International Conference on Human Resource Development for Introducing and Expanding Nuclear Power Programmes

Panel Discussion: IAEA Role in Knowledge Transfer

Agency Priorities in Addressing the Knowledge Transfer Challenge Through Education, Training and Capacity Building

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The Role of the IAEA in Sharing Knowledge related to Nuclear Power

Statute of the IAEA, Article III A, paragraphs 3 and 4

"The Agency is authorized to […]

3. to foster the exchange of scientific and technical information on the peaceful uses of atomic energy,

4. to encourage the exchange of training of scientists and experts in the field of peaceful uses of atomic energy,

- **The role for the Agency is to assist in the transfer of knowledge from "centres of competence" to the "centres of growth".**
- **Potentially high risk of knowledge loss and additional cost for future generations must be avoided, and the Agency can help to integrate this long-term aspect into today's strategic decisions.**

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Knowledge Areas Needed for a Nuclear Power Programme

- National position
- Nuclear safety
- Management
- Funding and financing
- Legislative framework
- Safeguards
- Regulatory framework
- Radiation protection
- Electric grid
- Human resource development
- Stakeholder involvement
- Site and supporting facilities
- Environmental protection
- Emergency planning
- Security and physical protection
- Nuclear fuel cycle
- Radioactive waste
- Industrial involvement
- Procurement

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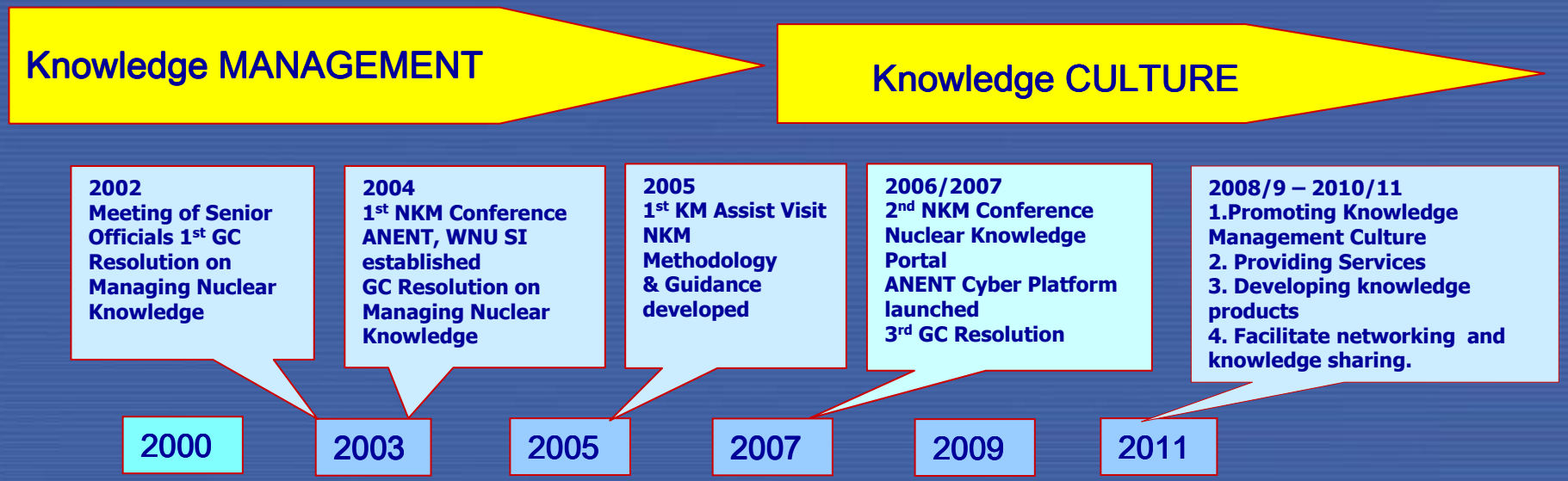
The Knowledge Management Activities



Analyzing Needs

Promoting NKM

Guidance & Methodology

Providing Services & Support

Support
Catalyze
Build

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IAEA Supports Capturing and Sharing Knowledge

- Documents that provide guidance and lessons learned
- Networks and Data Bases
- Services
- Training Courses/Workshops
- Fellowships and Scientific Visits

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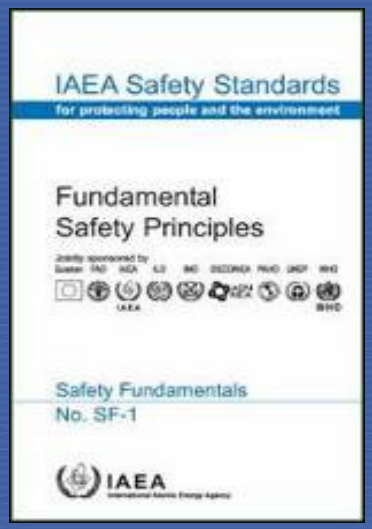
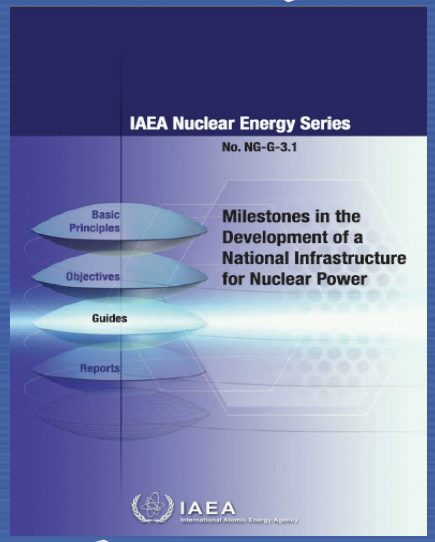
Knowledge Transfer through Technical Cooperation

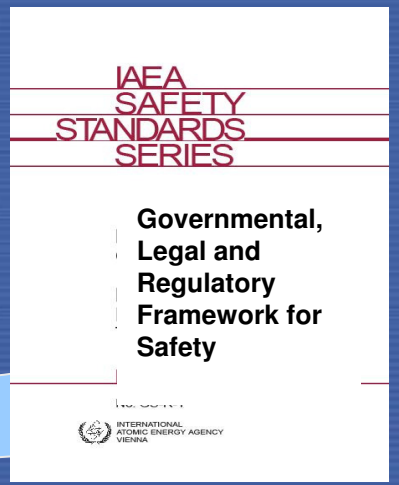
Milestone Approach

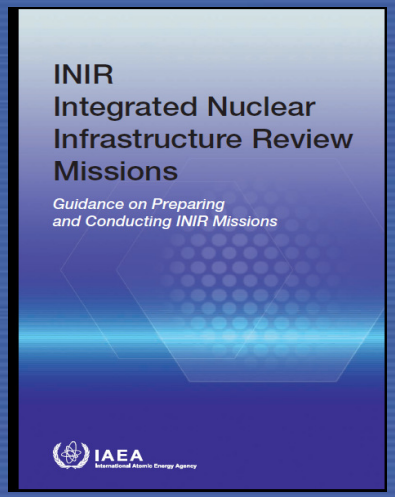
TC programme and Technical Services





Member State NP Infrastructure Activities





Feedback

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Knowledge Transfer for Energy Assessment

Capacity Building for energy assessment

Information Dissemination

Analytical Tools and Training

Technical Assistance for National Energy Studies

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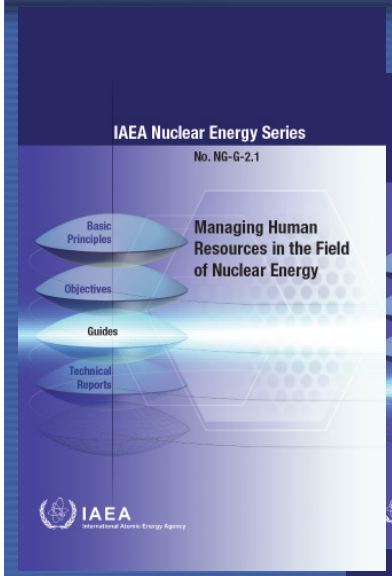
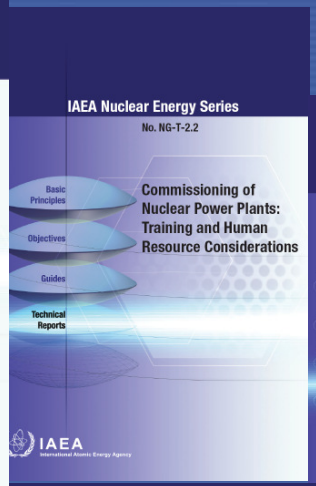
Tele-Support Expert Service for Users of IAEA Energy Tools

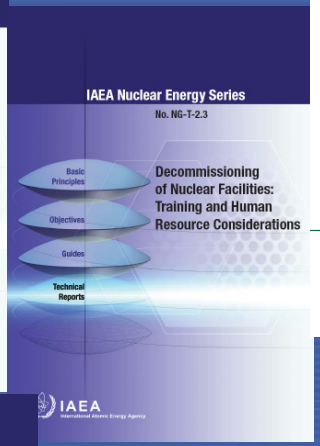
Technology Supported Learning
e-Training Courses

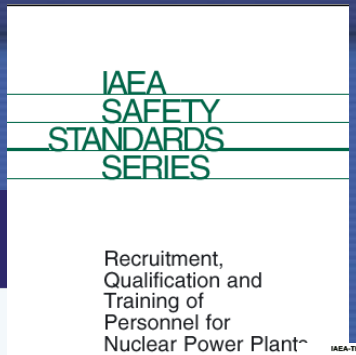
Examples of IAEA Publications on HR and Training

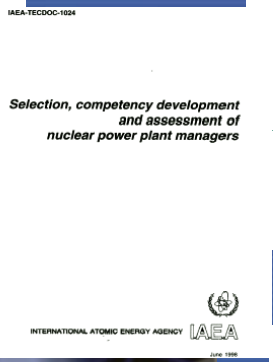
http://www.iaea.org/OurWork/ST/NE/NESeries/ClickableMap/
http://www-ns.iaea.org/publications/default.htm

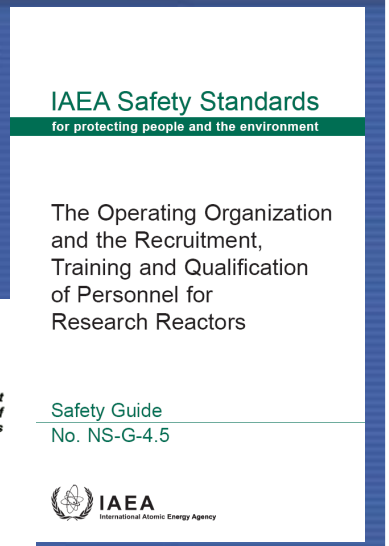


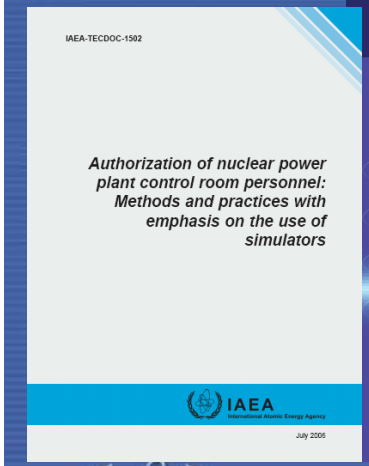


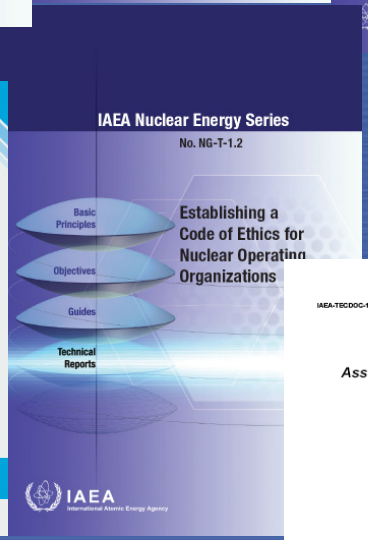


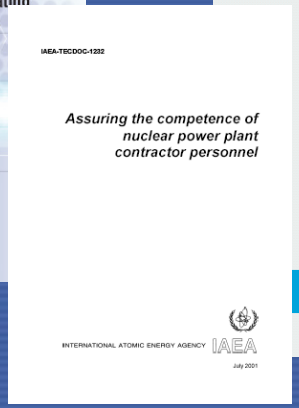


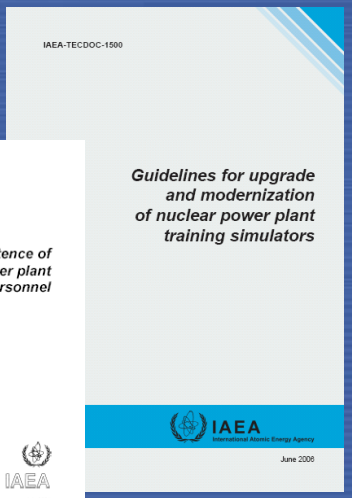


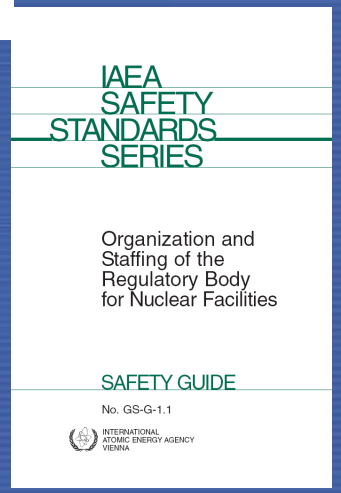












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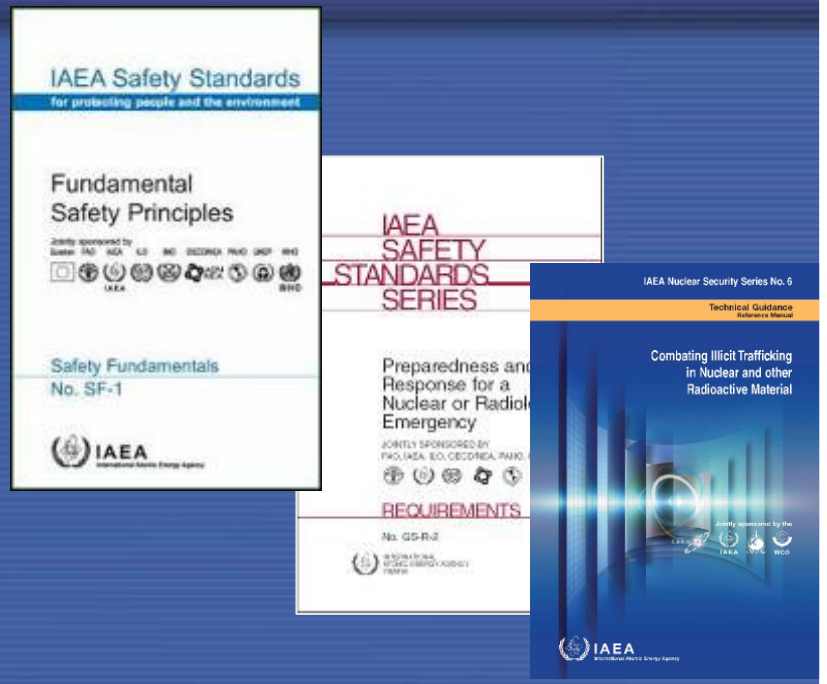
Capacity Building Through Knowledge Transfer in Nuclear Safety & Security

IAEA Publications

- *Safety Standards*
  - *Nuclear Safety*
  - *Radiation, Transport and Waste Safety*
  - *Emergency Preparedness and response*
- *Security Guidelines*



Missions and services

- *Integrated Regulatory Review Services (IRRS)*
- *International Nuclear Security Advisory Service (INSServ)*
- *International Physical Protection Advisory Service (IPPAS)*
- *Emergency Preparedness Reviews (EPREV)*
- *Operational Safety Review Team (OSART)*
- *…and more*

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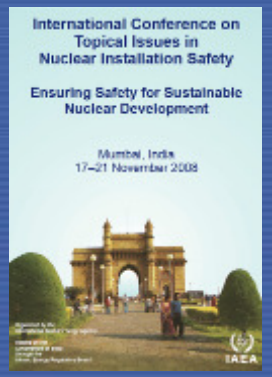
Capacity Building Through Knowledge Transfer in Nuclear Safety & Security

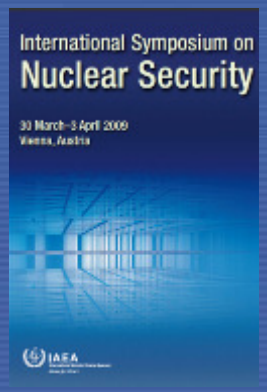
Review and Information Exchange Meetings

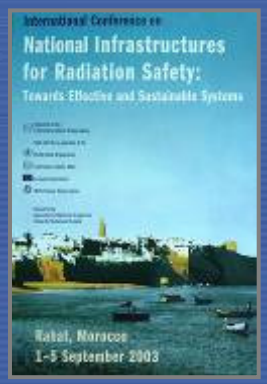
- *Nuclear Safety Convention*
- *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*
- *Convention on the Physical Protection of Nuclear Material & Amendment*
- *Convention on Early Notification of a Nuclear Accident*
- *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*
- *Codes of Conduct: Radioactive Sources; Research Reactors*

Conferences, Symposia

- *Such as:*







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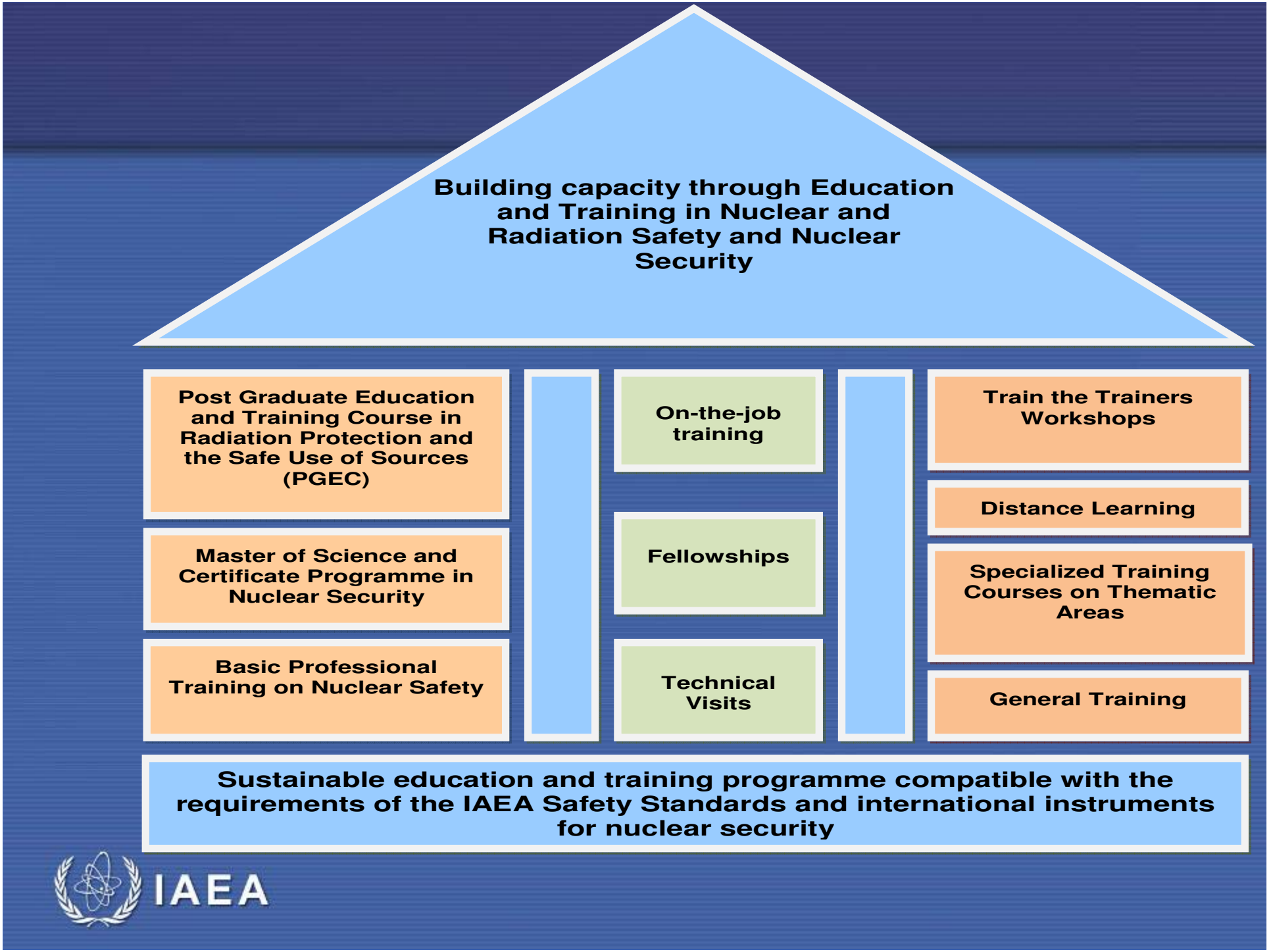
Building capacity through Education and Training in Nuclear and Radiation Safety and Nuclear Security
Post Graduate Education and Training Course in Radiation Protection and the Safe Use of Sources (PGEC)
Master of Science and Certificate Programme in Nuclear Security
Basic Professional Training on Nuclear Safety
On-the-job training
Fellowships
Technical Visits
Train the Trainers Workshops
Distance Learning
Specialized Training Courses on Thematic Areas
General Training
Sustainable education and training programme compatible with the requirements of the IAEA Safety Standards and international instruments for nuclear security
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Capacity Building Through Education and Training

Education and Training

- *Postgraduate education courses for future leaders and senior managers*
- *Basic Professional Training Course on Nuclear Safety (BPTC)*
- *Topical training courses to build expertise (e.g.: for regulators, security officials, plant operators)*
- *Train-the-Trainers workshops to build capacity at the national level*
- *Establishment of regional training centres and capacity building centres*
- *Implementation of IAEA strategic plans for E&T*
- *Guidance to assist States develop national strategies for building competence*

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Knowledge Transfer supporting NP Operations

Agency work in this area includes:

- **assembling expert teams for advisory missions to facilities to identify potential improvements;**
- **publishing technical guidance and reference documents;**
- **maintaining databases on operating experience;**
- **disseminating operating experience, new knowledge and best practices;**
- **providing direct training and computer packages for distance learning; and**
- **coordinating research among groups working on common problems.**

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Knowledge Transfer Supporting Advanced and Innovative NPP Designs

- **The Agency serves as a catalyst.**

It coordinates research and promotes information exchange for current reactor lines and for innovative nuclear energy systems.

The Agency seeks to stimulate innovation in nuclear power through activities in four areas:

- Technological progress along the main reactor lines: light water, heavy water, fast and gas cooled reactors;
- The International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO);
- Small and medium sized reactors;
- Non-electric applications such as hydrogen generation and desalination using nuclear energy.

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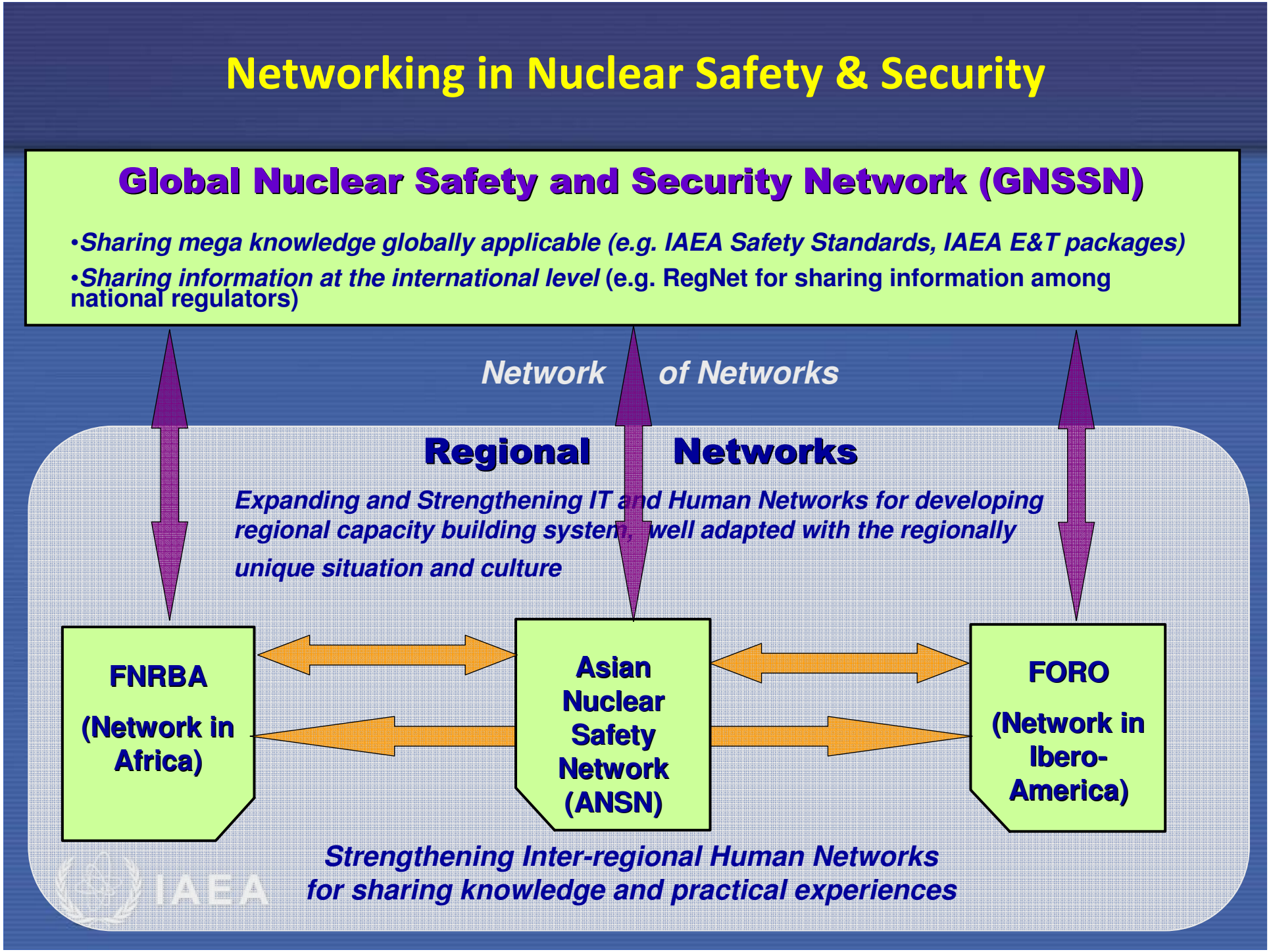
Networking in Nuclear Safety & Security



Networking Nuclear Education

RAS/0/047: Supporting Web-Based Nuclear Education and Training through Regional Networking

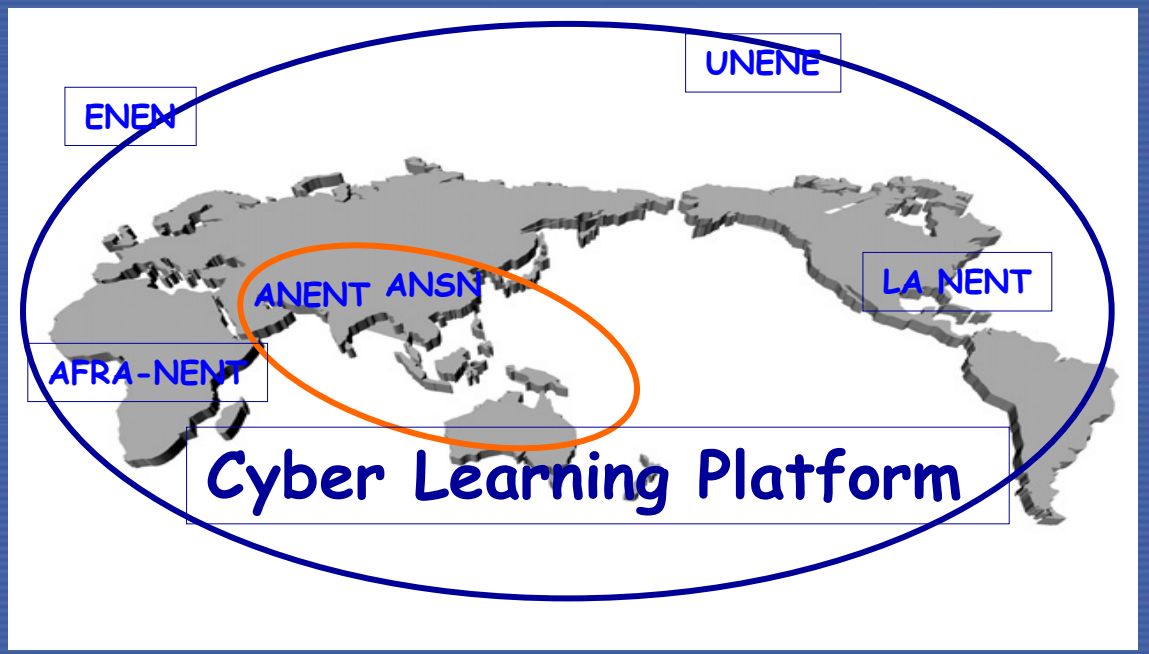
- **26 Countries in the Asia-Pacific Region - ANENT**

  Afghanistan, Bangladesh, China, Indonesia, (Iran), Iraq, Israel, Jordan, Kuwait, Lebanon, Marshall Islands, Malaysia, Mongolia, Myanmar, Pakistan, Palestinian A., Philippines, Qatar, Korea, Saudi Arabia, Singapore, Sri Lanka, Syrian Arab Rep., Thailand, United Arab Emirates, Vietnam, Yemen

Australia, India

- **Main Objective**

Support to develop, consolidate, and utilize the web-based standardized E&T materials



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Assist Visits on Nuclear Education: a Direct Service to Member States

- **2007**

  Lithuania (Kaunas Univ. of Tech.)

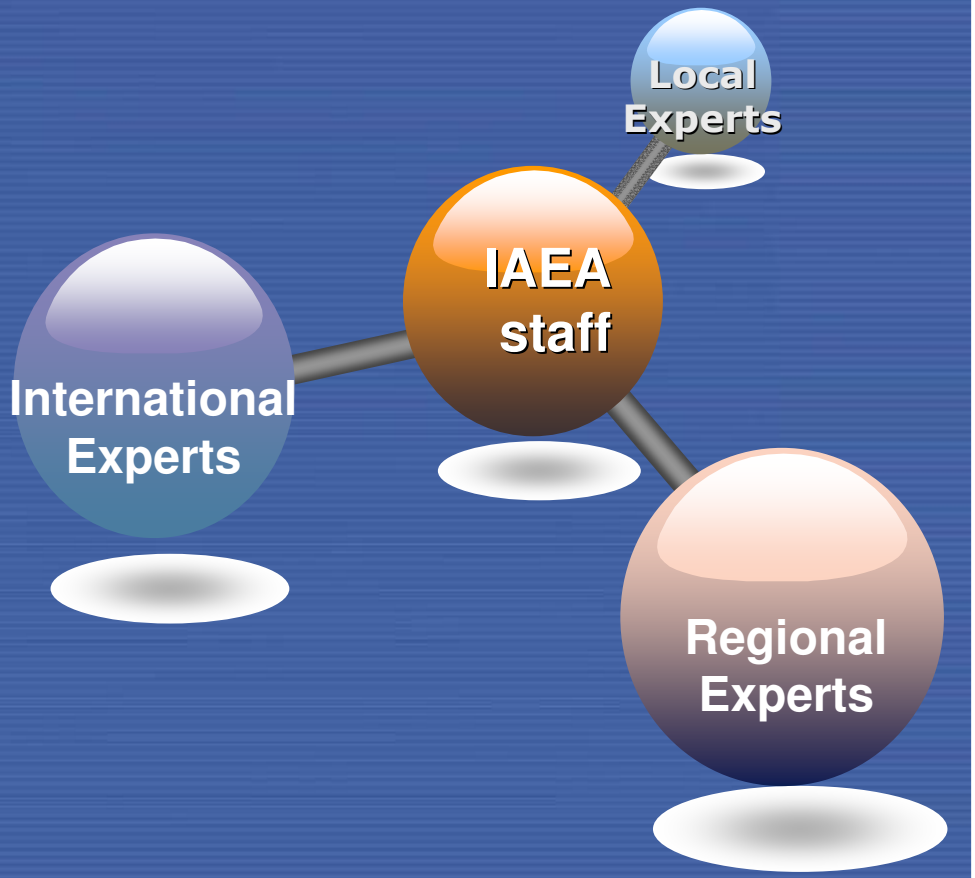
- **2008**

  Bruce Power
  Zaporozie NPP
  Kazahstan AEC

- **2009**

  Malaysia
  Montenegro
  Argentina
  Bulgaria
  AECL Canada

- **2010:** Philippines, Russia, …



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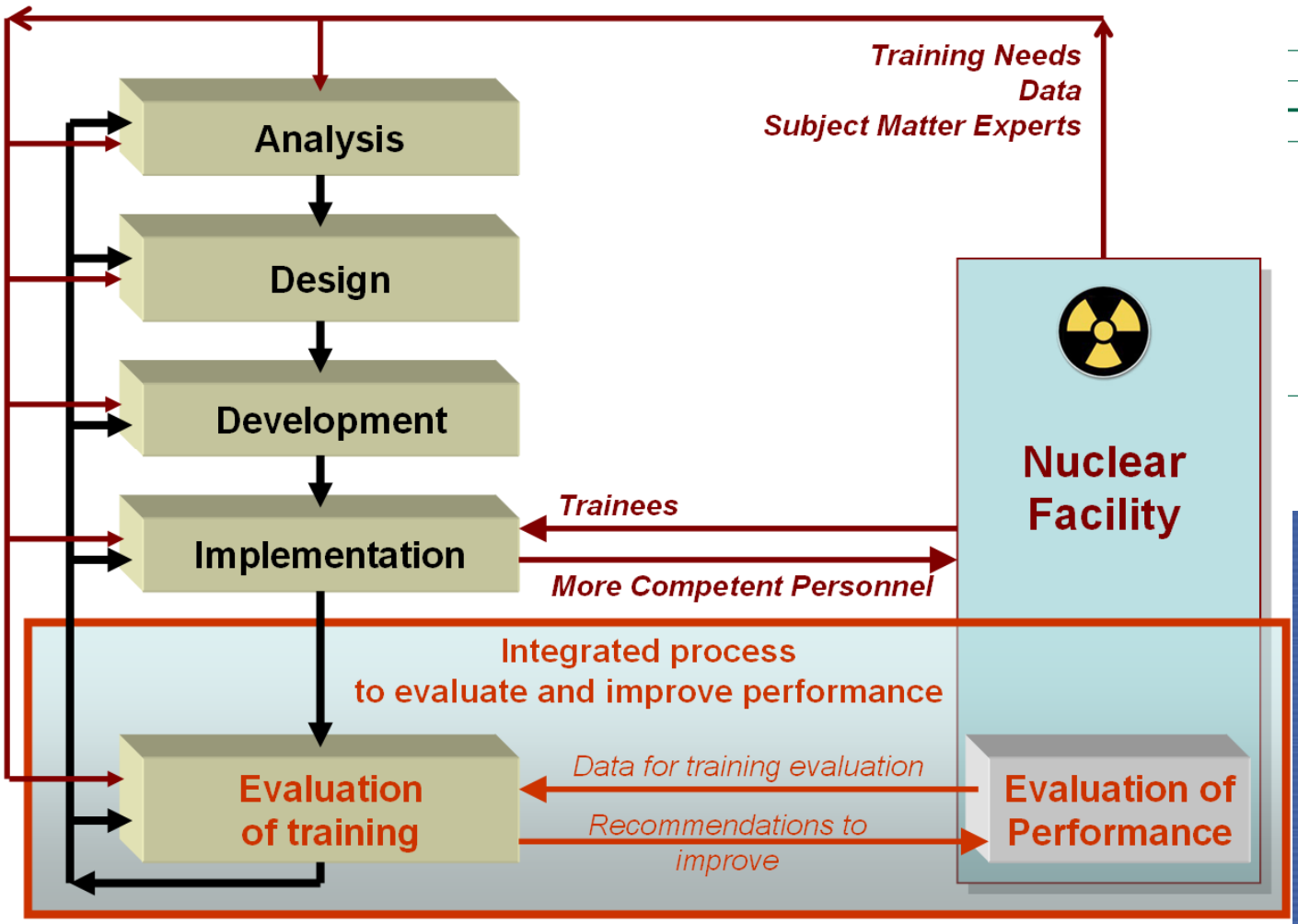
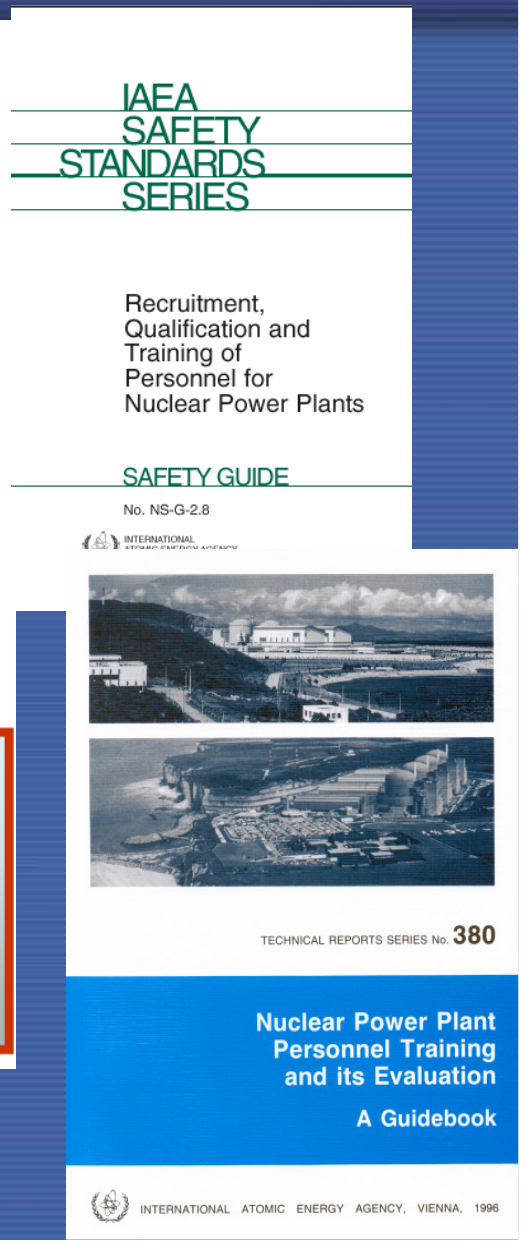
Systematic Approach to Training (SAT): An IAEA Expectation





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How to consider KM from the beginning of a Nuclear Power Programme?

- Use an integrated, systematic approach toward considering and implementing a NP programme (The “Milestones” Approach)
- Develop workforce/staffing plans that are based upon the roles and responsibilities for the activities in each of the 3 Phases
- Require SAT for all training programmes
- Include SAT, and knowledge capture and transfer requirements in supplier(s) contracts
- Maintain this integrated workforce planning approach and KM programme through the entire lifecycle of the facilities/programmes
- Networking to share knowledge regionally and internationally

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Thank you for your attention

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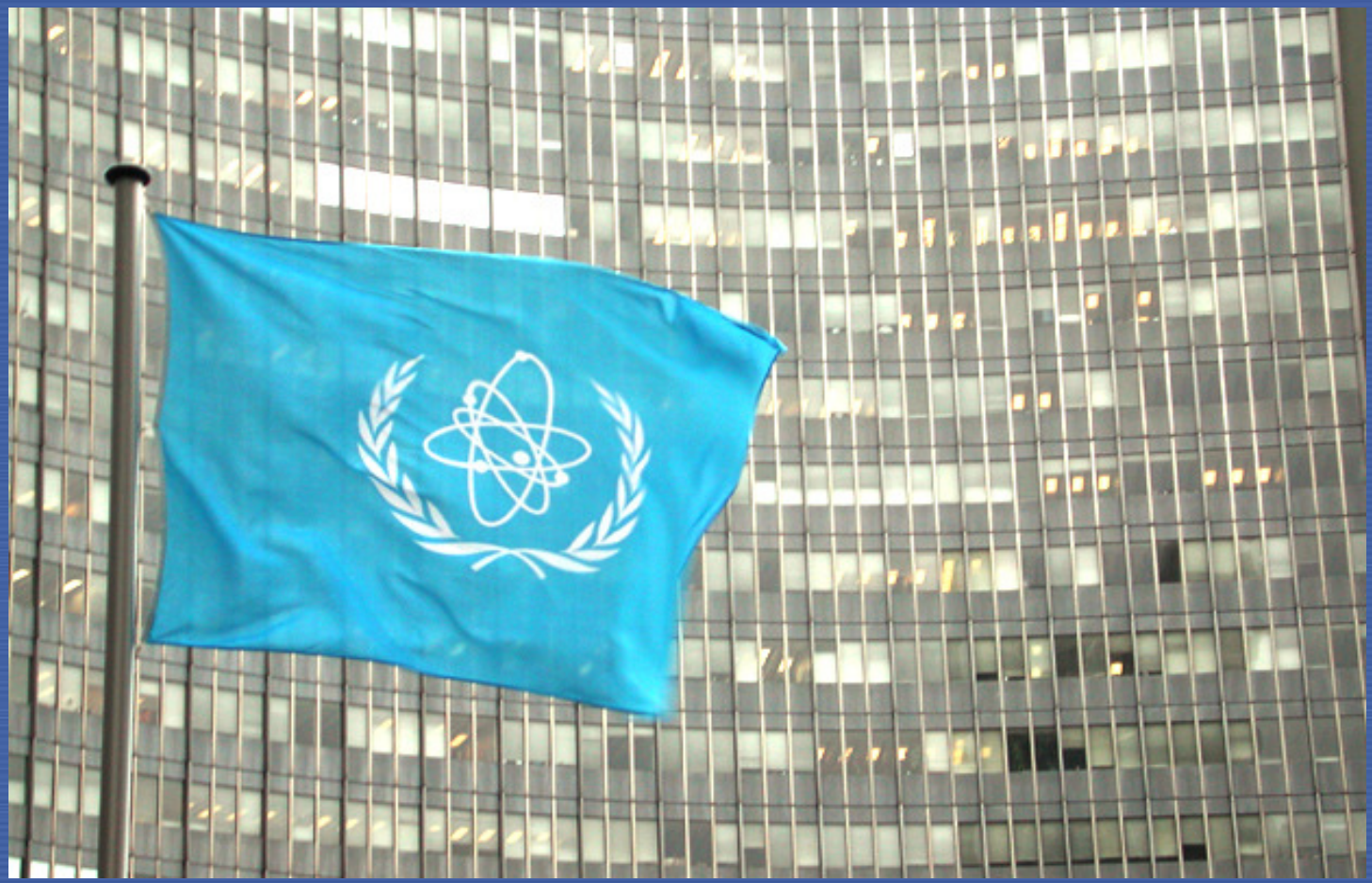

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…atoms for peace.