Testing, testing, testing, and Quality

Andrew Eisenberg

Tasktop Technologies

@werdnagreb

andrew.eisenberg@gmail.com
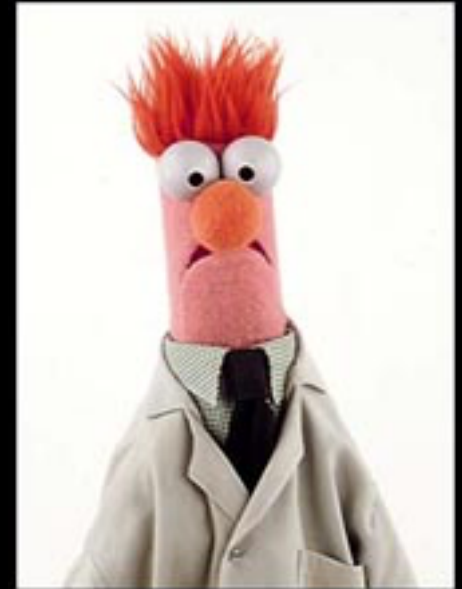
Automated tests of some form are really,

really, REALLY important

Automated tests of some form are really,
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(and fun)

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About me

- Rice University 94-98

- Morgan Stanley 00-02

- UBC Grad School 02-08

- SpringSource/VMware/Pivotal 08-13

- Tasktop 13-now

My grad school days
(it was very stressful)

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Why should we test?

Why should we test?

Quality

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Make sure the thing we built is really the thing we thought we built.

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Make sure the thing we thought we built is really the should have built.

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Make sure the thing we should have built is really what people want.

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- Did we build it right?
- Did we build the right thing?
- Should this thing have been built at all?

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- Did we build it right? Unit Tests
- Did we build the right thing?
- Should this thing have been built at all?

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- Did we build it right?   Unit Tests

- Did we build the right thing?   Integration Tests
System Tests

- Should this thing have been built at all?

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- Did we build it right?

Unit Tests

- Did we build the right thing?

Integration Tests
System Tests

- Should this thing have been built at all?

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And a bunch of other reasons

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And a bunch of other reasons

- Confidence to change

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And a bunch of other reasons

- Confidence to change

- Documentation

  - Capture design decisions

  - Communicate to new team members

  - Communicate to future you

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How to test?

How to test?

- Just try it out

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How to test?

- Just try it out

- Hire someone else to try it out

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How to test?

- Just try it out

- Hire someone else to try it out

- Write more code that does this automatically

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How to test?

- Just try it out

- Hire someone else to try it out

- Write more code that does this automatically

What are the problems with each of these?

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What kinds of tests are there?

- Unit
- Integration
- System

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- Integration
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Note: oversimplification, and not correct.

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- Integration
- System

Note: oversimplification, and not correct.
But: useful (and roughly Tasktop strategy)

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What kinds of tests are there?

- Unit   Single components
- Integration
- System

Note: oversimplification, and not correct.
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What kinds of tests are there?

- Unit   Single components

- Integration   Multi-components
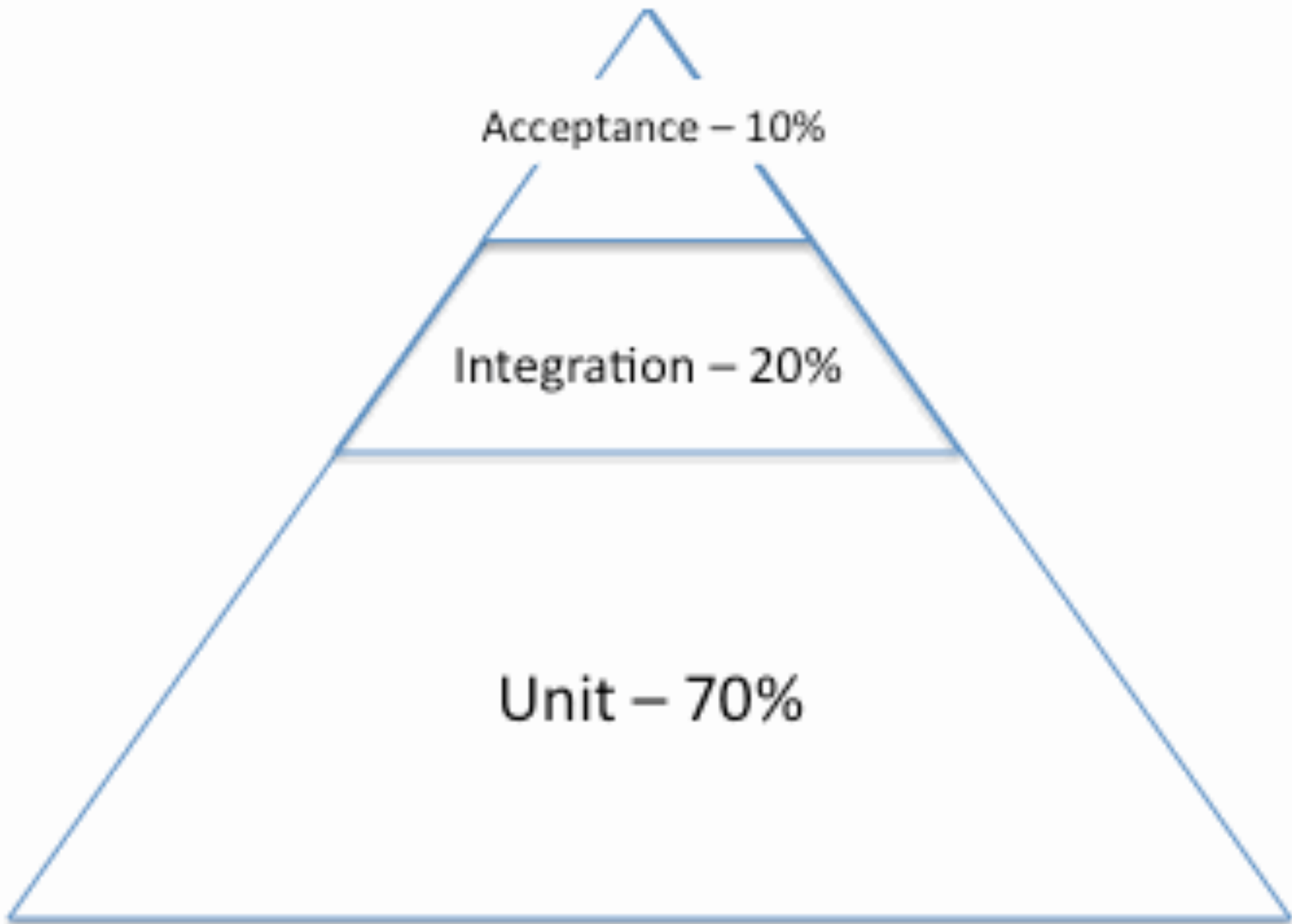
- System

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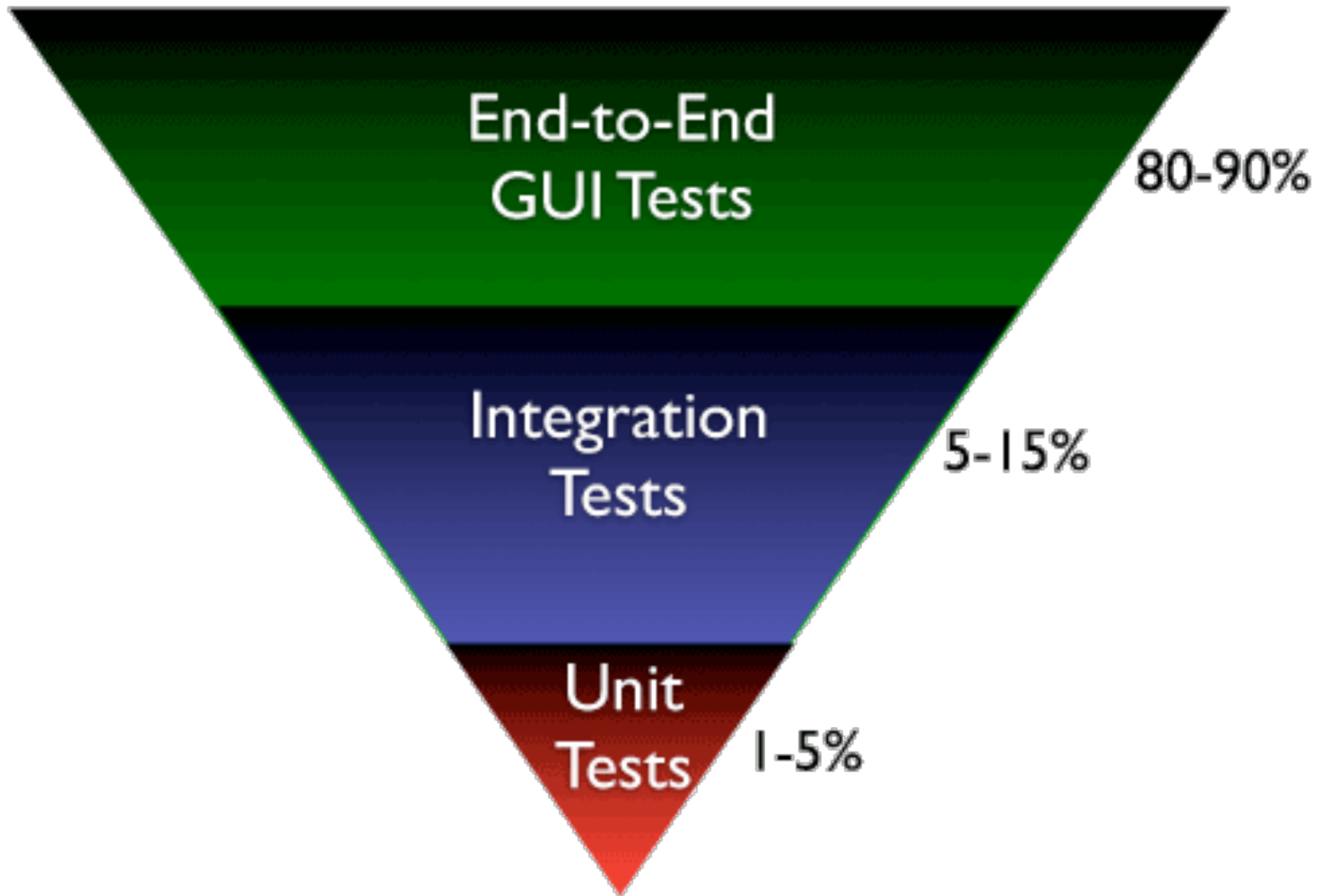TASKTOP

What kinds of tests are there?

- Unit   Single components
- Integration   Multi-components
- System   Everything together

Note: oversimplification, and not correct.
But: useful (and roughly Tasktop strategy)

Acceptance – 10%

Integration – 20%

Unit – 70%

Inverted Test Pyramid

Why is inverted pyramid bad?

- Higher level tests are brittle

- More expensive to write

- More expensive to maintain

- Hard to track a test failure to a location in code

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Unit Testing

- Single components
  - Class, module, file, etc
- Mock/stub dependencies
- Code coverage important
  - (but don't rely on coverage alone)
- Must be fast!
- Run before committing
- Test Driven Development???

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Unit testing frameworks I use daily

JUnit (Java)

Jasmine (JavaScript)

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SHOW ME SOME ?*#! CODE ALREADY

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Integration Testing

- Multiple components
  - package, folder, project
  - interactions between components
- No mocking/stubbing
- Speed less important
- (Usually) run before committing

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Integration testing frameworks I use daily

SeleniumHQ

UI testing for a browser

JUnit (Java)

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System tests/Functional Verification

- Entire system
  - multiple scenarios
- A complex beast
  - There are no frameworks for this
  - Specific to each product
- Slow
- Stability is an issue
- Run sometimes

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SHOW ME SOME ?*#! CODE ALREADY

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Testing is…

- …really, really important.
- …hard to do right.
- …something that requires effort.
- …different things to different people.
- …about more than *just* correctness.
- …unit, integration, system.
- …a joy and a curse.

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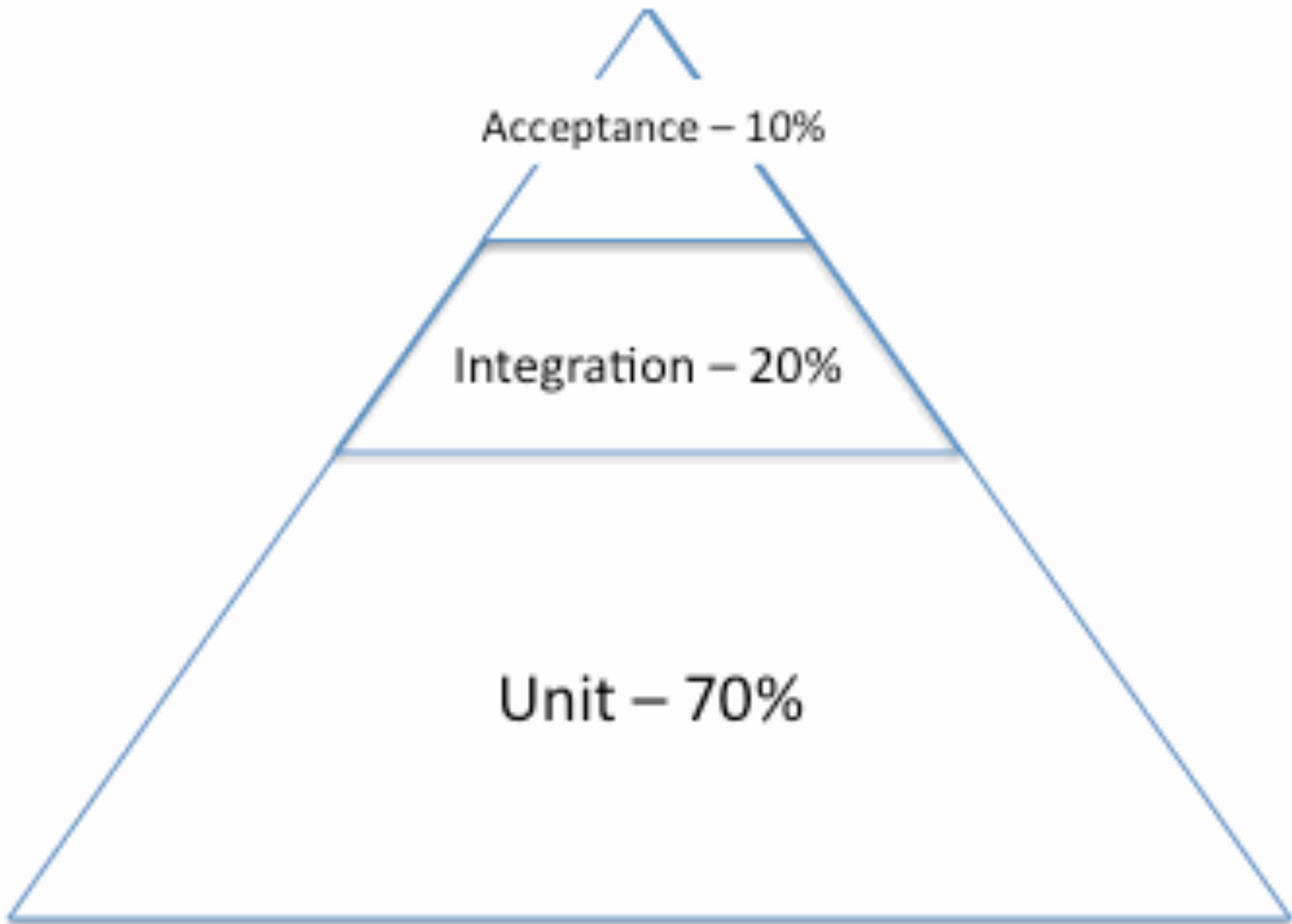
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