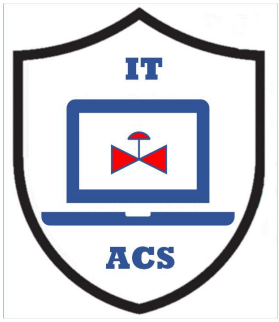
What is a Professional Role?

MLM-001-B

Industry – All
Principal Role – All
Professional Role – All
Enterprise Phase – All



Turn on your audio and click start to begin video

START

This MLM describes Professional Roles as used in PERA Human and Organizational Architectures.

Click the NEXT button when you are ready to advance to the next slide.

Definition of a Professional Role

A Professional Role is a *widely recognized profession, such as a Functional Engineering Role or a Business Administration Role.*

- *Courses to quality students for Professional Roles are typically offered by Universities and Community Colleges.*
- *Professional Roles may be assigned to "Organization Chart Positions" within a company.*
- *Courses to qualify personnel for Org Chart Positions may be provided by Internal company training groups.*

2

A Professional Role is a widely recognized profession, such as a Functional Engineering Role or a Business Administration Role.

Courses to quality students for Professional Roles are typically offered by Universities and Community Colleges.

Professional Roles may be assigned to "Organization Chart Positions" within a company.

Courses to qualify personnel for Org Chart Positions may be provided by Internal company training groups.

Examples of Professional Roles in ACS Cybersecurity

The following are example generic Professional Roles related to Automation and Control Systems (ACS) in Process industries.

- Control Engineer
- Chief Technical Officer (CTO)
- Maintenance Technician
- Industrial Networks Engineer
- Chief Information Security Officer (CISO)
- Human Resources Manager (H/R)
- Procurement Manager

Note that the skills and responsibilities of each Professional Role may be similar across different industries and companies, but may vary significantly during different phases of the ACS Lifecycle.

3

The following are some Generic Professional Roles related to ACS Cybersecurity:

- Control Engineer
- Chief Technical Officer (CTO)
- Maintenance Technician
- Industrial Networks Engineer
- Chief Information Security Officer (CISO)
- Human Resources Manager (H/R)
- Procurement Manager

Note that the skills and responsibilities of each Professional Role will vary significantly during different ACS Lifecycle Phases. For example, a control engineer requires different skills during the Engineering Phase to design a secure ACS system than are required to tune, troubleshoot, and maintain it during the Operations Phase.

How are Professional and Principal Roles Related?

- A Principal Role, such as "Owner/Operator or Vendor, will contain multiple Professional Roles.

  Principal Role
  | Professional Role 1
  | Professional Role 2
  | Professional Role 3

- "Requirements" defined by ISA/IEC 62443 are the responsibility of one Principal Role; however, in practice, these Requirements are assigned to specific Professional Roles to actually produce the deliverables.
- More commonly, engineering standards assign Requirements directly to Professional Roles.
- ISA 62443 is unusual in that its standards are applied to Enterprises in many different industries. As a result, companies must assign standards Requirements to Professional Roles themselves (perhaps as part of a Cybersecurity Master Plan).

4

A Principal Role, such as "Owner/Operator or Vendor, will contain multiple Professional Roles.

Principal Role
| Professional Role 1
| Professional Role 2
| Professional Role 3

"Requirements" defined by ISA/IEC 62443 are the responsibility of one Principal Role; however, in practice, these Requirements are assigned to specific Professional Roles to actually produce the deliverables.

More commonly, engineering standards assign Requirements directly to Professional Roles.

ISA 62443 is unusual in that its standards apply to Enterprises in many different industries. As a result, companies must assign standards Requirements to Professional Roles themselves (perhaps as part of a Cybersecurity Master Plan).

Professional Roles are assigned to Organizational Positions

When a company establishes its ACS Cybersecurity Program, Generic Professional Roles defined in 62443 are assigned to Organizational Positions in that enterprise.

Principal Roles each contain
| Professional Roles that are assigned to
| Organizational Positions

- One Position may be assigned multiple Professional Roles, or one Professional Role may be assigned to multiple Positions.

When a company establishes its ACS Cybersecurity Program, Generic Professional Roles defined in 62443 are assigned to Organizational Positions in that enterprise.
Principal Roles each contain
| Professional Roles that are assigned to
| Organizational Positions

One Position may be assigned multiple Professional Roles, or one Professional Role may be assigned to multiple Positions.

Assignment of Standards Requirements (1 of 2)

- Requirements established by standards are assigned to Professional Roles (such as generic engineering positions).
- Professional Roles are assigned to “Positions” in the organization (by company practices)
- These assignments may exist in company practices, or new assignments may be recommended by Enterprise, Programs, or Project Master Plans.
- Requirements between Principal Roles may be shown with Swim Lane Diagrams (literally Org Chart Group to Org Chart Group). An example might be the Maintenance Group transitioning to the Site Procurement Group.

Requirements established by standards are assigned to Professional Roles (such as generic engineering positions).

Professional Roles are assigned to “Positions” in the organization (by company practices)

These assignments may exist in company practices, or new assignments may be recommended by Enterprise, Programs, or Project Master Plans.

Requirements between Principal Roles may be illustrated using Swim Lane Diagrams (literally, from one org chart group to another). An example might be the Maintenance Group transitioning to the Site Procurement Group.

Requirements between Positions may be shown with Workflow Diagrams. An example might be a Control Systems Engineer requests his supervisor to approve the procurement of test equipment and spare parts for a new plant device. The Supervisor then requests that the Maintenance Stores Supervisor purchase the requested parts and test equipment, and maintain a minimum inventory level in the maintenance stores.

These swimlane and workflow diagrams may include Engineering Deliverables (e.g., specification sheets, drawings, etc.).

Assignment of Standards Requirements (2 of 2)

- Requirements between Positions may be shown with Workflow Diagrams. An example might be a Control Systems Engineer requests his supervisor to approve the procurement of test equipment and spare parts for a new plant device.
  The Supervisor then requests that the Maintenance Stores Supervisor purchase the requested parts and test equipment and maintain a minimum inventory level in the maintenance stores.

- These swimlane and workflow diagrams may include Engineering Deliverables (e.g., specification sheets, drawings, etc.).

Requirements established by standards are assigned to Professional Roles (such as generic engineering positions).

Professional Roles are assigned to “Positions” in the organization (by company practices)

These assignments may exist in company practices, or new assignments may be recommended by Enterprise, Programs, or Project Master Plans.

Requirements between Principal Roles may be illustrated using Swim Lane Diagrams (literally, from one org chart group to another). An example might be the Maintenance Group transitioning to the Site Procurement Group.

Requirements between Positions may be shown with Workflow Diagrams. An example might be a Control Systems Engineer requests his supervisor to approve the procurement of test equipment and spare parts for a new plant device. The Supervisor then requests that the Maintenance Stores Supervisor purchase the requested parts and test equipment, and maintain a minimum inventory level in the maintenance stores.

These swimlane and workflow diagrams may include Engineering Deliverables (e.g., specification sheets, drawings, etc.).

Swimlane and Workflow Diagrams

- Requirements exchanged between Principal Roles may be shown with “Swim Lane Diagrams”.
- Deliverables exchanged between Professional Roles may be shown in Workflow Diagrams
- Tasks are completed by an individual in a certain Org Chart Position

Principal Role → Swimlane Diagrams show exchanges between Principal Roles
| Professional Roles → Workflow Diagrams show exchanges between Professional Roles
| Org Chart Position → Task Descriptions show actions of an individual (Position)

Swimlane and Workflow diagrams may be shown using standard UML2.0 formats and may be automated using various workflow software packages.

Tasks may be checklists or a simple text description of steps to be completed by one person.

Requirements exchanged between Principal Roles may be shown with “Swim Lane Diagrams”.

Deliverables exchanged between Professional Roles may be shown in Workflow Diagrams

Tasks are completed by an individual in a certain Organization Chart Position

Principal Role - Swimlane Diagrams show exchanges between Principal Roles
Professional Roles - Workflow Diagrams show exchanges between Professional Roles
Org Chart Position -Task Descriptions show actions of an individual (Position)

Swimlane and Workflow diagrams may be shown using standard UML 2.0 formats and may be automated using various workflow software packages.

Tasks are defined as checklists or simple text descriptions of steps to be completed by one person.

Key Messages in this MLM

- Requirements established by standards (such as ISA 62443 or ISO 27001 are assigned to Professional Roles (within Principal Roles).
- Requirements are addressed as “Deliverables” provided by one Professional Role to another Professional Role.
- Exchange of Deliverables between Professional Roles may be shown in Workflow Diagrams.
- Organizations assign Professional Roles to Org Chart Positions.

9

The following are the key messages in this MLM:

Requirements established by standards (such as ISA 62443 or ISO 27001 are assigned to Professional Roles (within Principal Roles).

Requirements are addressed as “Deliverables” provided by one Professional Role to another Professional Role.

The exchange of Deliverables between professional roles can be illustrated in Workflow Diagrams.

Organizations assign Professional Roles to organizational chart positions.

More Reading

- **Related MLMs**
  - MLM-001-A Principal Roles in Cybersecurity
  - MLM-001-C Human Resources Role in ACS Cybersecurity
  - MLM-001-D Procurement Role in ACS Cybersecurity

Please click here to comment on this learning module.

Author

Gary has more than 40 years of experience with enterprise integration and optimization projects, including PERA master planning and project management.

As one of the initial authors of the PERA Handbook of Master Planning, he has used PERA Enterprise Architecture and Master Planning methodologies throughout his career including control and information systems for oil production, pipelines, refining and marine loading, petrochemicals, coal, gas, and oil-fired power plants, polyethylene, ammonia, explosives, paint, pulp and paper, food and beverage, and pharmaceuticals. LNG facilities included world-scale arctic, European, and US Gulf coast complexes.

infrastructure facilities included Fire, Police, and Emergency Response systems for major US cities, as well as emissions reporting and trading systems for more than 100 US Power Plants,

Please click here to provide feedback on this MLM.