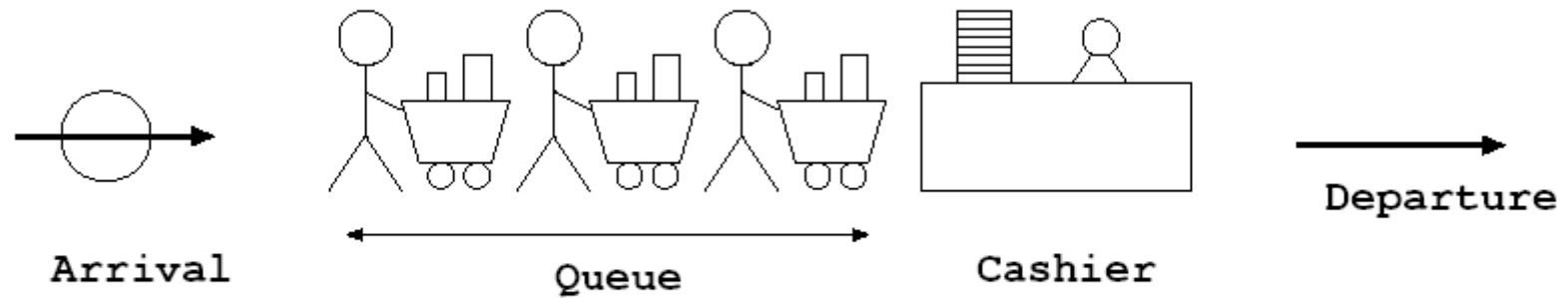


The Software Process

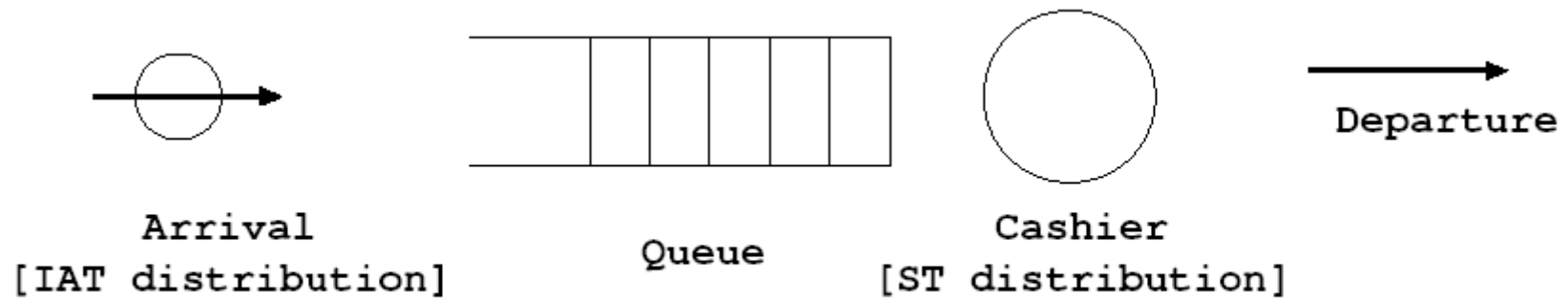
Comp-304 : The Software Process
Lecture 1

Alexandre Denault
Original notes by Hans Vangheluwe
Computer Science
McGill University
Fall 2006

Process : Queuing System

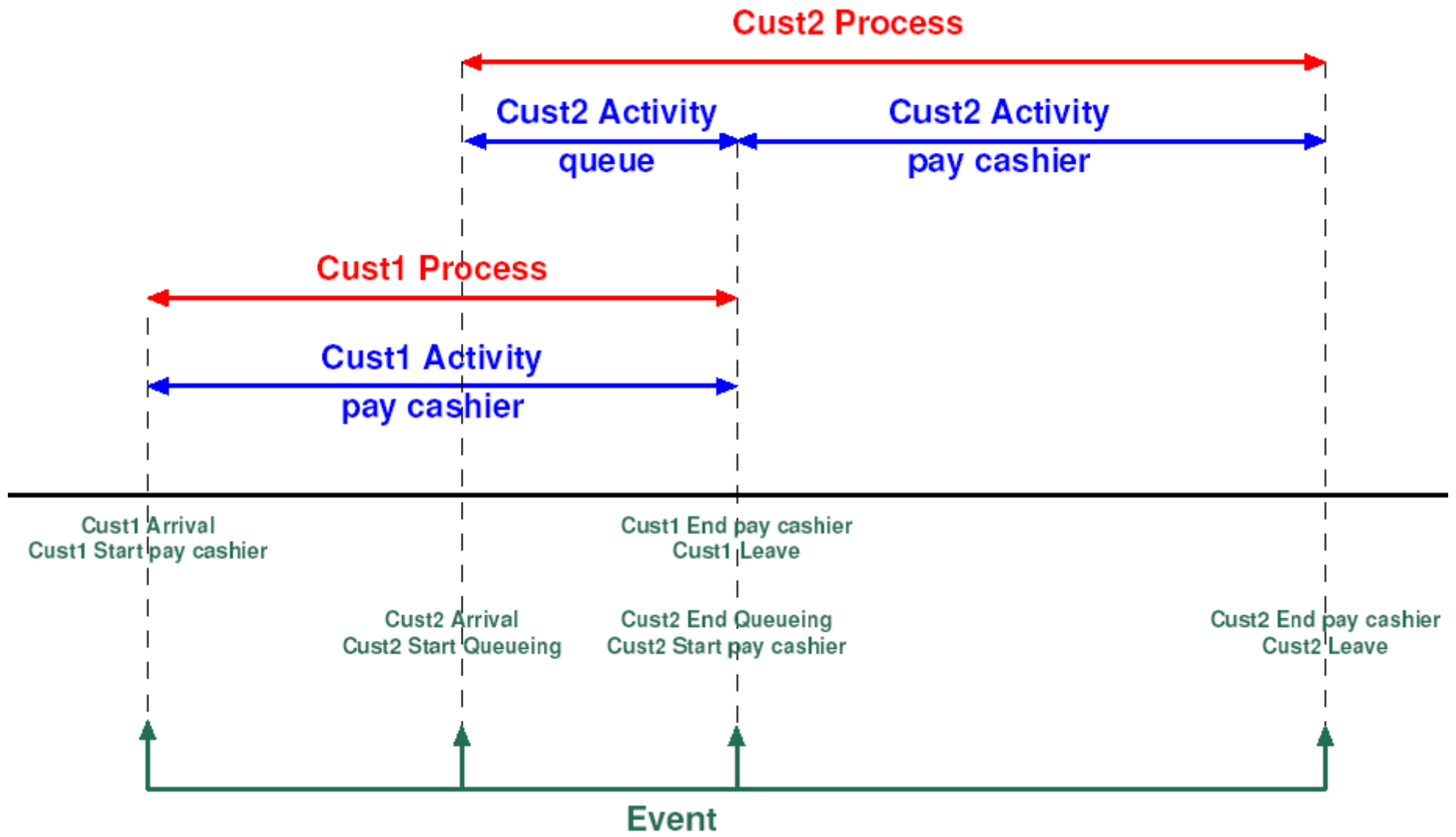


Physical View



Abstract View

Event/Activity/Process



Software Process

“The Software Engineering process is the total set of Software Engineering activities needed to transform requirements into software.”

Watts S. Humphrey. Software Engineering Institute, CMU.
<http://portal.acm.org/citation.cfm?id=75122>

Activities in the process?

- Implementation
- ...

Activities in the Process

- Requirements Gathering / Specification
- Analysis & Design
- Implementation
- Environment Setup
- Training
- Testing
- Deployment
- Maintenance
- Project Management

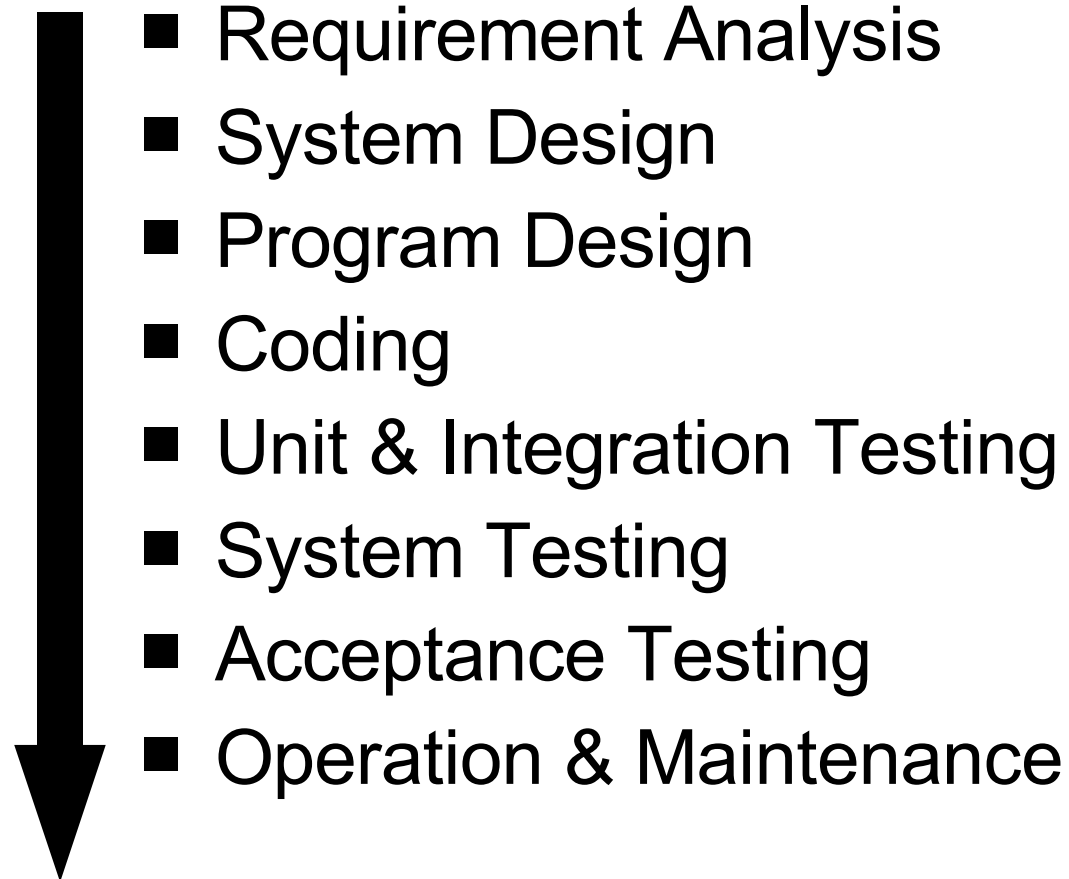
Software Processes

- Waterfall
- ...

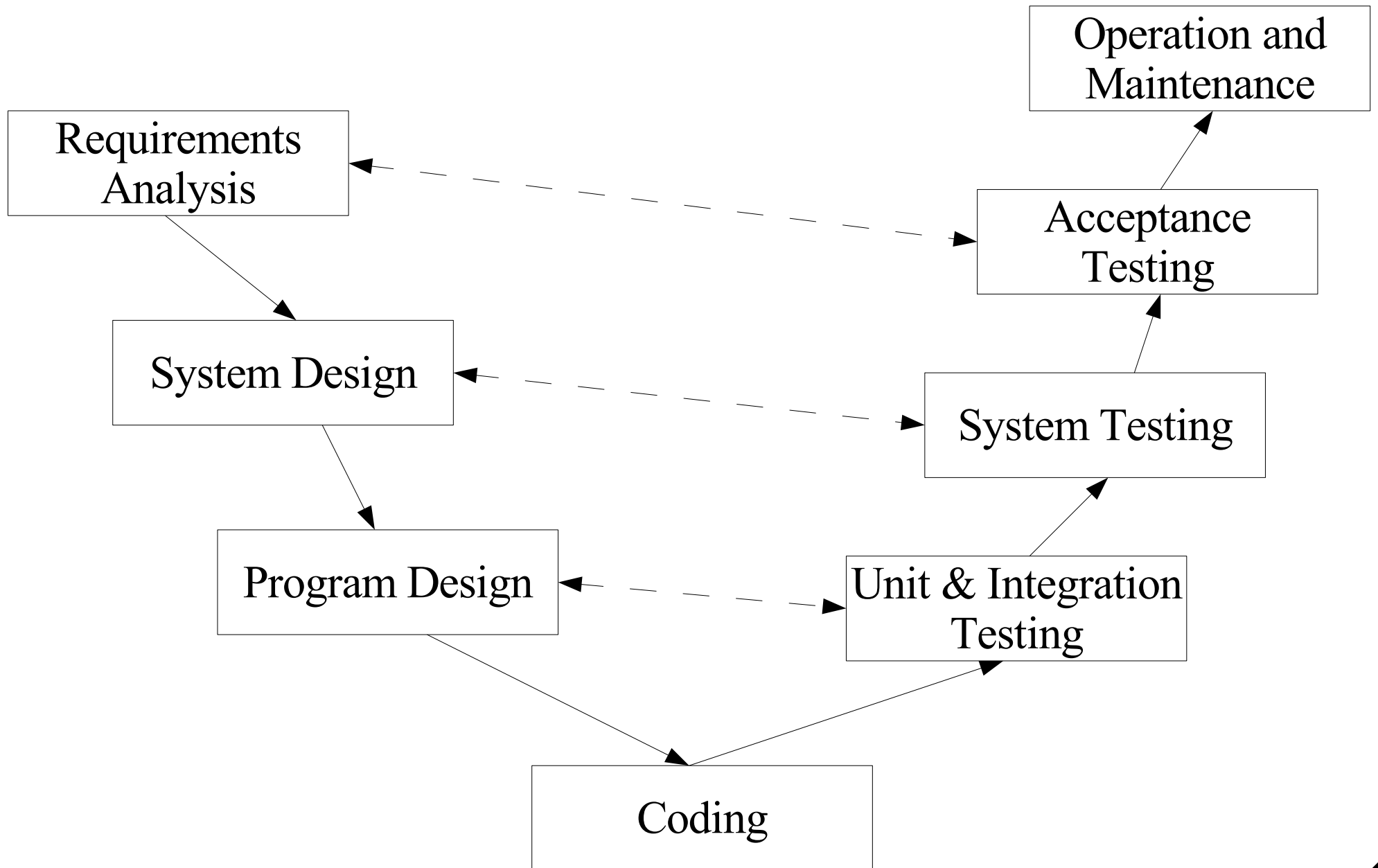
Software Processes

- Waterfall (Royce)
- V Model (German Ministry of Defense)
- Prototyping
- Operational Specification
- Transformational (automated software synthesis)
- Phased Development: Increment and Iteration
- Spiral Model (Boehm)
- The Rational Unified Process (RUP)
- Extreme Programming (XP)

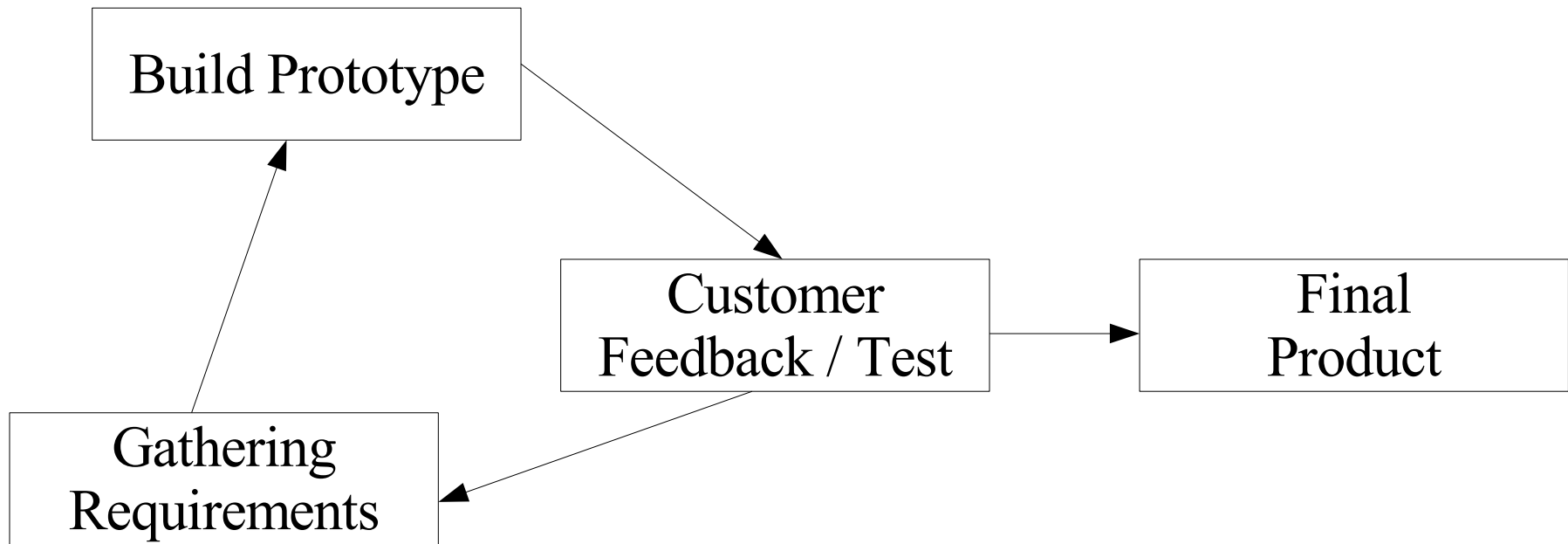
Waterfall



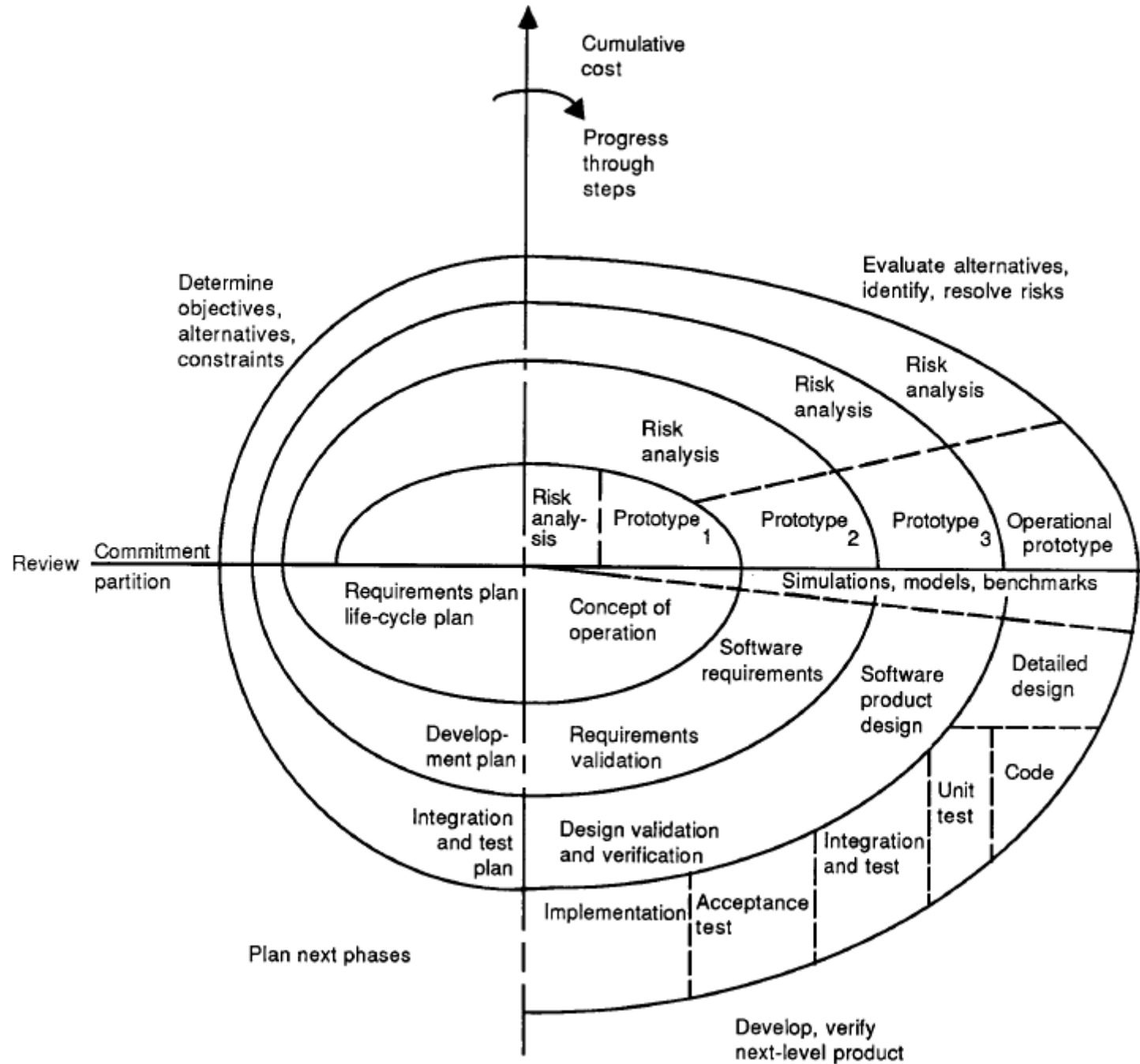
V Model



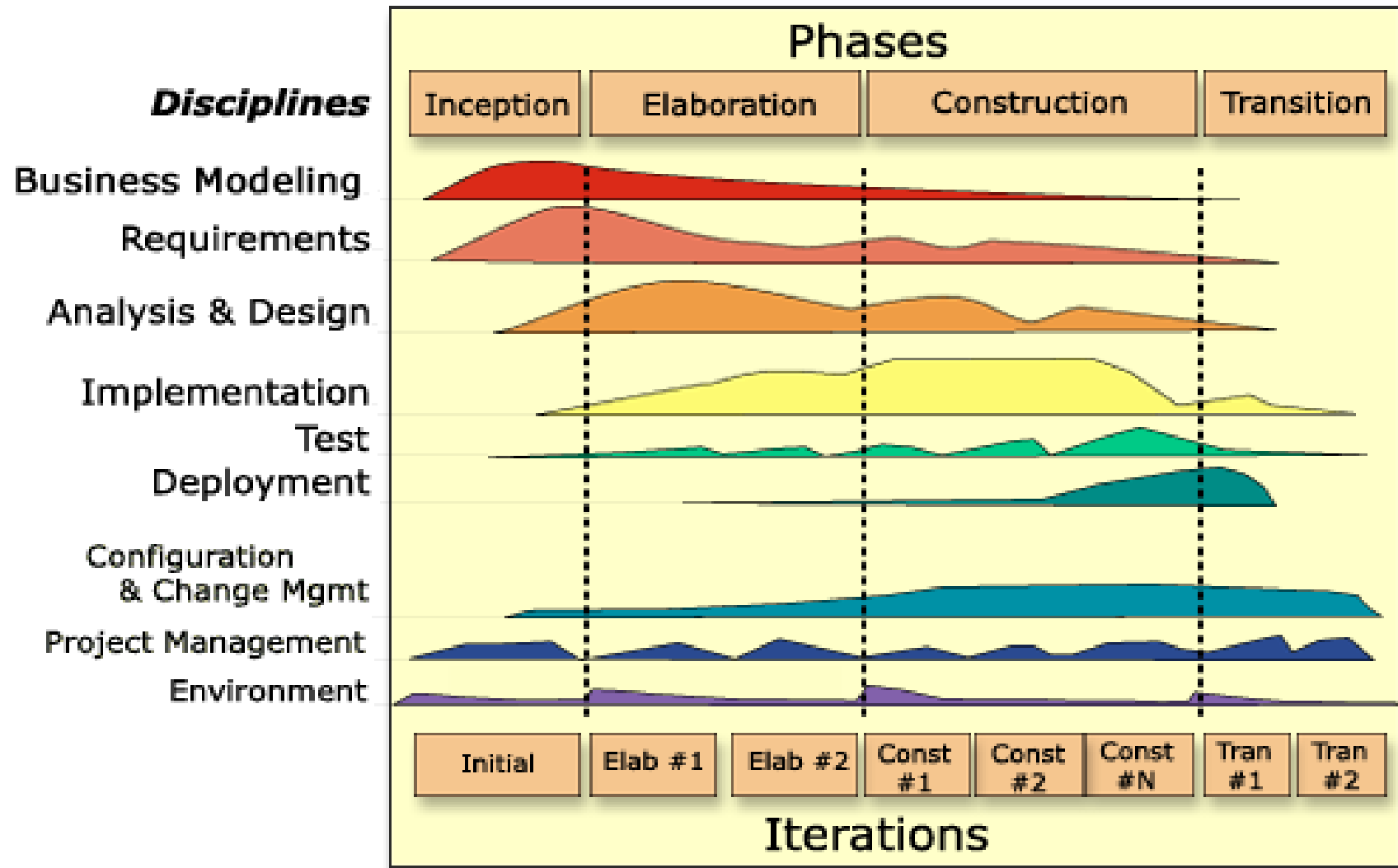
Prototyping



Boehm Spiral



The Rational Unified Process (RUP)



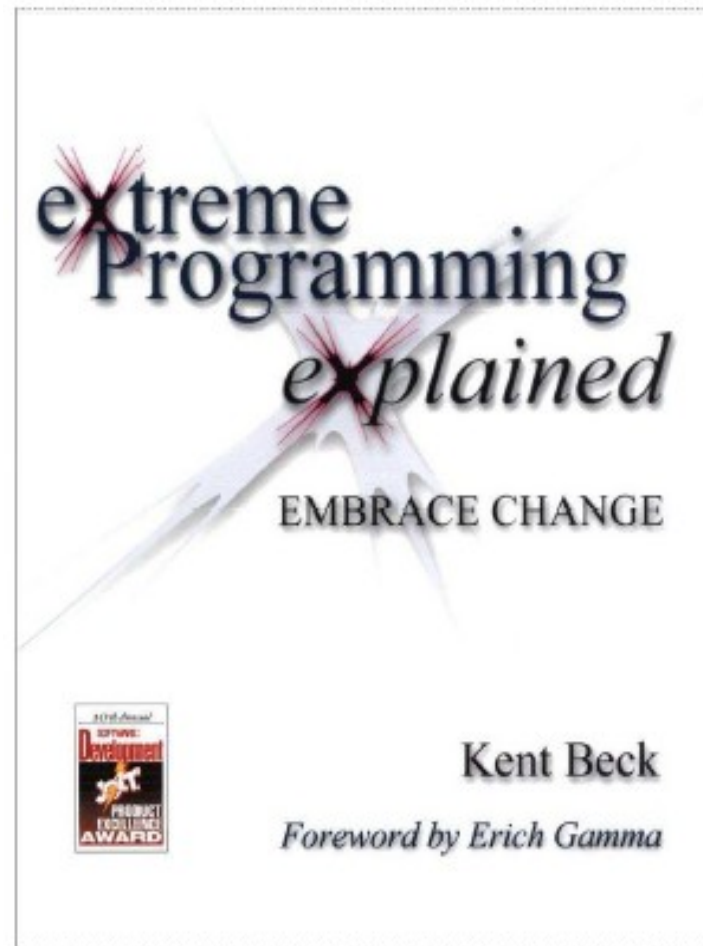
RUP : Observations

- Waterfall-like sequence of
 - ◆ Requirements, Design, Implementation, Testing.
- Not pure waterfall
 - ◆ Phased Development (iterative)
 - ◆ Overlap (concurrency) between activities
- Testing
 - ◆ Regression (test not only newly developed, but also previously developed code)
 - ◆ Testing starts before design and coding

Agile Manifesto

- Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
- The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
- The best architectures, requirements, and designs emerge from self-organizing teams.
- At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

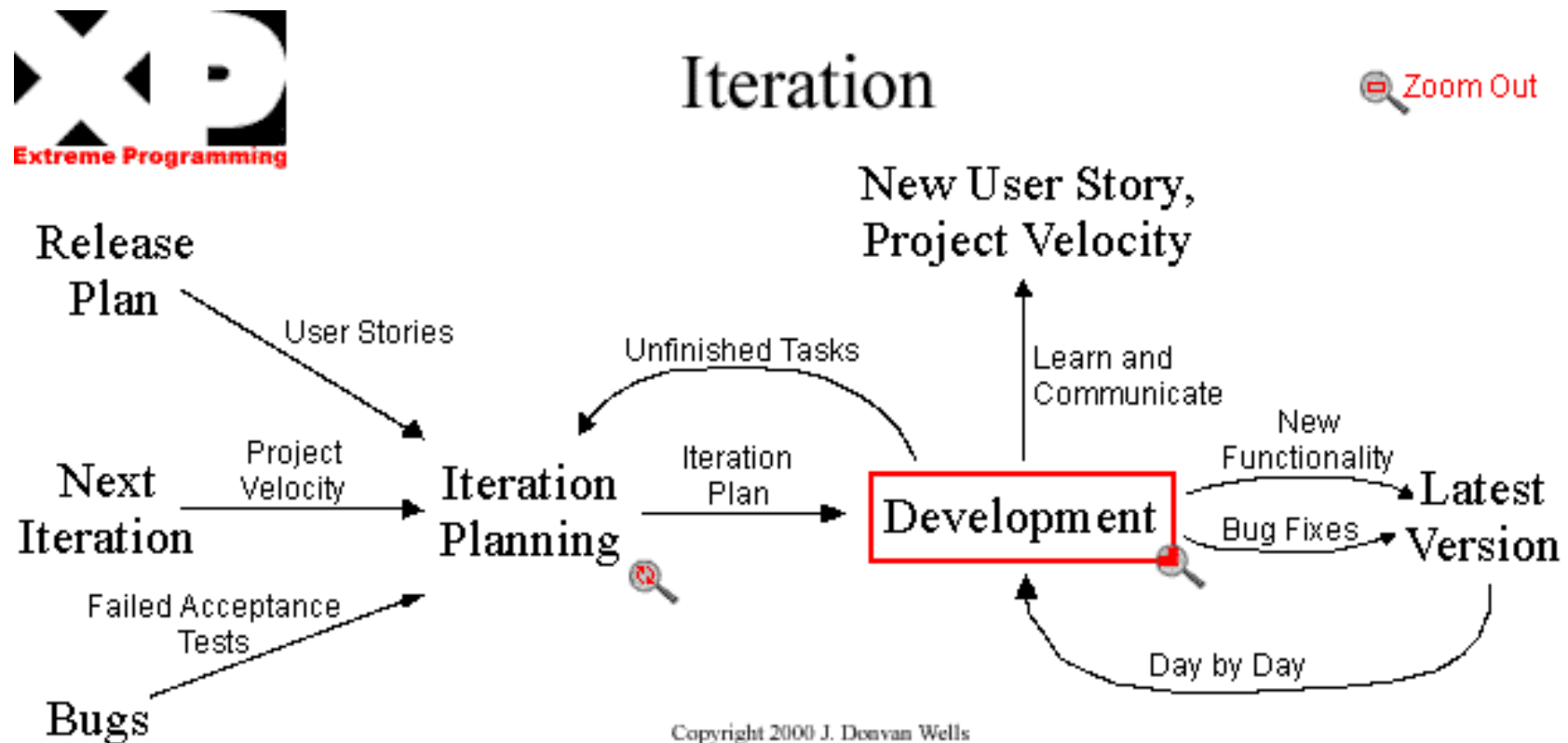
Extreme Programming (XP)



www.extremeprogramming.org

XP Process

- User Stories are written by the customers as things that the system needs to do for them.
 - ◆ They drive the creation of acceptance tests.
- The project is divided into Iterations.



XP Highlights

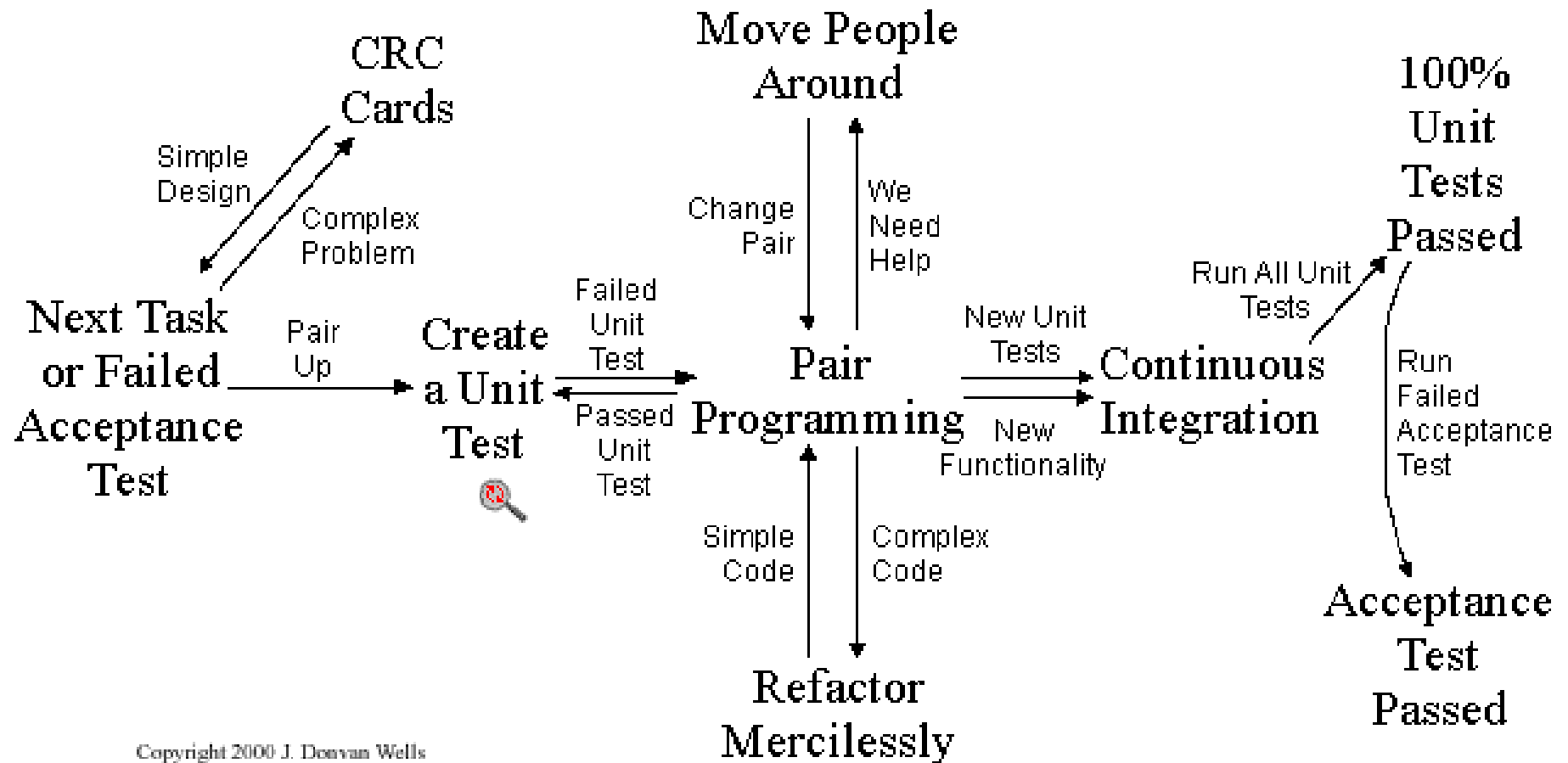
- Code the Unit Test First
 - ◆ Write the simplest code that succeed the test
- Make frequent small releases
- Pair Programming
 - ◆ Two programmers, 1 desk
- Refactor Mercilessly
 - ◆ Because less code is easier to maintain

Collective Code Ownership

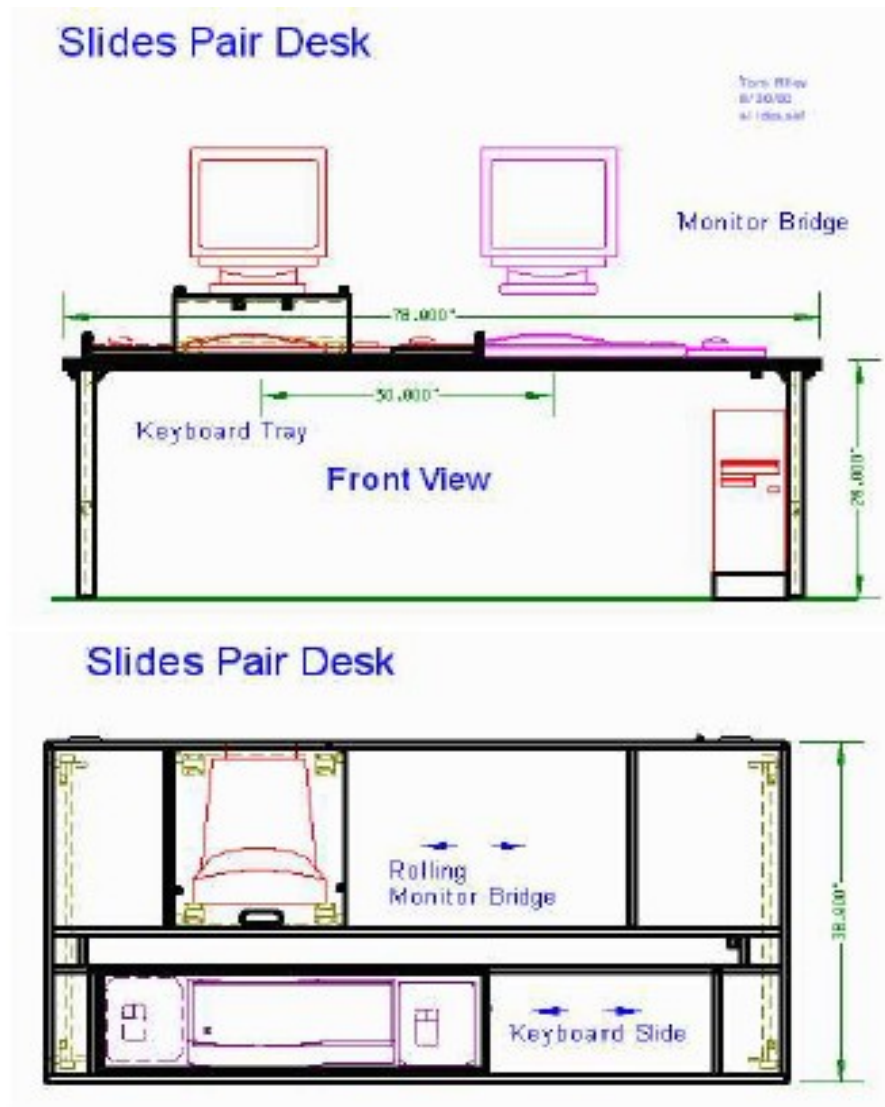


Collective Code Ownership

Zoom Out



Pair Programming Workstation



Pair Programming

www.charm.net/~jriley/pairall.html