Software Testing (2)

CS580 Advanced Software Engineering
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jUnit – Test with Resources

- Use src/main/resource to store test resources
  - e.g., files, configurations
- Get the resource using getResource()
  - e.g., src/main/resource/res-folder/test.jpg

```
getClass().getResource("/res-folder/test.jpg").getFile();
```

jUnit – Test Exceptions

◆ Use try-catch/fail

```
try {
    File nonExistFile = photoManager.getPhotoFile(
            "testId001", "non-existing-id");
    Assert.fail("Exception is supposed to be thrown here.");
} catch (RuntimeException e) {
    System.out.println("File is not found. Exception is catched.");
}
```
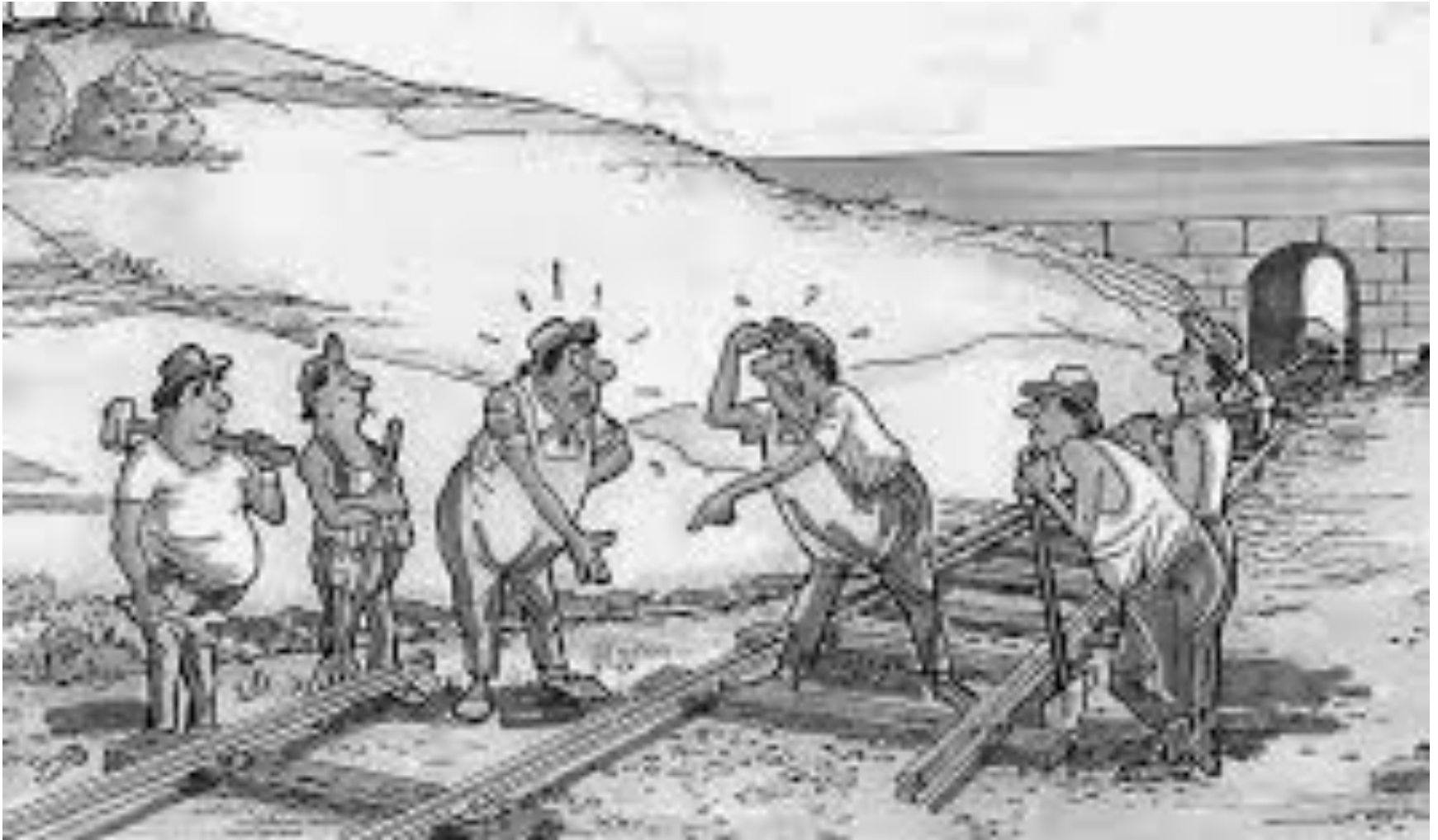
◆ Use jUnit expected

```
@Test(expected = NullPointerException.class)
public testAddPhoto() {
    … …
}
```

jUnit Mocking Framework - Mockito

```
<dependency>
        <groupId>org.mockito</groupId>
        <artifactId>mockito-all</artifactId>
        <version>1.9.5</version>
</dependency>
```
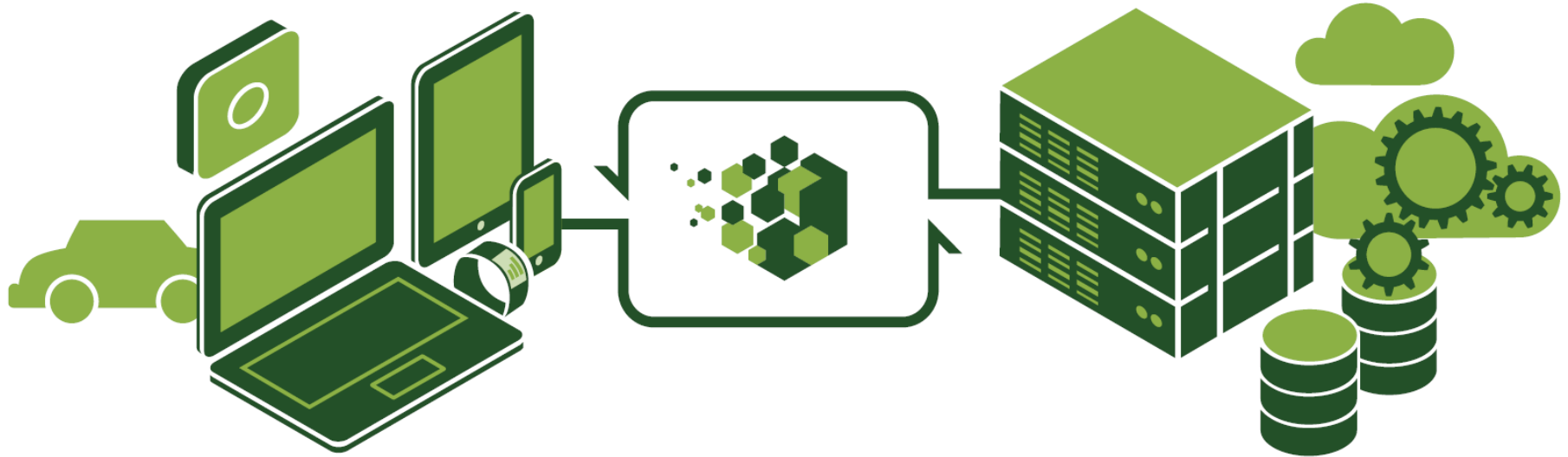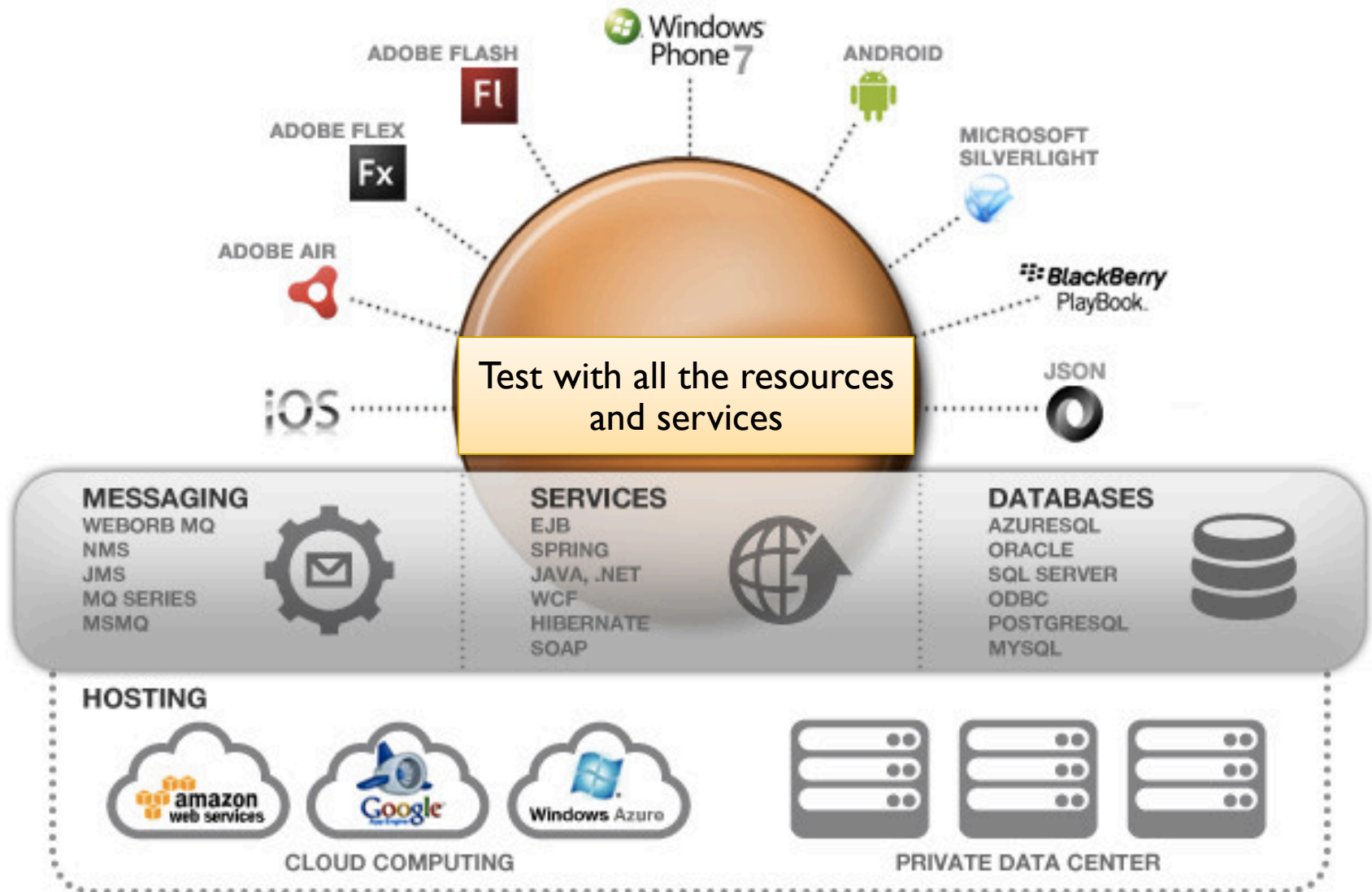
Integration Test

Integration Test

◆ Mocking helps to verify the individual process and workflow, but just mocking is insufficient

◆ Tests need to be done with the real configurations and running environments

Enable All the Resources in Tests

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Test with all the resources and services

ADOBE FLASH

ADOBE FLEX

ADOBE AIR

iOS

Windows Phone 7

ANDROID

MICROSOFT SILVERLIGHT

BlackBerry PlayBook.

JSON

MESSAGING
WEBORB MQ
NMS
JMS
MQ SERIES
MSMQ

SERVICES
EJB
SPRING
JAVA, .NET
WCF
HIBERNATE
SOAP

DATABASES
AZURESQL
ORACLE
SQL SERVER
ODBC
POSTGRESQL
MYSQL

HOSTING

amazon web services

Google

Windows Azure

CLOUD COMPUTING

PRIVATE DATA CENTER

Spring Integration Test Framework

◆ Libraries to test HTTP APIs

```
RestTemplate rest = new TestRestTemplate();

ResponseEntity<String> response = rest.getForEntity(
        "http://localhost:8080/iphoto/ping", String.class);

Assert.assertTrue(response.getStatusCode() == HttpStatus.OK);
```
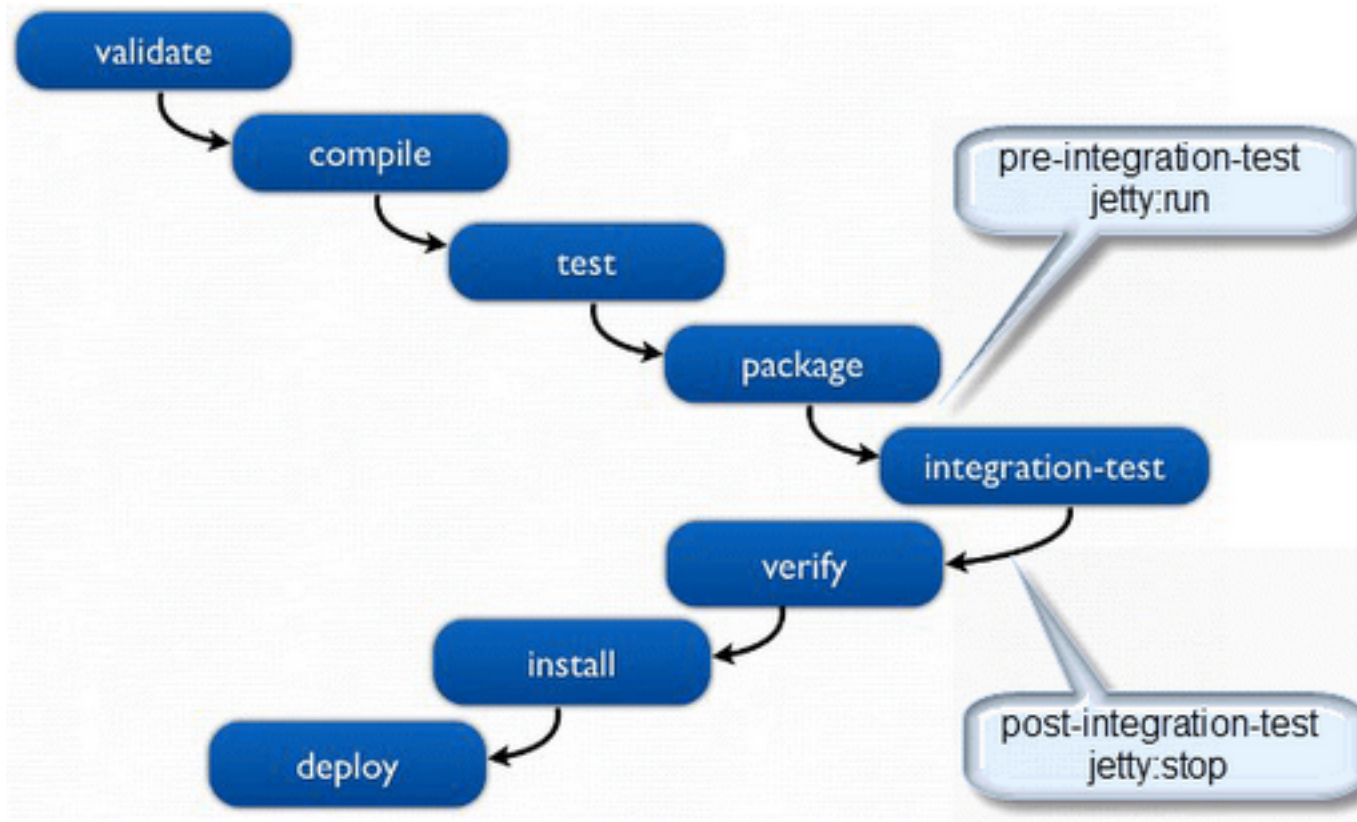
◆ Automatic Server Runner

```
@RunWith (SpringJUnit4ClassRunner.class)
@SpringApplicationConfiguration (classes = App.class)
@WebAppConfiguration
@IntegrationTest
```

Integration Test in Build Automation

Test-Driven Development

Test-Driven Development