



Streamlining iOS Development with Selective Testing

Michael Gerasymenko



Who I am

Hey, I'm Michael. I am originally from Ukraine 🇺🇦,
based in Berlin 🇩🇪

Started as an iOS engineer in 2009:

- Readdle
- Wire
- Cara Care
- Feeld

Github: [mikeger](#)

Web: <https://gera.cx>



Where I work

Today, a Staff iOS engineer at Delivery Hero Logistics:

- Available in 70-something countries
- Serving over a million delivery drivers monthly

talabat

 foodpanda

 efood

**HUNGER
STATION**

 foodora

 PedidosYa

 Yemeksepeti

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Your mobile application

There are some core jobs it is doing:

- Login and Registration,
- Preferences,
- Home UI,
- Details UI,
- ...



Growth

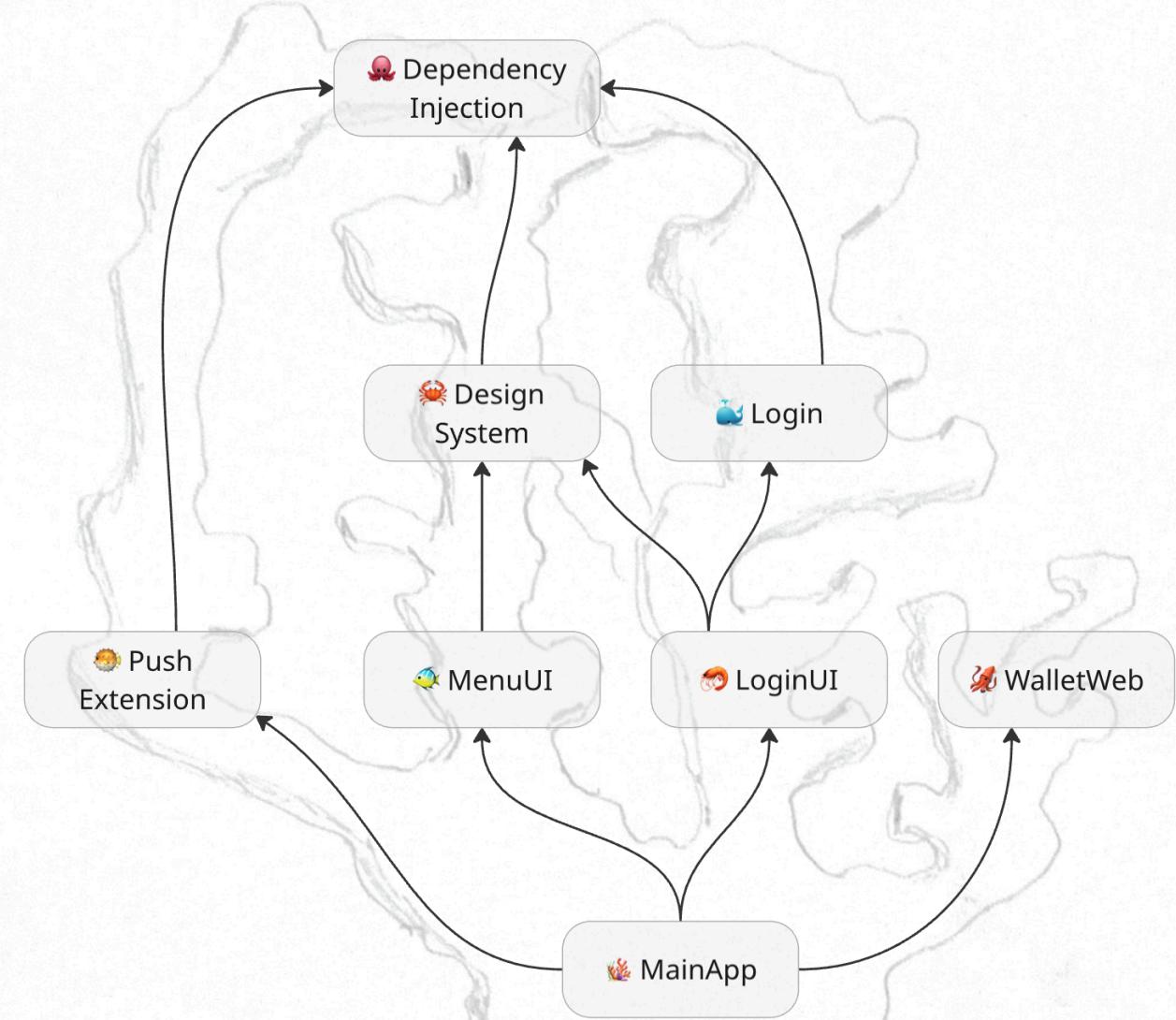
As your company grows 🌱, so does your app. Over time, multiple teams would work on a single application. Letting them **separate responsibilities** and allowing them to **own** their part of the application is crucial.

Each team can own a set of modules and some parts of the main application's code.



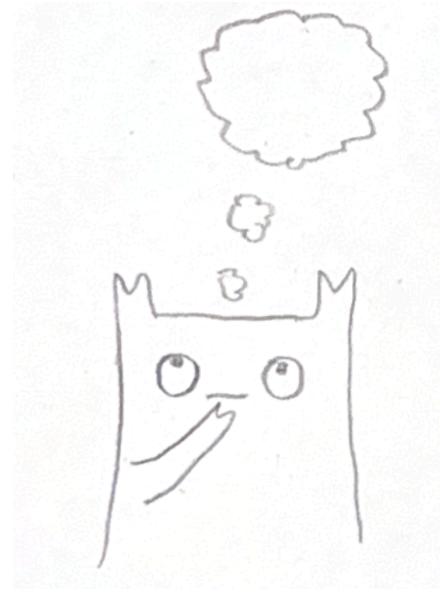
Modules

Imagine having the following dependency structure:

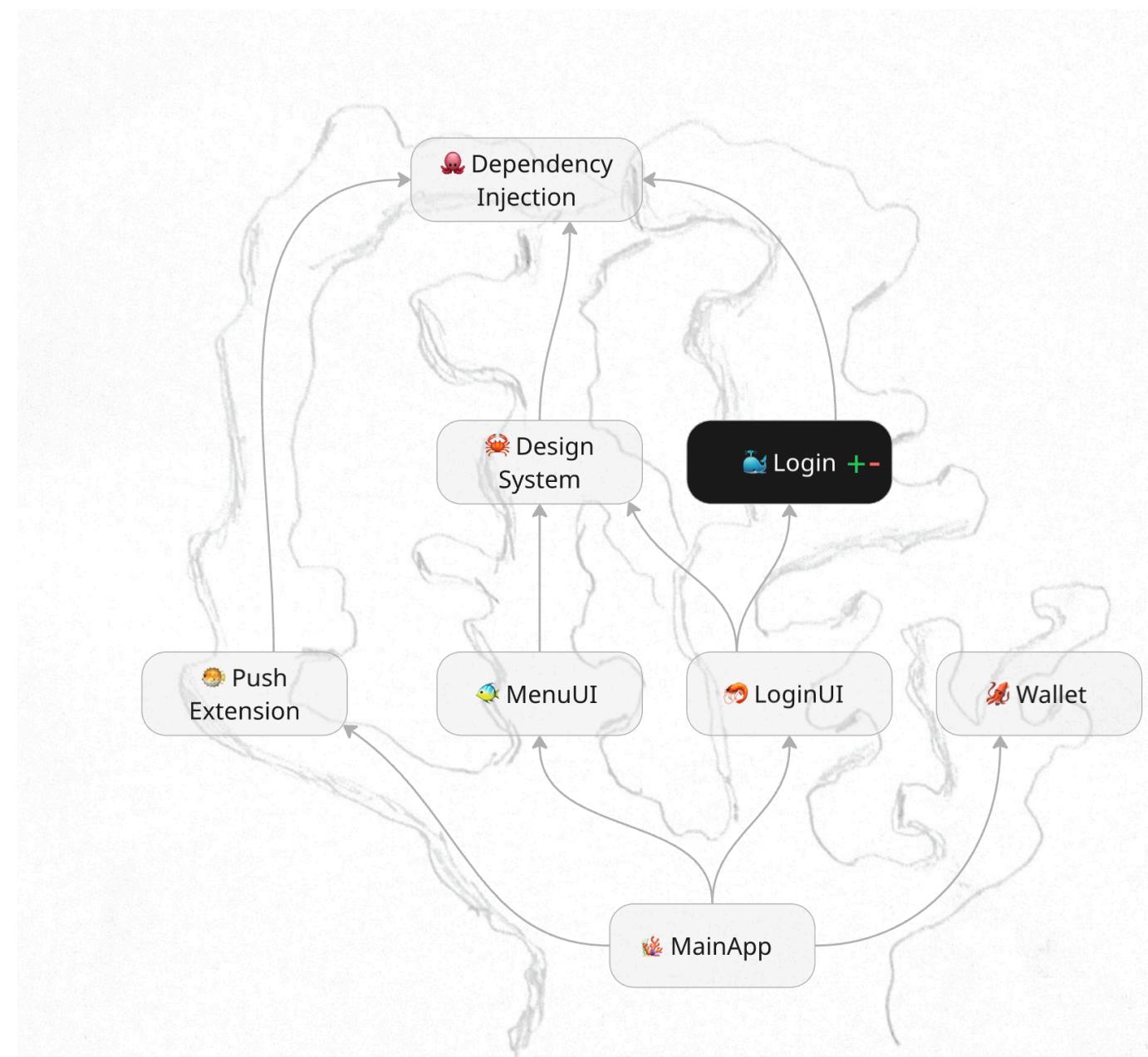


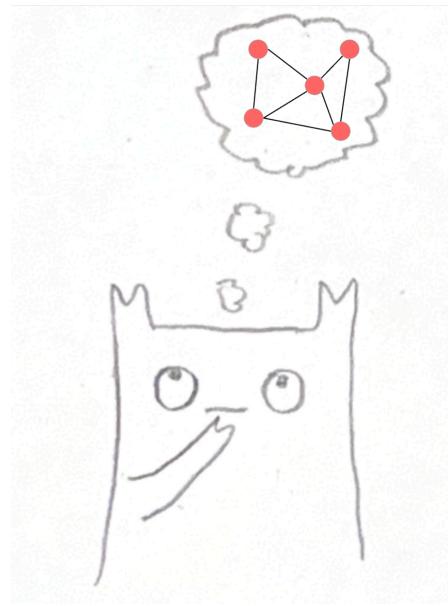


Running all those tests is taking so much time!

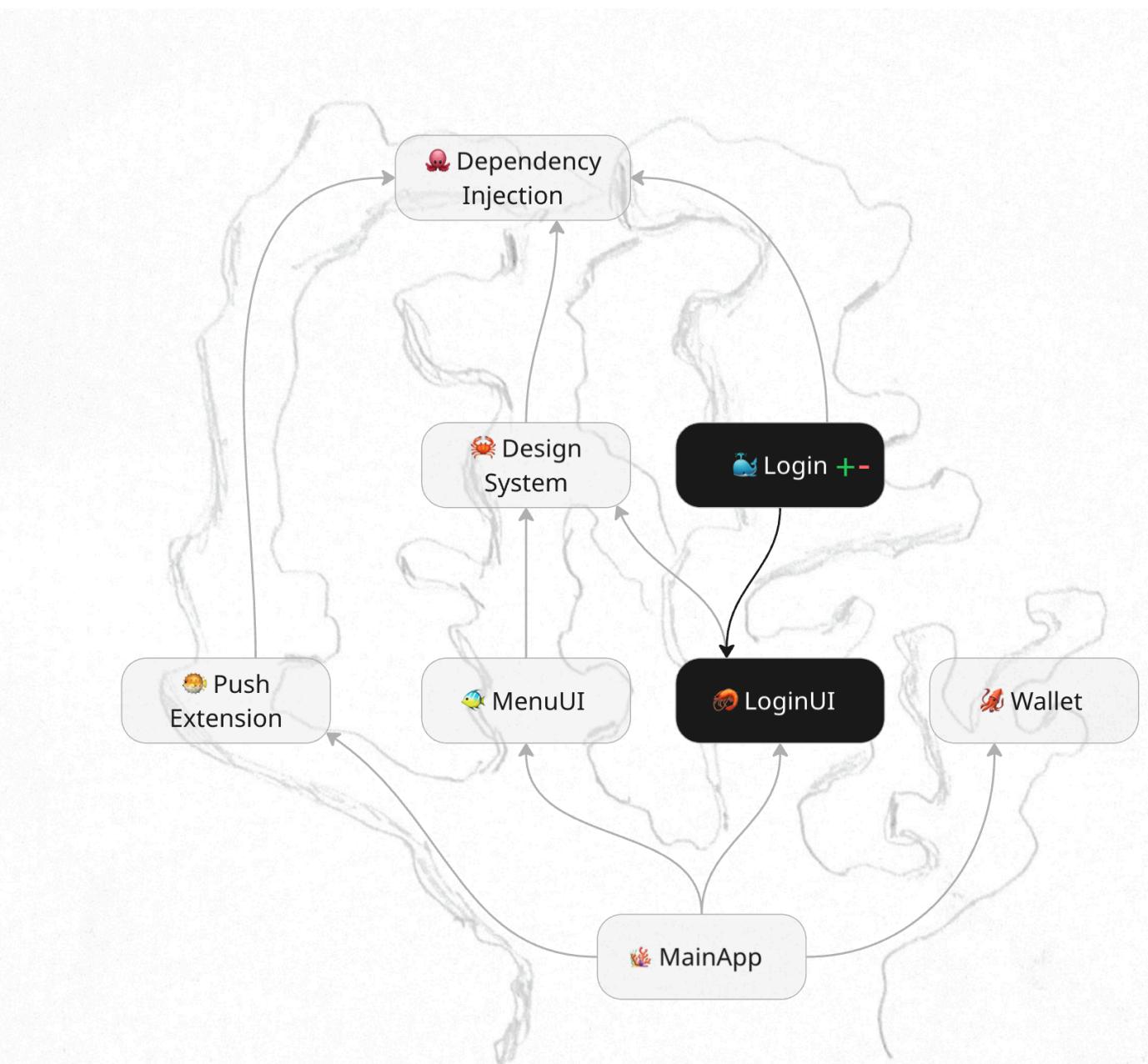


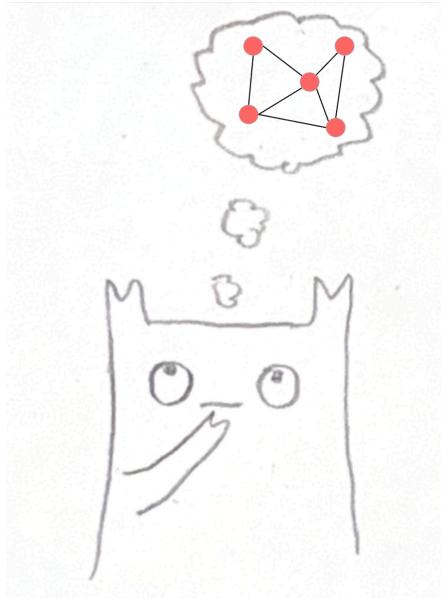
If the 📦 *Login* module is changed...





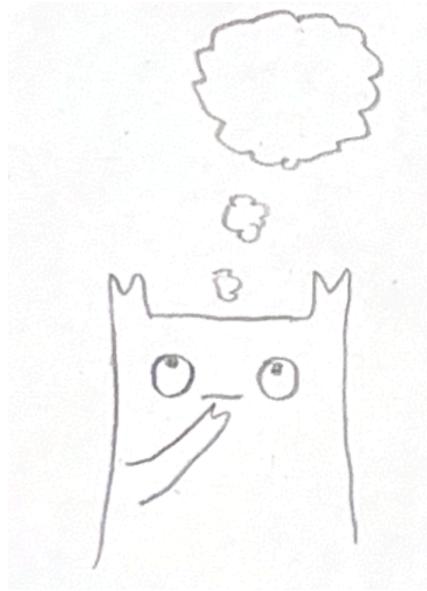
It would only affect the 🏢
LoginUI...





And the *MainApp*...





Does it make sense to test all the modules, if we know only the 📦 *Login* module is changed?



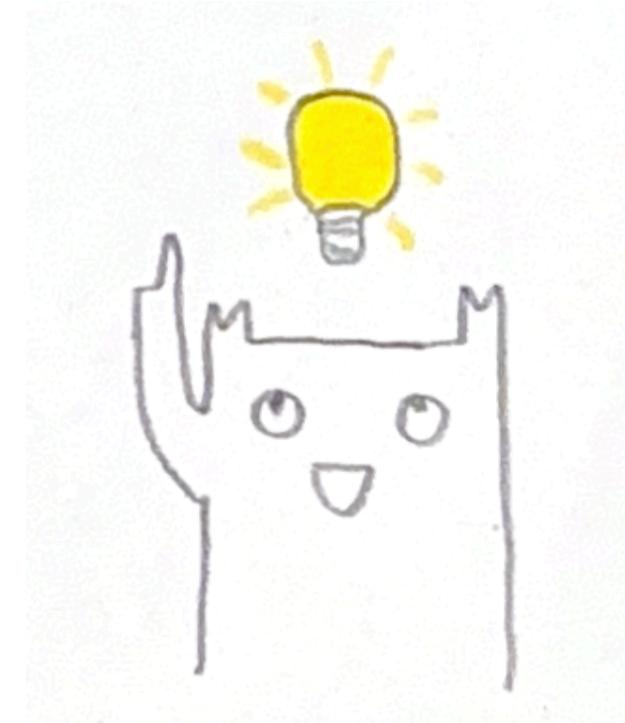
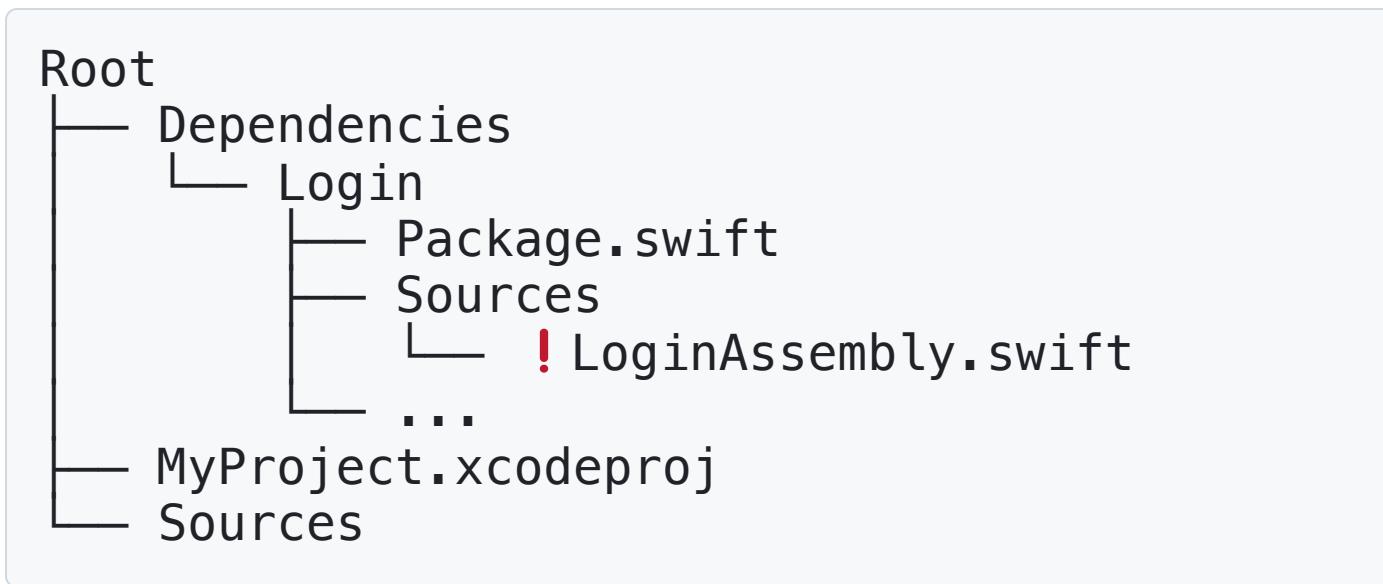
**We can only run
50% of the tests
and get the
same results**



But how can we know?

1. Detecting what is changed

Git allows us to find what files were touched in the changeset.





2. Build the dependency graph, save the list of files for each dependency

Going from the project to its dependencies, to its dependencies, to dependencies of the dependencies, ...

This can be achieved with the *XcodeProj* package from Tuist.

Dependencies between packages can be parsed with `swift package dump-package`.

This is the most challenging part. We are dealing with obscure Xcode formats. But if we get that far, we will not be scared by that.

3. Traverse the graph, disable tests that can be skipped in the scheme/test plan

Go from every changed dependency all the way up, and save a set of dependencies you've touched.



Sounds like fun, Mike

But I am not going to implement it now.



Luckily, I implemented it already

mikeger/
XcodeSelectiveTesting

Xcode selective testing: Run only tests relevant to the changeset.

1 Contributor 2 Issues 80 Stars 0 Forks



GitHub

GitHub - mikeger/XcodeSelectiveTesting: Xcode selective testing: Run only tests relevant to the chan...

Xcode selective testing: Run only tests relevant to the changeset. - GitHub - mikeger/XcodeSelectiveTesting: Xcode selective testing: Run only tests relevant to the changeset.

github.com/mikeger/XcodeSelectiveTesting

Benefits

We observed a 40-50% average CI time reduction when using Xcode Selective Testing.

	#13166	30m 7s Jun 29 02:20:51pm	
	#13165	22m 57s Jun 29 02:06:49pm	
	#13161	5m 42s Jun 29 01:21:20pm	
	#13152	20m 51s Jun 29 11:05:11am	
	#13150	5m 23s Jun 29 10:08:21am	
	#13130	19m 38s Jun 28 05:23:20pm	



Support

- Xcode Projects, also with buildable folders
- Swift Testing
- XCTest + UI Tests
- SPM packages



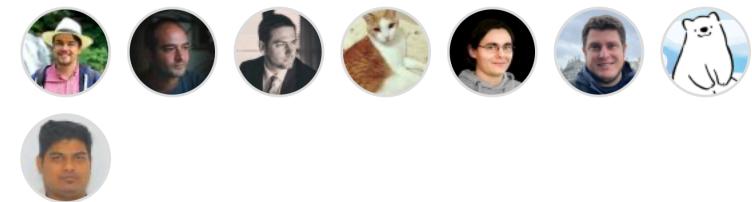
Pitfalls

- Code coverage reports must be uploaded per module. Otherwise, every run you would get different (bad) coverage.
- Flaky tests might be merged and stay in the repo for a while until someone touches them.

Open-source is awesome

- Make friends
- Let your future employer already benefit from your code
- Other people fix your bugs
- Maybe even speak on stage
- I would like to thank all contributors!

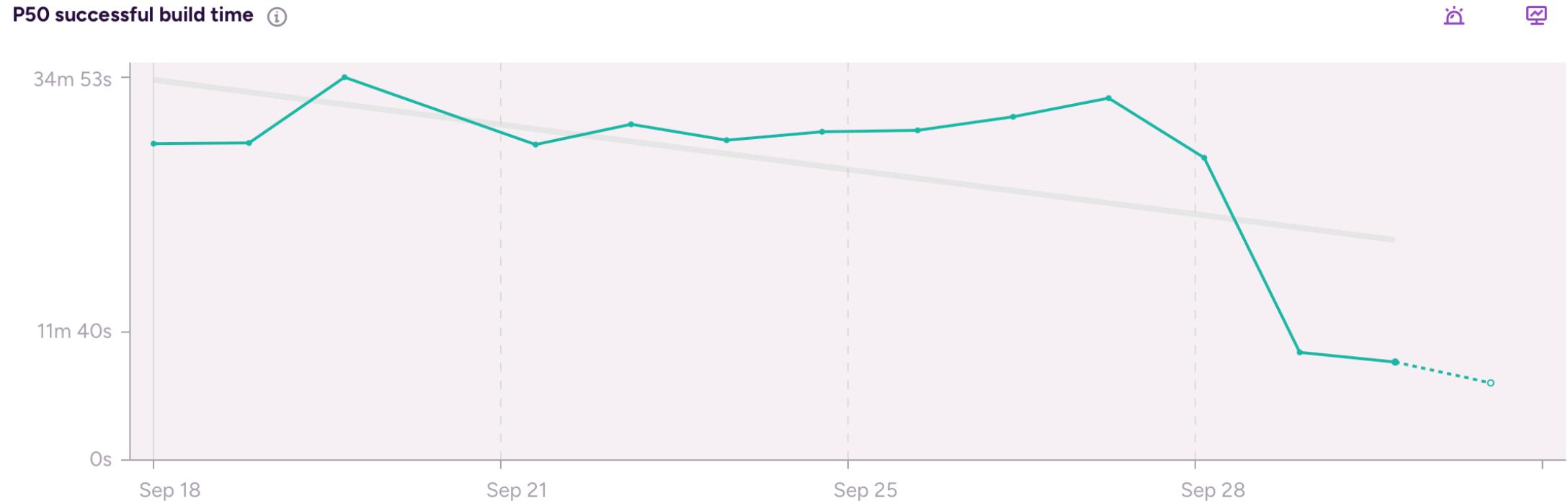
Contributors 8





What about other solutions?

- **Tuist** also supports selective testing
- Has a different principle: Target contents are hashed, and after the test is successful, it's saved on the Tuist.dev cloud
- Downsides: it is paid
- Upsides: fewer test runs for feature branches



Thank you!

Questions?

AI used for proofreading

Illustrations by Alexander Gerasymenko

Sunflower by Wolfgang Hasselmann

