

Monoliths to Microservices

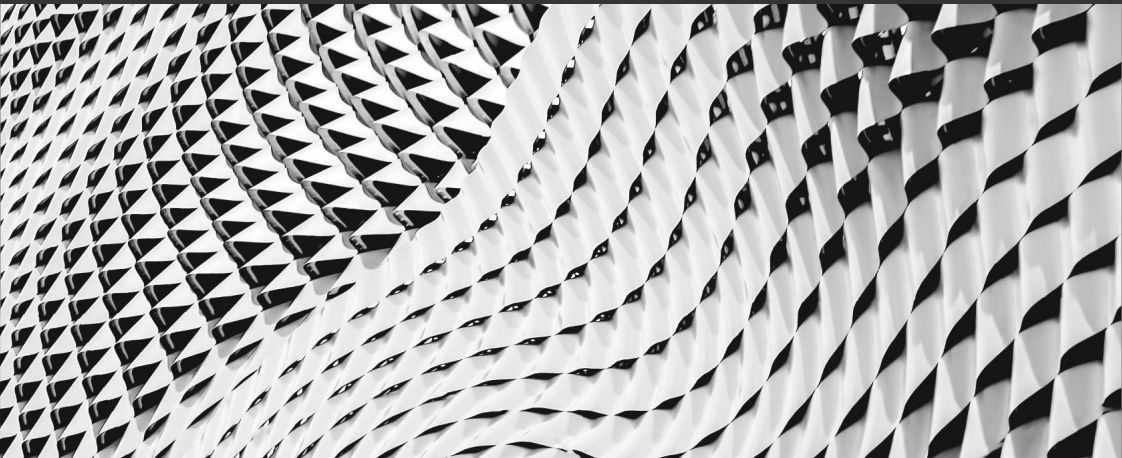
A low-risk solution to optimizing legacy code

Richard Hofmeister

App Dev Solution Architect



A Joke!

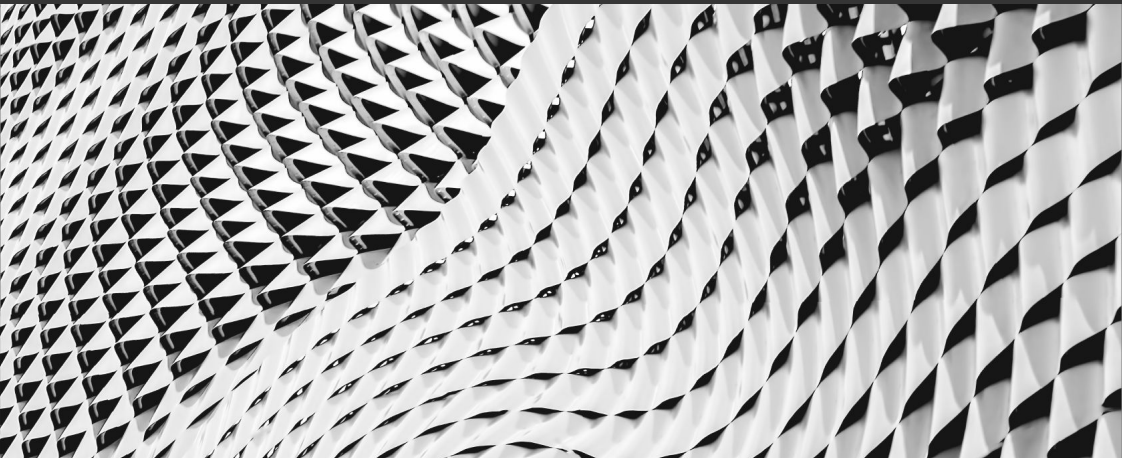




ROUGH AGENDA

- Why begin the transformation to microservices?
- What are the different methods? (Demo)
- How do we execute these methods?
- How Red Hat can help.
- Next Steps

Why?



Customers and businesses expect...

ON-DEMAND
SERVICE

DELIGHTFUL
INTERACTIONS

ACCESS FROM
ANYWHERE

PERSONALIZED
EXPERIENCE

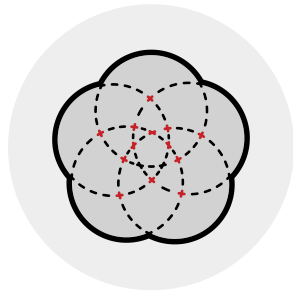
Creating value depends on your ability
to develop and deliver
high quality applications faster.

Shifting to Innovation

It's about efficiency, agility, & speed



Optimize the IT
you have



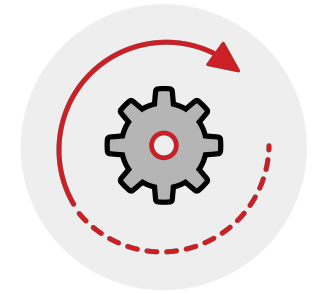
Integrate apps, data,
& processes



Add & manage cloud
infrastructure



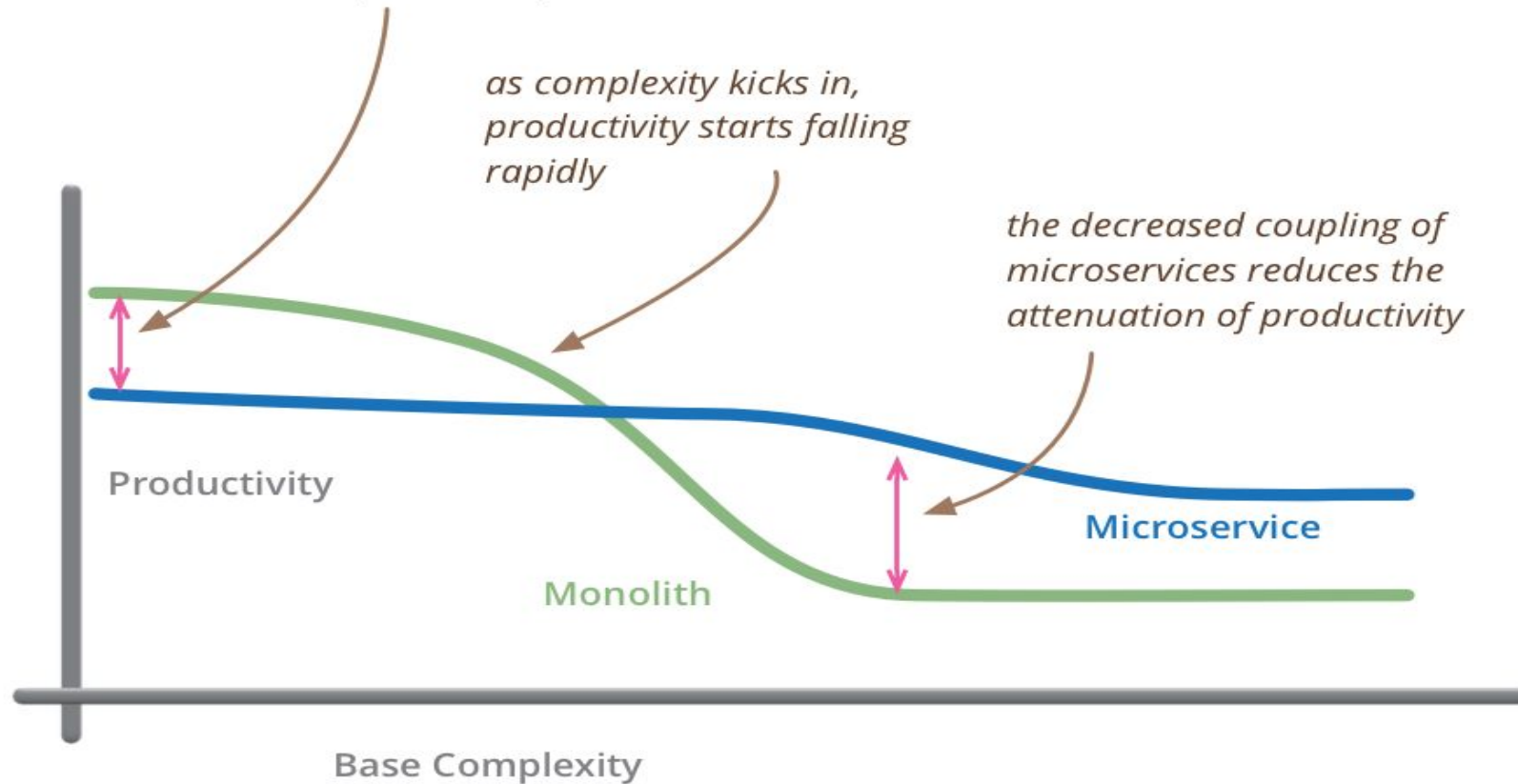
Build more modern
applications



Automate &
manage IT

MONOLITHS VS MICROSERVICES

for less-complex systems, the extra baggage required to manage microservices reduces productivity



THE BIGGER PICTURE: THE PATH TO CLOUD-NATIVE

A DIGITAL DARWINISM



WHY BUSINESS LOVES MICROSERVICES?



**FASTER
SERVICE DELIVERY**



**INCREASE SERVICE
QUALITY**



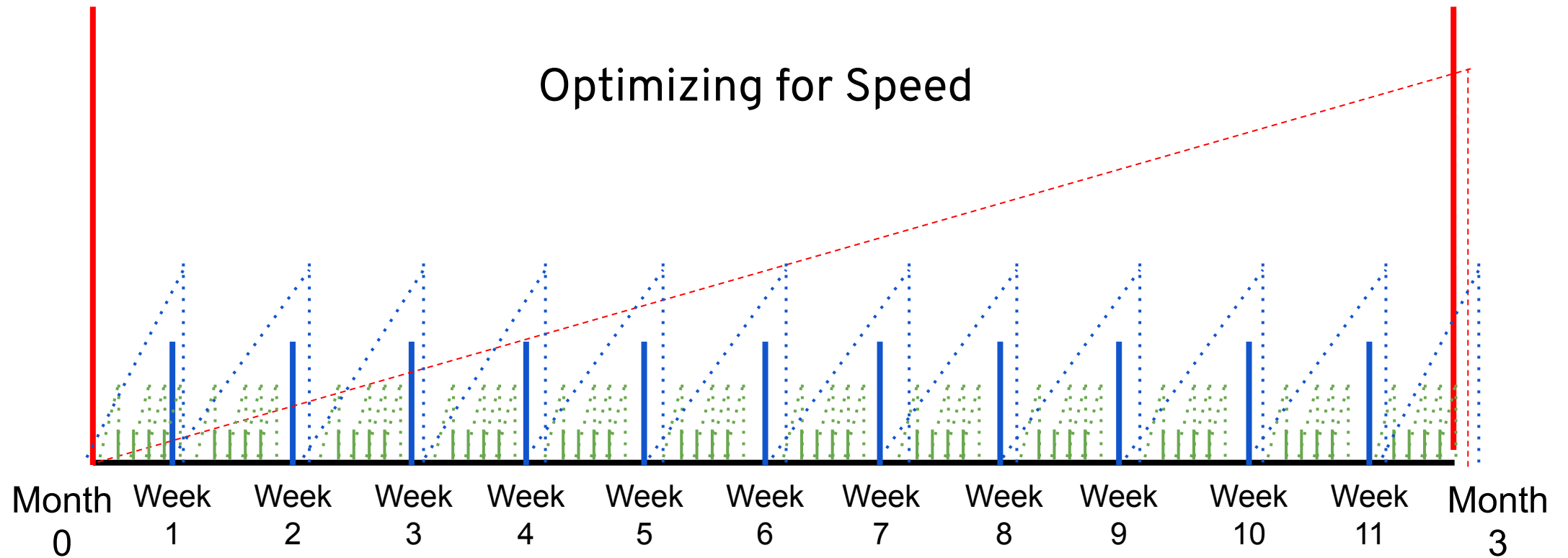
**REDUCE
RISK OF DELIVERY**

REDUCING TIME TO VALUE

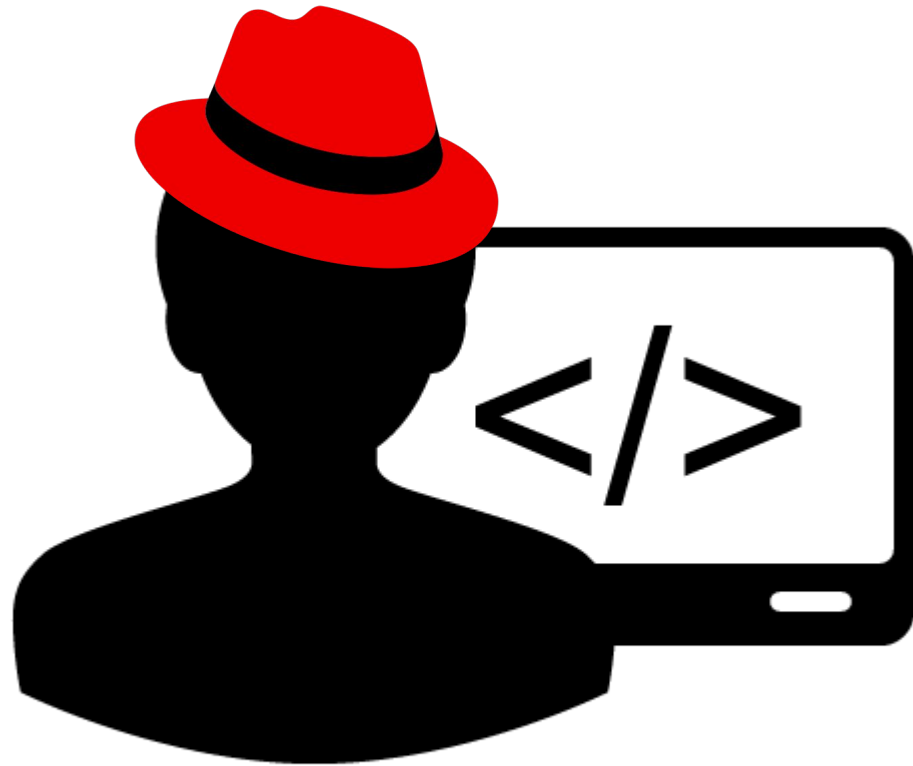
Monolith Lifecycle

Fast Moving Monolith

Microservices



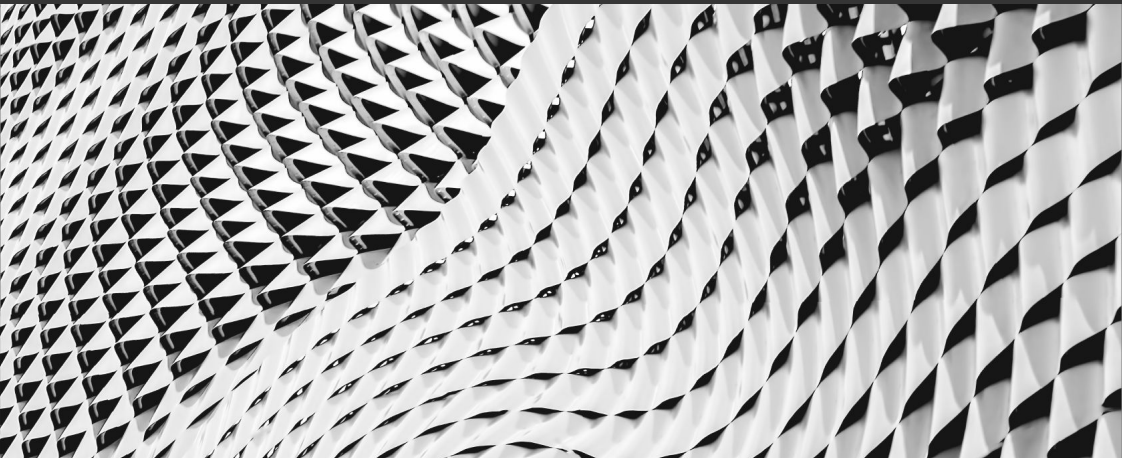
DEVELOPER BENEFITS



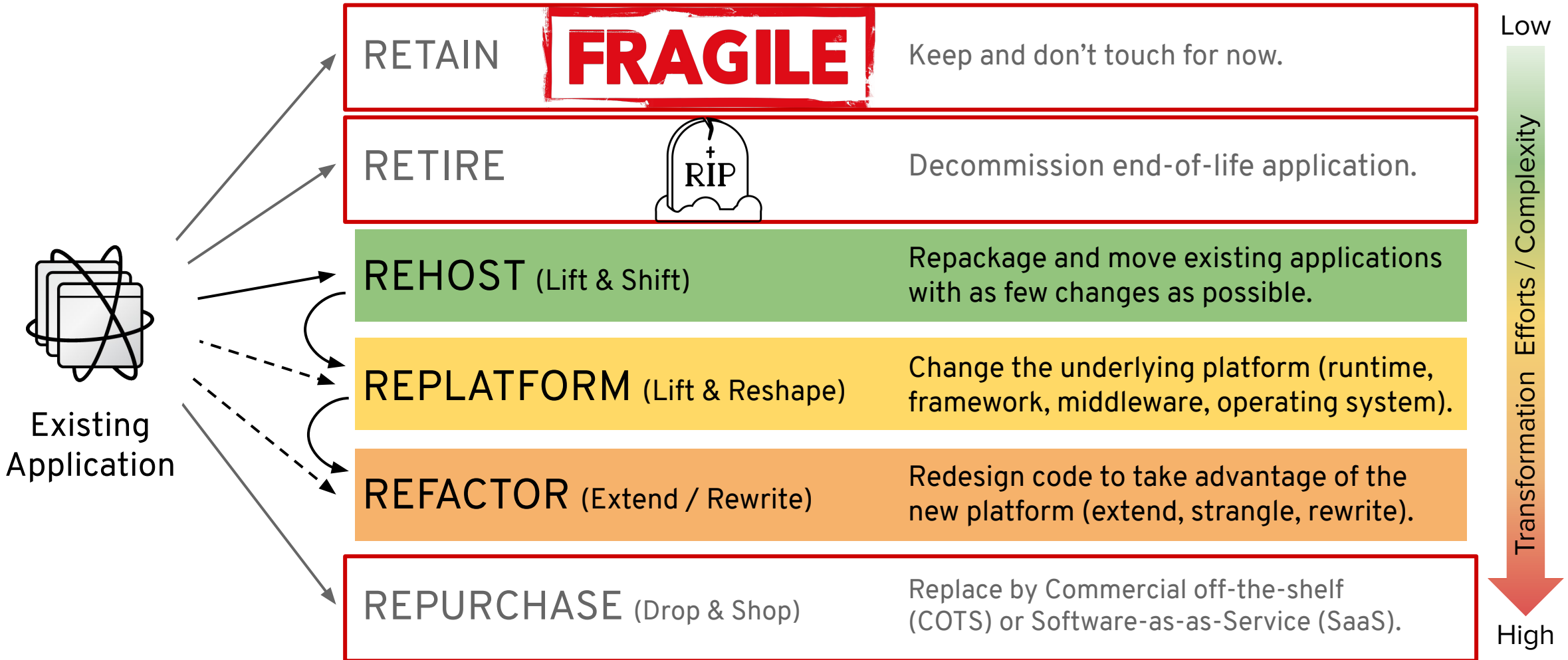
- Clean Slate Architecture
 - Speed of Developer Adoption
 - Choice of tools
 - Lower Lead Time
 - + Independence with Guard Rails
-

Developer Happiness

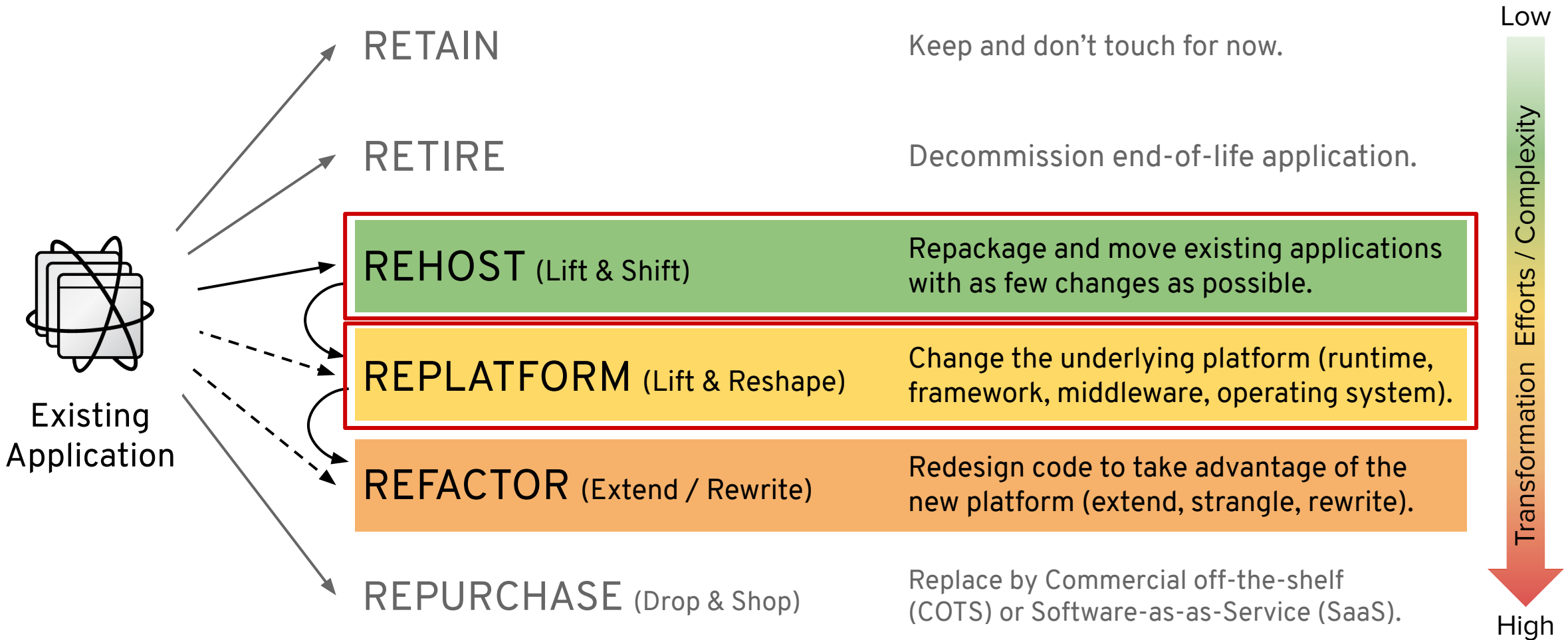
How?



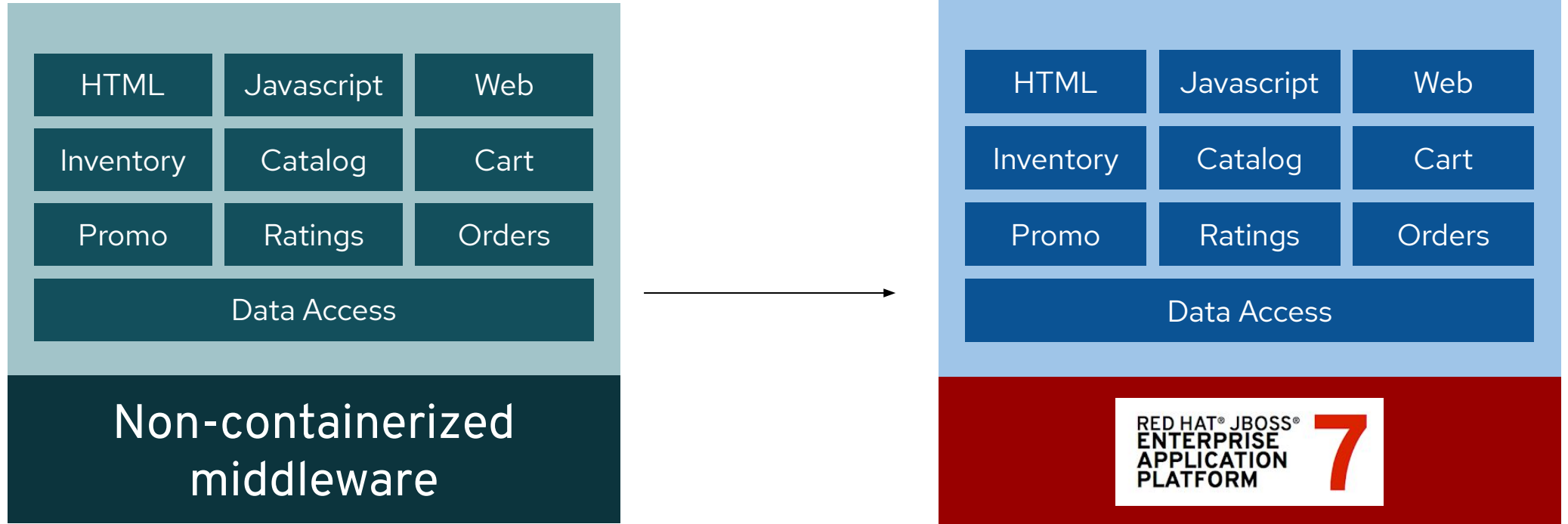
OPTIONS FOR MONOLITHS



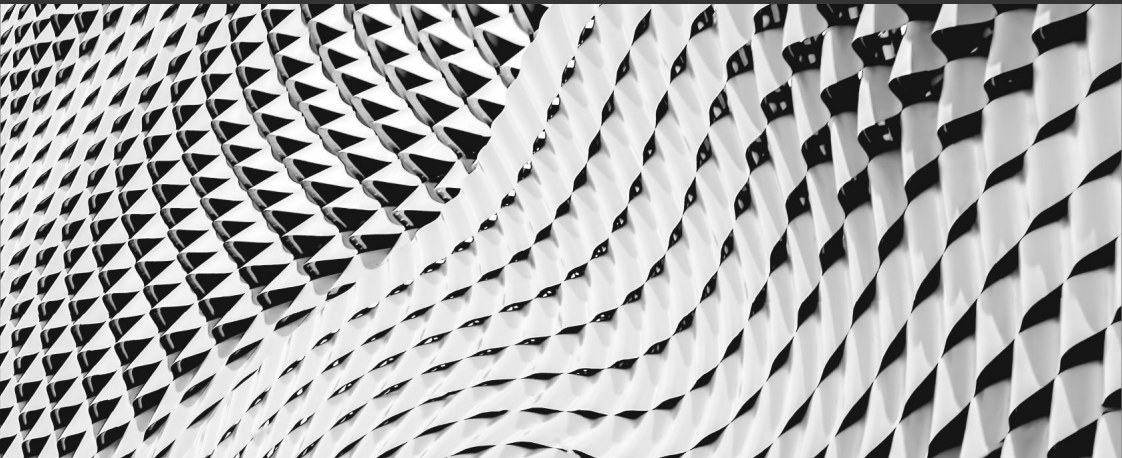
OPTIONS FOR MONOLITHS



LIFT-THINKER-AND-SHIFT



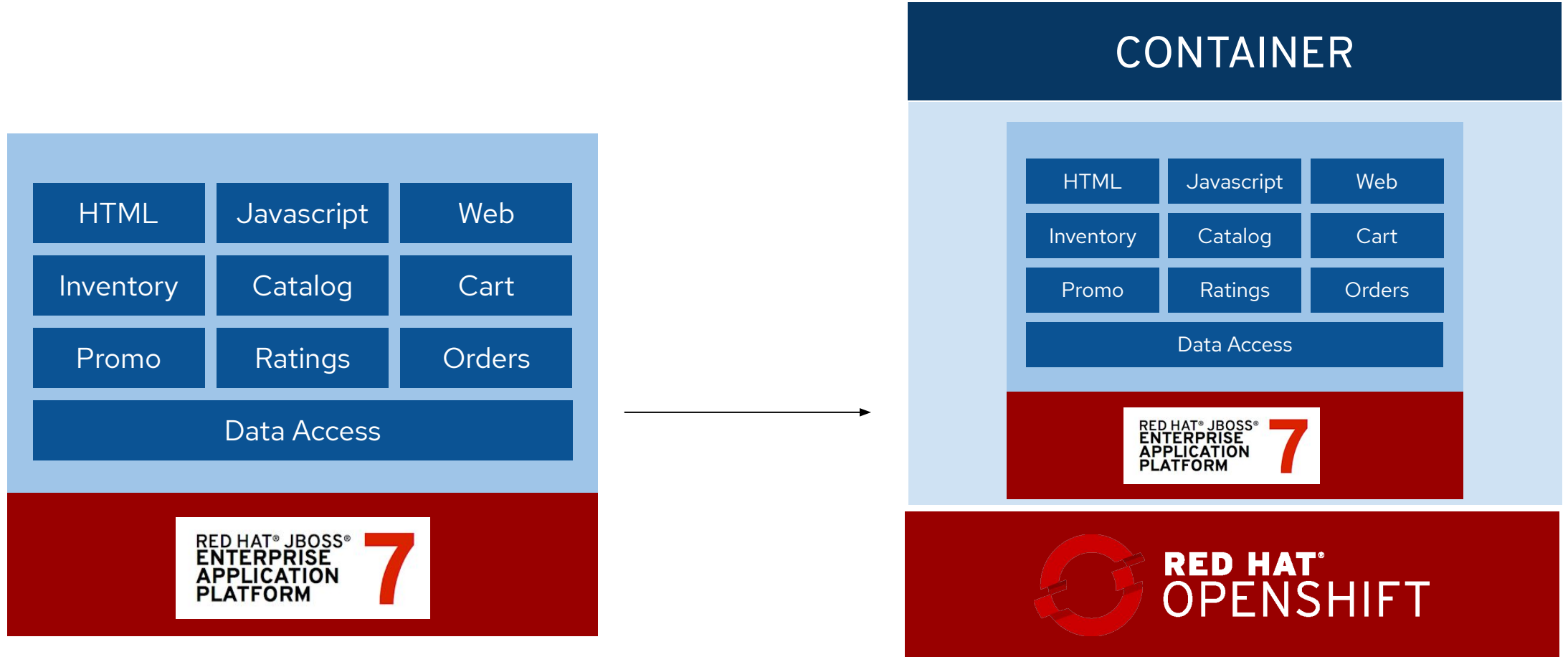
Demo Time!



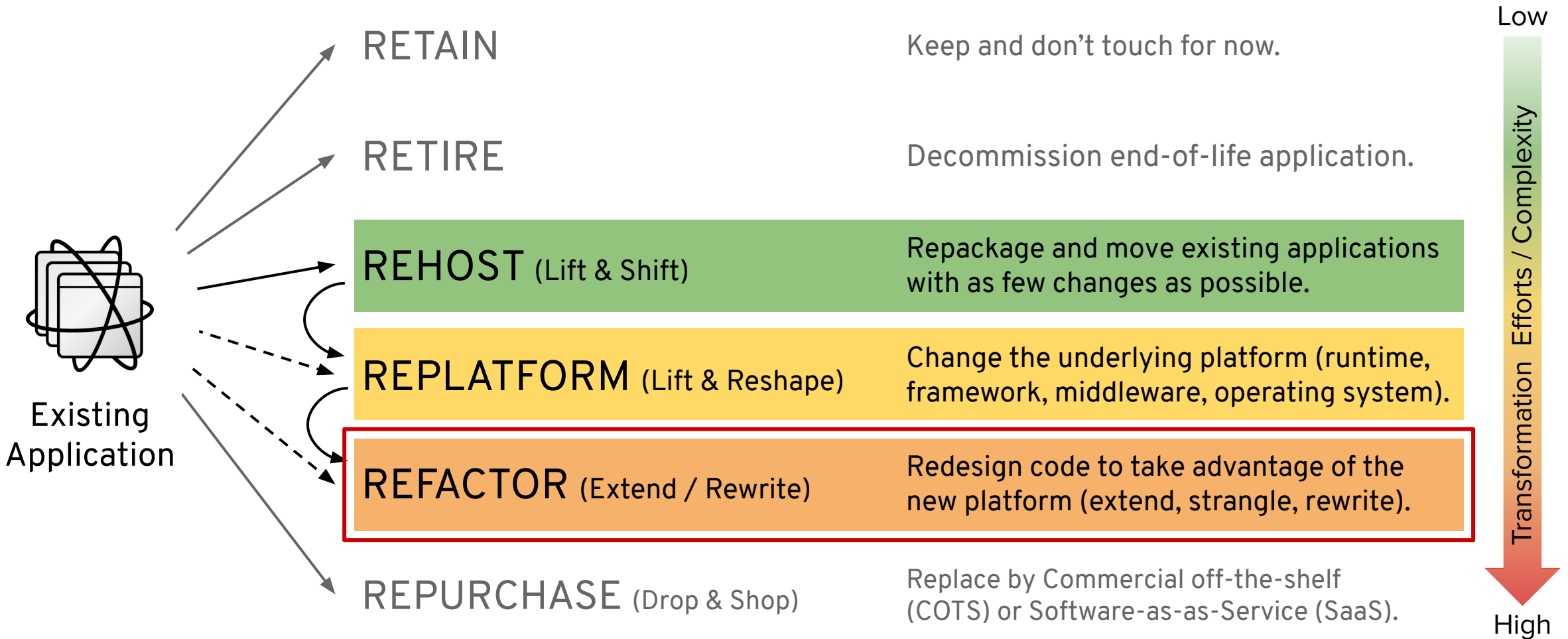
Red Hat Application

Migration Toolkit

LIFT-THINKER-AND-SHIFT



OPTIONS FOR MONOLITHS



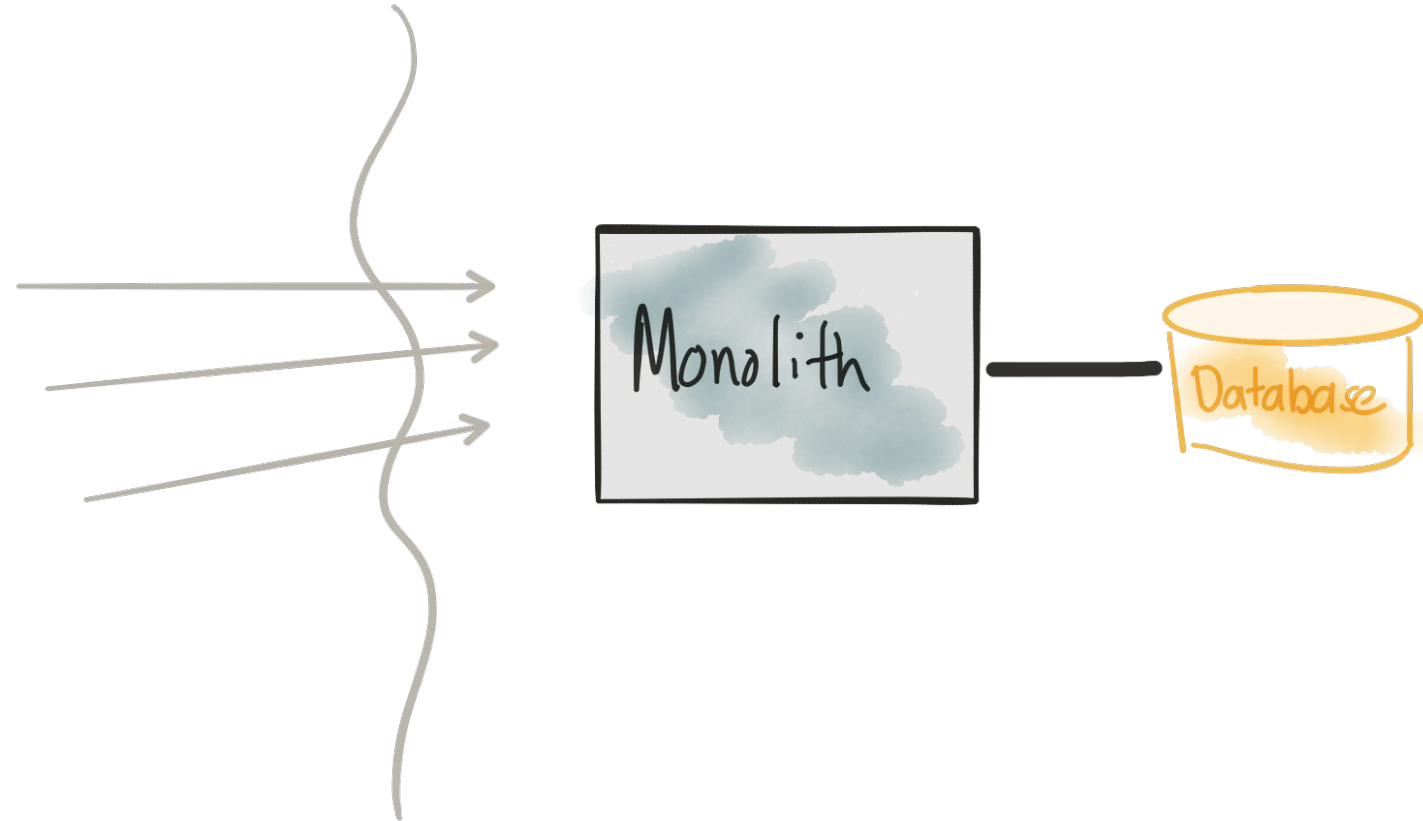
MONOLITH STRANGLING



Monolith Strangulation

Our Base Monolith:

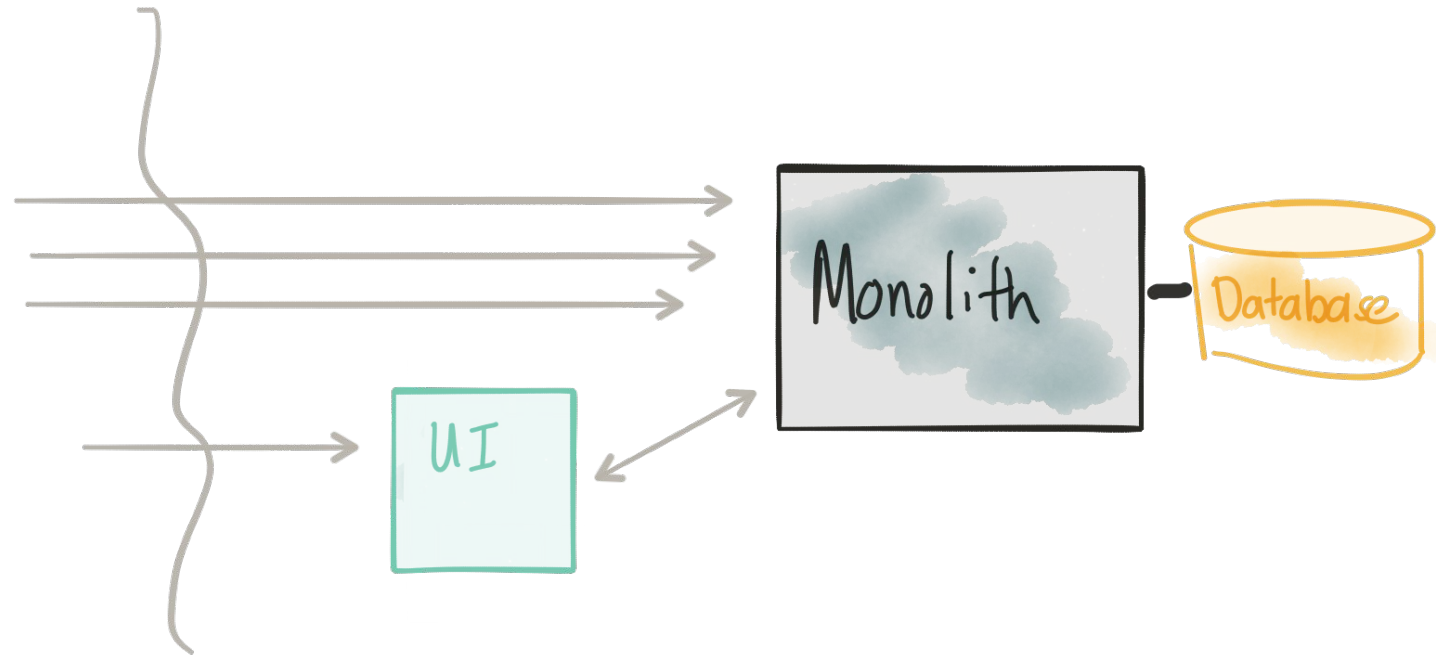
- Singular Application with UI, Business Logic, and Data Access Layer
- Tightly Coupled



Monolith Strangulation

Extract the UI:

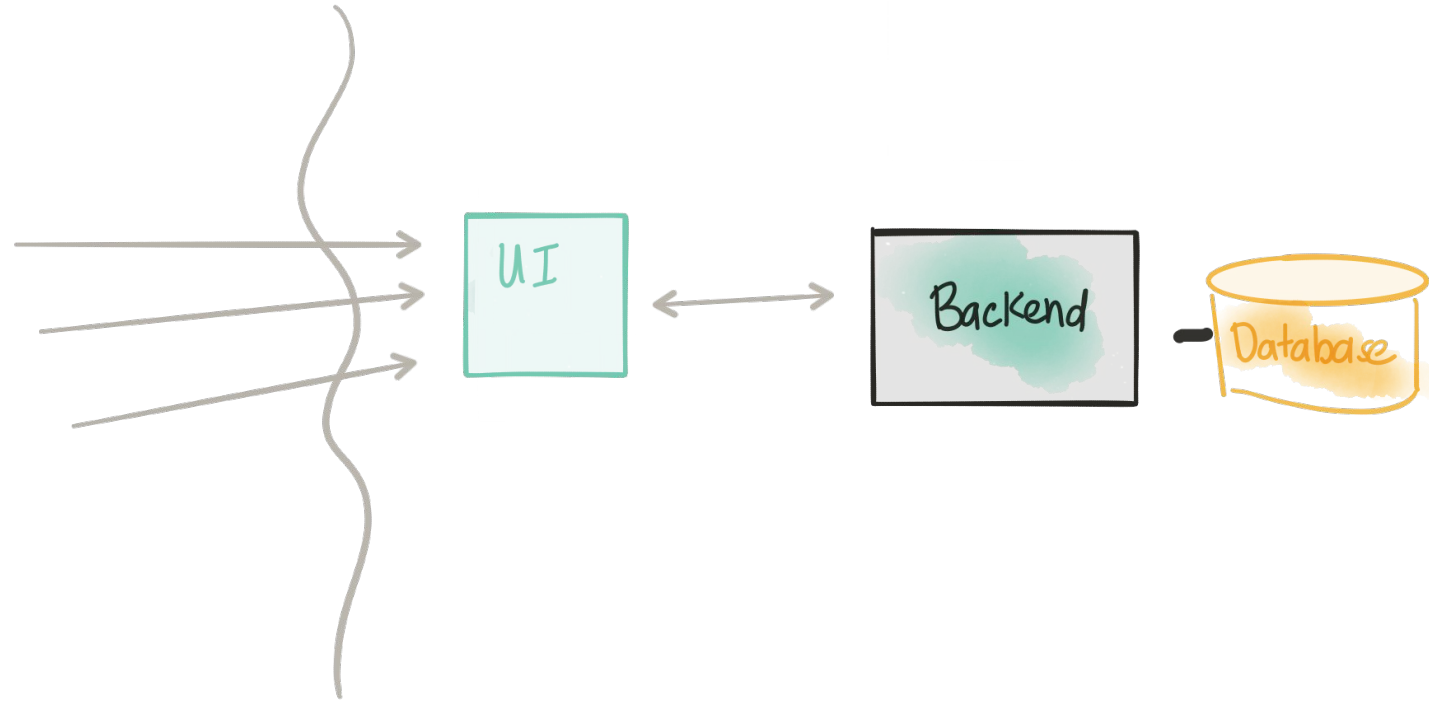
- Decouple the UI
- Rolling/Canary Release
- No backend changes (hopefully)



Monolith Strangulation

Drop the UI Entirely:

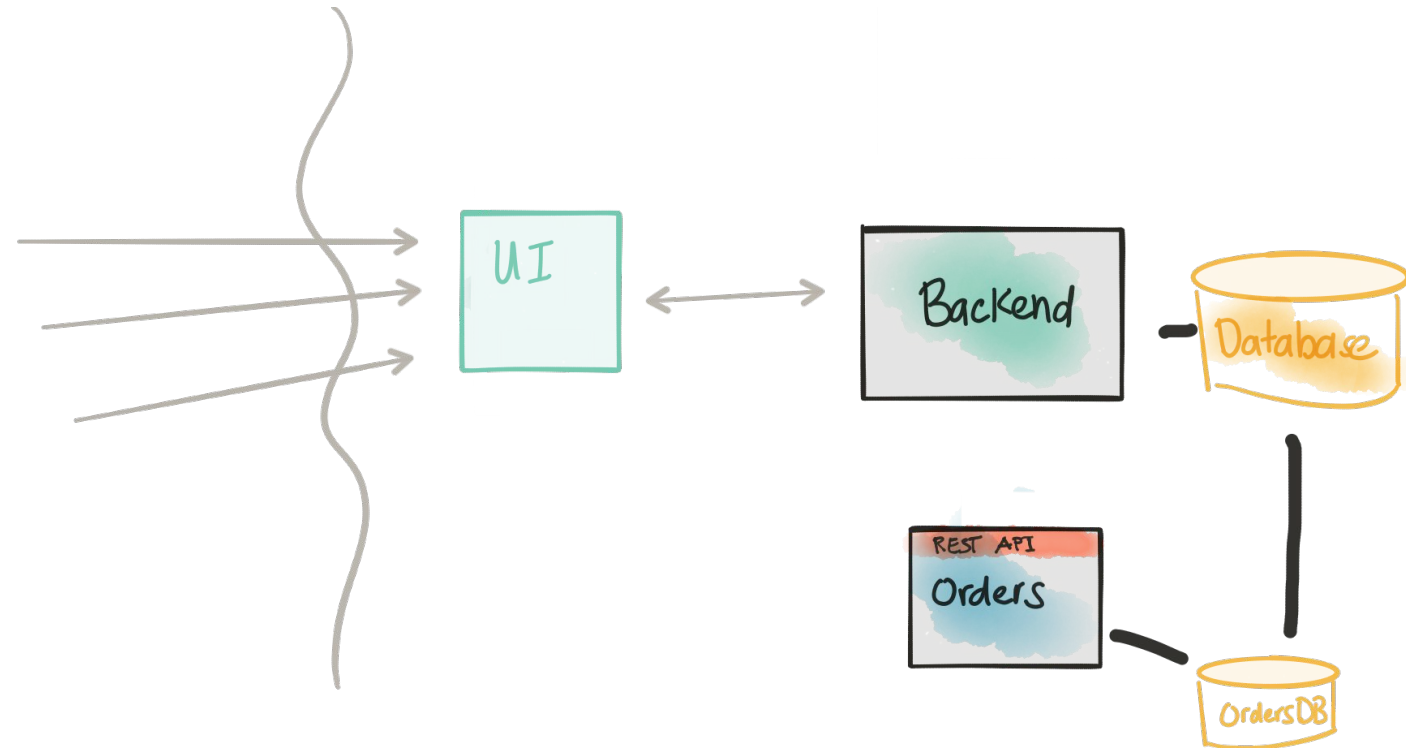
- Remove UI Code from Monolith
- Choose our first service
- Wrap first expected service in unit tests



Monolith Strangulation

Introduce New Service:

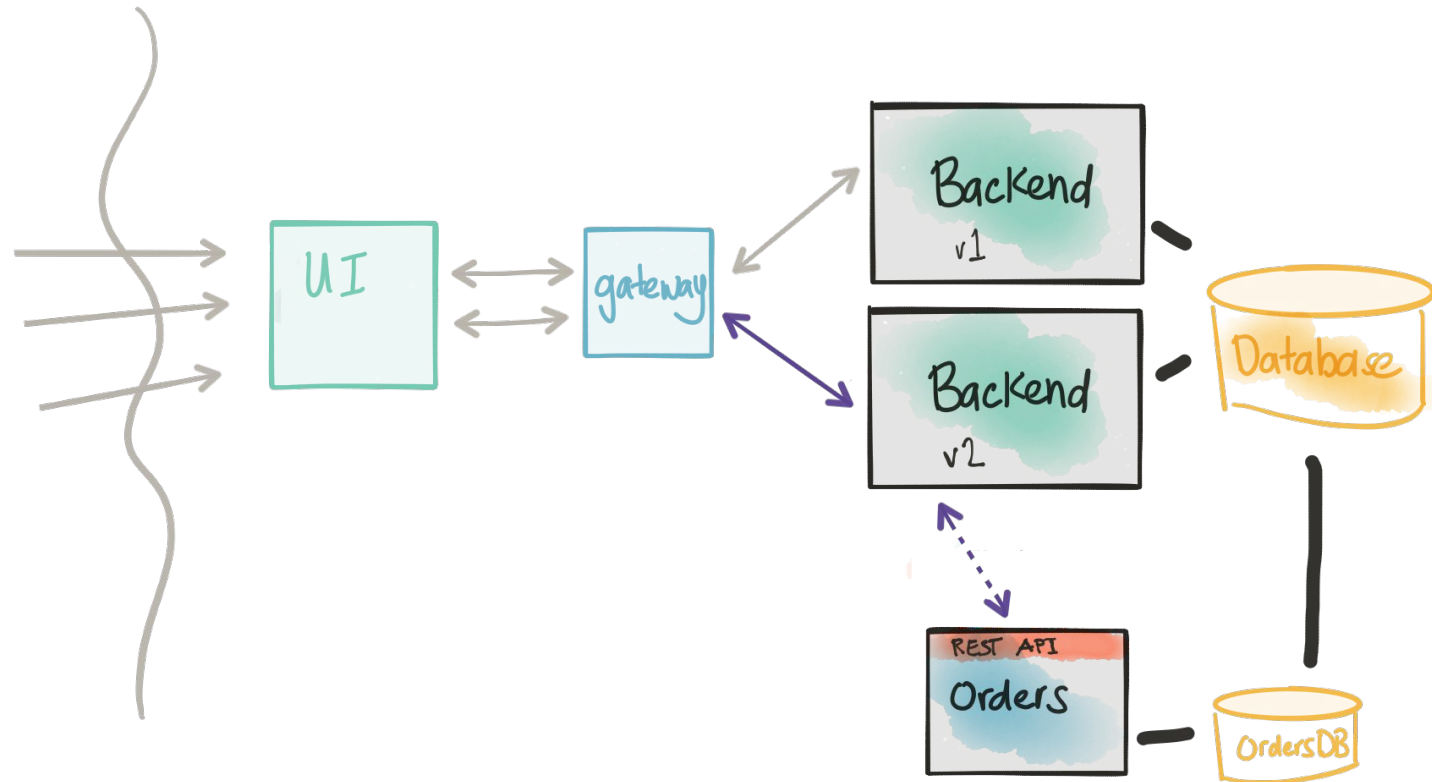
- New Service/Fresh Slate
- Using the right tool for the job
- Pull over unit tests
- Coupling with the larger database when necessary



Monolith Strangulation

Dark Launch:

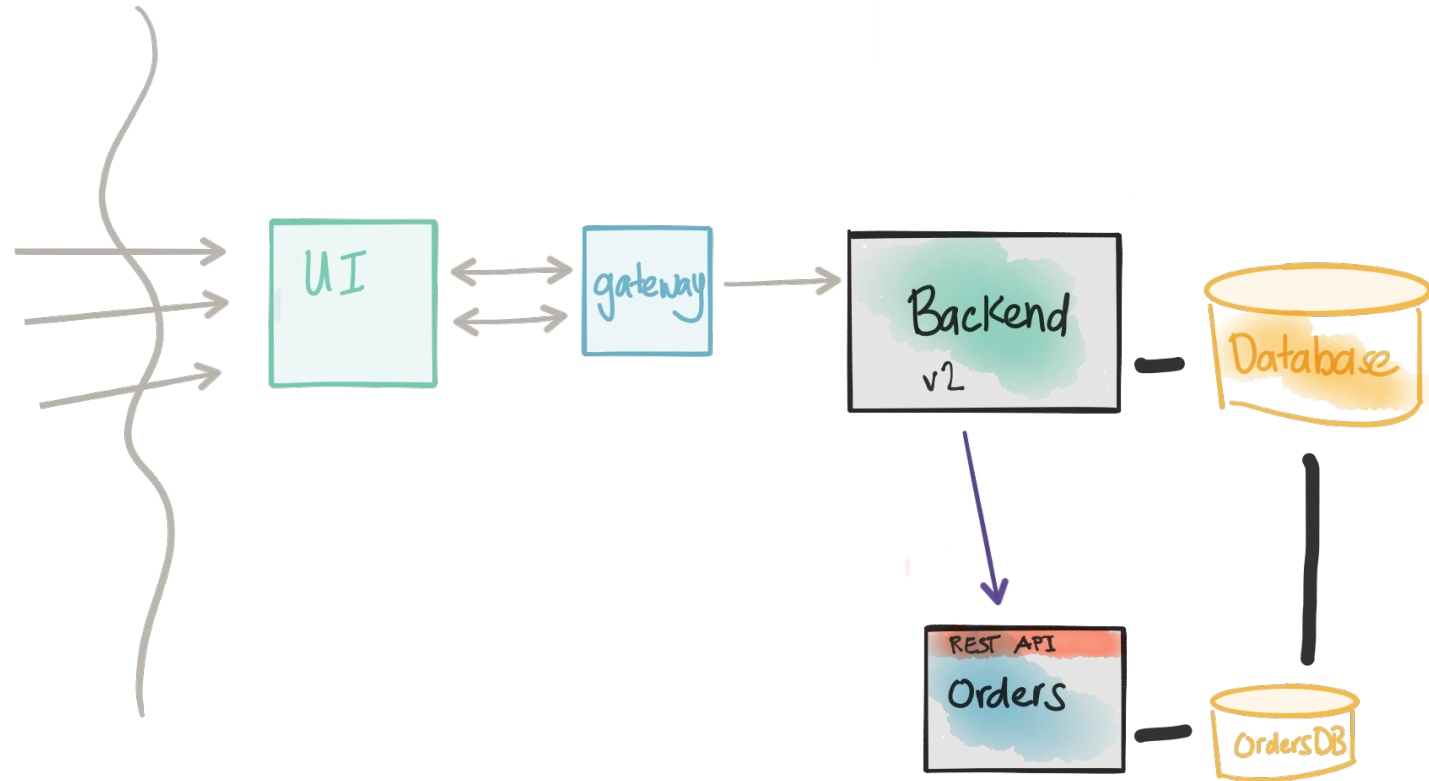
- Enough code to use either/both
- Externalize to a gateway
- Use a gateway to toggle or duplicate



Monolith Strangulation

Canary/Rolling Release:

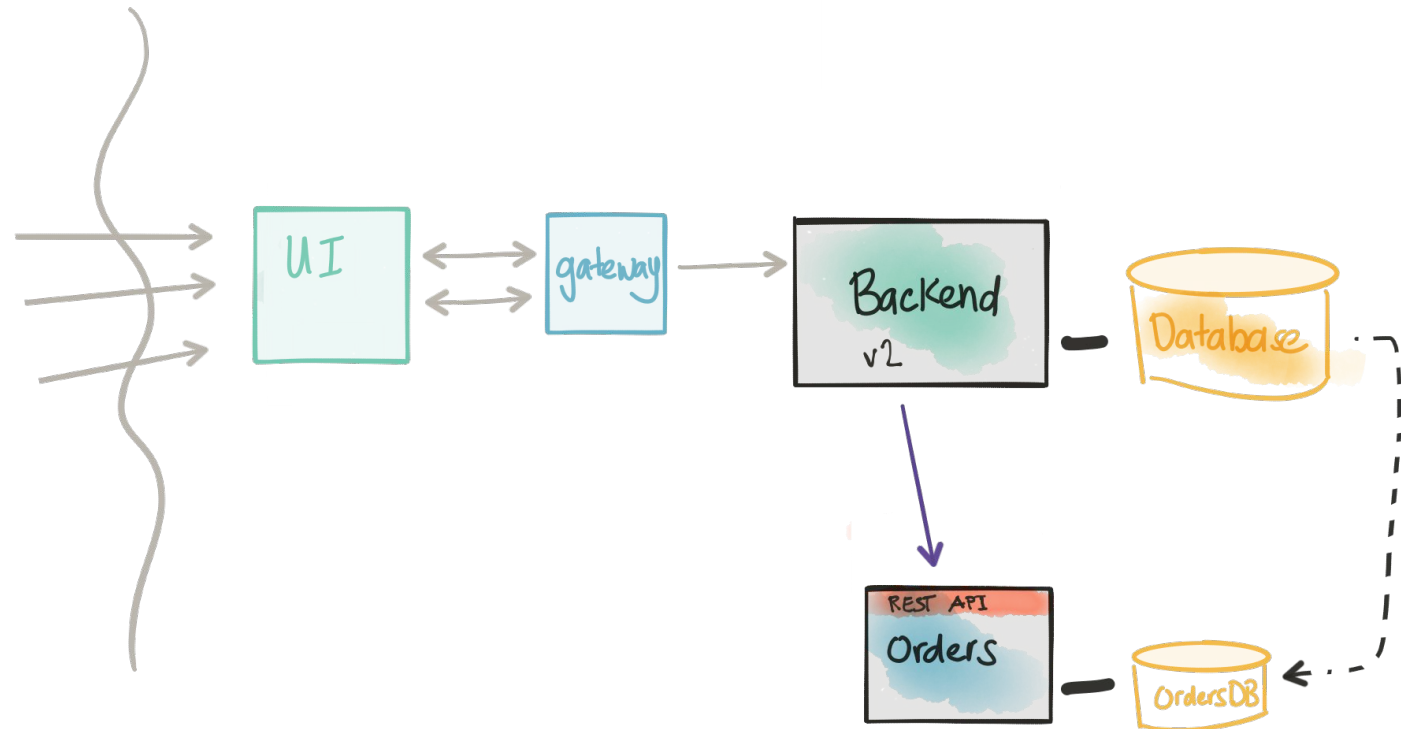
- Mitigated Risk
- Try for no take backs
- Drain traffic to fully use new service



Monolith Strangulation

Data Migration:

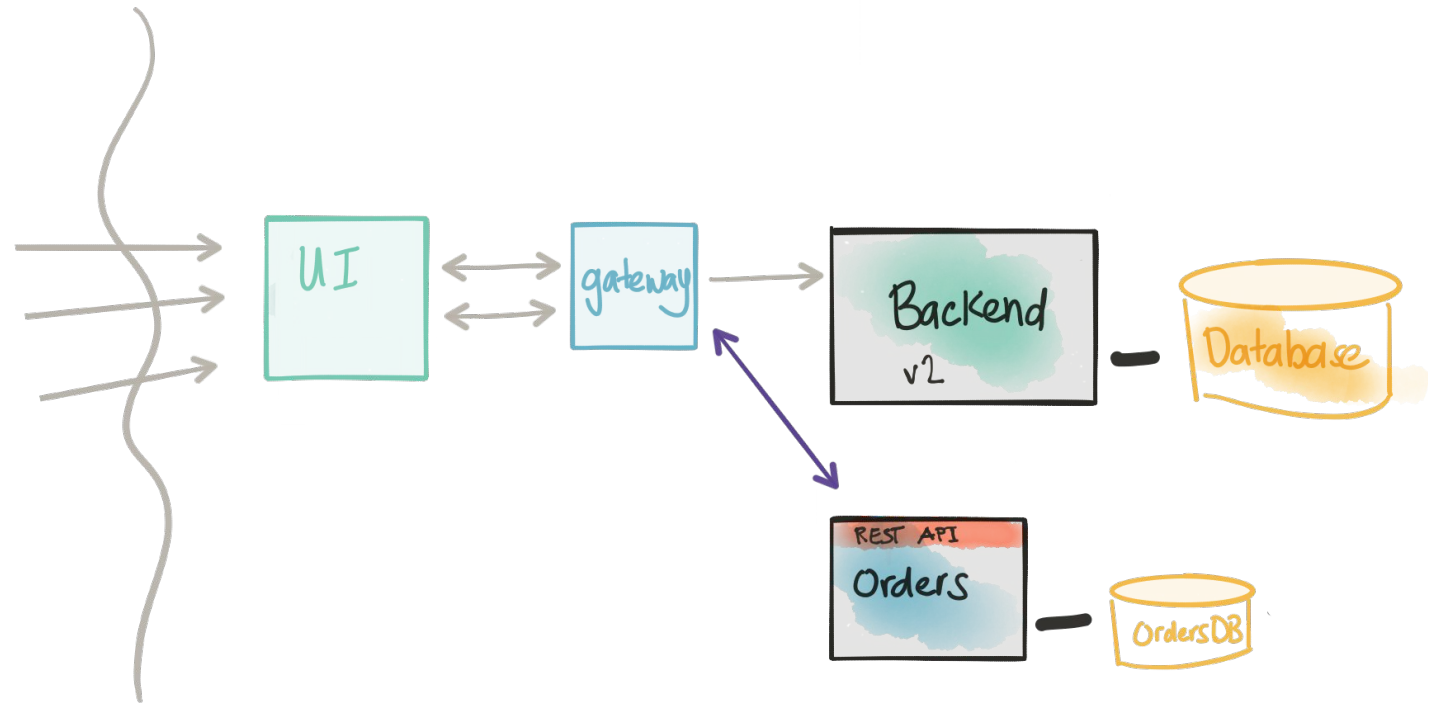
- Payoff database technical debt
- One-time ETL

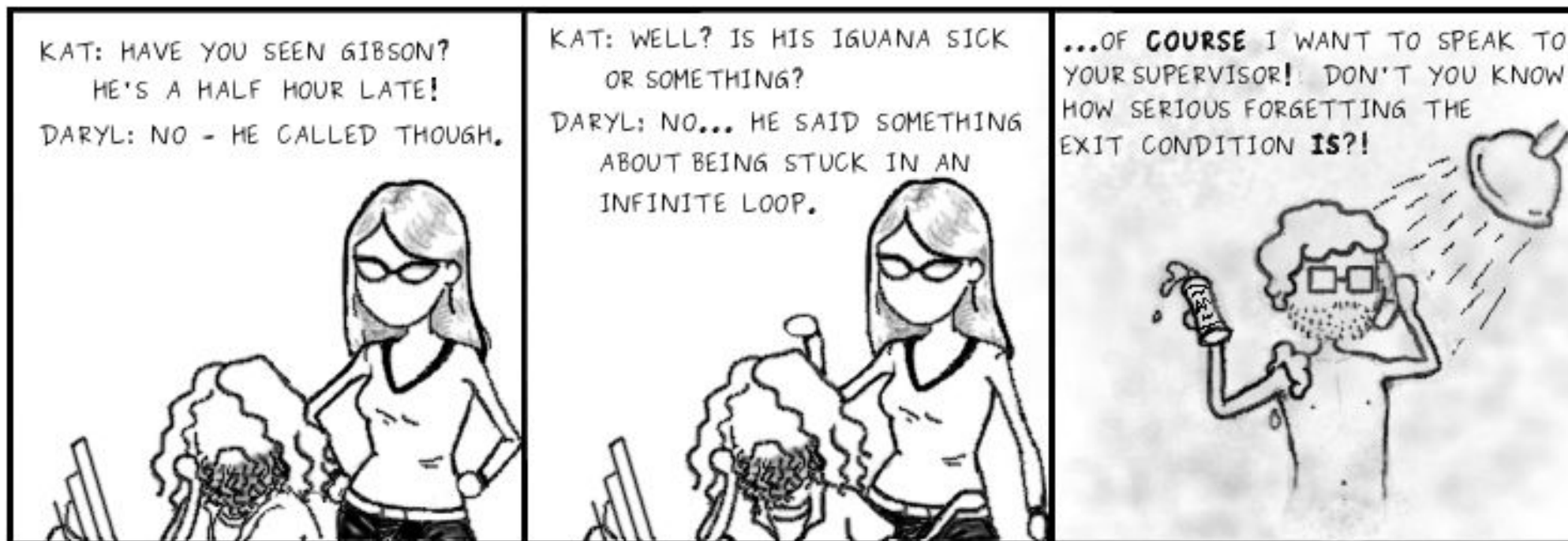


Monolith Strangulation

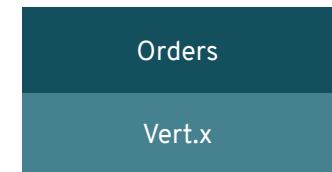
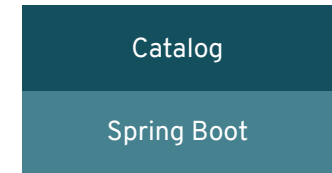
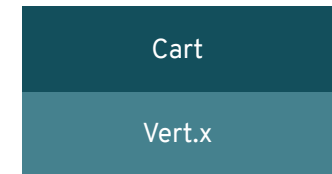
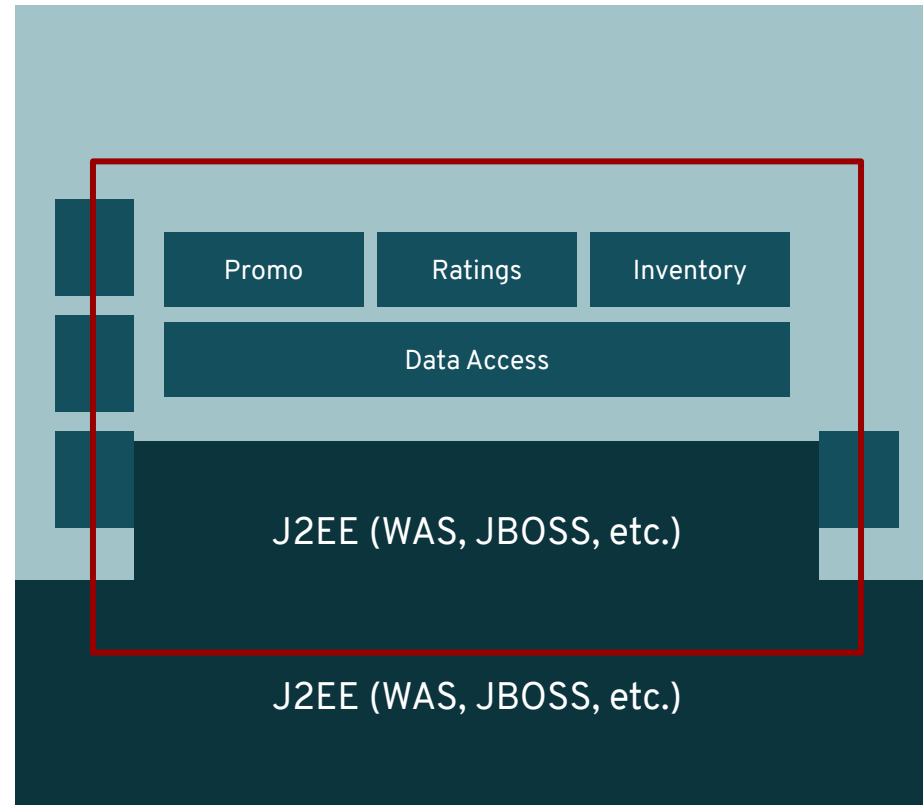
Disconnect and Decouple:

- UI now directly calls
- Remove all technical debt from Backend
- Completely decoupled

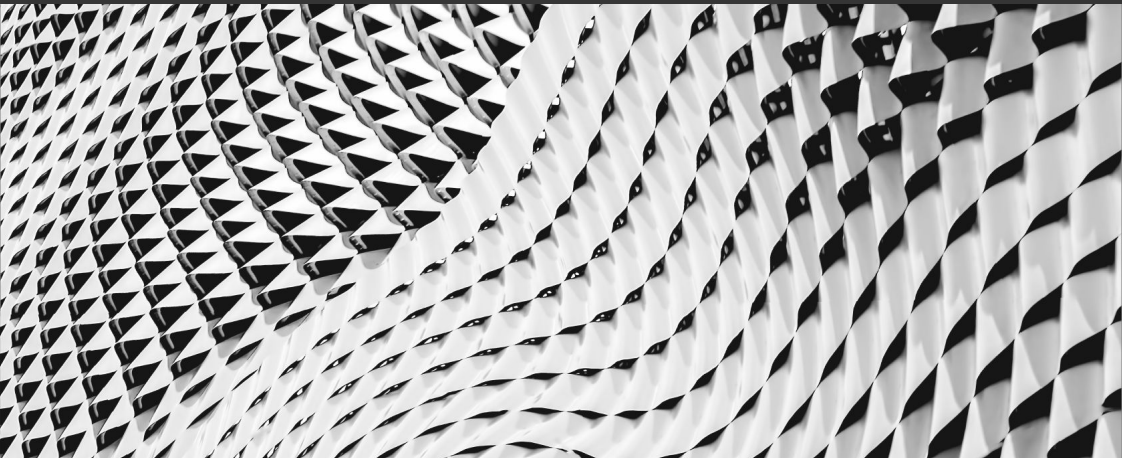




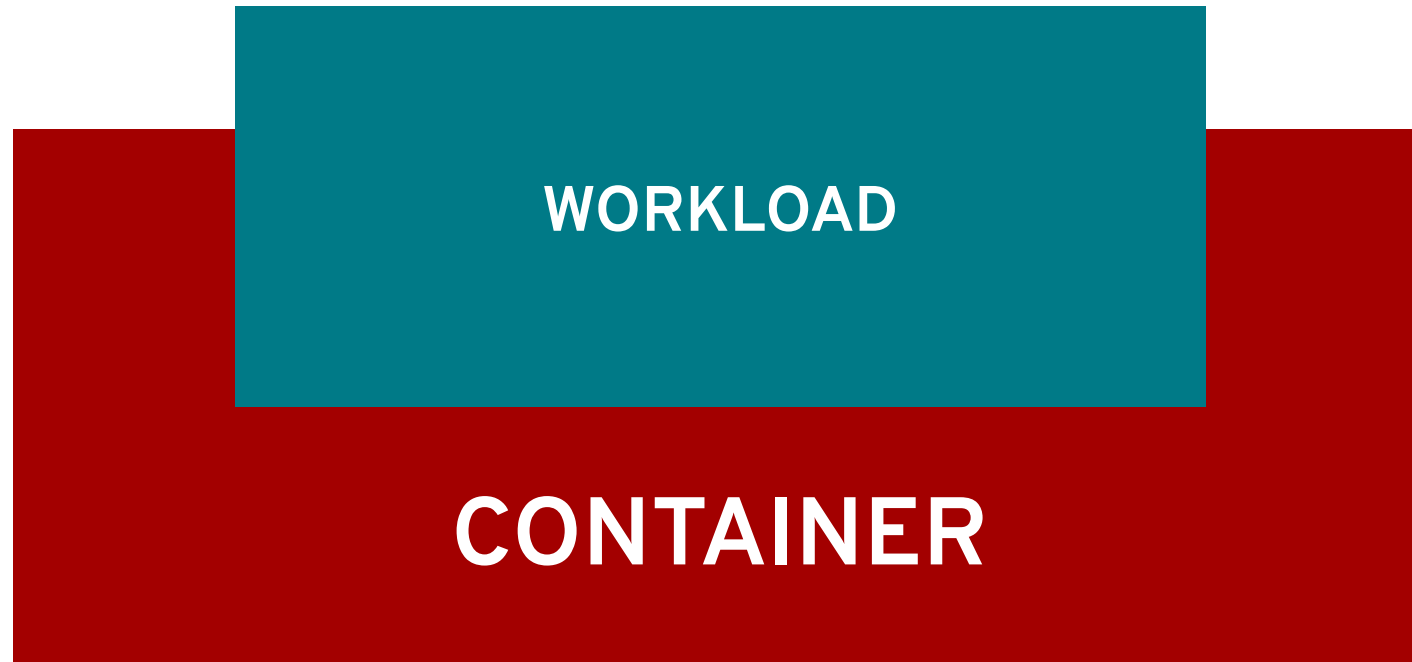




That's Easy!

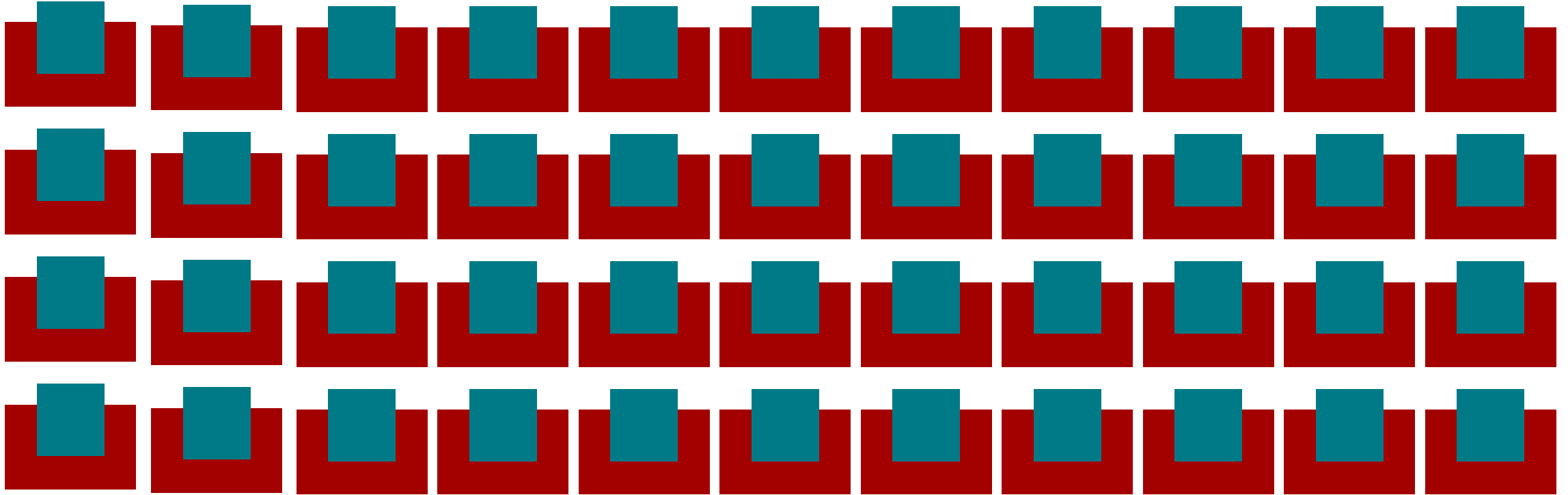


KEY TO INCREMENTAL: THE CONTAINER

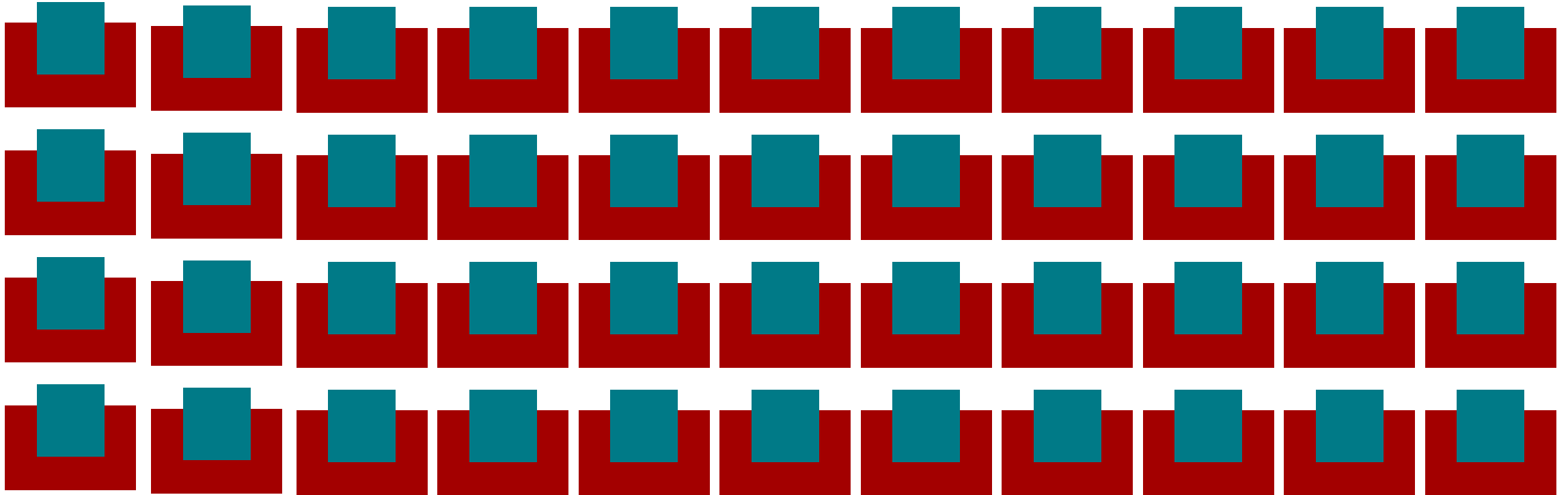




DOING CONTAINERS AT SCALE IS HARD

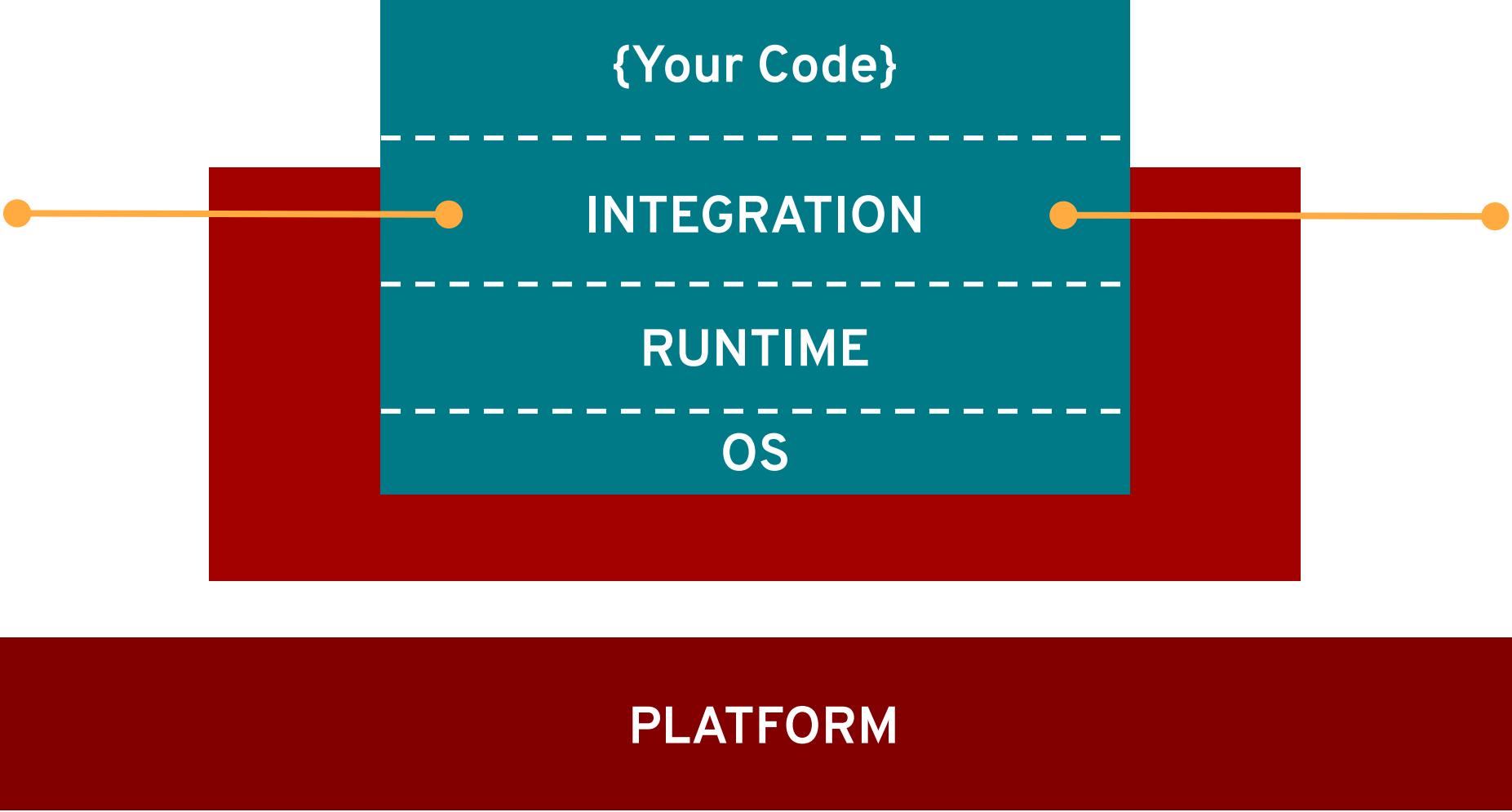


WHAT THE CONTAINER IS ON MATTERS



PLATFORM

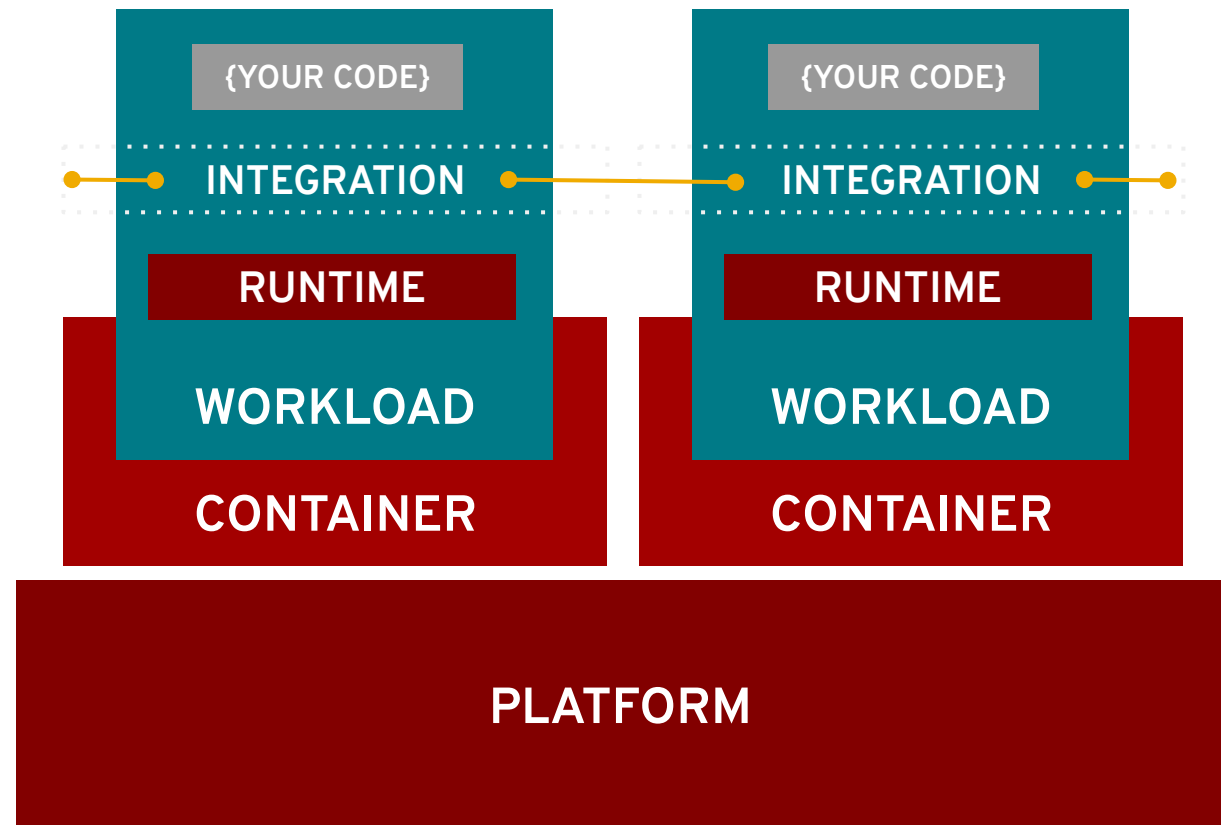
What's IN the Container Matters



WHAT'S BETWEEN THE CONTAINERS MATTERS

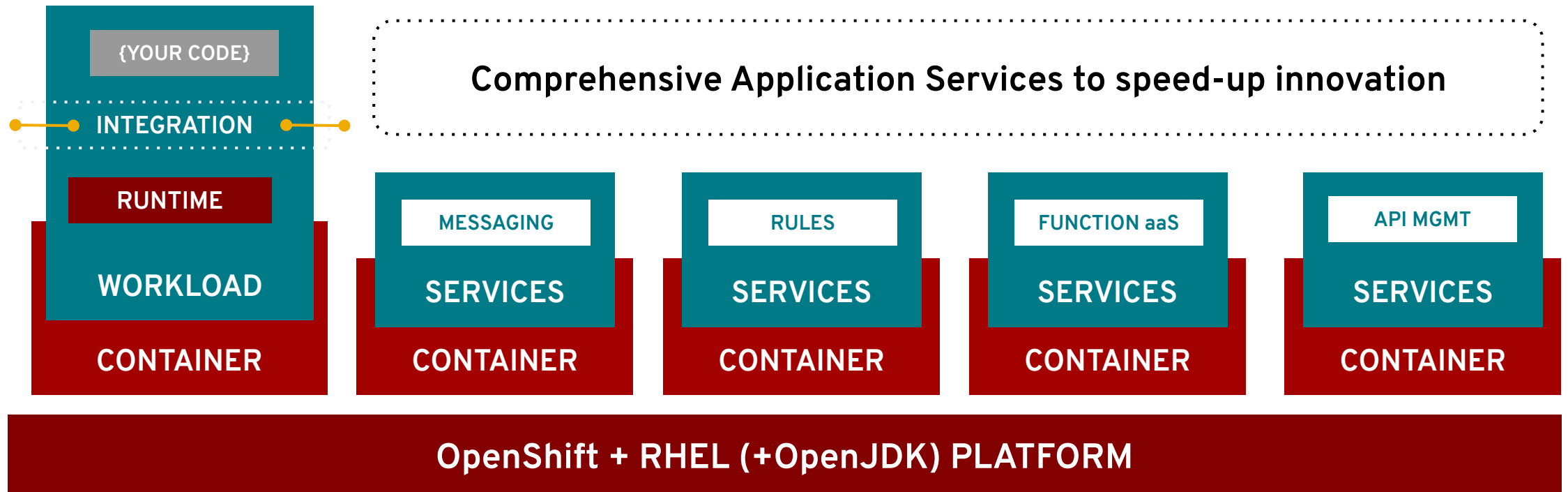
Integrate data, processes and policies across microservices, applications and systems

- Integrate more data sources
- Create, expose and manage APIs
- Reuse integration patterns
- Control and monetize APIs
- Extract and transform data

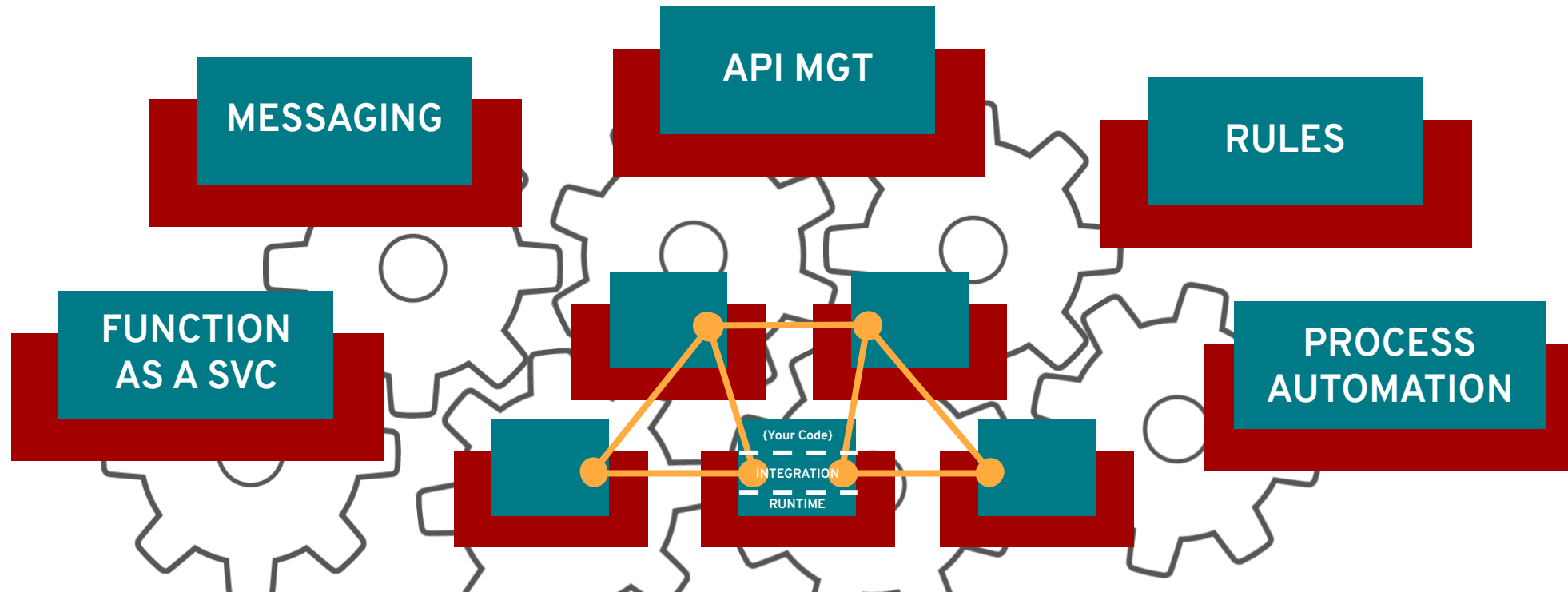


WHAT'S AROUND THE CONTAINERS MATTER

Supporting your applications thru a comprehensive application environment

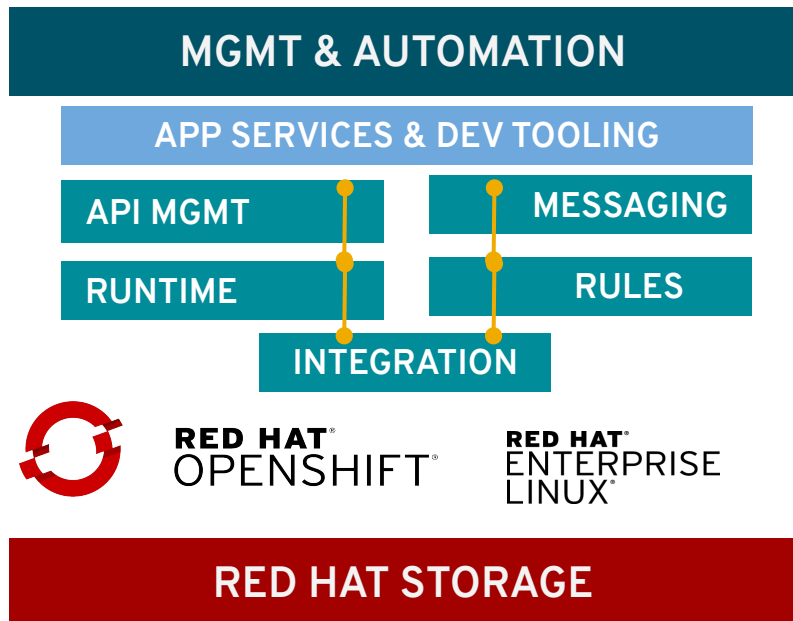


HOW IT'S ALL ENGINEERED TOGETHER MATTERS



WHY RED HAT MIDDLEWARE FOR HYBRID CLOUD?

A unified application environment.
For a faster, flexible cloud-native future



Distributed applications demand more complete and open platforms for innovation – where the connective tissue between applications, data, and users remains strong as needs shift, move, and scale



RED HAT MIDDLEWARE



Red Hat
Runtimes

BUILD & MIGRATE APPS



Red Hat
Integration

COMPOSE & INTEGRATE
APPS



Red Hat
Process Automation

AUTOMATE & OPTIMIZE
BUSINESS PROCESSES



Red Hat
Middleware



PHYSICAL



VIRTUAL



PRIVATE CLOUD

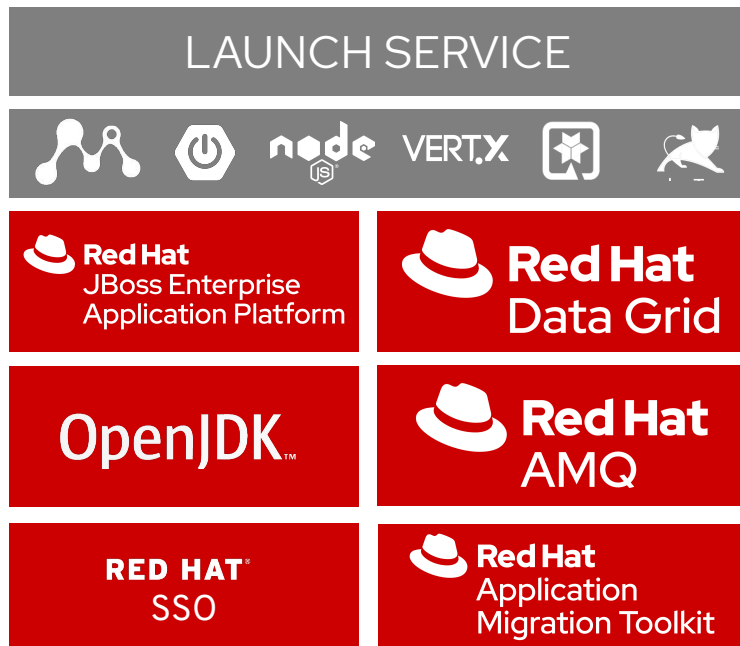


PUBLIC CLOUD

Create, run and maintain traditional and cloud-native apps for on-premise, cloud or hybrid architectures

RED HAT RUNTIMES

Offering lightweight runtimes and frameworks for highly-distributed cloud architectures such as microservices, with distributed in-memory caching for fast data access, single sign-on for authentication and authorization, and durable messaging for reliable data transfer between existing and new applications.



- Best-of-breed runtimes, frameworks and languages
- OpenShift & Kubernetes Services native integration
- Modernization and optimization initiatives
- Established middleware technologies (EAP)
- In-memory data grid
- Standards-based enterprise messaging
- SSO authentication

RED HAT INTEGRATION

Comprehensive set of agile and flexible integration and messaging products that provide service orchestration, cross-datacenter message streaming, and API management for applications that need be integrated with internal and external systems.



Red Hat
Fuse



Red Hat
AMQ



Red Hat
3Scale



Red Hat
Runtimes

- Pattern-based integration engine
- Comprehensive set of connectors and data formats
- Manage and secure access to distributed APIs
- Manage external and internal APIs
- OpenShift & Kubernetes Services native integration
- Standards-based enterprise messaging

RED HAT PROCESS AUTOMATION

Automate business decisions and processes by allowing close collaboration between IT and business teams to capture and enforce business policies and procedures, automate business operations, and measure results of business activities across heterogeneous environments including physical, virtual, mobile and cloud.

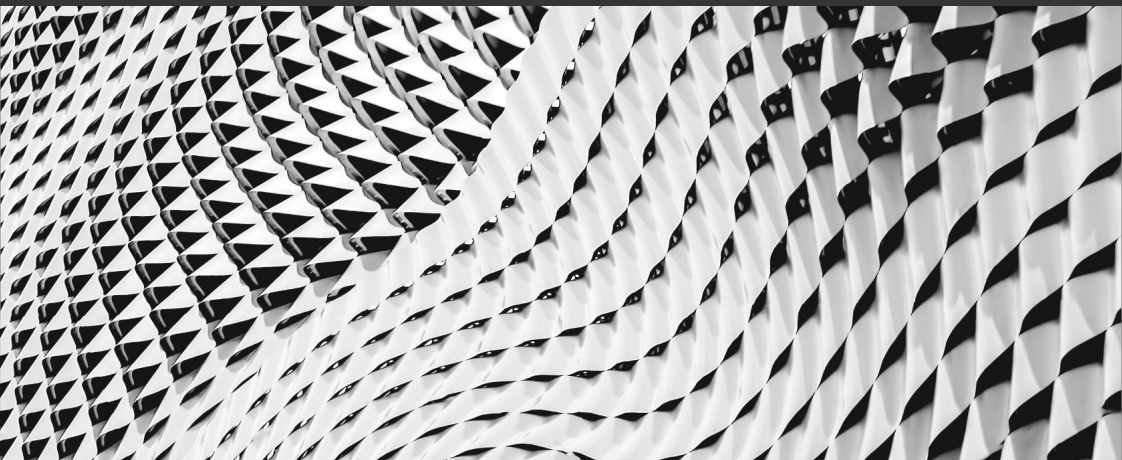
 **Red Hat**
Process Automation
Manager

 **Red Hat**
Decision Manager

 **Red Hat**
Runtimes

- Consistent development model to create & modify business apps
- Process automation & decision making at the microservice level
- One unique platform for business users and developers
- Simplify and accelerate the development, deployment and management of rules and process-centric app

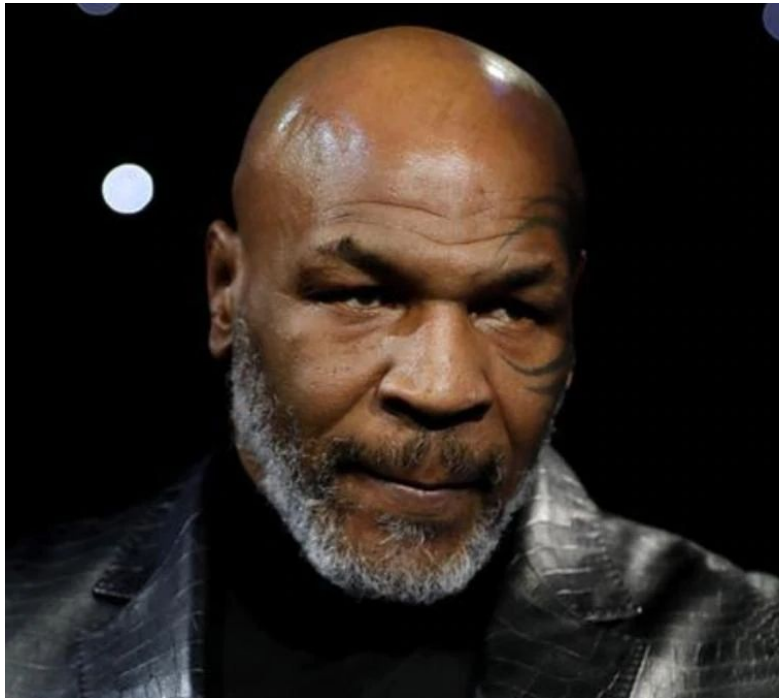
Now what?





"A **good** plan **today** is better than a **perfect** plan **tomorrow**."

George S. Patton



“Everyone has a plan until they get punched in the mouth”

Mike Tyson

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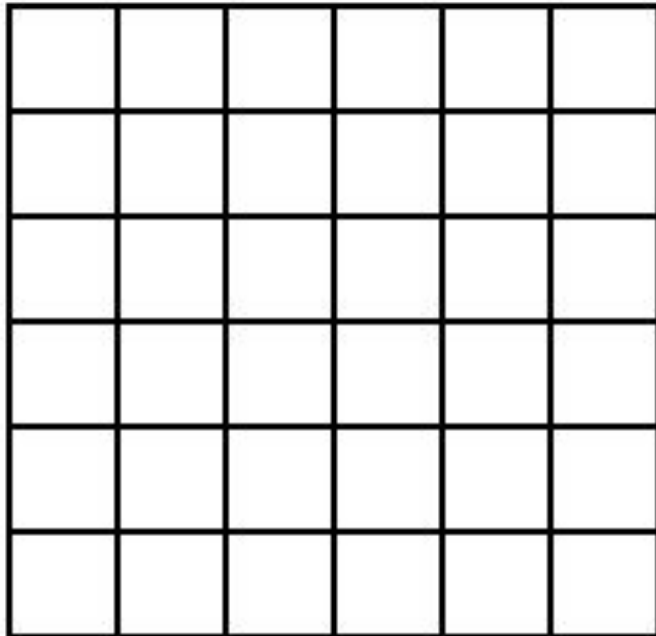
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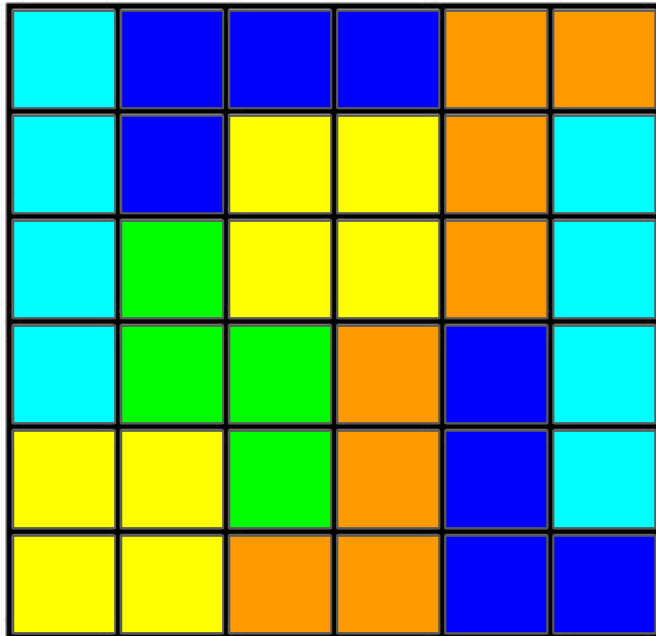
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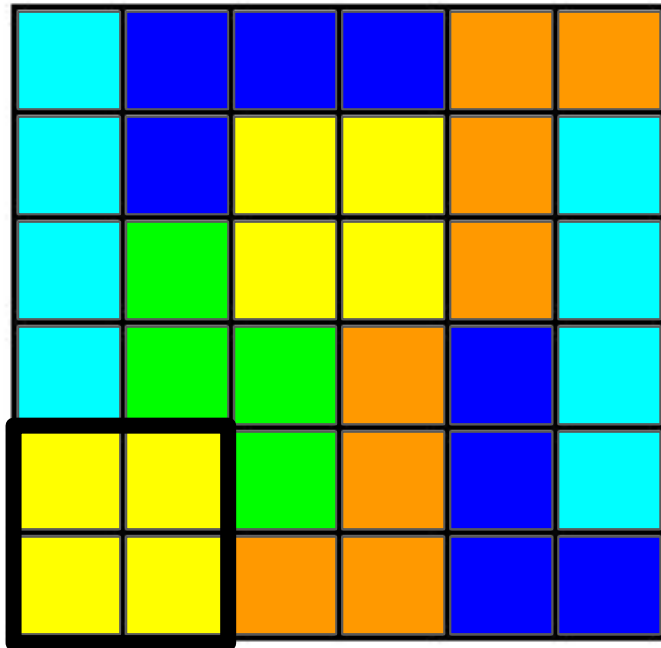
Monolith



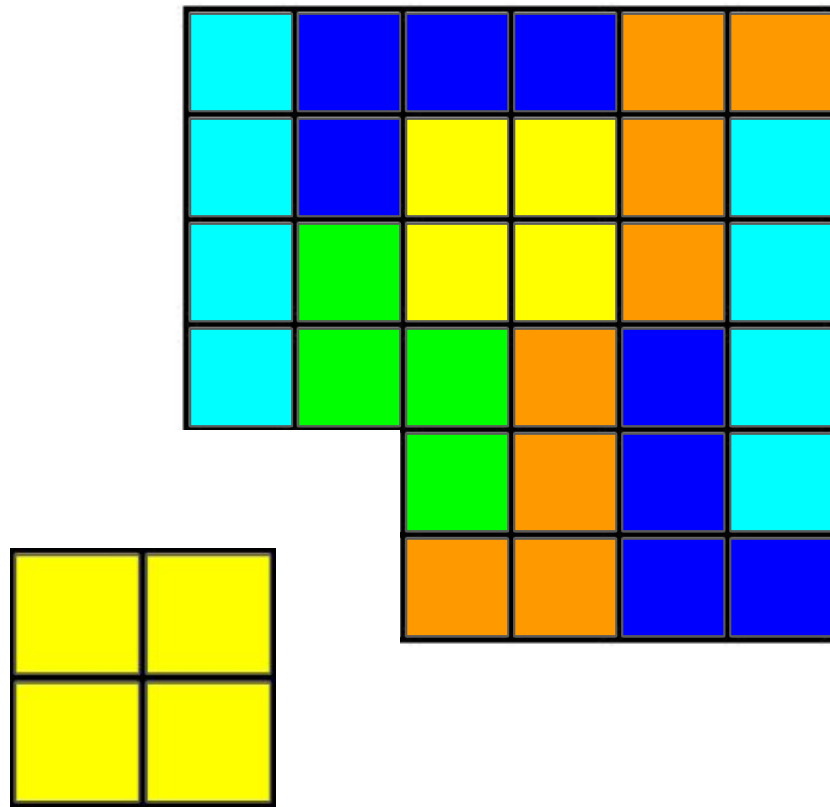
Monolith

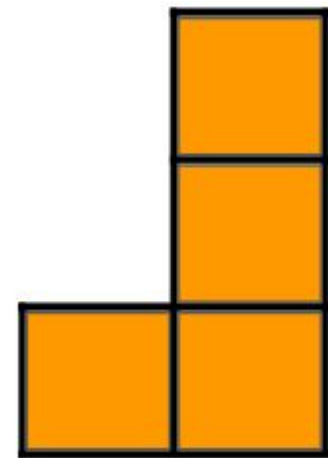
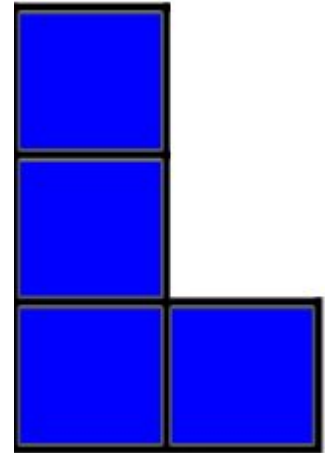
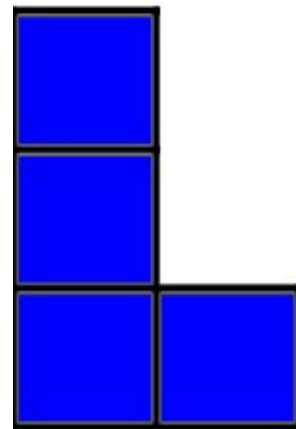
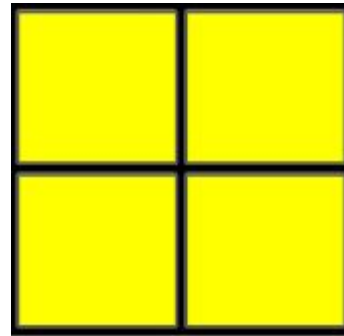
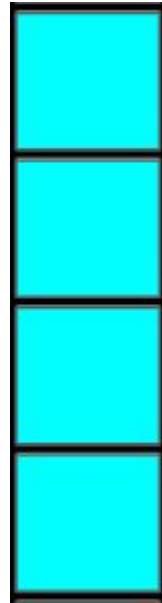
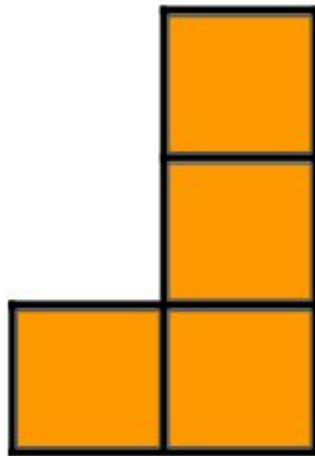
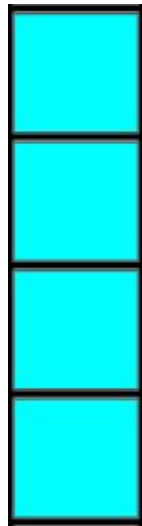
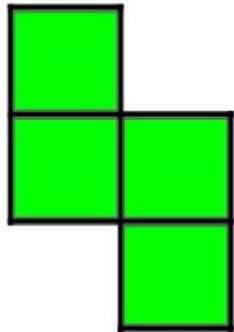
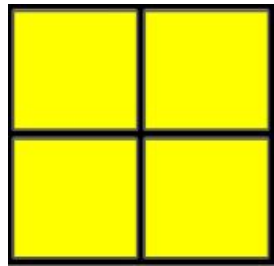


Monolith



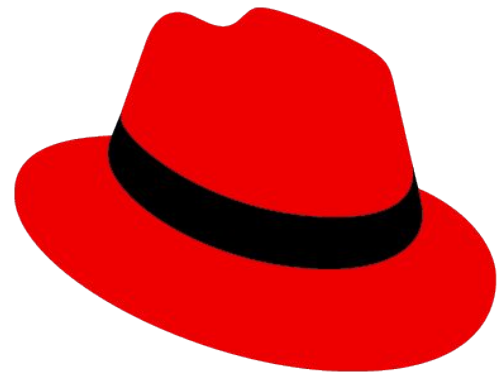
Monolith





References

- ▶ https://medium.com/@doh_88292/a-practical-guide-to-the-journey-from-monolith-to-microservices-e738faa67f38
- ▶ <https://developers.redhat.com/blog/2017/09/26/low-risk-monolith-microservice-evolution-part/>
- ▶



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Title

Presenter's Name

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Title

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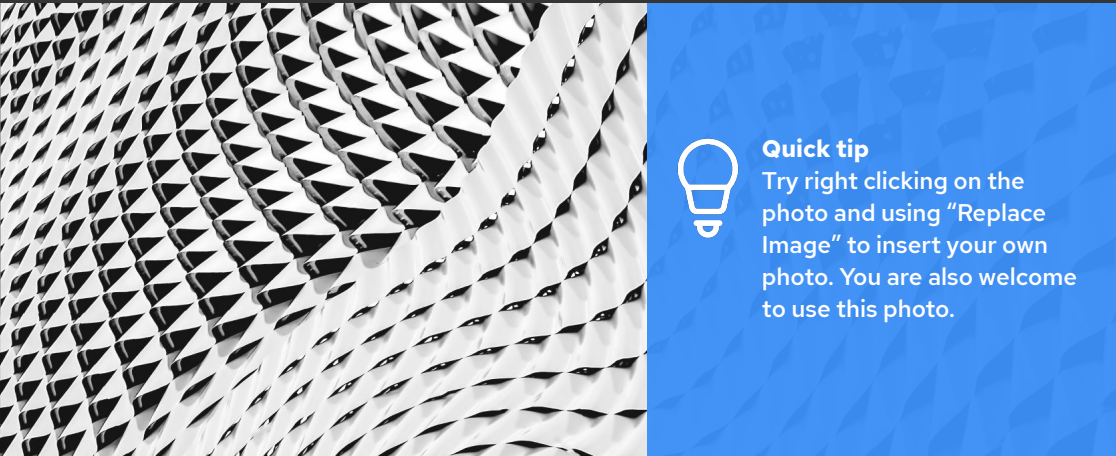
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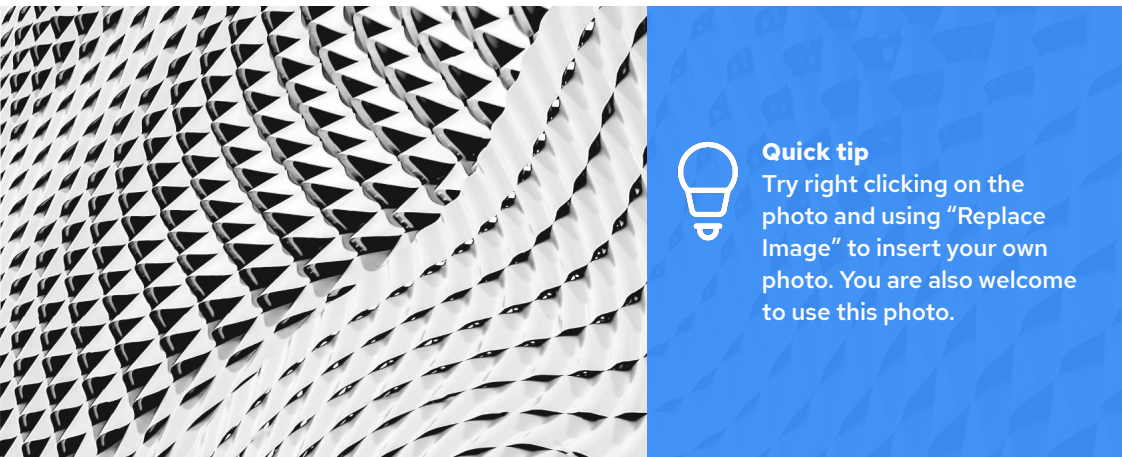
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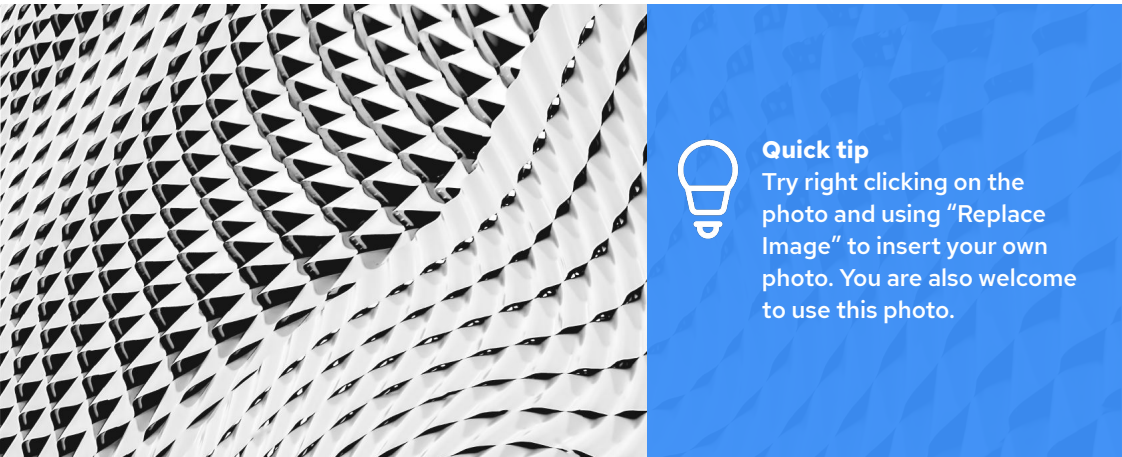
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This section includes:

Agenda slide templates

Content slide templates

Quote slide templates

What we'll discuss today

Topic

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What we'll discuss today

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Quick tip

Insert image in this designated area, deleting the shaded background. Keep the left and right margins clear to maintain the open feel in accordance with the brand.

If no subheading is needed, delete the subheading text, and the content can extend into the lighter shaded area.

Quick tip

Insert image in this designated area, deleting the shaded background. Keep the left, right, top, and bottom margins clear to maintain the open feel in accordance with the brand.

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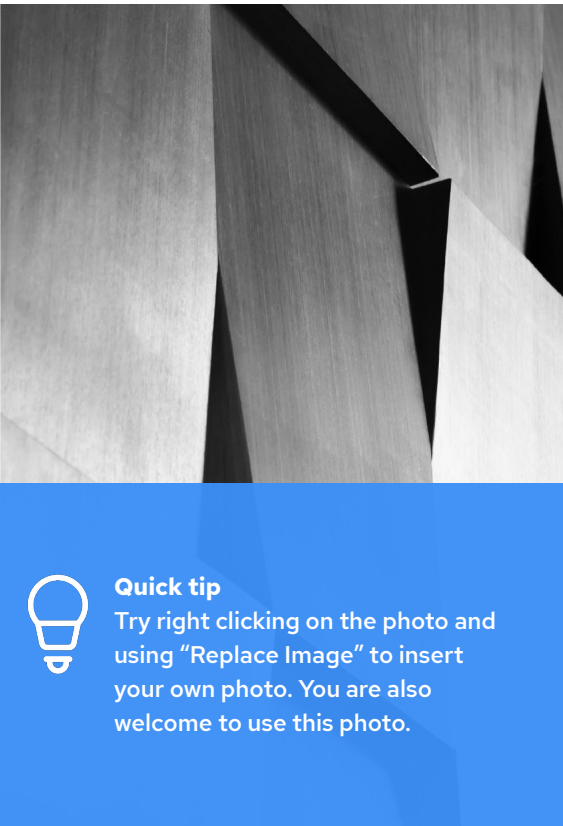
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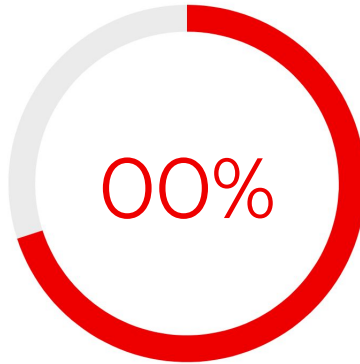


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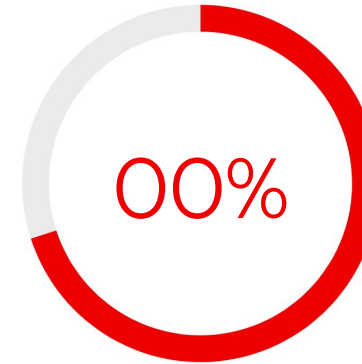
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Quick tip

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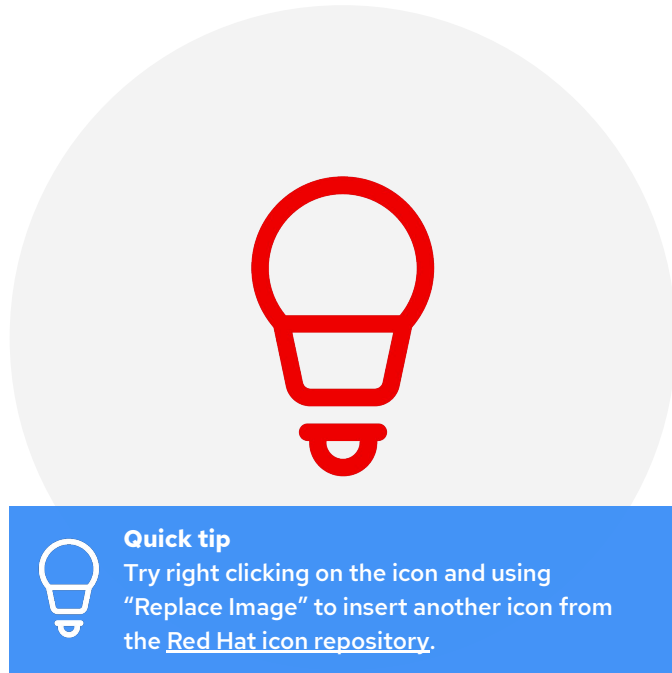


Quick tip

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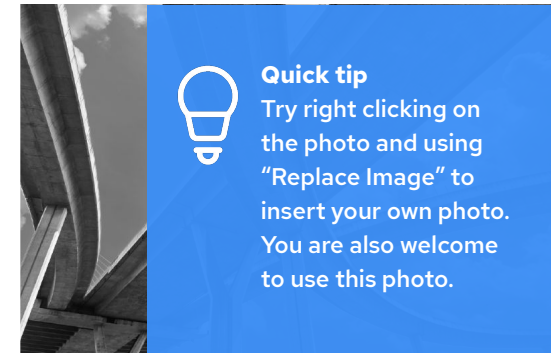
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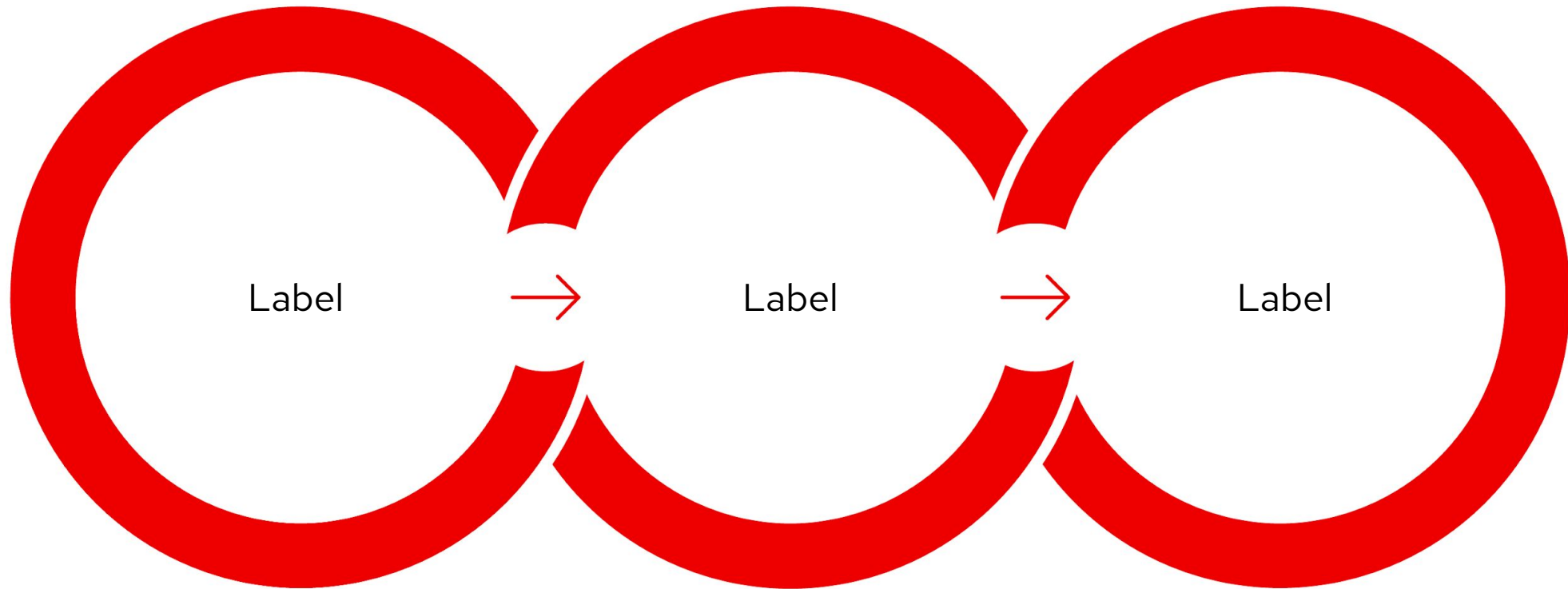


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John Doe
CTO, Acme Unlimited



Quick tip

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John Doe
CTO, Acme Unlimited

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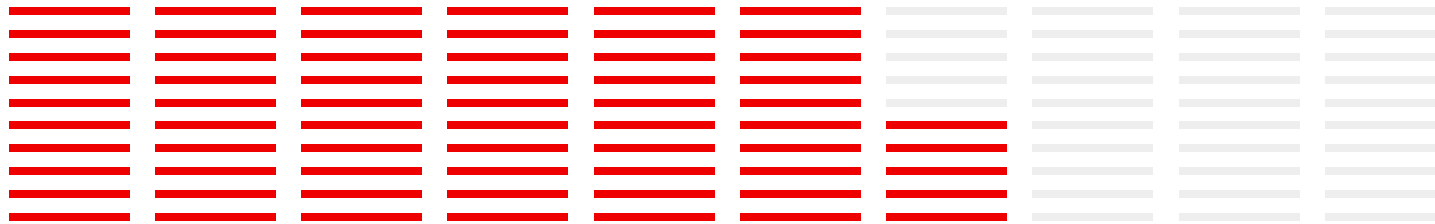
Data slide templates

Table slide templates

Timeline slide templates

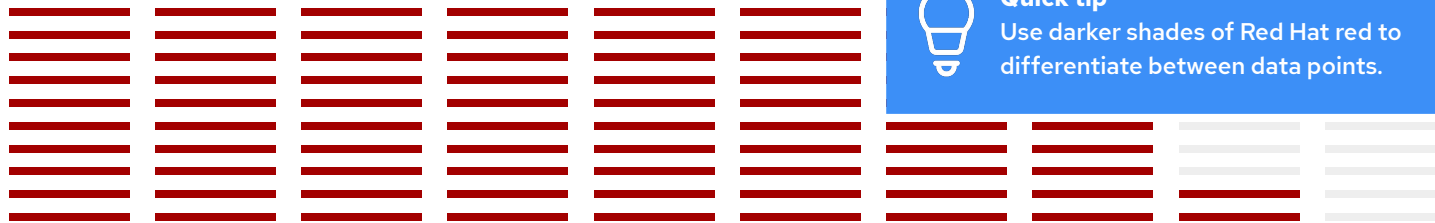
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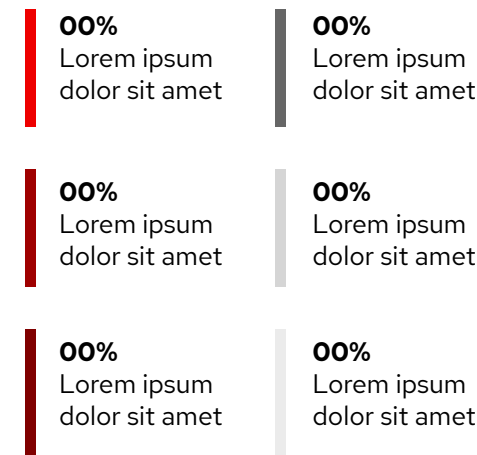
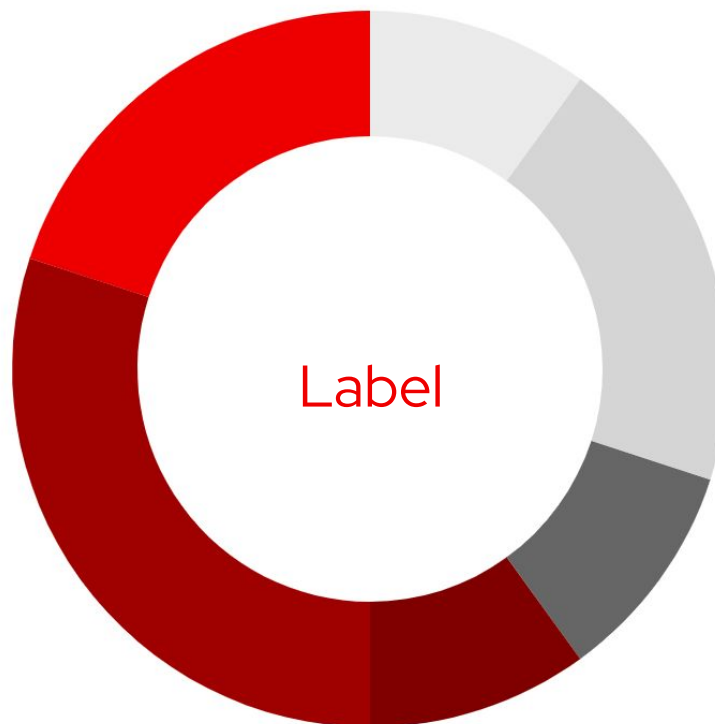
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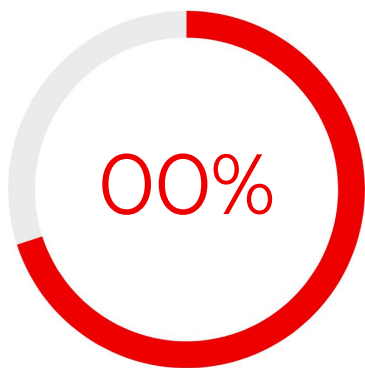


Quick tip

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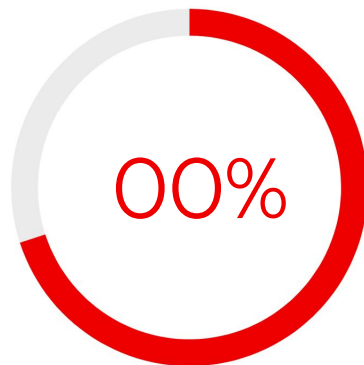
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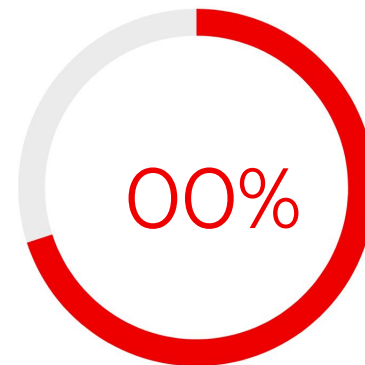
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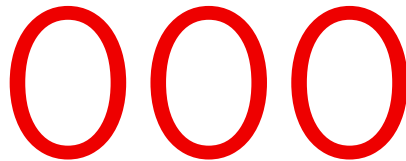
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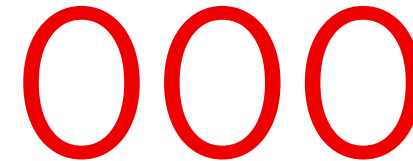
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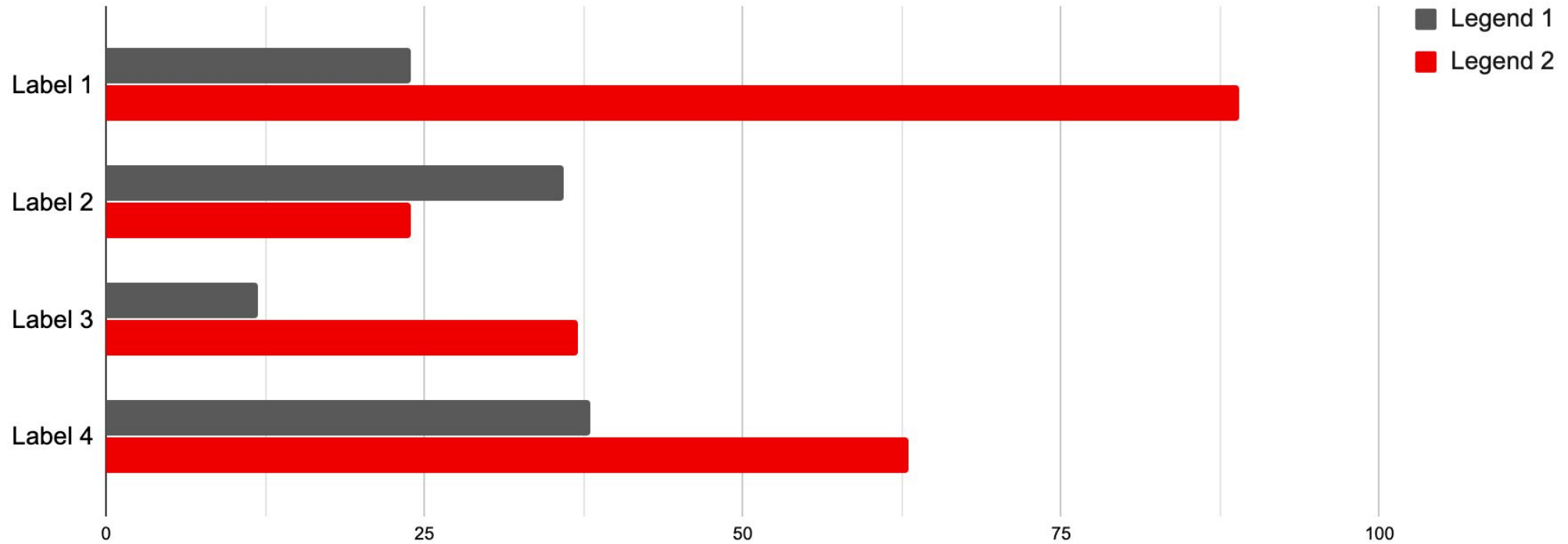
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Quick tip

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Optional section marker or title

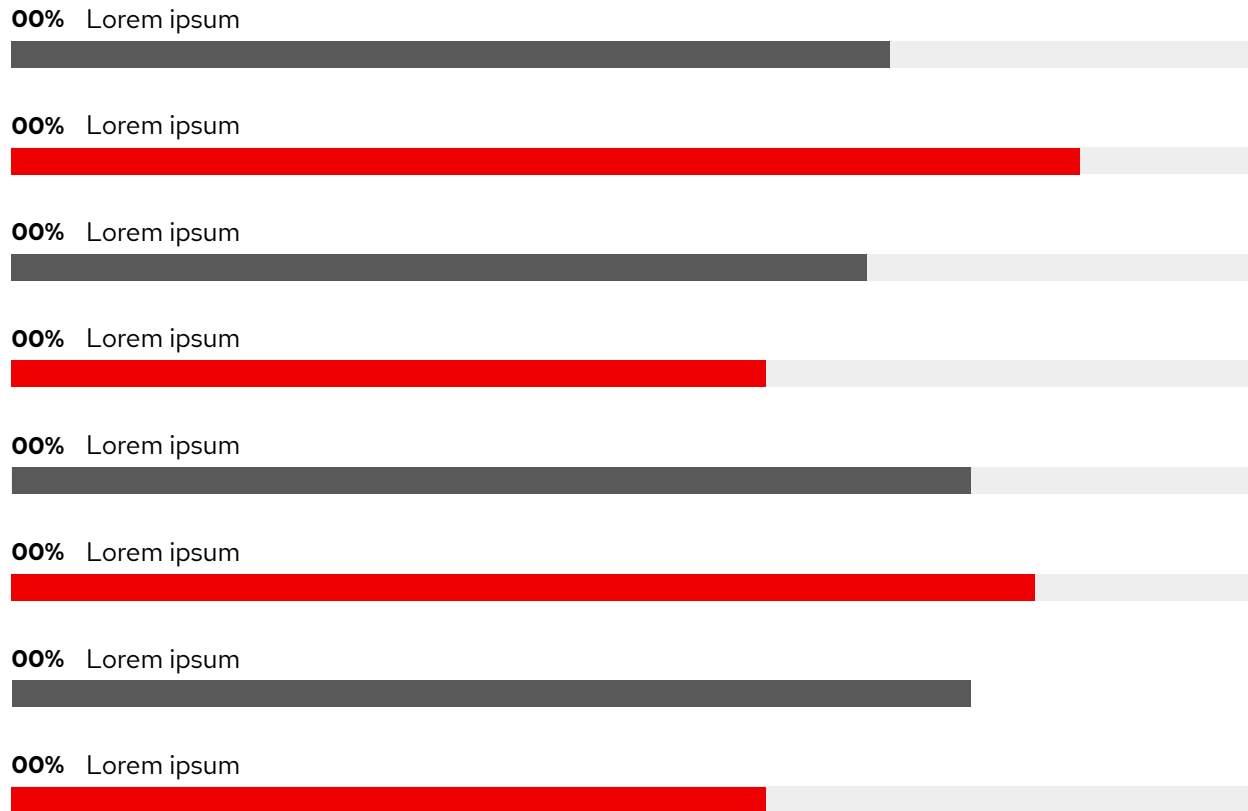
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01 Title of table

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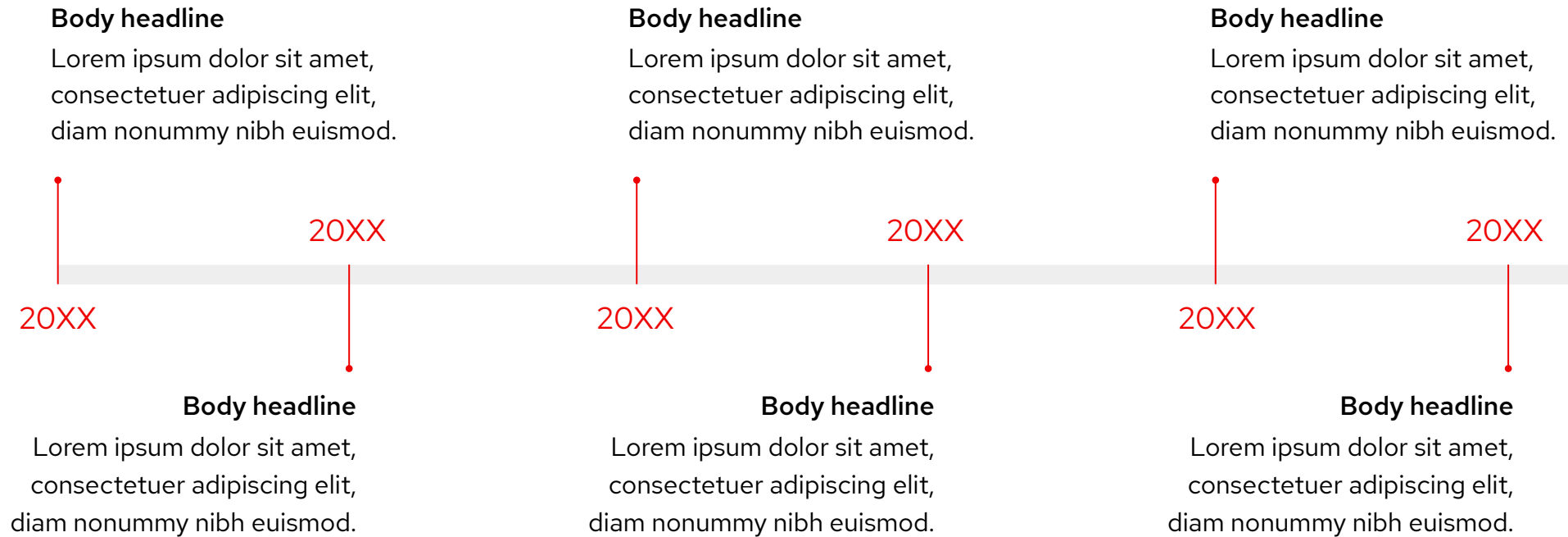
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Quick tip

Try right clicking on the photo and using "Replace Image" to insert your own photo. You are also welcome to use this photo.