How would you test a car ?
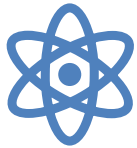
1. Scenario Tests

Test the whole system.

Slow.

Flaky/Odd.

- Happy paths OK
- Proper bootstrap

- Hard to reproduce (it might work on the next run)
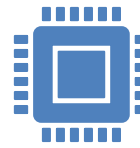- Hard to detect what went wrong
- Debug needed

2. Functional/Components Tests

Test the components association.

Simulate externals components.
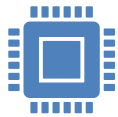
More conditions to simulate.

Faster.

- Sub system OK
- Focused

- Issue within the sub-system
- Easier to reproduce failure
- Debug needed

3. Unit Tests

Test individual parts.

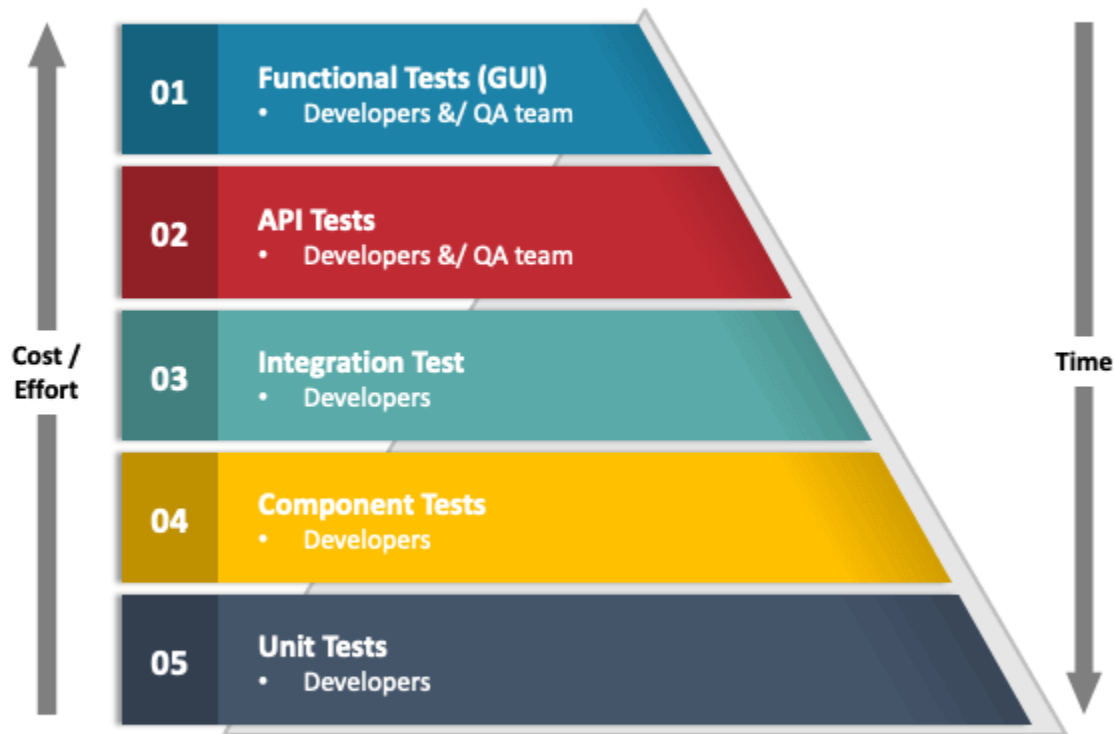Can simulate all conditions.

Way way way faster.

No flakiness.

- Isolated behavior is ok.
- Sure unit is ok.

- Issue within the sub-system
- Easier to reproduce failure
- Directly point to the root cause.
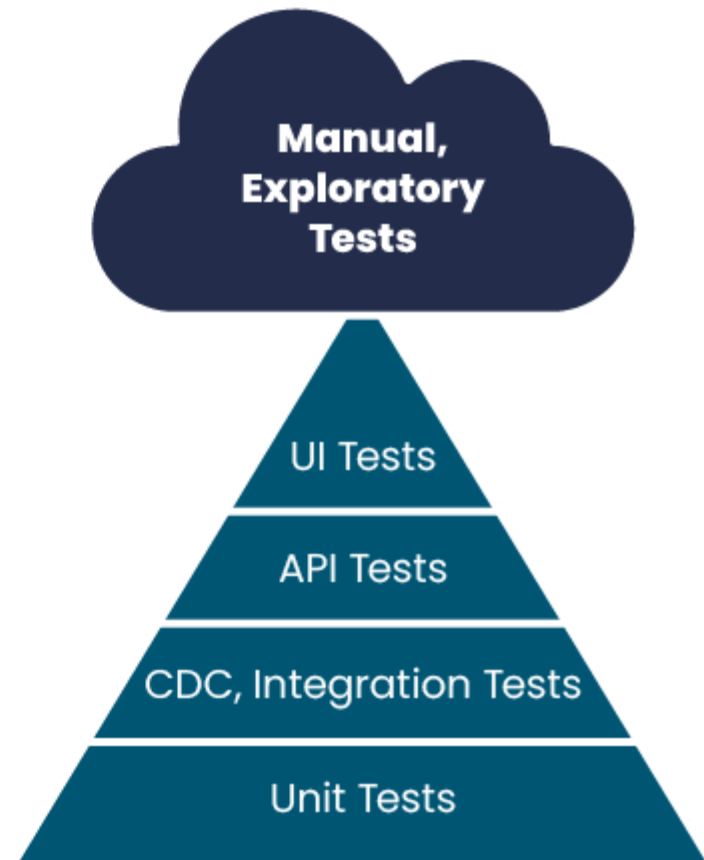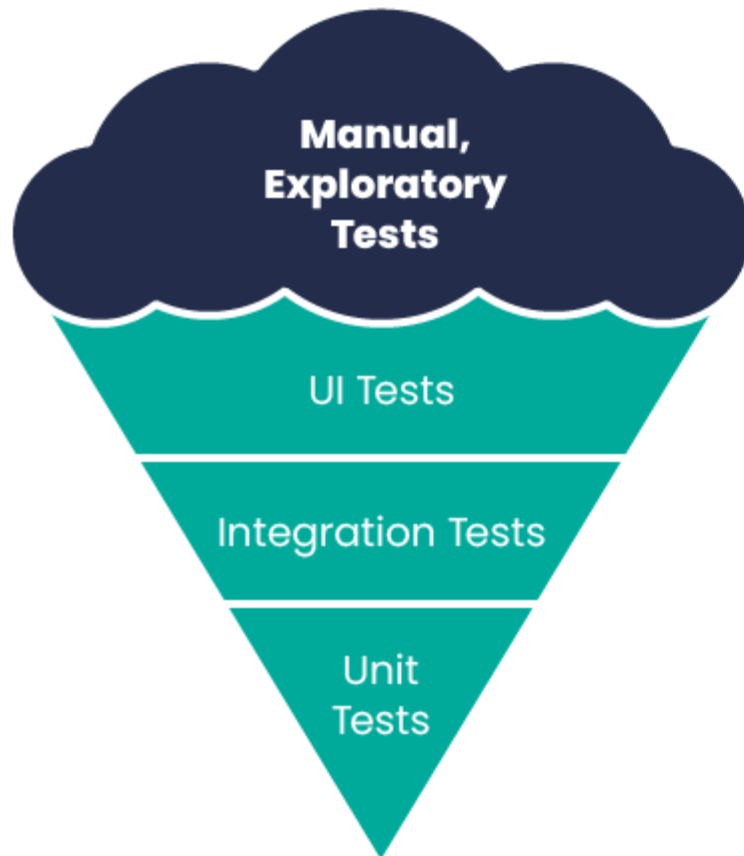- Often no need for a debugger.

Testing Pyramid

TESTING PYRAMID

Ideal Test Pyramid

Cost / Effort

Time

| 01 | **Functional Tests (GUI)** |
| | • Developers &/ QA team |

| 02 | **API Tests** |
| | • Developers &/ QA team |

| 03 | **Integration Test** |
| | • Developers |

| 04 | **Component Tests** |
| | • Developers |

| 05 | **Unit Tests** |
| | • Developers |

Bug Finding / Testing Pyramid

How ?

ARRANGE — Setup your test arguments.

ACT — Perform the action you wish to test.

ASSERT — Check the output.

Tools

Unit testing frameworks

Mocking frameworks

Behavior/Scenarion testing framework