



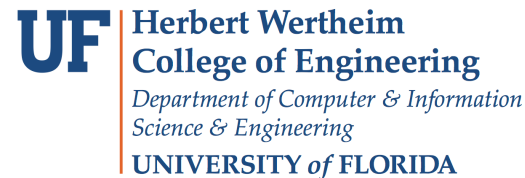
Software Testing for Continuous Delivery

Seminar 1: Course Introduction

Dr. Byron J. Williams
August 21, 2019

“It is the one who does the work that does the learning”

–Terry Doyle



About Me

- Associate Professor, UF, CISE
- Software Security researcher at Florida Institute for Cybersecurity Research (FICS) **Interested?**
- Married to BME Faculty - Dr. Lakiesha Williams
- Previously
 - Associate Professor at Mississippi State University
 - Associate Director & Chief Software Engineer at the Center for Defense Integrated Data (CDID)



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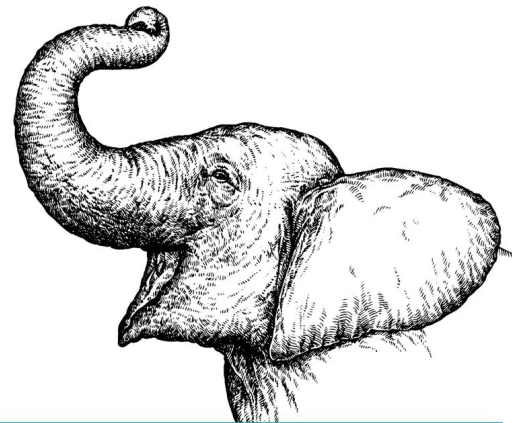
Points to Remember

NO



- Different vocabularies
- "It depends"
 - A "science of the artificial"
- Author's panacea of anecdotal evidence or narrow research
- Seemingly contradictory claims - ISQTB / Agile / Others
- Peer review - provides confidence

The answer to every programming question ever conceived



It Depends

The Definitive Guide

O RLY?

@ThePracticalDev

- What is your definition of high “**quality**”?

- Webster’s Dictionary defines “quality” as: ***a degree of excellence***

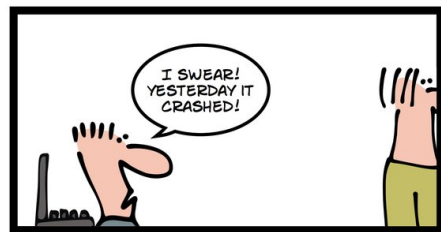
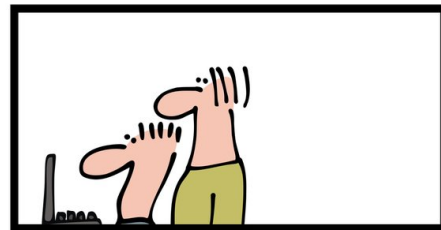
- *Deliver software system that ...*

- does what it is supposed to do
- does the things in a desired way
- show/demonstrate/prove the above two points

What is software quality?

Software Quality:

The totality of functionality and features of a software product that bear on its ability to satisfy stated or implied needs.





Correctness:
few problems with limited
damage to customers



Software

Quality Assurance

To ensure that few, if any, defects remain in the software when it is delivered to its customers or released to the market

Software Engineering (review)

- What is software engineering?
 - Software engineering is the application of engineering to the development of software in a systematic method
- How do we achieve the desired quality?
- What are software process models?



Source: <https://intersog.com/blog/software-teams/software-developers-role-in-project-management-triangle/>

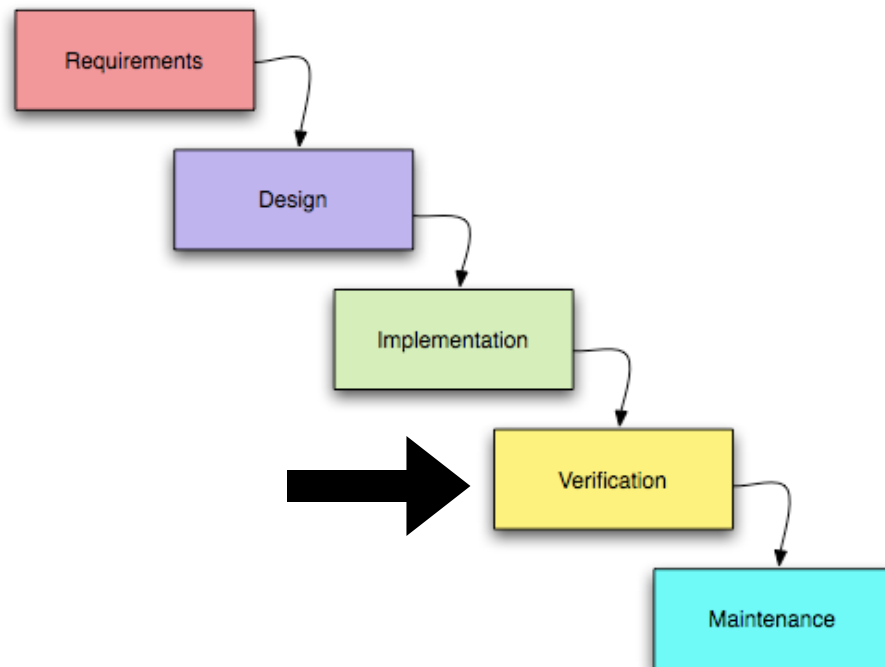
Waterfall Lifecycle

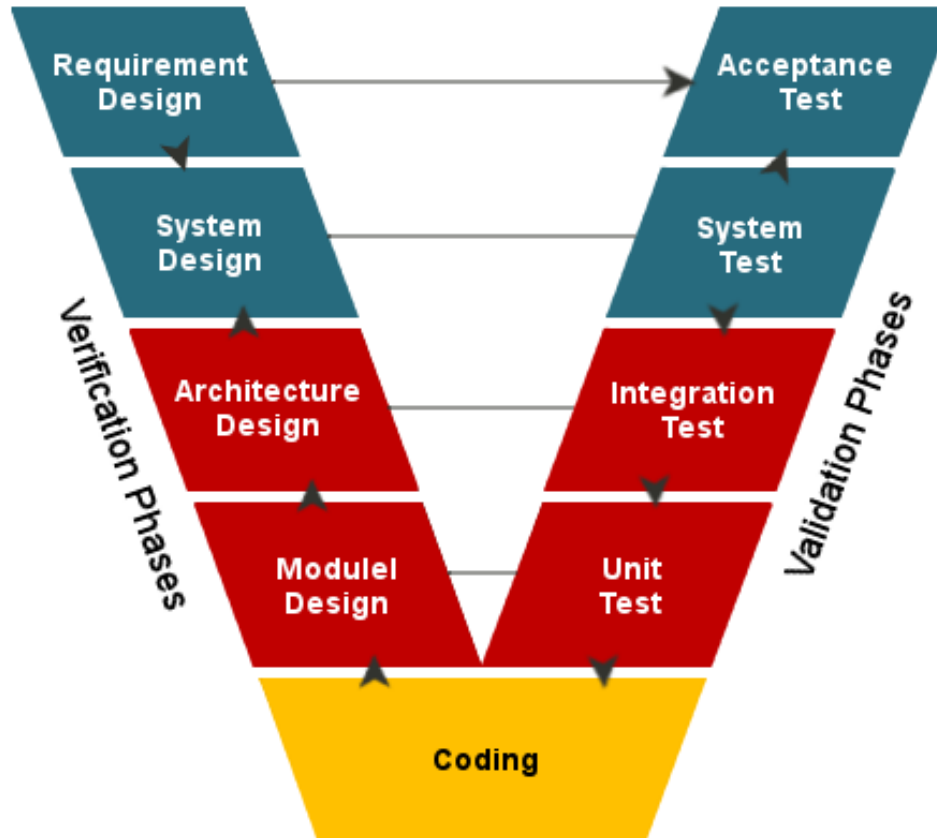
- **View of development:**

- a process of stepwise refinement
- largely a high level management view

- **Problems:**

- Static view of requirements - ignores volatility
- Lack of user involvement once specification is written
- Unrealistic separation of specification from design
- Doesn't accommodate prototyping, reuse, etc.





V-Model of Software Development

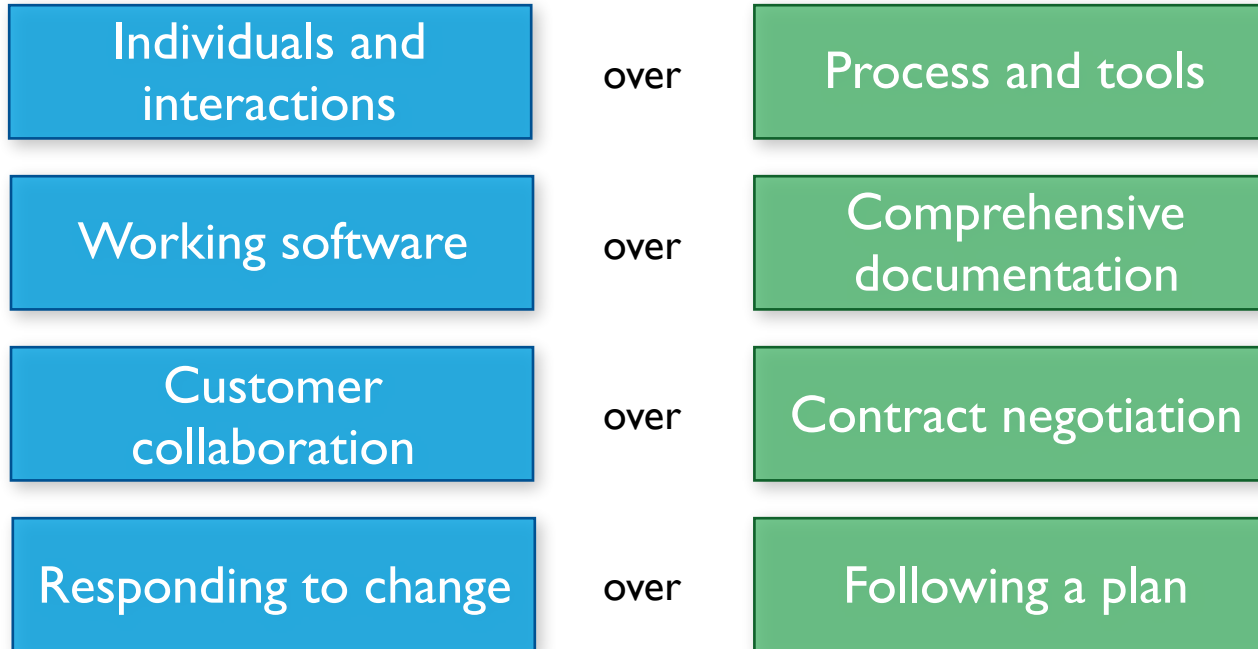
Agile Development



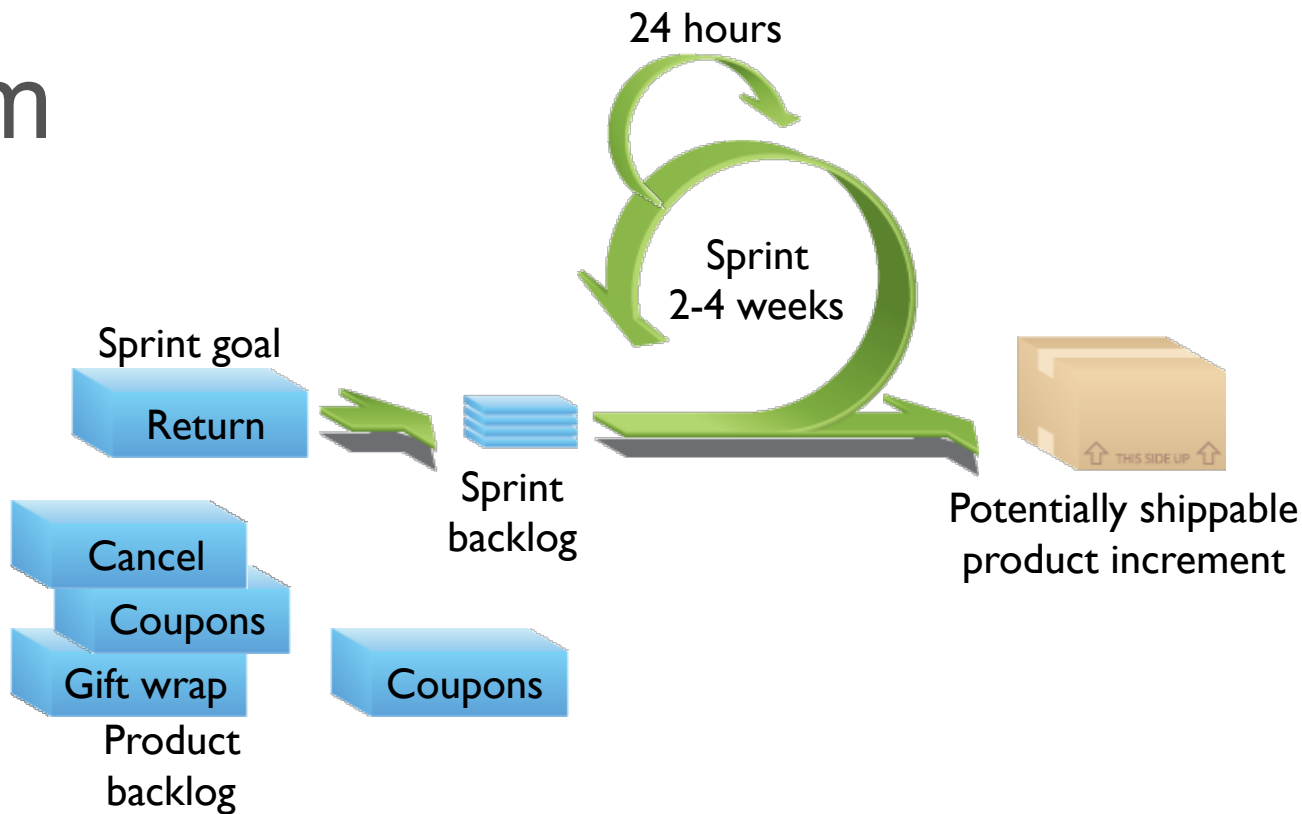
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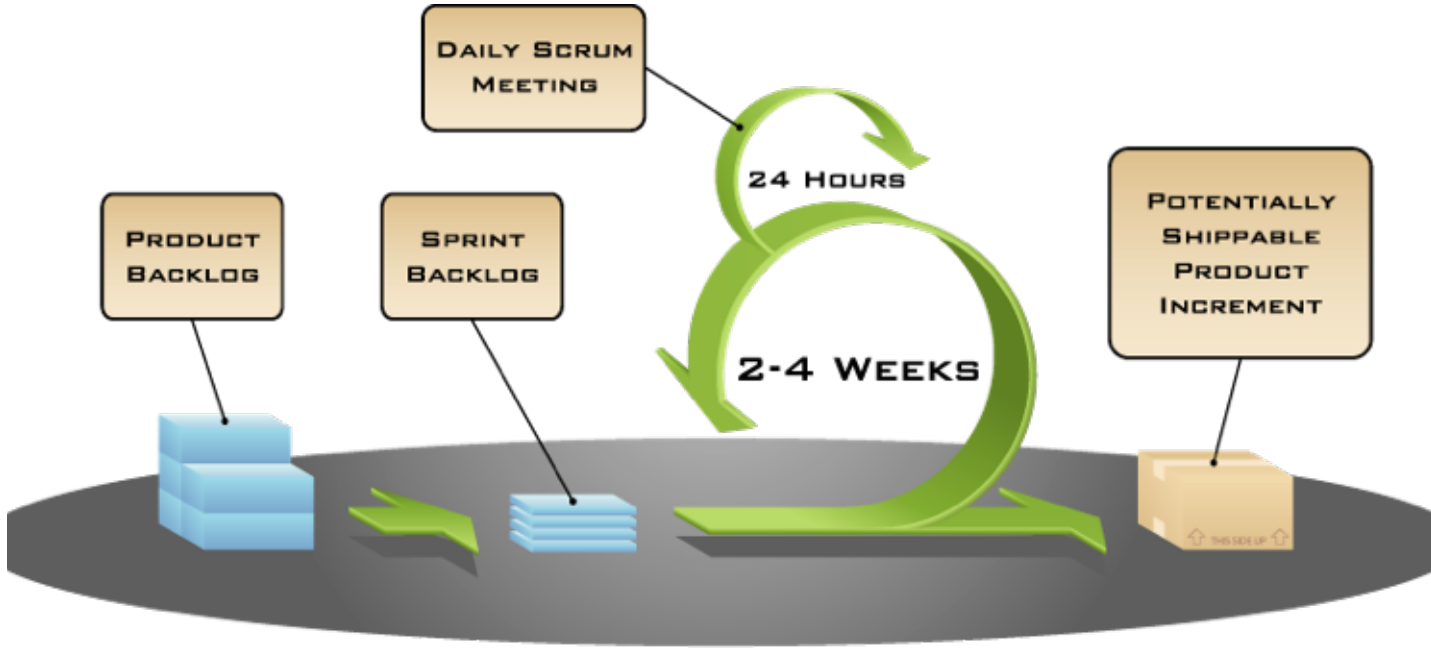
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The Agile Manifesto—a statement of values



Scrum





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Scrum

One of the 'Agile' Methods

Requirements

Design

Code

Test

Rather than doing all of
one thing at a time...

...Scrum teams do a little of
everything all the time

Scrum: Sequential vs Overlapping Development

One of the 'Agile' Methods



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Software Testing for Continuous Delivery

CIS 4930 - Computer & Information Science & Engineering

Testing (operational) Definition

- Defined: the **execution of software and the observation of its behavior...** as an outcome demonstrated using controlled experiments
- **Purpose:**
 - To demonstrate quality / proper behavior
 - To detect problems that need to be fixed
- General Process Steps:
 1. Test Planning & Prep
 2. Test Execution
 3. Analysis & Follow-up

Another Definition:

“Testing is the process of evaluating a product by learning about it through exploration and experimentation, which includes to some degree: questioning, study, modeling, observation, inference, etc.”

(Bach 2013).

Continuous Delivery

- The ability to get changes of all types—including new features, configuration changes, bug fixes and experiments—**into production**, or into the hands of users, **safely** and **quickly** in a **sustainable** way.
- ensuring our code is **always** in a deployable state, even in the face of teams of **thousands** of developers making changes on a daily basis

