



ODIN 2019

ISO 29119: Current Status & Future Plans

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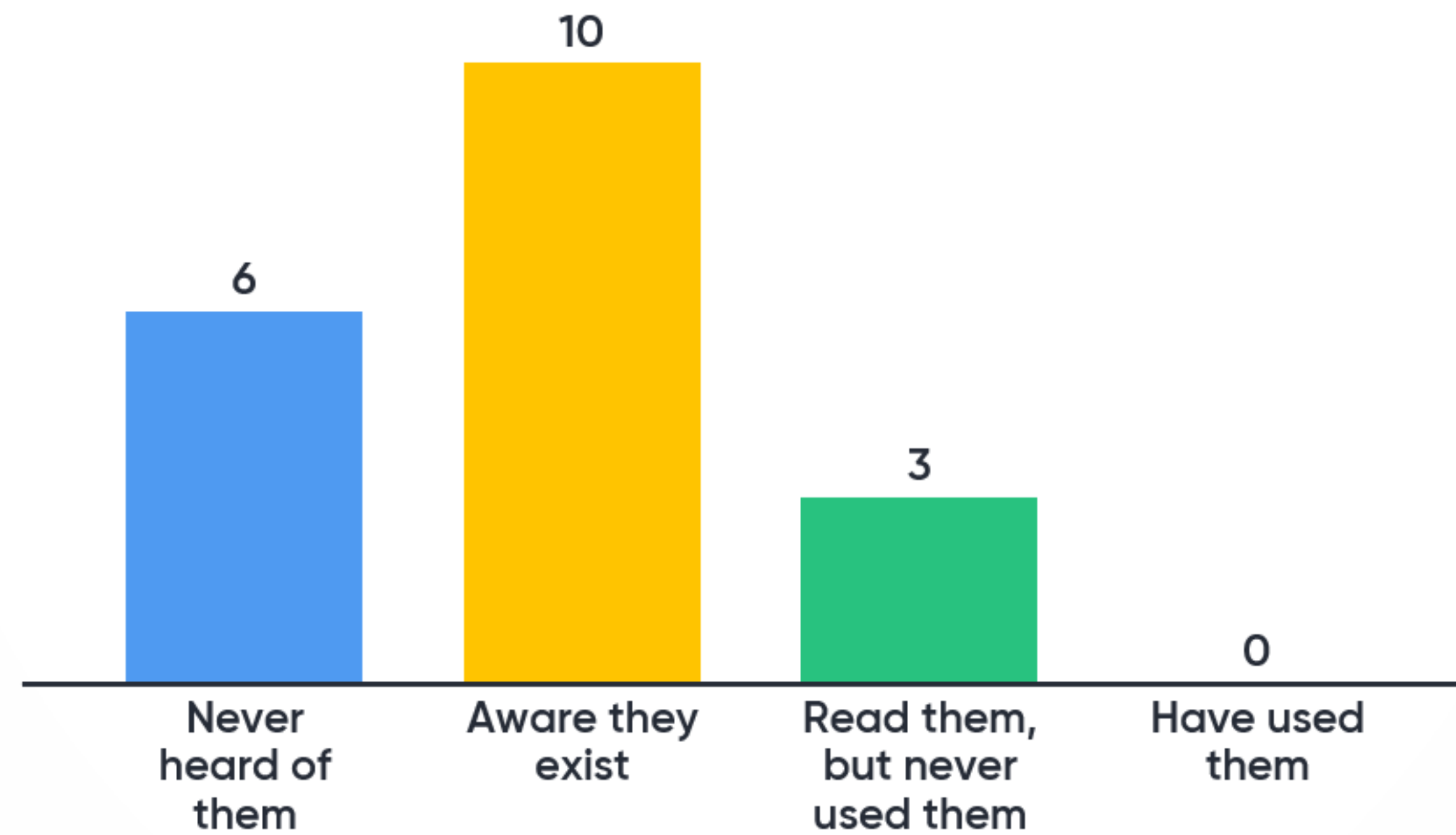
Scope

- **Purpose and motivation for software testing standards**
- **Overview of ISO 29119 standards & ISO 20246**
- **Development of standards**
- **Current and planned testing standards work**
- **5-Year Review & Test Design**
- **Adding Value to ISO/IEC/IEEE 29119 and Testing Standards**

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Mentimeter

What do you know about the ISO 29119 Software Testing Standards?



Slide is not active

Activate

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Purpose & Motivation

What are Standards?

"Guideline documentation that reflects agreements on products, practices, or operations by nationally or internationally recognized industrial, professional, trade associations or governmental bodies"

- ISO

- **Guidelines documents** as they are not compulsory unless mandated by an individual or an organization
- **Agreements** because they should reflect a certain level of consensus

Quality and Standards



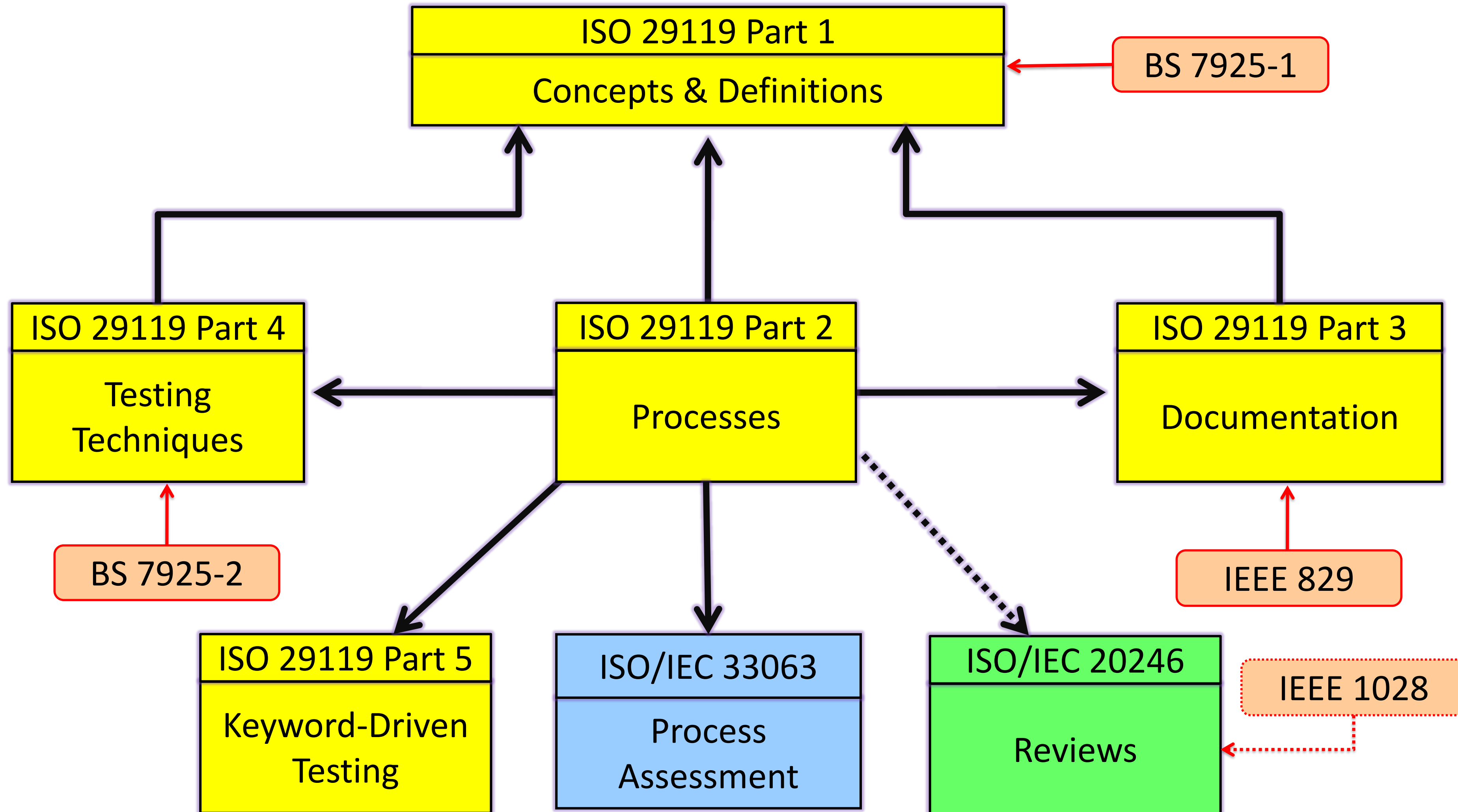
What use are Standards?

Standards describe a current 'body of knowledge' that provides the basis for a professional discipline

- **Basis for:**
 - Communication – common terminology
 - Professional qualifications for individuals
 - Certification/compliance schemes for organizations
 - Benchmark of 'good industry practice'
 - Contracts

Structure & Content of ISO/IEC/IEEE 29119 & ISO/IEC 20246 Reviews

WG26 Testing Standards – Structure



ISO 29119 Part 1: Concepts & Definitions

Scope, Conformance, Normative References

DEFINITIONS

SOFTWARE TESTING CONCEPTS

ANNEX - Testing in V & V

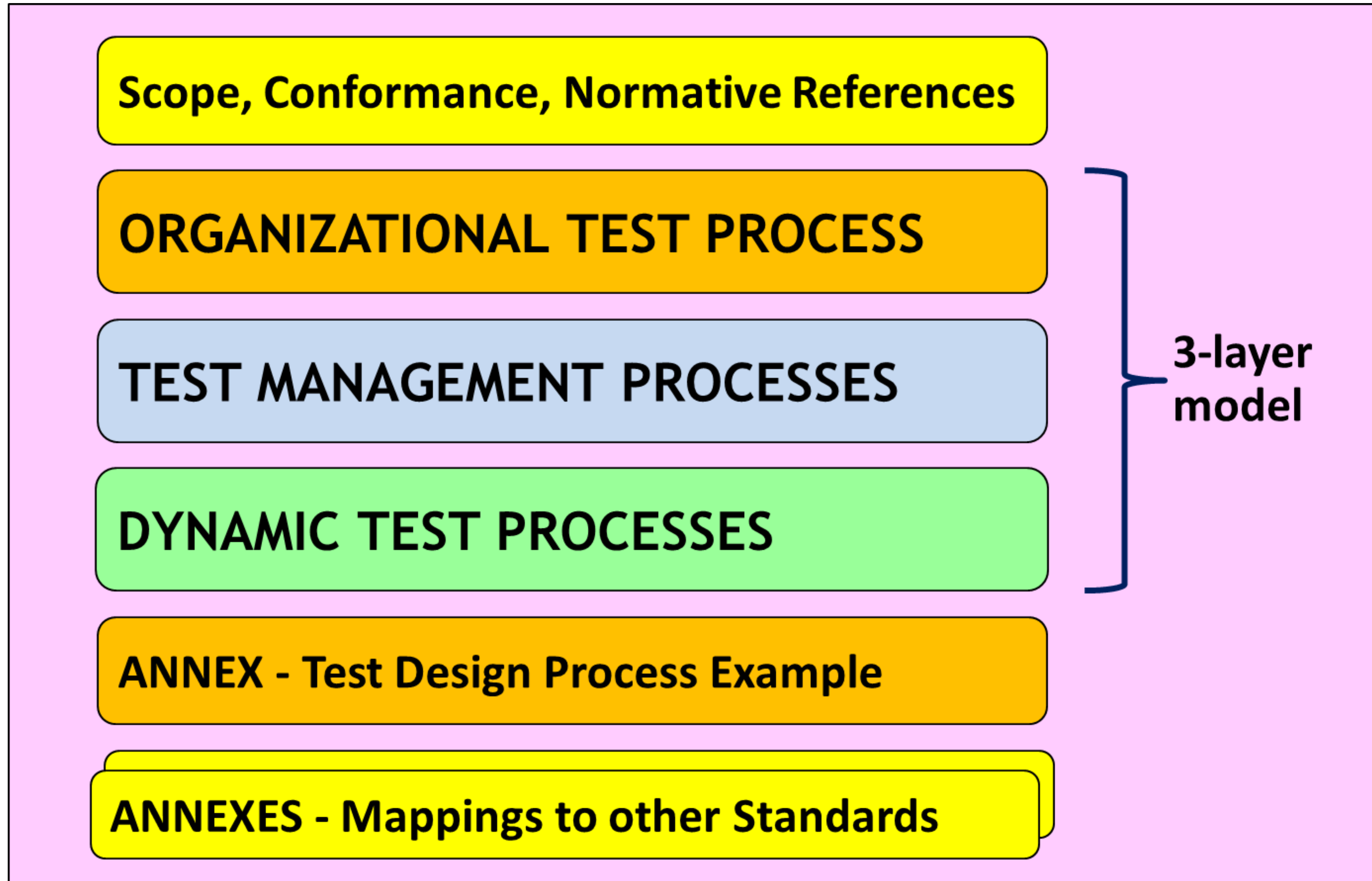
ANNEX – Test Metrics and Measures

ANNEX - Testing in Different Life Cycles

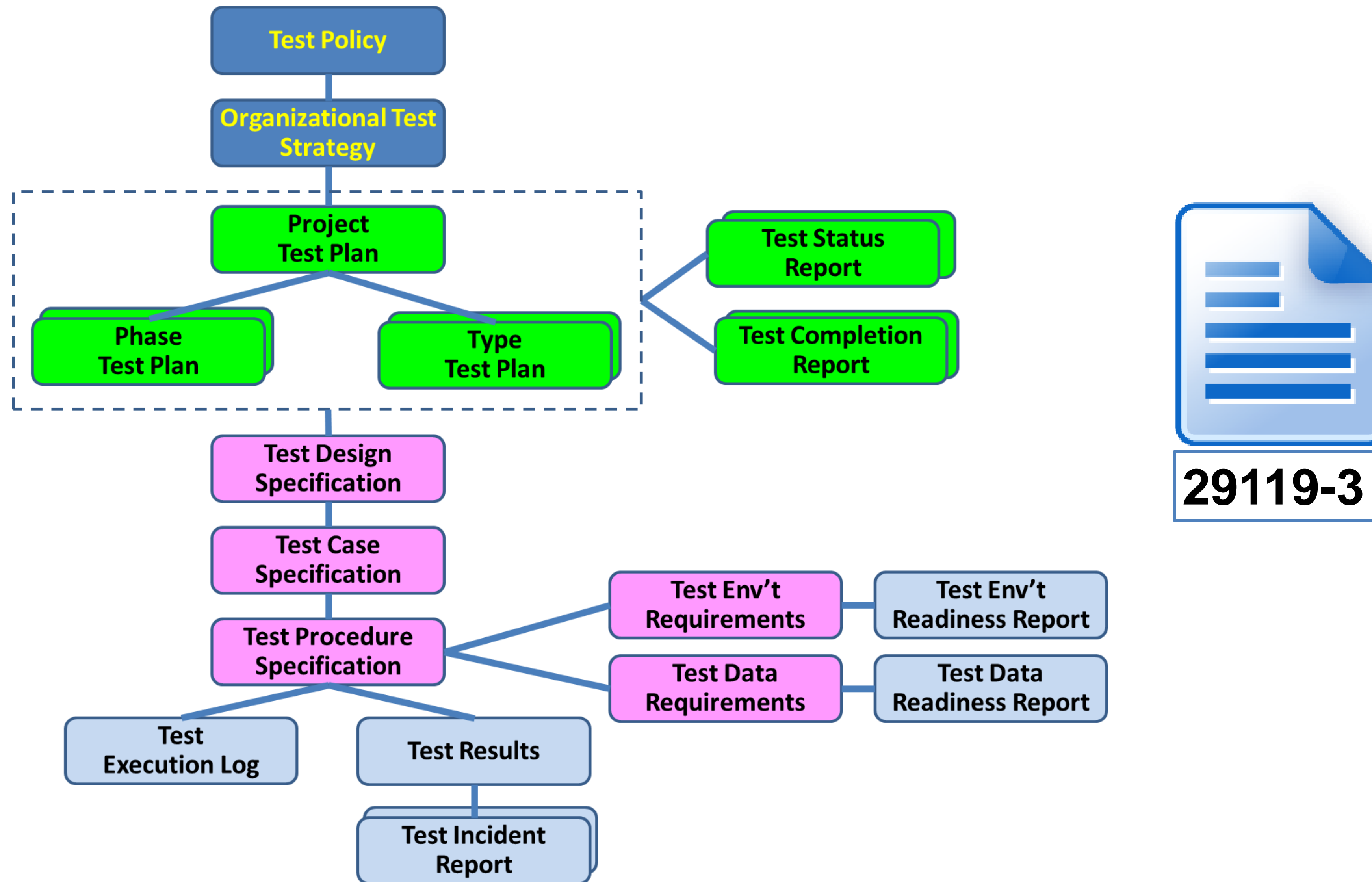
ANNEX - Roles and Responsibilities

Bibliography

ISO 29119 Part 2: Test Process



ISO 29119 Part 3 – Test Documentation



ISO 29119 Part 4 - Test Design Techniques

specification-based testing techniques

- boundary value analysis
- cause-effect graphing
- classification tree method
- combinatorial test techniques
- decision table testing
- equivalence partitioning
- random testing
- scenario testing
- state transition testing
- syntax testing

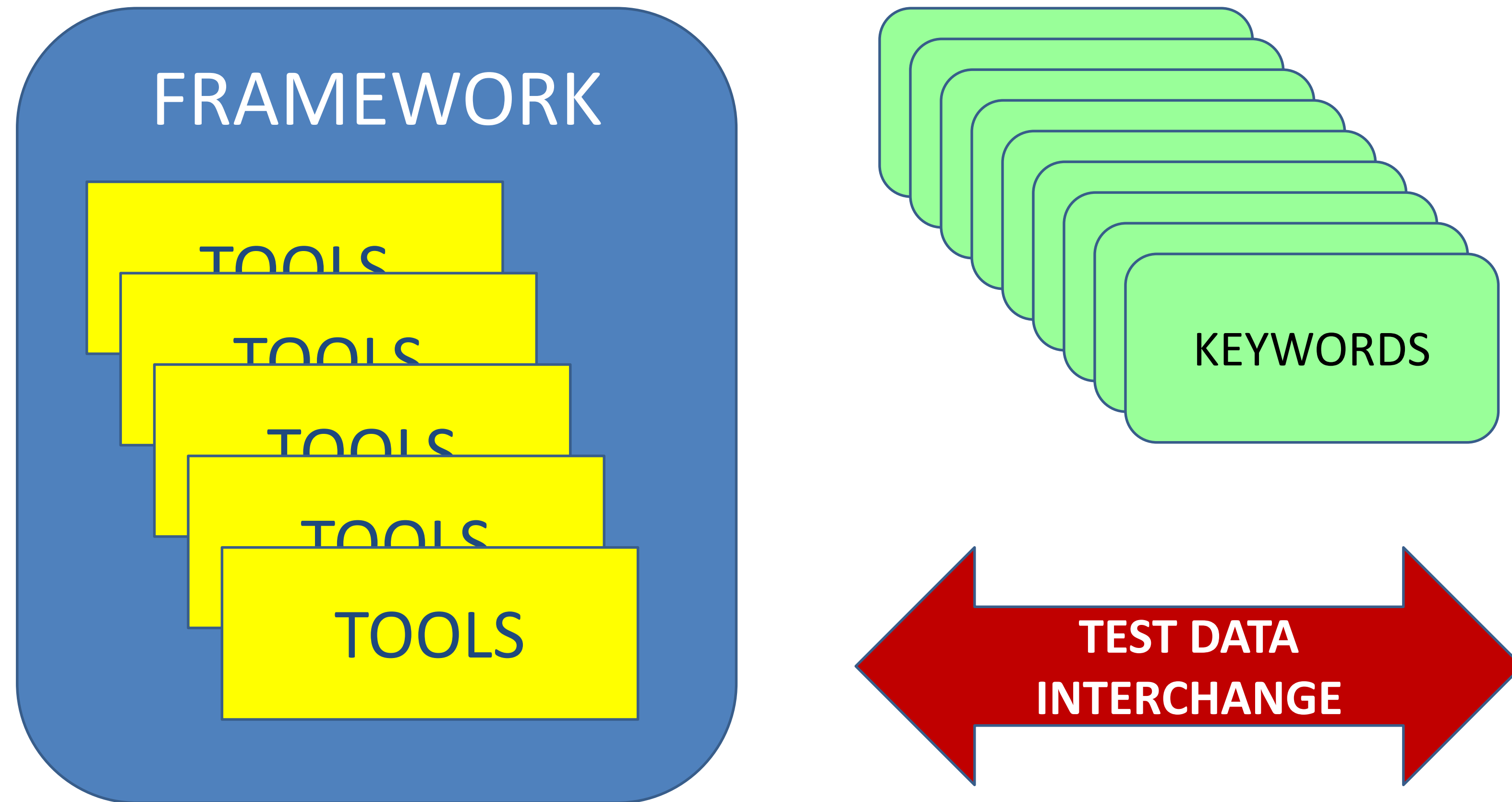
structure-based testing techniques

- branch / decision testing
- branch condition testing
- branch condition combination testing
- data flow testing
- modified condition decision coverage (MCDC) testing
- statement testing

experience-based testing technique

- error guessing

ISO 29119 Part 5 – Keyword-Driven Testing



ISO/IEC 20246 Work Product Reviews



- **Review Types**

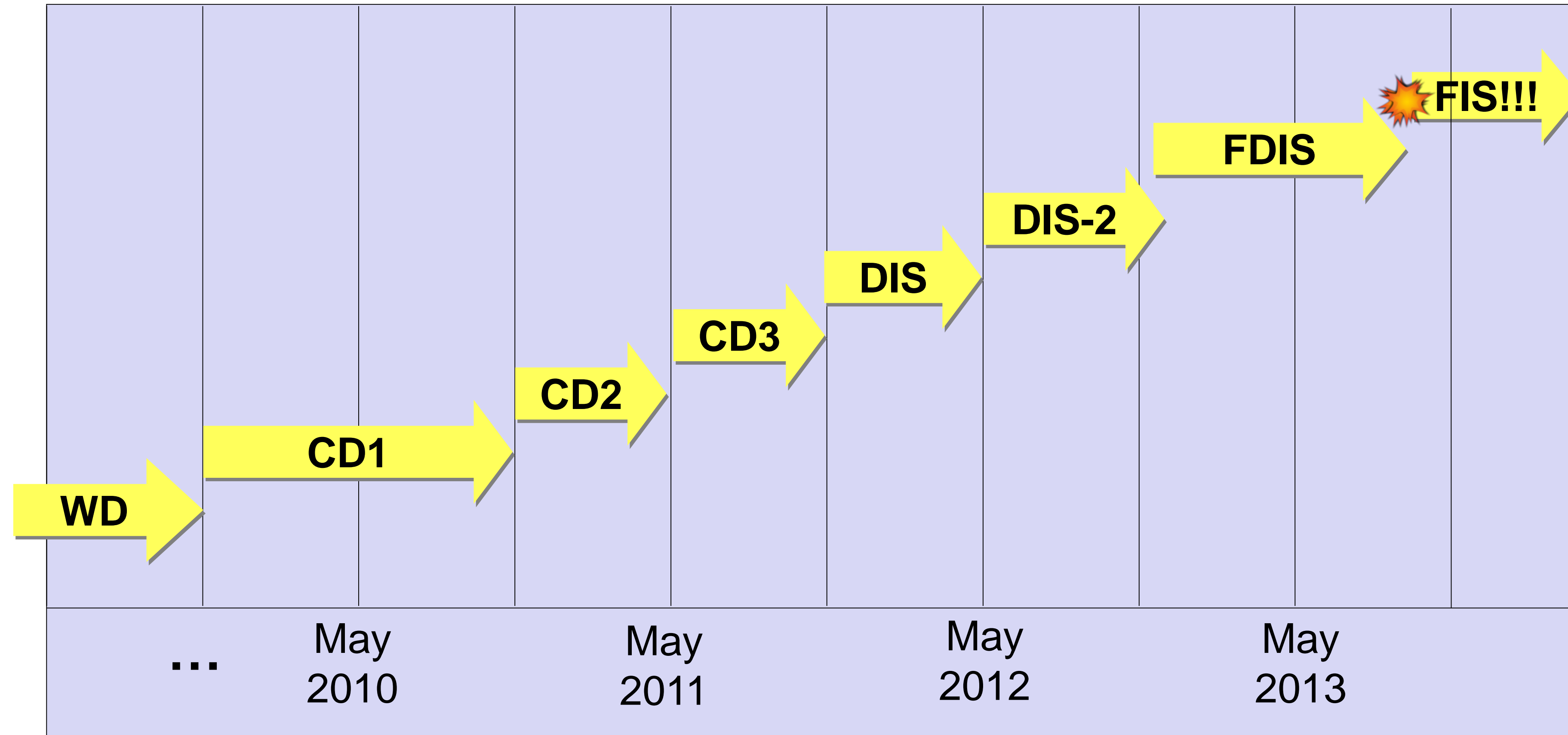
- Milestone Reviews
- Inspections
- Technical Review
- Walkthroughs
- Informal Group Review
- Pair Review
- Buddy Check
- Peer Desk Check
- Author Check

- **Review Attributes**

- Purpose
- Roles
- Individual review techniques
- Optional activities
- Number of reviewers
- Planned number of reviews
- Formal reporting
- Training required
- Review improvement
- Entry and exit criteria

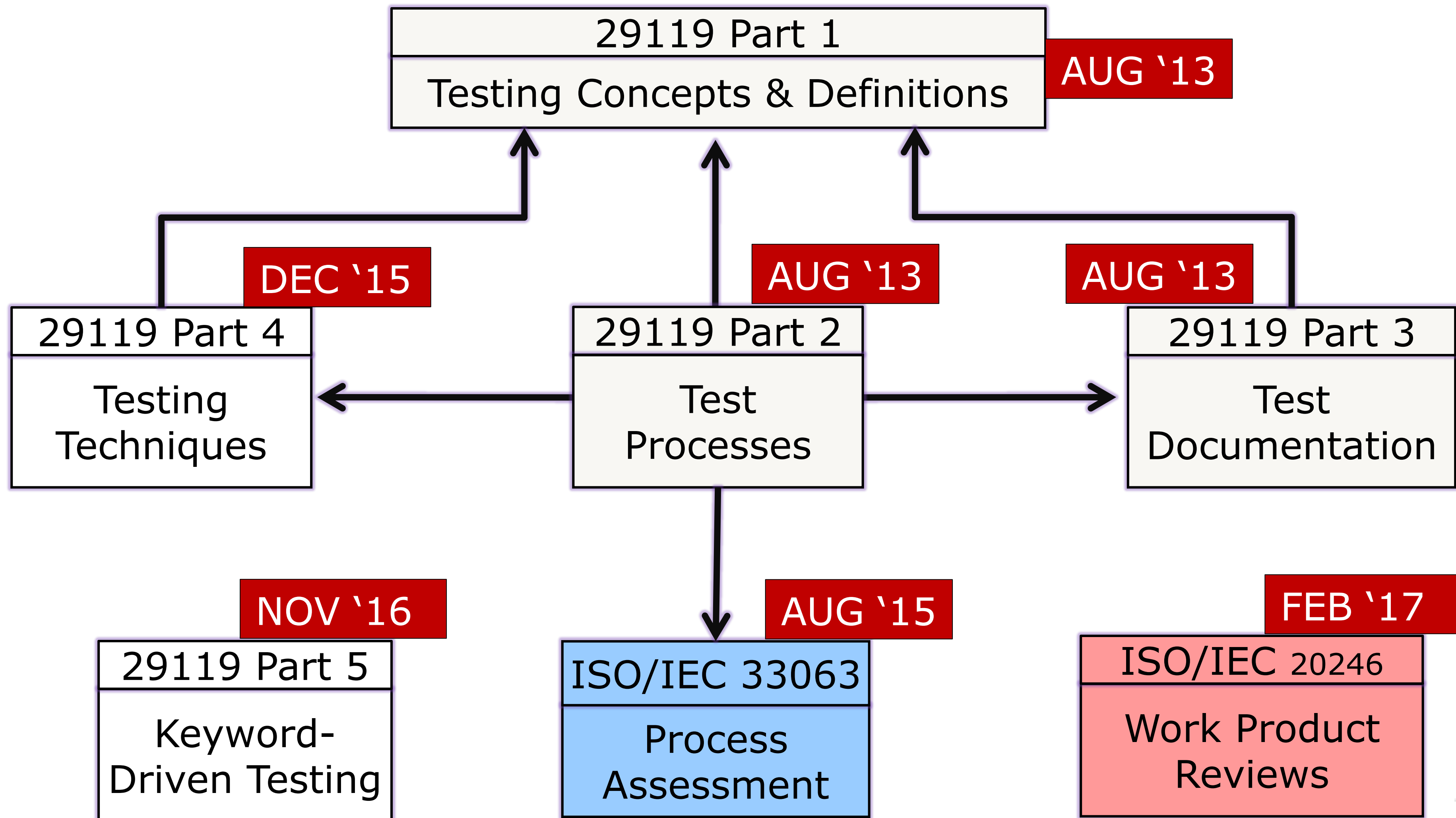
Standards Development, Current Status & Future Plans

Example Development – Parts 1, 2 & 3



Working Draft (WD)
Committee Draft (CD)
Draft International Standard (DIS)
Final Draft International Standard (FDIS)
Final International Standard (FIS)

WG26 – Published Standards



Status - ISO/IEC/IEEE 29119

- **Due in next year - Guideline Technical Reports**
 - Part 6 Testing on Agile projects
 - Part 7 Testing of automotive software
 - Part 8 Model-based testing
 - Part 9 Games testing
 - Part 11 Testing AI-based systems
- **In Progress – International Standard**
 - Part 10 Performance-based testing

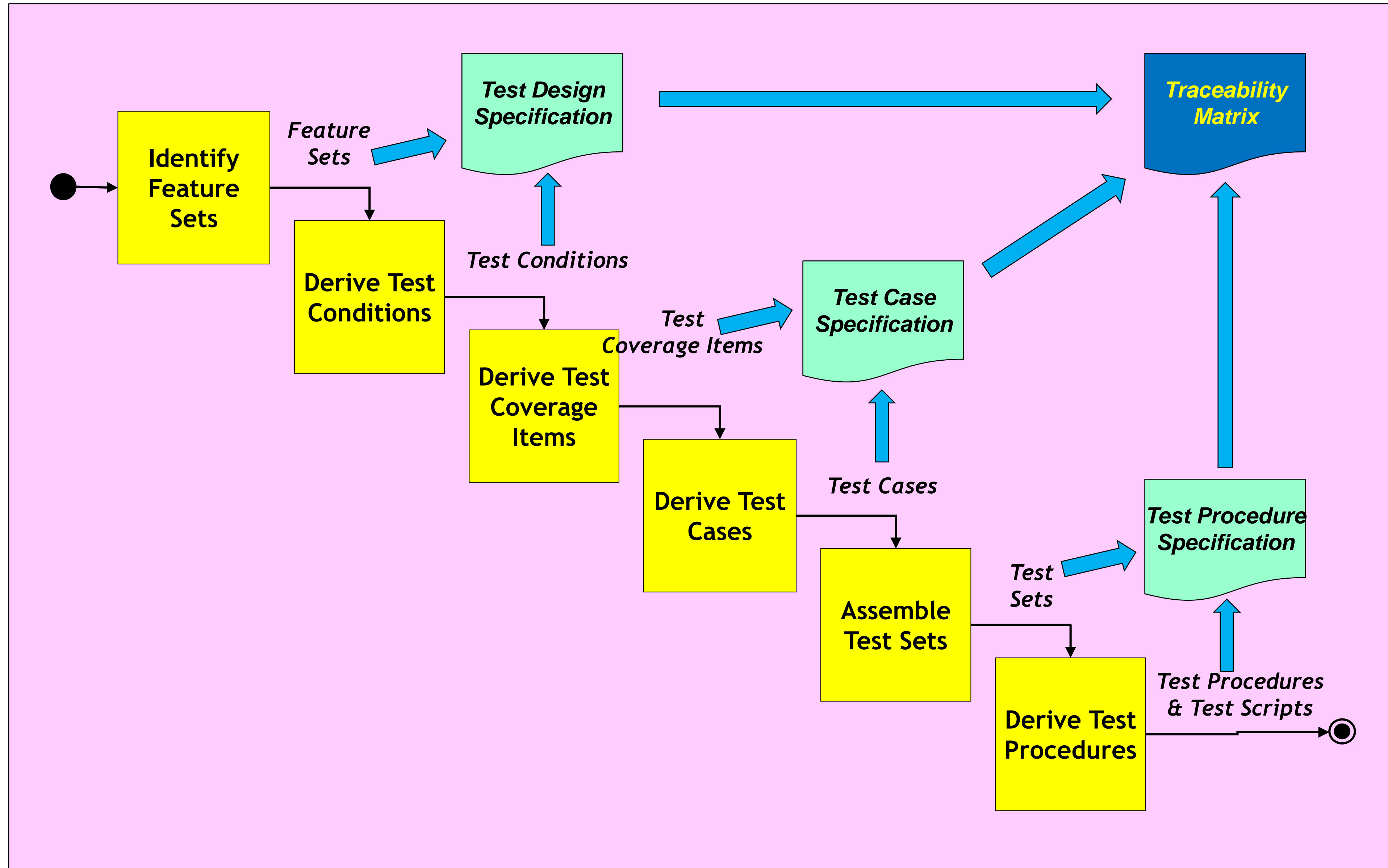
Future Plans - Other WG26 Standards

- **In Progress**
 - Incident Management
- **Just Starting:**
 - Static Analysis
- **Feasibility Studies:**
 - Test Environments
 - Test Scenarios
- **Five-Year Review...**

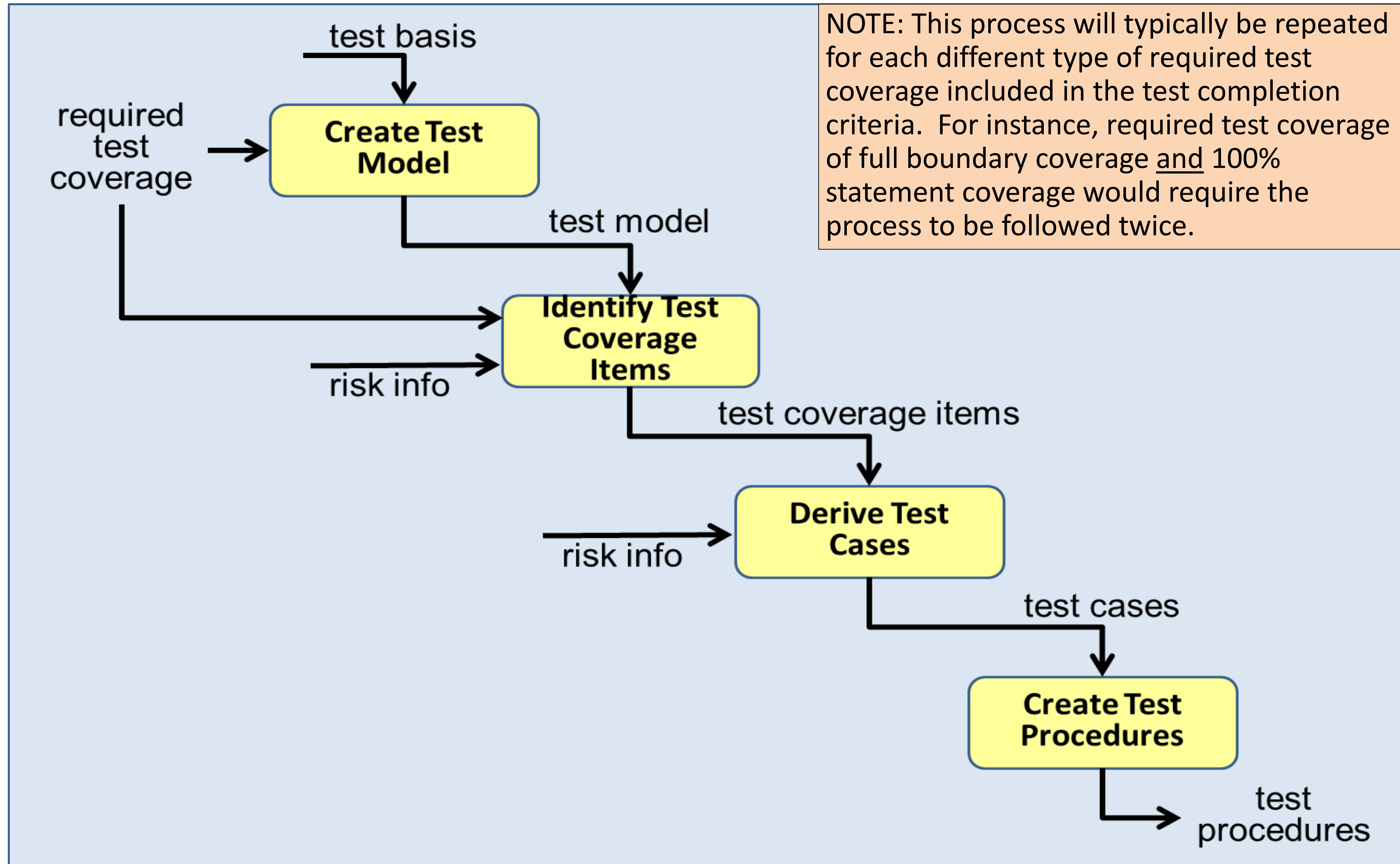
ISO/IEC/IEEE 29119

5-Year Review (Test Design)

Test Design & Implementation Process



Simplified Version 2 for Test Design



Example – Decision Table Testing

- **Test Model (decision table)**

		Rules			
		1	2	3	4
Condition(s)	Tired?	Yes	Yes	No	No
	At work?	Yes	No	Yes	No
Action(s)	Rest?	No	Yes	No	No

- **Test Coverage Items (rules)**

- See the four rules in the decision table

- **Test Cases**

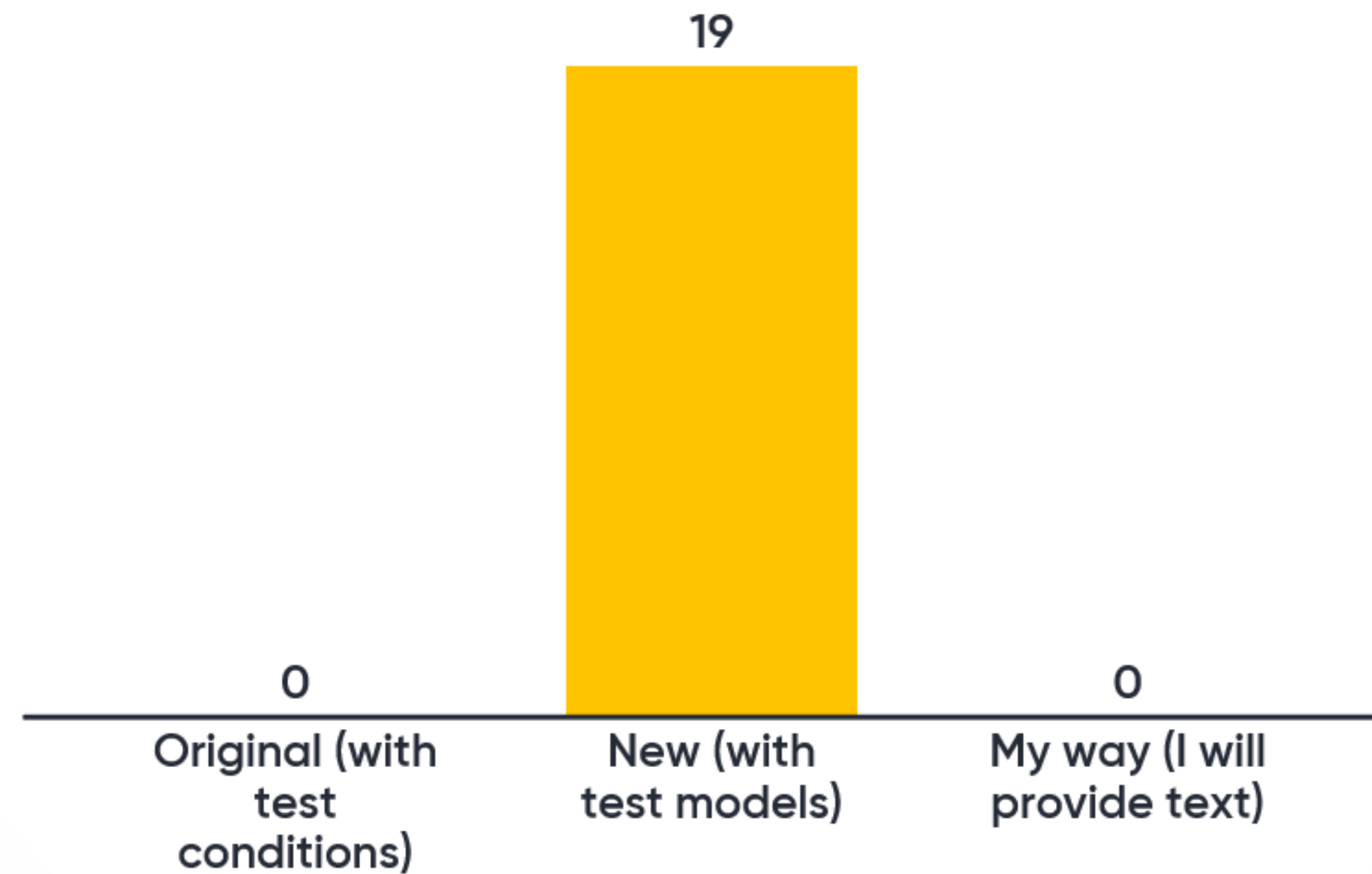
1. Inputs: Sim tired = yes; Location = office / Expected Result = Not resting
2. Inputs: Sim tired = yes; Location = home / Expected Result = Resting
3. Inputs: Sim tired = no; Location = factory / Expected Result = Not resting
4. Inputs: Sim tired = no; Location = home / Expected Result = Not resting

If resting at work when tired was considered more risky, we could duplicate coverage of rule 1 with an additional test case that covered the factory location

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Which test design approach should be included in the next version?



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Adding Value to ISO/IEC/IEEE 29119 and Testing Standards

ISO 29119 – Language Versions

- **Initially in English**
- **Korean version – 2018**
- **Chinese version – 2019**
- **Japanese version – in progress**

Commercial Certifications

- **ISO 29119 Certified Tester 2-day course**
 - 1-hour exam - 40 multiple choice questions
- **ISO 29119 Product Certification**
 - based on ISO/IEC/IEEE 29119 standards
- **ISO 29119 Process Certification**
 - based on
 - ISO 33063 Test Process Assessment (Process Assessment Model)
 - ISO 29119-2 Test Processes (Process Reference Model)
 - follows the SPICE approach
- **Available in English and Korean**

Do you want to be involved?

- **Join ISO Working Group 26**
 - representing your national standards body
 - 6 day meetings, every 6 months
 - contribute between meetings
- **Join a WG26 mirror group**
 - for your national standards body
- **Contribute materials**
- **Review drafts**
- **Trial the standards on real projects**
- **Translate to Norwegian 😊**

Finally...

- stureid.test@gmail.com
 - if you have any questions on the standards
 - if you are interested in trialling the standard on a project, reviewing drafts or writing examples
- <http://softwaretestingstandard.org/>
 - WG26 website
- <http://www.jtc1-sc7.org/>
 - access to official documents released by WG 26
- <http://www.stureid.info/>
 - downloadable guidelines on ISO standards

Acknowledgements

- **ISO/IEEE/IEC 29119-1 copyright IEEE, 2013**
- **ISO/IEEE/IEC 29119-2 copyright IEEE, 2013**
- **ISO/IEEE/IEC 29119-3 copyright IEEE, 2013**
- **ISO/IEEE/IEC 29119-4 copyright IEEE, 2015**
- **ISO/IEEE/IEC 29119-5 copyright IEEE, 2016**
- **ISO/IEC 33063 copyright ISO, 2015**
- **ISO/IEC 20246 copyright ISO, 2017**

Thank you for listening

Any Questions?