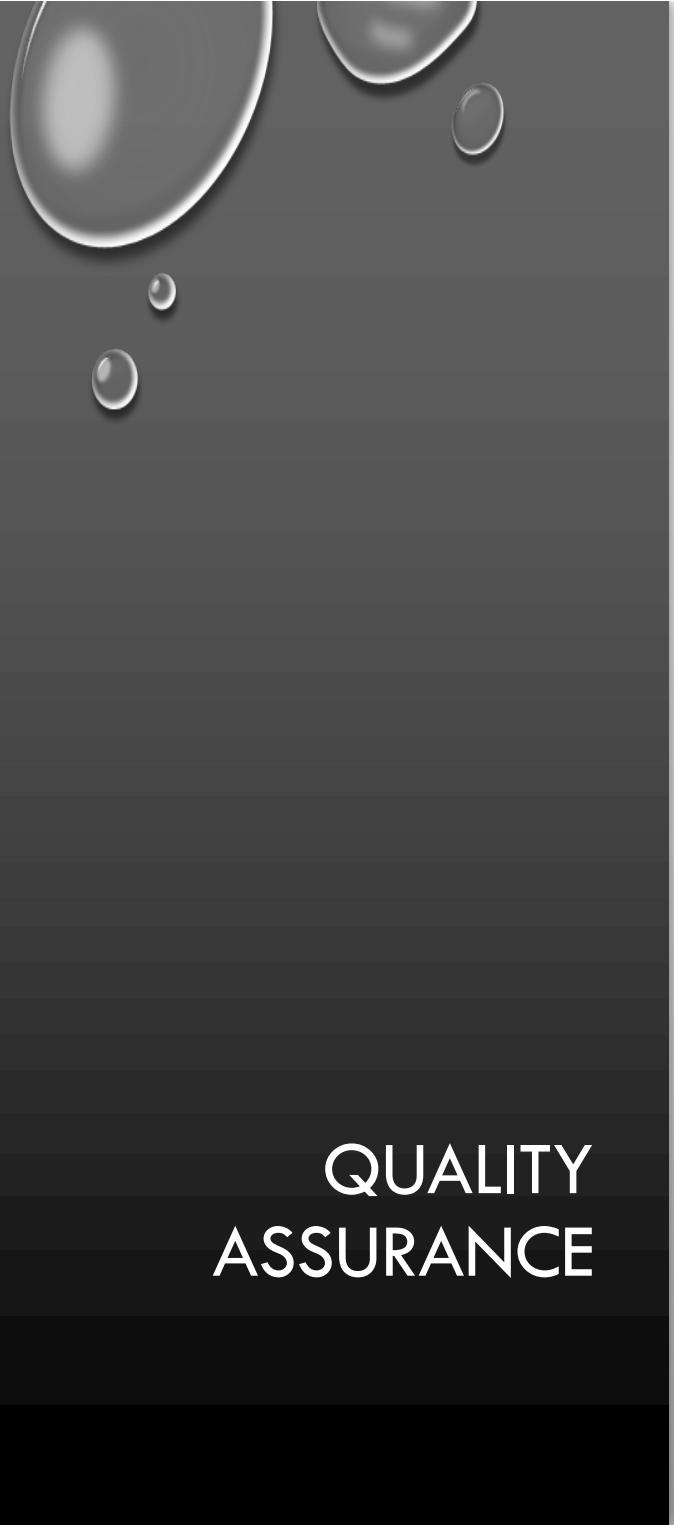


SOFTWARE QUALITY MANAGEMENT

ANGÉLICA DE ANTONIO

COURSE OUTLINE

- PART 1: INTRODUCTION TO SOFTWARE QUALITY
- PART 2: SOFTWARE QUALITY CONTROL ACTIVITIES
- PART 3: QUALITY METRICS
- PART 4: QUALITY MANAGEMENT AND QUALITY SYSTEMS
- PART 5: SOFTWARE QUALITY ASSURANCE ACTIVITIES
- PART 6: SOFTWARE CONFIGURATION MANAGEMENT



QUALITY ASSURANCE

- PLANNED AND SYSTEMATIC ACTIVITIES
IMPLEMENTED IN A QUALITY SYSTEM SO
THAT QUALITY REQUIREMENTS **FOR A**
PRODUCT OR SERVICE WILL BE FULFILLED
(AMERICAN SOCIETY FOR QUALITY (ASQ))
- A PROACTIVE APPROACH

QUALITY ASSURANCE VS. QUALITY CONTROL

Assurance of quality is a set of **preventive** activities, which are focused on processes.

Quality control is a **detection** activity, which is focused on detecting the defects once the product is manufactured.

Based on tests and checks, the quality control prepares regular **reports** that act as an input to the assurance of quality department, which then reviews the same and decides on the corrective and preventive **actions** required in the processes.

Quality Assurance **defines** Quality Control activities to be applied

Quality Assurance **uses** **the results** of Quality Control

THE QUALITY ASSURANCE FUNCTION

1 person by 15 to 40 development persons

Responsibilities

- Organisational and Client **goals are met**, and conflicts among them are solved
- **Check** that **development activities**:
 - Follow established procedures
 - Adhere to standards
 - Are in agreement to policies
 - Follow work guides and recommendations
- **Optimization**: cost, performance, effectiveness



THE QUALITY ASSURANCE FUNCTION

- TASKS IN A PROJECT
 - QUALITY PLANNING
 - QUALITY REQUIREMENTS ARE DEFINED
 - SELECT QUALITY CONTROL ACTIVITIES
 - QUALITY SUPERVISION
 - SUPERVISE RESULTS OF QUALITY CONTROL
 - DETERMINE CORRECTIVE ACTIONS IF NECESSARY
 - QUALITY CONSTRUCTION
 - ESTABLISH PREVENTIVE ACTIVITIES TO AVOID DEFECT INJECTION



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- 1 Purpose and scope**
- 2 Definitions and acronyms**
- 3 Reference documents**
- 4 SQA plan overview**
 - 4.1 Organization and independence**
 - 4.2 Software product risk**
 - 4.3 Tools**
 - 4.4 Standards, practices, and conventions**
 - 4.5 Effort, resources, and schedule**
- 5 Activities, outcomes, and tasks**
 - 5.1 Product assurance**
 - 5.1.1 Evaluate plans for conformance**
 - 5.1.2 Evaluate product for conformance**
 - 5.1.3 Evaluate product for acceptability**
 - 5.1.4 Evaluate product life cycle support for conformance**
 - 5.1.5 Measure products**
 - 5.2 Process assurance**
 - 5.2.1 Evaluate life cycle processes for conformance**
 - 5.2.2 Evaluate environments for conformance**
 - 5.2.3 Evaluate subcontractor processes for conformance**
 - 5.2.4 Measure processes**
 - 5.2.5 Assess staff skill and knowledge**
- 6 Additional considerations**
 - 6.1 Contract review**
 - 6.2 Quality measurement**
 - 6.3 Waivers and deviations**
 - 6.4 Task repetition**
 - 6.5 Risks to performing SQA**
 - 6.6 Communications strategy**
 - 6.7 Non-conformance process**
- 7 SQA records**
 - 7.1 Analyze, identify, collect, file, maintain and dispose**
 - 7.2 Availability of records**

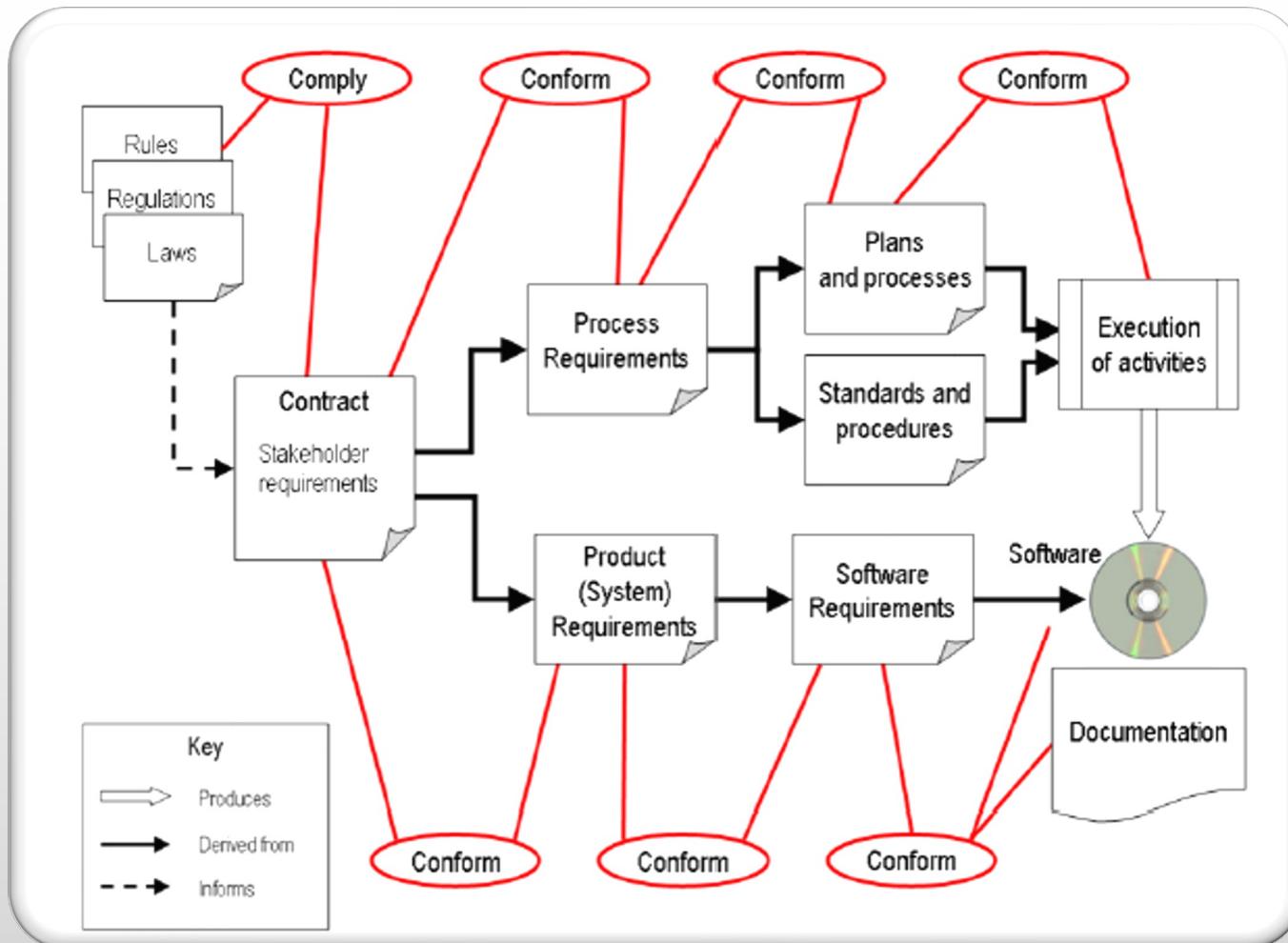
SOFTWARE QUALITY ASSURANCE PLAN

IEEE STANDARD 730-2014



THE QUALITY ASSURANCE FUNCTION

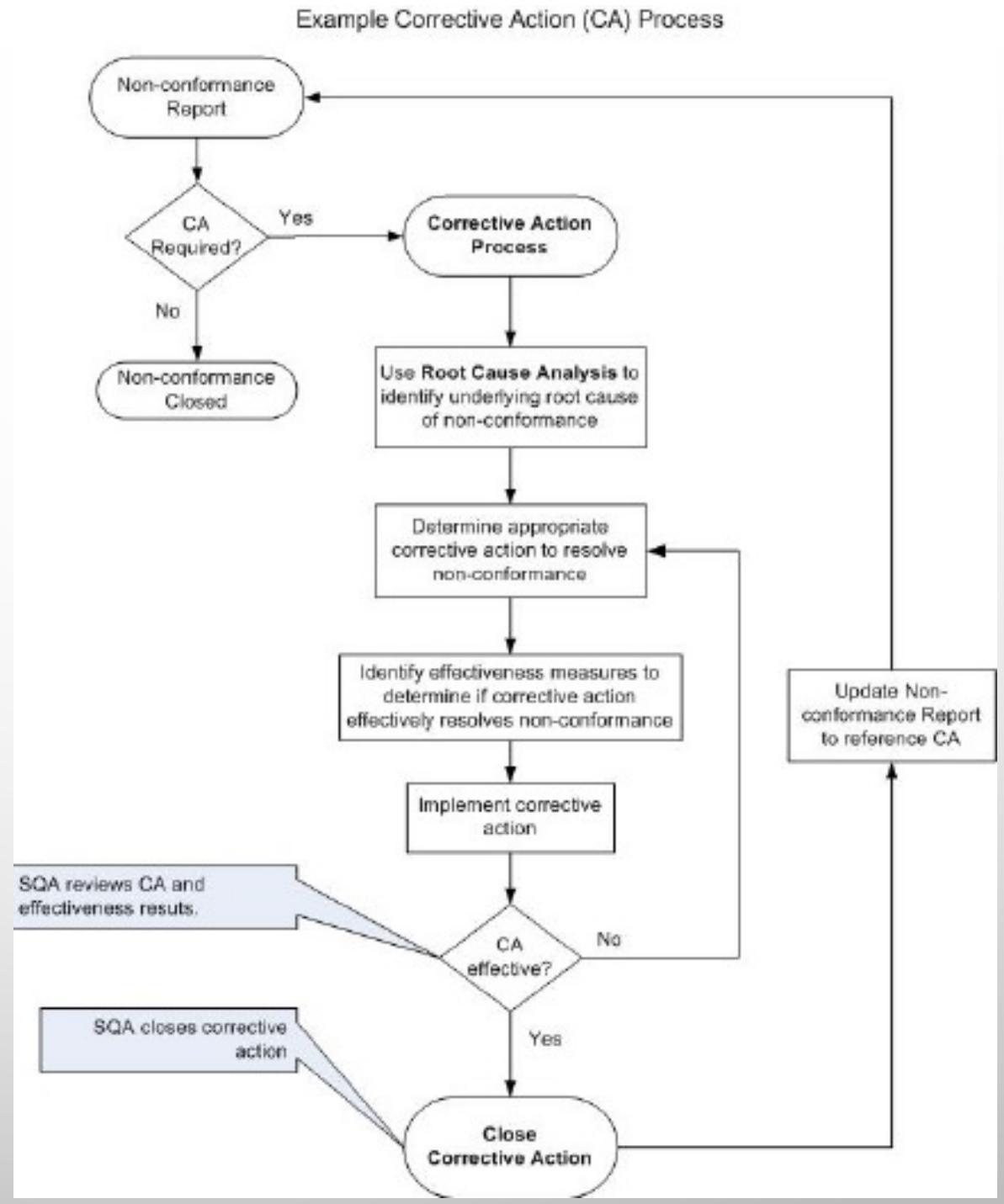
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QUALITY SUPERVISION

Quality Supervision

Corrective Actions



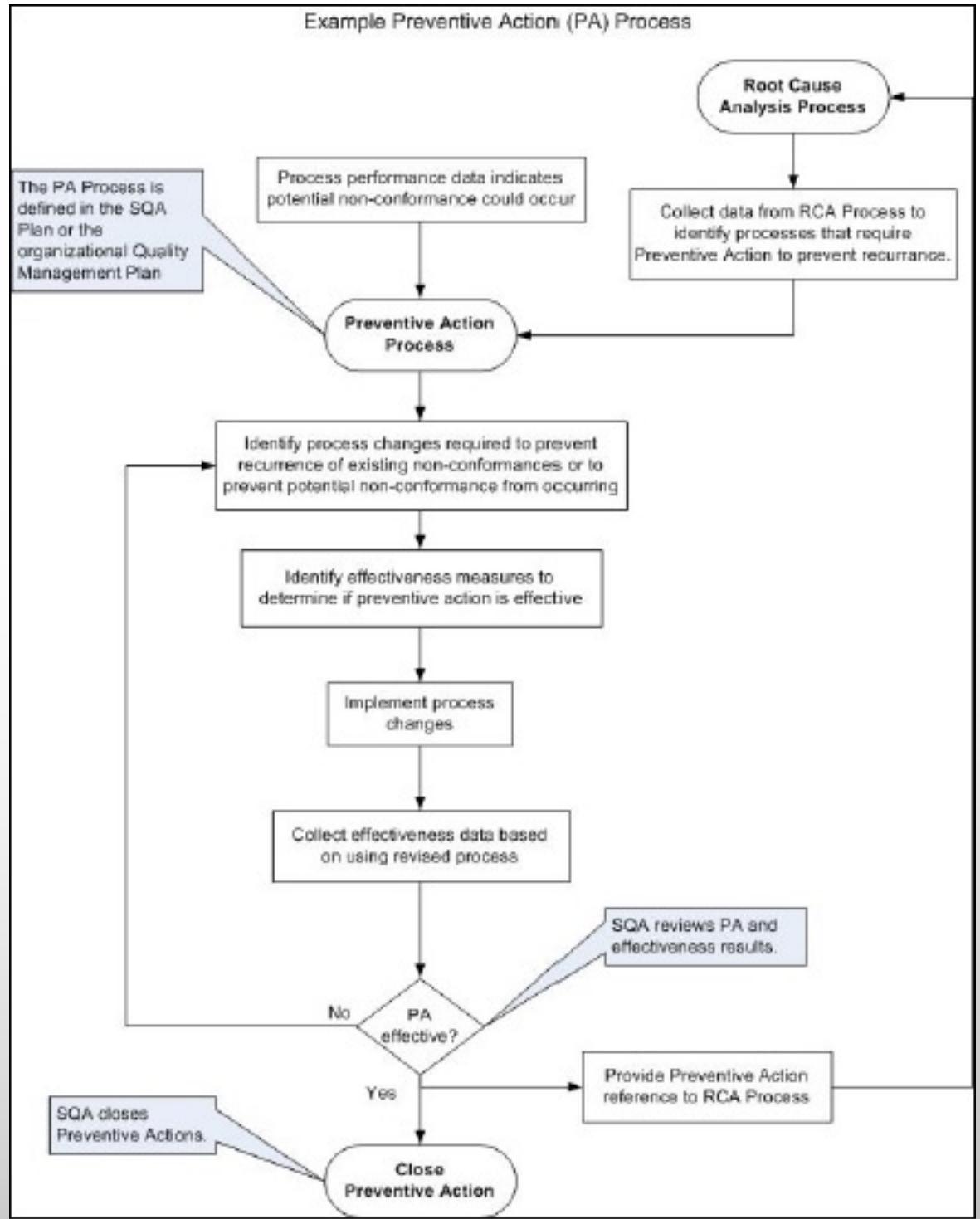


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Quality Construction

Preventive Actions



QUALITY CONSTRUCTION INTERVENTION AREAS

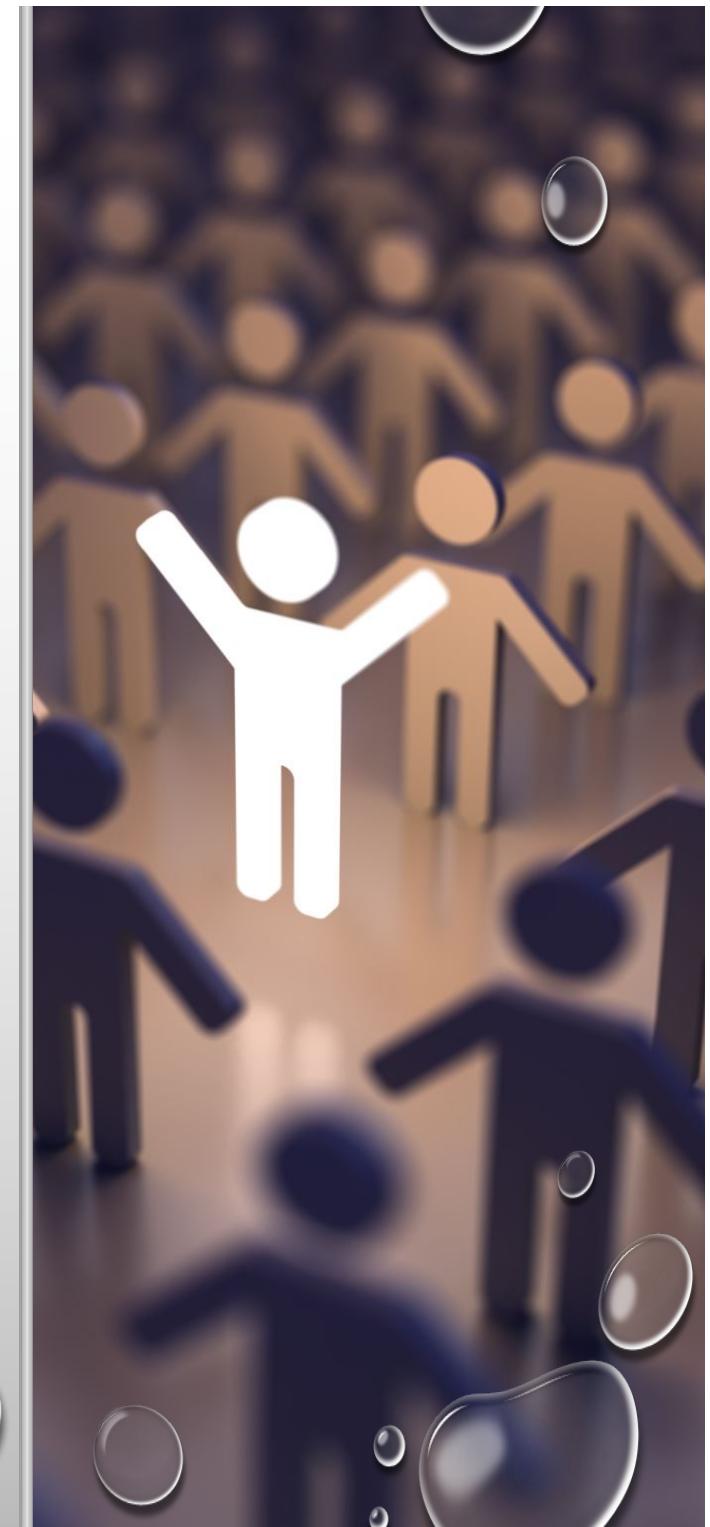
Technical
Software
Engineering
Practices

Managerial
Project
Management

Human

QUALITY CONSTRUCTION HUMAN ISSUES

- TRAINING
- MOTIVATION
- DIRECTION
- LEADERSHIP
- PHYSICAL WORK ENVIRONMENT
- TEAM COMMUNICATION
- ORGANIZATIONAL CULTURE



A vertical photograph on the left side of the slide shows the silhouettes of construction workers on a complex steel scaffolding structure against a vibrant orange and yellow sunset sky. The image is framed by decorative water droplets at the top and bottom edges.

QUALITY CONSTRUCTION STANDARDIZATION

- PROCESS MODELS
 - DECOMPOSITION OF THE PROCESS INTO PHASES AND ACTIVITIES
- METHODS
 - SYSTEMATIZATION OF ACTIVITIES
- FORMALISMS
 - LESS AMBIGUOUS COMMUNICATION
 - EASIER AUTOMATION OF QUALITY CONTROLS
- STANDARDS AND CONVENTIONS
- PATTERNS

QUALITY CONSTRUCTION

TOOLS

Estimation, Planning and Tracking

Analysis and Design

Development environments

Configuration Management

Re-engineering

Tests

- Test case generators
- Automatic execution of test cases
- Monitoring of results
- Report generation

[top-20-test-management-tools](#)



QUALITY CONSTRUCTION DOCUMENTATION

- WITHOUT DOCUMENTATION
THERE IS NO QUALITY CONTROL
- DOCUMENTS HAVE SPECIFIC
QUALITY ATTRIBUTES

A photograph showing various construction and safety items on a dark wooden surface. From top left to bottom right, there are: a white hard hat with a clear visor; a pair of yellow leather work gloves; a white roll of architectural blueprints; a black respirator mask with a white filter cartridge; a black stethoscope with a yellow earpiece; and several white and grey tape measures.

QUALITY CONSTRUCTION CHANGE CONTROL

- PROBLEM/DEFECT MANAGEMENT
- VERSION CONTROL
- CONFIGURATION MANAGEMENT