DEVOPS

DEVOPS COMPETENCES FOR SMART CITIES

DevOps basic concepts, culture and practices

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Defining a smart city

Smart city is an ecosystem

- Offers a variety of services to citizens
- Ensure delivering of services produced by different subsystems
- It has to answer to the needs of various diverse stakeholders

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Smart city ….
things to consider

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Five main challenges

- Digital transformation
- Problem domain complexity
- New ways to develop software (DevOps)
- City crisis management (resilience)
- Training needs (or lack of awareness)

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What is DevOps

- DevOps is the practice of operations and development engineers participating together in the entire service lifecycle, from design through the development process to production support.
- https://theagileadmin.com/what-is-devops/

- DevOps is defined as "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“
- https://en.wikipedia.org/wiki/DevOps

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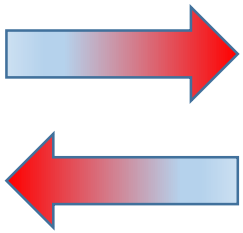
Different Views on Change

Inventors focus on change



Mechanics focus on stability

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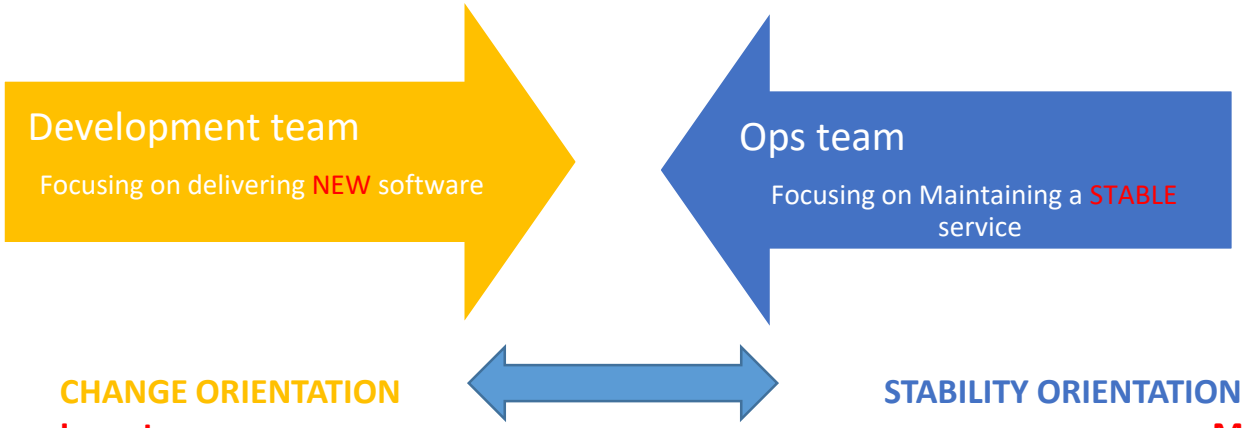
DevOps brings together



CHANGE ORIENTATION
Inventors

- Work with customers requesting changes
- Delivering changes
- Create new features and functionality in "dev" environment
- May incorporate feedback from users in future deliveries

STABILITY ORIENTATION
Mechanics

- Receive new S/W from developers to be installed and operated
- Work with customers requesting a smoothly running system
- Track problems, deployment failures, and system outages
- Delivering stability

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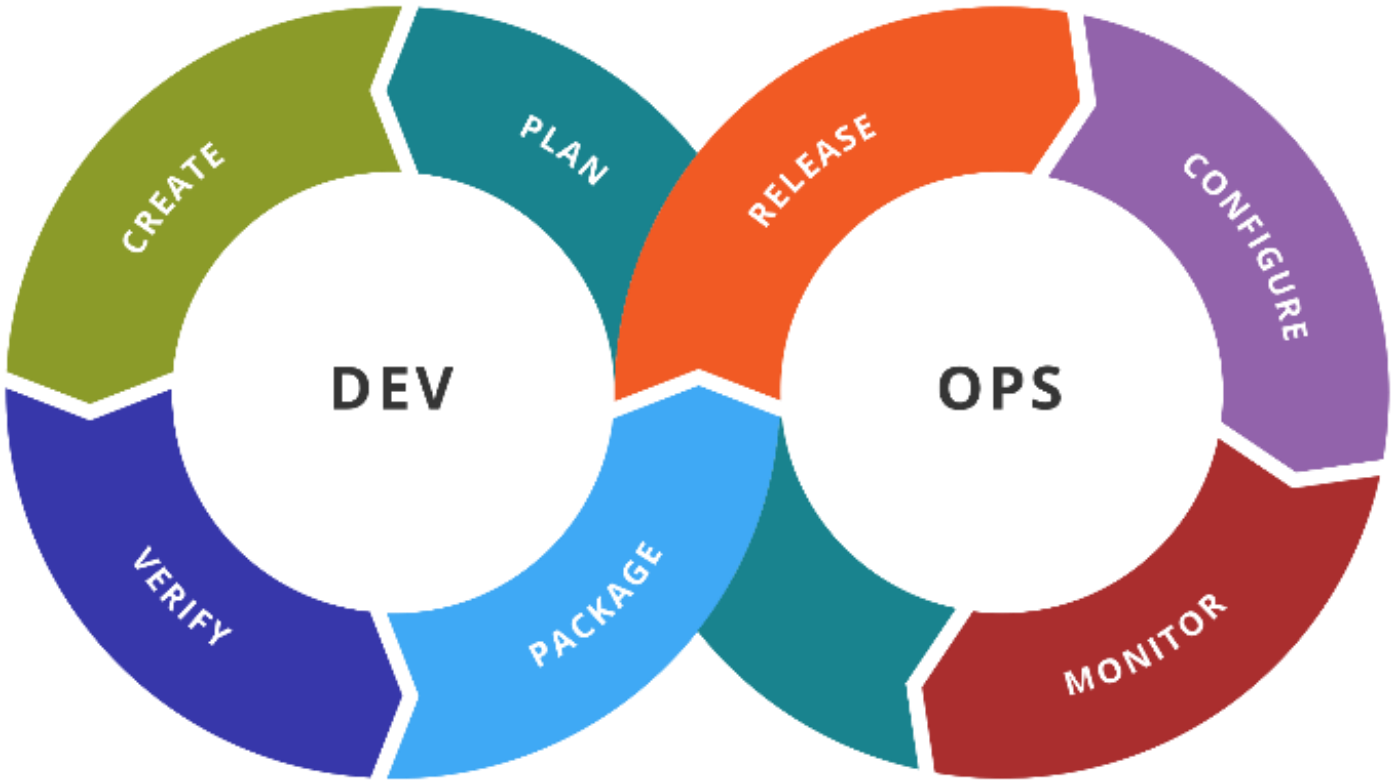
DevOps approach



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Why we need DevOps?

- According to Puppet Lab DevOps Report (2013) DevOps Delivers :

208 times more frequent code deployments

106 times faster lead time from commit to deploy

2604 times faster to recover from incident

7 times lower change failure rat

Data from DORA State of DevOps 2019 and refer to elite DevOps performers.
https://services.google.com/fh/files/misc/state-of-devops-2019.pdf

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Continuous Deployment

COMPANY	DEPLOY FREQUENCY	DEPLOY LEAD TIME	RELIABILITY	CUSTOMER RESPONSIVENESS
Amazon	23,000/day	minutes	high	high
Google	5,500/day	minutes	high	high
Netflix	500/day	minutes	high	high
Facebook	1/day	minutes	high	high
Twitter	3/week	minutes	high	high
Typical enterprise	once every 9 months	months or quarters	low/medium	low/medium

Source: http://athena.ecs.csus.edu/~buckley/CSc233/DevOpsGuide.pdf

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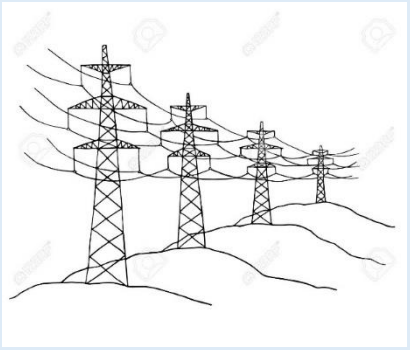
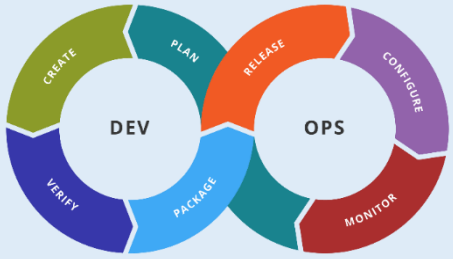
Continuous delivery of software

Roman times



20th century



Software enabled society

21th century

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Course Learning objectives

- The learning objectives of this module are the following:
  - To understand key principles and concepts of DevOps approach.
  - Understand the DevOps process
  - Understand the key DevOps capabilities such as continuous delivery, architectural,
  - The DevOps culture

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Course Units

- Introduction DevOps Foundational Terminology and Concepts
- DevOps Capabilities to drive improvement
- DevOps tools ecosystem

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Thank you for your attention!

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