



# *Software Unplugged*

💪 Rewriting the Rules with Local-First Software ⚡



Software Unplugged

***Brooklyn Zelenka @expede***



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[github.com/expede](https://github.com/expede)



Software Unplugged

**Brooklyn Zelenka @expede**

- ♦ Senior researcher at Ink & Switch
  - ♦ Leads the local-first access control team
- ♦ Editor @ UCAN Working Group
- ♦ Prev. spent a lot of time in P2P, IPFS, and Ethereum
- ♦ PLs and DS are my jam 🙌



[github.com/expede](https://github.com/expede)



Local-First

# ***Bottom Line Up Front***

## Seven ideals for local-first software

1. No spinners: your work at your fingertips
2. Your work is not trapped on one device
3. The network is optional
4. Seamless collaboration with your colleagues
5. The Long Now
6. Security and privacy by default
7. You retain ultimate ownership and control



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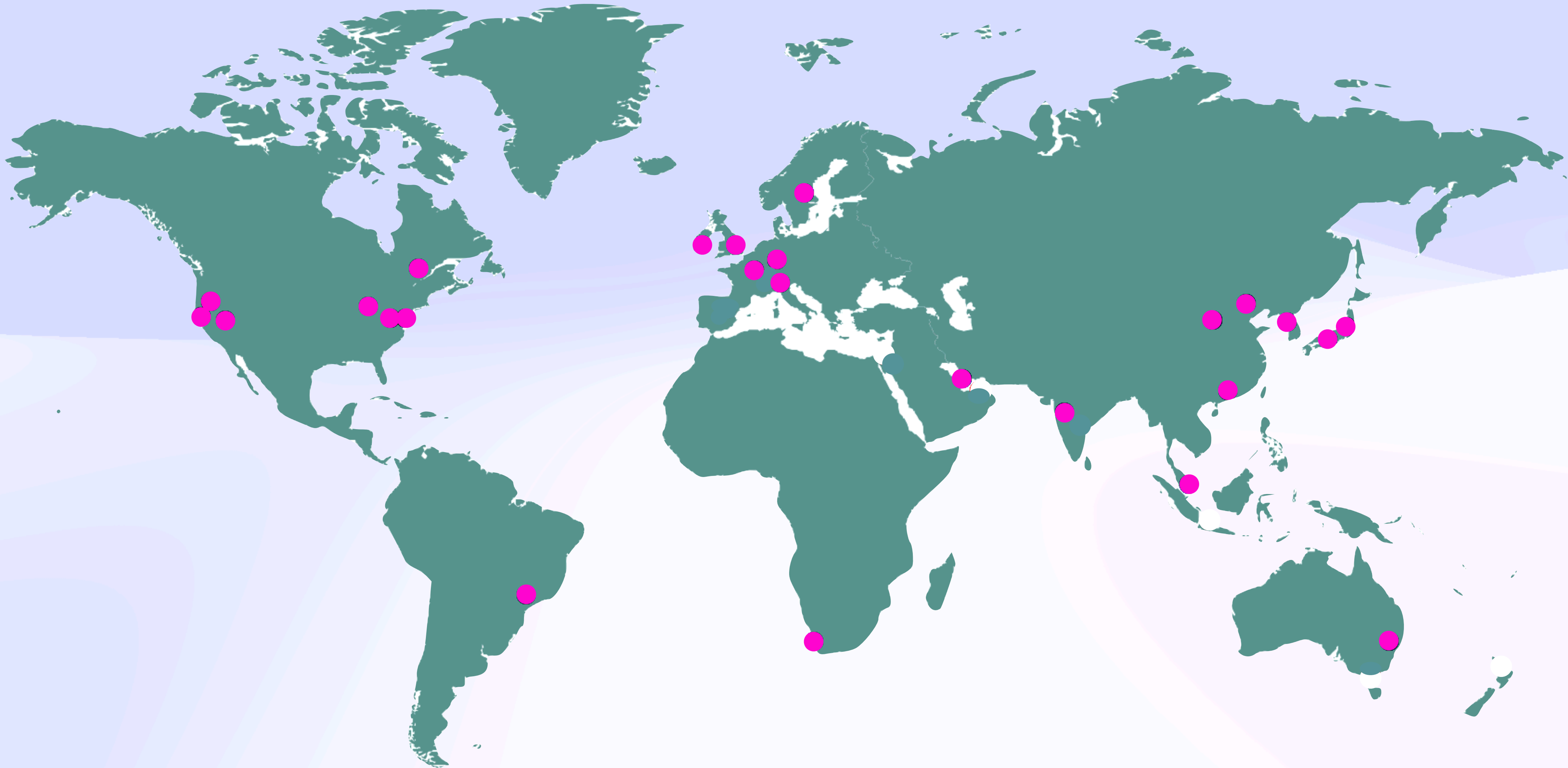
# ***Economic Weight Class***

 One Size Does Not Fit All 



Economic Weight Class

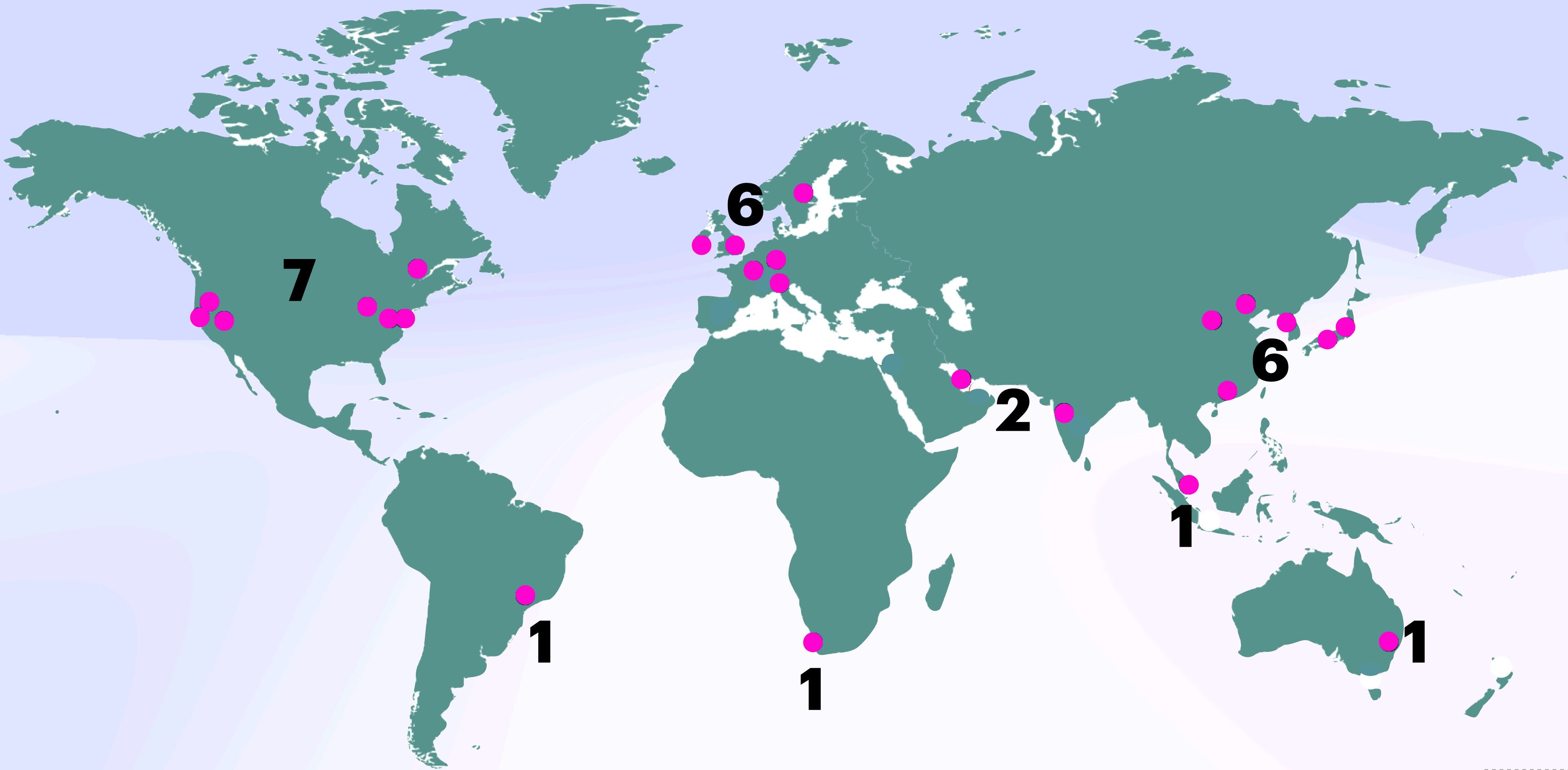
*Users vs Cloud Infra*





Economic Weight Class

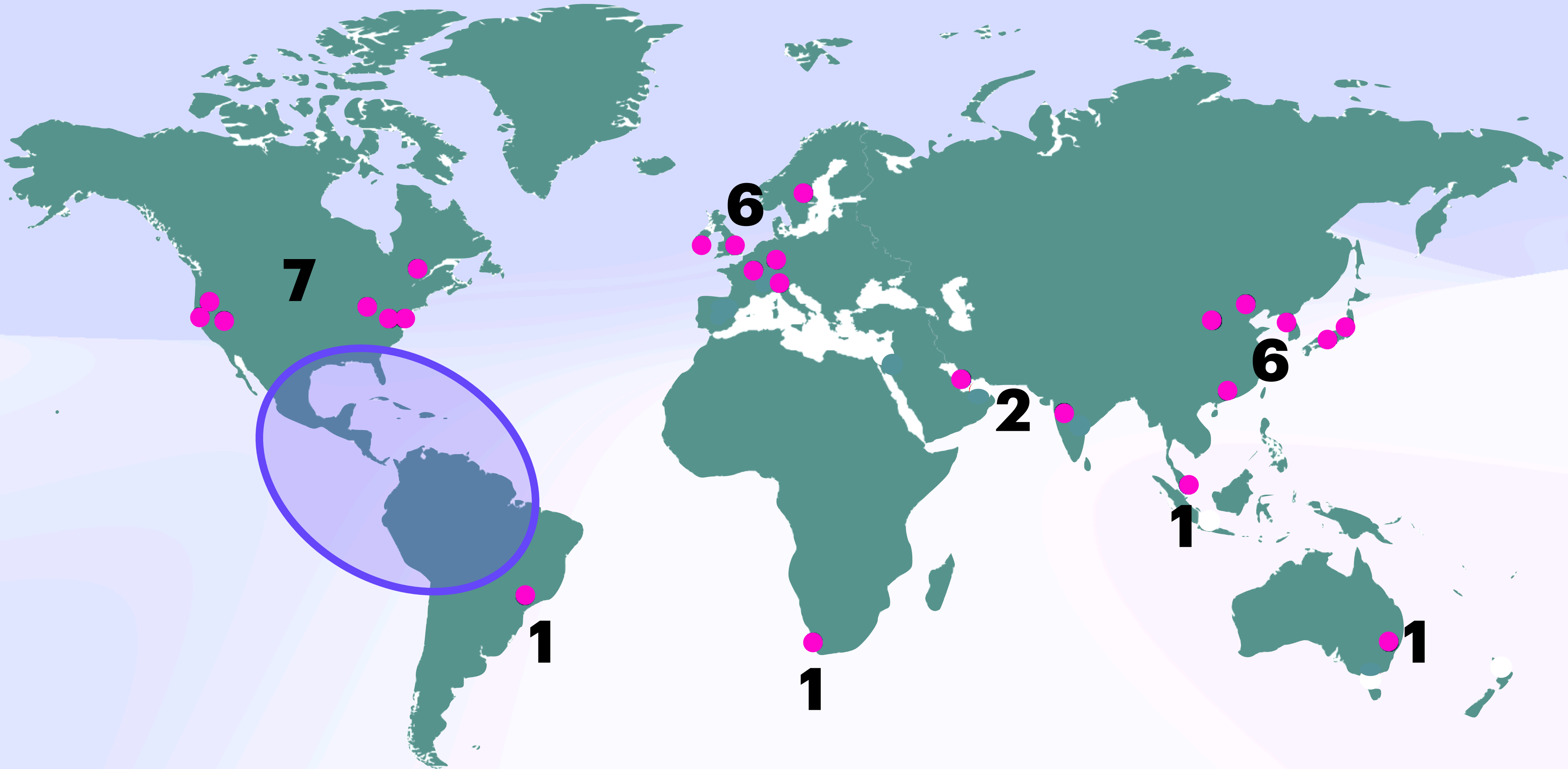
*Users vs Cloud Infra*





Economic Weight Class

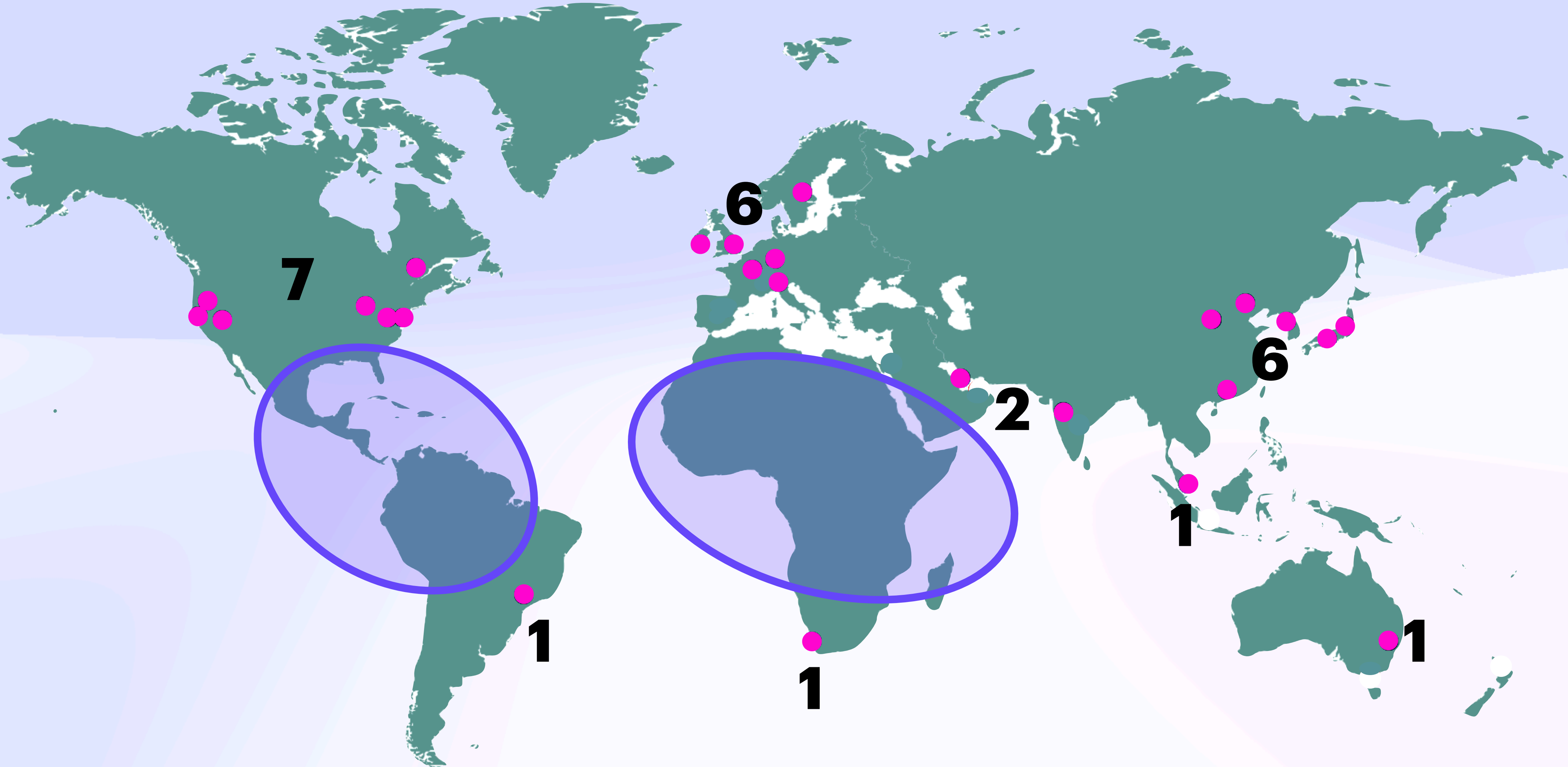
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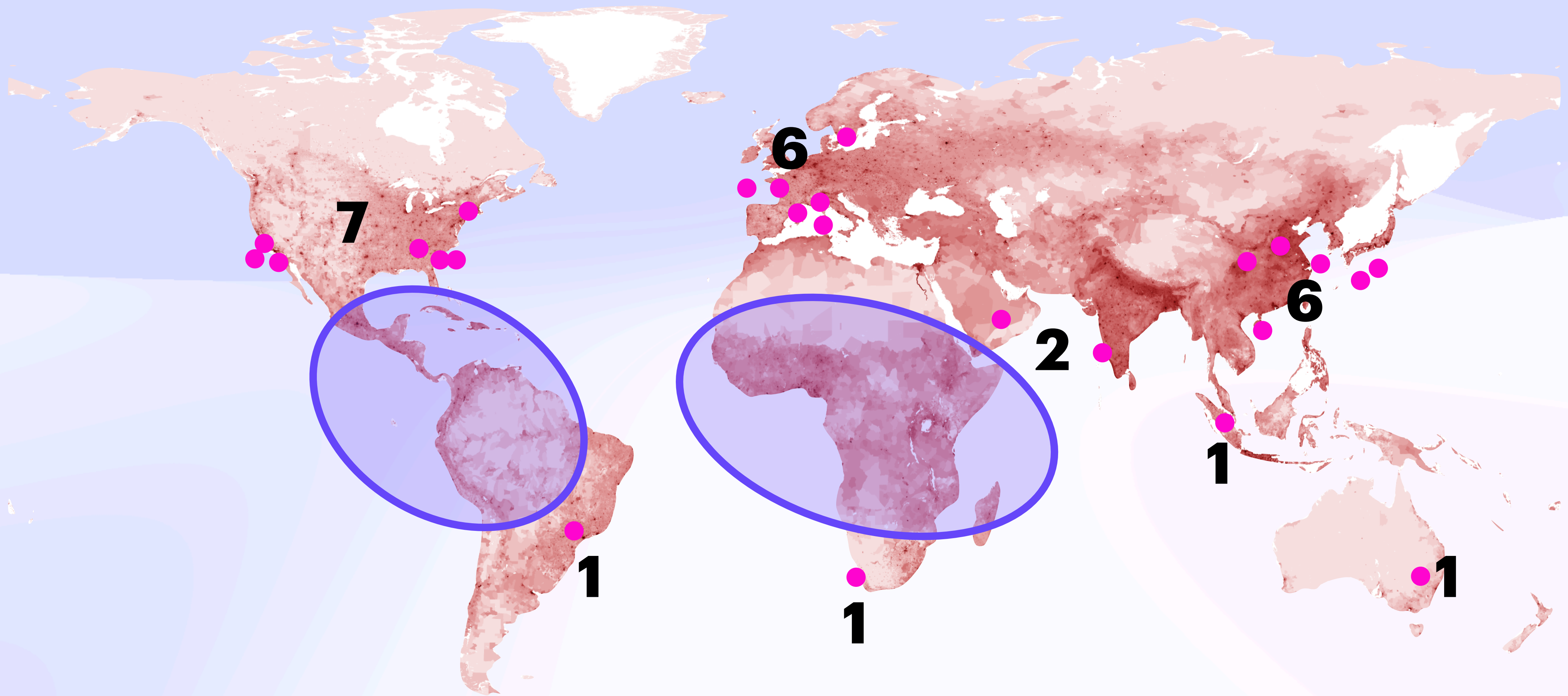
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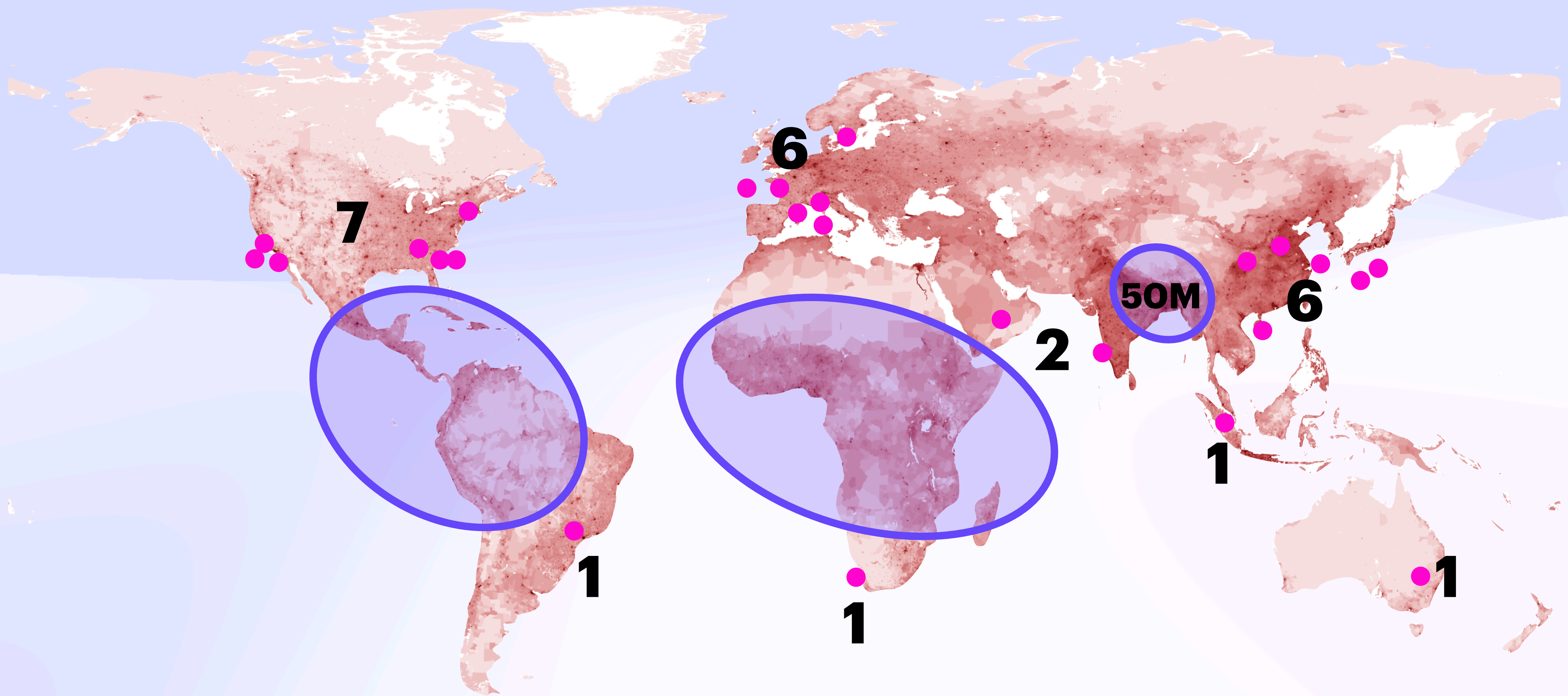
***Users vs Cloud Infra***





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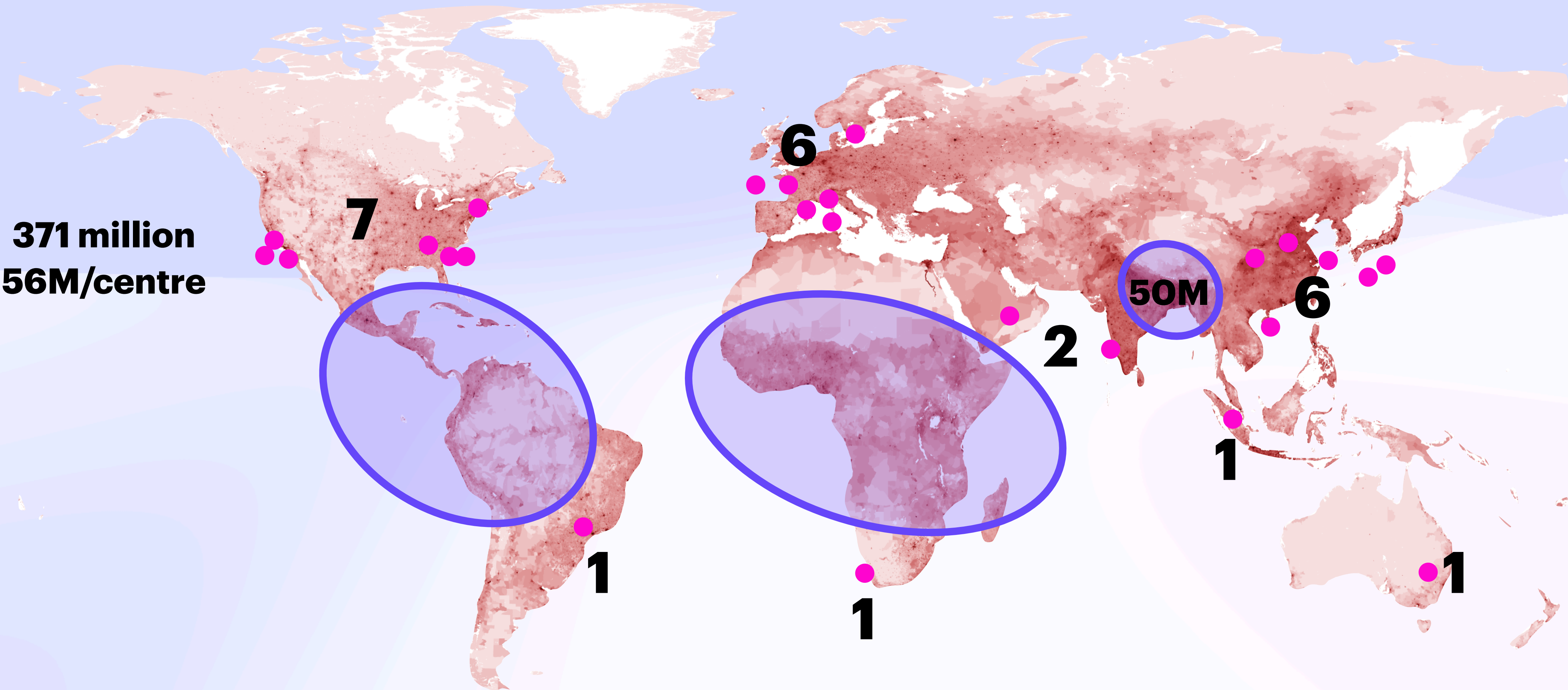
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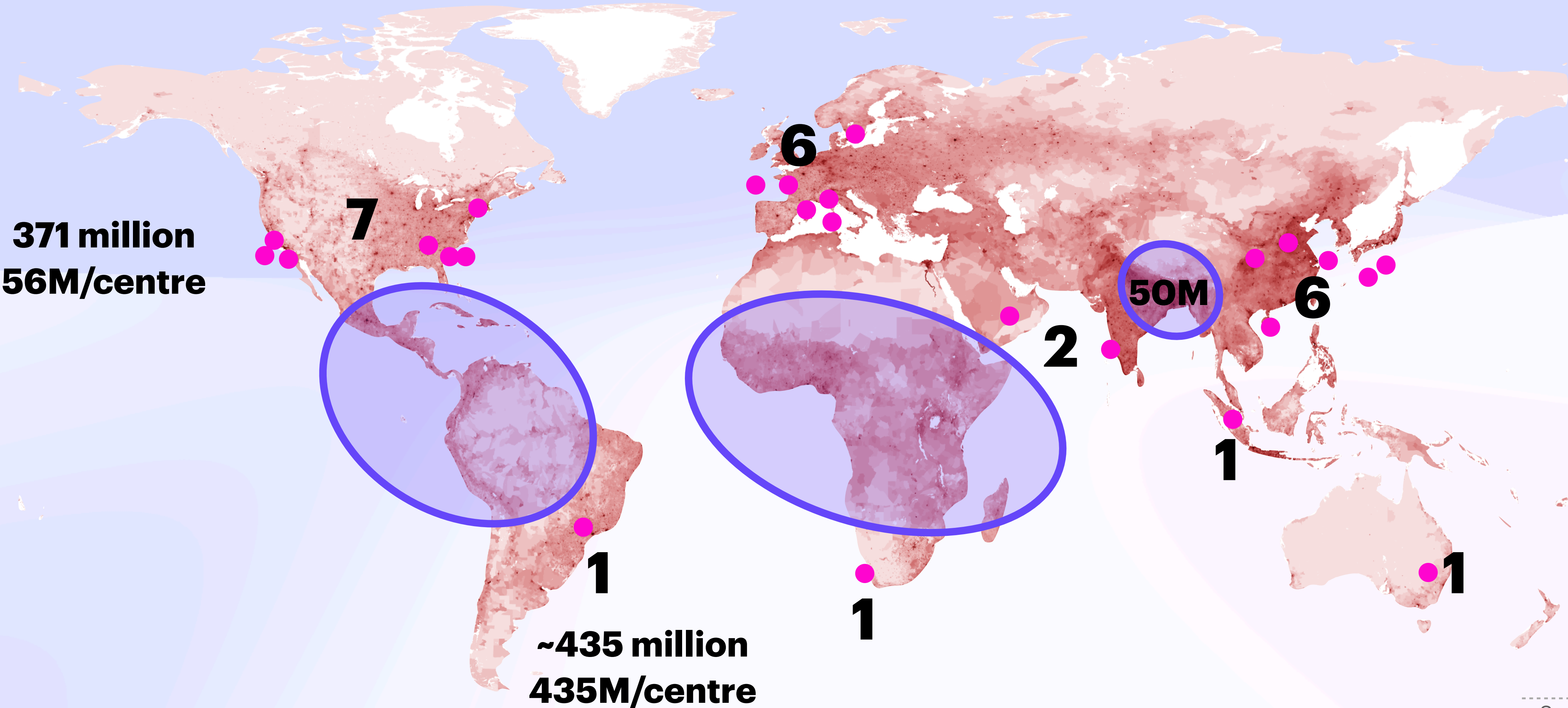
## *Users vs Cloud Infra*





# Economic Weight Class

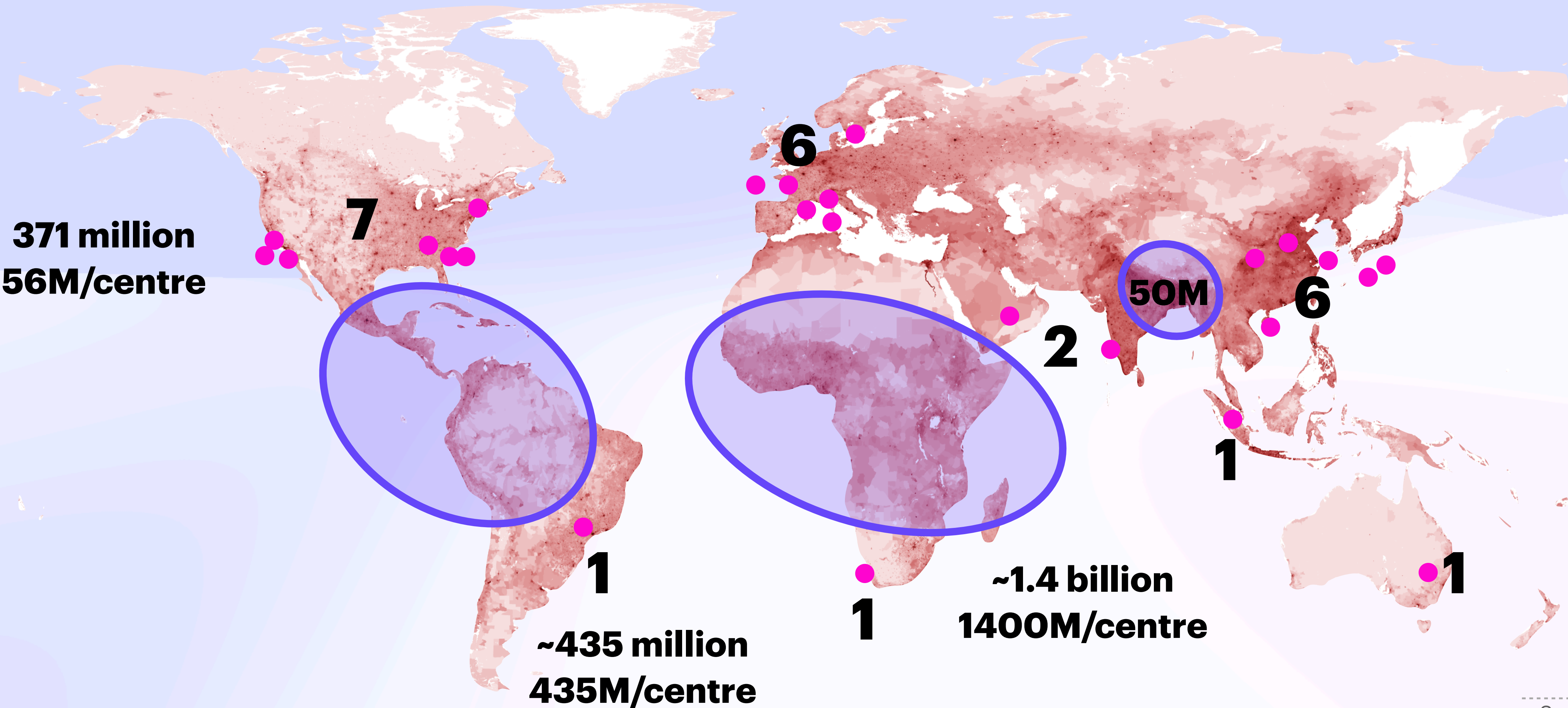
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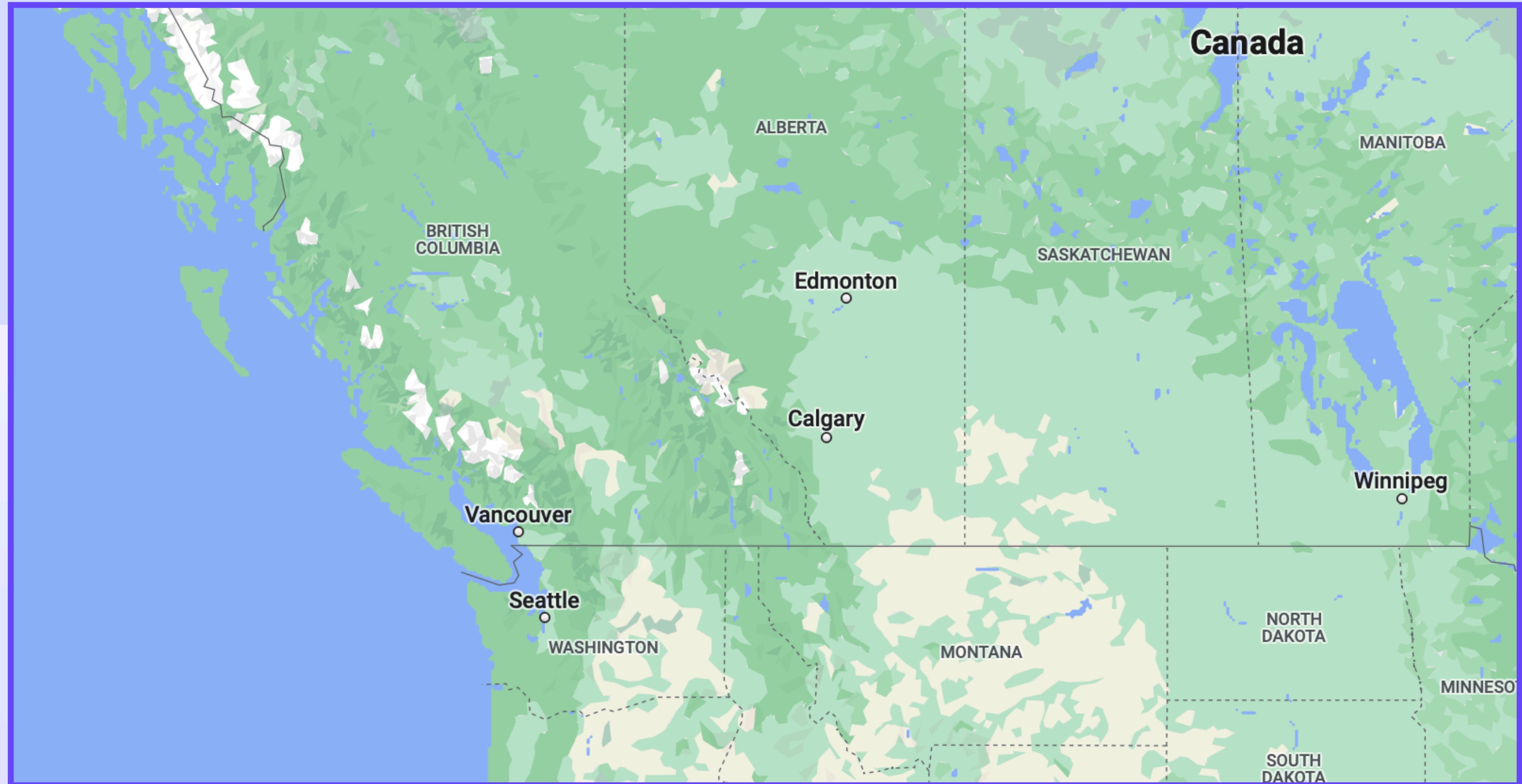
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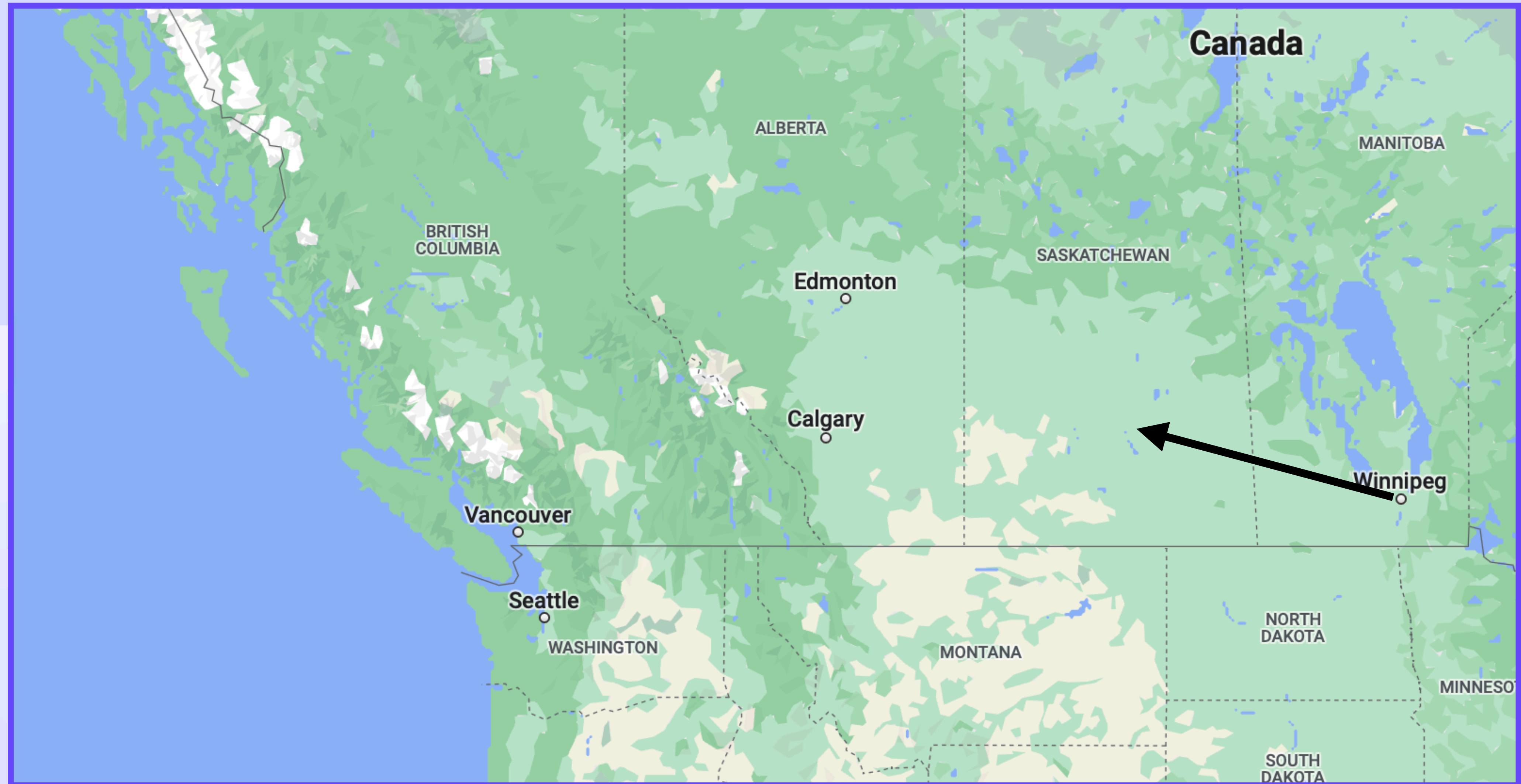
# ***Sending a "Direct" Message in 2024***





Economic Weight Class

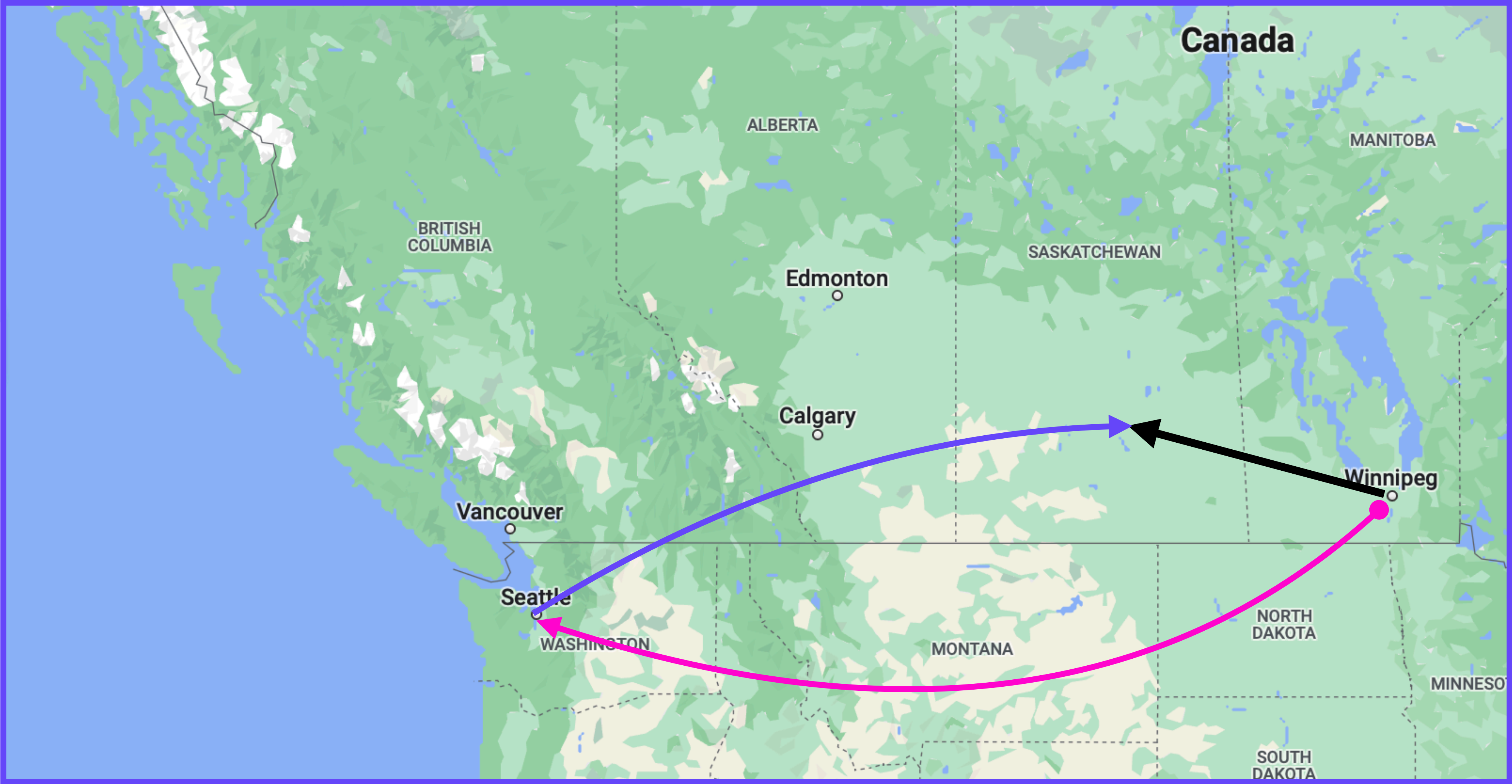
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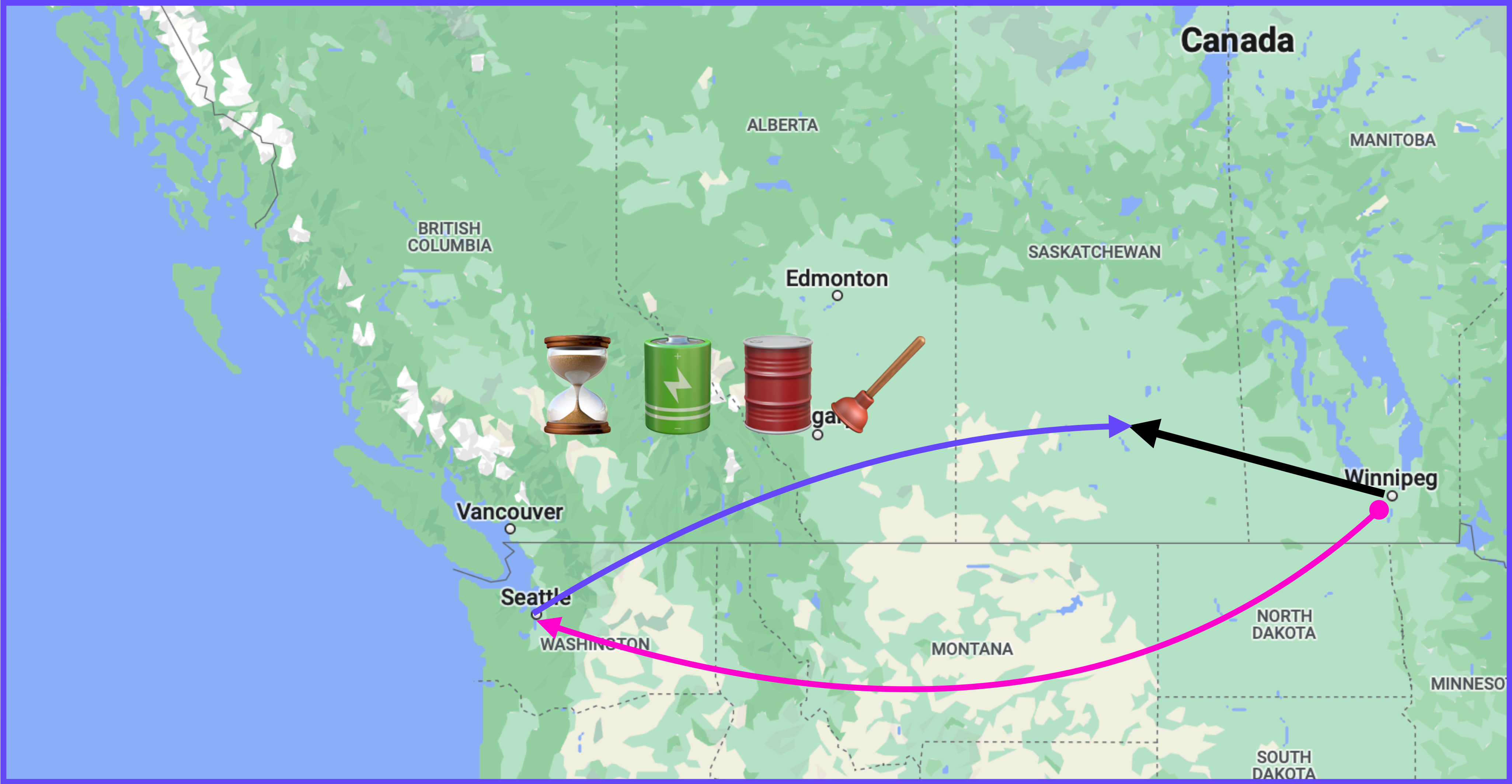
***Sending a "Direct" Message in 2024***





Economic Weight Class

***Sending a "Direct" Message in 2024***





Economic Weight Class

***Consequences*** 🍂

Economic Weight Class

# ***Consequences***

- Single source of truth ("**the**" database)



## Economic Weight Class

# *Consequences* 🍂

- Single source of truth ("**the**" database)

- Server-centric



- "Full stack development"
- DevOps, Docker, k8s
- How to train enough engineers?

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- DevOps, Docker, k8s

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# Economic Weight Class

## *Industrial*

USS Nimitz

Crew: ~5000

Cost: >\$8.5 billion (USD)

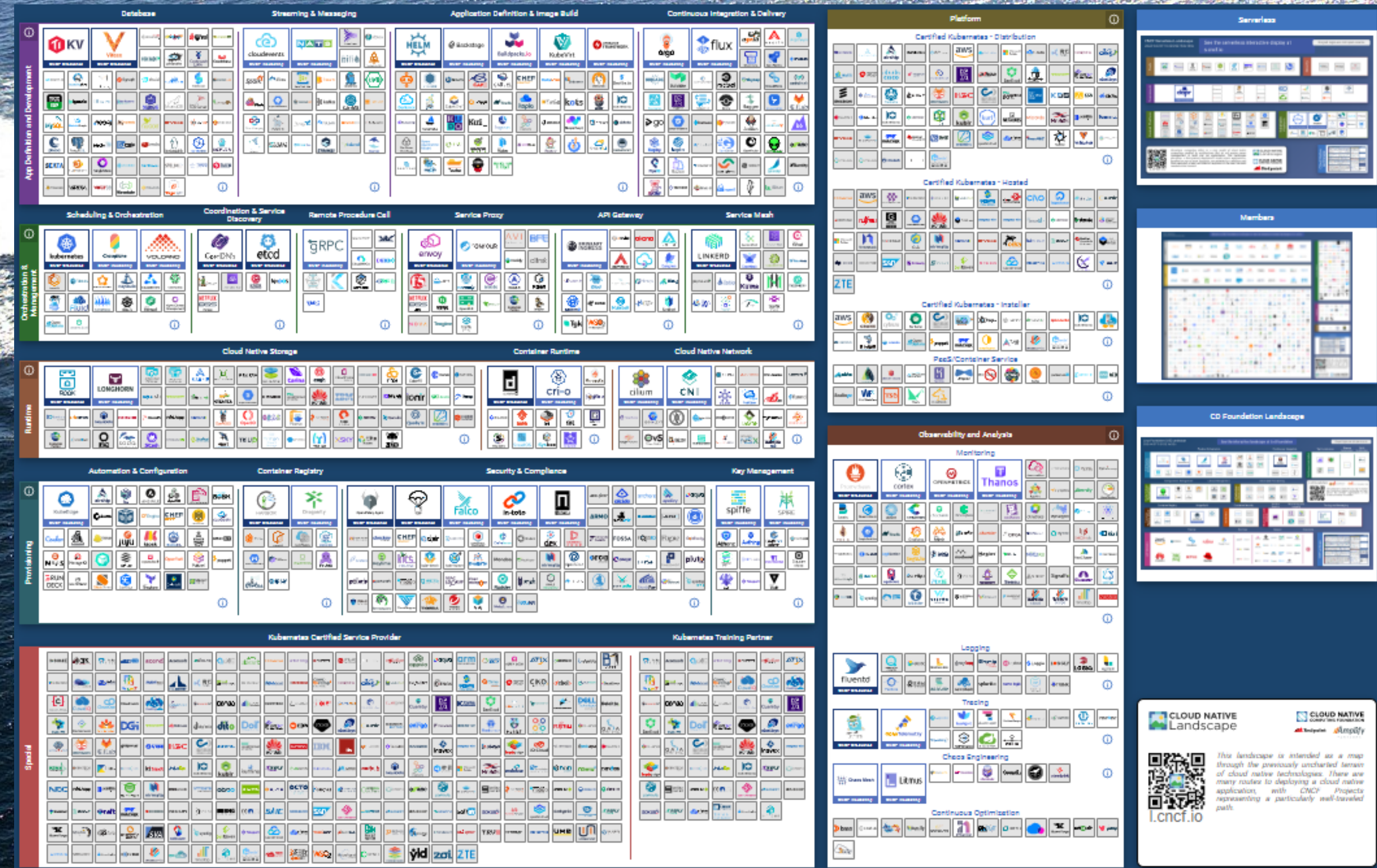
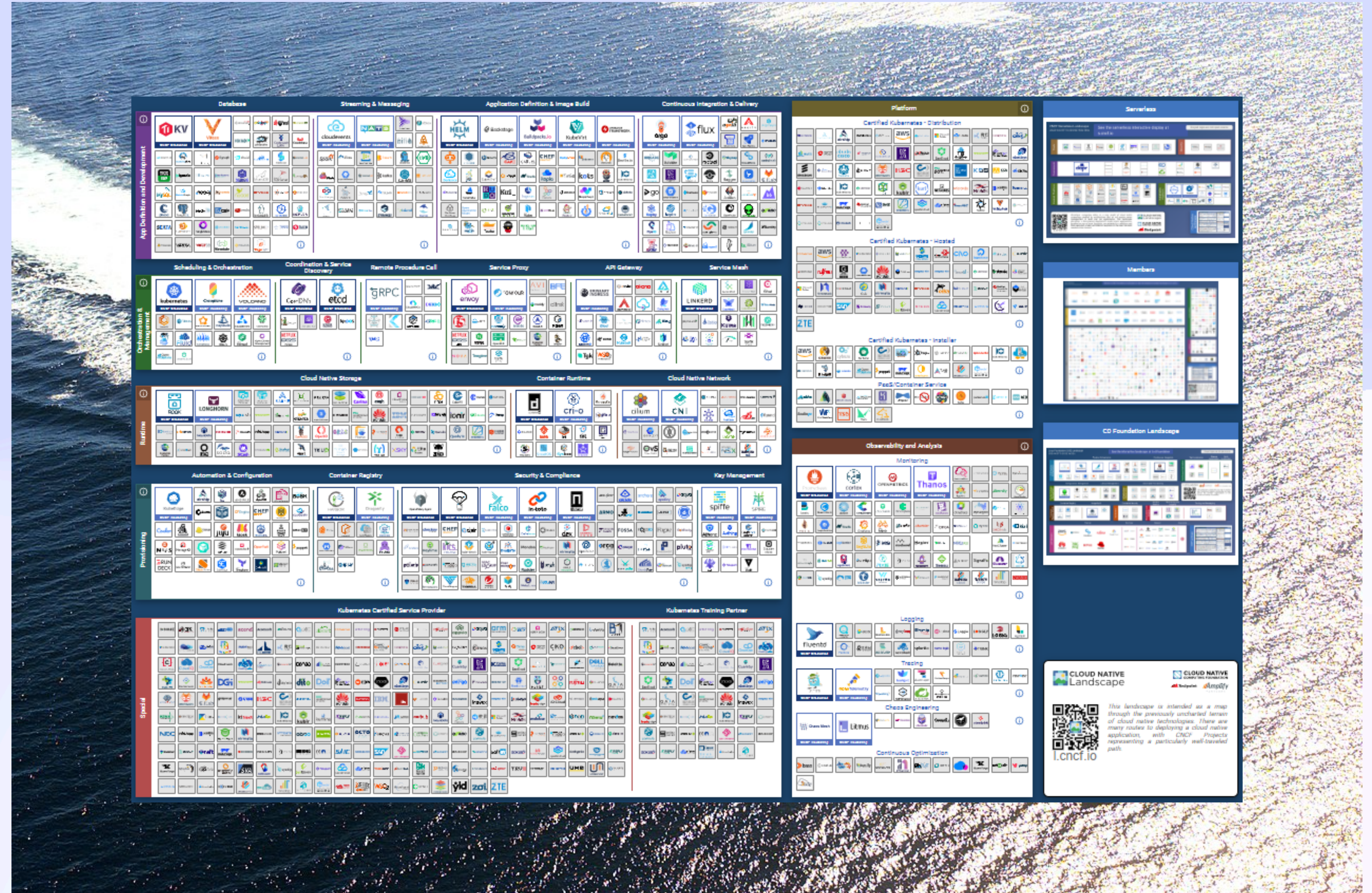




# Economic Weight Class

## *Industrial*


USS Nimitz  
Crew: ~5000  
Cost: >\$8.5 billion (USD)





Economic Weight Class


An Incredible Journey... Into a Dark Age



Killed by Google

Search

All (295)




December 2024

App

Google Jamboard

Off to the glue factory in 5 months, Google Jamboard was a web and native whiteboard app that offered a rich collaborative experience. It will be about 8 years old.




September 2024

Hardware

Jamboard

Scheduled to be killed in 2 months, Jamboard was a digital 4K touchscreen whiteboard device that allowed to collaborate using Google Workspace services. It will be over 7 years old.




2020 - 2024

Service

VPN by Google One

Killed about 1 month ago, VPN by Google One was a virtual private network service that provided users encrypted transit of their data and network activity and allowed them to mask their IP address. It was over 3 years old.




2009 - 2024

Hardware

DropCam

Killed 4 months ago, Dropcam was a line of Wi-Fi video streaming cameras acquired by Google in 2014. It was about 15 years old.



2018 - 2024

App

Google Podcasts

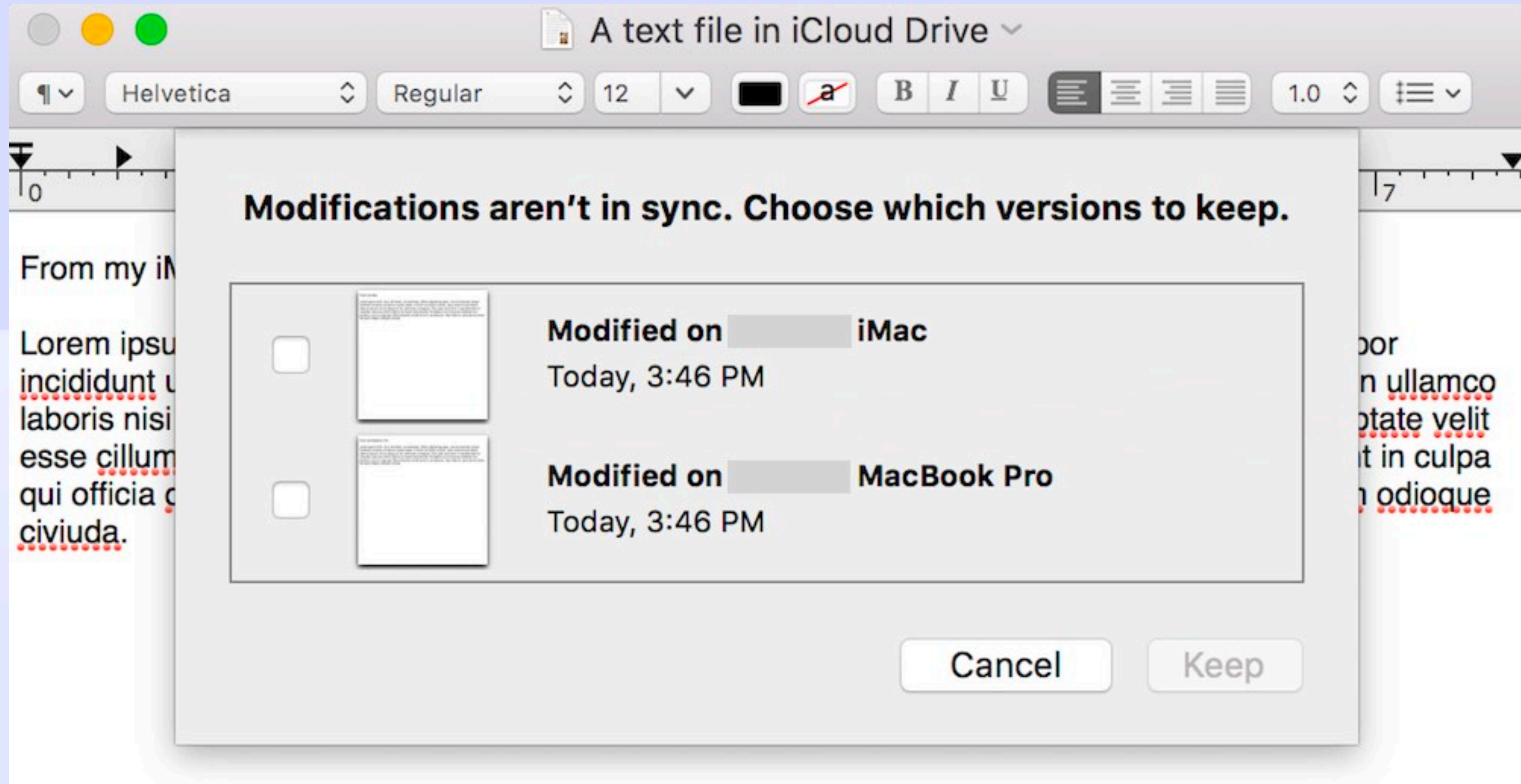
Killed 4 months ago, Google Podcasts was a podcast hosting platform and an Android podcast listening app. It was almost 6 years old.





Economic Weight Class

# *Objectivist Ergonomics*





Economic Weight Class

# ***What If Computing Were Interpersonal?***



Economic Weight Class

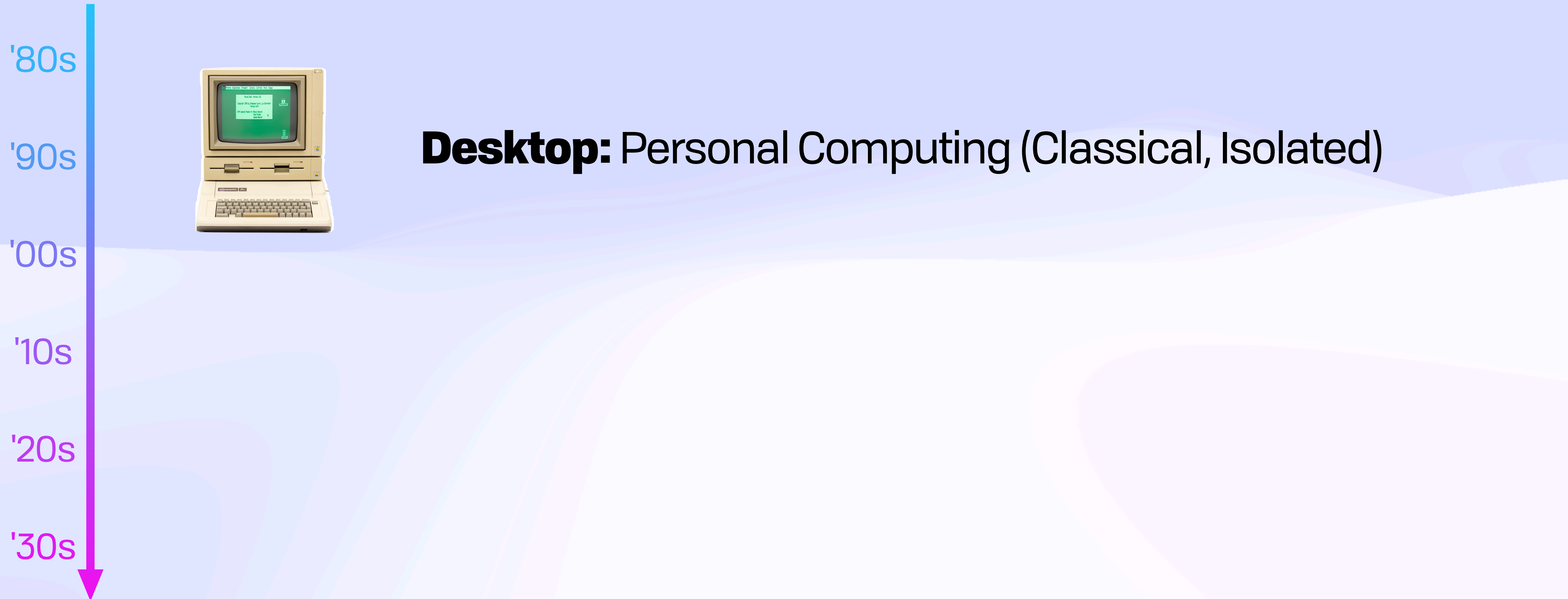
# ***What If Computing Were Interpersonal?***





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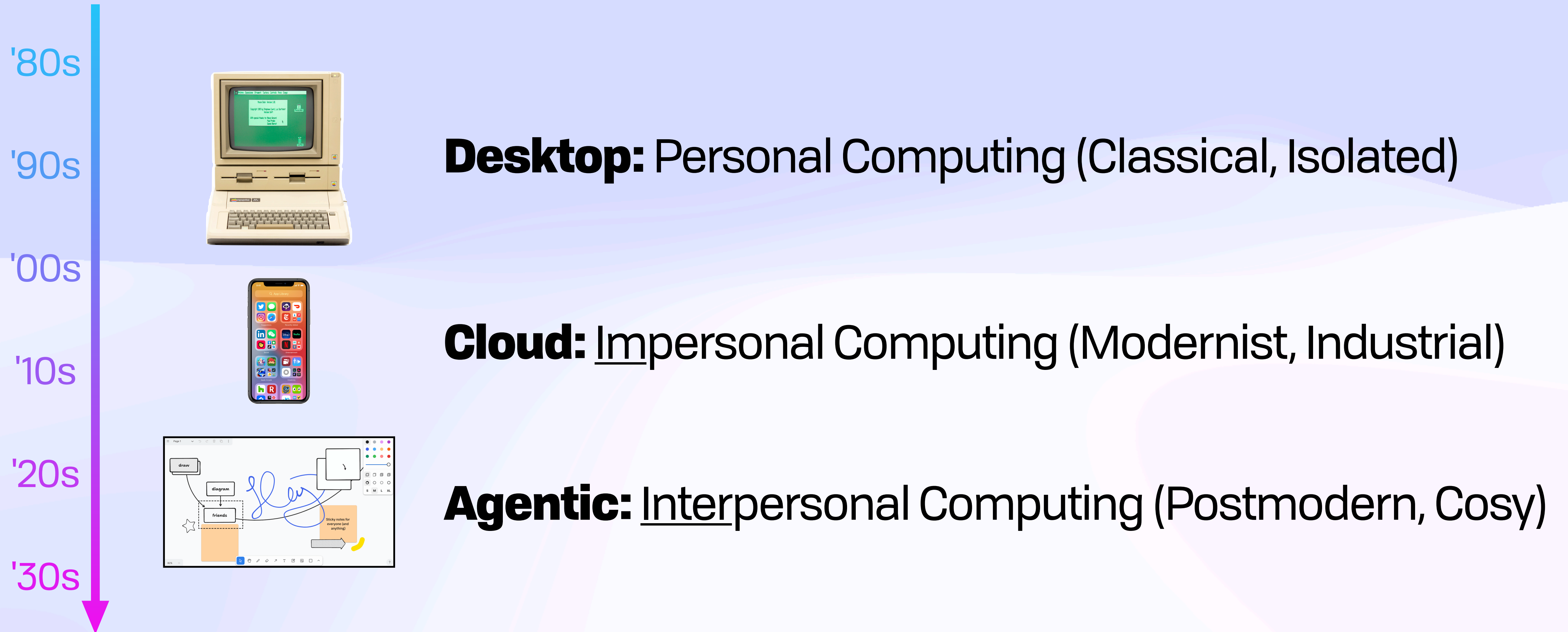
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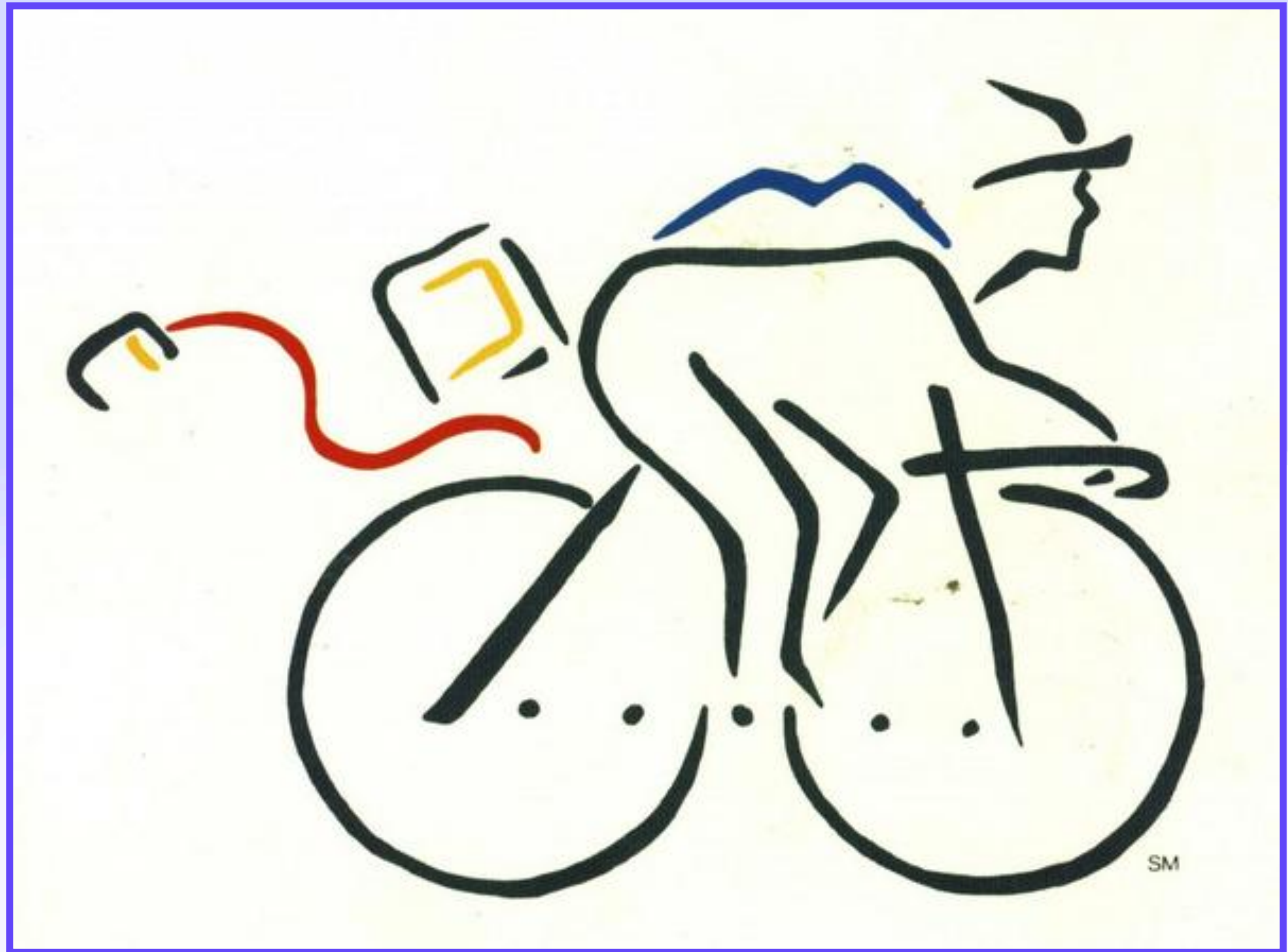
# Economic Weight Class

***Human***

A bike

Crew: 1

Cost: <\$8.5 billion (USD)





# ***Local-First***

Convenience, Idealism, and Movement Building





Local-First

***Local-First, Not Local-Only***



Local-First

***Local-First, Not Local-Only***





Local-First

*Local-First, Not Local-Only*





Local-First

***Command & Control***



Local-First

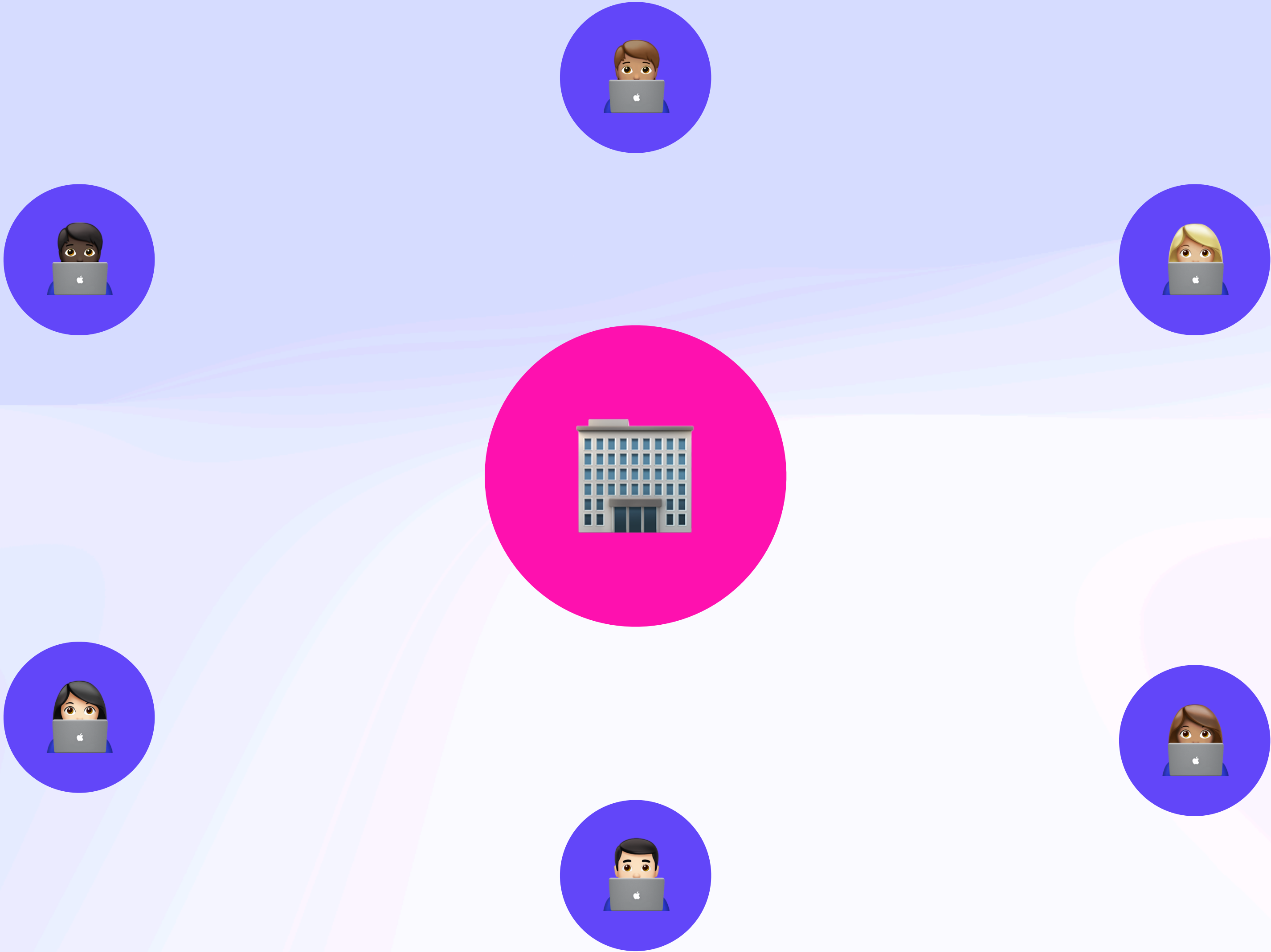
# ***Command & Control***





Local-First

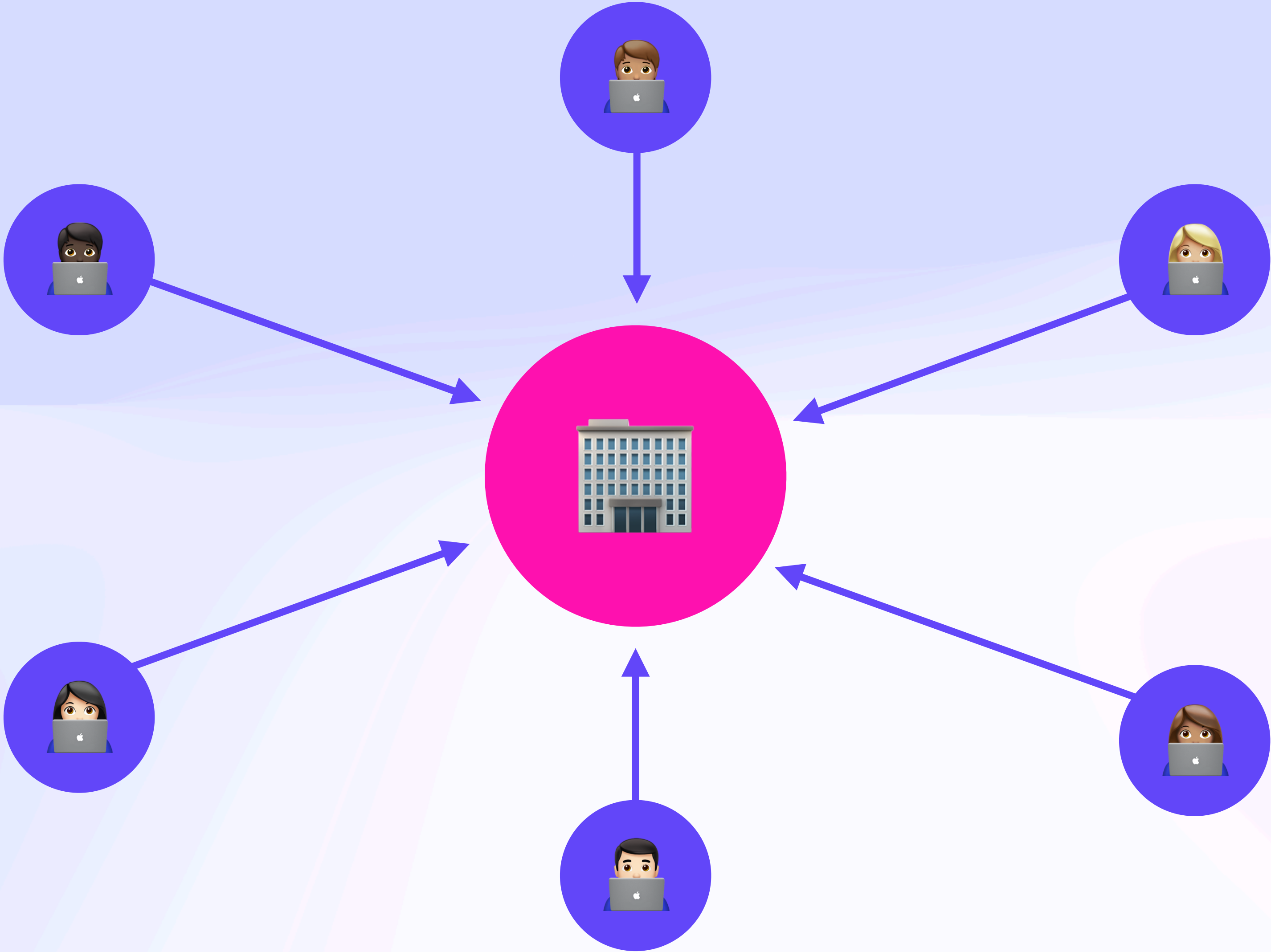
# *Command & Control*





Local-First

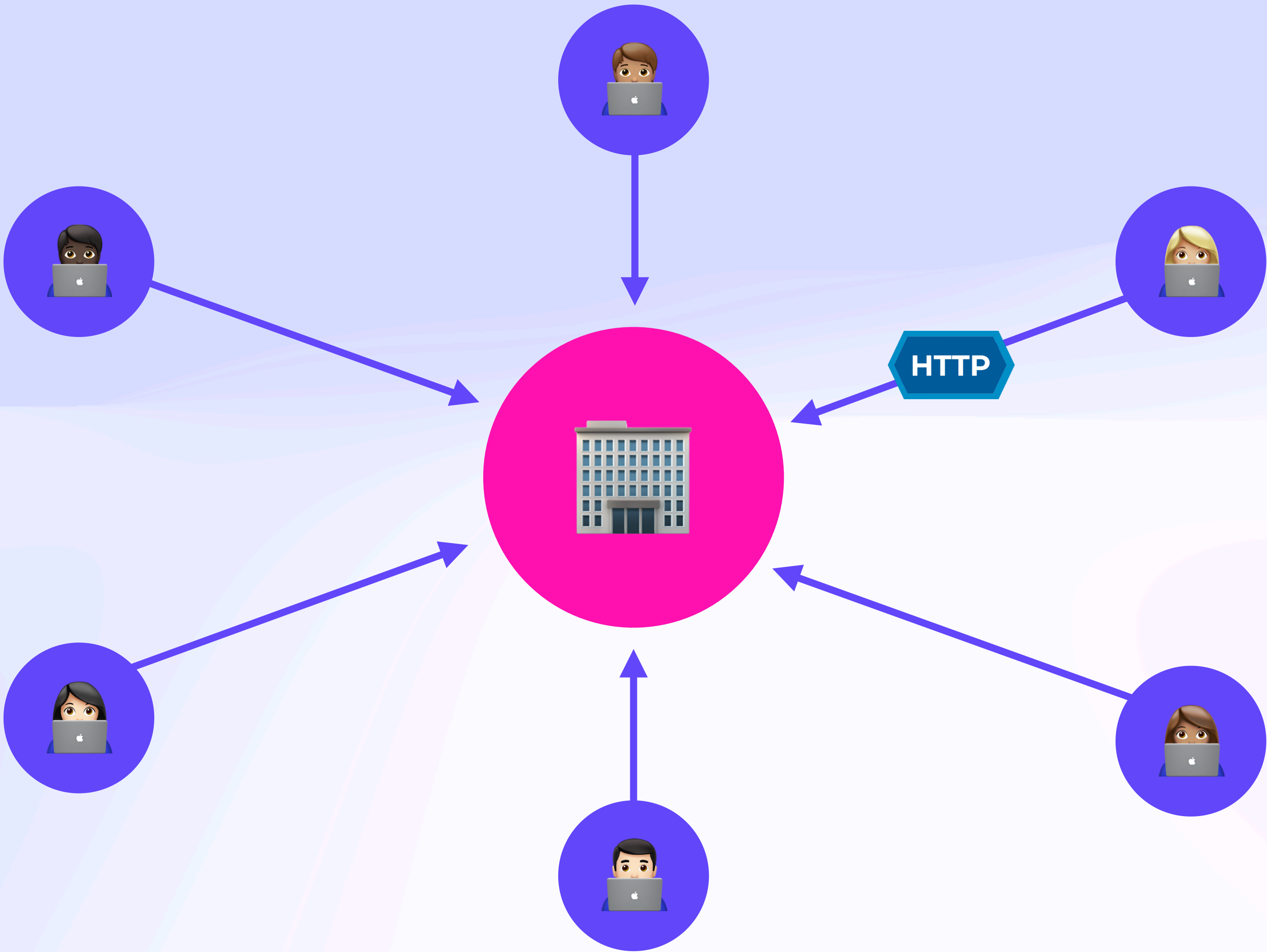
# *Command & Control*





Local-First

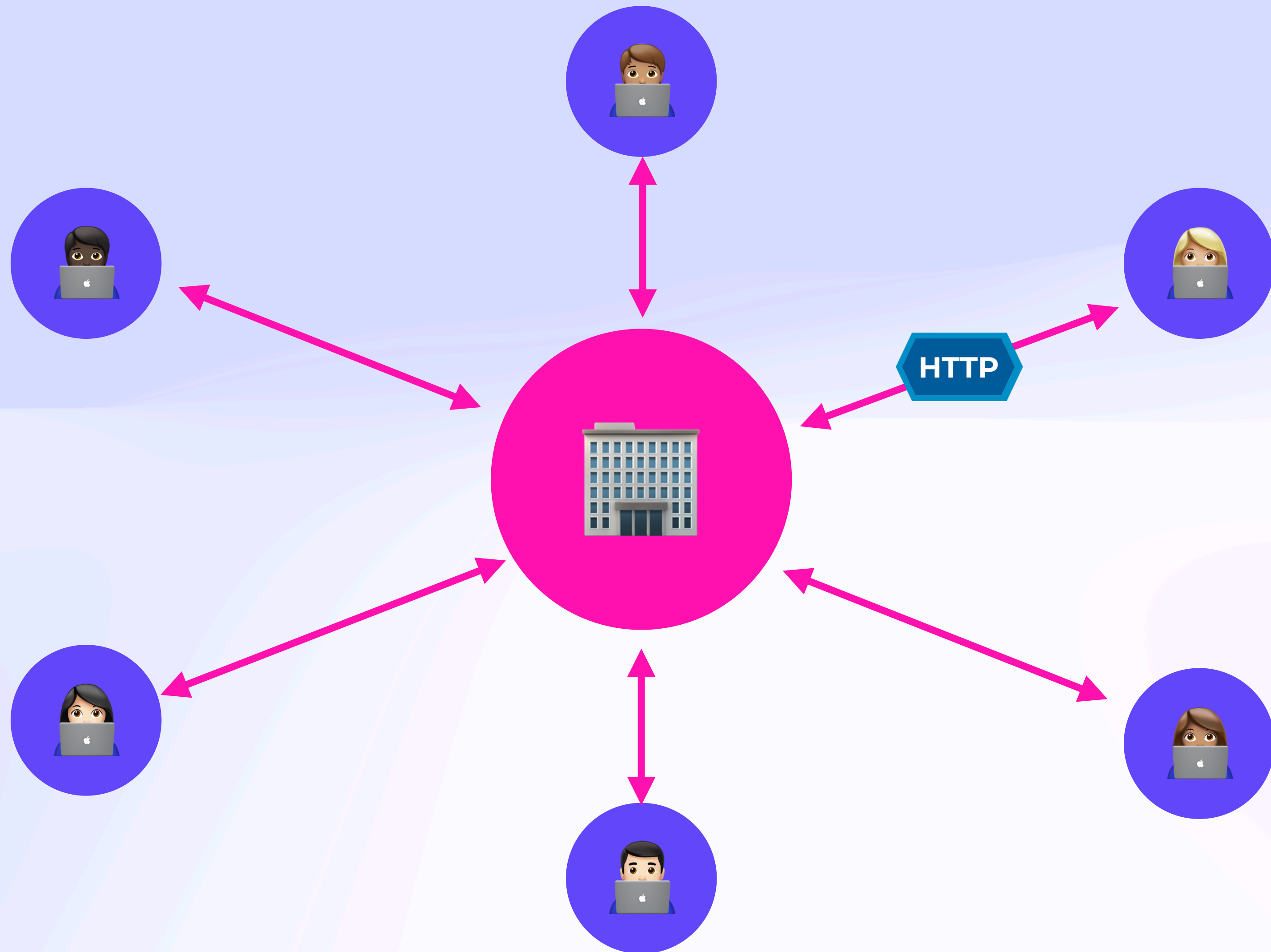
# Command & Control





Local-First

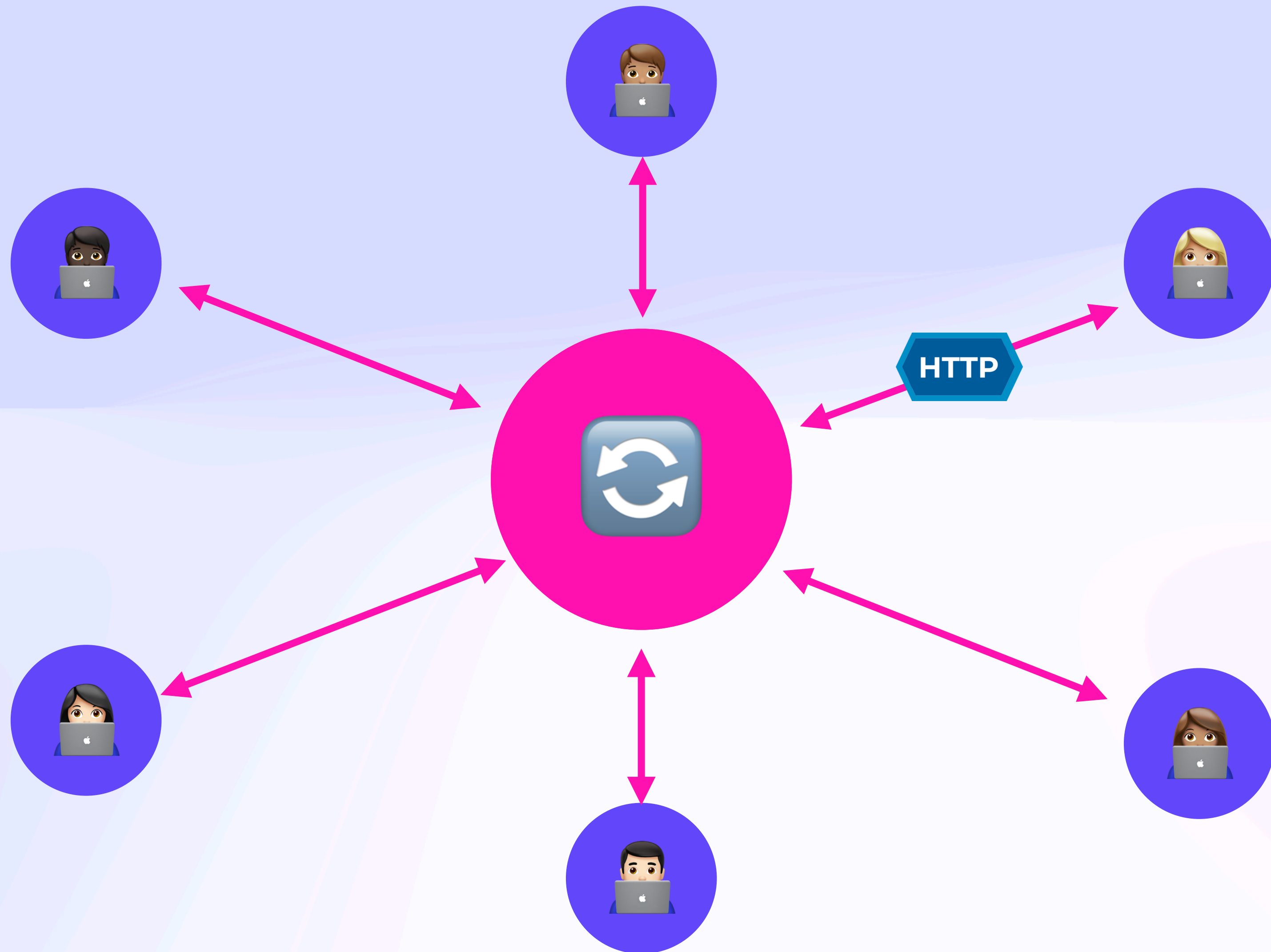
# *Hive Dynamics*





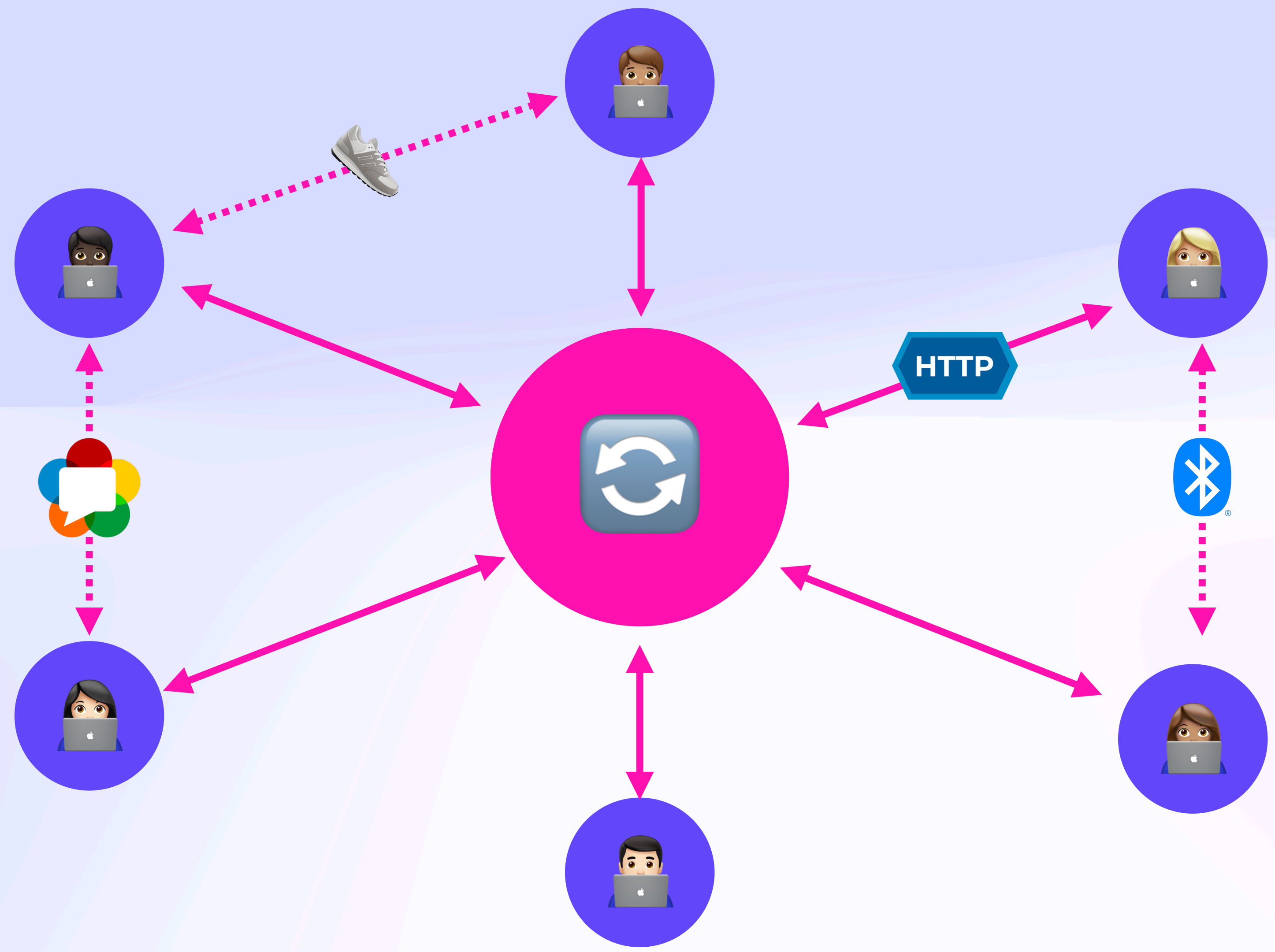
Local-First

# *Hive Dynamics*





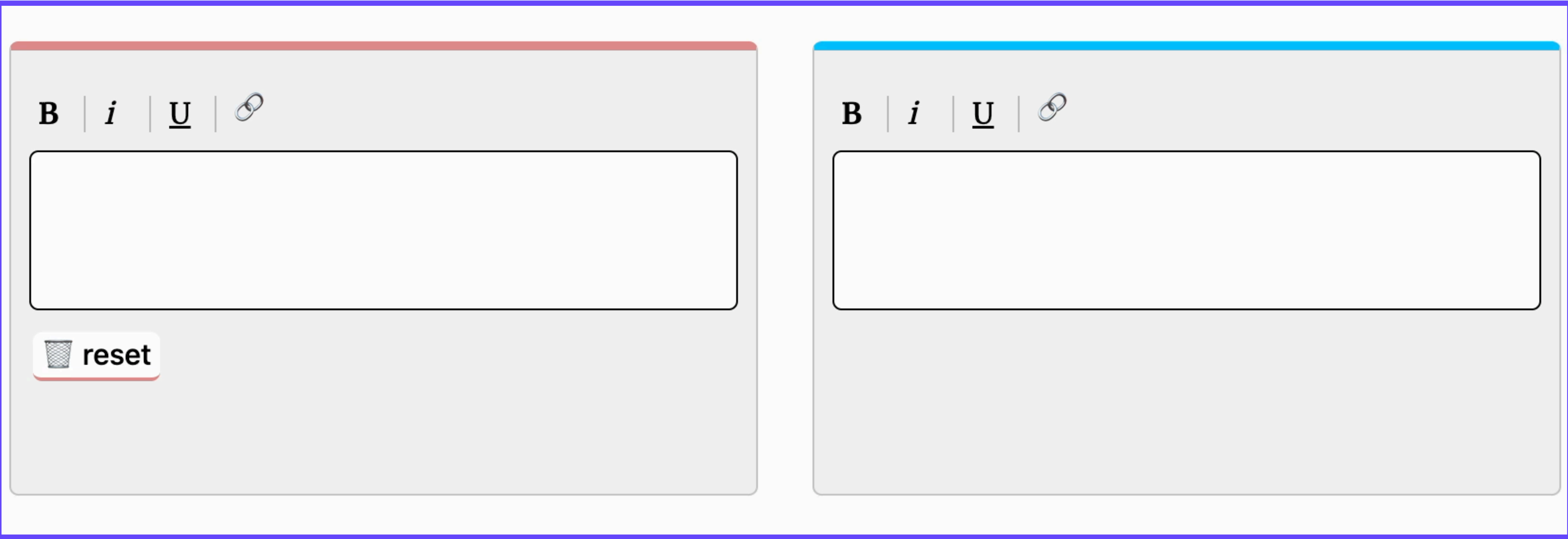
Local-First  
*Hive Dynamics*





# Local-First

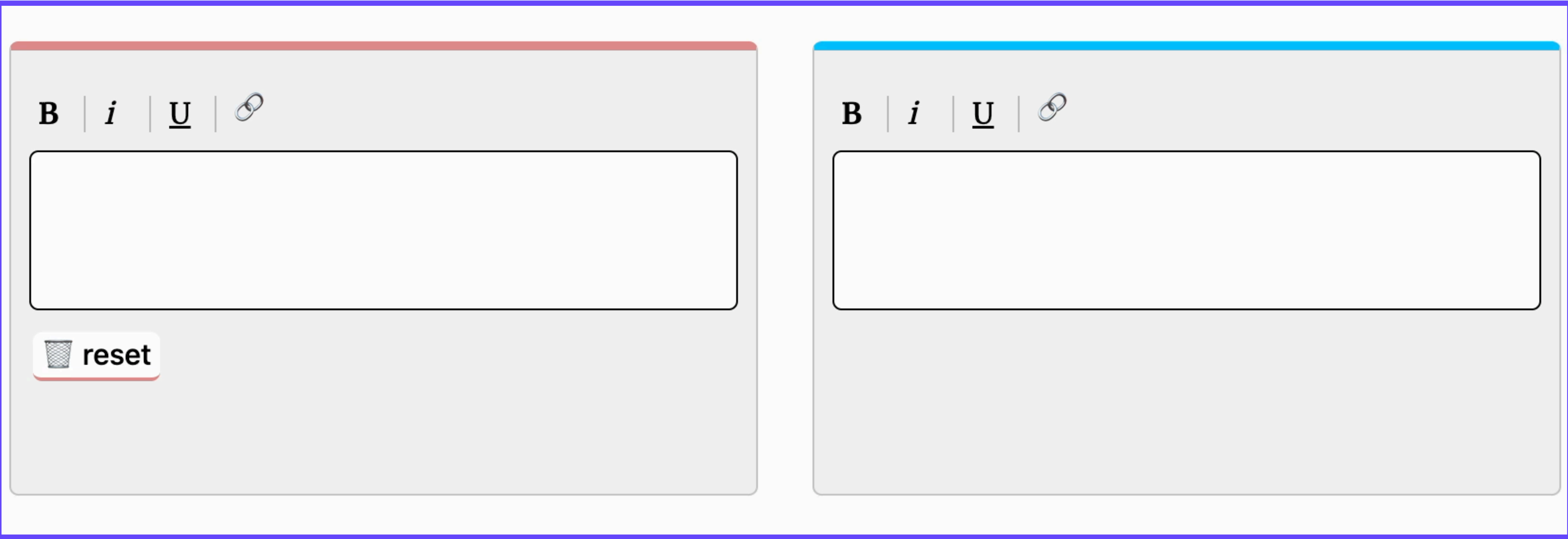
# *Enabling Tech: CRDTs*





# Local-First

# *Enabling Tech: CRDTs*



Local-First

# *Enabling Tech: CRDTs*

```
// (React example)
<input
  type="checkbox"
  checked={done}
  onChange={() =>
    changeDoc((d) => {
      d.tasks[index].done = !d.tasks[index].done
    })
  }
/>
```



# Local-First

# Universal Version Control & LLMs

```
url: "/patchwork/notebook/ TODO "  
title: " TODO / Timeline as chat ☒ "  
date: TODO  
description: TODO  
---
```

## goals for timeline:

- give a sense of what's going on at a glance; ☒ emphasize important moments
- support the ☒ need for conversation around the collaboration process -- expressing underlying intent, expressing appreciation for edits, etc.
- this prototype: what if we unified the two? ☒ Like a GitHub PR conversation, but w/o an explicit PR concept, and woven throughout.



## demo video:

<https://share.cleanshot.com/v0JNnKmn>

## ☒ reflections:

- visual design matters for the timeline -- relative emphasis of various moments is important.
- ☒ - AI auto-summaries work well
- ☒ - chat seems promising, but need to clear up the different kinds of

👑 Main

Showing 1 change [Reset to now](#)

created initial document with ideas for a prototype

changed title, added colon to "demo video"

Sunday, Mar 3

changed title, expanded goals, added demo video link, detailed reflections

Tuesday, Mar 19

Updated title, restructured content, added image link

finished initial braindump

branch merged

turned outline into prose

turned outline into prose

➤ Write a note (⌘+enter)

Local-First

~~***Just Enough To Be Dangerous!***~~



Local-First

~~*Just Enough To Be Dangerous!*~~

Users 

Developer 

# Local-First

# ***Just Enough To Be Dangerous!***

Users 🧑🧑🧑🧑

Browser 🖥️

REST / JSON-RPC / GraphQL ⬆️⬆️

Server ⚙️

Data Store 🗄️

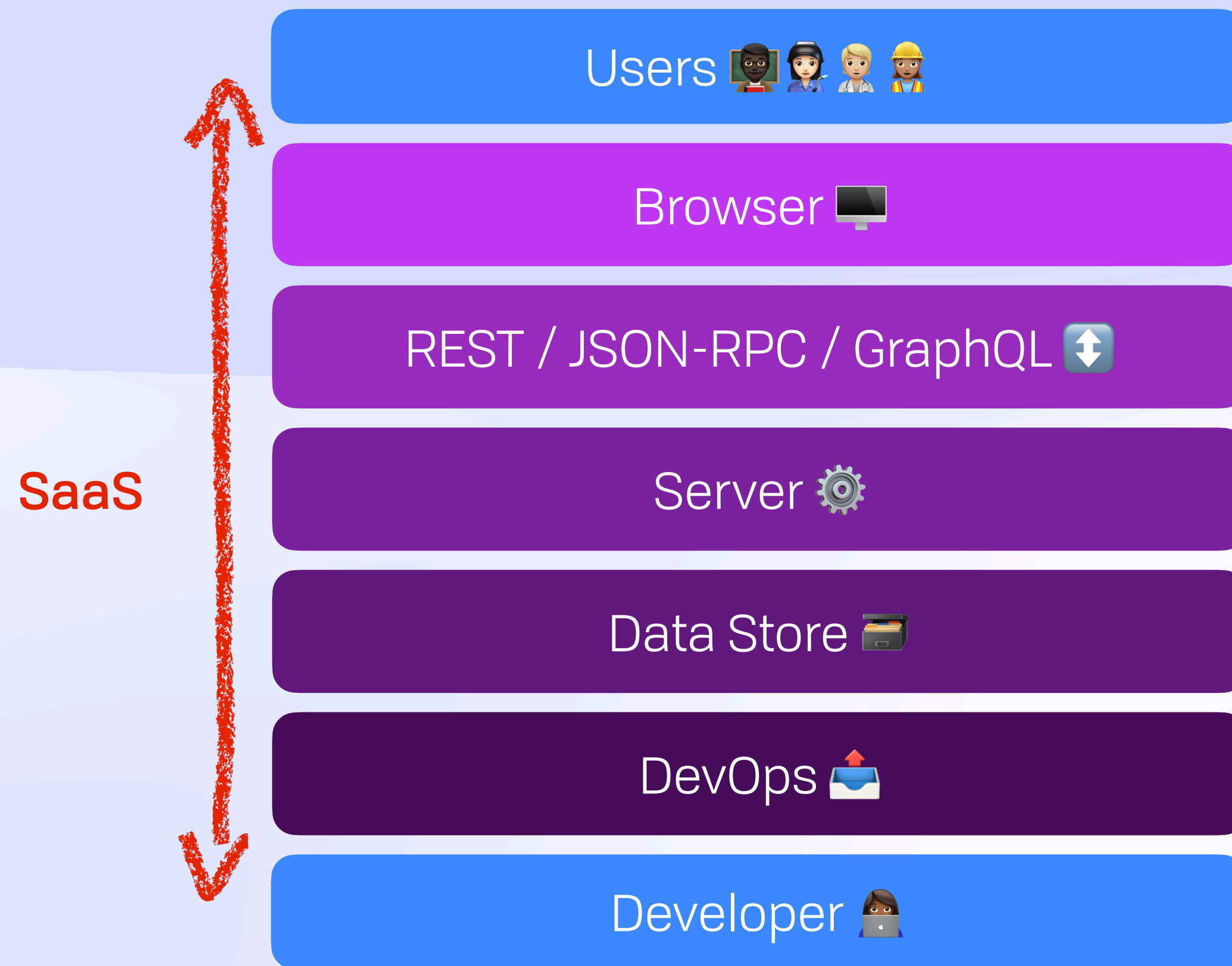
DevOps 📦

Developer 🧑💻



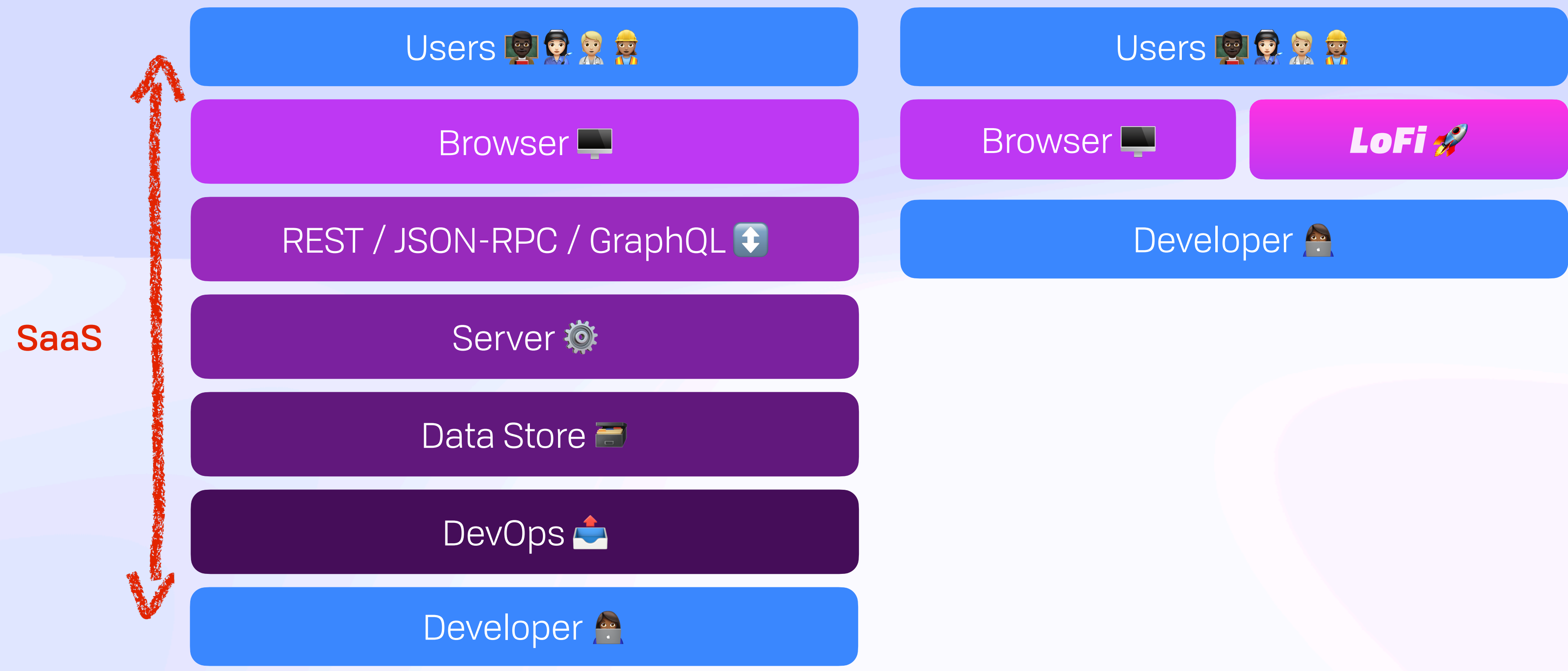
# Local-First

# ***Just Enough To Be Dangerous!***



# Local-First

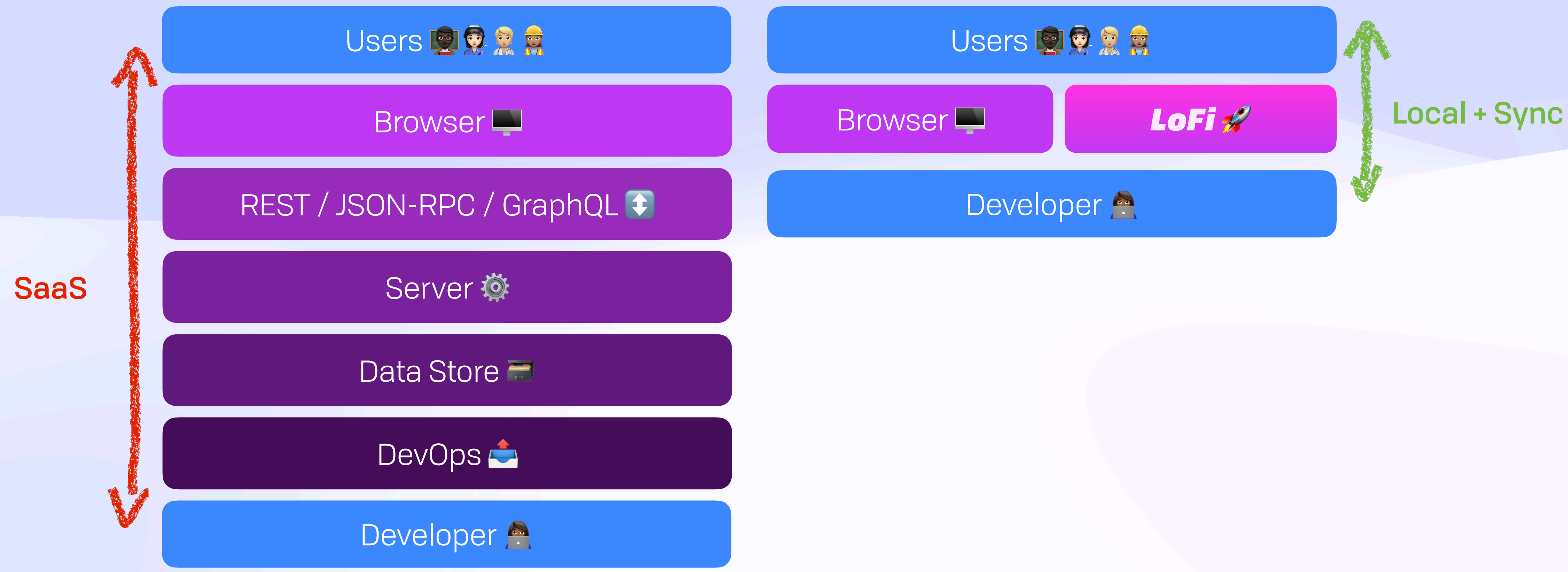
# ~~Just Enough To Be Dangerous!~~





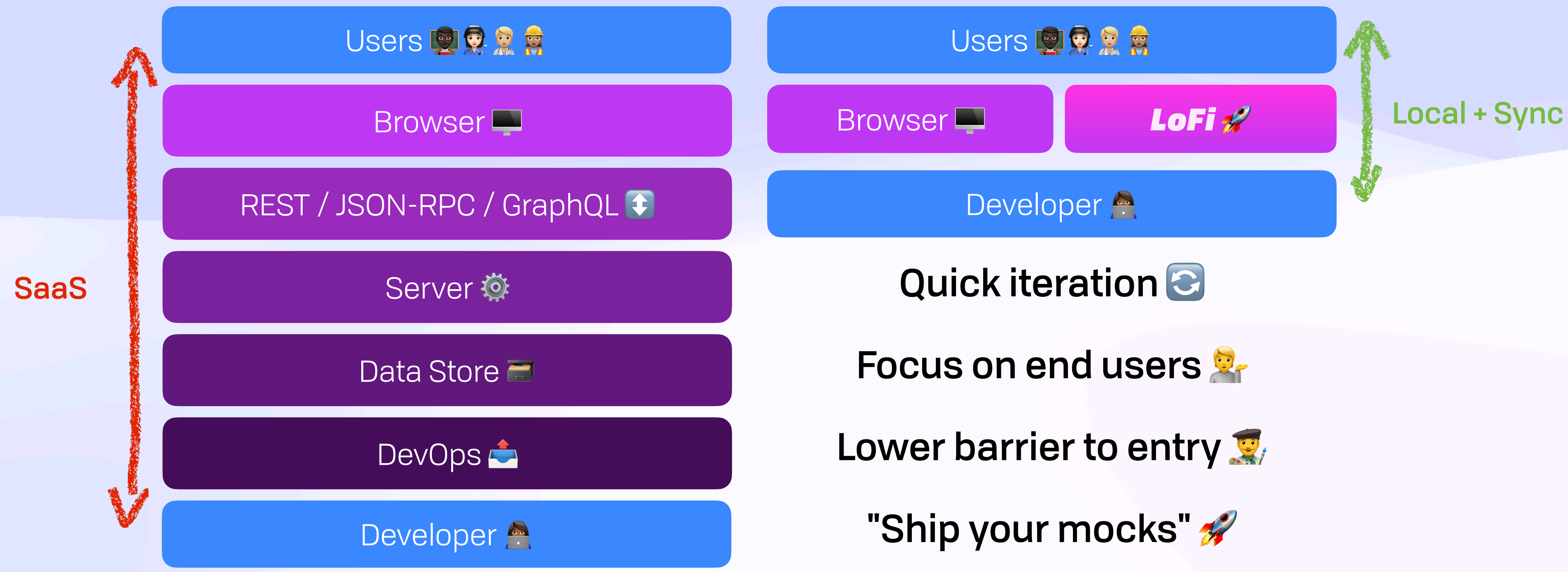
# Local-First

# ~~Just Enough To Be Dangerous!~~



Local-First

~~Just Enough To Be Dangerous!~~





Local-First

***In the Wild*** 🦁

Local-First

*In the Wild* 🦁





Local-First

***New Constrains = New Design Space***

Local-First

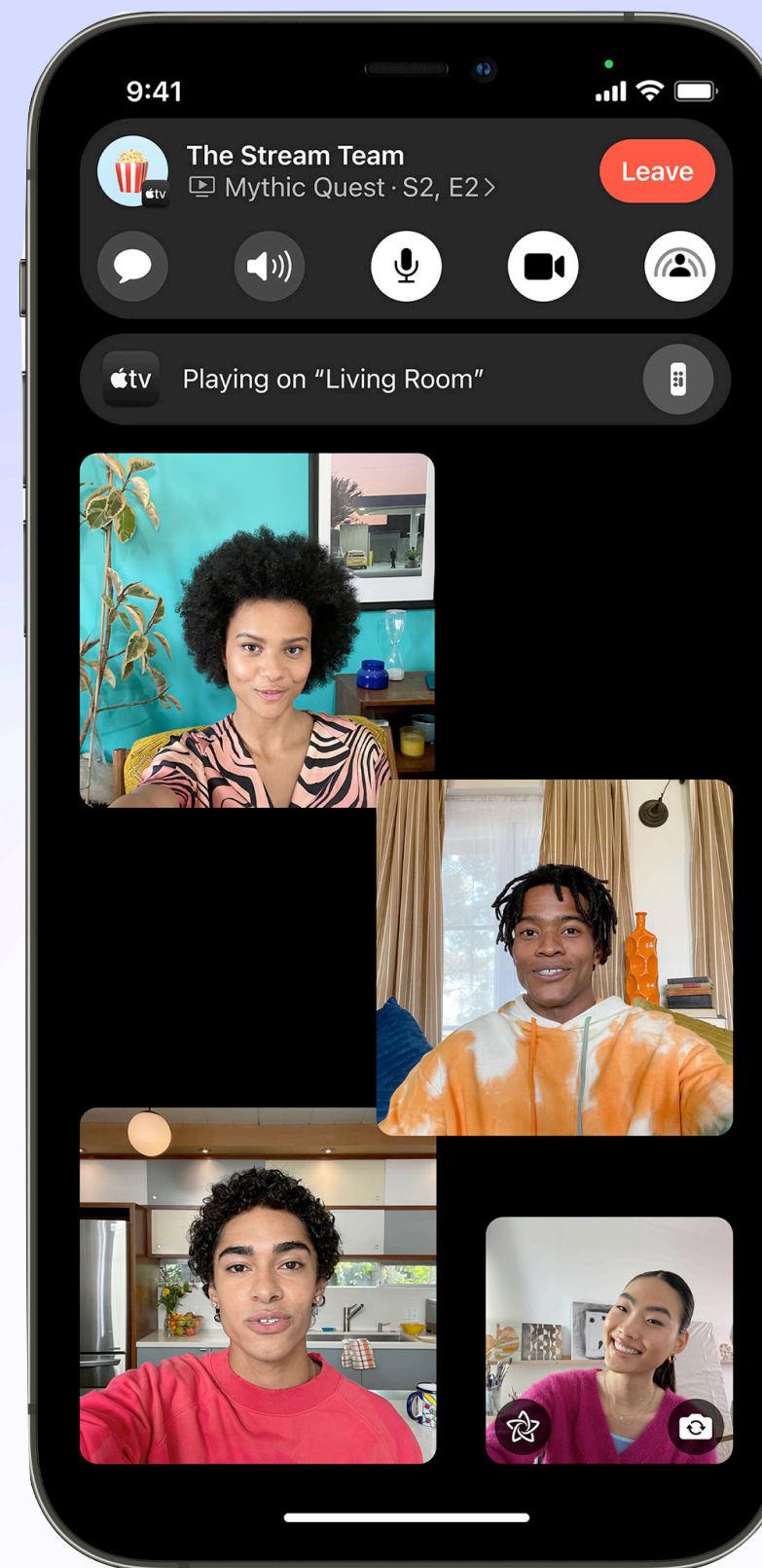
***New Constrains = New Design Space***





# Local-First

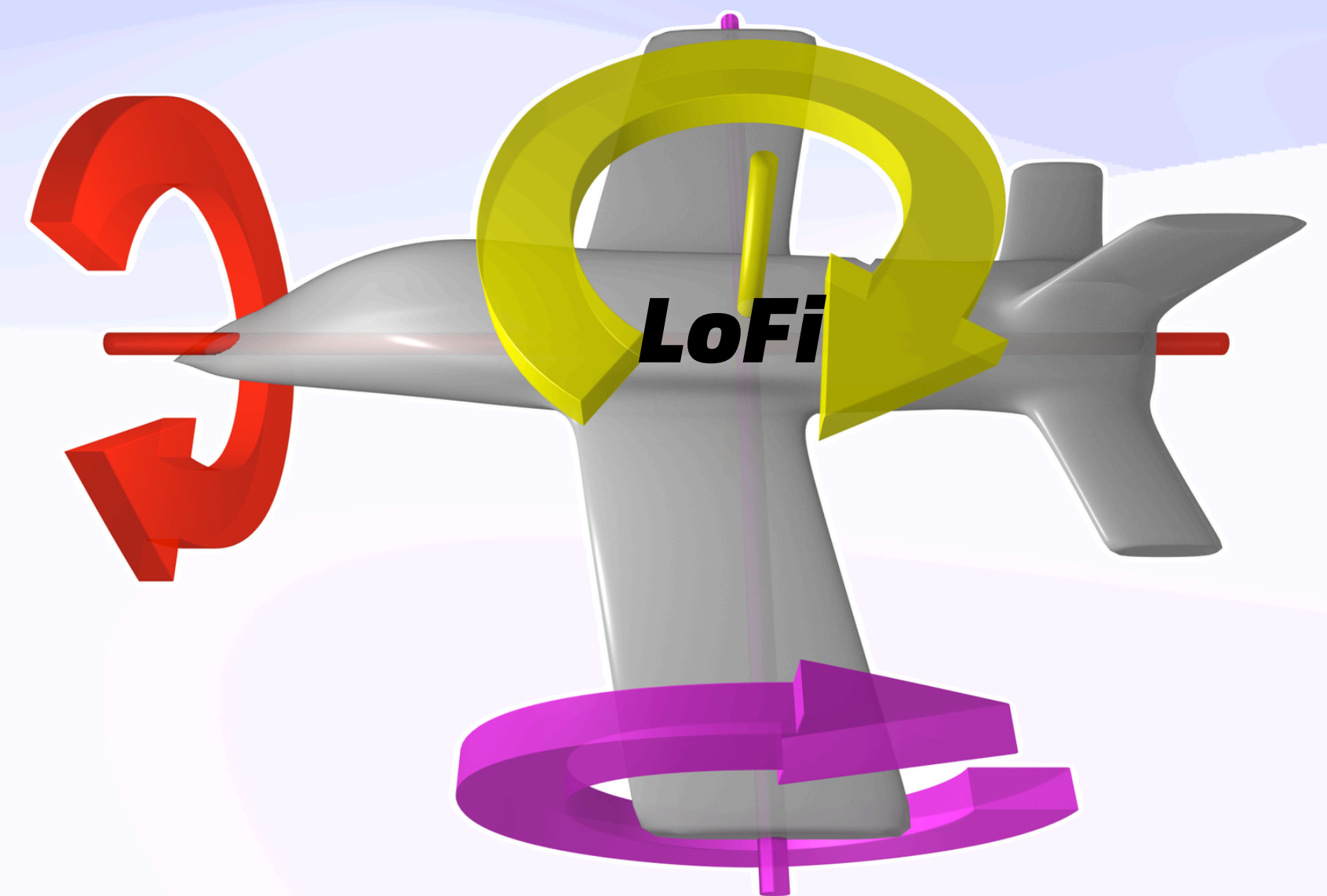
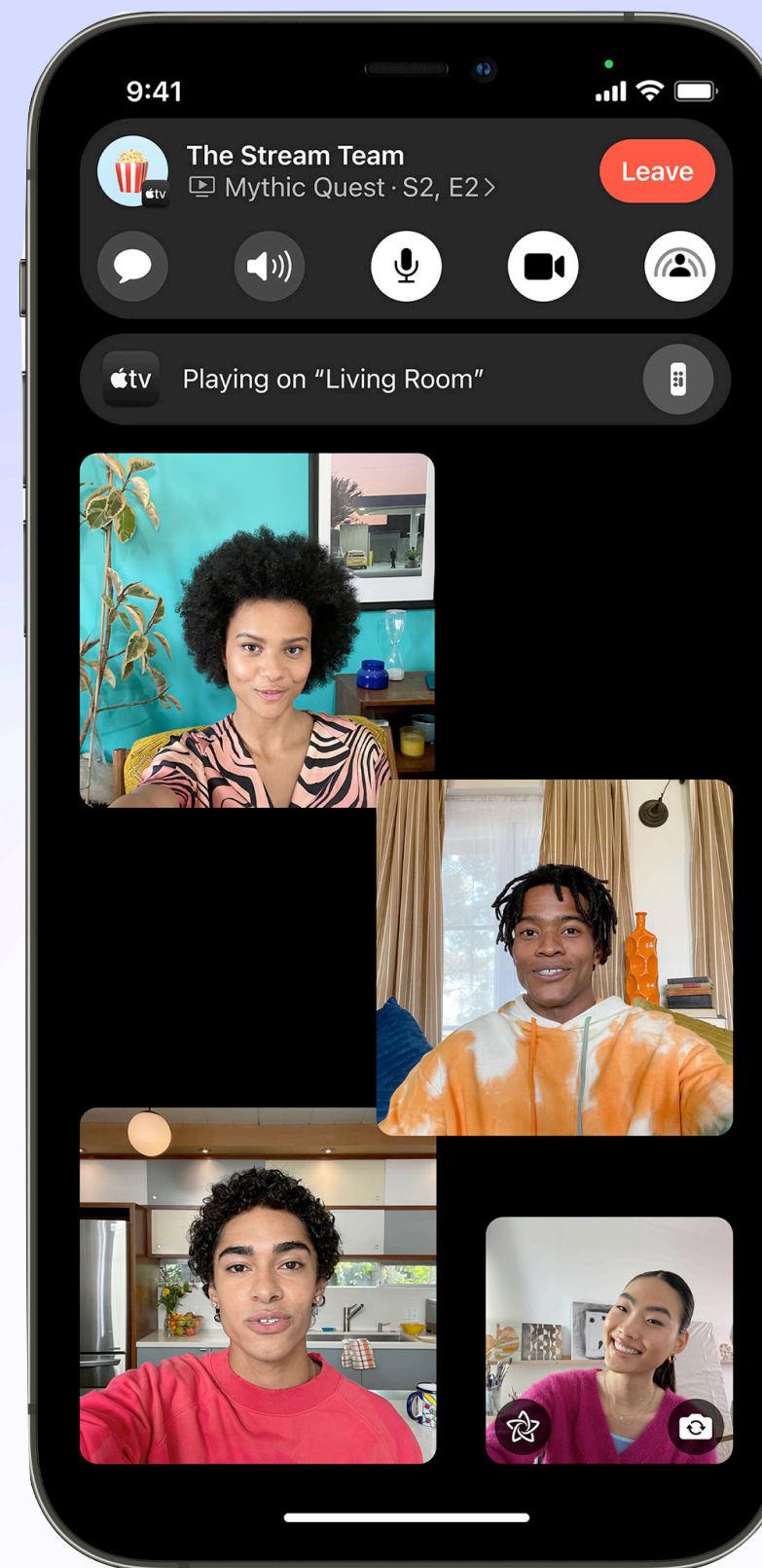
# ***New Constrains = New Design Space***





Local-First

***New Constrains = New Design Space***





Local-First

***Federate Data, Not Apps***

Local-First

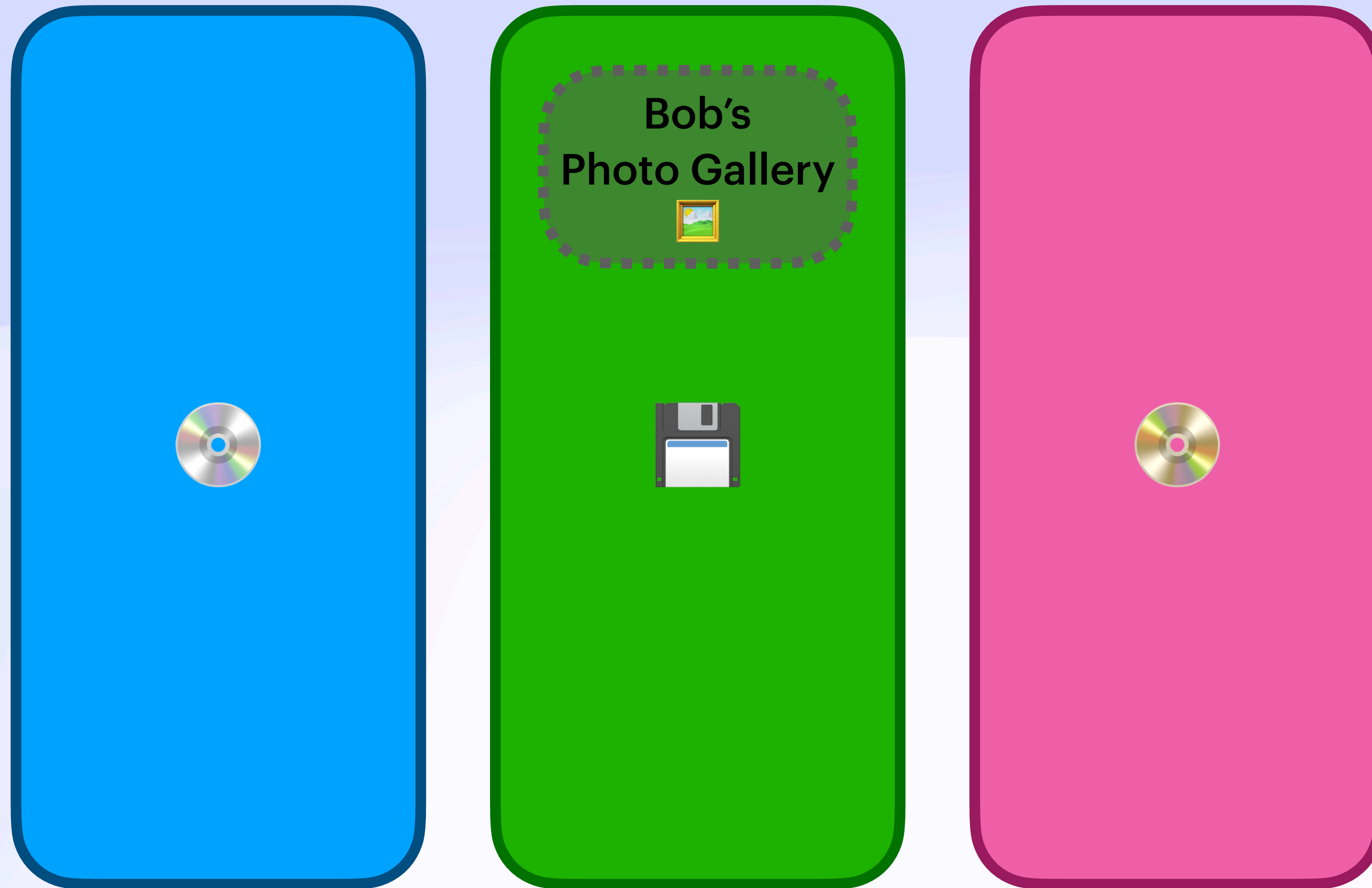
***Federate Data, Not Apps***





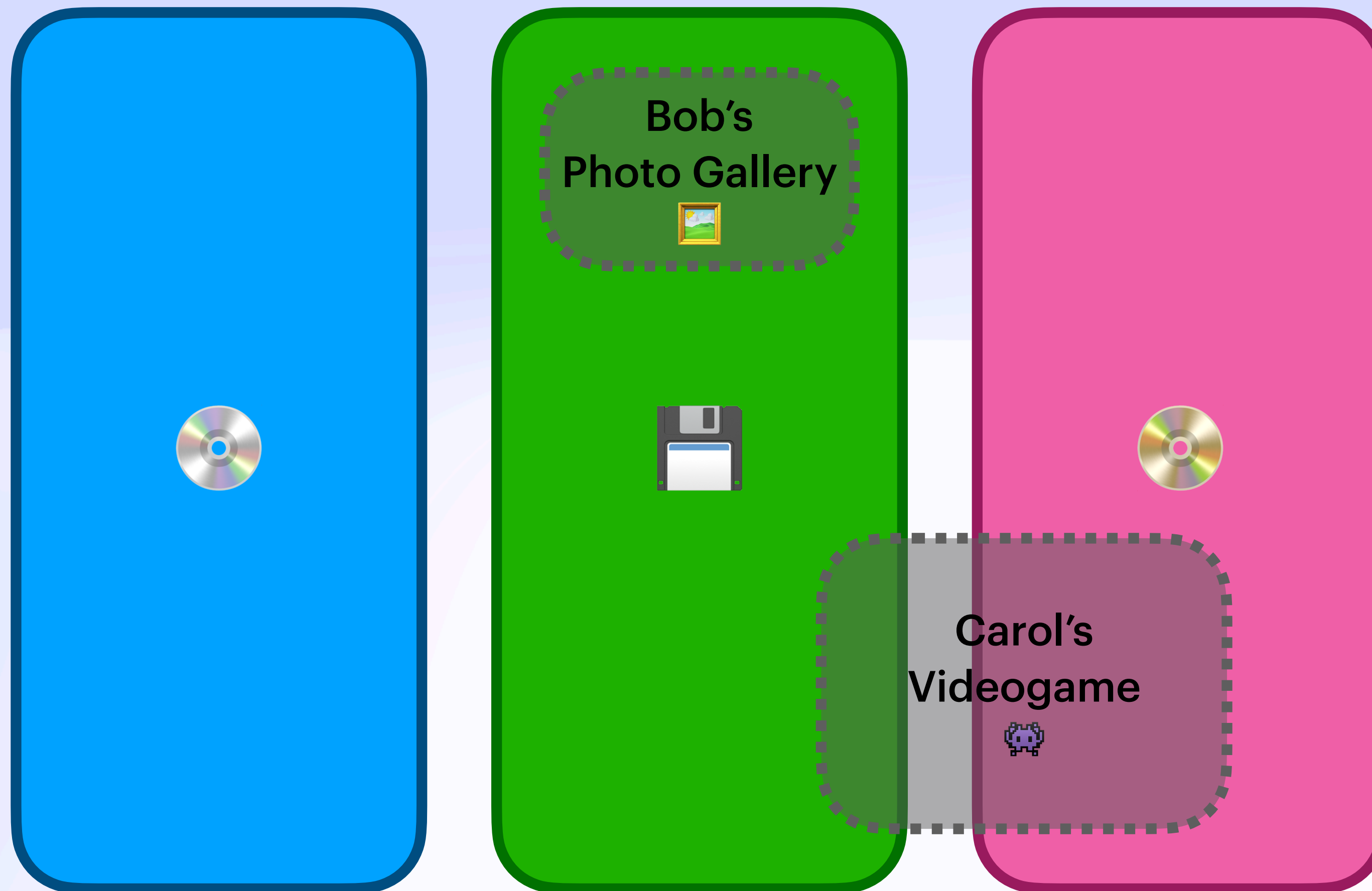
Local-First

# ***Federate Data, Not Apps***



Local-First

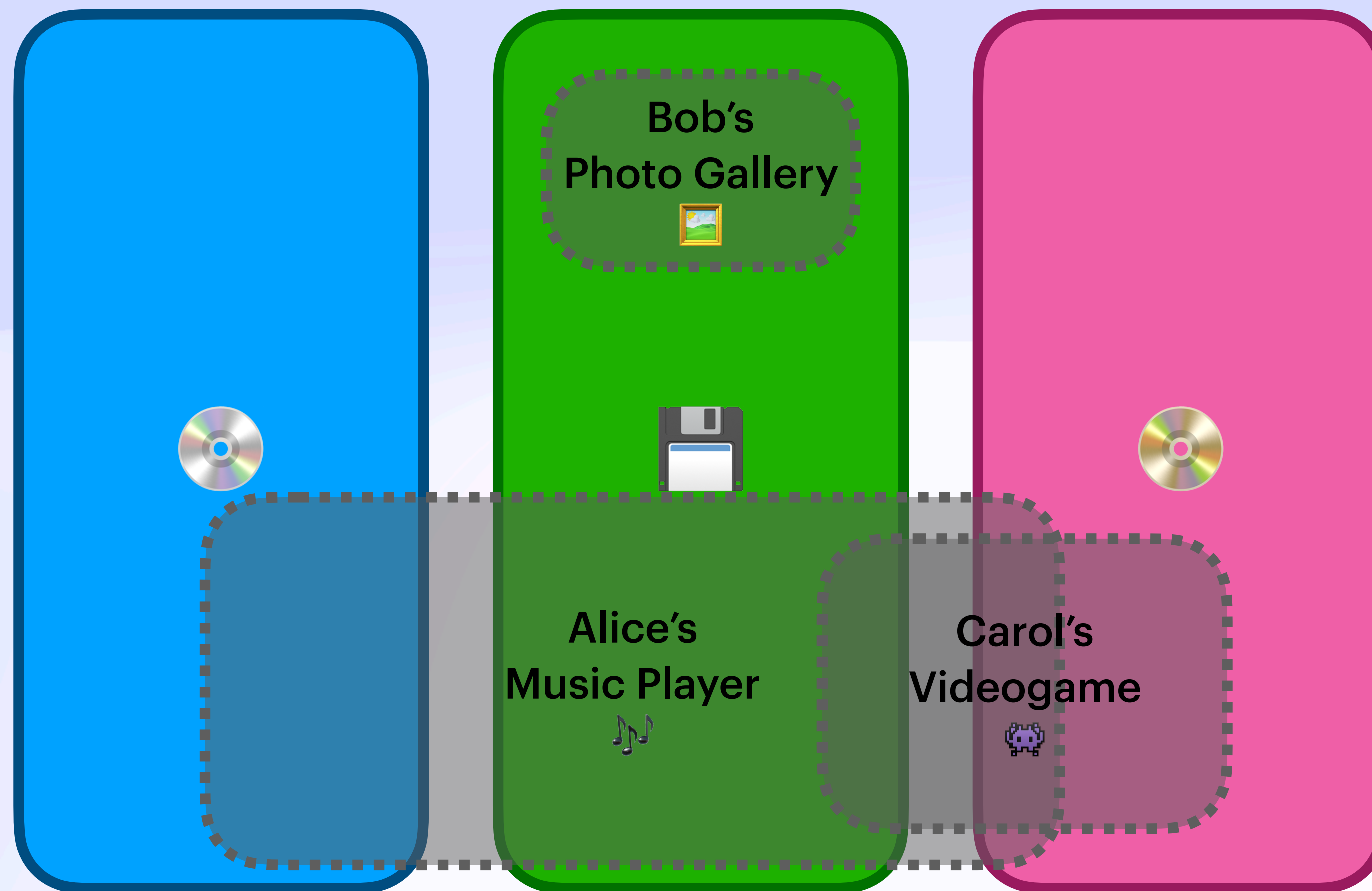
# ***Federate Data, Not Apps***





Local-First

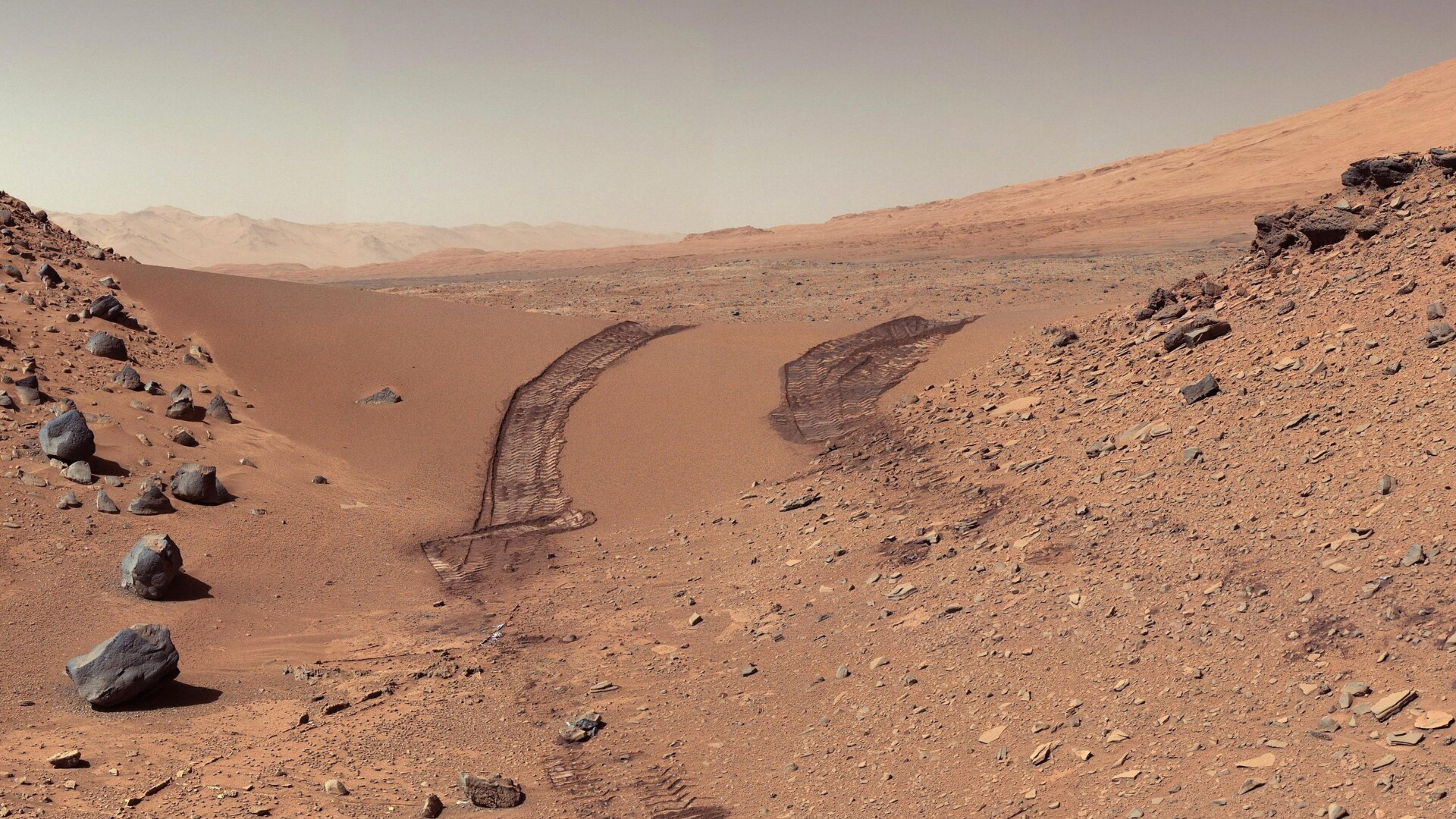
# ***Federate Data, Not Apps***



# ***Wrap Up Roadmap***

Threading the Needle 







Wrap Up Roadmap

***Livin' On the Edge***



## Wrap Up Roadmap

# ***Livin' On the Edge***

- ♦ Exciting times — in both senses 🎢



## Wrap Up Roadmap

# ***Livin' On the Edge***

- ◆ Exciting times — in both senses 🎢
- ◆ Lots of low hanging fruit!





# Wrap Up Roadmap

## ***Livin' On the Edge***

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- ◆ Lots of low hanging fruit!
- ◆ Early tools only



# Wrap Up Roadmap

## ***Livin' On the Edge***

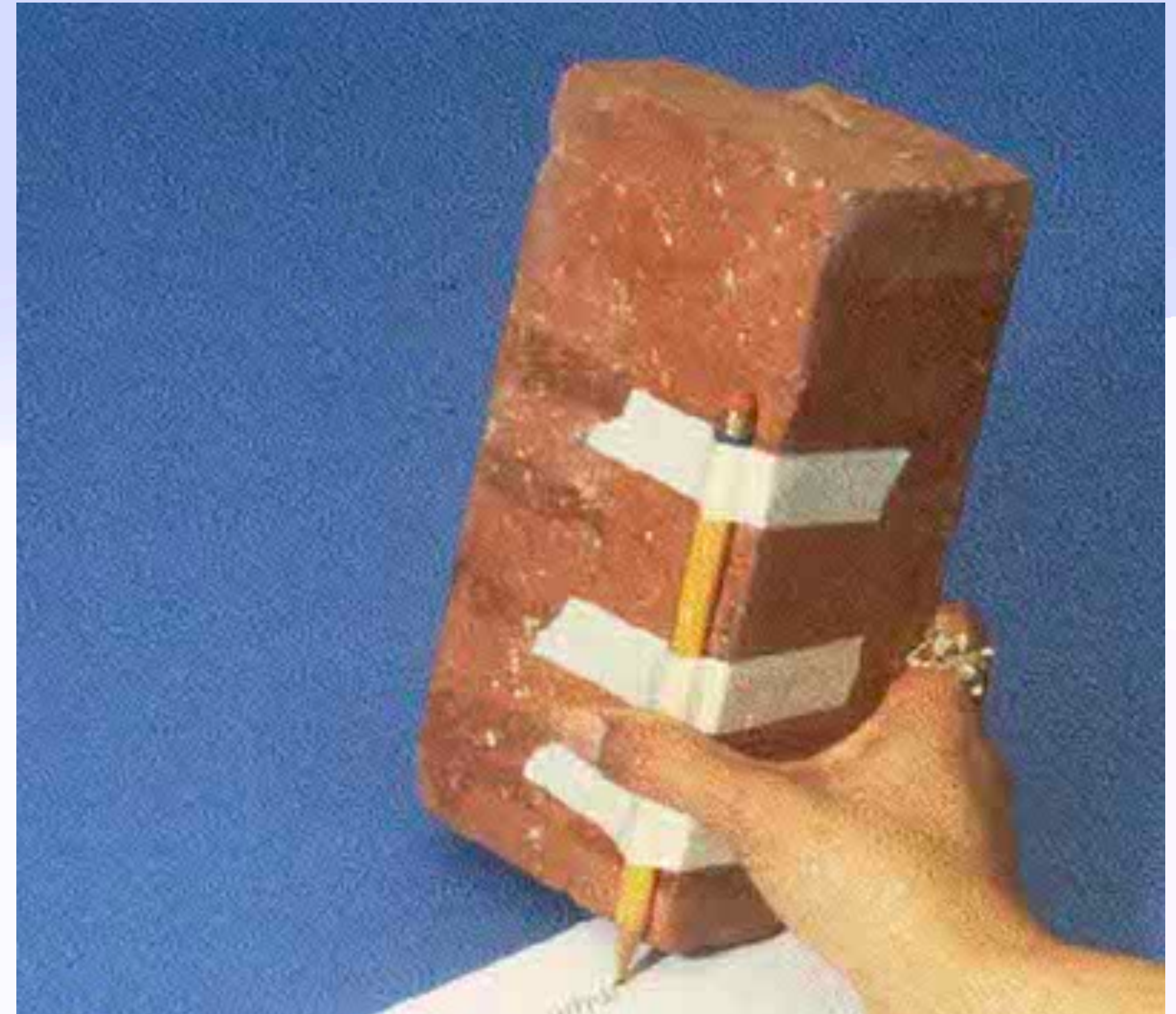
- ◆ Exciting times — in both senses 🎢
- ◆ Lots of low hanging fruit!
- ◆ Early tools only
- ◆ No obvious way (no LoFi LAMP or Rails)





Wrap Up Roadmap

***Not All or Nothing***

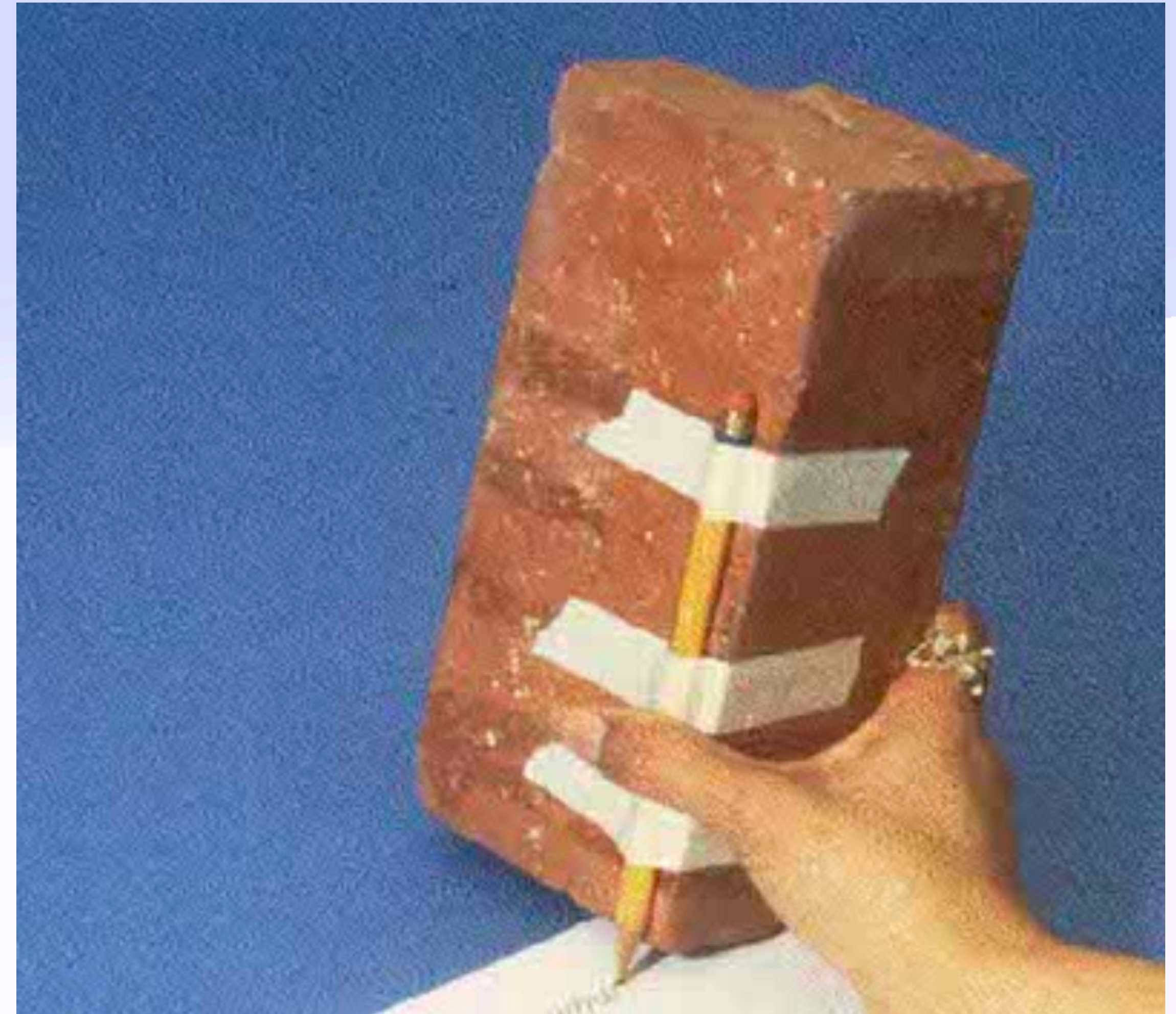




## Wrap Up Roadmap

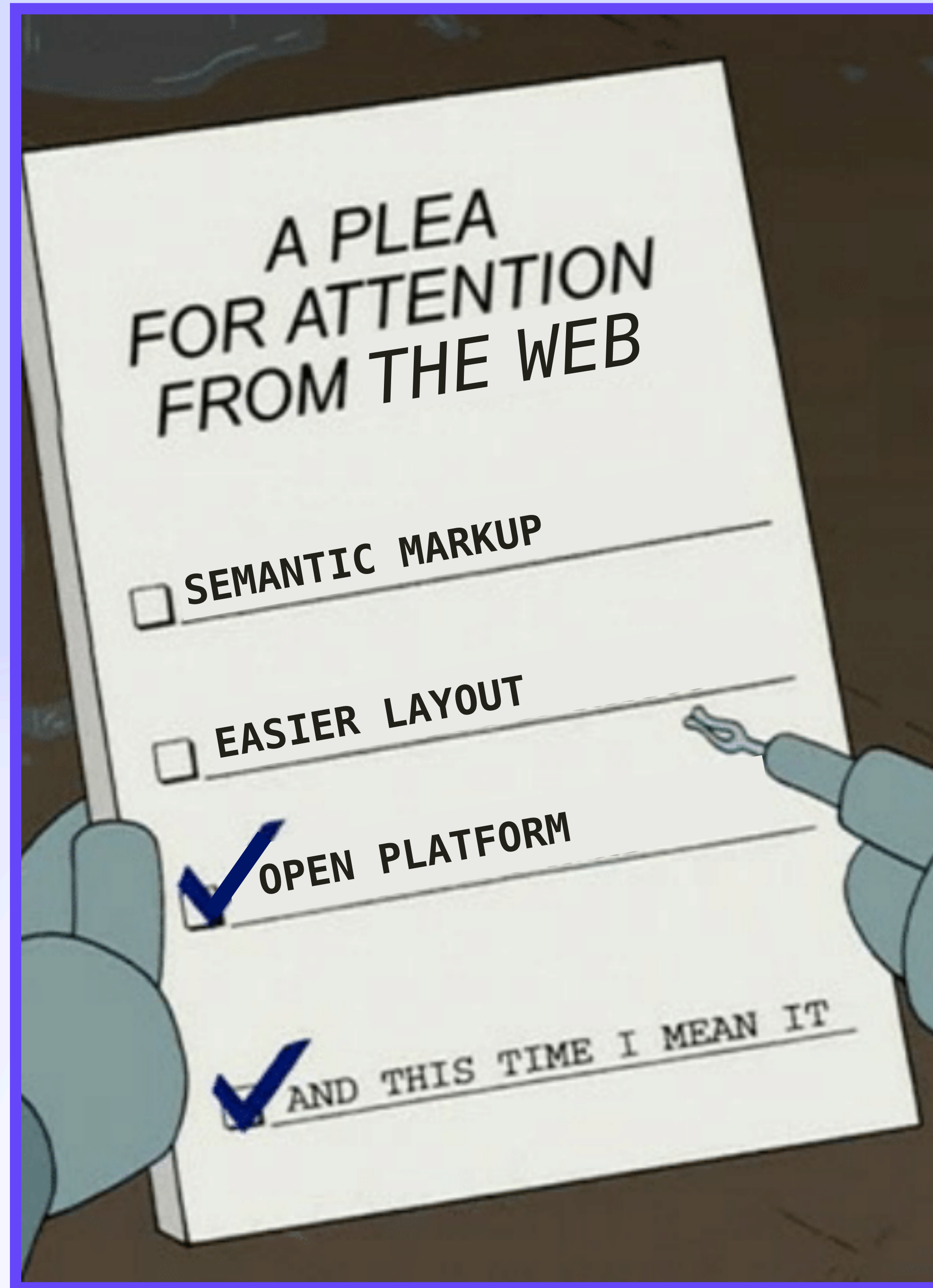
# ***Not All or Nothing***

- ♦ LoFi is great at human sizes & speeds
- ♦ ...but harder to do global things
  - ♦ e.g. "Build the Bluesky firehose"





# A Roadmap Wrap Up



🦋 @expede.wtf

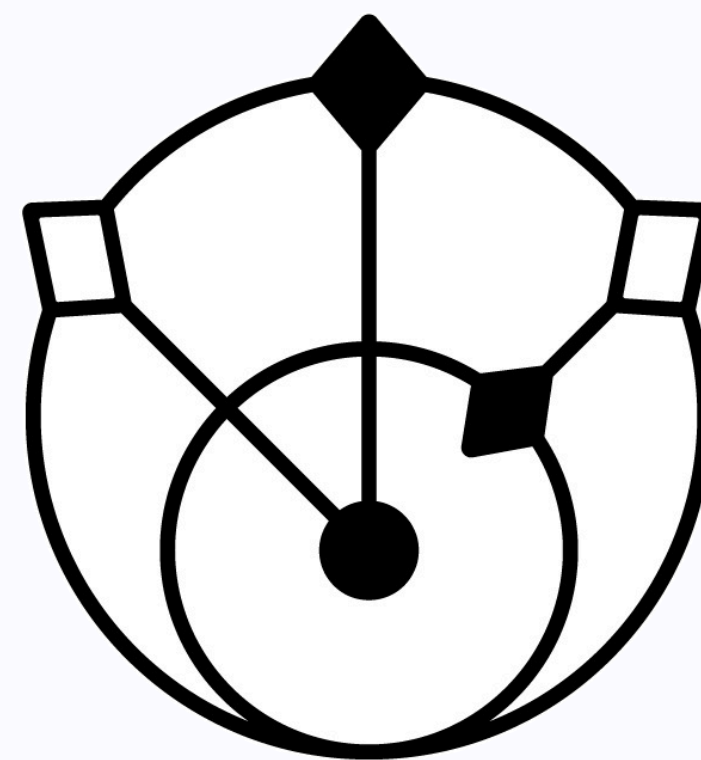
🐘 @expede@types.pl

✍️ notes.brooklynzelenka.com

🏢 inkandswitch.com



***Thank You, DWWeb Meetup*** 🤝



automerge.org