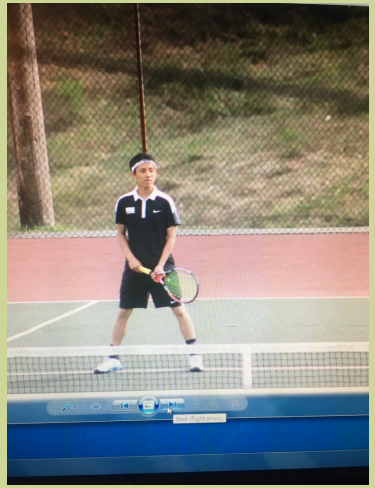


OpenOx

Zi (@ziyzhu)

A bit about me



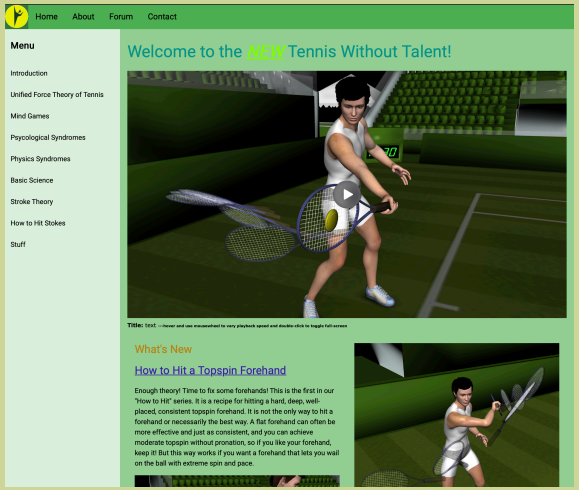


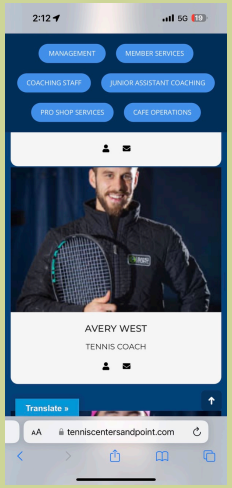
I like to play tennis 🎾



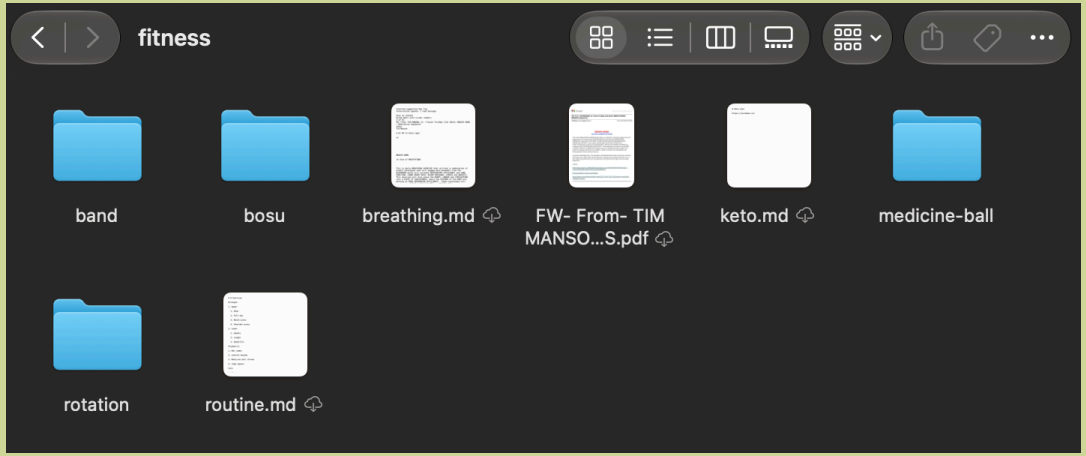


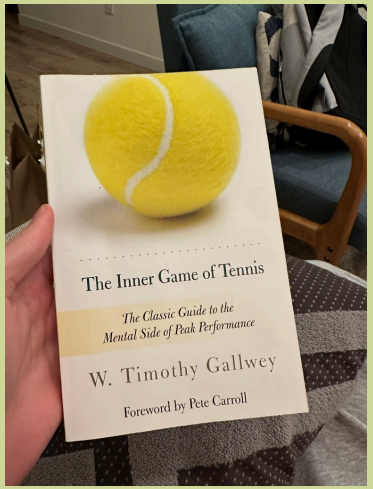
I wanted to become really good,
like really good.





Coaches, trainers, books, videos, ...





None worked, really

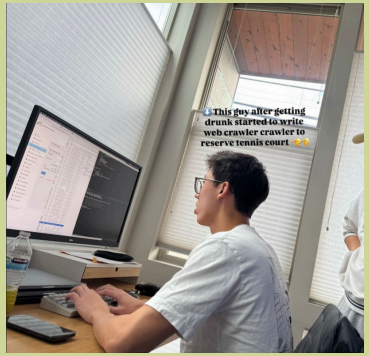
Until I played for two weeks straight,
two hours every day

I just gotta play more

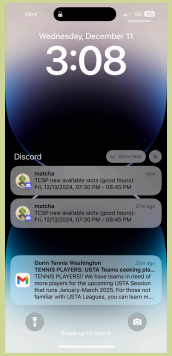
It's a pain in the a**
to find courts

I decided to solve it once and for all so I can play more

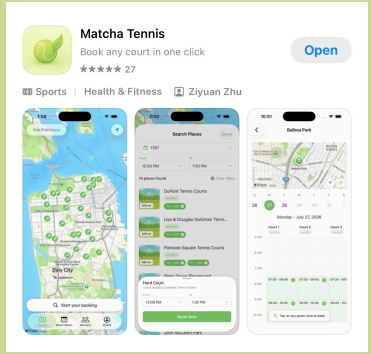
Script



Discord Bot



iOS App





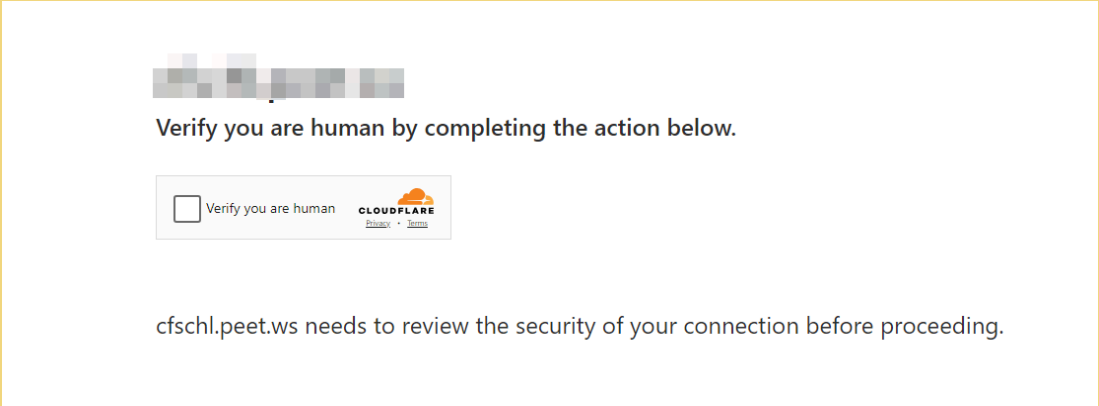
For full story, check out my interview with Questionable Calls

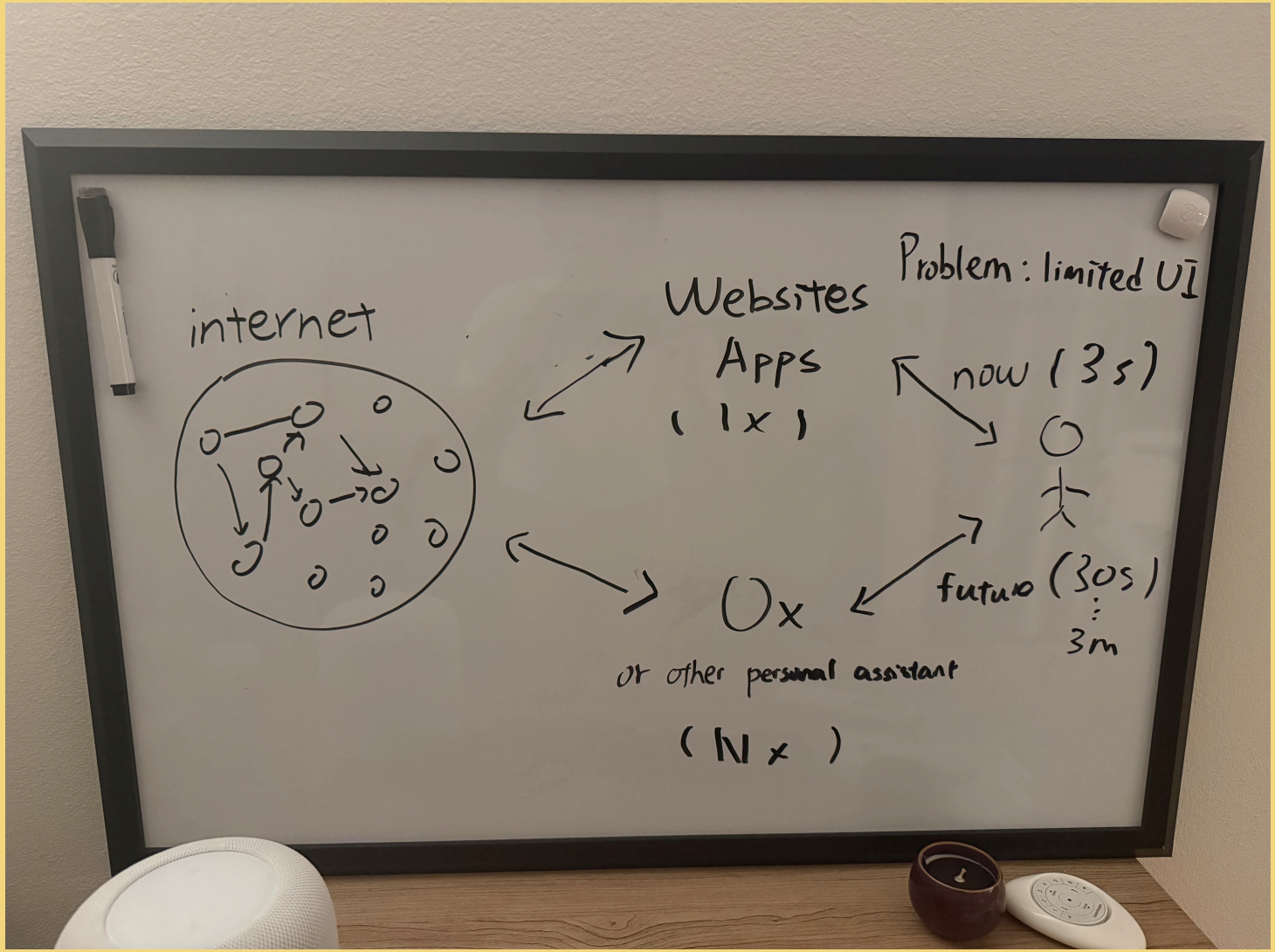
How does this have anything to do with systems?

I discovered something

Website interactions need to run on my phone.







What if I could do this for everything else?

No longer limited by UI, and much faster.

Requirement 1

Connect to anything

Assistant services


ChatGPT


Claude


Gemini


DeepSeek


Grok


Copilot


Qwen


Kimi


Perplexity


Doubao


Z.ai


Hugging Face

Daily services


Google


Gmail


Outlook


Amazon


Airbnb


DoorDash


Instagram


Facebook


LinkedIn



Xiaohongshu



Taobao


Ctrip

Legacy services


Chase



Amex


Bank of America


USCIS



USTA



FDA



NCBI


Nature

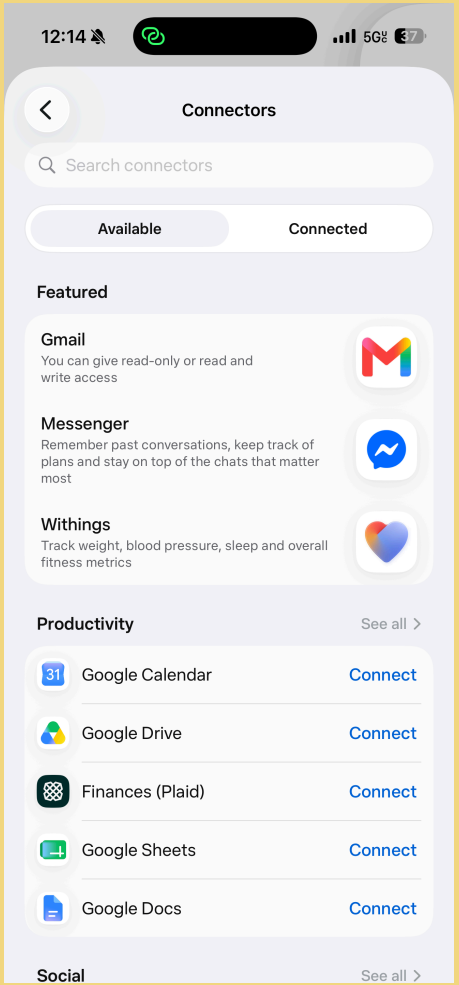

NEJM

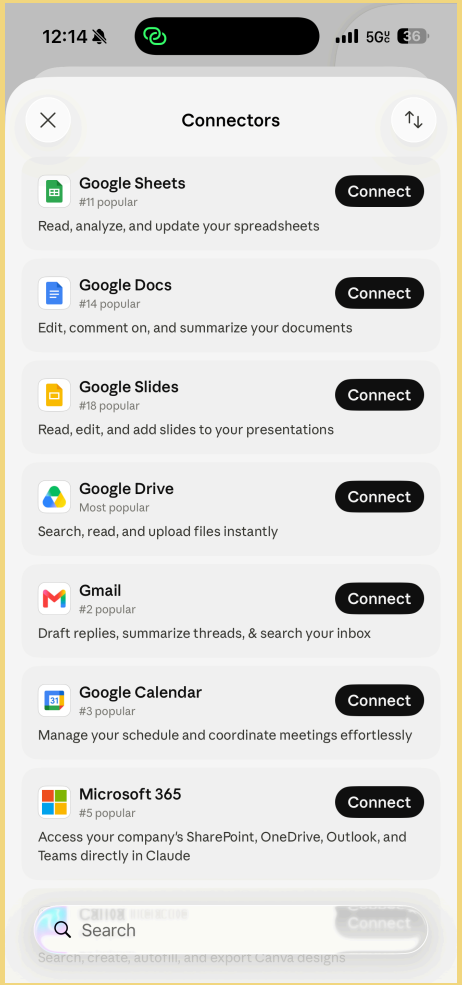

FlightAware

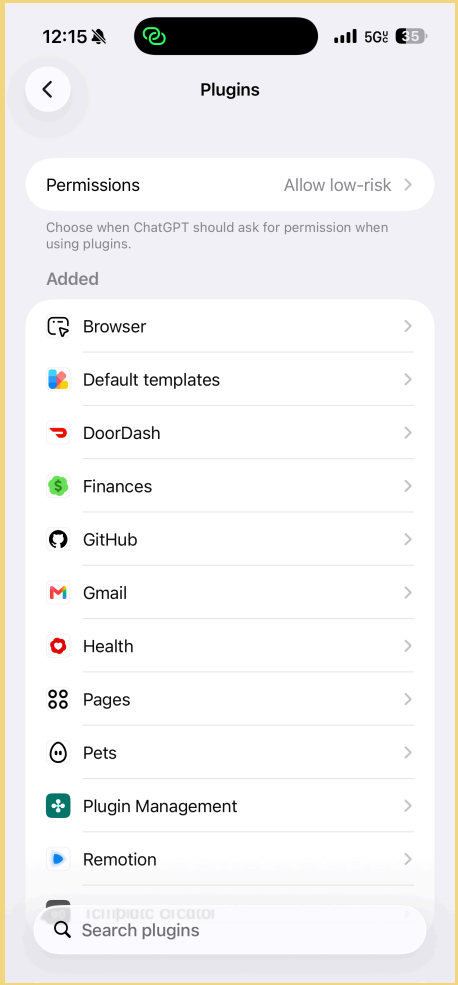

Apple Developer


App Store Connect

Connectors?


12:14
Connectors
Search connectors
Available
Connected
Featured
Gmail
You can give read-only or read and write access
Messenger
Remember past conversations, keep track of plans and stay on top of the chats that matter most
Withings
Track weight, blood pressure, sleep and overall fitness metrics
Productivity
See all
Google Calendar
Connect
Google Drive
Connect
Finances (Plaid)
Connect
Google Sheets
Connect
Google Docs
Connect
Social
See all


12:14
Connectors
Google Sheets
#11 popular
Connect
Read, analyze, and update your spreadsheets
Google Docs
#14 popular
Connect
Edit, comment on, and summarize your documents
Google Slides
#18 popular
Connect
Read, edit, and add slides to your presentations
Google Drive
Most popular
Connect
Search, read, and upload files instantly
Gmail
#2 popular
Connect
Draft replies, summarize threads, & search your inbox
Google Calendar
#3 popular
Connect
Manage your schedule and coordinate meetings effortlessly
Microsoft 365
#5 popular
Connect
Access your company's SharePoint, OneDrive, Outlook, and Teams directly in Claude
Search


12:15
Plugins
Permissions
Allow low-risk
Choose when ChatGPT should ask for permission when using plugins.
Added
Browser
Default templates
DoorDash
Finances
GitHub
Gmail
Health
Pages
Pets
Plugin Management
Remotion
Search plugins

The long tail starts where APIs don't exist



giants

starts here: long tail

All of these services have a website

1. Load the website

In a browser / web view

→

2. Inject JavaScript

A snippet defines callable functions

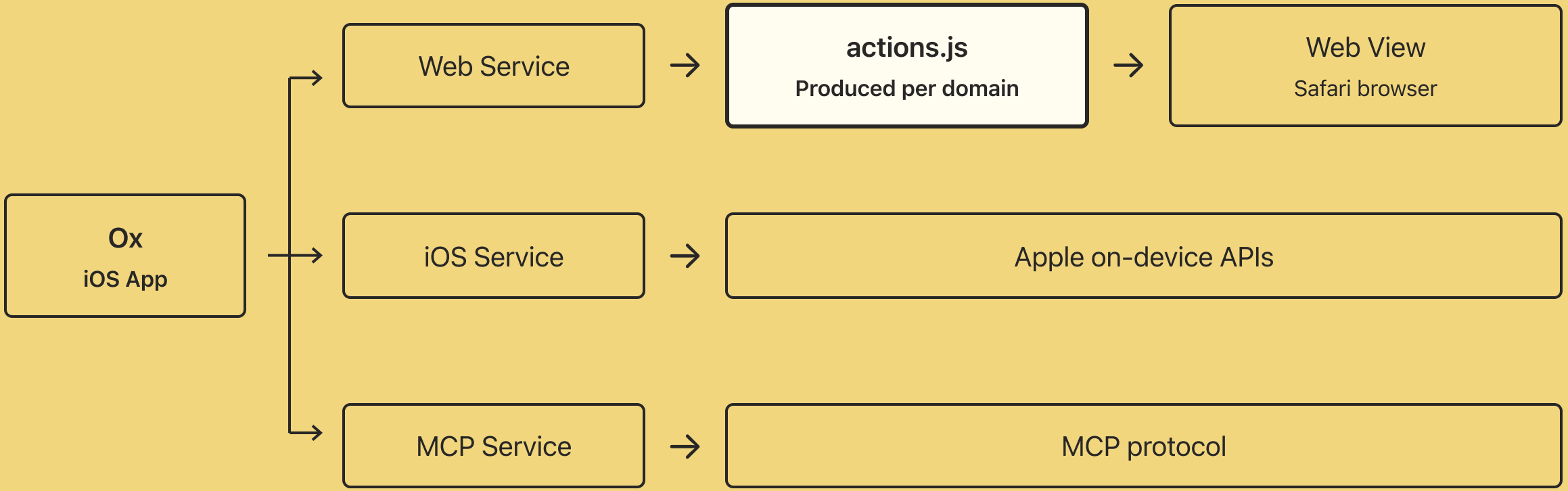
→

3. Invoke a function

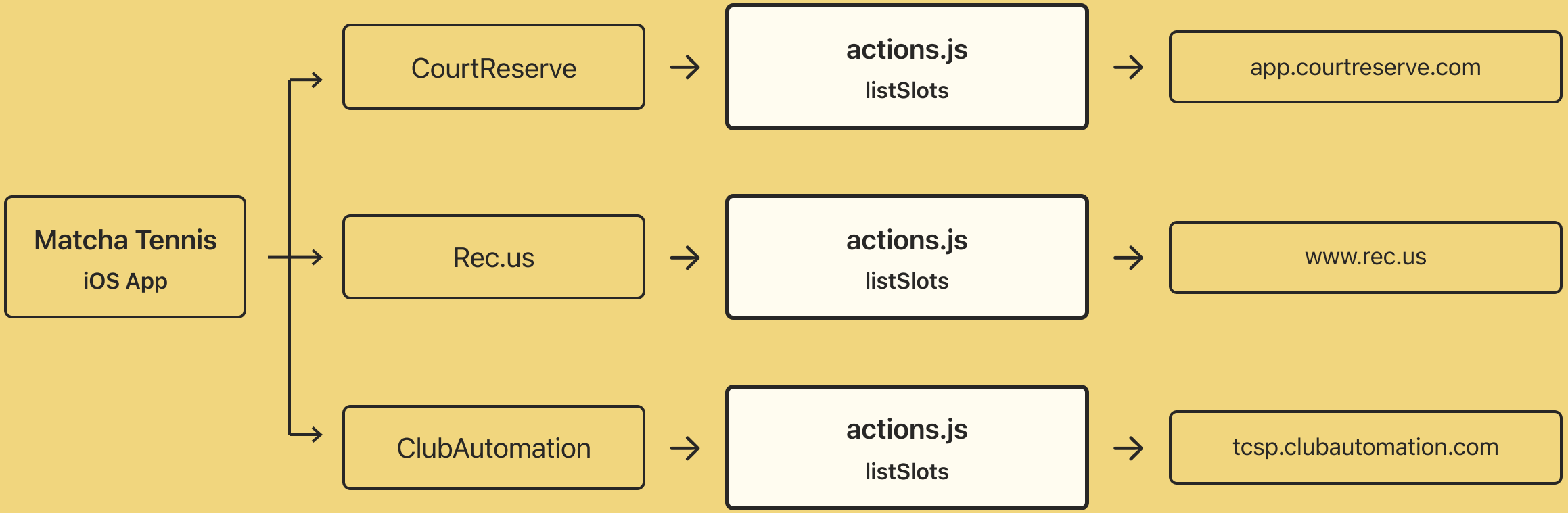
Client calls **bookCourt()**

↓

Website action

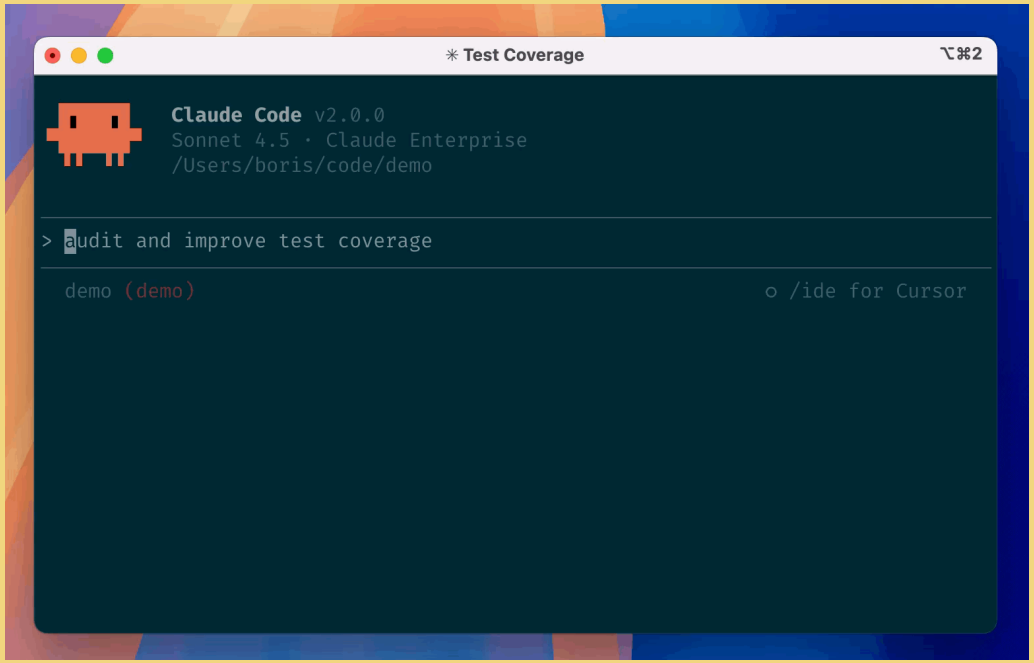

Ox
iOS App
Web Service
actions.js
Produced per domain
Web View
Safari browser
iOS Service
Apple on-device APIs
MCP Service
MCP protocol

Matcha Tennis: one app, multiple providers



How do we produce actions.js?

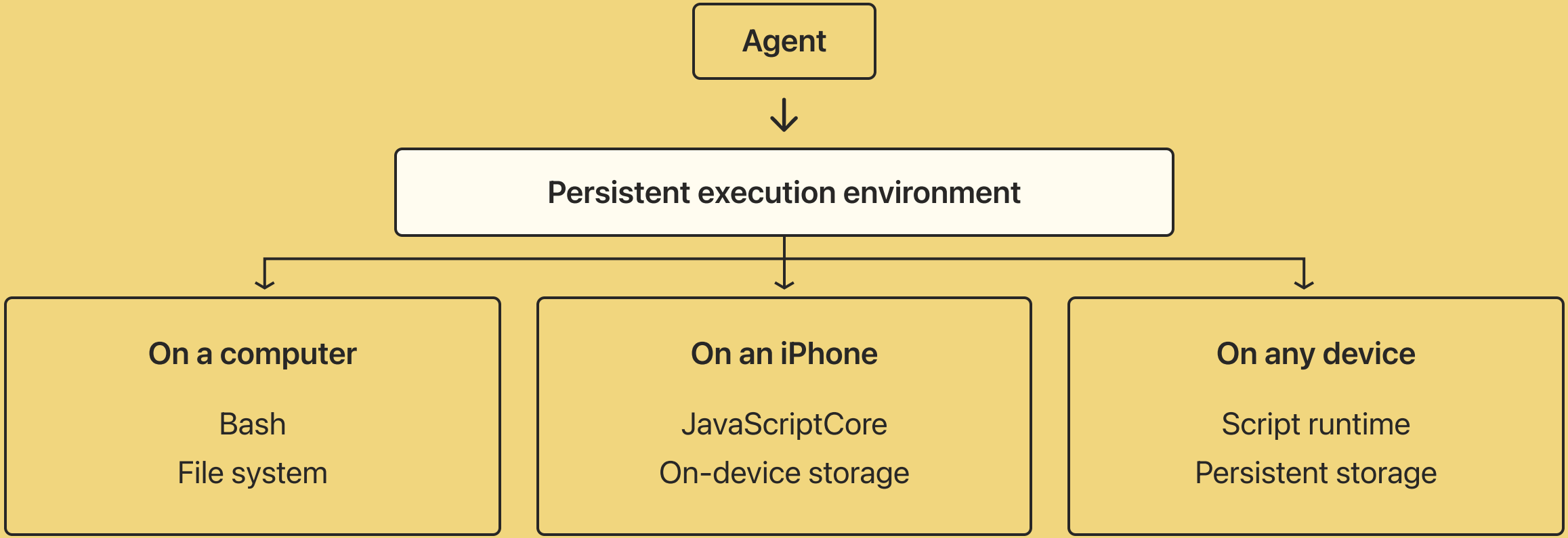
Easy!
Tell Claude Code to
reverse engineer a website,
or feed it a HAR file



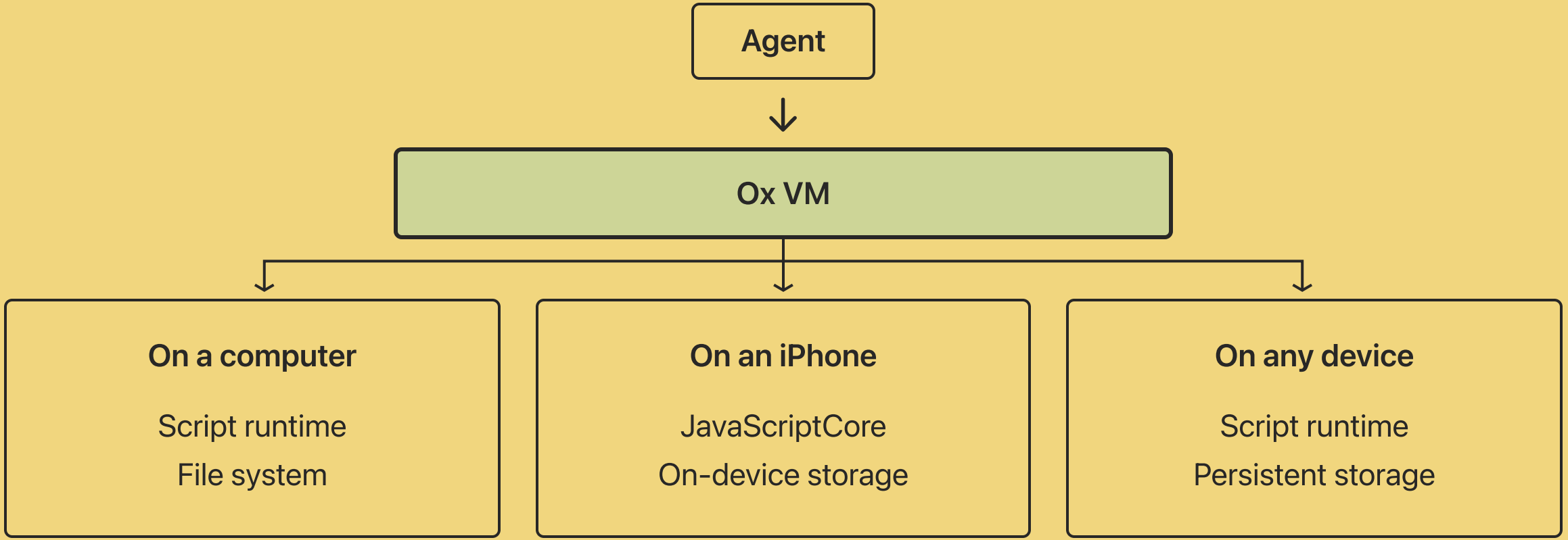
But...
we are on an iPhone



The agent doesn't have to know that



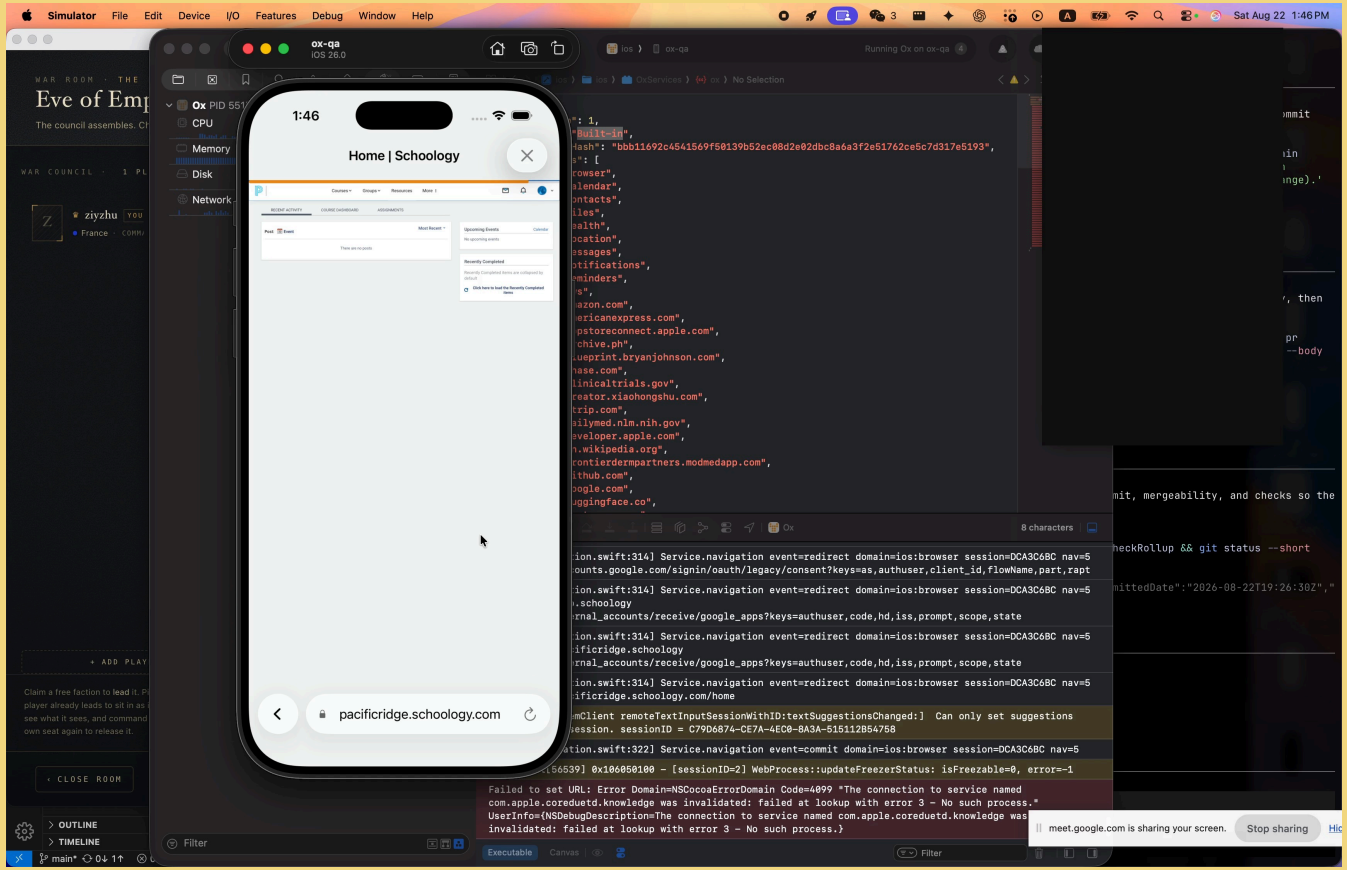
We call this execution environment Ox VM.



Inside Ox VM

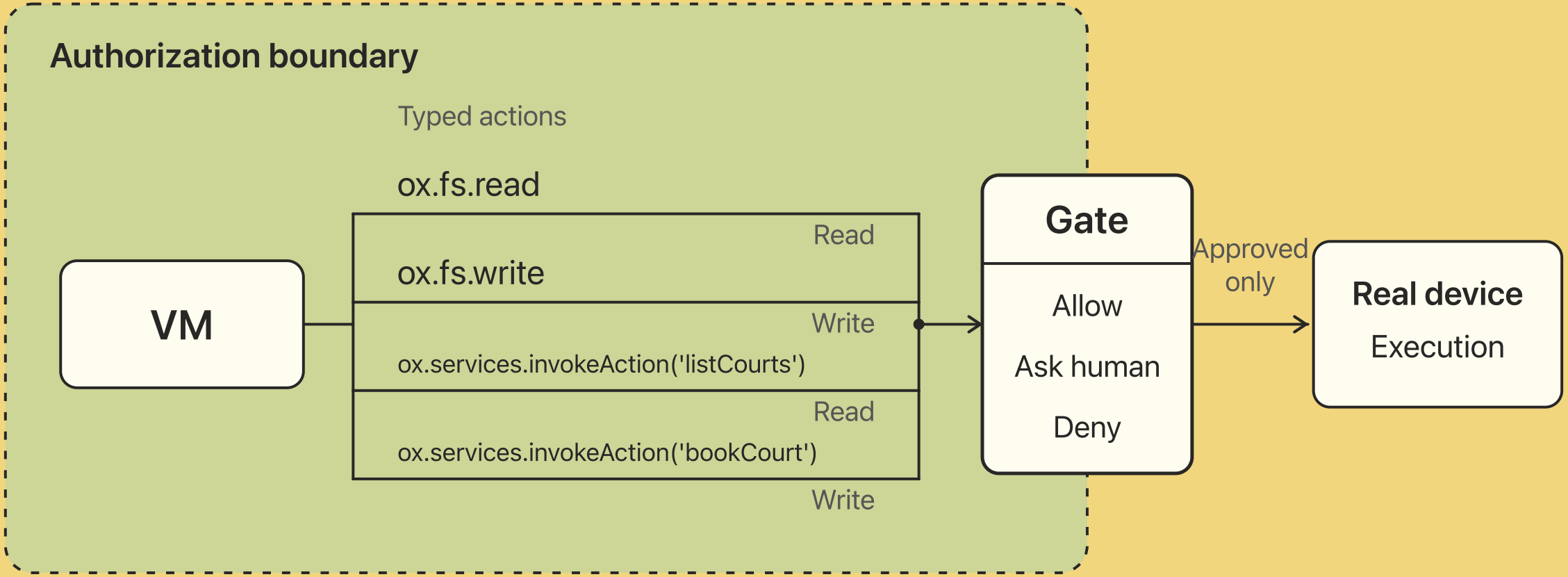

OX HELP
CAPABILITY CATALOG
ox.app · ox.conversation
Host information, Profile settings, and conversation operations
ox.provider · ox.secret
Model providers and credential management
ox.fs · ox.output
Scoped files and complete captured execution output
ox.service · ox.repository
Service discovery, actions, and repository management
ox.skill · ox.schedule
Reusable workflows and scheduled work
ox.user
User choices and progress updates
ox.web · ox.vision
Browser, search, fetch, and visual inspection
> ox.help()

Each Ox Service can be produced just-in-time when I need it.



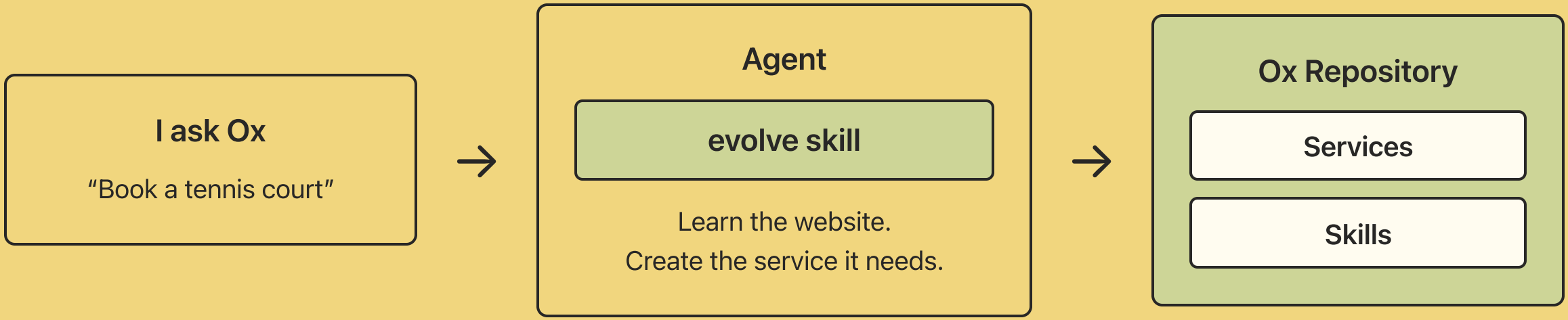
[Watch the demo online →]

Security

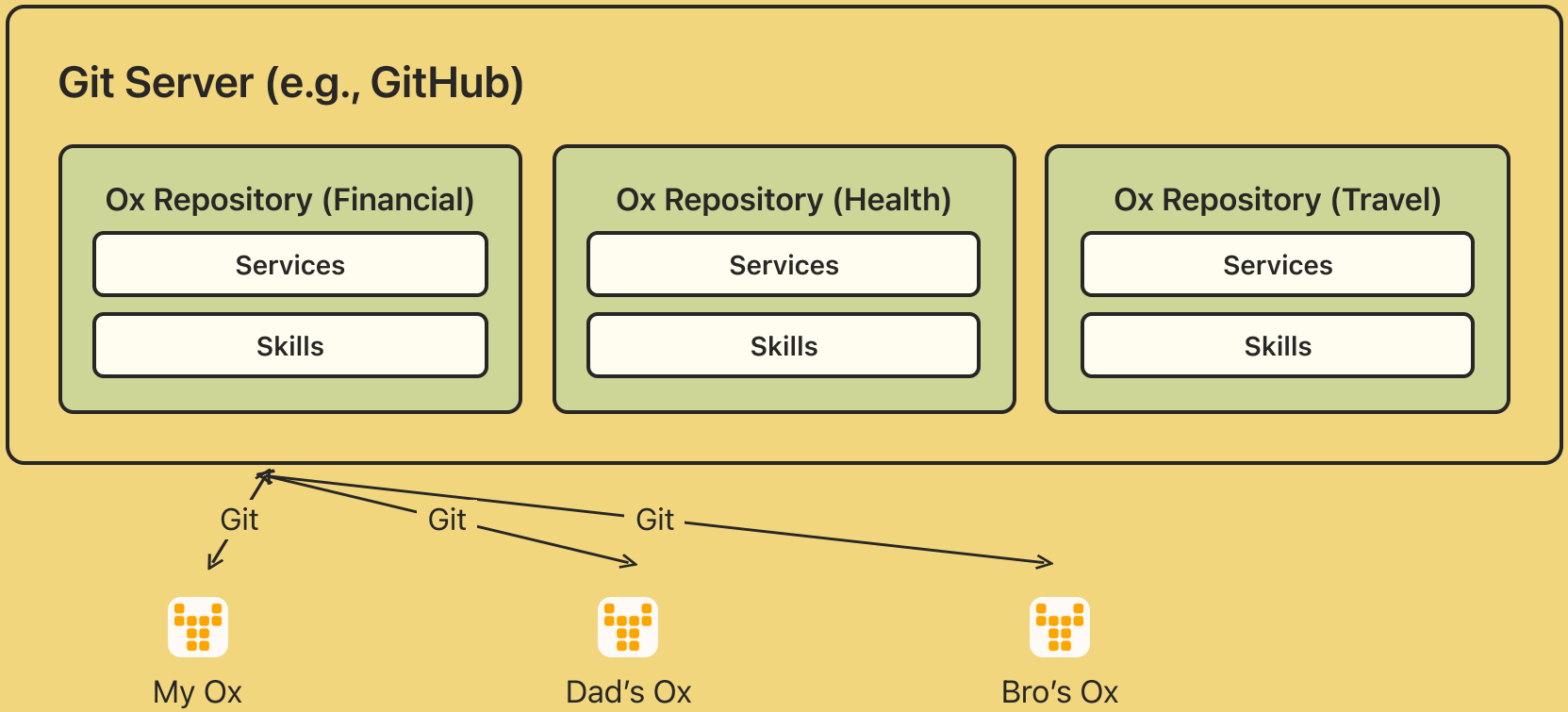


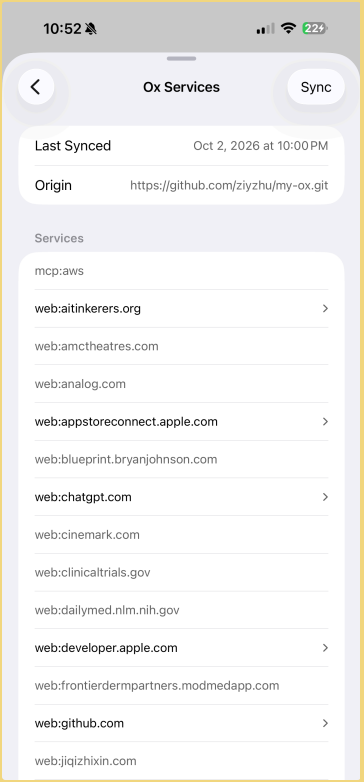
The VM can request actions, but it cannot bypass authorization.

Every agent has an **evolve** skill



Distributed Evolution





Requirement 2

Mine

Portable Data

Ox Profile

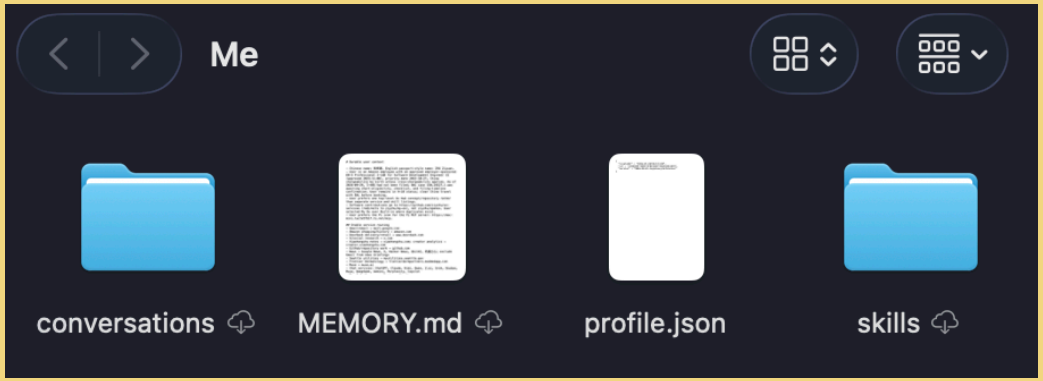
Identity · Memory
Files · Conversations

A portable folder I own

My Profile

Dad's Profile

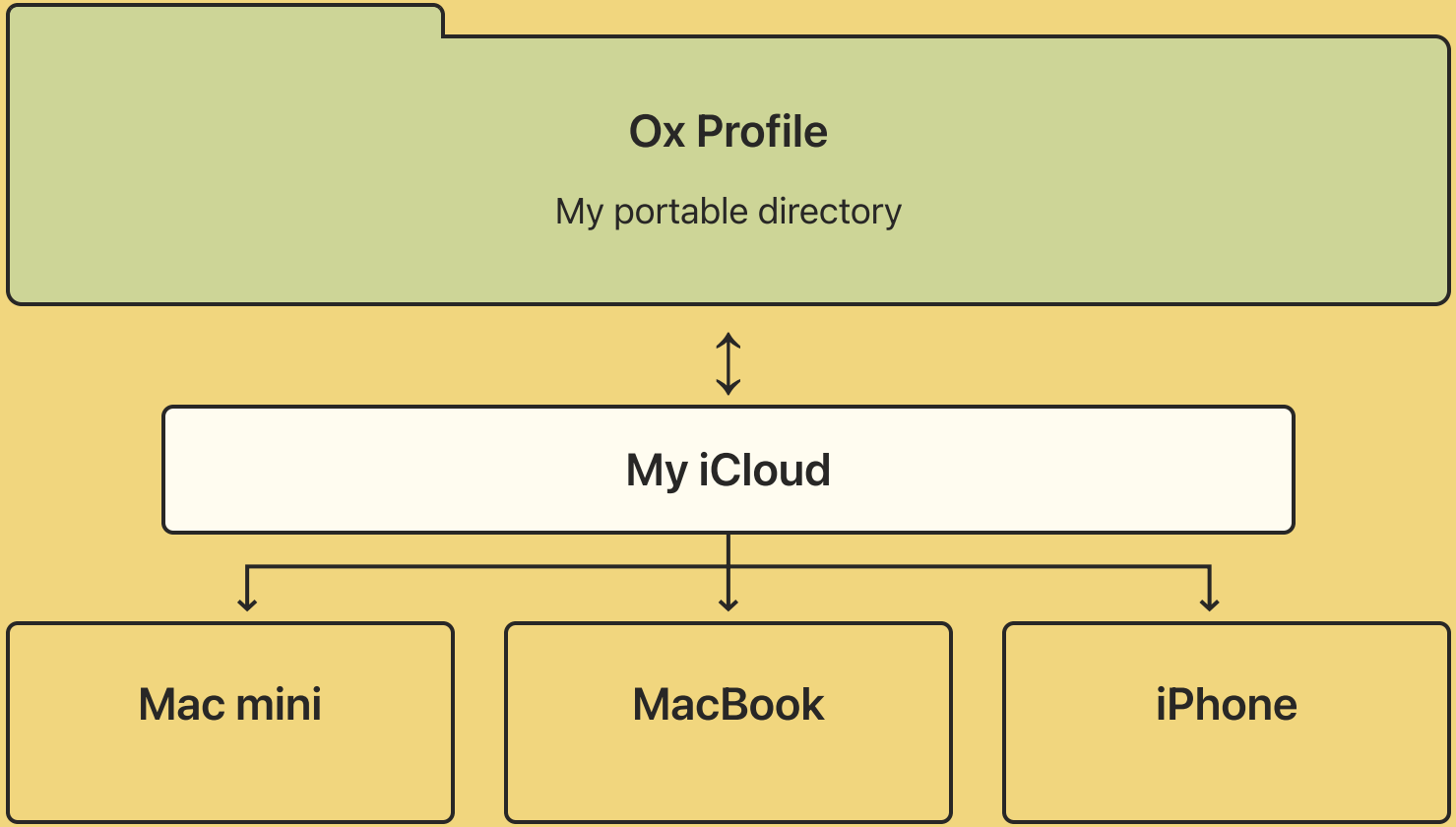
Testing Profile

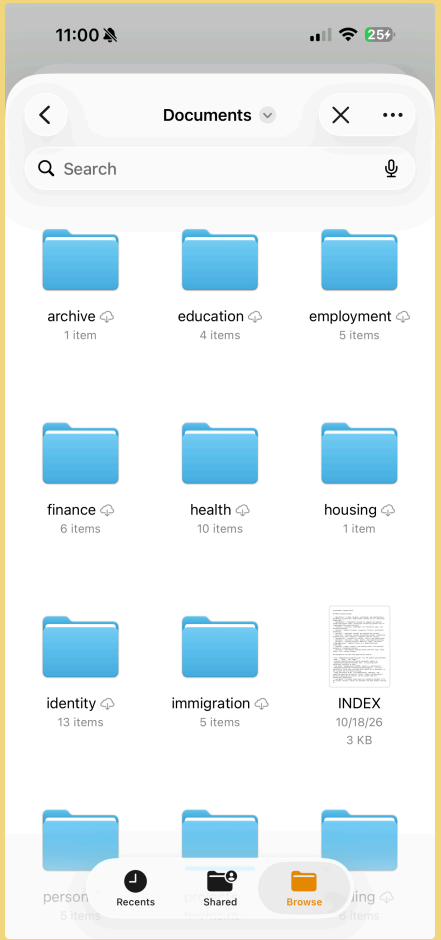



SanDisk



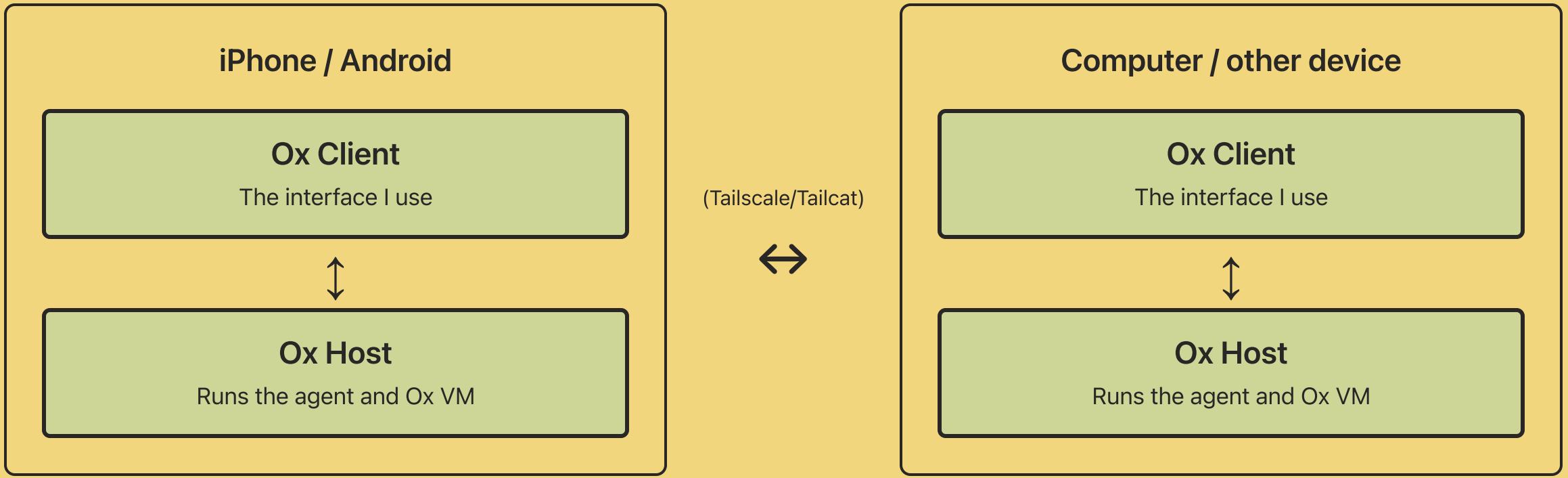
Optionally, sync across my devices

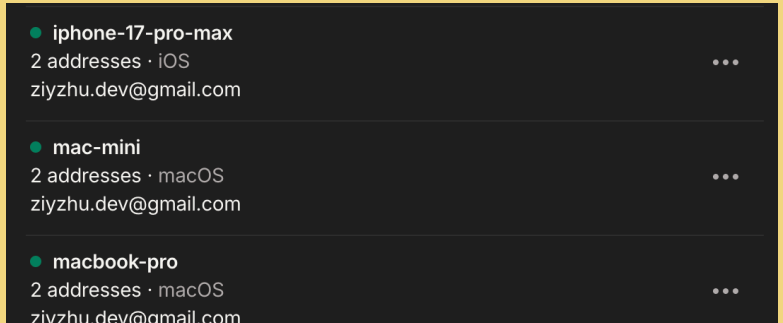




Interoperable Devices

Great for debugging, too.





```
ziyzhu@:~/Documents/slides$ ox -h
■     ■
■ ■ ■ ■  Ox CLI
  ■ ■
  ■ ■
Use Ox Profiles, repositories, Hosts, conversations, and VMs

Usage: ox [--host <ws-url>] [--conversation <conversation-id>] [--profile <id-or-path>] [--repository <path-or-url>] <command> [...flags] [...ar
gs]

Commands:
  profile list             List Host Profiles with --host, or discover iCloud Profiles offline
  profile memory           Read the Profile's memory from disk or the selected Host
  profile skills           List the Profile's skills, or print one
  profile files            List the Profile's files, or print one
  profile conversations    List the Profile's saved conversations, or print one transcript
  profile inspect          Inspect a Profile owned by the Host
  profile create           Create a local Profile on the Host (--name)
  profile select           Select the Host's active Profile
  profile rename           Rename a Profile owned by the Host (--name)
  profile update           Update Host Profile name or memory
  repository inspect       Inspect a local, localhost, or HTTPS repository
  repository validate      Validate a local, localhost, or HTTPS repository
  repository verify        Verify that a Git URL conforms to the Ox Server IR
  repository serve         Serve a local or remote repository on localhost
  repository services      List the repository's web and API services, or print one manifest as JSON
  repository actions       List the actions a repository service declares (--json)
  repository skills        List the repository's skills, or print one
  host describe            Show Host identity, supported protocol versions and methods (--json)
  host list                List reachable Ox Hosts (--all includes unavailable candidates)
  host discover            Alias for host list
  host logs                Read or follow structured Host logs
  host providers           List the Host's model providers and their models
  host services            Show the Host's services and their live page state
  host service             Invoke, evaluate, reload, or sync live services on the Host
  host files               List, mount, assign, or unmount Profile folders on the Host
  host repository          List repositories or connect/disconnect a granted folder
  conversation list        List conversations exposed by the selected Host (--json)
  conversation new         Start a conversation and make it active, optionally temporary or on a chosen model
  conversation open        Load a saved conversation and make it active (--conversation <id>)
  conversation respond     Answer a pending choice or approval using its prompt id
  conversation send        Send a message through the real conversation turn and wait for its outcome
  conversation stop        Stop the selected conversation's running turn
  conversation inspect     Inspect the selected conversation's prompt, tools, messages, and blocks
  conversation watch       Watch the selected conversation for changes, reconnecting between snapshots
  conversation logs        Read Host logs that mention the conversation (--conversation <id>; same flags as host logs)
  vm inspect               Inspect the selected Host, conversation-bound VM, and VFS roots (--json)
  vm functions             List the ox.* functions exposed by the VM (--json)
  vm help                  Print the complete contract for one ox.* function
  vm call                  Call one ox.* function with structured JSON arguments
  vm eval                  Run arbitrary JavaScript in the selected conversation-bound VM
  vm skills                List the skills visible to the selected conversation-bound VM, or print one

Flags:
  --host <ws-url>                   Ox Host WebSocket endpoint
  --conversation <conversation-id>  Conversation-bound VM on the Host
  --profile <id-or-path>            Host Profile ID with --host, or directory for disk inspection
  --repository <origin>             Repository path or Git URL
  -v, --version                     Display the installed version and exit
  -h, --help                        Display this menu and exit
```

Requirement 3

Any model

Model providers

OpenAI

Anthropic

Google

Any provider supporting:

- OpenAI Responses
- OpenAI Chat Completions
- Anthropic Messages
- Gemini Generate Content

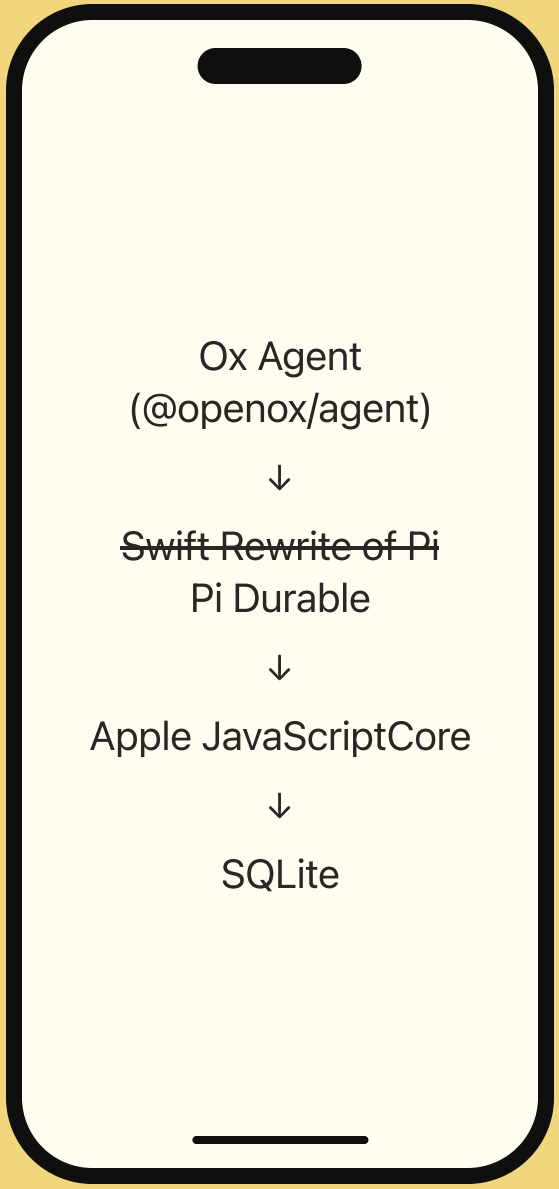
Local models

Introducing Ternary Bonsai 2 2B, 4B, and 9B: Bringing Local Agents to Everyday Devices

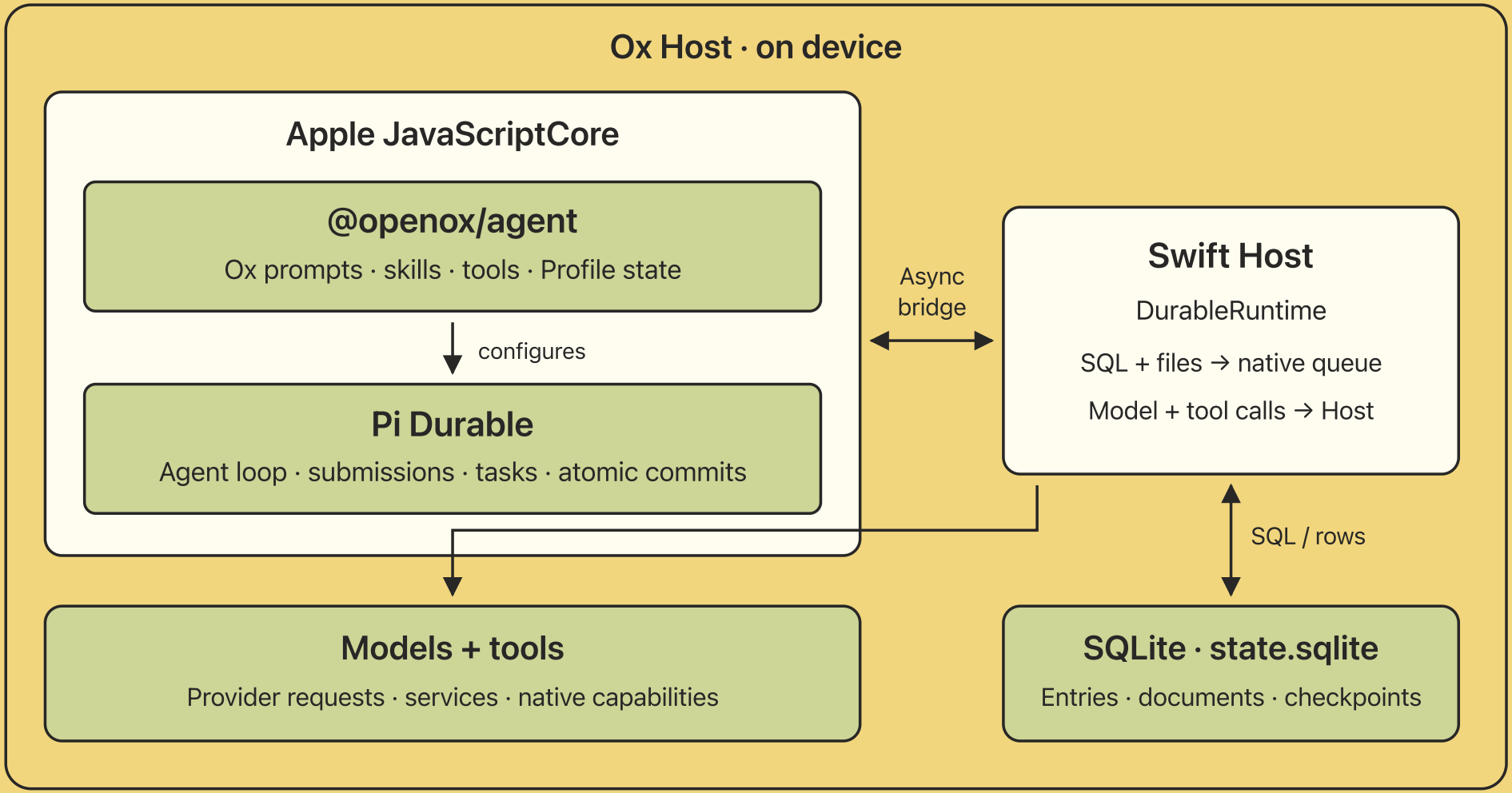
Run LLMs on-device with LiteRT-LM

The **production-ready** orchestration layer to run LLMs with LiteRT, engineered for **high-performance**, **cross-platform** execution.

Gemma 4: Local agentic intelligence on Android ↗


Ox Agent
(@openox/agent)
↓
~~Swift Rewrite of Pi~~
Pi Durable
↓
Apple JavaScriptCore
↓
SQLite

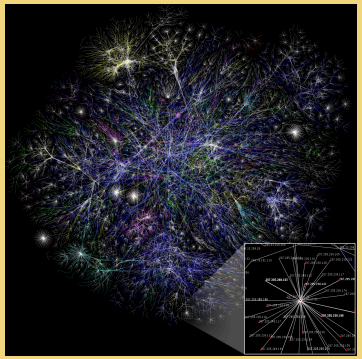
One on-device agent runtime



Commit before display. After restart, recover from stored state—not a saved JavaScript VM.

The next organizing layer is not another Google

Public web



Walled Platforms

My device

Personal Context

ziyzhu/**openox**

Moo moo



2 Contributors

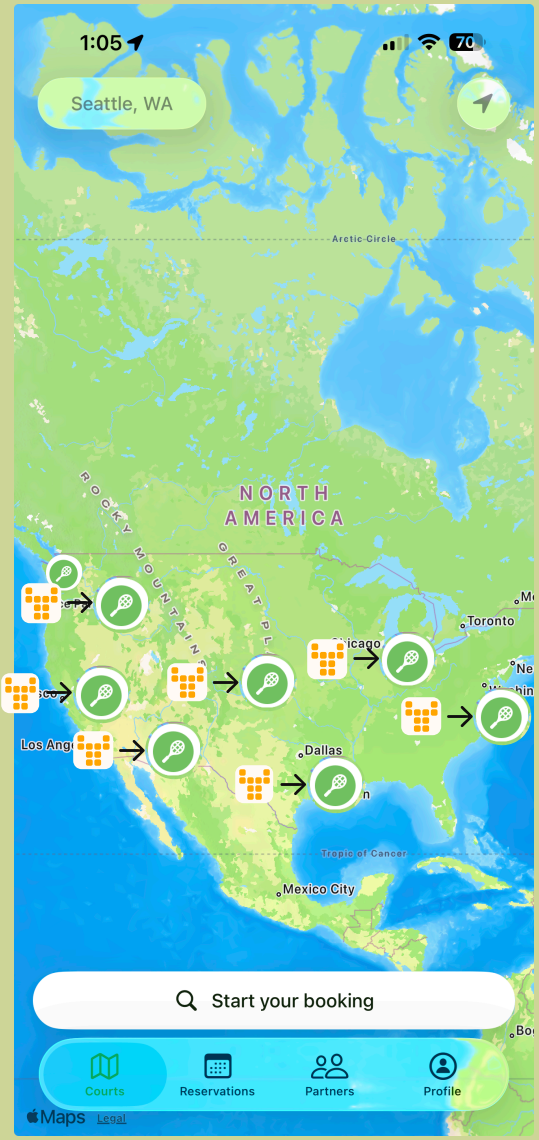
0 Issues

13 Stars

0 Forks

What does this mean for 🎾?

What if I can play more tennis wherever I go



Thanks

Inspiration: Pi Coding Agent, Earendil

Listening and suggesting: Xiaofeng Ding, Ian Liu, Weijian Li, Ruifan Wang, Jose Castillo, Zeke John, Colin Li, Herbert Xin, Nandh Devineni