

THE ROAD TO FASTER DEVELOPMENT

Unit Testing and Continuous Integration



A bit about us

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Unit Testing and Continuous Integration

Test-Driven Development

- Higher confidence in software changes
- Repeatable/predictable
- Makes for more modular, re-usable code
- Limits scope to an individual test

Subjects



zend®studio



The PHP Company

Terms

- **Unit Test**
 - The piece of code you are testing
- **Test**
 - A piece of code that calls the piece of code you're testing
- **Assertion**
 - Validating return types or results of the test
- **Code Coverage**
 - A report on which lines of code have been tested
 - Used to determine additional tests that need to be written
- **Continuous Integration**
 - The continuous application of quality control, i.e. unit tests

Examples

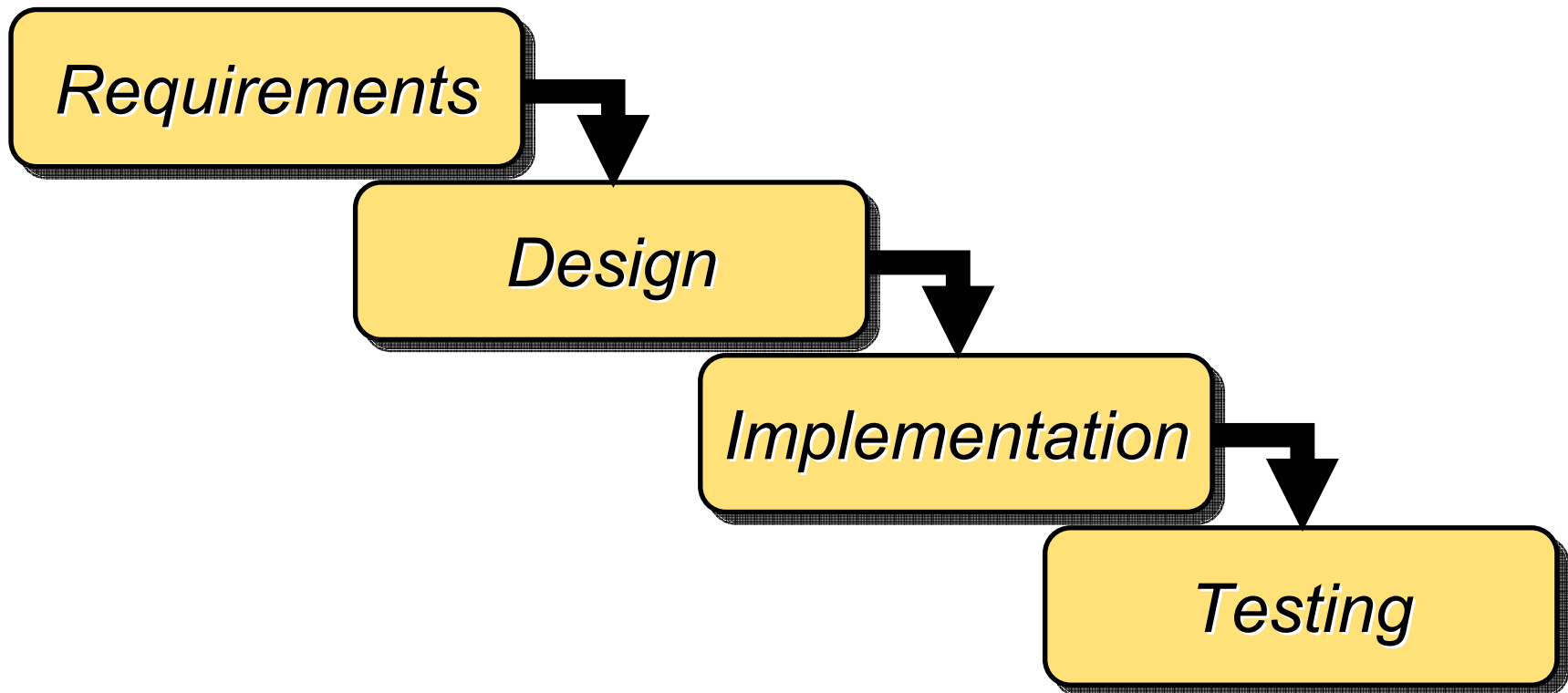
- **Example 1 – Creating a Unit Test for a model in Zend Studio**
- **Example 2 – Creating a Unit Test based off of Code Coverage**
- **Example 3 – Testing a Zend Framework controller**



What is Continuous Integration?



The Old Way: Waterfall

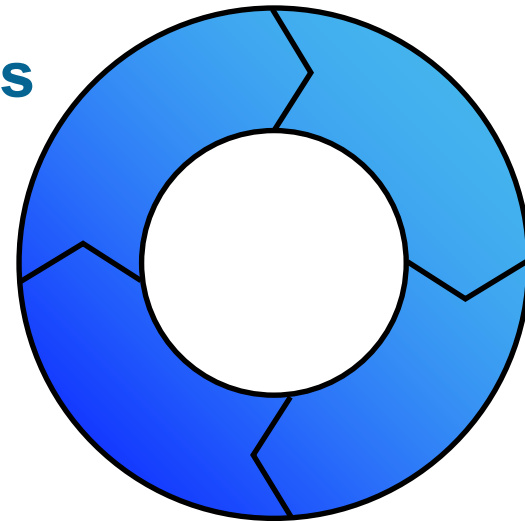


Problems with waterfall model

- **It's very difficult to express all requirements in one phase.**
- **Requirements almost always change.**
- **Rework, due to changes or defects, is almost always required.**
- **Waterfall projects almost always slip in time, cost, scope or quality.**

A Better Way: Iterate

1. Define a requirement
2. Specify tests
3. Implement, until tests pass
4. Repeat



The Old Way: Manual Testing

- **Write extensive test documentation.**
- **Manually perform tests prior to each release.**
- **Slow, error prone process often de-prioritized as deadlines loom.**

A Better Way: Automate Testing

- **Test your code...with code.**
- **Your test code is as important as your production code.**
- **Full suite of tests can be run on demand to prevent regressions**
- **Cheaper, faster, more thorough testing.**

Continuous Integration =
Iterative Development
+
Automated Testing



CI Further Defined

- **Changes are delivered in small, rapid increments**
- **Every time a change is made, all tests are run and the system is built/deployed**
- **If all tests **pass**, code is deployed to next step in QA chain**
- **If tests **fail**, developers are notified and fixing takes place immediately**

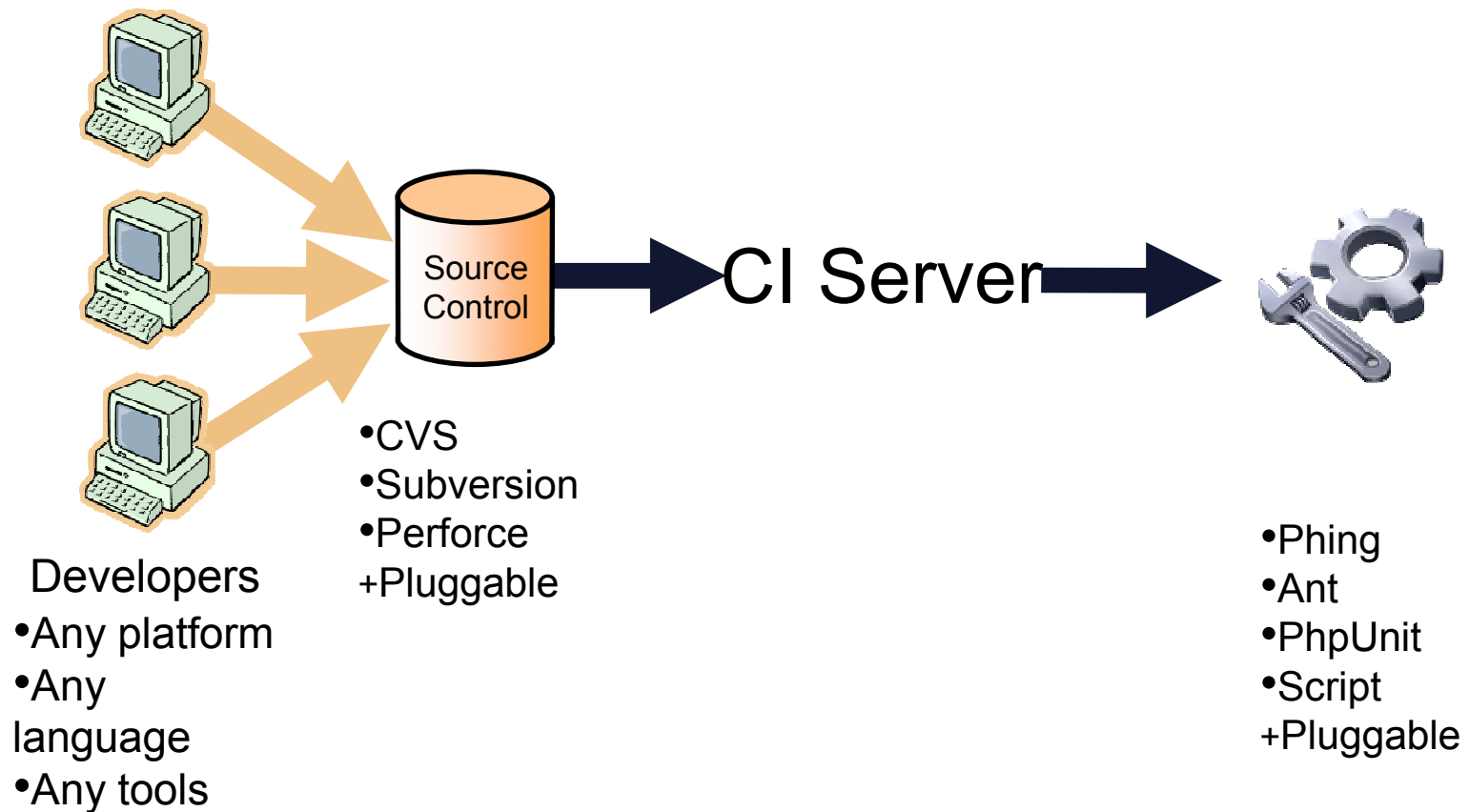
Why is CI Good?

- **Increases traceability of defects.**
- **Increases visibility of progress.**
- **Allows for early feedback from end users.**
- **Allows for staged, or partial, delivery.**
- **Reduces risk of major rework, and project slippage or failure.**

Why CI is Good 2: Developer Edition

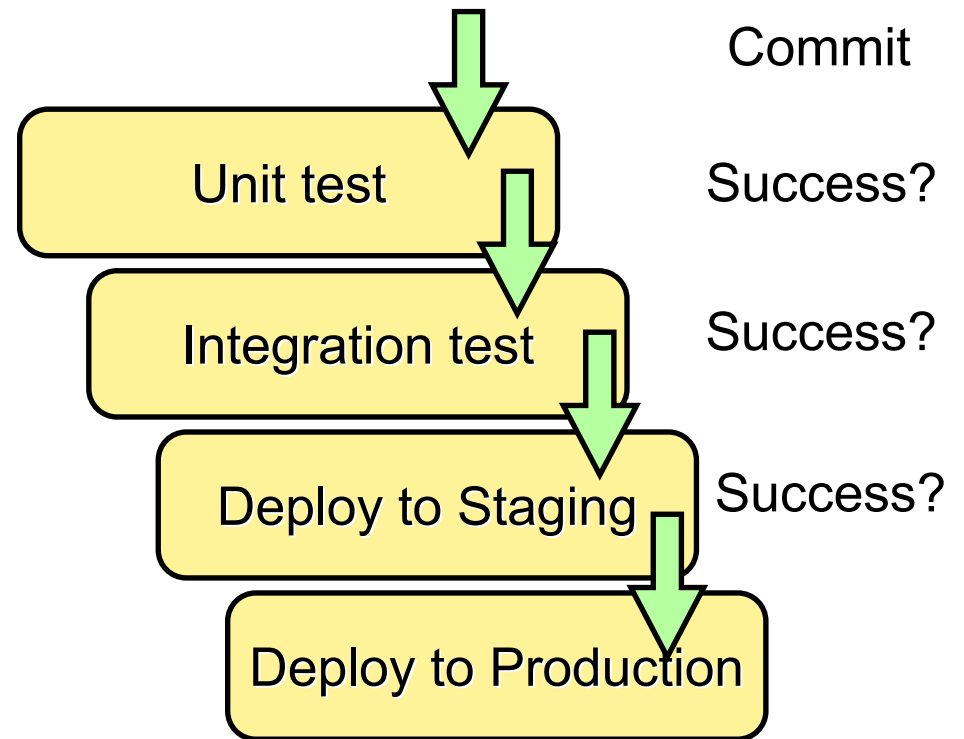
- **Early warning of conflicting changes**
- **“Current” build always available**
- **Frequent checkin encourages modular, non-complex code**
- **Metrics from CI/automated testing help developers write high quality code**

A Typical CI Deployment



Dependent Builds and Releases

- **Locked repo revision**
- **Success only execution**
- **Deploy only occurs on success**



Atlassian Bamboo

- **To work properly, CI must be automated**
- **Automate tests and deployment**
- **Manage complex deployments**
- **Architecture choices to fit your environment**

Information Radiators

Bamboo - Acceptance tests

[BAM-BAMFUNC-2782](#), Updated by [Belinda Teh](#), 6 hours ago 109 passed

Bamboo - HEAD

[BAM-MAIN-5714](#), Updated by [Belinda Teh](#), 6 hours ago 1646 passed

Bamboo - Remote Agent Functional Tests

[BAM-REMOTE-1837](#), Manual build by [Mark Chaimungkalanont](#), 2 hours ago 2 out of 12 failed

Bamboo - Stable Acceptance Tests

[BAM-STABFUNC-887](#), Updated by [David Cheney](#), 3 days ago 96 passed

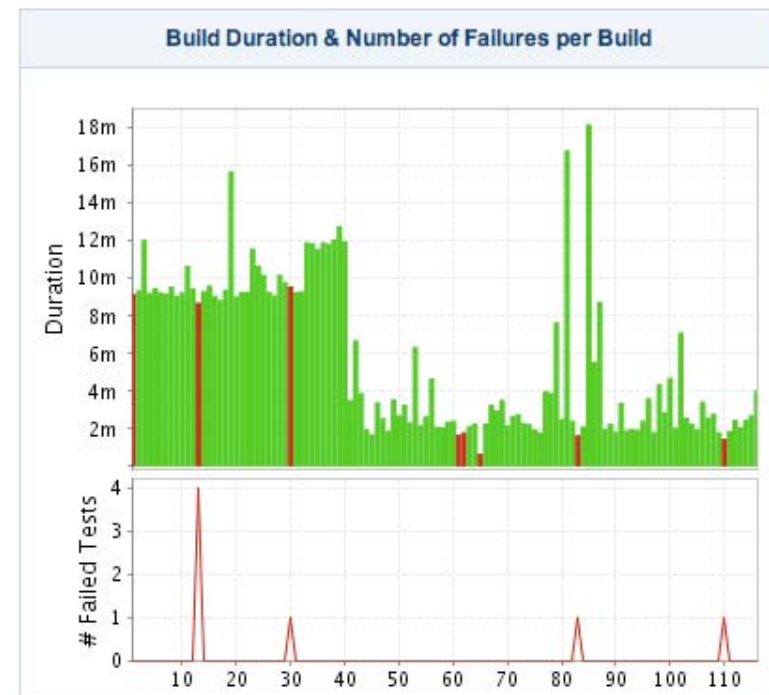
Bamboo - Stable Branch

[BAM-STAB-671](#), Updated by [David Cheney](#), 3 days ago 1680 passed

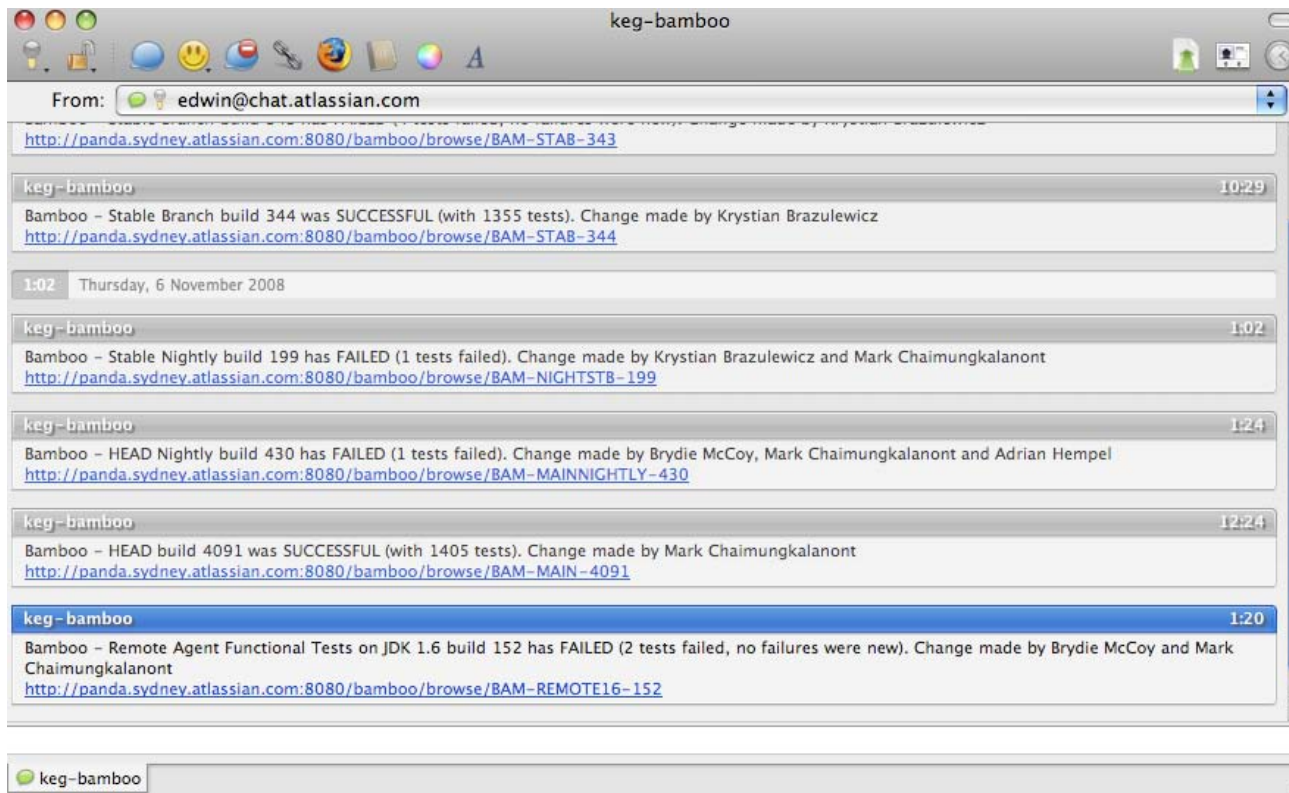


Build Telemetry

- **Statistics, trends, insight**
- **Make sense of trends over time**
- **Drill down, pull up**
- **Quantitative empirical data supports change**



Instant Collaboration



A Demonstration



Questions?



Where to go from here

<http://www.atlassian.com/software/bamboo/>

<http://www.zend.com/en/products/studio/>



Atlassian



Zend Technologies



douglaskbutler



zend



kpschrade



blogs.atlassian.com/devtools/



www.eschrade.com

