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Dependency Injection Approaches

Who am I?

Developer for 9+ years
Most of them in Ruby/Ruby on Rails, but did a lot of JavaScript too
Joined Planable in April, started doing TypeScript/React

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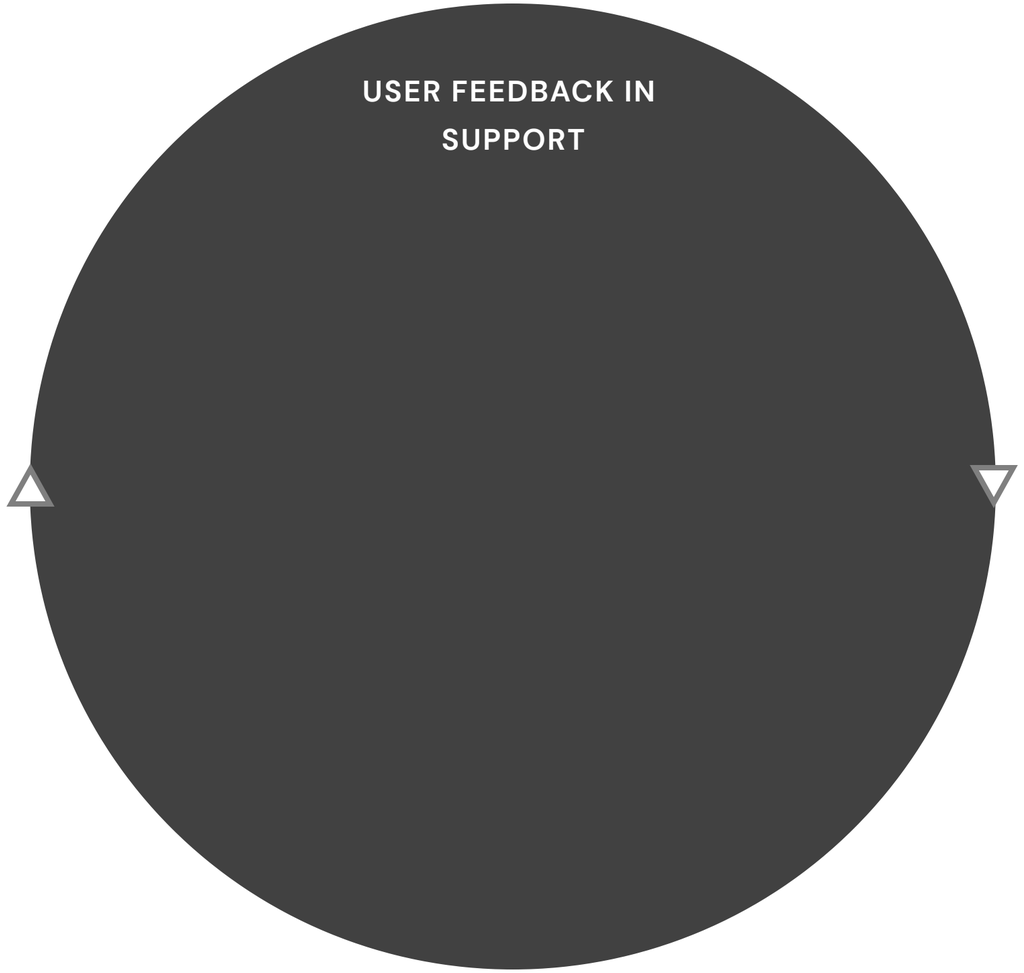
What's a unit anyway?

```
import TwitterClient from 'twitter'
import isPostValid from '~/path/to/isPostValid'

export default function postToTwitter(text) {
  if (!isPostValid({ text }))
    throw new Error('invalid post')

  const payload = makeTwitterPayload(text)
  TwitterClient.post(payload)

  return true
}

function makeTwitterPayload() {
  // ...snip
}
```

Unit – a module export.

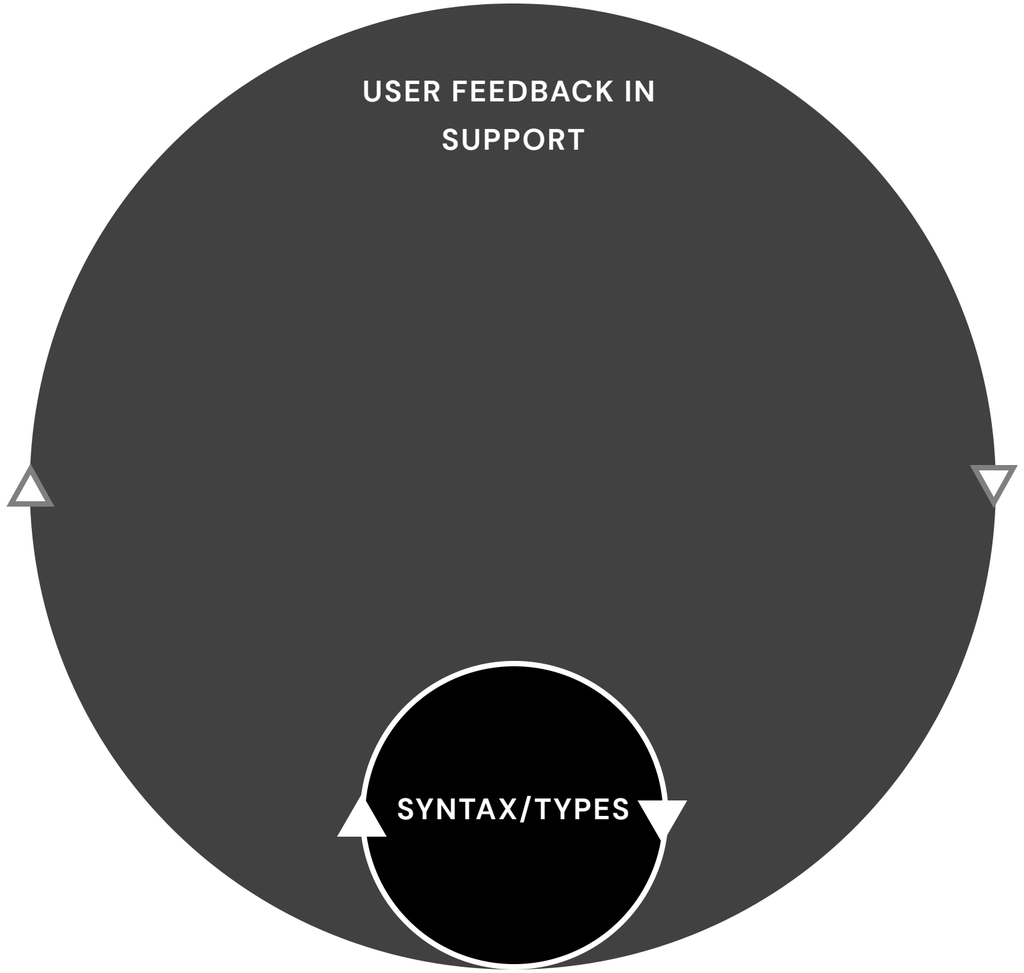
Why Unit Test Anyway?

Feedback cycles



User feedback
Has the most context, comes slow, late and already generated frustration

Feedback cycles



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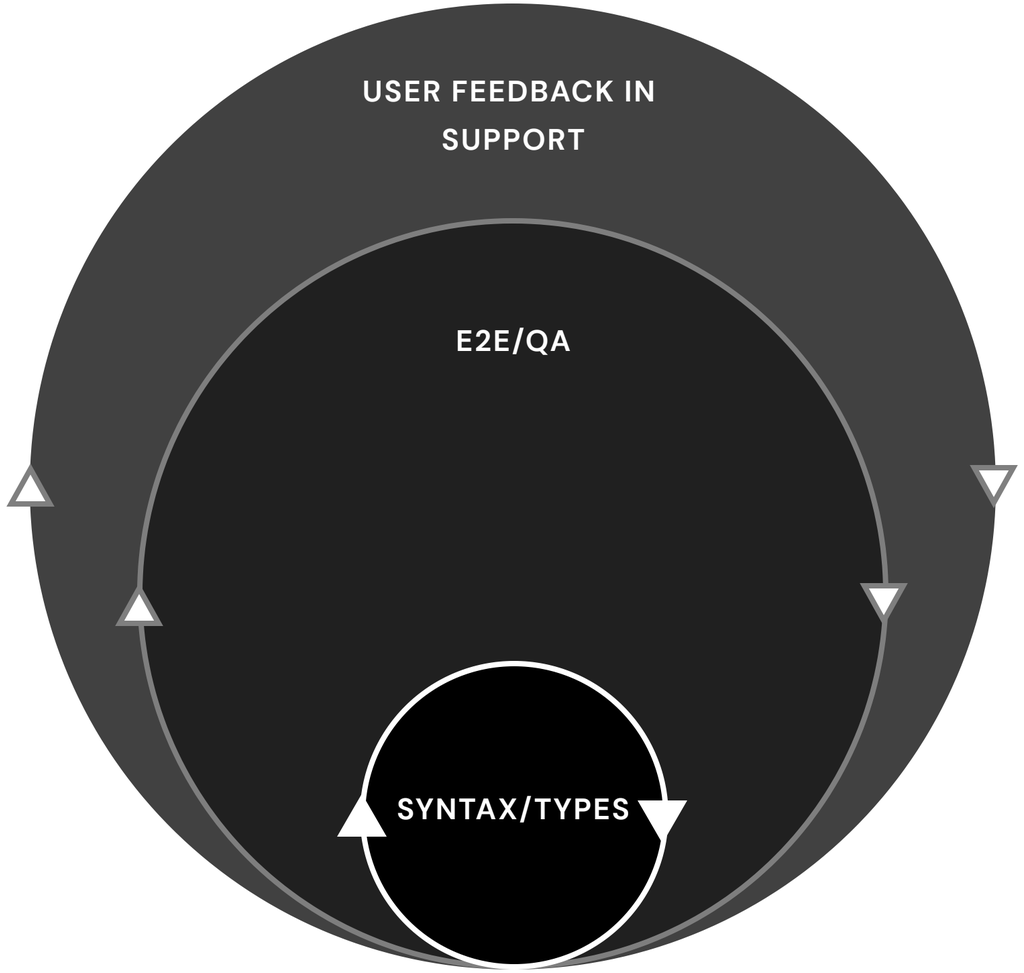
Syntax/Types
Is instant, does not guarantee the code works as it should

Feedback cycles



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End 2 end testing / QA
code did not reach the users, we got feedback, but it was slow as well

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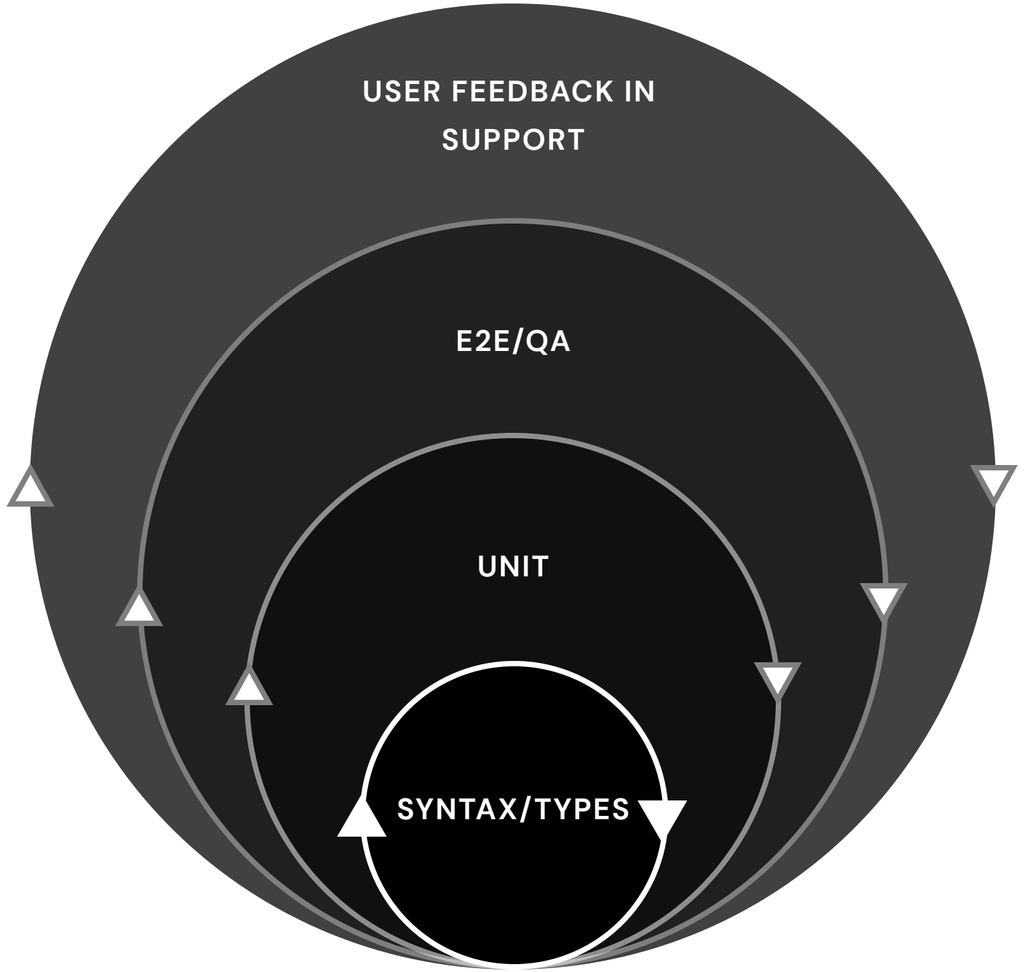
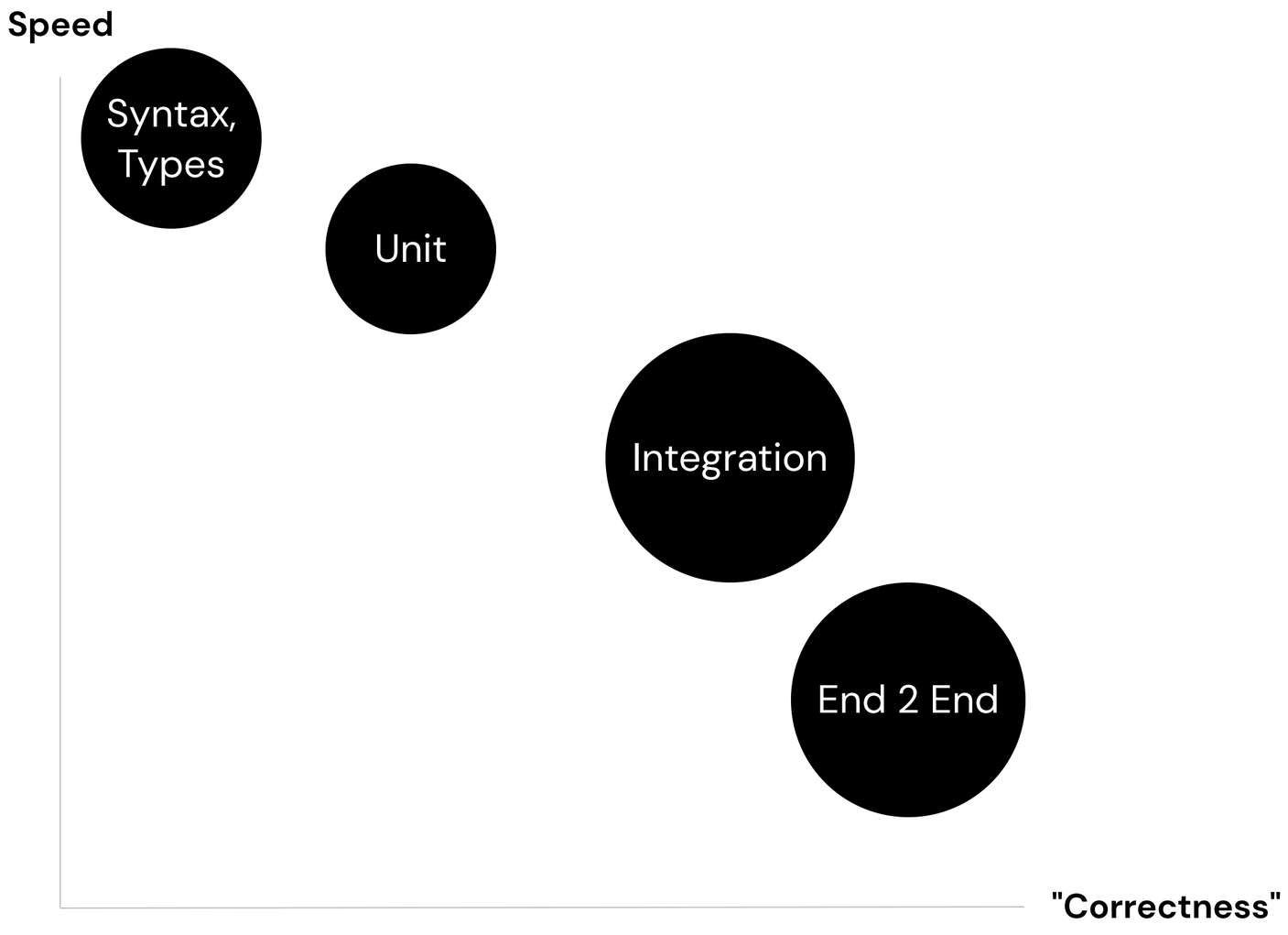


User feedback
Has the most context, comes slow, late and already generated frustration

End 2 end testing / QA
code did not reach the users, we got feedback, but it was slow as well

Unit tests
very fast feedback, but not guaranteed that the user will be satisfied

Syntax/Types
Is instant, does not guarantee the code works as it should



Goals

Speed

Isolation

Coverage

```
import TwitterClient from 'twitter'
import isPostValid from '~/path/to/isPostValid'

export default function postToTwitter(text) {
  if (!isPostValid({ text }))
    throw new Error('invalid post')

  const payload = makeTwitterPayload(text)
  TwitterClient.post(payload)

  return true
}

function makeTwitterPayload() {
  // ...snip
}
```

Approach: Not dependency inject

Pros:

- tests integration between units as well

Cons:

- complex dependency graph, which can be hard to isolate
- some things need to be isolate (eg: twitter client)

```
import postToTwitter from './postToTwitter'

describe('postToTwitter', ()=> {
  it('throws an error if post is not valid', ()=> {
    const veryLongPost = 'x'.repeat(500)

    assert.throws(()=> {
      postToTwitter(veryLongPost)
    }, /invalid post/)
  })
})
```

Approach: explicit arguments

Pros:

- very simple in implementation and understanding

Cons:

- function signature is cluttered

```
export default function postToTwitter(content, deps = {isPostValid}) {
  if (!deps.isPostValid({ content }))
    throw new Error('invalid post')

  // ...
}
```

```
import postToTwitter from './postToTwitter'

describe('postToTwitter', ()=> {
  it('throws an error if post is not valid', ()=> {
    const falseValidator = ()=> false

    assert.throws(()=> {
      postToTwitter('test', { isPostValid: falseValidator })
    }, /invalid post/)
  })
})
```

Approach: stubs

Pros:

- function does not declare its dependencies

Cons:

- default exports cannot be stubbed in sinon
- stubs house-keeping code in tests

```
import TwitterValidation from '~/path/to/TwitterValidation'

export default function postToTwitter(content) {
  if (!TwitterValidation.isPostValid({ content }))
    throw new Error('invalid post')

  // ...
}
```

```
import postToTwitter from './postToTwitter'
import TwitterValidation from '~/path/to/TwitterValidation'

describe('postToTwitter', ()=> {
  const sandbox = sinon.createSandbox();

  afterEach(()=> {
    sandbox.restore()
  })

  it('throws an error if post is not valid', ()=> {
    sandbox.stub(TwitterValidation, 'isPostValid').returns(false)

    assert.throws(()=> {
      postToTwitter('test')
    }, /invalid post/)
  })
})
```

Approach: factories

Pros:

- factories can encapsulate very complex logic

Cons:

- indirection
- implementation has test-related code nearby

```
const dummyValidator = ()=> true

export function makePostToTwitter(options = {validatorFunc: isPostValid}) {
  const isPostValid = validatorFunc ?? (process.env.NODE_ENV === 'test' ?
dummyValidator : isPostValid)

  return (text)=> {
    if (!options.validatorFunc(text))
      throw new Error('invalid post')

    // ...
  }
}

makePostToTwitter()('hello world')
```

```
import makePostToTwitter from './postToTwitter'

describe('postToTwitter', ()=> {
  it('throws an error if post is not valid', ()=> {
    const falseValidator = ()=> false

    assert.throws(()=> {
      makePostToTwitter({validatorFunc: falseValidator})('test')
    }, /invalid post/)
  })
})
```

Conclusion

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End

Isolation