CloudWave

"DevOps with a difference"

An introduction to CloudWave

www.cloudwave-fp7.eu
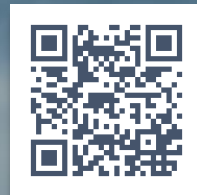
Objective and motivation

To date *cloud* has focussed on *cost* to the detriment of enabling *agility* and *innovation.*

Cloud efforts have been hampered by *stability* due to scale and distribution.

CloudWave focusses on applications, aiming to make them adaptive to changes in the environment and market requirements

CloudWave will *enable the agile development and delivery of adaptive cloud services*

Providing:
▪ tools & methods for agile development of reliable and adaptable cloud services

based on an:
▪ open architecture and standards-based reference implementation

CloudWave

Execution Analytics

+

Coordinated Adaption

+

Feedback driven Development

Gathering and Analyzing operational data of apps and infra. at the cloud

Continuous, automated adjustment of apps and infra. to changes in their environement

Tools and methods for incremental application development based on continuous feedback.

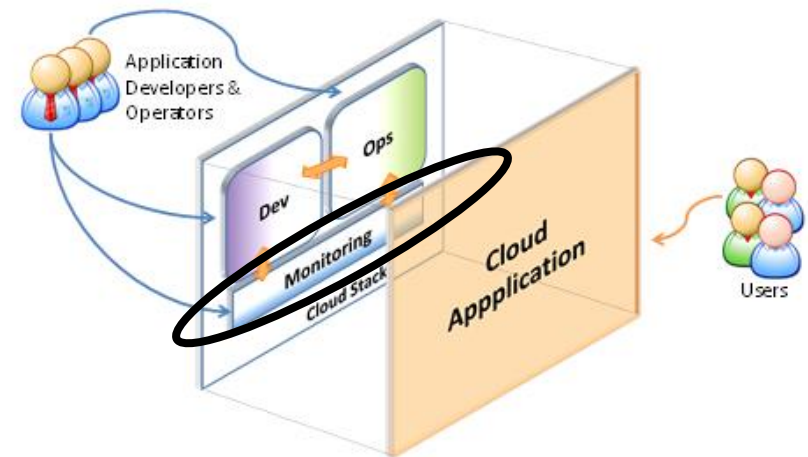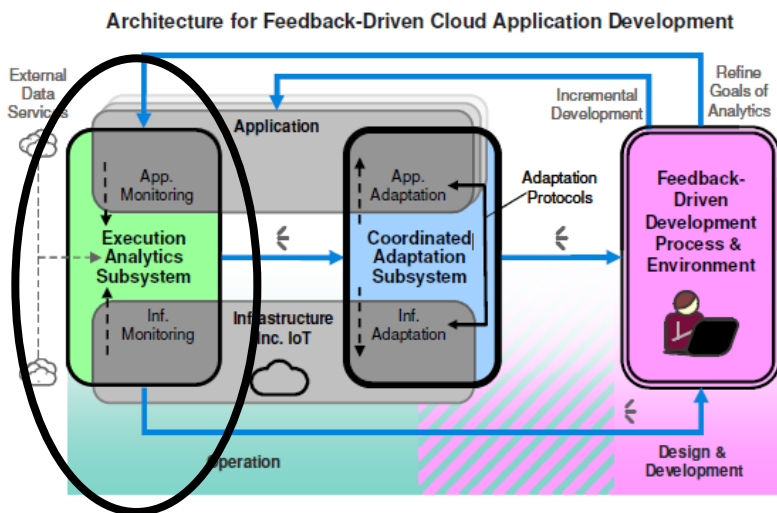= **Agile Service Engineering for the Future Internet**

CloudWave will define and implement a novel architecture which incorporates the three main pillars. Implementation will be based on the OpenStack technology, while leveraging other open tools and standards.

Architecture for Feedback-Driven Cloud Application Development
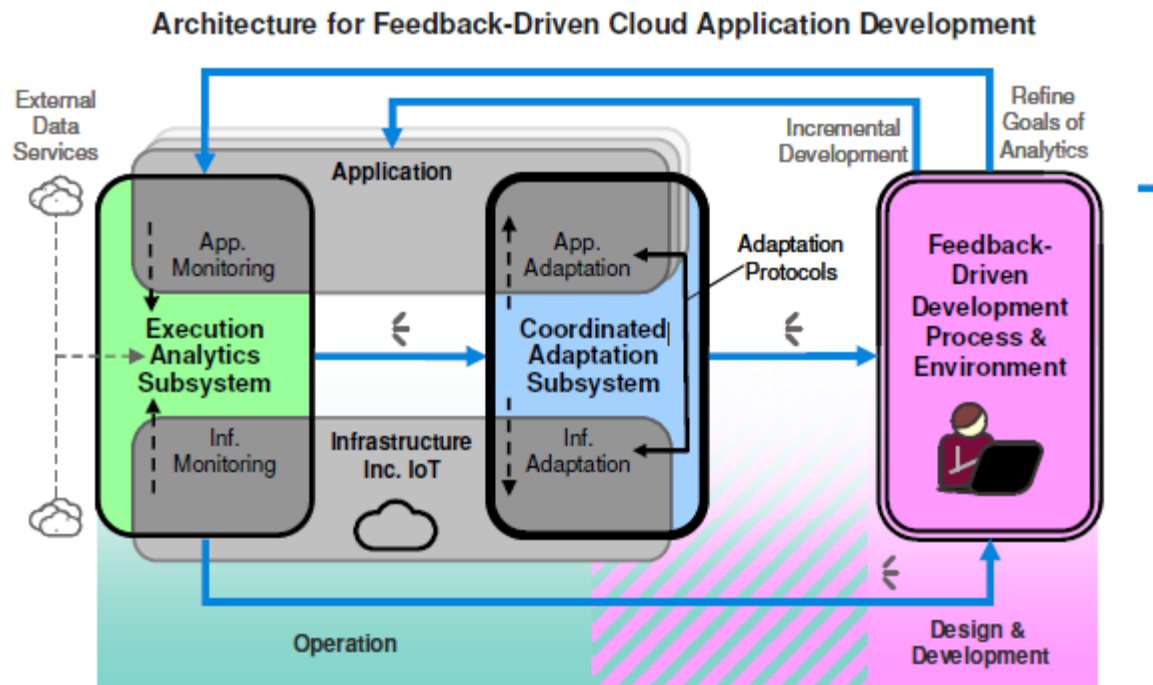
CloudWave introduces two related feedback cycles: the first is automated and deals with self-adaptation of applications and infrastructure, the second involves "humans in the loop" who, based on feedback from cloud operations, manually evolve the application.
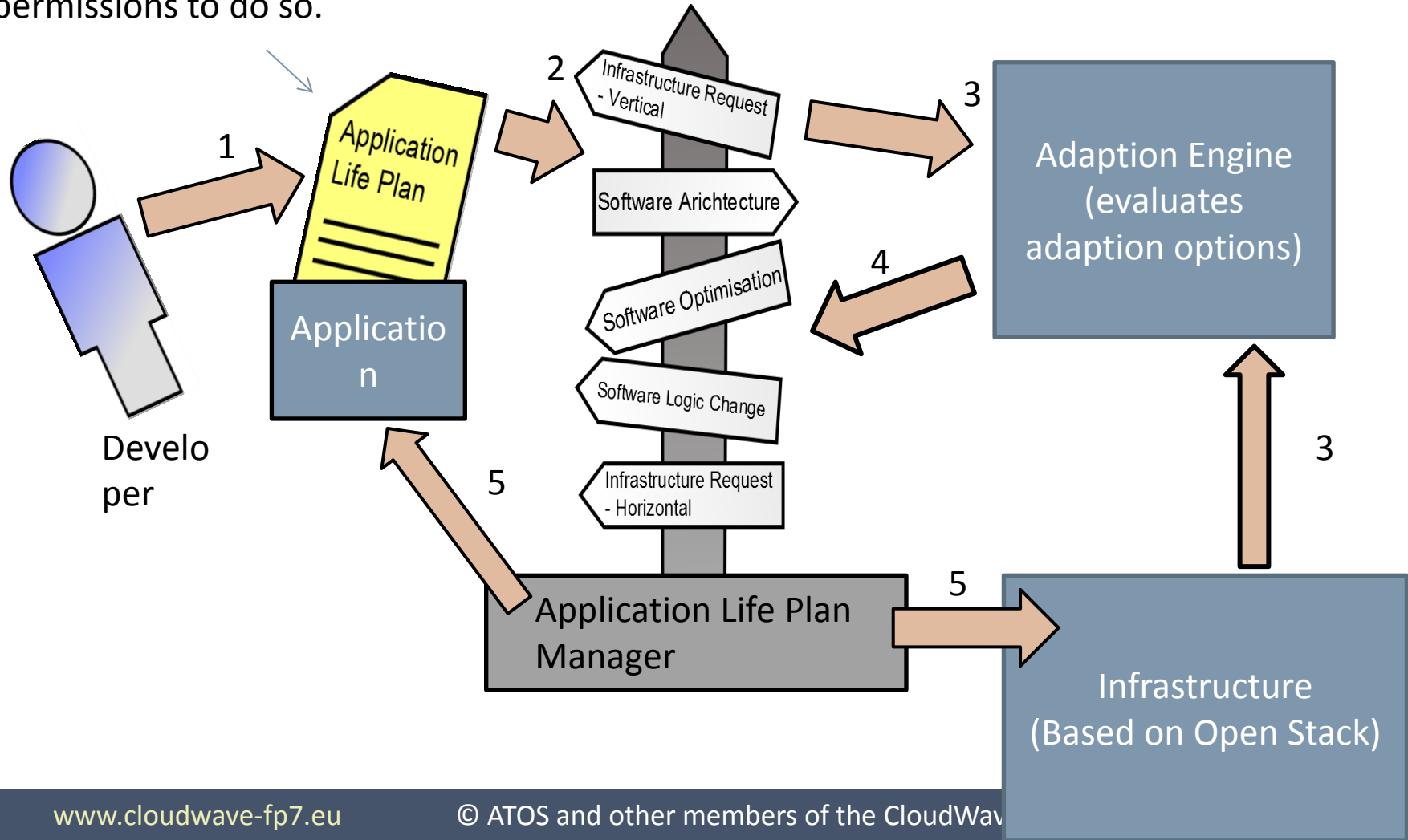
CloudWave will define and implement a new framework where specialized algorithms dynamically analyse cloud infrastructure and application behaviour, seamlessly integrate data pertaining to physical and virtual resources and IoT elements, and provide consolidated feedback to drive service evolution and adaptation

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When to adapt and permissions to do so.

Application Life Plan

1 → Application Life Plan

2 Infrastructure Request - Vertical

Software Arichtecture

Software Optimisation

Software Logic Change

Infrastructure Request - Horizontal

3 → Adaption Engine (evaluates adaption options)

4

Application

Developer

5

Application Life Plan Manager

5 → Infrastructure (Based on Open Stack)
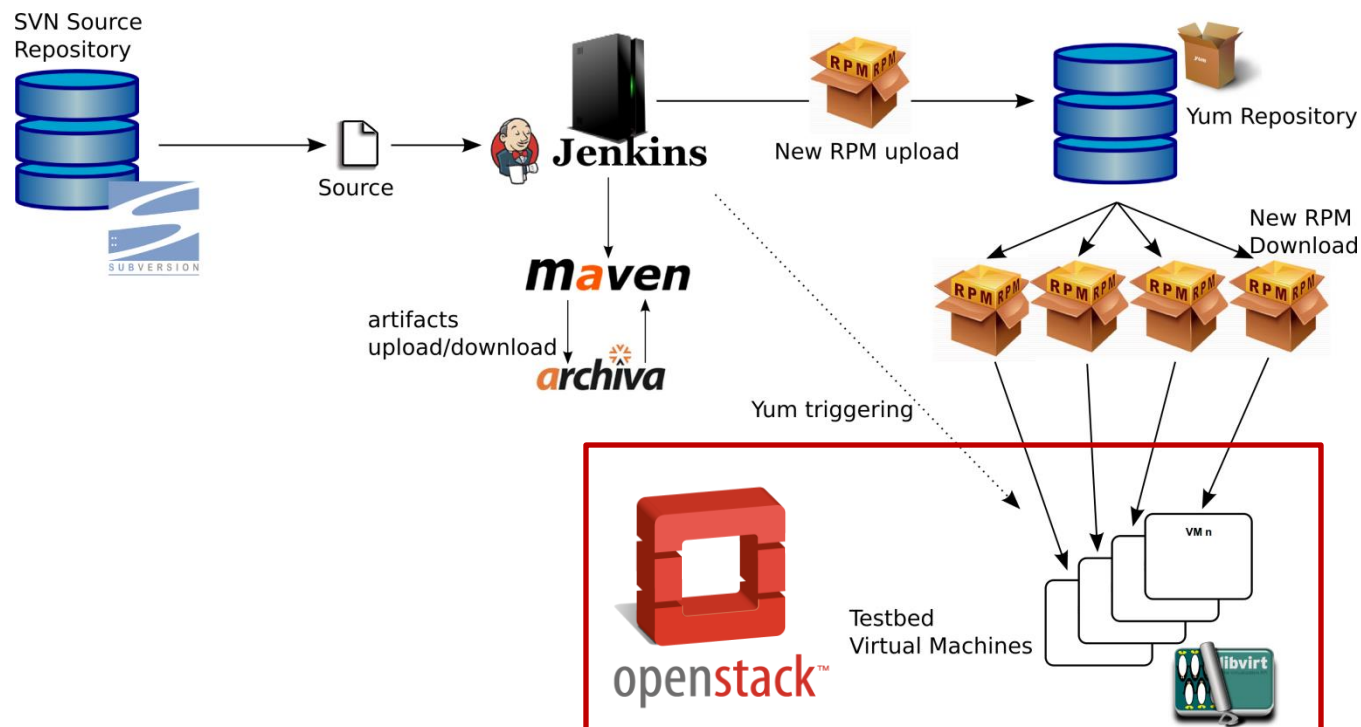
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Feedback Driven Development

New development model and tools for software built on PaaS, that exploits the feedback data collected through the Execution Analytics subsystem, allowing software developers **to evolve software**, minimizing operational disruptions.
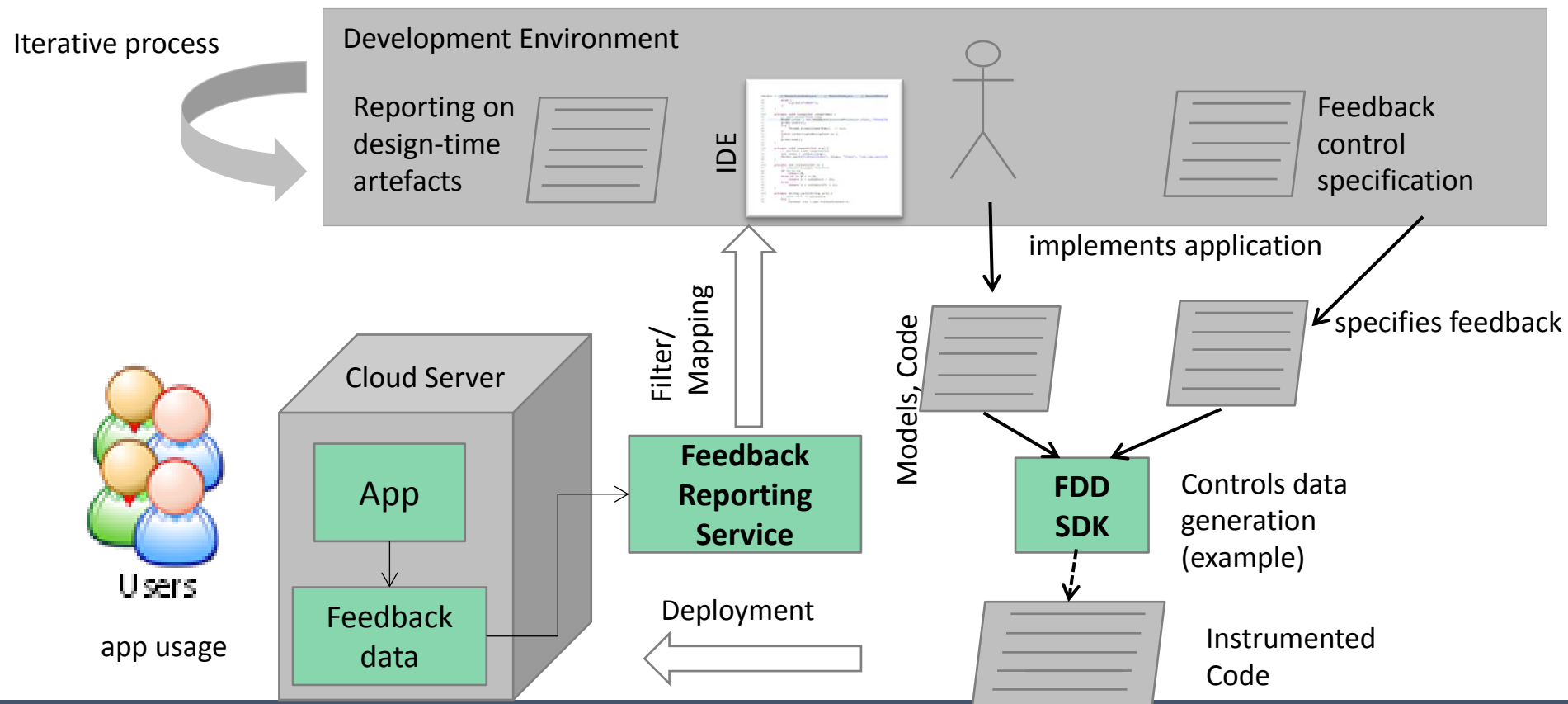
Test bed and Integration

The framework will be deployed on a multi-site test bed in which a working version of OpenStack is integrated. The test bed is composed by virtual machines (VM) managed by OpenStack. All software components will be integrated on the test bed during the integration phases and deployed on the CloudWave VMs.

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IBM SAP intel Atos Technion Israel Institute of Technology UNIVERSITÄT DUISBURG ESSEN *Open-Minded*

UNIVERSITÀ DEGLI STUDI DI MESSINA TELECOM ITALIA University of Zurich UZH CLOUDMORE

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