

# *InSTA 2015 Opening*

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InSTA 2015

(International workshop on Software Test Architecture)

Graz, Austria 2015/4/13(Mon)

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The University of Electro-Communications, Japan

# Welcome to InSTA 2015!

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- **InSTA is a newcomer to ICST**
  - InSTA is “International Workshop on Software Test Architecture”
  - InSTA 2015 is the 2<sup>nd</sup> InSTA
    - » 1<sup>st</sup> InSTA was in conjunction with ISSRE 2011
  - 11 papers are submitted and 6 papers are accepted (54.5%)
  - Program consists of 1 Excellent keynote, 6 papers and 1 discussion
    - » Workshop dinner is being prepared!
  - Next InSTA will be held in conjunction with Next ICST in Chicago
- **Research on Test Architecture is undeveloped area**
  - Test technologies for large-scale and complicated systems
  - Big picture, holistic, higher-level abstraction can be key concepts
    - » Definition of Test Architecture has been yet ambiguous
  - Practical research area for industry and good for collaboration between industry and academia
    - » It's a gold mine for researchers! 😊
  - We attendees should explore possible research themes in this InSTA

# Organization of InSTA 2015

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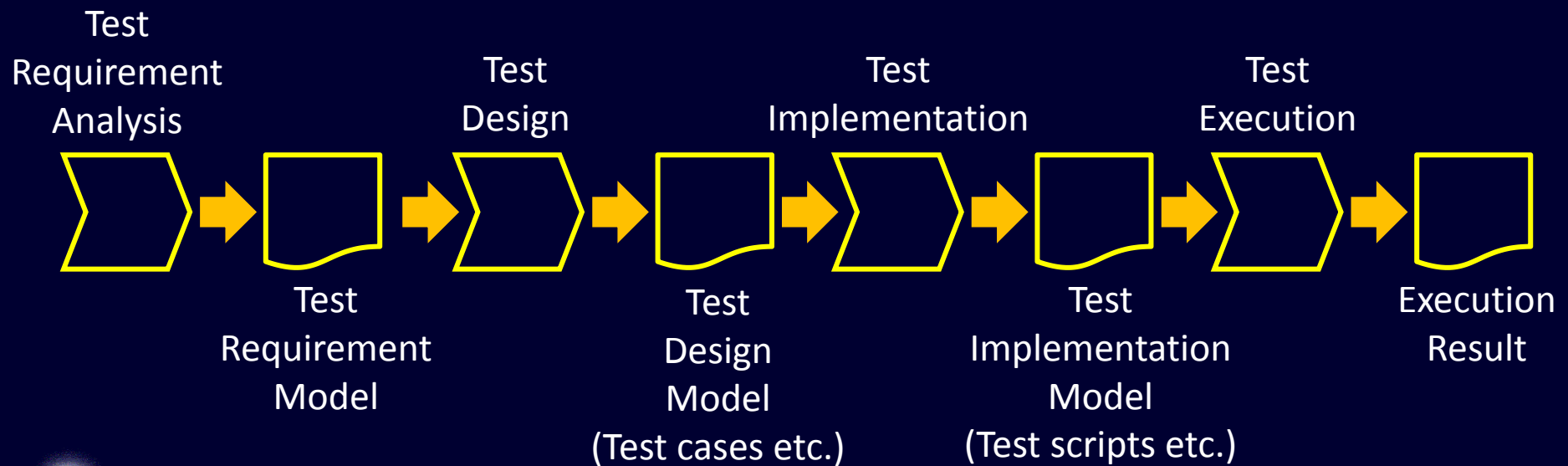
- **General Chair:**
  - Yasuharu Nishi, The University of Electro-Communications, Tokyo, Japan
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  - Satoshi Masuda, IBM Research - Tokyo, Japan
  - Satomi Yoshizawa, NEC, Japan
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  - Peter Zimmerer, Siemens, Germany

3 from Europe  
2 from USA  
4 from Asia/Pacific  
7 from Japan

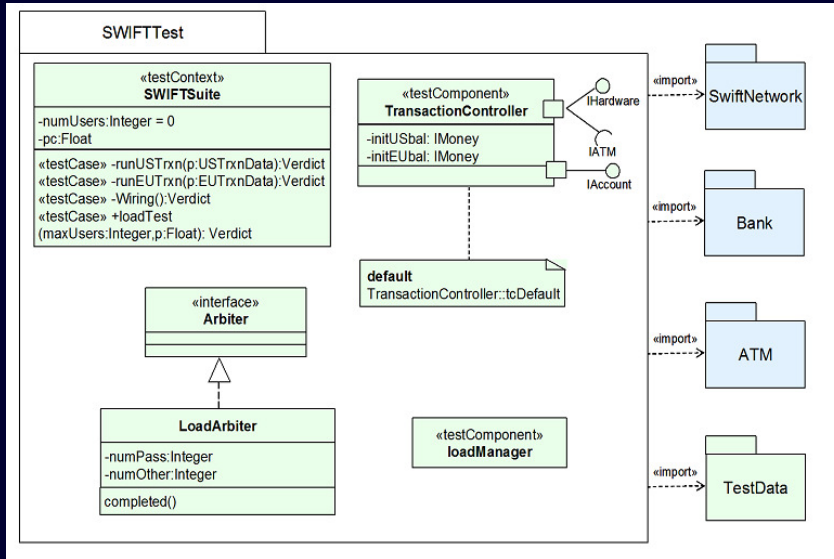


# Test Architecture

- Test has several tasks and correspondent deliverable
  - TRA, TD, TI, TE
- Test engineers have to consider architecture of each task (test system) and deliverable (test suite)
  - Ex. of test system architecture is architecture of automated test execution
  - Ex. of test suite architecture is architecture of test levels and types

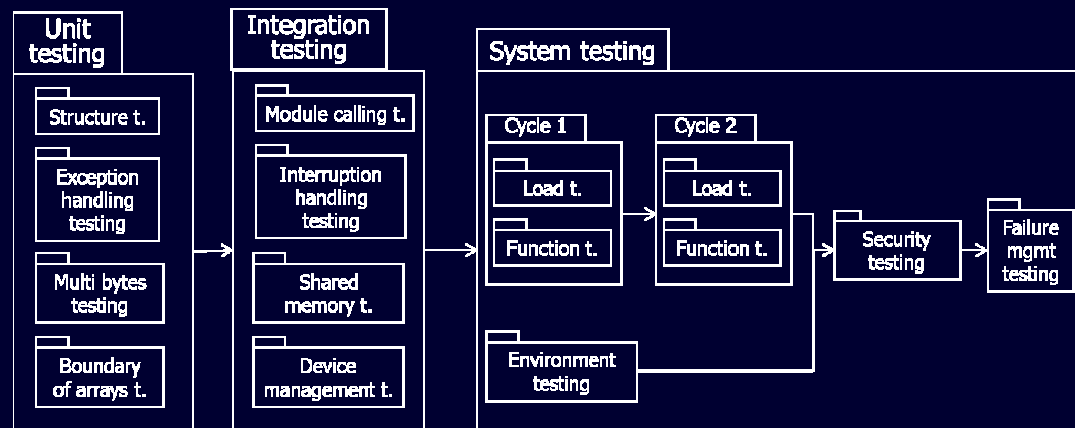


# Example model of test architecture



Example of test system architecture

Example of test suite architecture



# Candidate research themes for InSTA from CfP

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- **Concepts of test architectures**

- Abstraction of test cases (e.g. test levels, test types, abstract equivalent classes, high-level test conditions and high-level test cases)
- Relationships of abstract test cases
- Separation of concerns for test
- Architecture of test suite based on abstract test cases (e.g. design of test levels and test types)
- Types of test architecture (e.g. architecture of test suite and architecture of test system/environment)
- Similarities, differences and harmonization between test suite architecture and test system architecture
- Similarities and differences among test architecture, test strategy, test plan and test sub-process in 29119

- **Design of test architecture**

- How to design several test levels
- How to design complicated test types and test cycles
- Design concepts for test architecture design
- Modeling technique for test architecture design
- Design patterns for test architecture design
- Styles of test architecture
- Quality characteristics of test architecture (e.g. maintainability of test suite)
- Original diagrams and notation for test architecture design
- Application or enhancement of existing notation (e.g. UML/UTP, SysML and future diagram for SPL)
- Connection of test architecture design and test case design (e.g. structure of test case based on test architectural components)
- Meta-models or ontology for test architectures

# Candidate research themes for InSTA from CFP

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- **Test requirement analysis**
  - Whether software requirement specification is the goal of software test or not?
  - How to model holistic test requirement
  - How to model non functional requirement for test
  - How to organize test requirement for several source (e.g. from customer, from design and from environment)
  - How to overview large-scale and complex requirements for test
  - Analysis patterns for test requirement analysis
- **Application of test architecture**
  - Quality evaluation of test architecture
  - Overall test engineering methodology based on test architecture design
  - Reuse of test architecture design
- **Application of test architecture**
  - Product line engineering of test suite (e.g. how to design and manage variants of test suite)
  - Design example of test architecture for large-scale and complicated system
  - Roles and responsibilities of test architect
  - Automation based on test architecture (e.g. separating automated test and manual test in keyword driven testing based on test architecture)
  - Test process improvement based on test architecture
  - Relationships between software architectures and software test architectures
  - Typical test architecture for a domain and/or comparison among domains (e.g. banking, logistics, cloud, automotive, medical, industrial automation and telecommunications)
  - Industrial experiments and case studies of test architectures

# Presentations for InSTA 2015

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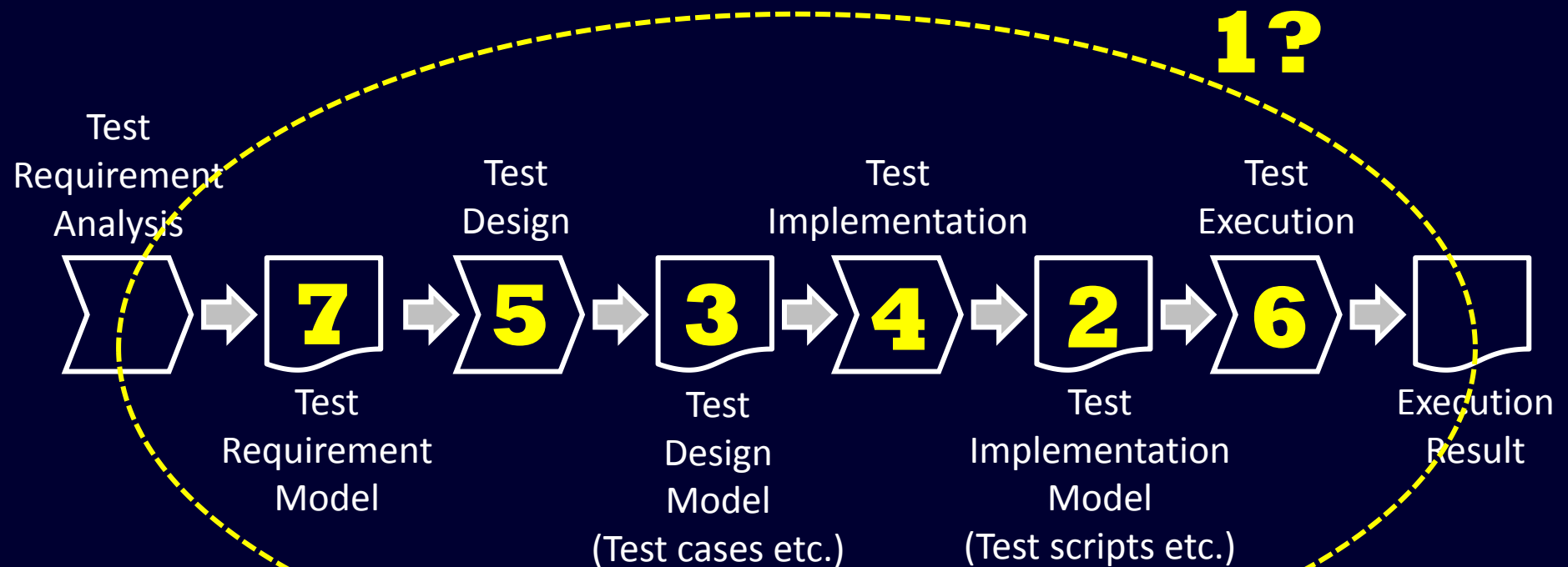
- Presentations for InSTA 2015

1. Excellent keynote
  - » Sigrid Eldh, Ericsson, Sweden
2. Mining process models and architectural components from test cases
  - » Vipul Shah et al
3. Design principles in Test Suite Architecture
  - » Yasuharu Nishi
4. Compatibility Testing Method for Software Logic by Using Symbolic Execution
  - » Keiji Uetsuki et al
5. Semantic Analysis Technique of Logics Retrieval for Software Testing from Specification Documents
  - » Satoshi Masuda et al
6. Test Driven Development for Device Drivers and Rapid Hardware Prototyping
  - » Dominic Eschweiler et al
7. A Study on Implementation Approach for Analyzing Test Basis Using I/O Test Data Patterns
  - » Tsuyoshi Yumoto et al,





I'm trying to place papers on tasks or deliverables...



*Thank you for coming to InSTA  
and let's discuss the new research area!*

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InSTA organizing team