ANGULAR
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E2E Testing
With Cypress

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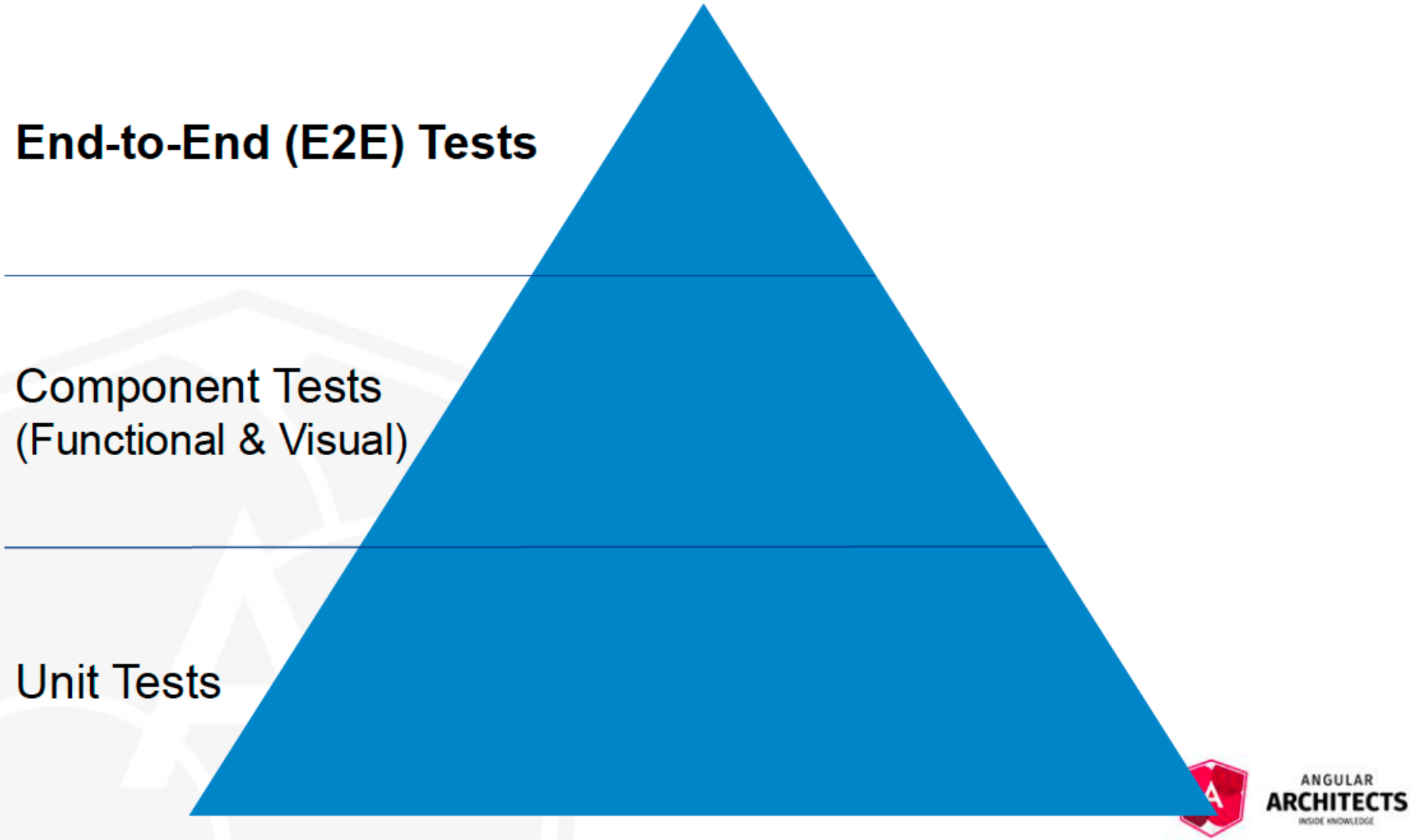
Outline

- Motivation
- E2E Testing with Cypress
- Cypress E2E Testing Lab
- Advanced topics

Motivation Testing

- Prevent bugs
- Enforce code quality
- Tests must be backed by Devs (require discipline)
- Writing Tests needs to be learned
- Tests must run fast, each has its own universe

Testing pyramid



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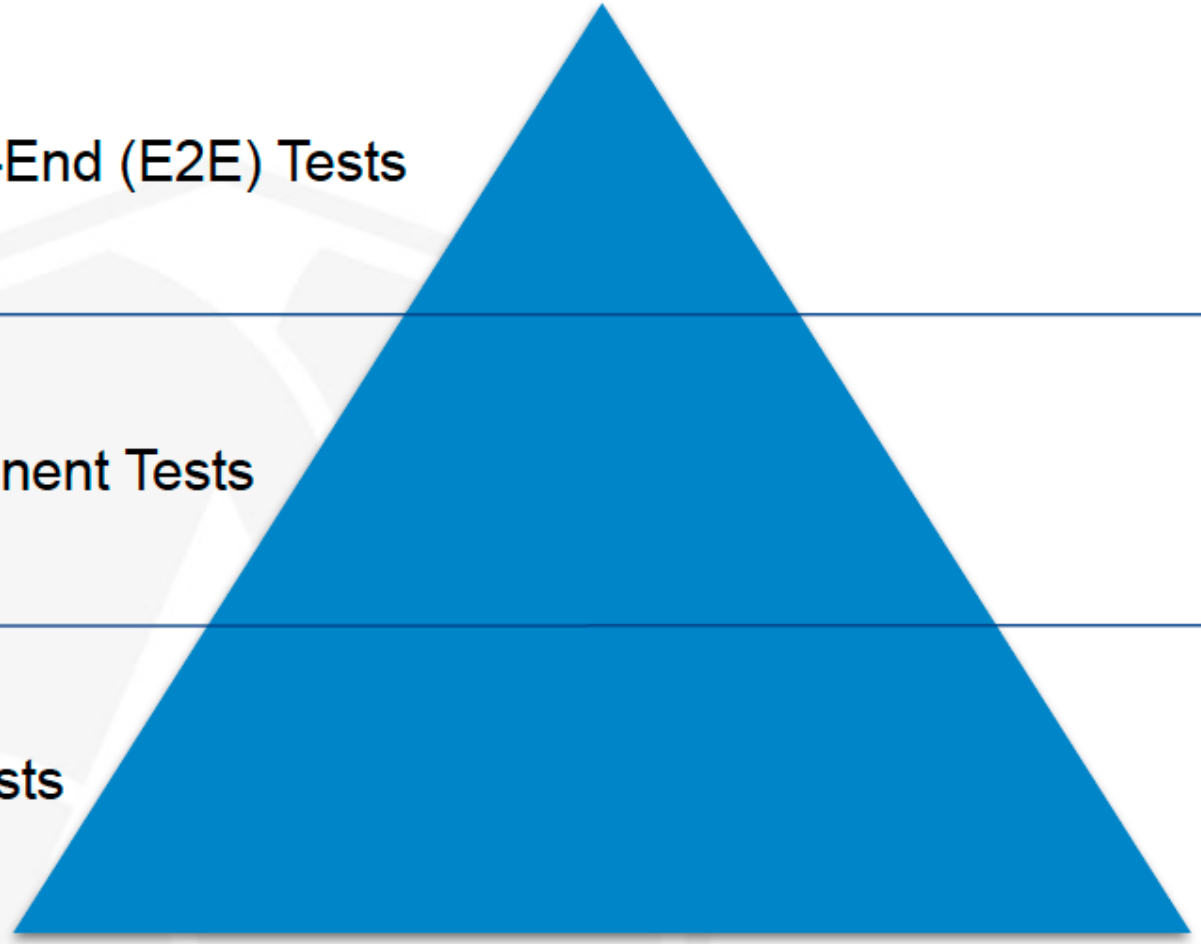
Official version (until NG 11)

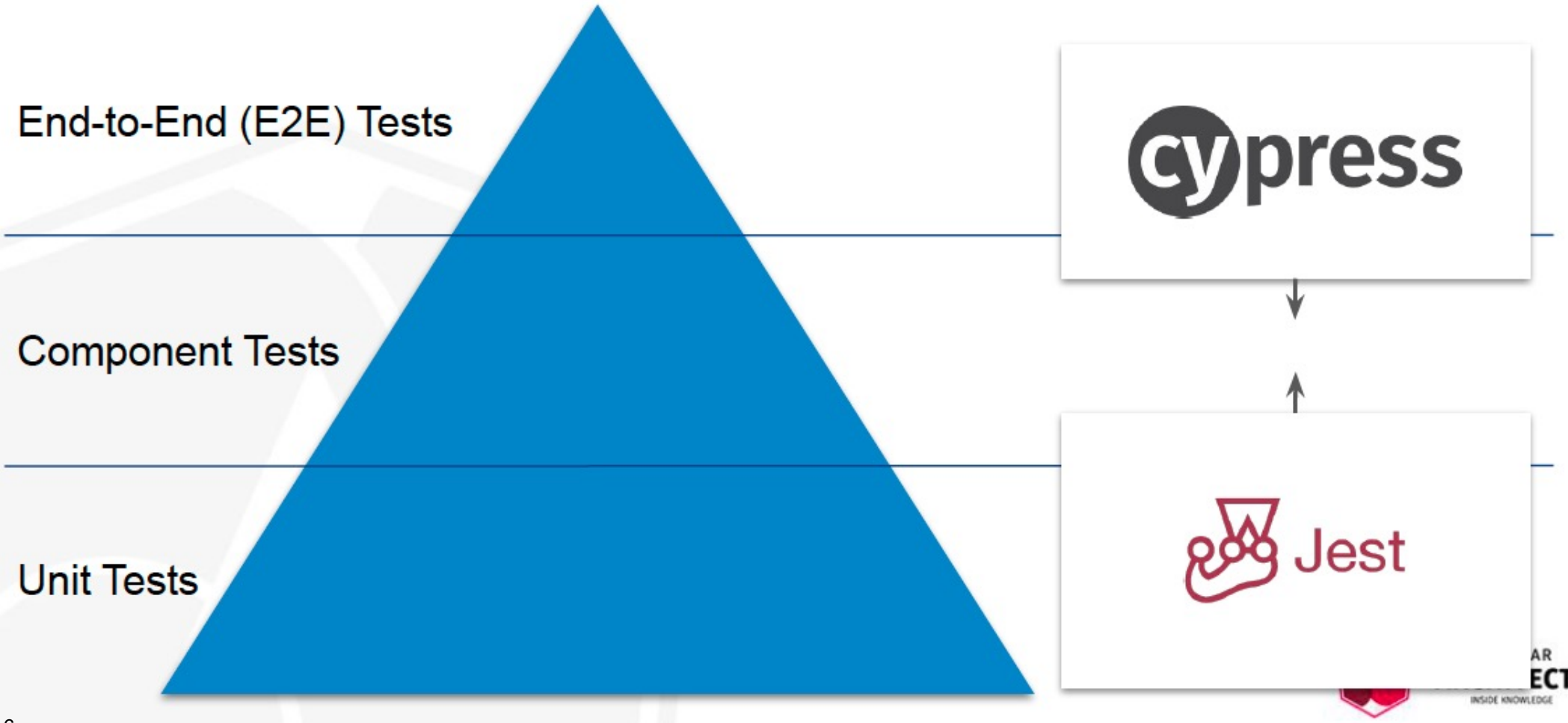


Protractor
end to end testing for AngularJS

Jasmine

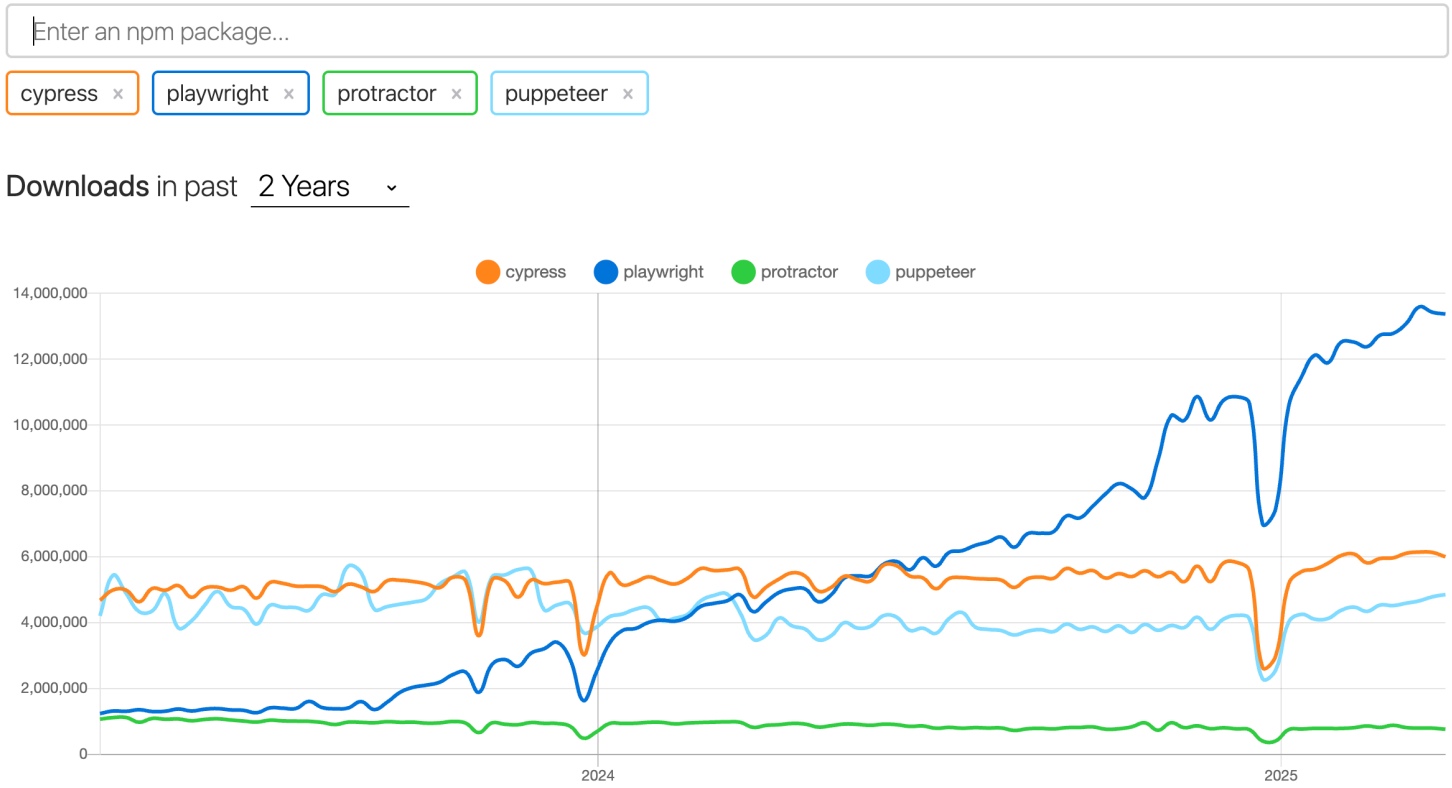
KARMA

Our recommendation



NPM trends

cypress vs **playwright** vs **protractor** vs **puppeteer**



Intro

- Cypress (in most cases) perfect successor
- Migration is a rewrite

Motivation cypress.io

- Great Developer Experience
- Good Documentation
- Easy Setup
- Internal "IDE”
- CI Features like Videorecording and Screenshots

Cypress Setup

- npm i --save-dev / yarn add -D cypress
- add tsconfig.json to newly cypress directory
- cypress open (open the Cypress Dashboard) or
- cypress run (just runs the tests)

Basic commands

- cy.visit(url: string)
  - Can only be run at the beginning (of a test)
  - Domain can't be changed

- cy.get(selector)
  - Uses jQuery style selectors
  - Runs asynchronously
  - Chainable
    - contains
    - click
    - type
    - …

Assertions Implicit

- Behaves like a normal command
- Does waiting as well (asynchronicity)
- Good for single assertions

```
cy
  .get('h1')
  .should(
    'have.text',
    ' Unforgettable Holidays '
  );
```

Assertions Explicit

- More verbose
- Good when more logic is involved

```
cy.get('h1').should(($h1) => {

  expect($h1).to.have

    .text(' Unforgettable Holidays ');

});
```

Assertions are not required!

DEMO

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SOFTWARE
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LAB

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Setup for Labs

- Prerequisites
  - NodeJS (I use version 14 because NG 12 currently demands it)
  - IDE: Visual Studio Code (free) or IntelliJ WebStorm
  - Chrome (or Chromium based)
  - Your repos checked out

Advanced topics

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Page Object Model

- a page object should allow a software client
  - to do anything
  - see anything that a human can
- used for significant elements on a page

```
class Sidemenu {

  click(name: "Customers" | "Holidays"): Chainable {

    return cy.get("mat-drawer a").contains(name).click();

  }

}

export const sidemenu = new Sidemenu();
```

Database Test Seed?

- Provide a Database specifically for Tests
- "One size fits all" approach
- Does not scale
- Better: Use Backend API for Arrange/Given Parts

Without API access

- Reasons
  - Requires special privileges
  - External Data Source/Proxy
  - Unreasonable (complexity, efforts)
- Mocked API

```
cy.server();

cy.route({

  method: 'GET',

  url: '/customer',

  response: [

    { id: 1, firstname: 'Hugo', name: 'Brandt', country: 'AT'},

    { id: 2, firstname: 'Natalia', name: 'Rusnov', country: 'RU'},

  ],

});

cy.visit('');
```

Alternative: Arrange API Requests

- Call same endpoints as Angular
- Don't use the frontend directly!

```
cy.request({
  method: 'POST',
  url: '/holidays',
  body: {
    title: 'Pyramids',
    teaser: 'Visit the Ancient Wonders of Old Egypt',
    description: 'Fly to Cairo, get on a ship on the Nile and live like a Pharaoh'
  }
}).then(res => res.body.id);
```

Best Case: Dedicated Test API

- Backend provides special API for test mode
- Shortcuts possible, e.g.
  - merge chain of requests into one
  - Overcome Security Issues
- Best option, but of course expansive

Now you know how to use Cypress

- Any questions left over? ☺