IoT at Scale with Evolutionary Serverless Architecture

aws
COMMUNITY DAY
NL

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@ssasoglu


Change

CAN YOUR ARCHITECTURE SURVIVE?

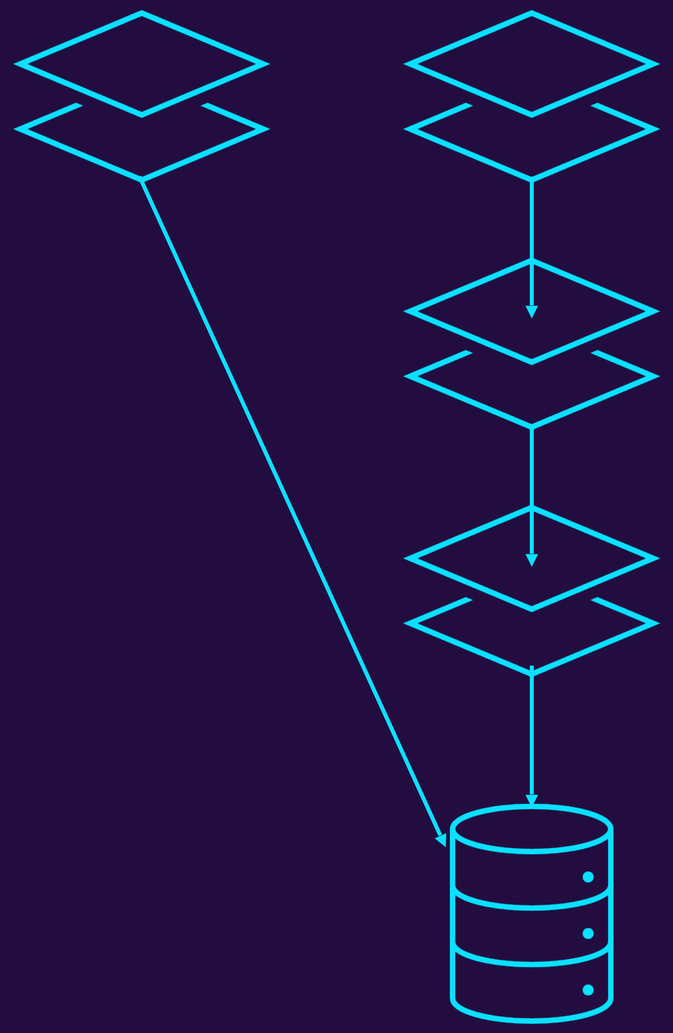
ARCHITECTURE

Things that are

HARD

to change later.


HLM
LIEBHERR



Presentation Layer

Service Layer

Data Access Layer

Database

EVOLUTIONARY ARCHITECTURES

EVOLUTIONARY ARCHITECTURES

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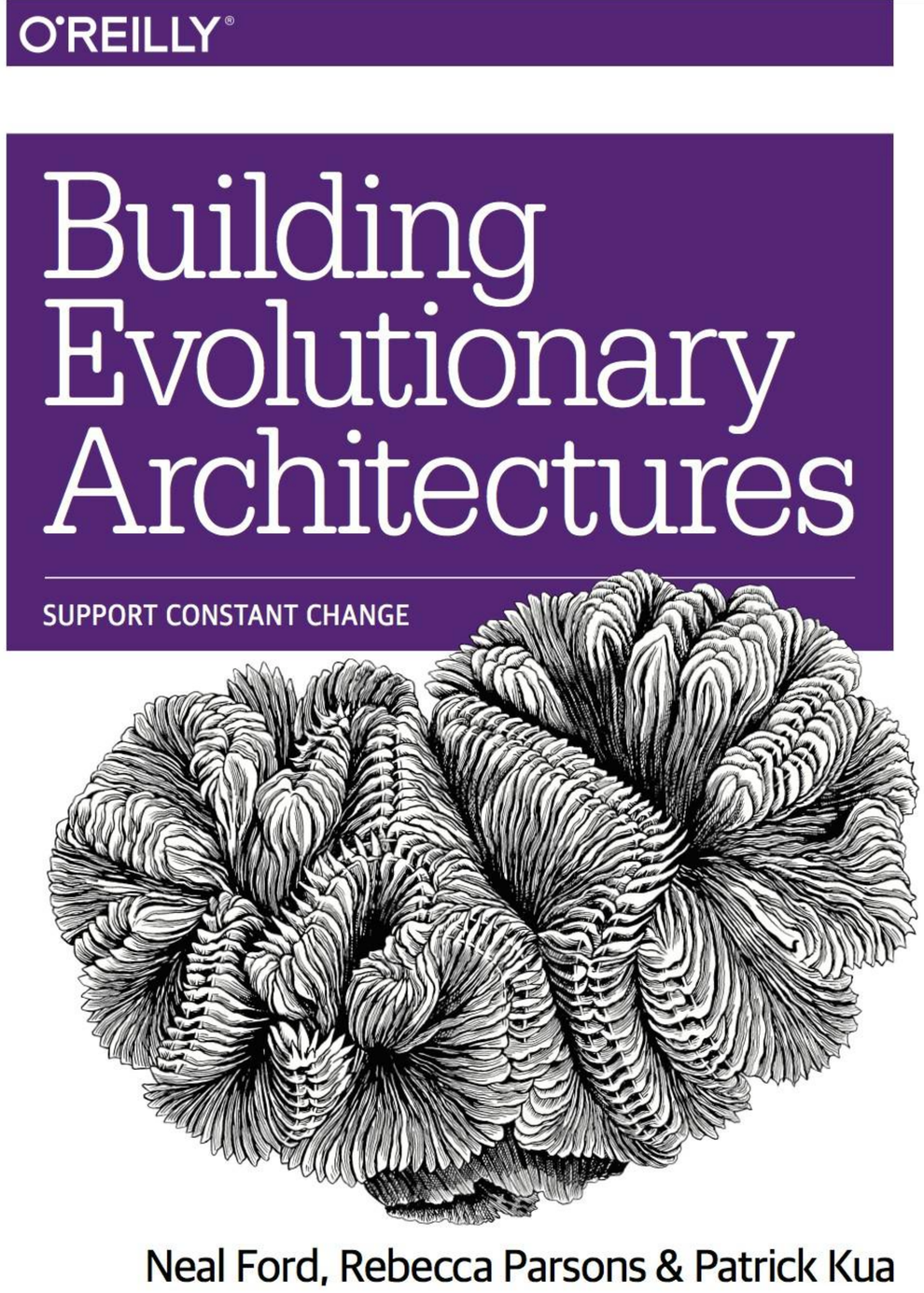
* https://www.thoughtworks.com/insights/books/building-evolutionary-architectures



EVOLUTIONARY ARCHITECTURES

An evolutionary architecture supports guided, incremental change across multiple dimensions.

** From the book Building Evolutionary Architectures*

EVOLUTIONARY ARCHITECTURES

Big Ball of Mud

Monoliths (Unstructured, Modular, Layered)

Service Oriented Architecture

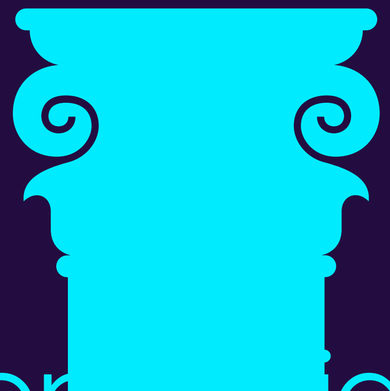
Microservices Architecture

Event Driven Architecture

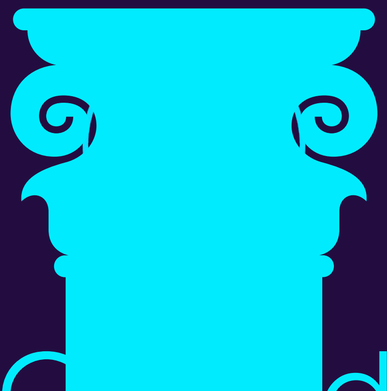
Serverless Architecture

Microkernel Architecture

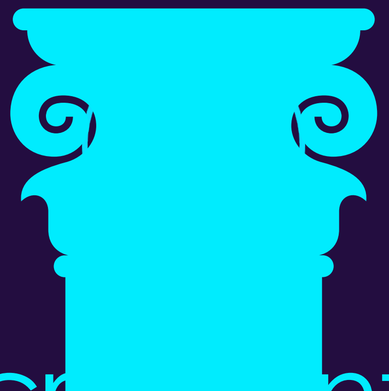
EVOLUTIONARY ARCHITECTURES



Appropriate Coupling



Guided Change

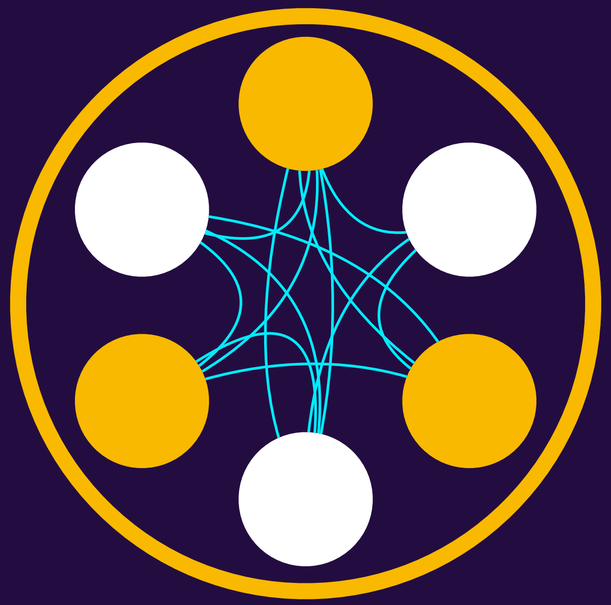


Incremental Change

3 Principles

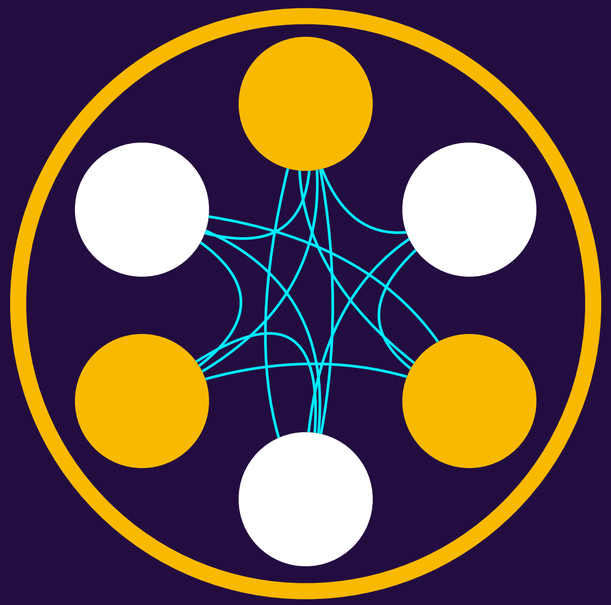
EVOLUTIONARY ARCHITECTURES

Appropriate Coupling



EVOLUTIONARY ARCHITECTURES

Appropriate Coupling

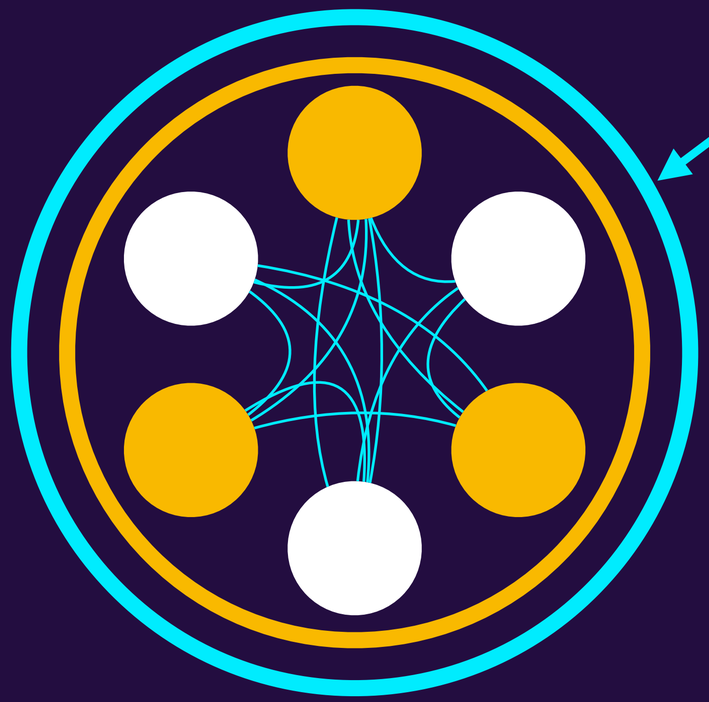


EVOLUTIONARY ARCHITECTURES

Appropriate Coupling

Architectural

Quantum



EVOLUTIONARY ARCHITECTURES

Guided Change

accessibility	composability	evolvability	administrability
customisability	agility	configurability	credibility
efficiency	debuggability	accuracy	deployability
compatibility	extensibility	dependability	flexibility
maintainability	modularity	precision	reusability
reliability	resilience	responsiveness	productibility
robustness	safety	scalability	sustainability
testability	traceability	timeliness	usability

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EVOLUTIONARY ARCHITECTURES

Guided Change

FITNESS FUNCTIONS

EVOLUTIONARY ARCHITECTURES

Guided Change

Unit Tests

Integration Tests

End to End Tests

FITNESS FUNCTIONS

Alerts

Manual Checks

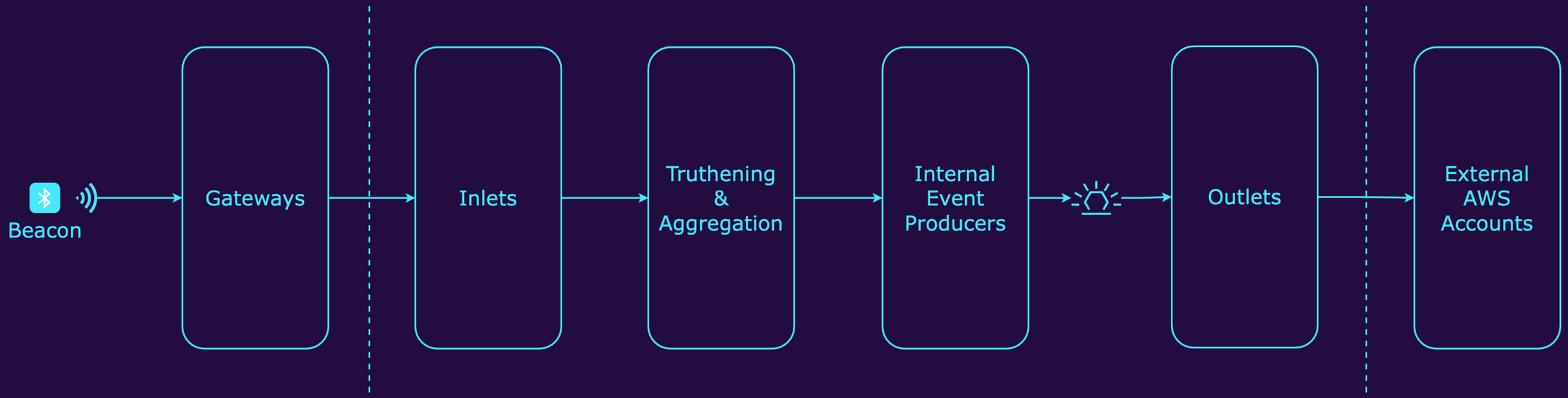
Metrics

EVOLUTIONARY ARCHITECTURES

Incremental Change

IOT-PLATFORM

IOT-PLATFORM



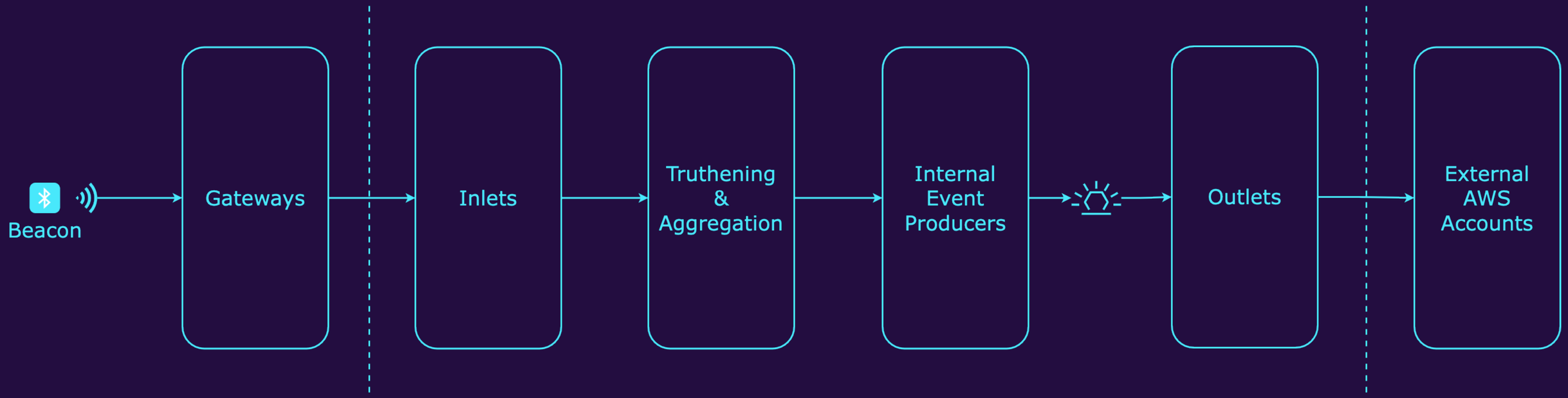

RANDI VINI
D'ITALIA
FRAGILE
ZERBRECHLICH

IOT-PLATFORM

- Beacons on rollcages

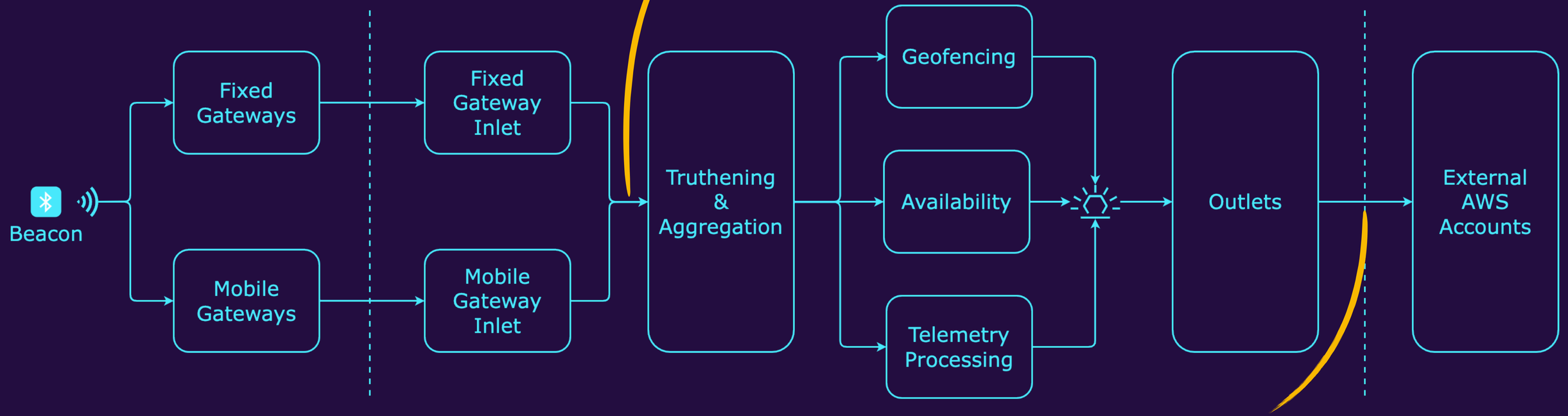

320.000

IOT-PLATFORM



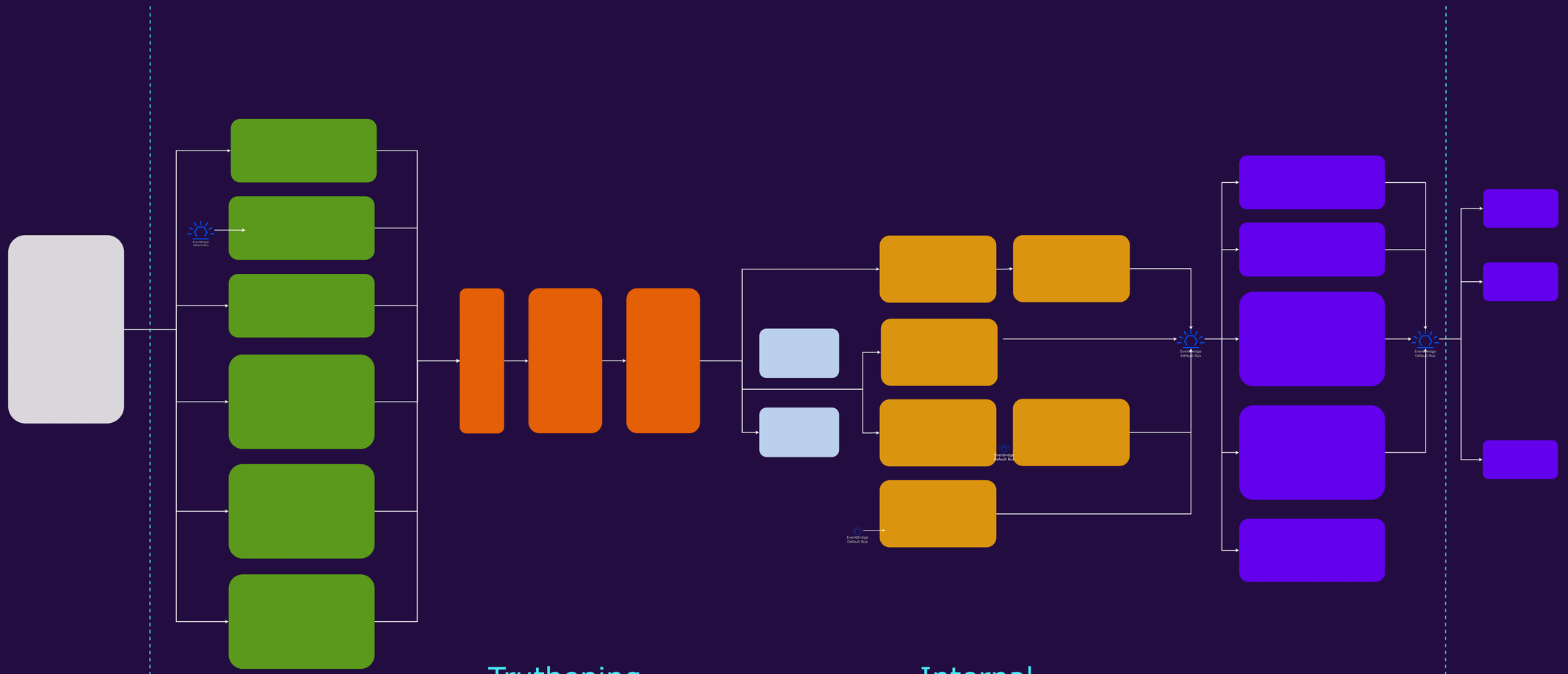
IOT-PLATFORM

- 5000 – 8000 events per second
- 18M - 28,8M events per hour



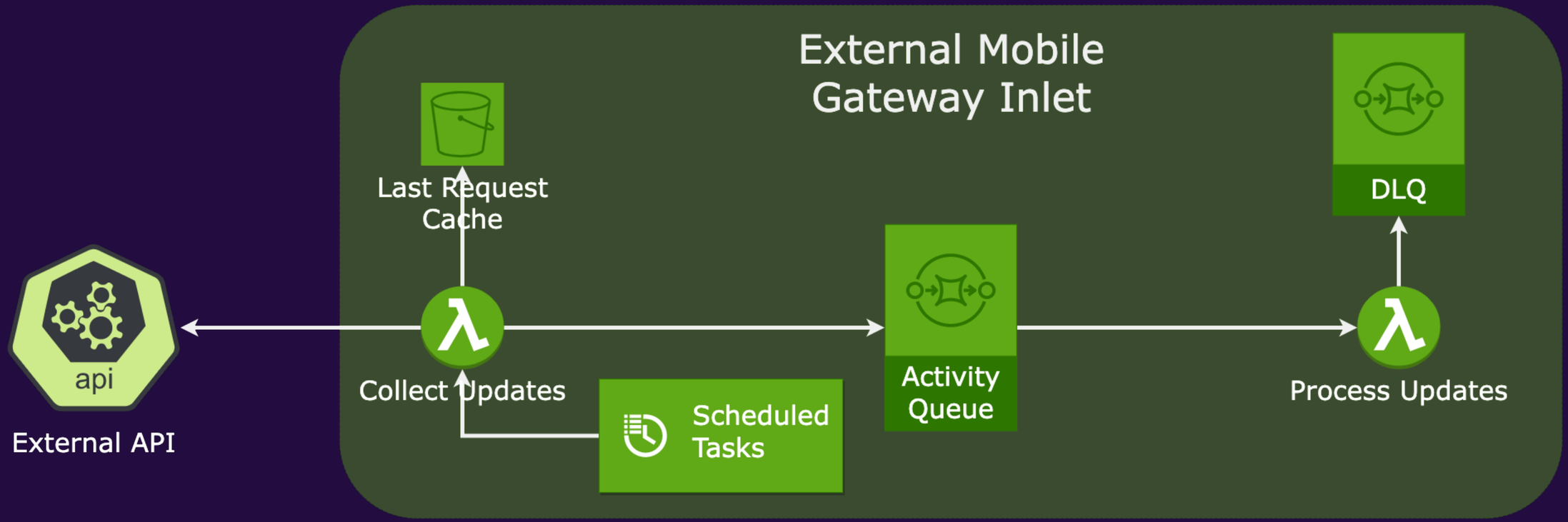
- 60 - 100 events per second
- 220K - 360K events per hour

IOT-PLATFORM



APPROPRIATE COUPLING

Module/Microservice Based Development



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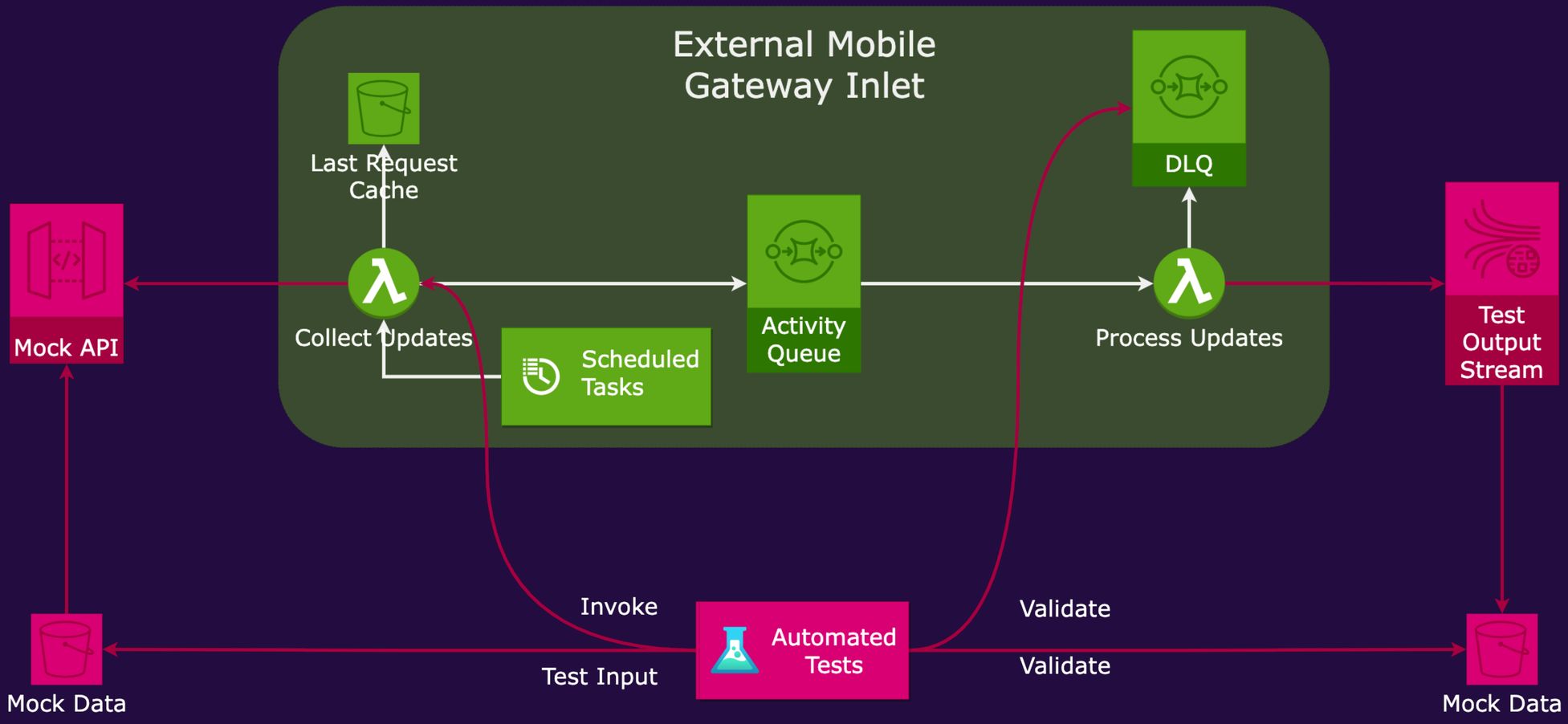
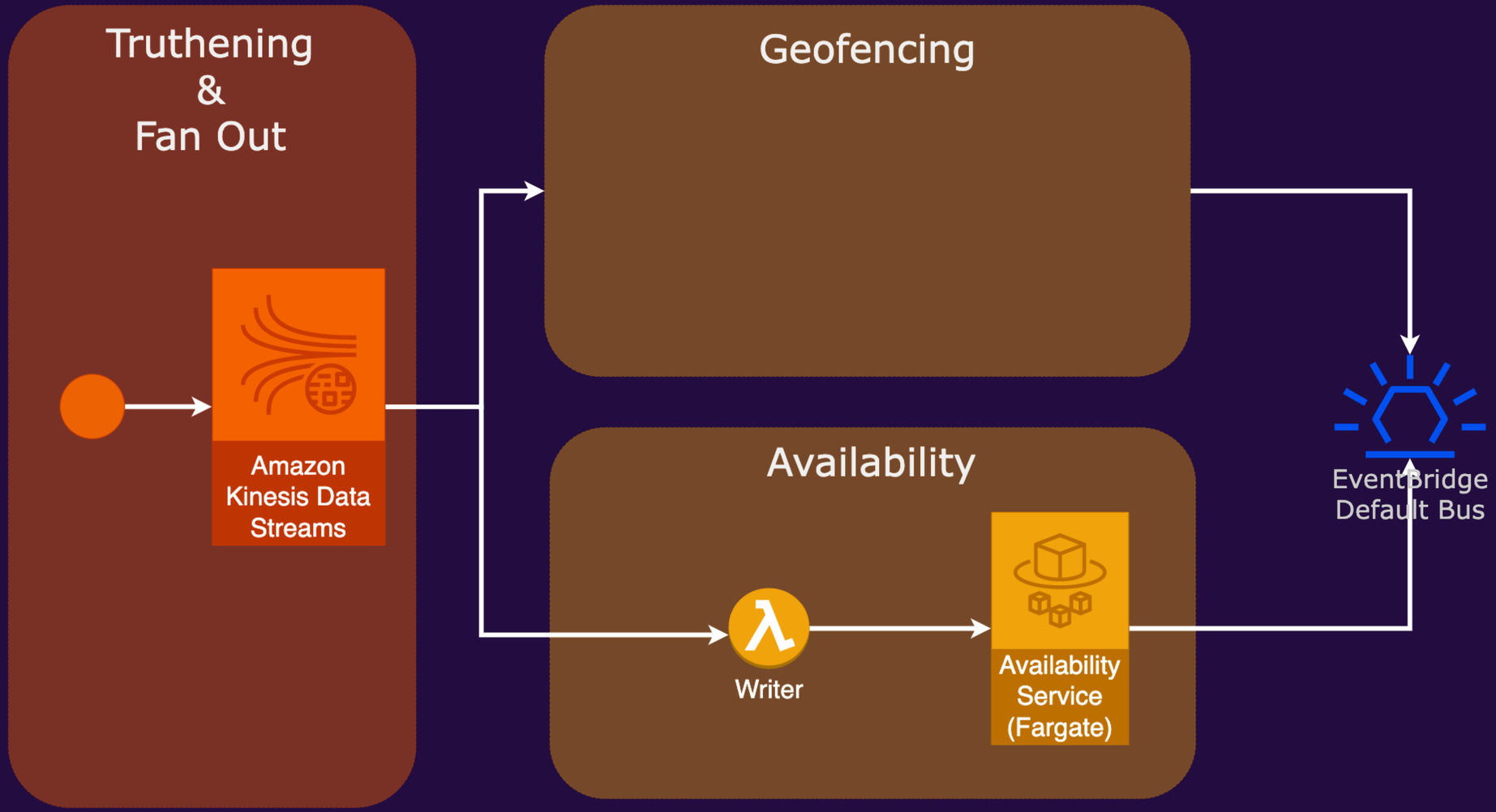


GUIDED CHANGE

Fitness Functions



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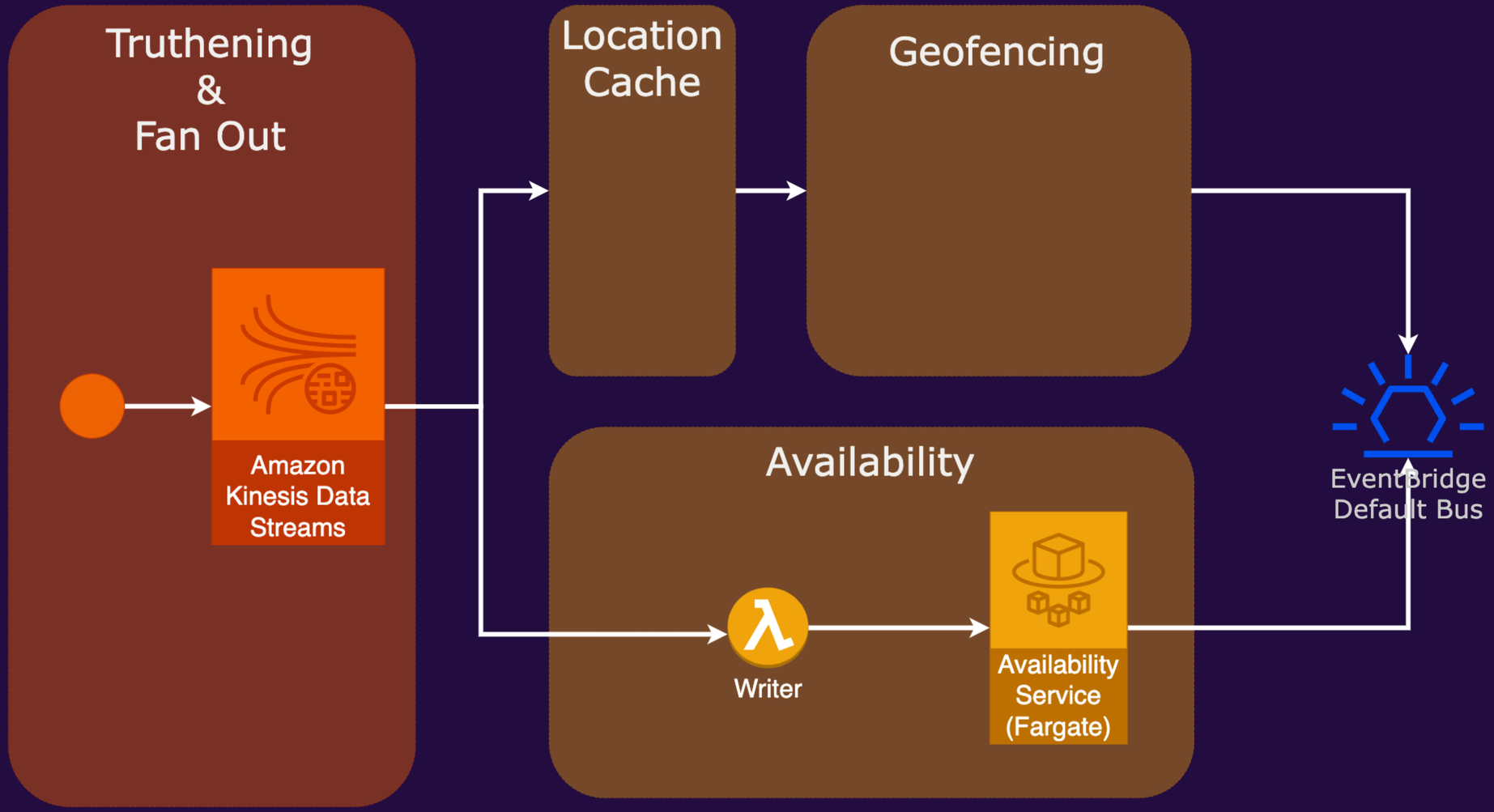

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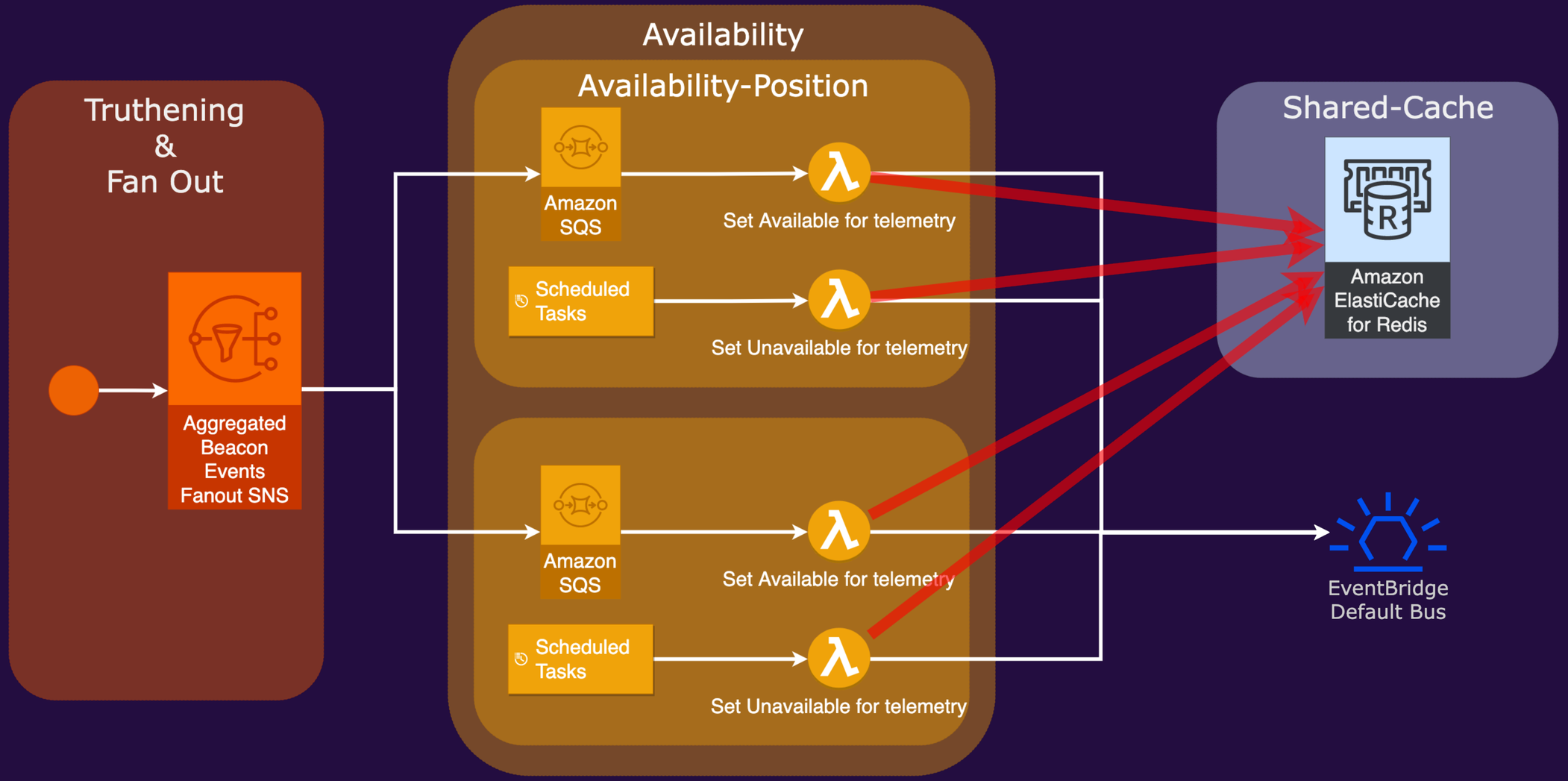

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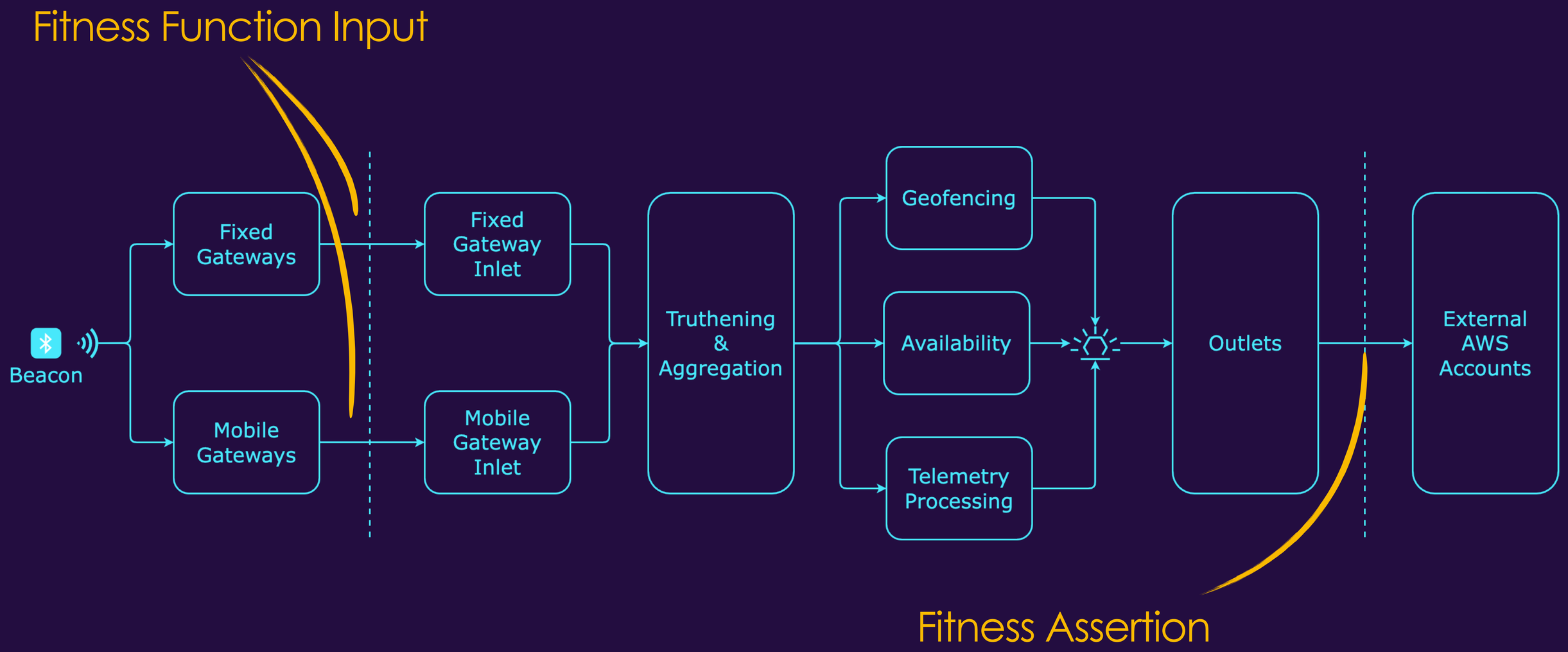

GUIDELINES

Make Decisions Reversible

- Use feature toggles
- Canary/Ramped/Blue Green Deployments
- Do not over engineer to support reverse ops

Build Sacrificial Architectures

- Set nothing on stone
- Find balance with tracer bullets

Defer Solutions Until Patterns Emerge

- Do not rush into making tough decisions or tool selections
- Defer tough decisions until last moment by hiding them behind abstractions

Version services/events

- Always version services/events

RECAP

Evolutionary Architectures

Appropriate Coupling

Small
+
High Functional Cohesion
=
Evolvable

Guided Change

Key Dimensions
and
Fitness Functions

Incremental Change

Use Automation

Questions?

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Thank you!

Have any feedback?
You can scan here!

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