



Breakdown your costly **e2e tests** into efficient
low level tests through **hermetic**
testing

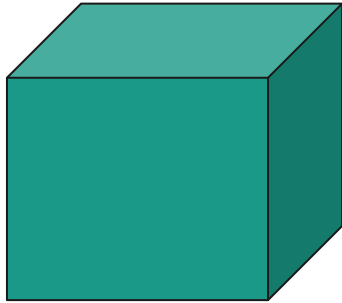
Jaswanth Manigundan

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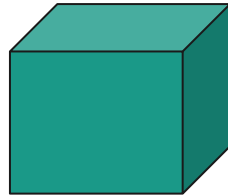
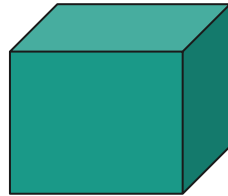
linkedin.com/in/-jaswanth/



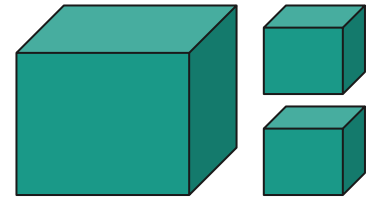
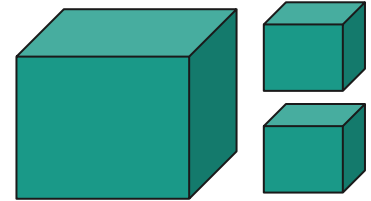
The ever evolving software products...



Start up



+3 years



+ 8 years

So are we saying...

Don't use E2E tests at all ?


No! That's not the point...

To quote Richard

The slide features a diagram illustrating different architectural layers: UI (blue), API (orange), and UNIT (red). The diagram shows three distinct configurations of these layers, representing different architectural styles or patterns. The first configuration shows a UI layer on top of an API layer, which is on top of a UNIT layer. The second configuration shows a UI layer on top of an API layer, which is on top of a UNIT layer, but the layers are stacked in a way that suggests a different flow or interaction. The third configuration shows a UI layer on top of an API layer, which is on top of a UNIT layer, but the layers are stacked in a way that suggests a different flow or interaction. The diagram is presented on a screen, and a photo of a speaker, Richard Bradshaw, is shown to the right of the screen. The speaker is wearing a dark t-shirt with a logo and glasses. The slide also includes a logo for SAUCECON 19 and social media handles for Ham Vocke and Mark Winteringham.

Heuristic
Ham Vocke
Mark Winteringham

[in](#) [t](#) @FRIENDLYTESTER



© Richard Bradshaw
Saucecon 2019



The cost of an E2E test



Feedback loop time



Build time



Environment cost



Ownership cost



Debugging cost



Maintenance cost

Breaking down E2E tests...



What is a hermetic test ?

Hermetic

/hə:'mɛtɪk/

complete and airtight.

An isolated test where the state of the app is completely set @before the test is run.

Disclaimer

All characters appearing in this work are fictitious. Any resemblance to real persons is purely coincidental (not-really).

Two friends quarrel over a failed E2E test 🙄

Playwright E2E Test



Best Sellers in Java Programming

Top 100 Paid Top 100 Free

#1	#2
<p>Testing Web APIs Mark Winteringham Kindle Edition £51.99</p>	<p>Java: Learn J LCF Publishing Kindle Edition £2.44</p>

Two friends quarrel over a failed E2E test 🙄

Playwright E2E Test



Two friends quarrel over a failed E2E test 🙄



Playwright E2E Test



Failing playwright E2E Test

Room: [Update](#) [Cancel](#)

Room ID:

Type: Description:



Accessible:

Room price:

Room features: WiFi TV Radio Refreshments Safe Views

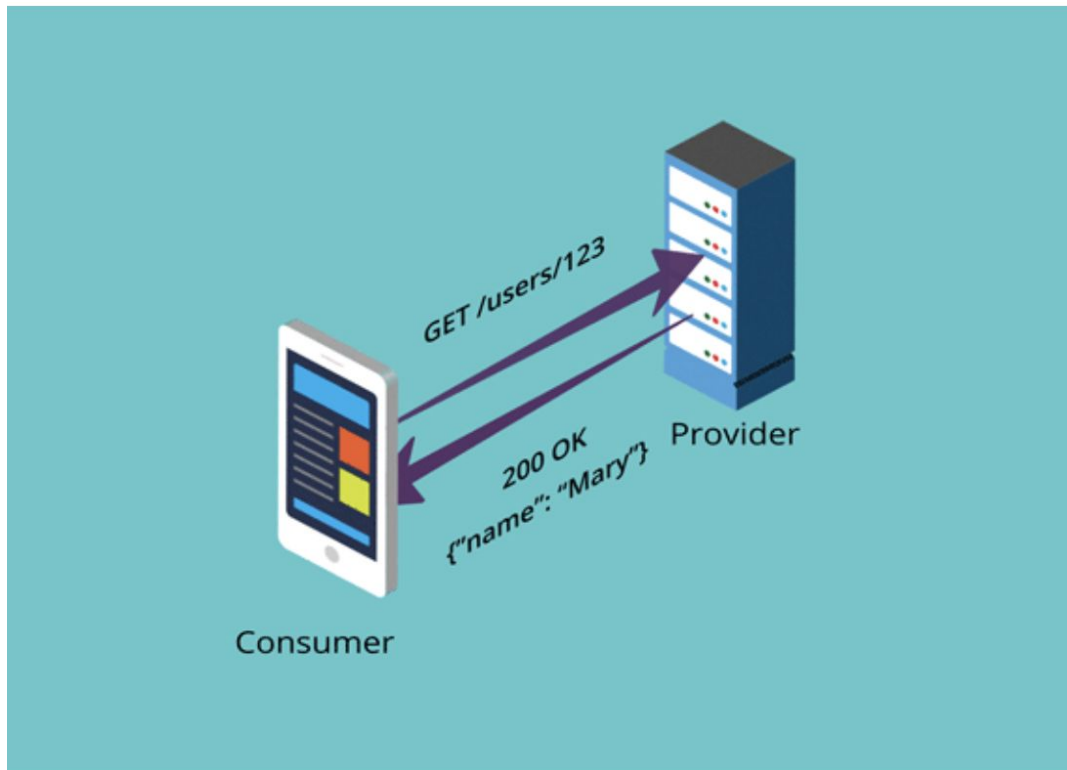
Image:

Type can only contain the room options Single, Double, Twin, Family or Suite

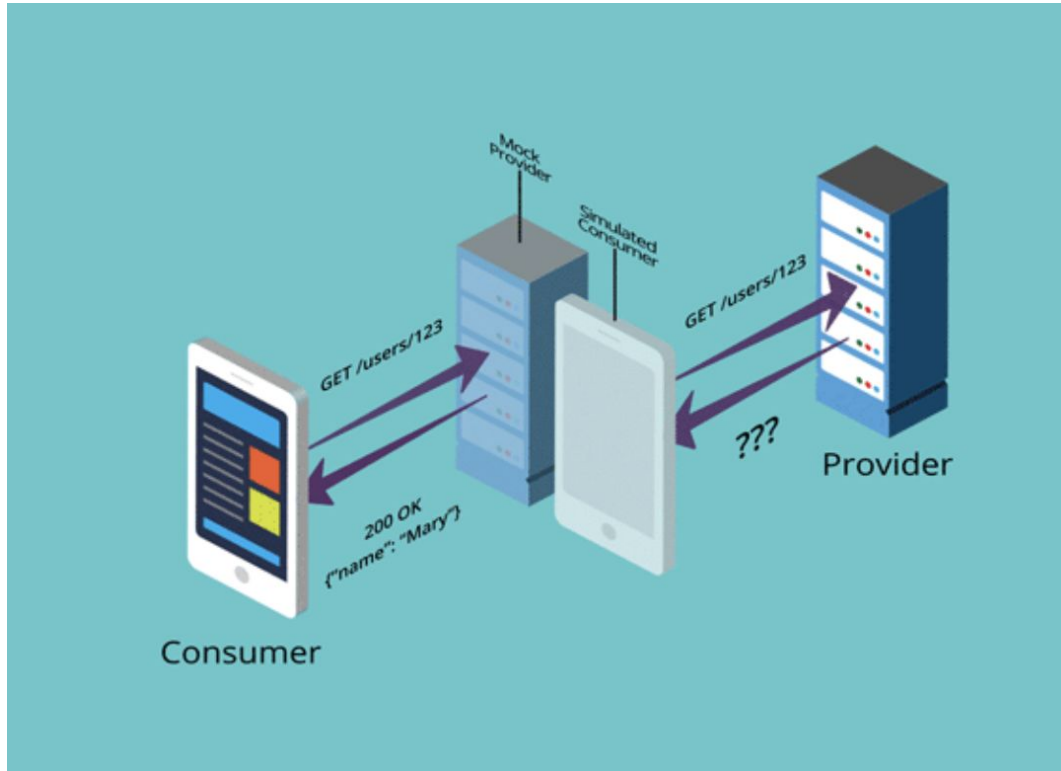
First name	Last name	Price	Deposit paid?	Check in	Check out	
James	Dean	400	true	2022-02-01	2022-02-05	 



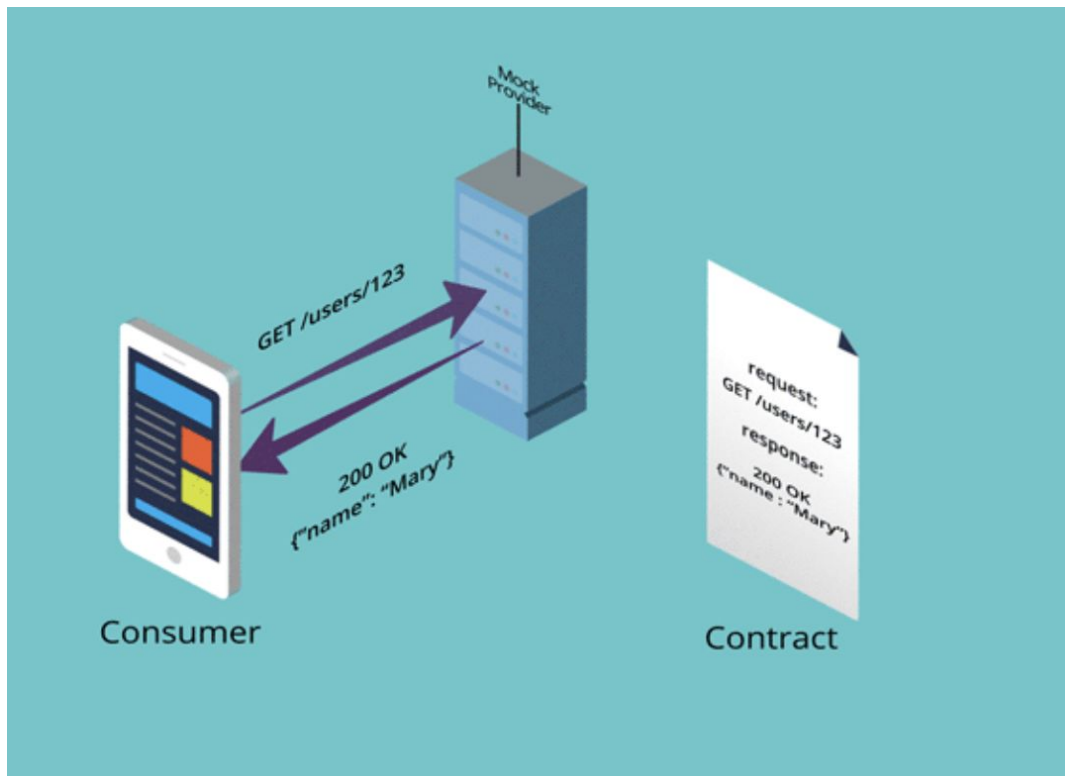
Richard & Mark learn about pact



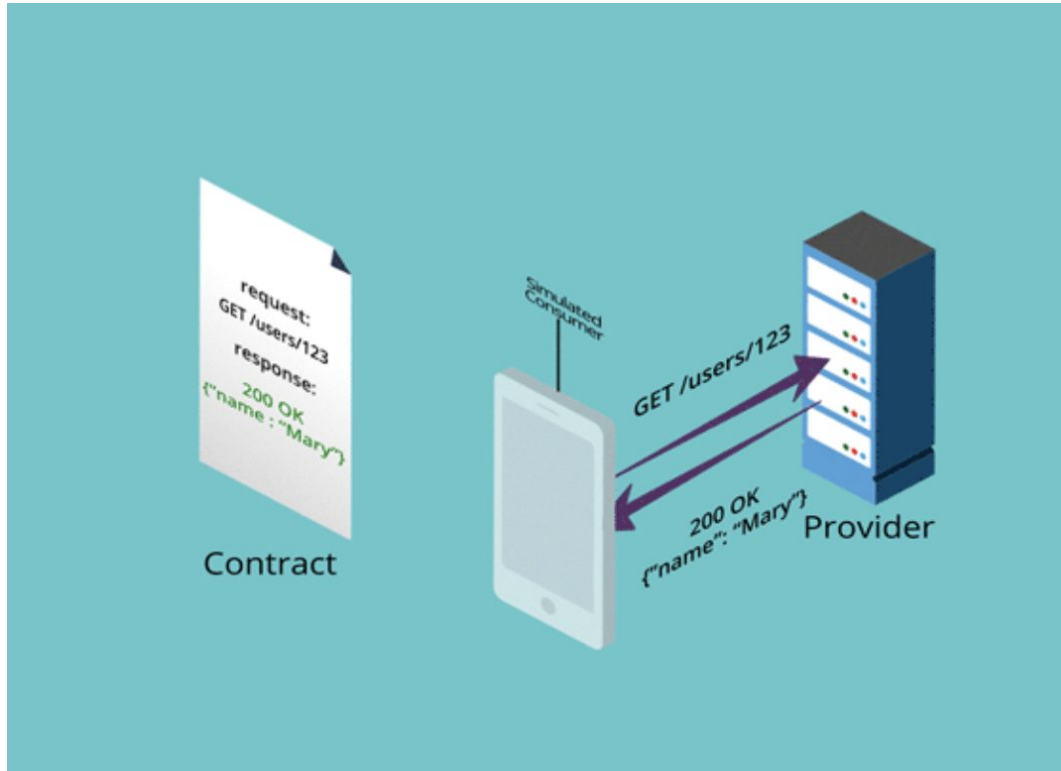
Richard & Mark learn about pact



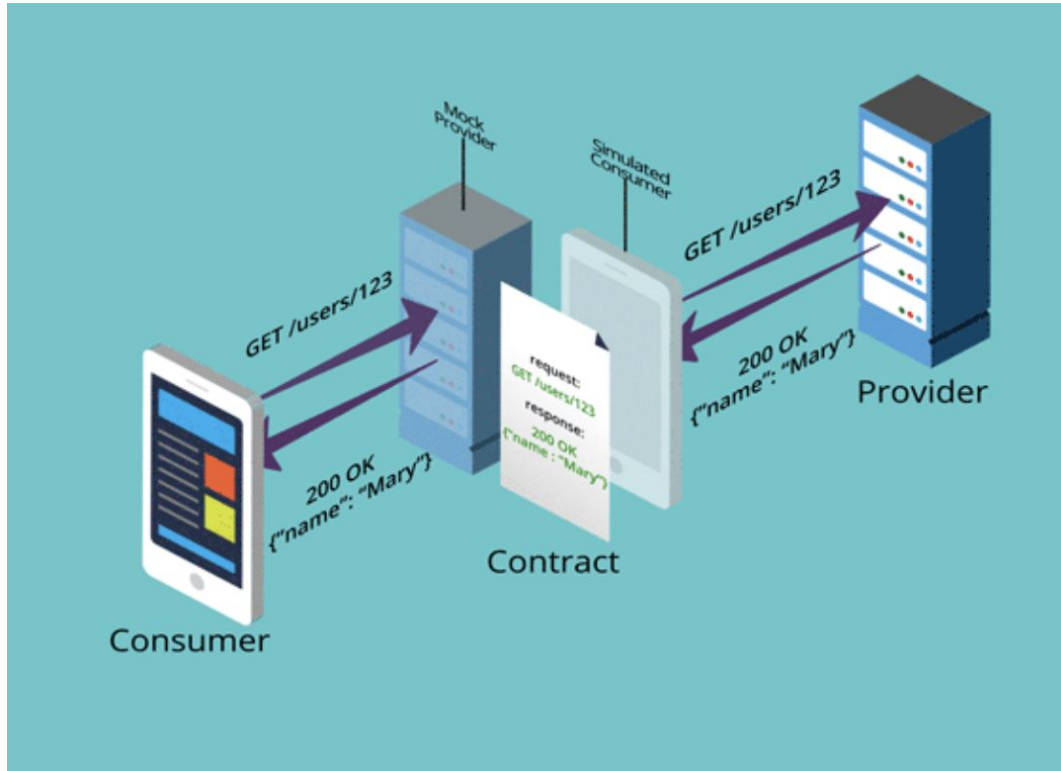
Richard & Mark learn about pact






Richard & Mark learn about pact




Richard & Mark learn about pact



Breakdown - Level 1 (UI/Consumer)

- ∨ ⊗ admin-edit-room-e2e.playwright.spec.ts
 - ⊗ E2E - Admin can successfully edit a room 5.8s
- ∨ ✓ admin-edit-room-pact-consumer.playwright.spec.ts
 - ✓ Pact Consumer - Admin can successfully edit a room   

Breakdown - Level 1 (Backend/Provider)



```
java.lang.AssertionError: rbp-react-app - Upon pw_GET_/room/1_200
```

Failures:

1) Verifying a pact between rbp-react-app and rbp-room-api - pw_GET_/room/1_200 has a matching body

1.1) body: \$.type Expected 'Single' (String) but received 'single' (String)



Playwright E2E Test

Playwright UI test

PACT

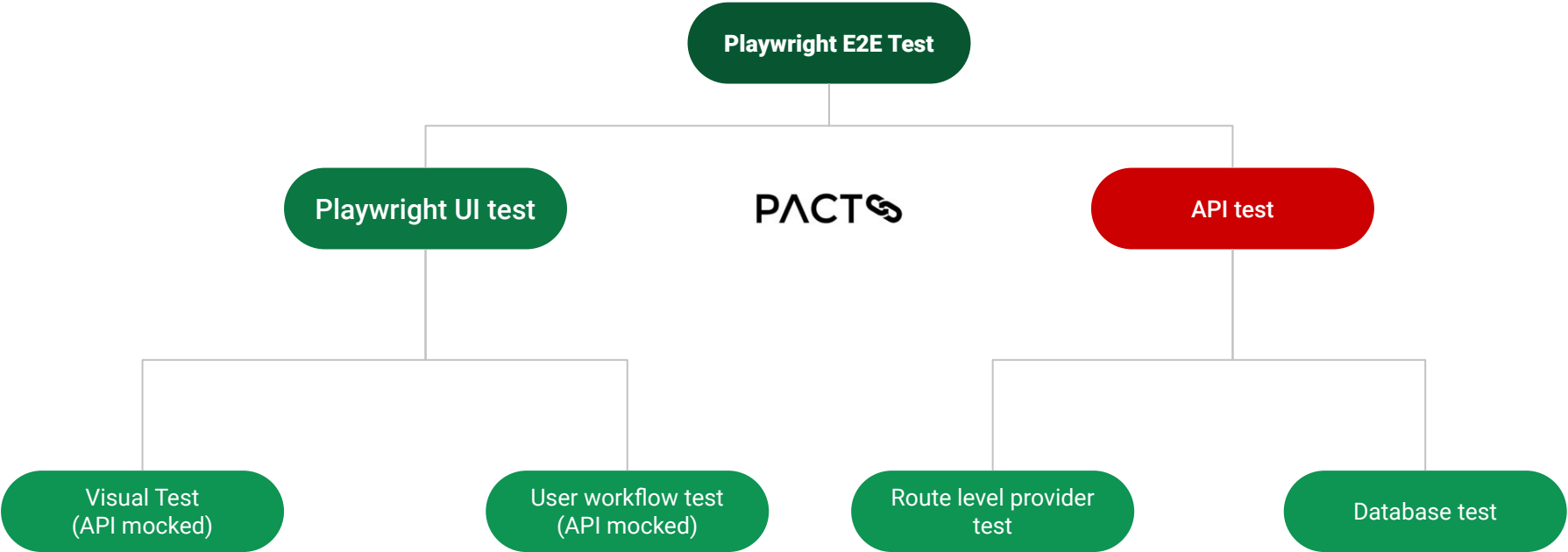
API test

Visual Test
(API mocked)

User workflow test
(API mocked)

Route level provider
test

Database test



Breakdown - Level 2



```
INSERT INTO ROOMS (room_name, type, beds, accessible, image, description, features, roomPrice)
VALUES ('101', 'single', 1, true,
       'https://www.mwtestconsultancy.co.uk/img/testim/room2.jpg',
       'Aenean porttitor mauris sit amet lacinia molestie. In posuere accumsan aliquet. Maecenas
ARRAY[ 'WiFi', 'TV', 'Safe'], 100);
```

Breakdown - Level 2



```
INSERT INTO ROOMS (room_name, type, beds, accessible, image, description, features, roomPrice)
VALUES ('101', 'single', 1, true,
       'https://www.mwtestconsultancy.co.uk/img/testim/room2.jpg',
       'Aenean porttitor mauris sit amet lacinia molestie. In posuere accumsan aliquet. Maecenas
       ARRAY[ 'WiFi', 'TV', 'Safe'], 100);
```



Playwright E2E Test

Playwright UI test

PACT 

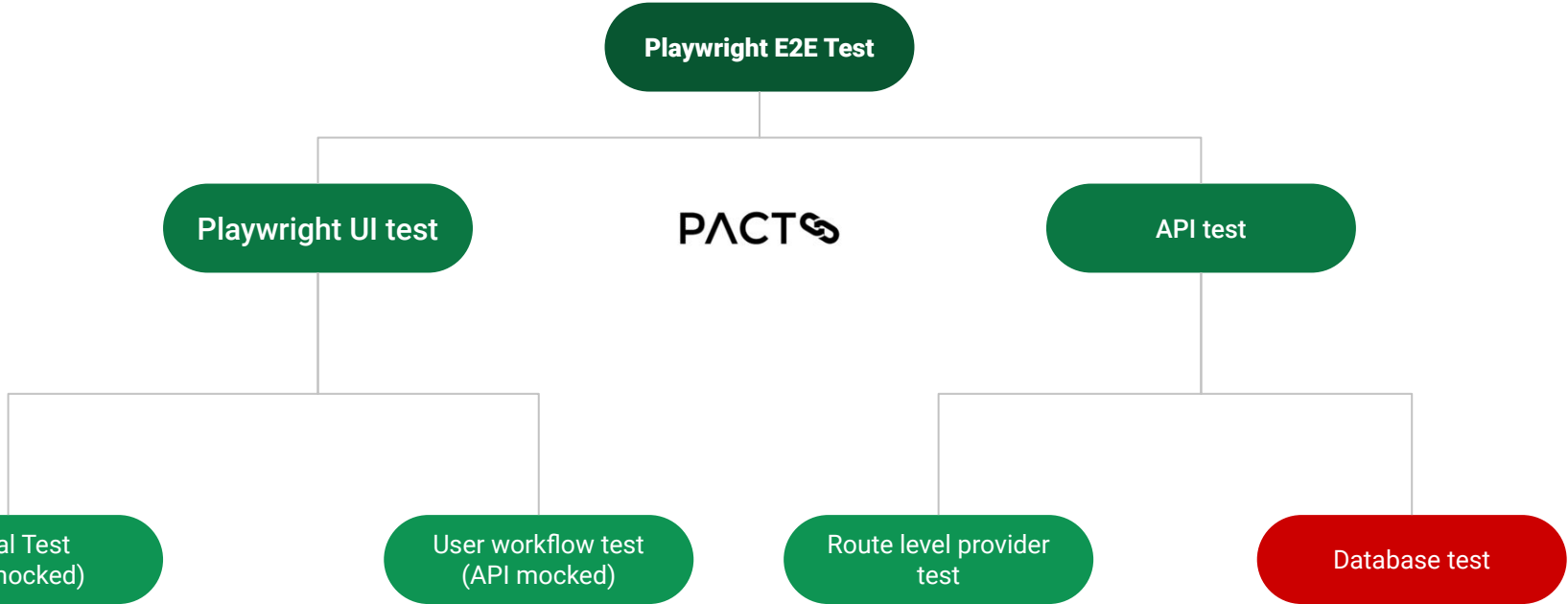
API test

Visual Test
(API mocked)

User workflow test
(API mocked)

Route level provider
test

Database test



Back to being friends, happily ever after...



Back to being friends, happily ever after...



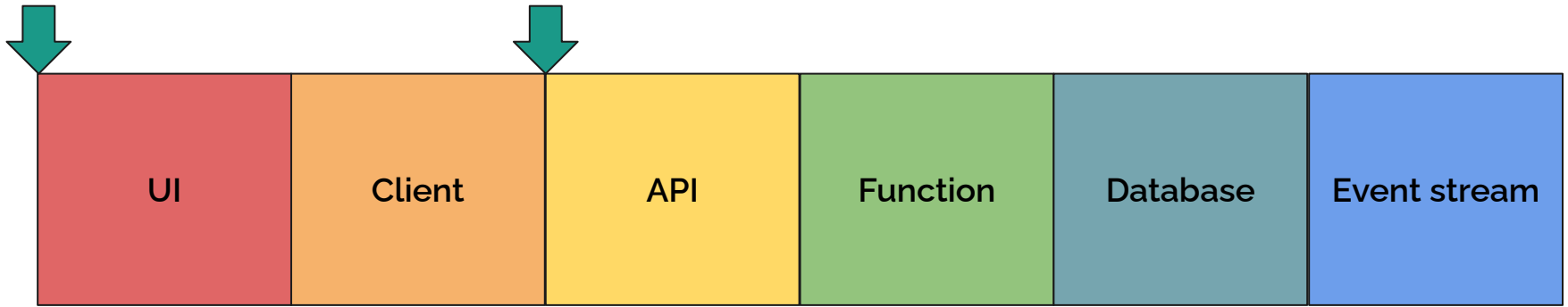


Introducing hermetic tests with less friction

- Start small - Pick 1 scenario / 1 team
- Replace hermetic tests into existing processes
 - Eg. If you have a mock for your react apps, replace that mock library with Pact (or pact msw)
- Start it as an experiment before going all-in.
- Learn and iterate
- Pivot if required
- It's a collaborative effort - advocacy plays a big part.



Hermetic test scale



make your own

Don't mock if you
aren't going to
validate them



Some examples of validating mocks

REST APIs

- Contract testing
- Mock vs Schema diff

Database mocks

- DB schema validations

Event bus

- Avro/protobuf schema validation

SDKs

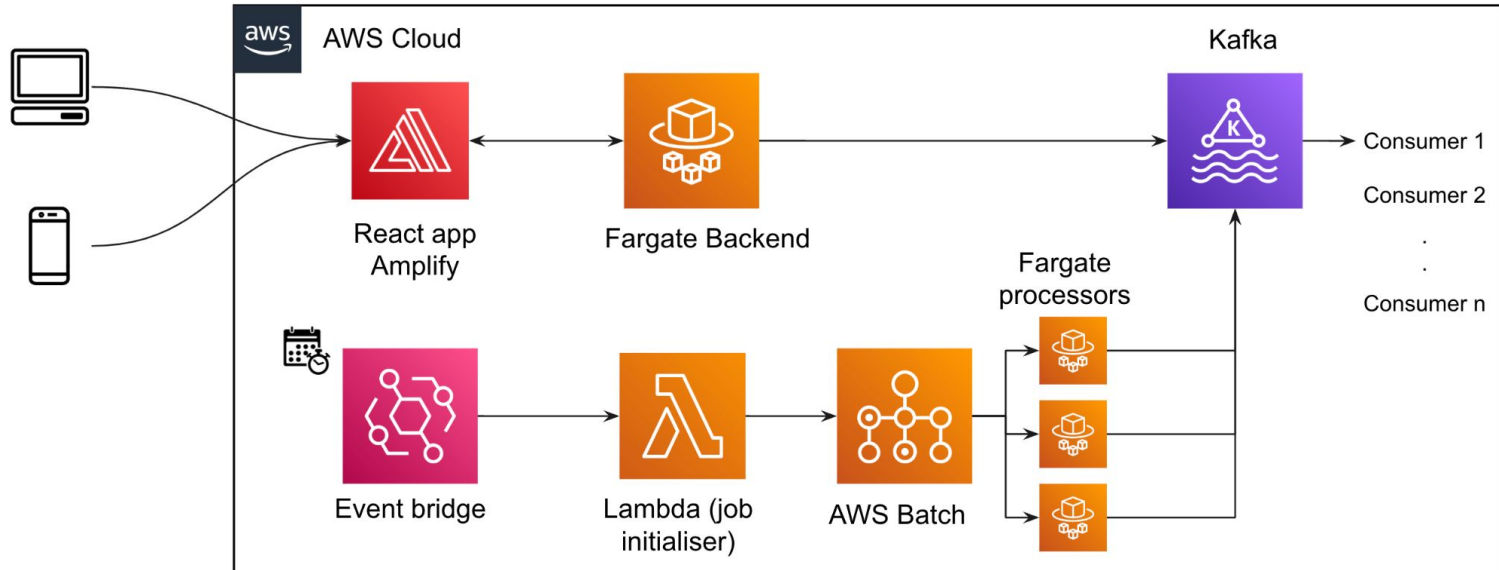
- Additional tests that validates SDK functionality

Code level mock objects

- Unit test each class/object

Closing thoughts

Eventually ending up with Hermetic tests...





Summary



Your savings...



Feedback loop time



Build time



Environment cost



Ownership cost



Debugging cost



Maintenance cost

Thank you!



jaswanthm / restful-booker-platform

🔗 5 Open ✓ 0 Closed

🔗 **#1 Run a playwright e2e test**

#1 opened 4 days ago by jaswanthm

🔗 **#2 Run a pact consumer test (UI)**

#2 opened 4 days ago by jaswanthm

🔗 **#3 Run a pact provider test (backend)**

#3 opened 4 days ago by jaswanthm

🔗 **#4 - Run low level UI tests**

#4 opened 4 days ago by jaswanthm

🔗 **#5 - Run low level backend tests**

#5 opened 4 days ago by jaswanthm