DOSSIER-Cloud

DEVOPS-BASED SOFTWARE ENGINEERING FOR THE CLOUD

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Deliverable D2.1

DevOps oriented software engineering training content (talks, lectures, seminars)

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5.0	28/10/16	Antreas Christoforou	Fourth review
6.0	4/11/16	Antreas Andreou	Final review and corrections

Contents

1. Introduction

1.1 Purpose

This document describes the presentations and other content given during lectures, talks or seminars for training purposes, delivered by the experts from the University of Tilburg (UvT) and the Politecnico di Milano (POLIMI) to members of the Cyprus University of Technology (CUT) on DevOps-oriented Software Engineering.

This deliverable is part of Work Package 2 (WP2) that describes the actions to enable successful transfer of knowledge from the leading institutions to CUT for luxuriating its knowledge base on technical issues of the Cloud computing environment and distributed software services, DevOps principles and workflows, collaboration and communication issues in DevOps environments, and motivation, leadership and people risk in DevOps teams, as well as gain expertise on open source tools and reuse of existing open source modules.

1.2 Definitions, Acronyms, and Abbreviations

CUT: Cyprus University of Technology

UvT: University of Tilburg

POLIMI: Politecnico di Milano

1.3 Overview

The rest of this document is structured as follows: Section 2 describes the training content delivered by members of the POLIMI, section 3 presents the training material covered by staff of UvT and finally, section 4 concludes this document.

2. POLIMI Site Visits and Workshop

2.1 First Site Visit – February 18-20, 2016

During the first site visit, members from the CUT group attended a number of presentations given by POLIMI group related to software development and deployment for distributed applications. In particular, the subject of these presentations were dealing with self-adaptation of cloud applications, formalization and identification in cloud-workload specifications, software verification and analysis of incomplete models designed in software development.

2.1.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	18/02/2016	Time:	09:00-10:00
Facilitator/Presenter:	Luciano Baresi Garlo Ghezzi	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Welcome and introduction

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	18/02/2016	Time:	10:00-12:00
Facilitator/Presenter:	Christos Tsigkanos	Location:	III floor, building 22, via Golgi, 42

1. Subject / Short Description

Problem deals: Managing, configuring and deploying complex applications. To facilitate formal reasoning about latent qualities (Quality Assurance) of a workload design, proposed a static bigraphical semantics for the modeling language defined by the emerging Topology and Orchestration Specification for Cloud Applications (TOSCA) standard. Follows a presentaiton how to check for the presence (absence) of (anti-)patterns expressed as logical formula over bigraphical predicates.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof.Carlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Christos Tsigkanos, PhD candidate	POLIMI / Italy	christos.tsigkanos@polimi.it	
Alessandro M. Rizzi, PhD candidate	POLIMI / Italy	alessandromaria.rizzi@polimi.it	
Claudio Menghi, Postdoctral student	POLIMI / Italy	menghi@elet.polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
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Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
On formalizing and identifying patterns in cloud workload specifications	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Christos-Tsigkanos.pdf	Christos Tsigkanos, PhD Cand.

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	18/02/2016	Time:	14:30-16:00
Facilitator/Presenter:	Giovanni Quattrocchi	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

Problem overview: Steering modern Internet applications in the Cloud, given a set of functional and non-functional requirements, is a complex task. The work described is part of the ongoing ECoWare initiative. ECoWare is a framework for enriching Internet and service-based applications with self-capabilities; it is based on the classical notion of MAPE (Monitoring, Analysis, Planning, and Execution) control loops. MAPE control loops can help, and the focus is on coordination of multiple adaptation actions. A simple language has been developed for describing the adaptation capabilities of an Internet application.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Sam Guinea	POLIMI / Italy	sam.guinea@polimi.it	
Giovanni Quattrocchi	POLIMI / Italy	giovanni.quattrocchi@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
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Andreas Christoforou	CUT / Cyprus	xristofo@gmail.com	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
Self-adaptation of cloud applications with containerization and control theory	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
ECoWare2 presentation.pdf	Giovanni Quattrocchi, PhD candidate

2.1.2 Day Two

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	19/02/2016	Time:	10:00-11:00
Facilitator/Presenter:	Alessandro M. Rizzi	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Problem overview: Software verification expresses properties using matching logic, whereas program verification checks that every execution satisfying the specification also satisfies the program properties. This requires a high usage of computational resources. The general approach is syntax-directed: semantic rules, expressed according to Knuth's attribute grammars, specify how verification conditions can be computed. Outcome: syntax-direct verification framework

2. Attendees			
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Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
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3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Incremental Syntax-drivenProgram Verification using Matching Logic	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Alessandro-Rizzi.pdf	Alessandro M. Rizzi, PhD candidate

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	19/02/2016	Time:	11:30-12:30
Facilitator/Presenter:	Claudio Menghi	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Dealing with incompleteness in automata based model checking

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof.Carlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Christos Tsigkanos, PhD candidate	POLIMI / Italy	christos.tsigkanos@polimi.it	
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Claudio Menghi, Postdoctral student	POLIMI / Italy	menghi@elet.polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Dealing with incompleteness inautomata-based model checking	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)

Description	Prepared by
ThesisMenghiClaudioA4.pdf	Claudio Menghi, Postdoc

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	19/02/2016	Time:	14:30-16:30
Facilitator/Presenter:	All	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Open discussion, wrap-up, planning, and end of the day

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof.Carlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
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Claudio Menghi, Postdoctral student	POLIMI / Italy	menghi@elet.polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by

2.2 Second Site Visit – February 25-27, 2016

Three members from the CUT group participated in the second site visit. Two main lectures were given by POLIMI group relating to software development and deployment for distributed applications. In the first lecture, a comprehensive introduction to MODAClouds project was made, whereas in the second lecture, an approach for the management of resources in very large cloud platforms was described.

2.2.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	25/02/2016	Time:	09:00-10:00
Facilitator/Presenter:	Luciano Baresi	Location:	III floor, building 22, via Golgi, 42

1. Subject / Short Description
Welcome and introduction

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panayiotis.christodoulou@cut.ac.cy	
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3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Welcome and introduction			

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Welcome and introduction	

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	25/02/2016	Time:	10:00-13:00
Facilitator/Presenter:	Danilo Ardagna	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

Energy - aware Automatic Resource Allocation in Very Large Cloud Data Centers

They propose a distributed hierarchical solution based on mixed integer non-linear optimization for the management of resources of very large cloud service centers, acting at multiple time-scales Extensive experiments across a wide variety of configurations demonstrate the efficiency and effectiveness of their approach. The goal of this research work is to devise resource allocation policies for virtualized cloud environments that satisfy performance and availability guarantees and minimize energy costs in very large cloud service centers.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panayiotis.christodoulou@cut.ac.cy	
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3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
Energy-Aware Autonomic Resource Allocation in very Large Cloud Data Centers	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
DaniloArdagna-DesignCloud.pdf	Prof. Danilo Ardagna

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	25/02/2016	Time:	14:00-16:30
Facilitator/Presenter:	Danilo Ardagna	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

MODAClouds presentation: The objective of the MODAClouds project (www.modaclouds.eu) is to reduce this complexity and therefore the vendor lock-in imposed to cloud application developers. Design and runtime tools to bridge the gap between different providers have been developers and made available to the community. The tools are designed to interact and cooperate to each other in order to help the user to find a satisfactory configuration for the application at design time.

SPACE 4Clouds has a twofold function. First, it keeps track of candidate solutions and manage their creation, modification, evaluation, comparison and feasibility check. Second, SPACE 4Clouds deals with the design-space exploration and optimisation process. The sub-component, named as Local Search Optimizer, applies iteratively a set of moves belonging to different search neighbourhoods in order to make the current solution to improve with the goal of fulfilling user constraints while minimising the overall costs.

LINE is the component in charge of the evaluation of the performance models (LQN) enriched with information about the efficiency and the dynamic behavior that can affect the Cloud platform. Moreover, LINE can also compute Response Time Distributions, which can be directly used to assess service level objectives defined as percentiles of the response time. LINE offers a parallel execution model for the efficient solution of a large number of performance models. Note that LINE receives as input the performance models derived from every SPACE 4Clouds candidate solution

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Danilo Ardagna	POLIMI / Italy	danilo.ardagna@polimi.it	
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Kyriaki Antoniou, MSc student	CUT / Cyprus	ka.antoniou@edu.cut.ac.cy	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
MODAClouds: Designing Multi-Cloud Applications with QoS guarantees	lecture		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
DaniloArdagna-DesignCloud.pdf	Prof. Danilo Ardagna

2.2.2 Day Two

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	26/02/2016	Time:	09:00-10:00
Facilitator/Presenter:	Panayiotis Christodoulou	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Recommender Systems Introduction. RS can be seen as intelligent search engines which collect information about users or items aiming at provide customized recommendations. Classification: i) Content-based systems (CB) are based on keywords and suggest items to a user compared to items the same user liked or seen in the past, ii) Collaborative Filtering techniques (CF) recommend items to a user: based on the items he/she has seen or bought in the past or based on the similarities between the active user and other users' who share similar interests, and iii) Hybrid Systems which are a combination of CB and CF approaches.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
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Marios Athanasiou, MSc student	CUT / Cyprus	mt.athanasiou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	ka.antoniou@edu.cut.ac.cy	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
Recommender Systems	Presentation	Panayiotis Christodoulou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Recommender Systems	Panayiotis Christodoulou

2.3 Third Site Visit – March 3-5, 2016

Four researchers from CUT group participated in the third site visit, during which a number of lectures were given by POLIMI group members. These lectures covered a wide range of aspects and research topics on cloud distributed systems, such as pricing on cloud, autonomic management, and data processing on large clusters.

2.3.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	03/03/2016	Time:	09:00-10:00
Facilitator/Presenter:	Diego Perez	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

Synthesis of Adaptation Plans for Cloud Infrastructure with Hybrid Cost Models Presented a method and a tool for devising adaptation plans for the deployment of software applications on cloud computing infrastructure comprising a combination of reserved and "pay-as-you-go" resources. Starting from a trace log that represents the expected workload pattern of the application, the authors exploit queuing theory results to synthesize an adaptation plan that manages the cloud elasticity in a cost-effective way. To this end, the amount of resources to be reserved for a long period is quantified in a first activity of the method. Then, as a second activity, the number and types of pay-as-you-go resources is assessed. The adaptation plan produced for a real web server is shown to be cost effective even when the actual workload differs from that in the trace log by as much as 5 -- 20%.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Raffaela Mirandola	POLIMI / Italy	raffaela.mirandola@polimi.it	
Diego Perez, Postdoc	POLIMI / Italy	diego.perez@polimi.it	
Prof. Sotirios Chatzis	CUT / Cyprus	sotirios.chatzis@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
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3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
Synthesis of Adaptation Plans for Cloud Infrastructure with Hybrid Cost Models	Lecture	Diego Perez, Postdoc	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)

Description	Prepared by
Synthesis of Adaptation Plans for Cloud Infrastructure with Hybrid Cost Models.pdf	Diego Perez, Postdoc

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	03/03/2016	Time:	10:00-11:00
Facilitator/Presenter:	Diego Perez	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

QoS-driven probabilistic runtime evaluations of virtual machine placement on hosts. The authors address the problem that most of the organizations face when considering to deploy their applications on the cloud expecting them to work with good QoS. System managers dedicate efforts to capacity planning based on the application characteristics, the QoS requirements and the infrastructure capabilities. This paper presents a probabilistic method to evaluate how good a host is to allocate new VMs based on the expected computing quality that the host can offer considering the variable computing demand of the VMs along time using as input the information from the running VMs that is easily to measure at the hypervisor level.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Raffaela Mirandola	POLIMI / Italy	raffaela.mirandola@polimi.it	
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3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
QoS-driven probabilistic runtime evaluations of virtual machine placement on hosts	Lecture	Diego Perez, Postdoc	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
QoS-driven probabilistic runtime evaluations of virtual machine placement.pdf	Diego Perez, Postdoc

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	03/03/2016	Time:	11:30-12:30
Facilitator/Presenter:	Luciano Baresi	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

Self-supervising BPEL Processes Service compositions suffer changes in their partner services. Even if the composition does not change, its behavior may evolve over time and become incorrect. Such changes cannot be fully foreseen through prerelease validation, but impose a shift in the quality assessment activities. Provided functionality and quality of service must be continuously probed while the application executes, and the application itself must be able to take corrective actions to preserve its dependability and robustness. We propose the idea of self-supervising BPEL processes, that is, special-purpose compositions that assess their behavior and react through user-defined rules. Supervision consists of monitoring and recovery. The former checks the system's execution to see whether everything is proceeding as planned, while the latter attempts to fix any anomalies. The paper introduces two languages for defining monitoring and recovery and explains how to use them to enrich BPEL processes with self-supervision capabilities. Supervision is treated as a cross-cutting concern that is only blended at runtime, allowing different stakeholders to adopt different strategies with no impact on the actual business logic. The paper also presents a supervision-aware runtime framework for executing the enriched processes, and briefly discusses the results of in-lab experiments and of a first evaluation with industrial partners.

2. Attendees

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Charalambos Partaourides, PhD candidate	CUT / Cyprus	ck.partaourides@edu.cut.ac.cy	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
Self-supervising BPEL Processes	Lecture	Prof. Luciano Baresi	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Self-supervising BPEL Processes.pdf	Prof. Luciano Baresi

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	03/03/2016	Time:	14:30-15:30
Facilitator/Presenter:	Luciano Baresi	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
A fine-grained Autonomic Management Solution for Multi-Layers Systems. This paper presents a Multi-Level monitoring where aggregators and analyzers collaborate to produce the knowledge needed and a Multi-level Adaptation. For Multi-Lvel monitoring a Multi-layer Collection and Constraint Language (mlCCL) defines the runtime data we want to collect from the various layer, how to aggregate the data to build higher-level knowledge and how to analyze the data to identify undesired behavior. Also a ECoWare FrameWork works as an event Correlation middleware which supports mlCCL specifications and provides advanced data aggregation and analysis. For Multi-level Adaptation a planning is responsible for defining an adaptation strategy that can fix a specific problem. This paper established the basic tools needed to perform multi-level service management.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
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Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panayiotis.christodoulou@cut.ac.cy	
Charalambos Partaourides, PhD candidate	CUT / Cyprus	ck.partaourides@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
A fine-grained Autonomic Management Solution for Multi-Layers Systems	Lecture	Prof. Luciano Baresi	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
A fine-grained Autonomic Management Solution for Multilayers Systems.pdf	Prof. Luciano Baresi

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	03/03/2016	Time:	15:30-16:30
Facilitator/Presenter:	Luciano Baresi	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
A distributed Approach for the Federation of Heterogeneous Registries. Registries play a key role in service-oriented applications. Originally, they were neutral players between service providers and clients. The UDDI Business Registry (UBR) was meant to foster these concepts and provide a common reference for companies interested in Web services. The more Web services were used, the more companies started create their own "local" registries: more efficient discovery processes, better control over the quality of published information, and also more sophisticated publication policies motivated the creation of private repositories. The number and heterogeneity of the different registries —besides the decision to close the UBR— are pushing for new and sophisticated means to make different registries cooperate. This paper proposes DIRE (DIstributed REgistry), a novel approach based on a publish and subscribe (P/S) infrastructure to federate different heterogeneous registries and make them exchange information about published services. The paper discusses the main motivations for the P/S-based infrastructure, proposes an integrated service model, introduces the main components of the framework, and exemplifies them on a simple case study.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Sotirios Chatzis	CUT / Cyprus	sotirios.chatzis@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
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Charalambos Partaourides, PhD candidate	CUT / Cyprus	ck.partaourides@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
A distributed Approach for the Federation of Heterogeneous Registries	Lecture	Prof. Luciano Baresi	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
A distributed Approach for the Federation of Heter…us Registries.pdf	Prof. Luciano Baresi

2.3.2 Day Two

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	04/03/2016	Time:	09:30-11:30
Facilitator/Presenter:	Danilo Ardagna	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Game Theory Models for MapReduce: Joint Admission Control and Capacity Allocation. Nowadays many companies have at their disposal large amounts of raw, unstructured data. With the term Big Data we refer to the analysis of huge datasets, allowing the extraction of information of utmost importance for business purposes. Among the enabling technologies, a central place is held by the MapReduce framework, in particular its open source implementation, Apache Hadoop. For cost effectiveness considerations, a common approach entails sharing server clusters among multiple user classes. Such a common infrastructure should provide every user with a fair share of computational resources, ensuring that Service Level Agreements (SLAs) are met and avoiding wastes. In this work we consider mathematical programming problems that model the optimal allocation of computational resources in a cluster, in order to develop new capacity allocation techniques, allowing for better performance in shared datacenters. Our goal is the reduction of power consumption, while respecting the deadlines stated in the SLAs and avoiding penalties associated with job rejections. At the core of this approach there is the development of a distributed algorithm, based on Game Theory models and techniques, and enabling run-time capacity allocation, hence the need to split the original problem of resource allocation in MapReduce environments into two classes of problems, one for the central Resource Manager and the other for each Application Master. Further improvements could be gained taking into account also the issue of data locality, which can greatly impact performance in the execution of MapReduce jobs.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Danilo Ardagna	POLIMI / Italy	danilo.ardagna@polimi.it	
Eugenio Gianniti, PhD candidate	POLIMI / Italy	eugenio.gianniti@polimi.it	
Prof. Sotirios Chatzis	CUT / Cyprus	sotirios.chatzis@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panayiotis.christodoulou@cut.ac.cy	
Charalambos Partaourides, PhD candidate	CUT / Cyprus	ck.partaourides@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time

Game Theory Models for MapReduce	Lecture	Prof. Danilo Ardagna	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Game Theory Models for MapReduce - Joint Admiss…ity Allocation.pdf	Eugenio Gianniti PhD Cand.

2.4 Fourth Site Visit – March 10-12, 2016

During the forth site visit, three members from the CUT group attended presentations and lectures given by the POLIMI group regarding software development and deployment for distributed applications. More specifically, the agenda included various topics linked with the software development process, social debt, QoS monitoring, data migration, self adaptation, model driver design, and capacity allocation in cloud application.

2.4.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	10/03/2016	Time:	09:00-10:00
Facilitator/Presenter:	Damian Andrew Tamburri	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
From Technical to Social Debt: Analyzing Software Development Communities using Social--Networks Analysis Damian discusses SSE (Social Software Engineering), a branch of Software Engineering that has to do with the social and organizational aspects of the software development processes. Simple examples of failures in a software development process that have to do with SSE are unrealistic deadlines, communication problems etc. Next, the term Technical Debt is explained, which is basically a decision that seems correct but it is going to cost in the future. He then discusses how this debt can be minimized studying the Social Relations between people and the Organizational and Technical Relations between artifacts and people. There are some relevant papers from Damian mentioned in this presentation

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Elisabetta Di Nitto	POLIMI / Italy	elisabetta.dinitto@polimi.it	
Damian Andrew Tamburri, Postdoctral student	POLIMI / Italy	damianandrew.tamburri@polimi.it	
Andreas Christoforou , PhD candidate	CUT / Cyprus	ax.christoforou@edu.cut.ac.cy	
Marios Athanasiou, MSc student	CUT / Cyprus	mt.athanasiou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	ka.antoniou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
From Technical to Social Debt: Analyzing Software Development Communities using Social--Networks Analysis	Lecture	Damian Andrew Tamburri, Postdoc	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Slides_Seminar_Social_Debt.pdf	Damian Andrew Tamburri, Postdoc

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	10/03/2016	Time:	10:00-11:00
Facilitator/Presenter:	Elisabetta Di Nitto	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

Today's Challenges in QoS Monitoring: This was a presentation created by Marco but presented by Prof. Elisabetta. The scope of this presentation was to state the difference of a finished software and a code ready for delivery to the user. This day we only say a product is finished when it is retired. There is a need of constant monitoring for detecting or predicting issues and understanding customer needs. They propose a way to monitor data coming from multiple and heterogeneous sources using the Tower 4Clouds Architecture (slide11). Data Collected are analysed and balancing actions or change of configurations are made accordingly. Monitoring rules can be customized through an XML like language.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Elisabetta Di Nitto	POLIMI / Italy	elisabetta.dinitto@polimi.it	
Marco Miglierina, PhD Cand	POLIMI / Italy	marco.miglierina@polimi.it	
Andreas Christoforou , PhD candidate	CUT / Cyprus	ax.christoforou@edu.cut.ac.cy	
Marios Athanasiou, MSc student	CUT / Cyprus	mt.athanasiou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	ka.antoniou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Today's Challenges in QoS Monitoring	Lecture	Marco Miglierina, PhD Cand	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
2016-03-09_Seminar-Today-s-challenges-in-qos-monitoring.pdf	Marco Miglierina, PhD Cand

Workpackage:	WP2 – New software process for developing and operating distributed applications

Date: (MM/DD/YYYY)	10/03/2016	Time:	11:00-12:00
Facilitator/Presenter:	Marco Scavuzzo	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

Interoperable data migration between heterogeneous NoSQL databases. Marco's presentation addressed the ventor lock-in problem, the problem when due to database limitations and differences it's difficult to develop and a cloud application for multi-cloud use. The proposed solution is called Hegira 4Clouds and its goal is to perform correct data migration between NoSQL databases, replication of a database improving application availability and performance with non or minimal code adaption. For the data migration part, an intermediate metamodel is used as interchange language. After a detail review of the Hegira 4Clouds Architecture we are presented some interesting future work like the customizable data migration, using joins and filters.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Elisabetta Di Nitto	POLIMI / Italy	elisabetta.dinitto@polimi.it	
Marco Scavuzzo, PhD Cand	POLIMI / Italy	marco.scavuzzo@polimi.it	
Andreas Christoforou , PhD candidate	CUT / Cyprus	ax.christoforou@edu.cut.ac.cy	
Marios Athanasiou, MSc student	CUT / Cyprus	mt.athanasiou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	ka.antoniou@edu.cut.ac.cy	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
Interoperable data migration between heterogeneous NoSQL databases	Lecture	Marco Scavuzzo, PhD Cand	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)

Description	Prepared by
Hegira short.pdf	Marco Scavuzzo, PhD Cand

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	10/03/2016	Time:	14:30-15:30
Facilitator/Presenter:	Luca Florio	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

Decentralized Self-Adaptation in Large-Scale Distributed Systems. The presentation was about self adaptation and if it can be applicable in large-scale distributed systems. At the beggining we are presented with Selflet framework which is applicable in a specific development paradigm. The goal is to decentralize self adaptations to applications based on on-the-edge approaches like microservices. Luca's work is at the very beggining but his deliverable, GRU, will be an automatic management of Docker containers. At this moment, GRU agents run in each Node of a decentralized system and communicated with the GRU deamon and other agents to monitor the system and plan the best action to actuate.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Elisabetta Di Nitto	POLIMI / Italy	elisabetta.dinitto@polimi.it	
Luca Florio PhD Cand	POLIMI / Italy	luca.florio@polimi.it	
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Marios Athanasiou, MSc student	CUT / Cyprus	mt.athanasiou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	ka.antoniou@edu.cut.ac.cy	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time

Decentralized Self-Adaptation in Large-Scale Distributed Systems	Lecture	Luca Florio, PhD Cand	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Decentralized-self-adaptation.pdf	Luca Florio, PhD Cand

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	10/03/2016	Time:	15:30-16:30
Facilitator/Presenter:	Michele Guerriero	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Model-Driven Design of Data-Intensive Applications. Michele discussed something not so relevant with this project's interests, Model-Driven design of data-intensive applications. In other words he describes some modeling layers that allow you to describe your application that you want to develop. The first layer is in a higher level of abstraction and it gives you a structural view of the application. The second one is a refinement where you add technology specific details. You are allowed to describe your application and framework logic. At the last layer you specify the deployment model of the application. With this kind of modelling you can export formal verification, optimization, automatic code generation and many more.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Elisabetta Di Nitto	POLIMI / Italy	elisabetta.dinitto@polimi.it	
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Kyriaki Antoniou, MSc student	CUT / Cyprus	ka.antoniou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Model-Driven Design of Data-Intensive Applications	Lecture	Michele Guerriero, PhD Cand	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
diceModeling.pdf	Michele Guerriero, PhD Cand

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	10/03/2016	Time:	16:30-17:30
Facilitator/Presenter:	Elisabetta Di Nitto	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
DICE: Quality-Driven development of Data-Intensive Cloud Applications. The presenter started with the explanation of the DICE Project and what DICE Platform Independent Model is. He then proceeds and states the 4 QA tools that DICE uses, Discrete Event Simulation, Formal Verification Tools, Architecture Optimization Tool and Feedback Analysis. He then briefly explained the architecture of this approach and how, at this moment, they try to measure some metrics such as idle time and failures. Unfortunately it was in my opinion the most complicated presentation of that visit. If its needed I will dig deeper to find more information

2. Attendees			
Name	Department/Division	E-mail	Phone
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Kyriaki Antoniou, MSc student	CUT / Cyprus	ka.antoniou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
DICE: Quality-Driven development of Data-Intensive Cloud Applications	Lecture	Prof. Elisabetta Di Nitto	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
DiceFM.pdf	Prof. Elisabetta Di Nitto

2.4.2 Day Two

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	11/03/2016	Time:	09:30-11:30
Facilitator/Presenter:	Soroush Karimian	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Performance Evaluation and Capacity Allocation of Data Intensive Cloud Applications. Soroush's goal is to configure in a cost-effective way Map-Reduce systems that are on the Cloud. He also wants to implement an efficient design space exploration exploiting formal models for performance prediction. He is also in the start of his research. He explains what Petri Nets and Stochastic Petri Nets are and he states that the Marcov Chain resulting from the Stochastic Petri Net model is subject to the State Space Explosion problem. He continues explaining what the two steps of the State Space Reduction are, decomposition and folding.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Danilo Ardagna	POLIMI / Italy	danilo.ardagna@polimi.it	
Soroush Karimian , PhD candidate	POLIMI / Italy	skarimian@ce.sharif.ir	
Andreas Christoforou , PhD candidate	CUT / Cyprus	ax.christoforou@edu.cut.ac.cy	
Marios Athanasiou, MSc student	CUT / Cyprus	mt.athanasiou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	ka.antoniou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Performance Evaluation and Capacity Allocation of Data Intensive Cloud Applications	Lecture	Soroush Karimian , PhD candidate	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
PerformanceevaluationandCapacityAllocationofdataintensiveCloud applications.pdf	Soroush Karimian , PhD candidate

2.5 Milan Workshop – April 11-13, 2016

Members from all institutions participated in the sessions of the workshop. During the opening session, a summary of the first series of site visits was made and a discussion on which topics should be studied further in order to be used for project objectives followed. During the remaining sessions of the workshop, a detailed discussion was held on these topics separately.

2.5.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications

Date: (MM/DD/YYYY)	11/04/2016	Time:	09:30-11:30
Facilitator/Presenter:	Andreas Andreou	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Project Meeting. Four 2-day visits in February/March 2016. A total of 22 talks presented. 19 were presented from POLIMI 3 from CUT. The areas that were discussed were: Self-adaptive systems, Cloud resource management, Cloud pricing plans Social software engineering.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Prof. Mike Papazoglou	UvT / Netherlands	mike@uvt.nl	
Prof. Willem-Jan van den Heuvel	UvT / Netherlands	wjheuvel@uvt.nl	
Prof. Arjan van den Born	UvT / Netherlands	J.A.vdnBorn@uvt.nl	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Prof. Sotirios Chatzis	CUT / Cyprus	sotirios.chatzis@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time

Project Meeting	Presentation	Andreas Andreou, Andreas Christoforou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Project Meeting	Andreas Andreou, Andreas Christoforou

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	11/04/2016	Time:	14:30-15:30
Facilitator/Presenter:	Giovanni Quatrocchi, Tsigkanos Christos, Claudio Menghi	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
"Self-adaptation of cloud applications with containerization and control theory". Systems that adapt themselves automatically according to changes in the environment, in the requirements or in the system itself. Reactive or proactive approaches. Usually these systems use feedback loops to control the adaptation process. The control loop is composed by four phases: monitoring, analysis, planning and execution

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Prof. Sotirios Chatzis	CUT / Cyprus	sotirios.chatzis@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	

Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Self Adaptive Systems	Presentation	Giovanni Quatrocchi, Tsigkanos Christos, Claudio Menghi	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Self Adaptive Systems	Giovanni Quatrocchi, Tsigkanos Christos, Claudio Menghi

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	11/04/2016	Time:	16:00-17:00
Facilitator/Presenter:	Soroush Karimian	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Cloud resource management requires complex policies and decisions for multi-objective optimization. It is extremely challenging because of the complexity of the system, which makes it impossible to have accurate global state information. It is also subject to incessant and unpredictable interactions with the environment. The strategies for cloud resource management associated with the three cloud delivery models, Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS), differ from one another. In all cases, the cloud services providers are faced with large, fluctuating loads that challenge the claim of cloud elasticity. In some cases, when they can predict a spike can be predicted, they can provision resources in advance. For example, seasonal Web services may be subject to spikes.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Prof. Sotirios Chatzis	CUT / Cyprus	sotirios.chatzis@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Cloud Resource Management	Presentation	Soroush Karimian	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Cloud Resource Management	Soroush Karimian

2.5.2 Day Two

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	12/04/2016	Time:	09:30-11:00

Facilitator/Presenter:	Damian Tamburri	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Research Goal: Decrease waste (time, effort, code, etc.) in software processes connected to social and organizational causes. Research Approach: Explorative & empirical software engineering in industry, Establishing causality of observed social and organizational phenomena, Identify good organizational configurations (e.g., best-fit collaboration patterns, tool-support, communication protocols, community structures, barrier mitigation strategies, etc.) and Multi-disciplinarity

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Prof. Sotirios Chatzis	CUT / Cyprus	sotirios.chatzis@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Social Software Engineering / Cost estimation	Presentation	Damian Tamburri	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by

Social Software Engineering / Cost estimation	Damian Tamburri

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	12/04/2016	Time:	11:30-13:00
Facilitator/Presenter:	Diego Perez	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description

Pay-as-you-go pricing allows you to easily adapt to changing business needs without overcommitting budgets and improving your responsiveness to changes. With a pay as you go model, you can adapt your business depending on need and not on forecasts, reducing the risk or overprovisioning or missing capacity. By paying for services on an as needed basis, you can redirect your focus to innovation and invention, reducing procurement complexity and enabling your business to be fully elastic.

2. Attendees

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Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Prof. Sotirios Chatzis	CUT / Cyprus	sotirios.chatzis@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time

Cloud Pricing	Presentation	Diego Perez	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Cloud Pricing	Diego Perez

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	12/04/2016	Time:	14:30-15:30
Facilitator/Presenter:	Andreas Andreou	Location:	III floor, building 22, via Golgi, 42, Milan, Italy

1. Subject / Short Description
Computational Intelligence (CI) is a sub-branch of Artificial Intelligence (AI), which attempts to apply methods and techniques that enable or facilitate intelligent behavior in complex and uncertain environments CI Techniques include: Artificial Neural Networks (ANN), Fuzzy Systems (FS), Evolutionary Computation (EC)

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Prof. Sotirios Chatzis	CUT / Cyprus	sotirios.chatzis@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Computational Intelligence (CI)	Presentation	Prof. Danilo Ardagna	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Computational Intelligence (CI)	Prof. Danilo Ardagna

3. UvT Site Visits

3.1 First Site Visit – June 1-3, 2016

Three members from the CUT group participated in the first site visit at UvT during the course of which several lectures were given that linked the key knowledge areas presented in Work Package 2.

3.1.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	01/06/2016	Time:	09:30 -10:30
Facilitator/Presenter:	Mike P. Papazoglou	Location:	Marienburg Den Bosch

1. Subject / Short Description
The Internet of Everything connects people in more relevant ways, delivers the right information to the right person or machine at the right time, leverages data into more useful information for decision making and connects physical devices and objects to the Internet and each other together for a more intelligent descion making. The world needs smarter solutions – more automated, interconnected, interoperable that lead to improved decision making. R&D challenges are discussed as well as Big Data & Analytics in Smart Connected Factories.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Mike P. Papazoglou	Tillburg / The Netherlands	m.p.papazoglou@uvt.nl	
Prof. Willem-Jan van den Heuvel	Tillburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
The Next Fronier : The Internet of Everything	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
The Internet of Everything.pdf	Prof. Mike P. Papazoglou

Workpackage:	WP2 – New software process for developing and operating distributed applications

Date: (MM/DD/YYYY)	01/06/2016	Time:	10:30 – 11:00
Facilitator/Presenter:	Mike P. Papazoglou	Location:	Marienburg Den Bosch

1. Subject / Short Description
This presentation focuses on cognitive and behavioral explanations for organizational decision-making with a specific interest in interorganizational collaboration. The business model innovation for the Dutch water autohirties is the changing of taxation, laboratory, and rat catching activities, from in-house to allying with other authorities and the engaging in a new activity: the generation, collection and commercializing of energy and resources.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Mike P. Papazoglou	Tillburg / The Netherlands	m.p.papazoglou@uvt.nl	
Prof. Willem-Jan van den Heuvel	Tillburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Koen van der Oever	Tillburg / The Netherlands	k.f.vdnoever@tilburguniversity.edu	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Business model innovation by Dutch Water Authorities: Decision-Making and Alliance Formation	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	**Prepared by**
VdnOever-BMI by Dutch water authorities.pptx	Prof. Mike P. Papazoglou

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	01/06/2016	Time:	11:30- 12:30
Facilitator/Presenter:	Yan Wang	Location:	Marienburg Den Bosch

1. Subject / Short Description

The recent research projects of a Dutch telecommunication company are: i) How service development and operation are managed and ii) the Gaps in IT-enabled service ecosystem. IT-enabled service ecosystem are managed from developemnts / innovations and service operations but still there are many gaps on Dev-Ops, opretaion during outsourcing and management. Following a scenario on the resource pooling with central management the following outcomes are addressed: i) Restrict wish intake with consideration of delivery progress and service performance ii) Commit to the assigned priority, no change to the planned sprints iii) Project prioritization should be aligned with development and service operation and iv) Trade off between quality and time to market.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Mike P. Papazoglou	Tillburg / The Netherlands	m.p.papazoglou@uvt.nl	

Prof. Willem-Jan van den Heuvel	Tillburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Yan Wang	Tillburg / The Netherlands	y.wang13@uvt.nl	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Managing dynamics between IT-enabled service development and operation	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
20160601 Managing dynamics between IT-enabled …d operation.pptx	Yan Wang

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	01/06/2016	Time:	12:30- 13:30
Facilitator/Presenter:	Eric Postma	Location:	Marienburg Den Bosch

1. Subject / Short Description

This presentation discusses a series of machine learning techniques in order to to recognize patterns using filters in Neural Networks. The challenges are that Image recognition requires very complex decision boundaries (many layers) and pre-processing is crucial to deal with translations. A brief introduction on how to train a Deep Convolutional Neural Network is presented. Deep Learning can be used in Speech recognition/translation, Image and object recognition, Control tasks (playing video games) and Language generation.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Mike P. Papazoglou	Tillburg / The Netherlands	m.p.papazoglou@uvt.nl	
Prof. Willem-Jan van den Heuvel	Tillburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Prof. Eric Postma	Tillburg / The Netherlands	e.o.postma@tilburguniversity.edu	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou	CUT / Cyprus	xristofo@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Machine learning in support of human decision making	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Machine learning in support of human desicion making.pdf	Eric Postma

3.2 Second Site Visit – June 27-July 1, 2016

Three members from the CUT group participated in the 11th Symposium and Summer School On Service-Oriented Computing organized by UvT, in the context of the second site visit at Tilburg. During the summer school CUT members attended presentations and lectures related to key knowledge areas of the corresponding work package.

3.2.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	27/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
The goal of user-centered computing is the: optimizing usability and usefulness of IT in the interplay with organizational work practice, structures and processes. The Usability Engineering Process can help us achieve this goal by analyzing the at first the context of use and the user needs and then by desinging the prototype and launching a user-oriented product. The introduction of new processes the Pattern Maturation Process and the Pattern Library Prototype described in this presentation can help us overcome the various challenges of user-centered computing.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
Evolving Pattern Libraries in Distributed Explorative Projects - an Approach for Research and Industry	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
FIT-SummerSoc2016_Presentation_print.pptx	Rene Reiners

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	27/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
Existing cloud offerings are i) Difficult to analyse and compare and ii) «Impedance mismatch» when deploying applications on multiple cloud offerings. To ease the design of cloud-based applications, there is the need for: i) Languages that permit defining applications and ii) Full-fledged support for designing cloud-based applications. This presentation presented the open-source prototype tool DrACO (Discovering Available Cloud Offerings), which permits to look-up for cloud offerings, and to retrieve them in a standardised TOSCA (Topology and Orchestration Specification for Cloud Applications) format.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
DrACO: Discovering Available Cloud Offerings	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
DrACO.pdf	Antonio Brogi

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	27/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
This presentation outlined the development of portable service-oriented and process-aware software in two ways: Firstly, it provides evidence for the existence of portability issues and the insufficiency of standards for guaranteeing software portability. Secondly, it derives and validates a novel measurement framework for quantifying portability. It also describes a methodology for benchmarking the conformance of engines to a language standard and implement it in a fully automated benchmarking tool.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Portability of Process-Aware and Service-Oriented Software: Evidence and Metrics	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
presentation-summersoc.pdf	Joerg Lenhard

3.2.2 Day Two

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	28/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
This presentation covered the challenges of Stream Mining. Data Stream Mining is the process of extracting knowledge structures from continuous, rapid data records. A data stream is a real-time, continuous, ordered (implicitly by arrival time or explicitly by timestamp) sequence of items.

2. Attendees			
Name	Department/Division	E-mail	Phone

Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Stream Mining	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
SummerSoc2016-Streammining-Tutorial.pdf	Daniela Nicklas

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	28/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
This presentation described various examples and frameworks for generating APIs for diverse solutions to streamline their usage and orchestration as the simple deployment plan is costly, time-consuming, error-prone and requires a lot of expertise.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Collaborative Gathering and Continuous Delivery of DevOps Solutions through Repositories	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Collaborative Gathering and Continuous Delivery of DevOps Solutions through Repositories	Johannes Wettinger

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	28/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description

A business process consists of a set of activities that are performed in coordination in an organizational and technical environment. There is a great interest in Business Processes standardization i) Homogenize formats used among and within companies and ii) Focus on Business Process Model Notation (BPMN). This presentation presents an Owl-S based representation of BMPN that i) allows the integration with the existing pattern ontology and ii) Cloud patterns contain the information necessary to deploy the service.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
A Semantic Model for Business Process Patterns to support Cloud Deployment	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
presentazione-Summersoc.pdf	Antonio Esposito

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	28/06/2016	Time:	

Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
The presentation outlined the FlexMash approach which is a: Flexible modeling and execution of data integration and processing scenarios based on non-functional user requirements. This approach was motivated by the Big Data problem where the Data sources are oftentimes heterogeneous, distributed, and dynamic.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
TOSCA4Mashups - Enhanced Method for On-Demand Data Mashup Provisioning	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Presentation_Hirmer.pdf	Pascal Hirmer

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	28/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
The proposed top-down model presented in this presenation is an effective decision support to filter the vast amount of NoSQL database systems based on central requirements. The NoSQL Toolbox described here provides a mapping from functional and non-functional requirements to common implementation techniques to categorize the constantly evolving NoSQL space.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
NoSQL Database Systems: A Survey and Decision Guidance	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
2.6-SummerSOC-2016-pdf.pdf	Felix Gessert

3.2.3 Day Three

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	29/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
This presentation describes with details the Fundamentals of the SOC Paradigm which are: i) Aspects that exceed classical Theoretical Informatics ii) Towards a Theory of Services and iii) Composing many services.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	koulla1992@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Fundamentals of the SoC Paradigm	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
SUMMERSOC-Reisig.pdf	Wolfgang Reisig

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	29/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description

The PaaSage described in this presentation is an open and integrated platform used to support both design and deployment of Cloud applications and an accompanying methodology that allows model-based development, configuration, optimization and deployment of existing and new applications. The PaaSage Features are: Open-source, extensible and modifiable, Modelling of many application aspects, Multi/cross-cloud application deployment, Cloudbursting support, Deployment optimisation based on user quality, location & hardware requirements and Application re-configuration based on scalability rules & global-based adaptation.

2. Attendees

Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	koulla1992@gmail.com	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
The PaaSage Model-Based Cloud Platform: A Training Session	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
3.2-paasageInNutshell.pdf	Kyriakos Kritikos

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	29/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
SOA can mean variosu things to different people, for example: i) A set of services that a business wants to expose to their customers and partners, or other portions of the organization, ii) An architectural style which requires a service provider, a service requestor (consumer) and a service contract (a.k.a. client/server) etc. In this presentation the microservices community claims that microservices are a new architectural style that overcomes the deficiencies of SOA. SOA proponents argue that microservices are a state-of-the-art implementation approach to SOA ("SOA done right"). A closer look unveils that most of the key characteristics of microservices are mostly pertain to development process and deployment viewpoint.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	

Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	koulla1992@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Microservices Tenets: Agile Approach to Service Development and Deployment	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
ZIO-SummerSoC2016-MSTvsSOAv10p.pdf	Olaf Zimmermann

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	29/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
This presentation provided models for calculating the collective utility of ensemble and hierarchical structures for measuring the upper level utilities from lower level utilities. The success of the proposed approach depends on i) the way utility functions are selected (so that preferences of entities are appropriately represented) ii) how well the consecutive levels in the hierarchy coordinate to take into account complementarities, interdependencies and knowledge aggregation so that a scalable model is built.

2. Attendees			
Name	Department/Division	E-mail	Phone
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	koulla1992@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Collective Utility in Hierarchical Structures of Collective Adaptive Systems: an Application in Transportation Systems	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
3.5-Bitsaki-presentation.pdf	Bitsaki Marina

3.2.4 Day Four

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	30/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
This presentation provides an introduction on the Identity and Access Management (IAM), the Delegation Control using OAuth and OIDC for RESTful services and SAML and Web SSO for web services and finally the Access control. IAM is the security and business discipline that "enables the right individuals to access the right resources at the right times and for the right reasons".

2. Attendees			
Name	Department/Division	E-mail	Phone
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	koulla1992@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Security & Access Control	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
SecurityAccessControlSummerSoc.pdf	Ulf Schreier

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	30/06/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
Services and Workflows are needed for a variety of applications – preferably in an appropriate Software Engineering Context. This presentation describes the: Production Automation. The application characteristics are: Cyber-physical systems, changes – independently w.r.t requirements, hard and software and the automation support needed for continuous hard- & software evolution. The implementation is done using a agent-/component-oriented software development platform that is an Implementation platform for autonomous services as well as workflows. It has the potential for building and managing knowledge models and an appropriate adaptation platform for change management.

2. Attendees			
Name	Department/Division	E-mail	Phone
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Kyriaki Antoniou, MSc student	CUT / Cyprus	koulla1992@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Autonomous Services and Workflows for Production Automations	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
1606-Kreta-FYPA2C.pdf	Winfried Lamersdorf

3.2.5 Day five

Workpackage:	WP2 – New software process for developing and operating distributed applications

Date: (MM/DD/YYYY)	01/07/2016	Time:	
Facilitator/Presenter:	Summer School On Service-Oriented Computing	Location:	Symposium and Summer School on Service-Oriented Computing. Crete, Greece

1. Subject / Short Description
The DLR-PT, Project Management Agency presented drives research, innovation and education, supports policies, programmes and projects, operates nationally, across Europe and internationally. It also networks disciplines, industries and stakeholders and stands for dedication and professionalism. Various examples of real-world smart service/product implementations are outlined in this pesentation.

2. Attendees			
Name	Department/Division	E-mail	Phone
Kyriaki Antoniou, MSc student	CUT / Cyprus	koulla1992@gmail.com	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Economic relevance of Smart Services technologies	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
SummerSOC_Crete_Mattauch.pdf	Walter Mattauch

3.3 Third Site Visit and Workshop

Three members from the CUT group participated in third site visit to UvT which also included a concluding workshop. During the first half of this site visit members visited the new Jheronimus

Academy of Data Science (JADS) campus at Den Bosch, where they attended introductory presentations in the field of Data Science. In the second half of the site visit, the second DevOps oriented software engineering workshop was conducted, in which a synopsis of the second series of site visits was presented.

3.3.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	04/07/2016	Time:	09:30 -11:00
Facilitator/Presenter:	Willem-Jan van den Heuvel	Location:	Marienburg Den Bosch

1. Subject / Short Description
Tour at the new Data Science campus at Den Bosch.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Mike P. Papazoglou	Tillburg / The Netherlands	m.p.papazoglou@uvt.nl	
Willem-Jan van den Heuvel	Tillburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	paa.christodoulou@edu.cut.ac.ct	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Lambros Odysseos	CUT / Cyprus	lambros.odysseos@edu.cut.ac.cy	

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Tour and demonstration of JADS programmes of study and facilities	Willem-Jan van den Heuvel

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	04/07/2016	Time:	11:30-13:30
Facilitator/Presenter:	Willem-Jan van den Heuvel Mike P. Papazoglou	Location:	Marienburg Den Bosch

1. Subject / Short Description
The Mariënburg Campus in 's-Hertogenbosch is home to the Graduate School Data Science and Entrepreneurship. The aim of this School is to develop so-called 'T-Shaped' data scientists and researchers, with strong skills and experience in one discipline and an essential understanding of many others. The school is a joint initiative of Tilburg University and Eindhoven University of Technology with the intention to make the Netherlands the leading data driven economy in Europe and to stimulate data entrepreneurship in the region. Data Science researchers, graduates and under-graduates all benefit from an innovative, multi-disciplined teaching approach.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Mike P. Papazoglou	Tillburg / The Netherlands	m.p.papazoglou@uvt.nl	

Willem-Jan van den Heuvel	Tillburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Panayiotis Christodoulou	CUT / Cyprus	paa.christodoulou@edu.cut.ac.ct	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Lambros Odysseos	CUT / Cyprus	lambros.odysseos@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Data Science and Enterpreneurship Presentation	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Data Science and Enterpreneurship Presentation	Willem-Jan van den Heuvel and Mike P. Papazoglou

3.3.2 Day Two

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	05/07/2016	Time:	09:30 -11:00
Facilitator/Presenter:	UvT Research Office	Location:	Tilburg University

1. Subject / Short Description

Tilburg University operates from an international academic orientation. International cooperation is a prerequisite for realizing our ambitions in teaching, research, and valorization. The university is increasingly focused and selective in its collaborations to be able to define its profile more sharply also in international relations. Tilburg University actively participates in various international research networks focused on knowledge-sharing and advocacy.. The university cooperates with various universities in the area of education, enabling students to gain international experience through Master's programs with multiple degrees, internships, exchange programs, or a summer school.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Mike P. Papazoglou	Tillburg / The Netherlands	m.p.papazoglou@uvt.nl	
Willem-Jan van den Heuvel	Tillburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Panayiotis Christodoulou	CUT / Cyprus	paa.christodoulou@edu.cut.ac.ct	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Lambros Odysseos	CUT / Cyprus	lambros.odysseos@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Research at Tilburg	Discussion		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Research at Tilburg	UvT Research Office

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	05/07/2016	Time:	11:30-13:30
Facilitator/Presenter:	Panayiotis Christodoulou	Location:	Tilburg University

1. Subject / Short Description
The SmartGov project aims to create new support tools that effectively incorporate Linked Open Data and Social Media into Fuzzy Cognitive Maps (FCMs). FCMs are a useful modelling and visualization tool for discussing policy scenarios between citizens and governments. The developed tools will be tested and implemented in four European cities.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Mike P. Papazoglou	Tillburg / The Netherlands	m.p.papazoglou@uvt.nl	
Willem-Jan van den Heuvel	Tillburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Panayiotis Christodoulou	CUT / Cyprus	paa.christodoulou@edu.cut.ac.ct	
Sotiris Vasou	CUT / Cyprus	sotiris.vassou@edu.cut.ac.cy	
Lambros Odysseos	CUT / Cyprus	lambros.odysseos@edu.cut.ac.cy	

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
SmartGOV Project	Presentation		

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by

SmartGOV Project	Panayiotis Christodoulou

4. Summer School

4.1 1st mini-school on Cloud Computing and Software Services

The 1st mini-school on Cloud Computing and Software Services was organized in mid-September and included a project meeting, lectures from senior researchers from POLIMI and a stakeholders' meeting and workshop. In the project meeting, members from all project partners discussed the project progress and organised the upcoming steps of the project (CUT and POLIMI with physical presence, UvT through teleconferencing). The four lectures by POLIMI researchers were attended by undergraduate and postgraduate students, and academic staff of CUT. At the stakeholders' meeting and workshop, the DOSSIER-cloud project was presented to various representatives from software development companies. The purpose was to have a discussion with them to identify ways for their involvement in the project from an industry perspective.

4.1.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	15/09/2016	Time:	09:00-09:15
Facilitator/Presenter:	Andreas Andreou Andreas Christoforou	Location:	Student Services Building Conference Room, Ground Floor, Athinon and N.Xiouta corner, Lemesos

1. Subject / Short Description
Welcome and introduction

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Srđan Krstić	POLIMI / Italy	srdan.krstic@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Undergraduate and graduate students	CUT / Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Introduction	Presentation	Andreas Andreou, Andreas Christoforou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Introduction	Andreas Andreou, Andreas Christoforou

Workpackage:	WP2 – New software process for developing and operating distributed applications

Date: (MM/DD/YYYY)	15/09/2016	Time:	09:15-10:15
Facilitator/Presenter:	Luciano Baresi	Location:	Student Services Building Conference Room, Ground Floor, Athinon and N.Xiouta corner, Lemesos

1. Subject / Short Description

A Service-Oriented Architecture is an enterprise-scale IT architecture for linking resources on demand. These resources are represented as business-aligned services which can participate and be composed in a value-net, enterprise, or line of business to fulfill business needs. The primary structuring element for SOA applications is a service as opposed to subsystems, systems, or components. SOA is a business-driven IT architectural approach that supports integrating your business as linked, repeatable business tasks or services. SOA enabled cloud computing to what is today

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Srđan Krstić	POLIMI / Italy	srdan.krstic@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Undergraduate and graduate students	CUT / Cyprus		

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
Monitoring of Cloud-Service-Based Systems	Presentation	Luciano Baresi	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Monitoring of Cloud-Service-Based Systems	Luciano Baresi

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	15/09/2016	Time:	11:15-12:15
Facilitator/Presenter:	Luciano Baresi	Location:	Student Services Building Conference Room, Ground Floor, Athinon and N.Xiouta corner, Lemesos

1. Subject / Short Description
WHAT DOES HYBRID MEAN? Some components stay local and others go on the cloud, Some virtual machines on different cloud infrastructures, Systems assembled by means of services provided by different cloud solutions.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Srđan Krstić	POLIMI / Italy	srdan.krstic@polimi.it	

Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Undergraduate and graduate students	CUT / Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Hybrid CLoud-Based Applications	Presentation	Luciano Baresi	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Hybrid CLoud-Based Applications	Luciano Baresi

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	15/09/2016	Time:	12:45-13:45
Facilitator/Presenter:	Srđan Krstić	Location:	Student Services Building Conference Room, Ground Floor, Athinon and N.Xiouta corner, Lemesos

1. Subject / Short Description
The main challenge here is that large scales cannot be collected, stored and processed on a single machine. The solution is a Distributed Monitoring using MapRecude. There are two parallelization strategies: Splitting the formula or Splitting the trace.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Srđan Krstić	POLIMI / Italy	srdan.krstic@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Undergraduate and graduate students	CUT / Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Cloud-based Software Verification	Presentation	Srđan Krstić	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by

Cloud-based Software Verification	Srđan Krstić

4.1.2 Day Two

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	16/09/2016	Time:	09:15-12:15
Facilitator/Presenter:	Garlo Ghezzi	Location:	Polichoros Ktisis, Heroes Square, Limassol

1. Subject / Short Description
Change is quintessential to software. Formal methods can set change management on systematic and rigorous grounds that lead to effective and efficient evolution. They can be brought to runtime to self-manage response to environment changes. We must focus on assurance that system complies with requirements drives both development and operation and on continuous assurance requires revisiting verification methods in the light of continuous change

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Srđan Krstić	POLIMI / Italy	srdan.krstic@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	

Undergraduate and graduate students	CUT / Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Dependability of Adaptable and Evolvable Distributed Systems – Part A	Presentation	Carlo Ghezzi	
Dependability of Adaptable and Evolvable Distributed Systems – Part B	Presentation	Carlo Ghezzi	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Dependability of Adaptable and Evolvable Distributed Systems – Part A	Carlo Ghezzi
Dependability of Adaptable and Evolvable Distributed Systems – Part B	Carlo Ghezzi

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	16/09/2016	Time:	12:45-13:45
Facilitator/Presenter:	Srđan Krstić	Location:	Polichoros Ktisis, Heroes Square, Limassol

1. Subject / Short Description

The open issues on Cloud-Based Elastic systems are the specification, verification and failure analysis.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Luciano Baresi	POLIMI / Italy	luciano.baresi@polimi.it	
Prof. Garlo Ghezzi	POLIMI / Italy	carlo.ghezzi@polimi.it	
Srđan Krstić	POLIMI / Italy	srdan.krstic@polimi.it	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Undergraduate and graduate students	CUT / Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Specification of Cloud-Based Elastic Systems	Presentation	Srđan Krstić	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Specification of Cloud-Based Elastic Systems	Srđan Krstić

4.2 1st Stakeholders Meeting and Workshop on Cloud Computing and Software Services

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	17/09/2016	Time:	09:15-09:45
Facilitator/Presenter:		Location:	Amphitheater 2, Tassos Papadopoulos building, Ifigenias and Themidos corner, Limassol

1. Subject / Short Description
Welcoming Introduction to the Dossier-Cloud project.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Representatives of public authorities and local business and industrial stakeholders	Cyprus		

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time
Welcoming Introduction to the Dossier-Cloud project	Presentation	Andreas Andreou, Andreas Christoforou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Welcoming Introduction to the Dossier-Cloud project	Andreas Andreou, Andreas Christoforou

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	17/09/2016	Time:	09:45-10:10
Facilitator/Presenter:	Constantinos Stylianou	Location:	Amphitheater 2, Tassos Papadopoulos building, Ifigenias and Themidos corner, Limassol

1. Subject / Short Description
This presentation described how human resource management within a company can help us desing and build cloud software services on time and budget.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	

Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Representatives of public authorities and local business and industrial stakeholders	Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Human Resources Management for Developing Cloud Software Services and Beyond	Presentation	Constantinos Stylianou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Human Resources Management for Developing Cloud Software Services and Beyond	Constantinos Stylianou

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	17/09/2016	Time:	10:10-10:30
Facilitator/Presenter:	Harris Neophytou	Location:	Amphitheater 2, Tassos Papadopoulos building, Ifigenias and Themidos corner, Limassol

1. Subject / Short Description

This presentation outlined a number of cloud services for smart Cities. it also presented some EU projects that have been completed regarding Smart Cities.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Representatives of public authorities and local business and industrial stakeholders	Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Novel Cloud Services and Modeling For Smart Cities	Presentation	Harris Neophytou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Novel Cloud Services and Modeling For Smart Cities	Harris Neophytou

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	17/09/2016	Time:	11:00-11:20
Facilitator/Presenter:	Andreas Andreou, Andreas Christoforou	Location:	Amphitheater 2, Tassos Papadopoulos building, Ifigenias and Themidos corner, Limassol

1. Subject / Short Description

Machine learning is the science of getting computers to act without being explicitly programmed. In the past decade, machine learning has given us self-driving cars, practical speech recognition, effective web search, and a vastly improved understanding of the human genome. Machine learning is so pervasive today that you probably use it dozens of times a day without knowing it.

2. Attendees

Name	Department/Division	E-mail	Phone
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Representatives of public authorities and local business and industrial stakeholders	Cyprus		

3. Training Content

Topic	Type (lecture, discussion, …)	Trainer	Time

Applications of Machine Learning and Data Science to Cloud Computing	Presentation	Andreas Andreou, Andreas Christoforou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Applications of Machine Learning and Data Science to Cloud Computing	Andreas Andreou, Andreas Christoforou

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	17/09/2016	Time:	11:20-11:40
Facilitator/Presenter:	Panayiotis Christodoulou	Location:	Amphitheater 2, Tassos Papadopoulos building, Ifigenias and Themidos corner, Limassol

1. Subject / Short Description

Three different systems were presented to the stakeholders that participate in the event. The first one was a Revenue Management system which combines hardware devices (iBeacons) and intelligent algorithms aiming to increase the revenue of a shop. The other two projects make use of Machine Learning algorithms in order to make shop predictions on a list of users or financial predictions on online platforms.

2. Attendees

Name	Department/Division	E-mail	Phone

Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Representatives of public authorities and local business and industrial stakeholders	Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Local stakeholders' involvement, piloting cases of interest	Presentation	Panayiotis Christodoulou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Local stakeholders' involvement, piloting cases of interest	Panayiotis Christodoulou

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	17/09/2016	Time:	11:40-12:00
Facilitator/Presenter:	Andreas Andreou	Location:	Amphitheater 2, Tassos Papadopoulos building, Ifigenias and Themidos corner, Limassol

1. Subject / Short Description
Opportunities for Collaboration

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Representatives of public authorities and local business and industrial stakeholders	Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Closing - Discussion	Presentation	Andreas Andreou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Closing - Discussion	Andreas Andreou

4.3 2nd mini-school on Cloud Computing and Software Services

The 2nd mini-school on Cloud Computing and Software Services took place in mid-October and included lectures from senior researchers from UvT and a project meeting between the partners (CUT and UvT with physical presence, POLIMI through teleconferencing). These lectures were attended by undergraduate and postgraduate students, as well as academic staff from CUT. During the project meeting members from all project partners discussed the project's progress, future steps and deliverables.

4.3.1 Day One

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	12/10/2016	Time:	09:00-09:15
Facilitator/Presenter:	Andreas Andreou, Andreas Christoforou	Location:	CUT Senate Conference Room, Senate Building, Ground floor, (opposite Limassol Municipality) Lemesos

1. Subject / Short Description
Welcome and introduction

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Willem-Jan van den Heuvel	Tilburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Prof. Mike Papazoglou	Tilburg / The Netherlands	m.p.papazoglou@tilburguniversity.edu	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	

Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Undergraduate and graduate students	CUT / Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Introduction	Presentation	Andreas Andreou, Andreas Christoforou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Introduction	Andreas Andreou, Andreas Christoforou

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	12/10/2016	Time:	09:15-10:15 10:45-11:45
Facilitator/Presenter:	Willem-Jan van den Heuvel	Location:	Senate Conference Room, Senate Building, Ground floor, (opposite Limassol Municipality) Lemesos

1. Subject / Short Description

This presentation was divided into 4 main parts. Part 1 (AoT Overview) described the AoT Models that help to analyze, predict and prescribe smart services as well the AoT challenges. Moreover, part 2(PAIRIT Care Project) presented a mobile application that assists asthma patients in improved self-management of their disease under the auspices of AC services. Furthermore, part 3 (CrossCarPool project) outlined a platform responsible for the management of information in a unified, secure, and flexible system. The objective was to develop and implement a cloud-based secure data pool platform to support Service enablers. Finally, part 4 presented the main challenges of AoT and future projects.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Willem-Jan van den Heuvel	Tilburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Prof. Mike Papazoglou	Tilburg / The Netherlands	m.p.papazoglou@tilburguniversity.edu	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Undergraduate and graduate students	CUT / Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Analytics of Things: SoA - SoP - VoS PAIRIT - Medical BLueprinting	Presentation	Willem-Jan van den Heuvel	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Analytics of Things: SoA - SoP - VoS PAIRIT - Medical BLueprinting	Willem-Jan van den Heuvel

4.3.2 Day Two

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	14/10/2016	Time:	09:00-09:15
Facilitator/Presenter:	Andreas Andreou, Andreas Christoforou	Location:	Senate Conference Room, Senate Building, Ground floor, (opposite Limassol Municipality) Lemesos

1. Subject / Short Description
Welcome and introduction

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Willem-Jan van den Heuvel	Tilburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Prof. Mike Papazoglou	Tilburg / The Netherlands	m.p.papazoglou@tilburguniversity.edu	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	

Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Undergraduate and graduate students	CUT / Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Introduction	Presentation	Andreas Andreou, Andreas Christoforou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Introduction	Andreas Andreou, Andreas Christoforou

Workpackage:	WP2 – New software process for developing and operating distributed applications		
Date: (MM/DD/YYYY)	14/10/2016	Time:	09:15-10:15 10:45-11:45
Facilitator/Presenter:	Mike Papazoglou	Location:	Senate Conference Room, Senate Building, Ground floor, (opposite Limassol Municipality) Lemesos

1. Subject / Short Description

The Enterprise Integration Applications was described in in this presentation. EAI is a key enabling technology that has emerged to help organisations achieve intra-enterprise integration and drive operational efficiency within the corporation. Adopting DevOps in the Enterprise can be helpful as: DevOps is the practice of operations & development engineers participating together in the entire service lifecycle development, from design thro' the development process to production support. Moreover, DevOps is a collaborative approach to release software applications and updates which brings together developers who write the software with operation managers responsible for deploying it.

2. Attendees			
Name	Department/Division	E-mail	Phone
Prof. Willem-Jan van den Heuvel	Tilburg / The Netherlands	w.j.a.m.vdnheuvel@tilburguniversity.edu	
Prof. Mike Papazoglou	Tilburg / The Netherlands	m.p.papazoglou@tilburguniversity.edu	
Prof. Andreas Andreou	CUT / Cyprus	andreas.andreou@cut.ac.cy	
Constantinos Stylianou, PhD candidate	CUT / Cyprus	cstylianou@cs.ucy.ac.cy	
Andreas Christoforou, PhD candidate	CUT / Cyprus	xristofo@gmail.com	
Panayiotis Christodoulou, PhD candidate	CUT / Cyprus	panchristodoulou@edu.cut.ac.cy	
Undergraduate and graduate students	CUT / Cyprus		

3. Training Content			
Topic	Type (lecture, discussion, …)	Trainer	Time
Distributed Application Integration	Presentation	Mike Papazoglou	

4. Pre-work/Preparation (documents/handouts, reading material, etc.)	
Description	Prepared by
Distributed Application Integration	Mike Papazoglou

5. Conclusions

In the context of Workpakage 2, a number of actions and activities were organized and performed aiming to transfer scientific knowledge to CUT members in the area of DevOps oriented software engineering. Firstly, CUT members participated in a series of four site visits in Milan, where researches from POLIMI delivered lectures related to software development and deployment for distributed applications. This series of site visits in POLIMI were concluded with a Workshop during the course of which members of all project partners came forward with a deeper discussion on topics that need to be studied further in order to be exploited according to the project's objectives.

A new series of site visits in Netherland followed, where researches from CUT attended various lectures given by UvT members involving DevOps principles and workflows, and focusing on applied techniques and methodologies. Site visits topics dealt in UvT were summarized during a workshop in the course of which the project partners studied research opportunities and applications, and discussed possible collaboration for submitting joint proposals to H2020 calls and attract further funding.

Two mini-schools on Cloud Computing and Software Services were organized in Cyprus at CUT's premises, including project meetings, lectures by senior researches from POLIMI and UvT, a Stakeholders meeting and a Workshop. During the project meetings, members from all partners discussed the progress of the project, lessons learned so far, as well as weaknesses and obstacles in the process followed. They also elaborated on the organisation of the upcoming steps of the project and shared their views on preparing a survey paper on DevOps oriented Software Engineering to submit to a scientific journal. During the 1st mini-school researchers from POLIMI delivered lectures which were attended by CUT undergraduate and graduate students and members of the accademic staff. During the stakeholders' meeting and workshop, the DOSSIER-cloud project was presented to various representatives from the local market industry, and the public sector. Work Package 2 activities were completed with the 2nd mini-school which followed the same structure and organization with the 1st mini-school, but this time senior researchers and academics from UvT gave talks on the relevant topics of the project.