

ARCHITECTURE WITHOUT AN END STATE

Michael T. Nygard
Relevance

michael.nygard@thinkrelevance.com
[@mtnygard](#)

The Typical Enterprise Architecture Proposal



I. Start with a caricature



2. Show the promise



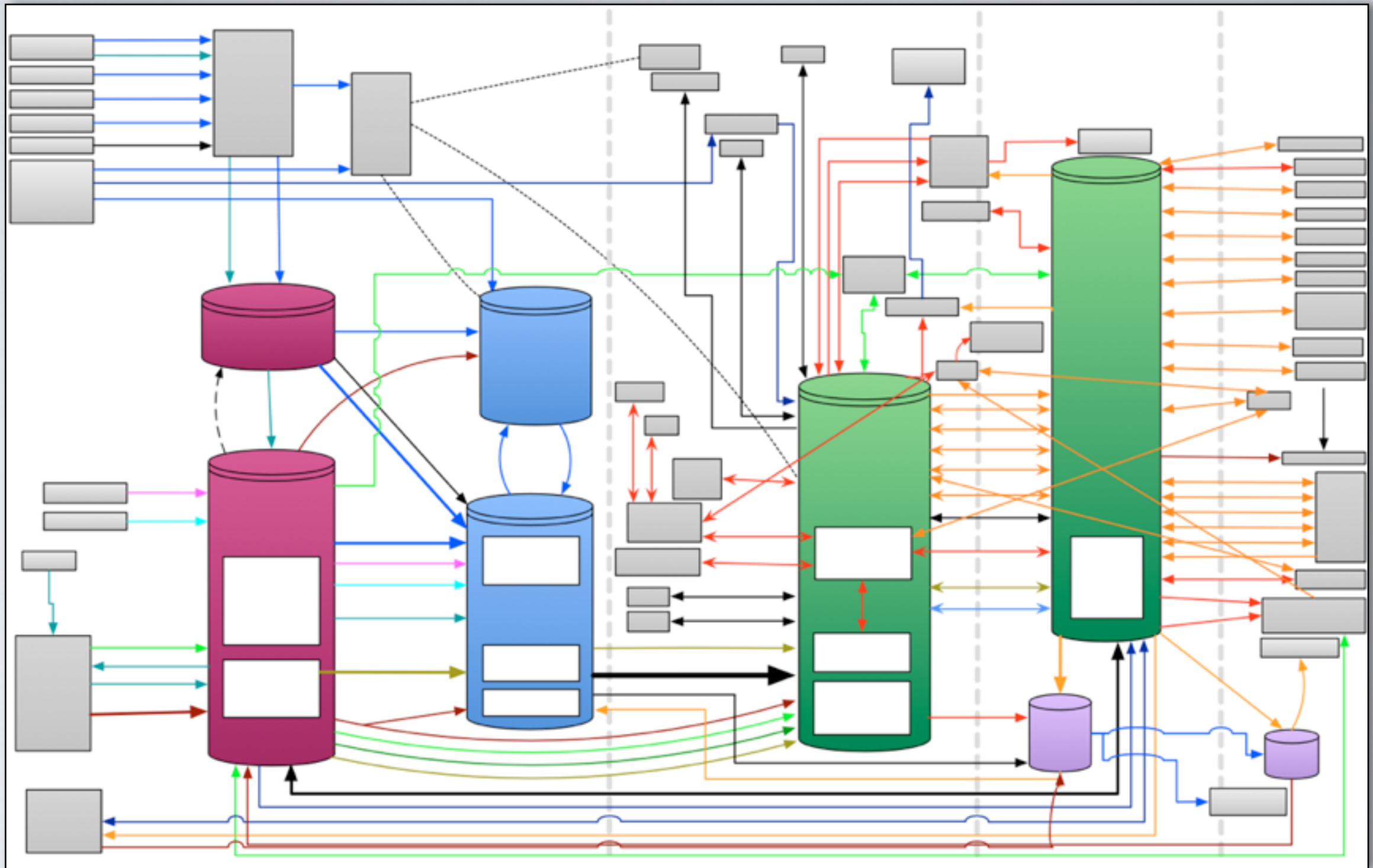
3. Pitch the plan



Call Now

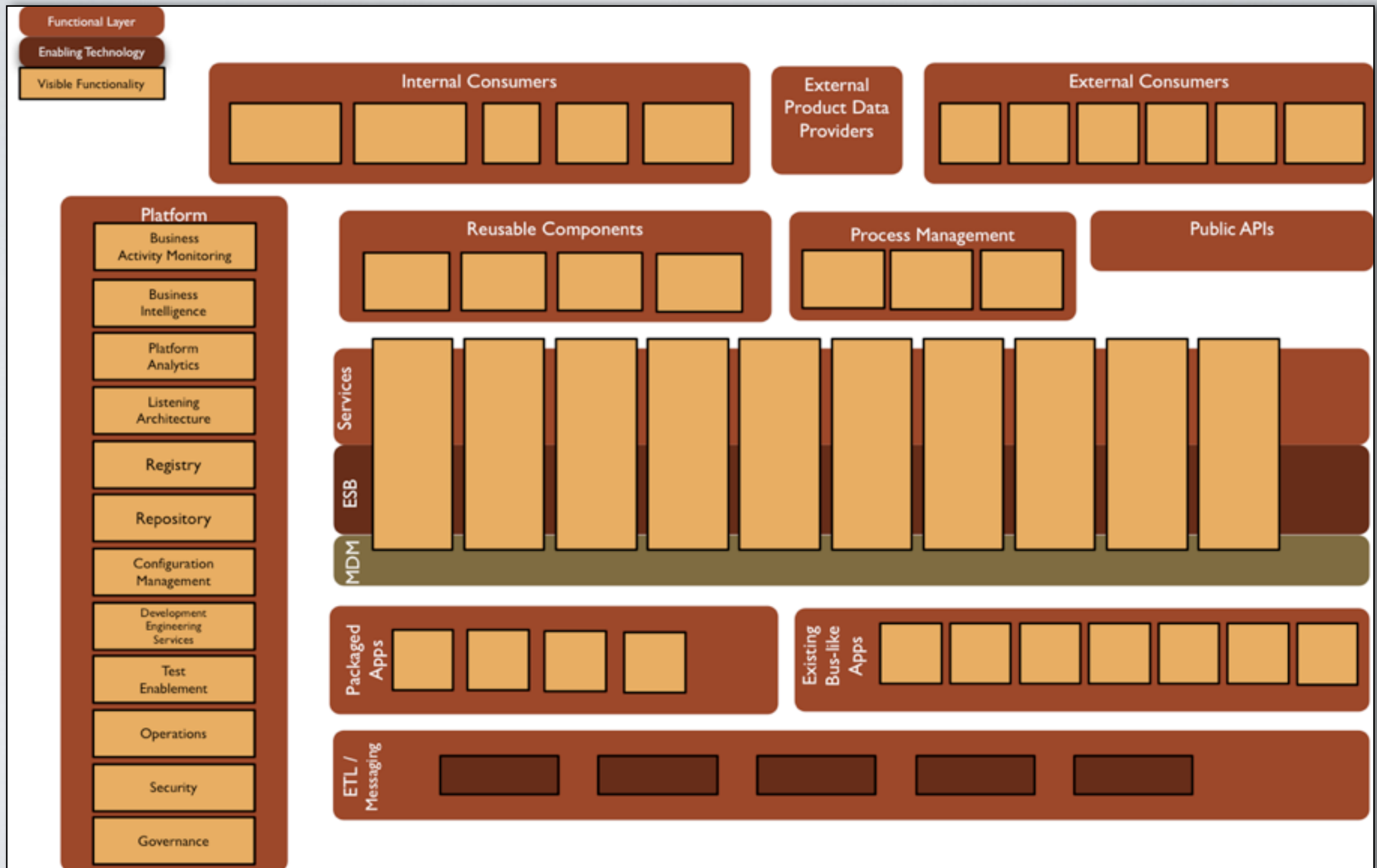
011 45 72 84 26

I. Start with a caricature



Current State

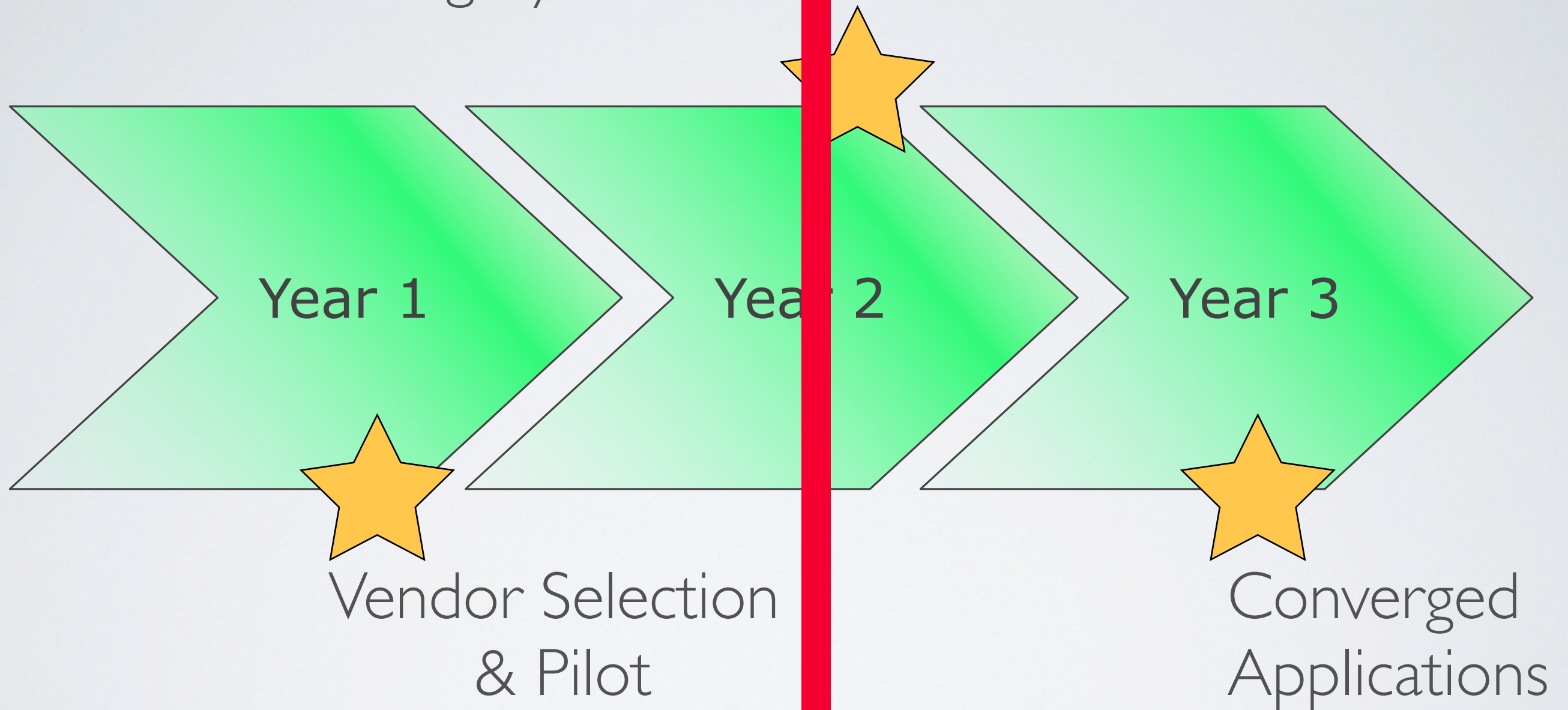
2. Show the promise



End State

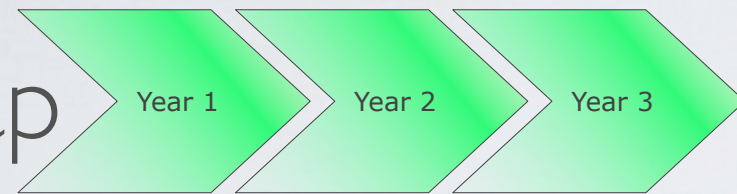
3. Pitch the plan

Legacy Conversion



4. Start a new cycle

Legacy crap



Legacy crap



Legacy crap

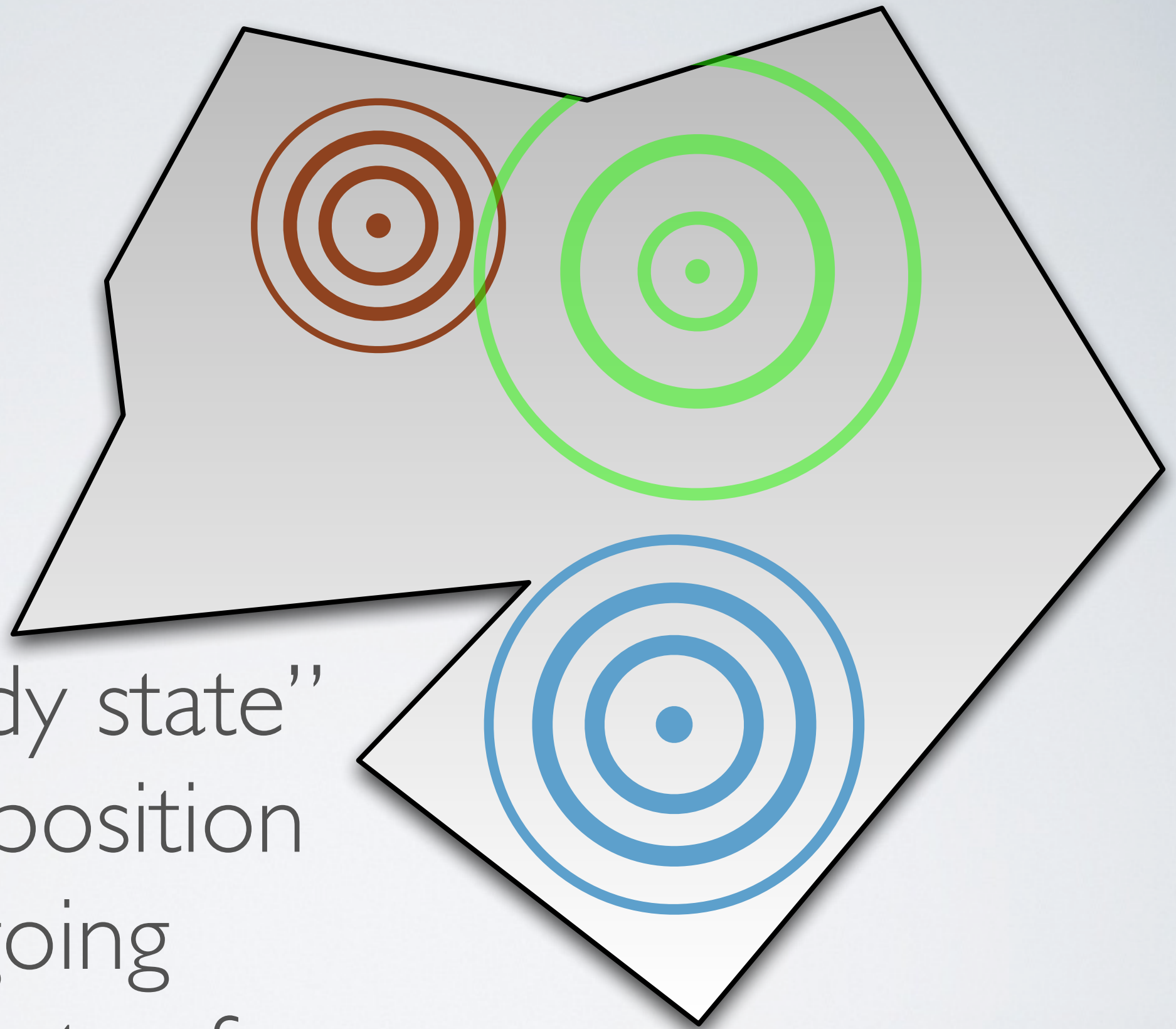


Previous CIO's boondoggle



Current CIO's vision





The “steady state”
is a superposition
of ongoing
wavefronts of
change.

Complex Systems

- No “grand narrative”, no privileged vantage point.
- Only locally contextualized views
- Many local optimizations
- Global optimization not possible

Complex Systems

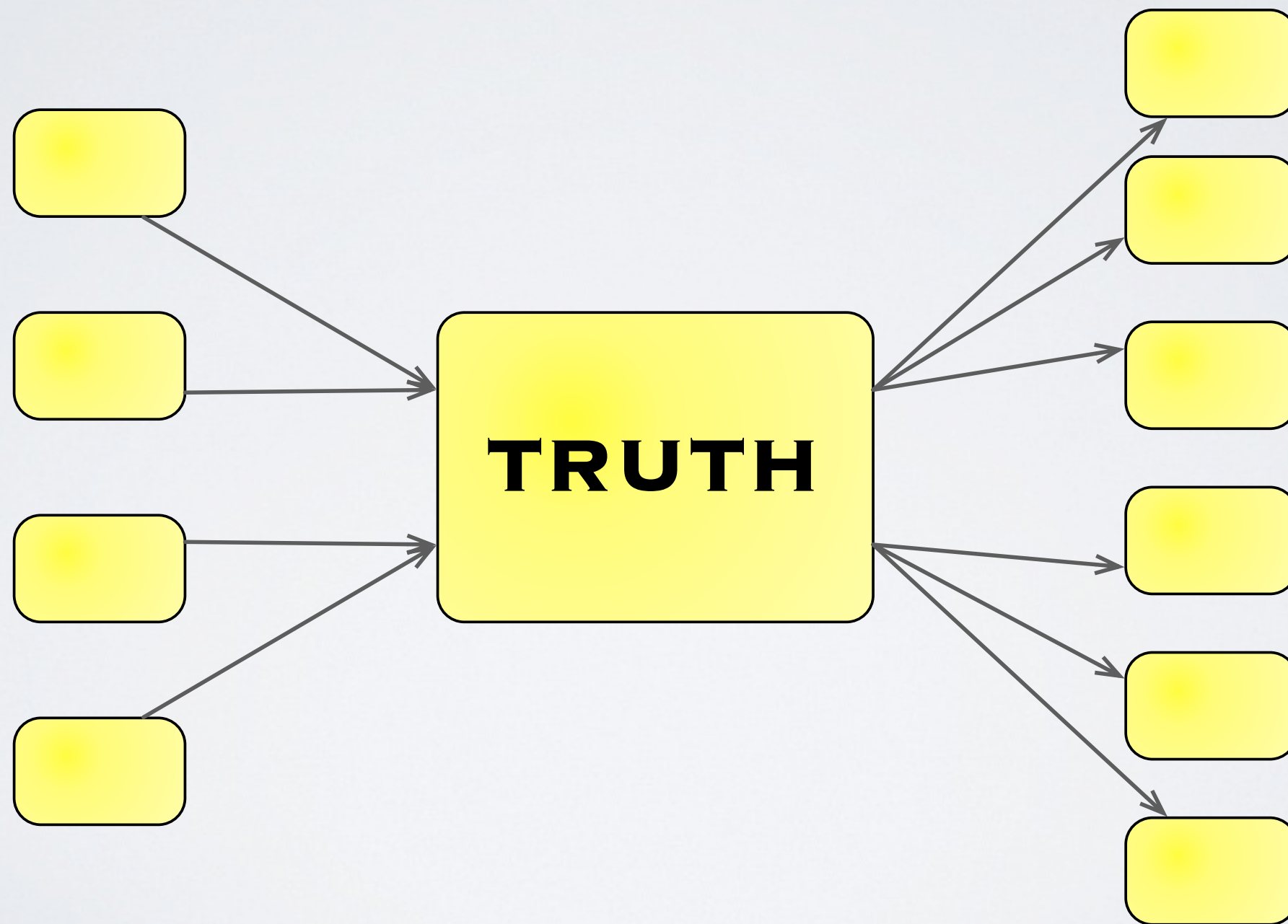
One person cannot know the complete ramifications of a decision.

Surviving In A Complex System

8 Rules

I. Embrace Plurality

Single System Of Record



Like world peace,
it exists only briefly
and is so very fragile.

Obvious Challenges To SSoR

- Mergers & acquisitions
- Partnerships
- Divestitures
- Entering new markets

Epistemological Challenges

- “We can only know what we can record.”
- SSoR must choose one representation
 - “What is a customer?”
- Any model enables some thoughts, disallows others.

Example: Getting SKUd

- What is a Stock Keeping Unit (SKU)?
 - Can be sold
 - Must be shipped
 - Takes up shelf space
 - Has a price & cost
 - One SKU exists per “kind of thing” that can be sold
 - Does not track the individual inventory item

Getting SKUd: Changes In One Year

New Market	Rendered Irrelevant	Added
Digital Downloads	Shelf space, shipping, fixed cost	Tracking individual purchases
Partner sales	Controlled ID space	Multiple prices & shippers per item
Home Installation & Renovation		16,000,000 add'l SKUs

Competing Deconstructions



Competing Extents

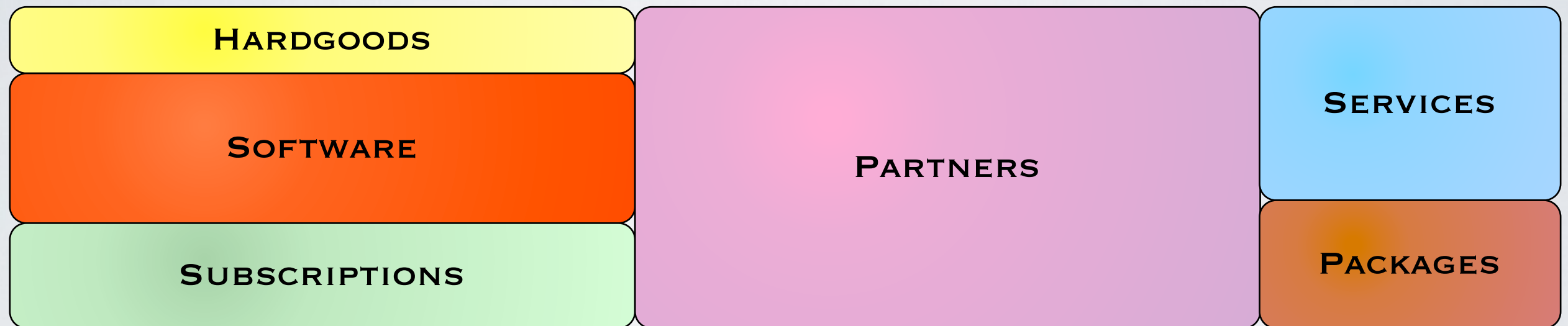


Competing Extents

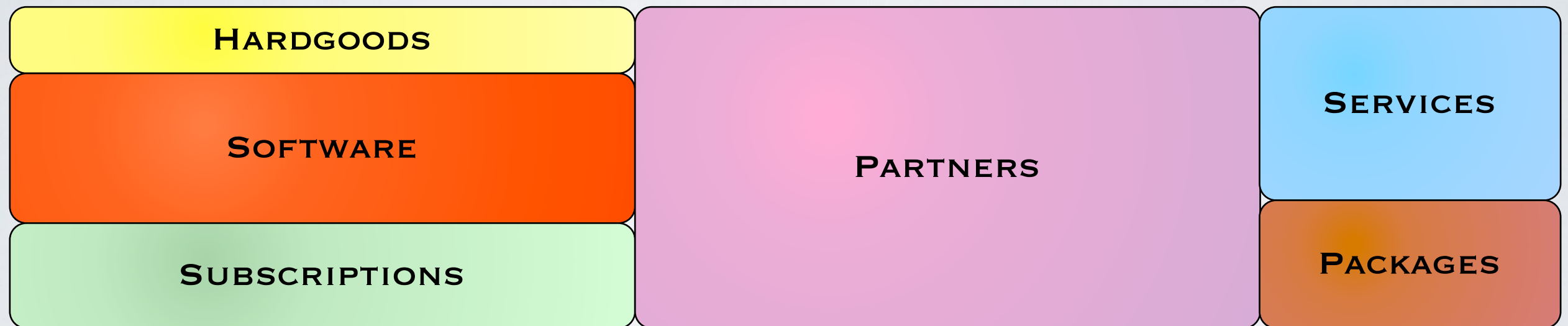
ALL SKUs

DARK MATTER

Federated Extents



Multiple Systems Of Record



Multiple Systems Of Record

Focus on

- Local authorities and spans
- System of identifiers: URNs & URIs
- Representations for interchange
- Enable copies instead of eliminating them
- Representations identify their contributors

Multiple Systems Of Record

Consumers must assume open world

- Cannot embed rules from all sources
- Use service URLs to identify mechanics
- E.g., “price me by posting to this URL”

8 Rules

1. Embrace Plurality
2. Contextualize
Downstream

Business Rules Are Contextual

How much information is required?

What is the lifecycle of the entity?

What can it be used for in the current state?

Answers will vary across business units.

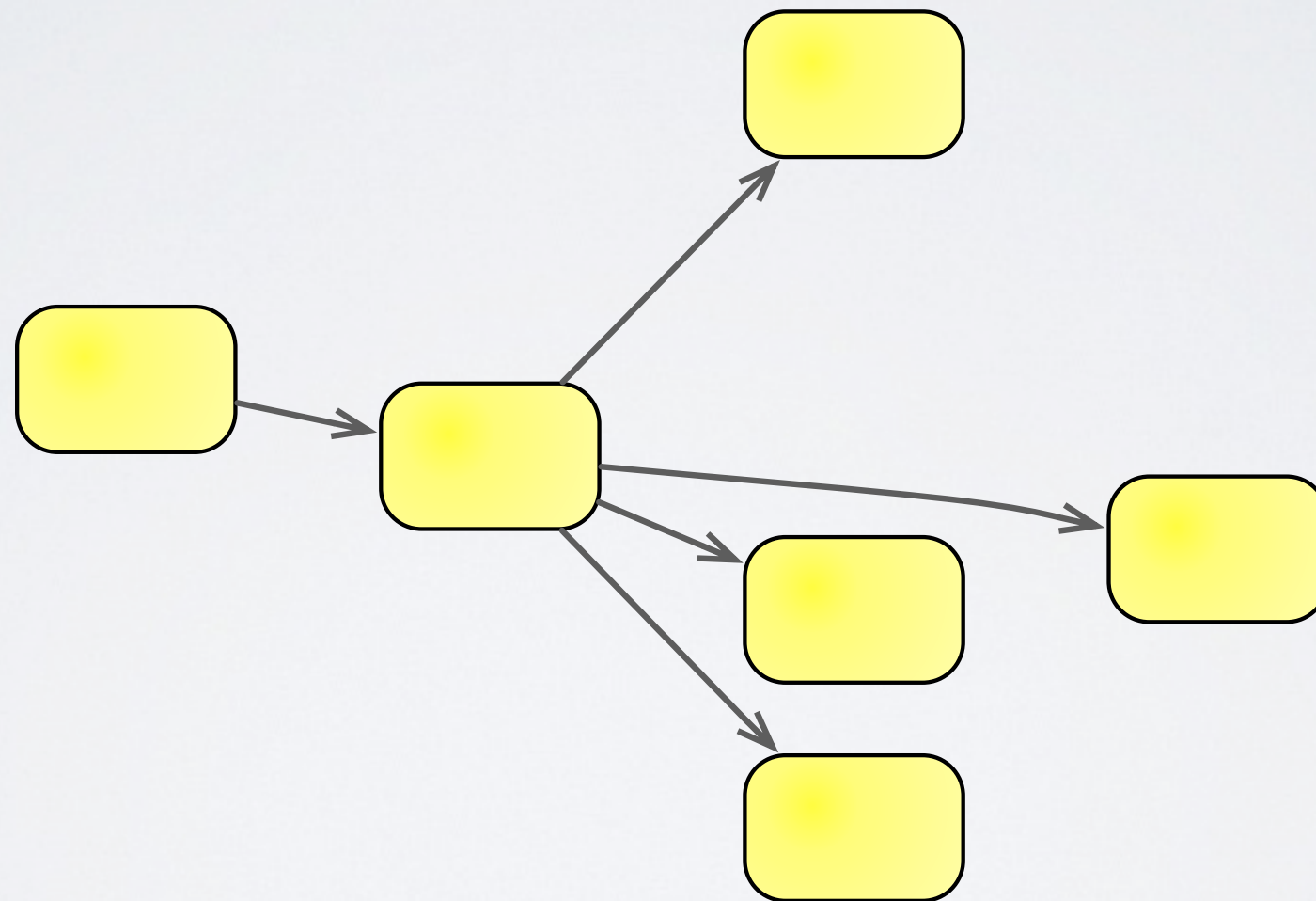
Example: Comparing Desk Sizes

	Equity	Fixed-income	HFT
Frequency	per minute	per day	per microsecond
Size	$10^5 - 10^6$	$10^6 - 10^7$	$10^4 - 10^6$
Execution Ratio	$\sim 1:1$	$1:1$	$1:10^5$

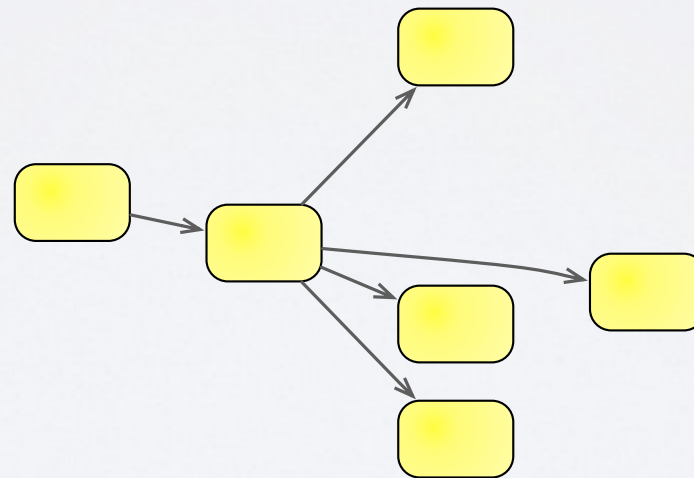
Example: Auto Financing

How many rules are the same between personal auto financing and fleet vehicle leasing?

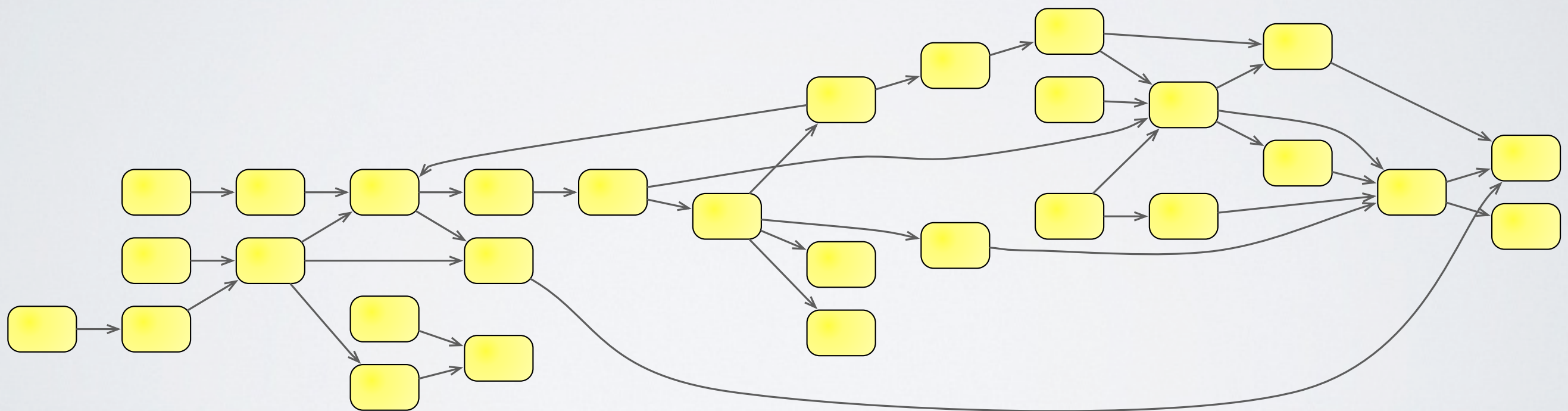
Upstream & Downstream



Upstream & Downstream



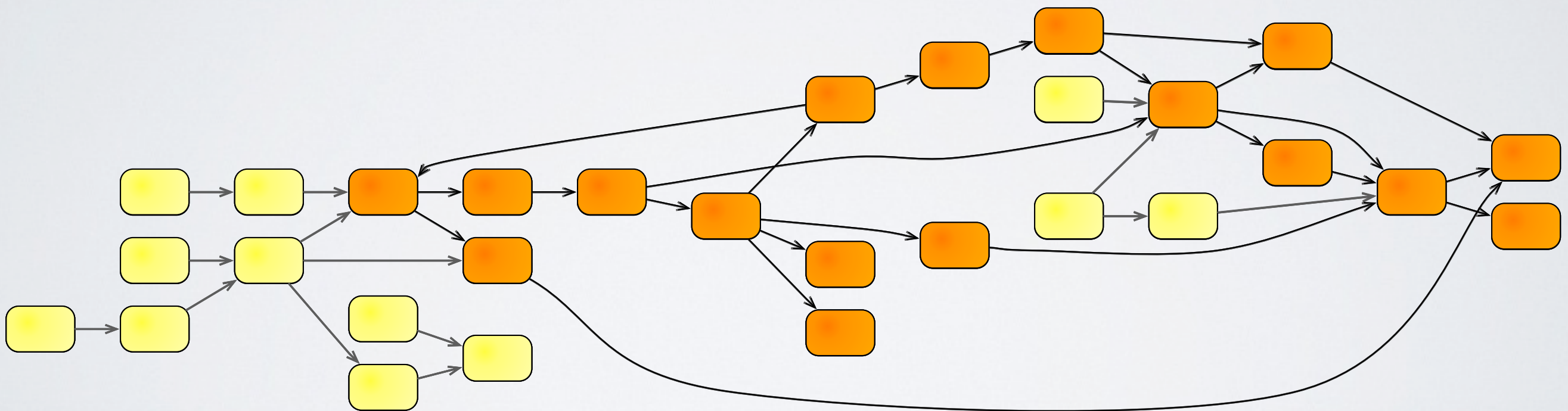
Upstream & Downstream



Upstream & Downstream

Augment

Contextualize



Apply policies in systems nearest
the users.

Those will change most often.

Corollary: Minimize the entities that all systems need to know about.

8 Rules

1. Embrace Plurality
2. Contextualize
Downstream
3. Beware Grandiosity



Enterprise Data Dictionary



Enterprise Data Architecture



Global Object Model



“One World”

Prerequisites For An Enterprise Modeling Project

- Global perspective
- Agreement across all business units
- Talent for abstraction
- Concrete experience in all contexts
- Small enough team to make decisions

The Modeling Fallacy

All models are wrong.
Some are useful.

1. Seek compromises
2. Assume an open world
3. Begin small, incrementalize
4. Allow lengthy comment periods

8 Rules

1. Embrace Plurality
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Downstream
3. Beware Grandiosity
4. Decentralize

Decentralization

Explore market space

Explore solution space

Chaos?

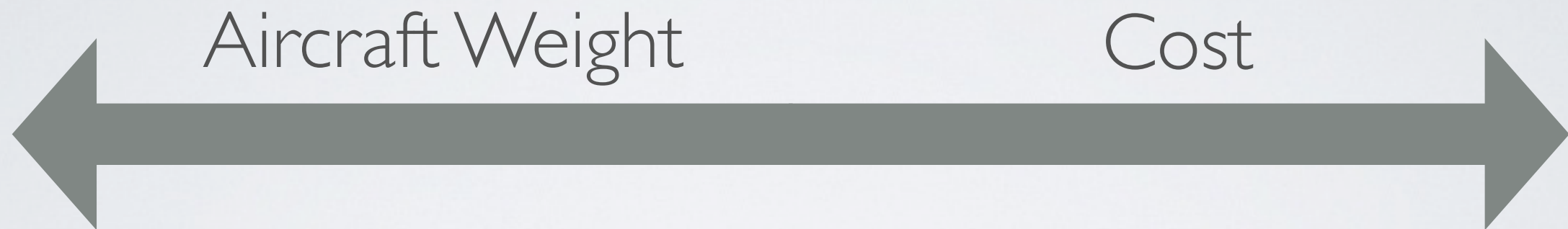
What about standards?

What about duplication?

Prerequisites

- Transparency
Methods, work, and results must be visible
- Isolation
One group's failure cannot cause widespread damage
- Economics
Distributed economic decision-making

Example: Boeing 777



1 pound gross weight = \$ 300 per plane

Set Tradeoff Policies Centrally

Define balancing forces globally.

Allow local optimization.

Misconception:

Centralization == Leverage

Leverage?

Centralize IT → Constant budget fight,
features vs. architecture.

Playing “catch up” to business
units.

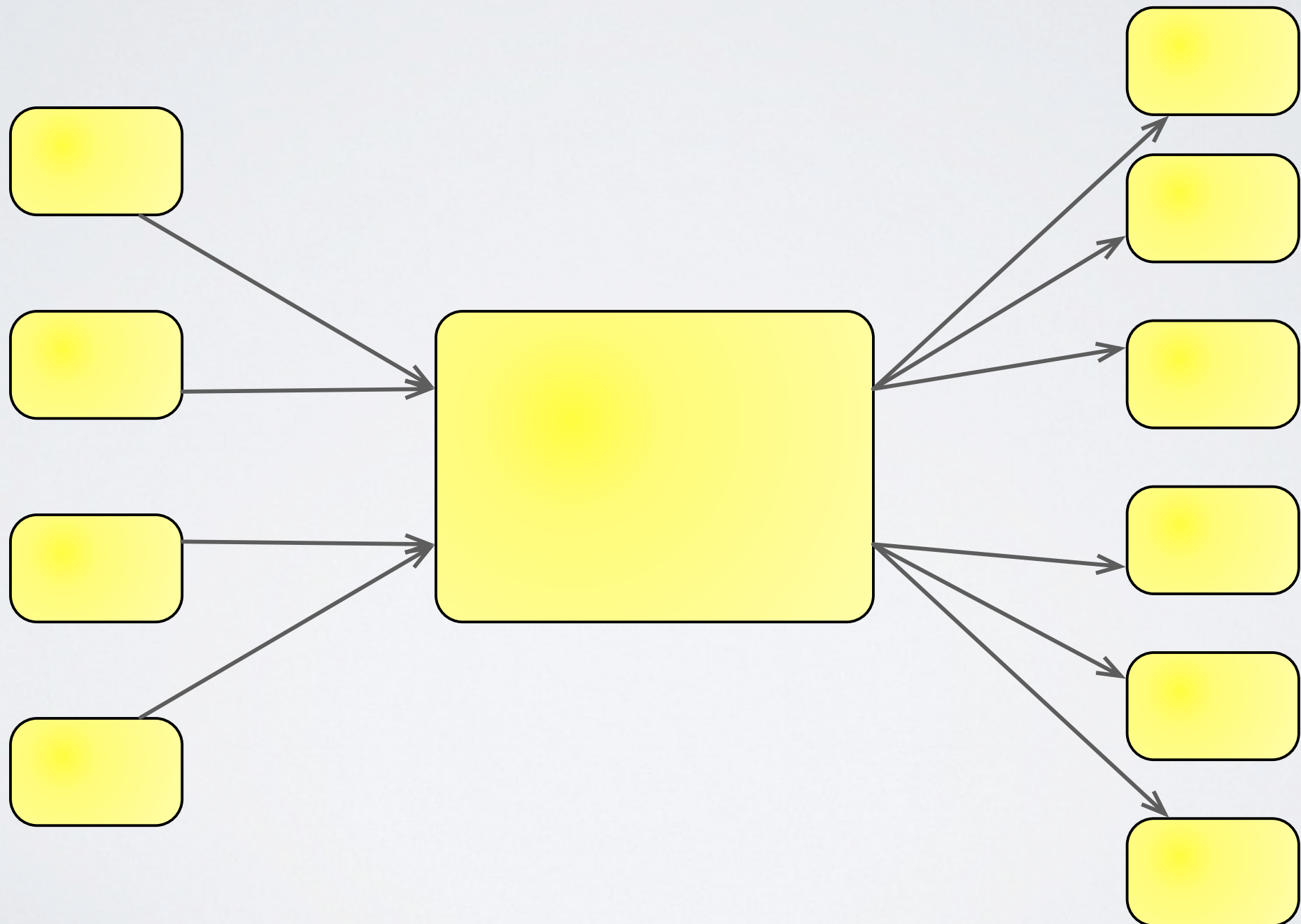
Leverage.

Decentralize → Slivers of other budgets, working toward shared benefits.

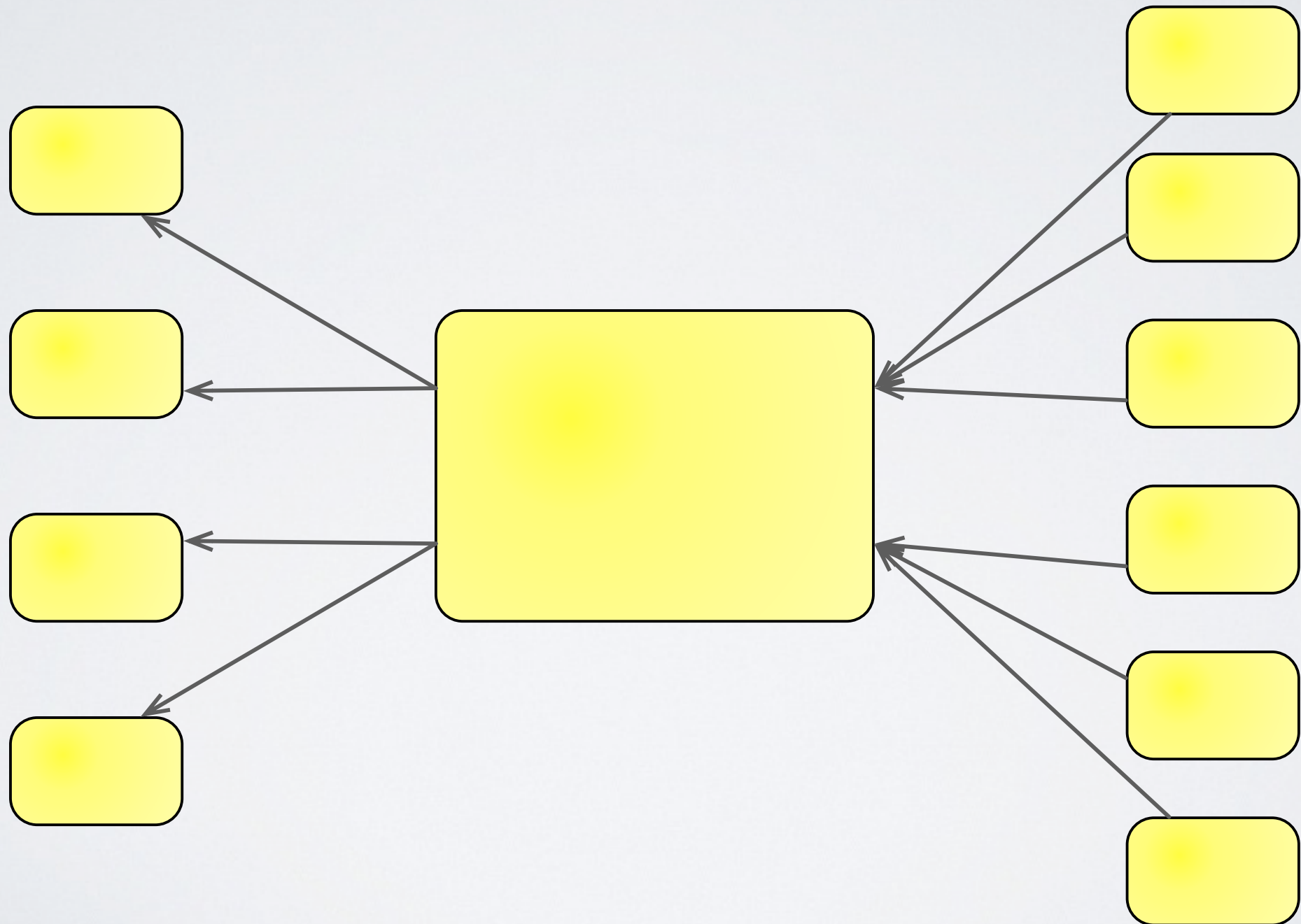
8 Rules

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Downstream
3. Beware Grandiosity
4. Decentralize
5. Isolate Failure Domains

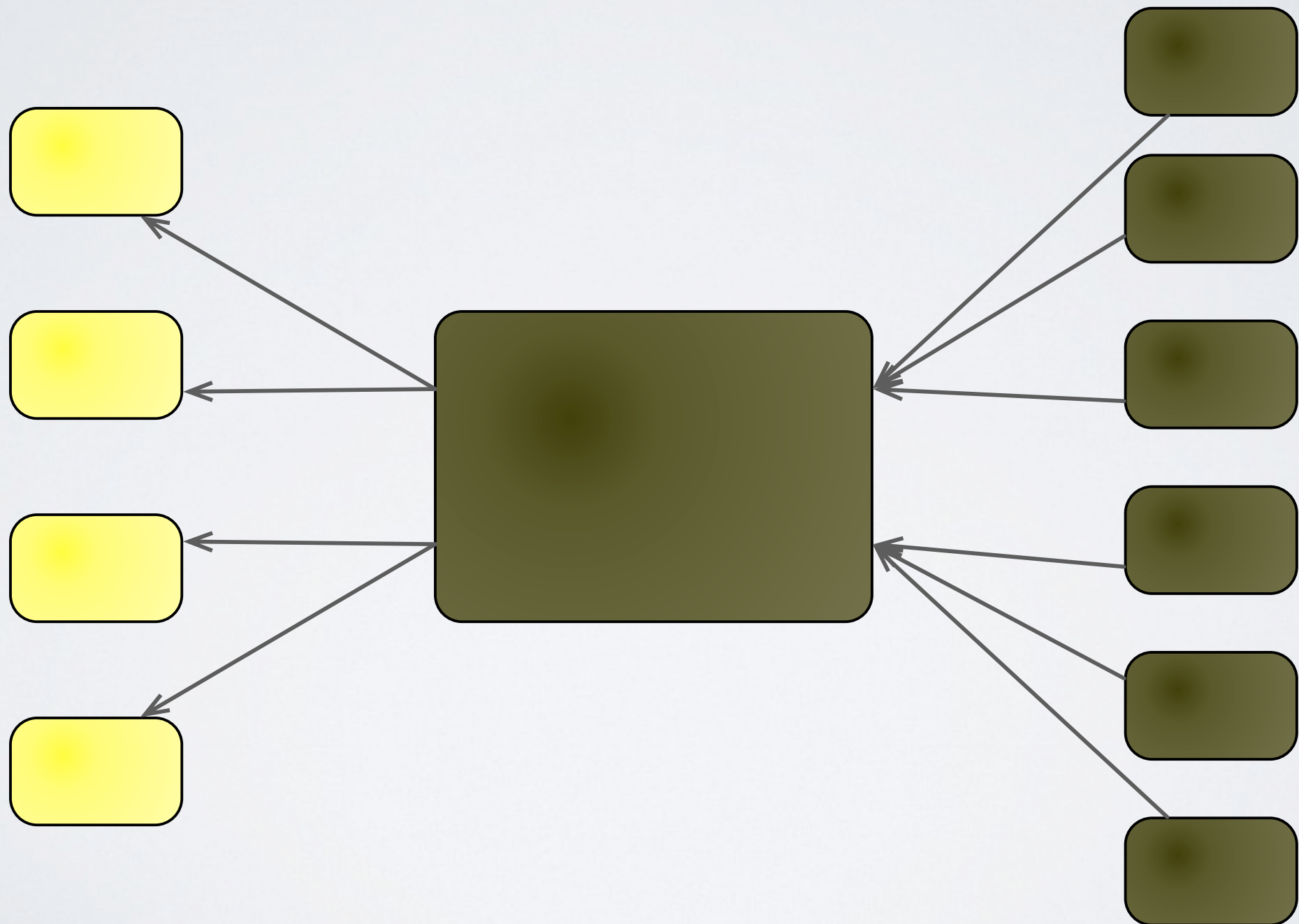
Operational Failures



Operational Failures



Operational Failures



Solution Space Failures

Giant bet on a strategy?

“Bet the company” means one shot.

Make survivable bets.

Value Of Modularity

Splitting

Excluding

Substitution

Inversion

Augmenting

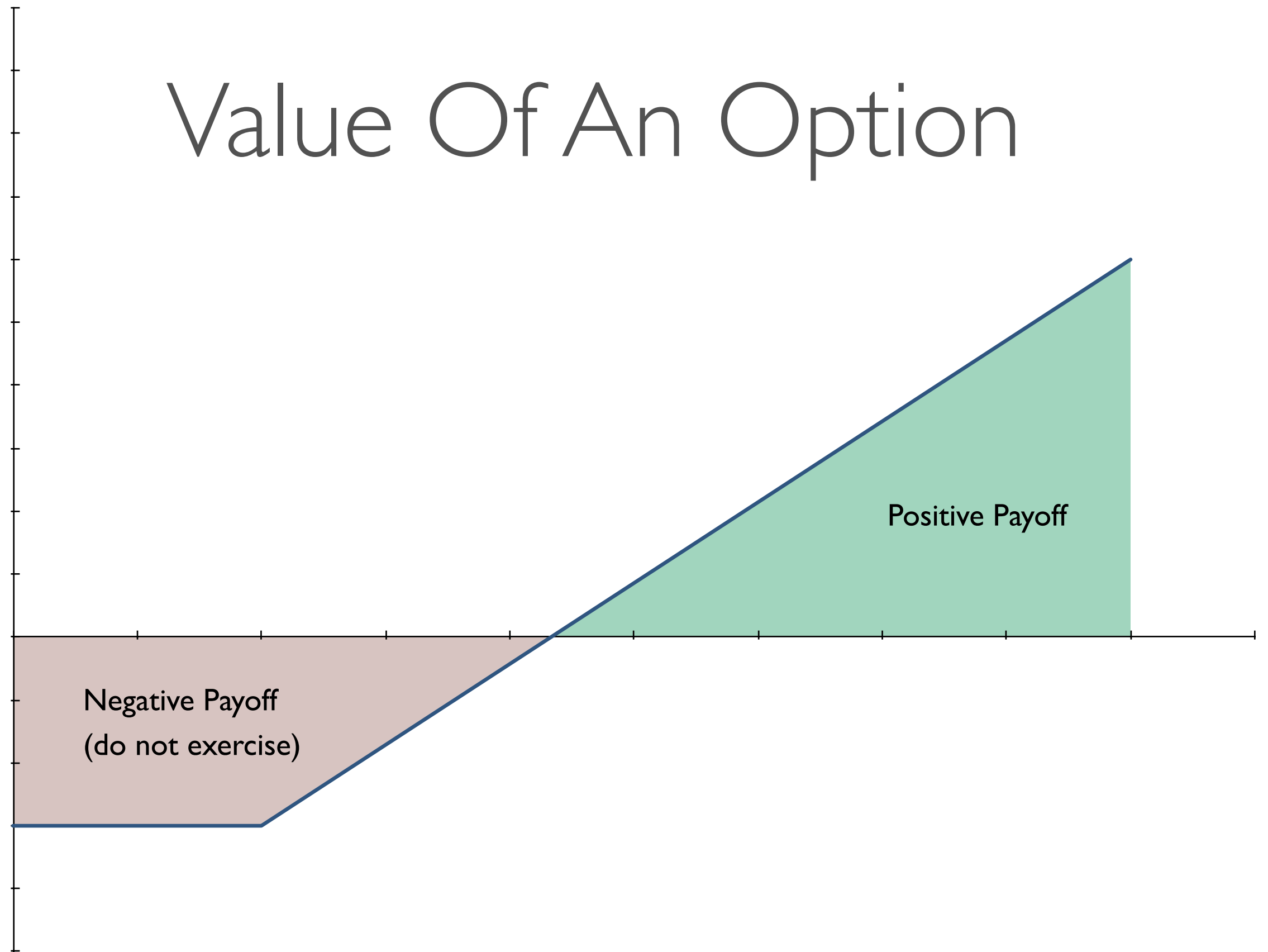
Porting

Value Of Modularity

Options

Value Of An Option

Profit



Negative Payoff
(do not exercise)

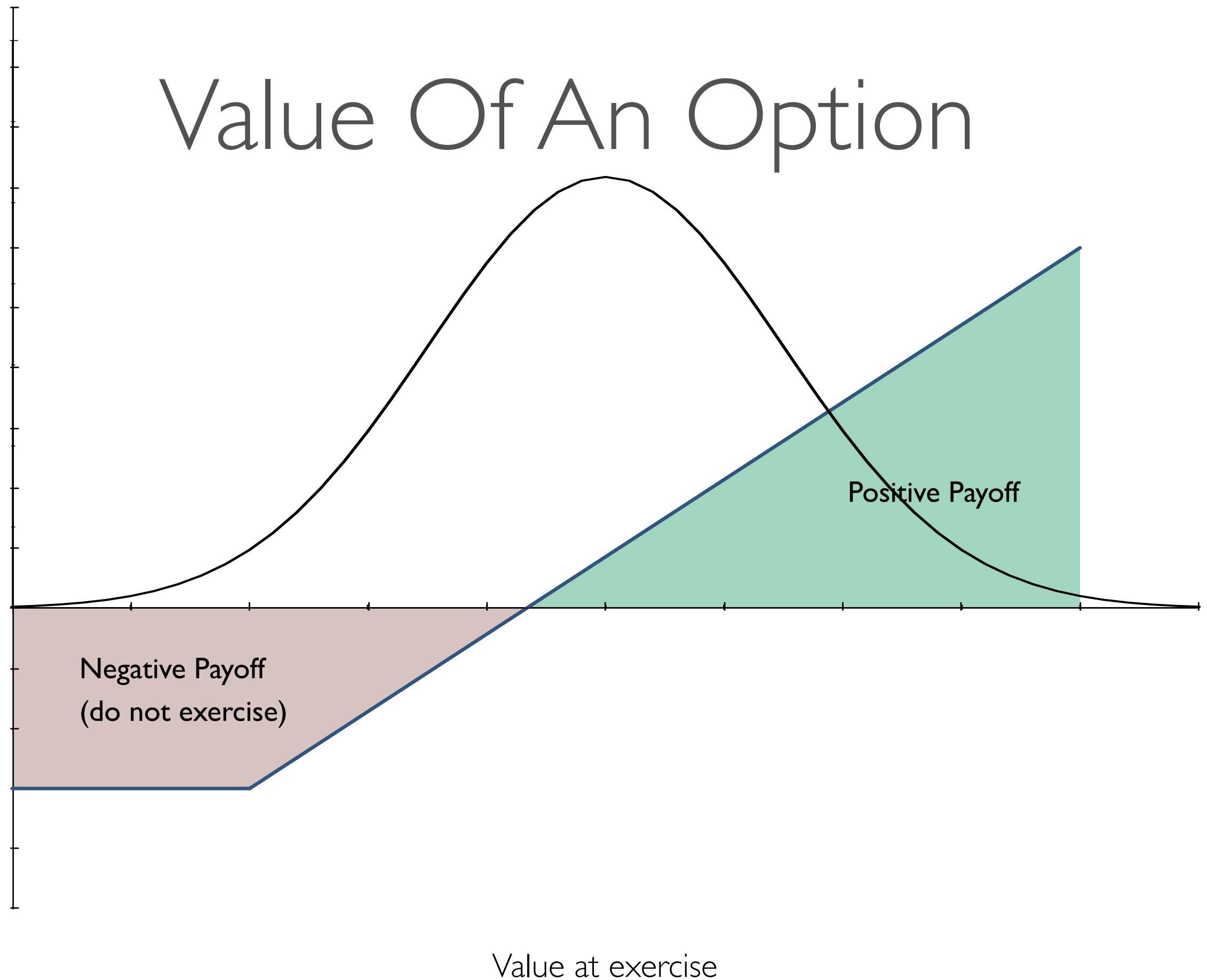
Positive Payoff

Value at exercise

“long call”

Value Of An Option

Profit



Negative Option Value

Failed system or failed business unit == negative value option.

Isolate the failure, use modularity options.

Example: Trading Company

Many small applications, integrated by messaging.

Cheaper to rewrite than maintain individual apps.

Example: Forward Internet Group

Hundreds of algorithms, replaced constantly.

“Programmer anarchy.”

Example: The Ultimate In Resilient Architecture

CICS Transactions

You can always fit another screen in somewhere.

Resilient architecture admits
componentwise change.

8 Rules

1. Embrace Plurality
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3. Beware Grandiosity
4. Decentralize
5. Isolate Failure Domains
6. Data Outlives Applications
7. Applications Outlive Integrations

Example: Mailing-list Vendor

First list assembled: 1972

Still in operation: 2011

Data set is as old as I am.

Database Technology

ISAM

VSAM

Network

Hierarchic

Relational

Graph

KVS

Document

Integration Technology

CICS

FTP

RPC

Sockets

RPC

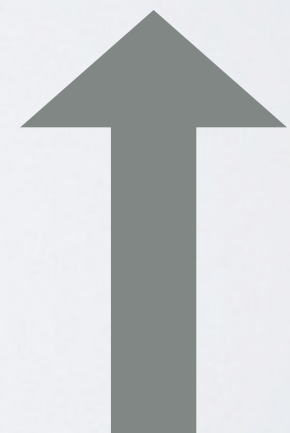
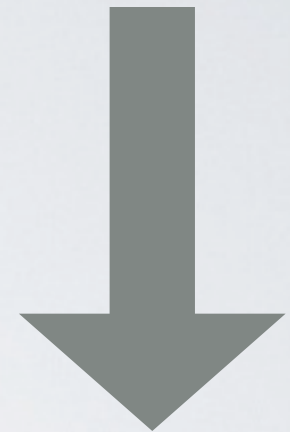
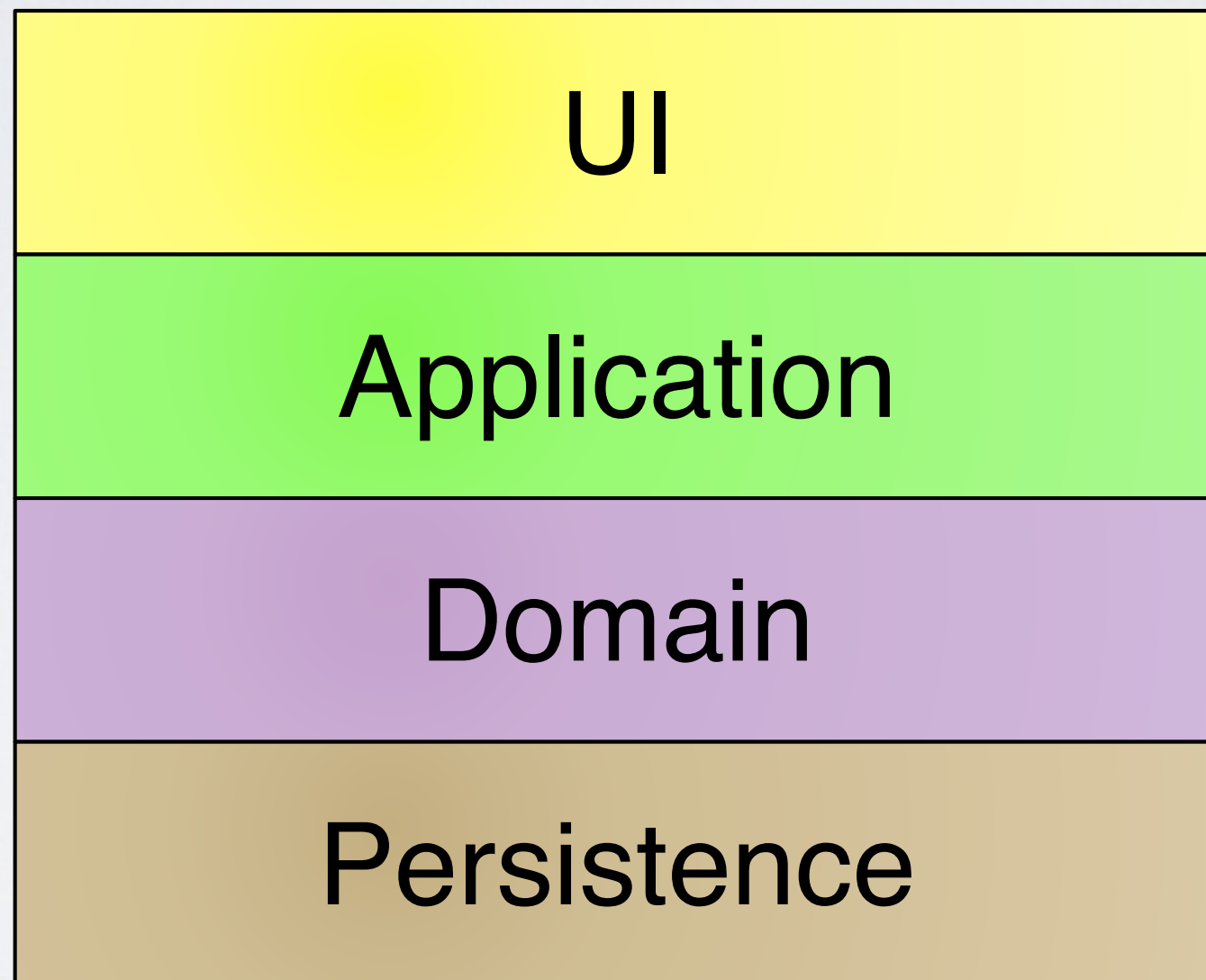
CD-ROM

XML-HTTP

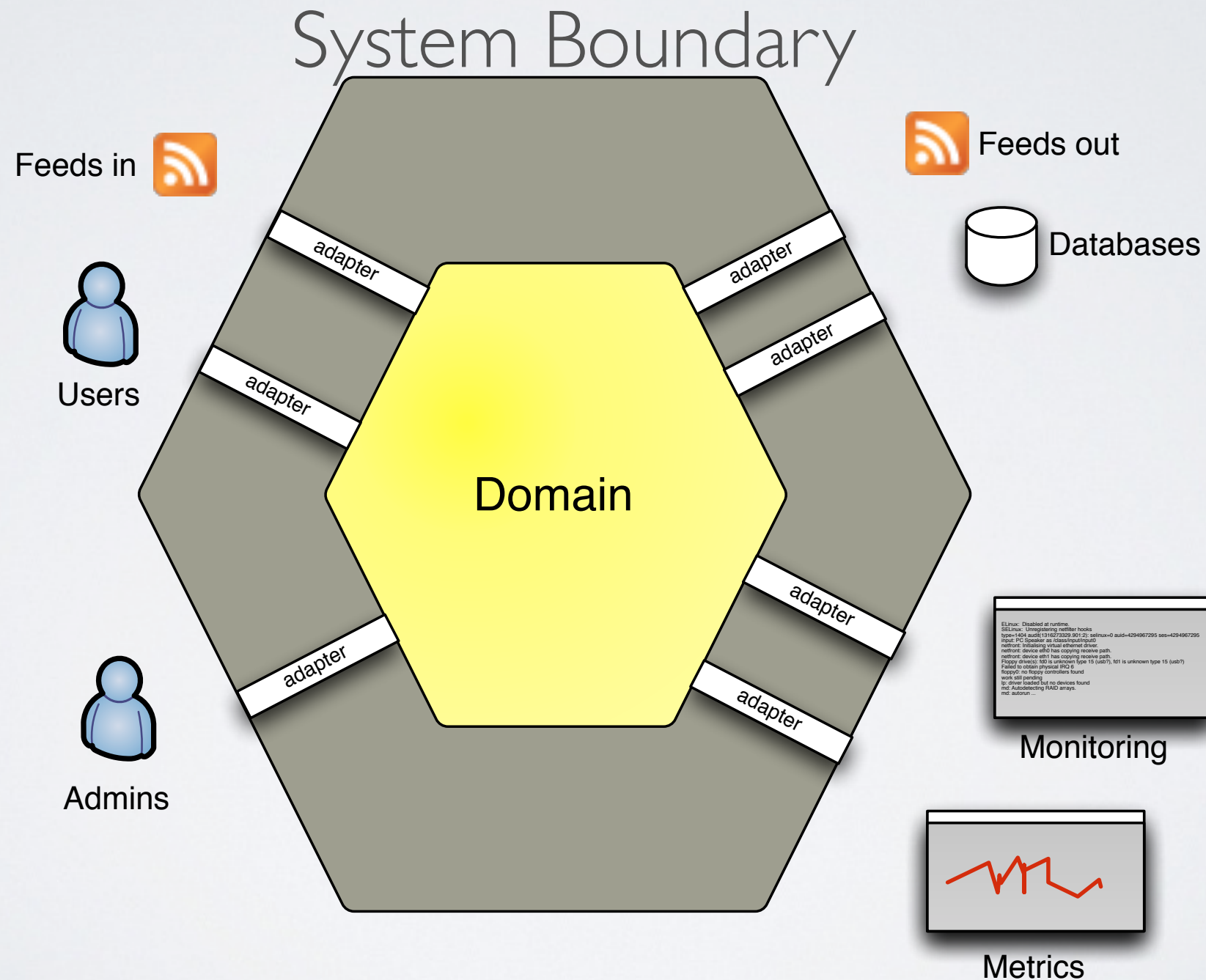
RPC

ESB

Typical Layered Architecture



“Hexagonal Architecture” Or Ports & Adapters



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8. Increase Discoverability

Omniscience is impossible.

Facilitate coincidence instead.

Improve by building on the work of others.

It's not eliminating duplication or reducing cost.

But costs will come down as a result of being better.

Prerequisites

- Visible work:
 - Internal blogs
 - Open code repositories
- Modern search engine (homegrown is fine)

Beware: Budget Culture

- Contributions are disruptions
- Inquiries are alarming.
 - They presage a budget annexation attack.

Beware people with Dilbert cartoons
on their walls.

Cynics reinforce status quo.

Engineering Culture

- Default to open sharing
- Every app should have links to:
 - Team blog
 - Bug submission
 - CI server

Foster engineering culture
at the grass roots.



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You Probably Aren't Either
Of These Guys



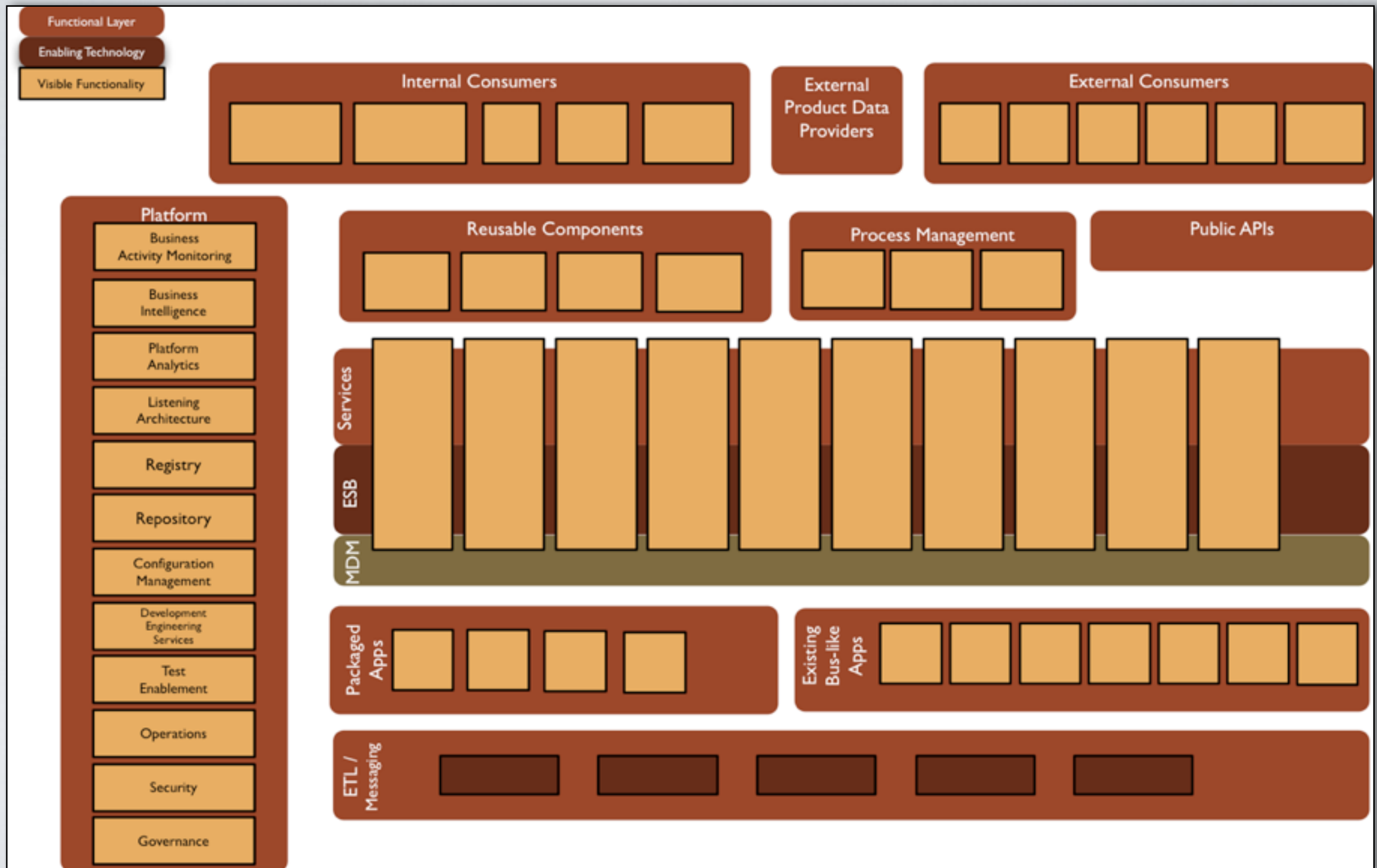
Vint Cerf

TotallyLooksLike.com



The Architect

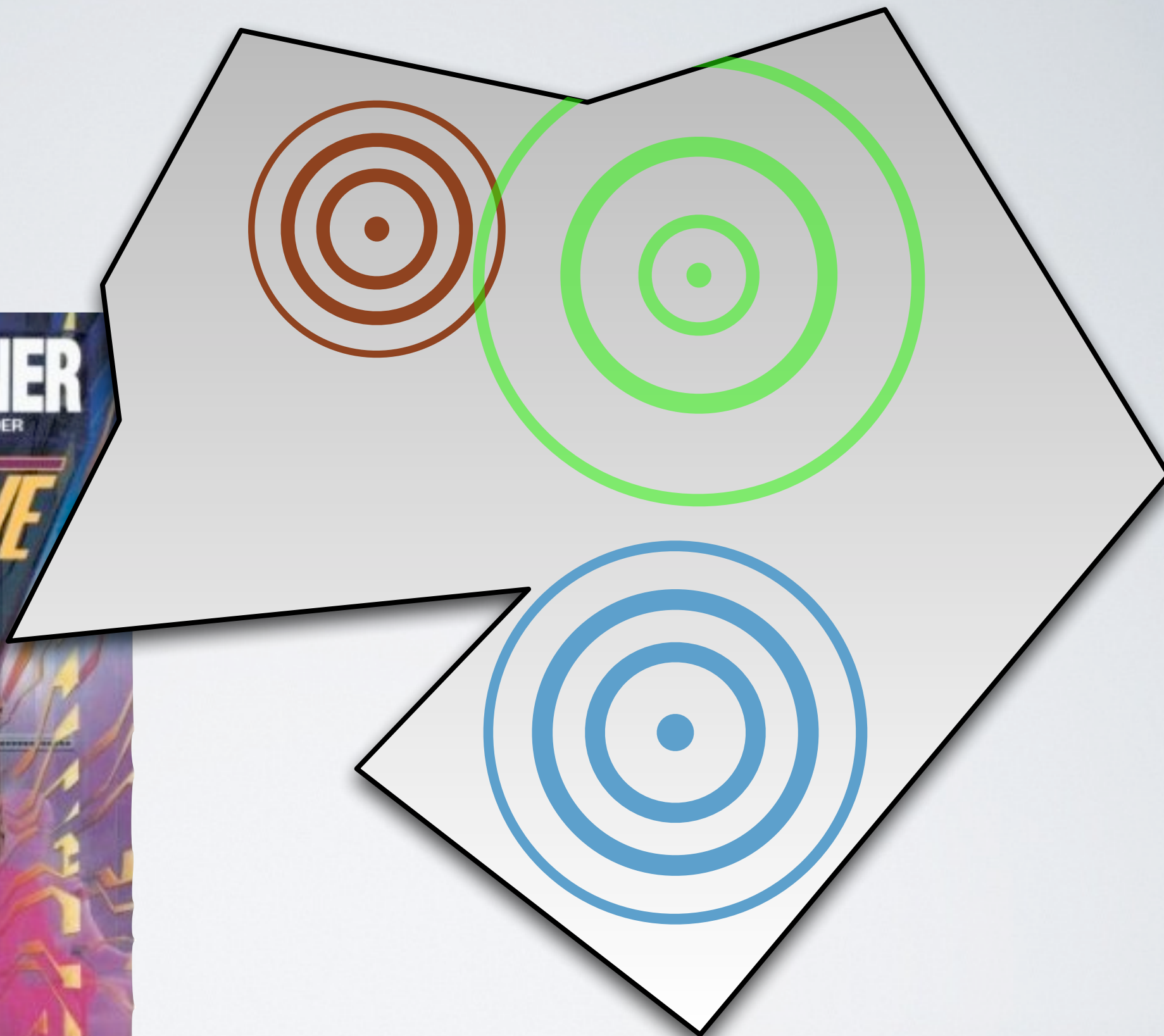
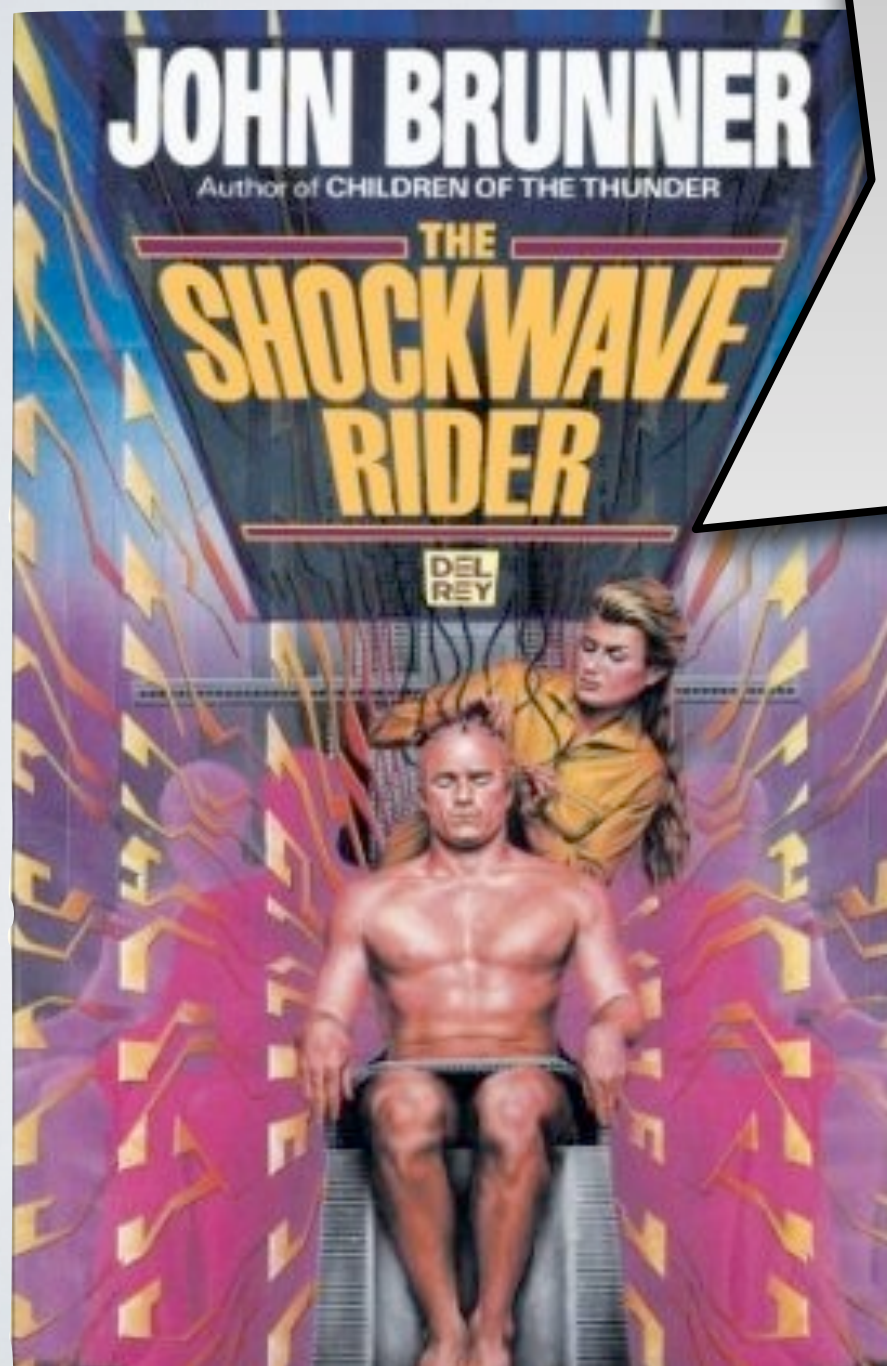
Stop chasing the end state



Abandon the 3 Year Plan

Legacy Conversion





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Michael T. Nygard
Relevance, Inc.

[@mtnygard](mailto:michael.nygard@thinkrelevance.com)

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