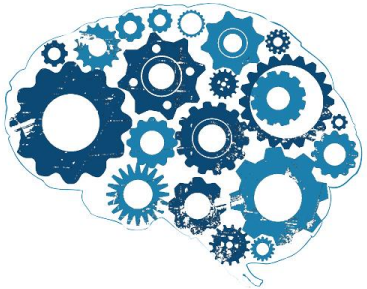
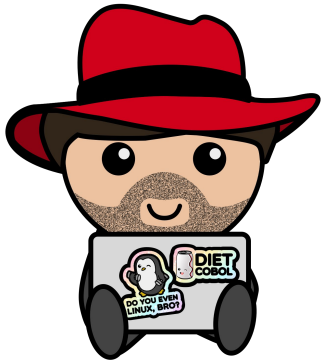
what got you here won't get you there

Matt Stratton
Transformation Specialist, Red Hat

DevOpsDays Cairo 2020

who am i?





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why are we here?

Why are we here

Kubernetes	Containers	CI/CD
AI/ML	Cloud Native	Microservices
Cloud	Big Data	Serverless

Why are we here

Why are we here

Why are we here

Why are we here

United States Postal Service Strategic Goals

Goal 1. Deliver world-class services and customer experiences.

Goal 2. Equip, connect, engage, and empower employees to serve our customers.

Goal 3. Innovate faster to deliver value.

Goal 4. Invest in future platforms.

Goal 5. Pursue legislative and regulatory changes necessary to achieve financial sustainability

Why are we here

JPMorgan Chase & Co.

Mission Statement: To be the best financial services company in the world.

Vision Statement: Aspire to be the best; execute superbly; build a great team and a winning culture

Why are we here

We promise our customers stellar service, our suppliers a valuable partner, our investors the prospects of sustained profitable growth, and our employees the allure of huge impact

Why are we here

None of these things mentioned containers or Kubernetes

Why are we here

Technology is an *enabler*, not the mission

the only constant is change

The Rise of Cloud

"...cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

- NIST Cloud Computing Definition

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The Rise of Cloud

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"...cloud computing is a model for enabling ubiquitous, convenient, **on-demand** network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be **rapidly provisioned** and released with minimal management effort or service provider interaction."

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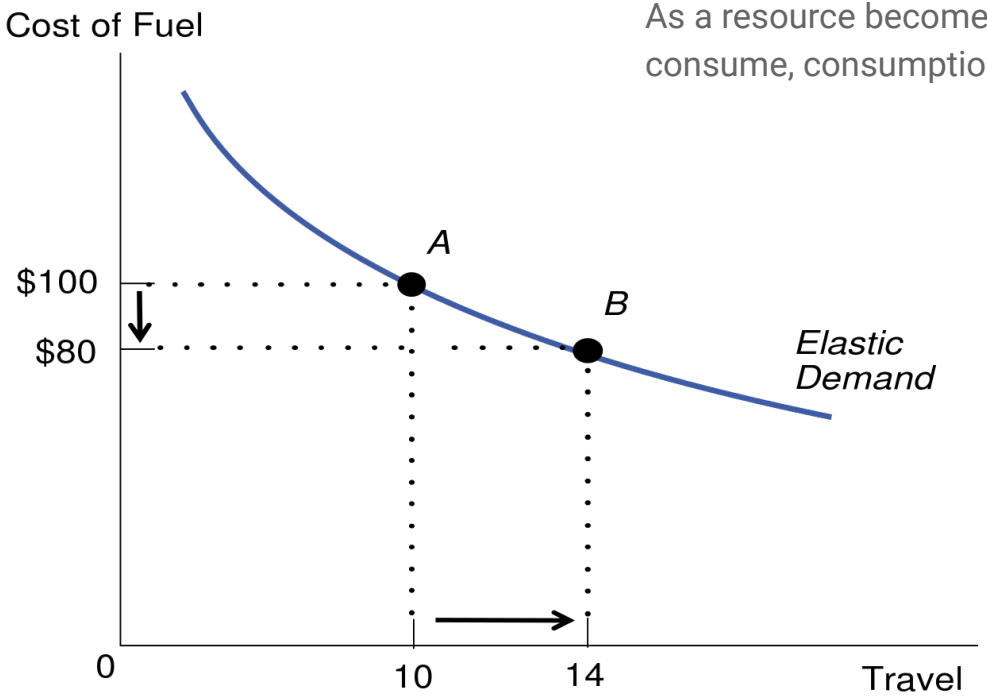
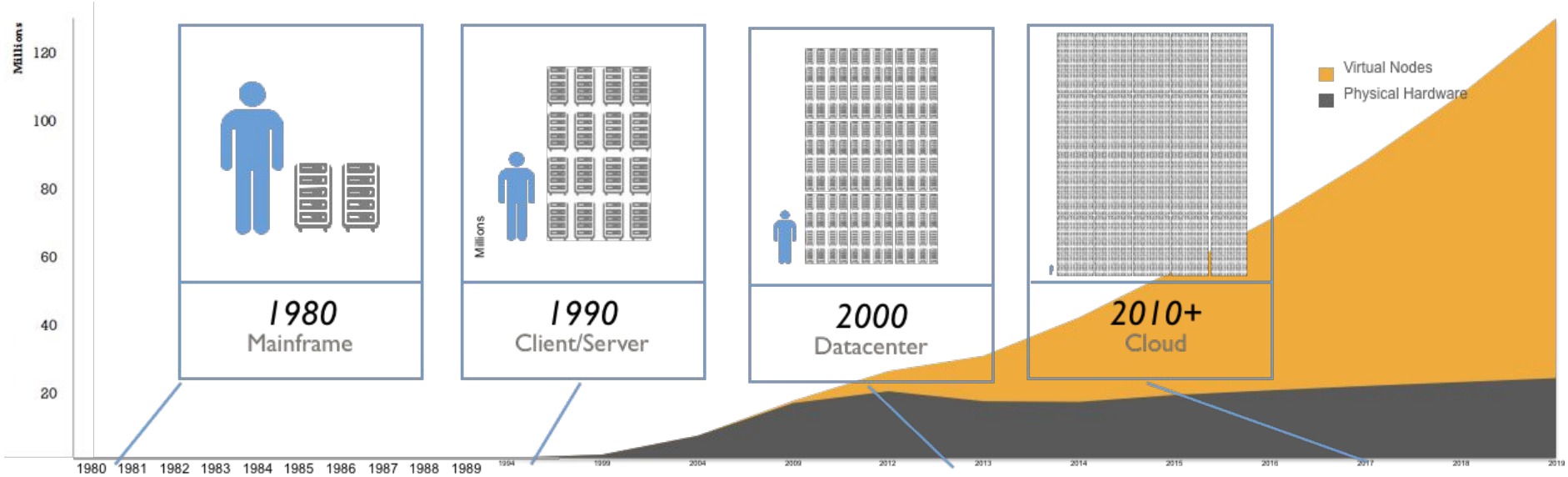
Jevon's Paradox



As a resource becomes more efficient (easier) to consume, consumption of the resource rises.

The Rise of Cloud

Consumption of compute is at an unprecedented level.



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Cloud has overwhelmed IT.

the “why” of devops

Containers, Containers, Containers

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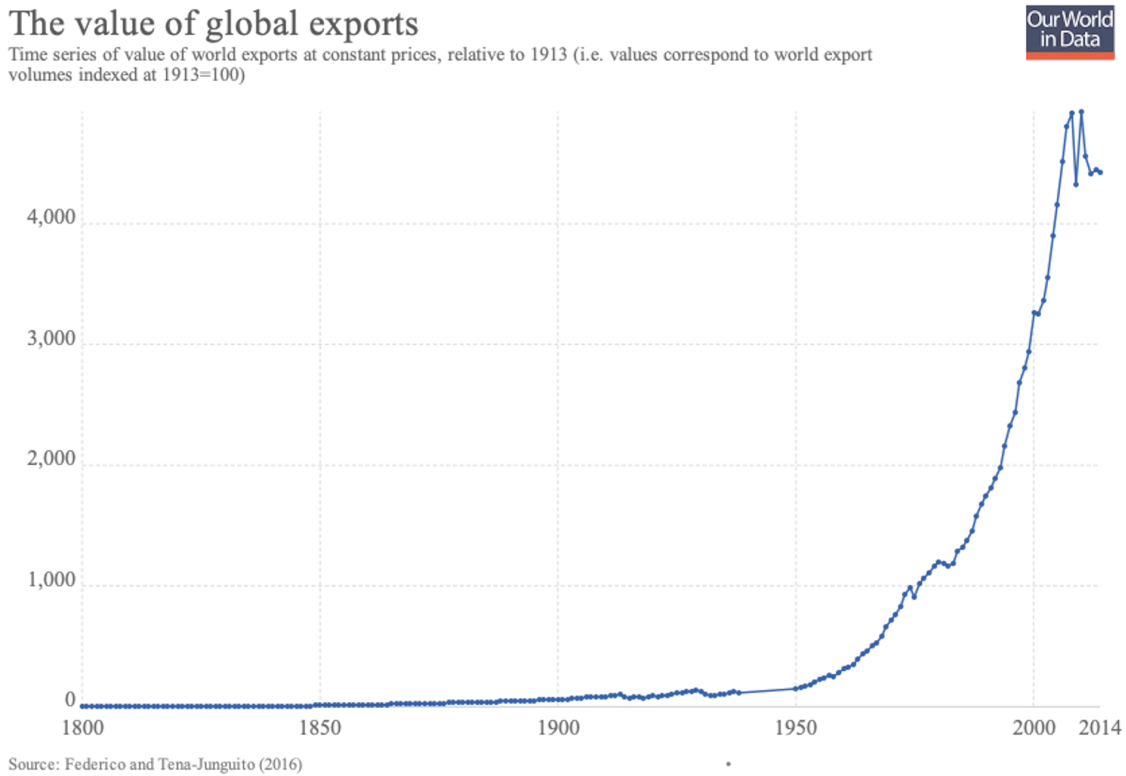
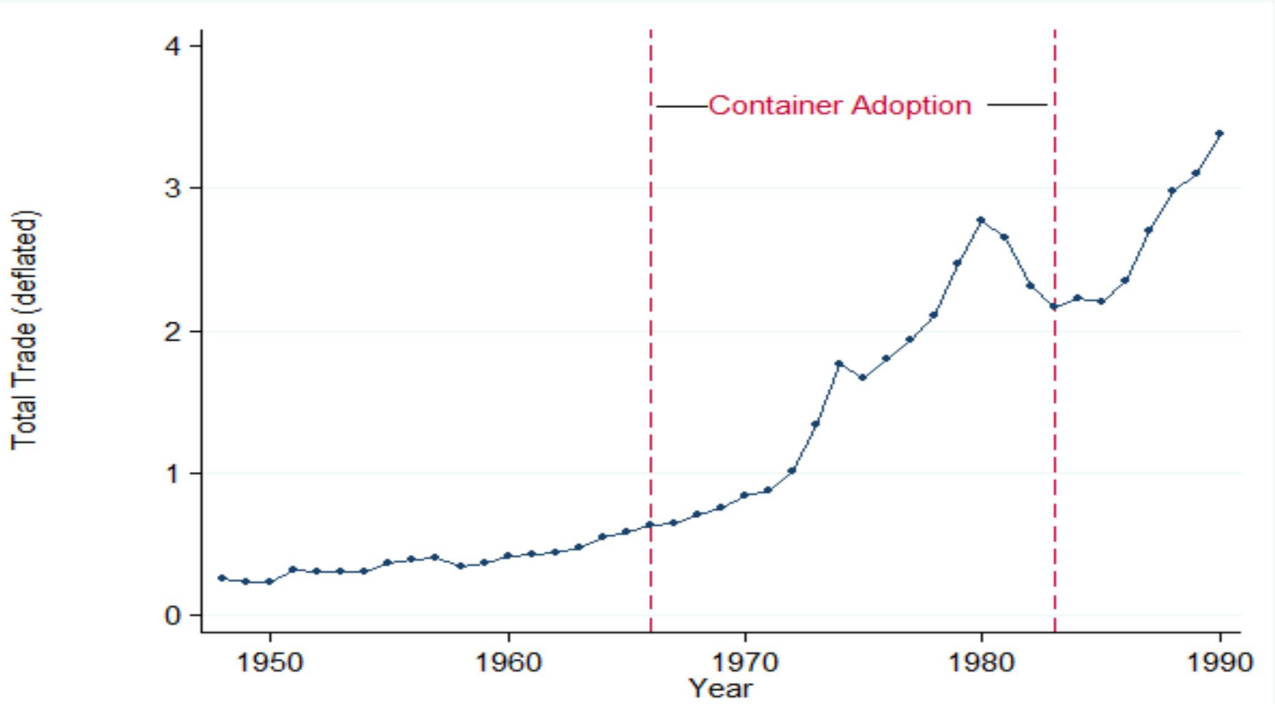
The Rise of Global Trade



Containers dramatically changed global trade.



Containers dramatically changed throughput of ports.

Table 1: Effects of containerization (UK/Europe)

	Pre-container: 1965	**Container: 1970/71**
Productivity of dock labor	1.7 (tons per hour)	30 (tons per hour)
Average ship size	8.4 (average GRT)	19.7 (average GRT)
Port concentration (number of European loading ports, southbound Australia)	11 ports	3 ports
Insurance costs (Australia-Europe trade for imports)	£0.24 per ton	£0.04 per ton
Capital locked up as inventory in transit (Route: Hamburg-Sydney)	£2 per ton	£1 per ton

Containers disrupted the entire supply chain.

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Containers disrupted the entire trade supply chain.

- Retool:
  - New trailers
  - New train cars
  - New cranes/lifts for ports
  - New design for ports
- Retrain:
  - Port workers move from manual labor to skilled labor
- Rethink:
  - Business models/pricing/costs change
  - Processes for cargo handling change

Cloud (and containers) have disrupted IT.

- Retool
  - On-demand infrastructure
  - Continuous Delivery
  - Automation
  - Measure everything
- Retrain
  - Develop skills for new technology & ways of working
- Rethink
  - Delivery processes
  - Site Reliability
  - Culture
  - Blamelessness/Learning From Incidents
  - Iterative development

DevOps is the union of people, process, and products to enable continuous delivery of value to our end users

Donovan Brown

Principal Cloud Advocate, Microsoft

Optimizing the human experience and performance of operating software with software and humans

Andrew Clay Shafer

Vice President, Global Transformation Office,
Red Hat

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Defining DevOps: CALMS

Culture

Automation

Lean

Measurement

Sharing

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Defining DevOps: **Culture**

People over process

Focus on learning

Psychological safety

Ideas from anyone

Defining DevOps: **Automation**

Automation of your entire software delivery lifecycle through:

Infrastructure as Code

Continuous Integration

Continuous Delivery

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Defining DevOps: Lean

Leverage Operations Management principles

Toyota Production System

Focuses on removing waste from processes

Defining DevOps: **Measurement**

Measure:

Performance Metrics

Process Metrics

People Metrics

Defining DevOps: **Sharing**

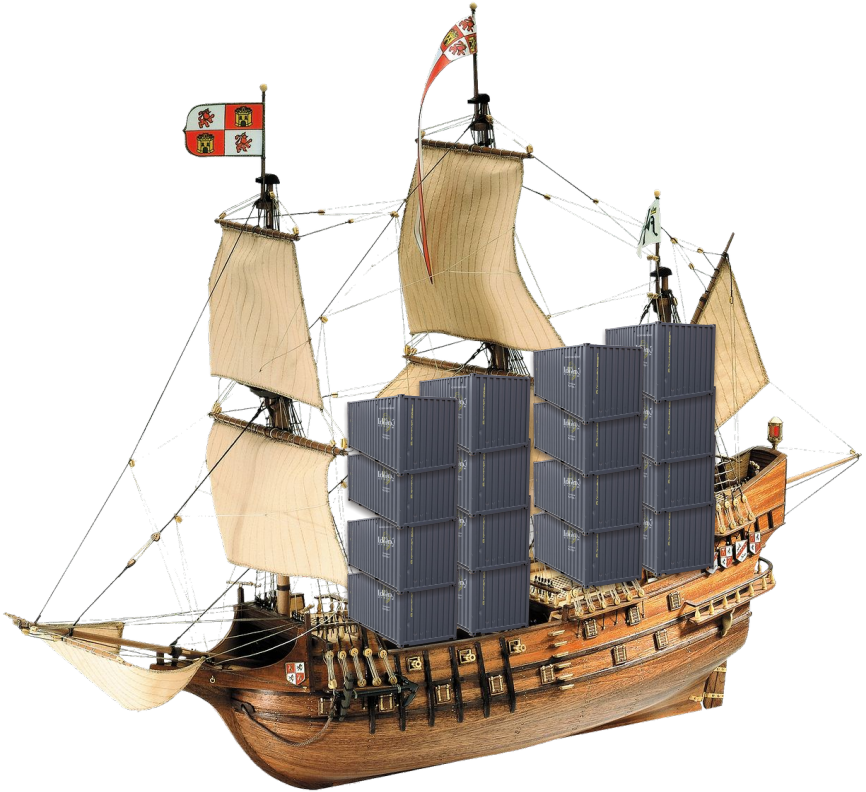
Adopting the principles of “Open”:

Intra-organization

Inter-organization

Sharing best practices and learnings to improve the overall industry.

The old way is not sustainable.



The old way is not sustainable.

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what got you here won’t get you there

IT must evolve their supply chain

How to Evolve the IT Supply Chain

Culture & Lean

Startups aren’t the only disruptor

COVID-19 made plans go out the window

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Resilience is a verb

Resilience

Rebound

Robustness

Graceful Extensibility

Sustained Adaptability

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Rebound

Returning to “normal” after a surprise or incident.

Work done ahead of time.

Robustness

The ability to withstand and absorb well-modeled disturbances

“Known knowns”

Graceful Extensibility

The ability to stretch with challenges to operational boundaries

As opposed to brittleness.

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Sustained Adaptability

Recognizing and managing adaptive capabilities over long timescales

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Why Culture?

Tools influence the culture

...and culture influences the tools

these are socio-technical systems

Why Culture?

Fundamental to how teams operate and interact in a DevOps world.

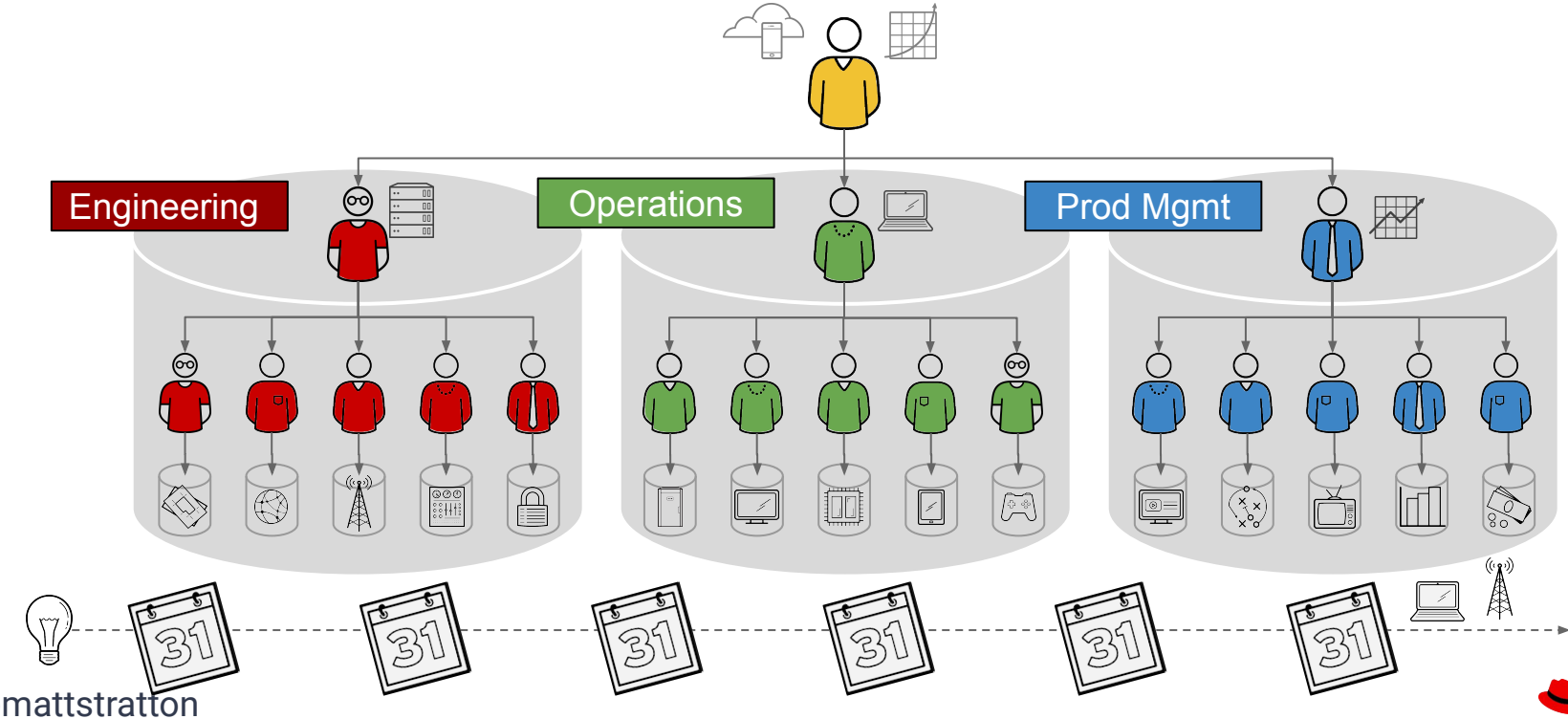
Allows team members and teams to define “how” they want to work and interact with one another.

Creates “easy” wins that can show success to build on.

Establishes and reinforces the other principles of CALMS

Siloed for Protection

The result of throwing over the fence
Conway's Law as a downstream effect



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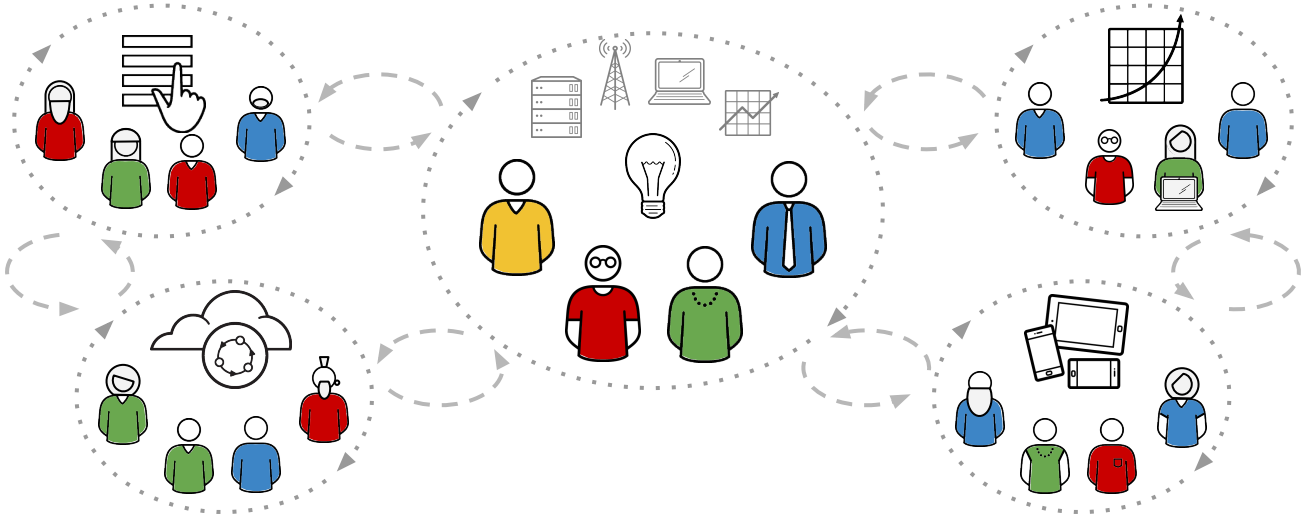
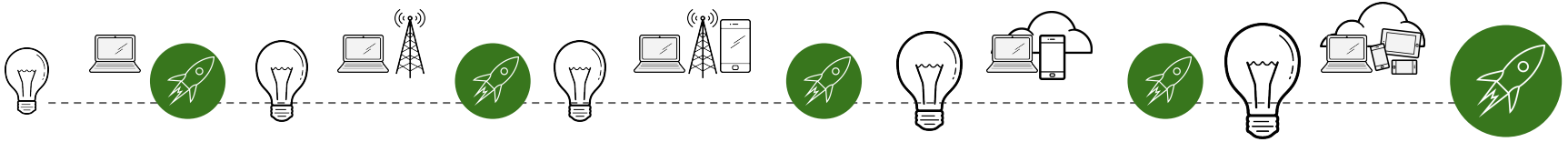
The Open Organization

Bottom-up, Collaborative, Continuous Innovation, Agile





Blunt / Sharp End

Blunt End

Removed from experience

Upstream decision makers

Sharp End

People directly engaged in the work

“Chop wood, carry water”

Sharp End

Constantly building and destroying systems

Strong signaling

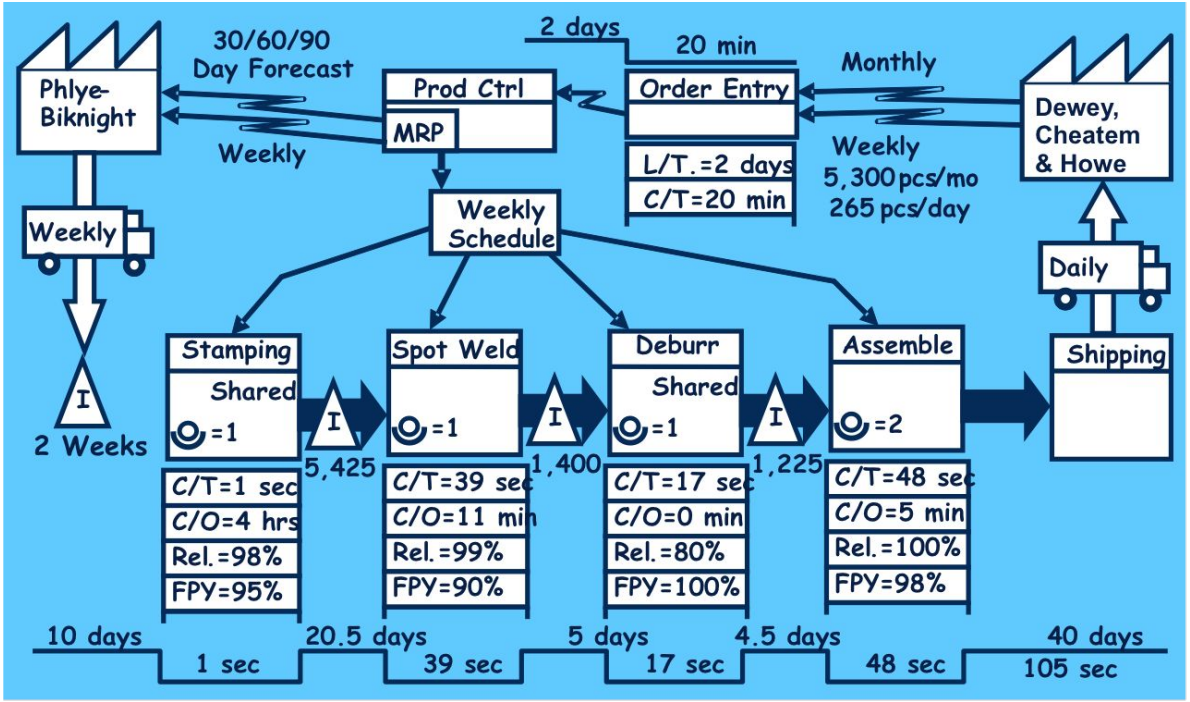
Improve systems based on strain

Will do so naturally if given ownership

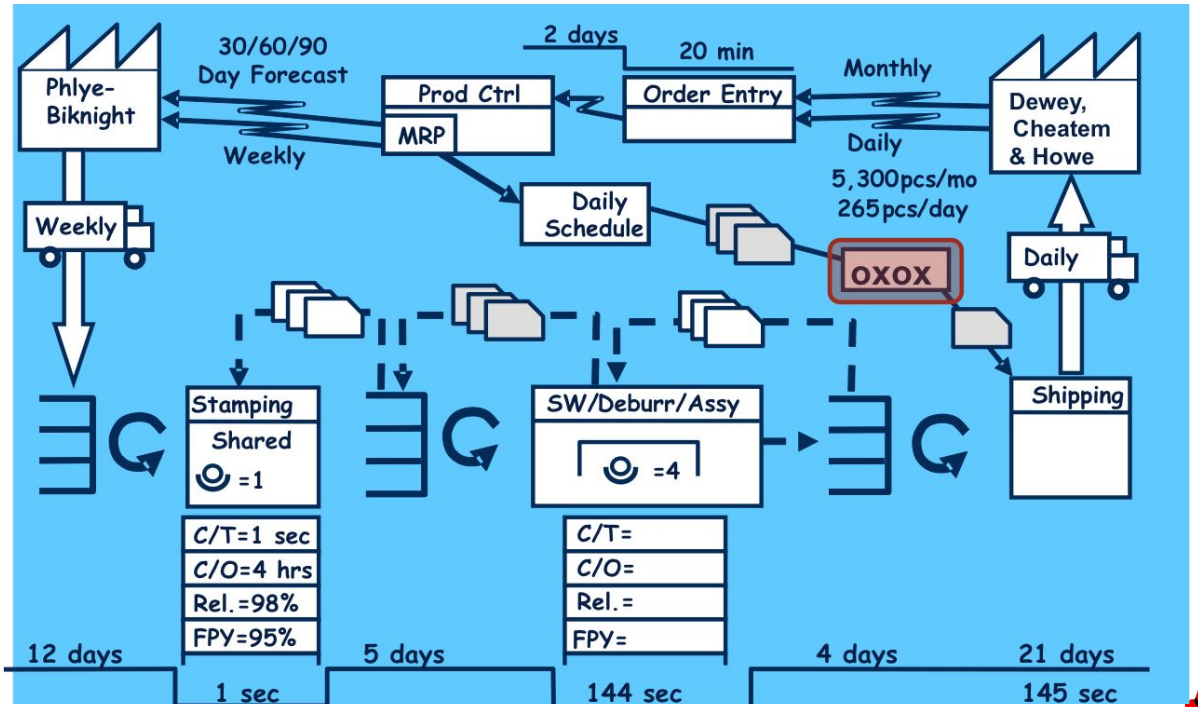
Why Lean?

- Provides hyper focus for teams on what problems to solve and how
- Findings of exercises heavily influence other areas of CALMS:
  - What should we **Automate**?
  - How are we going to **measure** metrics and process improvements?
  - How do we **share** best practices, success, experiences?
- Influences other ways to work such as Agile Software Development, Infrastructure as Code, etc

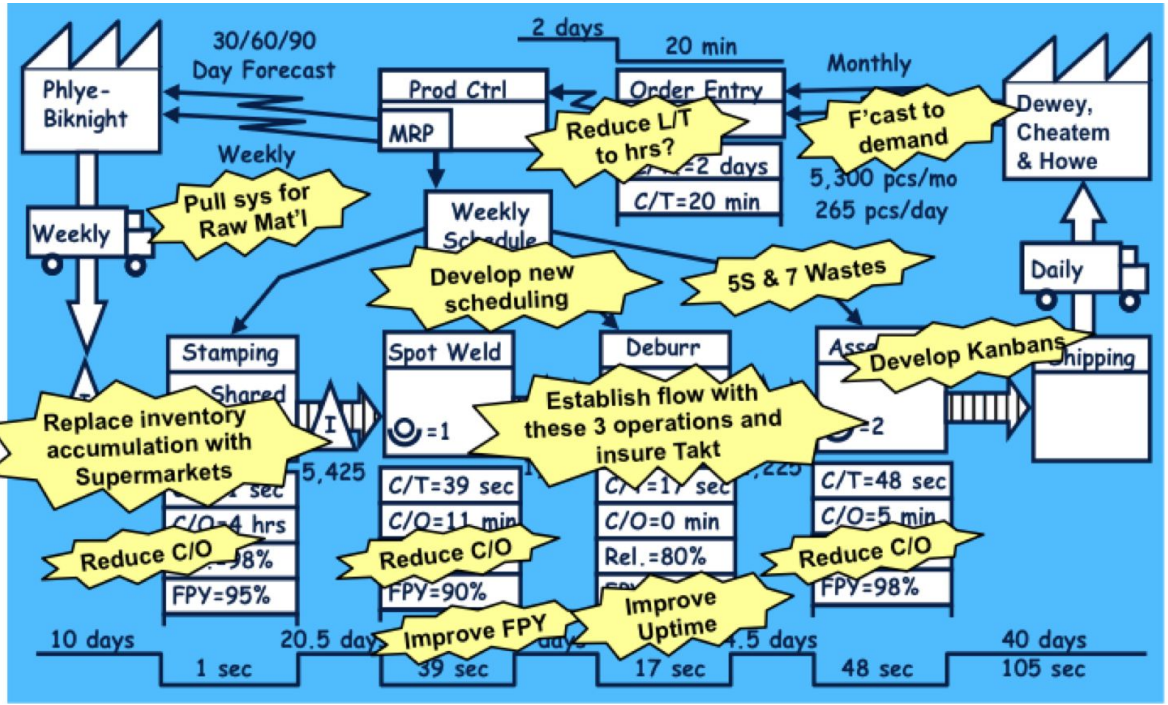
Value Stream Mapping: Current State Map



Value Stream Mapping: Future State Map



Value Stream Mapping: Improvement Plan



the five elements of transformation

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Five Elements

The approach expands the transformation conversation from **Agile Processes and Software Development** to include, **Leadership, Product, Architecture**, and **Operations.**

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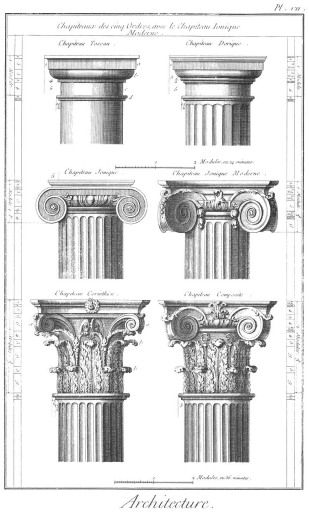
Expanding the Cloud Native Transformation

These establish a holistic system to address the concerns and needs of enterprises, moving away from a mindset of mere efficiency towards organizations that leverage technological advantage.



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Cloud Native Transformation towards a Digital Future

Expanding The Transformation Conversation

Leadership

Leadership, enabling peer level conversations and creating a balanced system of increasing strategic optionality.

Product

Working with teams to create strategies for creating and capturing differentiated value by moving from a project-centric to a product-centric mentality

Development

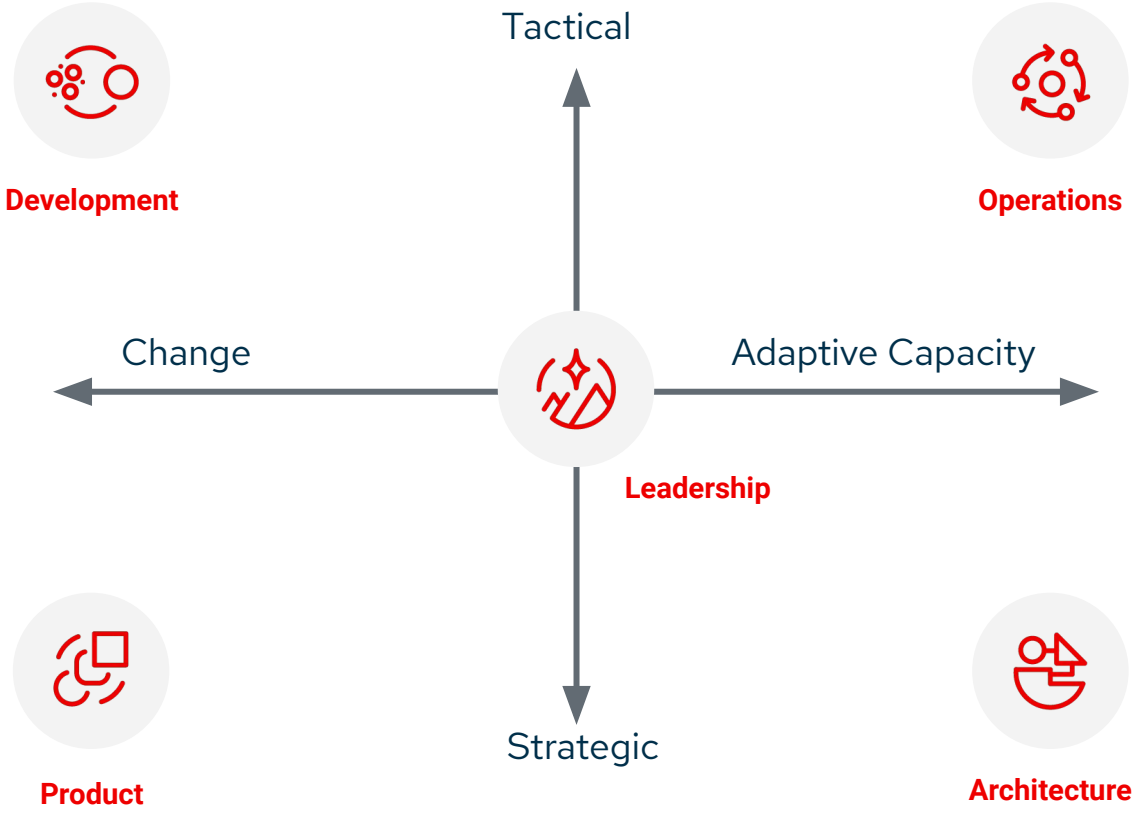
High quality execution of strategies using aligned tactics, practices, and tools such as agile methodologies and software factories.

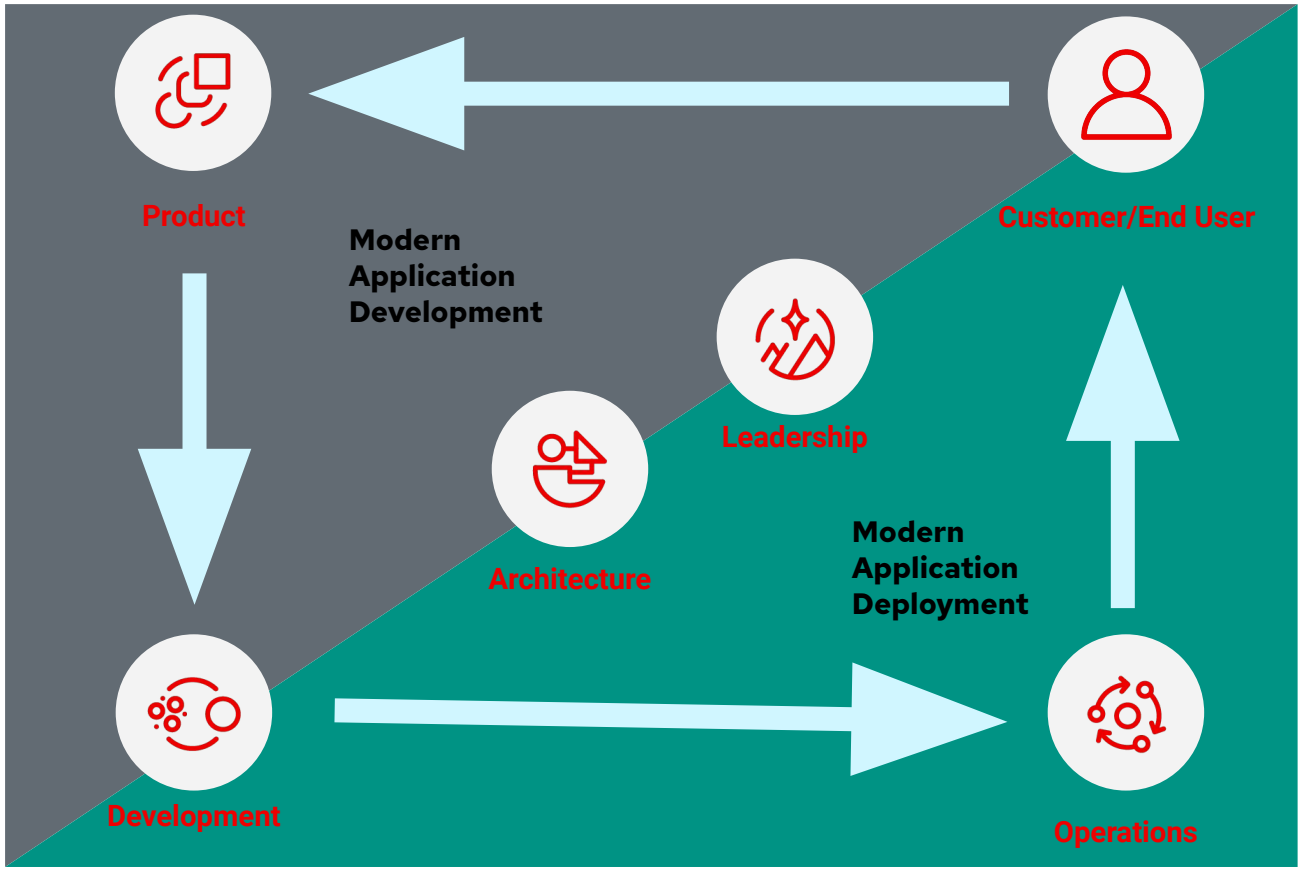
Architecture

Creating enterprise wide patterns and frameworks, to accelerate product development and ensure long term quality.

Operations

Operational Excellence, establishing a foundation of resilience from merely reliable components.


Tactical
Development
Operations
Change
Adaptive Capacity
Leadership
Strategic
Product
Architecture


Product
Customer/End User
Modern
Application
Development
Leadership
Architecture
Modern
Application
Deployment
Development
Operations

Summary

Remember the mission

Remember the holistic nature of DevOps.

Avoid overemphasis on one area

Start with Culture & Lean, the rest will fall out of those two principles

Understand the supply chain & Five Elements to achieve scale

Thank You

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