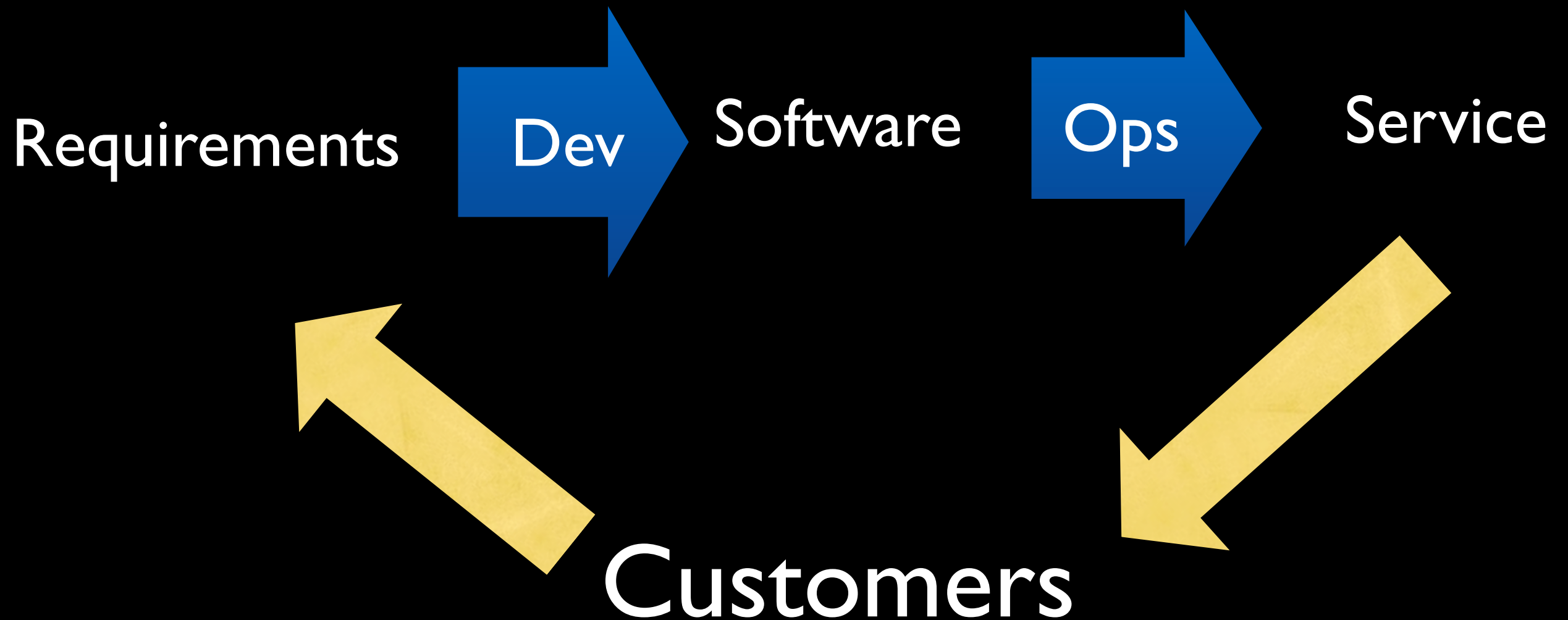# DevOps Demystified

An Introduction to the Ideas that are Driving DevOps

Ben Rockwood
Director of Systems Engineering
Joyent

DevOps Components

- Collaboration of People

- Convergence of Process

- Creation & Exploitation of Tools

DevOps Supports Flow

Requirements   **Dev** →   Software   **Ops** →   Service

Customers

Part I:
Collaboration of People

"Whats a community, whats a culture?
Its a group of people with a common set of values and beliefs.

When we're surrounded by people who believe what we believe, something remarkable happens...

trust emerges."

- Simon Sinek

What is Culture?

c : the set of shared attitudes, values, goals, and practices that characterizes an institution or organization

Webster

Attributes of Culture

- Shared Values

- Shared Goals

- Shared Practices

- Shared Attitudes

Implementing Culture

- Determine your core values

- Create goals which meet business needs that are consistent with your values

- Create practices which simplify the process toward those goals

- Test against these with the attitudes of your employees

Altering Culture

- **Listen carefully** to the attitudes of employees

- Determine **which values aren't being embraced**; do you need to change the values?

- **Examine the current goals** of the organization

- **Adjust the practices** to be always driving toward the goals.

Deming's
Seven Deadly Diseases of Management
#1:

Lack of constancy of purpose
to plan product and service that will have a market and keep the company in business, and provide jobs.
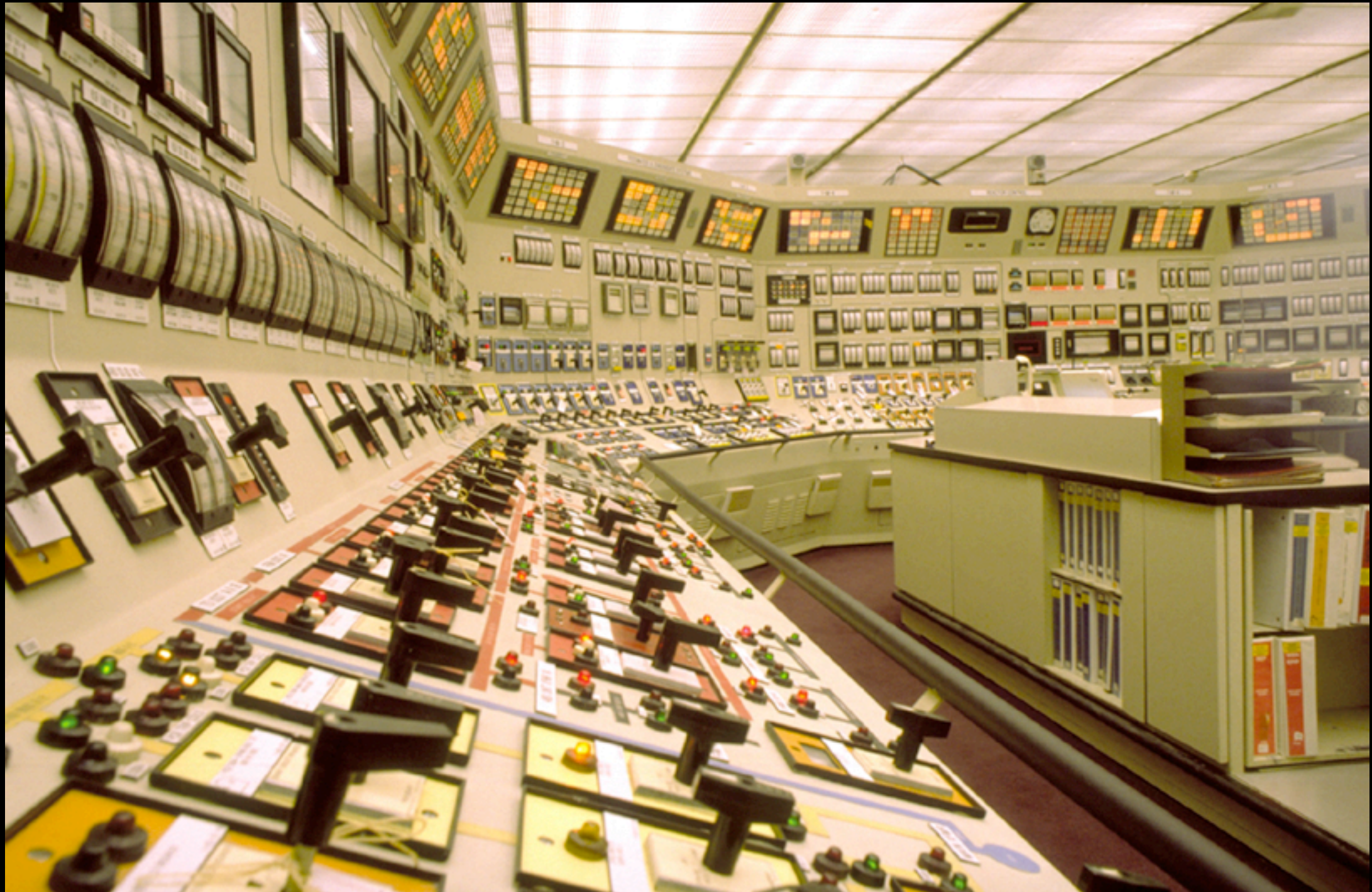
Sinek's Golden Circle

Emotional

Why

How

What

Logical
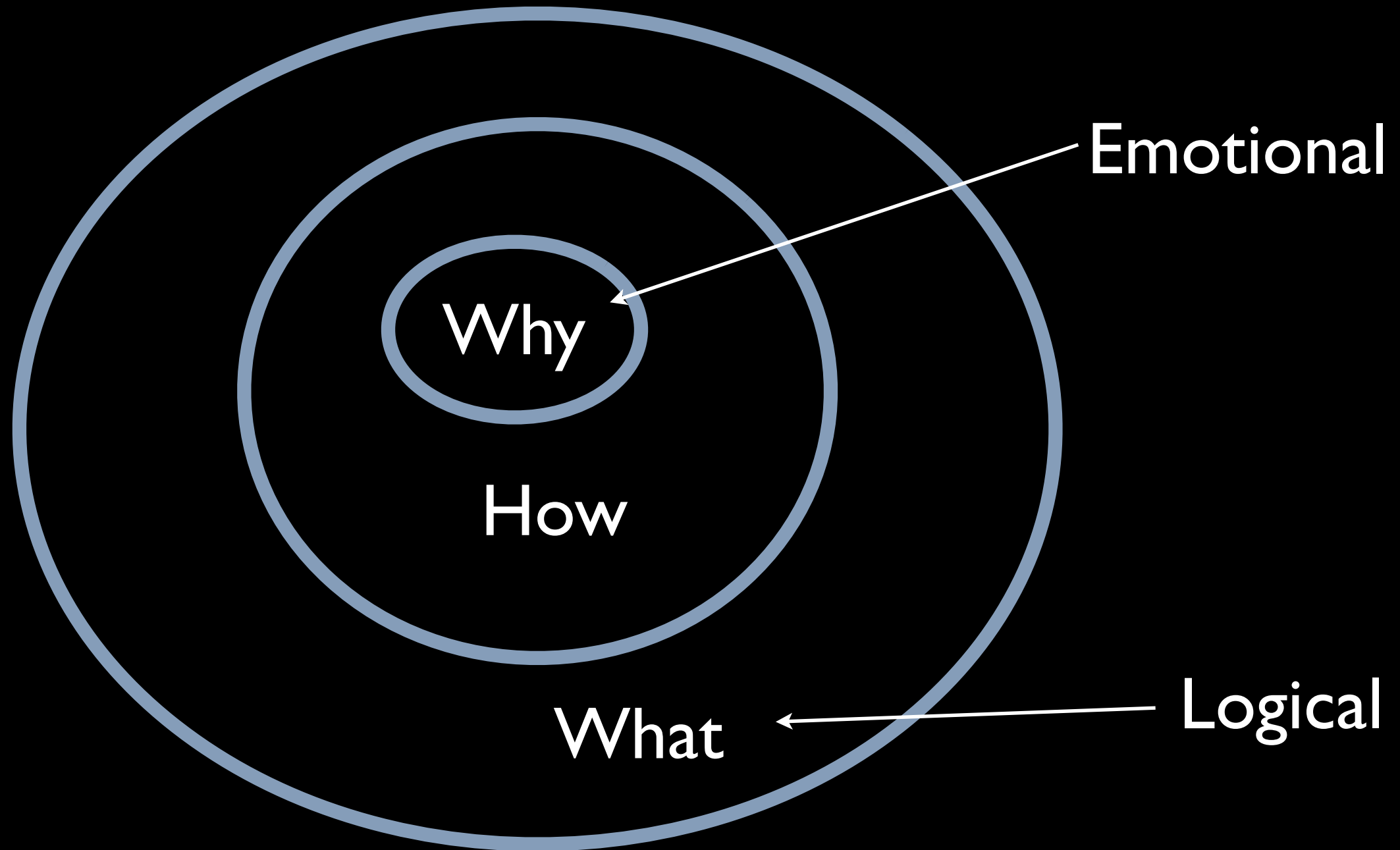
Ted Talk: Simon Sinek: How great leaders inspire action"

This is your customer.

We build this....

So she can do this.

Part II: Convergence of Process

"Efficiency is doing things right; effectiveness is doing the right things."

Peter Drucker

Influencing Fields of Study

- Agile

- Operations Management (OM)

  - Systems Thinking & Dynamics

  - Theory of Constraints (TOC)

  - LEAN (TPS)

- IT Service Management (ITSM) - ITIL

Agile Manifesto

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

2001

Agile Operations

- The birthing idea that became DevOps

- SCRUM doesn't work for Operations

- The ideas are sound, but incomplete for Ops and can re-enforce silos

Why SCRUM Doesn't Work for Ops

- There are 4 types of work:

  - Business Projects (New Service)

  - Internal Projects (Implement CM)

  - Planned Changes (Tickets)

  - Unplanned Changes (Break-fix, Interupts)

"When IT Fails: A Business Novel" - Gene Kim, et al.

Operations Management

- The traditional study of management

- You learn this as part of an MBA

- Includes the study of:

  - Scheduling, Project Management, Process Measurement, Quality, Scheduling, etc.

- Previously focused on manufacturing, today focused on service industries (like us)

- Includes TOC, LEAN/TPS, Six Sigma, etc.

Systems Thinking

- A system is a whole that cannot be divided into independent parts

- The essential properties of a system are those which none of its parts have

- A system is not the sum of the behavior of its parts, but its the product of their interactions

Dr. Russell Ackoff

The Systems Challenge

- Image the company just burned down and you have to start over from scratch... how would you do things differently?

- If you can't image change without constraints, how can you think that you'll know what to do with constraints?

Systems Dynamics

- Mathematical study of interactions within a system

- All interactions are feedback loops; cause and effect relationships

- Works back from events, to patterns, to the system itself to improve the system as a whole

Dr. Jay Forrester

Theory of Constraints (TOC)

1. **Identify** the system's constraint

2. Decide how to **Exploit** the system's constraint

3. **Subordinate** everything else to above decision

4. **Elevate** the system's constraint(s)

5. If, as a result of these steps, the constraint has moved, return to Step 1. Don't let **INERTIA** become the constraint.

"The Goal" - Dr. Goldratt

TOC: Drum-Buffer-Rope

- Drum: The beat at which everything moves

- Buffer: A cache of work before the constraint

- Rope: A pull method to draw work through the system

5   2   8   Rope

Drum: 2/hr.   Buffer: 8 units
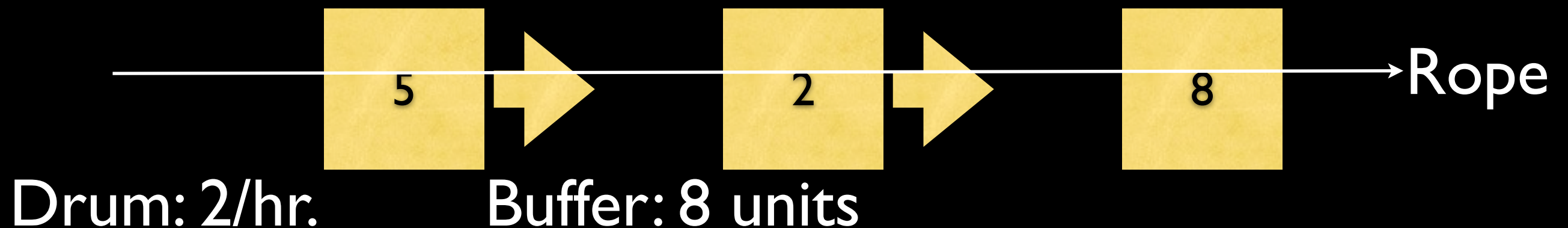
LEAN

- Draws principles from the Toyota Production System (TPS)

- TPS was created by Ohno at Toyota, but draws on Deming, Drucker, Toyoda, Shingo, Shewhart, Ford, etc, etc, etc.

- Focus on eliminating waste and creating a pull based system

LEAN Concepts

- Kaizen: Continuous Improvement

- Kanban: Just in Time (JIT) pull signalling system

- Jidoka: "Autonomation" automation with a human touch.

- Polka-Yoke: Mistake Proofing

- 5S: Sorting, Simplifying, Sweeping, Standardizing, Sustaining

- 5 Why: Root cause analysis method

- Muda (Waste): Removal of all non-value add action

Part III:
Creation & Exploitation of Tools

Common "DevOps" Tools

- Chef, Puppet, CFengine

- Nagios

- Ganglia, Graphite + statsd, Munin

- Splunk, Logstash, Graylog2

- Rundeck, MCollective

- Collins, Juju, Crowbar

- Git, Mercurial, Subversion

DevOps Tools?

- awk, sed, grep
- LDAP & Kerberos
- sudo, RBAC/BSM
- rsyslogd
- NFS/CIFS
- Post-It Notes

Best DevOps Tool

THE BEER

GUINNESS
BREWED IN DUBLIN

What is a DevOps Tool?

Any tool that:

A) Aids the convergence of process
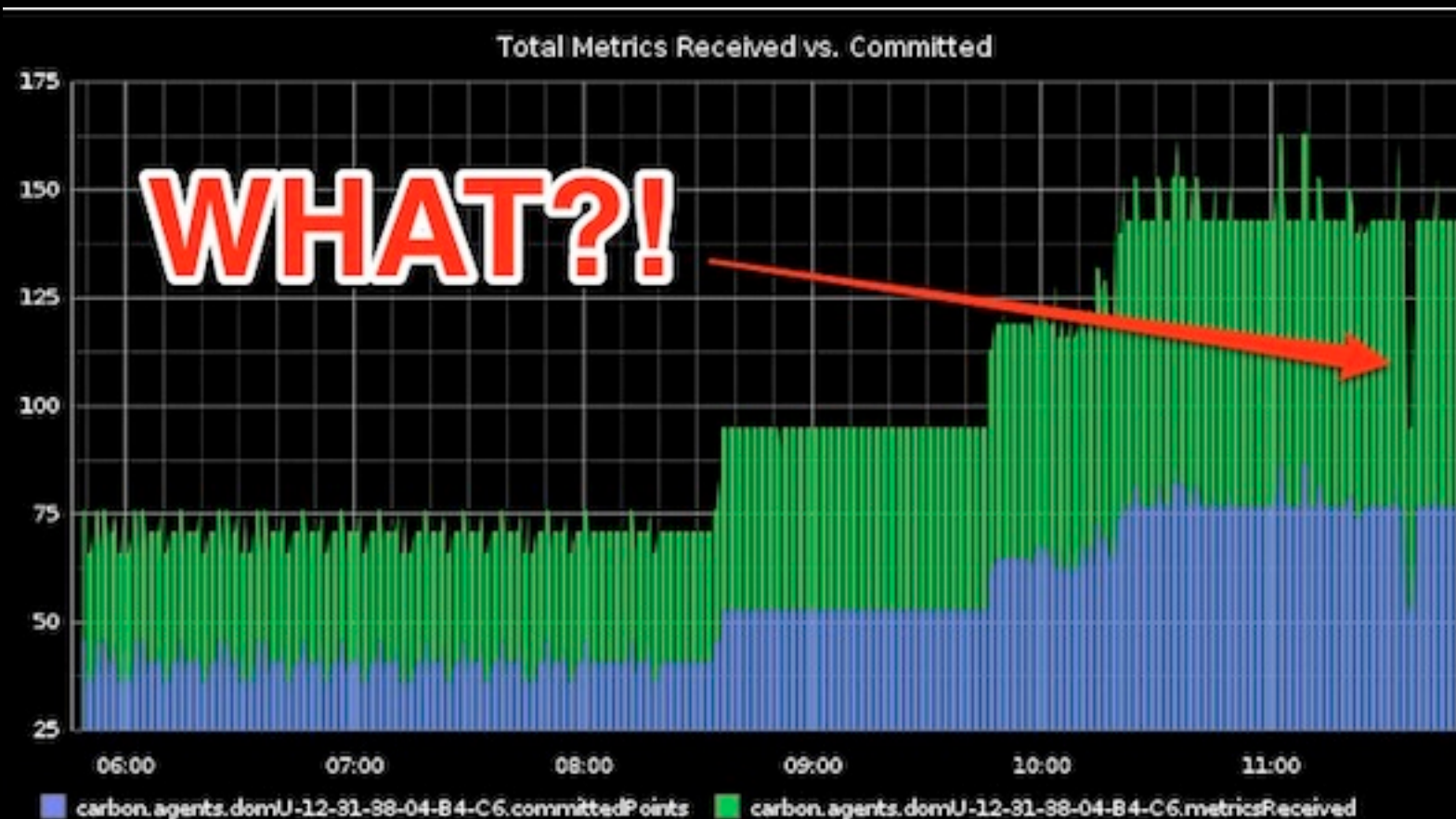B) Aids in the collaboration of people

TOOLS MUST SUPPORT FLOW!

Example 1: Beer

A) Aids the convergence of process: ??
B) Aids in the collaboration of people: ??

Example 2: Metrics

A) Aids the convergence of process: ??
B) Aids in the collaboration of people: ??

Summary

It's about customers

It's about flow

It's about pride of workmanship

If your not having fun, your doing it wrong.

Thank You.