

## **Seminar/Tutorial**

# **DevOps and Cloud based Software Development**

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### **TUTORIAL DESCRIPTION**

This tutorial provides a short summary of the generally used DevOps technologies including definitions, concepts, models and tools, specifically focusing on the cloud based DevOps tools for software development, deployment and operation that allows the main DevOps principle of continuous development and continuous improvement which are critical for modern agile data driven companies. The tutorial presents recommendations on the design and pilot implementation of the DevOps and Cloud based Software Development curricula for Computer Science and Software Engineering masters.

The central part of proposed approach is the Body of Knowledge in the DevOps technologies for Software Engineering (DevOpsSE BoK) that defines a set Knowledge Areas and Knowledge Units required for SE professionals to work efficiently as DevOps engineer or application developer. Defining DevOpsSE-BoK provides a basis for defining required professional competences and skills and allows consistent curricula structuring and profiling.

The tutorial will also share the experience of the first course run on 2018/2019 academic year at the University of Amsterdam. The tutorial will present the structure of the course and explains what instructional methodologies have been used for course development, such as project based learning that facilitates the students' team based skills both in mastering Agile development process and skills sharing.

### **Tutorial OUTLINE**

The tutorial will cover the following topics:

- DevOps adoption by industry, research and business: benefits and trends
- Demand for DevOps competences and skills
- What is DevOps and related technologies
- Defining DevOps Body of Knowledge as part of the Software Engineering master
- DevOps tools: individual, team oriented and cloud based
- Overview of cloud based platforms: Azure DevOps and AWS DevOps tools
- From DevOps to DataOps and data driven applications development

- Example DevOps curricula at the University of Amsterdam: lecture topics and practical assignments
- Discussion, recommendations

## REFERENCES

Software Engineering Body of Knowledge (SWEBOK) [online]

<https://www.computer.org/web/swebok/v3>

ACM and IEEE Computer Science Curricula 2013 (CS2013) [online]

<http://dx.doi.org/10.1145/2534860>

Data Science Body of Knowledge (DS-BoK). EDSF Community Initiative [online]

<https://github.com/EDISONcommunity/EDSF/tree/master/data-science-body-of-knowledge>

Azure DevOps [online] <https://azure.microsoft.com/en-gb/services/devops/>

AWS Training [online] <https://www.aws.training/>

## REQUIREMENTS AND TARGET AUDIENCE

No special requirements to audience.

The expected target audience is wide but primarily dealing with the Big Data and cloud based software development

## TUTORIAL DURATION

The tutorial material will be presented in one 2 hours sessions.

## A/V AND EQUIPEMNT

Standard presentation facilities, no AV required.

## INSTRUCTOR BIOGRAPHY AND PHOTO



Yuri Demchenko is a Senior Researcher at the System and Network Engineering of the University of Amsterdam. He is graduated from the National Technical University of Ukraine "Kiev Polytechnic Institute" where he also received his PhD (Cand. of Science) degree. His main research areas include Data Science and Data Management, Big Data and Infrastructure and Technologies for Data Analytics, DevOps and cloud based software development, general security architectures and distributed access control infrastructure for cloud based services and data centric applications. He is currently involved in the European projects GEANT4, MATES,

FAIRsFAIR where he develops different elements of cloud based infrastructures for scientific research, and issues related to Data Science and digital skills development. Yuri has coordinated the EU funded EDISON project (2015-2017) which has developed the EDISON Data Science Framework (EDSF) that provides a conceptual foundation and practical basis for building the Data Science profession. His recent research are also extending into data economics and open data market models.

He is actively contributing to the standardisation activity at RDA, OGF, IETF, NIST, CEN on defining Big Data Architecture Framework, Data Science competences, and data properties as economic goods.