

# Simulation Design

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CSSE 221

Fundamentals of Software Development  
Honors

Rose-Hulman Institute of Technology

# Announcements

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- Picnic was a great success!
- Please pass in written HW
- Keep your simulation project ideas with you

# This week: Start Simulation

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- Monday:
  - Planning for Simulation Project
- Tuesday:
  - Exam
- Thursday:
  - Fall break

Sort and Graphics/GUIs are Tuesday after break, due Sunday!

# Capsules round 3

# How to do a capsule?

## Round 3: +Lecture

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- Now you get to teach the whole topic to the class.
- 45 minutes
  - Short lecture (whiteboard or slides OK)
  - Demo
  - Hands-on activity where classmates get a chance to apply knowledge
  - Quiz integrated with your slides and demo/activity
  - You may skip the summary if you use slides and your slides + demo contain equivalent detail

# Capsule Deliverables

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- 48 hours in advance:
  - Email me the quiz, key, and slides or summary
  - Commit your demo to `csse221-201210-public`
- You may come for advice on topic and presentation if you'd like
  - I'm happy to teach teachers!

# Other ideas

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- Still need roles (demo-driver, rover, questioner)
  - Add 1 or more people to present the slides
  - You'll need to multi-task
- You may move freely between modes (slides/live coding/activities)

# How to give a great presentation!

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- Prepare!
  - Research: Know your stuff
  - Summarize: what are the 2-3 most important things I want everyone to learn from this capsule?
  - Spend some time thinking about the flow
  - Rehearse the whole thing together
- Delivery
  - Face your classmates
  - Make eye contact
  - Enunciate clearly and slowly



# Capsule Rubric

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- New:
  - Context and motivation
  - Summary → Explanation/correctness/organization
  - Presentation skills
  - Time (OK to go slightly under, but if you don't rehearse, this could really bite you!)

# Software Life Cycle



# Formal Development Processes

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- Standardized approaches intended to:
  - Reduce costs
  - Increase predictability of results
- Examples:
  - Waterfall model
  - Spiral model
  - “Rational Unified Process”

# Waterfall Model

Analysis

- Do each stage to completion
- Then do the next stage

Design

Implementation

Testing

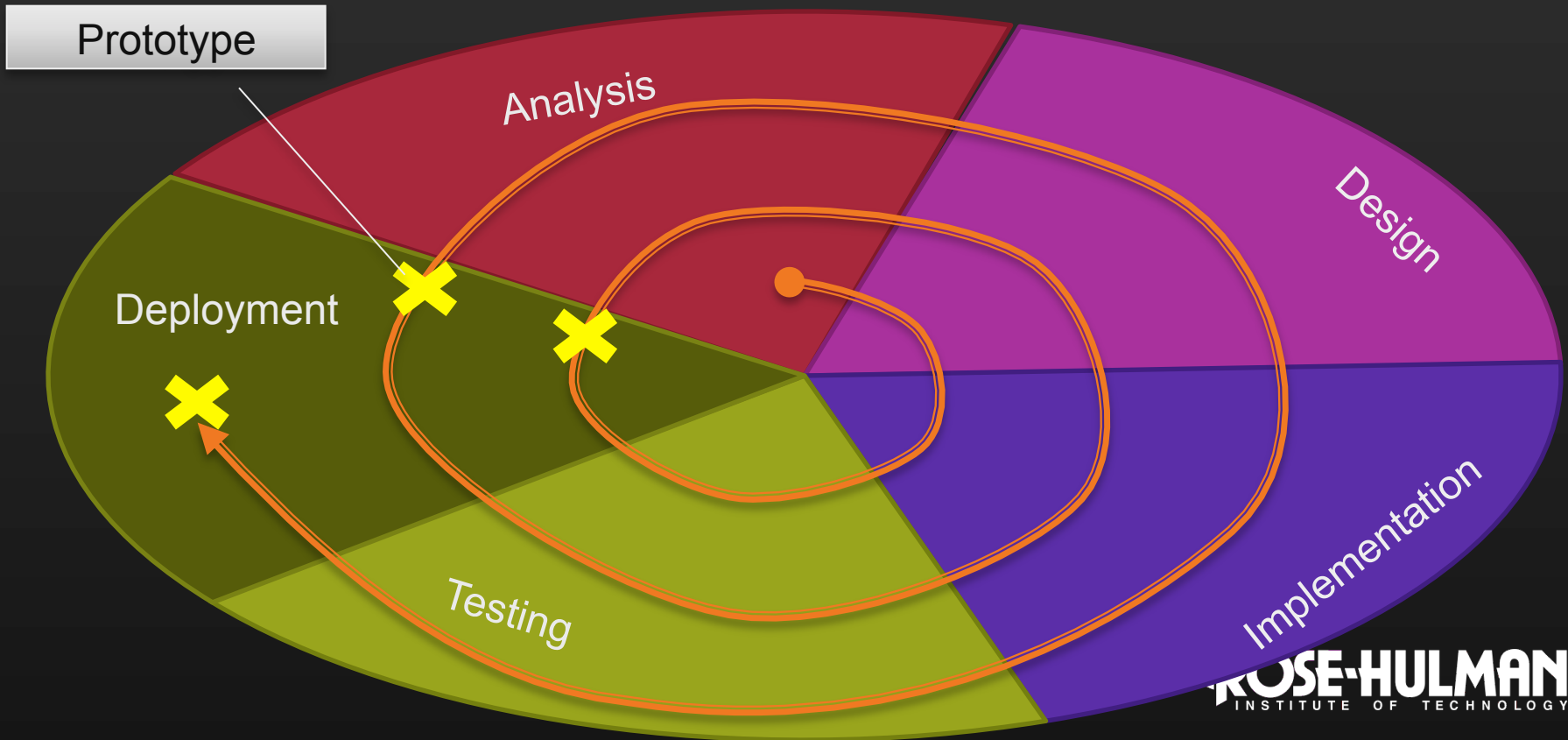
Pipe dream model?

Deployment

# Spiral Model

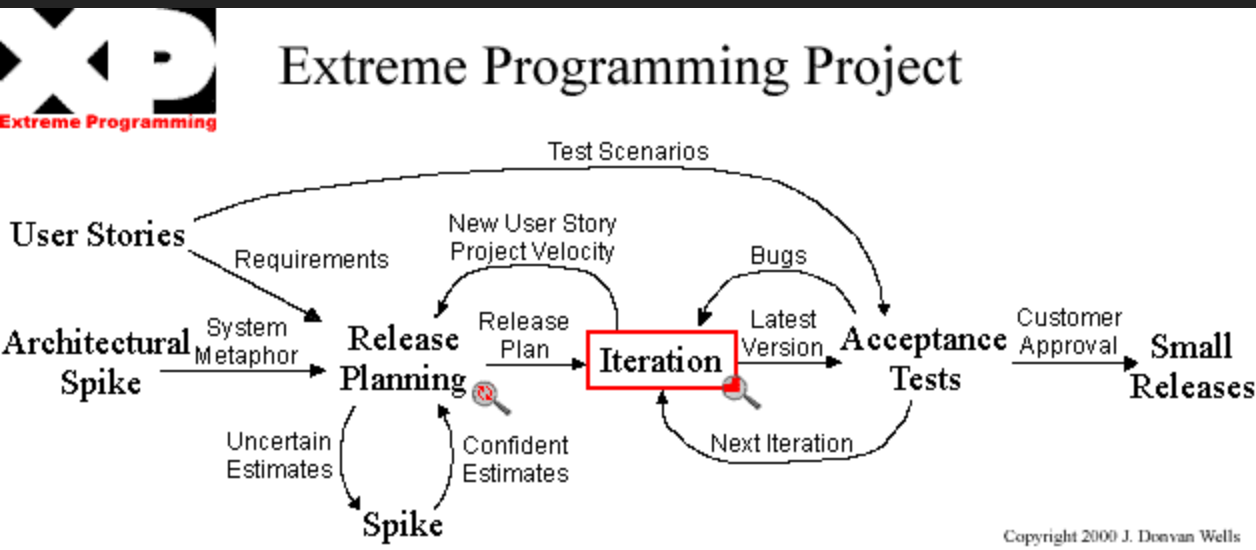
- Schedule overruns
- Scope creep

- Repeat phases in a cycle
- Produce a prototype at end of each cycle
- Get early feedback, incorporate changes



# Extreme Programming—XP

- Like the spiral model with **very** short cycles
- Pioneered by Kent Beck
- One of several “agile” methodologies, focused on building high quality software quickly
- Rather than focus on rigid process, XP espouses 12 key practices...



# The XP Practices

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- Realistic planning
- **Small releases**
- Shared metaphors
- Simplicity
- **Testing**
- **Refactoring**
- **Pair programming**
- Collective ownership
- **Continuous integration**
- 40-hour week
- On-site customer
- **Coding standards**

When you see opportunity to make code better, do it

Use descriptive names, Control-Shift-F, etc

These go to 11

**Break**





# Simulation Project

# Team formation

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- Your project teams are created.
- Gather with your teammates
- Please read your simulation project ideas
  - Listen carefully for ideas that interest you
  - When a team has mutually agreed to work with an idea, let me know
  - I have set up your repository
  - As a team, read the spec and get to work!