DevOps Demystified
An Introduction to the Ideas that are Driving DevOps

Ben Rockwood
Director of Systems Engineering
Joyent

Wednesday, August 29, 12
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

Why

How

What

Emotional

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, Interrupts)

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**
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

Drum: 2/hr.
Buffer: 8 units
Rope
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
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: ??
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.