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International Atomic Energy Agency

Training Methodology for International Nuclear Security

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Outline

- **Learning Objectives**
- **Regional Training Course (RTC) Objectives**
- **RTC Audience**
- **RTC Structure and Course Components**
- **Instructional Systems Design (ISD) Process**
- **Summary**

Note: This presentation has been designed and will be presented as though it were a lecture in a training course.

Learning Objectives

After this presentation, you should be able to:

- **Discuss the RTC objective and audience**
- **Discuss course components and their importance**
- **Discuss RTC instructor requirements**
- **List and discuss the 5 steps of the ISD process**
- **Describe the importance of learning objectives and how they relate to course components**

RTC Objective

- Students will learn how to apply the principles of a performance-based approach for the design and evaluation of a physical protection system for nuclear facilities and materials against the design basis threat of theft or sabotage
- This methodology is system engineering applied to physical protection
  - Requirements
  - Design
  - Evaluation
- We should not expect to create a new expert in two weeks of training

RTC Audience

- **Nuclear security professionals from a particular geographical region, including:**

Competent authority	Guards
License holders	Response forces
Designers	Intelligence agencies
Analysts	Other

- **For an optimum learning experience the class should be balanced among these diverse jobs disciplines**
- **For an enhanced learning experience the class should be fluent in a common language**

PP Training Uses Multiple Training Methods

- **PP Training uses different training methods to address different types of learners (auditory, visual, and tactile)**
- **According to the National Training Laboratory, research shows the following average retention rates for different training methods. As you can see the subgroup exercises are vital for RTC participants.**

5% Lecture
10% Reading
20% Audio-Visual
30% Demonstration
50% Discussion Group
75% Practice by Doing
90% Teaching Others

RTC Structure

- Lectures
- Subgroup Exercises
- National guest lecturers
- Field trip
- Final exercise
- Daily review
- Daily quiz
- Daily evaluation
- Social/cultural/team building activities

Course Components

Course Components	Type of Learning
Lectures/ Slides	Visual/Auditory
Subgroup Exercises	Visual/Auditory/Tactile
Text	Visual
Facility Tours	Visual/ Auditory/Tactile
Daily Review	Visual/Auditory
Daily Quiz/Daily Evaluation	Visual/Tactile

RTC Instructors

- Qualifications
  - Subject matter experts in multiple physical protection areas
  - Trained instructors
- Tasks
  - Present multiple lectures
  - Lead all subgroup exercises
- Commitment
  - Minimum of two weeks full time

Basic Instructor Training

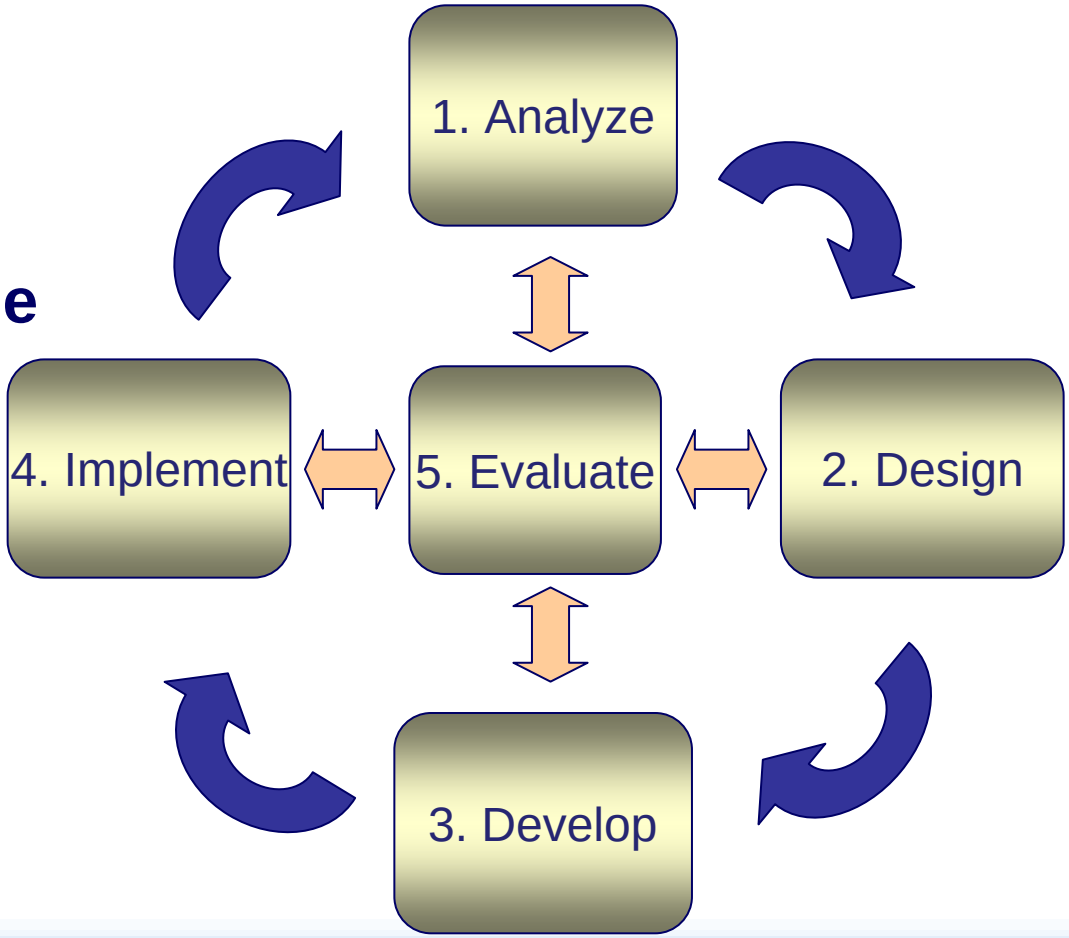
The ability to provide effective training is significantly influenced by an instructor's instructional skills and technical expertise.

Instructors should be able to:

- **Use a systematic approach to:**
  - **implement training**
  - **develop and use learning objectives**
  - **develop and use questioning techniques**
- **Understand and use adult learning and motivation principles**
- **Teach and facilitate classroom learning**
- **Use student-centered activities in a classroom environment**
- **Manage stress in the classroom**

Courses Designed and Maintained using 5 Phases of Instructional System Design (ISD)

1. Analysis Phase
2. Design Phase
3. Development Phase
4. Implementation Phase
5. Evaluation Phase



Why do I "the instructor" need to understand the ISD model?

- An instructor should understand the material they are using and the techniques used to design it
- An instructor should understand who the learners are
- An instructor should understand how to use their teaching material
  - Learning objectives
  - Quizzes
  - Reviews
- Instructors should understand the proper way to upgrade and improve a course

1. Analyze

- Conduct Needs Assessment
  - Will training fix the problem?
  - Who are the learners, what are their knowledge, skills, attitudes, and competencies?
  - What do people need to learn?
    - PPS Requirements
    - PPS Design
    - PPS Evaluation
- Develop Course Requirements
  - RTC Objective
  - Pre-requisite knowledge

2. Design

- **Write Student Learning Objectives**

Student Learning Objective: A specific description of tasks and abilities the student should be able to do at the end of a module.

  - **These are the most important piece of the course: all presentations should focus on these.**
  - **These items are directly linked to quiz questions and exercises to test the students knowledge of, or ability to complete the tasks.**

- **Specify Instructional Strategies**

Instructional strategies: Approach taken to achieve learning objectives.

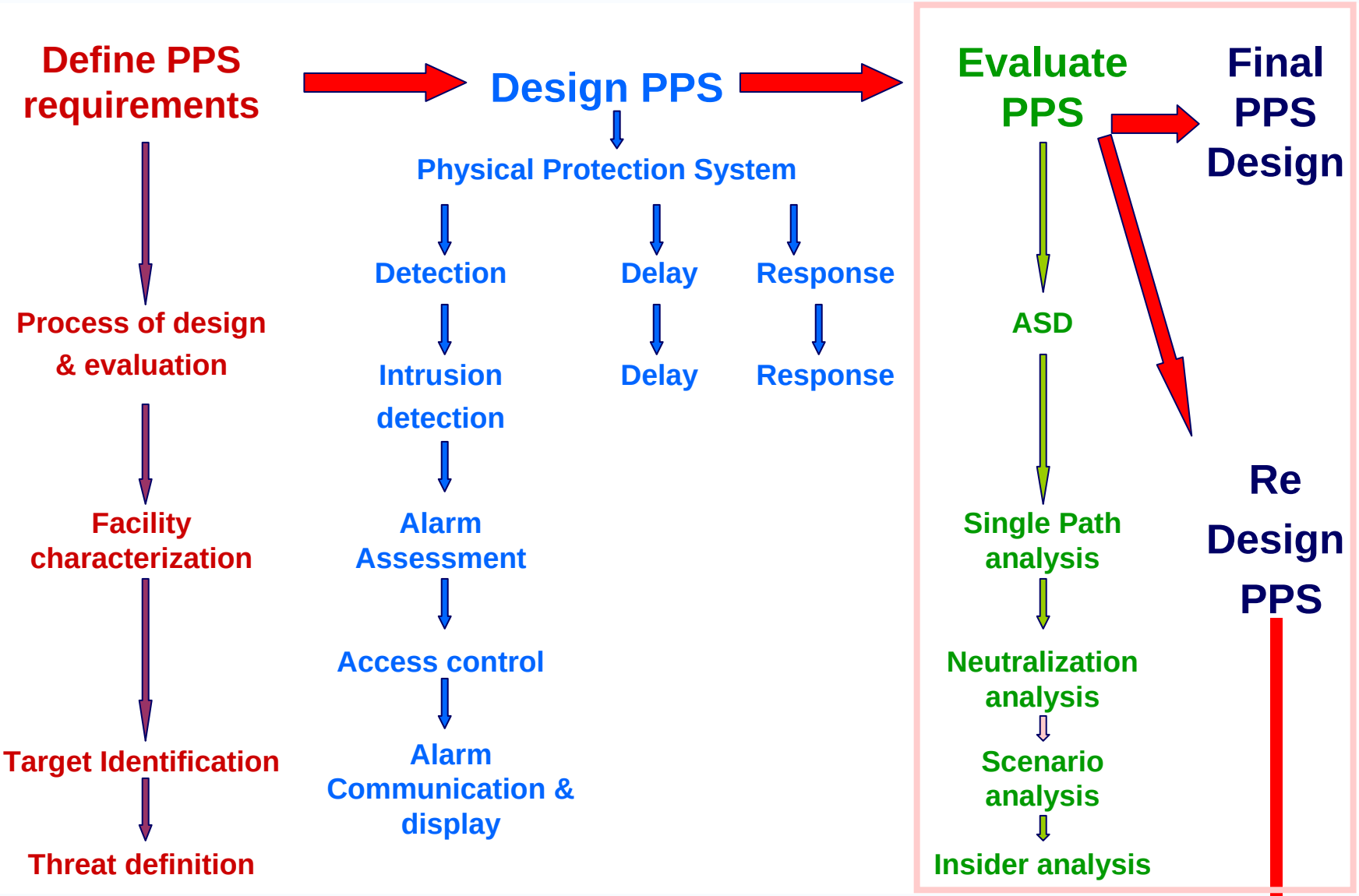
  - Examples: Lectures, Subgroup, Games, Demonstrations, Reading

Introduction to DEPO Methodology

Methodology based on a system engineering approach — three major steps:

1. **Define physical protection system requirements**
2. **Design new, or characterize existing, physical protection system**
3. **Evaluate physical protection system performance, and redesign if necessary**

Design and Evaluation Process Outline (DEPO)



3. Develop

- Develop instructional materials
  - Text
  - Lecture
  - Exercises
  - Test and evaluation
- Peer review
- Technical editing
- Production

4. Implement

- Instructor rehearsal and critique
  - Lectures
  - Subgroup exercises
  - Team building
  - Language skills
- Course presentation
  - Time management
- Student learning estimates
  - Daily quiz and feedback
    - Daily review
  - Instructor meetings

International Presentation Considerations

- Speak slowly, English is a second language for most participants.
- Focus on the objectives as you work through the presentation.
- Do not use acronyms.
- Do not use idioms or slang words, few of the participants will understand them.
- If asked a question, repeat the question so that everyone can hear it, and to confirm that you understood the question.
- Be aware, jokes do not always translate well.

5. Evaluate

- Evaluate versus RTC objective and requirements
  - Student feedback
    - Daily Quizzes (what participants learned)
    - Daily Evaluation Forms (how participants felt)
  - Instructor input
- Updates should be done when
  - Evaluation results suggest needed changes
  - Technologies and tools have changed
- Repeat the instructional system design process

Quiz Questions

- Quiz questions should be linked directly to the objectives.
  - This allows appropriate measurement of objective comprehension
  - This keeps the message consistent throughout the course
  - Results help identify what topics were understood and retained, and what topics should be reviewed and emphasized the next morning

Summary

- The RTC teaches a performance based approach to designing and evaluating PPS
- The RTC is designed to teach individuals using visual, auditory, and tactile learning styles
- Learning objectives are key to ensuring
  - Consistent presentations
  - Focused quiz questions
  - Appropriate reviews
- ISD Process