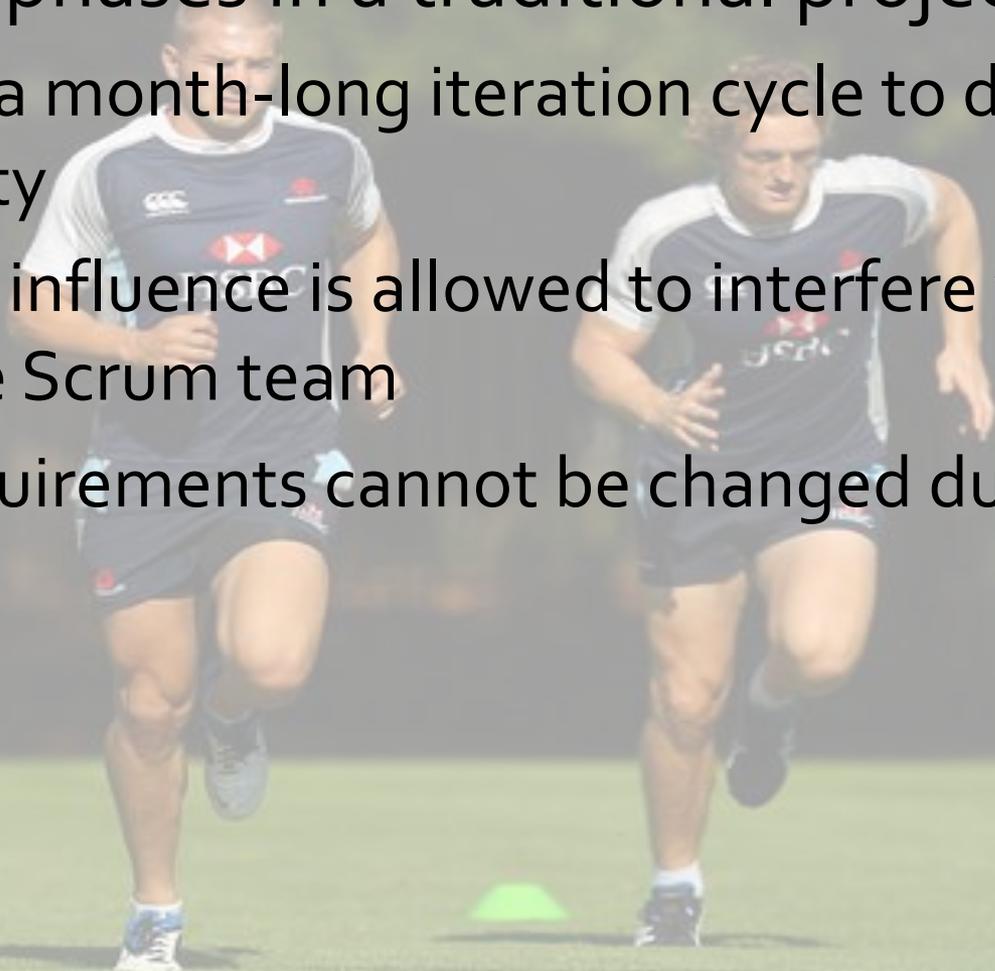
- Start date
  - Objectives
  - Benefits
  - Scope and boundaries of work
- Constraints
  - Assumptions
  - Deliverables
  - Activity time chart
  - Financial aspects

# Sprint planning meeting

- Scrum team, Scrum master, and the product owner at the beginning of each sprint (iteration)
- Three major activities
  1. Group defines the *product backlog*, which is basically a list of the project requirements.
  2. Group determines the *sprint goal*, which is the formal outcome(s) from this particular sprint.
  3. Group creates the *sprint backlog*

# Sprints

- Differ from phases in a traditional project
  - Limited to a month-long iteration cycle to develop functionality
  - No outside influence is allowed to interfere with the work of the Scrum team
  - Project requirements cannot be changed during a sprint.



# Daily scrum



- No more than 15 minutes
  - Scrum master (chairs) and the team
- Every team member briefly answers three questions
  1. What did you do since the last Scrum?
  2. What are you doing until the next Scrum?
  3. What is stopping you getting on with your work?

# Goals and objectives of a scrum

- What a scrum is not
  - A problem solving session
  - Not designed to be collecting information about who (or what) is behind schedule
- Instead, the scrum
  - Tracks the progress of the team
  - Allows team members to make commitments to each other

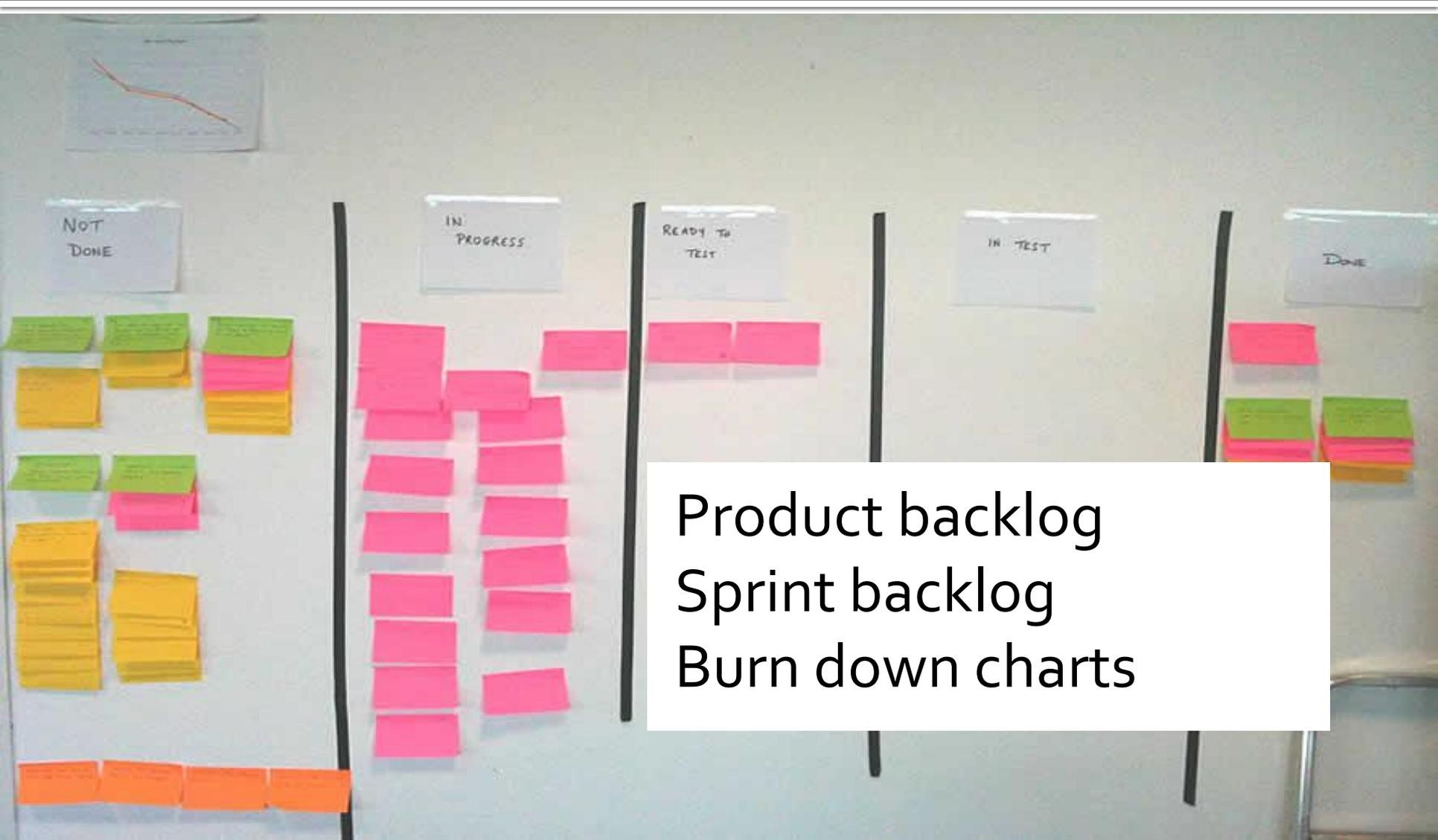


# Sprint review meeting

- Held at the end of each sprint
- Sprint functionality is demonstrated to the product owner
- Meeting should be informal and not be a distraction for the team members



# Artifacts



Product backlog  
Sprint backlog  
Burn down charts

# Product backlog

- The requirements list
  - Prioritized list of items
- Managed and owned by the *product owner*
- Major deliverable of the kickoff and sprint planning meetings
- The product backlog cannot be changed until the next sprint planning meeting

# Product backlog and sprint planning

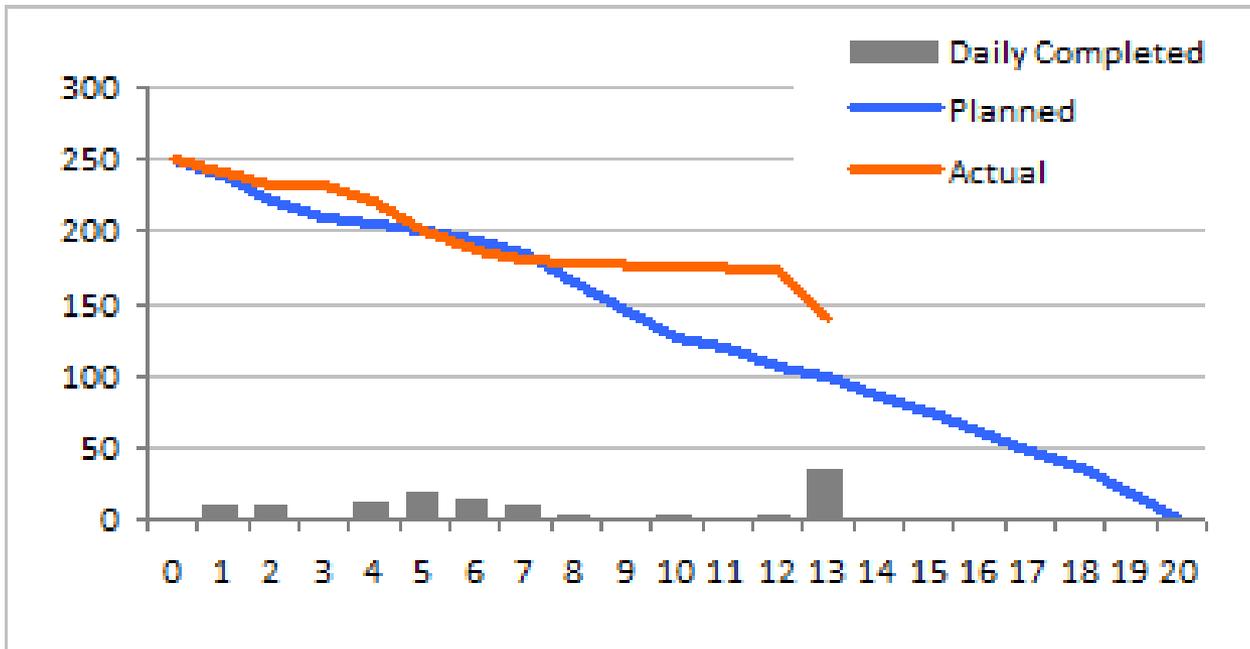
- The team performs an estimation of each product backlog item
- Two methods of review are typically used
  - Expert review
  - Creating a work breakdown structure
- Forecasts and not exact measurements
  - *Size category*, discussing the *story points* (a relative measure of the complexity of a particular feature within the project)
    - Used to estimate the amount of hours or days of work that will be involved to complete the item
    - *Velocity* or amount of effort that can be reasonably handled during one sprint

# Sprint backlog

- Subset of product backlog items part of a particular sprint
- Unlike the project backlog, the sprint backlog is created only by the scrum team members
- Updated every day and contains no more than 300 tasks
- The team may need to break down a task if it is determined that it will take more than 16 hours
- The team may determine that items may need to be added or subtracted from the sprint
  - This is the team's decision, it is not something that is directed by the product owner

# Burn down charts

- Focus on work done
- Three types
  - *Sprint burn down chart* documents progress of the sprint
  - *Release burn down chart* documents progress of the release
  - *Product burn down chart* documents the overall project progress



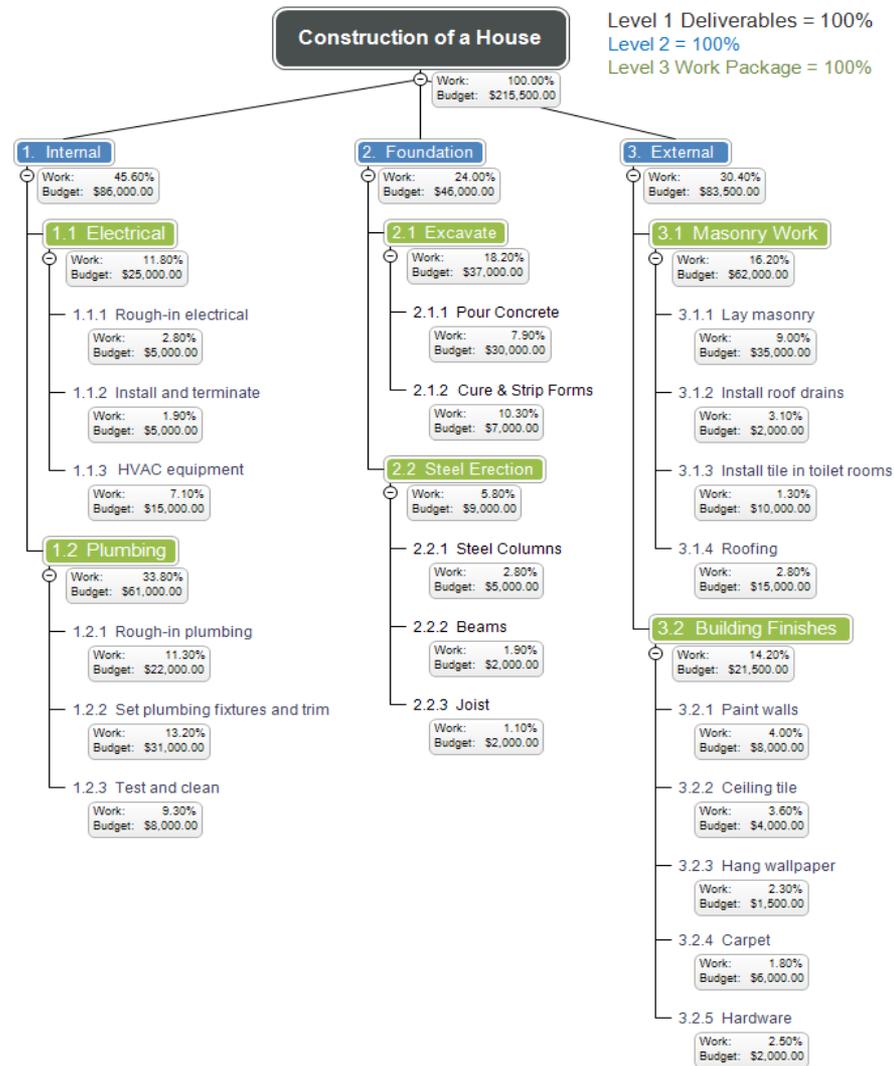
- Provides information in an easy to comprehend manner.
- Each task is typically represented in terms of time (the x-axis of the display grid) and duration (the y-axis)

# Stakeholders

- Key stakeholders on *every* project:
  - Sponsor
  - Project manager
  - Project team members
- External
  - Funders
  - Contractors/vendors
  - Customers
  - Larger organization

# Creating the WBS/ define tasks

- Hierarchical arrangement
- Descriptions of tasks
  - Brief and easily understood
- Not all tasks are subdivided to the same lowest level
  - On small project, tasks are divided into small components
- Does not show interdependencies



# Estimating effort and duration

- *Effort*
  - The time the task will take to complete
  - Assumes no interruptions, breaks, lost, or wasted time
- *Duration*
  - The time the task actually takes to complete
  - Includes all lost, wasted, and waiting time

The distinction between these two things is very important

# Create your own project chart in a spreadsheet program

- One sheet for each major job category
  - Job/task id
  - Who
  - Projected effort time
  - Actual effort (updated as work is done)
  - Projected start date
  - Projected end date
  - Actual start date
  - Actual end date
  - Total each column
- Summary sheet at the beginning which shows totals from all sheets

# Allocating resources to tasks

- Assigning personnel to tasks
- Reconfirm estimates of work and durations
  - Resources available
    - Part-time
    - Not as experienced
- Resource leveling
  - Checking and resolving over allocation of resources

# Risk analysis and contingency

- How much contingency has been included?
- Where is the contingency included?
- The problem of contingency cuts
  - Padding - *doesn't work*
- Risk analysis provides justification
  - Work that *must* be done to reduce risk of project failure
  - Work that *might* be needed if things go wrong

# Measuring risk

- Identify high-risk tasks
  - Determine the *probability of failure* using a high-low-medium or 1 to 5 scale
  - Determine the *impact on the project* using the same scale
  - Multiply probability by impact to get the total impact factor
  - High risk tasks have an impact factor of 12 or greater
- Prepare contingency tasks

These tasks should be performed by the entire team not just the project manager



# Project review

- Project effectiveness
  - Were the project objectives achieved?
  - Has the problem been solved or addressed?
- Process effectiveness
  - What could have been done better?
- Customer satisfaction
- Additional requests

# Why failure occurs

- Failing to establish commitment
  - Transforming a culture is a major undertaking
- Poor expectations management
  - Scope creep
  - Feature creep
  - “guestimation”
- Premature commitment to a fixed budget or schedule
- Adding resources to overcome schedule slippages

# Resources

- Deemer, P., Benefield, G., Larman, C., and Vodde, B. (2010). *The Scrum Primer*. Available online at <http://assets.scrumtraininginstitute.com/downloads/1/scrumprimer121.pdf?1285931497> –
  - An in-depth introduction to the theory and practice of Scrum albeit primarily from a software development perspective.
- Schwaber, K. (2009). Scrum.org online at [www.Scrum.org](http://www.Scrum.org)
  - Detailed information on Scrum methods
- Schwaber, K. (2004). *Agile Project Management with Scrum*. Microsoft Press
  - One of the first books on using agile methods for project management.
- James, M. (2010). Scrum reference cards.
  - Online at <http://scrumreferencecard.com/>

# Additional resources

- Work breakdown structure template
  - <http://www.projectmanagementdocs.com/templates/work-breakdown-structure-wbs.html>
- Creating a burn down chart in Google docs
  - <http://www.scrumology.net/2011/05/03/how-to-create-a-burndown-chart-in-google-docs/>
- Product (sprint) backlog template
  - <http://agilesoftwaredevelopment.com/scrum/simple-product-backlog>

# Thank you

Frank Cervone

Vice Chancellor for Information Services and CIO

Purdue University Calumet

[fcervone@purduecal.edu](mailto:fcervone@purduecal.edu)