

# La norma ISO/IEC 29119

## *Software Testing*

Relatore

Ercole Colonese

Roma, 2 marzo 2012



# Workshop “Software Testing”

---



14:00 – 14:30

Registrazione

14:30 – 14:40

Presentazione del workshop

*M. Cislaghi, A. Avellone*

14:40 – 14:50

Presentazione del questionario

*A. Avellone*

**14:50 – 15:20**

**Le norme ISO/IEC 29119 sul testing**

***E. Colonese***

15:20 – 15:45

Caso di studio: presentazione

*A. Avellone*

15:45 – 16:00

*Coffee Break*

16:00 – 16:30

Caso di studio: discussione

*A. Avellone*

16:30 – 17:00

Metodi e tecniche del testing

*E. Colonese*

17:00 – 17:30

Risultati del questionario e  
Problemi comuni del testing

*A. Avellone/E.Colonese*

17:30 – 17:45

Elementi di integrazione

*M. Cislaghi*

17:45 – 18:00

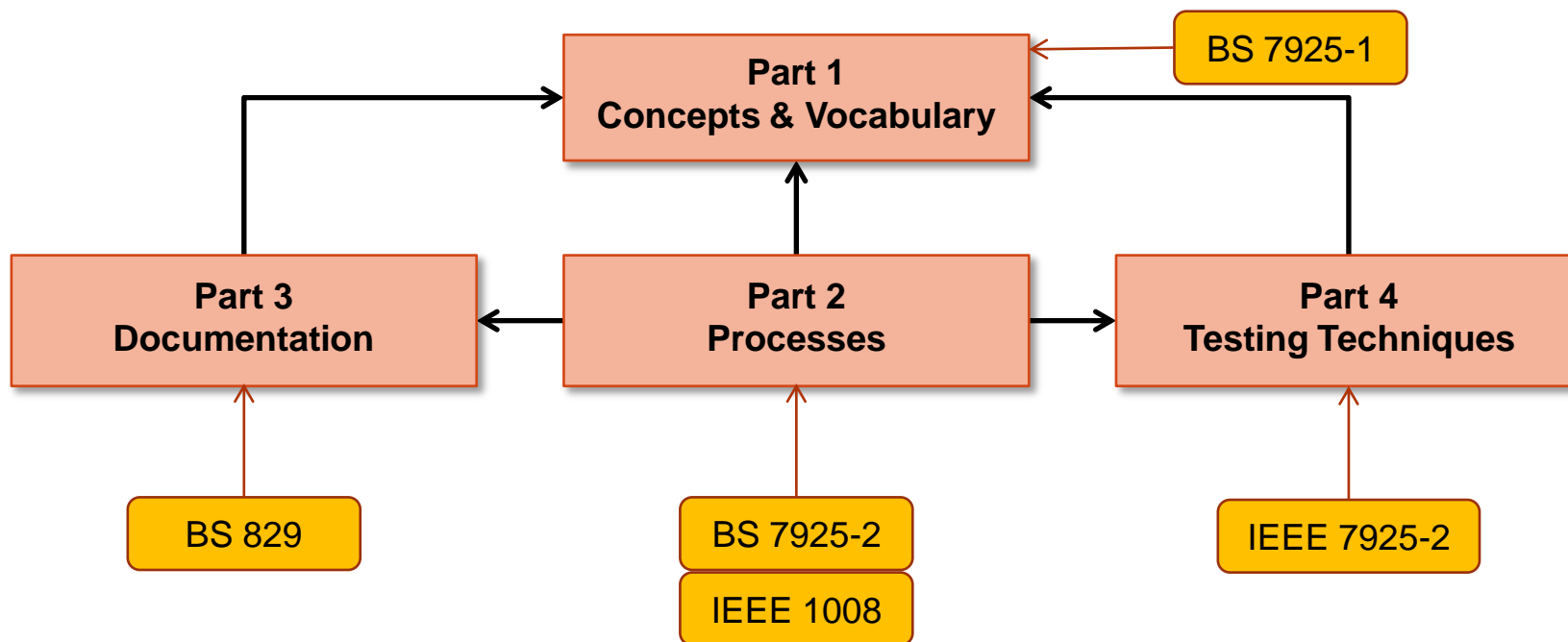
Sessione di discussione finale

*E. Colonese*

# Standard sul Software testing

- Pletora di standard
  - IEEE 829 tratta della documentazione (processo implicito)
  - IEEE 1008 tratta dello Unit Testing
  - BS 7925-1 & -2 sono standard per lo Unit Testing
  
- Manca la copertura de
  - Integration testing, system testing, acceptance testing
  - Modello esplicito di “test process”
  - Politiche e strategie per l’organizzazione del test
  - Project Test Management
  - Tecniche comuni per i test (quelle esistenti sono parziali)
  - Non-functional testing
  
- Conflitto nelle definizioni, processi e procedure
  
- I professionisti non hanno un riferimento preciso sul tema

# Ambito e struttura della ISO/IEC 29119



Fonte: ISO/IEC JTC1/SC7 WG26 Software Testing

# Stato dell'arte

---

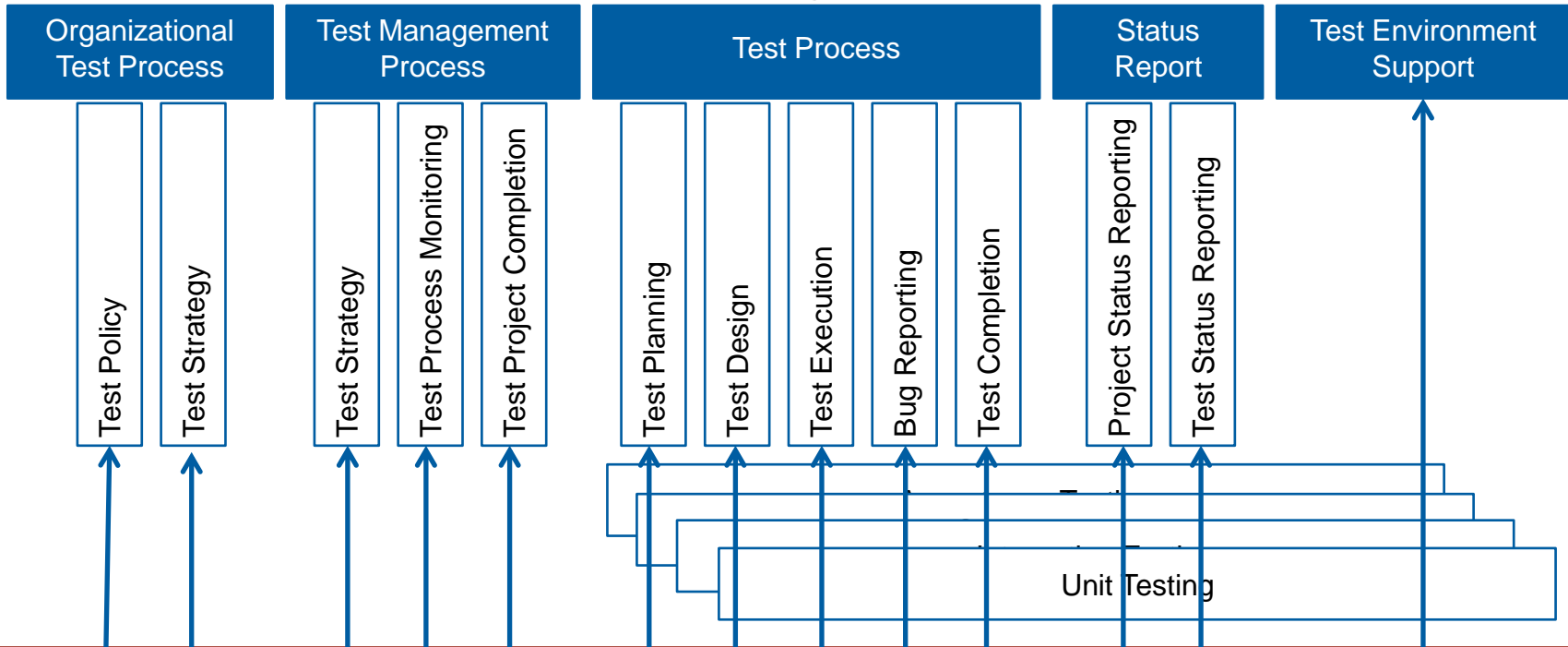
- ISO/IEC 29119 Software and System Engineering
  - Part 1: Concepts and definitions “Under development (May 2013)”
  - Part 2: Test process “**Available** (CHF 66,00)”
  - Part 3: Test documentation “**Available** (CHF 98,00)”
  - Part 4: Test techniques “Under development (Nov. 2012)”

## Nota:

- Generalmente uno standard si completa in non meno di 7 anni
- ISO/IEC 29119 vede l'inizio dello studio nel 2007

## Part 1 – Concepts and Vocabulary

### Part 2 – Testing Processes



### Part 3 – Testing documentation

### Part 4 – Testing Techniques

# Part 1: Concepts & Vocabulary

---

## Software testing concepts

- Introduzione al software testing
- Relazione tra testing, sviluppo e manutenzione
- Implicazioni dei modelli dei cicli di vita
- Approcci al testing

## Testing vocabulary

## Part 2: Testing processes

### Test Process Model

**Organizational Test Process**

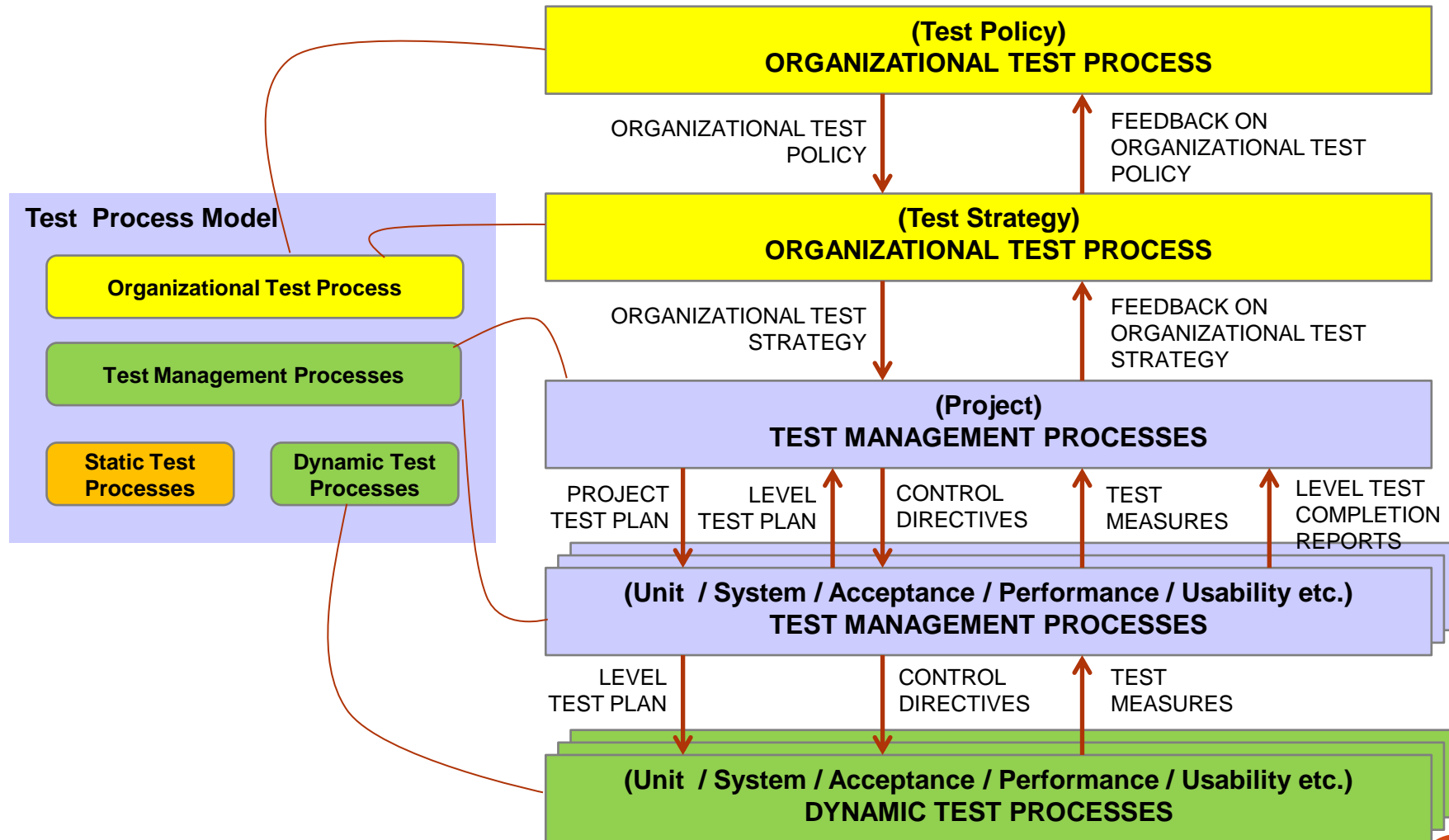
**Test Management Processes**

**Static Test  
Processes**

**Dynamic Test  
Processes**

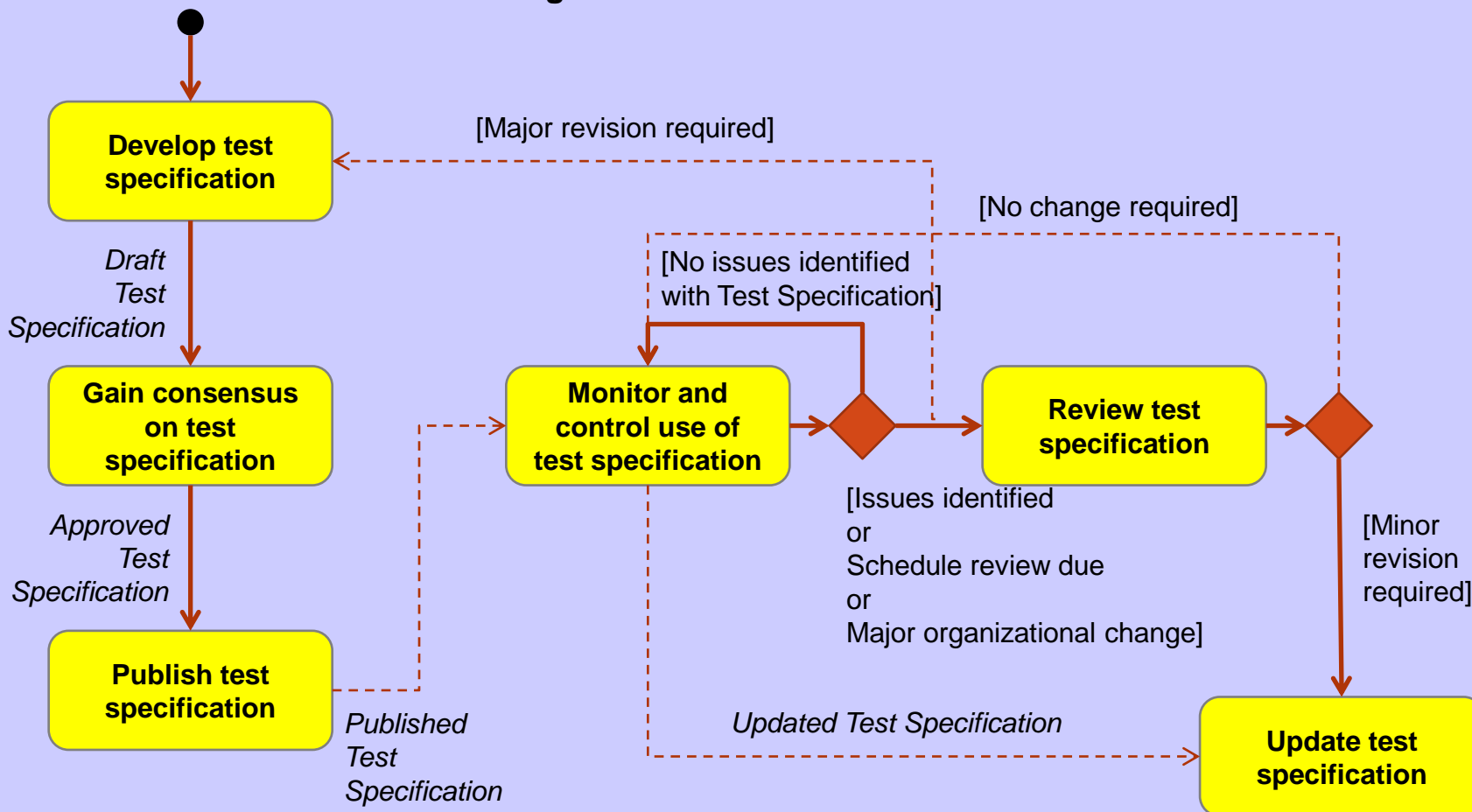


# Come iniziare i processi

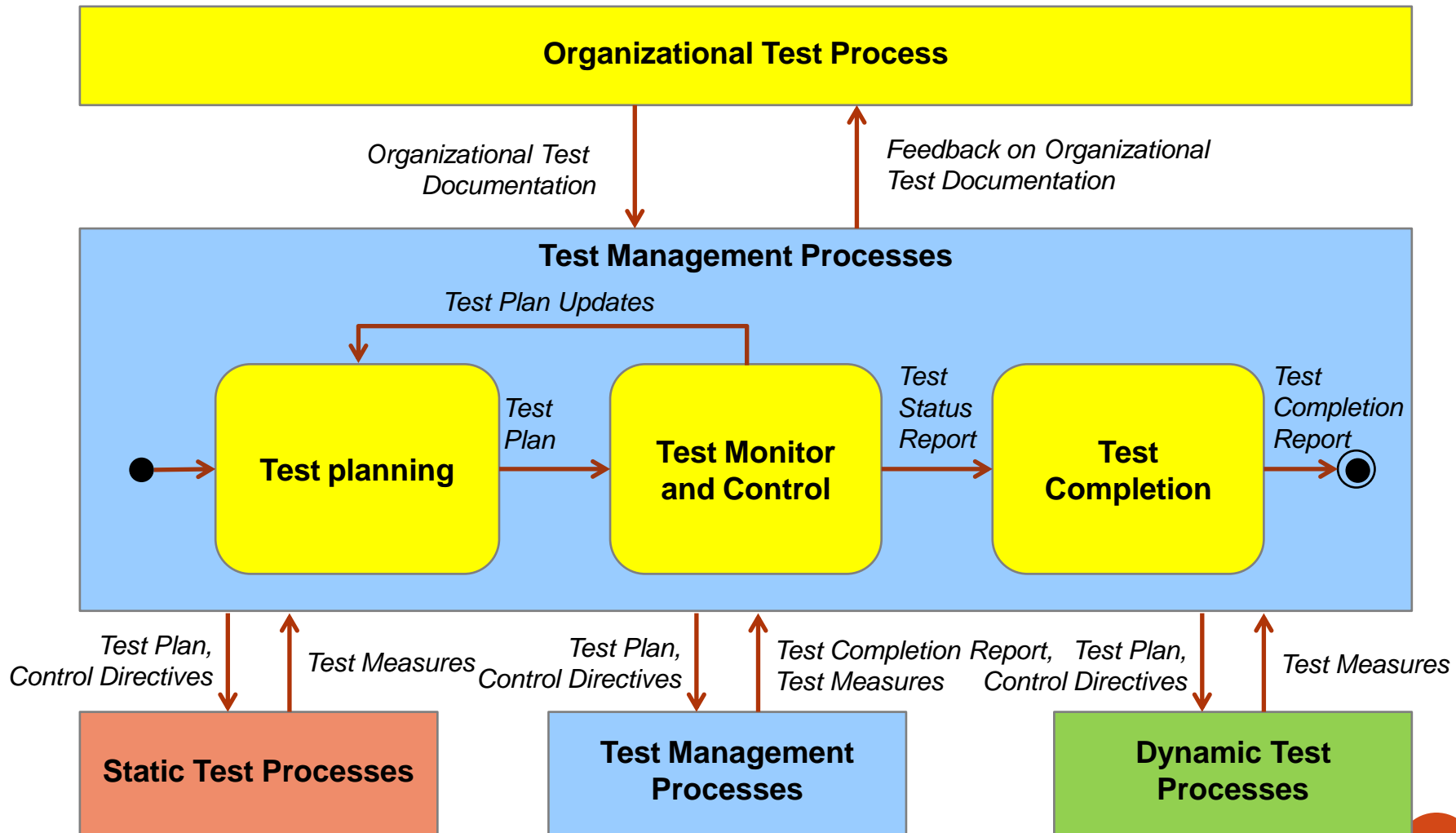


# Organizational Test Processes

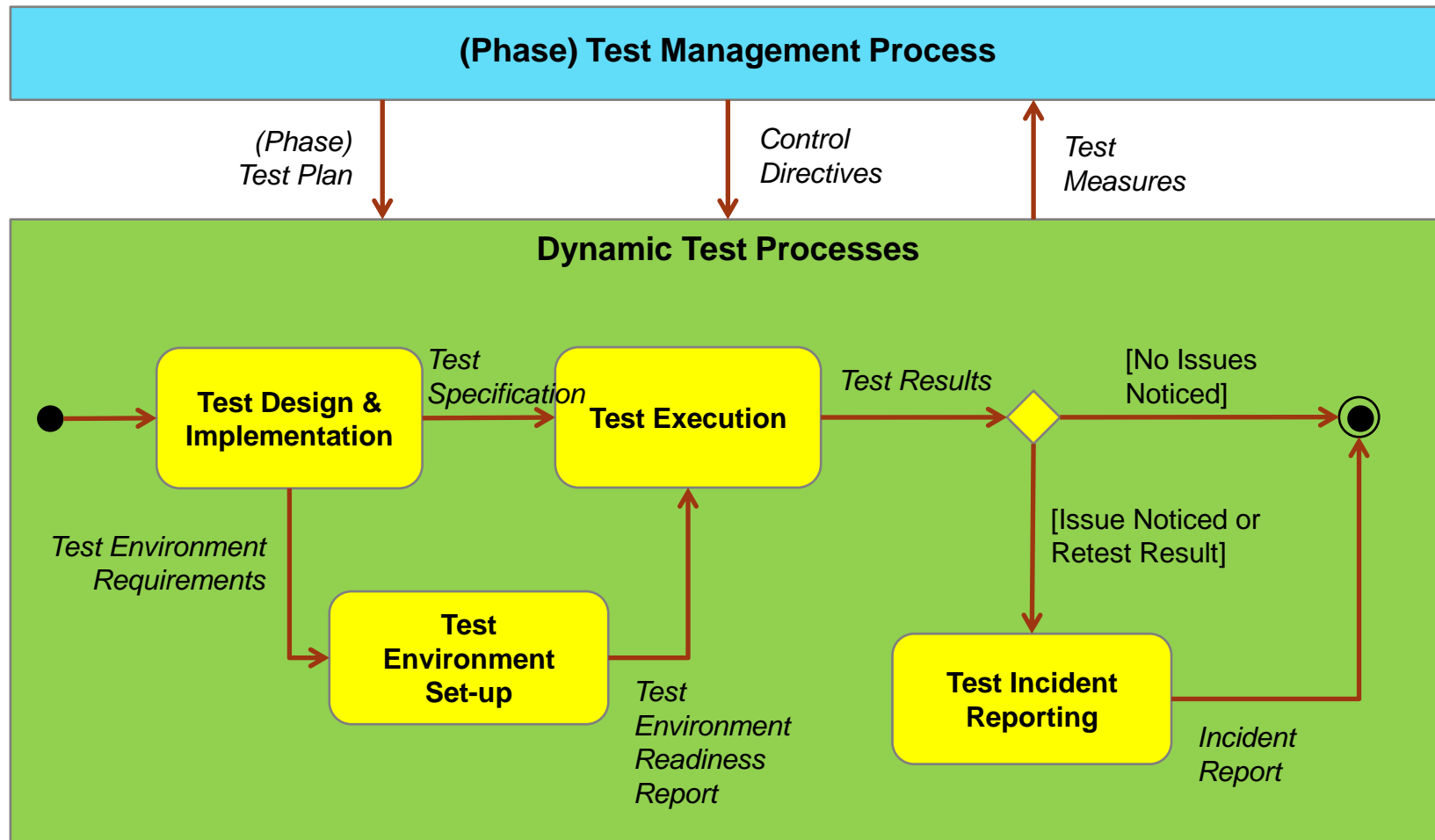
## Organizational Test Processes



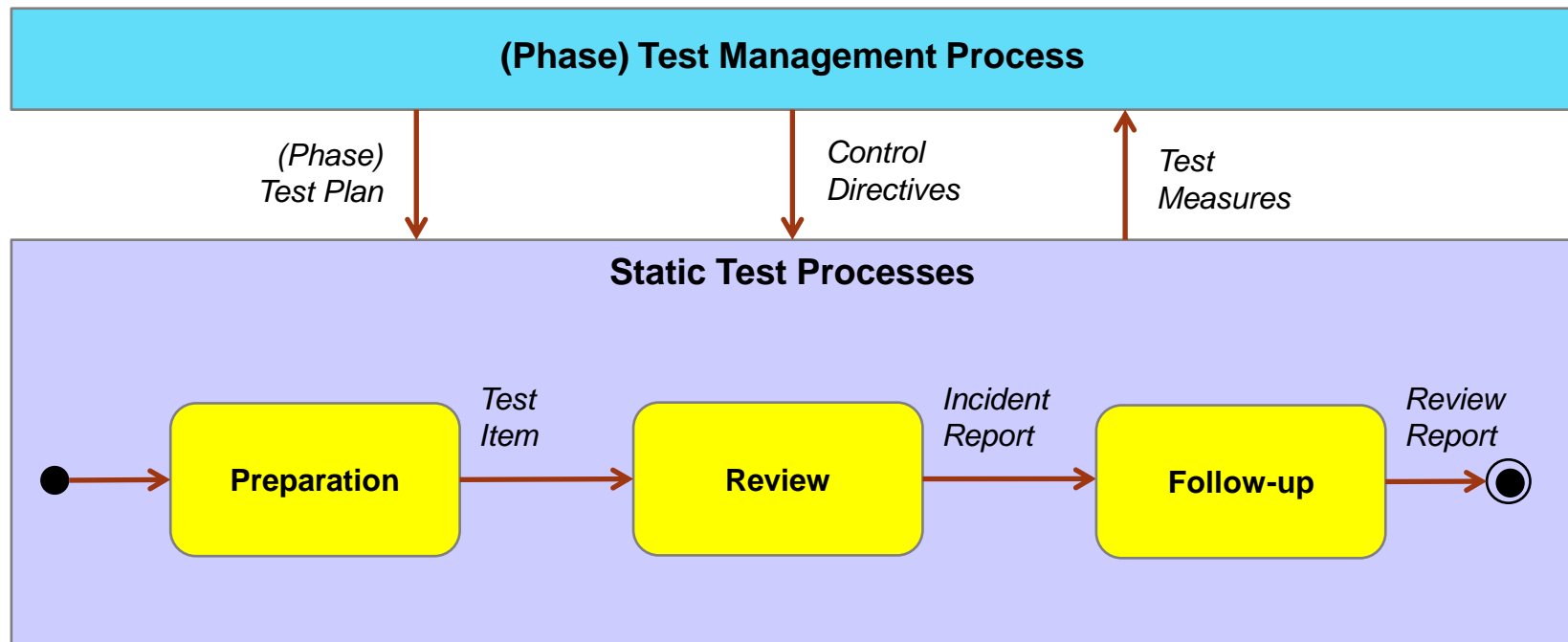
# Test Management Processes



# Dynamic Test Processes



# Static Test Processes



# Test Process Description: Test Design & Implementation

---

## Purpose

The purpose of **Test Design and Implementation** is to derive test procedures that will be executed during Test Execution Process. Test conditions, test coverage items and test cases area created as part of this process.

## Outcomes

As a result of the successful implementation of the **Test Design and Implementation** Process:

- the features to be tested are composed into Features Sets;
- the Test Conditions are derived;
- the Test Coverage Items are derived;
- Test Cases are derived;
- Test Sets are assembled;
- Test Procedures are derived.

## Activities and Tasks

The tester shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the **Test Design and Implementation** Process.

1. Identify Feature Sets (TD1) ...
2. Derive Test Conditions (TD2) ...
3. Derive Test Coverage Items (TD3) ...
4. Derive Test Cases (TD4) ...
5. Assemble Test Sets (TD5) ...
6. Derive Test Procedures (TD6) ...

## Information items

As a result of carrying out this process, the following information shall be produced:

- items

# Test levels

Test Level	Focus	Roles	Environment	Formality
Maintenance	Availability, Reliability, Regression Test	Tester	Running System Testing System	(In)formal
Acceptance	Requirement Testing, Non functional Test	Tester User (BA)	Representative	Formal
System	Overall function Non-functional Test	Tester	Representative environment, w/ interfaces with other systems	Formal
Integration	Interfaces/Interaction	Integrator / Tester / Developer	(May use) Stubs, Drivers and test harness	(In)formal
Unit/ Component	Code structure within unit	Developer	Stubs, Drivers and test harness	(In)formal

## Part 3: Documentation

### Organizational

- Test Policy
- Test Strategy

### Project

- Project Test Plan
- Test Completion Report

### Testing

- Test Specification
- Test Results
- Incident Reports
- Test Environment Report
- Test Status Report
- Test Completion Report

### Appendices

- Examples of documents at each level of testing



# Part 4: Techniques for Dynamic Testing

## Specification-Based Testing Techniques

- Equivalence Partitioning
- Classification Tree Method
- Boundary Value Analysis
- State Transition Testing
- Cause-Effect Graphing
- Etc.

## Structure-Based Testing Techniques

- Statement Testing
- Branch Testing
- Decision Testing
- Condition Testing
- Data Flow testing

## Quality-Related Types of Testing

- Accessibility Testing
- Backup/Recovery Testing etc.

## Part 5: Test Process Assessment

---

- E' stato proposta una quinta parte (Maggio 2010) prendendo in considerazione:
  - ISO/IEC 15504-2 come “Modello di riferimento della valutazione”
  - ISO/IEC 29119-2 come “Modello di riferimento del processo”
  - TMMi, “Testing Maturity Model Integration”
  - TPI, un modello per “Testing Process Improvement”
  
- Si considera l'opportunità di includere la quinta parte in una nuova versione della ISO/IEC 15504 Information Technology - Process Assessment (meglio conosciuta come SPICE) nella Serie 33000
  - **ISO/IEC 33063 Process Assessment Model for Software Testing Processes**

# Conclusioni

Lo standard internazionale fornisce ai professionisti del testing delle linee guida che coprono tutti gli aspetti del ciclo di vita

- Fornisce un insieme consistente di definizioni, processi, procedure e tecniche per il test del software

Sarà adottato da IEEE, BSI, ISO/IEC e da altri standard nazionali

E' stato rivisto da specialisti del settore rappresentanti di moltissime nazioni (18)

# Grazie per l'attenzione

---

Ercole Colonese

(+39) 338 7248417

[ercole@colonese.it](mailto:ercole@colonese.it)

[www.colonese.it](http://www.colonese.it)