what got you here won't get you there

Matt Stratton
Staff Developer Advocate, Pulumi

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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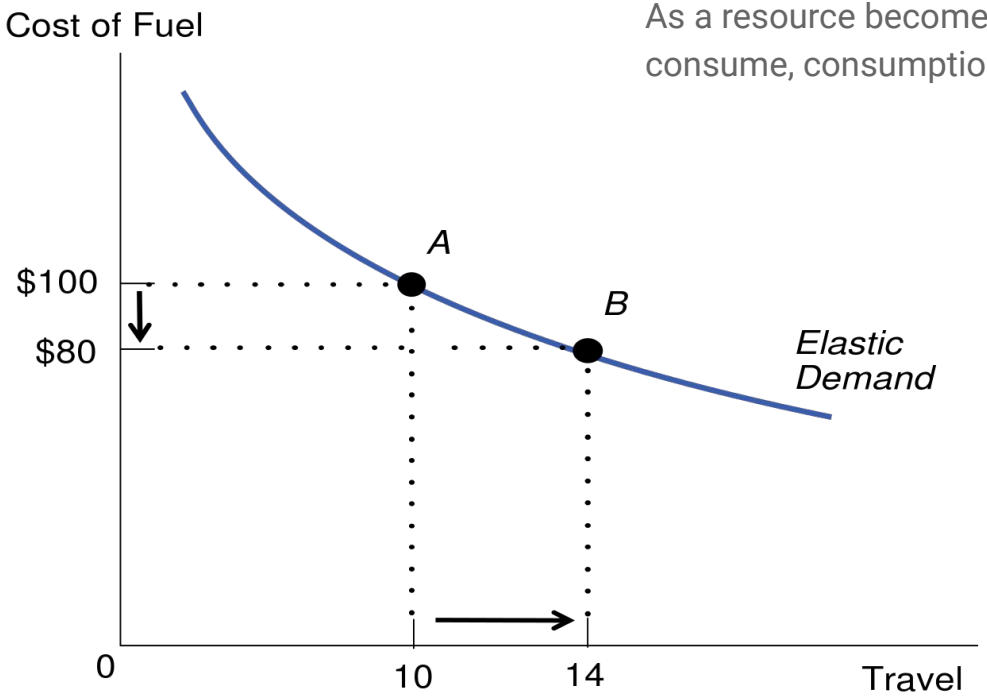
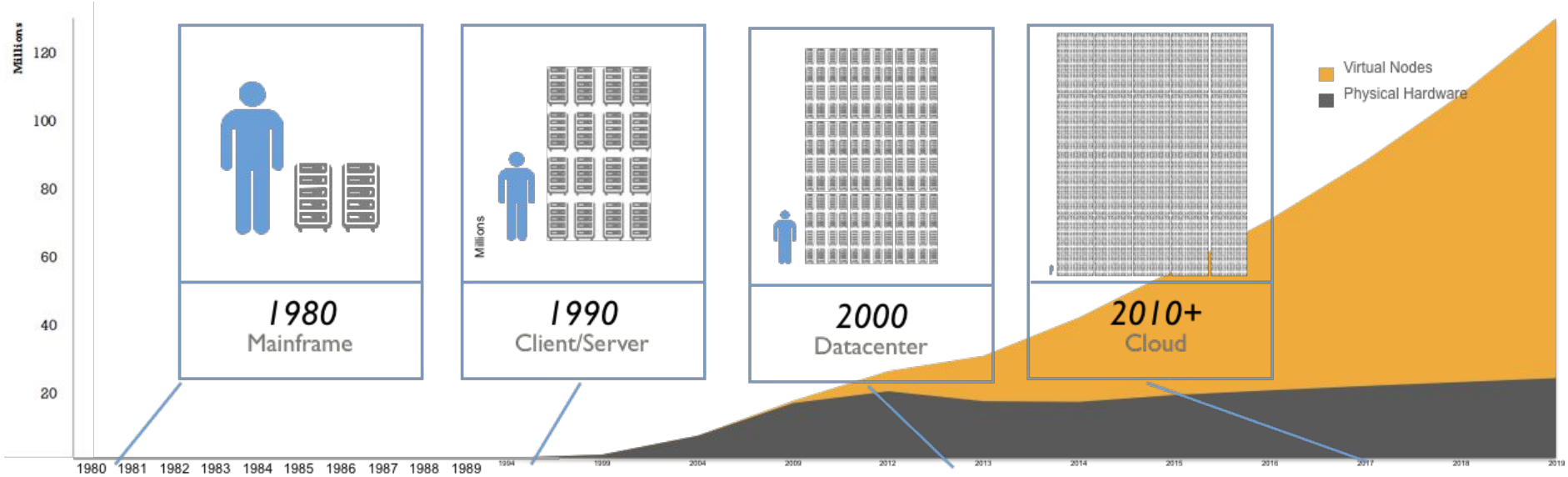
Jevon's Paradox



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.



Cloud has overwhelmed IT.

the “why” of devops

Containers, Containers, Containers

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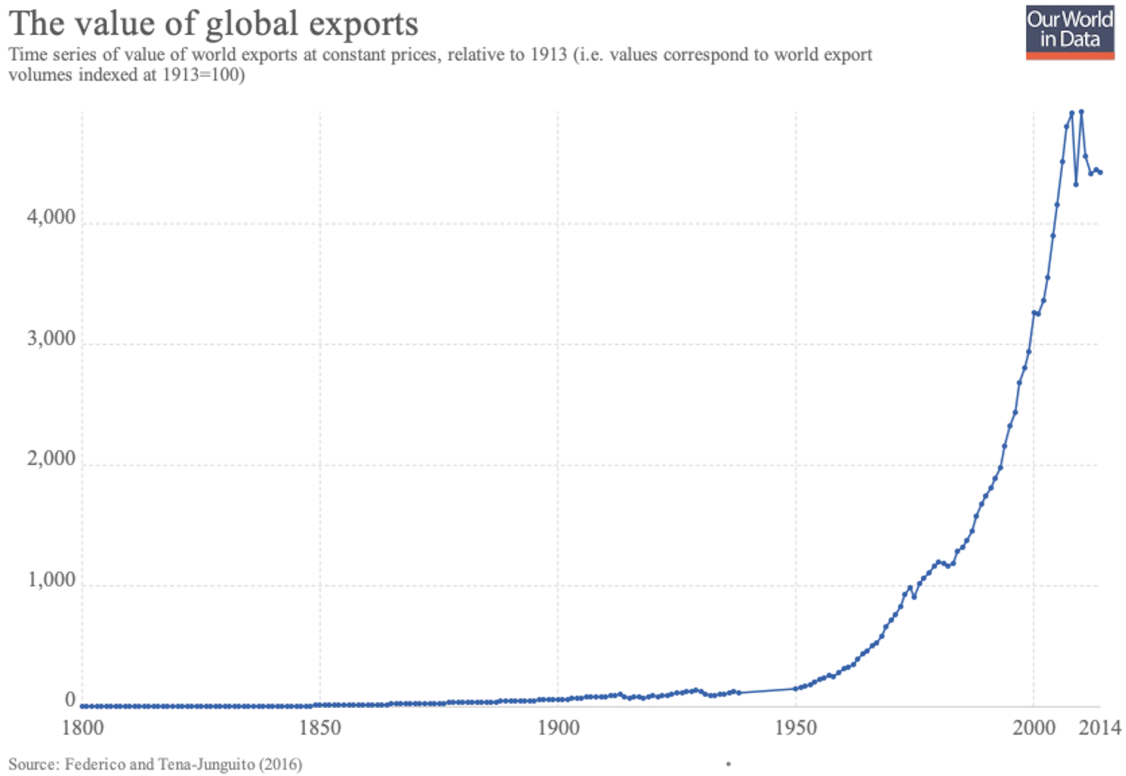
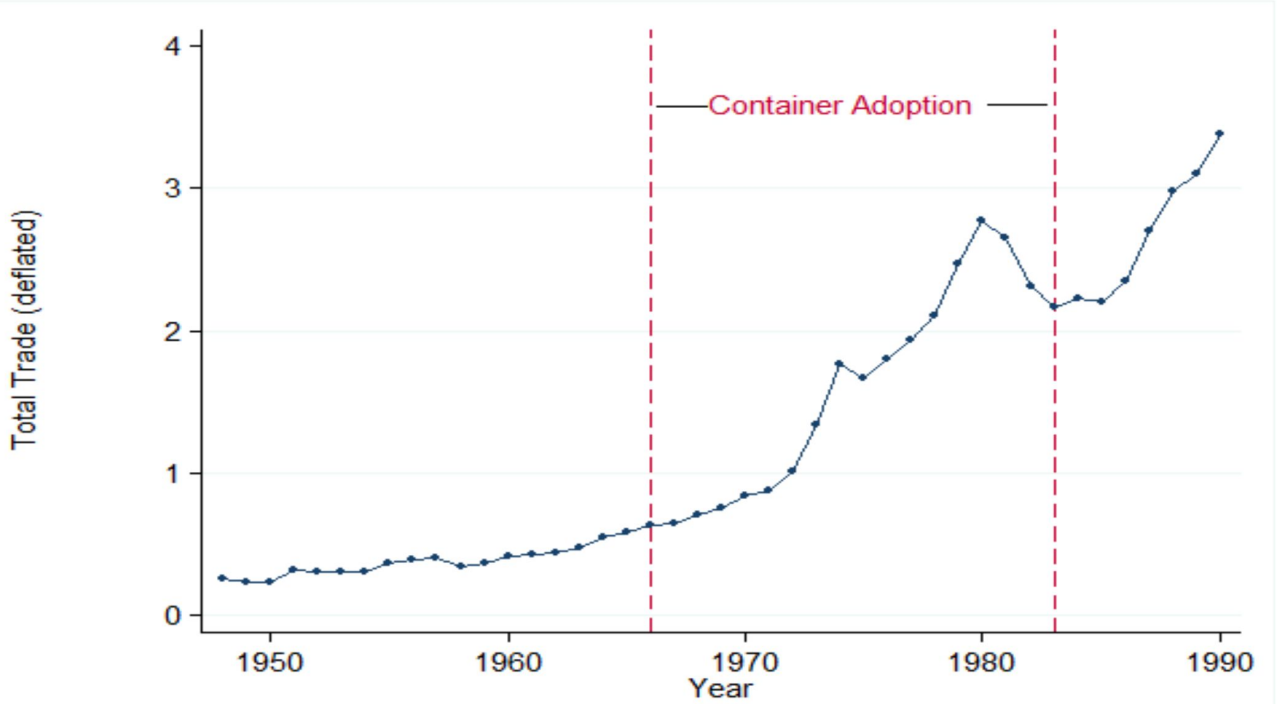
The Rise of Global Trade



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

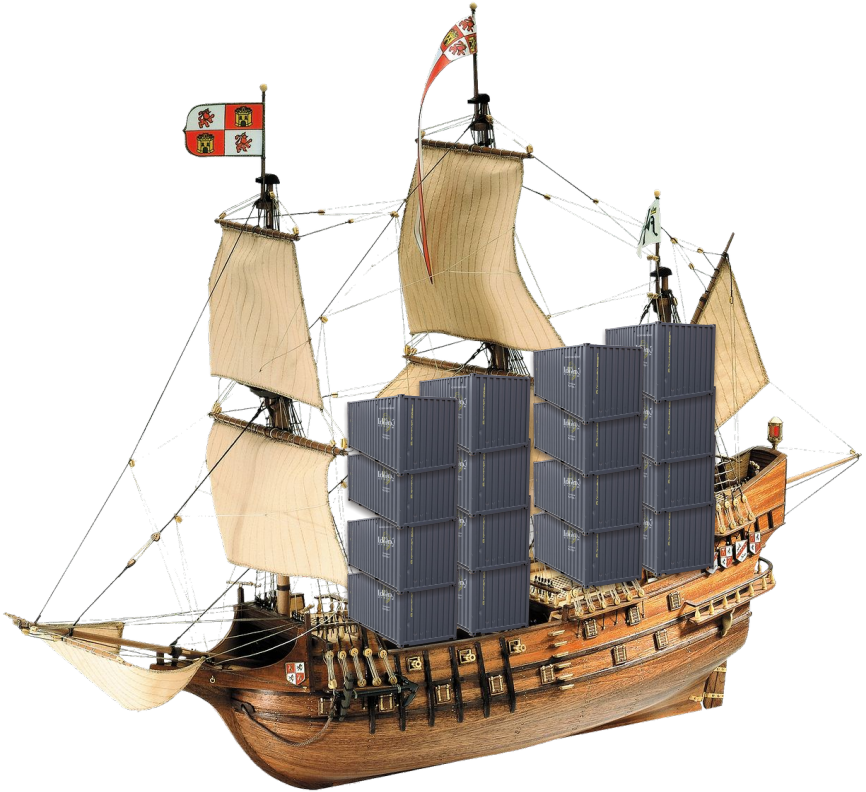
Principal Cloud Advocate, Microsoft

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

Andrew Clay Shafer

Vice President, Global Transformation Office,
Red Hat

The old way is not sustainable.



The old way is not sustainable.

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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

Resilience is a verb

Resilience

Rebound

Robustness

Graceful Extensibility

Sustained Adaptability

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.

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.

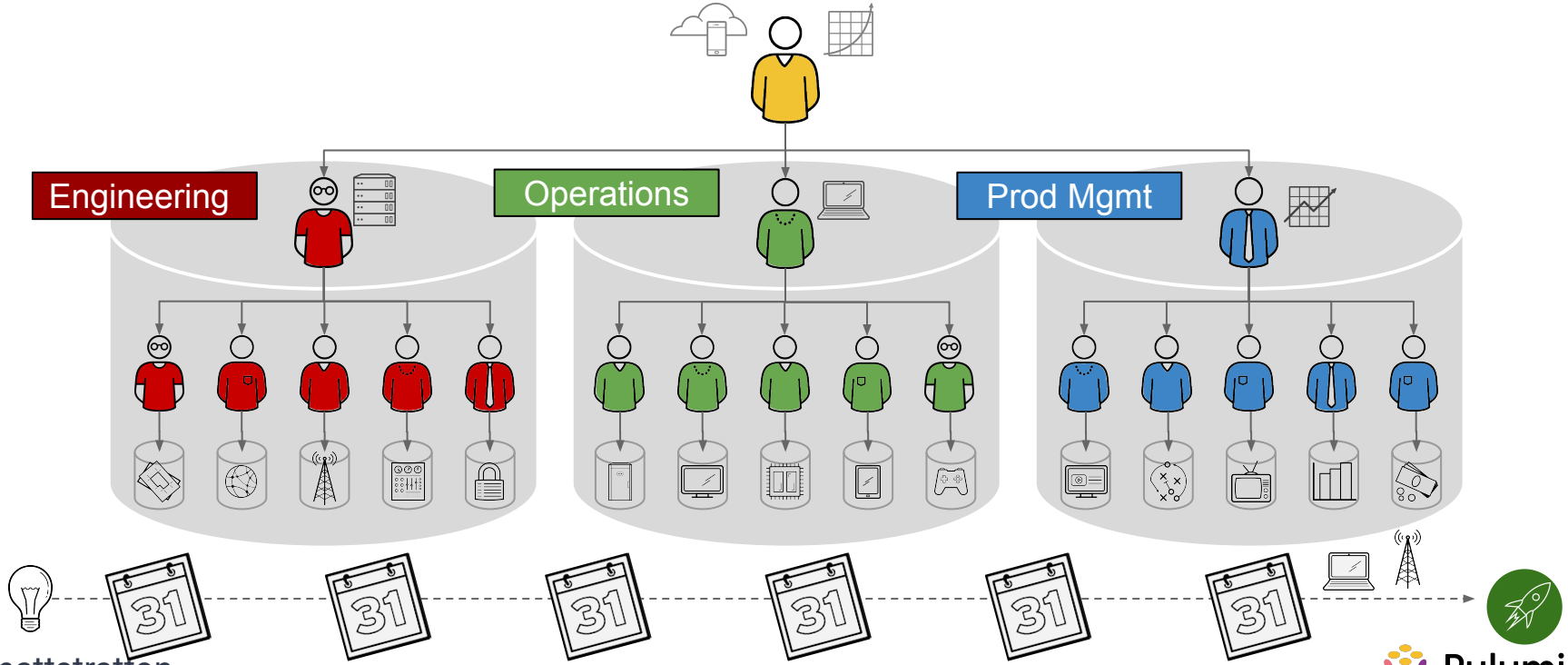
Allows team members and teams to define “how” they want to work and interact with one another.

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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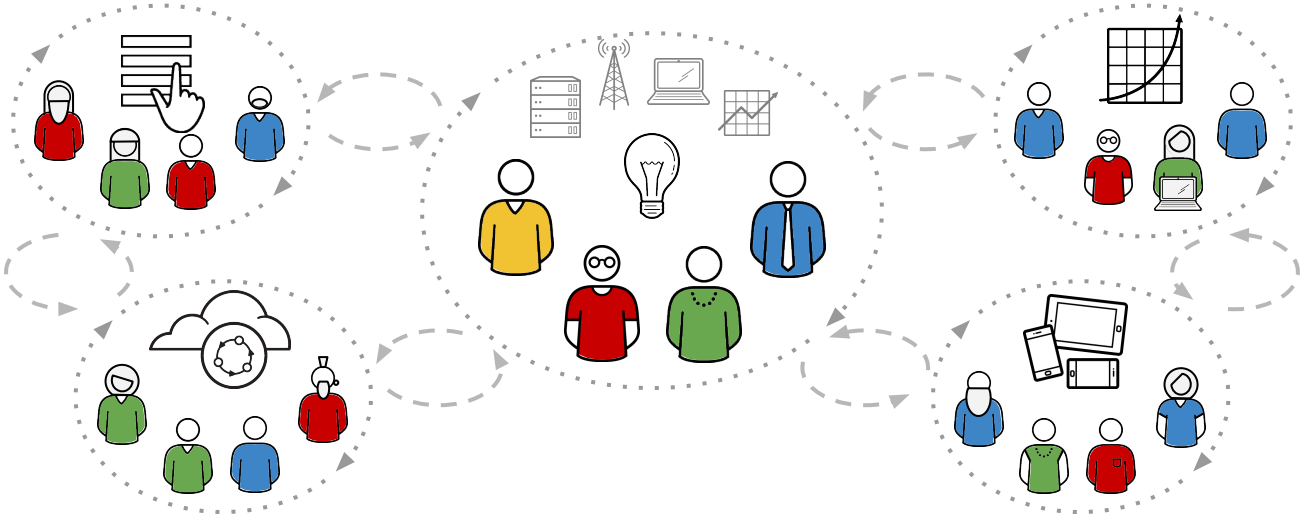
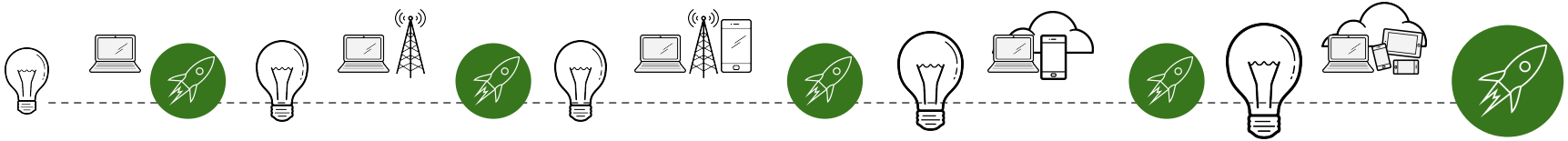
The Open Organization

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

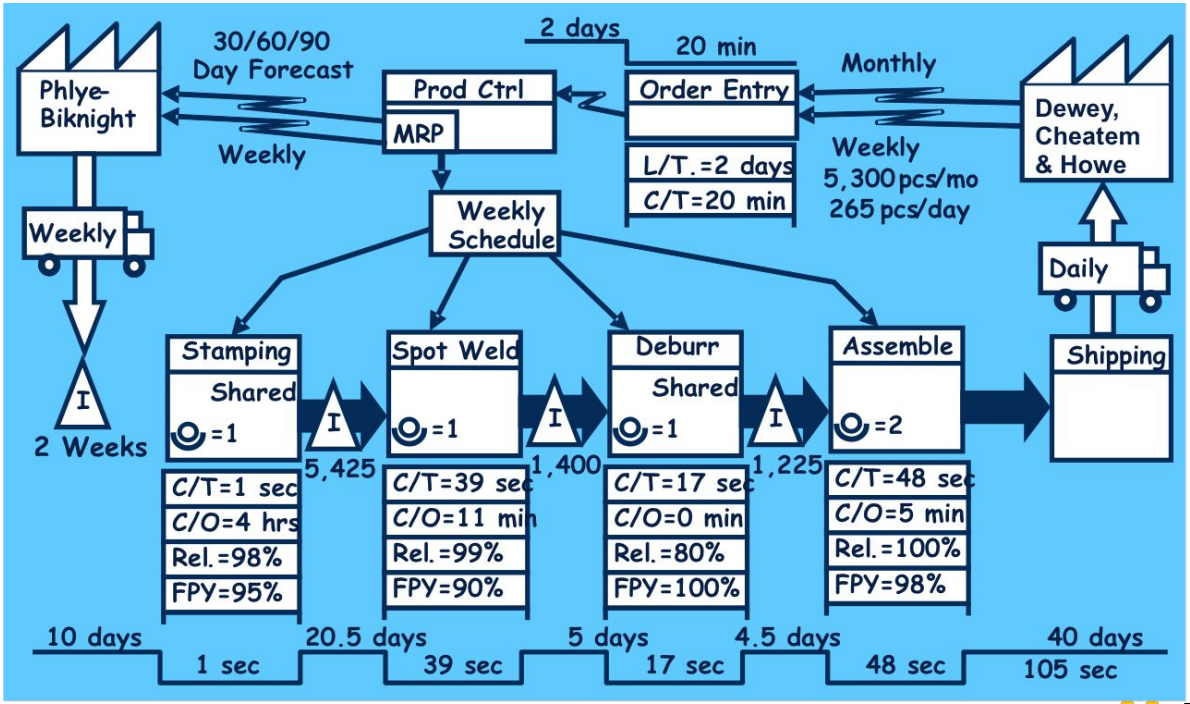
Improve systems based on strain

Will do so naturally if given ownership

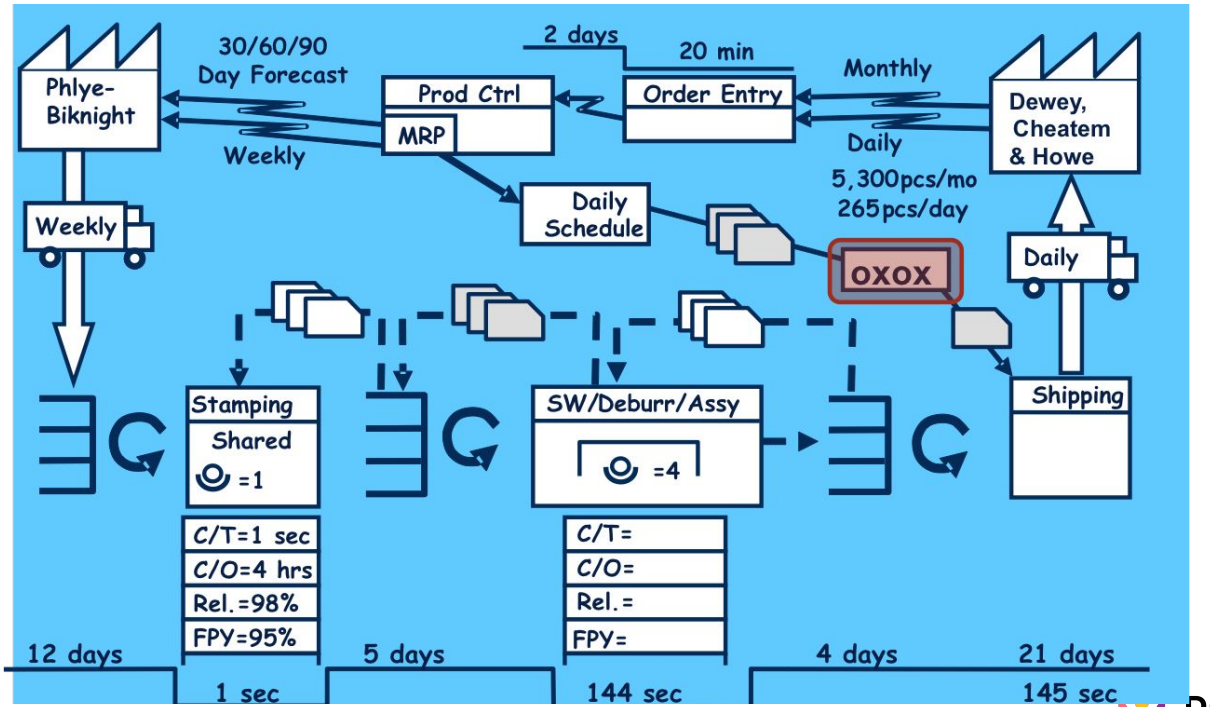
Why Lean?

- 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

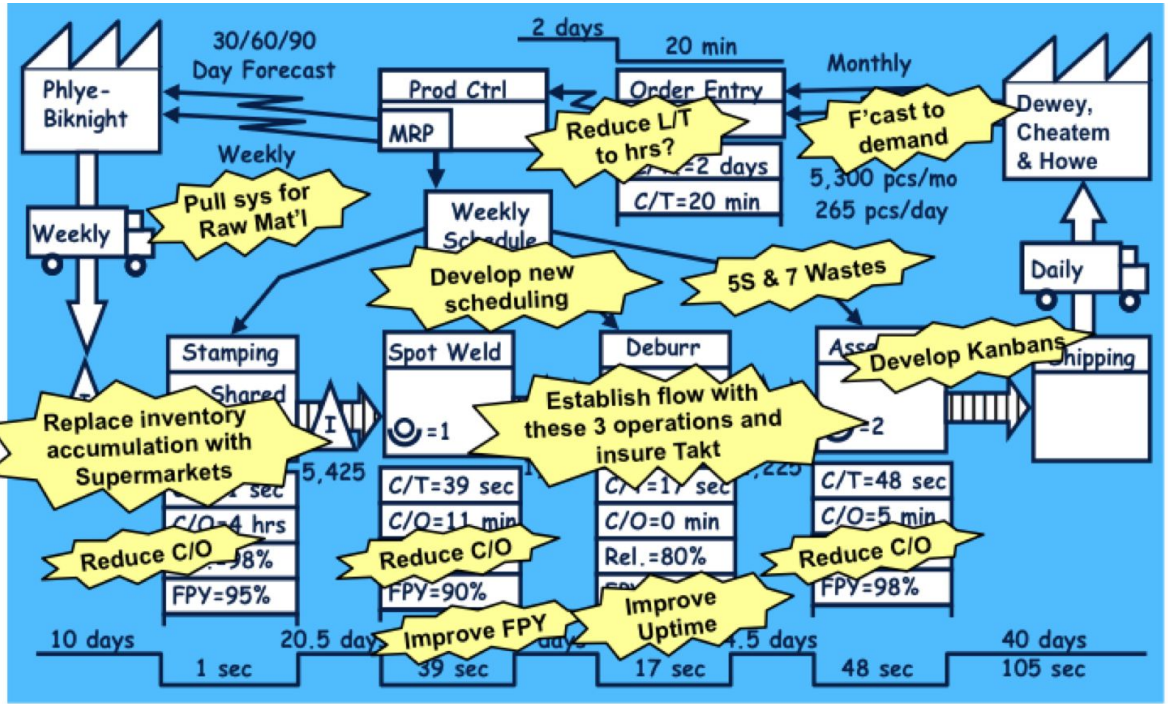
Value Stream Mapping: Current State Map



Value Stream Mapping: Future State Map



Value Stream Mapping: Improvement Plan



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 to achieve scale

Thank You

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