AWS re:Invent

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ARC207

The architect elevator: Connecting IT and the boardroom

Gregor Hohpe (he/him)
Enterprise Strategist
Amazon Web Services

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Modern architects

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"The value of a modern architect is measured by how many levels they can span."

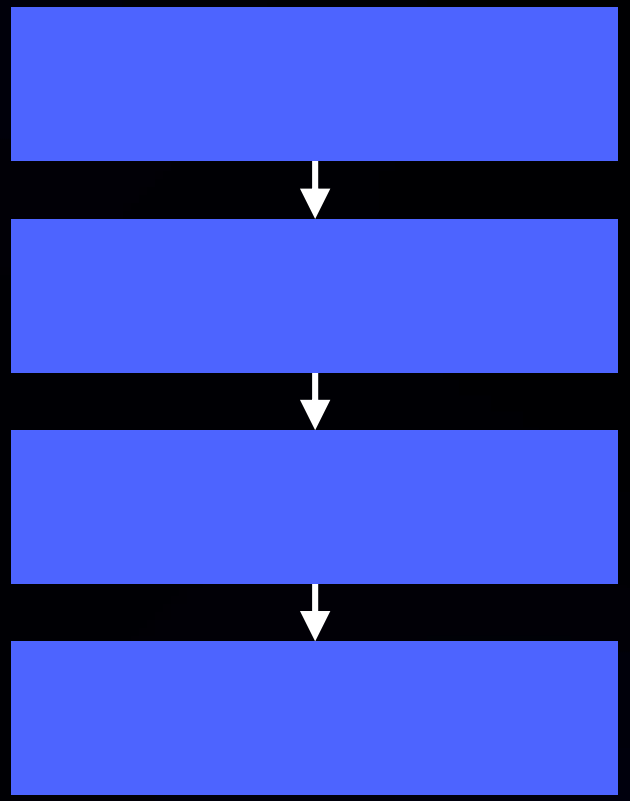


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Layering



- Separation of concerns
- Well-defined interfaces
- Abstraction
- Clean dependencies
- Replaceability





- Overhead
- Runtime latency
- Own complexity
- Local optimization
- Change propagation

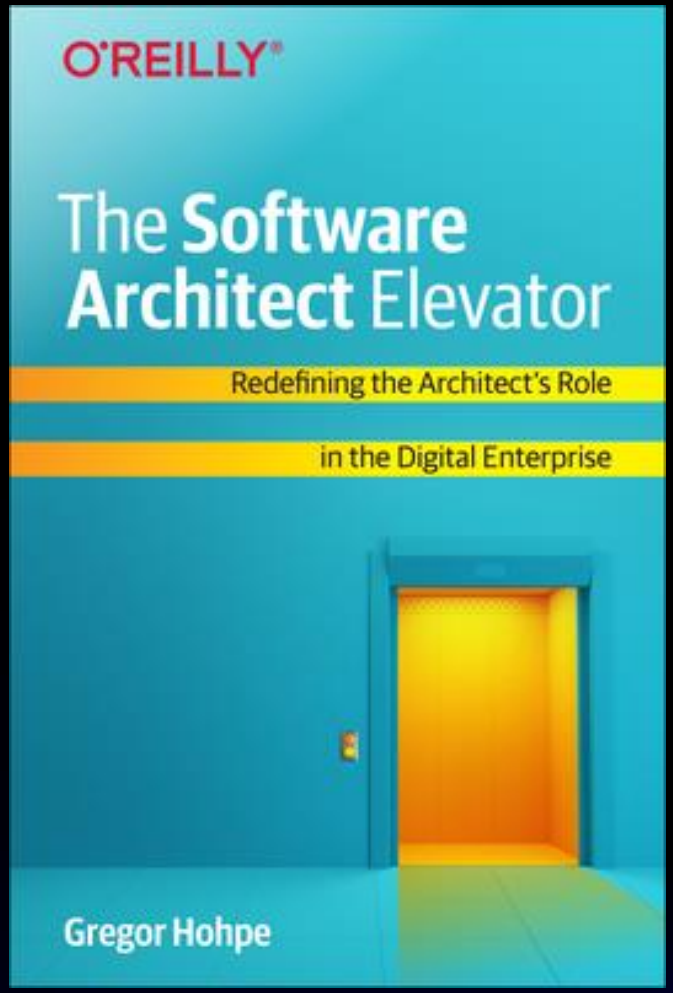
“Complex technical systems and organizational systems behave similarly. You are all qualified organizational designers!”

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The architect elevator

- Connect business and IT strategy
- Drive change
- Conquer complexity
- Explain, demystify, and excite
- Design internet-scale systems
- Remove friction
- Keep up



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“Will the folks in the penthouse care about what I have to say?”

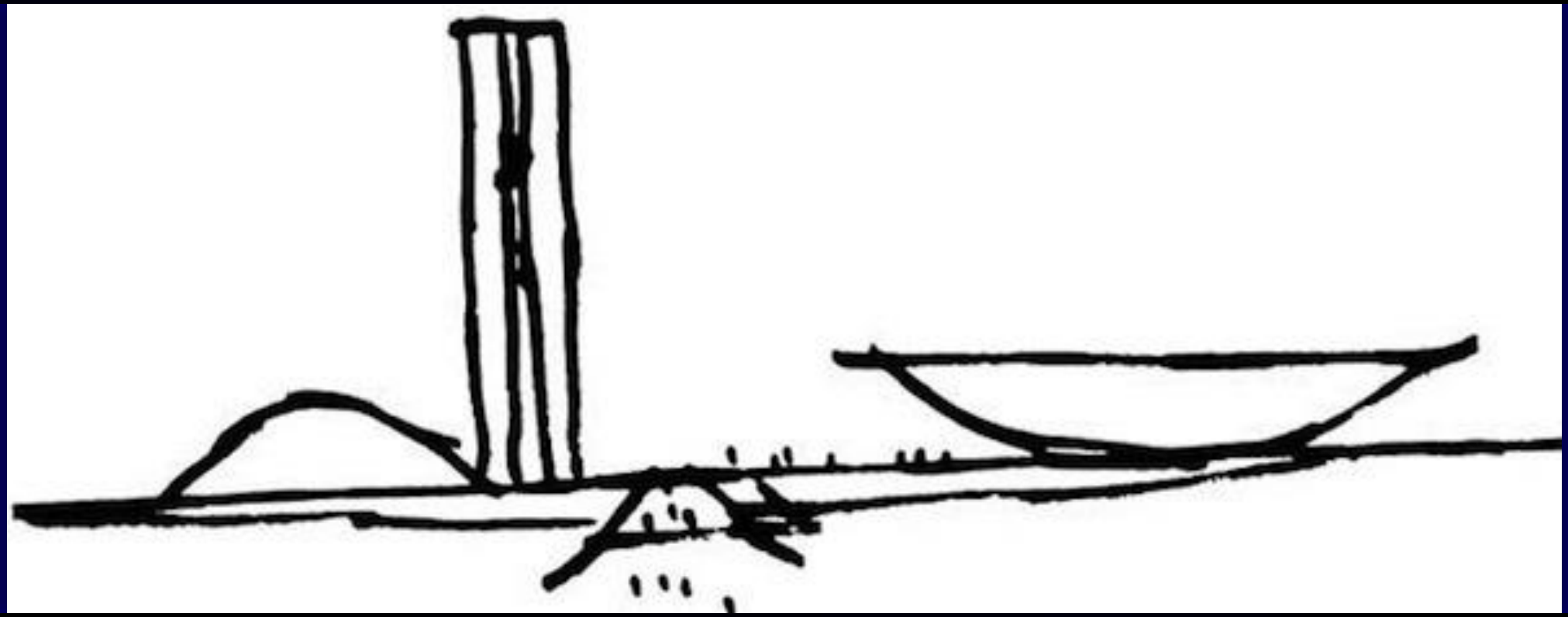


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Thinking like an architect

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Famous architect’s sketch



Oscar Niemeyer, sketch of the Brazilian National Congress

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Famous architect’s sketch

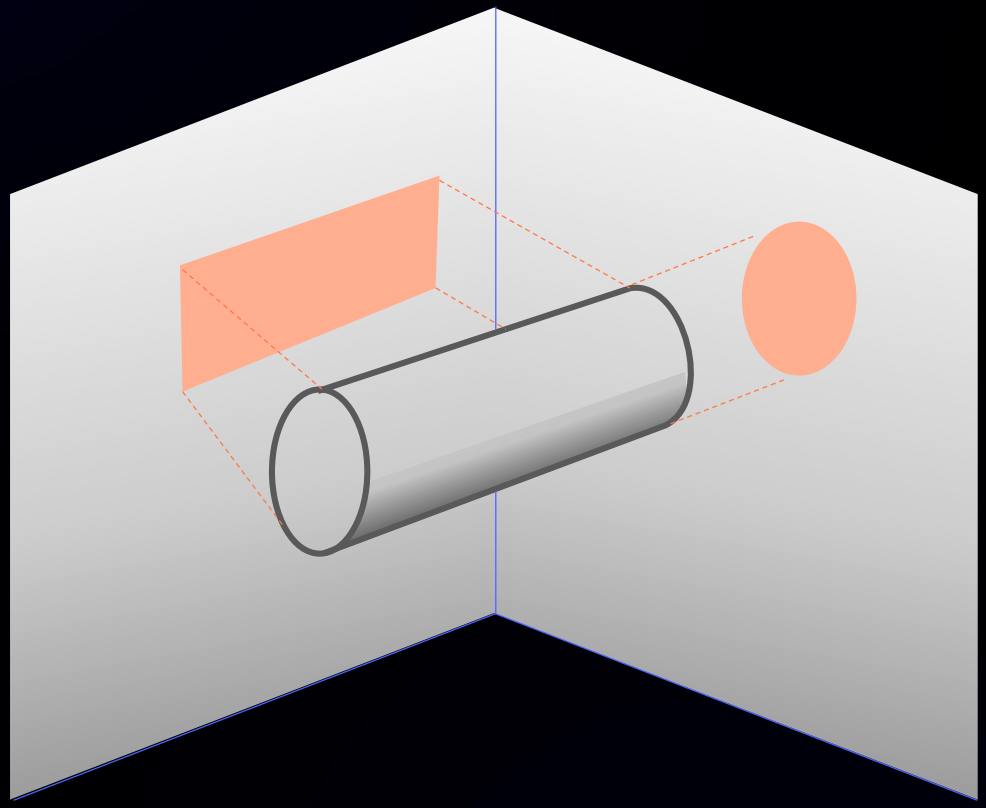


Oscar Niemeyer, sketch of the Brazilian National Congress

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Architects see more dimensions

This is a CIRCLE!



This is a RECTANGLE!

Rectangle or circle?

Reality is usually more complex!

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The value of architecture

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The value of architecture: Selling options

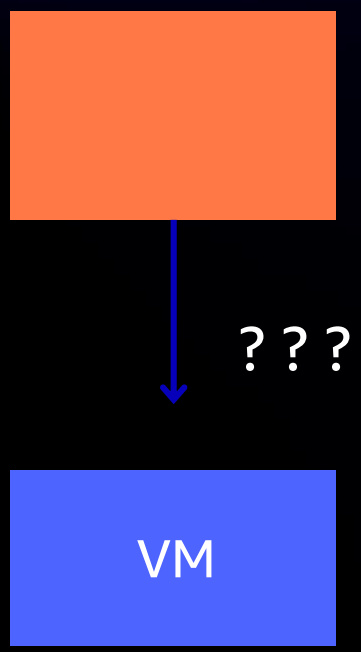
$$C(S_t, t) = N(d_1)S_t - N(d_2)Ke^{-r(T-t)}$$

$$d_1 = \frac{1}{\sigma\sqrt{T-t}}\left[\ln\left(\frac{S_t}{K}\right) + \left(r + \frac{\sigma^2}{2}\right)(T-t)\right]$$

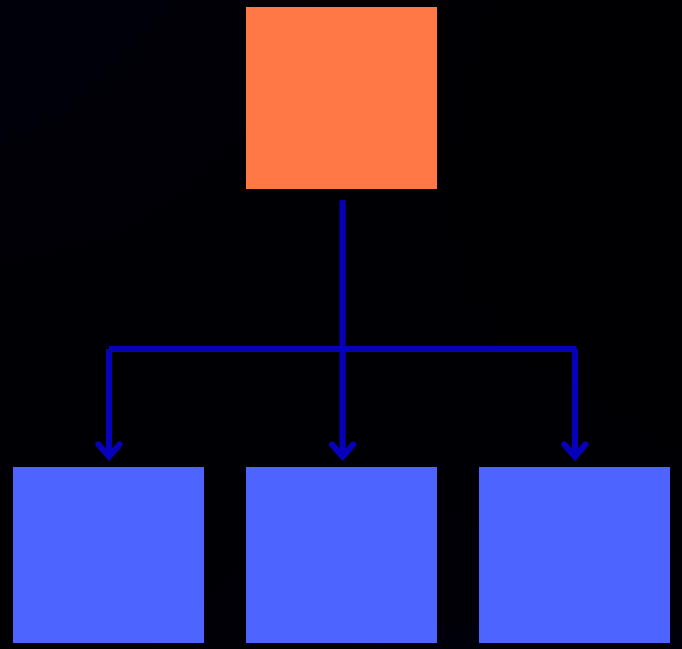
$$d_2 = d_1 - \sigma\sqrt{T-t}$$

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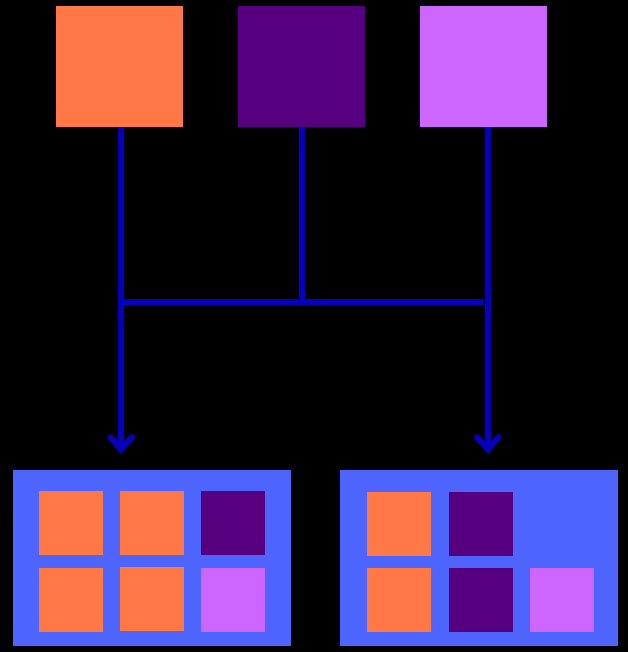
Cloud architecture options: Hardware sizing



Monolith
VM/Physical



Horizontal scaling
VM/Containers



Microservices
Serverless

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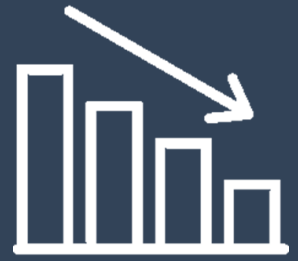
Options aren’t free



Effort



Complexity



Underutilization

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Architecture and agile thrive on uncertainty





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Riding the architect elevator: Upper floors

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Organization charts reveal corporate mindset

	Cost Center	Asset	Partner	Enabler
Focus on	Cost	Return on Investment	Business Value	Speed & Innovation
Typical CIO Reporting line	CFO	COO	CDO	CEO
Common Strategy	Outsource IT	Harmonize / Rationalize	Insource IT	IT = business
Levers	Cost Cutting	Economies of Scale	Agility	Economies of Speed

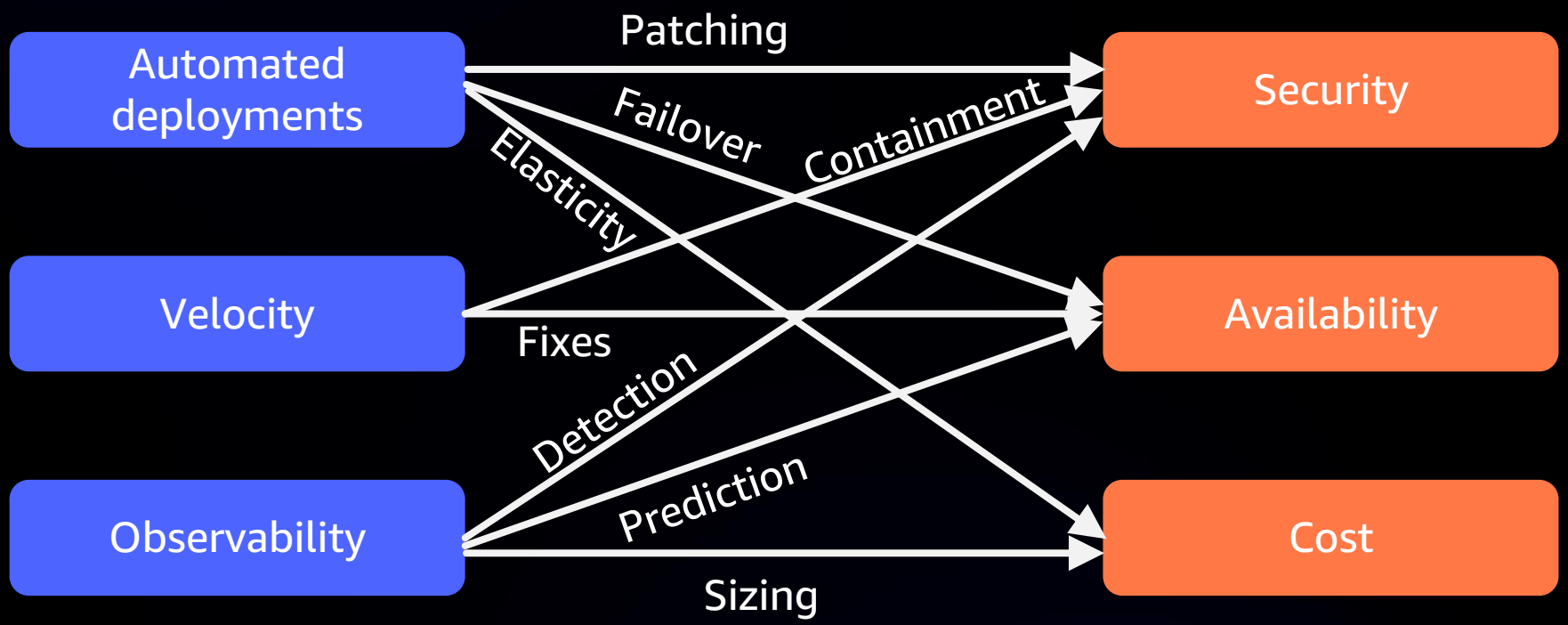
linkedin.com/pulse/reverse-engineering-organization-gregor-hohpe

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“Architects understand organizations and translate technical capabilities into the concrete business context.”

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Connecting the dots



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“Architects focus on grammar over vocabulary. Grammar defines relationships and expresses dependencies.”

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Riding the architect elevator: Mid-levels

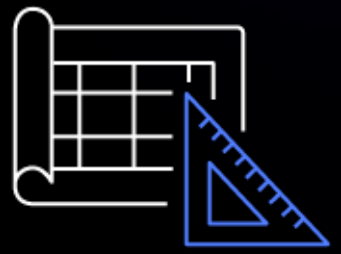
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Architects build models



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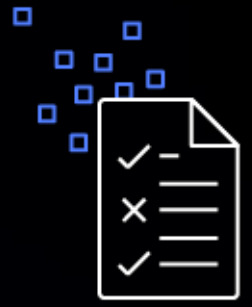
IT architects also build models



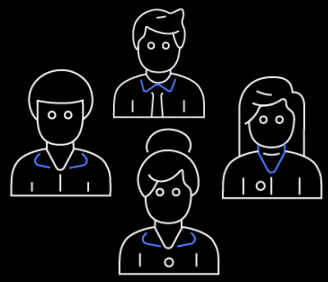
Predict a system's essential properties



Focus on the essence, omit noise



Make better decisions



Widen the audience

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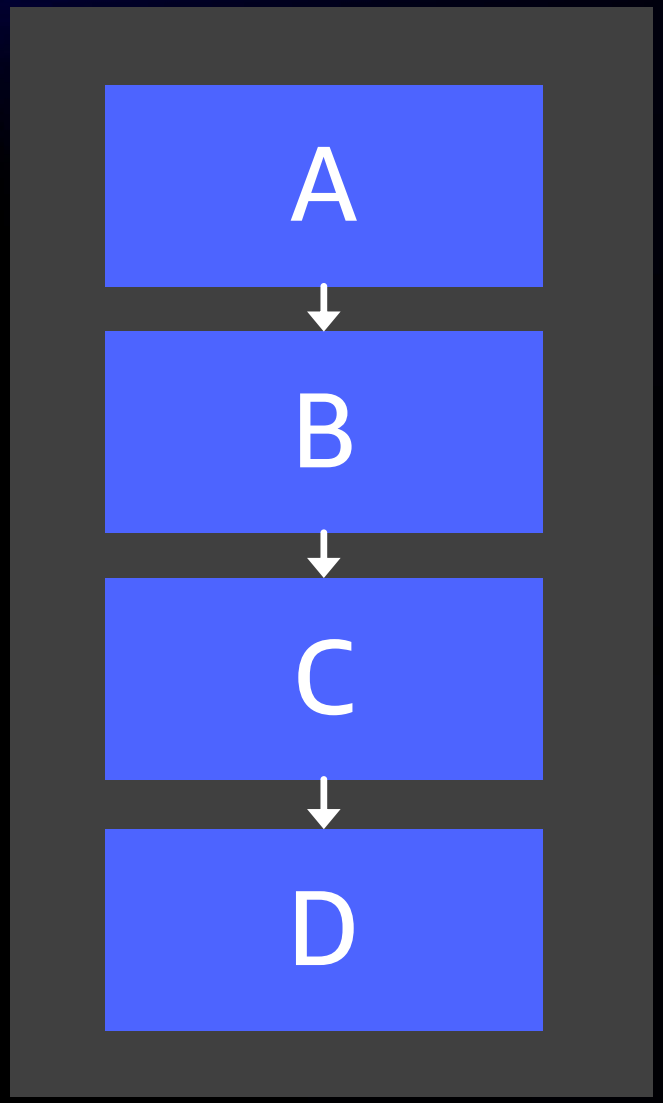
“All models are wrong, but some are useful.”

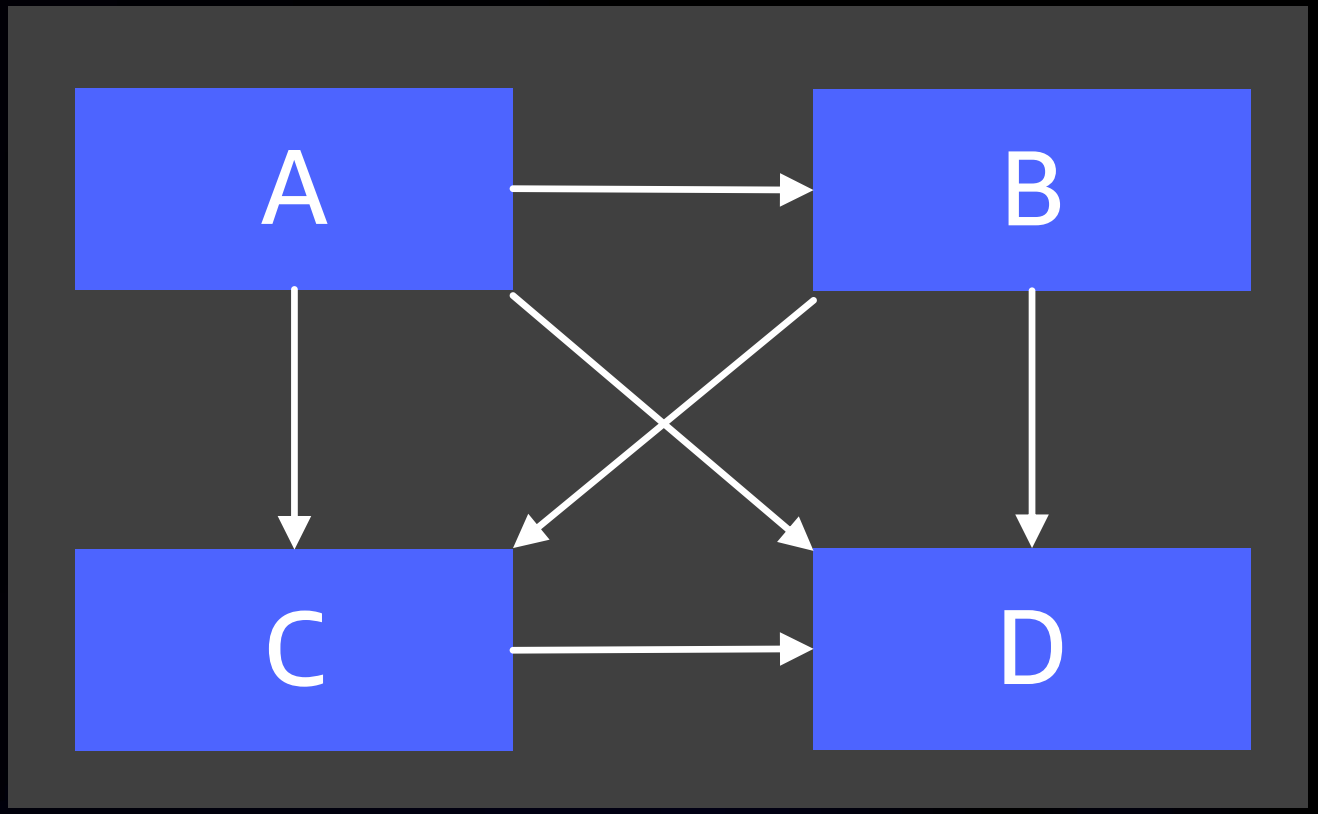
“Simple but evocative models [are] the signature of the great scientist so overelaboration and overparameterization is often the mark of mediocrity.”

George E. P. Box
Statistician

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Two models





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“Architects use higher-level abstractions to deepen their thinking and communicate it.”

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Which question are you looking to answer?

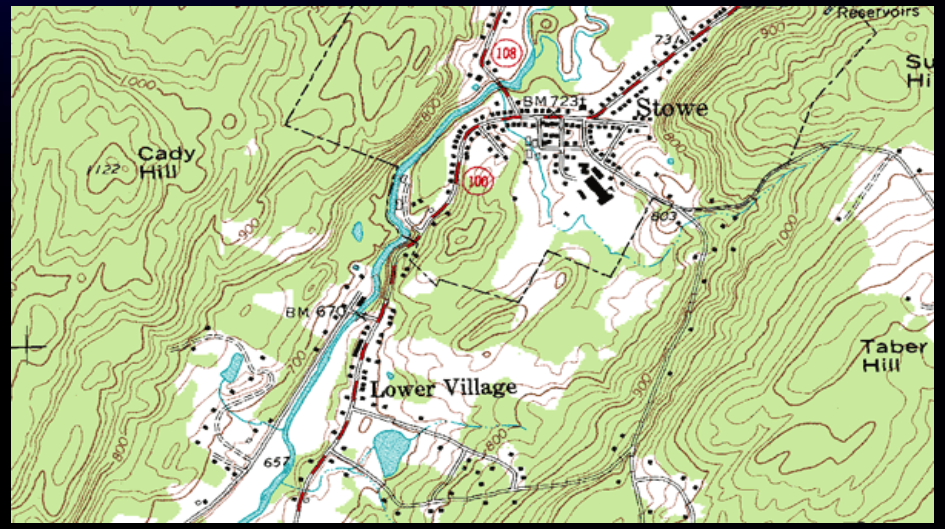
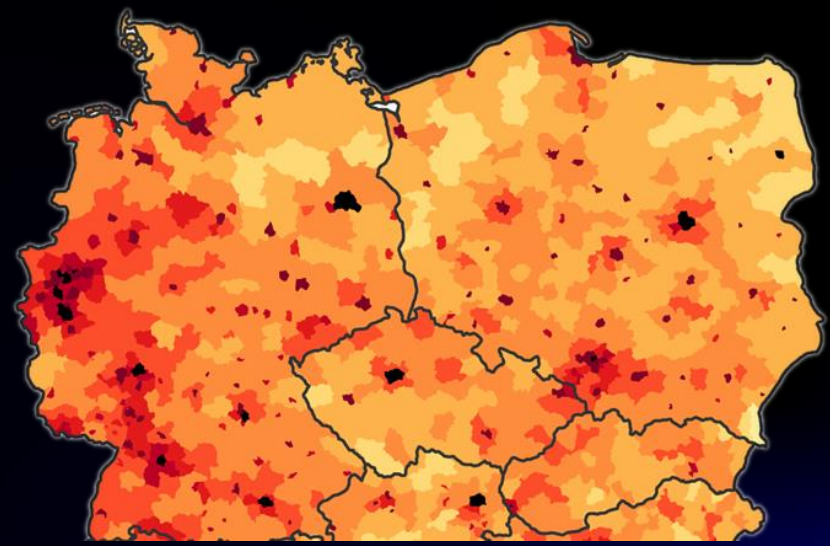






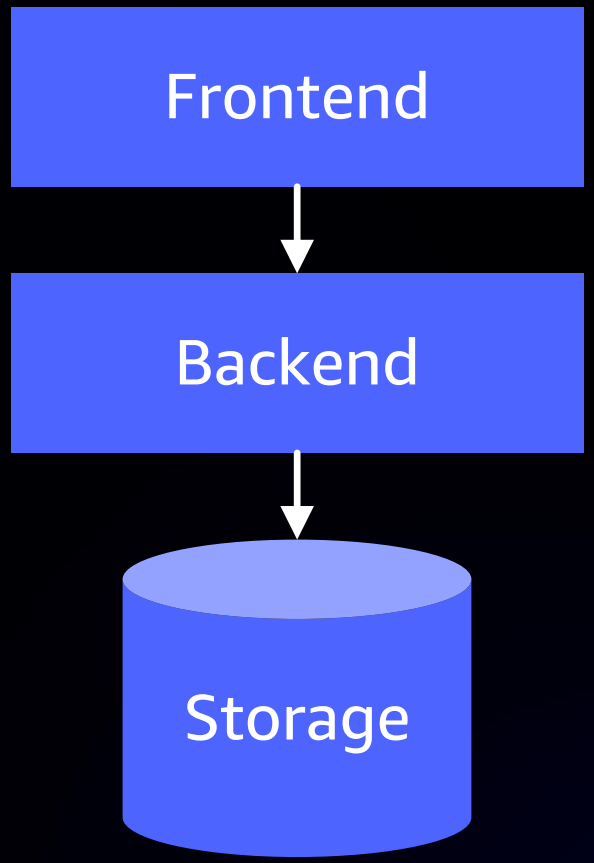
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Simple and evocative: Meaningful decisions



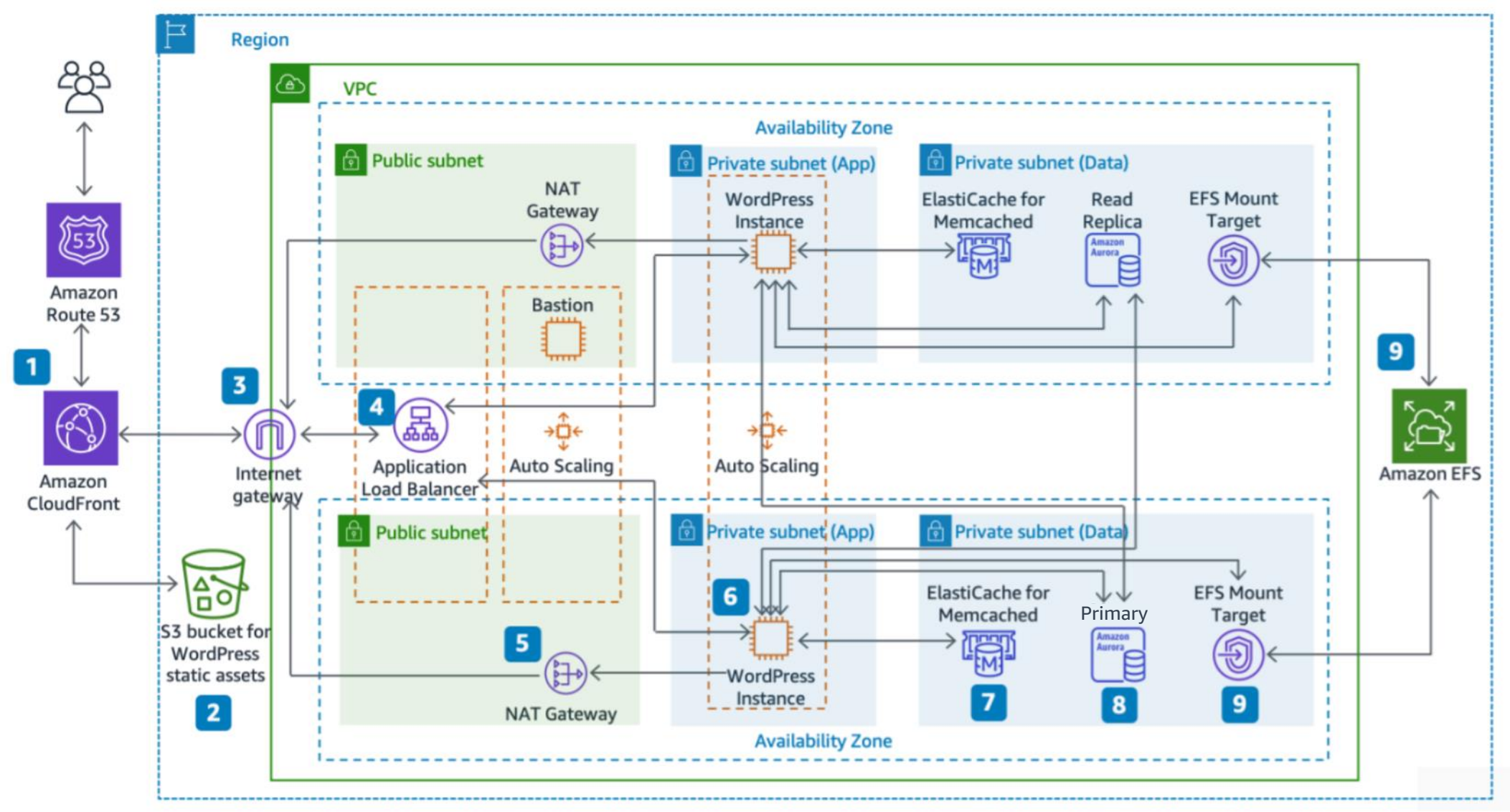
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“Useful models answer questions and convey meaningful decisions.”

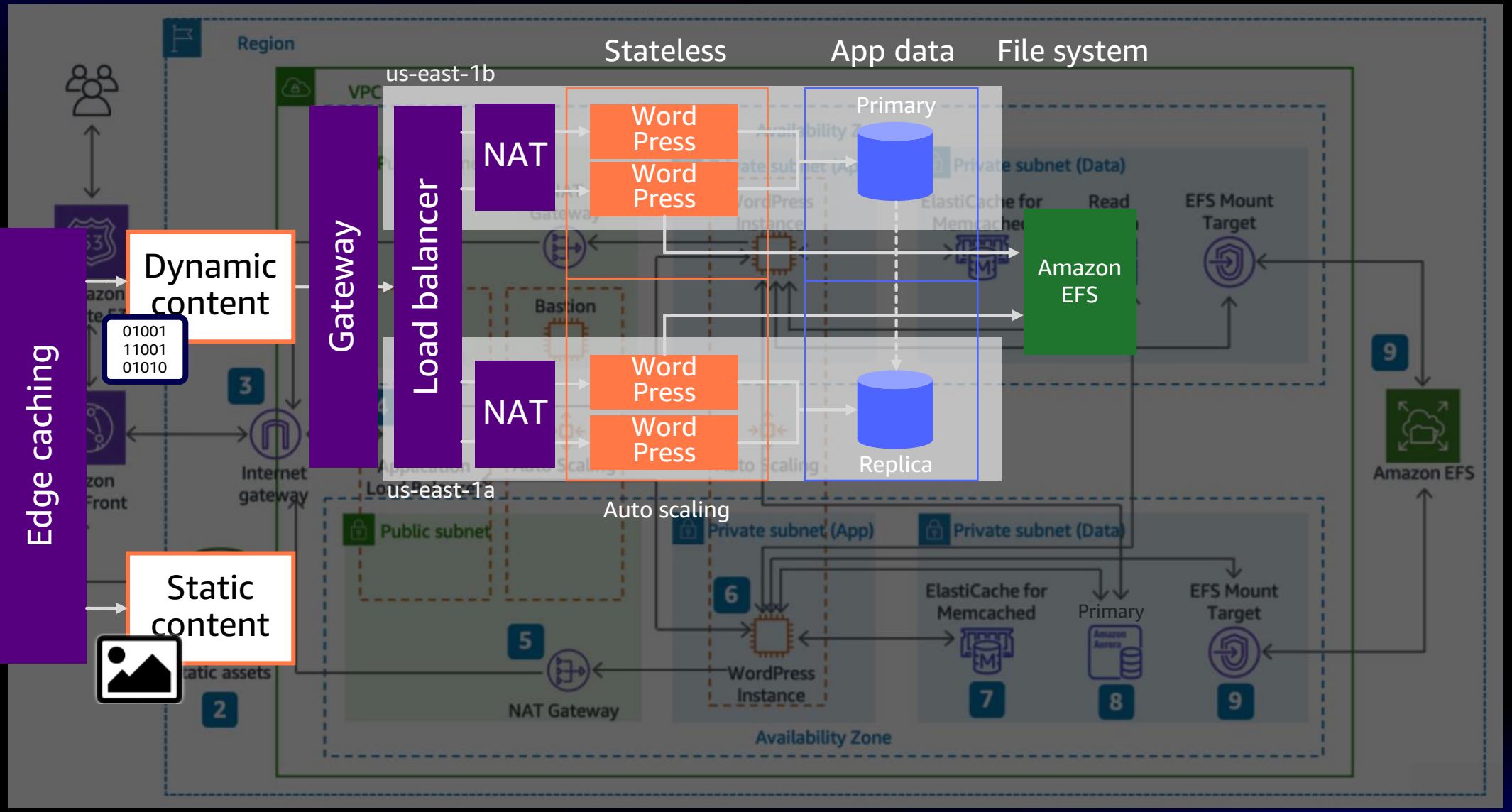
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A cloud architecture diagram



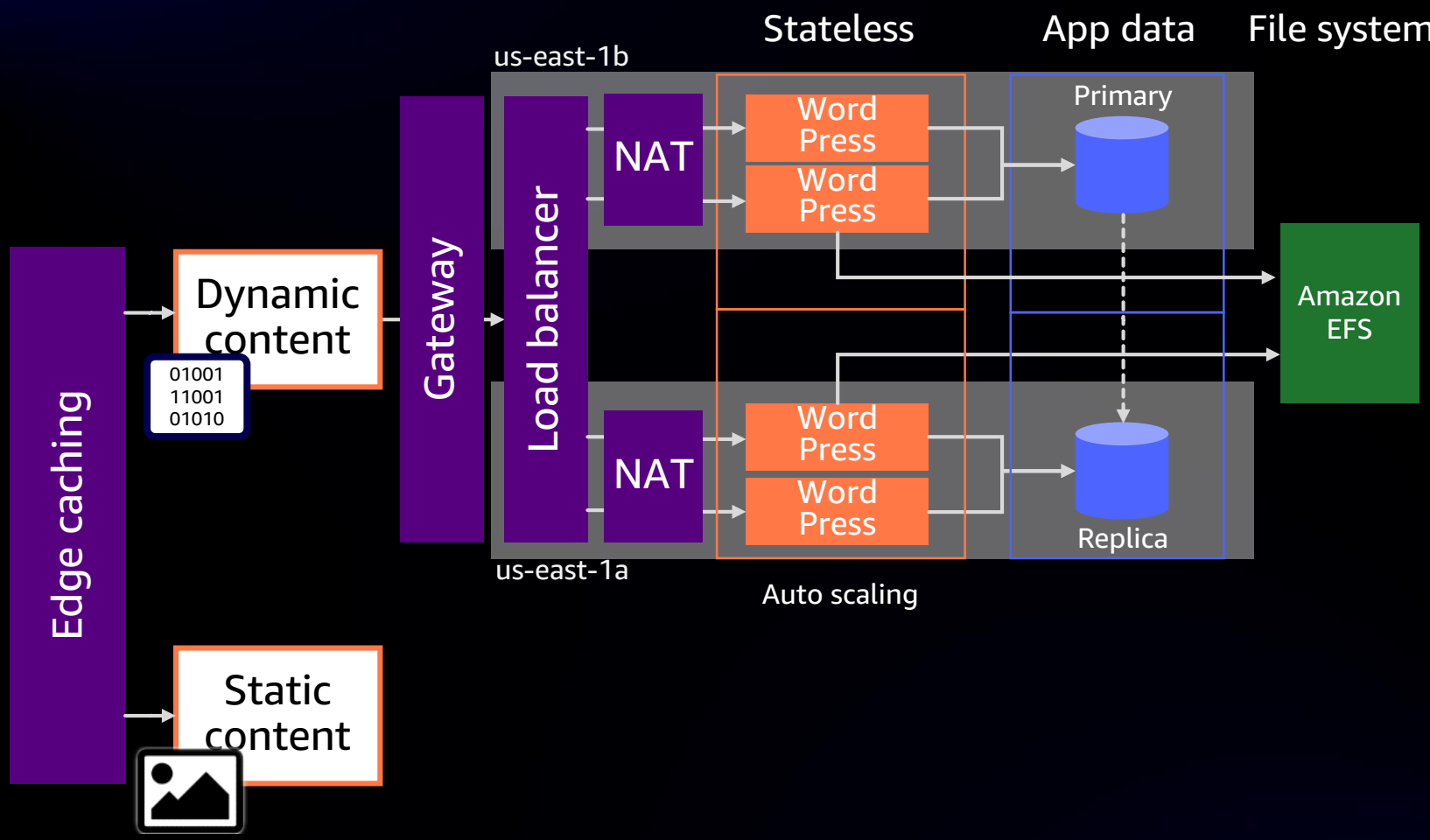
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Emphasis over completeness: Meaningful decisions



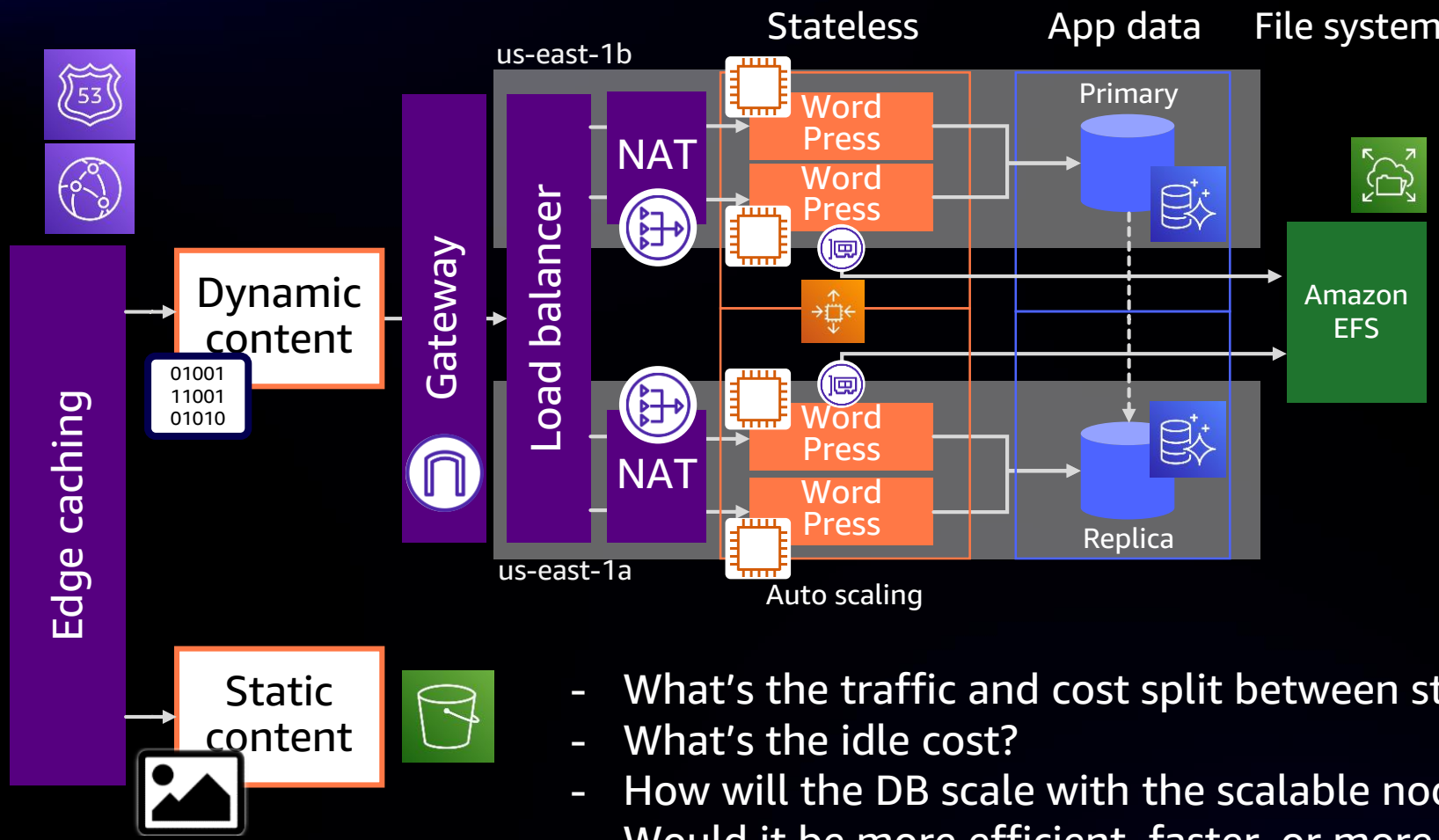
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Emphasis over completeness: Meaningful decisions



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Emphasis over completeness: Meaningful decisions



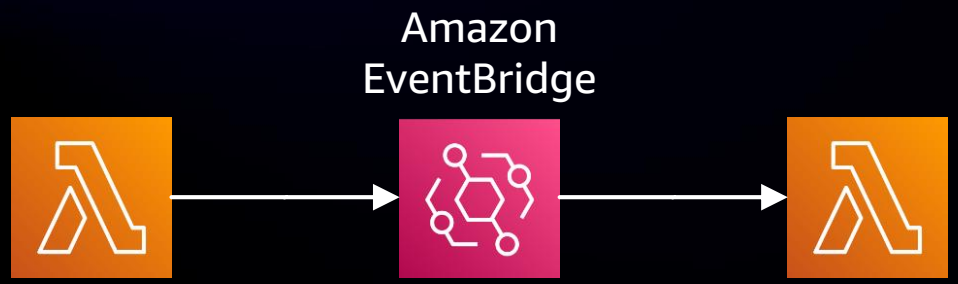
- What's the traffic and cost split between static and dynamic content?
- What's the idle cost?
- How will the DB scale with the scalable nodes?
- Would it be more efficient, faster, or more reliable on Amazon EKS?
- How do I load static content into Amazon S3 and link it from WordPress?
- What's the total system availability?

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“Your architecture isn’t a bill of materials.
You’re the chef, not shopping for groceries.”

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What's behind an icon?



- Serverless
- Event driven
- Loosely coupled
- Distributed
- Automated



- Business value?
- Cost planning?
- Skill set needs?
- Operational complexity?
- Switching cost?

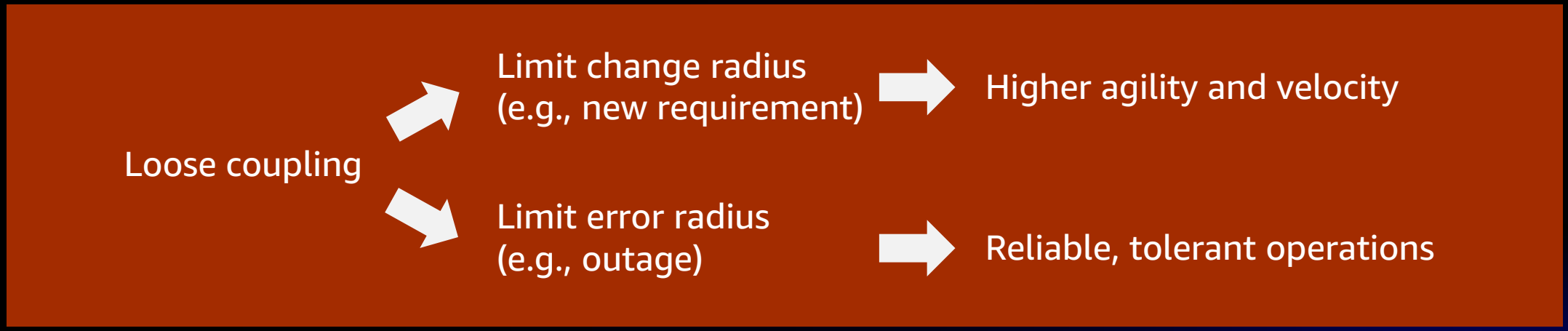
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Translating benefits: Loose coupling

- What is it (in plain terms)?
- What benefit does it bring?
- How is it achieved?
- What else has to be in place?
- What downsides does it have?

- A measure of dependency
- Limit change and error radius
- Asynchrony, common data formats
- Tooling, messaging infrastructure
- Overhead, complexity, tool dependence



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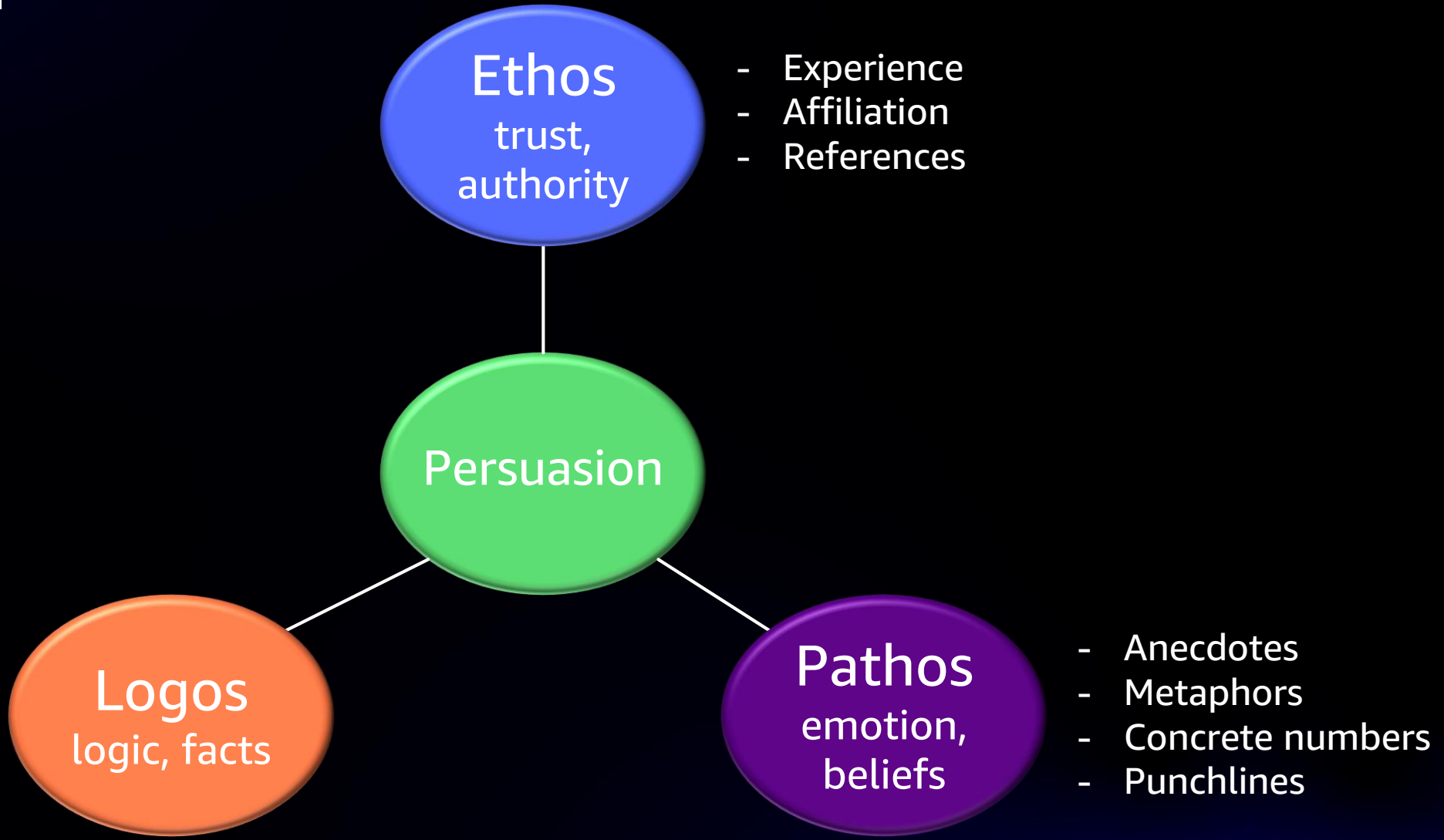
“Architects shun buzzwords. Instead, they translate benefits into the audience’s context.”

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Making it compelling

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Modes of persuasion



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Present like a DJ



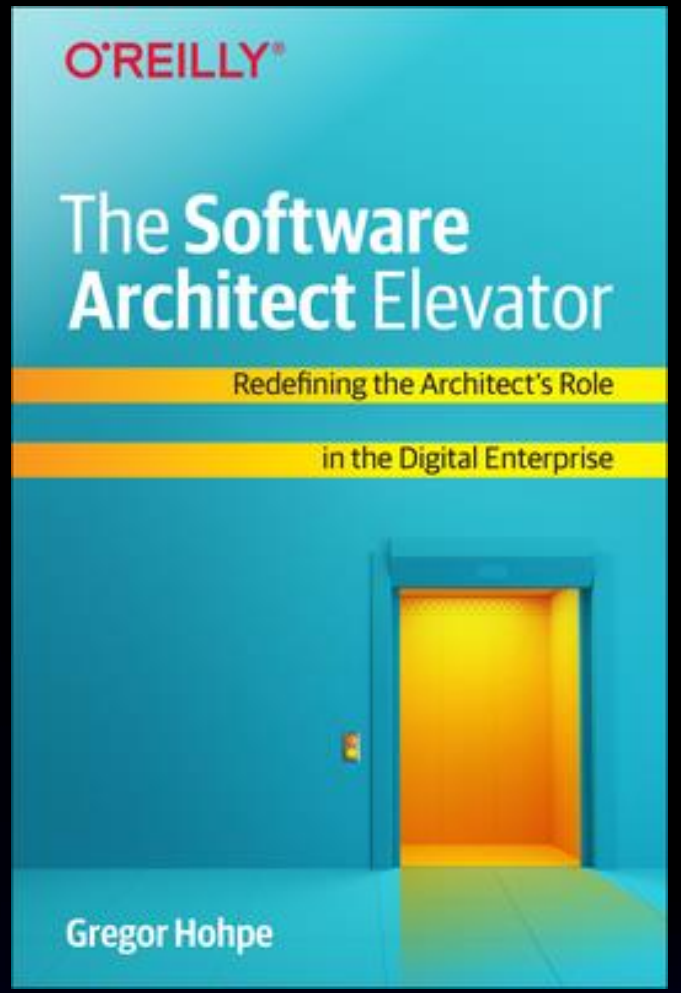
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