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"IS IT A BIRD? IS IT A PLANE?"

THE WEIRD SHAPES WE USE TO TALK ABOUT TESTING

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"IS IT A BIRD? IS IT A PLANE?"

THE WEIRD SHAPES WE USE TO TALK ABOUT TESTING

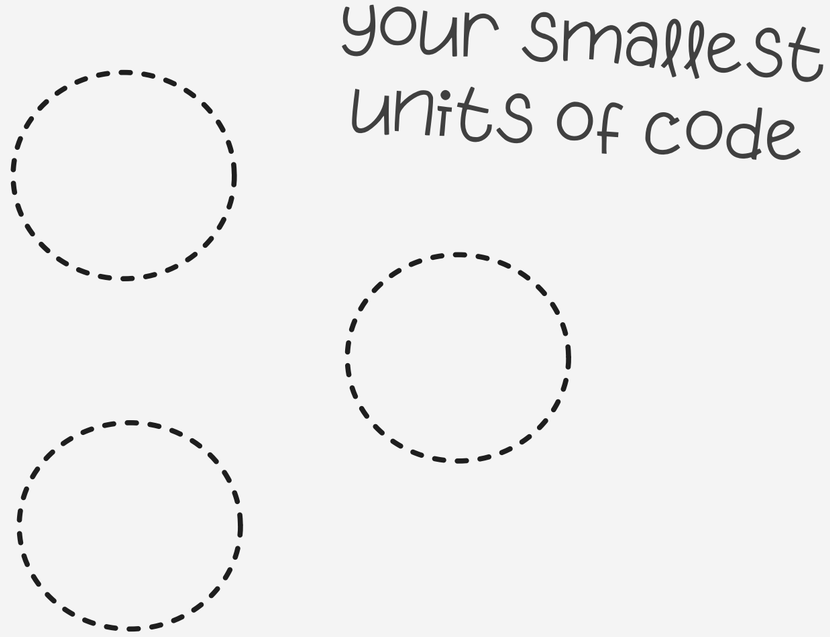
PART I:

Common testing methodologies

THE DIFFERENT TYPES OF TESTS

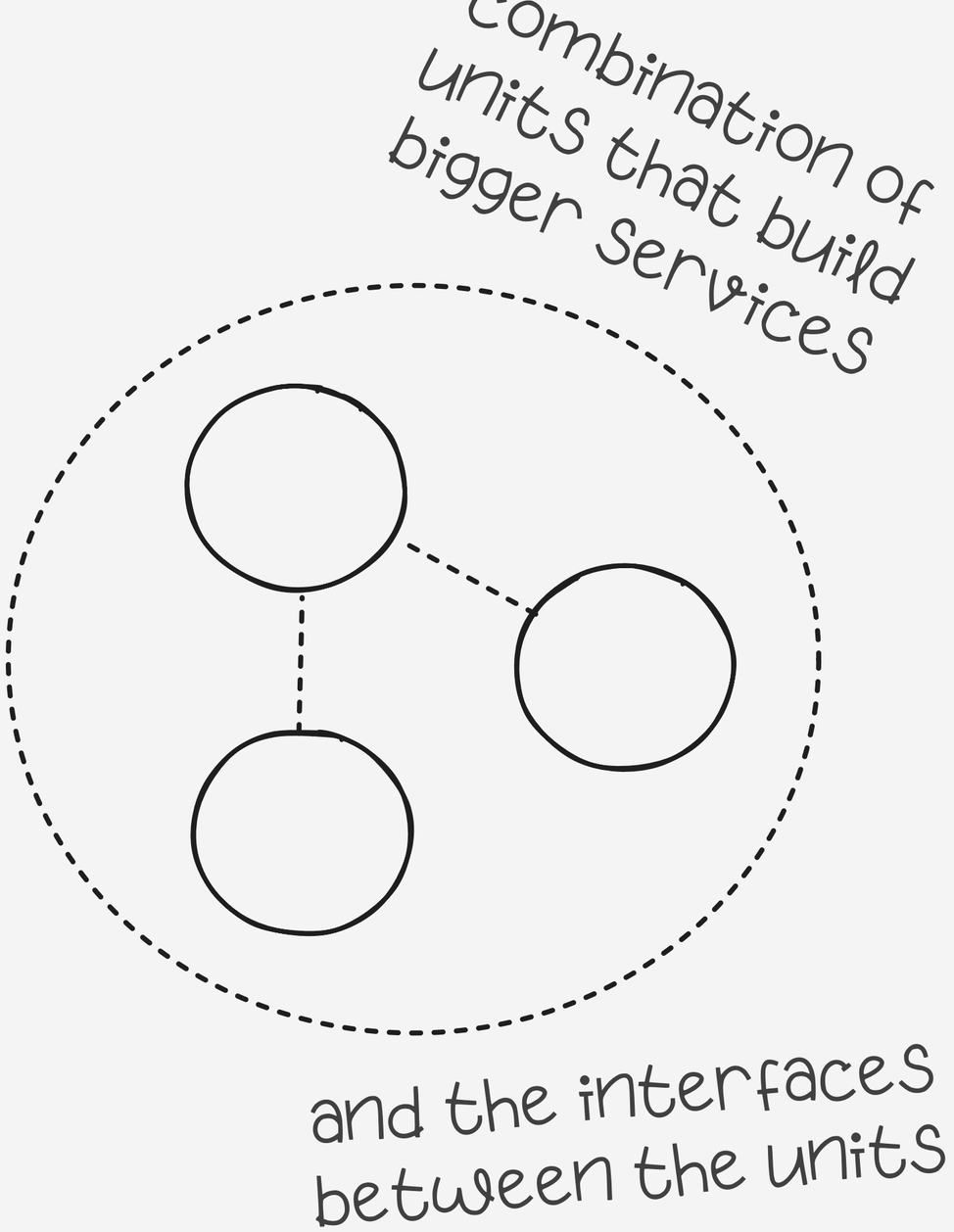
THE DIFFERENT TYPES OF TESTS

1. Unit tests



THE DIFFERENT TYPES OF TESTS

1. Unit tests
2. Integration tests

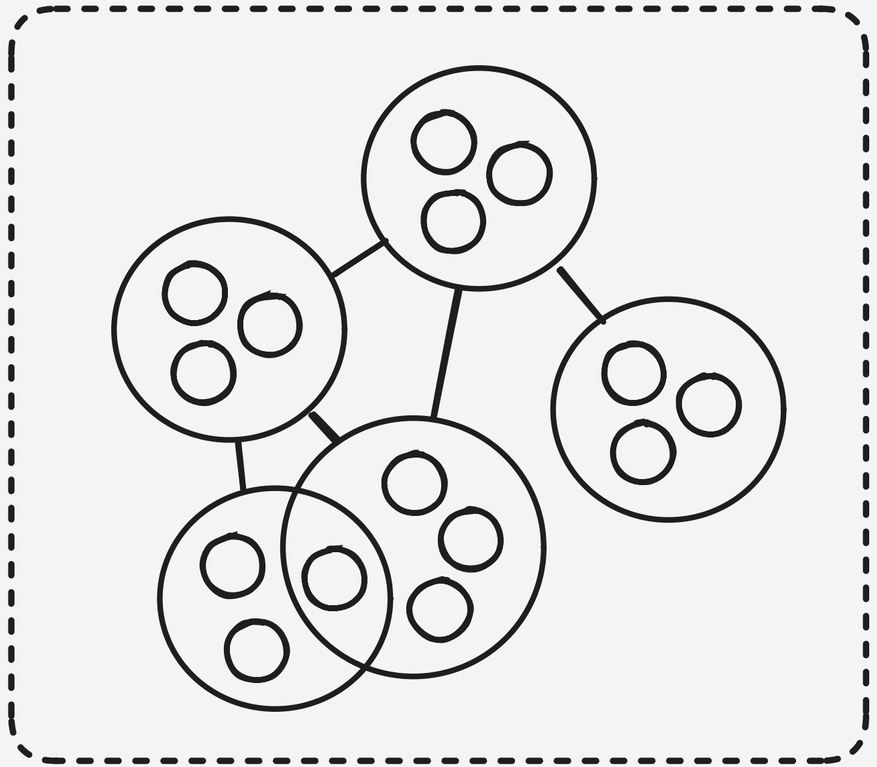


https://www.reddit.com/r/ProgrammerHumor/comments/isidkn/unit_testing_vs_integration_testing/

THE DIFFERENT TYPES OF TESTS

1. Unit tests
2. Integration tests
3. End-to-end tests

the end-to-end behaviours of the system



THE DIFFERENT TYPES OF TESTS

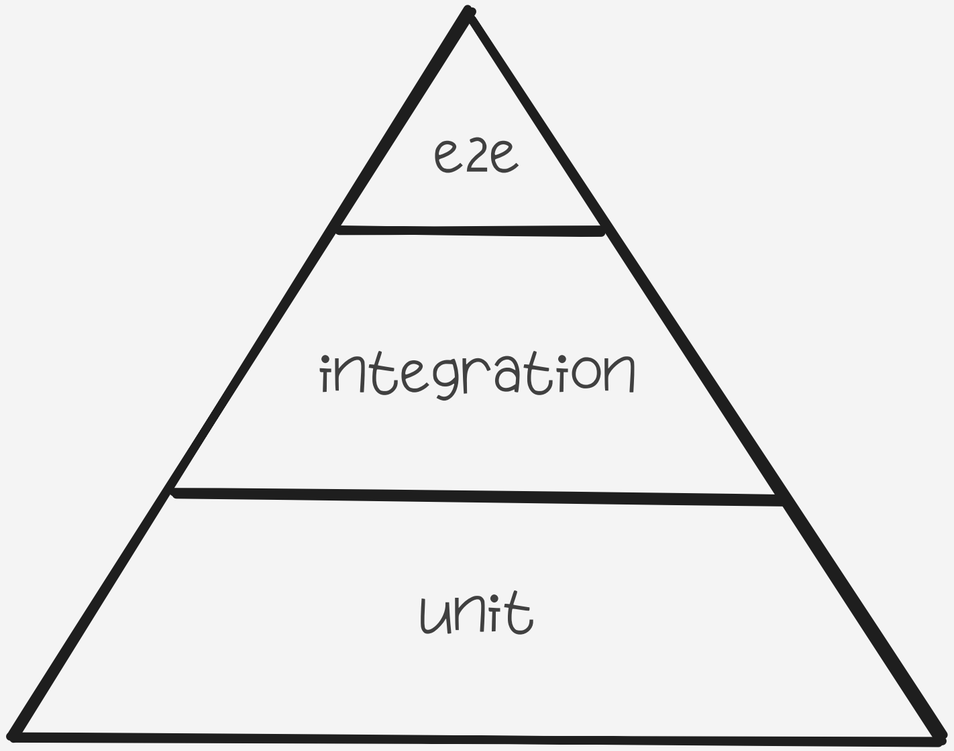
1. Static tests
2. Unit tests
3. Integration tests
4. End-to-end tests

THE DIFFERENT TYPES OF TESTS

1. Static tests
2. Unit tests
3. Integration tests
4. End-to-end tests
5. Manual tests

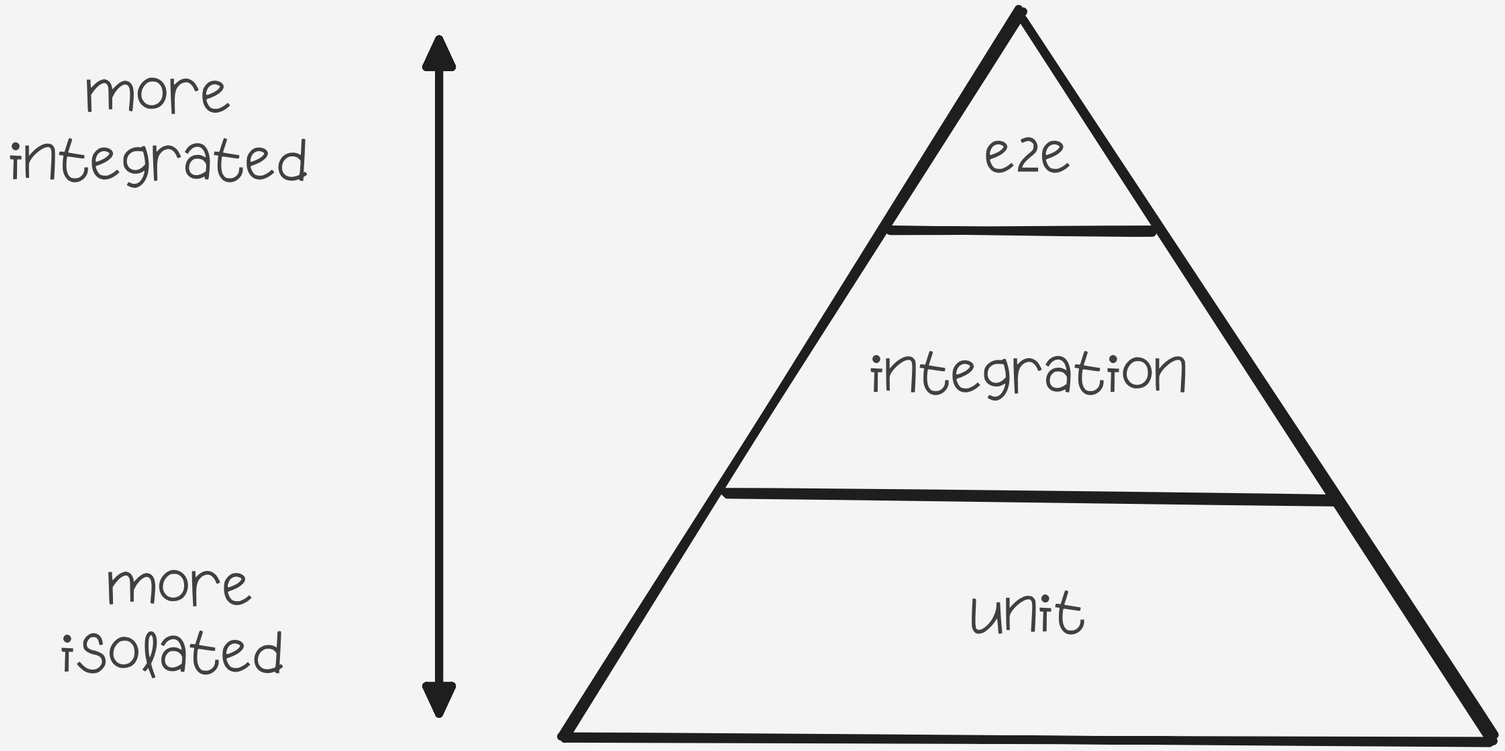
“THE SHAPES”

“THE SHAPES” — THE PYRAMID



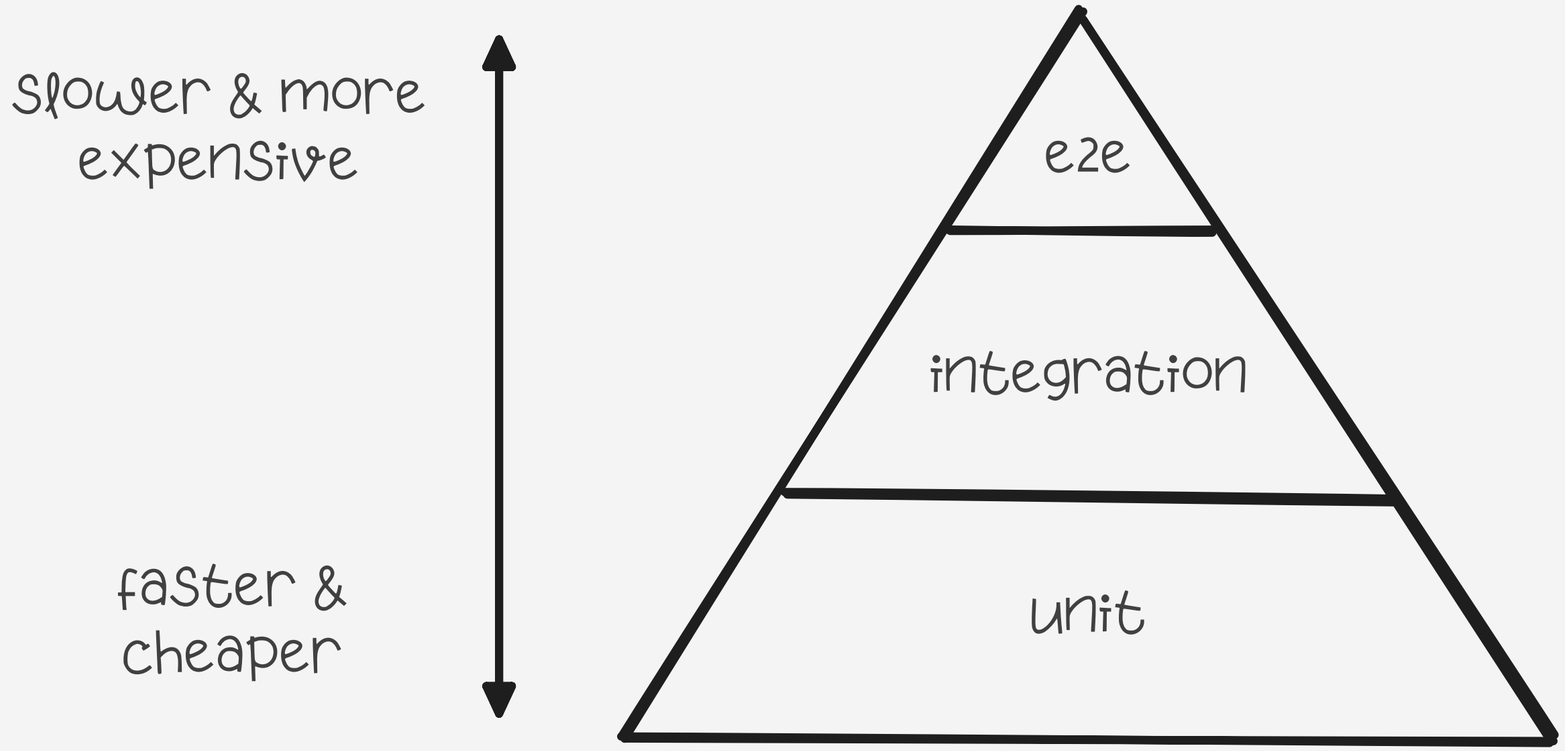
https://web.dev/articles/ta-strategies

“THE SHAPES” — THE PYRAMID



https://web.dev/articles/ta-strategies

“THE SHAPES” — THE PYRAMID



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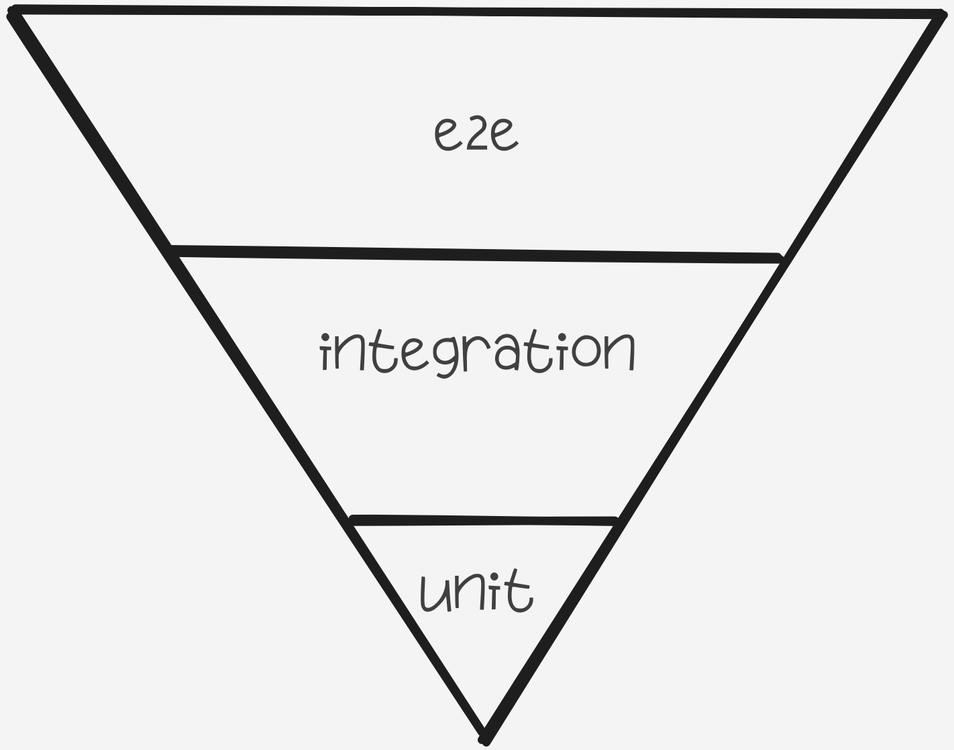
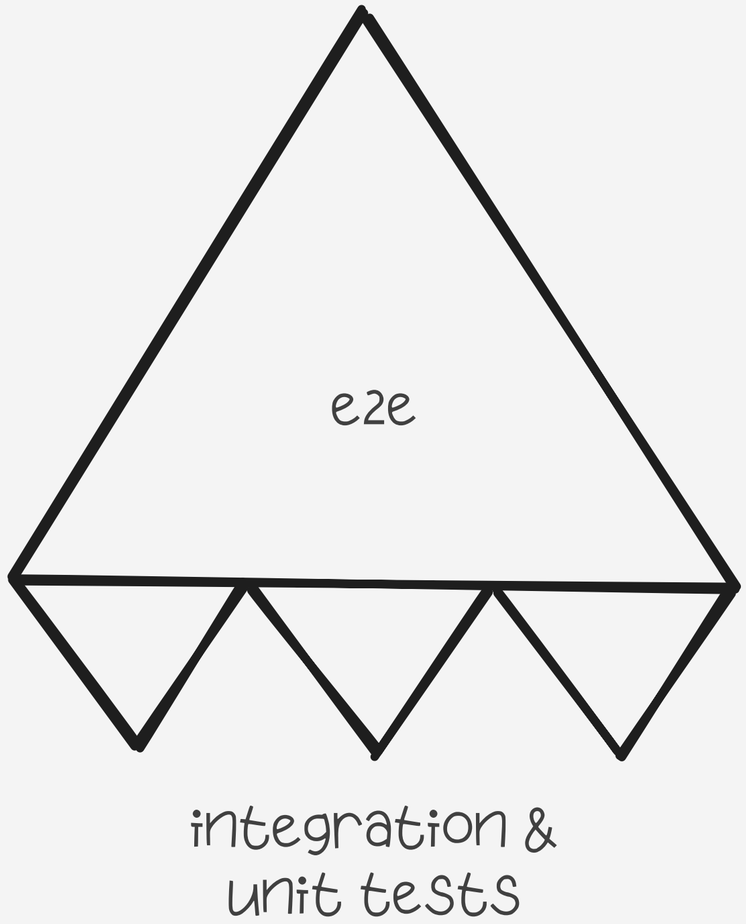
“THE SHAPES” — THE ICE CONE



https://web.dev/articles/ta-strategies

“THE SHAPES” — THE CRAB 🦀



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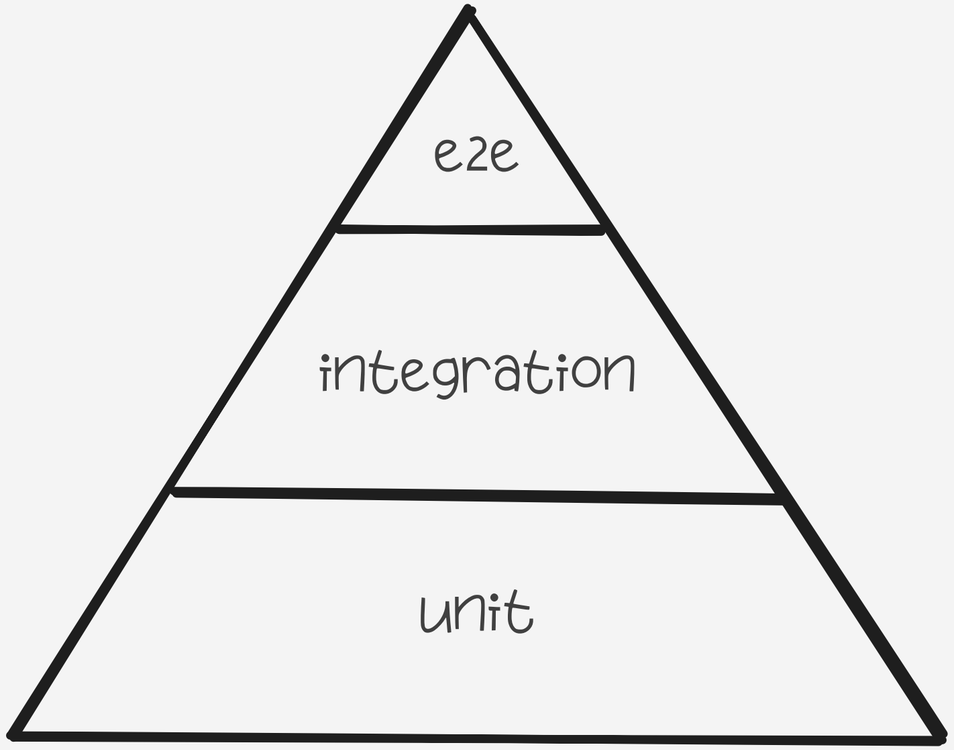
“THE SHAPES” — THE DIAMOND



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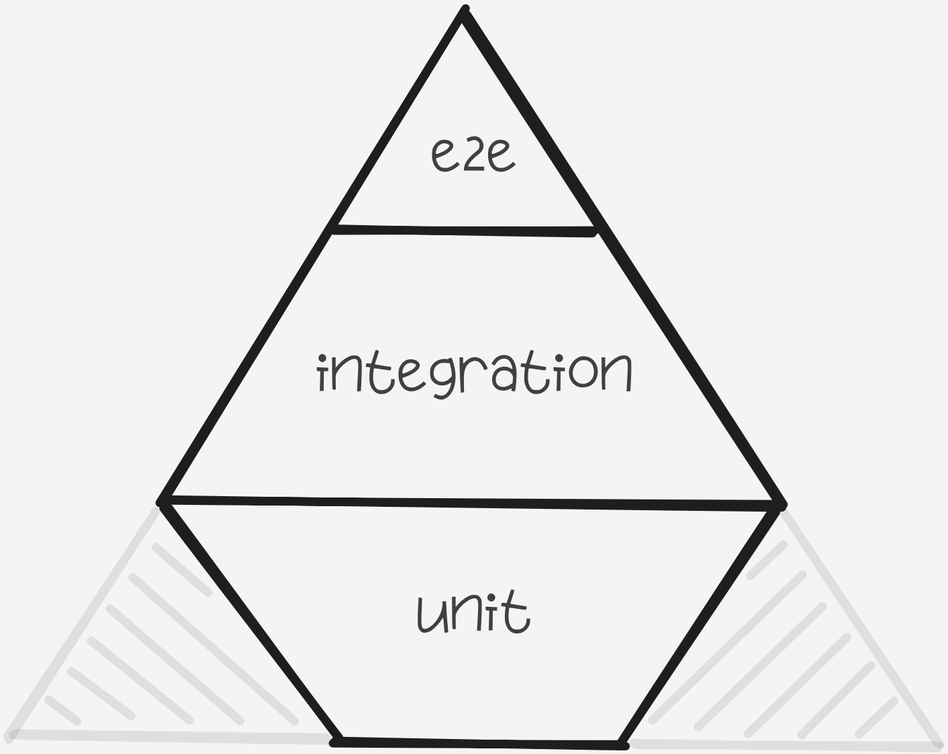
“THE SHAPES” — THE DIAMOND



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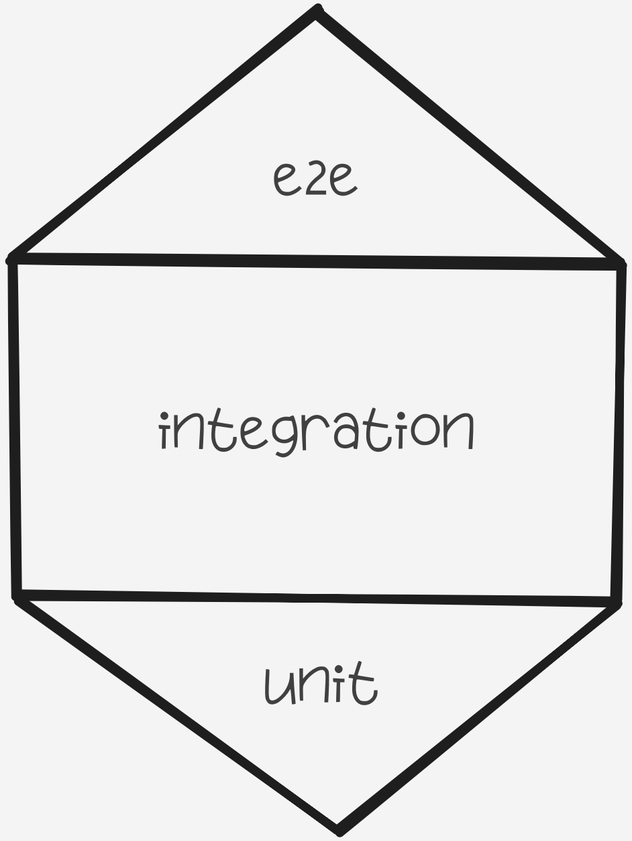
“THE SHAPES” — THE HONEYCOMB



https://web.dev/articles/ta-strategies

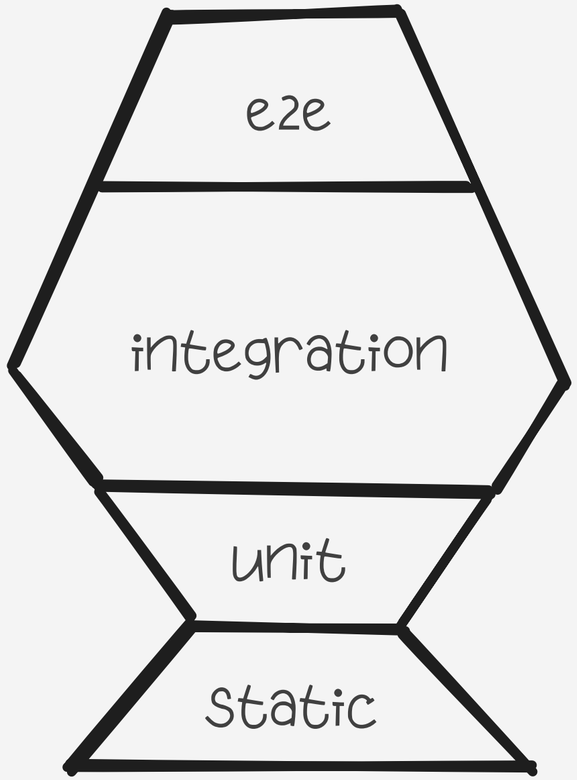
WE ARE ABLE TO REFACTOR THE INTERNALS WITHOUT TOUCHING ANY TESTS. WE COULD EVEN REPLACE THE DATABASE FROM POSTGRESQL TO NOSQL WITHOUT HAVING TO MODIFY THE ACTUAL TEST METHODS.

https://engineering.atspotify.com/2018/01/testing-of-microservices/

THE TRADE-OFF HERE IS SOME LOSS OF SPEED IN TEST EXECUTION [... AND ...] THAT WE MIGHT LOSE SOME FEEDBACK ACCURACY WHEN A TEST FAILS

https://engineering.atspotify.com/2018/01/testing-of-microservices/

“THE SHAPES” — THE TROPHY



https://web.dev/articles/ta-strategies

Justin Searls
@searls

I'm realizing I've never shared this publicly before, but I probably should: almost all the advice you hear about software testing is bad. It's either bad on its face or it leads to bad outcomes or it distracts by focusing on the wrong thing (usually tools). A brief thread on why

>
> **Justin Searls** @searls · May 15, 2021
>
> People love debating what percentage of which type of tests to write, but it's a distraction. Nearly zero teams write expressive tests that establish clear boundaries, run quickly & reliably, and only fail for useful reasons. Focus on that instead.
>
> ...
> Show more

12:17 AM · May 16, 2021

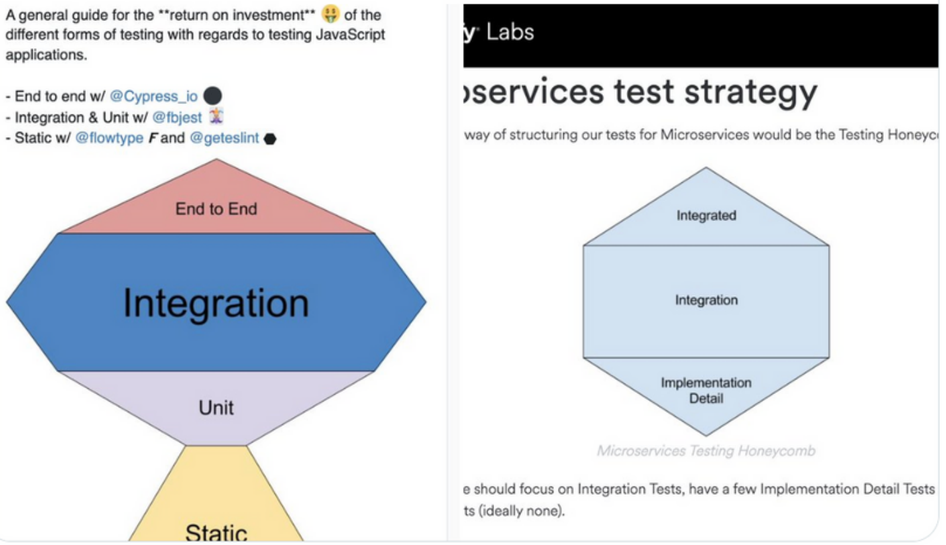
https://twitter.com/searls/status/1393571227650908162

Justin Searls
@searls

Follow

People love debating what percentage of which type of tests to write, but it's a distraction. Nearly zero teams write expressive tests that establish clear boundaries, run quickly & reliably, and only fail for useful reasons. Focus on that instead.

> **swyx** @swyx · May 15, 2020
>
> The @MartinFowler Test Pyramid has fallen out of style.
> Integration > Unit tests is the new conventional wisdom.
>
> In frontend, we now have the "Testing Trophy" from @rauchg and @kentcdodds....
> Show more



11:58 AM · May 15, 2021

https://twitter.com/searls/status/1393385209089990659

PART II:

Why do we write tests?

PART II:

Why do we *not* write tests?

WHY DO WE NOT WRITE TESTS?

WHY DO WE NOT WRITE TESTS?

"We don't have time for this"

WHY DO WE NOT WRITE TESTS?

“We don’t have time for this”

“They start failing when changing
unrelated code or implementation details
and are becoming brittle quickly”

WHY DO WE DO WRITE TESTS?

WHY DO WE DO WRITE TESTS?

"To make our managers or team lead happy"

ANY OBSERVED STATISTICAL REGULARITY WILL TEND TO COLLAPSE ONCE PRESSURE IS PLACED UPON IT FOR CONTROL PURPOSES

— Goodhart's Law

https://www.ribbonfarm.com/2016/06/09/goodharts-law-and-why-measurement-is-hard/

WHY DO WE DO WRITE TESTS?

~~“To make our managers or team lead happy”~~

WHY DO WE DO WRITE TESTS?

~~“To make our managers or team lead happy”~~

Stability for the end-user

“A MAJORITY OF THE PRODUCTION FAILURES (77%) CAN BE REPRODUCED BY A UNIT TEST.”

— Simple testing can prevent most critical failures; Research paper from the University of Toronto (2014)

https://www.usenix.org/system/files/conference/osdi14/osdi14-paper-yuan.pdf

WHY DO WE DO WRITE TESTS?

~~"To make our managers or team lead happy"~~

Stability for the end-user

Enable refactoring

CODE IS READ AND UPDATED WAY MORE OFTEN THAN IT IS WRITTEN

— Tim Bray

https://www.tbray.org/ongoing/When/202x/2021/05/15/Testing-in-2021

“WALKING ON WATER AND DEVELOPING SOFTWARE FROM A SPECIFICATION ARE EASY IF BOTH ARE FROZEN”

— Edward V. Berard

https://en.wikiquote.org/wiki/Edward_V._Berar

PART III:

a little detour, sorry!

TDD — The misunderstood monster under your bed

RED-GREEN-REFACTOR

RED-GREEN-REFACTOR

Write a test that describes the desired behaviour

https://tidyfirst.substack.com/p/canon-tdd

RED-GREEN-REFACTOR

Write a test that describes the desired behaviour

Write the minimal amount of code necessary to make the test pass

https://tidyfirst.substack.com/p/canon-tdd

RED-GREEN-REFACTOR

Write a test that describes the desired behaviour

Write the minimal amount of code necessary to make the test pass

Refactor the code

https://tidyfirst.substack.com/p/canon-tdd

SELF-TESTING CODE

SELF-TESTING CODE

Tests should be part of your code delivery

https://martinfowler.com/distributedComputing/duckling.pdf

SELF-TESTING CODE

Tests should be part of your code delivery

You should be running tests as often as possible — ideally automated

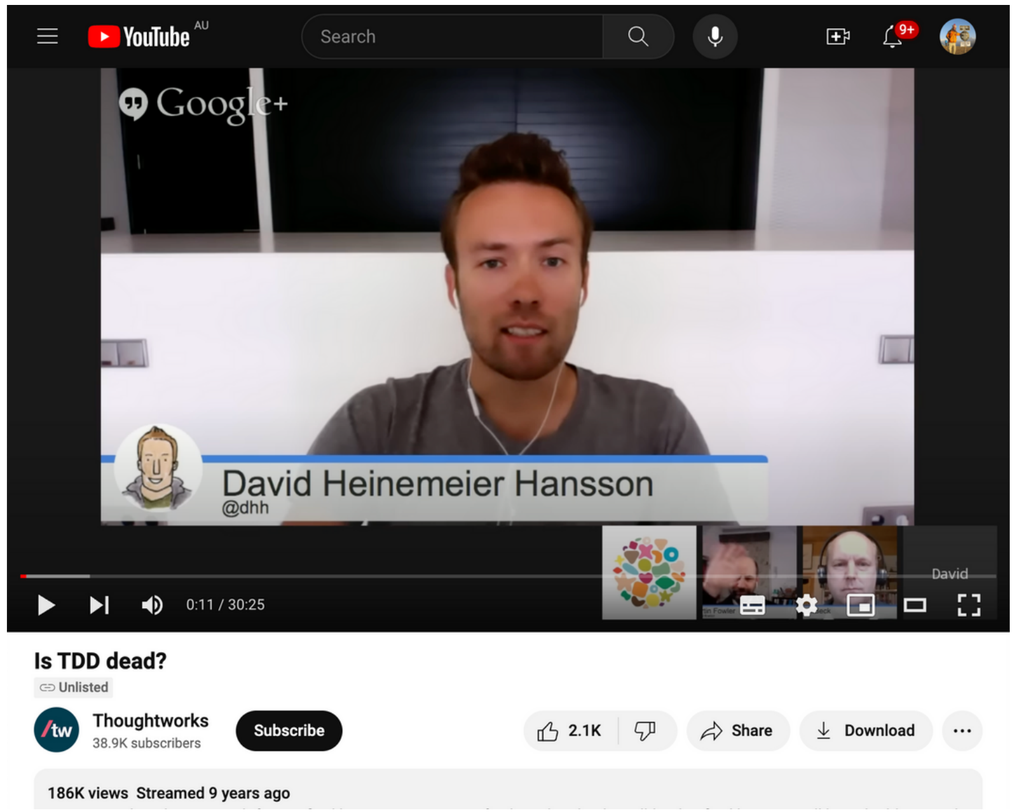
https://martinfowler.com/distributedComputing/duckling.pdf

TDD — SOME MISCONCEPTIONS

TDD — SOME MISCONCEPTIONS

"TDD means I have to write my tests first!"

IS TDD DEAD? — VIDEO SERIES WITH DHH, MARTIN FOWLER AND KENT BECK



https://martinfowler.com/articles/is-tdd-dead/

TDD — SOME MISCONCEPTIONS

"TDD says I have to mock everything outside of the unit test scope"

“SIMILARLY THEIR NOTION OF INTEGRATION TEST SOUNDS VERY MUCH LIKE WHAT I WOULD CALL A SOCIABLE UNIT TEST. THIS MAKES THE PYRAMID VERSUS HONEYCOMB DISCUSSION MOOT”

— Martin Fowler

https://martinfowler.com/articles/2021-test-shapes.html

The Addison-Wesley

"Any fool can write code that a computer
Good programmers write code that human.
—M. Fowler (1999)

REFACTOR

Improving the Design of Existing

Martin Fowler
with contributions by
Kent Beck

SECOND EDITIO

The Addison-Wesley Signature Series

TEST-DRIVEN DEVELOPMENT

BY EXAMPLE

KENT BECK

A KENT BECK SIGNATURE BOOK

PART IV:

Practical tips to get started with testing

1 Be the advocate!

2

Embrace tests as a way to improve developer confidence

3

Test behaviour, not implementation details

4

Automate your tests!

5

Identify the most common or likely points of failure in your system

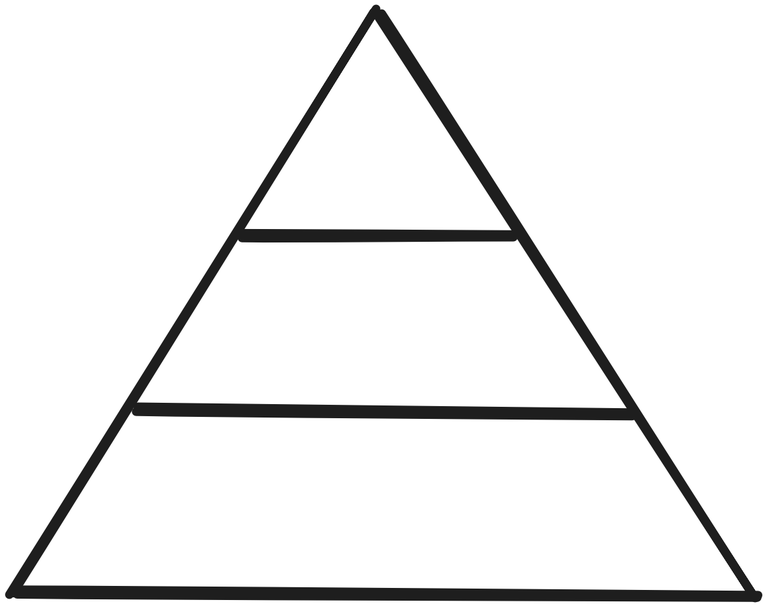
ANOTHER APPLICATION OF CYCLOMATIC COMPLEXITY IS IN DETERMINING THE NUMBER OF TEST CASES THAT ARE NECESSARY TO ACHIEVE THOROUGH TEST COVERAGE OF A PARTICULAR MODULE.

https://en.wikipedia.org/wiki/Cyclomatic_complexity

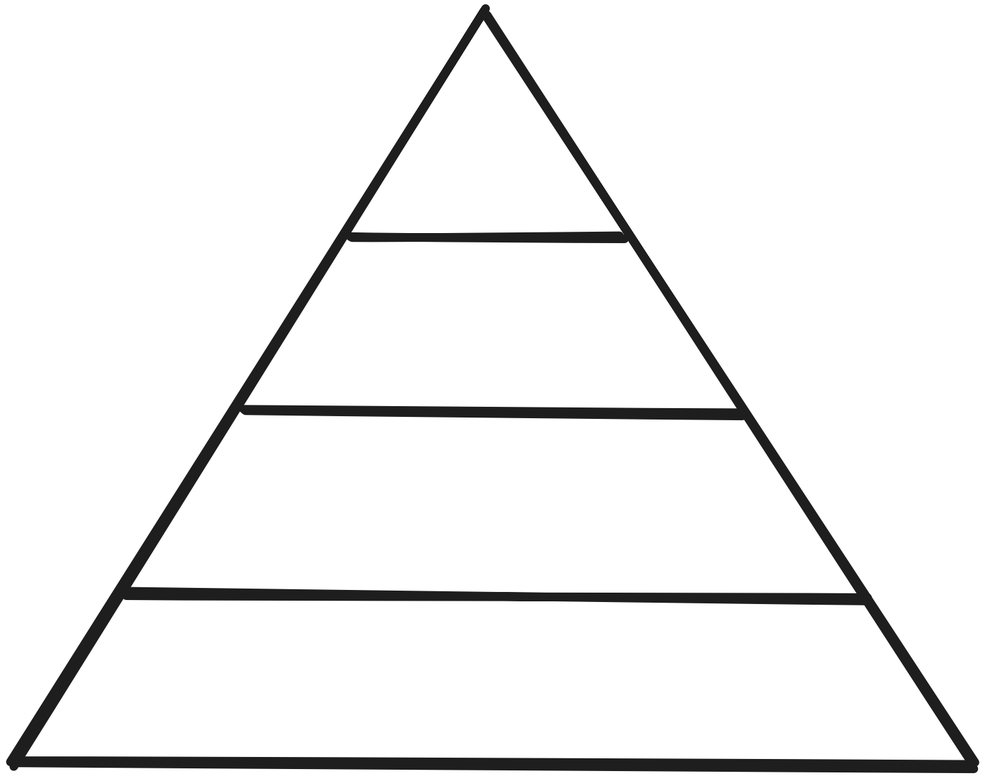
6

Don’t just blindly follow a “shape” or strategy

ENSURE YOUR “SHAPE” HAS INTENTION



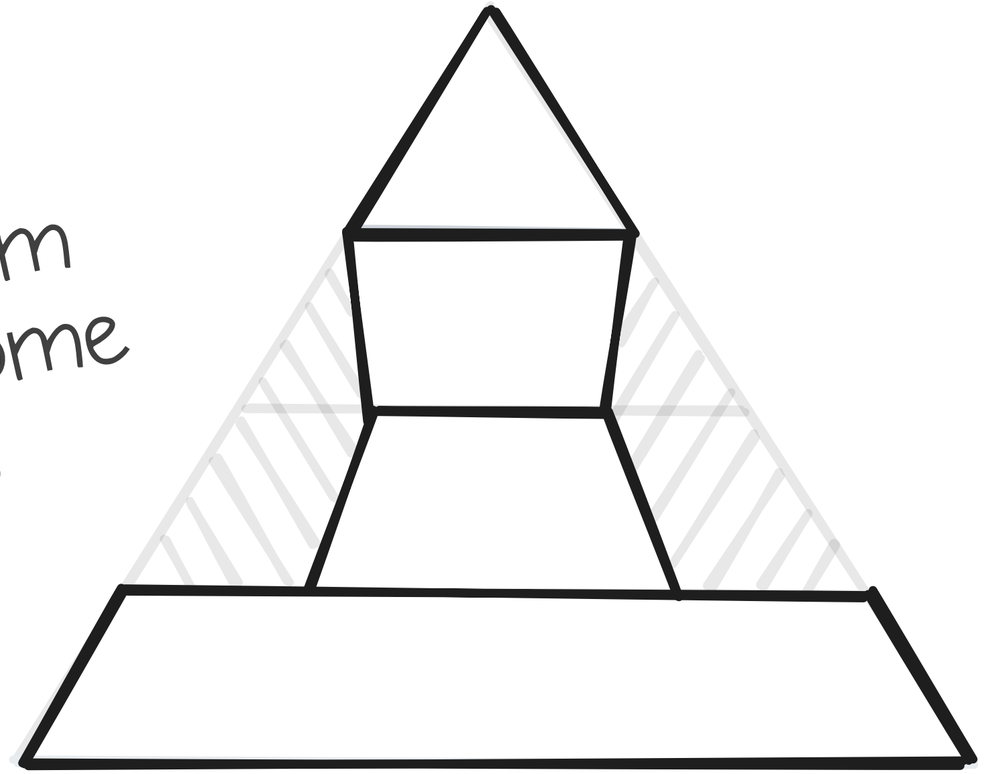
ENSURE YOUR “SHAPE” HAS INTENTION



let's add the static layer

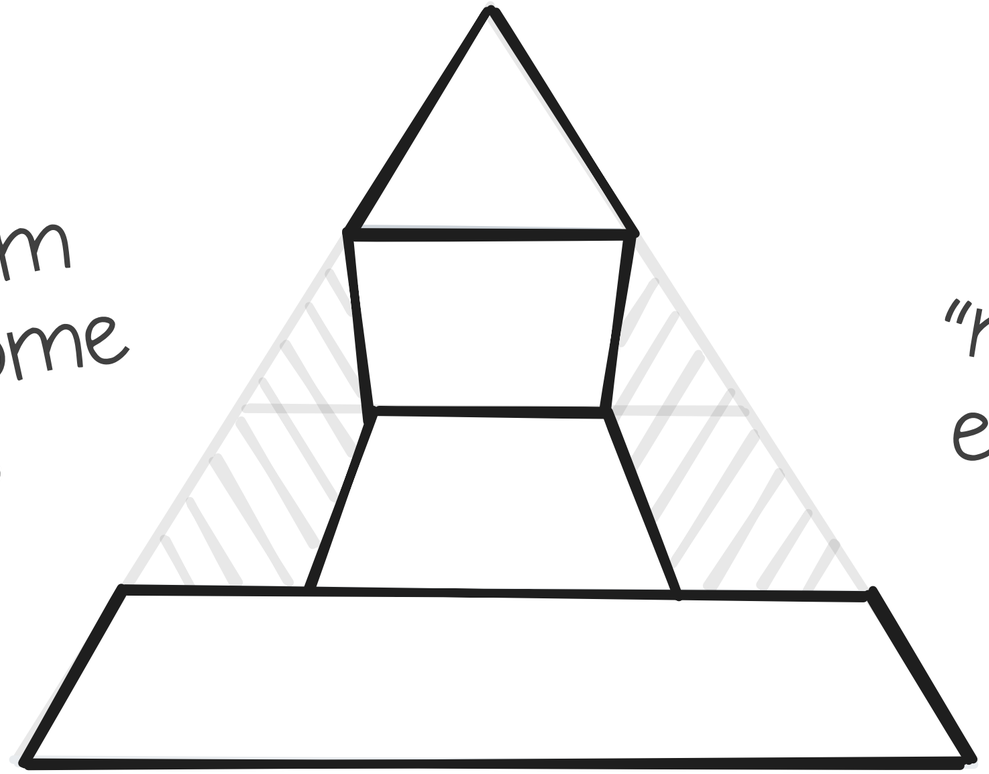
ENSURE YOUR “SHAPE” HAS INTENTION

ecosystem
covers some
tests



ENSURE YOUR “SHAPE” HAS INTENTION

ecosystem covers some tests

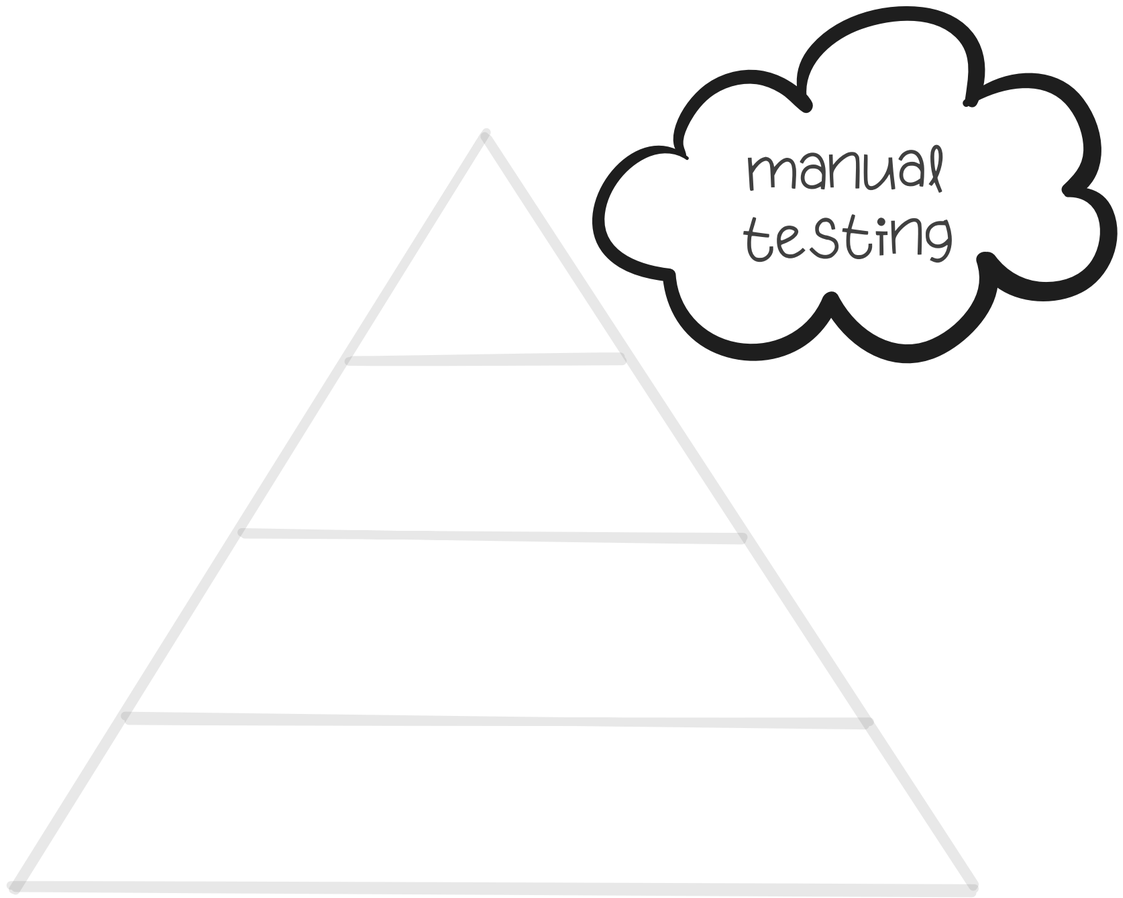


other “natural” erosion

7

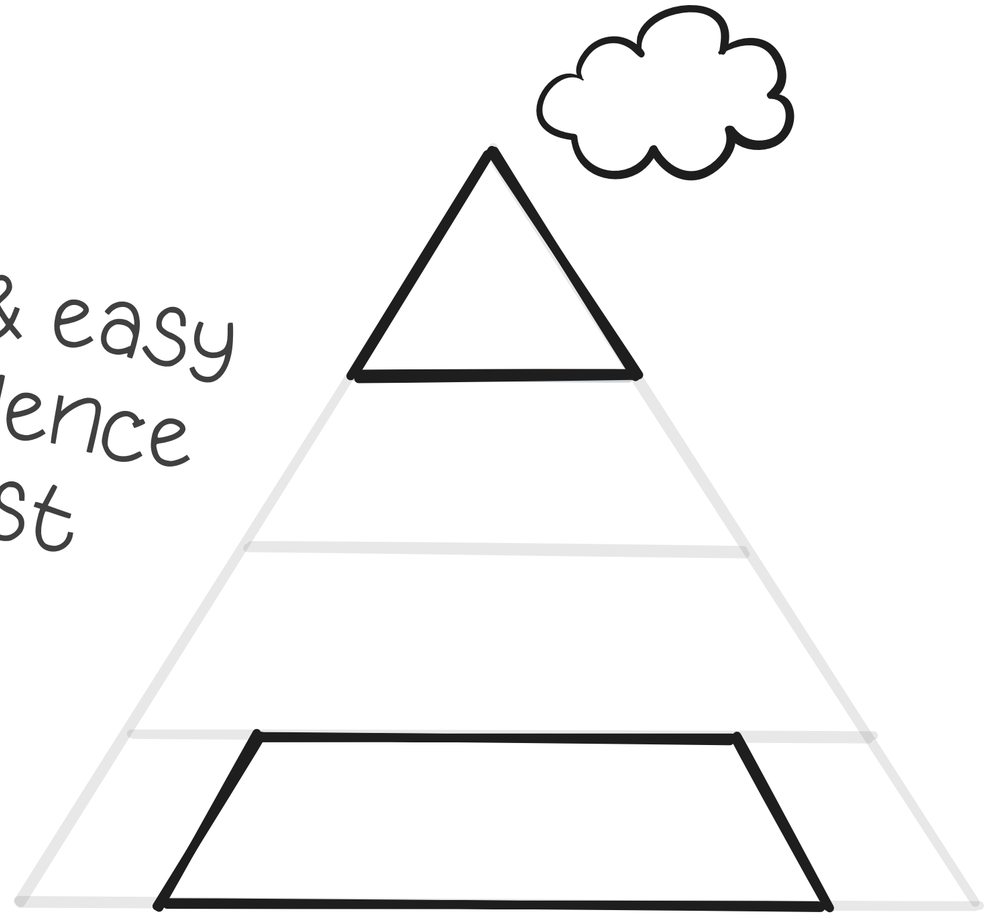
Have smaller milestones to work towards the end goal

MILESTONES TO YOUR IDEAL SETUP

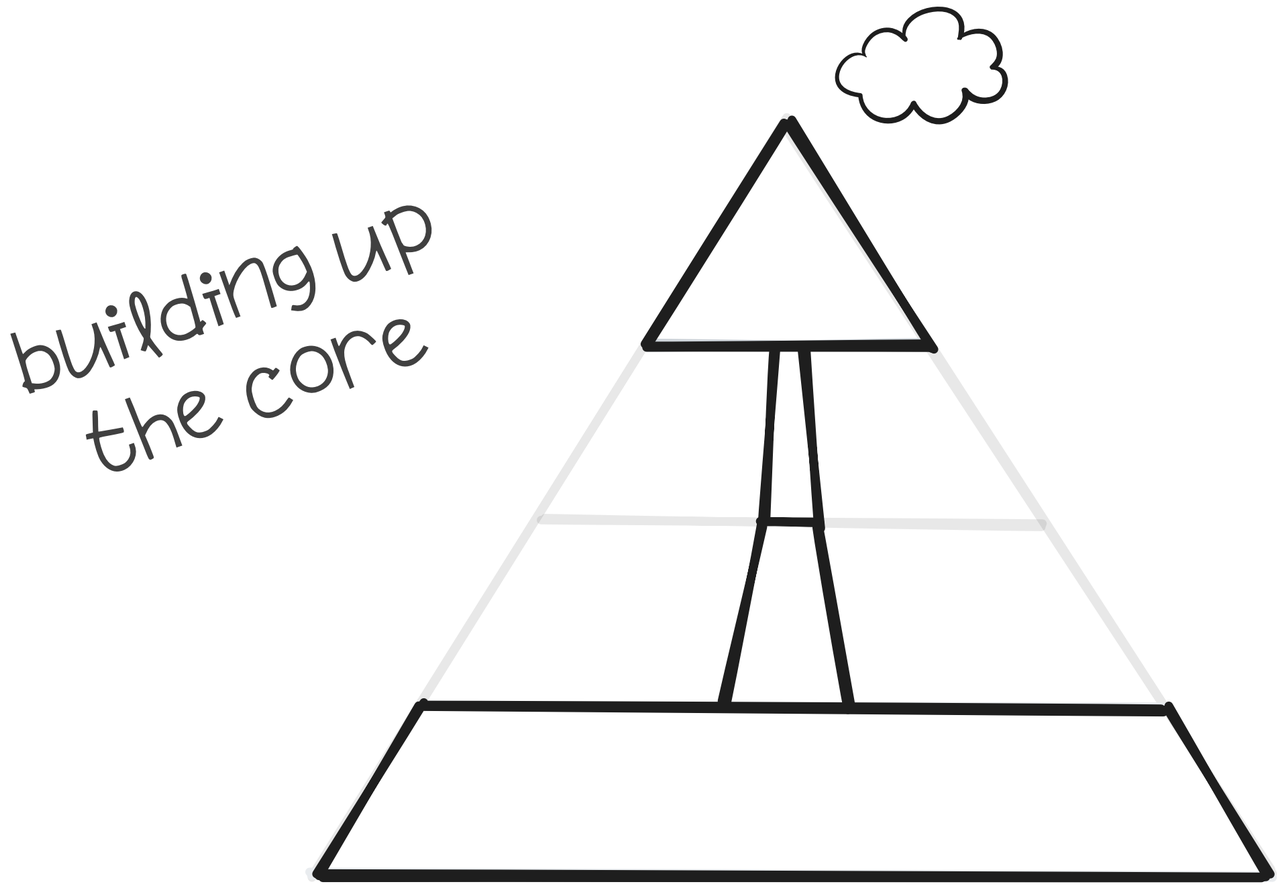


MILESTONES TO YOUR IDEAL SETUP

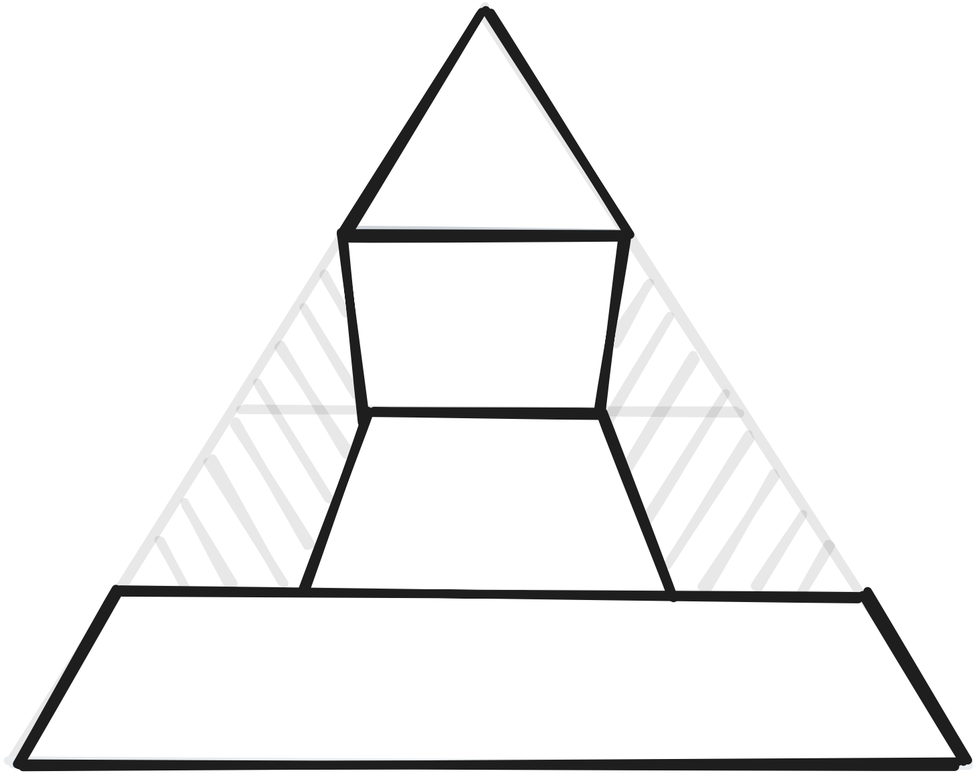
quick & easy confidence boost



MILESTONES TO YOUR IDEAL SETUP



MILESTONES TO YOUR IDEAL SETUP



THE END.

@jburr90 / Julian Burr

https://www.julianburr.de/ddd-melbourne-2024-slides.pdf

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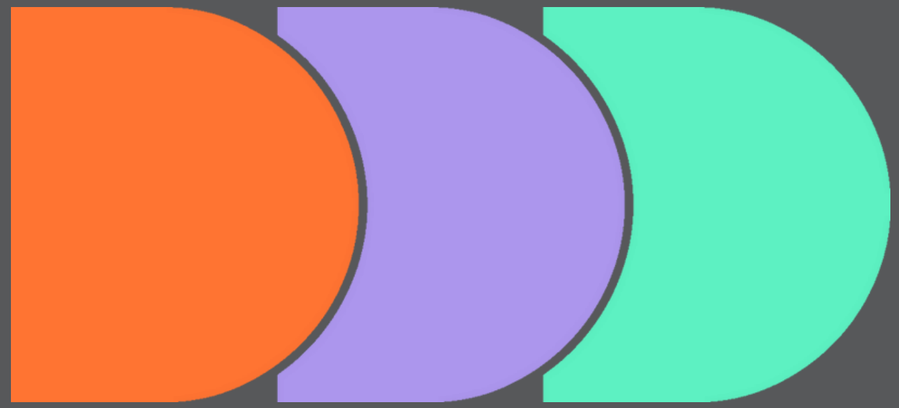

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