

The Dimensions of DevOps

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XP2015
26.05.2015



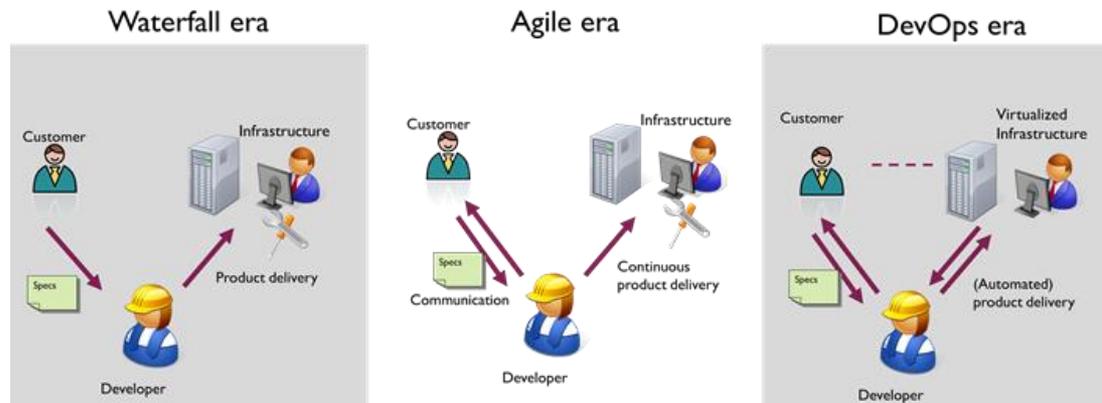
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Introduction

Background

- Continuous and frequent deployments, a trend for most Internet companies
- DevOps
 - collaboration between software development and operations activities
 - Aims to facilitate continuous deployment
- No common understanding of what DevOps constitutes



Adapted Image by Tapio Rautonen*

Research contribution

- To identify and describe main elements that characterize the DevOps phenomenon
- Build an initial DevOps conceptual framework

Research Approach

Research Approach: Literature review complemented with interviews



Literature Search

- Searched 'DevOps' in 6 databases, 187 items retrieved, 22 relevant scientific papers selected

Interviews

- Semi-structured interviews with 4 practitioners actively involved in DevOps movement

Data Analysis

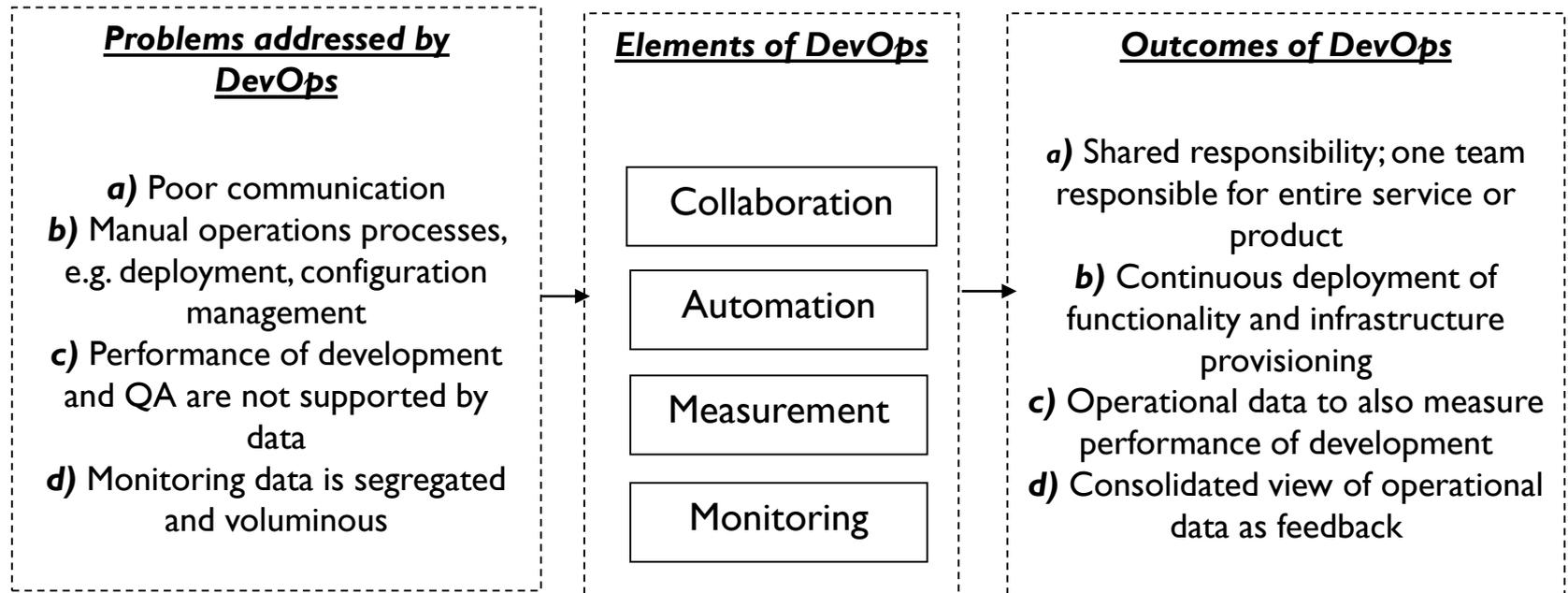
- Coding scheme: (1) problems addressed by DevOps (2) actions taken/elements (3) impact of the actions

DevOps conceptual framework

- Based on the analysed data

Dimensions of DevOps

- An initial DevOps conceptual framework with four elements describing DevOps
 - Collaboration
 - Automation
 - Measurement
 - Monitoring



Collaboration

Culture of collaboration between software development and operations.

– Problems

- Systems designed with incomplete knowledge, visibility or support for their operational profile

– Outcomes

- Increased feedback loops, shared responsibilities, broadening of skillset, shifting responsibilities

Automation

Automation of development and operations activities.
'Infrastructure as Code'

– Problems

- To keep up with the pace of Agile software development
- Manual processes in Operations

– Outcome

- Automated deployment tools
- Infrastructure and functionality are provisioned and deployed repeatedly and fast in cloud environment

Measurement

Measurement to help put *'efficiency and process into perspective'*.
Going beyond QA to system performance data in real environment

– Problems

- Quality measures before deployment are not aligned with after deployment

– Outcome

- Software development efforts are effectively measured

Monitoring

Fast and effective monitoring of systems and infrastructure after deployment

– Problems

- Logs are voluminous, time consuming to allocate problems when the systems are designed not to expose relevant information
- Monitored data is not consolidated and effectively used and shared

– Outcome

- Consolidated view of operational data as feedback to development
- Systems designed to expose relevant information

Conclusion

- **DevOps**
 - A relatively a new phenomenon that is not commonly understood in academia and practitioners' communities
- **Contributions**
 - Four elements of DevOps : collaboration, automation, measurement and monitoring.
 - A DevOps conceptual framework
- **Future works**
 - Need for empirical research that investigates the phenomenon.
 - For this study, works to validate and enhance the presented conceptual framework.

THANK YOU!

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