



Developing at Uber Scale

Uber

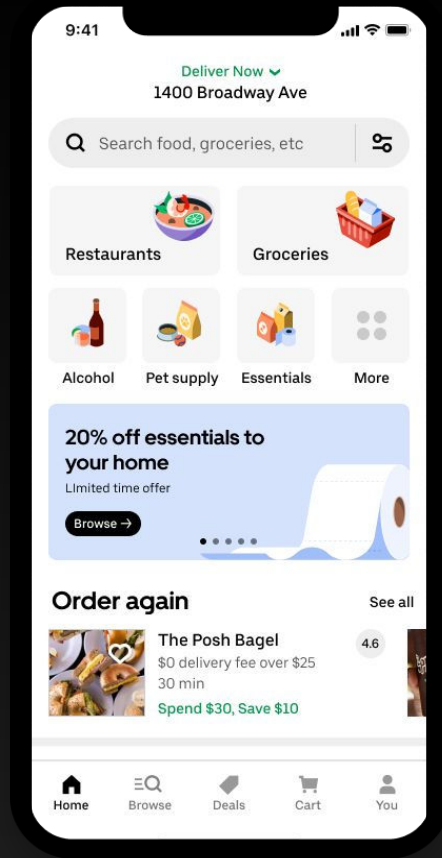
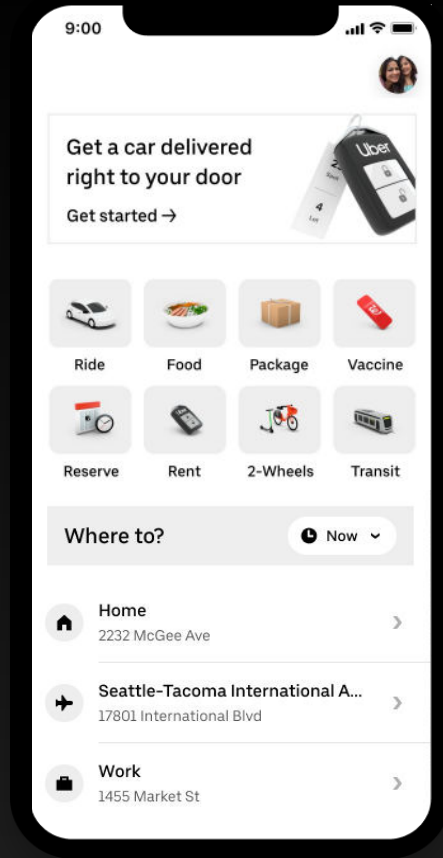
Ali-Reza
Adl-Tabatabai



Uber

Go anywhere Get anything

Uber's mission is to
to reimagine the way
the world moves
for the better.



Uber's global scale

70+

countries

10,000+

cities

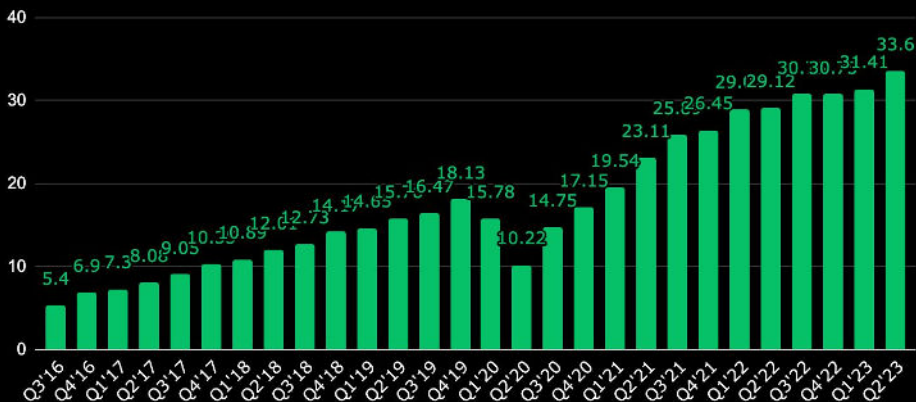
25 MILLION+

trips a day

137 MILLION+

monthly active customers

GROSS BOOKINGS (\$B)



18%

Gross Bookings
Growth YoY



Global tech platform at massive scale

5,000+ microservices

1.8 MILLION CPU cores allocated to
microservices

1 EB Stateful volumes

110 PB online storage

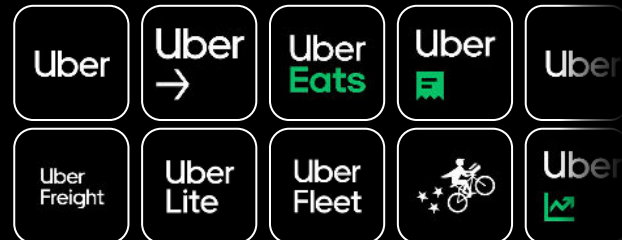
350 PB big data storage

15 Mobile apps

2B User sessions/month

2T Mobile events/month

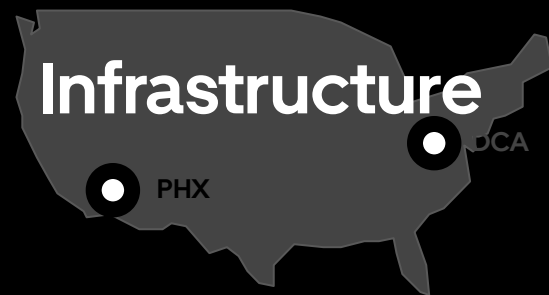
Uber Apps



Microservices



Infrastructure



Development at Uber scale

4,500+

Engineers

10+

Global engineering offices

65_K

Code commits/month

104_K

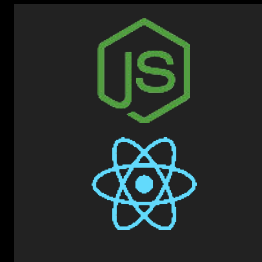
Production deployments/month

100+_M

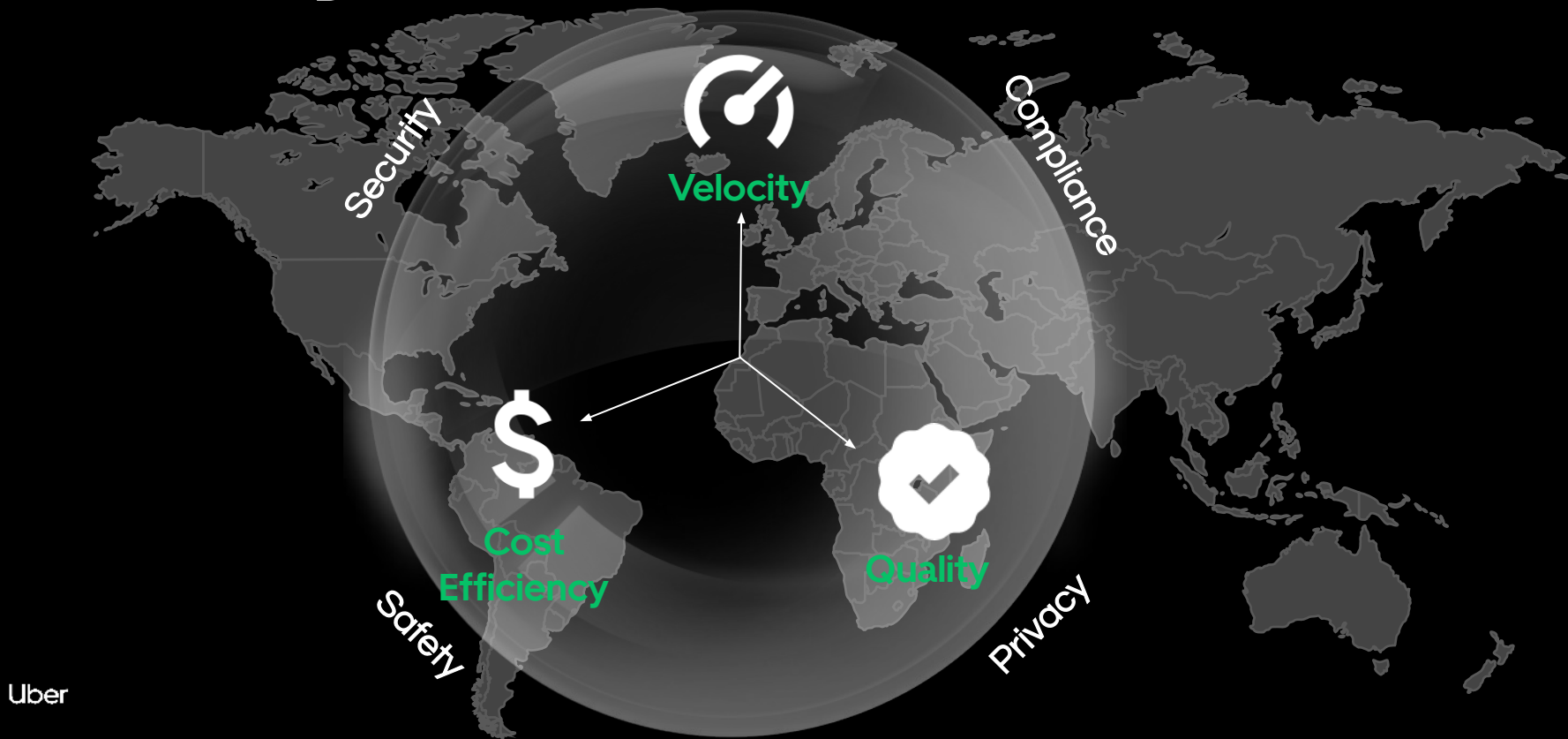
Monorepo LOC

7

Programming languages



Challenges @ scale



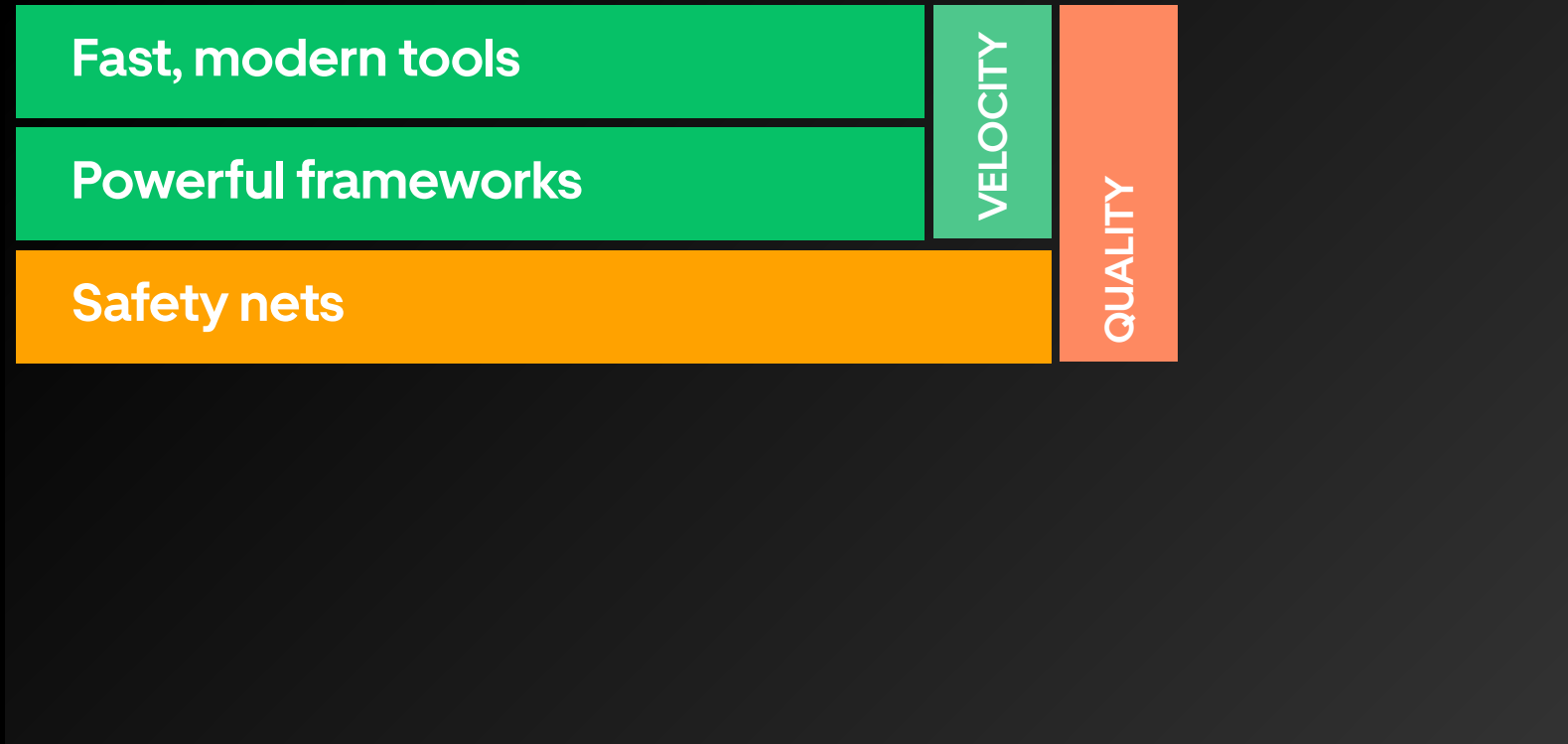
Our developer platform strategy

Fast, modern tools

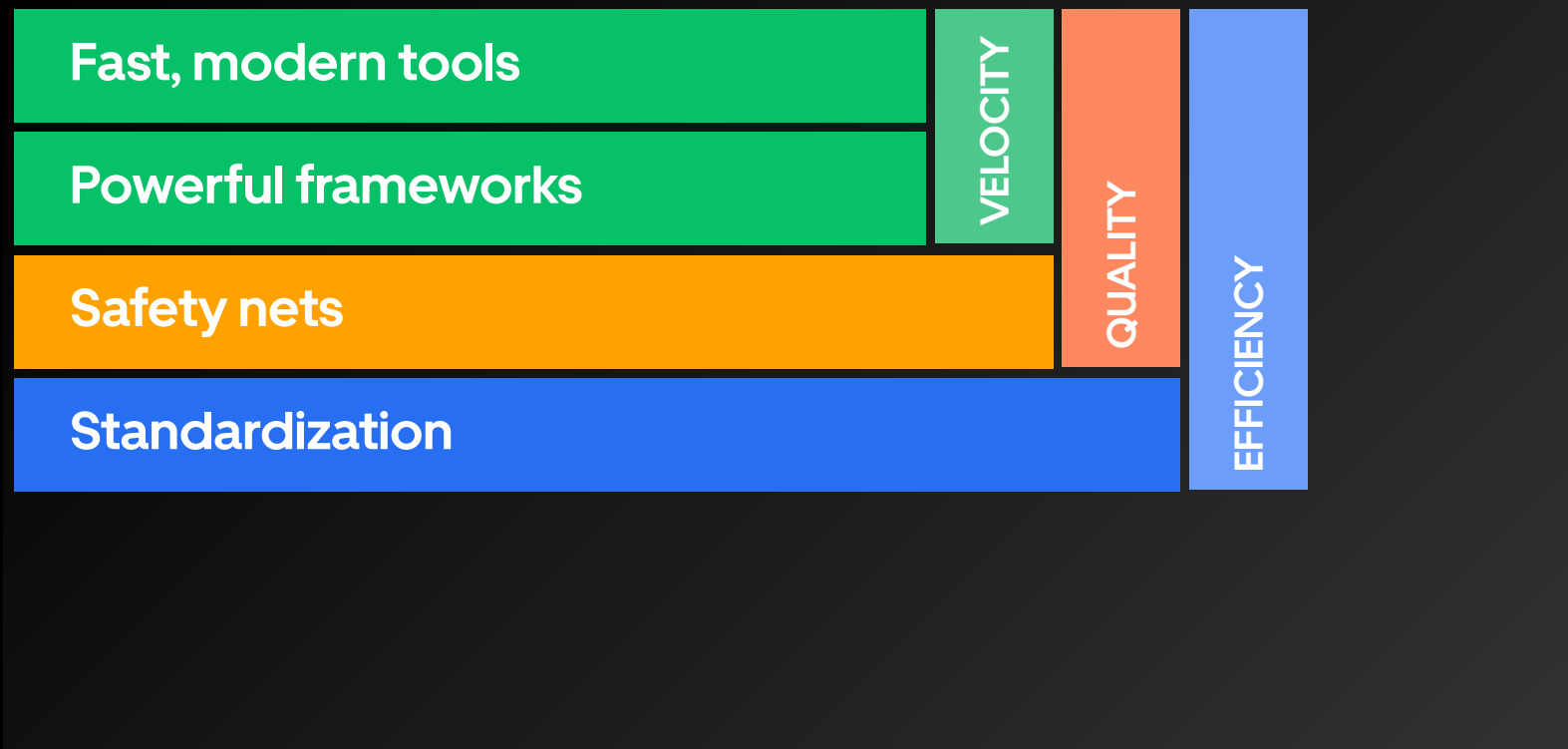
Powerful frameworks

VELOCITY

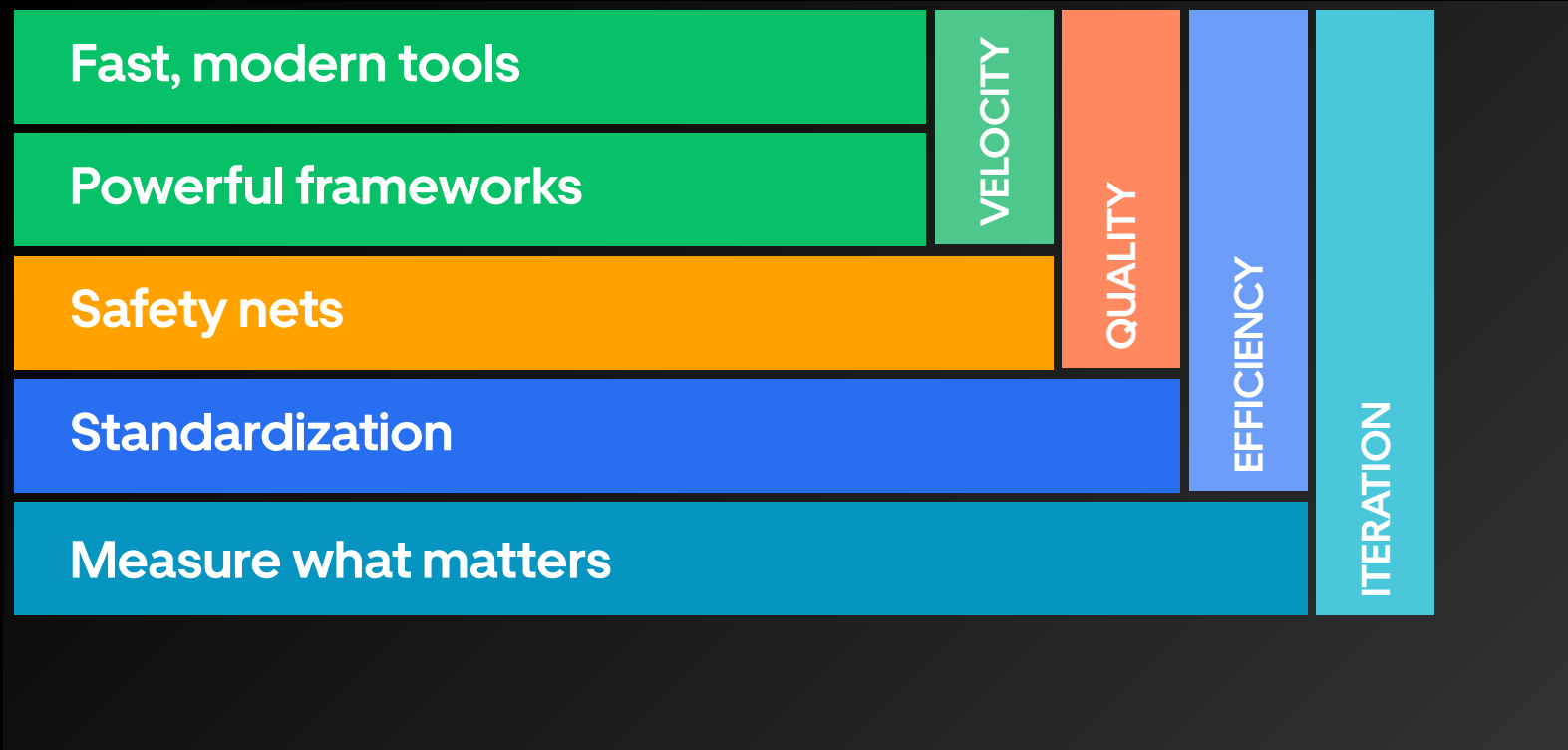
Our developer platform strategy



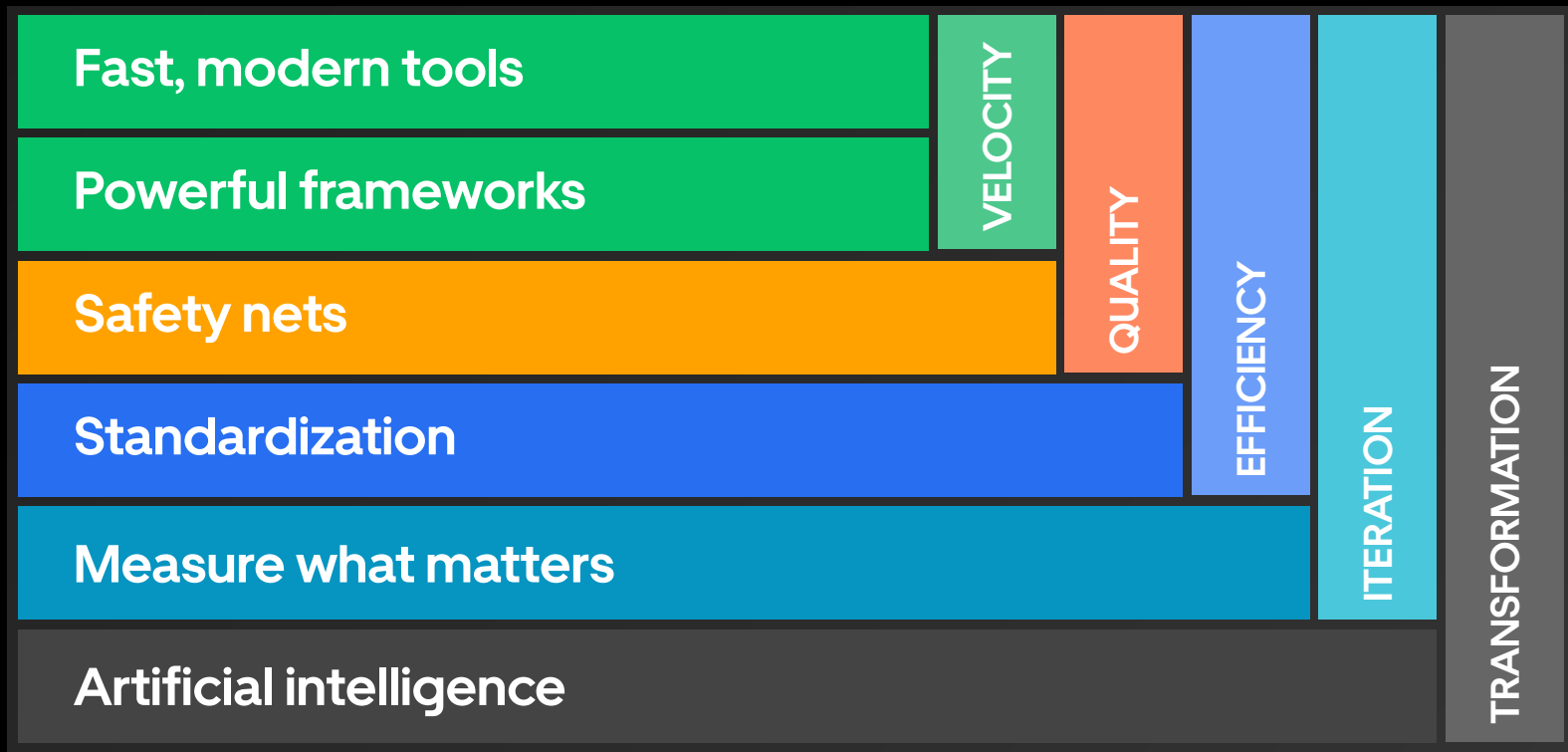
Our developer platform strategy



Our developer platform strategy



Our developer platform strategy



Standardized development

Per platform monorepos & frameworks

Platform teams centrally improve tools and frameworks, and support all engineers

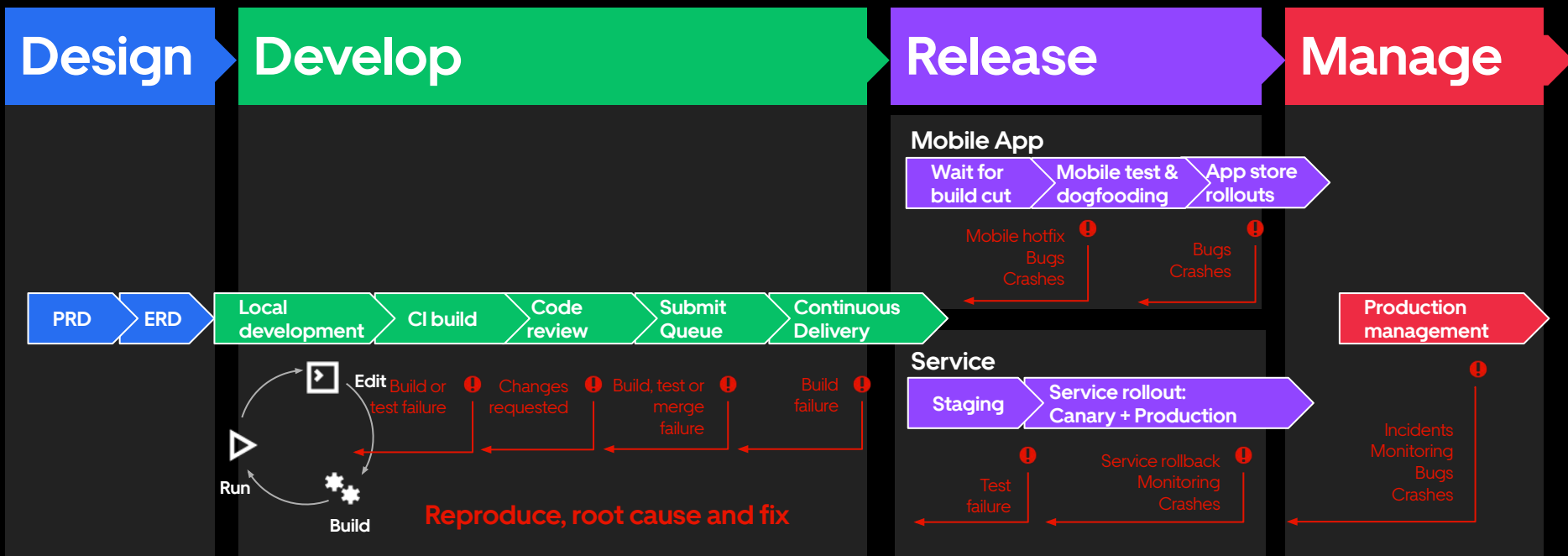


Standardized development environment

Developers move quickly using standardized cross-platform tools and frameworks



Standardized developer workflow



Developer workflow optimization

Reduce Latencies

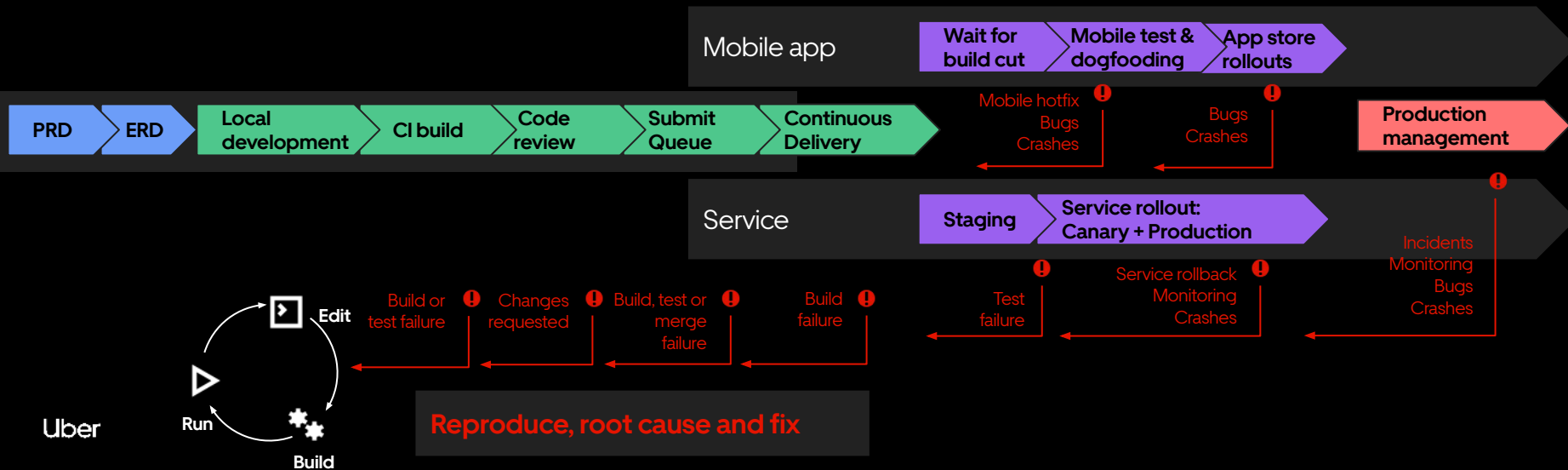
Speed up tools & automate workflows

Reduce impact of failures

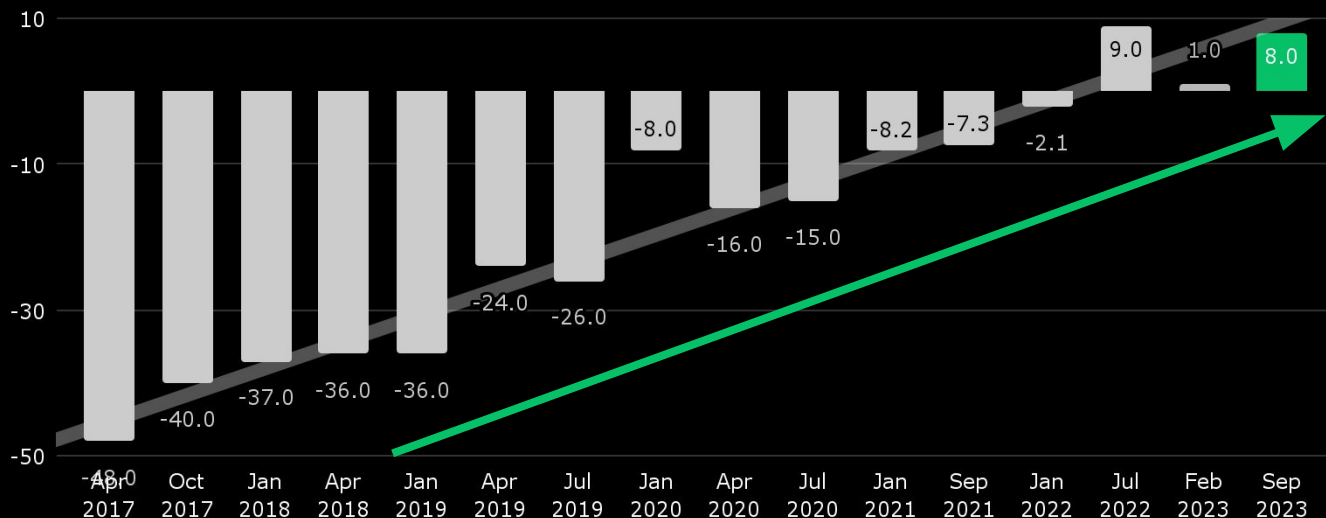
Shift left, increase SNR & improve debugging

Improve productivity

Increase uninterrupted focus time and team autonomy



Developer Satisfaction (NPS)



Top themes

Quality

- Testing
- Debugging

Daily dev experience

- Tool speed & reliability
- IDEs

NPS QUESTION

On a scale of 0 to 10, how likely are you to recommend Uber's development environment to other engineers?

Our experience using code assistants

29%

Acceptance
rate

1.4

LOC per
accepted code

75%

Feel more
productive

6.0

NPS score
for Copilot

Internal survey results

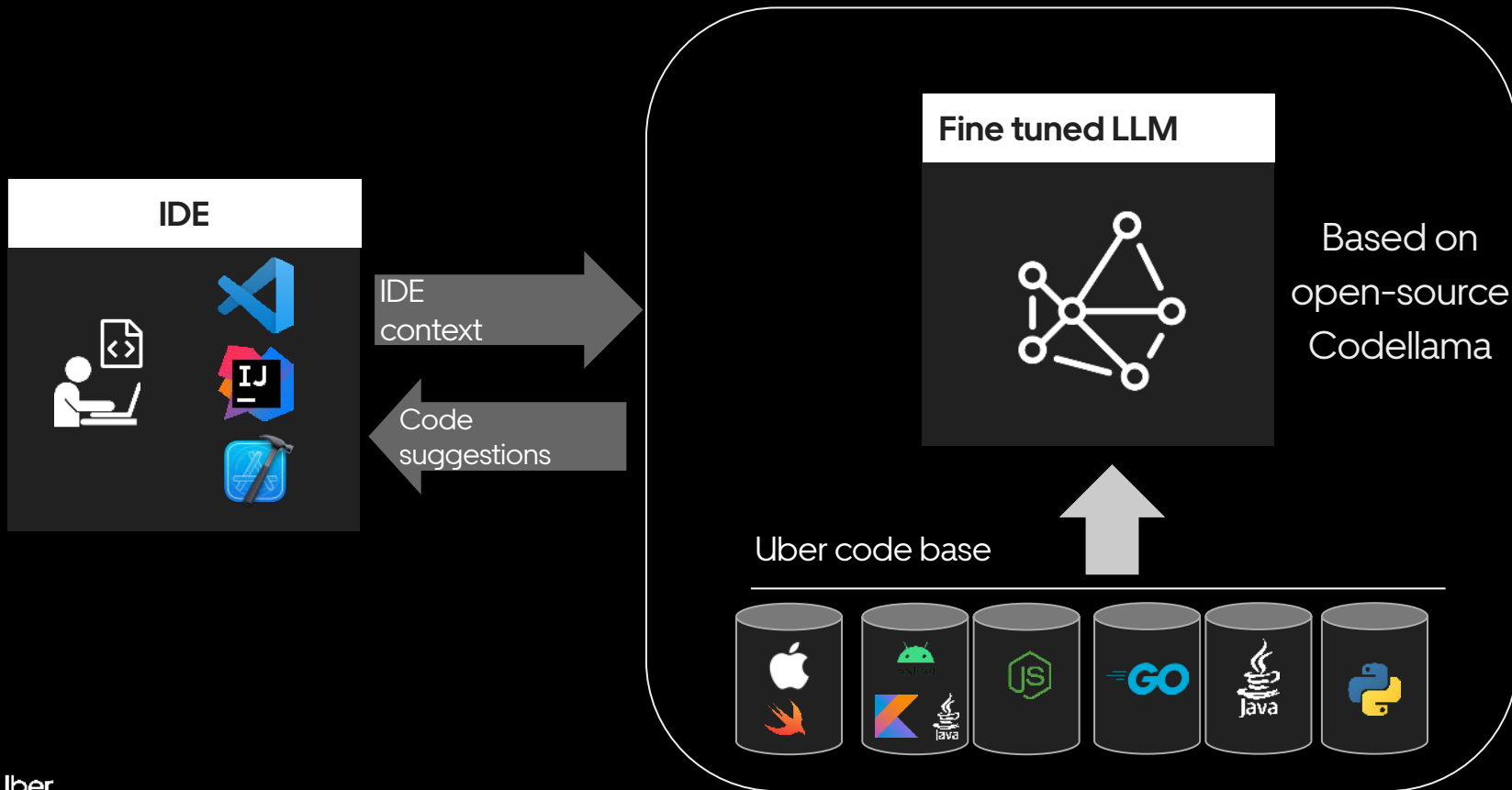
- + Effective for simple boilerplate code and tasks

Copilot is really useful for writing 1-2 lines of straightforward / repetitive code

- Code suggestions frequently need further editing

It frequently has small misses. I find myself usually double-checking Copilot's work for longer than it would have taken me to just write that work myself.

Uber Code Assistant



Uber tech-wide Hackdays

700+

Participants

100

Projects demoed

6

Sites around the globe

3

Broad categories

Product experience



Developer productivity



Business operations

Impact of errors in code

Sorry, that extra \$35 you got in your Uber account was a mistake

[Clint Henderson](#)

Dec. 26, 2021 · 3 min read

Incident in 2021 due to MisusedWeekYear

“Week year” is intended to be used for week dates, e.g. “2015-W01-1”, but is often mistakenly used for calendar dates, e.g. 2014-12-29

```
@SuppressWarnings("MisusedWeekYear")
private static final DateTimeFormatter IDEMPOTENCY_DF=
DateTimeFormatter.ofPattern("MM_YYYY");
```

7K

Java errors / week

15min*

Dev time / error

Automatically fixing errors in code



3.5K

Errors auto-fixed / week*

875

Dev hrs saved per week*

Automatically improve code quality

Suggest fixes in the IDE & local builds

Code corrections while writing it



 Auto-fix suggestions within the IDE

Fix new errors in PRs

Create a PR

Write initial code



Review & approve changes




 Suggest an automatic fix

Continuously fix tech debt in the existing code base



Review & approve changes



 Generate Pull requests with fixes

Automatic app testing



✦ AI generated
mobile test flow

Eliminates costly
test maintenance

Higher quality,
less effort

Takeaways

Standardization

improves
efficiency at
scale

Measure what
matters

AI unlocks
exciting new
opportunities

Stay connected



Ali-Reza
Adl-Tabatabai



An aerial, top-down view of a city street scene. The image shows a grid of streets with numerous cars and buildings. The buildings have various roof colors, including blue, grey, and brown. There are trees with some autumn-colored leaves scattered throughout the scene. The overall lighting is somewhat dim, suggesting an overcast day or late afternoon. The text "Thank you!" is centered in the middle of the image in a large, white, sans-serif font.

Thank you!