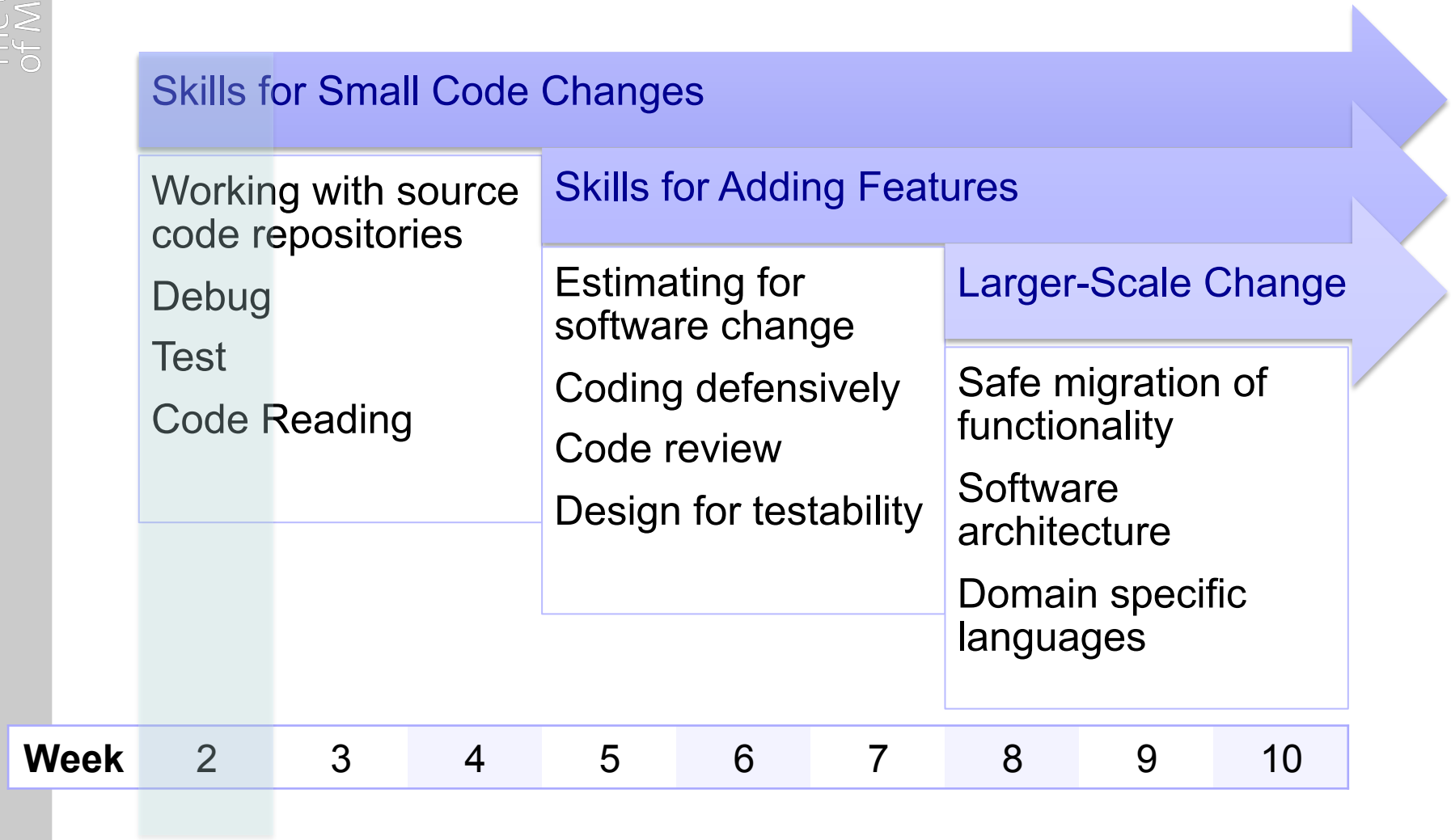
Building and Testing Open Source Software

COMP23420: Software Engineering

Week 2

Duncan Hull, Chris Page & Suzanne Embury

Course Unit Roadmap (Weeks 2-10)

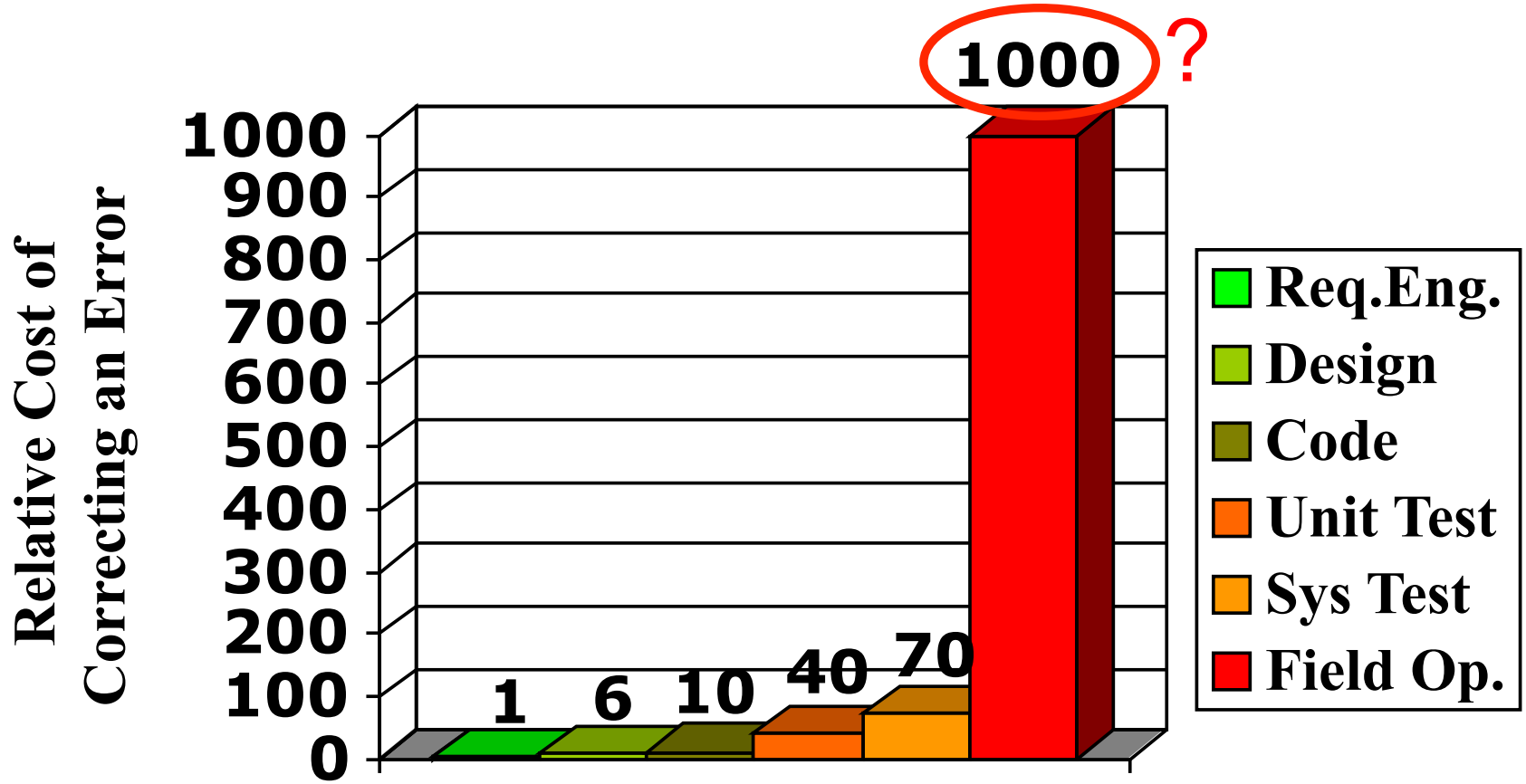


Scenario

- You have joined a software development team on a graduate scheme or placement.

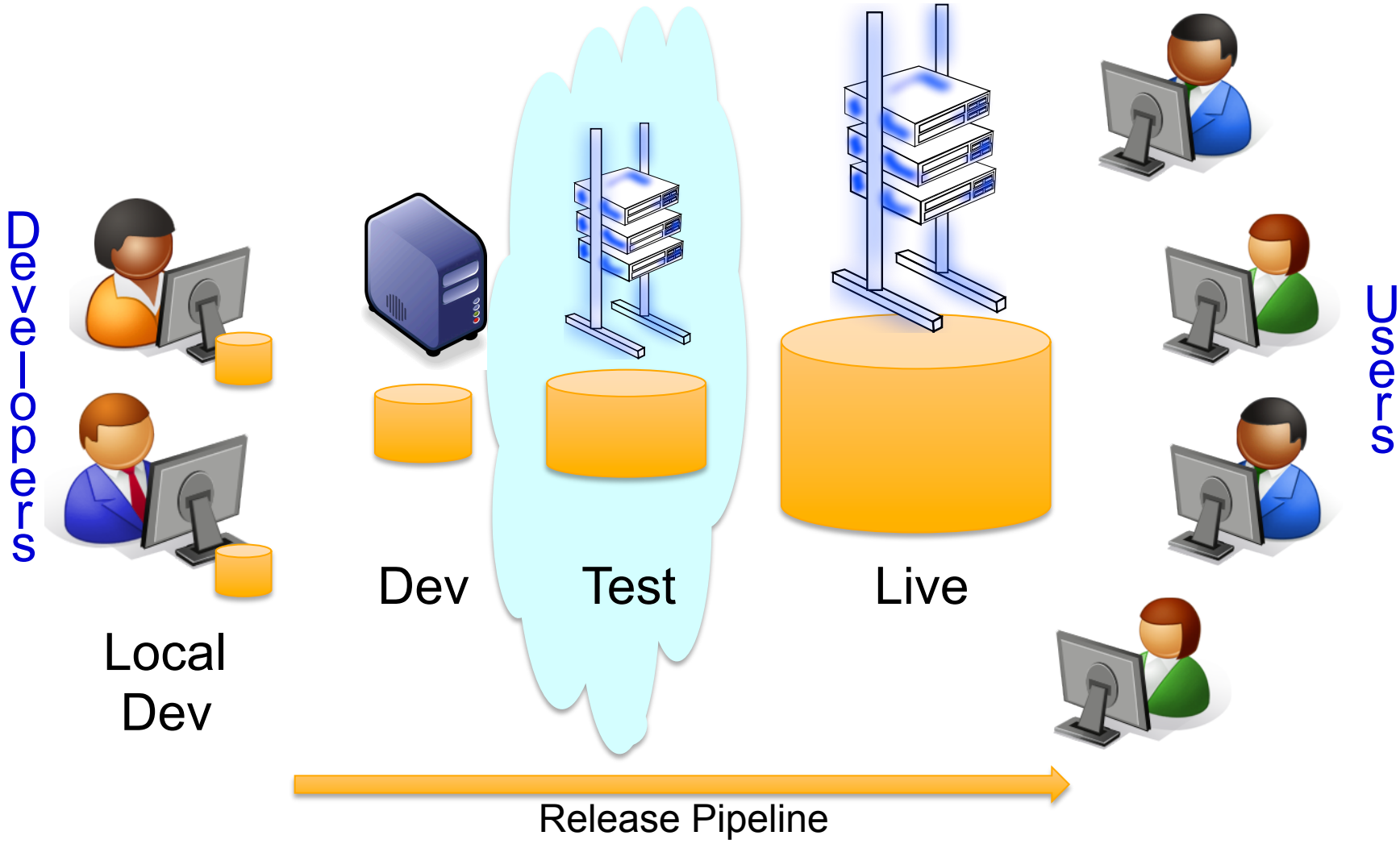
- How do you become a useful team member quickly?

Boehm's Model of Cost of Change



From: Software Engineering Economics, B.W. Boehm, Prentice Hall, 1981

Typical Software Organisation



Step 1: Acquiring the Source Code

- Where is it?

Step 2: Build the Object Code

- What does this involve?
  - "Build" = "Compile"?
- When do we build the code?
- How many build processes do we want?
  - One build process with options to
    - Deploy to dev
    - Deploy to test
    - Deploy to live

Build Automation

- All this points to the need for the build process to be automated

- Build automation tools:
  - Maven, Ant, Gradle, make, Rake, MSBuild, NAnt, …

- Aim: make build:
  - Painless to initiate
  - Completely repeatable
  - Quick!

Step 3: Run the Tests

- Release pipeline gateways:
  - Code review
  - Coding standards/documentation procedures
  - Automated tests

Unit Test Results.

Designed for use with JUnit and Ant.

Summary

Tests	Failures	Errors	Skipped	Success rate	Time
119	24	0	0	79.83%	0.112

Note: *failures* are anticipated and checked for with assertions while *errors* are unanticipated.

Packages

Name	Tests	Errors	Failures	Skipped	Time(s)	Time Stamp	Host
<none>	119	0	24	0	0.112	2016-02-09T10:41:58	cspool98.cs.man.ac.uk

Step 4: Run the Code

- Easy if talking about a single Java program.

- What if our system consists of multiple components executing concurrently?
  - E.g. client-server system

In Today's Workshop You Will

- Follow the instructions provided to compete all 4 steps for our target system.
- Work individually
- Try to complete all 4 steps. If you don't finish in the workshop, you'll need to carry on in your spare time
- You need to know how to do all this for the coursework

Integrated Development Environments

- COMP161/162: used command line and text editor
- COMP23420: will use an IDE

- Why?

Link to the Coursework/Exam

- Coursework 1
  - Git repository already supplied for your team
  - You'll need to figure out how to build the client and the server
  - You'll need to figure out how to run the code
  - You'll need to be able to run the tests and interpret their results

- Exam
  - Could be questions on any aspect of the build and test process.

We Are Here to Help!

Need help? Then please just ask.

You may take a 10 minute break at any time before the last 20 minutes of the workshop.

Next Week

- Monday
  - teams assigned – check Moodle for details
  - coursework details available on Moodle
- Tuesday
  - first proper team study session
  - Collab1/Collab2/G102
- Thursday
  - group R workshop
  - second team study session
- Friday
  - Groups T & Q workshops