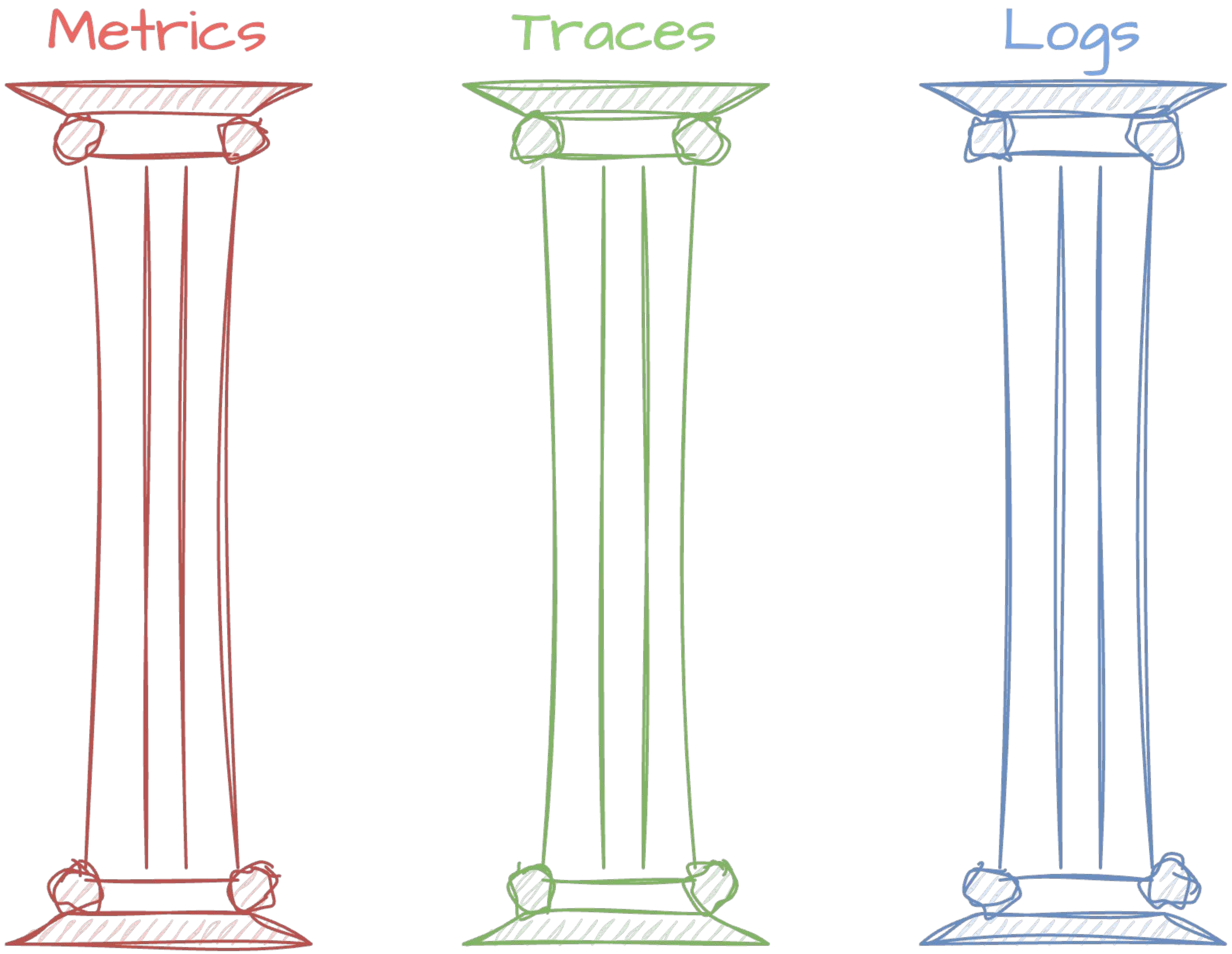
07/05/2024 Daniel Gomez Blanco

Building an Observability Mindset at Skyscanner

Skyscanner

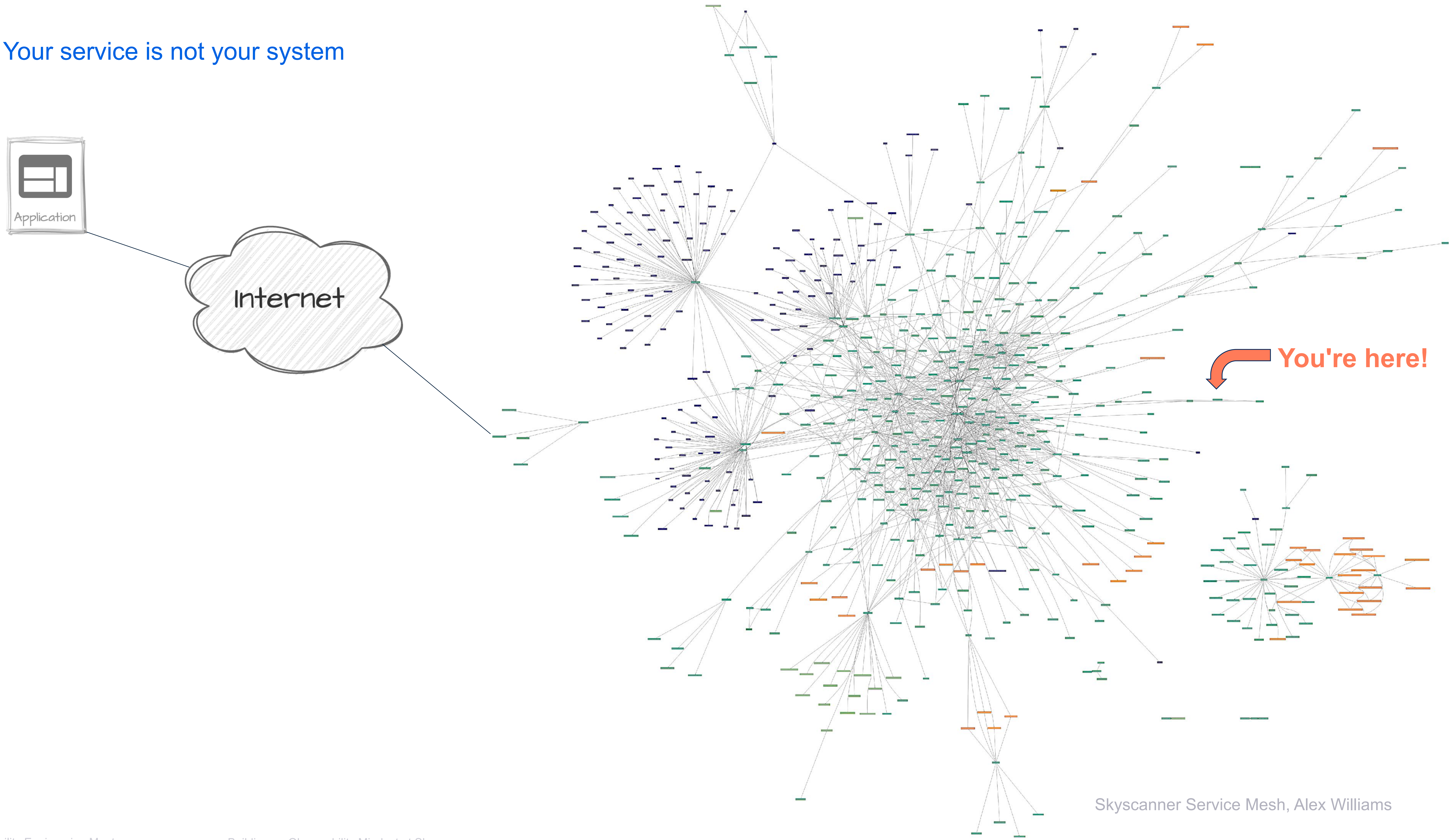
What are the building blocks of observability?

The ol’ trusty three pillars of observability



How well can you infer the internal state of a system from observations of its external outputs?

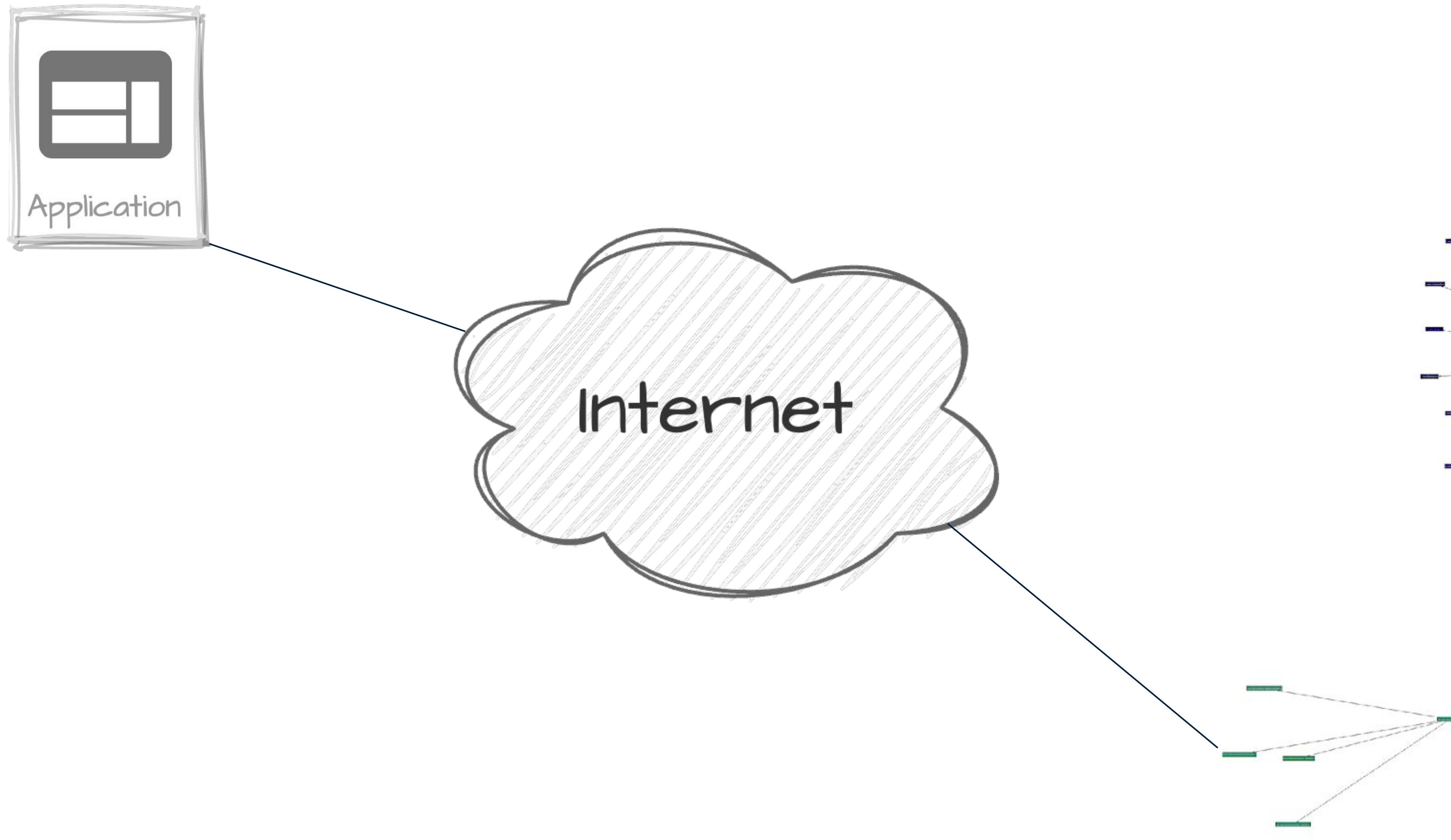
Your service is not your system

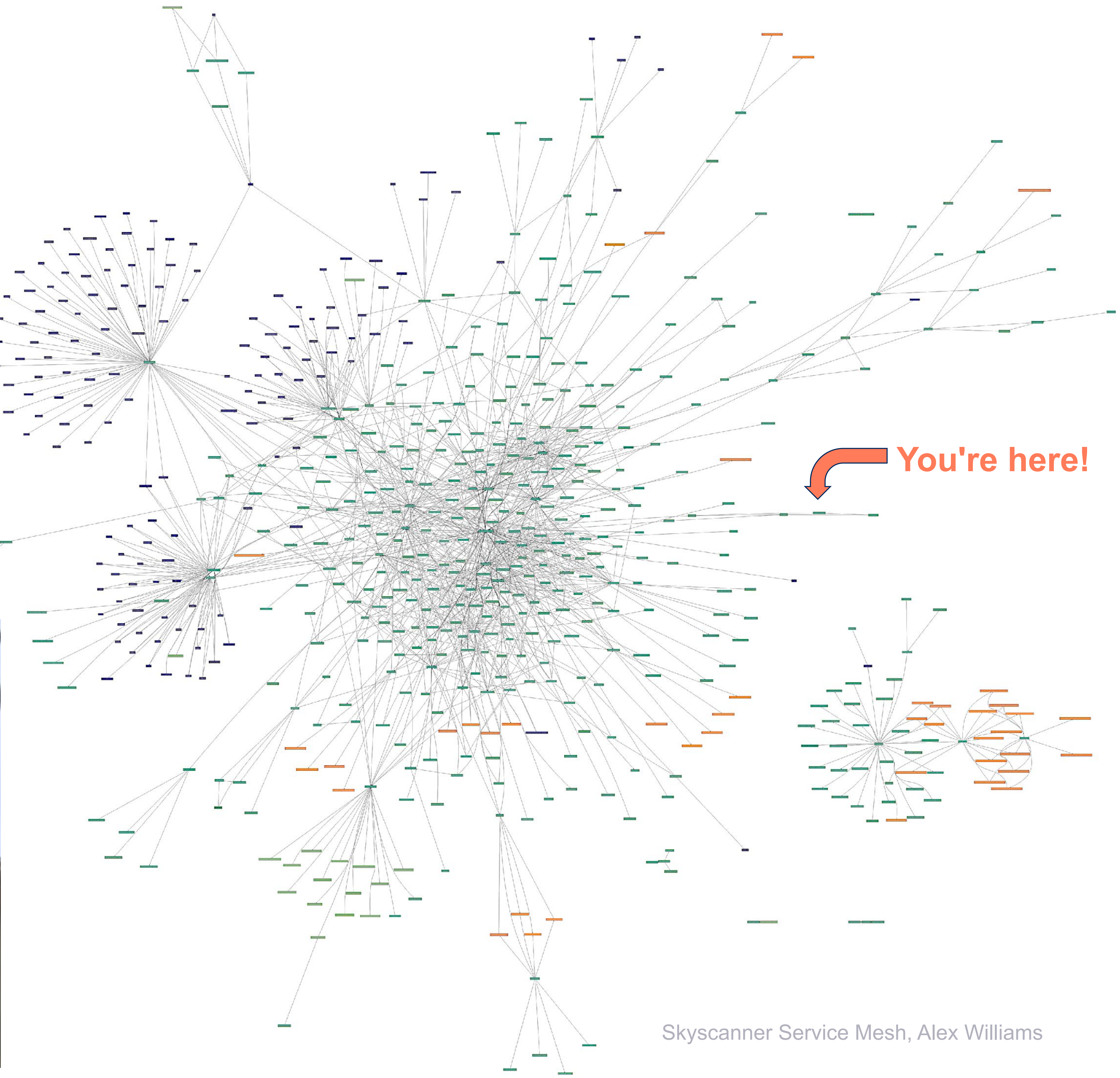


You're here!

Skyscanner Service Mesh, Alex Williams

Your service is not your system





Skyscanner Service Mesh, Alex Williams

One single stream of contextualised telemetry data

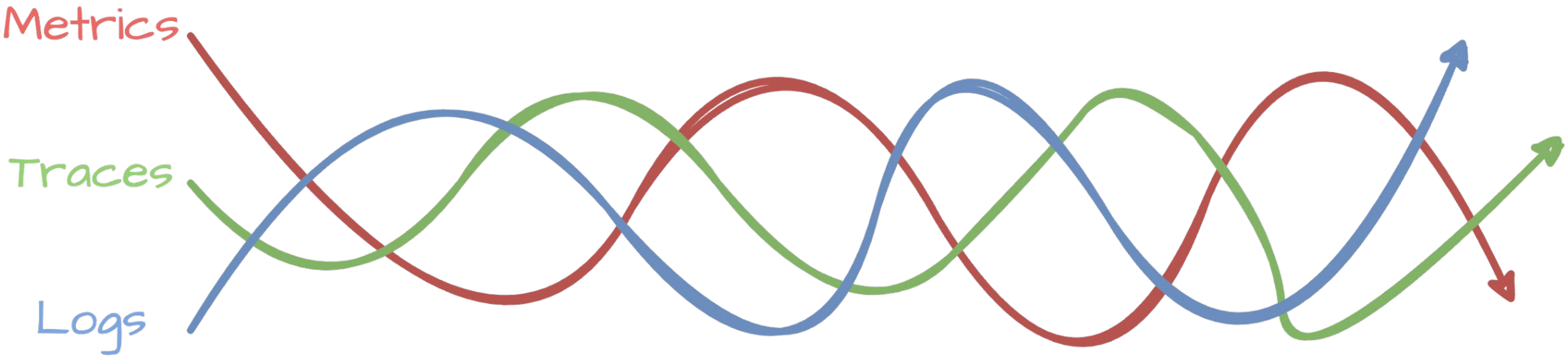


Photo by Ross Cameron

Observability Engineering Meetup

A bit about me

- Principal Engineer at Skyscanner leading observability since 2020
- Joined in 2018 to work on client-side performance and K8s resource optimisation
- Platform engineer in organisations of all sizes for 13 years
- OpenTelemetry Governance Committee member since November 2023
- Author of Practical OpenTelemetry: Adopting Open Observability Standards Across Your Organization (Apress, 2023)

Agenda

1. OpenTelemetry signals in context
2. Maximising return-on-investment
3. Communicating value
4. Facilitating adoption

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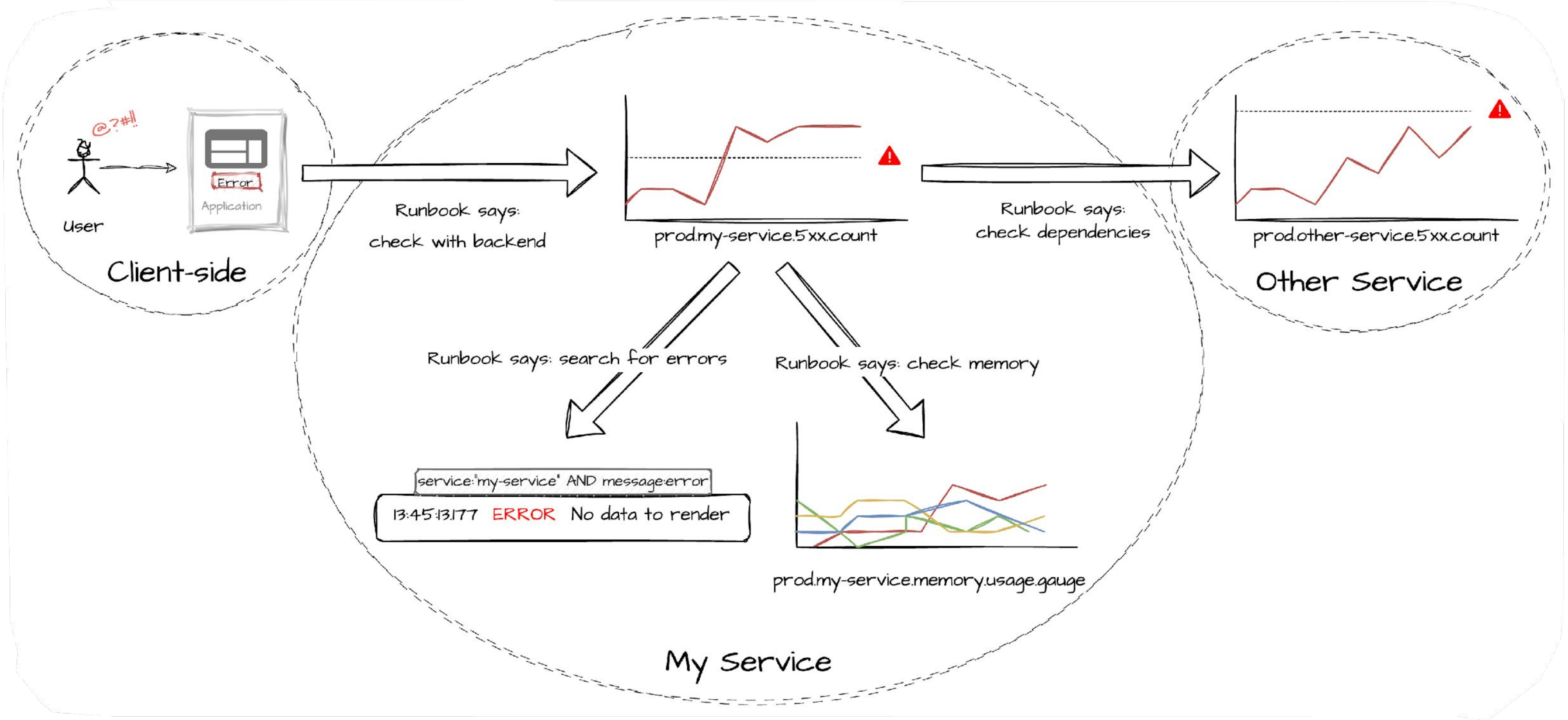
Debugging with no context

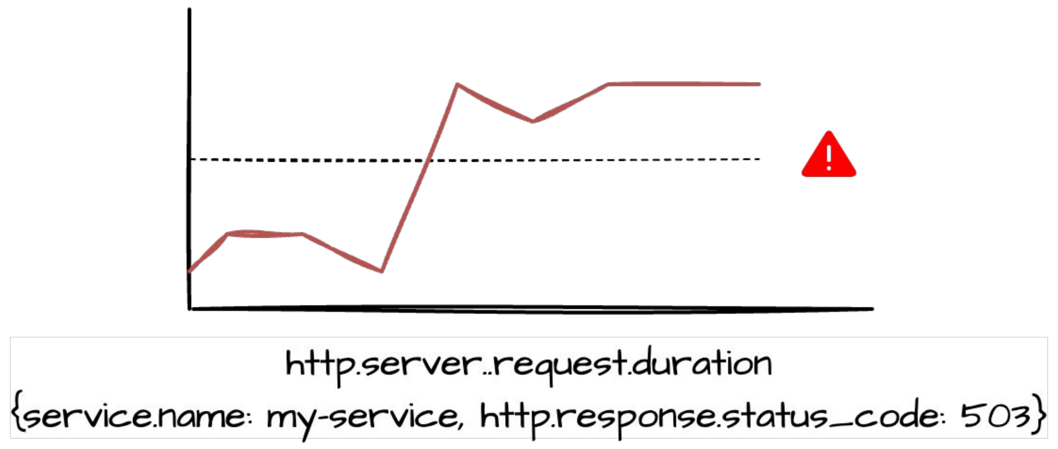

@?#!!
User
Error
Application
Client-side
Runbook says:
check with backend
prod.my-service.5xx.count
Runbook says:
check dependencies
prod.other-service.5xx.count
Other Service
Runbook says: search for errors
Runbook says: check memory
prod.my-service.memory.usage.gauge
My Service

```
service:"my-service" AND message:error
13:45:13.177 ERROR No data to render
```

BACKEND
CLIENT-SIDE
PLATFORM
imgflip.com

Experience/intuition based debugging

Each signal has a purpose



Metrics

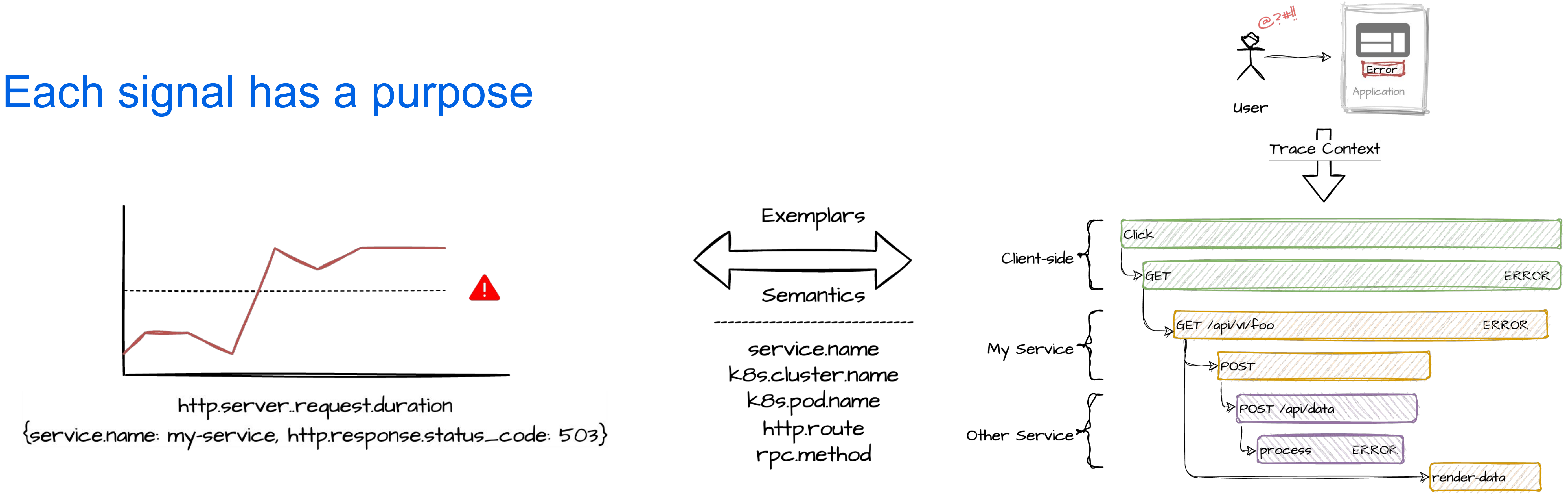
+ Most reliable signal → alerting

+ Lower volume → long-term

- No context

- Cardinality limits

Each signal has a purpose



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Traces

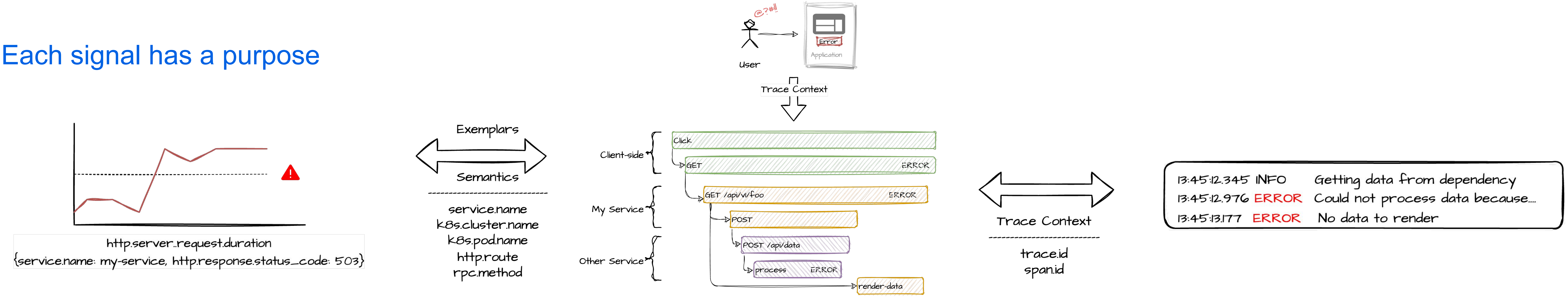
+ High granularity → debugging

+ Rich context → correlation

- Sampled (keeping useful stuff)

- Expensive to buffer/retry

Each signal has a purpose



```
13:45:12.345 INFO    Getting data from dependency
13:45:12.976 ERROR   Could not process data because...
13:45:13.177  ERROR   No data to render
```

Metrics

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Logs

- No context, but high volume

- If unstructured, pretty useless

+ Background tasks, legacy libs

+ Events API

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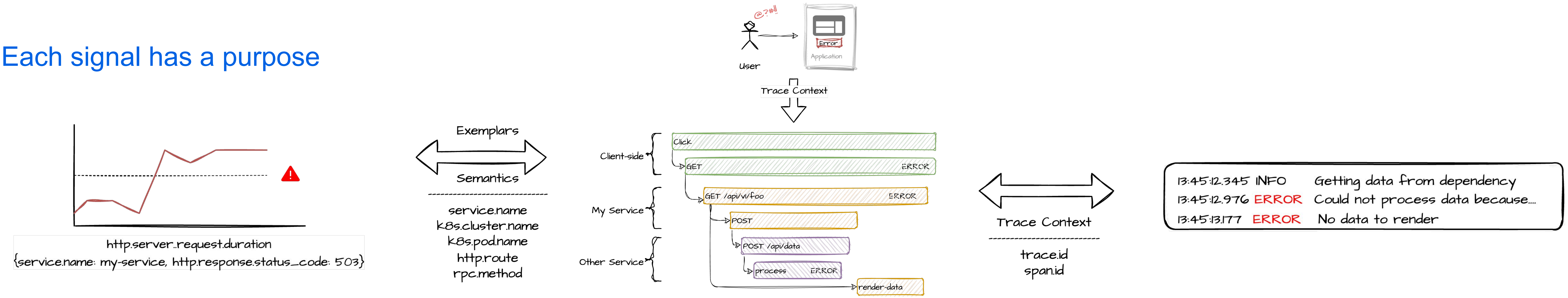

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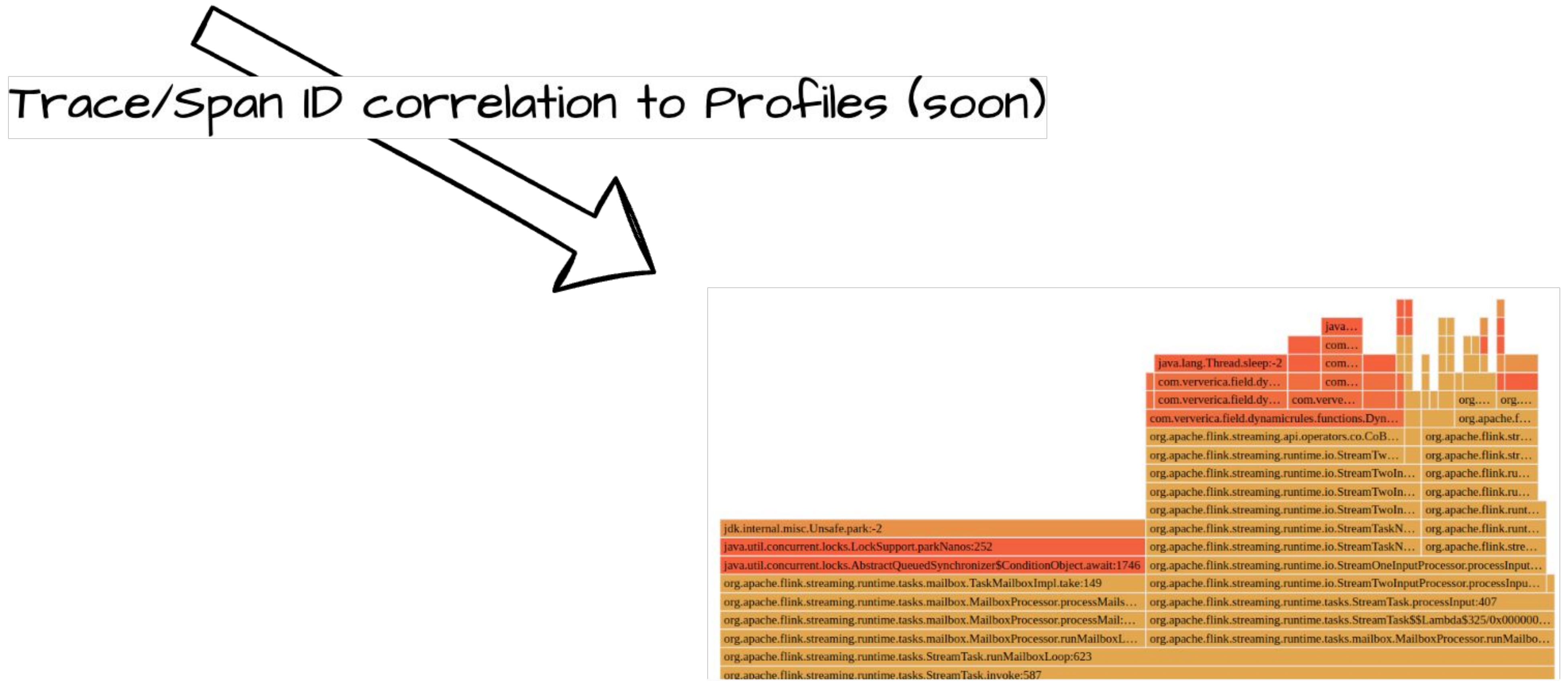
Trace/Span ID correlation to Profiles (soon)

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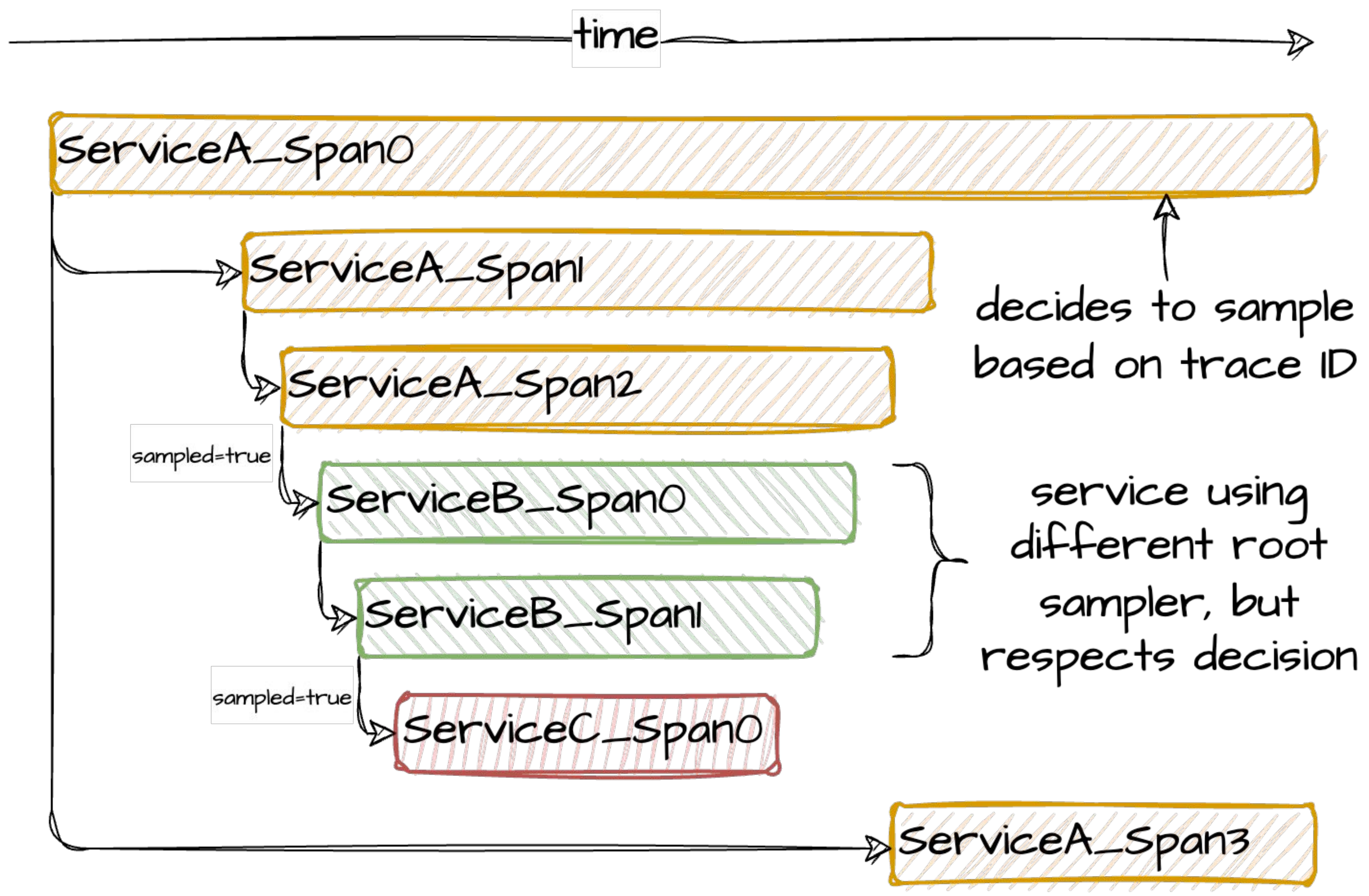
It can be expensive…

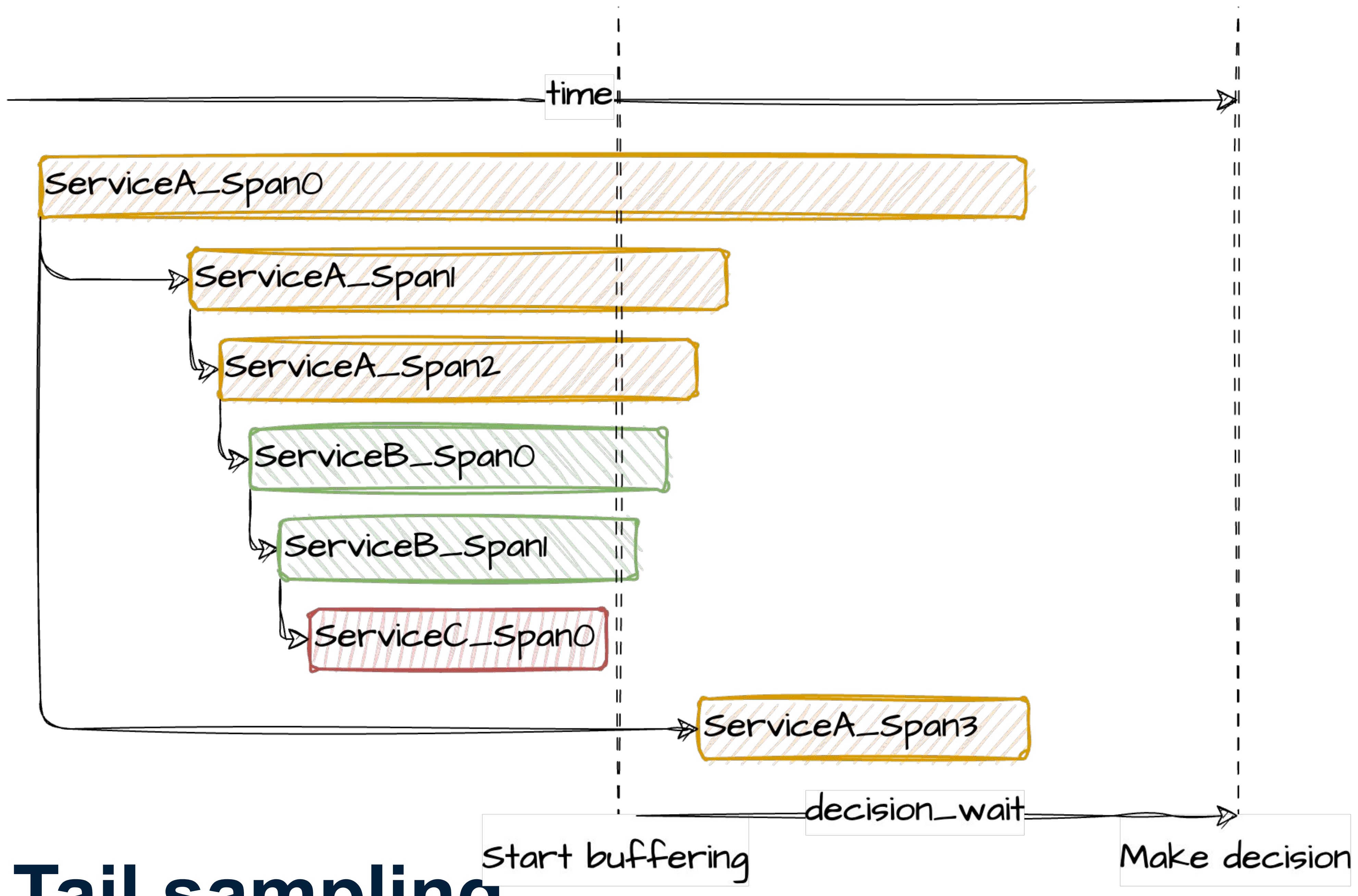
Most data gathered for debugging purposes is never used

Using context to keep the most useful data



Head sampling

- ➕ Trace Context can propagate sampling decisions
- ➕ Easy configuration and maintenance
- ➕ Efficient resource utilisation
- ➖ Probabilistic (i.e. cannot consider whole trace)



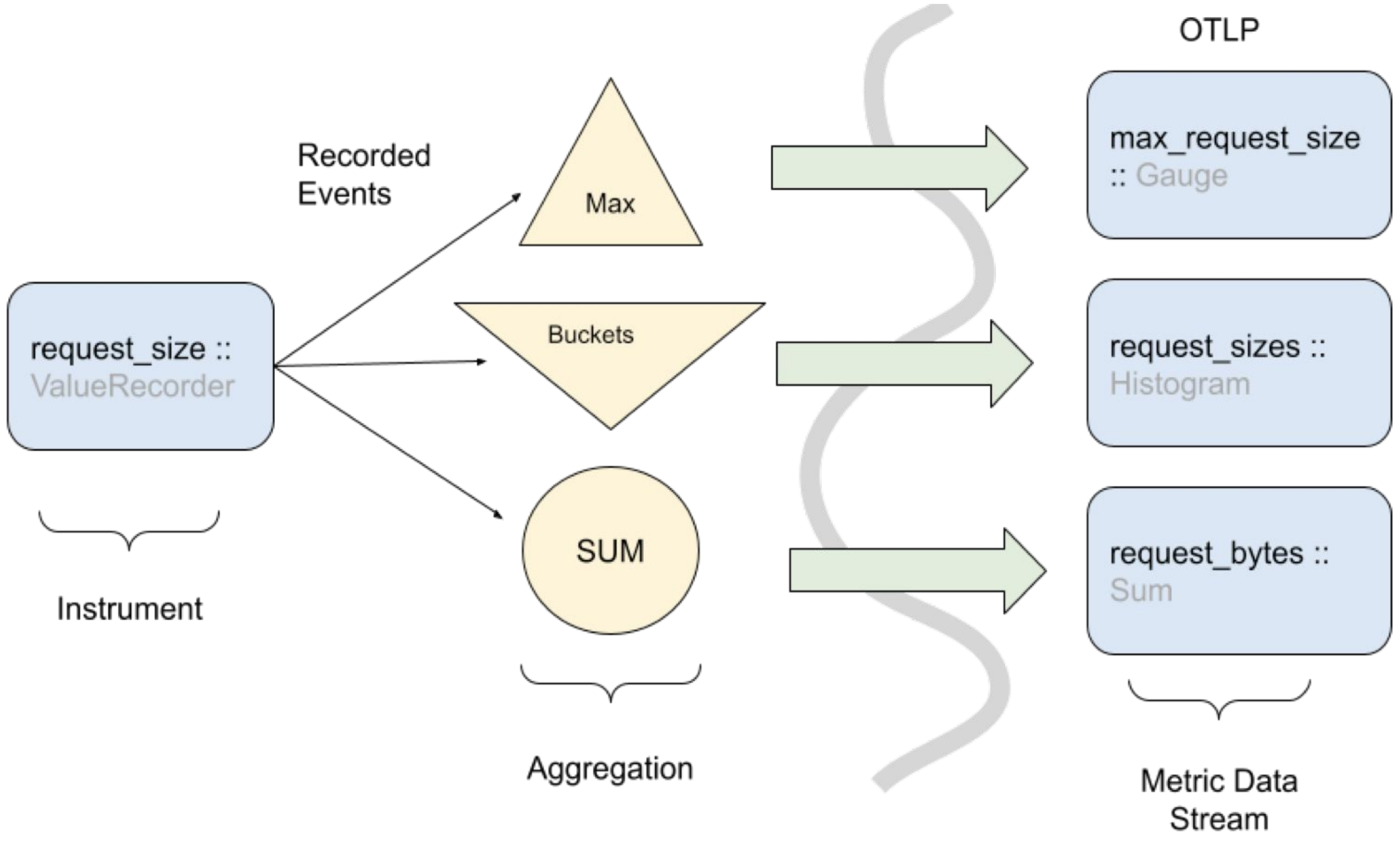
Tail sampling

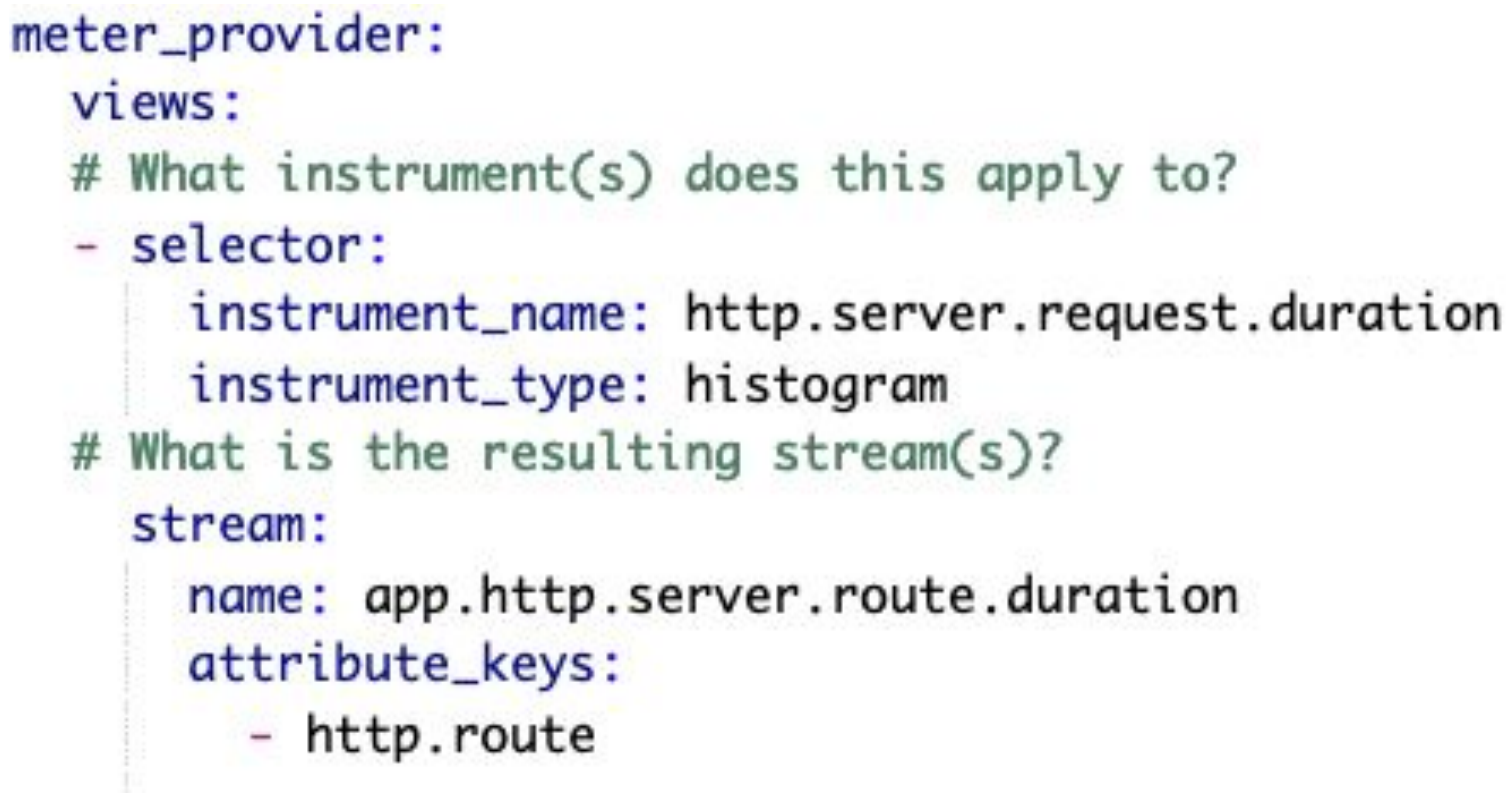
- ➖ More complex to implement and operate
- ➕ Can consider whole trace in sampling decision
- ➕ OpenTelemetry Collectors or vendor-specific features

Skyscanner keeps ~5% of the 7.5M traces and 150M spans produced each minute

Metric Views

- Decouple measurements from their aggregation
- Control of resulting metrics streams via SDK config
- Customise auto-instrumented metrics
    - Instrumentation libs
    - Library authors





```
meter_provider:
  views:
  # What instrument(s) does this apply to?
  - selector:
      instrument_name: http.server.request.duration
      instrument_type: histogram
  # What is the resulting stream(s)?
    stream:
      name: app.http.server.route.duration
      attribute_keys:
        - http.route
```

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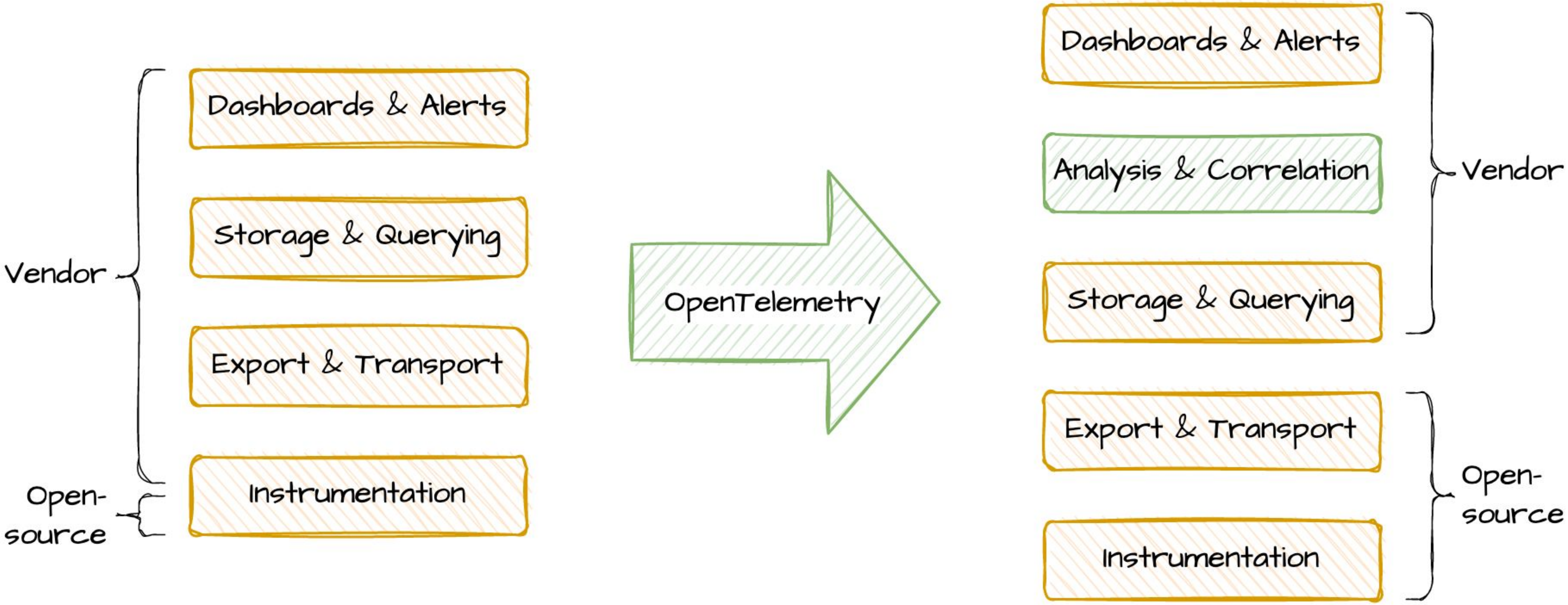
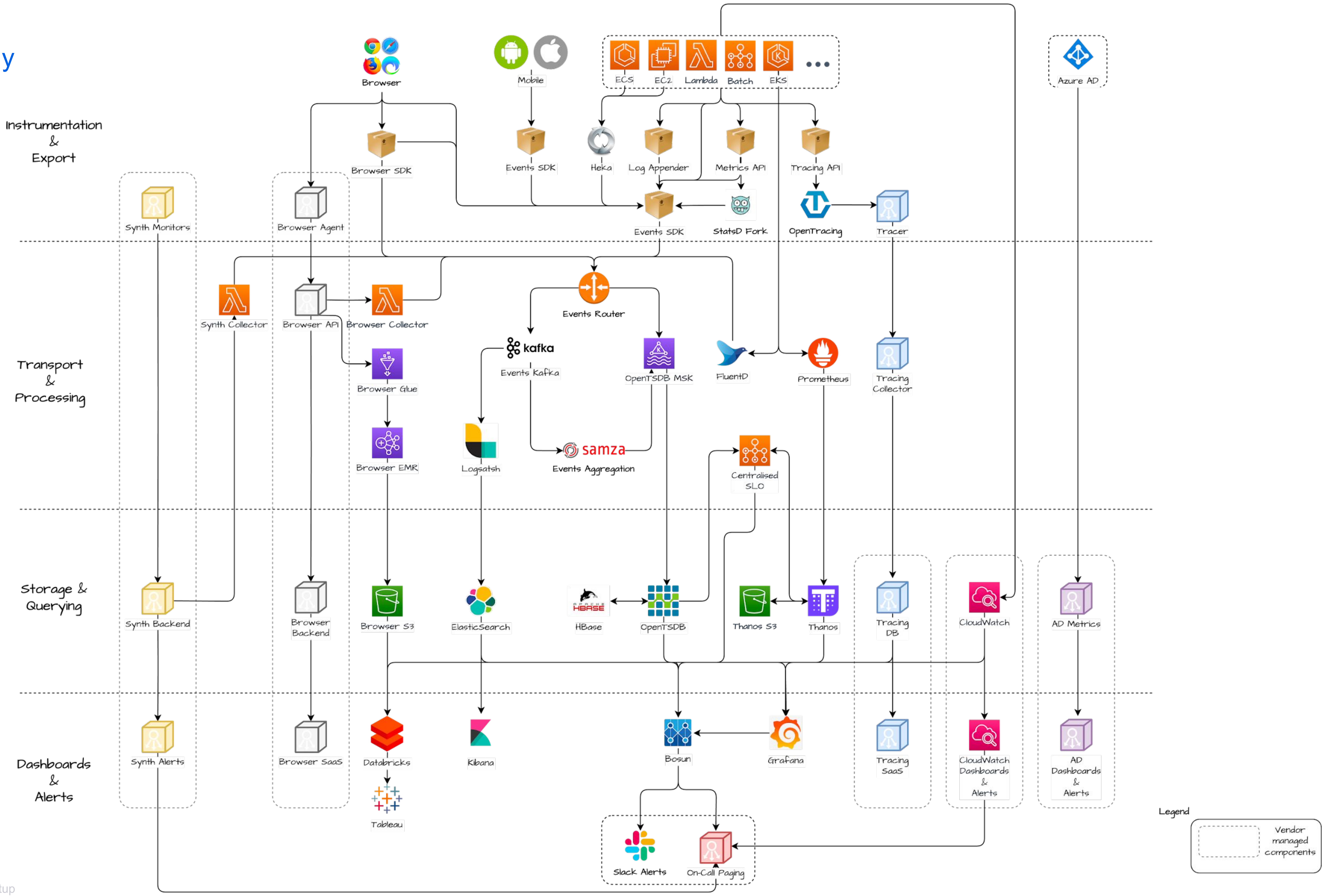
Simplification without vendor locking

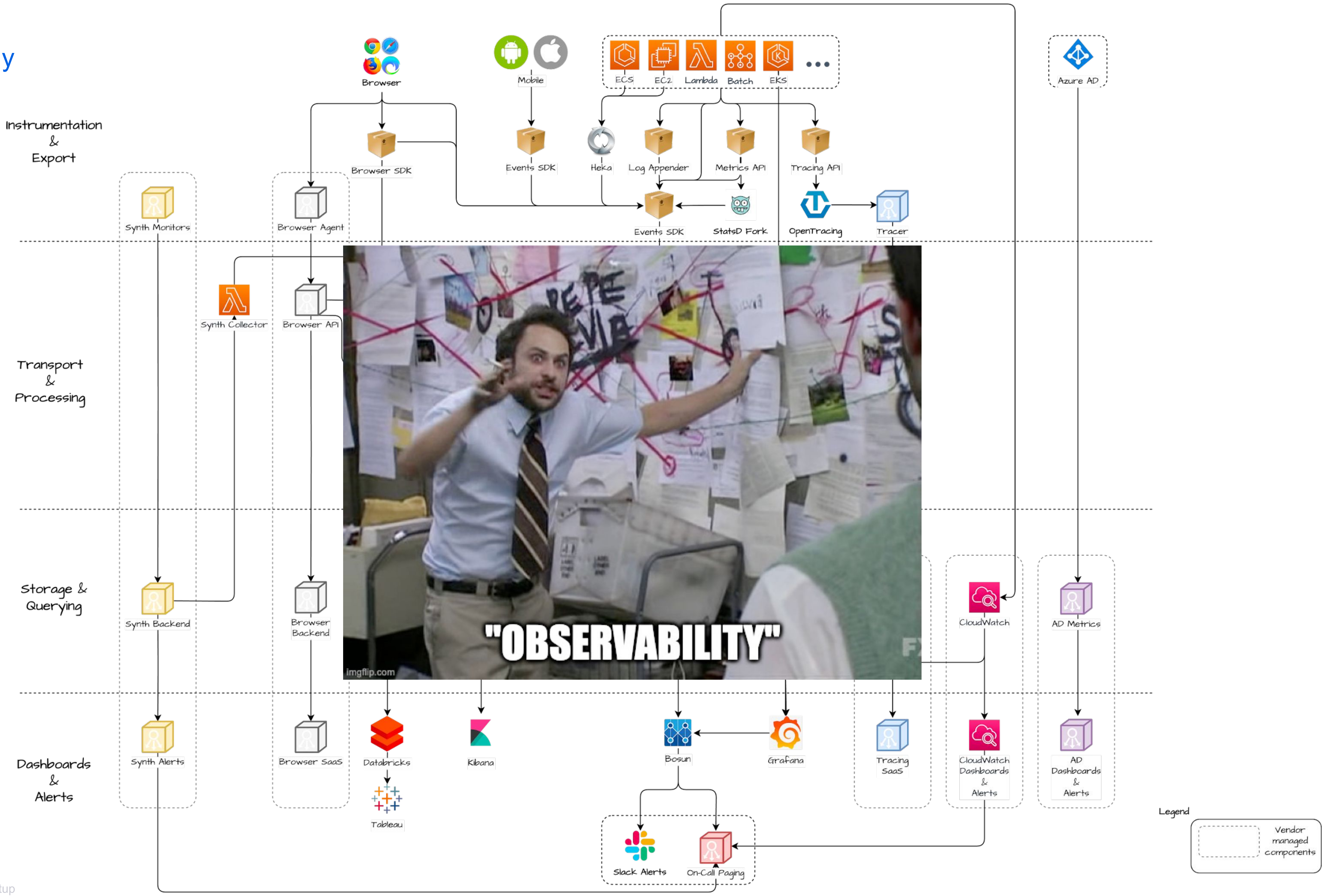


Practical OpenTelemetry: Adopting Open Observability Standards Across Your Organization

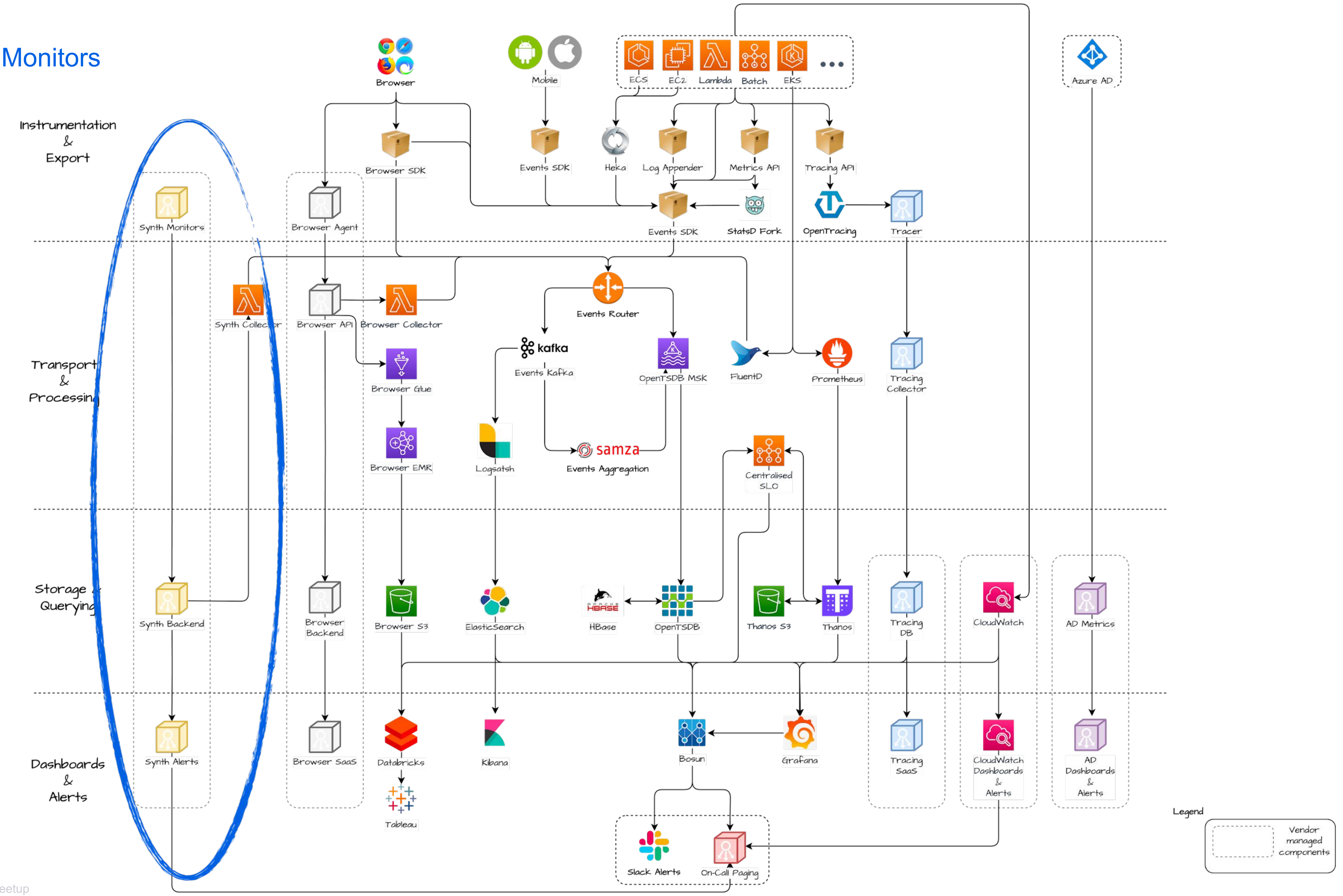
Pre-strategy



Pre-strategy



Synthetic Monitors



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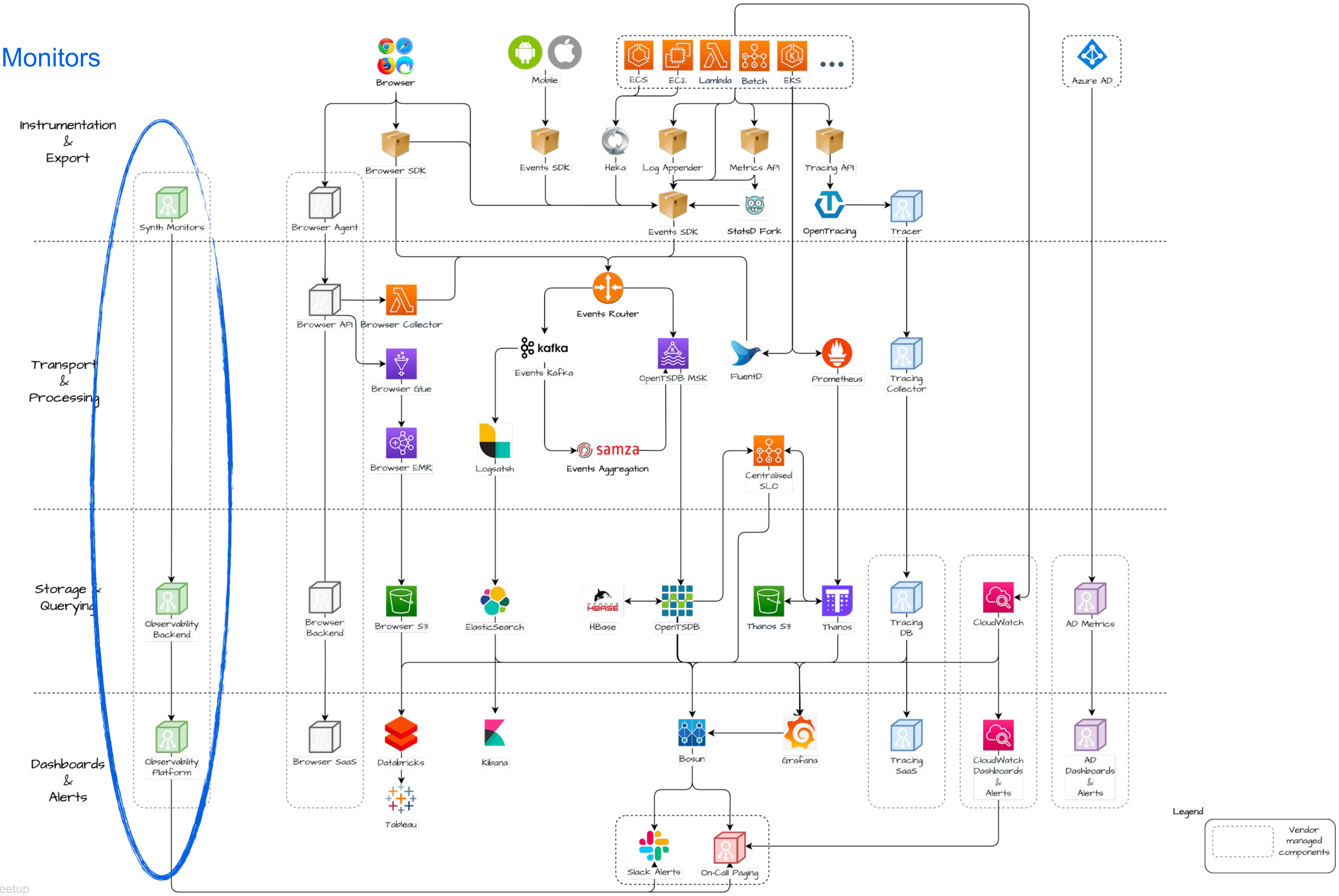
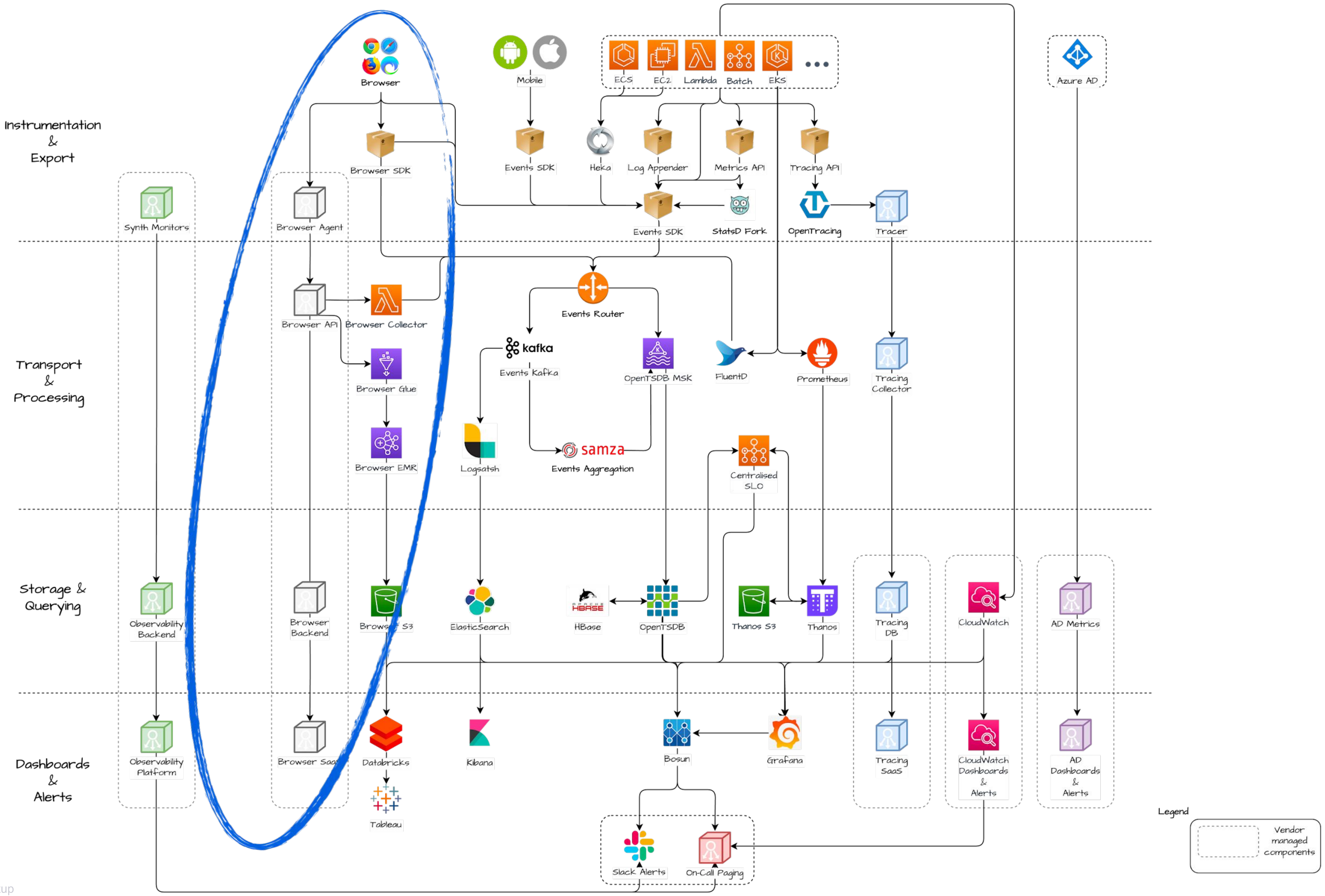


Browser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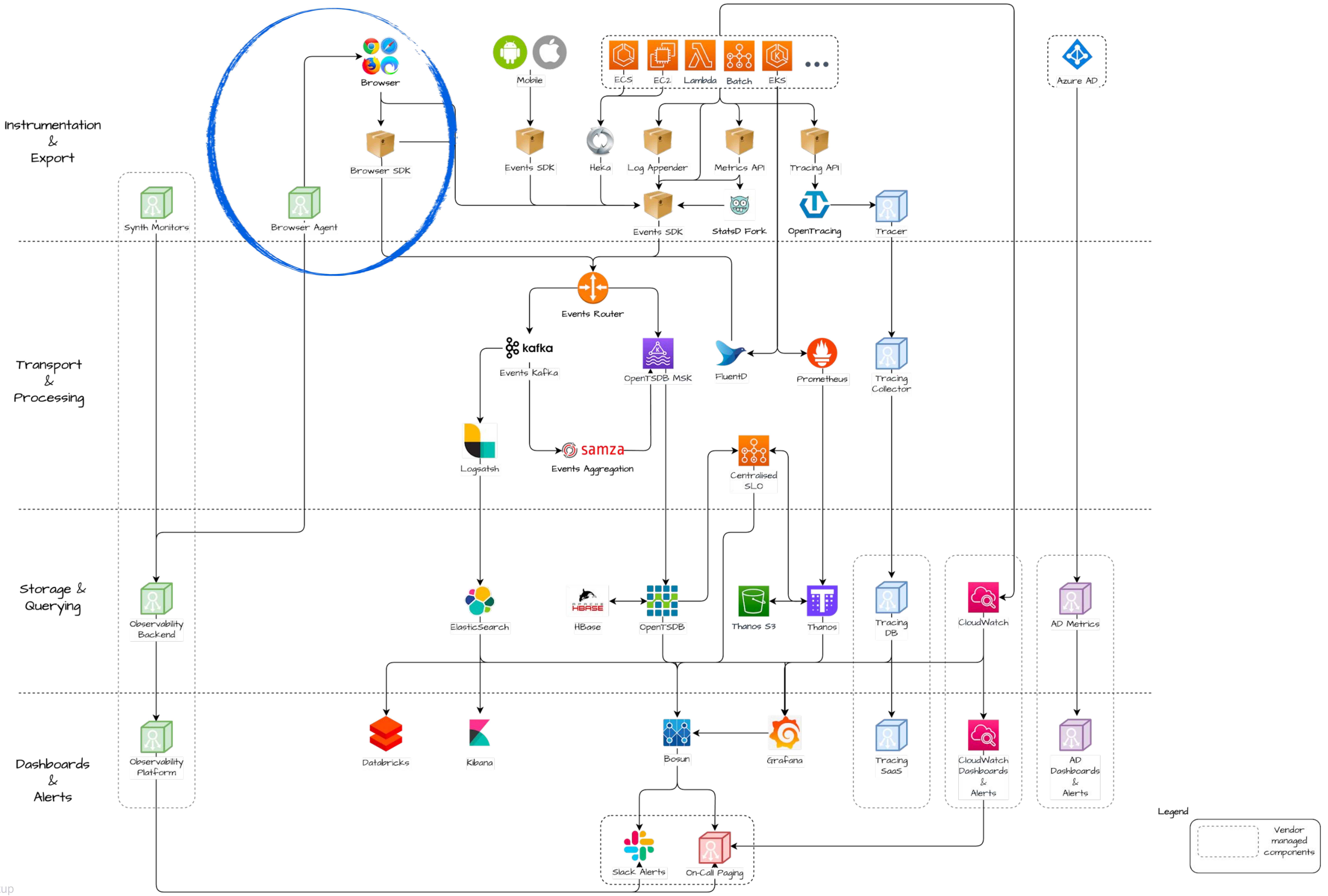
Vendor managed components

Browser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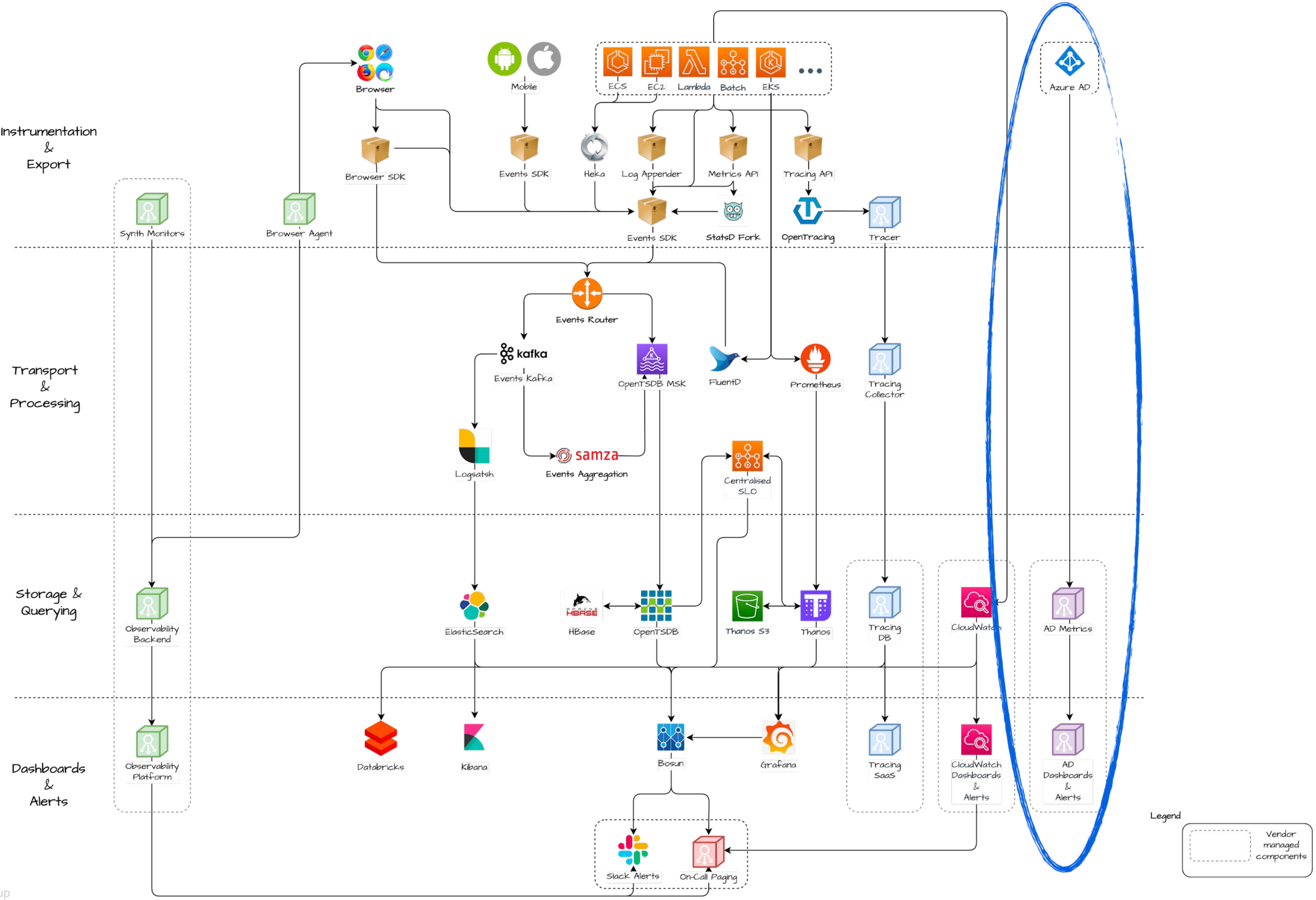
Azure AD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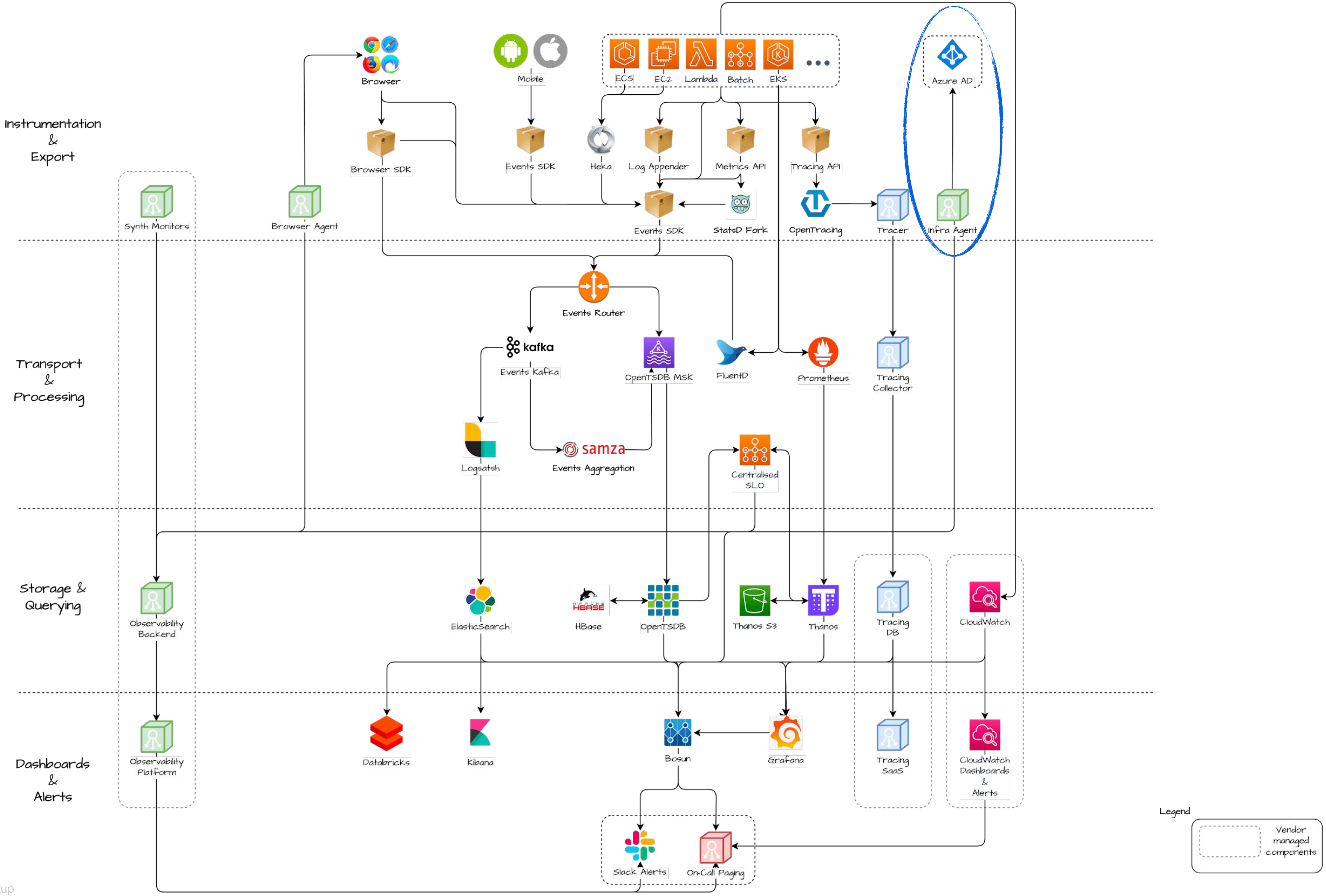
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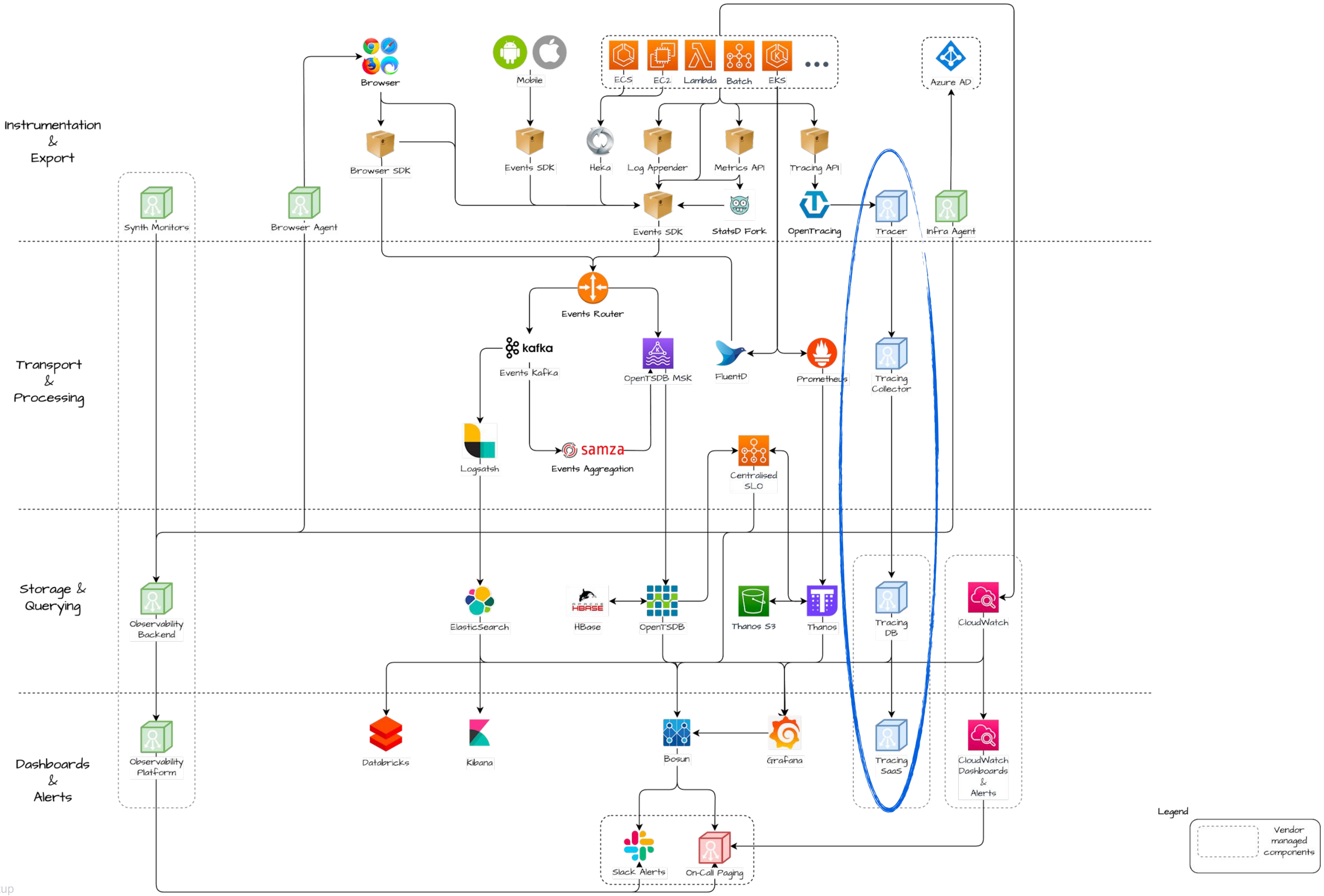
Tracing



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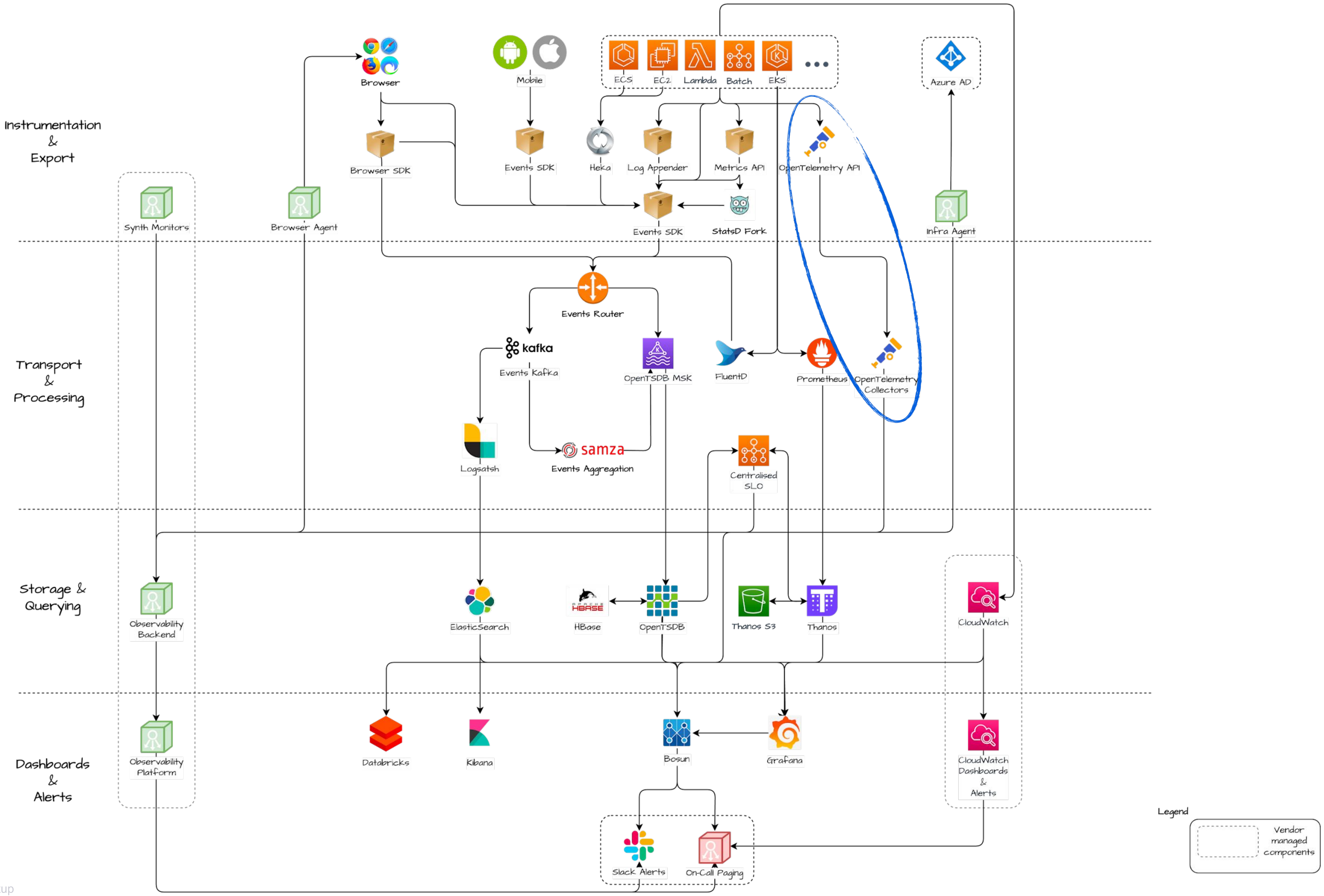
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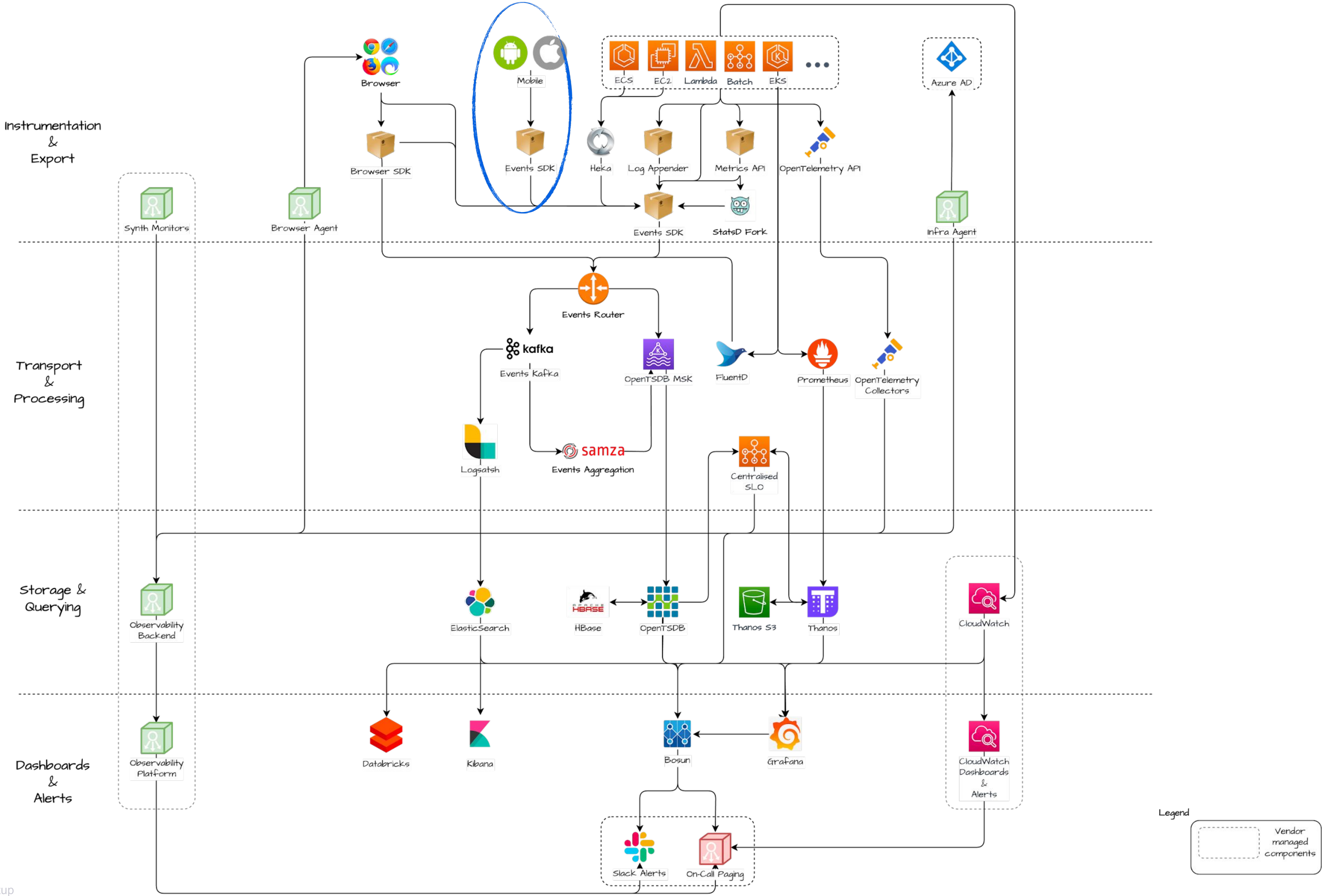
Mobile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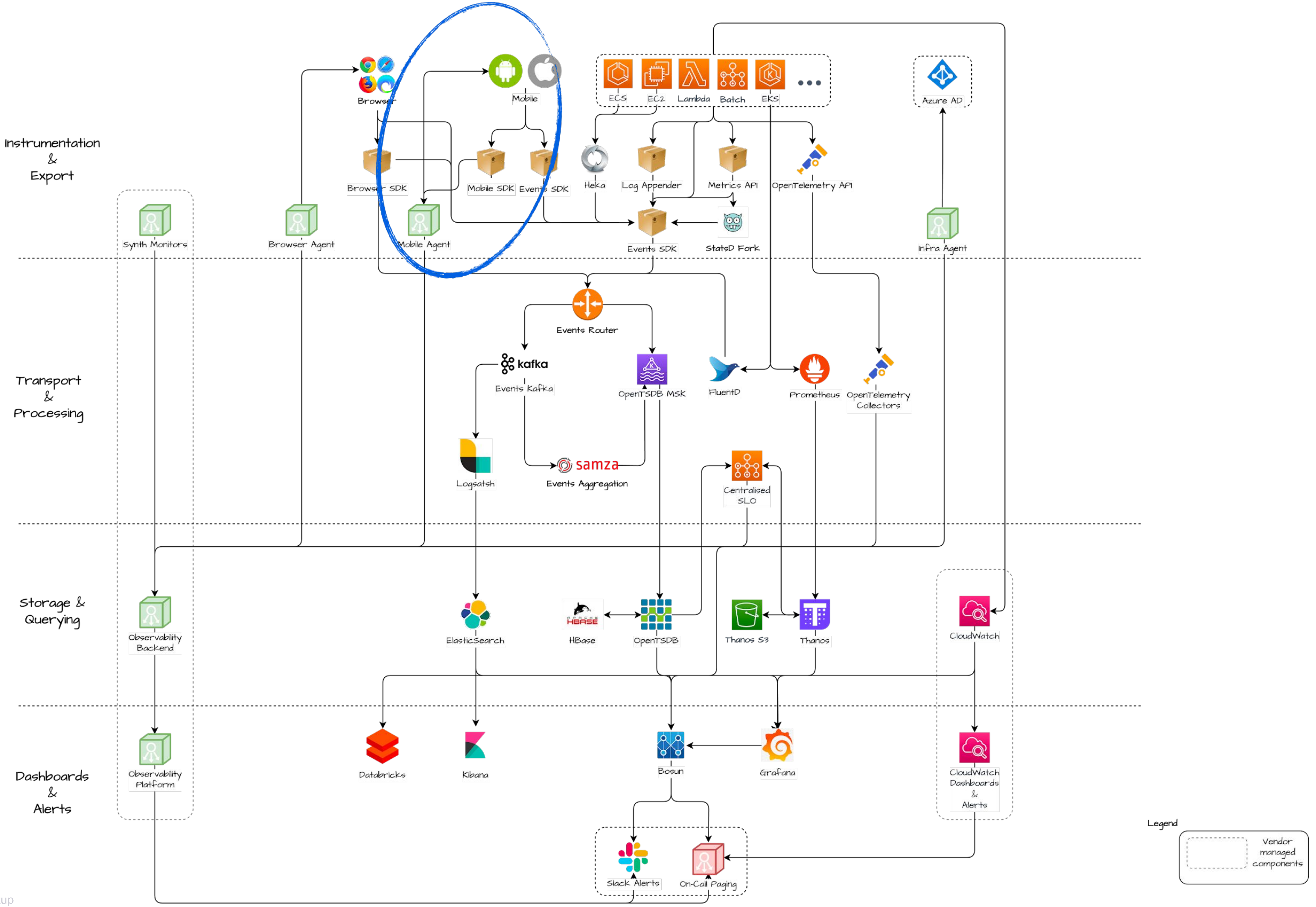
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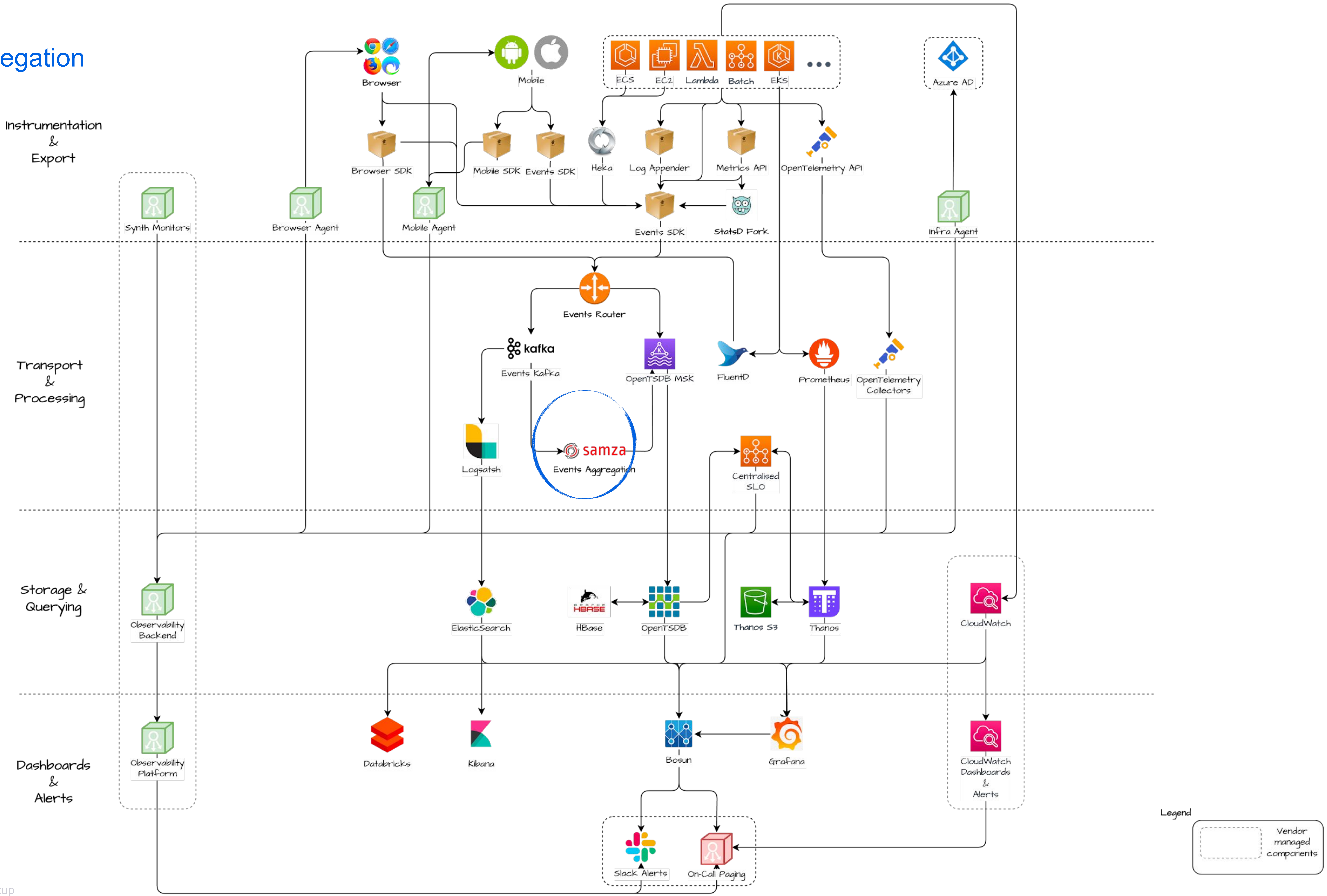

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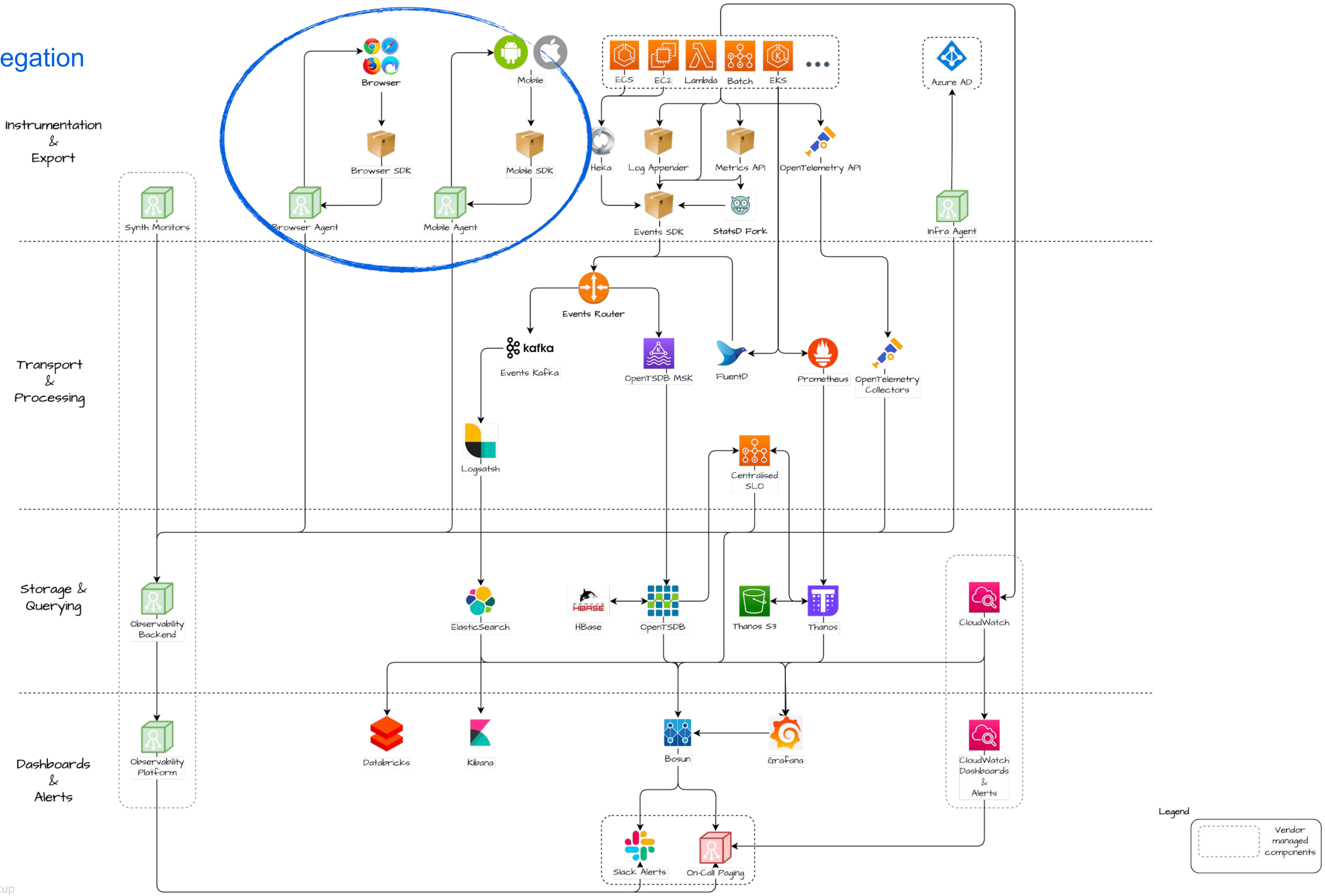
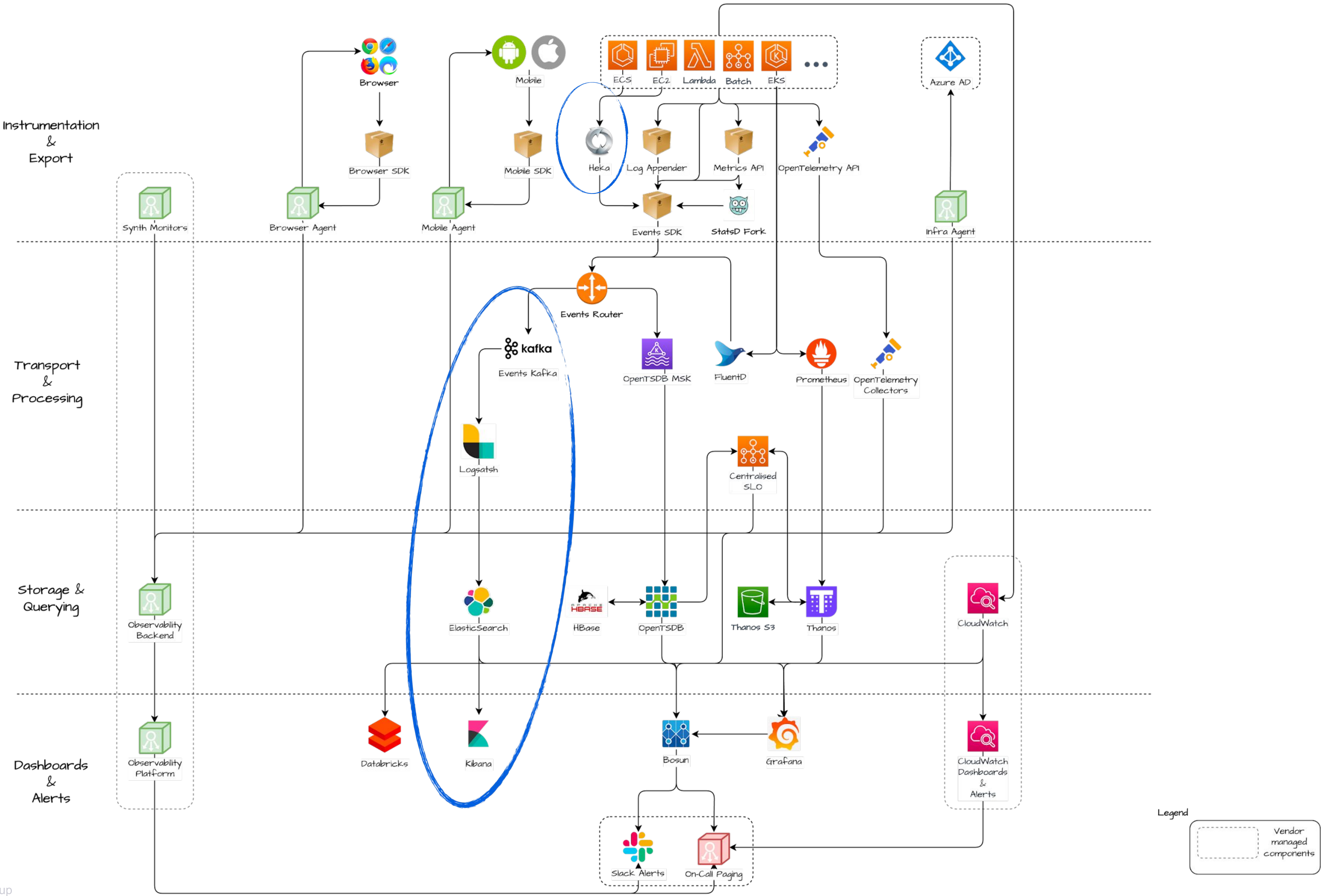


Logging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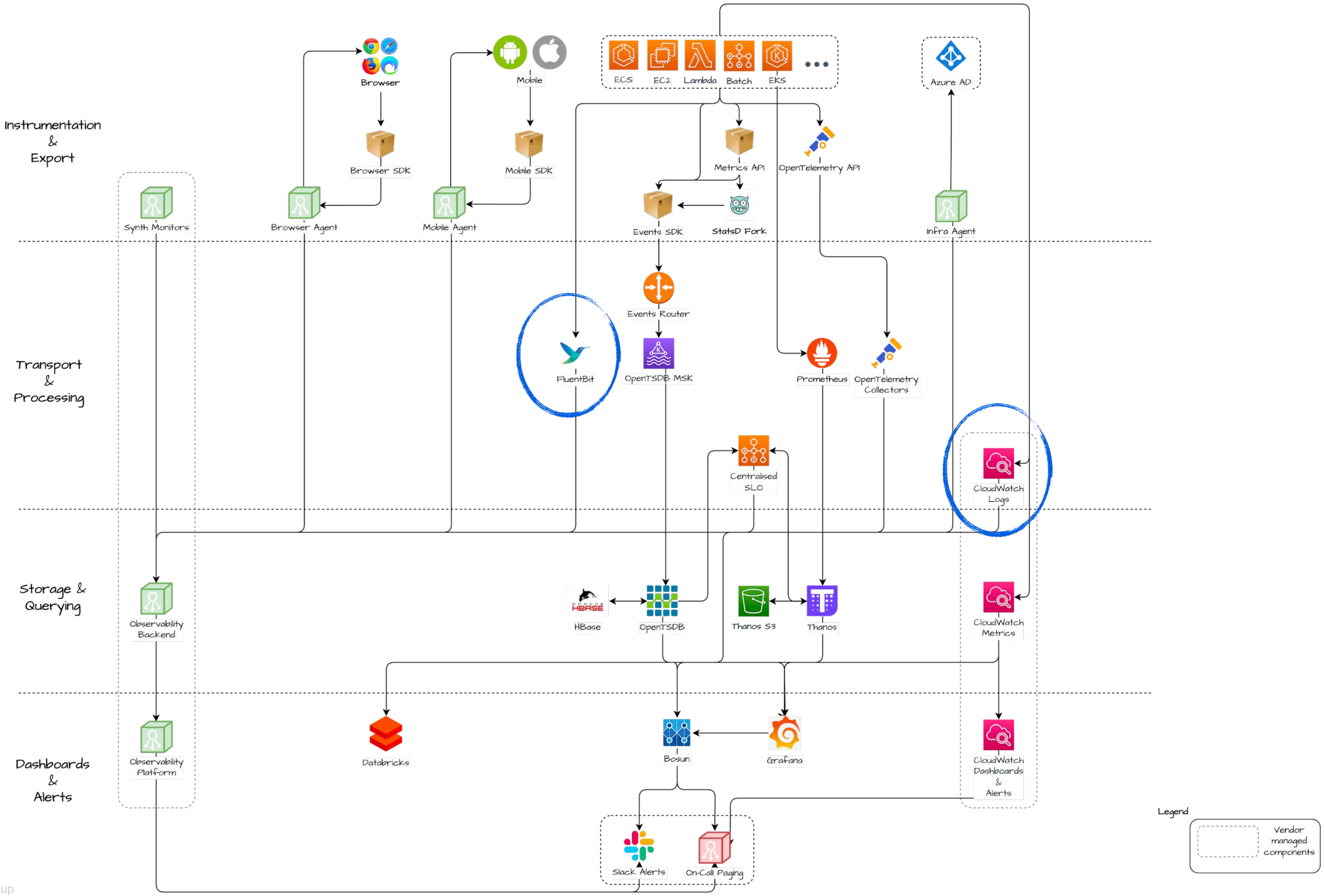

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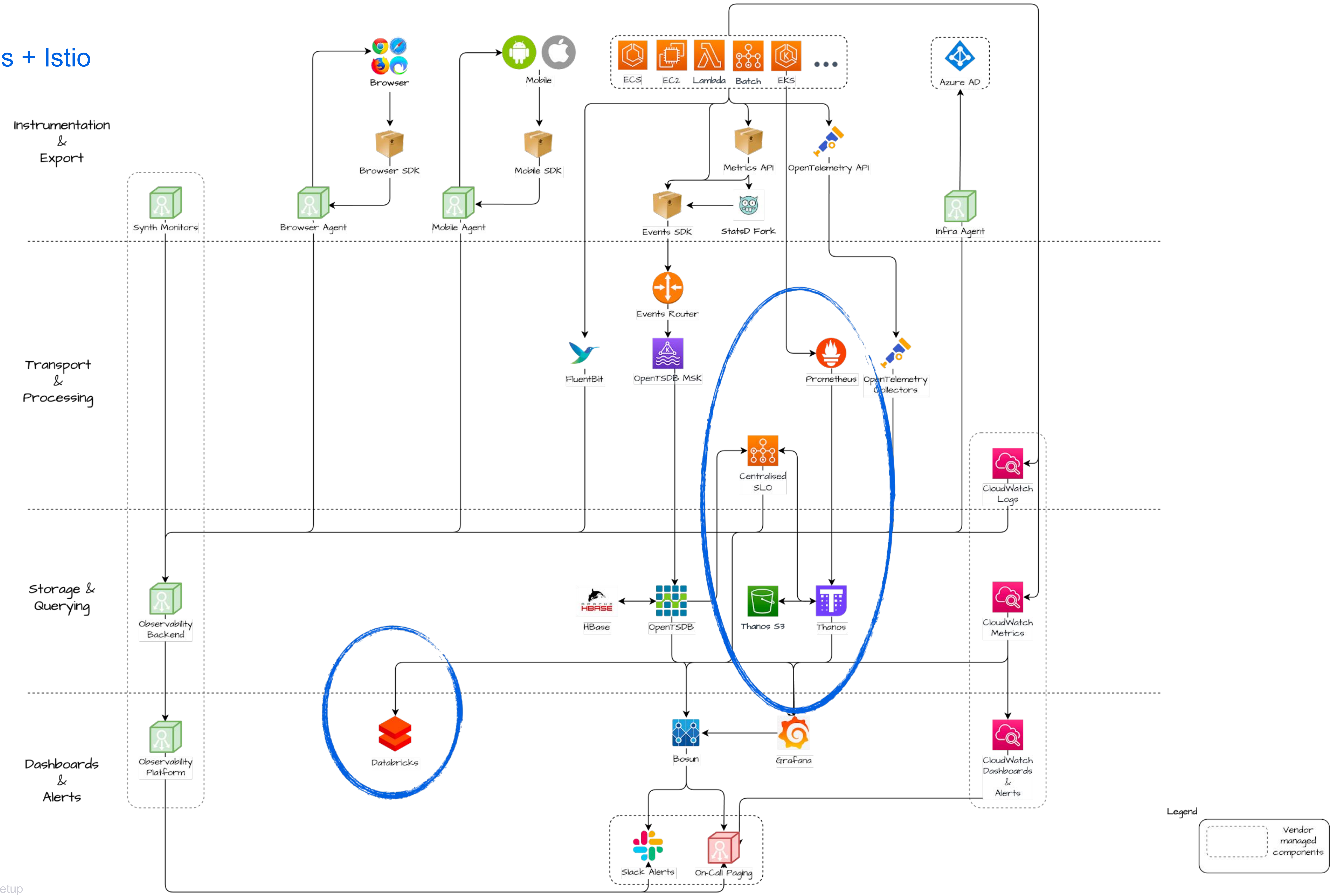
Kubernetes + Istio



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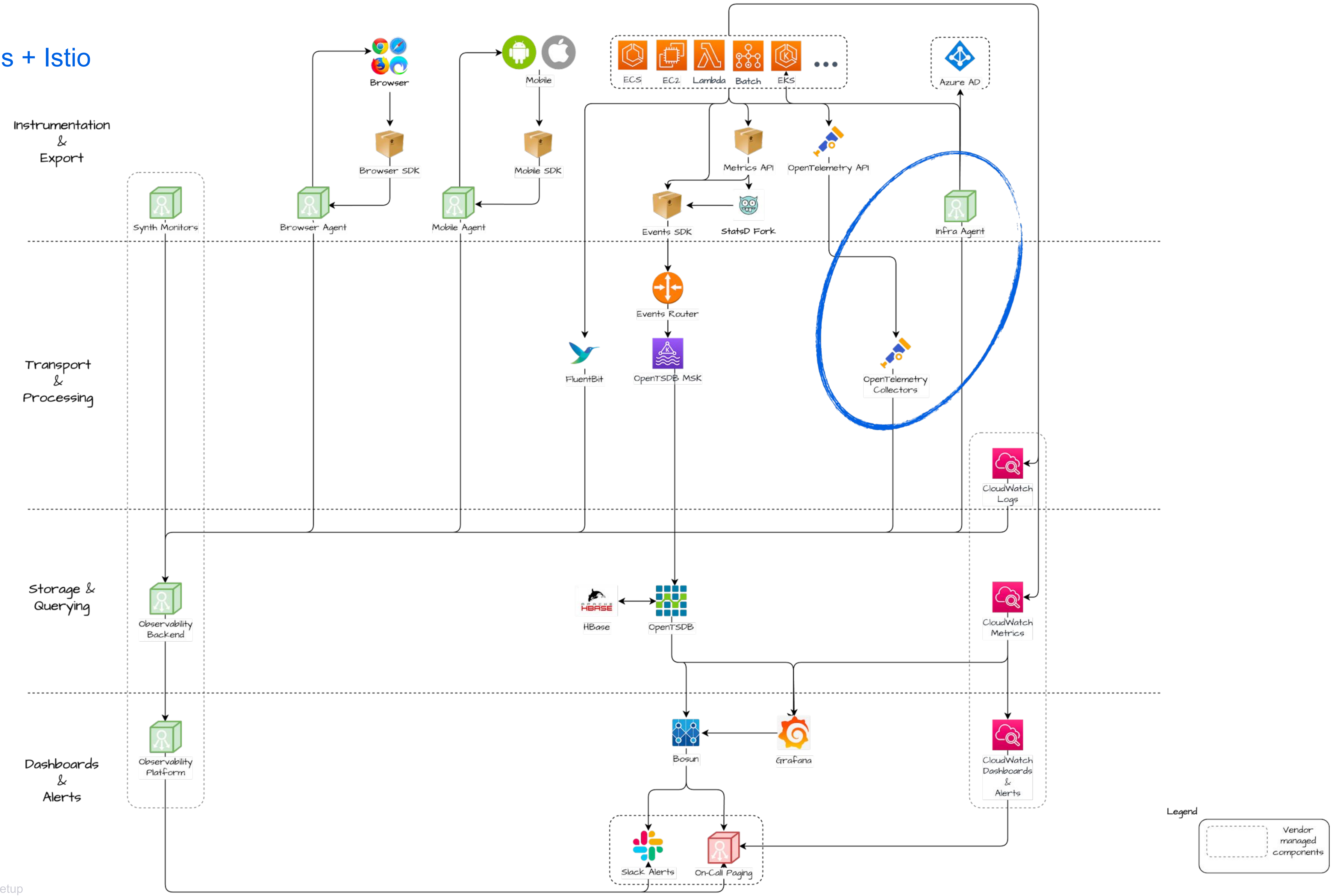
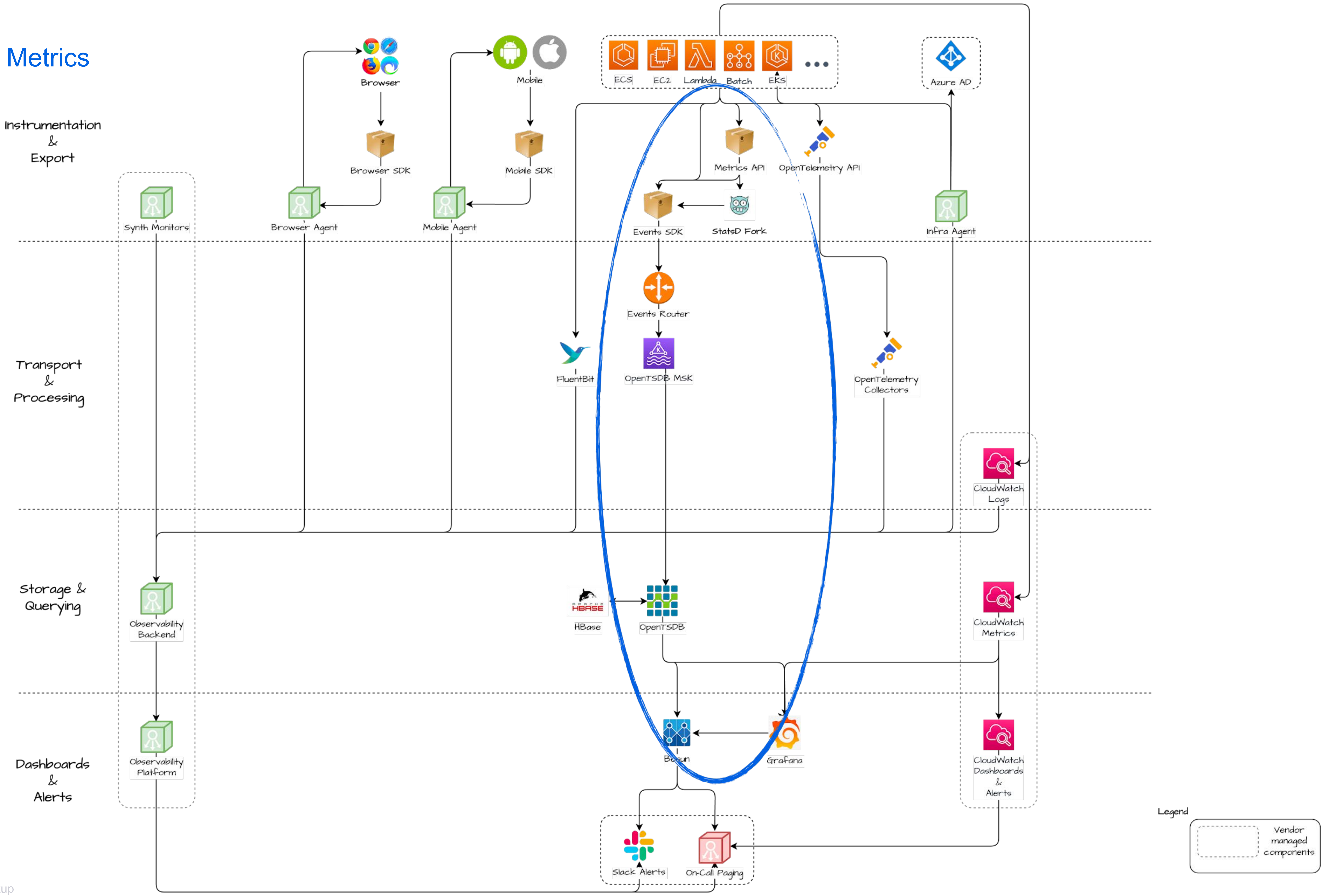


Application Metrics



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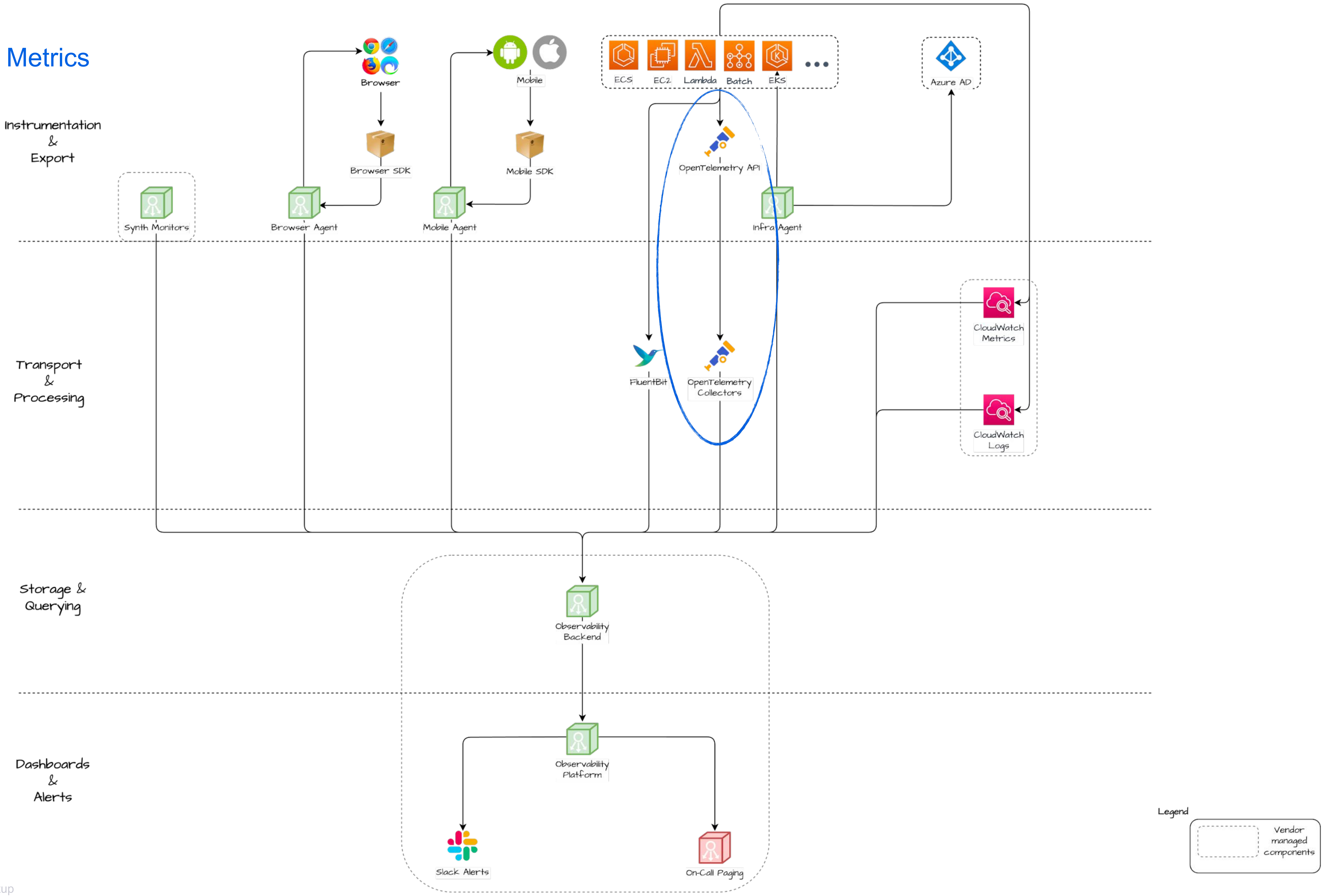
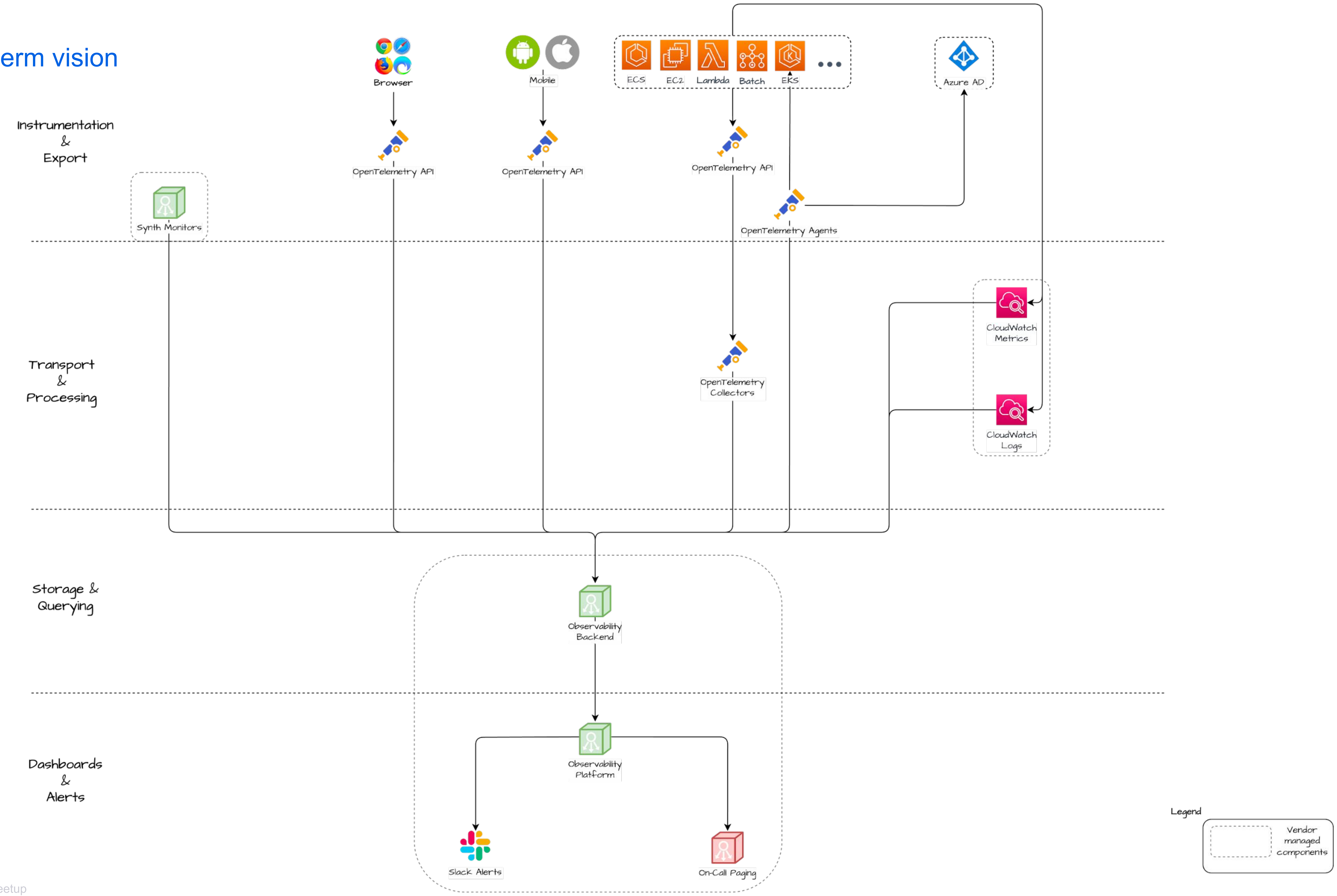
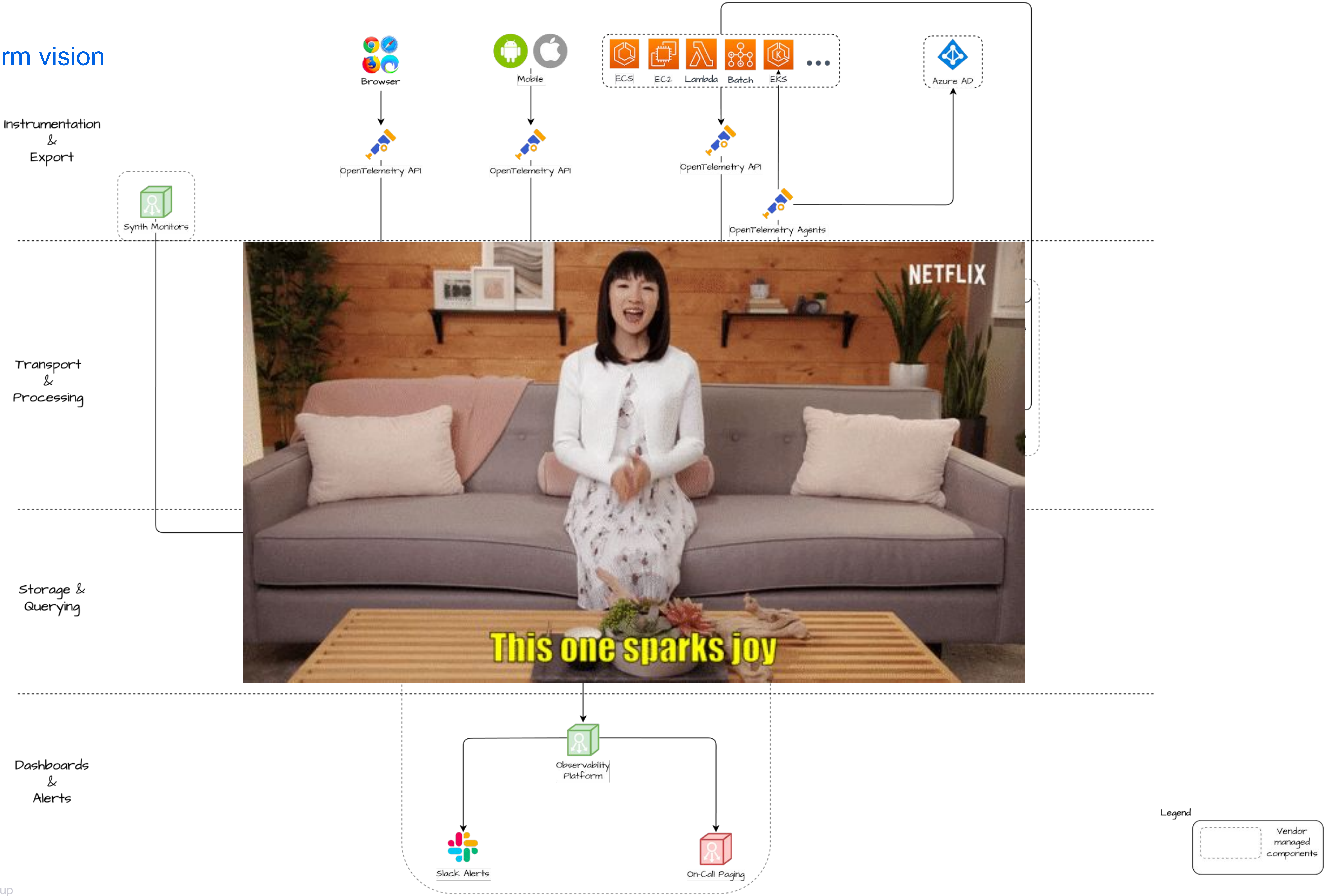


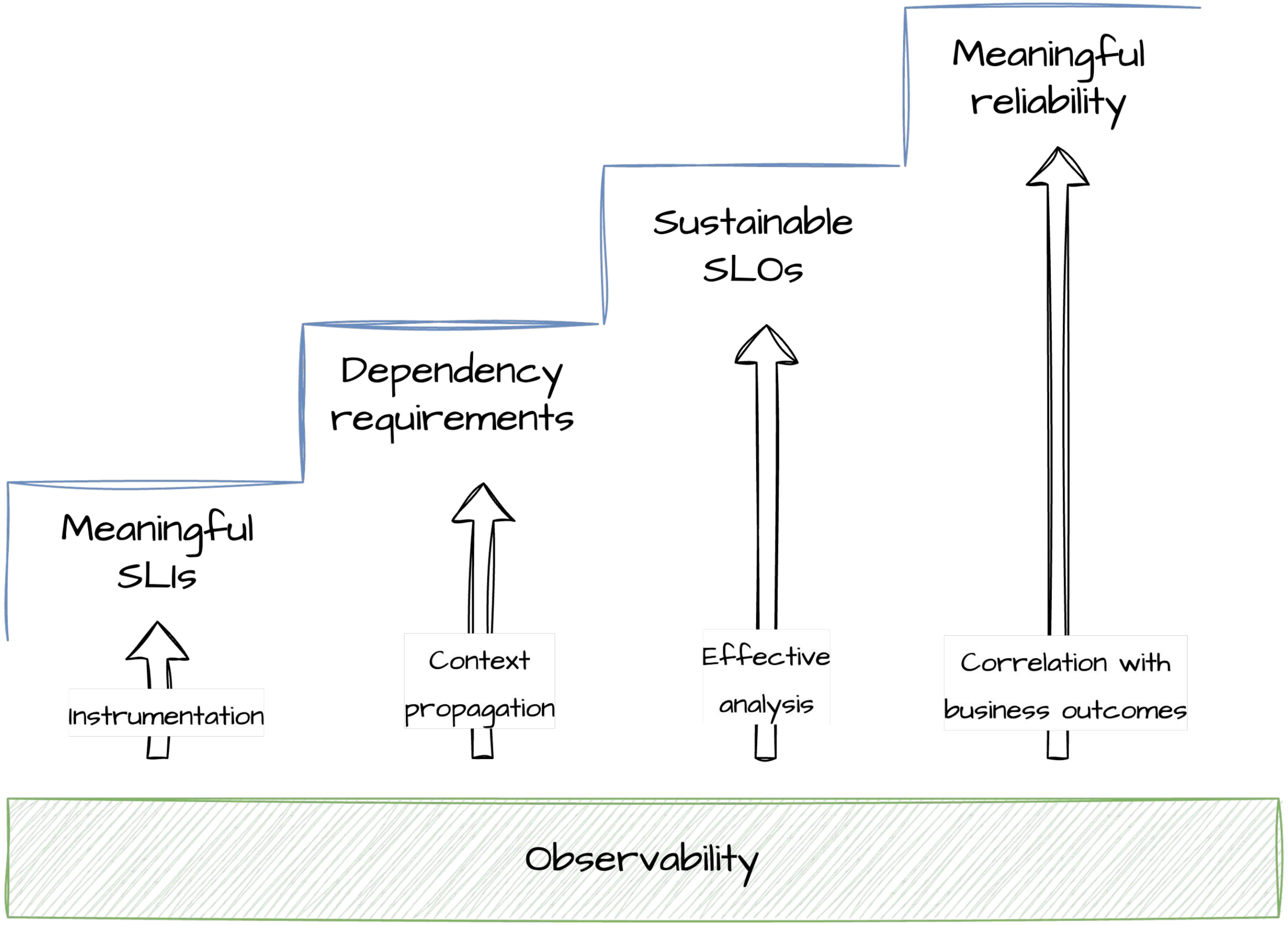
Our long-term vision



Our long-term vision



How does observability relate to business outcomes?



Agenda

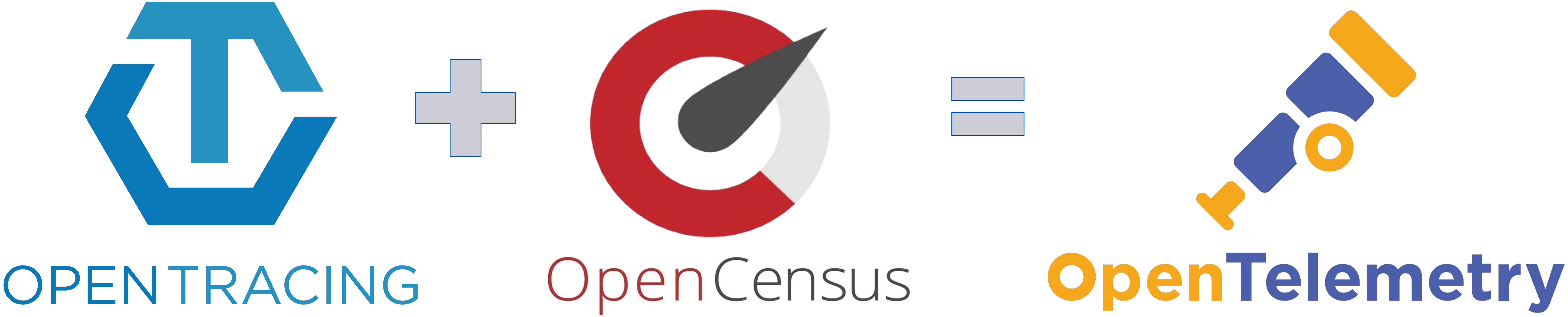
1. OpenTelemetry signals in context
2. Maximising return-on-investment
3. Communicating value
4. Facilitating adoption

Make the golden path the path of least resistance

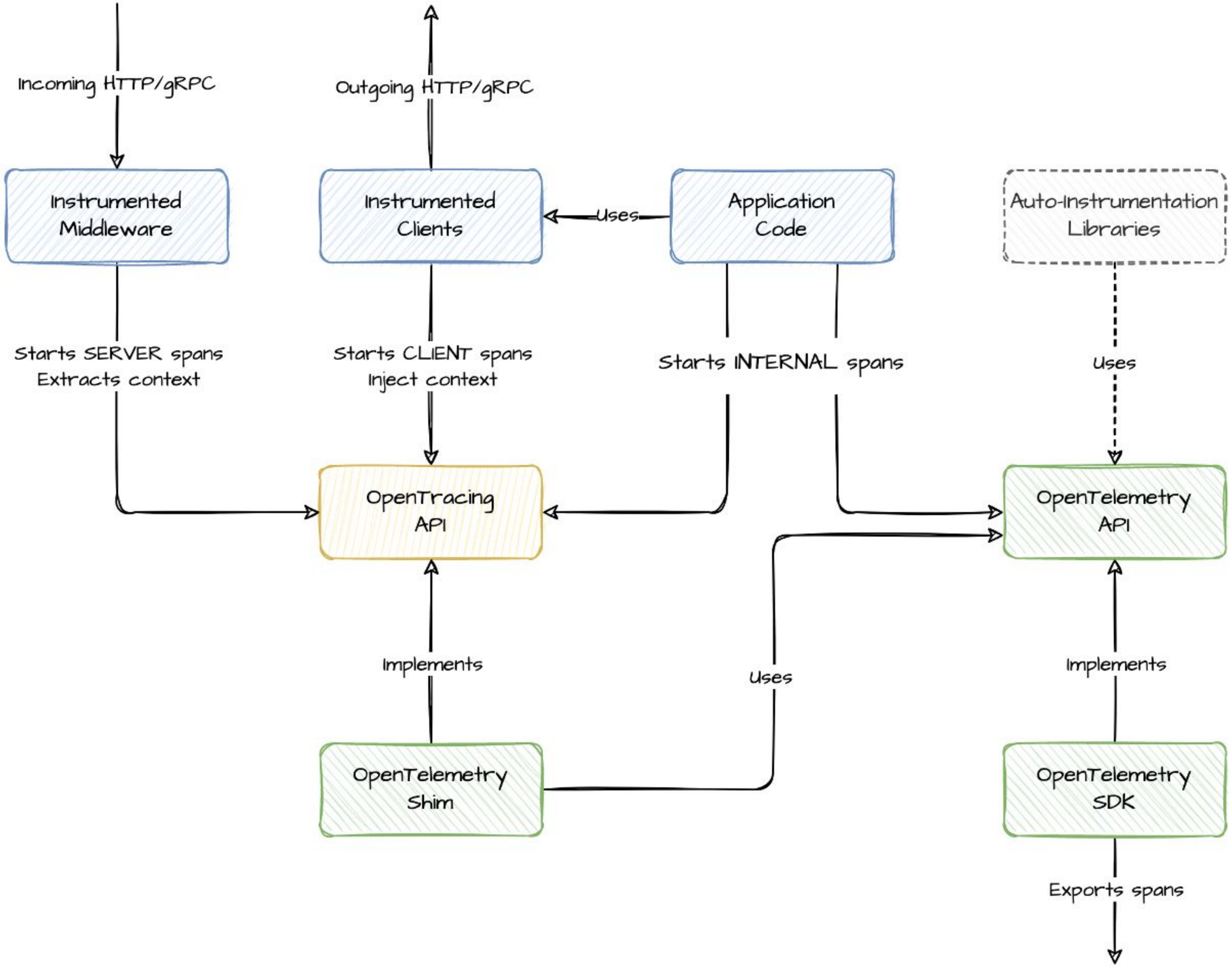
Standard telemetry out of the box

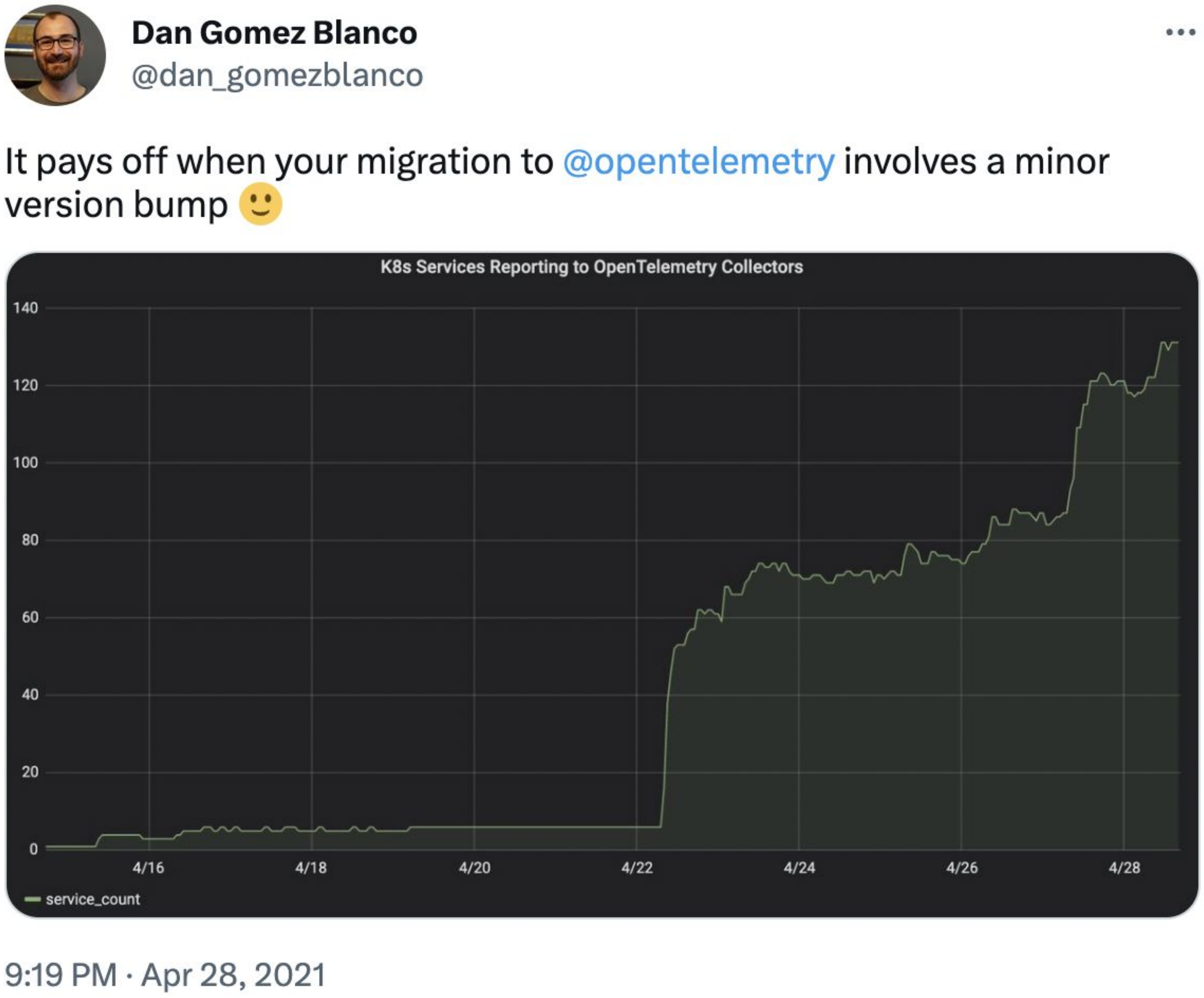
- Configuration libs/images for supported languages (Java, NodeJS, Python)
- Production Standards baked in
- Minimal, extensible config (standard file or env)
- Instrumentation packages take precedence
- OpenTelemetry Distros can help

Migration from other open standards



Benefits of API design



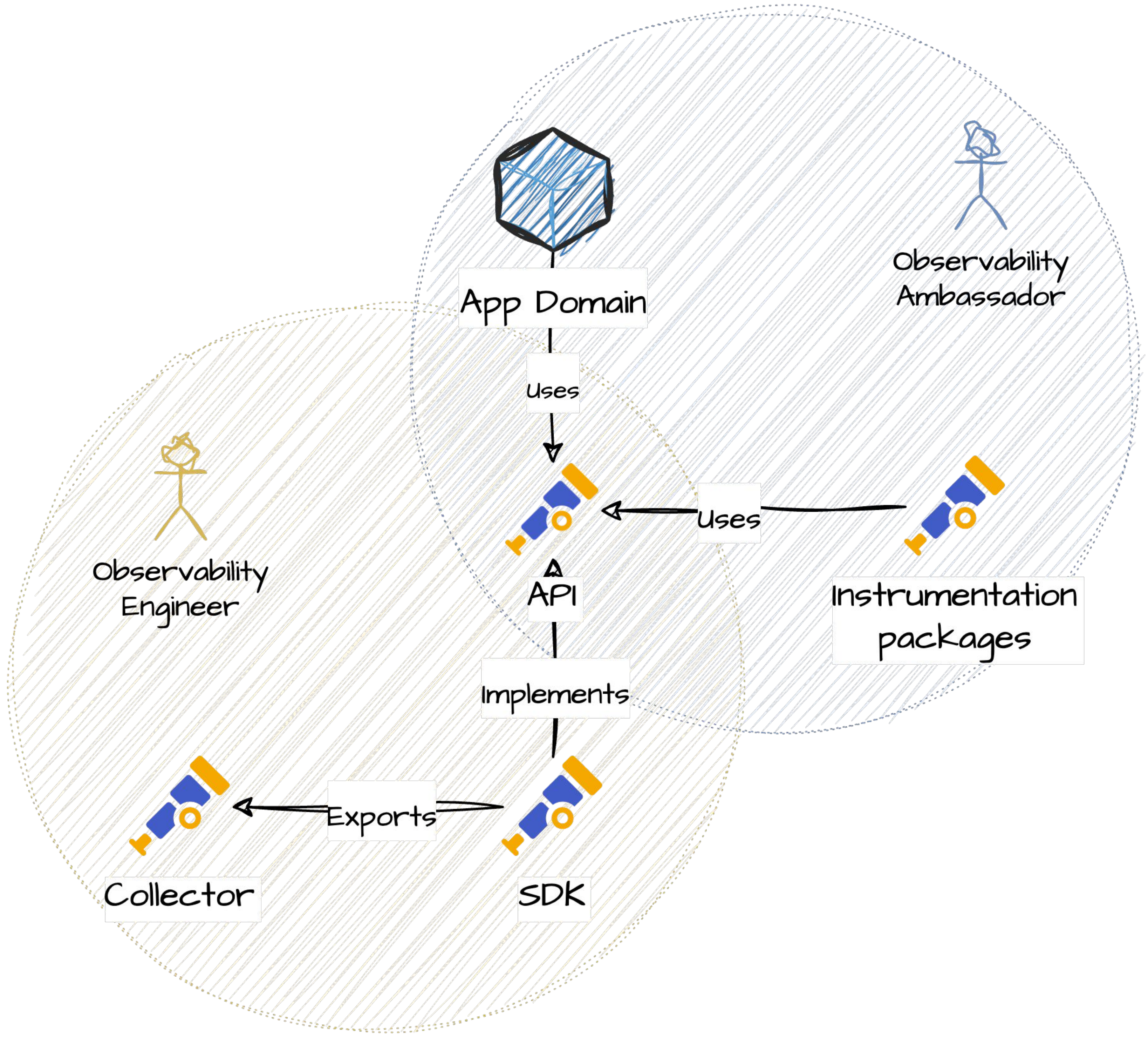


Dan Gomez Blanco
@dan_gomezblanco

It pays off when your migration to @opentelemetry involves a minor version bump 🙂

9:19 PM · Apr 28, 2021

Empowering a culture shift

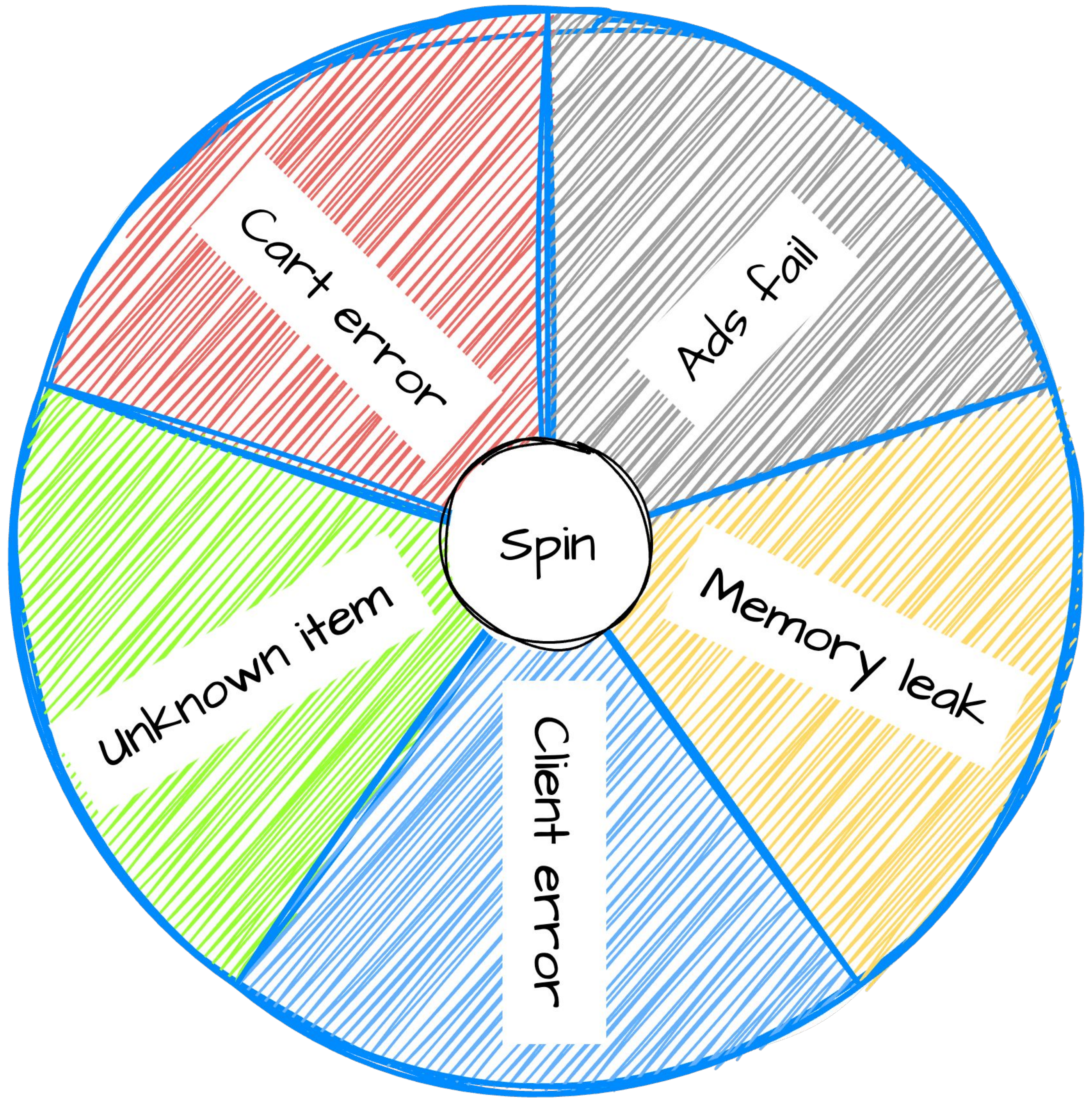


Observability Ambassadors

Bridging enablement and adoption

Empowering Observability Engineers to focus on innovation

Driving adoption of best practices within their domain



Make it fun!

Official OpenTelemetry Demo https://opentelemetry.io/docs/demo/

Gamify root cause analysis (wheel of misfortune) on a common stack

Context and correlation always win!

- Context and correlation over intuition and experience
- Use the right tool for each job and maximise ROI
- Observability is a cross-cutting discipline

Thank you