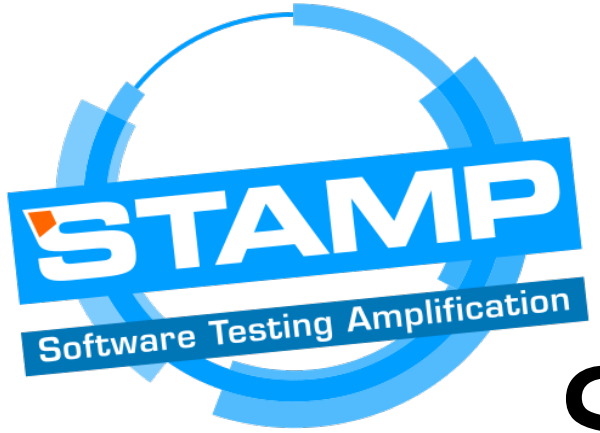


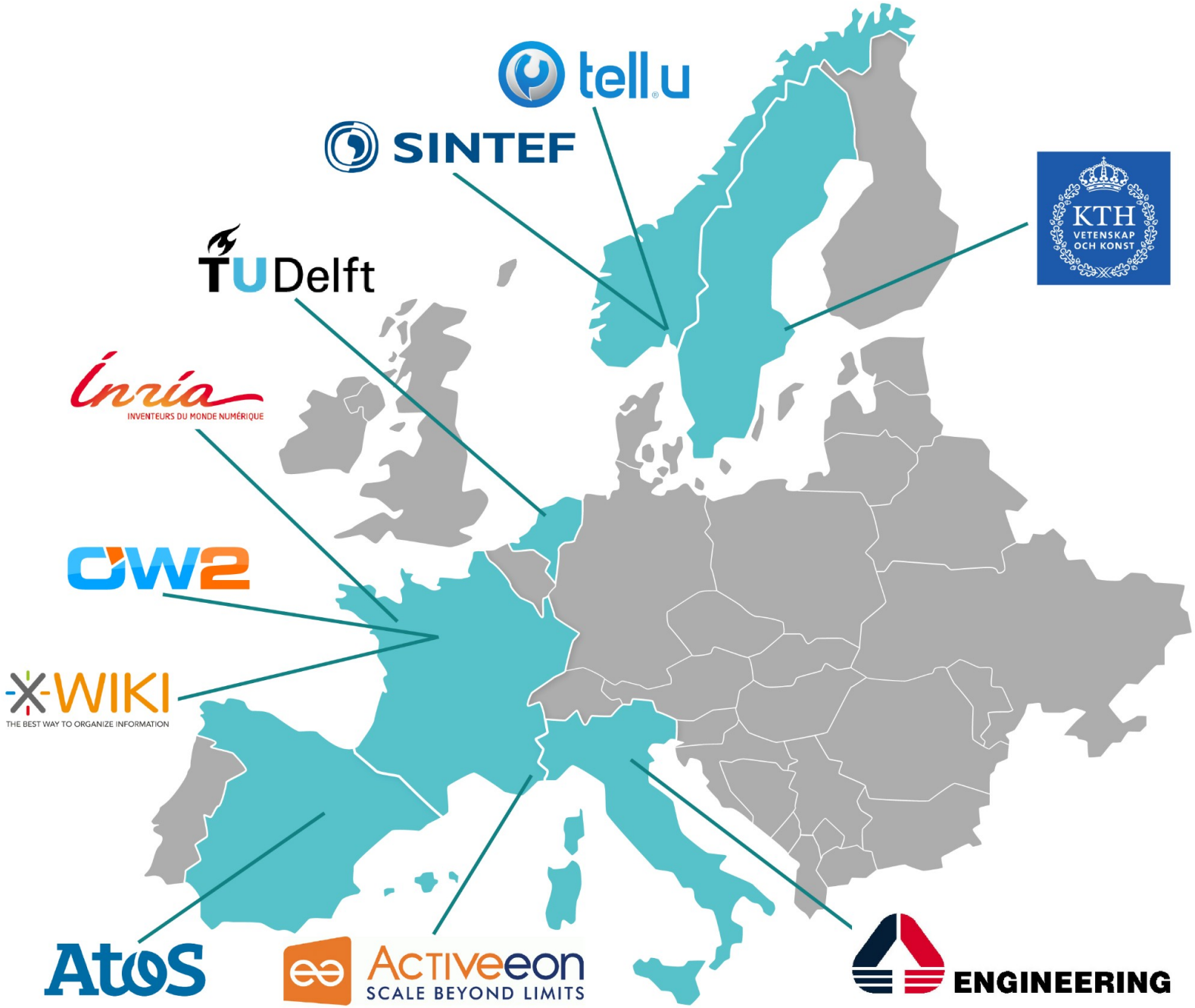
Software Testing AMPlification

H2020 LEIT RIA - ICT-10-2016 – Software Technology

2016/12/01 – 2019/11/30

STAMP
Software Testing Amplification

- 4 res. institutions
- 5 companies
- 1 open source consortium
- 516 p.m
- To increase test automation in DevOps

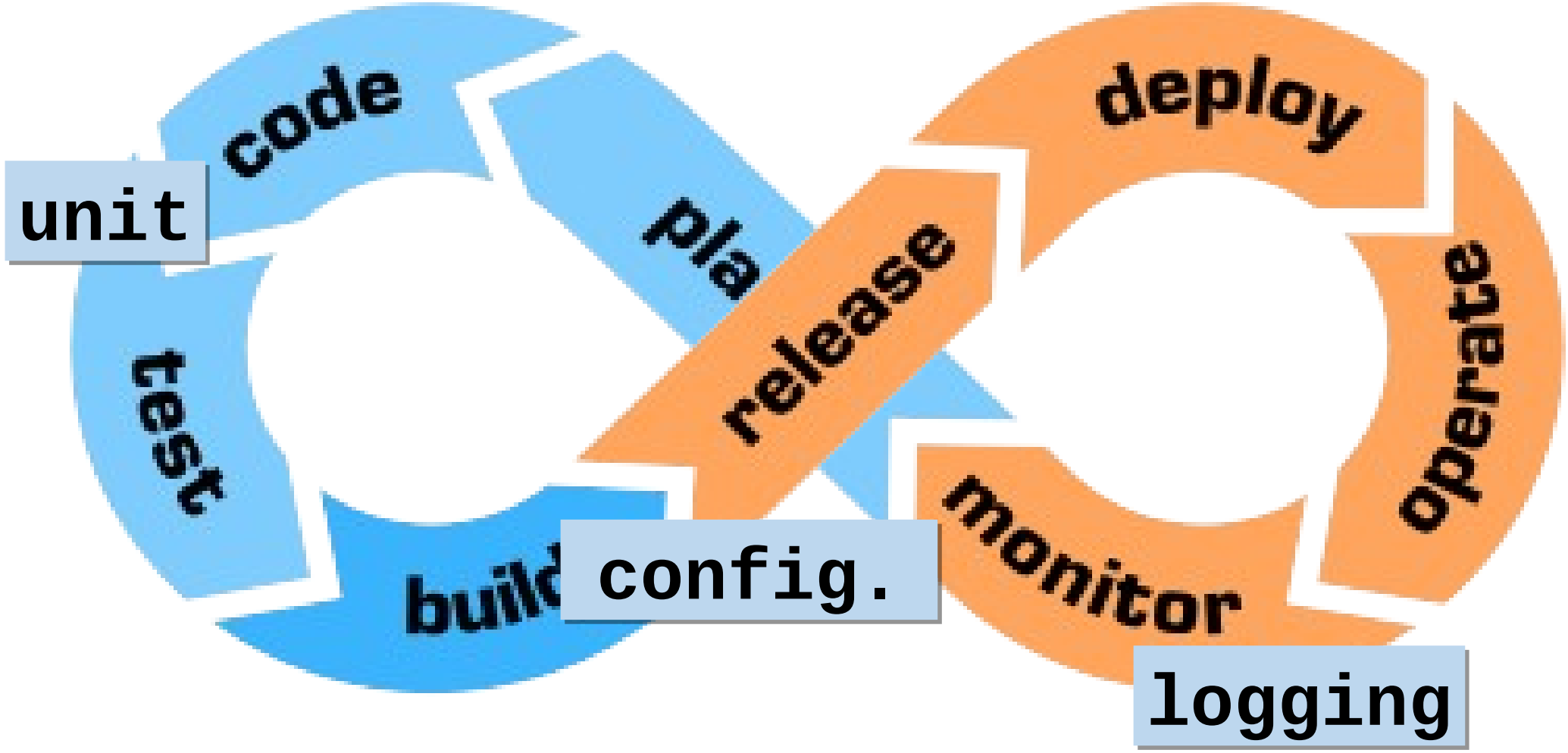


Objectives

- O1. Automatically amplify unit test cases when a change is introduced in a program
- O2. Automatically generate, deploy and test large numbers of system configurations.
- O3. Automatically amplify, optimize and analyze production logs in order to retrieve test cases that verify code changes against real world conditions.

science

STAMP – Continuous test automation



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science

- O4. Develop three test amplification microservices that can be integrated in different toolchains.
- O5. Validate the relevance and effectiveness of amplification on 5 use cases.
- O6. Disseminate and exploit the open source STAMP test amplification services.

impact

Objective 1

- Automation for unit test amplification
  - Automatic generation of suggestions for test improvement
  - Automatic amplification of unit tests in the CI
  - Performance optimization for DSpot

Objective 2

- Generate, deploy and test system configurations.
  - Selection of configurations to be tested
  - Integration with JUnit and JMeter
  - Code instrumentation to measure the variation among tested behavior

Objective 3

- Amplify production logs to retrieve test cases
  - Botsing: extensible and license friendly framework reproducing crashes from log data.
  - Runtime AMPlification (RAMP) to take the behavior of the software under test into account to generate unit tests (model seeding).
  - Pre-processor module for the input stack trace and a parallelized version of Botsing for crash reproduction.

Objective 4

- Test amplification microservices that can be integrated in different toolchains.
  - Integration with Maven, Jenkins, Jira, Github Issues, Eclipse
  - Courseware with documentation and samples
  - Dedicated collaborative platform

Objective 5

- Validate the relevance and effectiveness of amplification on 5 use cases.
  - All use cases experimented with all tools
  - Some use cases integrated STAMP tools in their pipeline
  - Achieved TRL6

Objective 6

- Disseminate and exploit the open source STAMP test amplification services.
  - 15 industry events, incl. Devoxx
  - 25 scientific publications, incl. 7 in EMSE
  - Individual exploitation plans
  - Business model analysis

Recommendations

- Task 3.2 should be prolonged and renamed
- D3.2 should be renamed
- Add clarifications in D3.1
- D3.4 should refer to behavioral patterns
- D3.5 should include a cohesive story line for the whole WP3

Recommendations

- Brief roadmap of each tool
  - In final periodic report
- Analyze pricing strategies
  - Cf. D6.5
- Brief explanation of industry participation in WP1 – WP3
  - In final periodic report

Achievements

- Reached the objectives specified in the DoA
  - Novel software technology
  - Ambitious science
- Outcome
  - Recruited and trained SW engineers
  - Consolidate software quality
- Academia, industry R&D, software dev, EC collaboration

Agenda

- 09:05 – 09:30: Introduction & QA
- 09:30 – 10:45: WP1 - WP3
- 10:45 – 11:00: break
- 11:00 – 12:00: WP4 and demo
- 12:00 – 13:00: lunch
- 13:00 – 15:45: WP5
- 15:45 – 16:00: break
- 16:00 – 16:45: WP6
- 16:45 – 17:00: WP7