

14-18 November 2022

PNRI, Manila, Philippines

# Indonesia

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# Introduction

## Radiation Facilities

### Medical Facilities

Radiologi Diagnostik dan  
Intervensional ▪ Radioterapi ▪  
Kedokteran Nuklir

13791 KTUN

2014 - 2019

16.679  
Radiation Sources

### Research and Industrial Facilities

Gauging ▪ Fotofluorografi ▪  
Well Logging ▪ Radiografi  
Industri ▪ Produksi  
Radiosiotop ▪ Penelitian/  
Kalibrasi, dll.

20856 KTUN

# Nuclear Installations

- TRIGA 2000 Research Reactor (1MW); 1961
- Kartini Research Reactor (150kW); 1976
- GA Siwabessy Research Reactor (30MW); 1983
- Experimental Fuel Element Facility
- Reactor Fuel Element Facility
- Waste Management Facility
- Radiometalurgical Facility
- Temporary Storage Spent Fuel Facility
- Etc.



**34 provinces, 514 districts/cities**



# National strategy on E and T in NSS

- (Act 10/1997 & BR 1/2015) Objectives:
  - To ensure safety, health of workers, public, and environment
  - To enhance national capacity building in nuclear safety and security
  - To develop and maintain competence of workers in nuclear and radiation utilization
  - To enhance coordination among related authorities
- Scope:
  - Nuclear and radiation safety
  - Nuclear security
  - EPR

# National strategy on E and T in NSS (cont.)

- (Act 10/1997) Roles:
  - BAPETEN:
    - Regulatory Body,
    - Coordinator for national nuclear security
  - BATAN (National Research and Innovation Agency=BRIN-2021):
    - Promoting Body,
    - Together with BAPETEN as a coordinator for national capacity building in nuclear safety
- Related gov. institutions: MoH, MoEMR, Custom, MoEnv., Police, CBRN, local gov, etc.
- Activities:
  - Routine coordination meeting
  - Joint - regulation review to increase synergy in regulation
  - Joint trainings, fill each other's competence gap

# Systematic approach to training

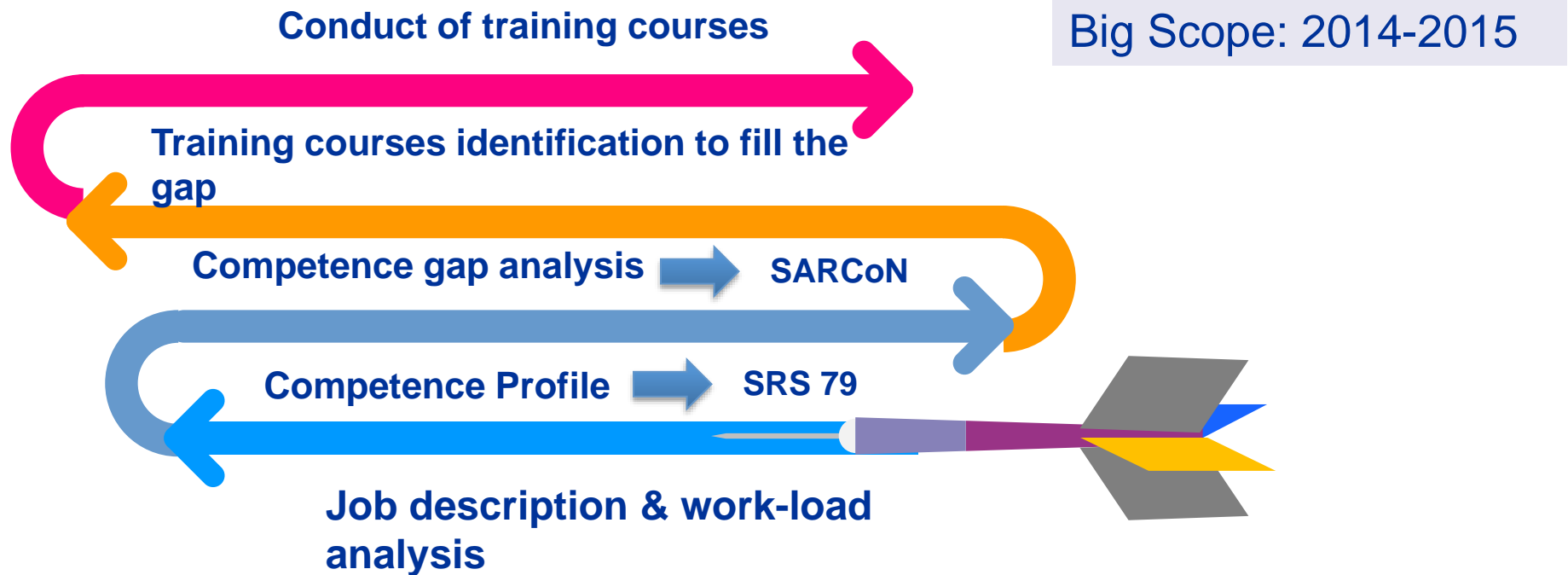
- Analysis
  - Competence gap analysis
  - needs analysis, job analysis, and task analysis
- Design
  - Objectives
  - How to fullfill the gap → E or T or R or others..
- Development
  - Methods and Materials
- Implementation: application of method, material delivery → competent participants
- Evaluation: feedback for improvement

- Send to external training provider → A
- Self training → ADDIE
- Send to educational institution → AD/D
- In cooperation training → ADDE
- OJT → ADE



# Assessment of competence needs

- Big Scope Competence Gap Analysis (CGA): Periodically every 5 years → ongoing process of CGA adopting TE 1757 % 1860



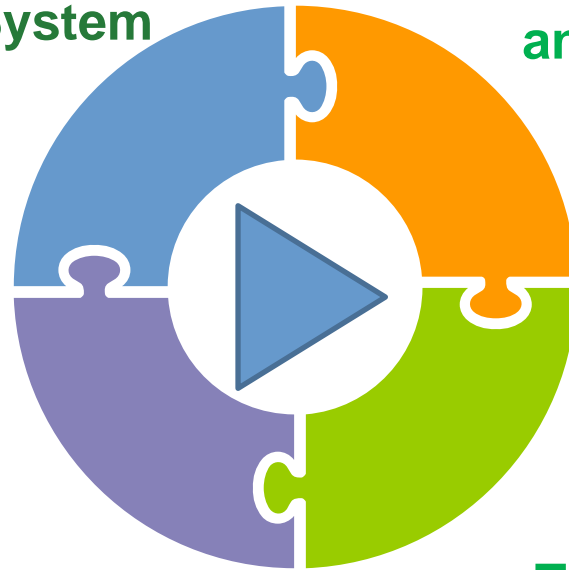
- Small scope: CGA is also done every year to consider urgent organizational needs and updated technology



# Educatiopn & Training Management

(BR 14/2014) HRD Provision is  
stated in BAPETEN  
Management System

Edu & Training needs is  
analyzed periodically



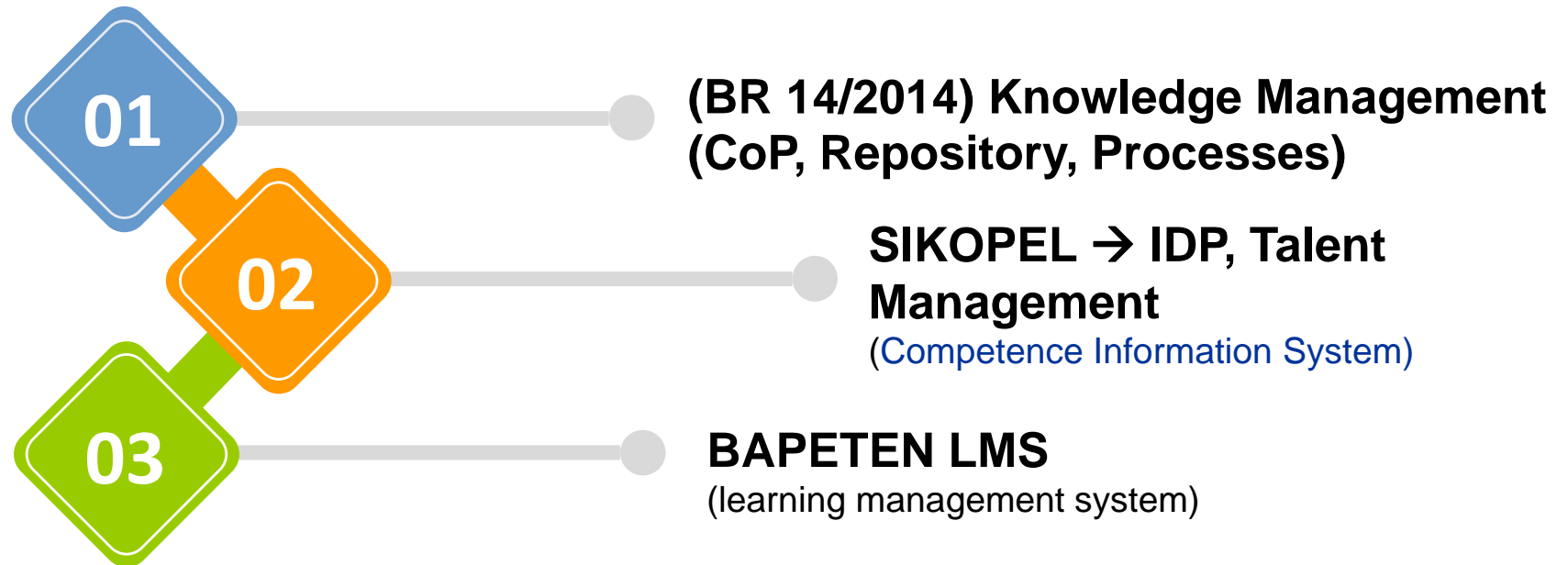
Edu & Training  
Cooperation

Training Tools are  
developed to support  
HRD



# Training management

## Training Management Tools



# Training management (cont.)

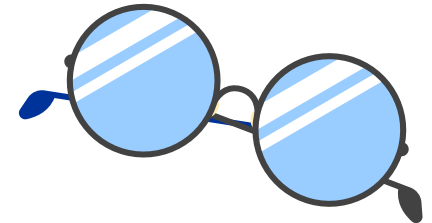
## Methods of Trainings

**Class room**

**Coaching &  
Self-Study**

**Blended Learning**

**Methods**



**E-Learning**

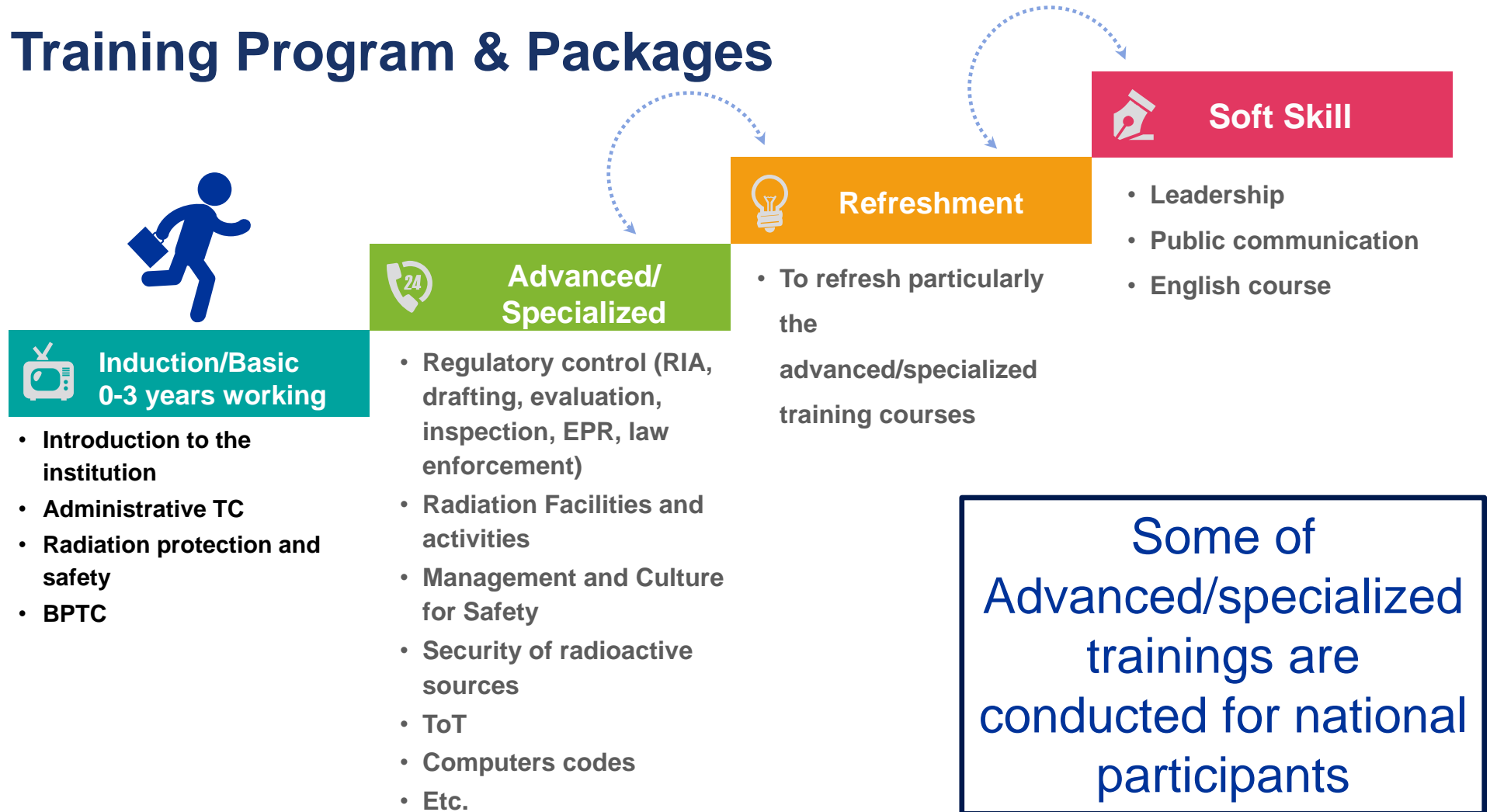
**On-Job Training**

**Online training**



# Training management (cont.)

## Training Program & Packages



# Training management (cont.)

## RPO training

- (BR 16/2014) BAPETEN is allowed to train RPOs as long as there are no training institutions available
- (BR 16/2014) If there are already available training institutions for RPO outside BAPETEN, then BAPETEN is not allowed to train RPO anymore
- (BR 16/2014) BAPETEN is responsible for conducting RPO certification examination in order to obtain an RPO working license
- BAPETEN conduct ToT for RPO to develop external training institutions

To maintain the independence of BAPETEN,  
same mechanism is also applied for Radioactive  
Source Security Officer

# Education

- BAPETEN develop educational cooperation with universities:
  - Gadjah Mada University (UGM): 1<sup>st</sup> degree in Nuclear Engineering and Medical Physics
  - UGM-BAPETEN: doctoral degree in nuclear cyber security (tailor made)
  - University of Padjajaran: master degree in applied economy and nuclear/public policy
- Other universities also provide nuclear and radiation related fields:
  - University of Indonesia: master degree in medical physics
  - University of Diponegoro: 1<sup>st</sup> degree in medical physics
  - Bandung Institute of Technology (ITB): doctoral degree in nuclear physics
  - UGM: master degree in nuclear engineering
  - Etc.

# Challenges in education and training

- At national level
  - Massive reorganization of promoting body
  - Overlapping responsibility among institutions
- At organizational level
  - Majority of BATAN employees are over the productive age
  - How to preserve the competence of seniors who are about to retire



# Networking and cooperation in E&T

- Participation in ANSN
- Participation in INSEN and ANENT
- Participation in NSSC
- Participation in EC-INSC program

# Future plans in education and training

- At national level
  - Enhance human resource capability to support national priority program:
    - Radioactive waste management
    - National management of TENORM
    - HRD preparation on SMR
    - Nuclear security capacity development
  - Increase the frequency of coordination meeting among stakeholders
- At organizational level
  - Development of talent management to maintain effective management succession
  - Increasing the implementation of coaching and mentoring methods

Asian Nuclear Safety Network Education and Training Topical Group  
Regional Workshop on the Management of Training Systems for Nuclear and Radiological  
Safety

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*Thank you!*