



# ARQUILLIAN

**Helping to get Web Developers  
and QA along**

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Lukáš Fryč

# Real Life Testing



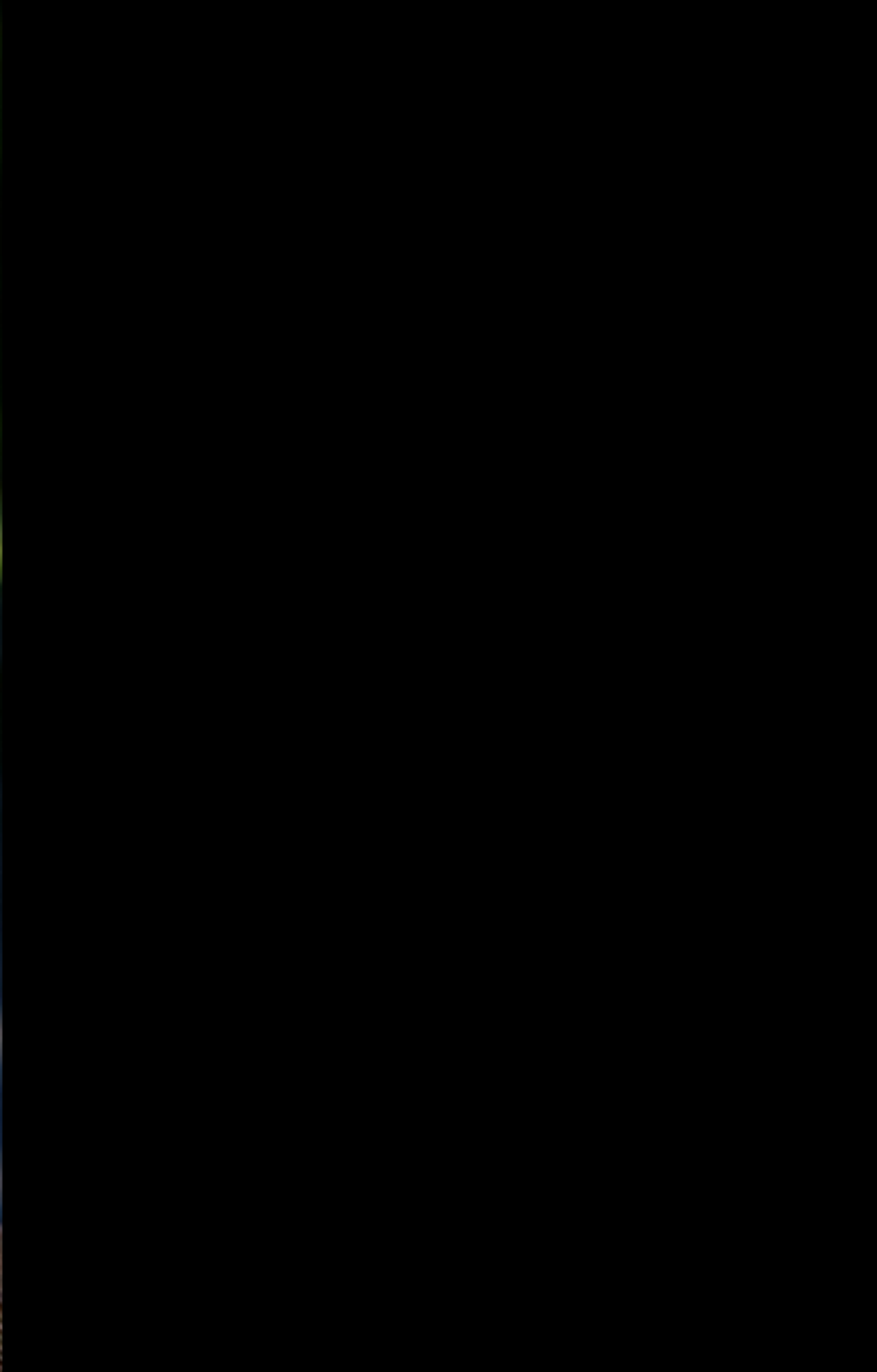
Testing = ?

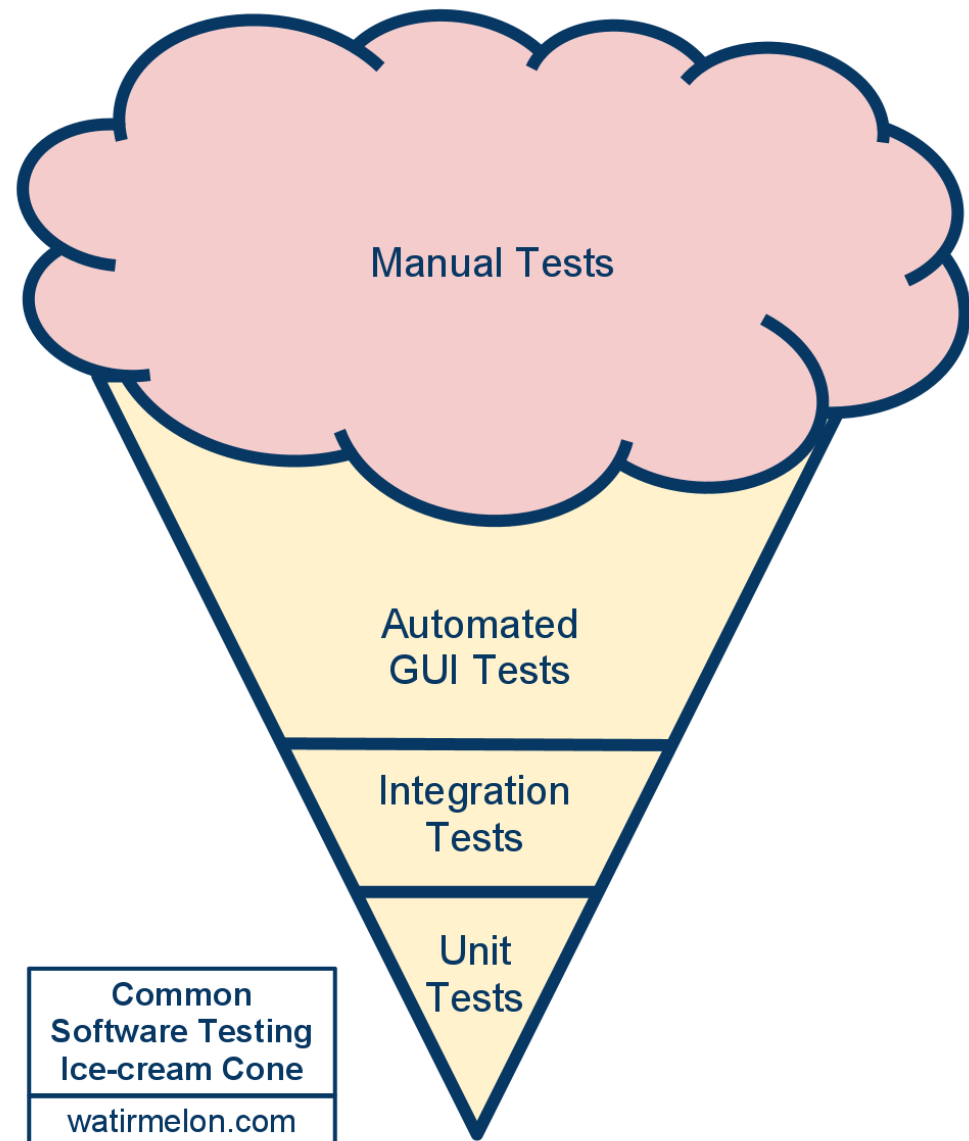
Testing = hard

Testing = boring

Testing = slow

Testing = expensive







# Automation for a Rescue!

Developers = test authoring

QE = test execution

easy

fun

fast

\$0

How?

Testing = Learning

Testing = Understanding

Testing = Debugging

Testing = Documentation

Testing = Collaboration

Testing = Developing

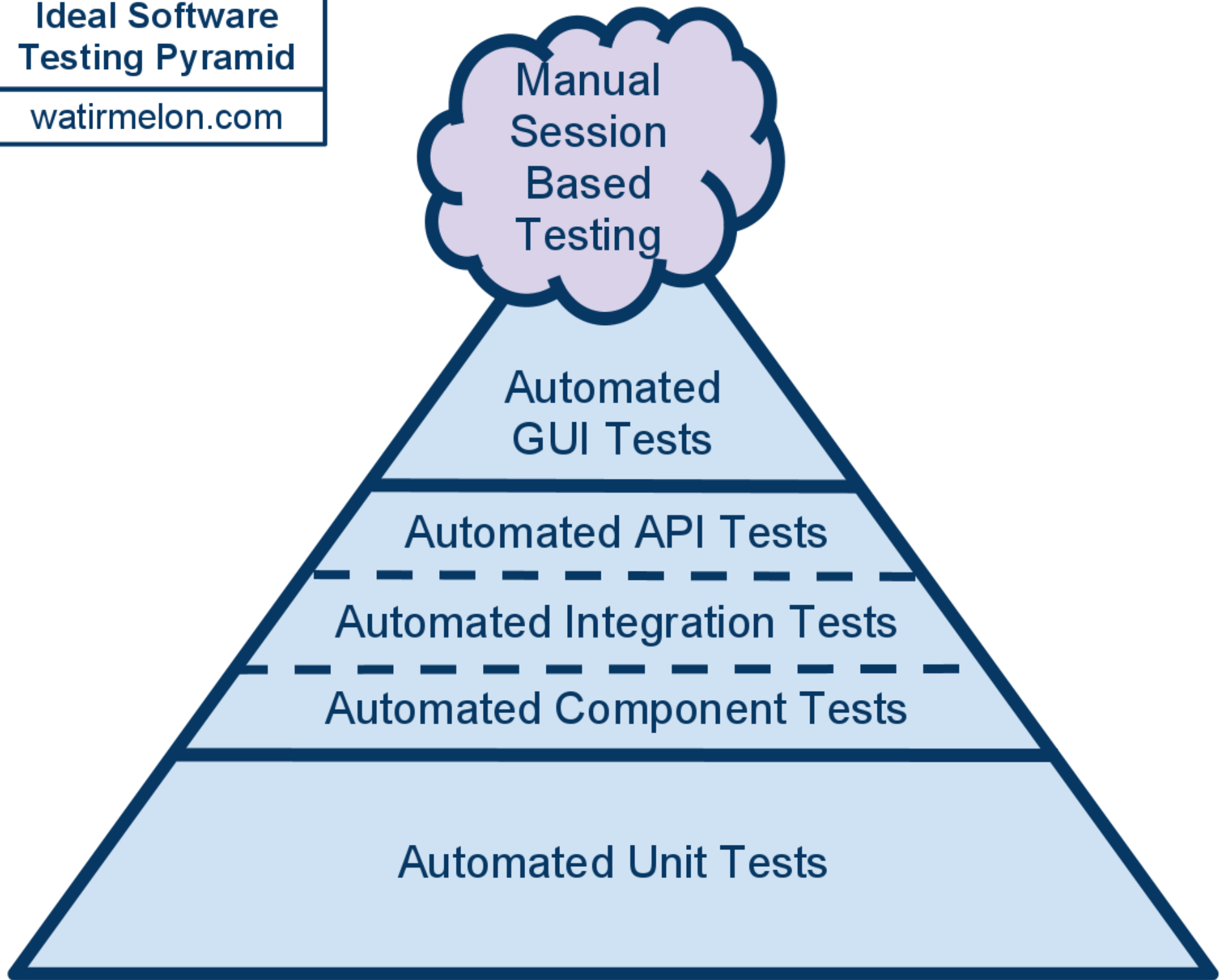
“The purpose of testing is to  
enable change.

Verifying correctness is just a nice  
side effect.”

~Jeremy Norris

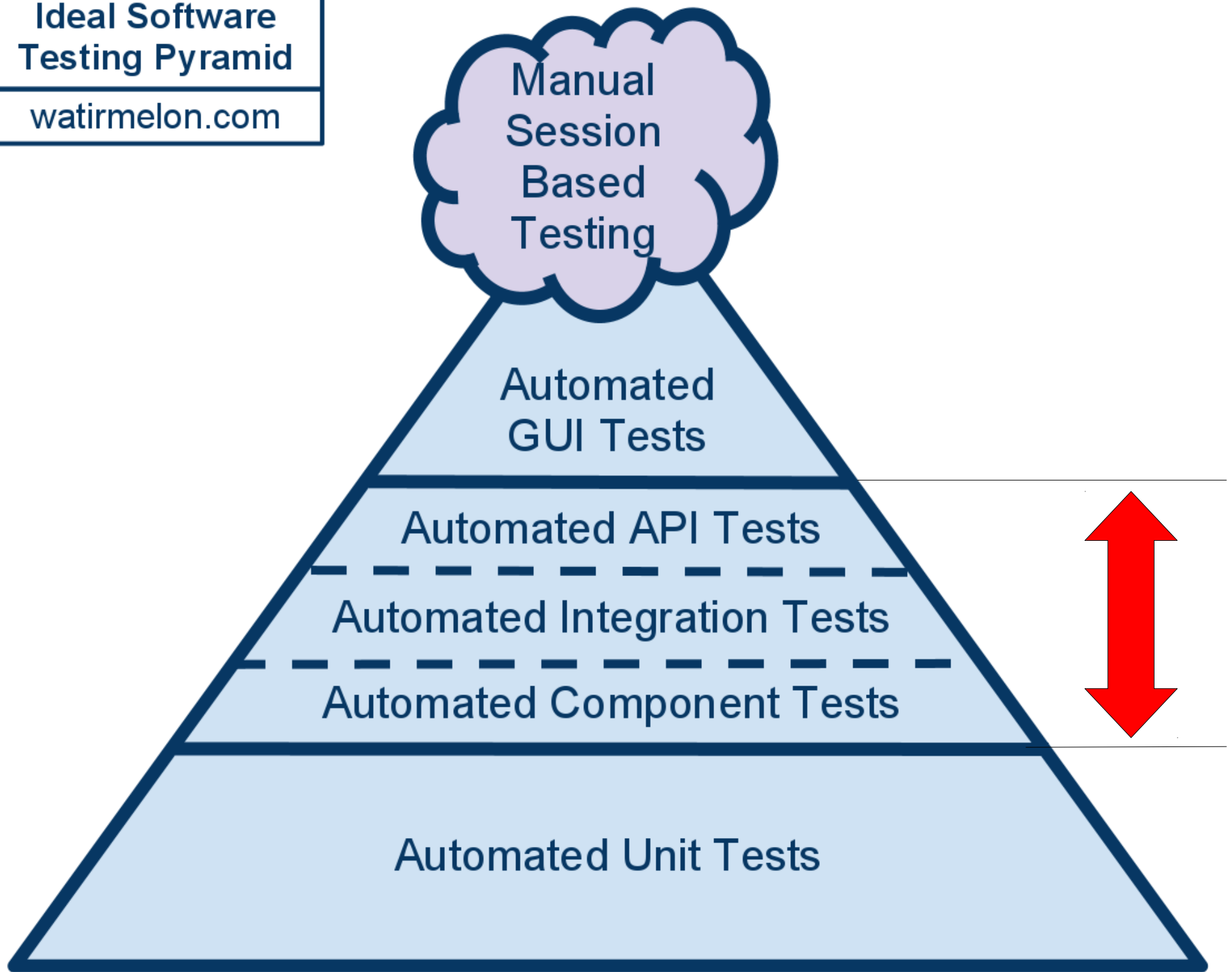
Ideal Software  
Testing Pyramid

watirmelon.com



Ideal Software  
Testing Pyramid

watirmelon.com



Mocks.

Mocks. Really?

No Mocks Movement



Real Tests

# Test Harness

cover 85% of your needs



# Arquillian Platform

# Core

Test runners

Junit / TestNG / Spock

# Containers

Portability

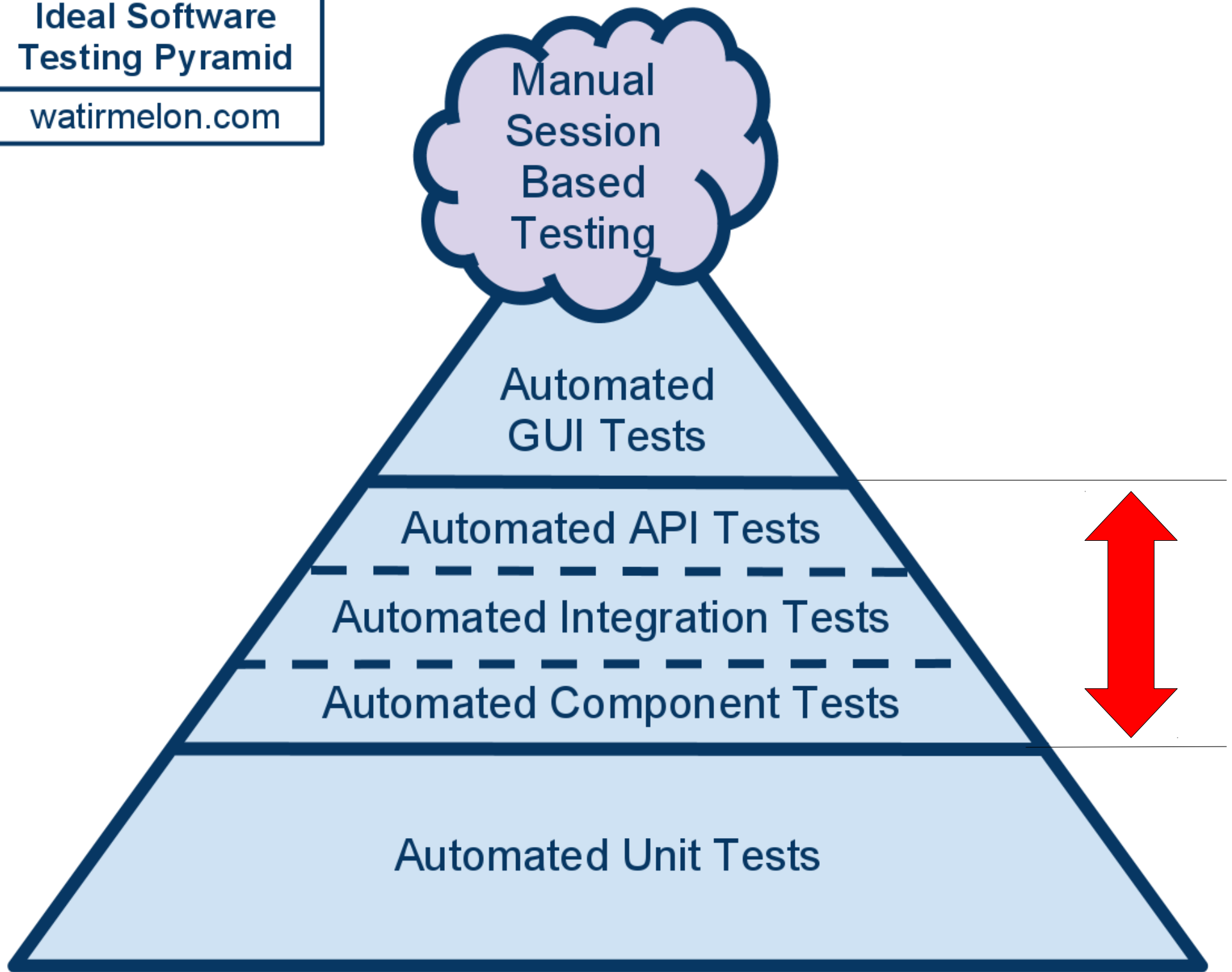
WildFly / GlassFish / WAS / WLS

# Extensions

Reusing existing tools  
Hard-workers

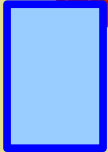
Ideal Software  
Testing Pyramid

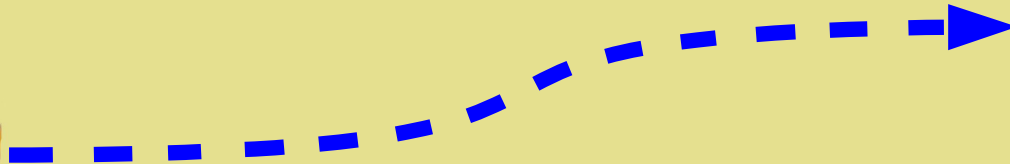
watirmelon.com

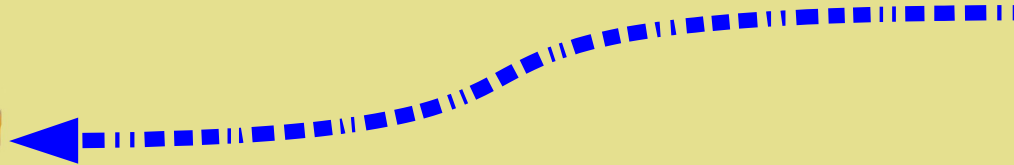
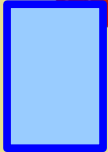


Run Modes...

Run as Client







Black Box

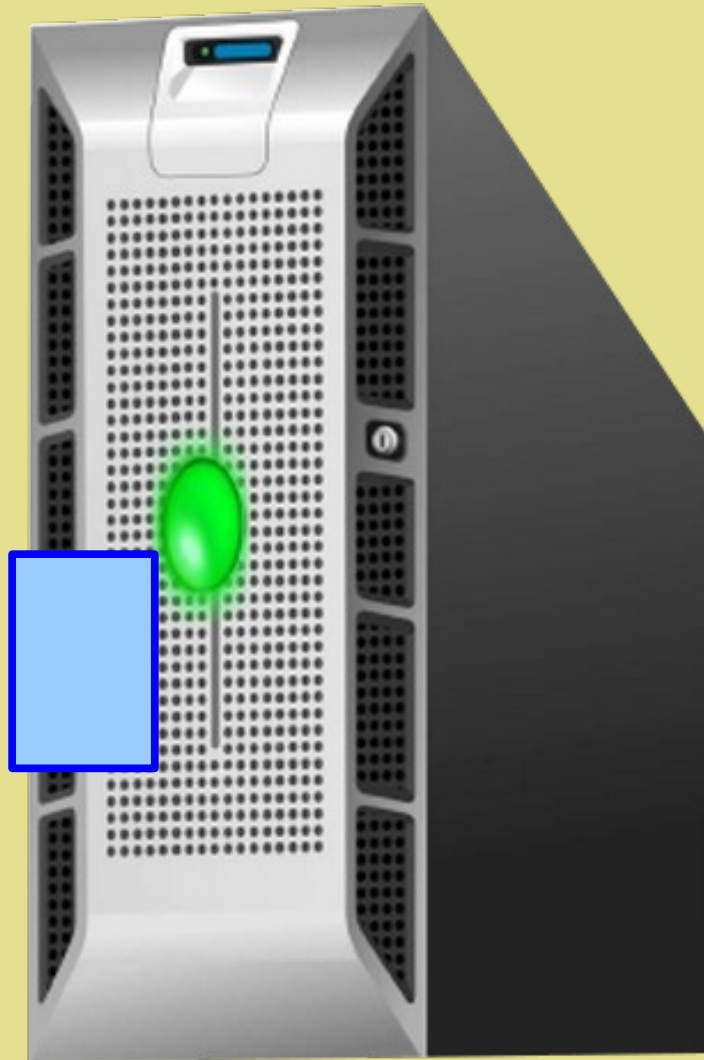
```
@RunWith(Arquillian.class)
@RunWithClient
public class BlackBoxTest {

    @Deployment(testable = false)
    public static Archive<?>
        deployment() {}

}
```

In-container

**White Box**



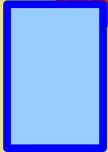
```
@RunWith(Arquillian.class)
public class WhiteBoxTest {

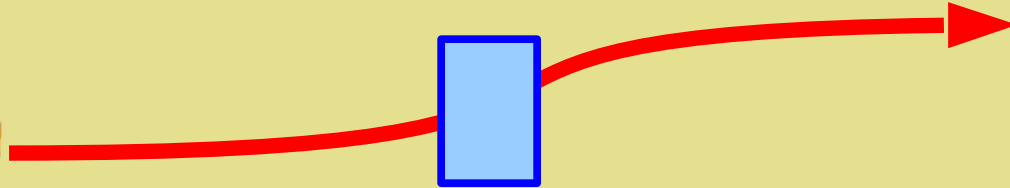
    @Deployment(testable = true)
    public static Archive<?>
        deployment() {}

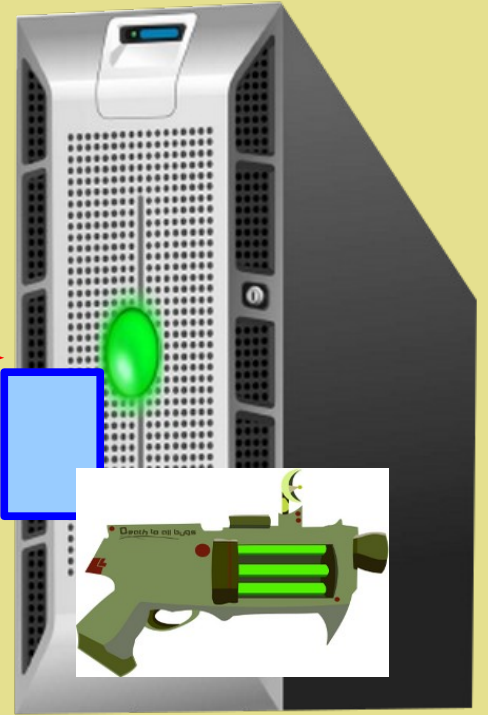
}
```

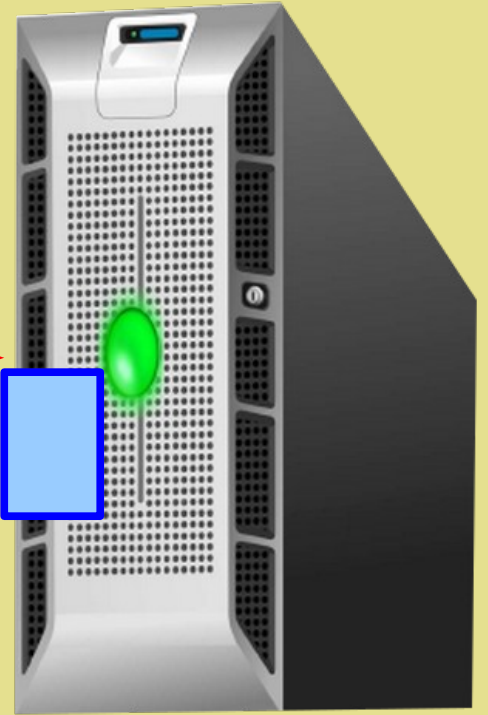
Warp mode = hybrid

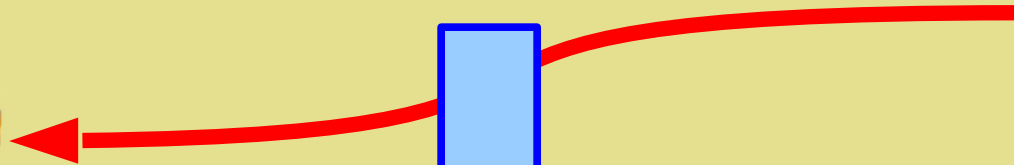
Gray Box

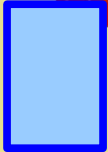












```
@RunWith(Arquillian.class)
@WarpTest
@RunAsClient
public class WhiteBoxTest {

    @Deployment(testable = true)
    public static Archive<?>
        deployment() {}

}
```

# In-Container

White box

# Run as Client

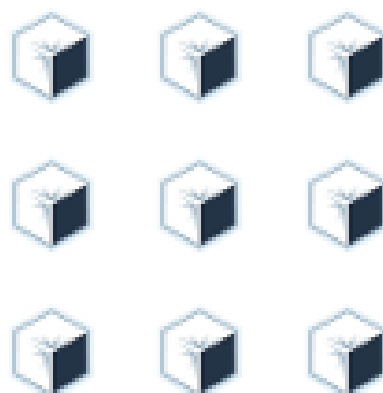
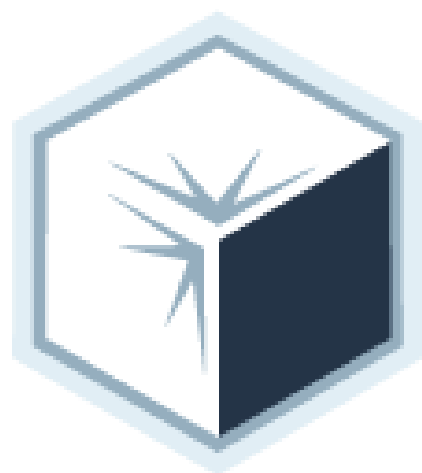
Black box

# Warp

Gray box

What is an app under a test?

ShrinkWrap



# Archives API

jar, war, ear

Micro-deployments

# Descriptors

beans.xml, web.xml, ...

# Resolvers

Maven dependencies

Testing = ~~hard~~

Testing = ~~boring~~

Testing = slow

Testing = ~~expensive~~

# Rapid Dev Turnaround

# 1. IDE

incremental compilation

# 2. Save deployment time

micro-deployments

JRebel Extension

## 3. Remote Server

Startup time

## 4. Reuse Browser Session

Graphene Extension



14

15:20  
本线一北京西  
15:20  
15:20

请旅客在站台内行走  
请勿靠近站台边缘

15

13

和谐号

请文明候车 美化环境

Quality Assurance?

# 1. Extend the test suite

Acceptance tests

Regression testing

# 2. Jenkins

Run the tests on one-click

# 3. Test manually

Exploratory testing

User experience testing



Continuous Integration?

# 1. Small Footprint

WildFly

Travis CI, EC2 Micro, OpenShift Small

# 2. Headless Browsers

WebDriver + PhantomJS

## 3. Caching

Deployments, Dependencies

## 4. Smoke Tests

JUnit Categories

TestNG Groups



Testing = easy

Testing = fun

Testing = fast

Testing = \$0

# Real Tests

increase certainty  
builds confidence  
increase robustness



Arquillian

I must to know more...

Arquillian: the revolutionary Java middleware testing platform

No more mocks. No more container lifecycle  
and deployment hassles. Just *real* tests!

Get Started!

Don't write another  
test until you study  
this one ▶

1. Delegates execution of the test to Arquillian
2. Creates a test archive that provides classpath isolation
3. Injects the CDI bean from the application code
4. Specifies a test method for asserting behavior

```
GreeterTest.java
@RunWith(Arquillian.class) #1
public class GreeterTest {
    @Deployment #2
    public static JavaArchive createDeployment() {
        return ShrinkWrap.create(JavaArchive.class)
            .addClass(Greeter.class)
            .addAsManifestResource(EmptyAsset.INSTANCE, "beans.xml");
    }

    @Inject #3
    Greeter greeter;

    @Test #4
    public void should_create_greeting() {
        assertEquals("Hello, Earthling!", greeter.greet("Earthling"));
    }
}
notextile.
```

*What's been happening lately?*



Latest News



Featured Noble



Upcoming Events

<http://arquillian.org>



Welcome, Guest

Community > Arquillian

[Overview](#)[All Content \(605\)](#)[Discussions \(564\)](#)[Articles \(14\)](#)[Blog](#)[Polls](#)[Set as default tab](#)

## Welcome to the Arquillian User Space!

This area is host to the **user discussions and articles** for the Arquillian project. The development discussions and articles are located in the [Arquillian Development Space](#) and the FAQs are located in the [Arquillian FAQ Space](#). Information about the project can be found on the [Arquillian Project Site](#).

We invite you to join us in the [#jboss testing](#) channel on freenode IRC to chat about Arquillian, [ShrinkWrap](#), [Embedded](#). The [#jboss testing](#) channel is logged by echelog and JBossBot is there to expand JIRA issues.

## Recent Blog Entries

Feb 23, 2012

<http://bit.ly/arq-users>

# Getting Involved



## arquillian (Arquillian)

You are a member of this Organization!

Name Arquillian  
Website/Blog <http://jboss.org/arquillian>  
Location Worldwide  
Member Since Jul 13, 2010

38

Public Repos

0

Private Repos

13

Members

## Repositories (38)

Find a repository...

All Repositories

Public Private Sources Forks Mirrors

🌟 [arquillian.github.com](#)

JavaScript 26 22

Arquillian Web Site

Last updated 21 hours ago

🌟 [arquillian-container-glassfish](#)

Java 13 12

Arquillian GlassFish Containers

Last updated 4 days ago

🌟 [arquillian-showcase](#)Forked from [aslakknutsen/arquillian-showcase](#)

Java 29 17

Arquillian enables you to test your business logic in a remote or embedded container. Alternative...

Last updated 4 days ago



## Organization Members (13)

**ALRubinger** (Andrew Lee Rubinger)

61 public repos, 27 followers

**aslakknutsen** (Aslak Knutsen)

34 public repos, 51 followers

**bartoszmajsak** (Bartosz Majsak)

16 public repos, 12 followers

**gpoul** (Gerhard Poul)

4 public repos, 4 followers

**hasalex** (Alexis Hassler)

13 public repos, 5 followers

**joserodolfofreitas** (José Rodolfo Freitas)

13 public repos, 9 followers

**kpiwko** (Karel Piwko)

38 public repos, 7 followers

**leathersole** (Takayuki Konishi)

5 public repos, 4 followers

**Ifryc** (Lukas Fryc)

36 public repos, 11 followers

Conceal membership

**michaelschuetz** (Michael Schuetz)

34 public repos, 11 followers

**mojavelinix** (Dan Allen)

38 public repos, 74 followers

**pmuir** (Pete Muir)

31 public repos, 58 followers

**VineetReynolds** (Vineet Reynolds)

17 public repos, 2 followers

<http://github.com/arquillian>

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## Featured Content

-  [Re: Arquillian Extension Seam2 – what's next?](#)  
3 weeks ago by Dan Allen 
-  [Re: Feedback for Arquillian-JBehave extension](#)  
1 week ago by Vineet Reynolds 
-  [Re: Arquillian Persistence Extension roadmap](#)  
1 week ago by John Franey 
-  [Re: JavaScript testing integration](#)  
1 month ago by Lukáš Fryč 
-  [Re: Arquillian transaction support](#)  
1 month ago by Jonathan Halliday 

## Recent Articles and Discussions

-  [Re: Arquillian not cleaning up after itself?](#)  
6 hours ago by Rich DiCroce 
-  [Re: Testing a JBoss module using Arquillian](#)  
1 day ago by Tom Jenkinson 

<http://bit.ly/arq-devs>

XChat: lfryc @ irc.freenode.net / #jbossstesting (+nt)

XChat View Server Settings Window Help

▼ freenode

- ##jsf
- ##unavailable
- #atmosphere-comet
- #deltaspikes
- #forge
- #jboss-as7
- #jbossstesting
- #jquery
- #richfaces
- #seam
- #seam-dev
- #selenium

p://www.jboss.org/jsfunit | This Channel is Logged: http://echelog.com/?jbossstesting

1 ops, 26 total

do you guys feel there is a space now  
this could be made easier to user?

[19:16] ALR We had a shortcut API introduced

[19:16] \* ALR looking at it now

[19:16] ALR MavenDependencyResolvers

[19:16] kpiwko yep, shortcut help here, but  
virtually nobody is using it I guess

[19:16] kpiwko \*helps here

[19:17] kenfinnigan think I used MavenDependencyResolvers  
for Seam 3 tests, but can't recall

[19:17] ALR Yeah, I'm looking through it

[19:18] ALR The API isn't as clear as it could be  
with regards to the first entry point.  
exactly

[19:18] kpiwko I'd like to take a stab at that one,  
actually.

[19:18] kpiwko now it the right timeframe to do that

[19:18] ALR kpiwko has a lot of domain experience  
over the impl and Aether backing  
libraries

[19:18] ALR So I think generally-speaking I  
should focus on API

[19:19] ALR And leave kpiwko to do feature dev.

[19:19] kpiwko ALR: agreed

[19:19] ALR Super!

[19:19] ALR This should be fun.

[19:21] ALR kpiwko: Anything else?

[19:21] kpiwko well, what's left for impl for two  
next week then? profiles support only?

[19:21] ALR I think so.

[19:21] kpiwko so SHRINKWRAP-18

[19:21] jbossbot **jira** [SHRINKWRAP-18] Create Impl  
Distribution [Closed (Done) Task,

ChanServ  
aaronwalker  
alesj  
ALR  
bleathem  
bobmcw  
dmlloyd  
duranda\_  
echelog-2  
Jaikiran  
jamezp  
jbossbot  
jbott  
jose\_freitas  
konishi  
ldimaggi  
lfryc  
lkrejci  
OndrejZizka  
os890  
oskutka  
ozizka-ntb

Op DeOp  
Ban Kick  
Sendfile Dialog

lfryc |

#arquillian @ irc.freenode.net

#Arquillian



# Where to go?

Alex Soto & Bartosz Majsak

[Testing Polyglot Persistence Done Right](#)

Wiktor Zolnovski

[Page Object Pattern - it's change my life!](#)



Enjoy the Testing!

Questions for Ikes?

@lfryc

<http://lukas.fryc.eu>



Happy bug killing...