Write cool scalable enterprise application tests with Xtend & embedded DSLs

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EclipseCon Europe 2014

Outline

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Common problems of conventional tests

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  - Good knowledge of the entire system is required

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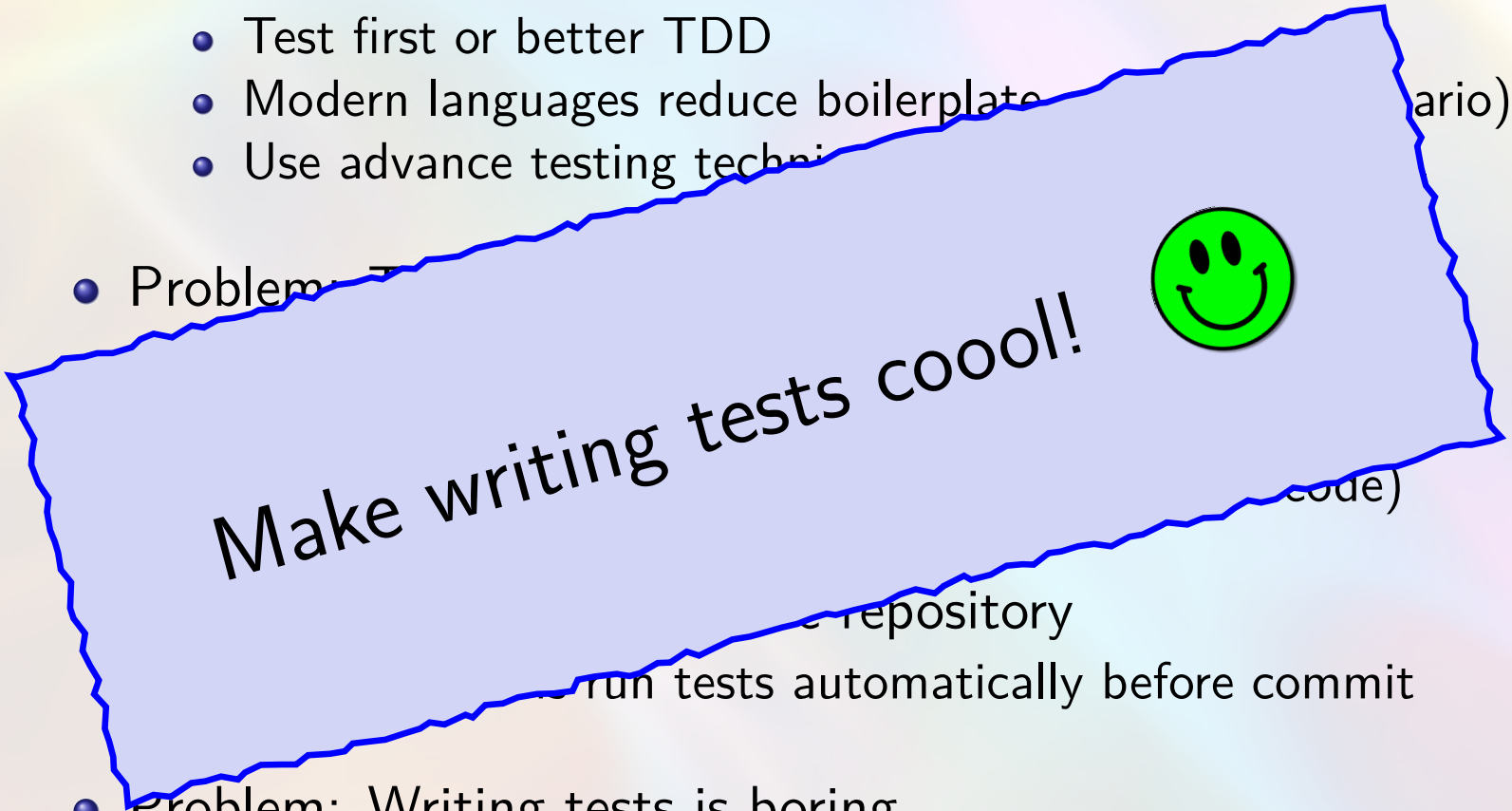
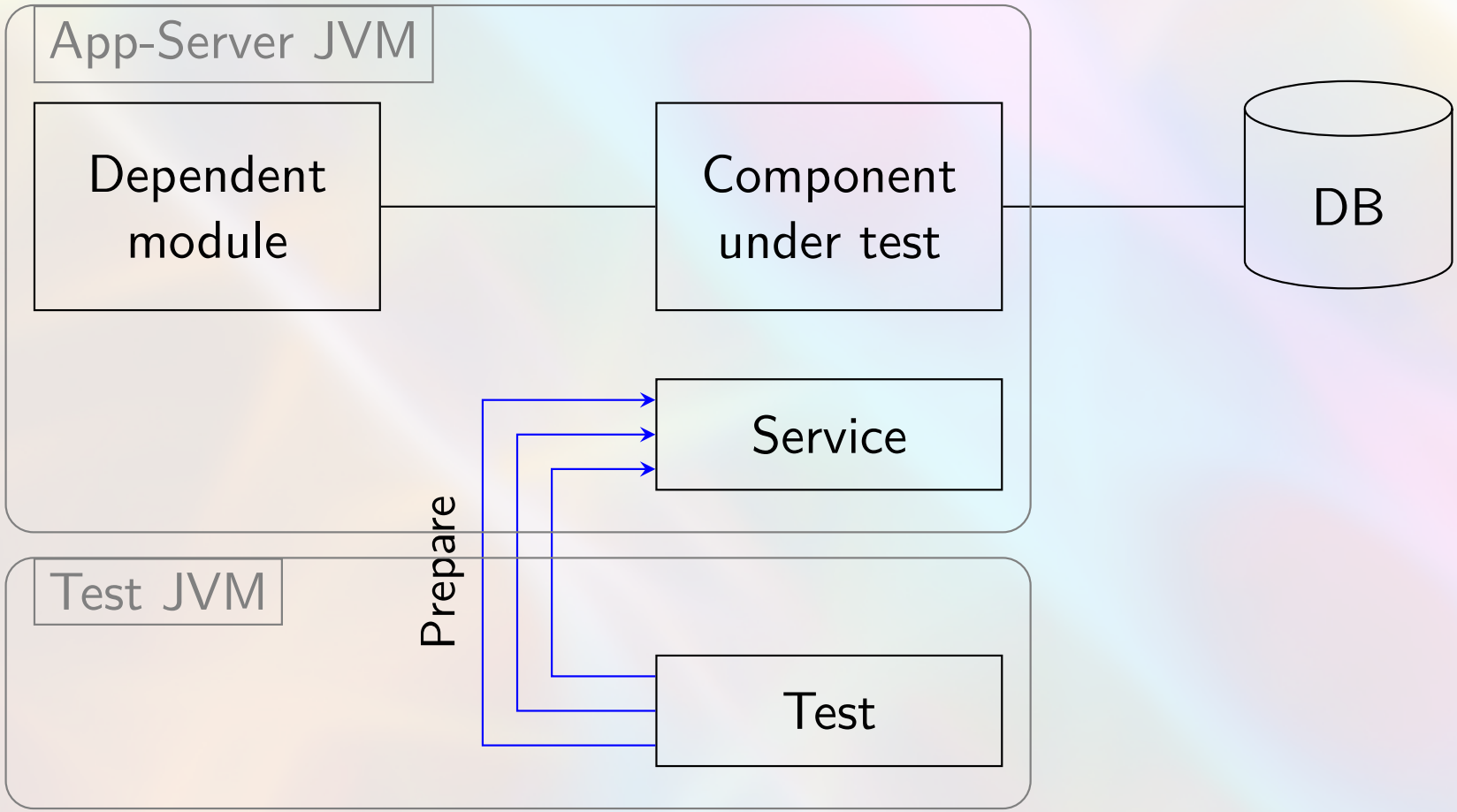


Outline

Integration test

- Test entire system



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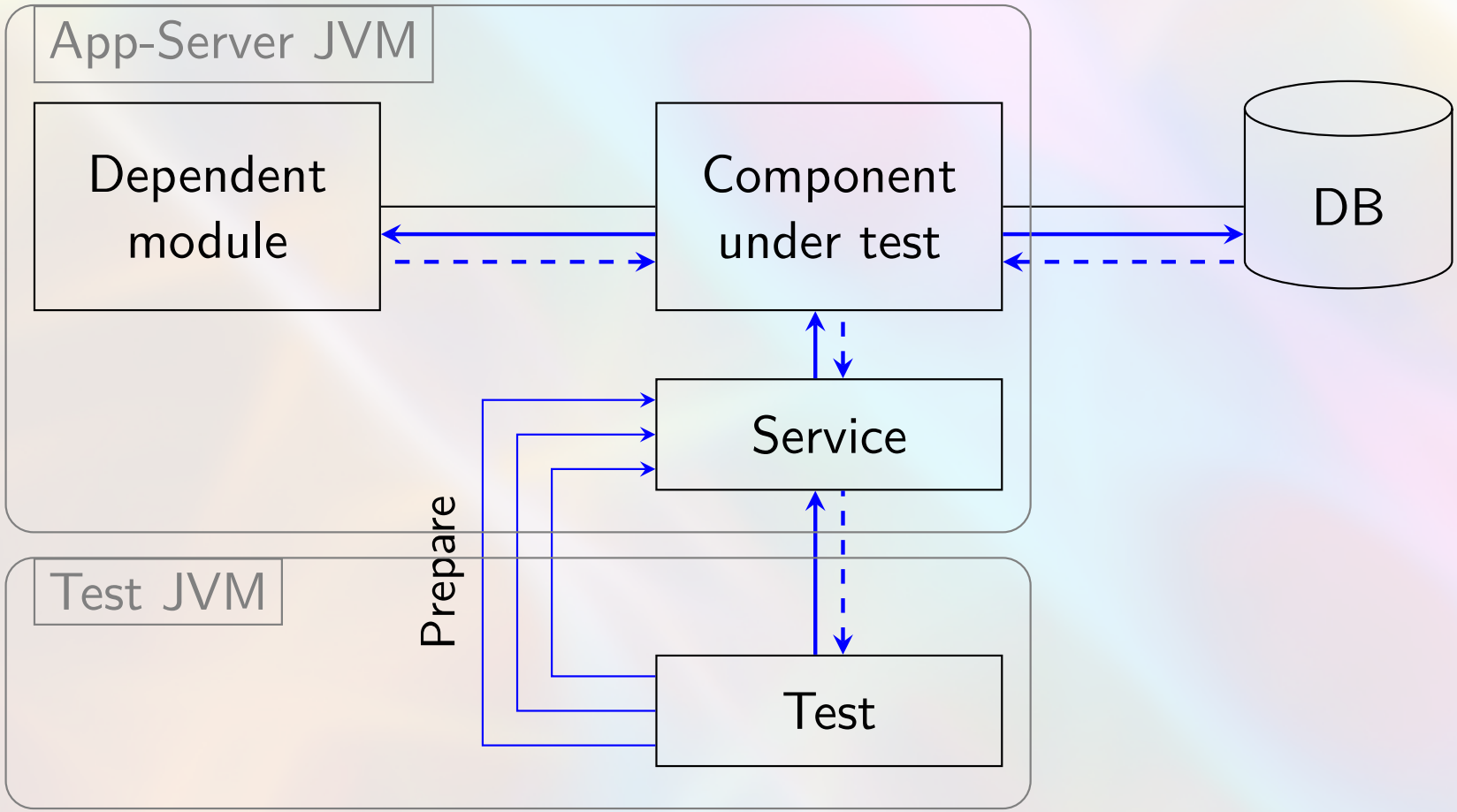

Unit test

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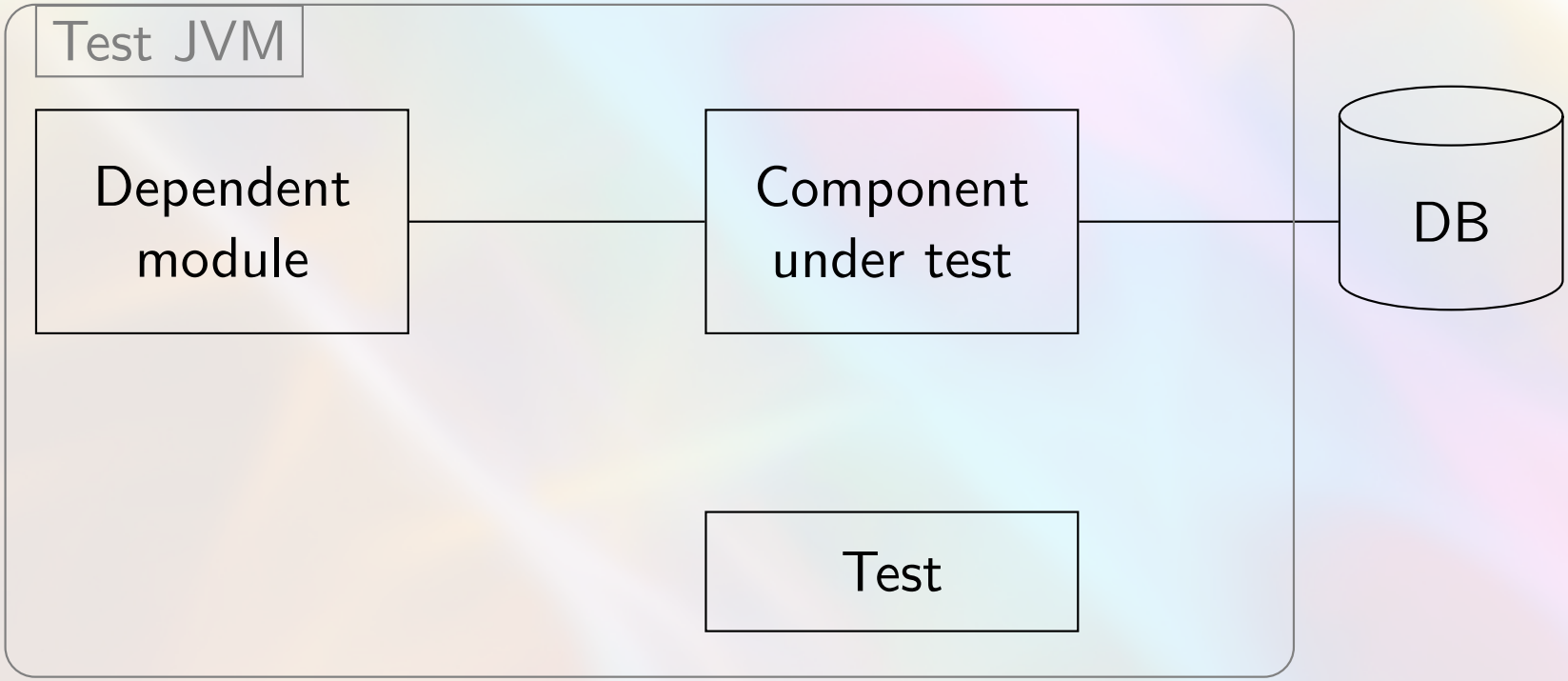

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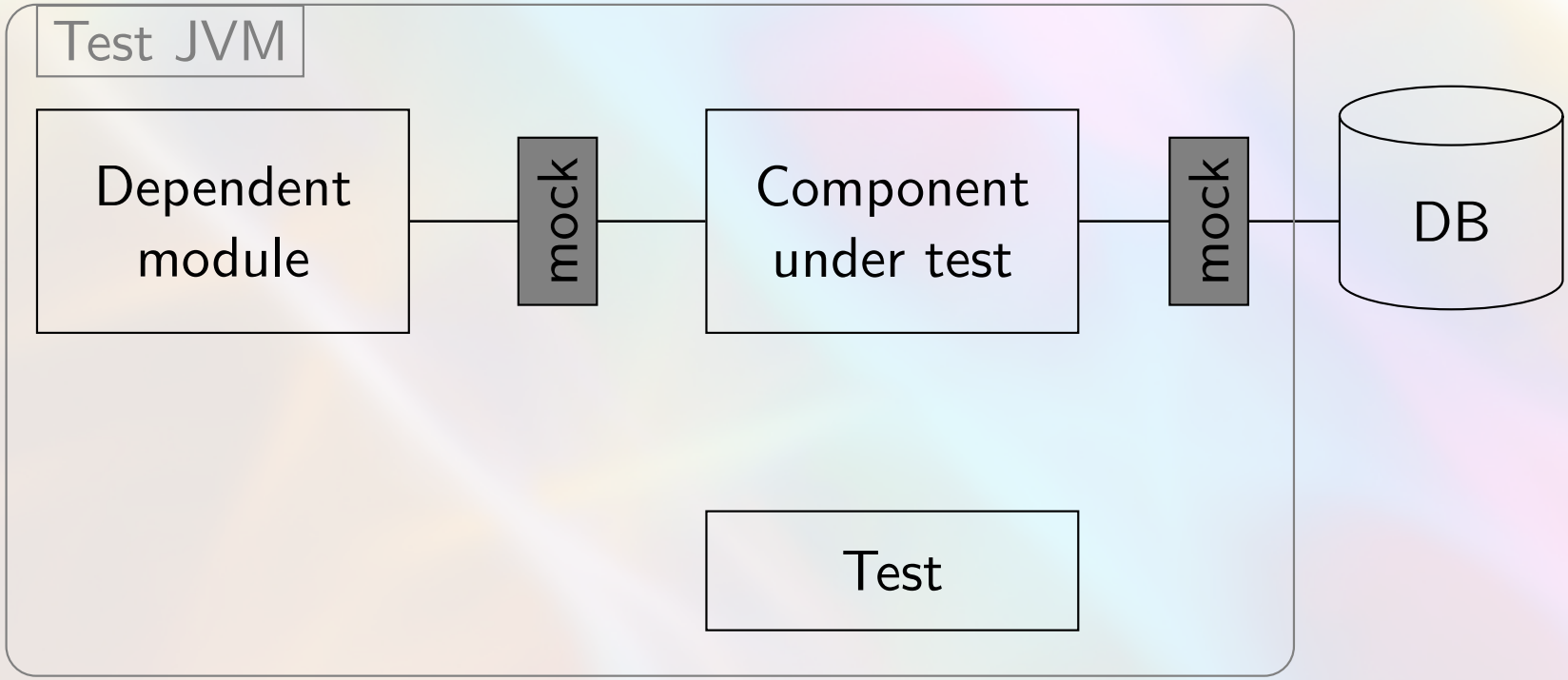

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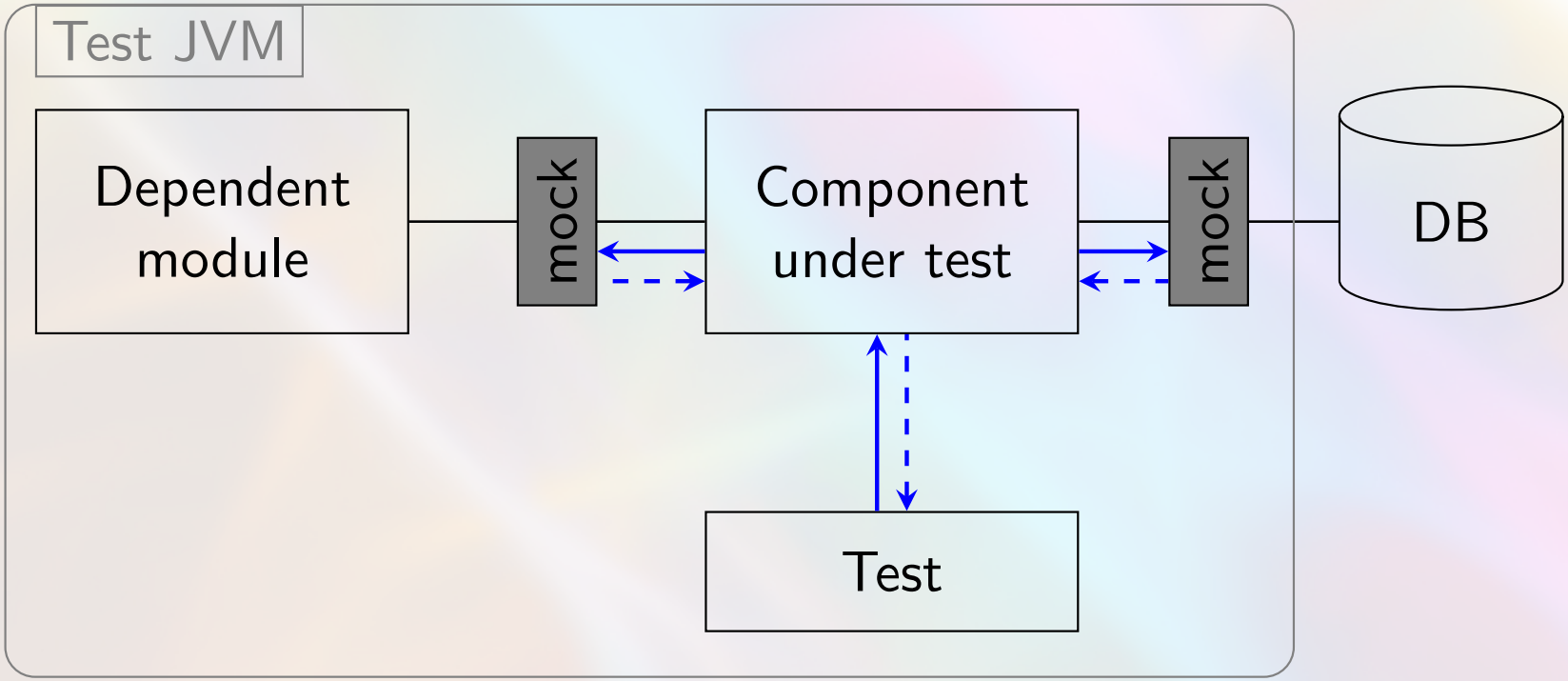
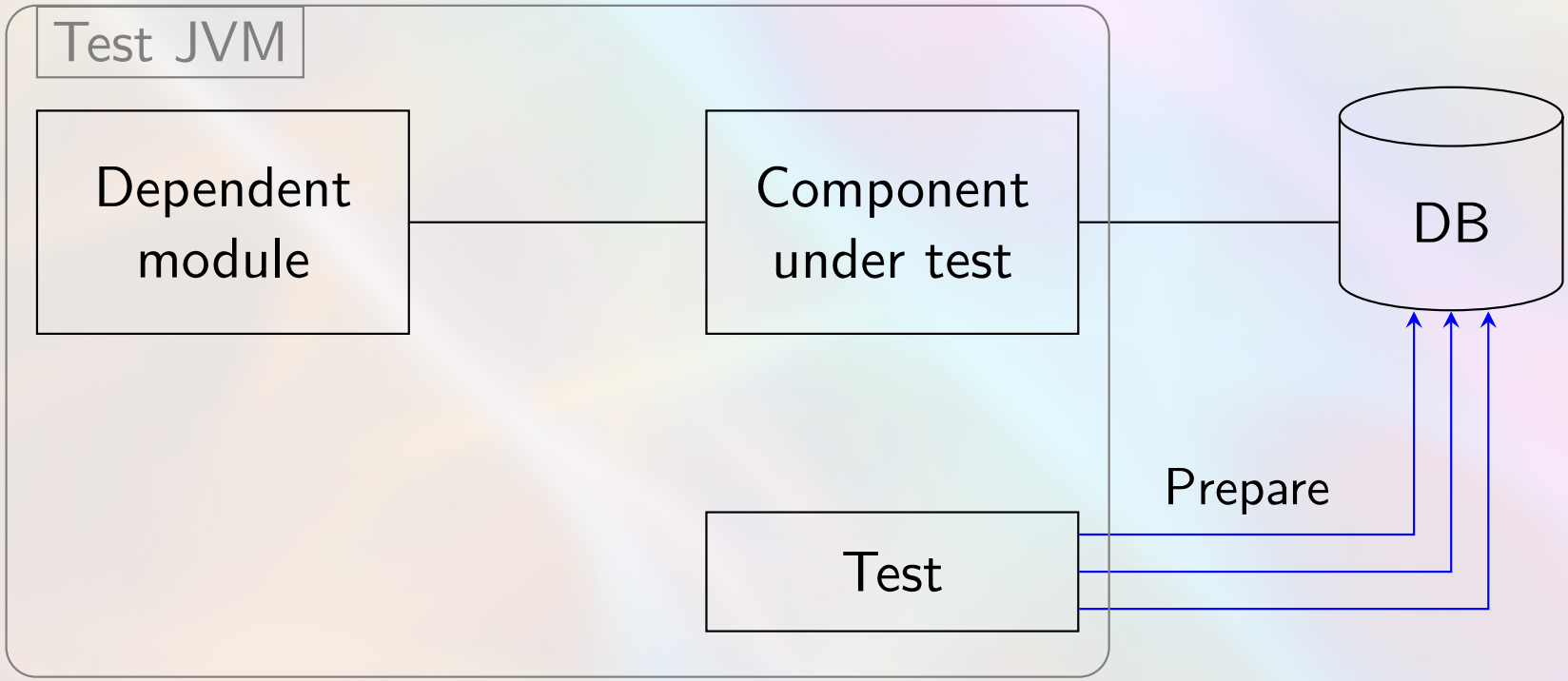


Persistence test

- Test with live database
- Hybrid between unit and integration tests



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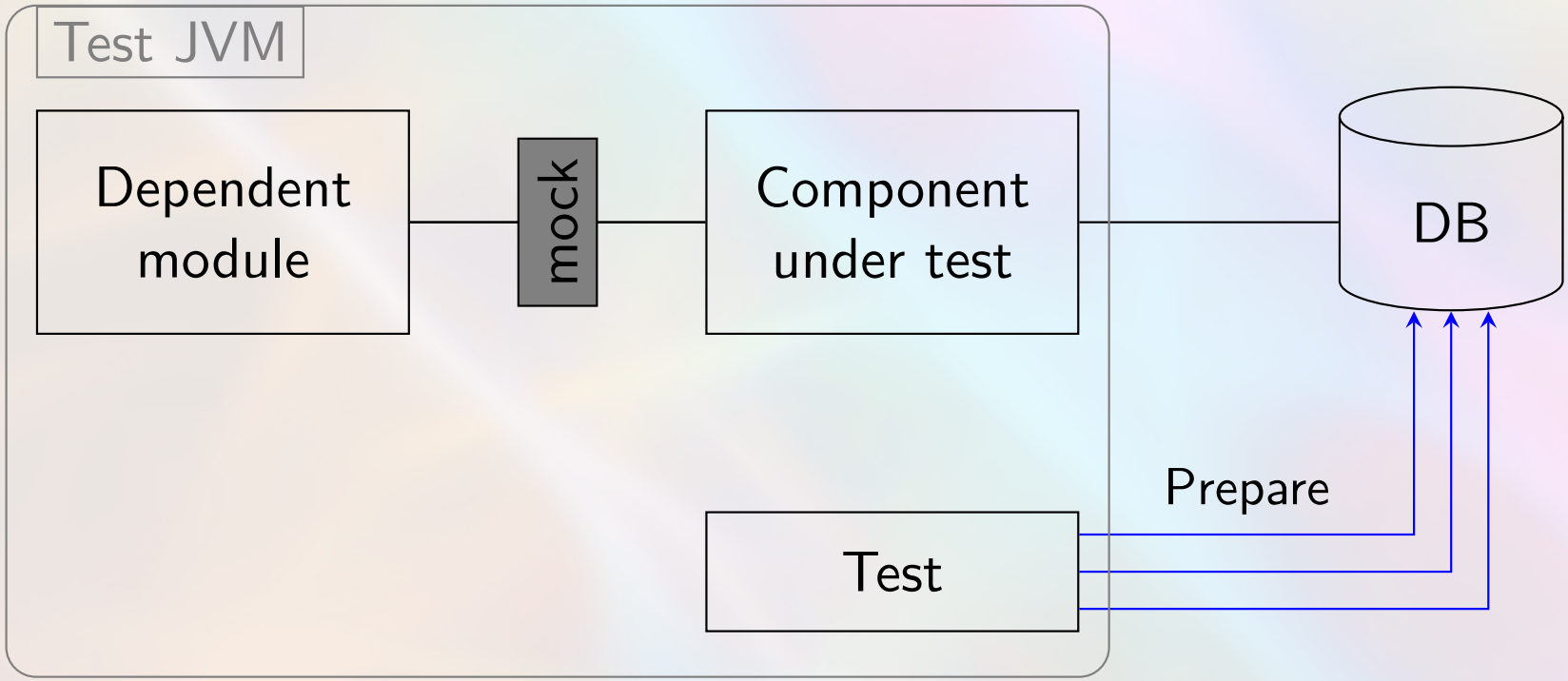

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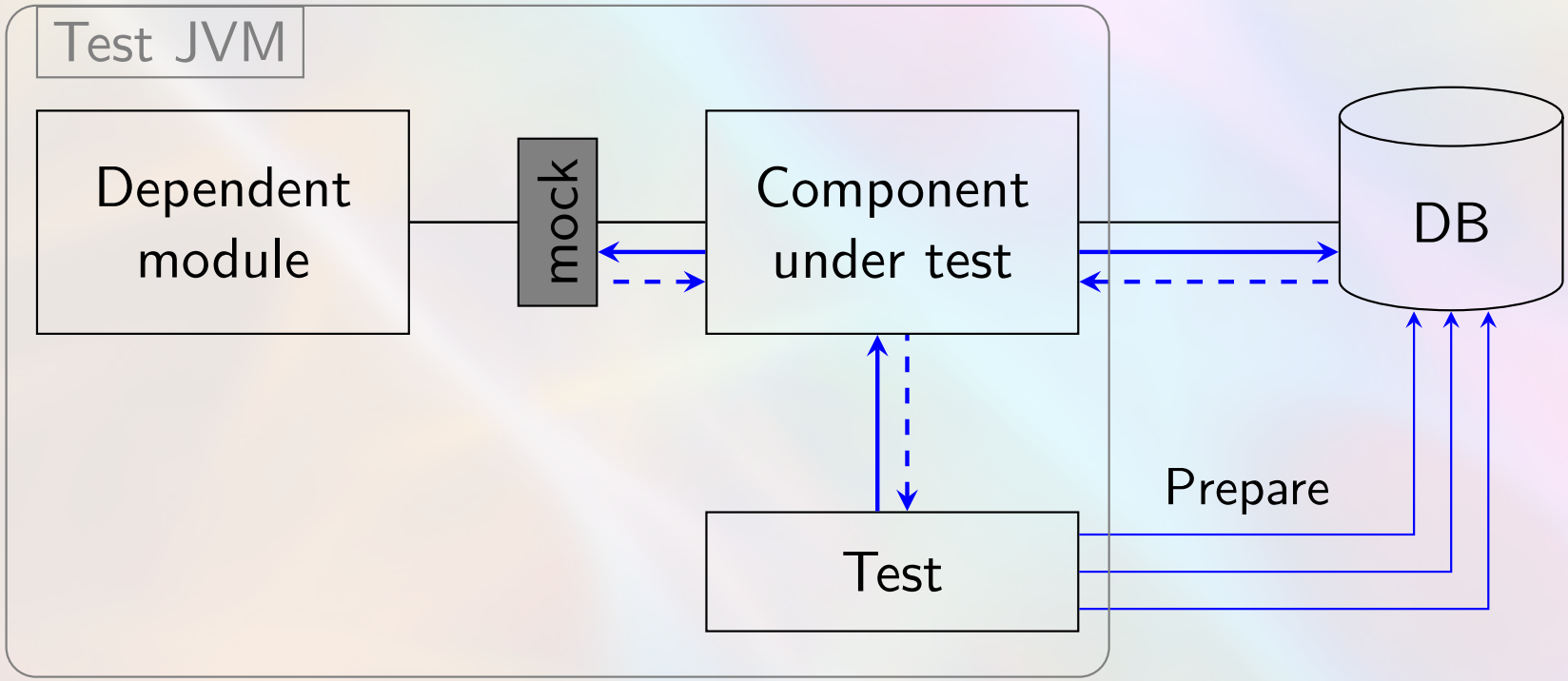


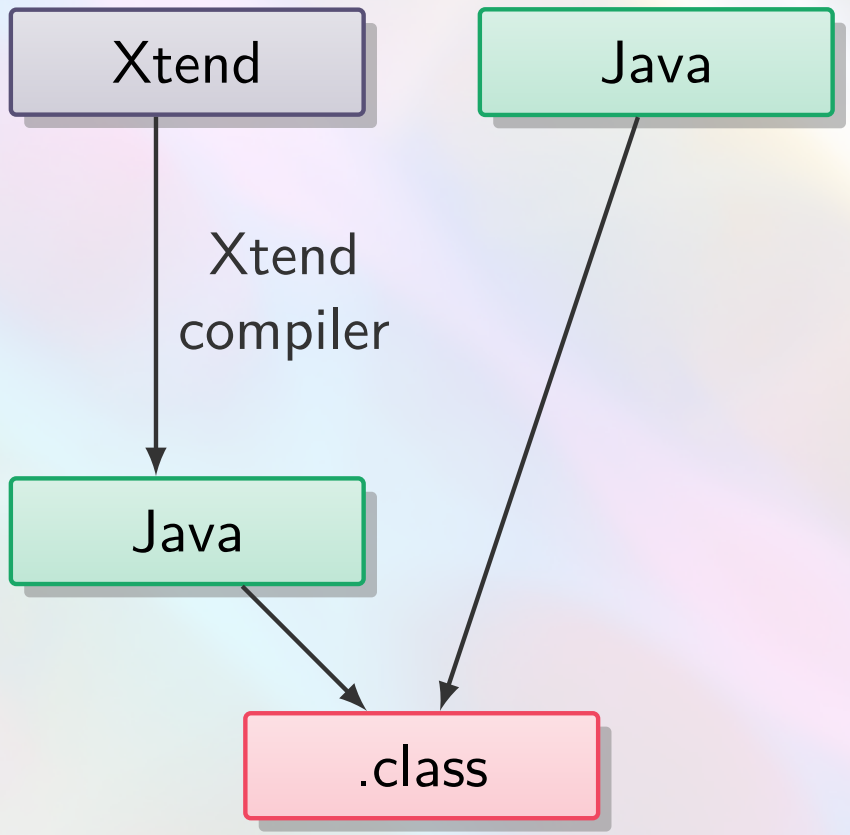
Outline

Java 10 today

Xtend

- Extension to Java
- Adds modern language features
- Compiles into readable Java
- 100% interoperable with Java
- With advanced IDE Support
- Java 8

- http://xtend-lang.org
- http://xtextcasts.org



Xtend Feature overview

- Type inference

```
for (item : list) {...}
```

- Extension methods

```
"age".toFirstUpper
```

- Lambda Expressions

```
btn.addActionListener[ println("Click!") ]
```

- ActiveAnnotations

```
@Accessors String name
```

- Operator overloading

```
"abc" > "bcd"
```

- Powerful switch expressions

```
switch o {Set case o.size > 3: o.size}
```

- No statements

```
msg = if (answer) "yes" else "no"
```

- Template expressions

```
'''
    name:  «name»
    score: «score * 10»
'''
```

- Multiple dispatch

```
def dispatch op(Long s)  {...}
def dispatch op(Short l) {...}
def dispatch op(Float f) {...}
```

Simple JUnit test with Xtend

Java

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public class MyTest {

    @Test
    public void test1() {

        // test code

    }
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Java

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public void operator_spaceship(Object o1, Object o2) {
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  Date now = date.getTime();
  date.add(Calendar.YEAR, years);
  return date.getTime().getTime() - now.getTime();
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Filling structures

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GenreDTO genre = new GenreDTO();
genre.setName("Detective");

BookDTO b = new BookDTO();
b.setAuthor(authorDTO);
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Outline

XFactory

- Create and persist entities
- Embedded DSL (into Xtend/Jnario)
- Designed for unit and persistence tests
- Open Source:
  `https://github.com/borisbrodski/xfactory`

Using XFactory

Get instance of a valid entity

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Use predefined methods

```
val b = xpersist(new XFactoryBook) [
    minimal(author)

    makeBestSeller

]
```

Implementing XFactory

Building an author

```
class XFactoryAuthor extends AbstractXFactory<Author> {
    extension XtendTestContrib = new XtendTestContrib

    override minimal() {
        set [
            firstName = "John"
            lastName = "Doe"
            birthday = 14.april(1967)

            genre = xpersistBefore(new XFactoryGenre)
        ]
    }
    def kill() {
        set [
            dayOfDeath = birthday + 40.years
        ]
    }
}
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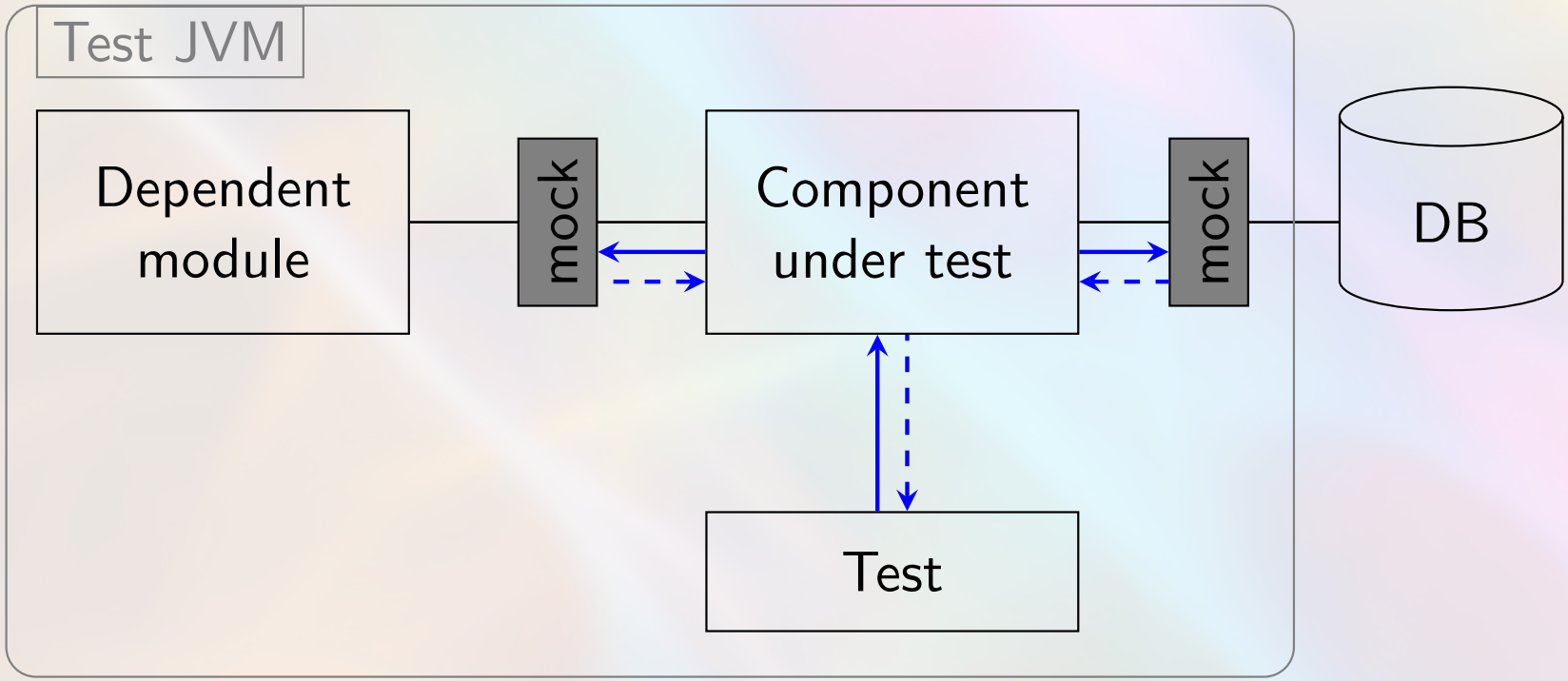

JMockit-Xtend

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- http://github.com/borisbrodski/jmockit-xtend

Using JMockit-Xtend

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DependentModule module

@Test
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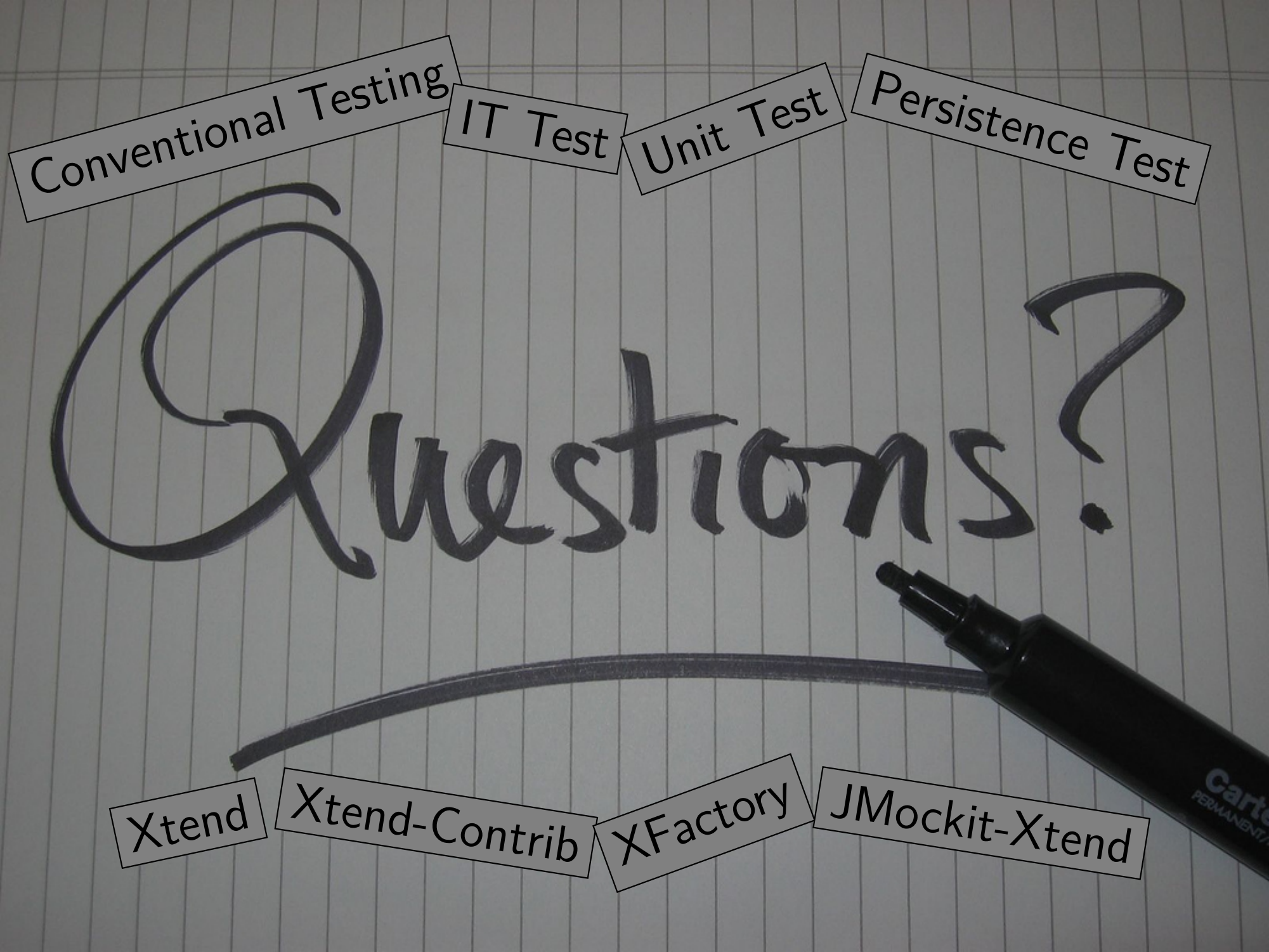
Live-Demo

http://www.flickr.com/photos/spam/


Conventional Testing
IT Test
Unit Test
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Questions?
Xtend
Xtend-Contrib
XFactory
JMockit-Xtend