



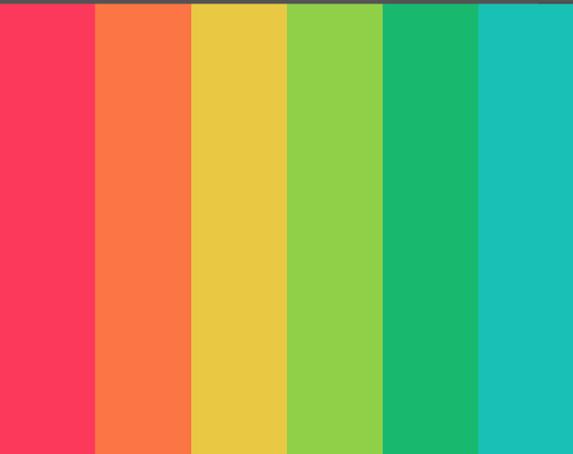
A Safe Place to Land



*Practical (and hyper-scale tested) advice for
technical decision-making while evolving systems in place*



HI LDX3!



I'm Ines



fastly[®]

making the internet a better place
where all experiences are fast, safe, and engaging.



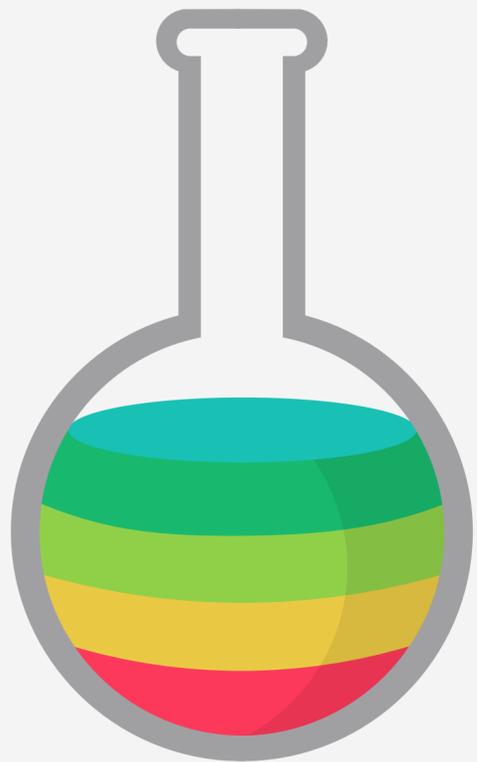
System **Evolution**

Let's set some context

<https://unsplash.com/photos/people-walking-on-sidewalk-during-daytime-xJY-7gtC38o>

Why evolve **in place**?

- ❖ Sustained accelerated growth & scale will demand rapid system adaptation
-
- ❖ Iteratively evolving systems in-place is an important competency to have as it reframes how you approach change & teaches you to optimize for the next safest landing spot





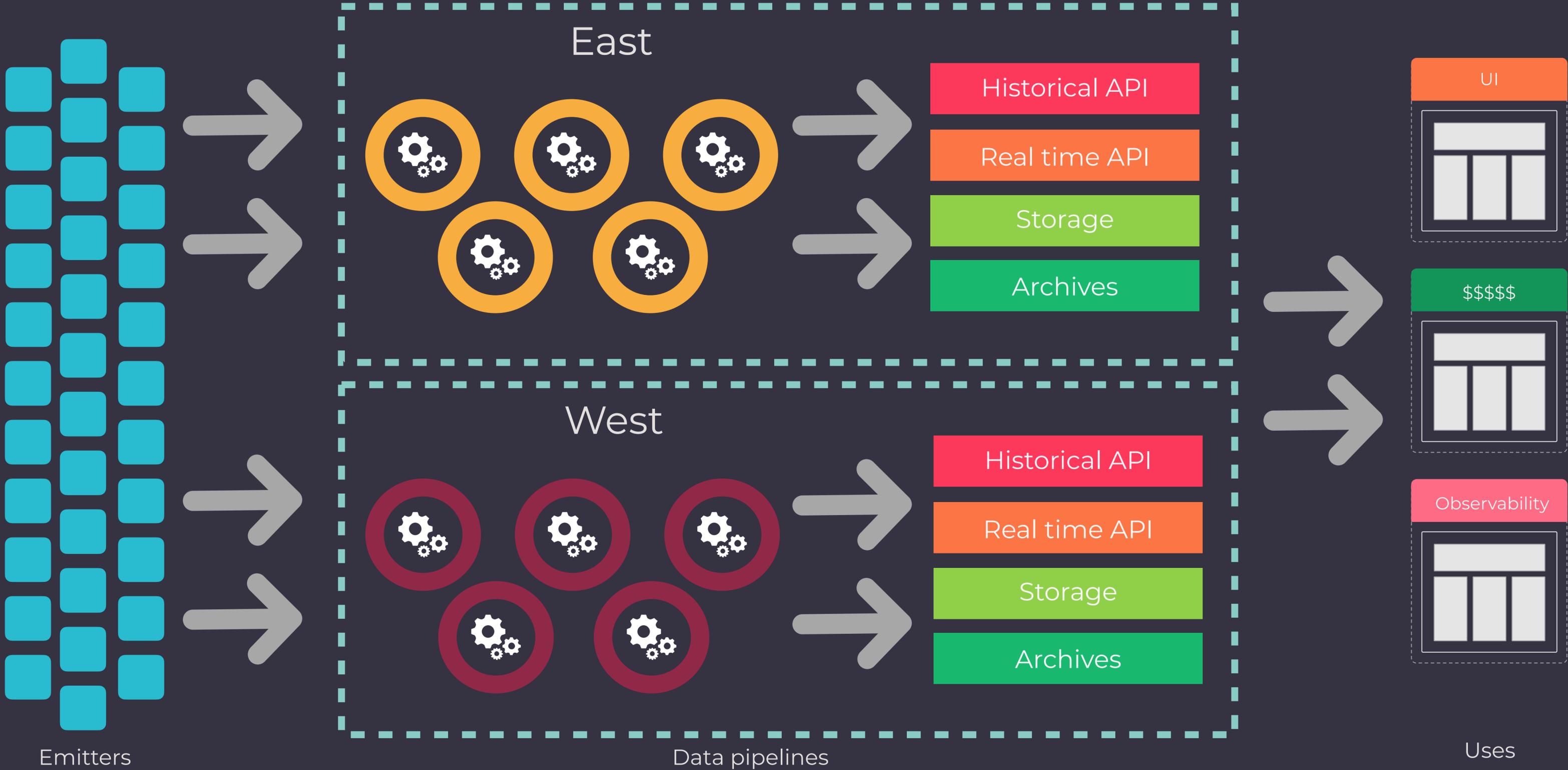
In Practice

Hyper Scale & Systems

https://unsplash.com/photos/two-gray-pencils-on-yellow-surface-1_CMoFsPfs0

Metrics System

Metrics Architecture



Metrics Evolution

Guiding principles for system evolution

❖ **Guarantees needed** - metrics == observability + \$\$\$

❖ **Stateful** - storage, aggregation, archival, presentation

❖ **Distributed** - multiple independent regions pattern

❖ **Strong verification** - needs continuous data verification processes, meet regulatory compliance

❖ **Fast** - optimized for fast metric aggregation, availability, and correctness (cannot double count)

Growth & Metrics

What drives this pipeline's growth?

```
1 msg/sec * nodes * message type * metrics
```

- ❖ **Network growth** - New POPs & caches
- ❖ **New emitter types** - Varnish, Compute, H2O, more!
- ❖ **New metrics** - Payload ~340+ metrics

Evolution of Metrics

Most successful strategies in this system

- ❖ Heavily relied on testing frameworks & output **validation** to ensure interface contracts are kept

- ❖ **Changed architecture** when volume demanded it: changed windowing from seconds to minutes, moved aggregation closer to emission and more!

- ❖ **ABS** (Always be Scaling) - We have rewritten every component of this pipeline at least 4-5 times with a very small team

Control Panel

Control Panel Evolution

Guiding principles for system evolution

- ❖ **Guarantees needed** - System availability & resilience are key. UI + APIs are the main platform interaction points

- ❖ **UX Unification** - Platform as a cohesive experience

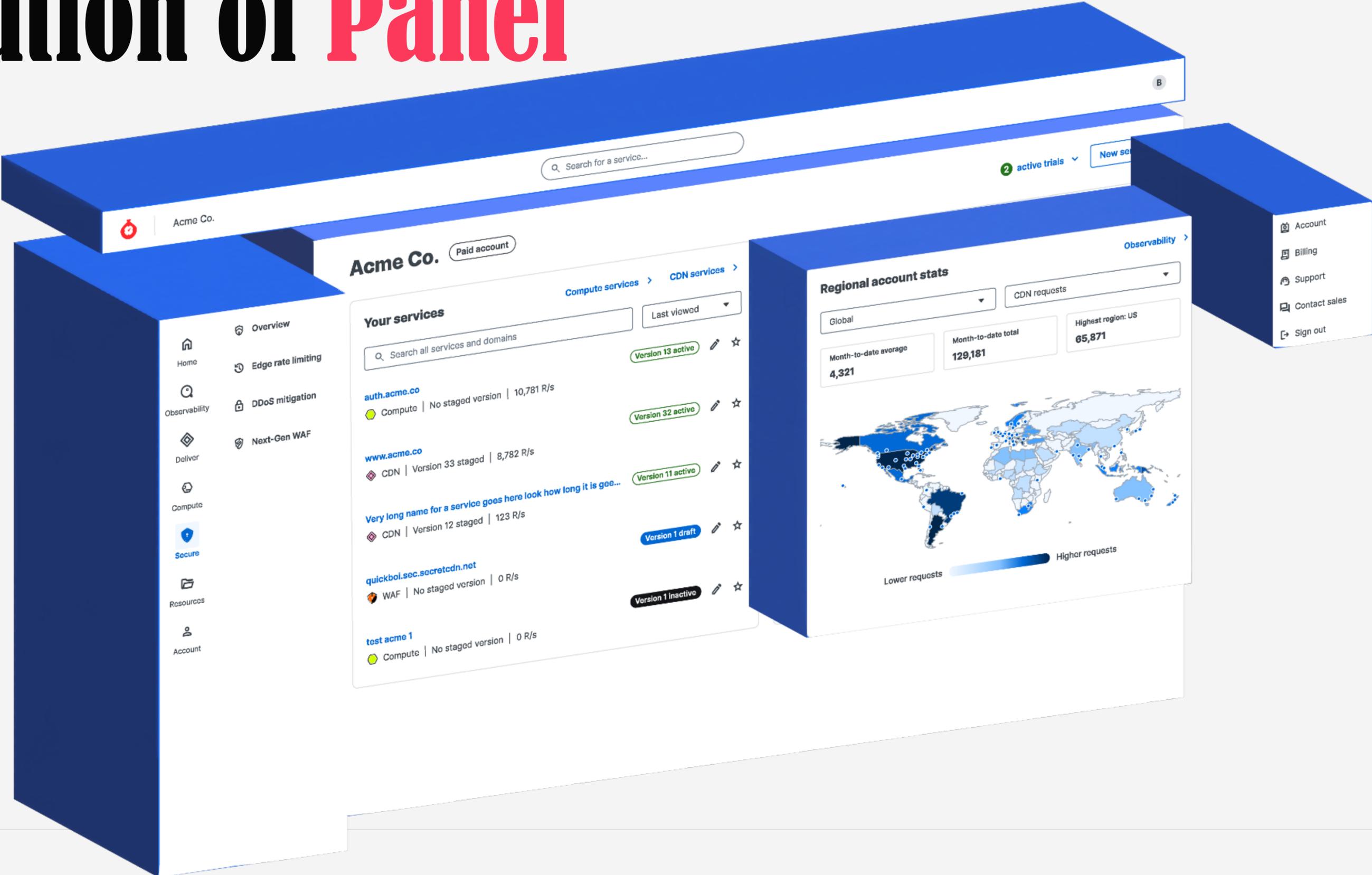
- ❖ **Improve Usability** - Simplify product by reducing complexity

Growth & Control Panel

What drives this system's growth?

- ❖ **New needs** - many new products shipped since control panel was introduced (8+ years ago) plus an acquisition!
- ❖ **Stakeholder frustration** - UI team was a bottleneck
- ❖ **Innovation Speed** - monolithic single page web application was a bottleneck for product velocity

Evolution of Panel



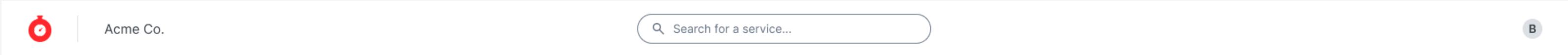
Micro frontend & New Navigation

The screenshot shows a cloud management dashboard for 'Acme Corp'. The interface is divided into several sections:

- Header:** 'Acme Corp' and a user profile icon 'J'.
- Left Navigation:** A vertical sidebar with icons for Home, Observability, Deliver, Compute, Resources, Secure, and Account.
- Top Navigation:** A horizontal menu with 'Overview', 'TLS management', 'Edge rate limiting (Beta)', 'DDoS mitigation', and 'Next-gen WAF'.
- Main Content Area:**
 - Acme Corp:** A large heading with a 'Create service' button.
 - Your services:** A list of services with search and filter options. Services include:
 - rare-near-crow learn glitch:** CDN | 0 R/s, version v1.
 - elemental-delicate-star:** Compute | 0 R/s, version v2.
 - Lomo Taco Labs:** CDN | 0 R/s, version v21.
 - jen compute project:** Compute | 0 R/s, version v1.
 - Kino demo:** CDN | 0 R/s, version v34.
 - Regional account stats:** A section with a 'Global' dropdown, 'CDN requests' dropdown, and three summary cards:
 - Month-to-date average: **97**
 - Month-to-date total: **778**
 - Top region: N. America: **383**A world map below shows request density with a legend from 'Fewer requests' (light blue) to 'More requests' (dark blue).

Universal Search

Universal search service introduced to overhaul search capabilities



Default state when opening search

Search for anything Fastly. Enter to search Clear X

I'm looking for...

Services TLS Certificates Users

Recent Searches

- Recent search per user, per device one
- Recent search per user, per device two
- Recent search per user, per device three
- Recent search per user, per device four
- Recent search per user, per device five

Quick Links | Create CDN service Create Compute service DevHub Fastly Docs

After typing a query: "WAF"

Search WAF Clear X

Services

- cifeadi Edge WAF v5
- csoc-goto-waf v12
- Frontend VCL Service - NG WAF edge deploy v1
- Implementing WAF with service chaining - VCL + Rust (captcha app) + SigSci - Rust v4
- Implementing WAF with service chaining - VCL + Rust (captcha app) + SigSci - VCL v6

Fastly Docs

- Cloud WAF Overview | Fastly Next-Gen WAF
- Fastly WAF logging original | Fastly Help Guides

Quick Links | Create CDN service Create Compute service DevHub Fastly Docs

Core Identity

Universal login

The image shows three sequential steps of the Fastly login process:

- Universal login:** A screen with the Fastly logo, an email input field containing "shizumajen@gmail.com", a "Continue" button, and a "Try Another Way" link.
- Login:** A screen with the Fastly logo, the email "shizumajen@gmail.com" with an edit icon, a password input field with masked characters, a "Log in" button, a "Back" button, and a "Forgot password" link.
- Redirecting:** A screen with the Fastly logo, a blue checkmark, the text "Redirecting", and the message "Your account uses SSO to manage logging in to Fastly."

Unified Identity

The screenshot displays the "Invite a new user" page in the Fastly Unified Identity console. The interface includes a top navigation bar with "Company" and "email@example.com", and a left sidebar with navigation options like "Company profile", "User management", "Account tokens", "Audit log", "Environmental impact", "Single sign-on", "Billing", "Personal Profile", "Your profile", "Your accounts", "Change password", "Two-factor authentication", "API tokens", and "Apperance".

The main content area is titled "Invite a new user" and includes:

- Next-Gen WAF role:** Radio buttons for "None", "User" (selected), "Observer", "Admin", and "Owner".
- Next-Gen WAF workspace access:** Radio buttons for "Access all workspaces" and "Limit access to selected workspaces" (selected).
- Manage workspace access:** A section to manage user access to workspaces, featuring a search bar, a table of workspaces, and "Grant access" buttons.

Workspace +	Access status +	
<input type="checkbox"/> A/B test login	Access blocked	Grant access
<input type="checkbox"/> Atlas	Access blocked	Grant access
<input type="checkbox"/> Backend 1	Access blocked	Grant access
<input type="checkbox"/> Backend 2	Access blocked	Grant access
<input type="checkbox"/> Edge browser ID	Access blocked	Grant access

At the bottom, there are "Invite user" and "Back" buttons.

Evolution of **Control Panel**

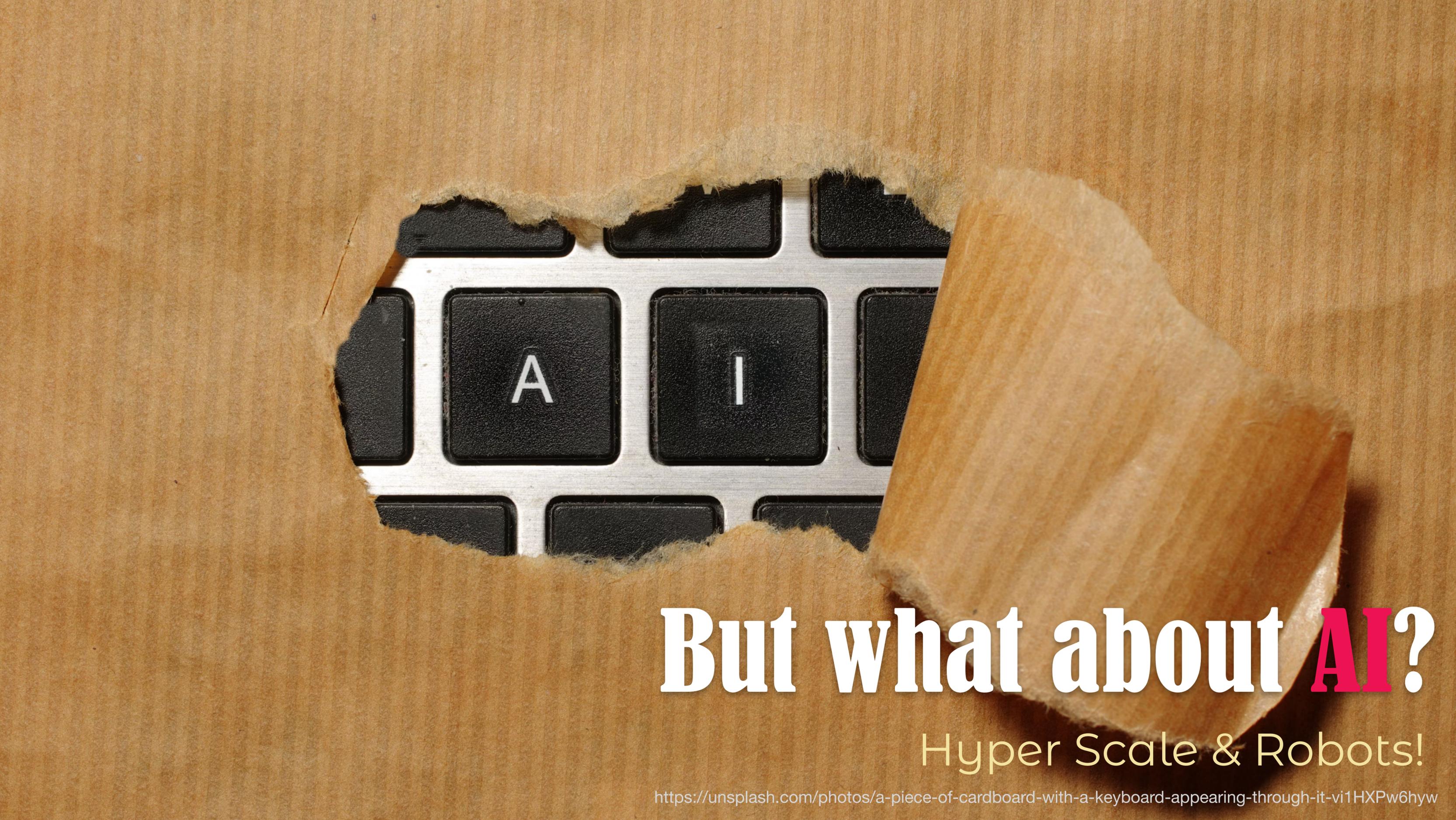
Most successful strategies in this system

- ❖ **Spent innovation tokens sparingly** - MFE architecture

- ❖ In-place evolution - Stitched old & new UIs and only ported as needed

- ❖ Gave back teams control over their own destiny, timelines, & product evolution





But what about AI?

Hyper Scale & Robots!

<https://unsplash.com/photos/a-piece-of-cardboard-with-a-keyboard-appearing-through-it-vi1HXPw6hyw>

AI & **Systems** evolution

Hyper-hyper-paced in-place evolution of:

- ❖ How our systems are written (Cursor, Claude, Gemini)
- ❖ How APIs are structured & what they return
- ❖ How our systems talk to each other (MCP)
- ❖ How our data is stored, labeled, retrieved (RAG)
- ❖ How our products are documented (LLM-friendly)

Rapid evaluation, iteration, adoption is **key**



AI growth & Metrics

Deepen our investment in core data platforms

- ❖ Data interfaces are key
 - ❖ Democratization of data sources
 - ❖ Performance, velocity, tooling, cataloging of data
 - ❖ MCP capability for products
 - ❖ Team size & efficacy around AI capabilities
-

AI growth & Control Panel

The screenshot displays the Fastly control panel interface. At the top, there is a header with a search bar and navigation links like 'Give feedback'. The main content area shows the configuration for 'www.fastly.com' under 'CDN services'. It includes tabs for 'Service summary' and 'Service configuration', and buttons for 'Options', 'Purge', 'Check cache', and 'Observability'. Below this, there are buttons for 'Version 3' (Draft), 'Show VCL', 'Diff versions', 'Clone', and 'Activate'. A sidebar on the left contains a search bar and a list of settings categories: Domains (2), Origins, Settings, Content, Logging, VCL snippets, Custom VCL, Image Optimizer, Conditions, Access control lists, Dictionaries, and Security. The 'Domains' section is expanded, showing a table with columns for 'Domain' and 'Comment'. The table lists 'www.fastly.com' (Marketing site) and 'auth.fastly.com'. A chat history panel on the right shows a conversation with 'Brian' and a list of instructions for adding a domain, including steps for selecting a service, opening the Domains tab, adding a new domain, entering the full hostname, and updating DNS settings.

Client name: Search

Give feedback

Home Observability **CDN**

CDN services / www.fastly.com

www.fastly.com

23r89hfsdkjfdasj281hgh |

Service summary **Service configuration**

Version 3

Search all settings

- Domains** 2
- Origins
- Settings
- Content
- Logging 0
- VCL snippets 0
- Custom VCL 0
- Image Optimizer Off
- Conditions 0
- Access control lists 0
- Dictionaries 0
- Security

Domains

<input type="checkbox"/>	Domain ↓	Comment	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
<input type="checkbox"/>	www.fastly.com	Marketing site	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
<input type="checkbox"/>	auth.fastly.com	-	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>

Results per page: 1-2 of 2 results

Chat history

Hey Brian, do you need help with this service?

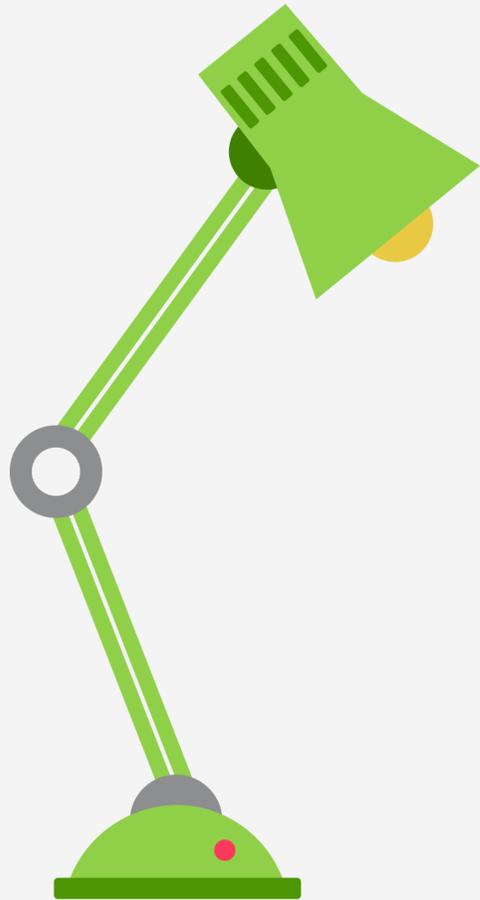
- Select Your Service**
 - From the dashboard, choose the service you want to add the domain to. If you haven't created one yet, click "Create service."
- Open the Domains Tab**
 - In the service configuration view, click on the "Domains" tab in the left-hand menu.
- Add a New Domain**
 - Click "Add domain."
- Enter the full hostname you want Fastly to serve** (e.g., www.example.com).
 - Click "Add" to save it.
- Activate Your Changes**
 - Click the "Activate" button in the top-right corner to deploy your changes.
- Update Your DNS**
 - Point your domain to Fastly by updating your DNS settings:
 - Use a CNAME for subdomains (e.g., www.example.com) and point it to your Fastly hostname (e.g., yourcompany.global.prod.fastly.net).
 - For apex domains (e.g., example.com), use an ALIAS or ANAME record, depending on your DNS provider.

Ask anything

AI growth & **Environment** evolution

“Successful” Strategies & Observations

- ❖ Helpful to think in terms of **decisions that are easy to revisit vs non easy to revert** (where your compute is vs where your data lives)
- ❖ Pick your sticky points but don't over-index on them. You can't avoid provider / vendor / model lock-in, this is not a bad thing per se, they change too fast anyway!
- ❖ **Agile company processes** & safety guardrails are key





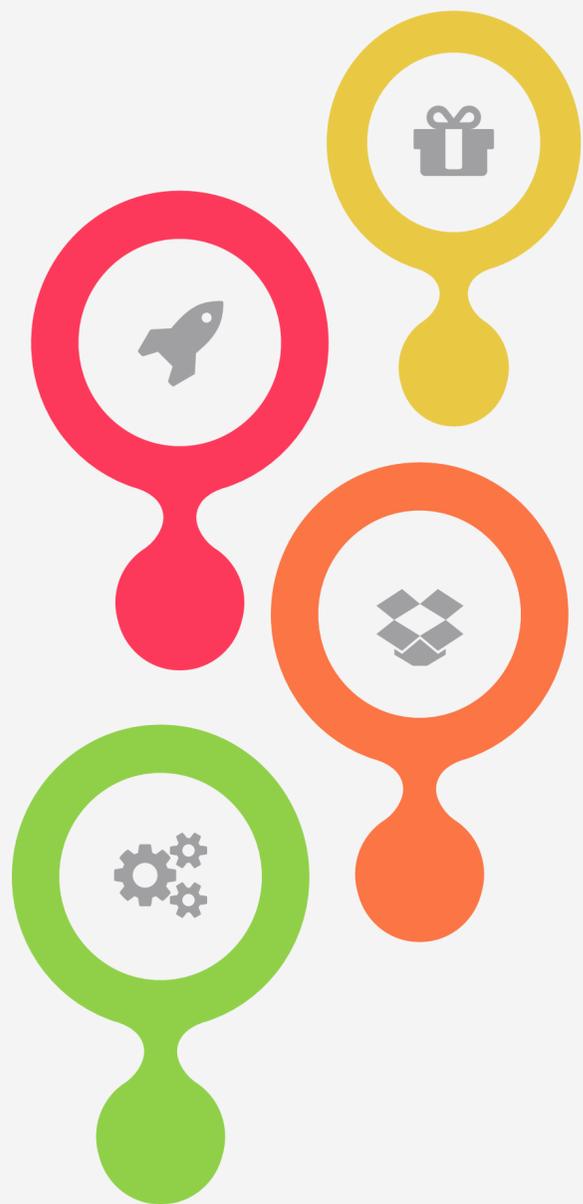
Reflections

& takeaways

Hyperscale & AI change things

Your perspective will evolve fast, get comfortable with

- ❖ **A shortened time to revisiting your assumptions** - yesterday's peak is today's new baseline
- ❖ **New operational needs** - more consistency, AI Agents, organizational processes & paved roads face change
- ❖ **Knowing you'll never be done** - what worked for one problem may not work for the next one





Thank you

github.com/Randommood/LDX3

<https://unsplash.com/photos/two-latte-drinks-with-heart-shaped-foam-tnJGUKsPEe0>