

# INCENTIVES FOR PROFESSIONAL QUALIFICATION

2016 LAS/ANS  
SYMPOSIUM



**Eletrobras**  
Eletronuclear



# ELETRONUCLEAR

 Ministério de Minas e Energia

  
Eletrobras

  
Eletrobras  
Eletronuclear



**GENERATION**



**TRANSMISSION**



**DISTRIBUTION**

**Concessionaires**

**CONSUMERS**

- Industry
- Commercial
- Household
- Others



# CENTRAL NUCLEAR ALMIRANTE ALVARO ALBERTO



## **ANGRA 1 PWR**

**Power: 657 MW**

**Technology: Westinghouse**  
**Operation start: January/1985**

## **ANGRA 2 PWR**

**Power: 1.350 MW**

**Technology: AREVA**

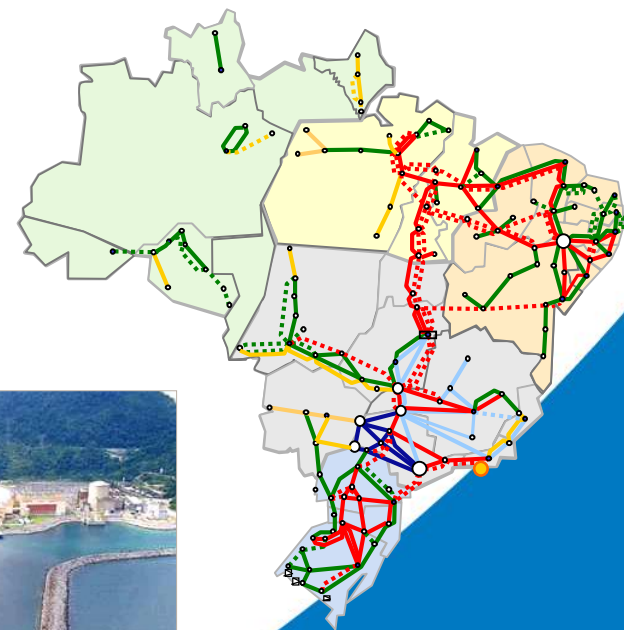
**Operation start: January/2001**



# A COMPANY PERSPECTIVE

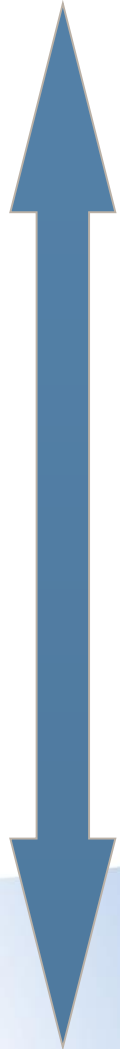


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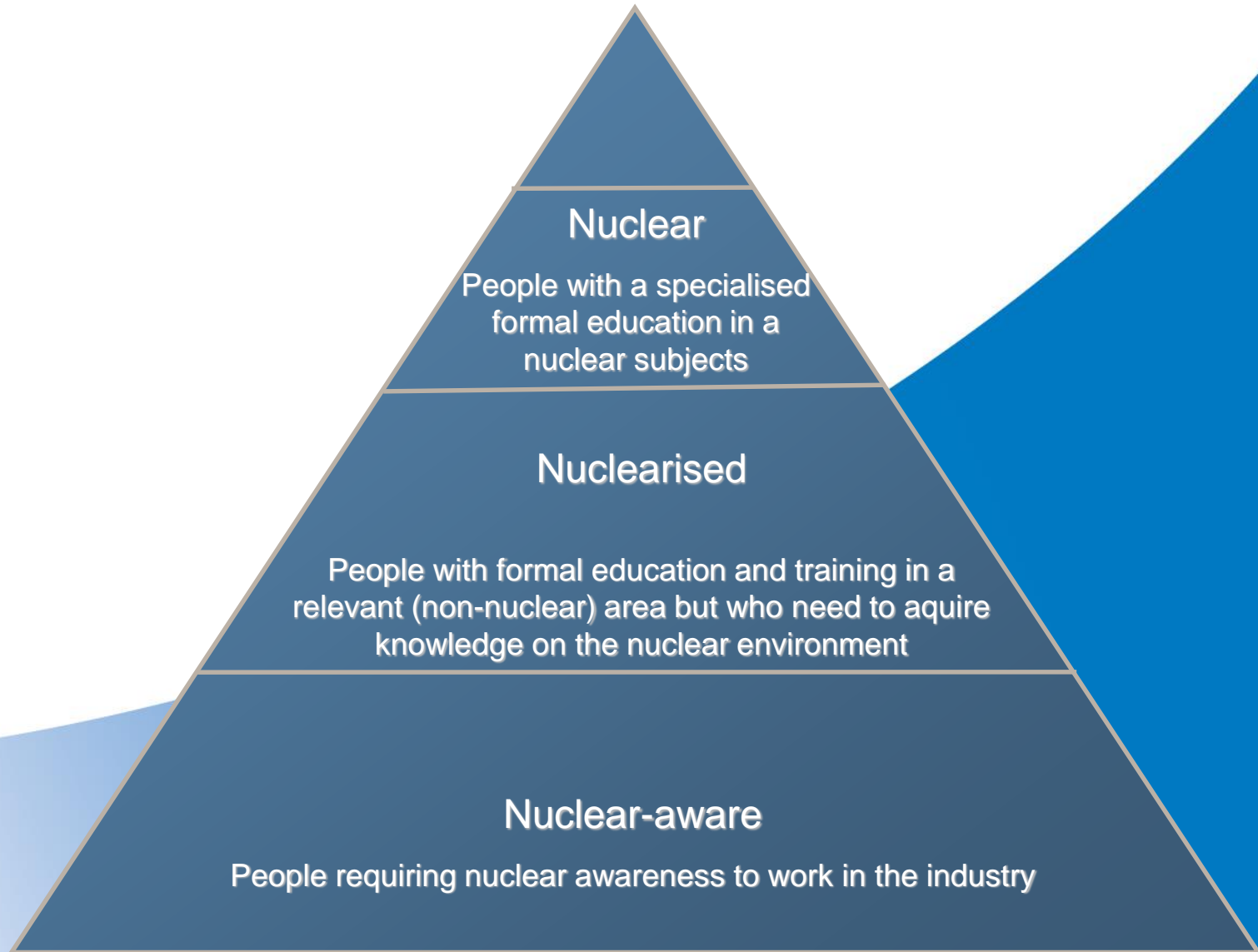


# The Pyramid of Competence

Education



Training





# Nuclear Training

- Initial Training & Continuing Training
- Initial Training
  - Minimum training requirements defined in procedures;
  - In some cases, initial training programs are submitted to regulatory body approval, and final evaluations are applied by them;
  - Selection of training settings (classroom, simulation, on the job, laboratory, workshop, mock-up, computer based training (CBT) or) should consider the fidelity required for effective training, and should be alternated, in order to maintain trainees' motivation as well as to enhance their ability to learn.

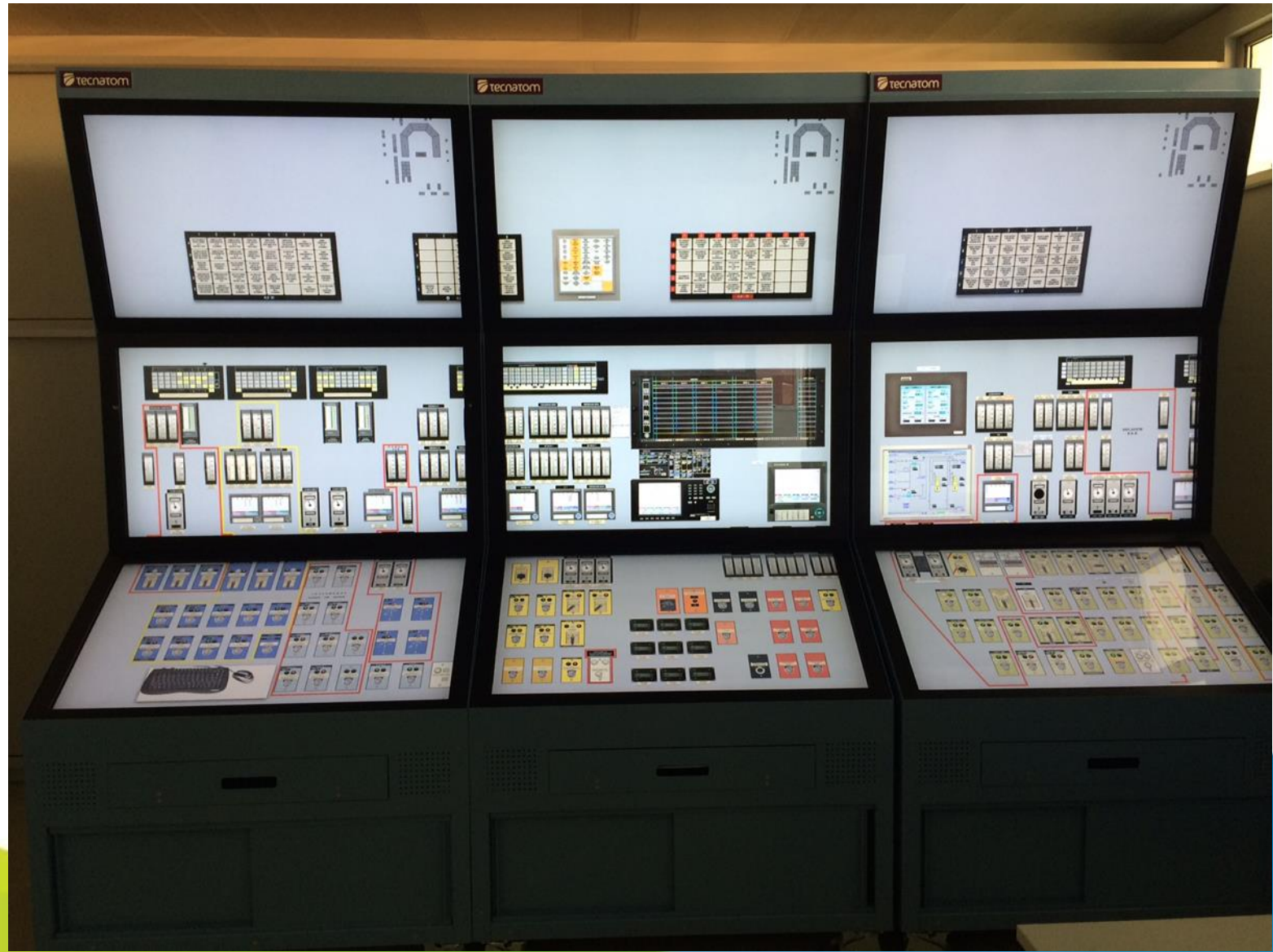
# Electronuclear Training Facilities

## – Angra 1 Simulator



# Eletronuclear Training Facilities

- Angra 1 Glass Top Simulator





# Eletronuclear Training Facilities

– Angra 2 Simulator





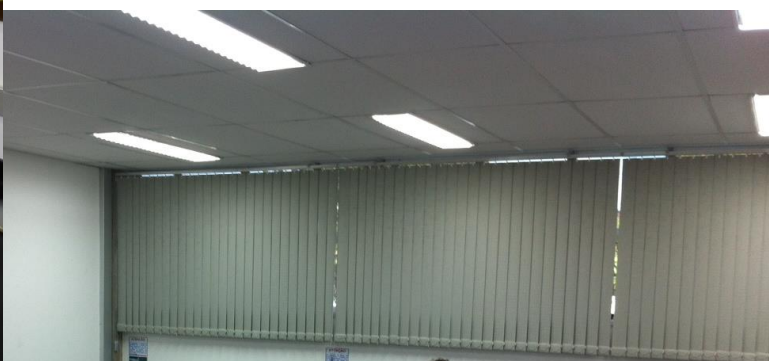
# Electronuclear Training Facilities

- Human Performance Simulator



# Eletronuclear Training Facilities

- Laboratories





# Eletronuclear Training Facilities

- Elevation, Confined Spaced Training



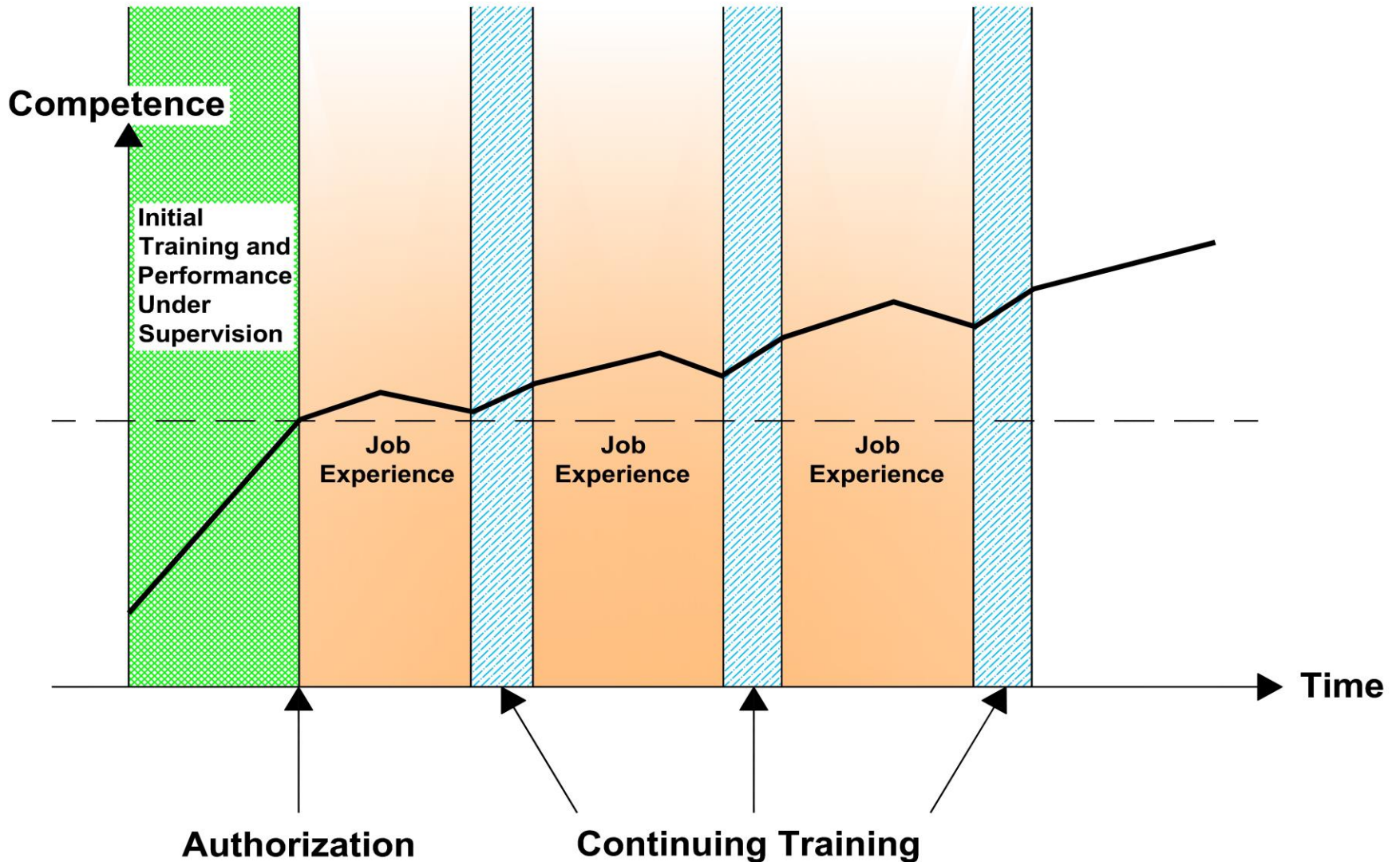
# Nuclear Training

- Continuing Training

- Refreshing those training objectives from initial training for which competence is not maintained through working on the job. Examples of such training objectives are those supporting tasks important to safe plant operation which are infrequently performed, such as those related to response to abnormal or emergency conditions;
- Training on changes in plant design, plant procedures and regulatory requirements, and on operational experience feedback.



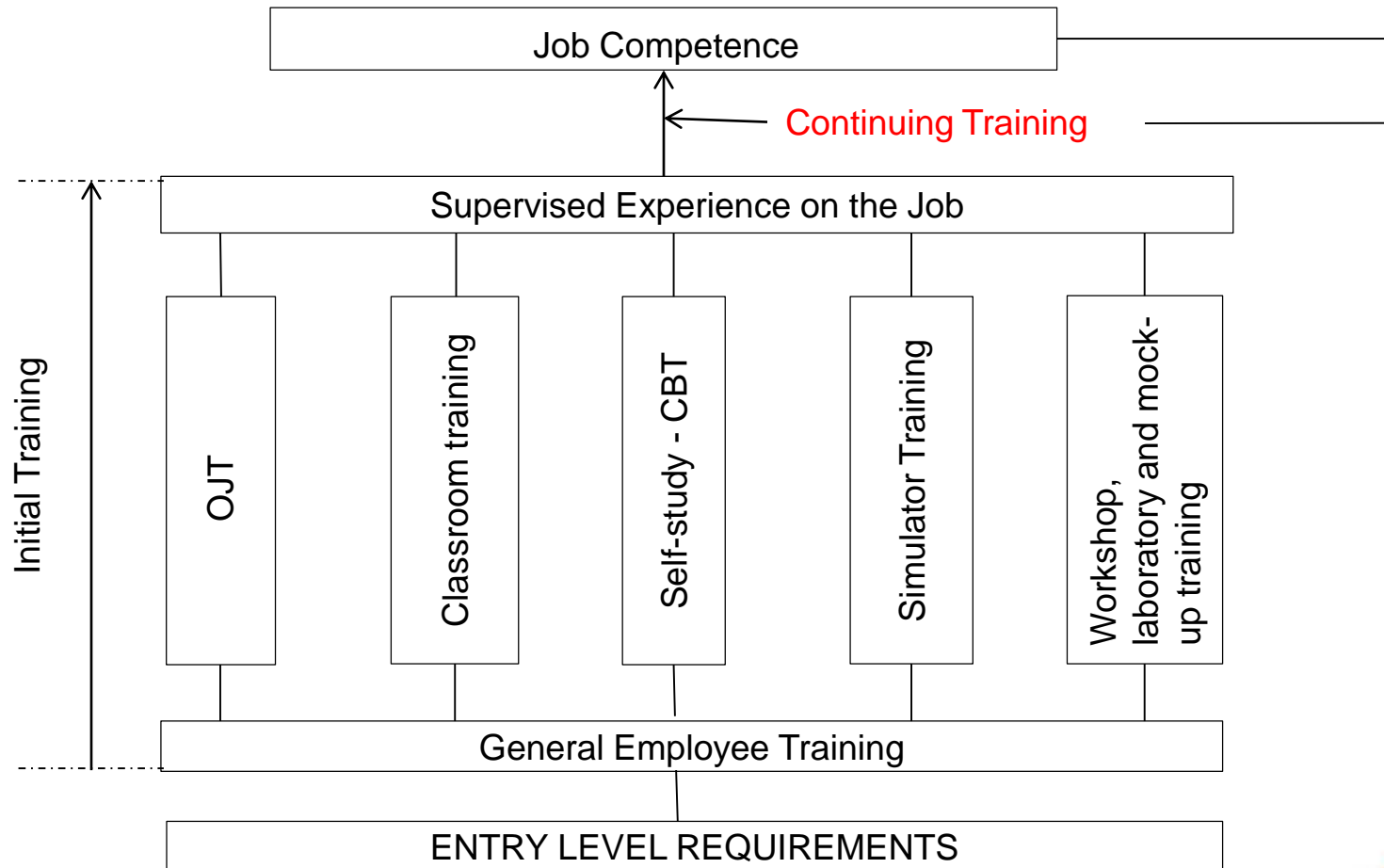
# Nuclear Training



**Competence Development Through Initial and Continuing Training**



# Nuclear Training



*Path to Job Competence*

# Nuclear Training

- Training Records
  - Training Programme;
  - Trainee attendance;
  - Examination question;
  - Individual trainee performance;
  - Final Report.
- Training Material
  - Training objectives;
  - Follow-up and reviews.
- Instructor Qualifications and Evaluation
  - Initial & Continuing Qualification;
  - Internal & External Evaluation;
  - OJT Instructors Evaluation.

# NPP Performance

- Some organizations keep track of the performance of the NPP around the world and share its results of their performance indicators, in order to enhance continuing improvement.

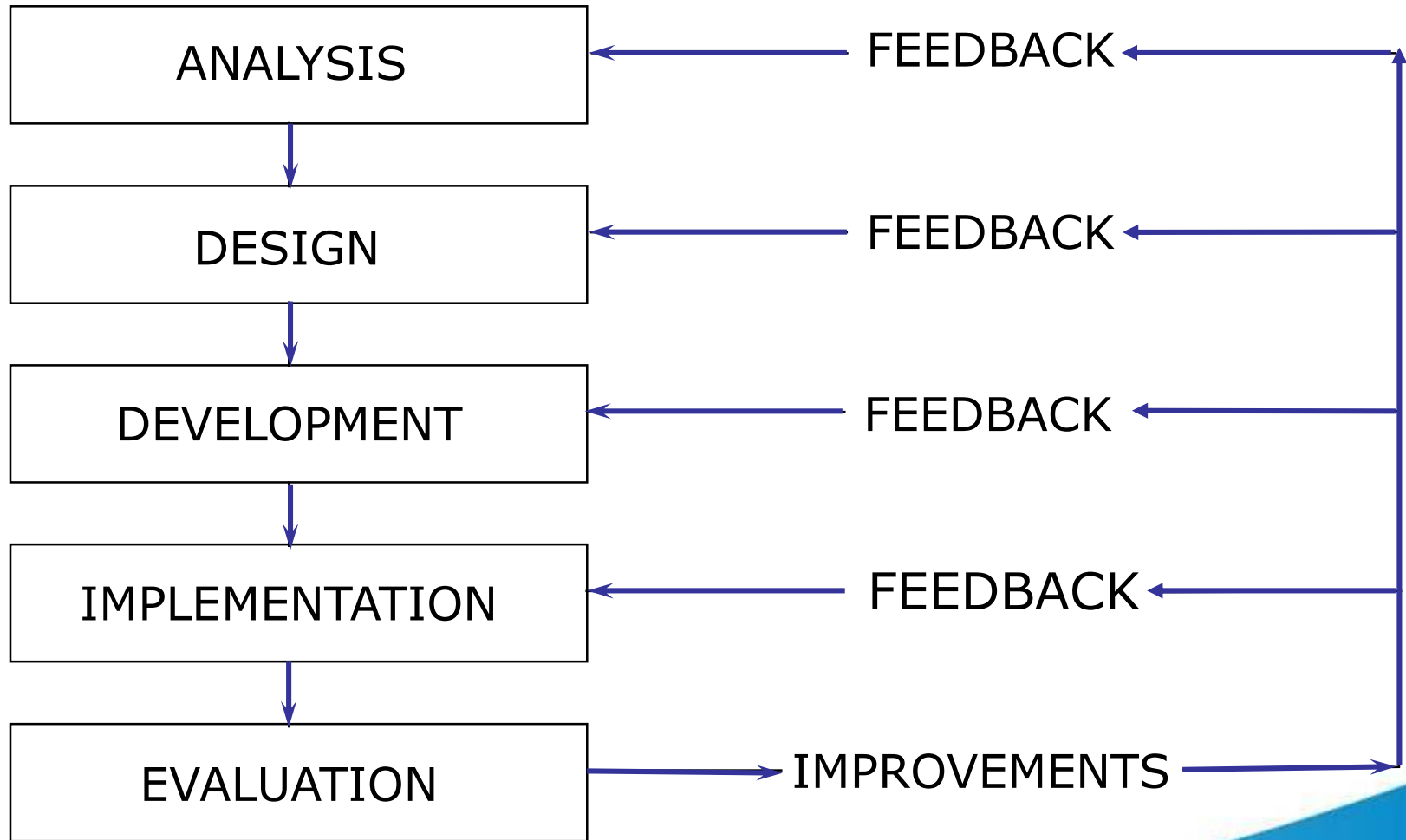




# Systematic Approach to Training (SAT)

- An approach that provides a logical progression from the identification of the competences required to perform a job to the development and implementation of training to achieve these competences, and subsequent evaluation of this training;
- Without SAT, there is a risk that important elements of training will be omitted, which would adversely affect the safety and reliability of the plant.

# Systematic Approach to Training (SAT)

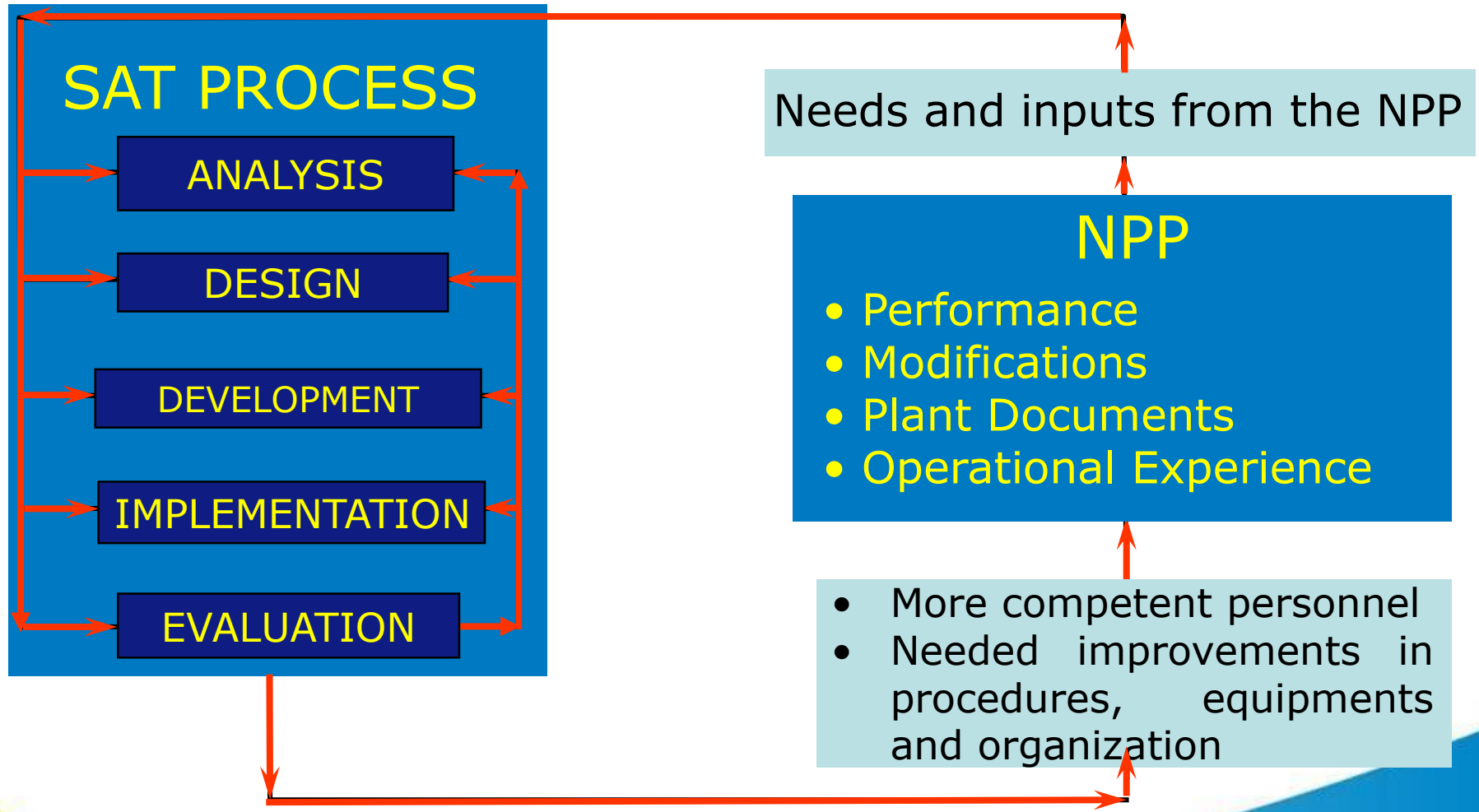


# Systematic Approach to Training (SAT)

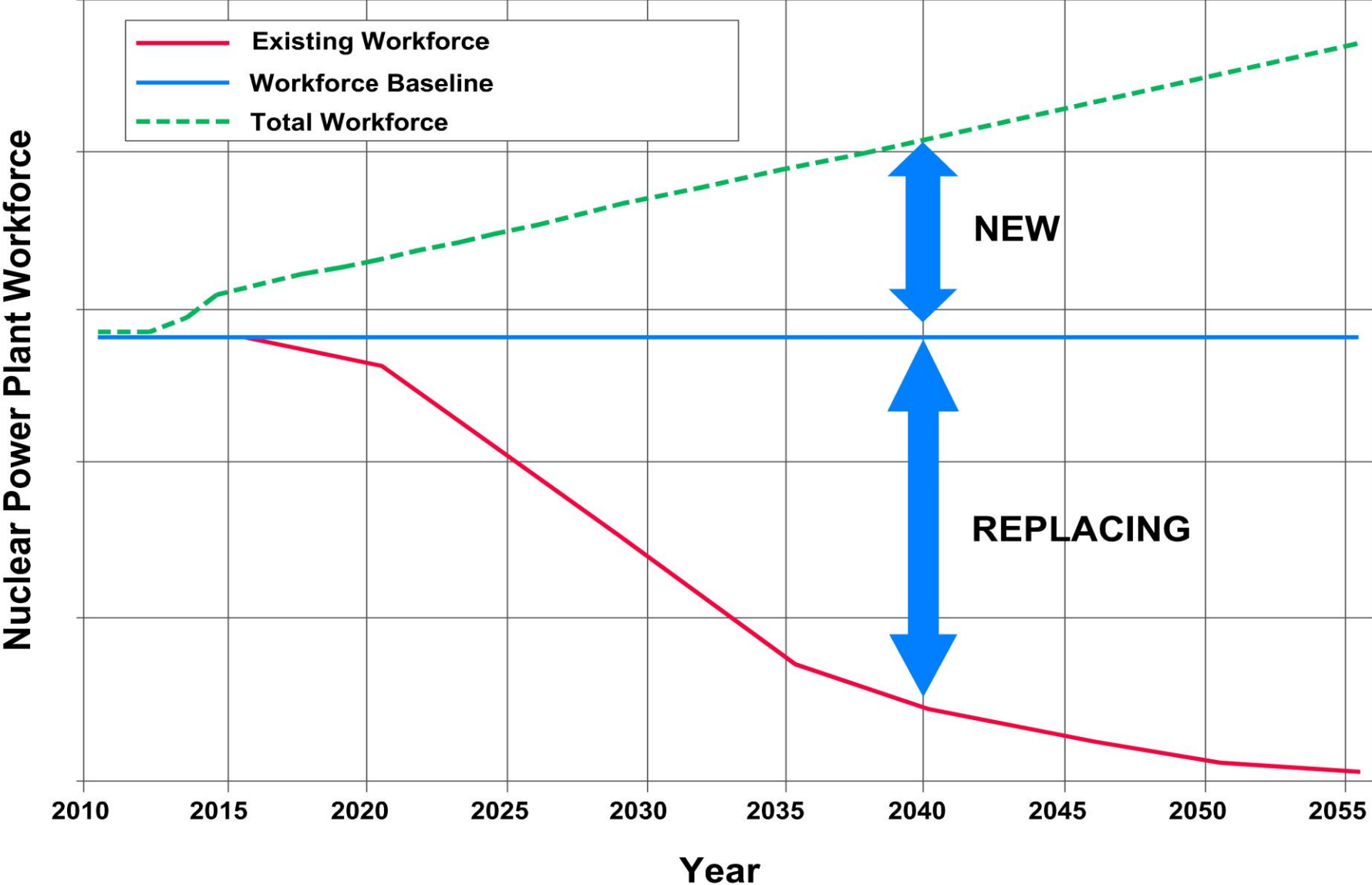
- **Analysis** – This phase comprises the identification of training needs and of the competences required to perform a particular job.
- **Design** – In this phase, competences are converted into training objectives. These objectives are organized into a training plan.
- **Development** – This phase comprises preparation of all training material so that the training objectives can be achieved.
- **Implementation** – In this phase, training is conducted by using the training material developed.
- **Avaliação** – During this phase, all aspects of training programmes are evaluated, leading to programme and plant improvements.



# Systematic Approach to Training (SAT)

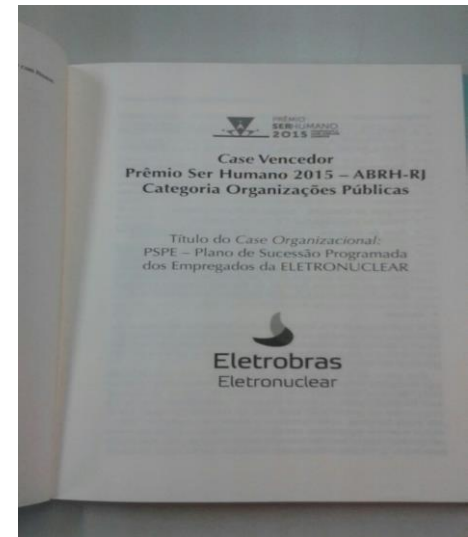


# Estimates of the operating personnel needed



# Incentives for Professional Qualification

- **Partnership with SENAI**
- **Agreement with CAPES**
- **Succession Planning**
- **Substitute Preparation Program**







**Thank you**

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