How frontend platforms are helping us evolve realestate.com.au

Stewart Gleadow
Architect | realestate.com.au | @stewgleadow

REA Group

- Scaling journey
- Web platform
- Native platform
- Future direction
- Lessons

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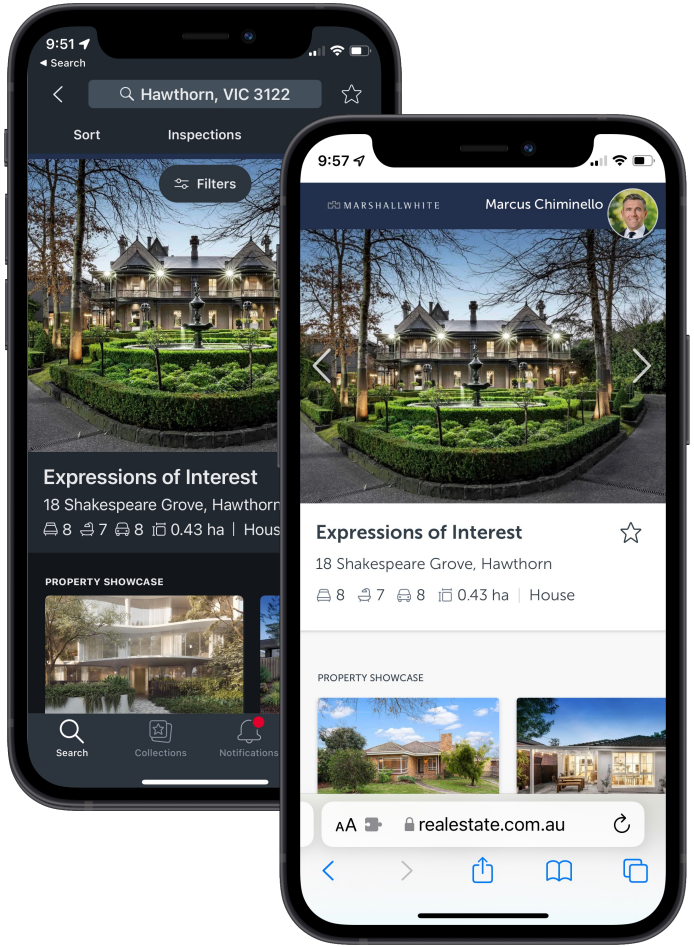
realestate.com.au

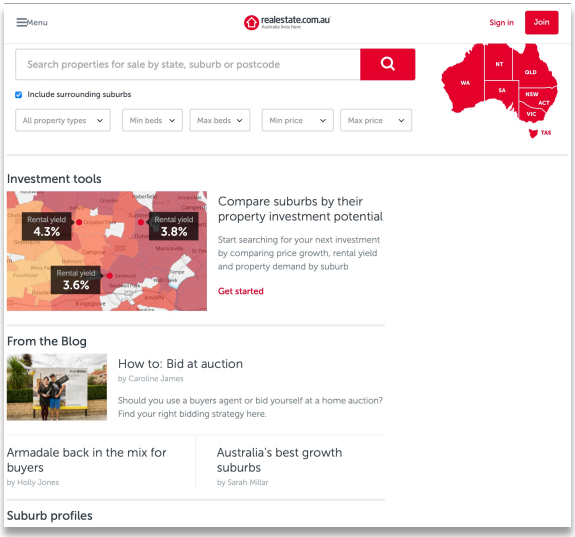
- 129m monthly visits[1]
- 12.6m monthly users[2]
- 650 tech people
- 60 squads
- 75 initiatives



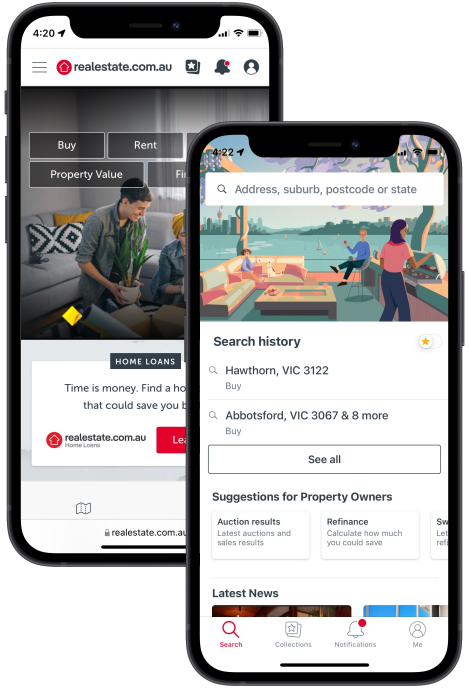
(1) Nielsen Digital Media Ratings (Monthly Tagged), July-September 21, P2+, Digital (C/M), text, realestate.com.au vs Domain, Total Sessions.
(2) Nielsen Digital Media Ratings (Monthly Tagged), July-September 21 (monthly averages), P2+, Digital (C/M), text, realestate.com.au, Unique Audience.

2010

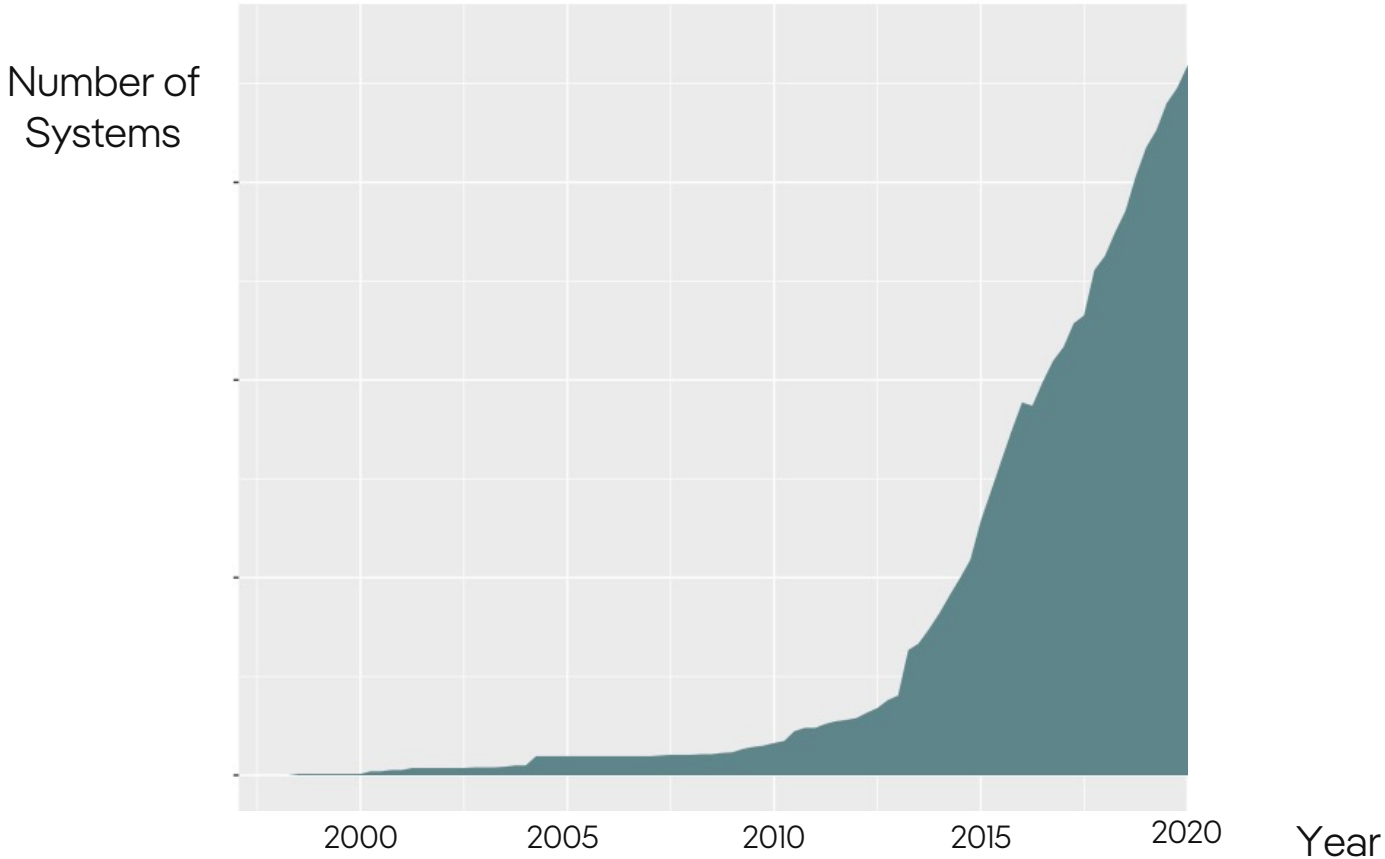
2015

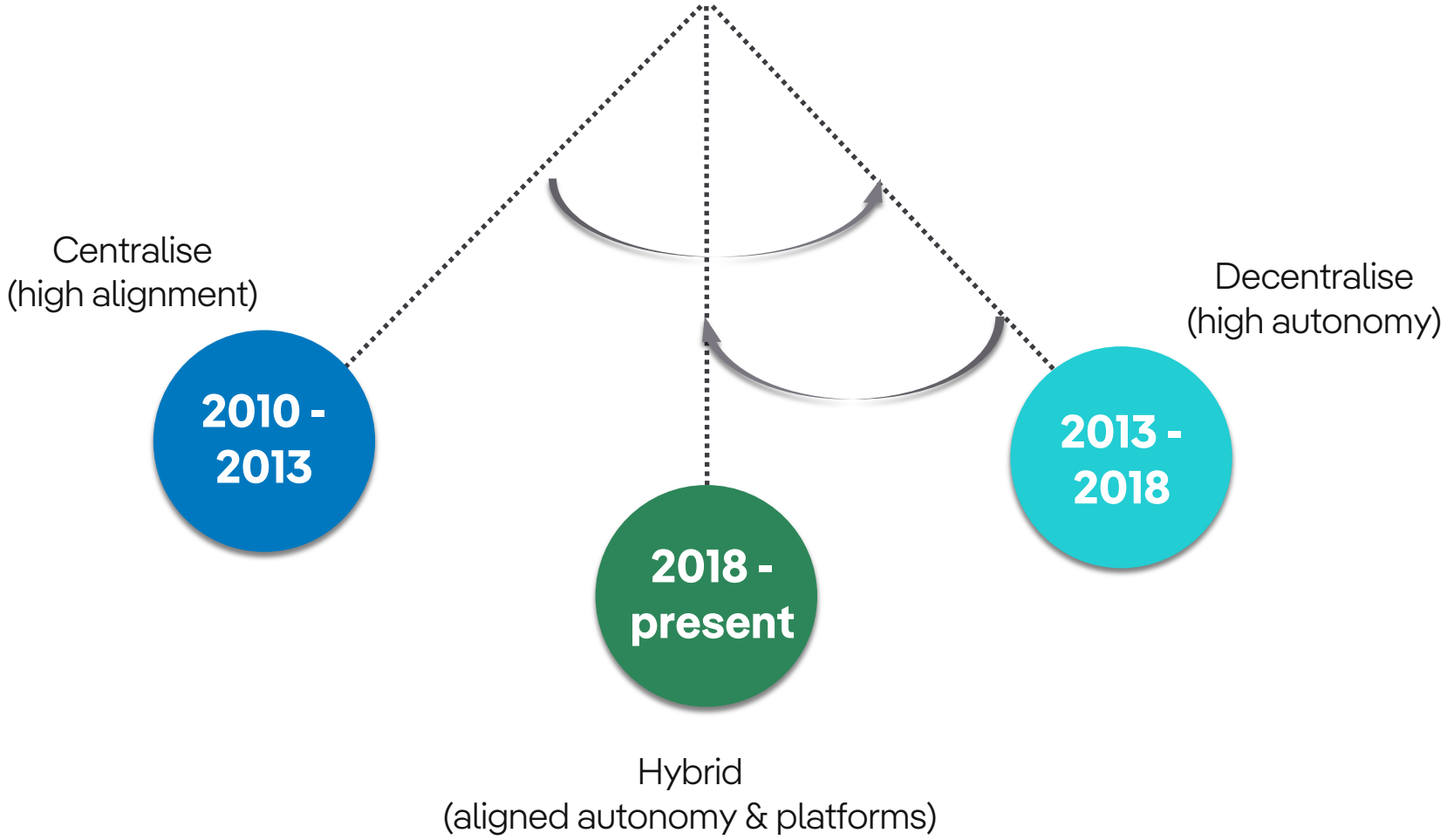


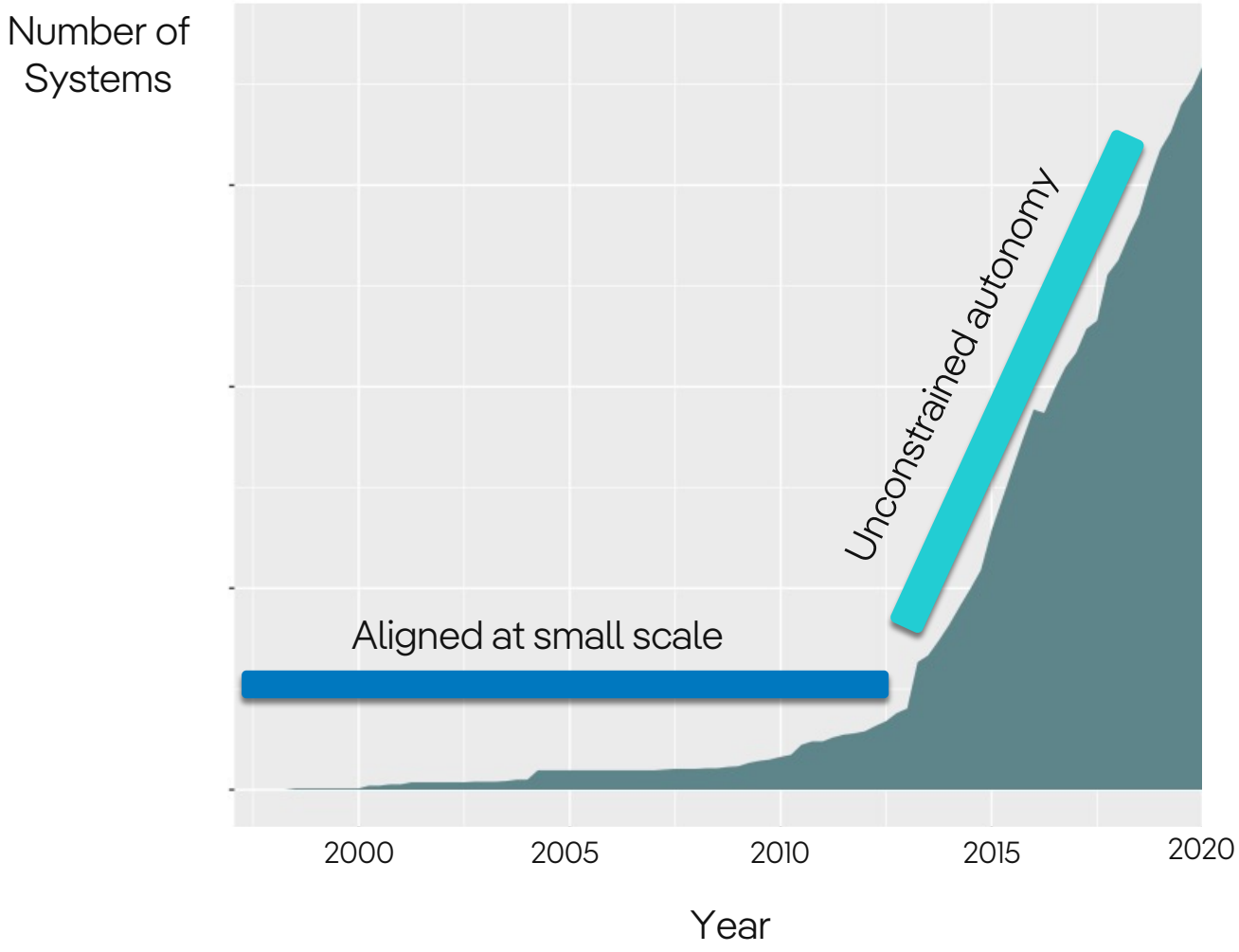
2020



Building software at different scales



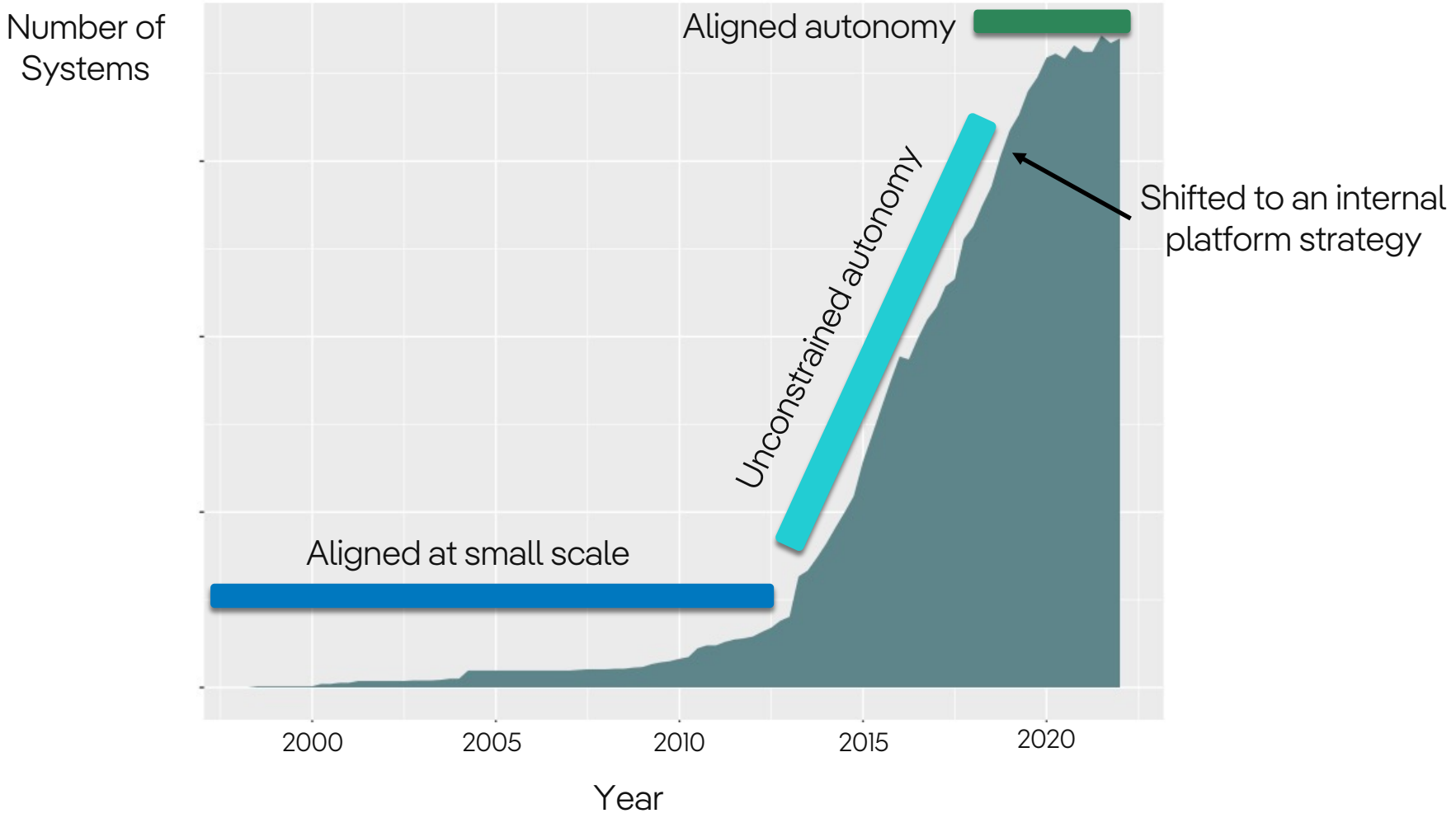

Centralise
(high alignment)
2010 -
2013
Decentralise
(high autonomy)
2013 -
2018
2018 -
present
Hybrid
(aligned autonomy & platforms)


Number of Systems
Unconstrained autonomy
Aligned at small scale
2000
2005
2010
2015
2020
Year

^colab

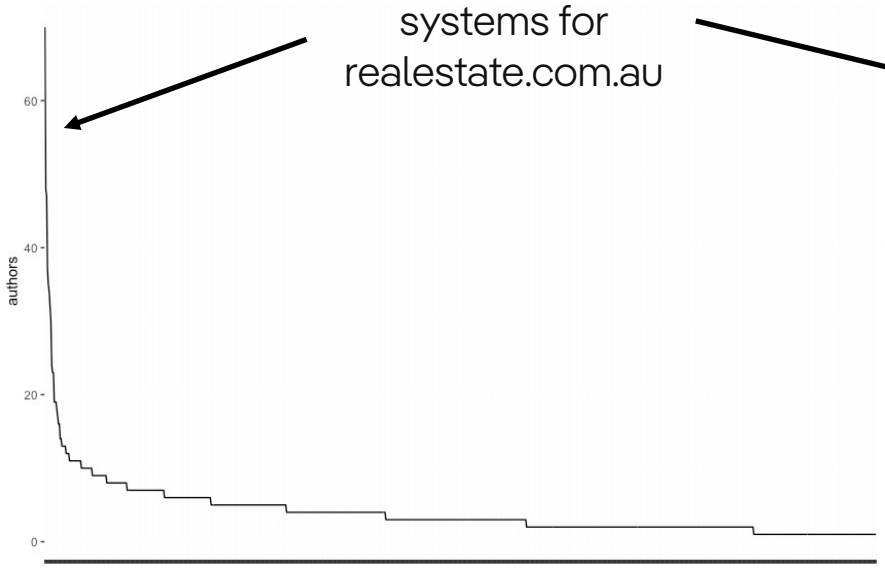
1. A mindset shift from local to company-wide tech thinking.

2. Approaching tech platforms as long-lived products.

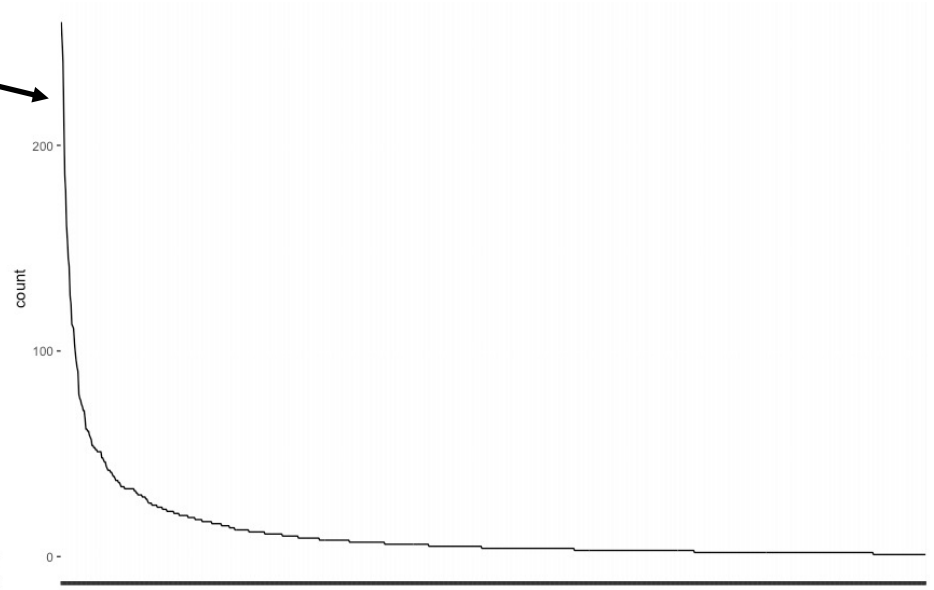

Number of Systems
Aligned autonomy
Unconstrained autonomy
Shifted to an internal platform strategy
Aligned at small scale
2000
2005
2010
2015
2020
Year

Different scaling journey for the front end

Our main frontend systems for realestate.com.au



Unique authors per system



Pull requests per system

- Scaling journey
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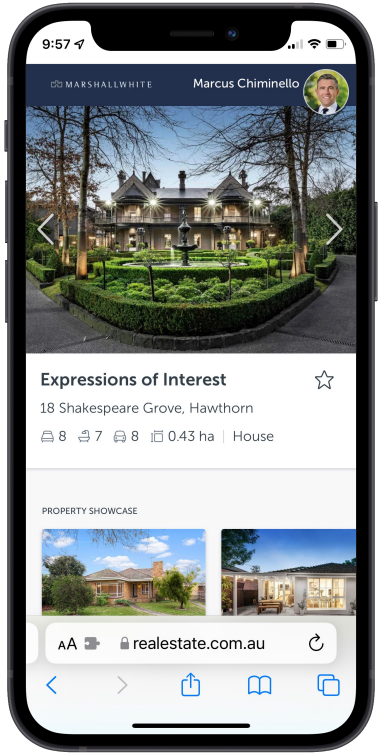
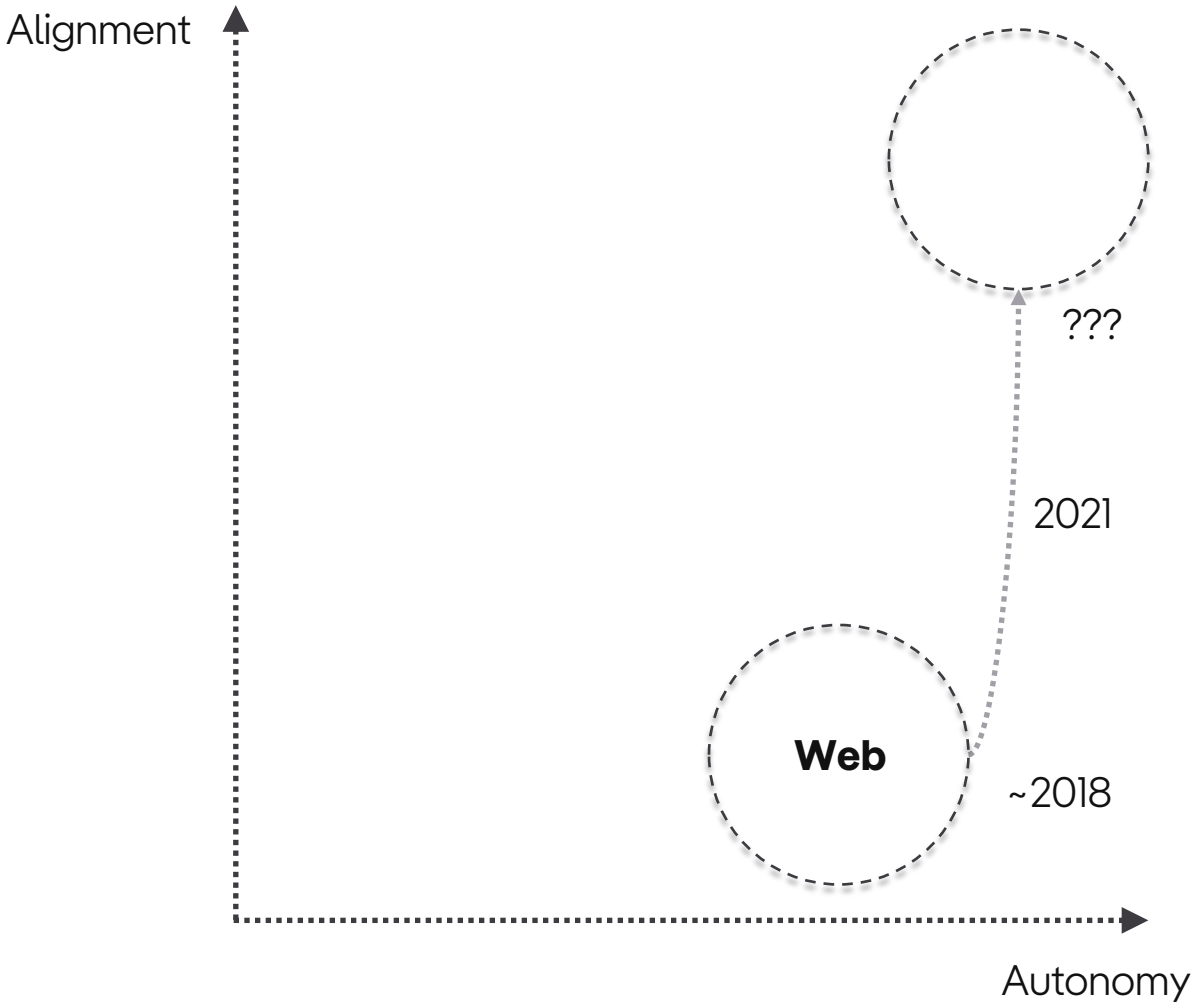
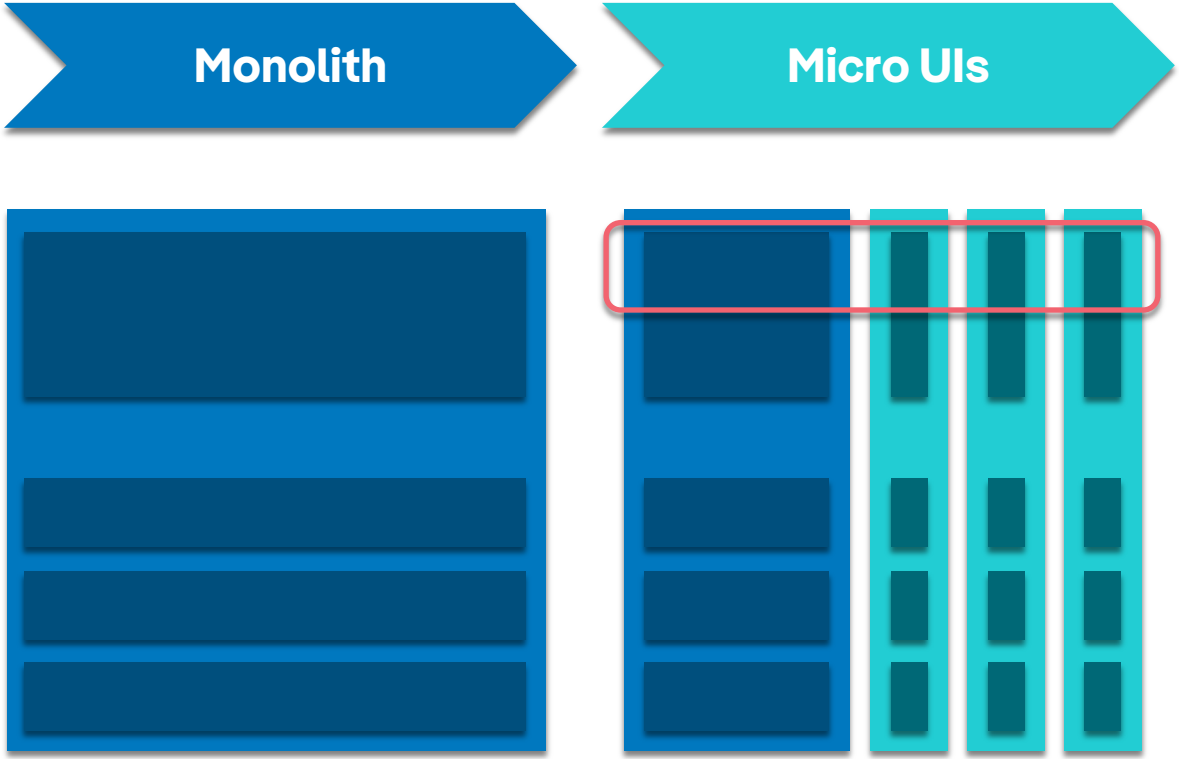


Web Platform

Monolith → Micro UIs → Micro Frontends


Alignment
???
2021
Web
~2018
Autonomy

Web Platform

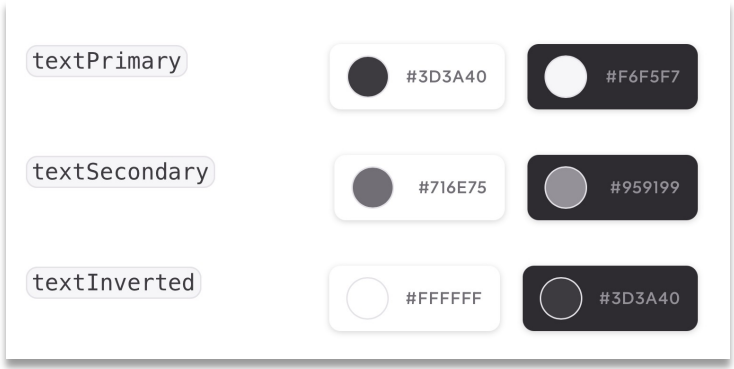


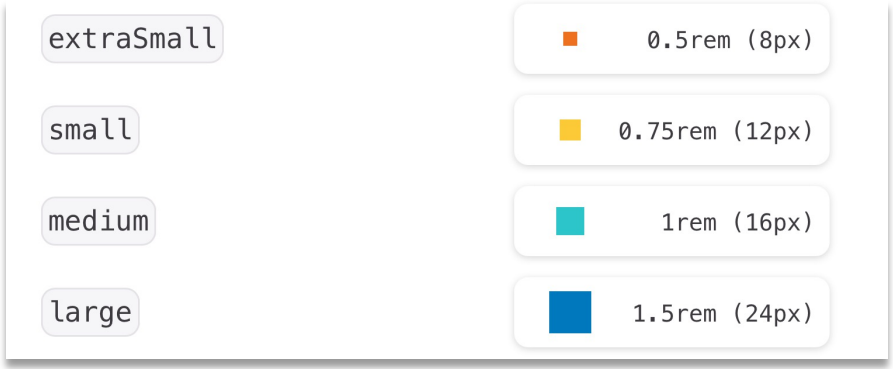
Start with your design system

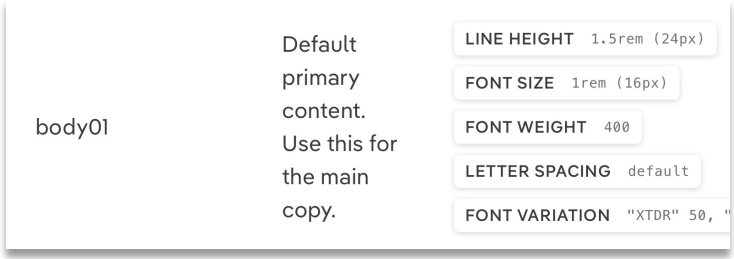
ConstructKit

ConstructKit

Start with the foundations

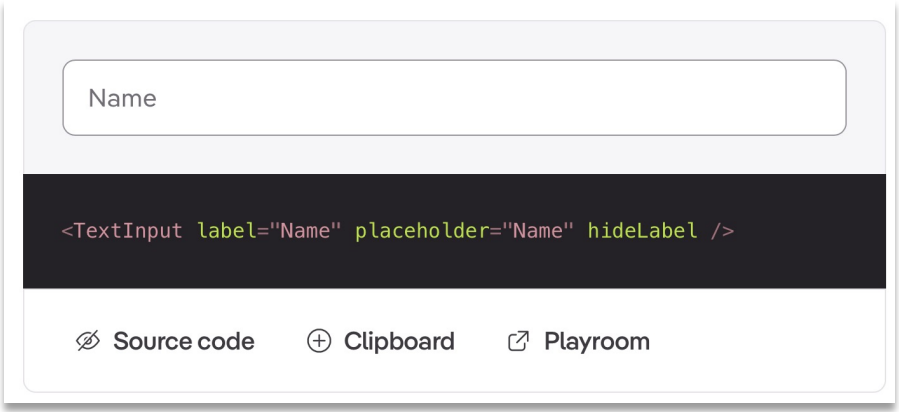


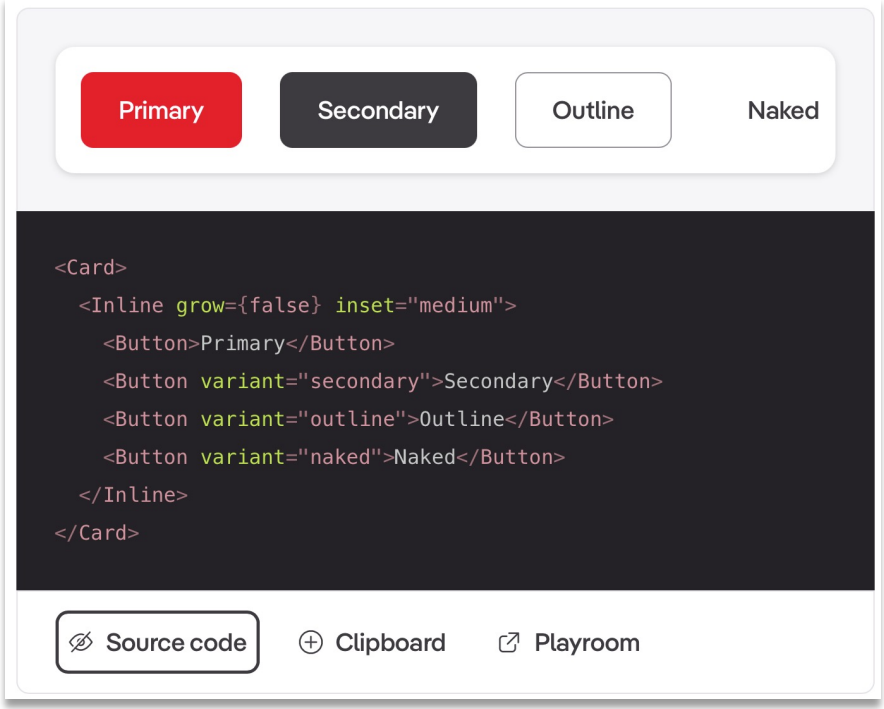




ConstructKit

Build from the bottom up based on need





Business-level components are valuable (but later)

Multiple locations

Richmond, VIC 3121 ✕ Hawthorn, VIC 3122 ✕ Search for a suburb

```
<Stack>
  <MultiLocationSuggest
    label="Multiple locations"
    placeholder="Search for a suburb"
    requestSource="construct-kit-docs"
  />
</Stack>
```

Source code Clipboard Playroom

Multiple locations

```
<Stack>
  <MultiLocationSuggest
    label="Multiple locations"
    placeholder=""
    requestSource="construct-kit-docs"
  />
</Stack>
```

Source code Clipboard Playroom

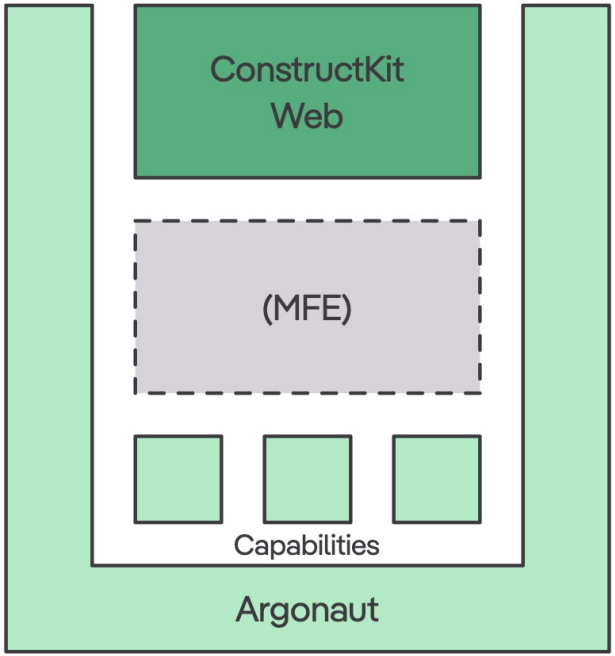
Start with your design system.

Web Platform

Monolith → Micro UIs

Argonaut

Identify common web concerns



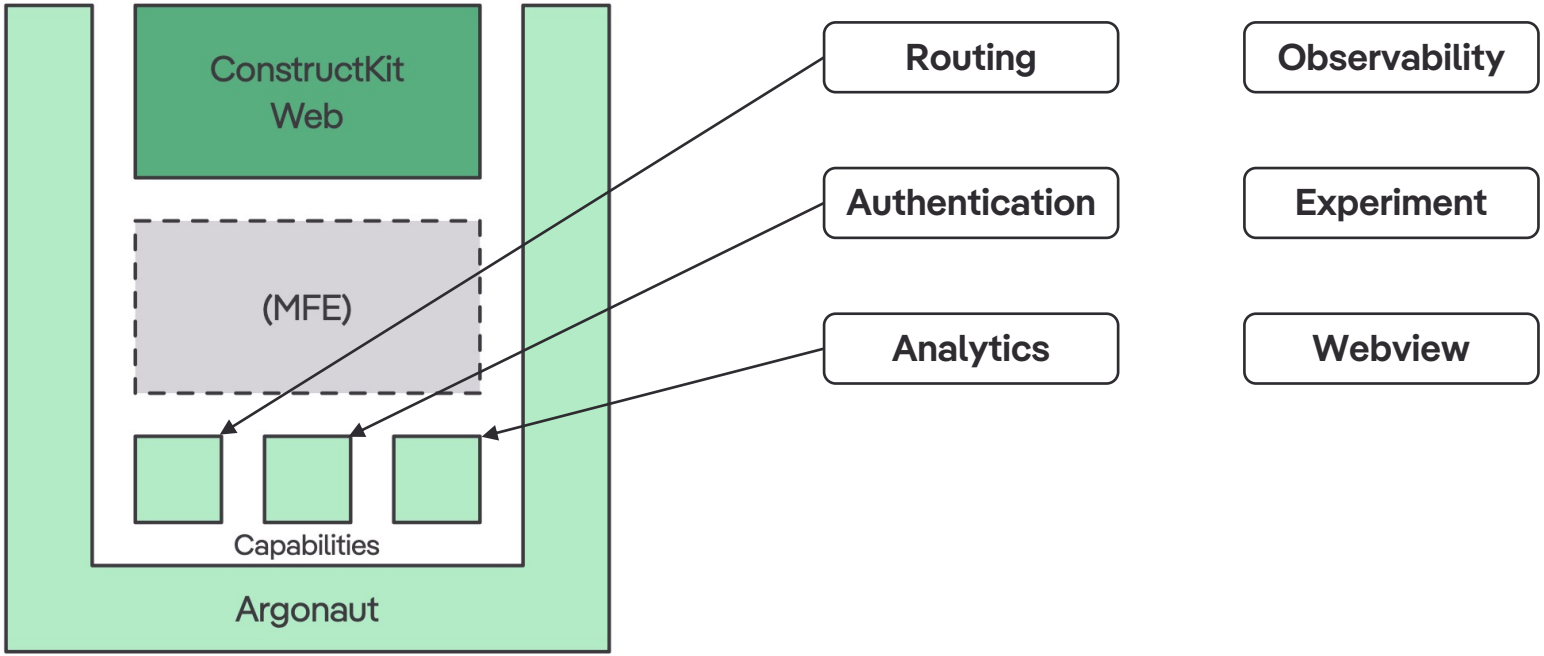
Capabilities

Micro Frontends

Tooling

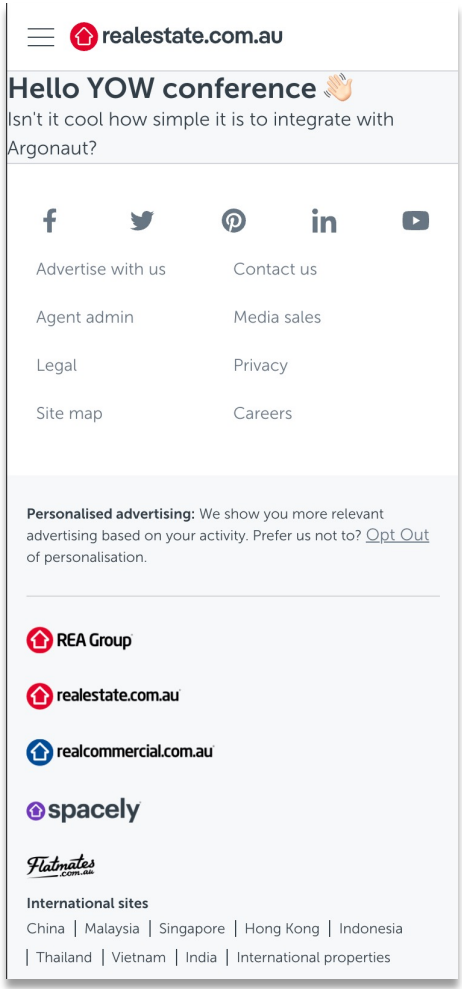
Argonaut

Capabilities

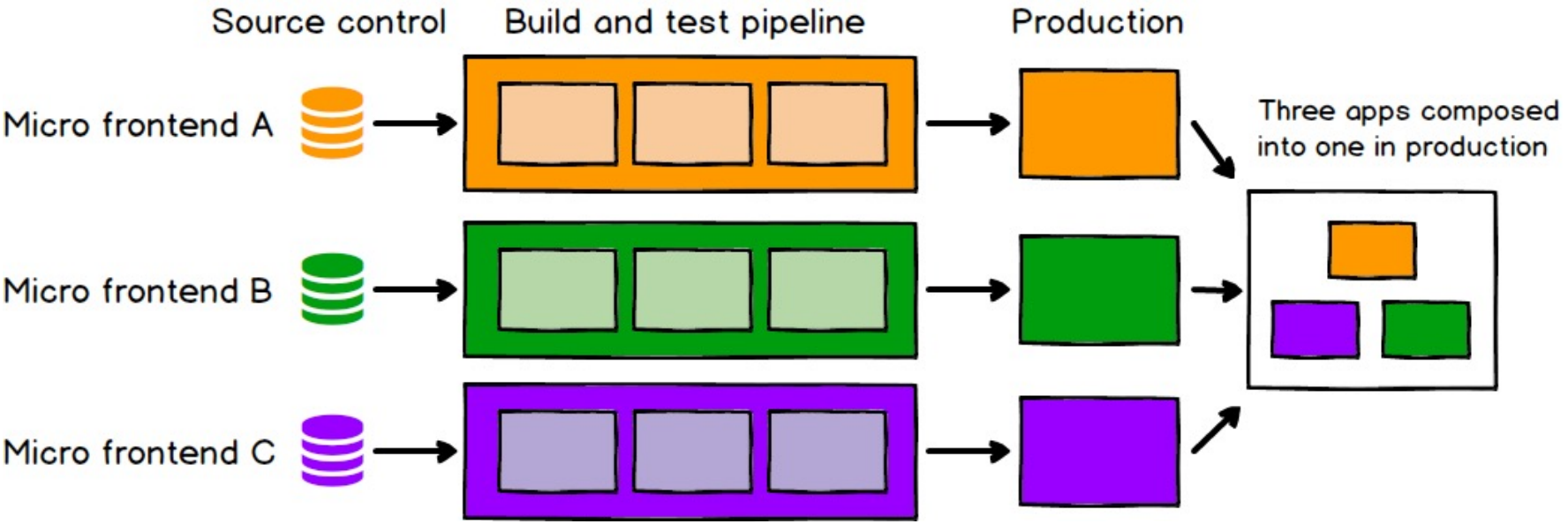


Micro Frontends

```tsx
export const getAction: GetAction = async (): Promise<Action> =>
  renderAction(async () => ({
    getElements: async () => {
      return {
        Screen: (
          <div>
            <H1>Hello YOW conference 👋</H1>
            <P>Isn't it cool how simple it is to integrate with Argonaut?</P>
          </div>
        ),
      };
    },
    getHead: async () => join(title("YOW Conference")),
  }));

```

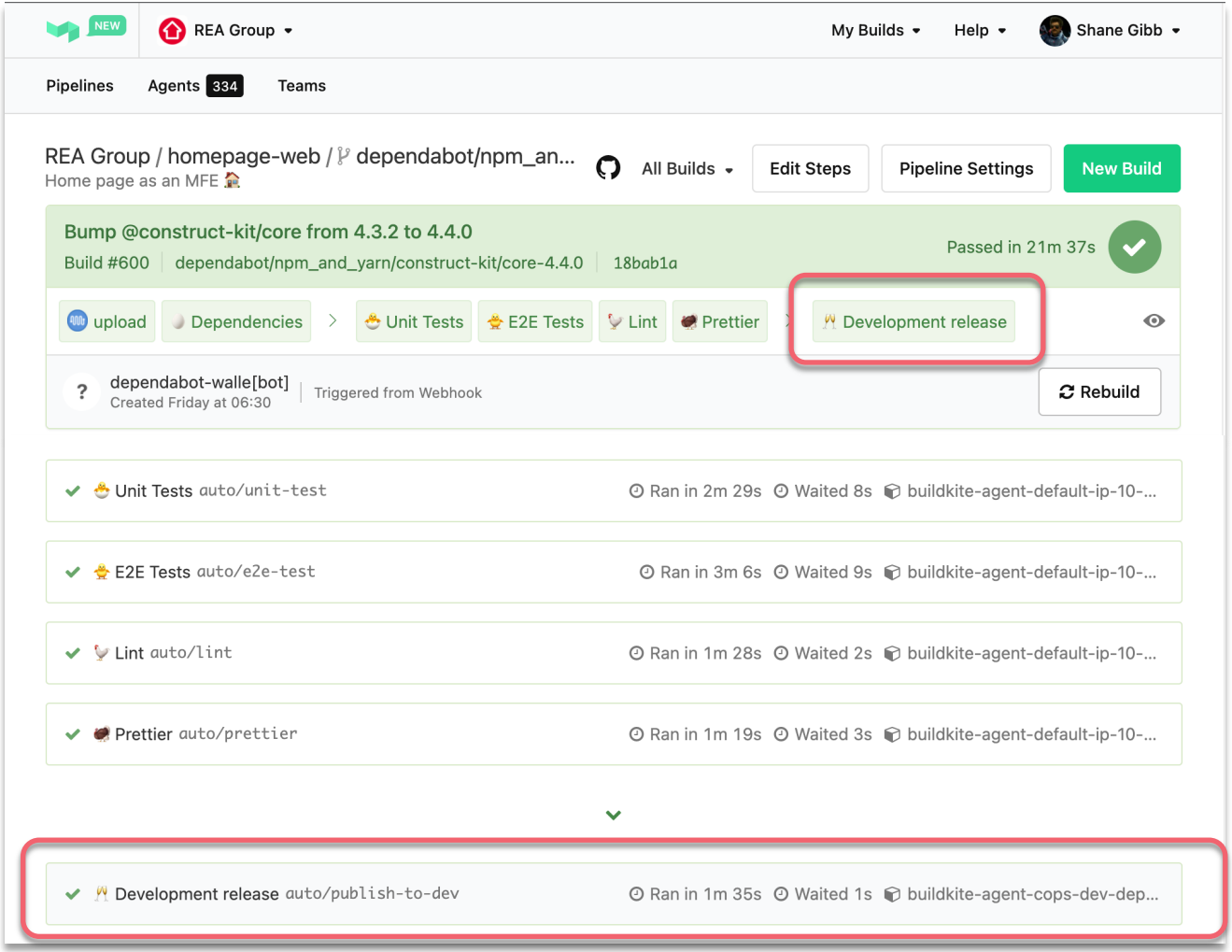


Micro Frontends



https://martinfowler.com/articles/micro-frontends.html

Branch deploys



nvim src/Screen.tsx

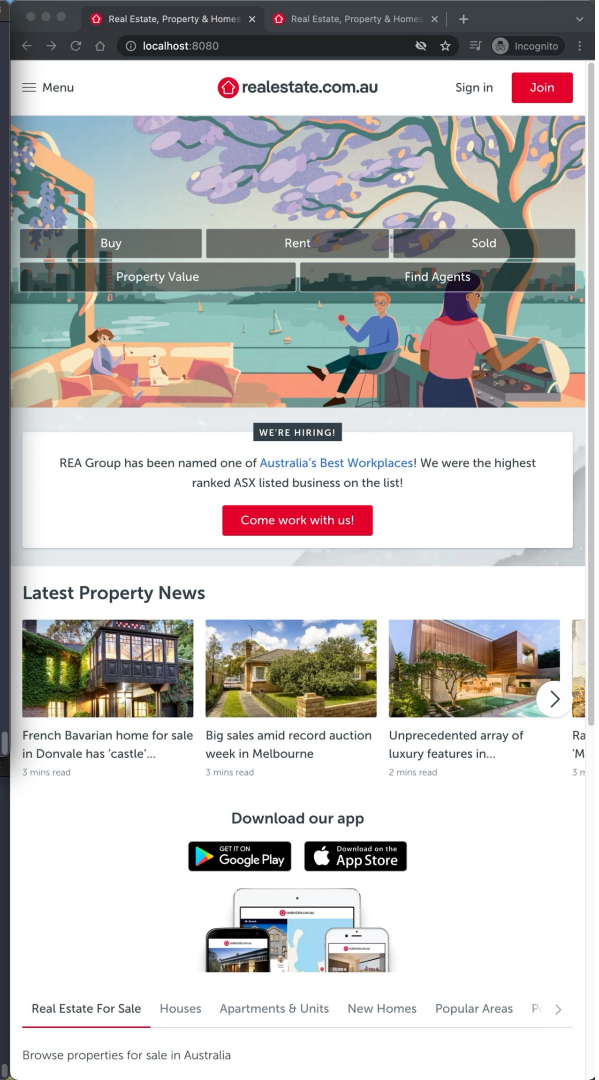
```
`;

const Screen: FC<ScreenProps> = ({ articles }) => {
  useEffect(() => {
    removePrefillData();
    trackPageView();
  }, []);

  return (
    <>
      <PageStyle />

      <Hero>
        <ChannelHeader />
      </Hero>

      <HomeLoanAd />
      <PropertyNewsList articles={articles} />
      <MobileAppAd />
      <SeoFooter />
      <DesktopLink />
    </>
  );
};

export default Screen;
```

1 yow-demo src/Screen.tsx

"src/Screen.tsx" 58L, 1466C written

npm run start

```
                                                  Asset      Size  Chunks             Chunk Names
                    devices-0c4b020d9eb5aec3c5463251203014ff.webp  14.7 KiB          [immutable]
                     devices-4214591be88c6ea27e7b73ad3d1919cd.png  96.5 KiB          [immutable]
           download-appstore-7f4fcdc5b6d5ab5b7c2208b1ef1e9114.svg  8.59 KiB          [immutable]
         download-googleplay-79c369bcef40c2f8514c8d1519b46723.svg  10.6 KiB          [immutable]
   finex-homepage-tile-bg@2x-e6a56f827064a762dfebf3f60f8f1103.webp  2.27 KiB          [immutable]
    finex-homepage-tile-bg@2x-e9754e8ab049fe2e9f3100313527e280.jpg  12.4 KiB          [immutable]
                                                 node-home.js  5.83 MiB    home              home
                     web_lrg-42a6ca728fe32ed5be8ea33b187df766.jpg   233 KiB          [immutable]
                    web_lrg-6f506ae429237a124627270a1bc908fd.webp   124 KiB          [immutable]
                    web_sml-b19bb7f51b21488a566ac8d6cdf0eb5e.webp  53.7 KiB          [immutable]
                     web_sml-c15ed454aa9cc91e0e4c67723f38ae93.jpg  89.2 KiB          [immutable]
   Entrypoint home = node-home.js
No issues found.
```

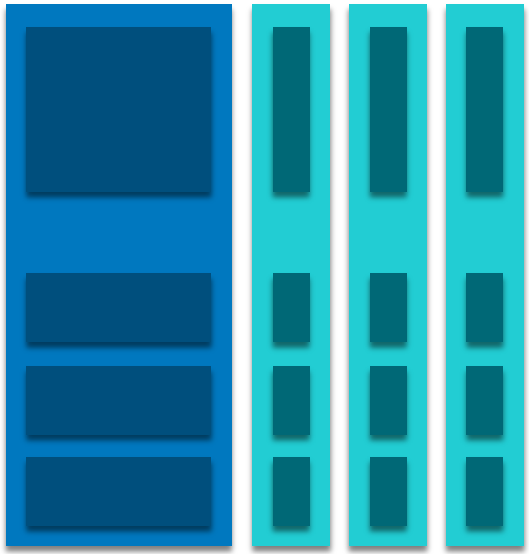


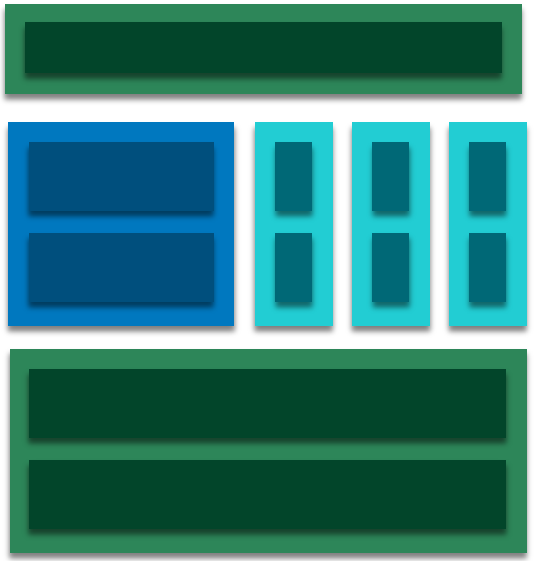
Web Platform

Monolith

Micro UIs

Micro Frontends





Used for 56% of realestate.com.au experiences

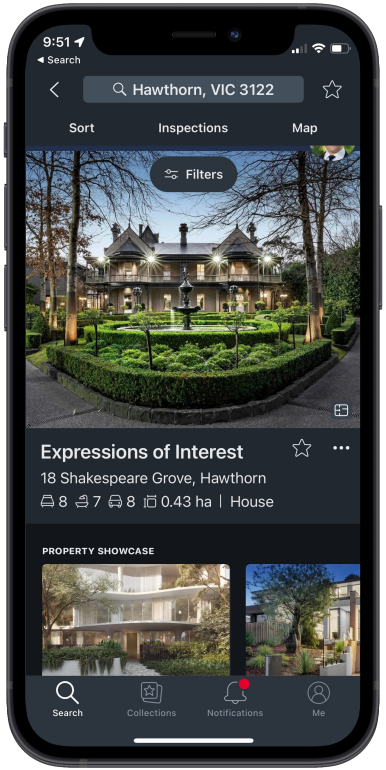
Powers 28% of realestate.com.au frontends

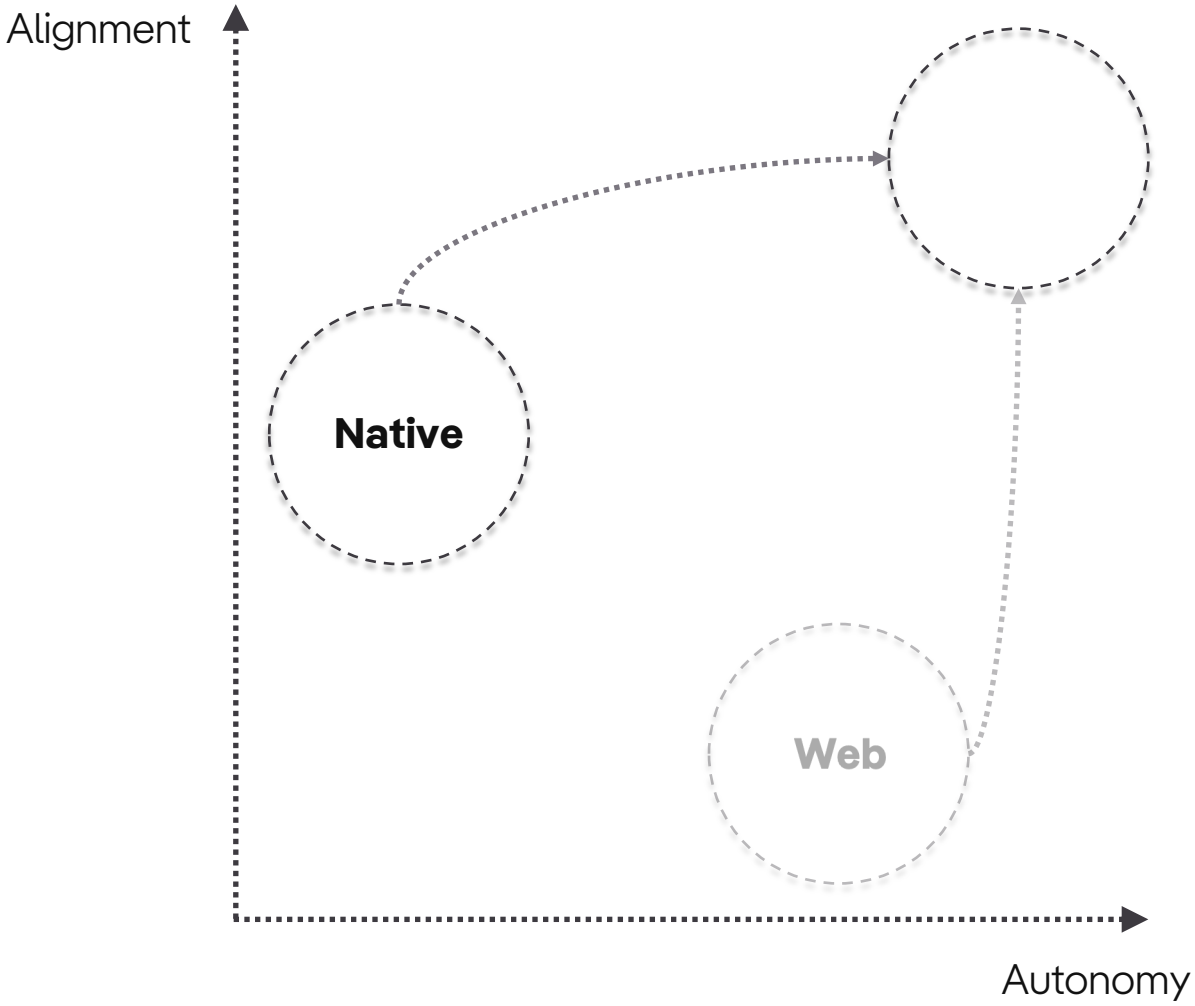
Saved an estimated 213,000 hours of effort

30-40% less code required after migration

60% faster build and deploy cycle

- Scaling journey
- Web platform
- **Native platform**
- Future direction
- Lessons

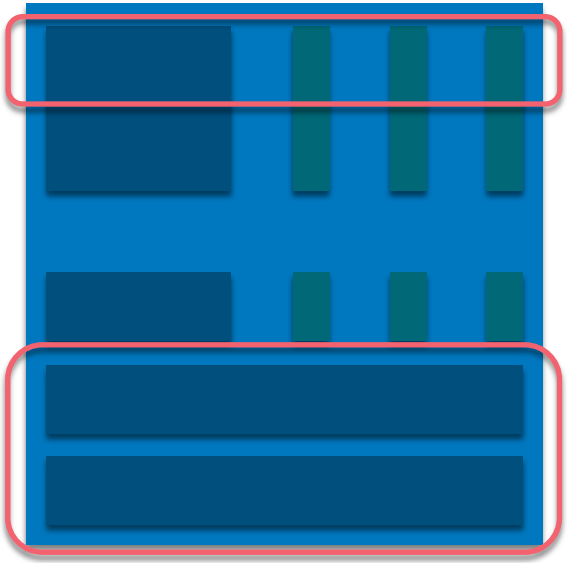



Alignment
Native
Web
Autonomy

Native Platform

Monolith

Modules

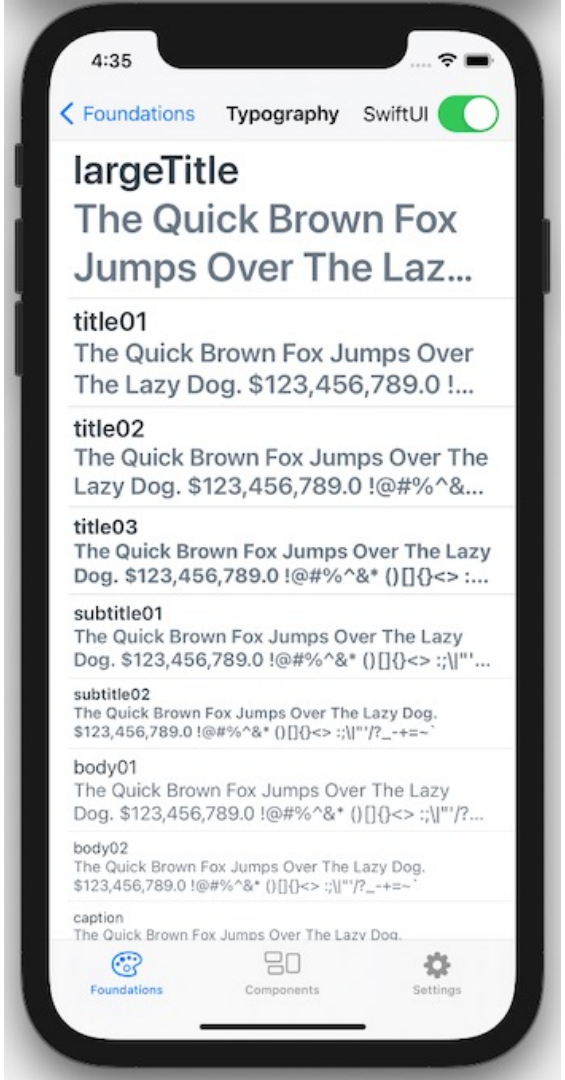


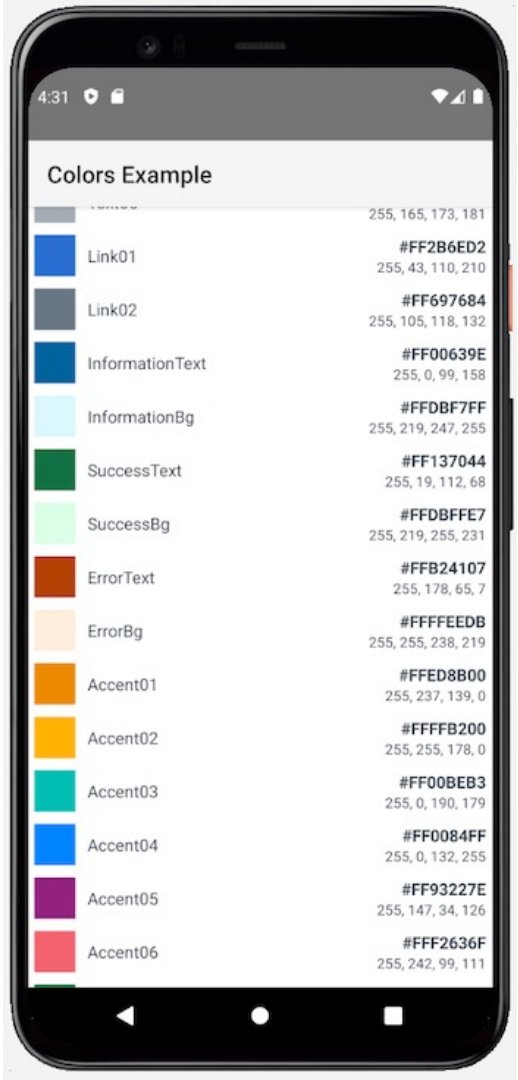
ConstructKit

Nautilus

ConstructKit

Use standalone demo apps for any native mobile libraries.

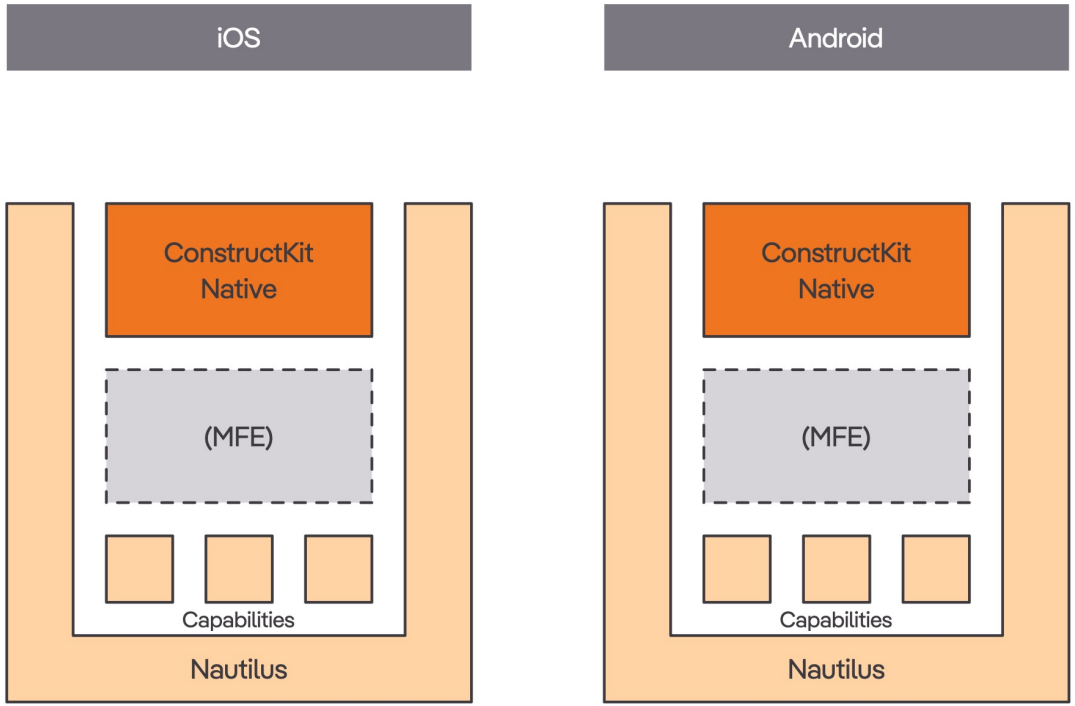




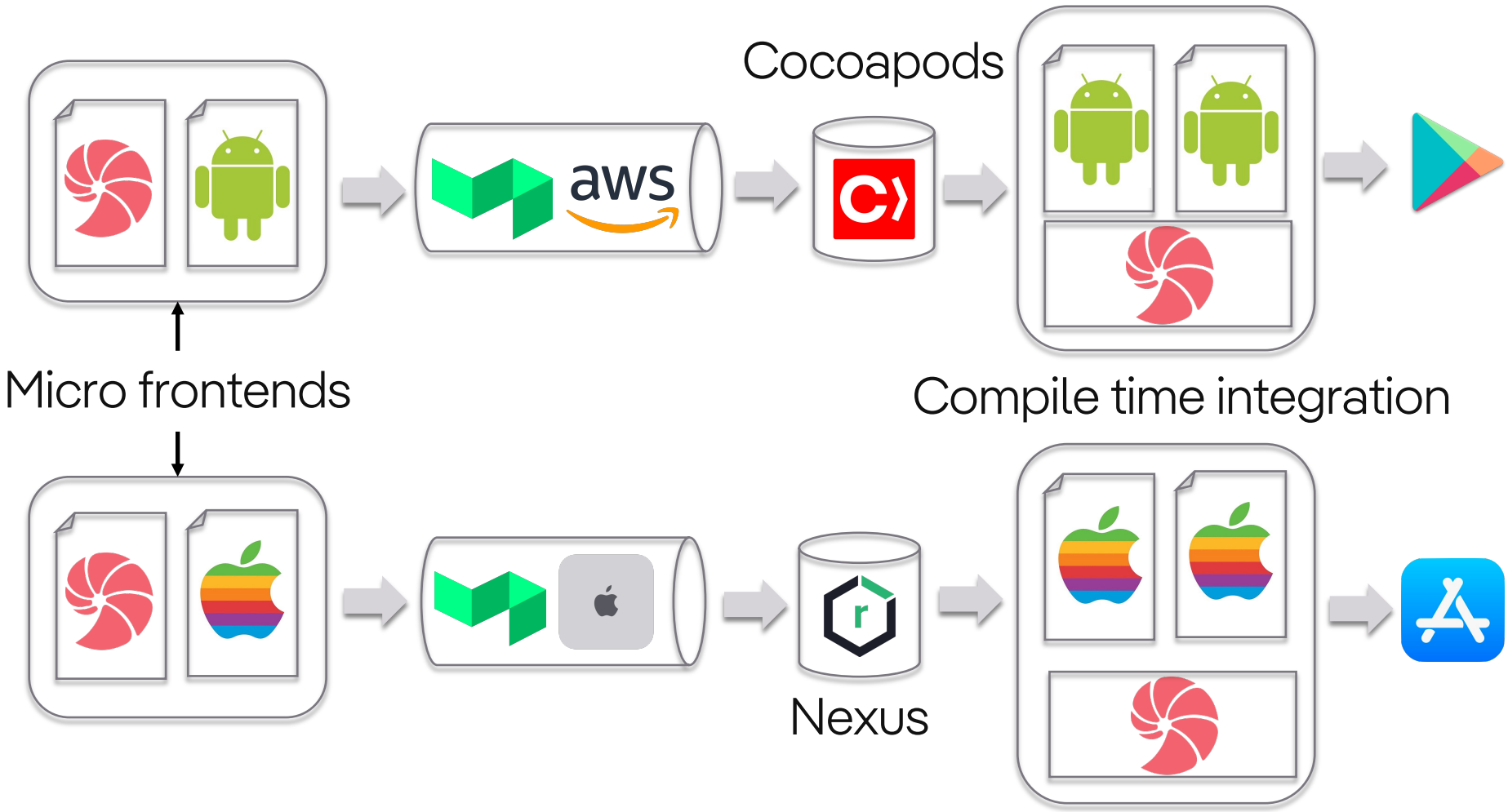
SwiftUI

Jetpack
Compose

Nautilus



- Capabilities
- Micro Frontends
- Tooling


Cocoapods
aws
Micro frontends
Compile time integration
Nexus

Native Platform

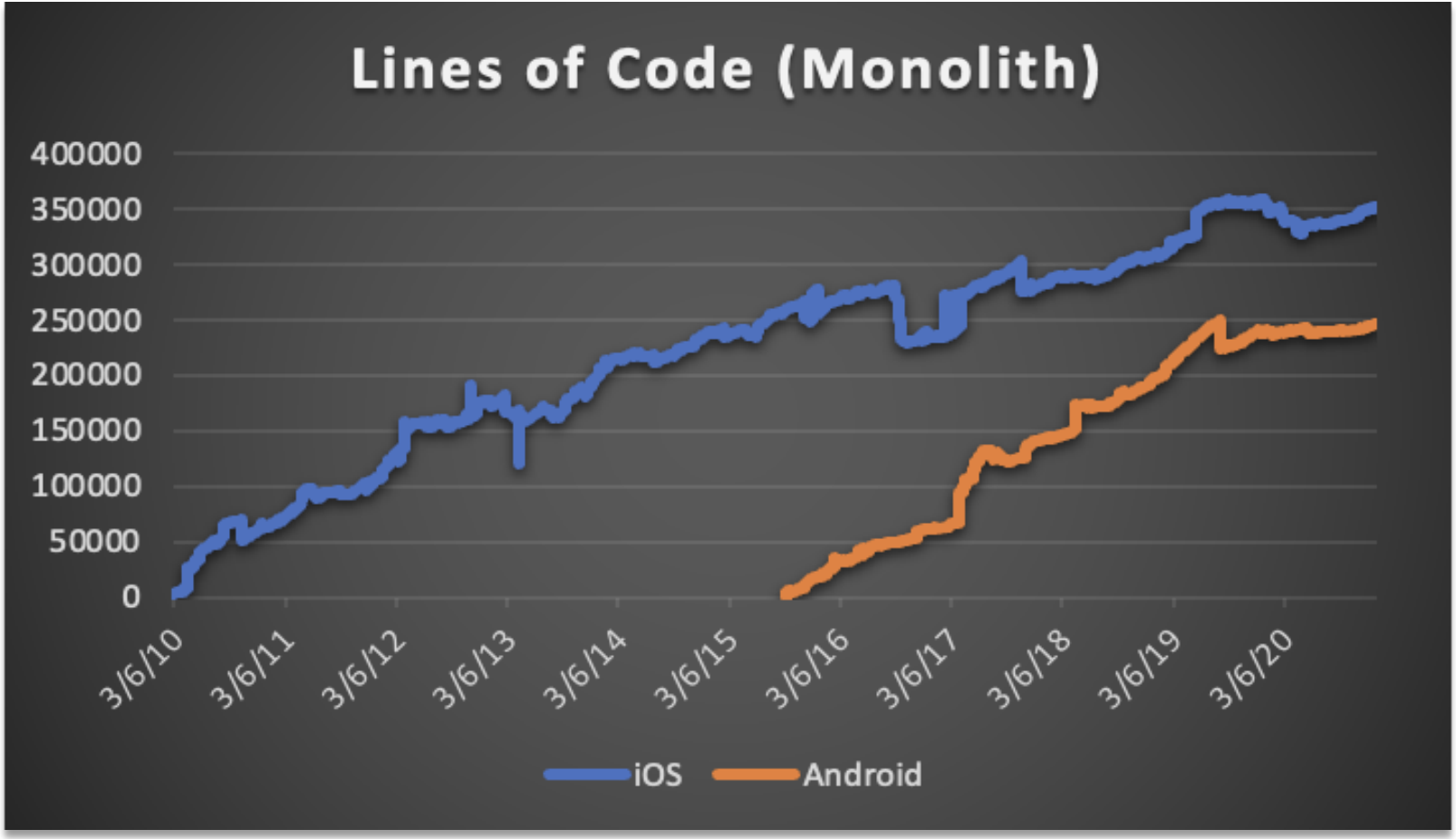
Monolith → Modules → Micro Frontends

Integrated into all our mobile frontends

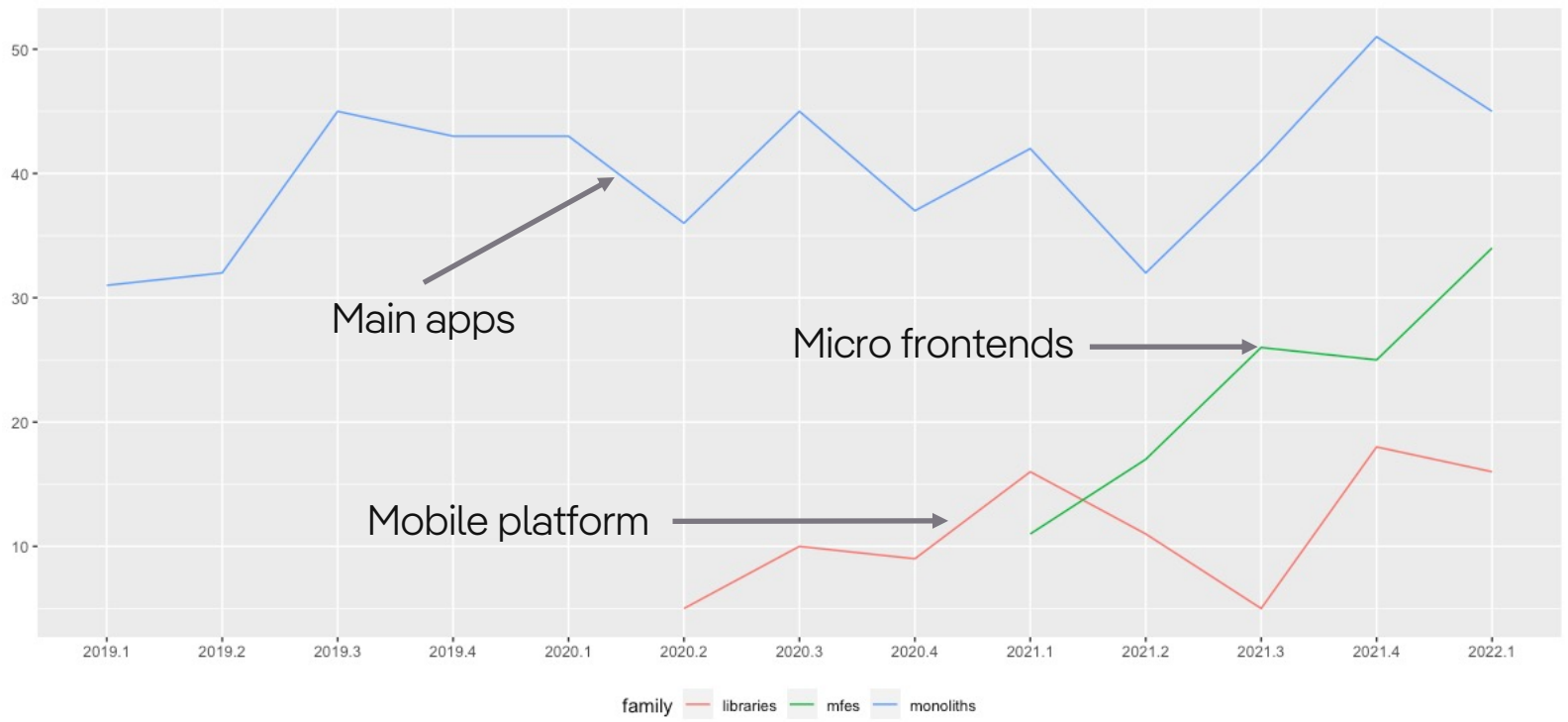
Powers 5 separate micro frontends

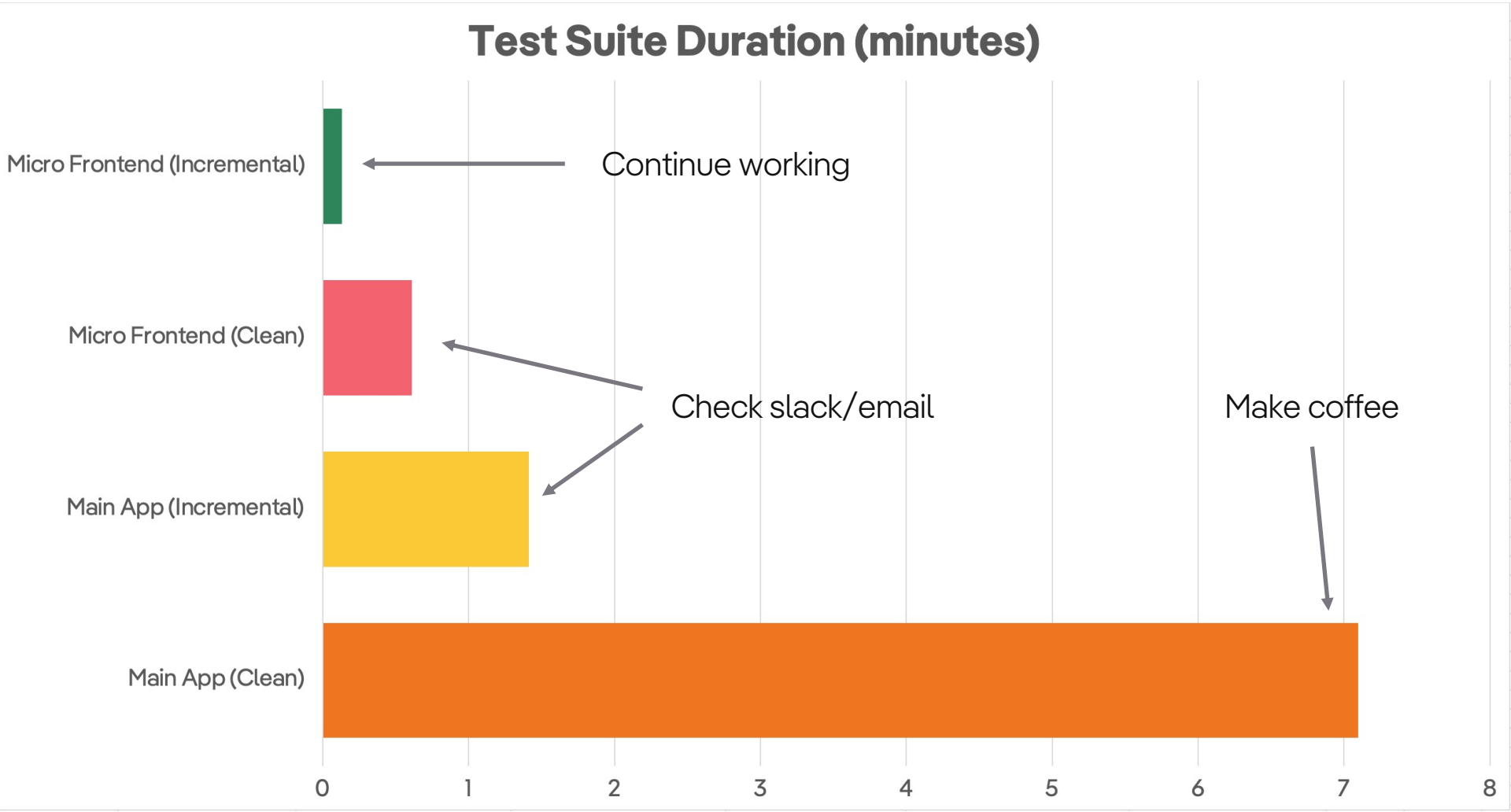
Helping drive visual consistency (and dark mode!)

Fast feedback with fast local and CI build times

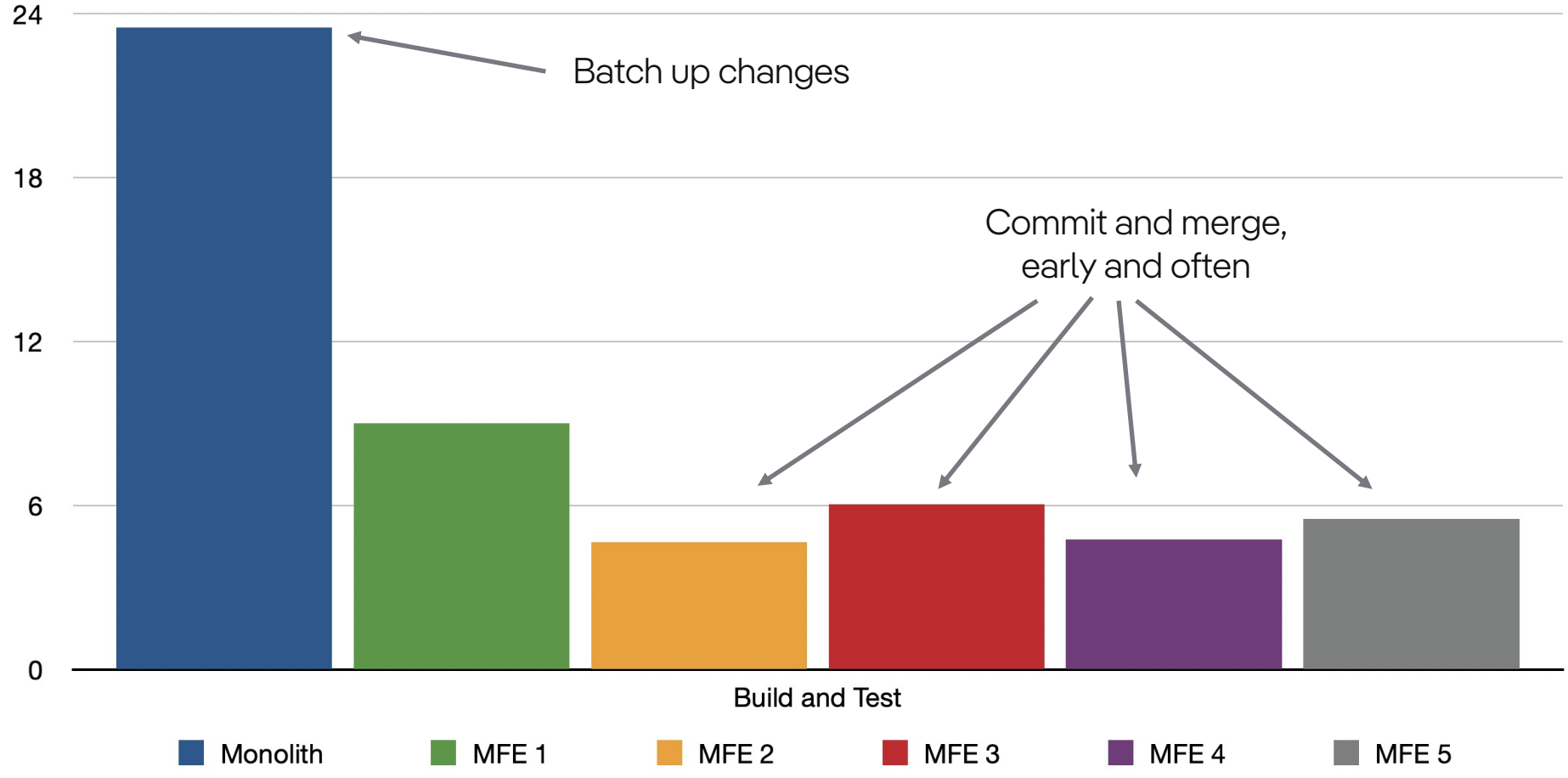

Lines of Code (Monolith)
400000
350000
300000
250000
200000
150000
100000
50000
0
3/6/10
3/6/11
3/6/12
3/6/13
3/6/14
3/6/15
3/6/16
3/6/17
3/6/18
3/6/19
3/6/20
iOS
Android

Authors by type of system




Test Suite Duration (minutes)
Micro Frontend (Incremental)
Micro Frontend (Clean)
Main App (Incremental)
Main App (Clean)
Continue working
Check slack/email
Make coffee
0
1
2
3
4
5
6
7
8

Total build times in CI for Main App vs Micro Frontends



- Scaling journey
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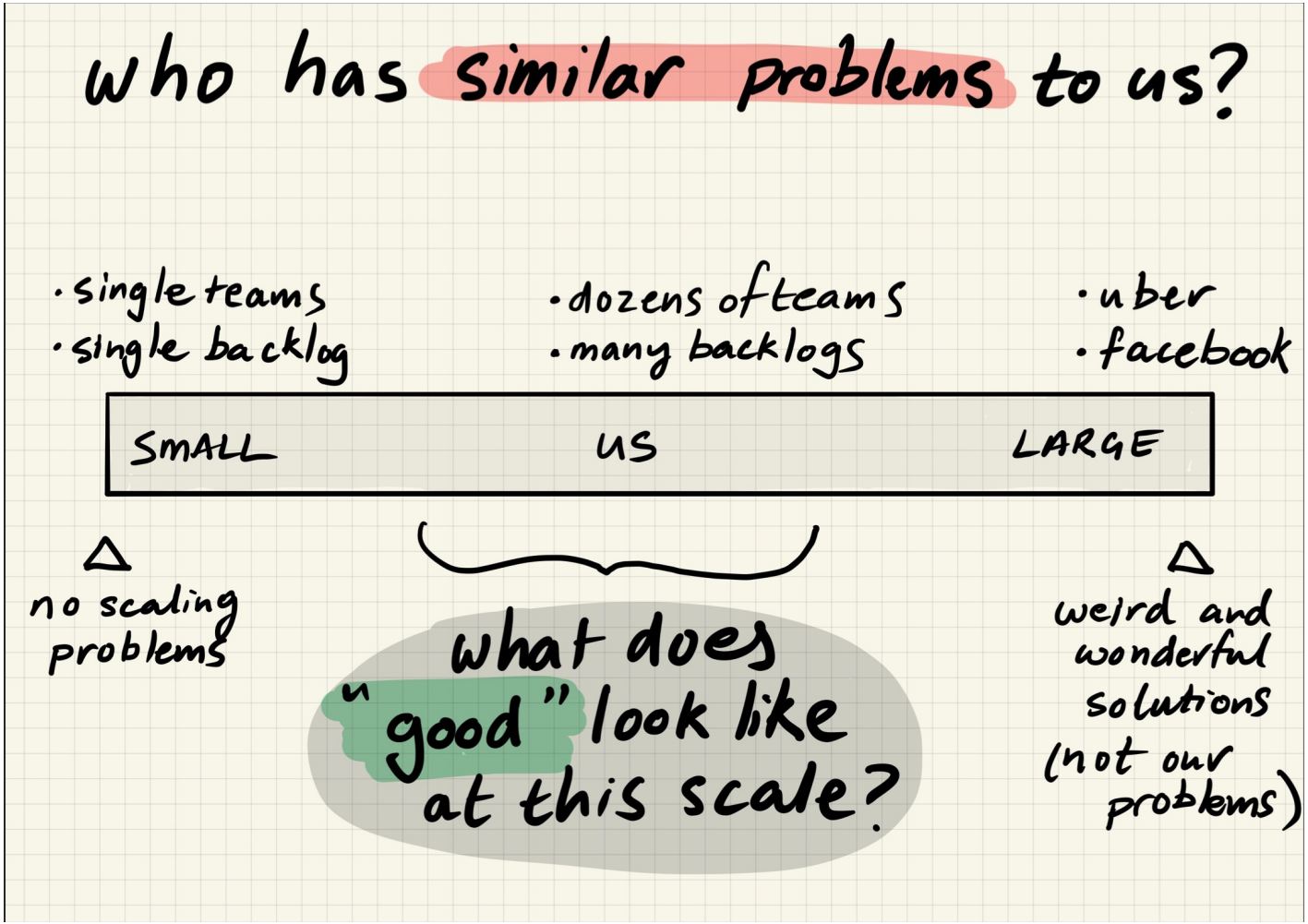
Where to from here...

Adopt: Continue to adopt and build out our frontend platform.

Extend: Move towards building component-based experiences.

Transform: Research Server Driven UI as a future direction.

And keep doing research...



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- **Lessons**

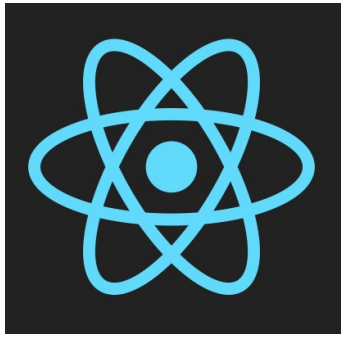
Mike Von, https://unsplash.com/photos/RvM_tS_C7sE

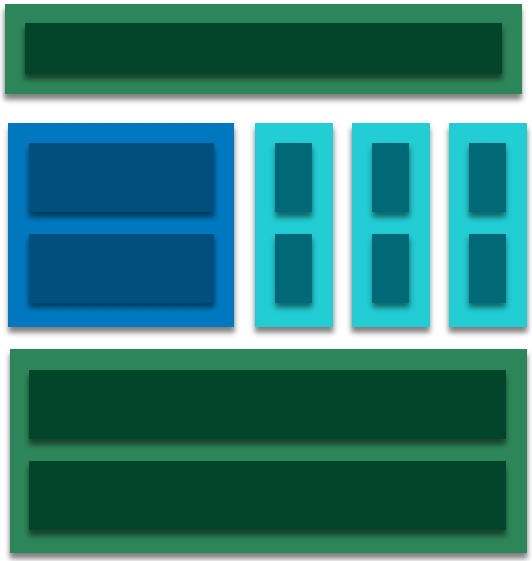
Pick when to adjust your platform strategy.

Treat your platforms as products.

Start with your design system.

Sensible constraints accelerate platform development.





Micro frontends are for organisational scale and decentralisation.

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How frontend platforms are helping us evolve realestate.com.au

Stewart Gleadow
Architect | realestate.com.au | @stewgleadow

REA Group