

# Indonesia: Education & Training, Outreach Activities (ANENT Framework)

IAEA RAS0075 ANENT  
The Second Coordination Meeting  
Tsuruga, 15-19 May 2017

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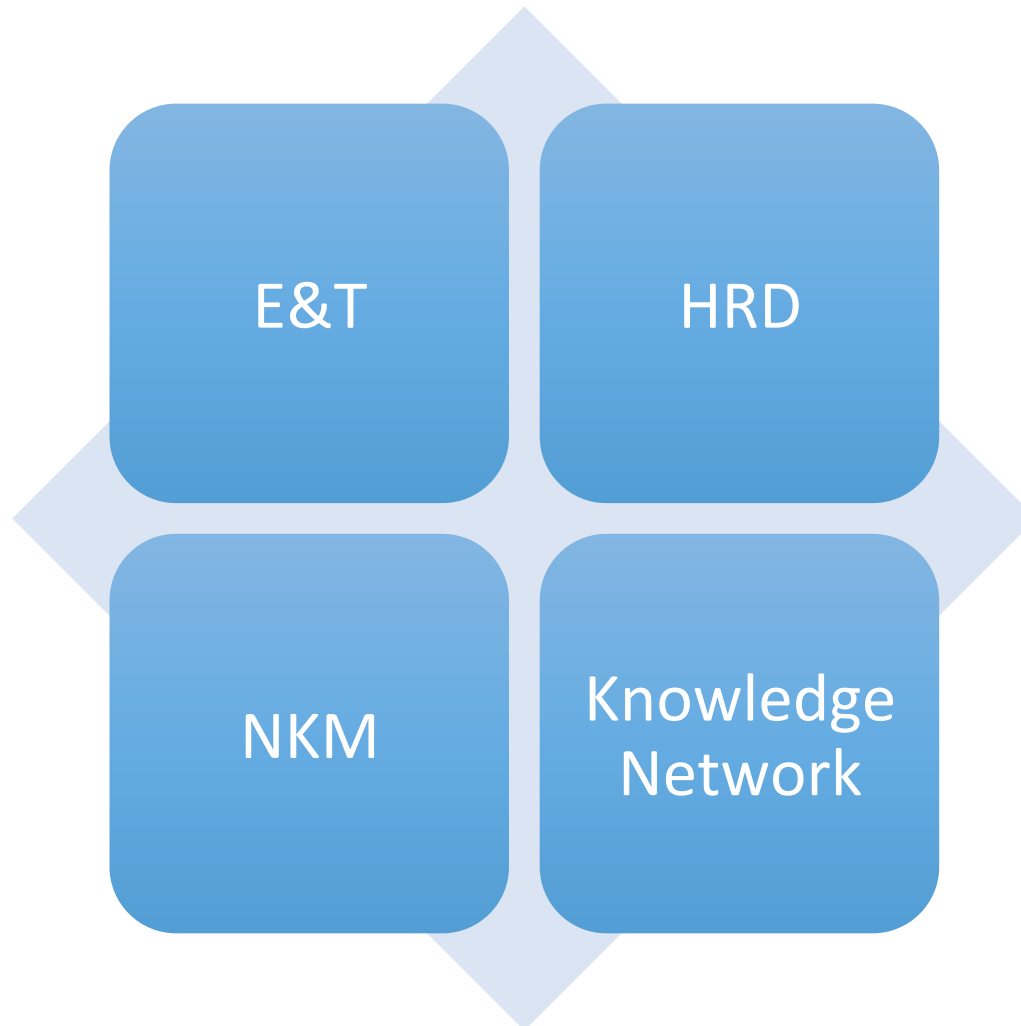
- Introduction
- Capacity Building
- Education and Training
- NKM Activities
- Outreach Activities

# Introduction



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## IAEA Concept for Nuclear Capacity Building

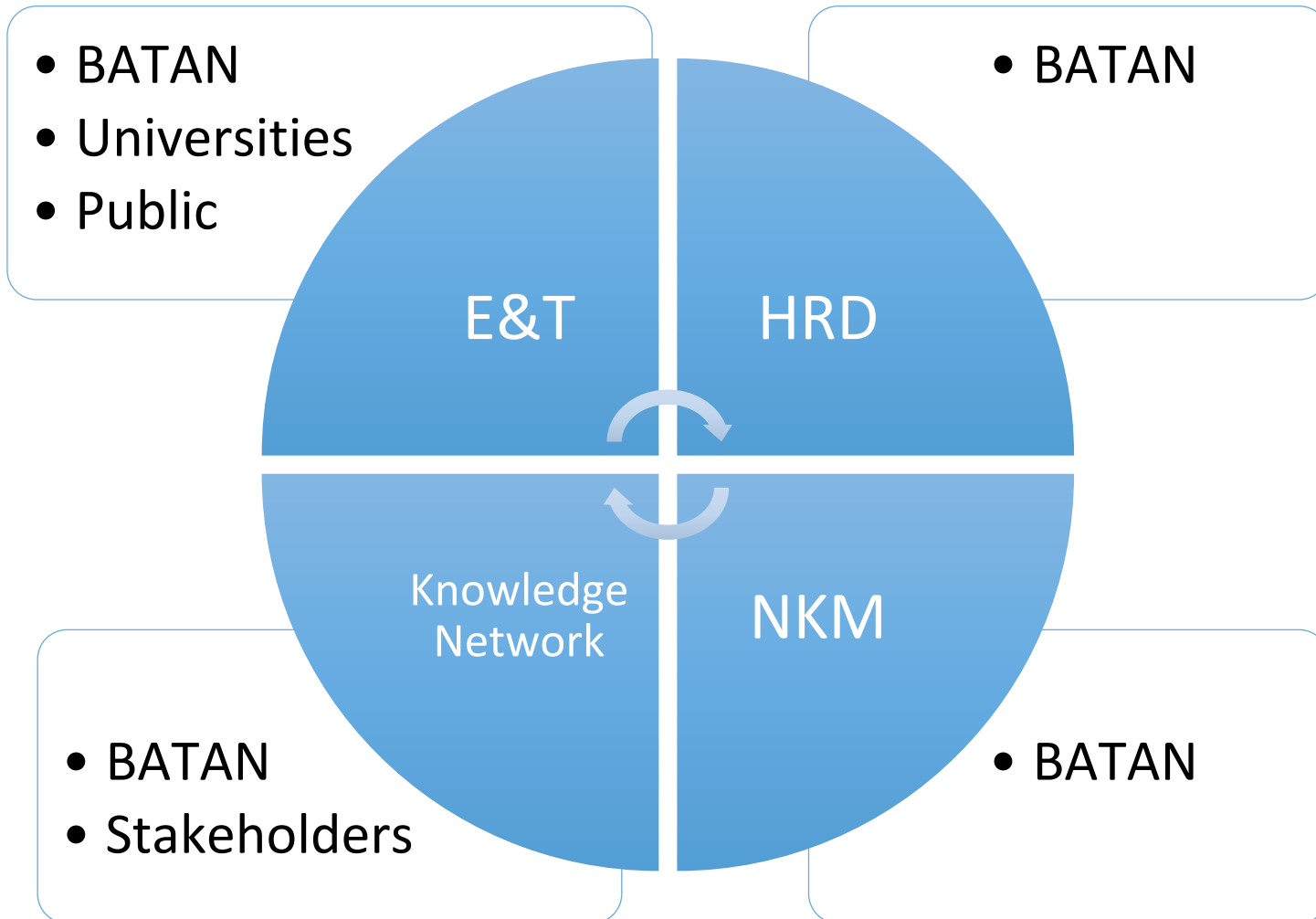


# Capacity Building



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## Targets/Beneficiaries



## Objectives:

### E&T

Building Competences

Preserving nat. comp. on NST

Public Outreach

### HRD

Effective Human Capital Management

### NKM

Preserving NK

Preventing NK loss

Harvesting NK

### Nuclear Network

Building competencies

Stakeholders involvement

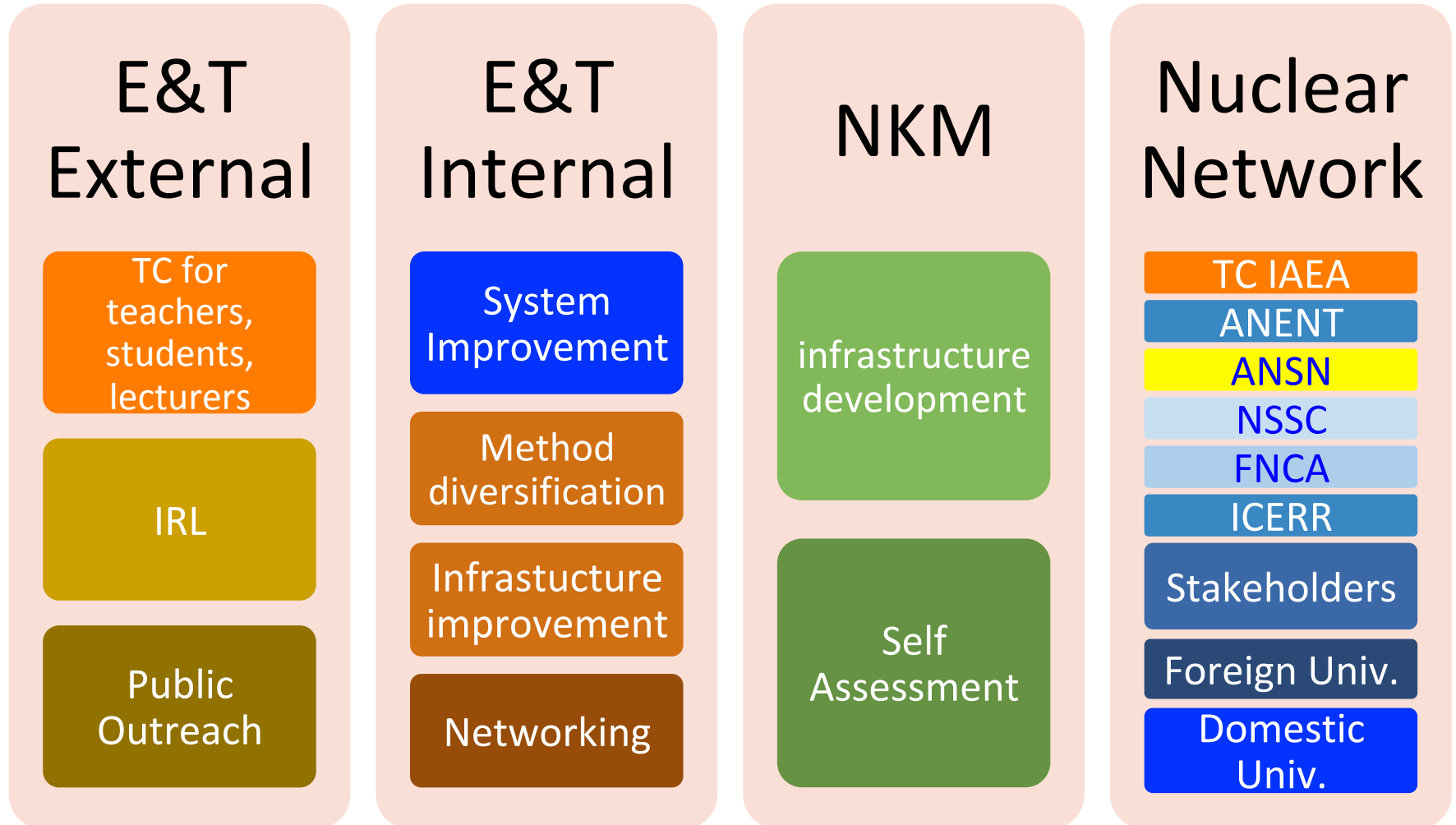
Public outreach

Increasing public support

# Capacity Building under ANENT Framework



## Activities:





# Education & Training



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- Introduction to nuclear science for high school teachers
- Nuclear school for students and lecturers of universities
- Radiochemistry for universities students
- Facilities of Medical Physics for universities students
- Practical works for Medical Physics students
- Neutron Activation Analysis for universities students, etc.

# E&T External: Nuclear School



- 2 days activity for students and lecturers of universities
- 10 -12 participants; 2-4 times/year

## Day 1

Opening

Introduction on Nuclear School

Introduction to Reactor Kartini

Introduction to Radiation Protection

Introduction to Reactor Operation and Neutron Flux Measurement

Practical Work 1: Reactor Operation

Practical Work 2: Neutron Flux Measurement

Discussion

## Day 2

Introduction to Radiation Detectors and Measurement

Practical Work 3: Control Rod Calibration

Practical Work 4: Measurement of Temperature Negative Reactivity

Practical Work 5: Reactor Power Calibration

Discussion

Evaluation and Feedback

## Objective

- Make available Reactor Kartini facilities for practical works on reactor physics through internet

## Status

- System was prepared
- Collaboration with many universities

## Some recommendations from EM

### I&C

- Analyze the opportunity to electrically isolate signals used for operation to the data acquisition system related to the IRL
- evaluate and develop isolation amplifier to the signals

### Video Conference System

- add one camera to show the core from the top of the reactor tank
- change the video conference system to a new one with support to several camera input, or choose one VC system that supports multipoint connections

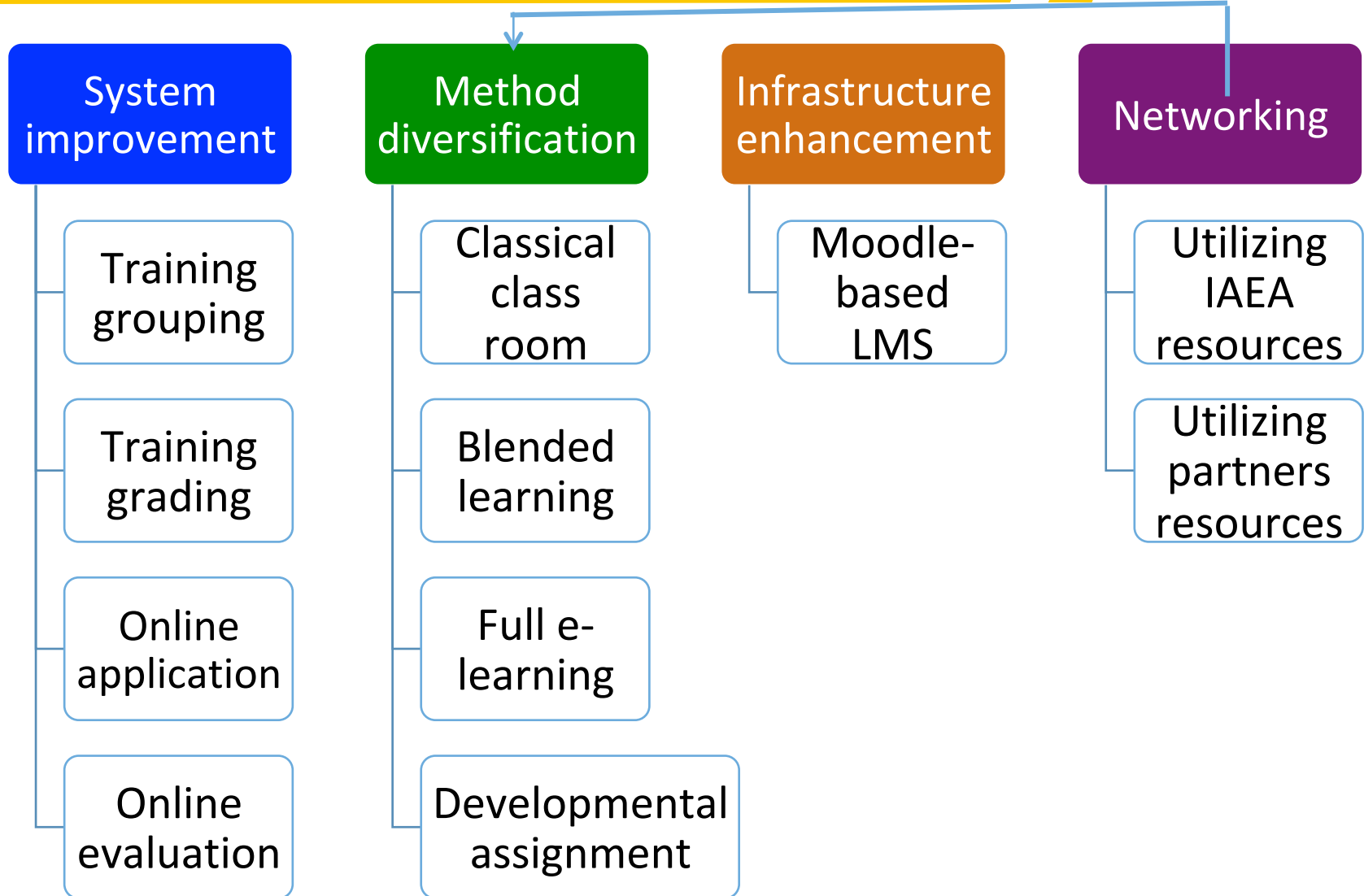
## Some recommendations from EM

### Protocol & Web platform

- lecturers & the web platform developers work together in the design on the web platform
- re-write the protocols using the characteristics of the platform developed.

### Operation

- conduct an orientation workshop with remote
- assign IRL administrator
- local lecturer and the remote lecturer get in touch before the broadcast
- Plan the schedule in advance

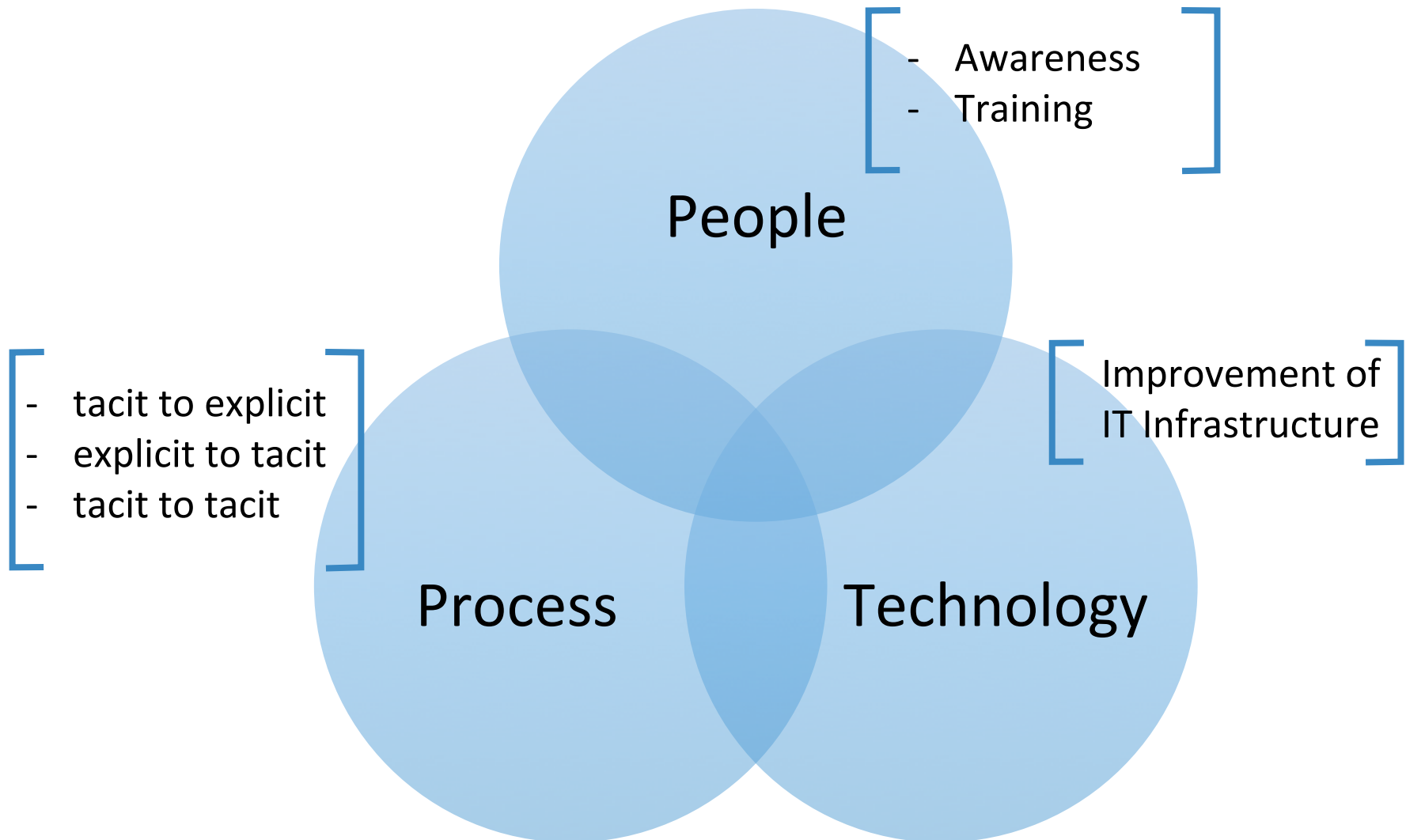


# NKM Activities



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A

Manpower profile

B

Map of Knowledge

C

Transfer, Sharing and Dissemination of Knowledge

D

Critical Knowledge & Potential Knowledge Loss

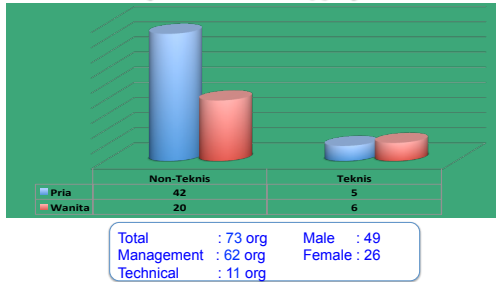
E

Program for Improvement

# NKM Self-Assessment

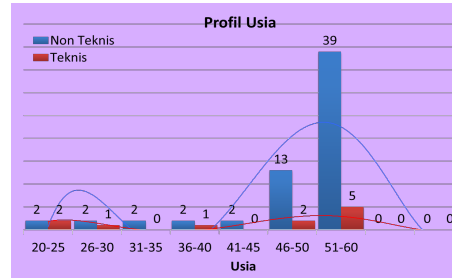


## Status Of Employees (Based on Work Types)



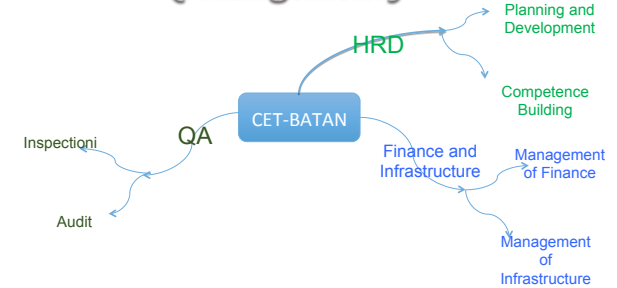
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## Age Profile



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## Knowledge Map: CET (Management)



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## Examples: CET- NKM Status

### Critical Knowledges



#### Needed, non-existent knowledge

- TOT : medical application of RIs
- TOT : Reactor Engineering

#### Existent, limited holders

- TOT: Radiografer Level 2 dan 3
- TOT: Radiation Protection
- TOT: Nuclear Instrumentation

### Potential Knowledges Loss



TOT : Radiography Level 2 dan 3

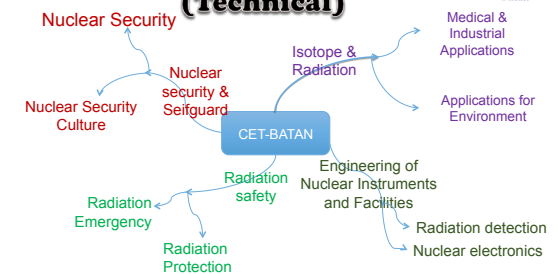
TOT : Radiation Protection

TOT : Nuclear Instrumentation

TOT : Teaching Methods, Learning materials development

Maintenance of nuclear radiation detectors

## Knowledge Map: CET (Technical)



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# Outreach Activities



# Outreach through Education (1)



## Nuclear Goes to School

Edufun, Presentation & motivation, simple **practices**, sharing & discussion, games, and role play “who want’s to be a nuclear scientist”



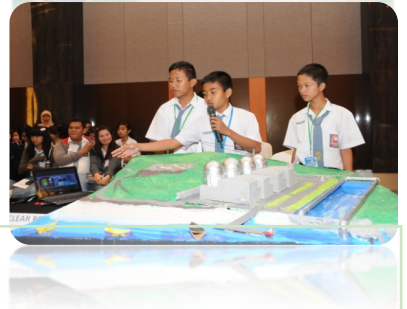
## Nuclear Corner

Information designed in fun and interactive concept and located in public facilities (Science Park, School)



## Science Competition

Competition **on** nuclear science **topics** and mini project.



## Nuclear Facility Visit

Nuclear facilities visit and tour for public.



## Scholarship

The academic scholarship for students who **have interest in studying majors related to** nuclear science.



## Nuclear in Curriculum

collaboration with Ministry of Education to **include** nuclear science for high school curriculum.



# Activities of public information



## Seminar, Talkshow

Disseminating R&D products, recent and update status of nuclear in Indonesia with discussion and general sharing



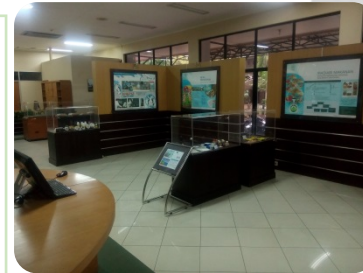
## Focus Group Discussion

Meeting with stakeholders and shareholders about nuclear prospect in future, also intense sharing about status of NPP



## Products Exhibition

Introducing R&D products that has been proved and useful for public or communities. i.e : Food, Medicine, Agriculture and others proven products



# Activities of public information



## Training of Trainer

Workshop for training local figure as a “nuclear communicator” to deliver nuclear information for local societies.



## Website

Provide nuclear up to date information and news for world wide public.  
[www.batan.go.id](http://www.batan.go.id), [www.infonuklir.com](http://www.infonuklir.com)



## Print Media

Information about nuclear also spread by using print media, i.e : flyers, magazines, etc

- menggiatkan sumber radiasi
- meminimalkan waktu paparan radiasi
- mengalihkan radiasi



**proteksi radiasi**



# Media campaign



## TV Commercial

Produce and placement tv commercial about nuclear energy, environment and technology achievement.



## Variety Show on TV

Blocking time on TV show, i.e : talkshow or advetorial about nuclear safety issues, energy prospect, human resource and others.



# Media campaign



## Public Service Advertisement on Radio

Produce and placement commercial break and *bumper* with nuclear theme and news.

## Radio Talkshow

Talkshow and interactive discussion about Nuclear Safety Issues, Socialization Activities, Young Communities, Education, and Human Resourch.



# Publication



Thematical Flyer & Pamphlet



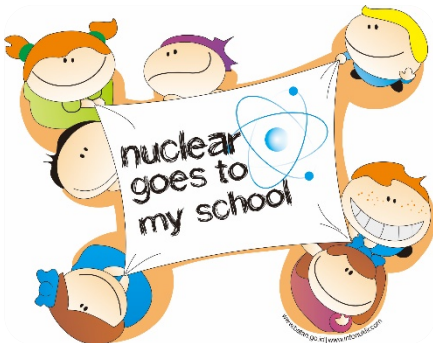
Book & Profile



T-Shirt



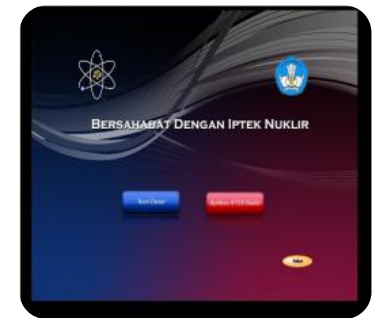
Glosarium



Sticker



Supplementary Material



CD & e-learning

# Publication in mass transportation



## 55 tahun kami mengabdikan dan akan terus mengabdikan

26 profesor riset 1072 ahli nuklir dan 3003 pegawai berdedikasi bekerja di 3 reaktor dan 5 kawasan riset mengembangkan teknologi nuklir untuk kemajuan bangsa. Dan kami terus mengharapkan dukungan 250 juta rakyat Indonesia untuk terus mengabdikan, mempersembahkan karya terbaik untuk negeri.

Energi Nuklir Untuk Kemajuan Bangsa  
[www.batan.go.id](http://www.batan.go.id)

## Human resource & Nuclear Safety

## Nuclear in Our life

# NUCLEAR reaction is the energy source of SUN

Matahari memperoleh energinya dari reaksi fusi nuklir, menghasilkan gelombang radiasi dan energi yang menjadi sumber energi primer bagi kehidupan di planet bumi dan memberikan manfaat bagi manusia. Terinspirasi dari fenomena alam, kini kita juga telah mampu mengembangkan teknologi nuklir dan radiasi untuk memberikan manfaat bagi kehidupan manusia.

PUSAT DISEMINASI IPTEK NUKLIR  
BADAN TENAGA NUKLIR NASIONAL

Temukan manfaat teknologi nuklir bagi kehidupan manusia di :  
[www.batan.go.id](http://www.batan.go.id) || [www.infonuklir.com](http://www.infonuklir.com)  
@atomosday

- Use of IAEA e-learning system for national trainings
- Use of IAEA modules for national trainings
- Supports for IRL development & operation

E&T

- Use of IAEA resources
- support for capacity building to knowledge creation
- ToT for critical knowledges

NKM

- Capacity building on public information

Outreach

# TERIMA KASIH ARIGATOU GOZAIMASHITA



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