institute for SOFTWARE RESEARCH

DevOps-Continuous Integration

What is DevOps?

1

Overview

- **Velocity of releases**
- Definition of DevOps and overview of DevOps processes

2

institute for SOFTWARE RESEARCH

2

Velocity of new releases is important

- Traditionally organizations deployed a new release quarterly or monthly.
- In the modern world, this is too slow.
- Internet companies deploy multiple times a day
- Velocity of releases translates into time to market

3

3

Release schedule statistics

- Etsy releases 90 times a day
- Facebook releases 2 times a day
- Amazon had a new release to production every 11.6 seconds in May of 2011

4

4

Why were releases so infrequent

- Multiple teams working on different portions of the release
  - Release must wait for slowest team to complete
  - 3rd party software not available
- Work of these teams must be integrated to produce a release.
- Integration process discovered many errors

5

5

What kind of errors?

- Incorrect interaction between modules
  - Interface specifications
  - Violating assumptions on use of a modules
- Incorrect configuration parameters.
- Inconsistent versions of libraries
- Errors in testing

6

6

3

Time is passing

- Every error must be corrected
- Correcting errors takes time
- Teams must coordinate on a variety of things
  - Division of responsibilities
  - Interfaces
  - Use of libraries
  - Use of other technologies
- Coordination takes time

© Len Bass 2021   7

7

Shortening time to release

- Avoid errors through a combination of
  - Process
  - Architecture
  - Tooling
- Reduce coordination among teams as much as possible
  - ~~Use of libraries~~
  - ~~Use of other technologies~~
  - Choice of architecture

© Len Bass 2021   8

8

Automation

- Another means to shorten time to production is to automate activities
- Any activity that is repeated is a candidate to be automated.
- Automation results in scripts.

© Len Bass 2021   9

Overview

- Velocity of releases
- **Definition of DevOps and overview of DevOps processes**

© Len Bass 2021   10

What is DevOps?

DevOps is a set of practices intended to reduce the time between committing a change to a system and the change being placed into normal production, while ensuring high quality.

- DevOps practices involve developers and operators', architectures, and tools.
- DevOps is also a movement – like agile.

© Len Bass 2021   11

11

DevOps Decomposition
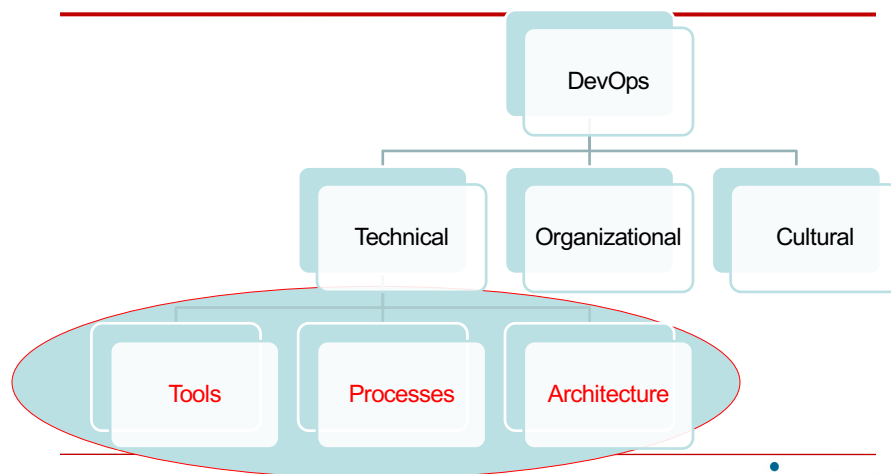
© Len Bass 2021   12

12

13

Summary

Carnegie Mellon University

Summary

- DevOps is motivated by a desire to reduce the time to market for changes to a system
- Historically releases were scheduled events – taking months to prepare
- DevOps is defined as a collection of practices whose goal is to reduce the time between commit and normal production

© Len Bass 2021 14

14

7