Sins of Test Automation

Path to Redemption included

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C, C++, PHP, Java, Clojure, Python, JavaScript

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C, C++, PHP, Java, Clojure, Python, JavaScript
.NET / C#

Monster Setups

- Oversized Setups / Over mocking / Shadow codebase copy
- Loads of setup needed to test simple operation

Monster Setups

```
public void SetUp()
{
    TestHelper = new TestHelper();
    ClaimServiceMock = new Mock<IClaimService>();
    ClaimServiceMock.Setup(mock => mock.CreateClaim(It.IsAny<Claim>())).Returns(new Claim {Id = 123});

    DocumentRepositoryMock = new Mock<IDocumentRepository>();
    RequestStoreMock = new Mock<IObjectStore>();

    ValidatorsMock = new Mock<IETrackMessageValidators>();
    ValidatorsMock.Setup(v => v.IsMessageFromValidOriginator(It.IsAny<ETrackMessages.Version1.Message>()))
                  .Returns(true);
    ValidatorsMock.Setup(v => v.IsValidMessageType(It.IsAny<ETrackMessages.Version1.Message>()))
                  .Returns(true);

    MessageTypeVersionValidatorMock = new Mock<IMessageTypeVersionValidator>();
    MessageTypeVersionValidatorFactoryMock = new Mock<IMessageTypeVersionValidatorFactory>();
    MessageTypeVersionValidatorFactoryMock.Setup(f => f.GetMessageTypeVersionValidator(It.IsAny<string>(),
          It.IsAny<string>())).Returns(MessageTypeVersionValidatorMock.Object);

    ETrackMessageService = new Mock<IETrackMessageService>().Object;
    LoggingServiceMock = new Mock<ILoggingService>();

    NotificationEventService = new Mock<INotificationEventService>().Object;
    MessageSequenceValidator = new Mock<IETrackMessageSequenceValidator>().Object;
    MessageDetailService = new Mock<IMessageDetailService>().Object;

    MessageTypeDifferentiatorMock = new Mock<IMessageTypeDifferentiator>();
    MessageTypeDifferentiatorFactoryMock = new Mock<IMessageTypeDifferentiatorFactory>();
    MessageTypeDifferentiatorFactoryMock.Setup(f => f.GetMessageTypeDifferentiatorForMessageContent(
          It.IsAny<string>())).Returns(MessageTypeDifferentiatorMock.Object);

    EmailRejectorMock = new Mock<IEmailRejector>();

    ContactTitleValidator = new Mock<IContactTitlesValidator>();
    ContactTitleValidator.Setup(validator => validator.ValidateContactTitle(It.IsAny<string>()))
                         .Returns(() => string.Empty);

    ContactNameToolkit = new Mock<IContactNameToolkit>();
    ContactNameToolkit.SetupGet(toolkit => toolkit.TitlesValidator).Returns(ContactTitleValidator.Object);

    ClaimRejectionPolicy = new Mock<IClaimRejectionPolicy>();
    ClaimRejectionPolicy.Setup(p => p.ShouldReject(It.IsAny<Claim>()))
                        .Returns(ClaimRejectionDecision.NotReject());

    ClaimRejectionMessageGeneratorFactory = new Mock<IClaimMessageGeneratorFactory>();

    UnexpectedErrorMessageGeneratorMock = new Mock<IClaimMessageGenerator>();
    UnexpectedErrorMessageGenerator = UnexpectedErrorMessageGeneratorMock.Object;

    ClaimRejectionMessageGeneratorFactory.Setup(f => f.CreateUnexpectedErrorGenerator())
                                         .Returns(UnexpectedErrorMessageGenerator);

    FakeClock = FakeClockHelper.Create();

    ARepositoriesConfigurationMock = new Mock<IARepositoriesConfiguration>();
    ARepositoriesConfigurationMock.Setup(x => x.DefaultWorkProviderBranchCode).Returns("A. Default");

    LossAdjusterServiceMock = new Mock<ILossAdjusterService>();
    TaskRepositoryMock = new Mock<ITaskRepository>();
}
```

Monster Setups

- Solutions:
  - Change the upstream design
    - Divide into smaller units
  - Use test data builder, object mother and other design patterns
  - Consider alternative test types

```
[Fact]
public void Should_support_new_office_formats()
{
    // Given, When, Then
    MimeTypes.GetMimeType(".docx").ShouldEqual("application/vnd.openxmlformats-
officedocument.wordprocessingml.document");
}
```

Inappropriate Intimacy

```
public class BowlingGameTests
{
    [Test]
    public void TestSpare()
    {
        var game = new BowlingGame();

        game.Roll(4);
        game.Roll(6);

        Assert.That(game.IsSpare, Is.True);
    }
}
```

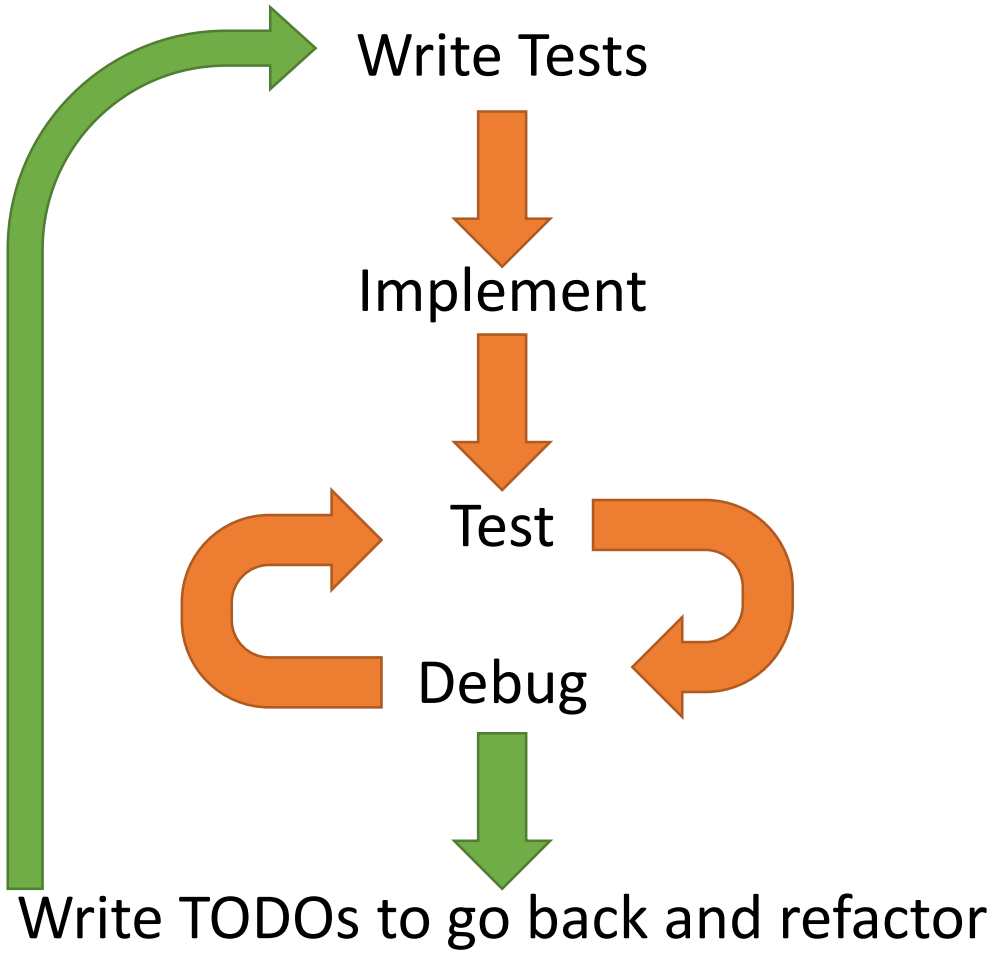
Inappropriate Intimacy

```
public class BowlingGameTests
{
    [Test]
    public void TestSpare()
    {
        var game = new BowlingGame();

        game.Roll(4);
        game.Roll(6);
        game.Roll(2);

        Assert.That(game.Score, Is.EqualTo(14));
    }
}
```

Test-Debug Cycle

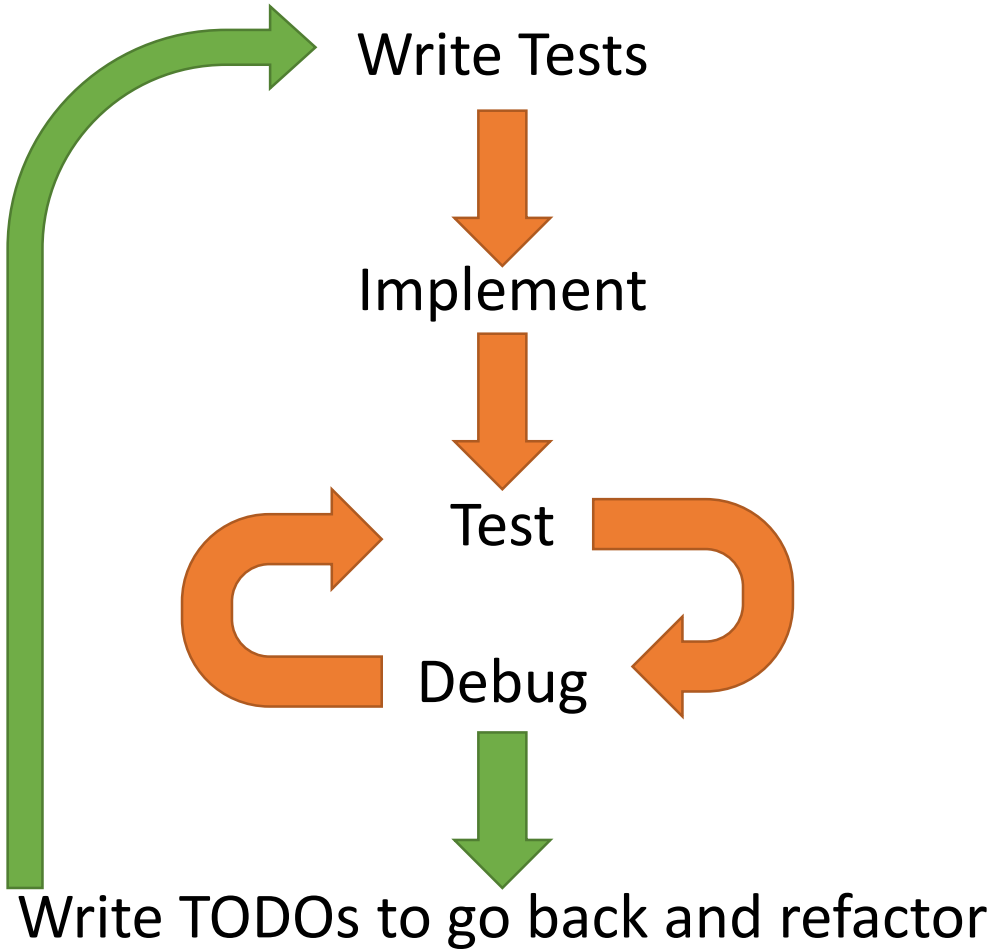


Test-Debug Cycle

```
[Test]
public void SystemShouldWork()
{
    // ...
}
```

Test-Debug Cycle

- Manage you test cycle better:
  - Take smaller steps and implement smaller chunks
  - Manage your dependencies (again)



Gherkin == BDD

```
Feature: Sign Up
  Scenario: Apply for an account
    Given I do not have an account
    And I am on the home page
    And I follow "Join"
    Then I should see "we need some information from you."
    And I should see "Home / Join"
    When I fill in "user_email" with "dave123@hotmail.com"
    And I fill in "user_password" with "passw0rd"
    And I fill in "user_password_confirmation" with "passw0rd"
    And I fill in "user_title" with "Mr"
    And I fill in "user_firstname" with "Dave"
    And I fill in "user_surname" with "Smith"
    And I fill in "user_display_name" with "Dave Smith"
    And I fill in "user_organisation_name" with "Big Corp"
    And I fill in "user_city" with "London"
    And I select "United Kingdom" from "user_country_id"
    And I fill in "user_phone_number" with "1234 5678"
    And I press "Sign up"
    Then I should see a confirmation message telling me to check my email
    And I have confirmed my application
    When I log in
    Then I should not see a message telling me to confirm my account
    But I should see a welcome message
    And I should see a form asking me to fill out my account profil
    When I fill out my profile details
    And I log out and log in again
    Then I should not see the form asking me to fill out my account
```

Matt Wynne on Refactoring Your Cukes

Gherkin == BDD

- BDD is not about tool
  - It’s about your communication with business
- Use Gherkin where it brings value
  - and not only another level of indirection

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Feature: Sign Up
  Scenario: Apply for an account
    Given I do not have an account
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```

Matt Wynne on Refactoring Your Cukes

Cliff Jumping

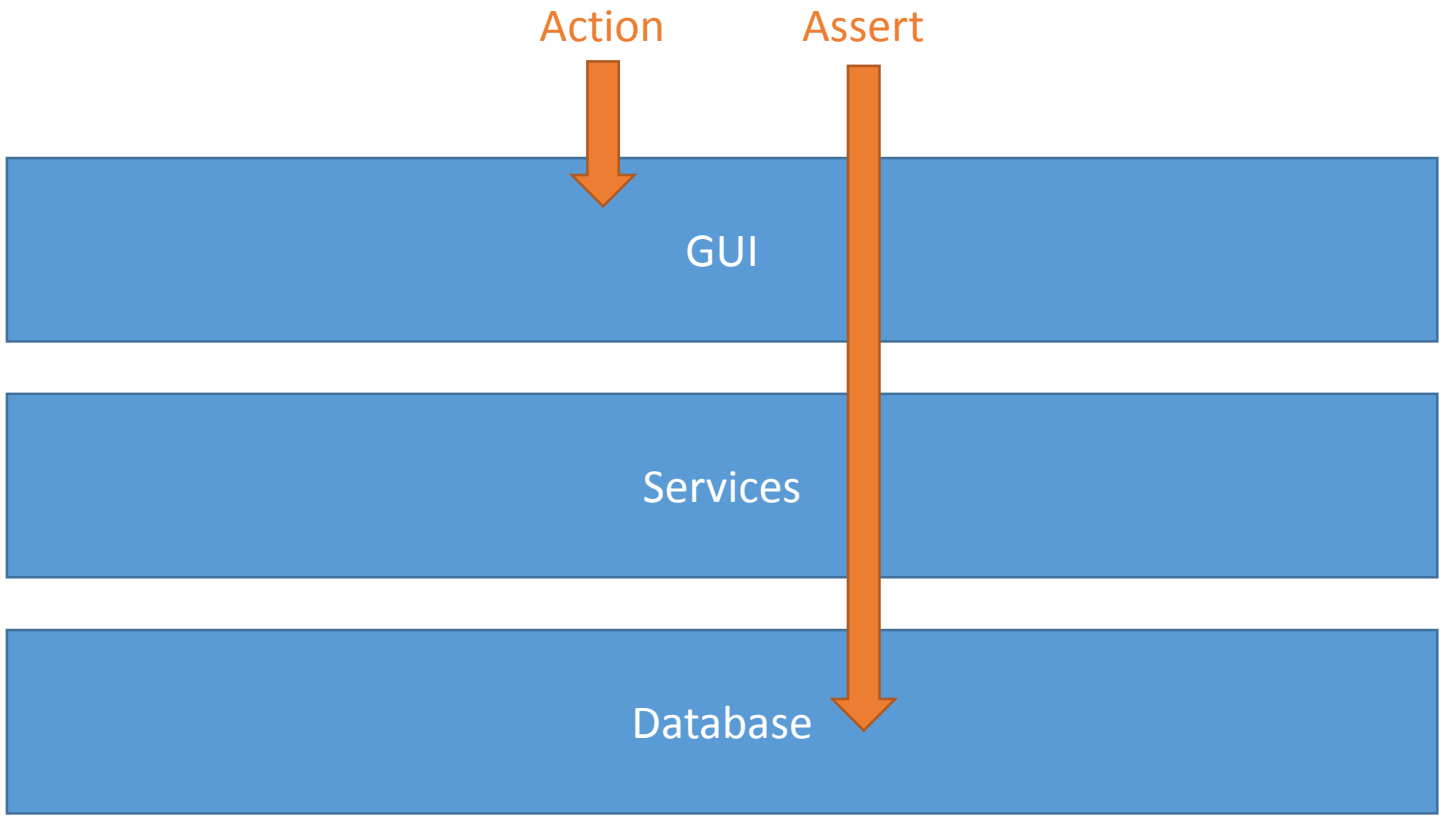
```
public void UserRegistration(User user)
{
    // web-driver actions
    HomePage homePage = new HomePage();
    UserRegistrationPage register = homePage.LoginBar.GoToRegistrationPage();

    register.YourEmail = testEmail;
    register.ConfirmEmail = user.Email;
    register.AcceptTerms = true;

    register.CompleteEquation();
    register.ClickSignUpButton();

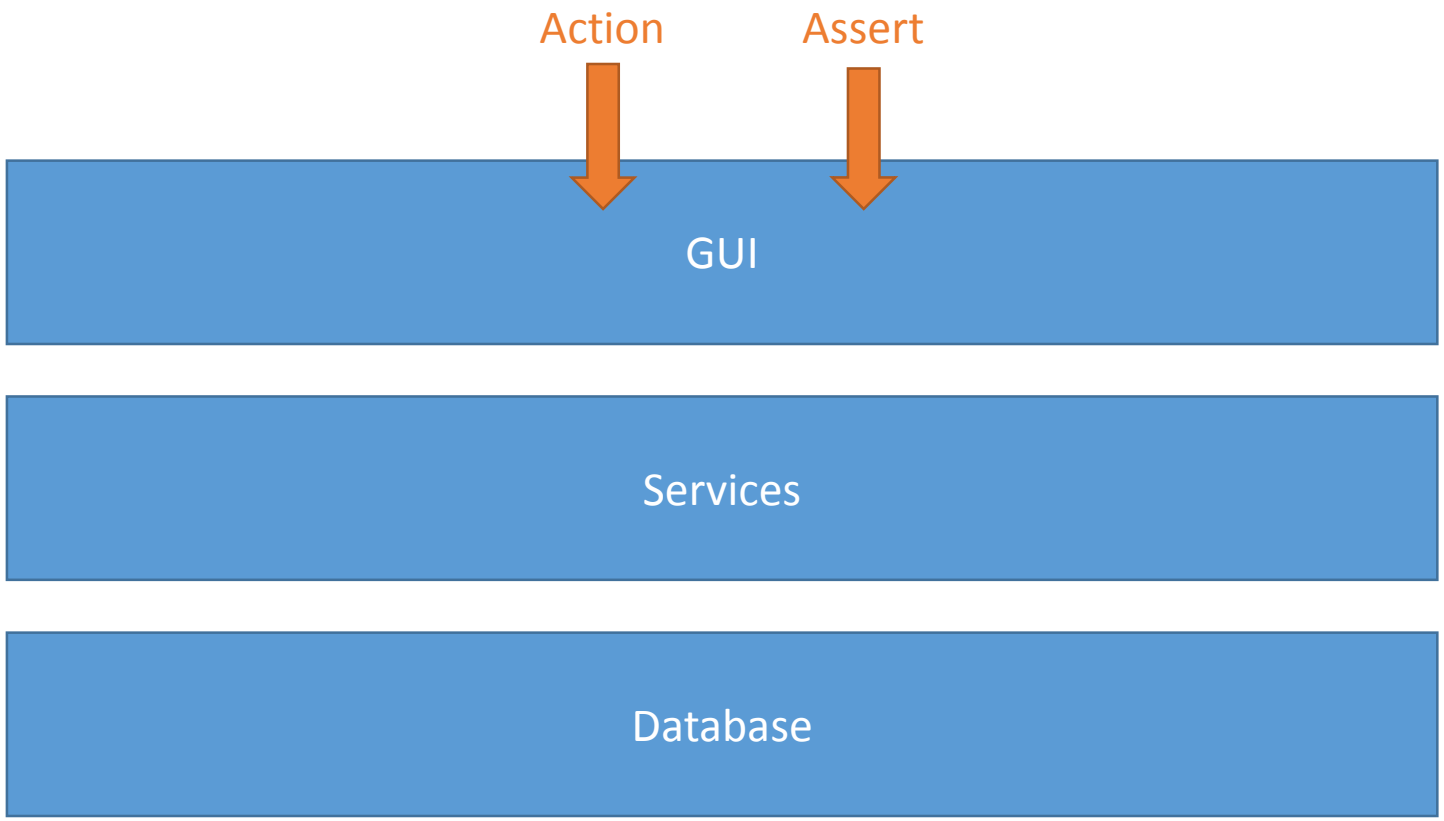
    // database check
    Assert.True(Database.Users.Any(databaseUser => user.Email == testEmail));
}
```

Cliff Jumping



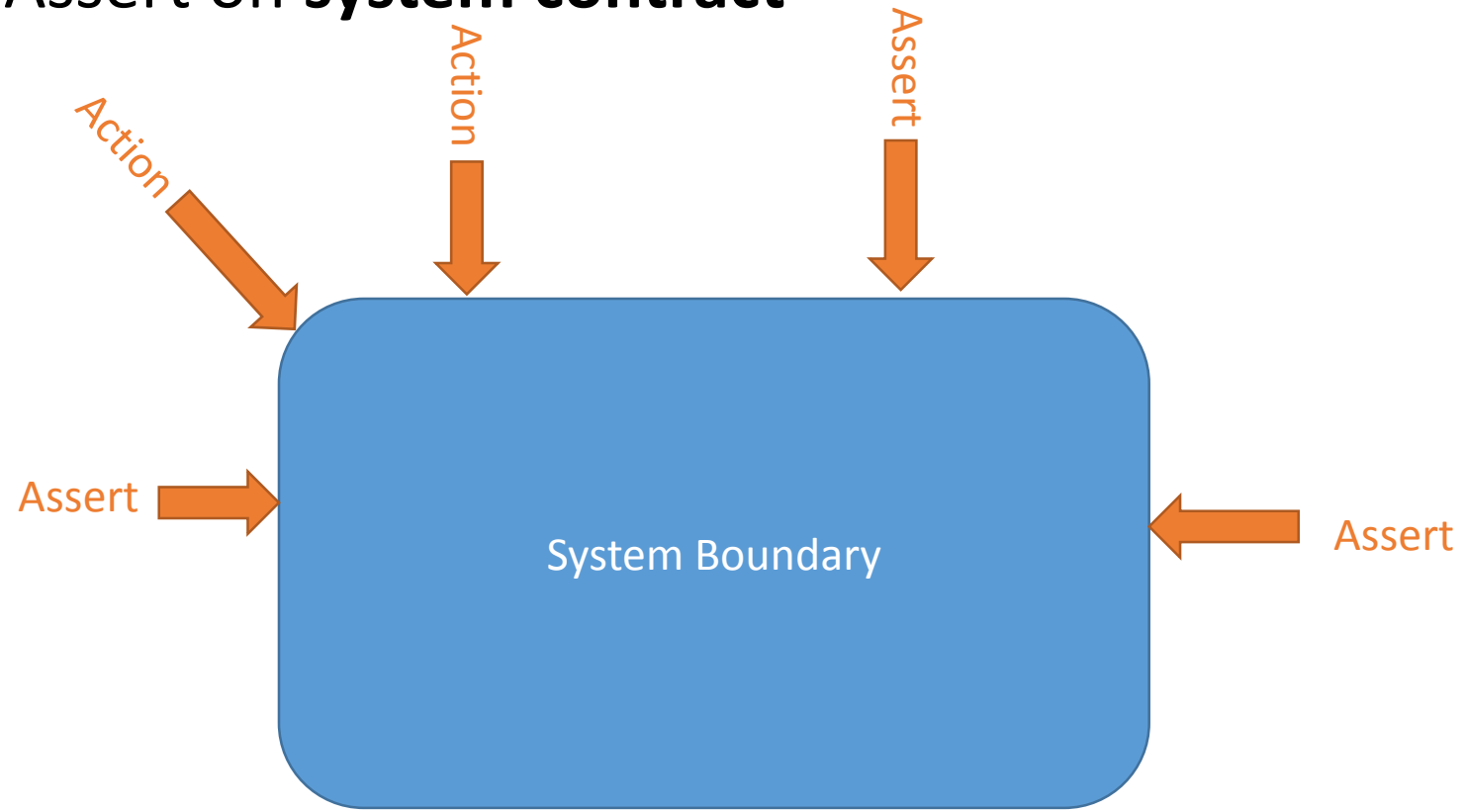
Cliff Jumping

- Act and Assert on the same level



Cliff Jumping

- Act and Assert on the same level
- Act and Assert on **system contract**



One to rule them all

- One type of automated tests used for everything

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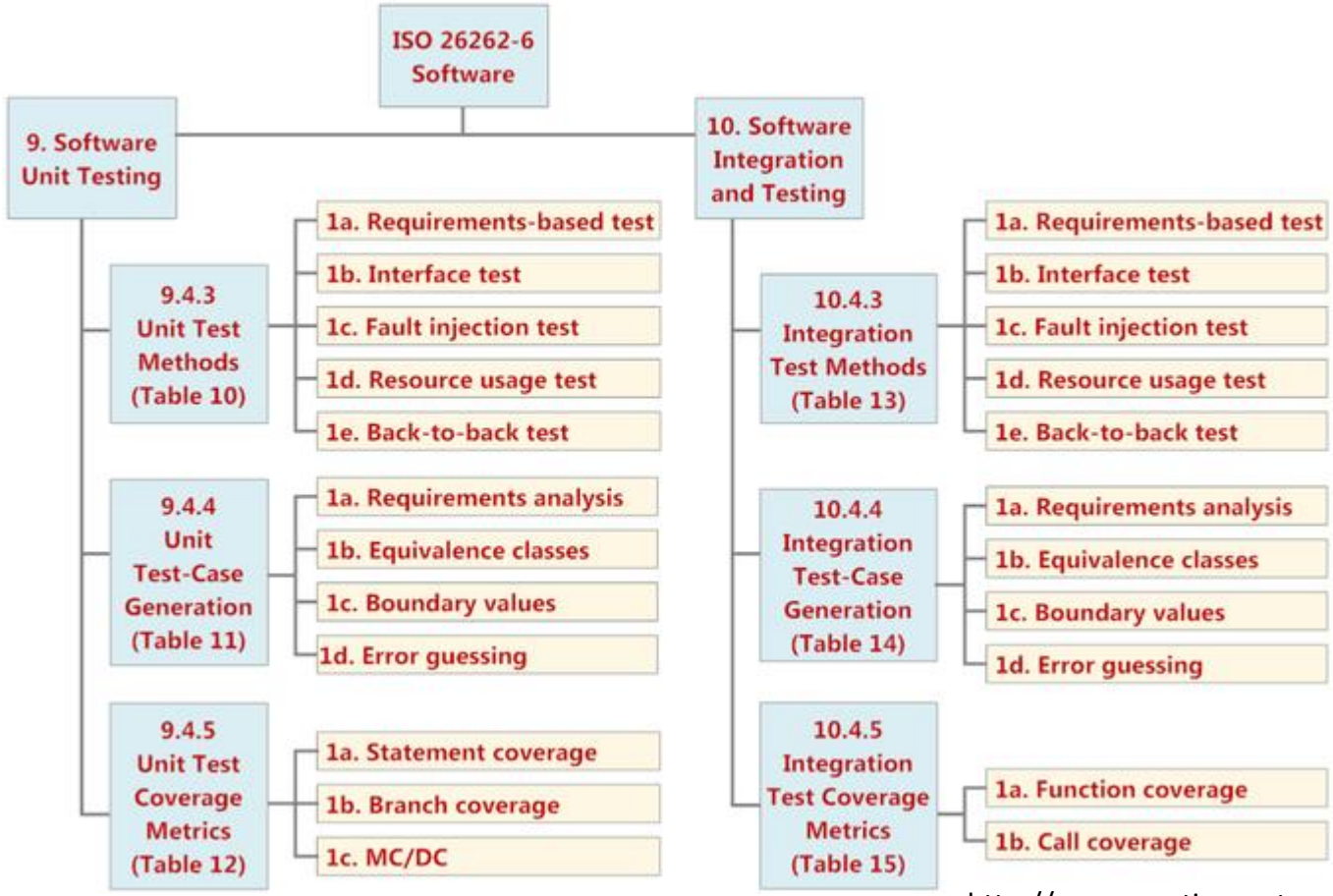
- ... but



http://www.reactive-systems.com/images/iso26262swtree_web.png

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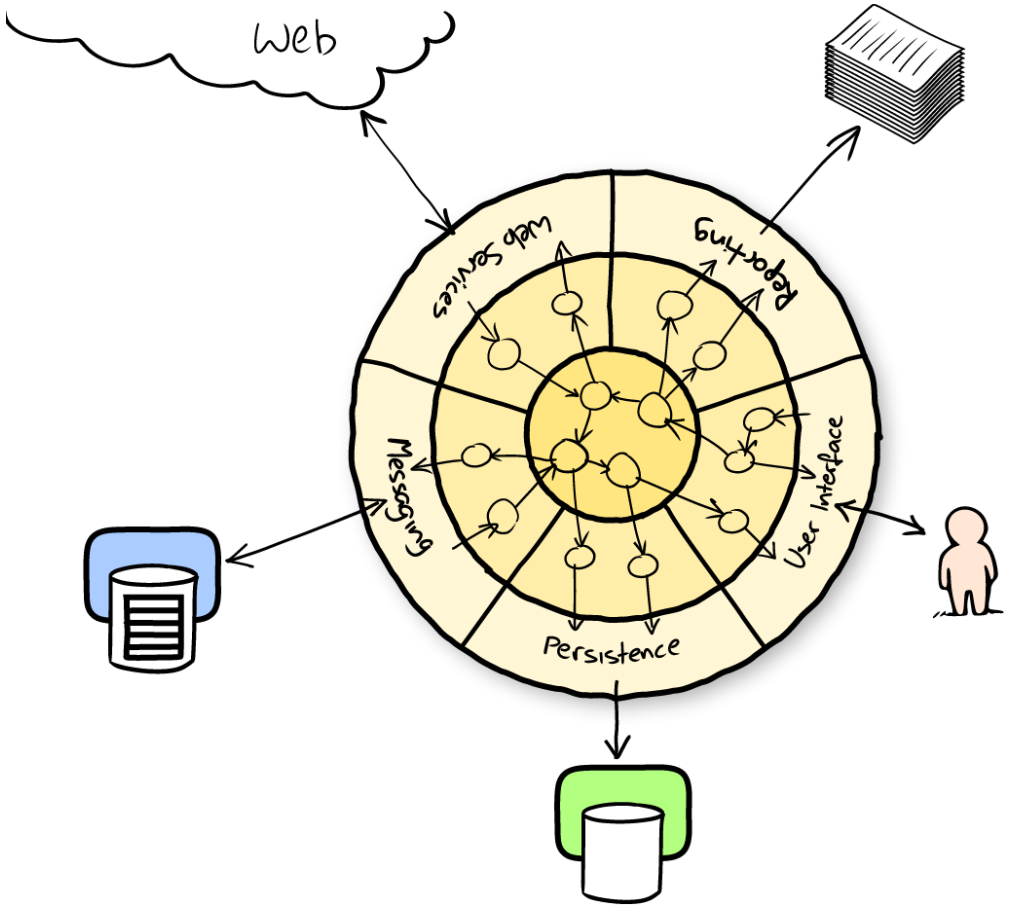

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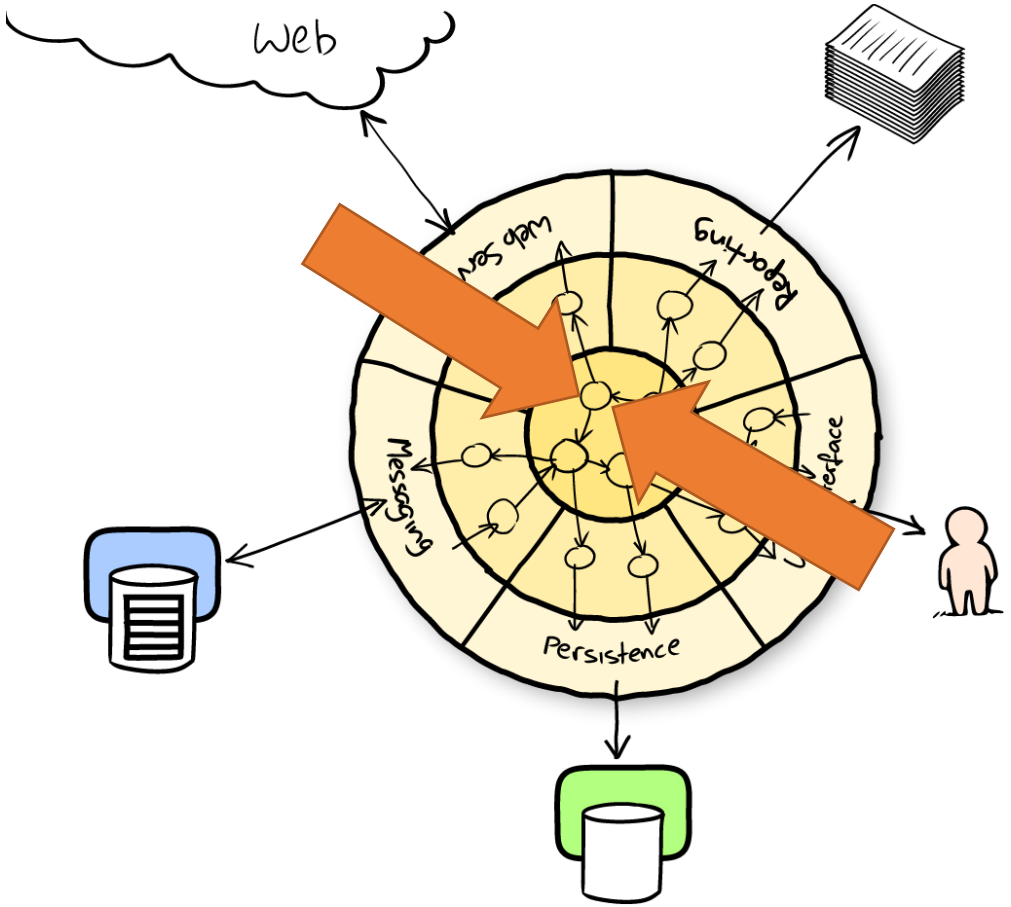

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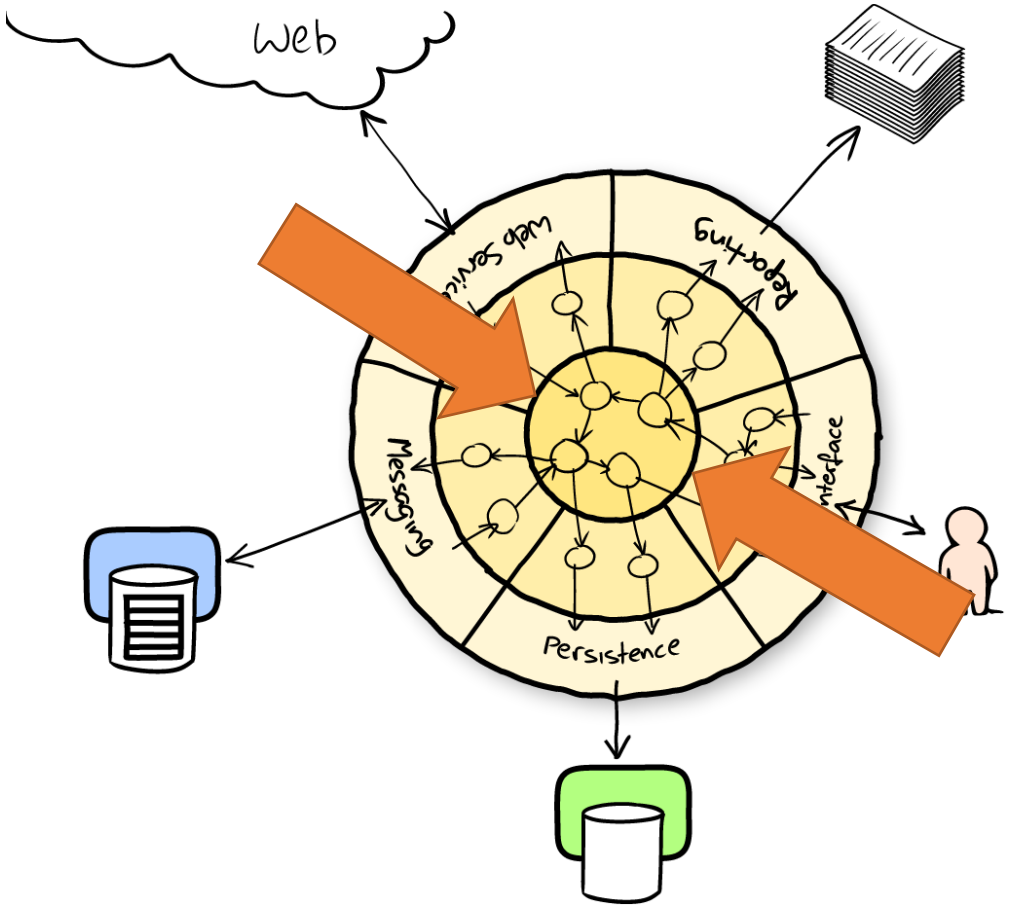

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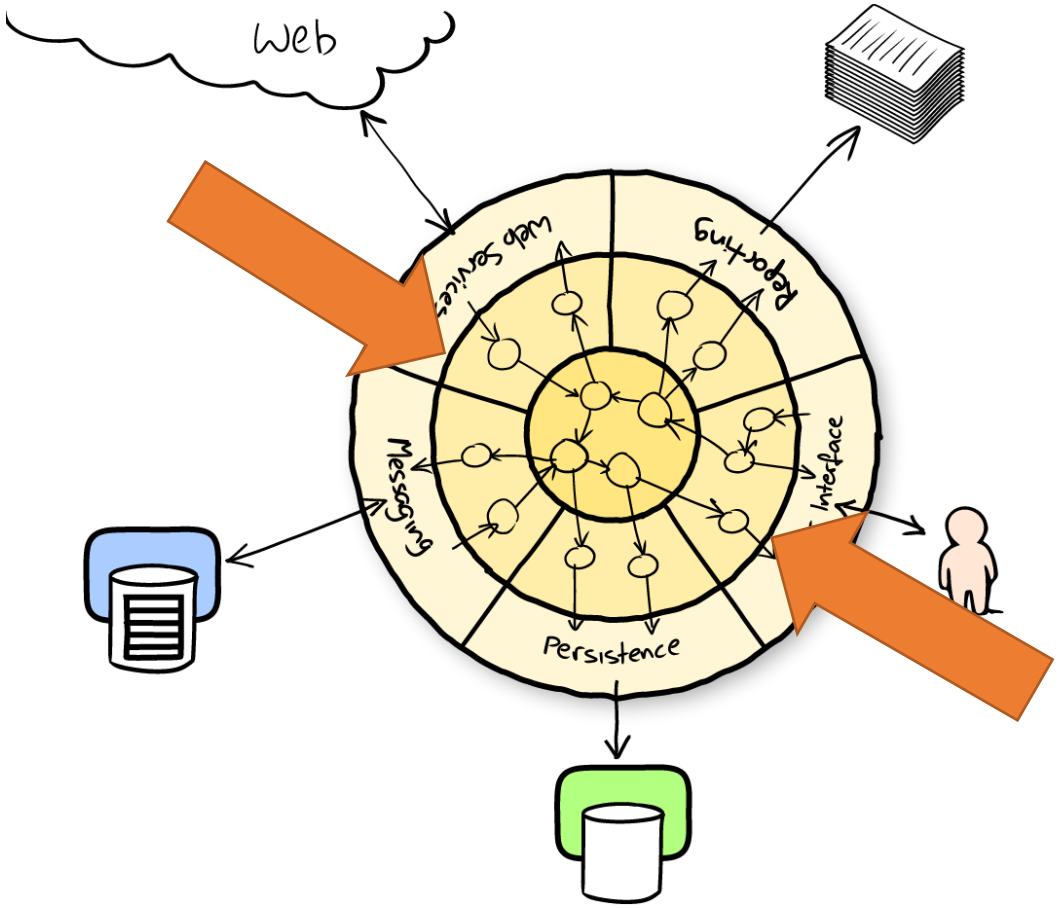

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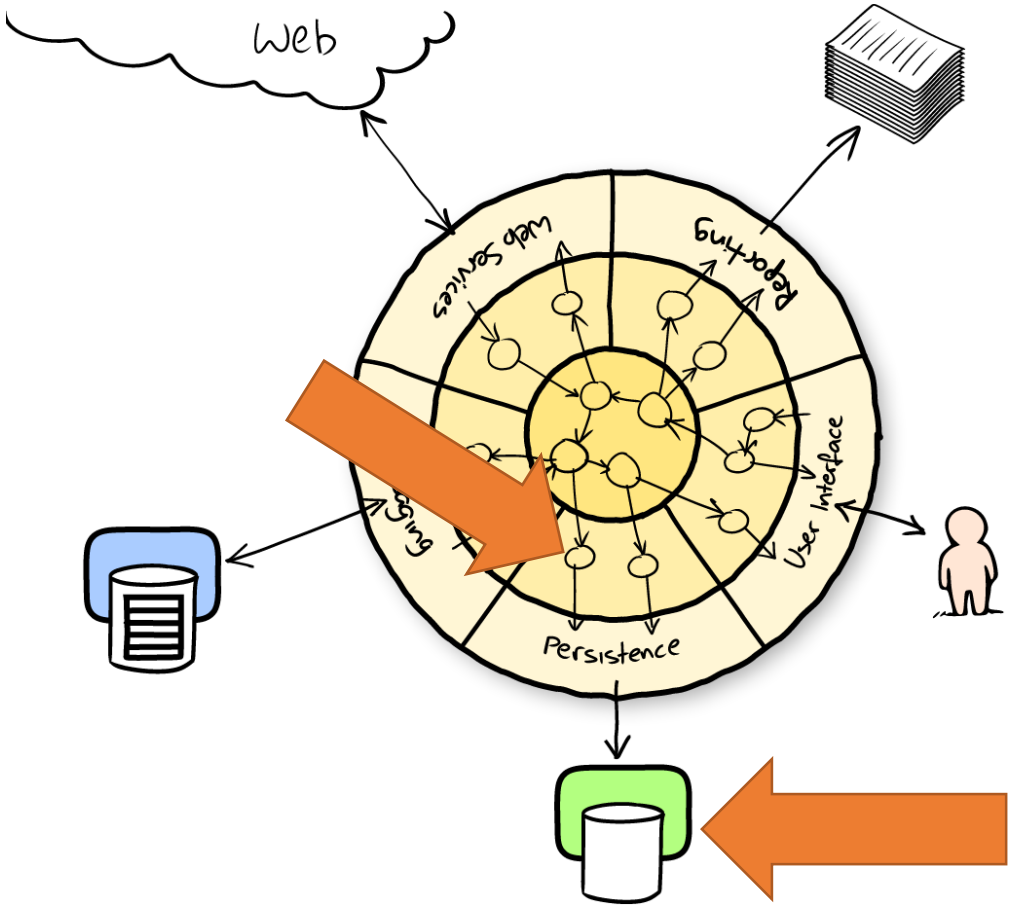

The Silver Bullet

- Test Automation is not a Silver Bullet
- Some things are better tested manually

Planet of Apes

- No test automation at all...

The Punishment

- High cost, maybe even higher than no tests!
  - The more you do it, the higher the cost of adding something to the system
  - In total, it might have been cheaper to just test the whole thing manually!
    - Especially if project will be canceled because of the low velocity
- Security Theater
  - You feel secure, but in fact you're not

The Road to Redemption

- Thou shall write tests first
- Thou shall write small tests
- Thou shall write readable tests
- Thou shall use business language in your tests
- Thou shall use tests to bring business value
- Thou shall treat test code as production code
- Thou shall use right tools for right problems

Thanks!

Presentation available @ https://github.com/mandrek44/talks/