

Standardization effort: ISO/IEC 29119 Software Testing

Javier Tuya

Software Engineering Research Group

University of Oviedo

Coordinator of the workgroup

AEN/CTN 71/SC7/GT26 – AENOR



giis.uniovi.es

AST Meeting, Seville, October 19th 2011



What are standards?

- “Set of mandatory requirements established by **consensus** and maintained by a recognized body to prescribe a **disciplined uniform approach** or specify a product, that is, mandatory conventions and practices” (*ISO/IEC 24765:2009 Systems and software engineering vocabulary*)
- Standards provide a **body of knowledge** that provides the basis for a professional discipline
- Basis for:
 - Communication – common terminology
 - Professional qualifications
 - Certification/compliance schemes
 - Benchmark of ‘good industry practice’
 - Contracts
 - Interoperability and consistency.....

Standards for Software Testing

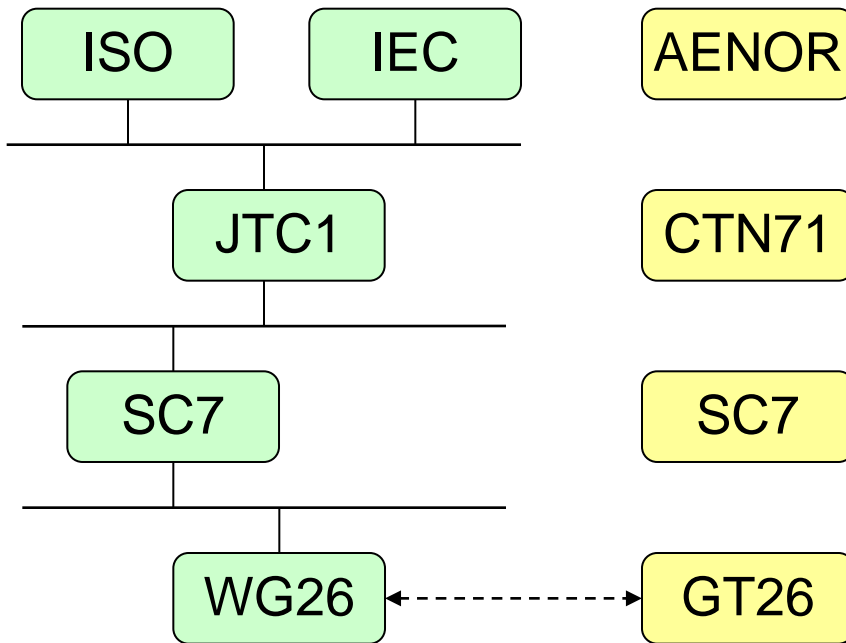
- IEEE & BSI Standards
 - IEEE 829 deals with documentation (implicit process)
 - IEEE 1008 deals with unit testing
 - BS 7925-1 & 2 unit testing standards
- Not covered:
 - Integration testing, system testing, acceptance
 - Explicit test process model
 - Project test management & organization-level
 - Partial view of testing techniques
- Conflicting definitions, processes & procedures
- Practitioners may not know which standard to follow

ISO/IEC 29119 - Scope

- Proposal of 29119 ISO project: February 2007
 - This project will produce a software testing standard applicable to all types of software products and software-intensive systems.
 - Purpose: unify and integrate the currently fragmented corpus of normative literature regarding testing that is currently offered by three distinct standards-makers: BSI, IEEE, and ISO/IEC JTC 1/SC 7.
 - Four Parts

Organization

■ ISO/IEC & National Bodies



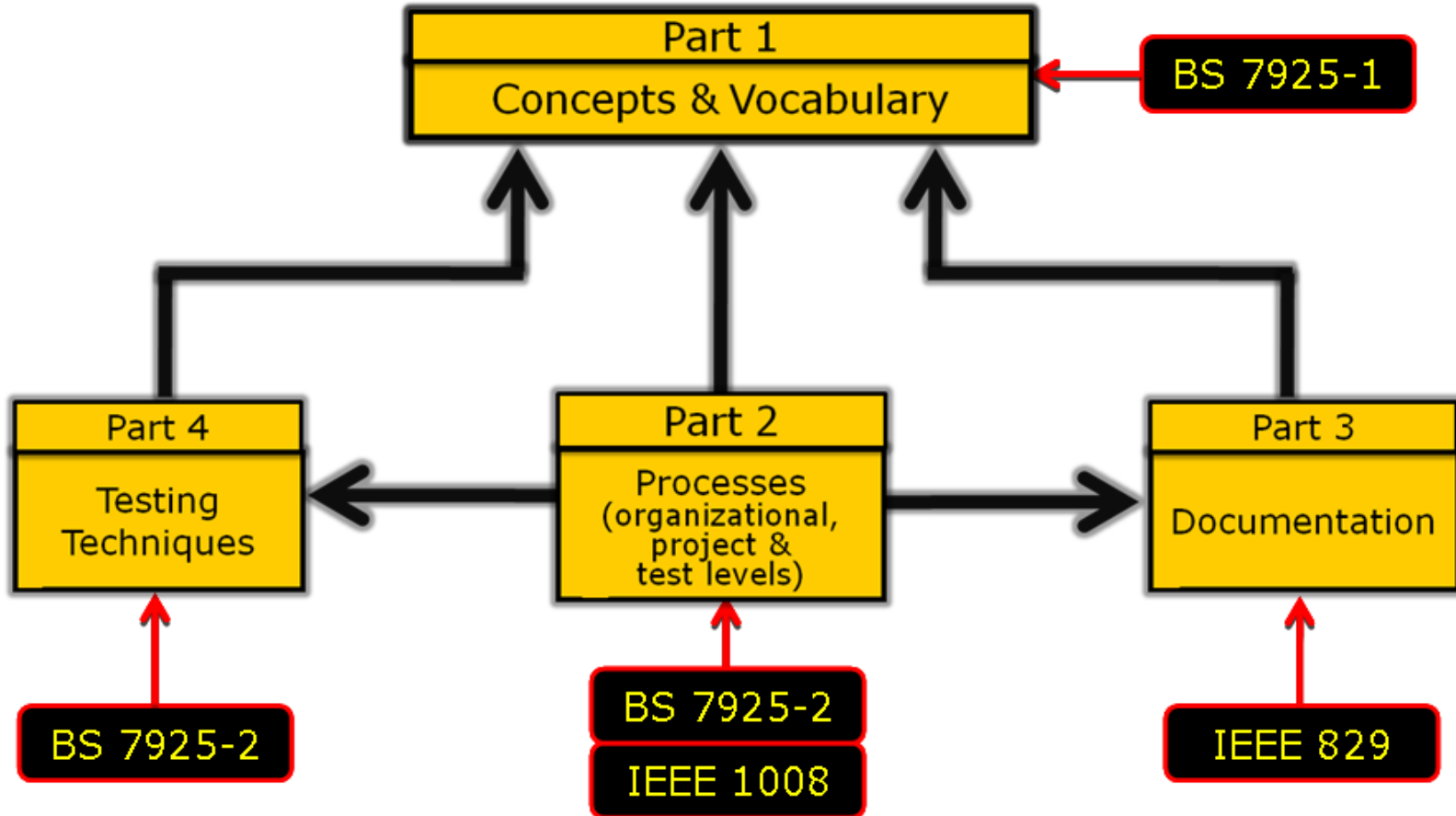
■ ISO Committees & Working Groups:

- ISO: International Organization for Standardization
- JTC1: Information Technology
- SC7: Software & Systems Engineering
- WG26: Software Testing

■ National Body (ES)

- AENOR: Asociación Española de Normalización y Certificación
- GT26: Pruebas del Software
- <http://in2test.lsi.uniovi.es/gt26/>

ISO/IEC 29119 Software Testing - Structure



Timelines

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

Parts 2 & 3

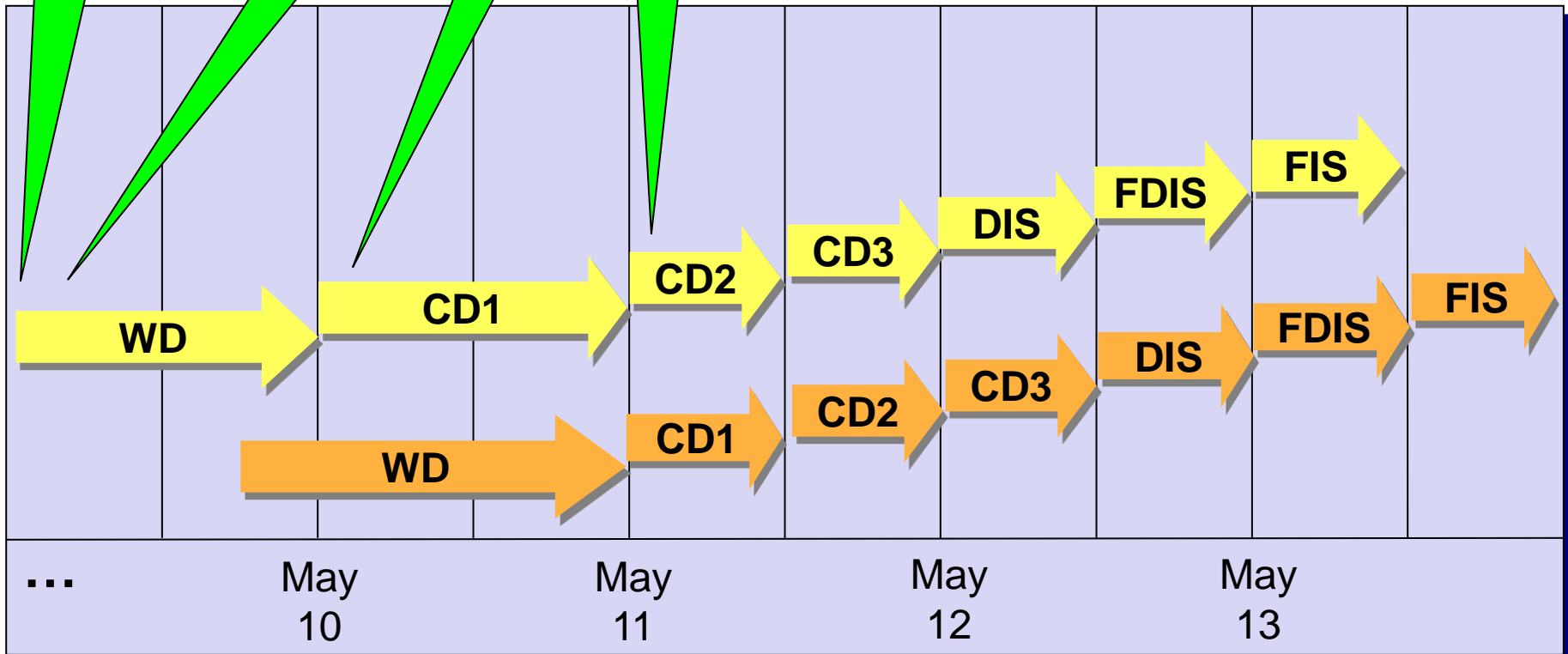
Parts 1 & 4

Aug 2008
 WD public
 P2,3

Sep 2009
 Redef.
 Proc. Model

Jun 2010
 WD/CDs
 P1,2,3

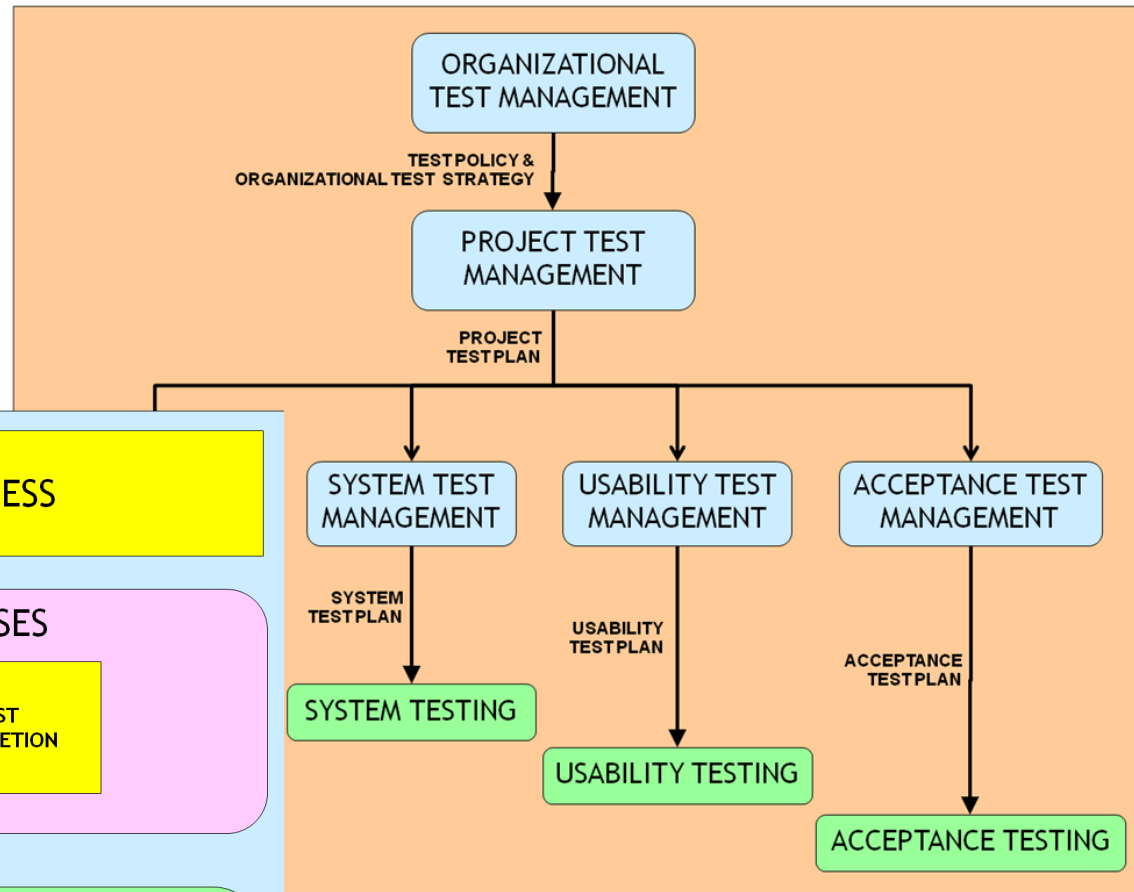
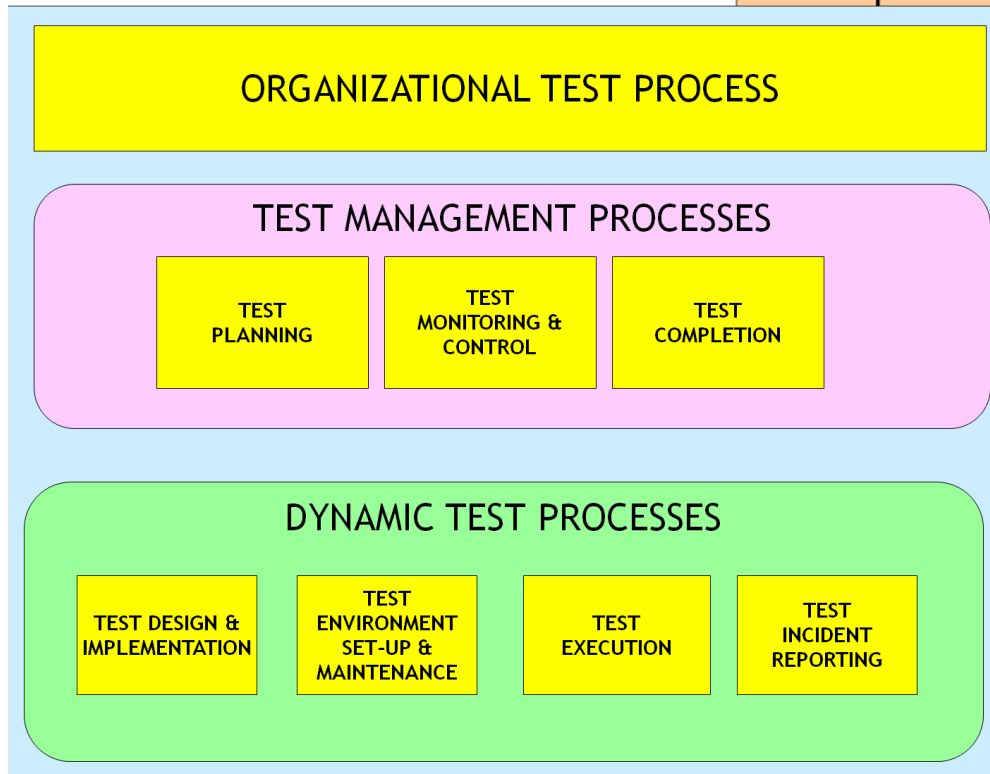
May 2011
 CDs
 P1,2,3,4



Part 1 – Concepts & Vocabulary (informative)

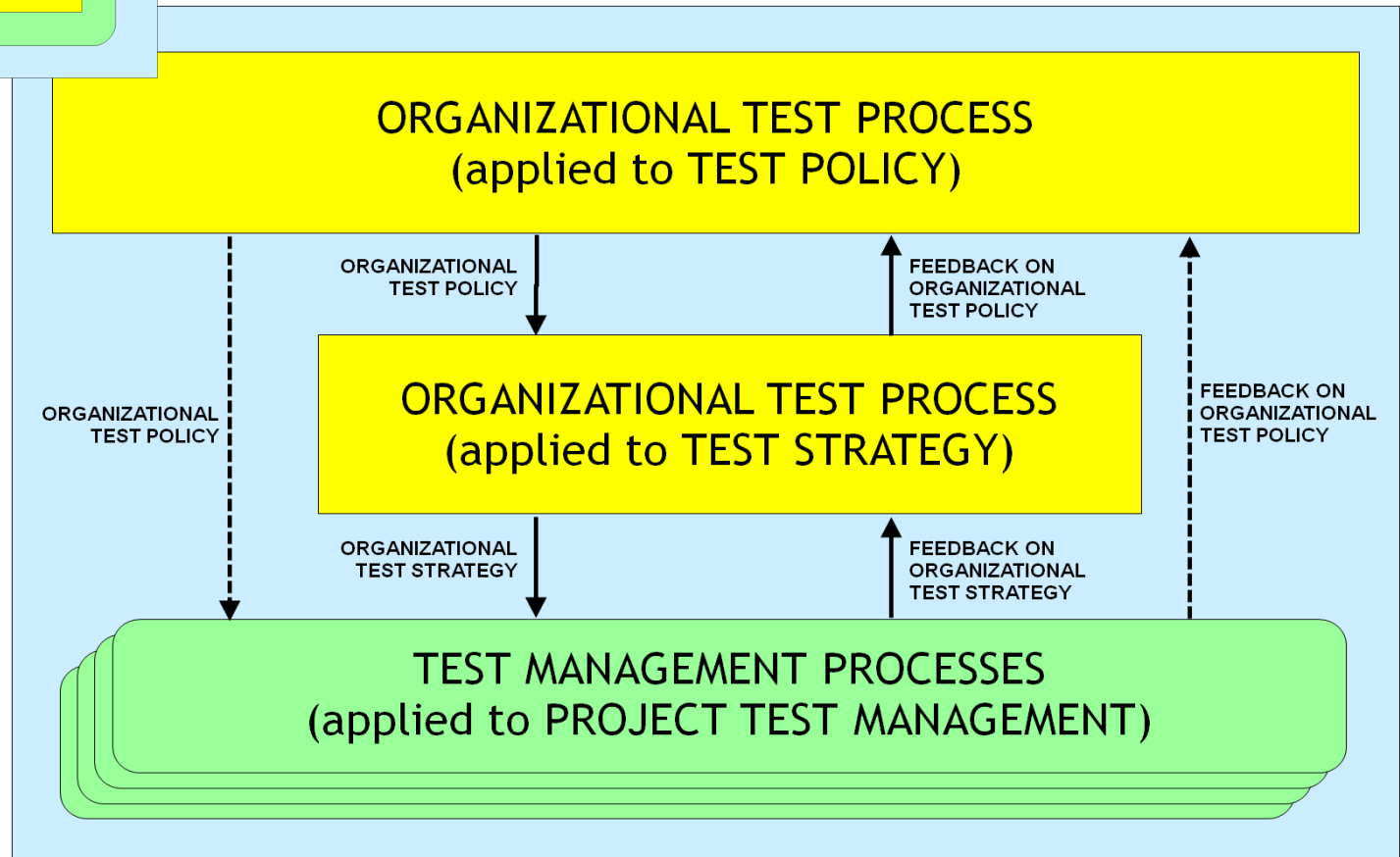
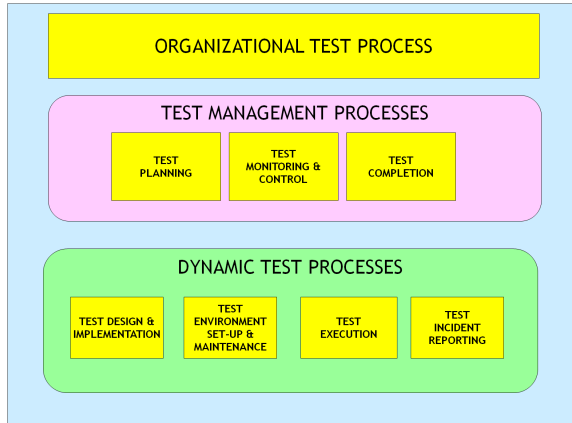
- Vocabulary of testing terms
- Software testing concepts (goal, levels, types, test basis, risk based testing)
- Testing in different life cycle models
 - Sequential
 - Agile
 - Evolutionary
 - Risk based Testing
- Roles and Responsibilities
- Metrics and Measures

P2 - Process Model

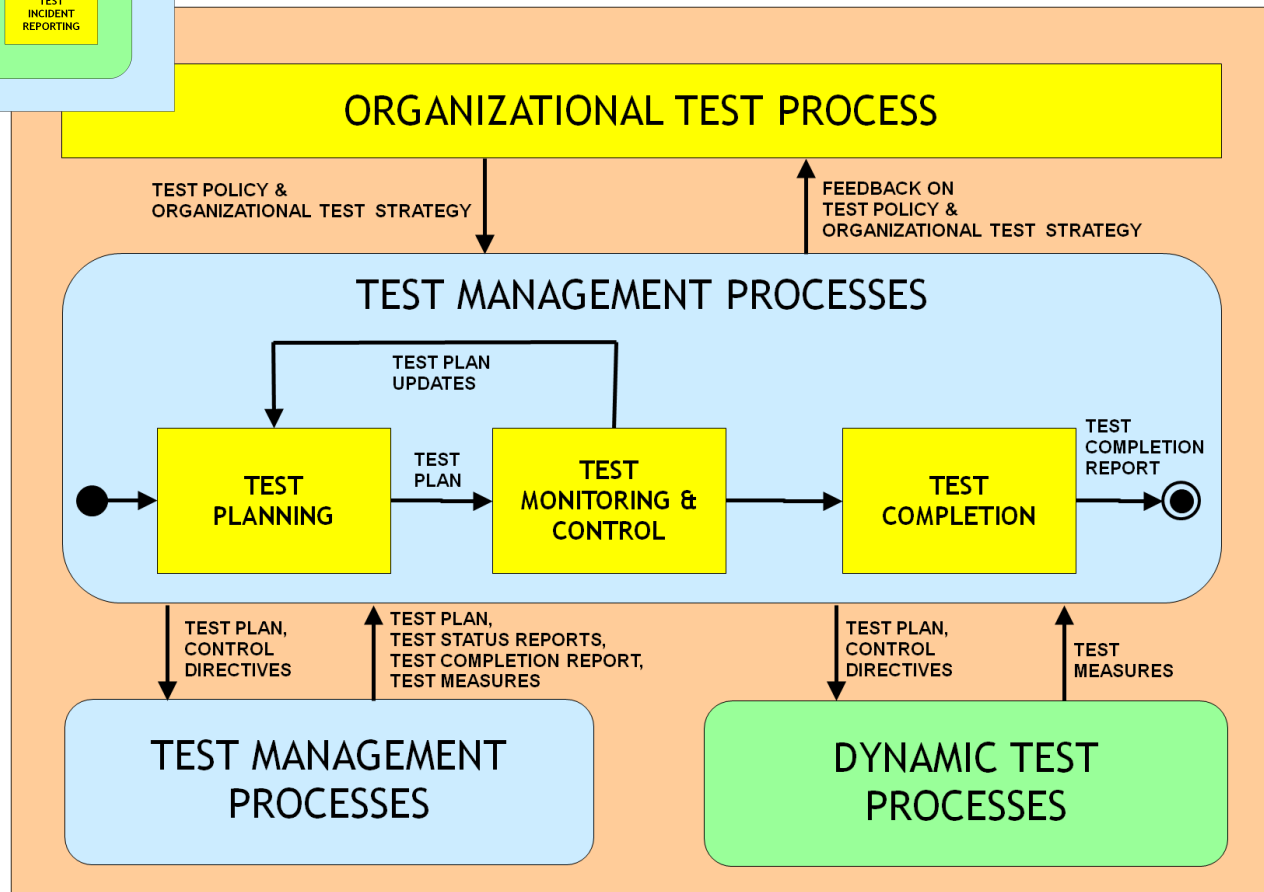
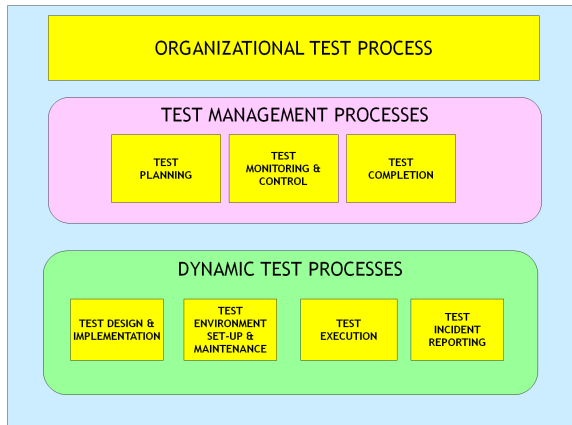


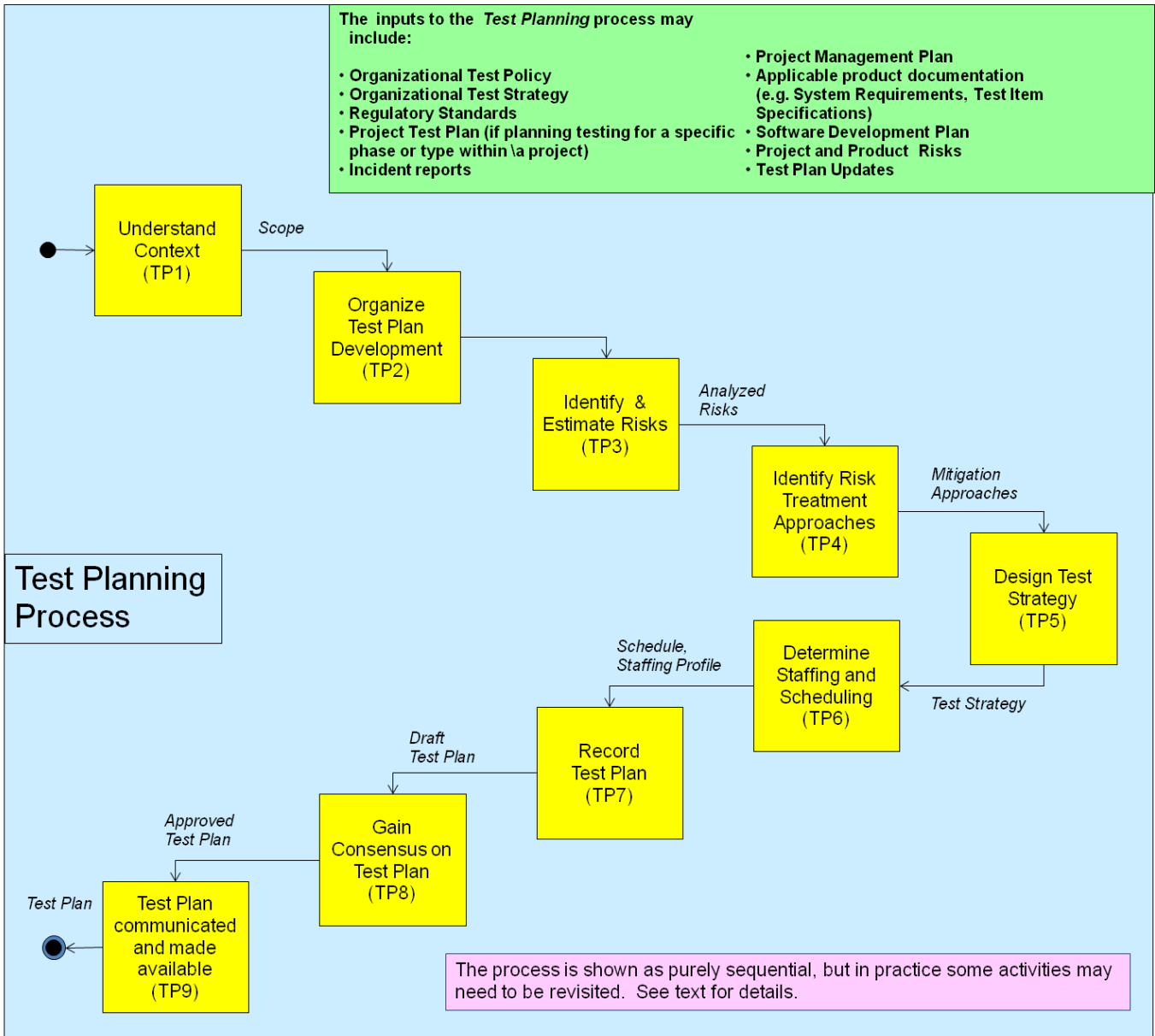
- Static Testing (reviews, static analysis...): covered by other standards, eg. IEEE 1012, 1028

P2 - Organizational Test Process



P2 - Test Management Process





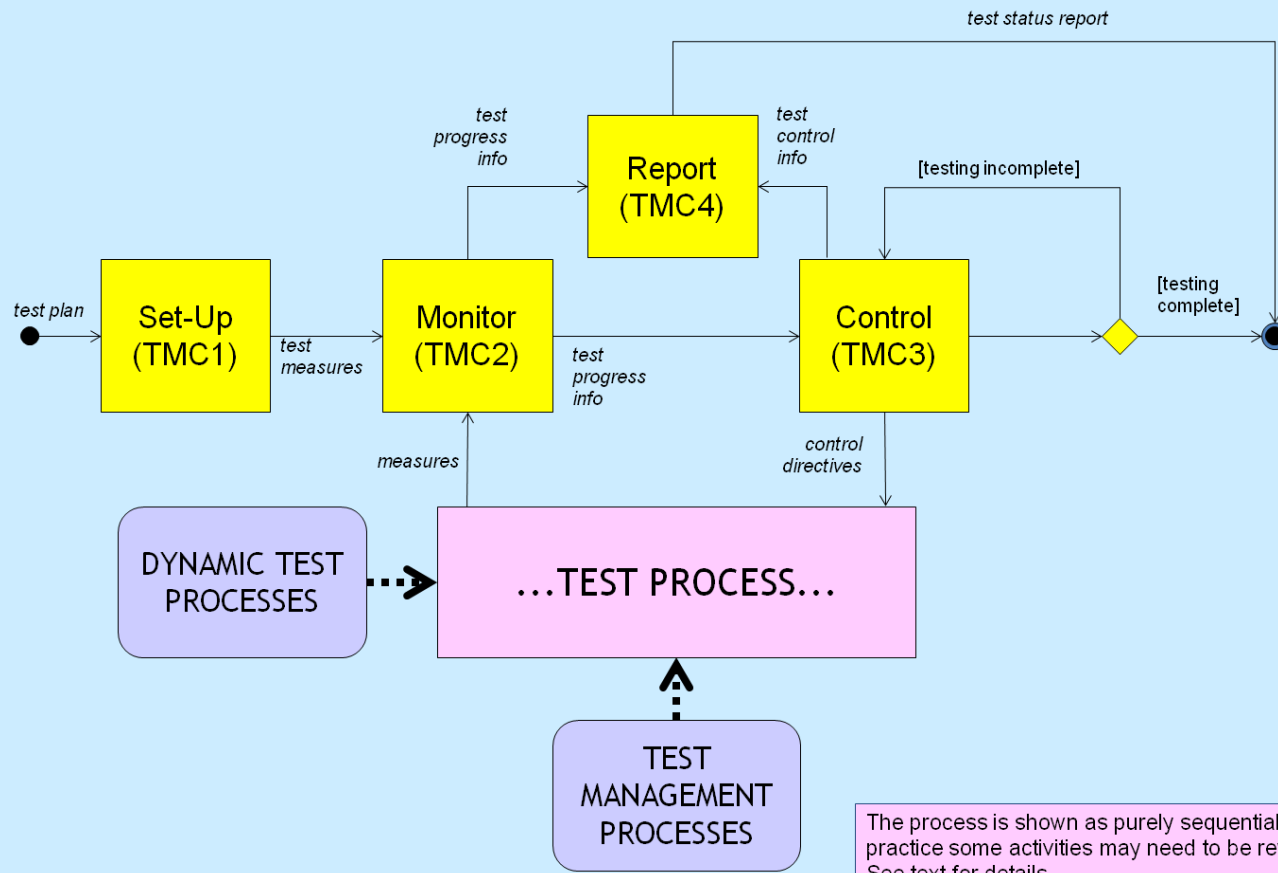
Test Monitoring & Control Process

The inputs to the *Test Monitor and Control Process* may include:

- Test Plan(s)
- Applicable product documentation, e.g. System Requirements, Contract, etc.

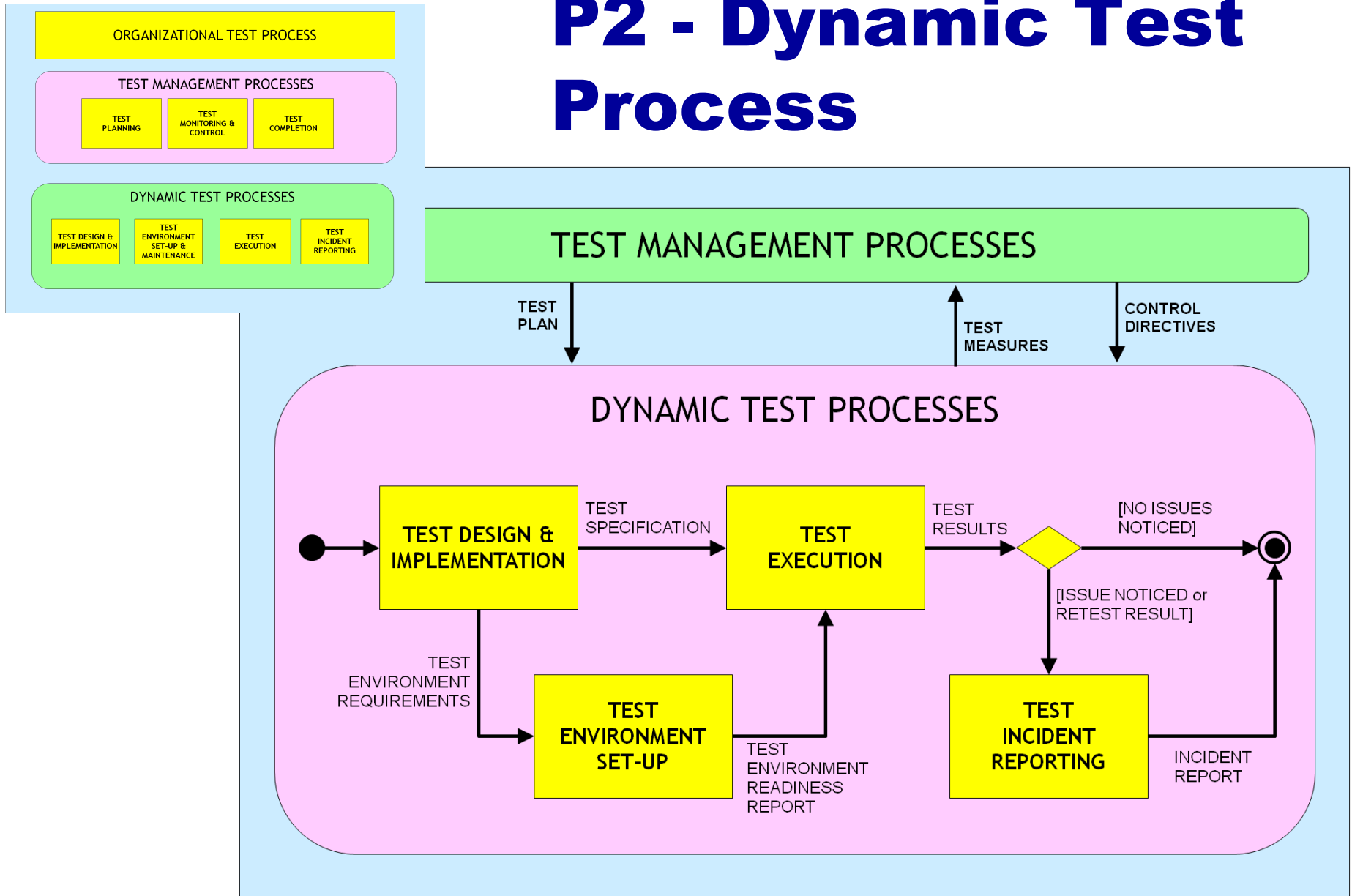
and, if available:

- Organizational Test Policy;
- Organizational Test Strategy;
- Control Directives (from a higher level *Test Monitor and Control Process*)
- Measures (from the *Test Process* being managed).

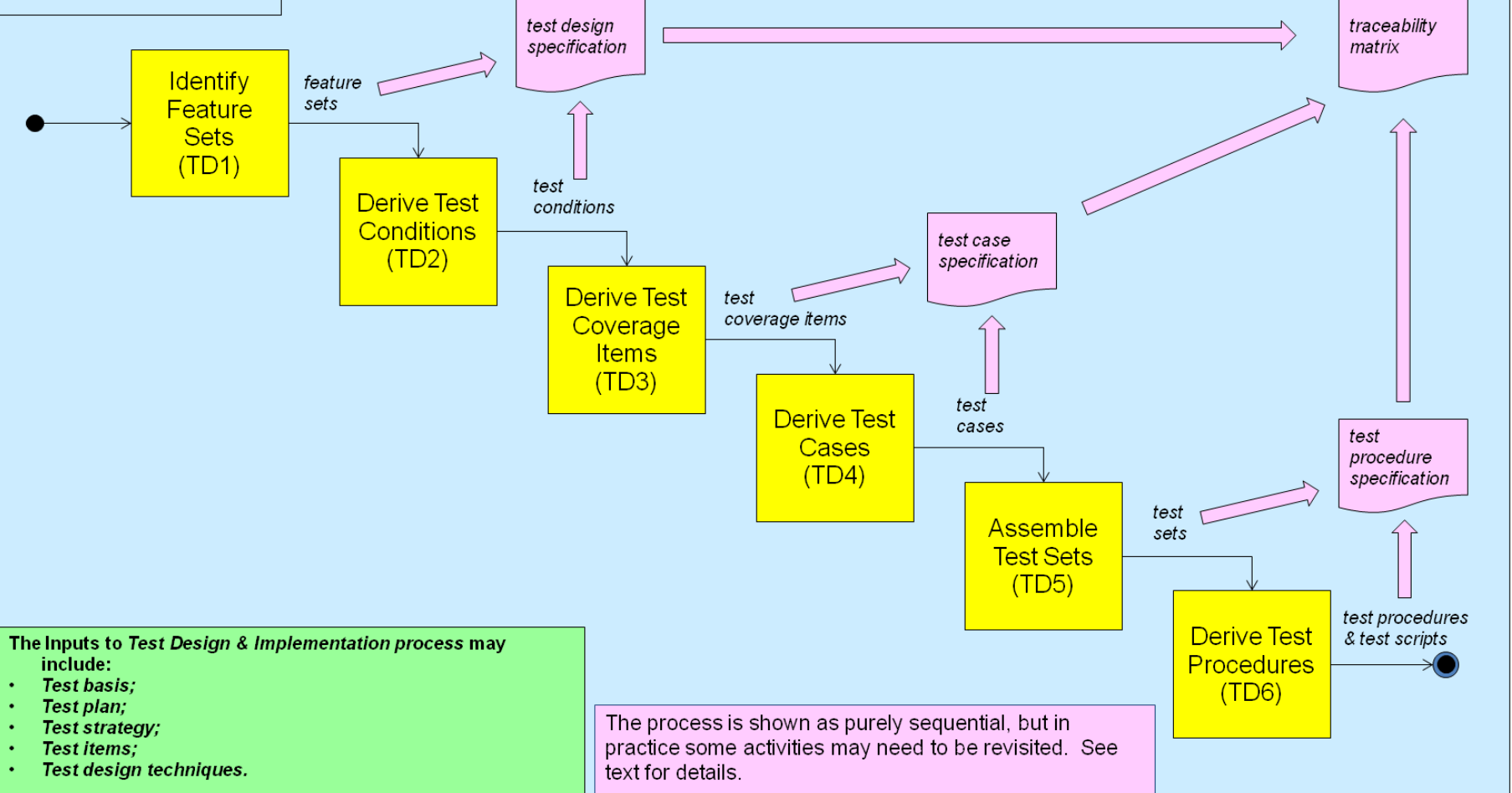


The process is shown as purely sequential, but in practice some activities may need to be revisited. See text for details.

P2 - Dynamic Test Process



Test Design & Implementation Process



The Inputs to Test Design & Implementation process may include:

- Test basis;
- Test plan;
- Test strategy;
- Test items;
- Test design techniques.

Parts 3,4 – Documentation and Techniques

■ P3 - Documentation

- Content + Templates + Examples

■ P4 - Techniques

- Description + Examples
- Dynamic Testing: Specification-based, Structure-based
- Static Testing (covered in other standards)
- Test Measurement Techniques
- Test of Quality Characteristics

More: Test Process Assessment

- May 2010 Proposal New Work Item (part 5?)
 - ISO/IEC 15504-2 as a Reference Assessment Model
 - ISO/IEC 29119-2 as a Reference Process Model
 - Consider TMMi & TPI
- To consider include it in the new versions of 15504 (33000 series)
 - ISO/IEC 33063 Process Assessment Model for Software testing processes

Conclusion

- International standard ISO/IEC 29119 will provide practitioners with guidelines for testing that cover all aspects of the life cycle
 - Provide consistent set of definitions, processes, procedures & techniques for software testing
 - Fill gaps not covered by current standards
 - To be adopted by national standards bodies
 - Currently has representation from 18 nations and is being reviewed by software testing professionals world-wide
- More Info:
 - GIIS Software Engineering Group: <http://giis.uniovi.es/>
 - Working Group GT26: <http://in2test.lsi.uniovi.es/gt26/>