Heard of DevOps? Find out how this methodology can accelerate your ability to launch new and more engaging Library/Museum exhibitions

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libraries.ou.edu
Introductions

My co-speaker today:
Today’s talk

The first list of things we hope you’ll take away:

1. What DevOps consists of and the basics of usage
2. How you can apply it to library/museum exhibitions
3. Real life examples
4. Conclusion / Q & A
What DevOps consists of?

“If you’re going to do operations reliably, you need to make it reproducible and programmatic.” “It doesn’t matter whether the nodes are in your own data center, in a hosting facility, or in a public cloud. If you’re not writing software to manage them, you’re not surviving.” “Infrastructure has to become code.”
What DevOps consists of?

“The new sysadmin won’t power down a machine, replace a failing disk drive, reboot and restore from backup; he’ll write software to detect a misbehaving EC2 instance automatically, destroy the bad instance, spin up a new one, and configure it all without interrupting service.”
What DevOps consists of?

The implication here?

“Operations becomes part of the development. The infrastructure moves into the code. This is the movement informally known as DevOps.”
What DevOps consists of?

Most IT departments deal with four types of work:

1. Business Projects
2. Internal Projects
3. Changes
4. Unplanned Work
What DevOps consists of?

“There are a very small number of resources (people, machines, processes) that dictate the output of an entire system. It’s called the “constraint”. Managing the flow through that constraint is critical for maximum utilization.”
What DevOps consists of?

To manage the constraint:

1. Identify it.
2. Exploit it (it can’t waste time) by..
3. Subordinating the constraint (make sure all other work arrives at the maximum rate it can be fed through the constraint).
What DevOps consists of?

The result?

“Enables faster release of new features, happier users, increased employee productivity…”
What DevOps consists of?

The **Three Ways** explained (very briefly!):

1. **First way:** Small batch sizes, continuous builds, integration, testing & never passing defects downstream. Focus on organization goals!

2. **Second way:** Constant flow of fast feedback across all steps of merged development/operations. Shared goals/pain.

3. **Third way:** Create a culture of experimentation, taking risks, learning from success & failure. Repetition and practice is prerequisite for mastery.
Applying DevOps to Library/Museum Exhibitions

Virtual Exhibits

- Virtual one-to-one representation
- Linked contextual taxonomies
- Rich resources
- Open educational resources
- Reusable, scalable structure
Applying DevOps to Library/Museum Exhibitions
The Benefits

- **SCALABLE**: It doesn't matter if a website has 1 exhibit item or 1000
- **EFFICIENT**: We can populate hundreds of pages of content in minutes
- **PROGRAMMATIC**: automate workflows where you can
- **REUSABLE**: NON developers can reuse the structure in another site
- **INNOVATIVE**: Developers can continue to focus on innovation
Applying DevOps to Library/Museum Exhibitions
Practical Applications

- **CONTENT**: Save hundreds of hours of time and months of site development
- **BACKEND PROCESS**: Save hundreds of hours of manual object loading and completely reduce human error
- **INFRASTRUCTURE**: Automate development environments, code deploy, software developer life cycle, testing, monitoring, alerting
Applying DevOps to Library/Museum Exhibitions
Automation of content

SPREADSHEET
EVENTS
<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE</th>
<th>DESCRIPTION</th>
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</tbody>
</table>

DATABASE
EVENT FIELDS
- EVENT NAME
- DATE
- DESCRIPTION
- DAY
- TIME
- LOCATION
- ROOM
- IMAGE
- LINK

WEBSITE
EVENT FIELDS
- IMAGE
- EVENT NAME
- DESCRIPTION
- TIME
- DAY
- LOCATION
- LINK

Curator
Subject Expert
Content Specialist

Developer
Site Builder

Graphic Designer

Intellectual Crossroads of the University
Applying DevOps to Library/Museum Exhibitions
Reusable Content Types

• Events
• Exhibit Items
• Locations
• Professional Profiles

• Artifacts
• Contact forms
• Interactive Timelines
• News Items
Applying DevOps to Library/Museum Exhibitions

Automated Digitization Workflow

Exhibit item → Digitization → IMG Files, Metadata, File Naming → Local Server

Bagit → Data Catalog → Celery → islandora → Exhibit Site

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Infrastructure

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Applying DevOps to Library/Museum Exhibitions

Infrastructure

- Deep health check monitoring
- Continuous integration platform
- Advanced analytics platform
- Managed configuration
- Cloud-based dev/test environments
- Automated test suites
- Rapid code promotion
- Service portability via microservices
Applying DevOps to Library/Museum Exhibitions
Infrastructure
Real Life Examples
OU Library’s Exhibitions – Galileo’s World
Real Life Examples
OU Library’s Exhibitions – Galileo’s World

The Reprise
Sept 2016 - May 2018
A reprise of the award-winning Galileo’s World exhibition provides another opportunity to experience these remarkable items in person.
- Reprise Schedule
- Upcoming Events
- Plan Your Visit

Galileo’s World
A Look Back: 2015 - 2016
Take a look back at the Galileo’s World exhibition. Learn about the exhibits, events and partnerships which made it possible.
- Exhibition Timeline
- Locations
- Collaborators

Virtual Exhibition
Online
Every item on physical display is represented on the website. Over 300 works have been fully digitized and are available for viewing online.
- Browse Exhibits
- Advanced Search
- Browse Subjects

640 Total Pages
- 20 Individual Galleries
- 33 Sections
- 373 Exhibit Items
- 93 Resources

4 Taxonomies / 84 Terms
- 10 chronological period
- 14 material types
- 36 region
- 24 subjects
Real Life Examples
OU Library’s Exhibitions – Galileo’s World

Summary
Featuring Galileo’s Handwriting. When Galileo heard news of telescopes invented in the Netherlands he worked out the underlying geometry and crafted one of his own design. In this work, Galileo published the first observations of the heavens made with the telescope. His sensational discoveries included mountains on the Moon, vast numbers of previously undetected stars and four satellites of Jupiter. (On display in Bizzell Memorial Library, Fall 2015; Fred Jones Jr. Museum of Art, Spring 2016.)

20 Content Fields
• Citations
• Location Info
• Subjects
• Exhibit Metadata

Full Text Book Viewer

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UNIVERSITY LIBRARIES
THE UNIVERSITY OF OKLAHOMA
Real Life Examples
OU Library’s Exhibitions – Poetics of Invention

Intellectual Crossroads of the University
Real Life Examples
OU Library’s Exhibitions – Poetics of Invention

135 Total Pages
• 1 Exhibit with 8 Rooms
• 40 sections
• 25 exhibit items
• 1 resource

0 Total Taxonomies
Real Life Examples
OU Library’s Exhibitions – Poetics of Information

4 Content Fields
- Images
- Descriptive text
Real Life Examples
Comparison of Resource Cost

Galileo World’s
• Dec 2014 – August 2015 (8 mos)
• Site Finished: August 2015

Total Resources
• Import content: 1 hour
• Site build: 800 hours
• Theme: 60 hours
• Content Input: 20 hours

Poetics of Invention
• May 2017 – Sept 2017 (4 mos)
• Site Finished: Dec (8 mos)

Total Resources
• Import content: n/a
• Site build/planning: 200 hours
• Theme: 100 hours
• Content Input: 400 hours
Real Life Examples

Why?

Why DevOps approach could not help Poetics:

1. MANUAL content extracted from layered Photoshop files
2. Content not finalized until shortly before the site opened
3. Some content was not provided until after the exhibit opened.
4. Content was not structured for Web
5. Digitization DID NOT go through an automated workflow
6. Were not able to reuse much code or content types
   (no overlap)
7. No automation, scalability, or efficiency!
Real Life Examples

Why?

How the Devops approach helped Galileo’s World:

1. Eliminated hundred’s of hours of content entry
2. Automatic loading of digital items
3. Reused established content types
   - News & Events
   - Calendar Views
   - Contact pages
4. Separate pieces build concurrently and then brought together
Conclusion

Additional things to take away:

1. Plan before you build
2. Merge Development and Operations so teams can work in tandem on separate parts.
3. Use tools that make your developers lives easier!
4. Look for and optimize constraints in processes.
5. Do things programmatically - reuse structure, code, content
6. Build for scalability
The End
Q&A

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