



Topical Issue 4

Nuclear Safety and Nuclear Security Networking: *Current and future activities*

**International Conference on Challenges Faced by Technical and Scientific Support
Organizations (TSO) in Enhancing Nuclear Safety and Security**

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Tokyo, Japan

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Department of Nuclear Safety & Security

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- **IAEA efforts in capacity building and infrastructure development**
- **Current and future challenges and opportunities in knowledge networking**
 - ✓ **Global Nuclear Safety and Security Network (GNSSN); and**
 - ✓ **Components of GNSSN (e.g. & RegNet; G-SAN; ANSN; FORO, RCF...etc)**
- **Conclusions**



Background



Main Challenges & Principles of Safety & Security Infrastructure & Capacity Building (1)

- Member States are responsible for building their infrastructure and capacity primarily by their ***own efforts and for their interests***
- ***Capacity for Capacity Building*** is vital to the development of an adequate and sustainable safety and security infrastructure
- International and regional Cooperation through global coordination and collaboration is crucial for ***continuous improvements of safety and security infrastructure and Capacity Building***



Main Challenges & Principles of Safety & Security Infrastructure & Capacity Building (2)

- The core of capacity to be built is **science-based**, safety and security cultures to be embedded in the relevant organization, leadership and other stakeholders
- An independent, effective and robust **Regulatory Body** and **TSO** are essential to further improve nuclear safety and security capacity building in Member States



Addressing Member State priorities

| Description | Number of countries in 2008 | Number of countries in 2010 |
|--|-----------------------------|-----------------------------|
| Not planning to introduce nuclear power plants, but interested in considering the issues associated with a nuclear power programme | 16 | 31 |
| Considering a nuclear programme to meet identified energy needs with a strong indication of intention to proceed | 14 | 14 |
| Active preparation for a possible nuclear power programme with no final decision | 7 | 7 |
| Decided to introduce nuclear power and started preparing the appropriate infrastructure | 4 | 10 |
| Invitation to bid to supply a nuclear power plant prepared | 1 | |
| New nuclear power plant ordered | | 2 |
| New nuclear power plant under construction | 1 | 1 |
| Total | 51 | 65 |

10 to 25 new countries are expected to bring their first nuclear power plants on-line by 2030

Example



Emergency Response

Energy Options

Planning

Human Resources

Legal Issues

Education & Training

TSOs

Regulatory Body/Competent Authority

Environment Public Protection

Public Acceptance

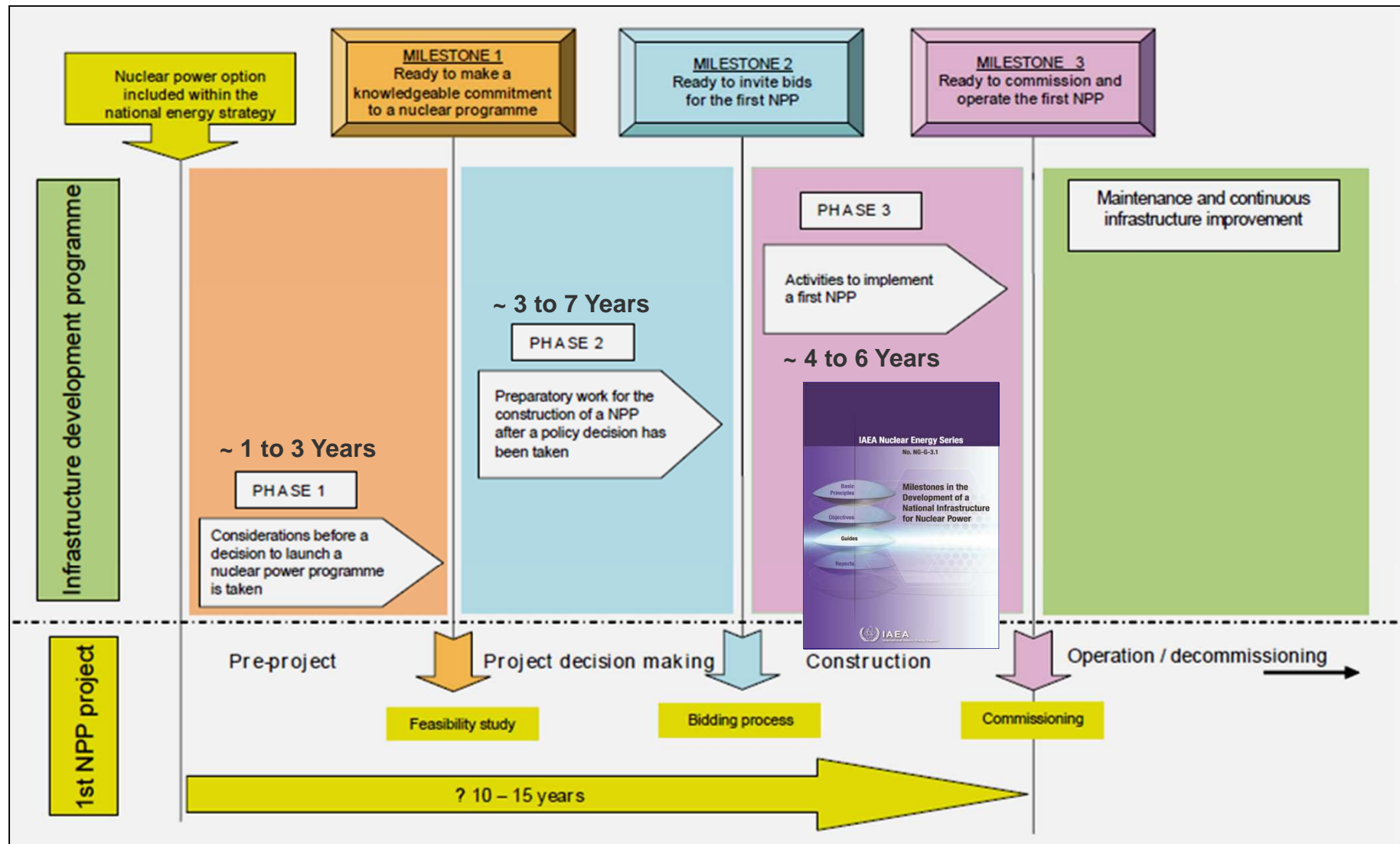
Nuclear Safety & Security

Radioactive Waste & Decommissioning

IAEA efforts in capacity building and infrastructure development



National Infrastructure Development (1)



Source: Milestones in the Development of a National Infrastructure for Nuclear Power, IAEA Nuclear Energy Series No. NG-G-3.1



National Infrastructure Development (2)

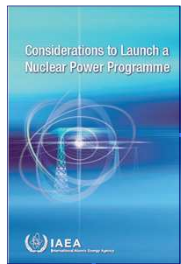
Key Infrastructure Issues

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

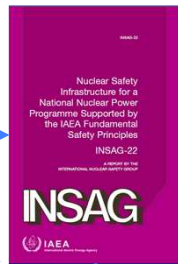


The central role of the Safety Infrastructure Guide

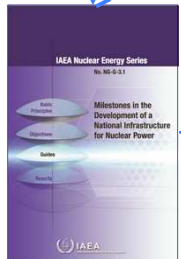
IAEA Nuclear Power Support Group's BROCHURE



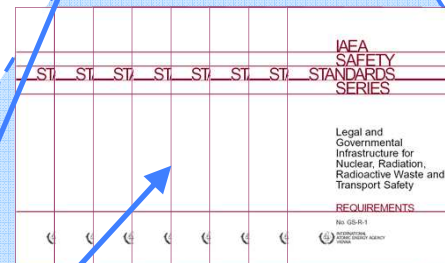
International Nuclear Safety Group's REPORT-22



"Milestones" document IAEA NG-G-3.1



FUNDAMENTALS



REQUIREMENTS



GUIDES

IAEA SAFETY STANDARDS



The Structure of the Safety Infrastructure Guide

“Establishing the Safety Infrastructure for a Nuclear Power Programme”

The **Safety Infrastructure Guide** is structured in accordance with the **IAEA Safety Requirements**.

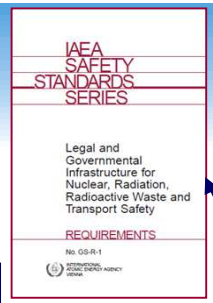
Primarily used to help establish and continuously improve newcomers’ **Safety Infrastructure and Capacity Building**.

Facilitating **international cooperation and coordination** for building nuclear safety infrastructure.

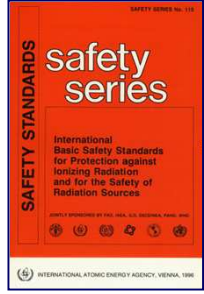


The 20 chapters of the SAFETY INFRASTRUCTURE Guide

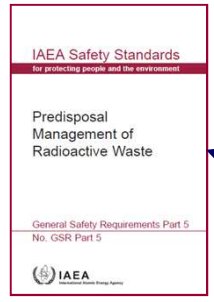
- 1 - National policy and strategy
- 2 - Global nuclear safety regime
- 3 - Legal framework
- 4 - Regulatory framework
- 5 - Transparency and openness
- 6 - Funding and financing
- 7 - External support organizations and contractors
- 8 - Leadership and management for safety
- 9 - Human resources development
- 10 - Research for safety & regulatory purpose
- 11 - Radiation protection
- 12 - Safety assessment
- 13 - Safety of radioactive waste, spent fuel management and decommissioning
- 14 - Emergency preparedness and response
- 15 - Operating organization
- 16 - Site survey, site selection and evaluation
- 17 - Design safety
- 18 - Preparation for commissioning
- 19 - Transport safety
- 20 - Interfaces with nuclear security



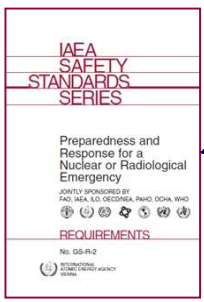
GS-R-1



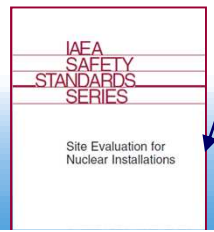
BSS-115



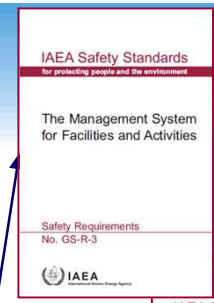
GSR Part 5



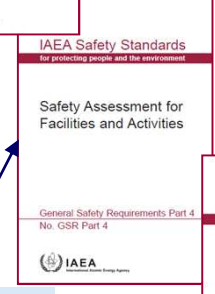
GS-R-2



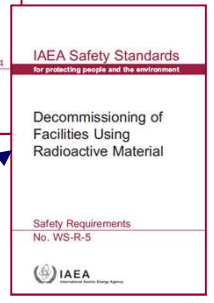
NS-R-3



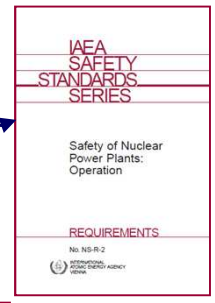
GS-R-3



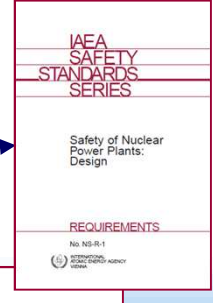
GSR Part 4



WS-R-5



NS-R-2



NS-R-1



TSO Conference

2011/8/16

13

International

Agency



Current & future challenges and opportunities in knowledge networking

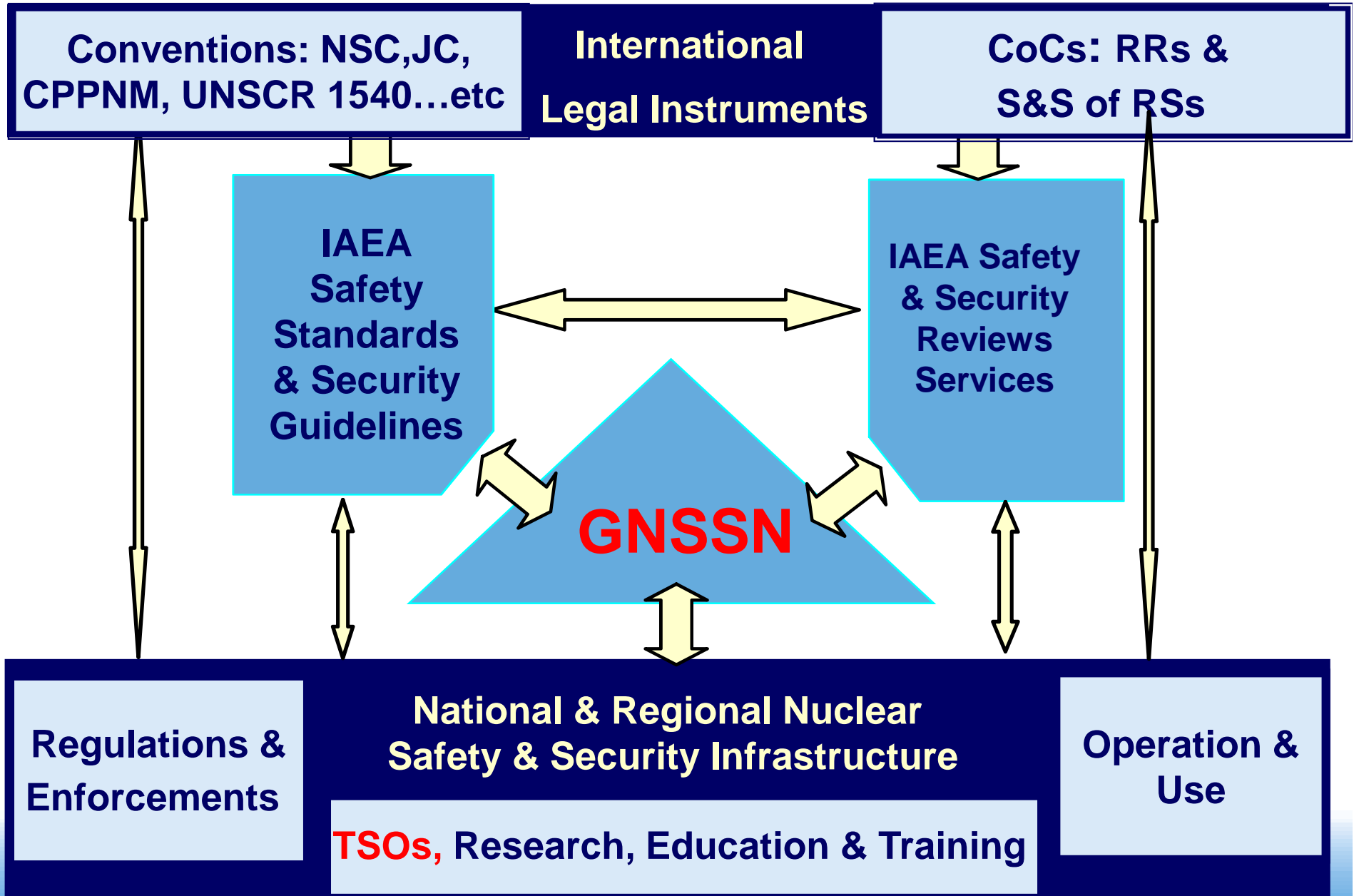


What is the GNSSN?

- **The GNSSN comprises a set of existing networks and information resources (public and restricted).**
- **GNSSN aims to ensure that critical knowledge, experience, and lessons learned about safety and security are exchanged as broadly as they need to be and to enable and support interaction and collaboration between professionals and organisations.**



Global Nuclear Safety & Security Framework



Development of GNSSN

Background (1)

- **This project was initiated as result of Conference on the Regulatory Effectiveness in 2006, Moscow; and strong support from G8 and other Member States**
- **Prototype platforms for GNSSN and RegNet in 2009, assistance and support from German (BMU and GRS)**
- **Official Announcement in the International Conference on Effective Nuclear Regulatory Systems, 14 to 18 December 2009 in Cape Town, South Africa**



Development of GNSSN

Background (2)

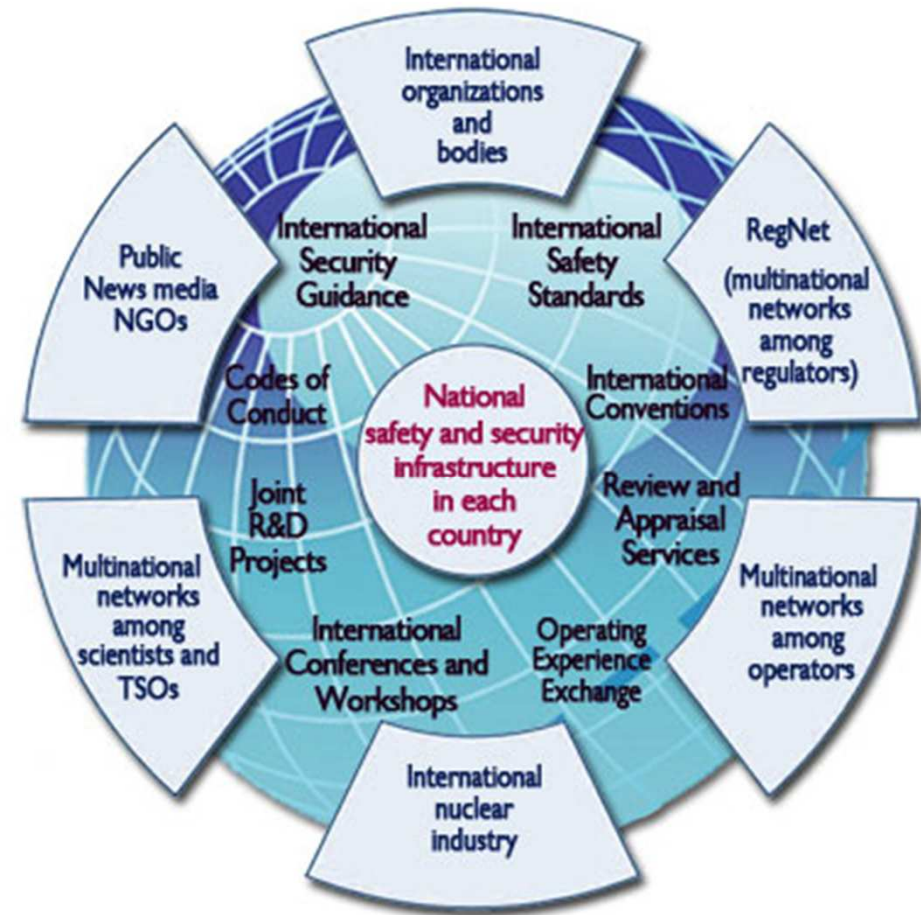
- **Successful migration from GRS Server to the GNSSN Production Server at IAEA applying the SharePoint software**
- **Integration of more thematic and IAEA review services into the GNSSN: such as RegNet, IRRS, EPREV, INSServ, INES, E&T...**
- **Successful test case for the Regulatory Cooperation Forum (RCF)**
- **Release of public websites for GNSSN, RegNet and its sub-sites; <https://gnssn.iaea.org/>**



Global Nuclear Safety and Security Network

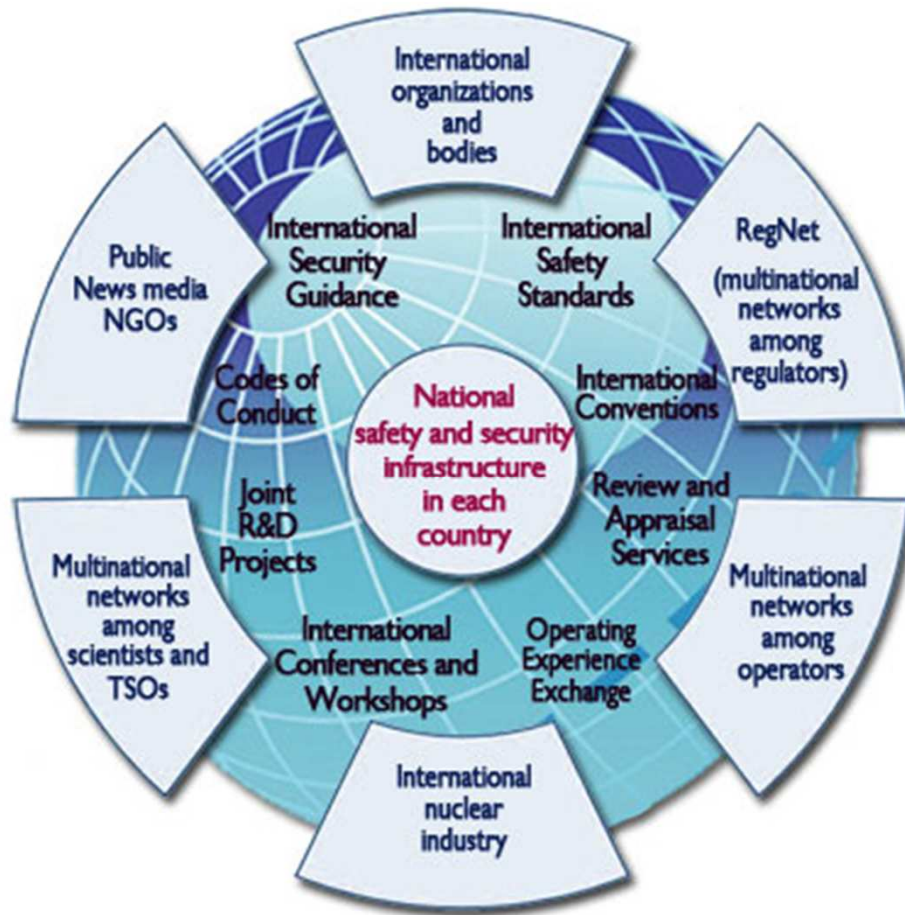
Structure of the GNSSN (1)

- National Safety and Security Infrastructure
- International Nuclear Industry
- International Organizations and Bodies
- RegNet – multinational networks among regulators
- Multinational Networks Among Operators
- Public News Media ...



Global Nuclear Safety and Security Network

Structure of the GNSSN (2)



- International Conventions
- Codes of Conduct
- International Safety Standards
- International Security Guidance
- Review and Appraisal Services
- Joint R&D Projects
- Operating Experience Exchange
- International Conferences and Workshops



Regional and international cooperation among GNSSN and regional networks

Fostering cooperation with the objective of facilitating and continuously improving capacity building and infrastructure development: nationally, regionally and internationally

Global Safety Assessment Network (G-SAN)

Regulatory Cooperation Forum (RCF)

Asian Nuclear Safety Network (ANSN)

Forum of Nuclear Regulatory Bodies in Africa (FNRBA)

Arab Network of Nuclear Regulators (ANNuR)

Ibero-American Network (FORO)



GNSSN: Global Safety Assessment Network (G-SAN)

Example

Objectives:

- **Facilitate a collaborative safety assessment programme linking experts worldwide**
- **Support global nuclear safety harmonization and capacity building in countries developing nuclear programmes or expanding them**



G-SAN Programme Projects and Activities

- **Capacity building activities – education and training**
- **Information and knowledge exchange**
- **Active projects and exercises**
- **Peer reviews, mentoring and advisory activities**
- **Thematic discussion groups and problem solving**
- **Development and validation of safety assessment methods**



Regulatory Cooperation Forum (RCF)

- **Follow-up from International Conference on the Effective Regulatory Systems in Cape-Town, 14 to 18 December 2009 South Africa**
- **The IAEA together with many regulatory bodies identified urgent needs:**

Creation of the ***Regulatory Cooperation Forum (RCF)***



Objectives of RCF – (1)

- **Identify and share relevant regulatory requirements and the gaps in capacity building and infrastructure development in the recipient Member States to achieve and sustain a high level of nuclear safety**
- **Promote coordination and collaboration among the RCF Member States to accept these requirements and fill these gaps**

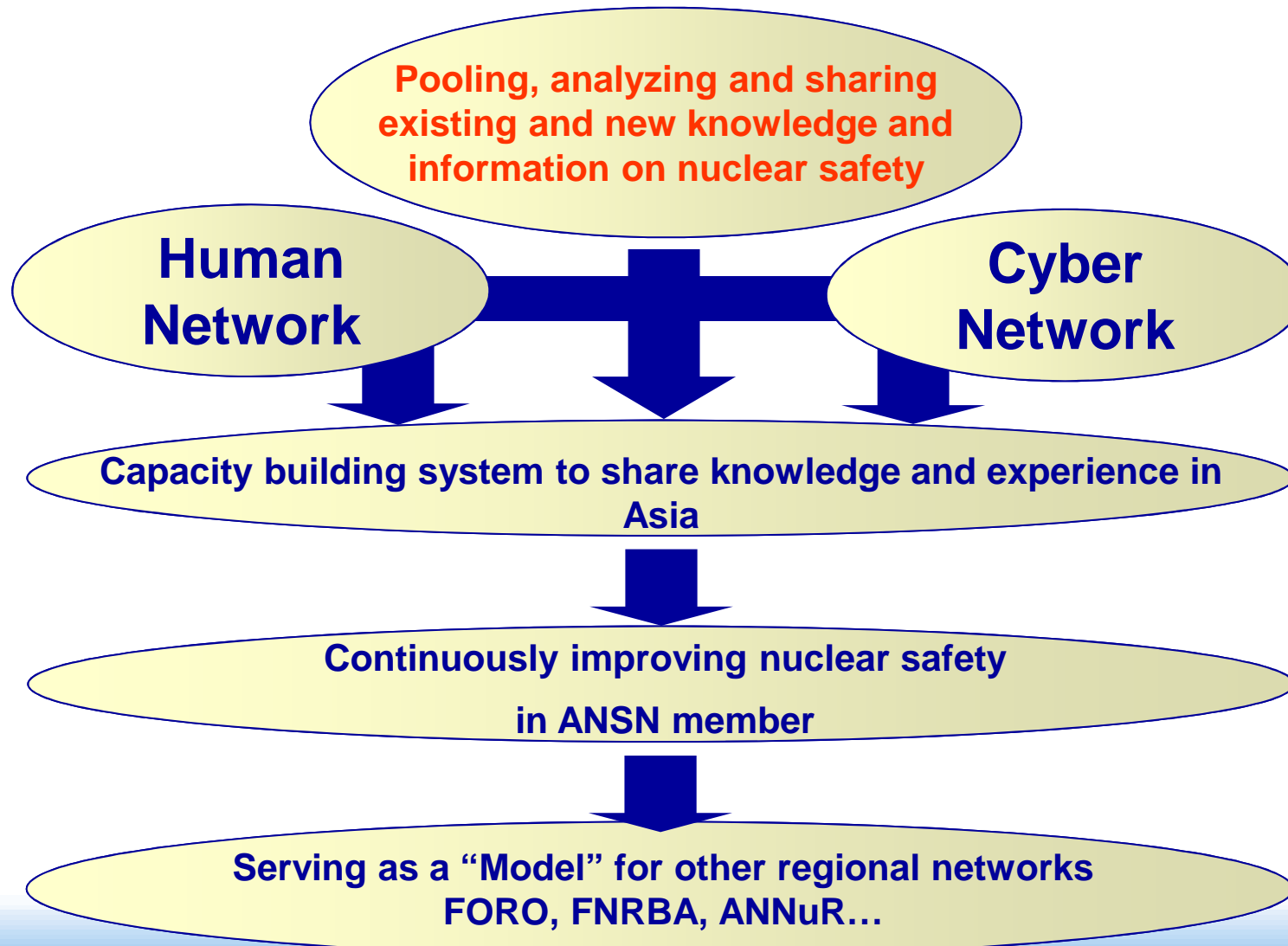


Objectives of RCF – (2)

- **Develop, plan, implement, monitor, and evaluate the results of RCF activities and feed them back to the RCF for continuous improvement**
- **Promote and advise on the regulatory advisory and peer reviews services for capacity building and infrastructure development**
- **Share and mutually learn regulatory experience and use lessons learned**



Asian Nuclear Safety Network



Organisation of ANSN

Nuclear Safety Strategy Dialogue

Steering Committee



Topical Groups

- **Governmental and Regulatory Infrastructure (Coordinator: Korea)**
- **Education & Training (Coordinators: Indonesia and Korea)**
- **Safety Analysis of Research Reactors and NPPs (Coordinator: Korea)**
- **Operational Safety of NPPs (Coordinator: China)**
- **Emergency Preparedness and Response (Coordinator: Japan)**
- **Radioactive Waste Management (Coordinator: Japan)**
- **Safety Management of Research Reactors (Coordinator: Australia)**
- **Siting (Coordinators: Vietnam and Korea)**

Capacity Building Coordination Group

The Ibero-American Forum of Nuclear and Radiation Safety and Security Regulatory Agencies (the FORO)

The FORO was established in 1997, with 8 participating countries:

Argentina, Brazil, Chile, Cuba, Mexico, Peru, Spain, Uruguay

Objectives:

To promote a high level of safety and security in all practices involving radiation, radioactive or nuclear materials in the Ibero-American Region

The activities are funded and implemented by the FORO with contribution of all Members (both in cash and in kind) under an Extrabudgetary Programme of the IAEA.



The Forum of Nuclear Regulatory Bodies in Africa (FNRBA)

Background

- Between 23 and 27 March 2009 the entire leadership of nuclear regulatory bodies in the continent of Africa converged in Pretoria, South Africa to launch the Forum of Nuclear Regulatory Bodies in Africa (FNRBA)
- 33 Participating Countries

The objectives of FNRBA are to:

- Provide a platform for fostering regional cooperation
- Provide for the exchange of expertise, information and experience
- Provide opportunity for mutual support and coordination of regional initiatives; and
- Leverage the development and optimisation of resource utilization

Organs of the FNRBA

- The Plenary
- The Steering Committee; and
- The Thematic Working Groups.



Arab Network for Nuclear Regulators (ANNuR)

ANNuR was created in 2010, attended by 18 members from Arab countries

Current Status of ANNuR

- **A three phase project has been formulated**
- **Terms of Reference of ANNuR have been established**
- **Action plan for implementation has been produced, which reflects current and future needs of Arab regulatory bodies**
- **Production of relevant regulations and guidelines in Arabic language**
- **Education and training programs for 3S staff**
- **Expert missions and meetings**



Main activities for the future (1)

1. Further development of the global and regional networks

- **Improvement of GNSSN public site which is accessible by everybody without any authentication**
- **Establishment of procedures of authentication and registration for different users under GNSSN**
- **Further development of restricted sites under GNSSN (one TM is being expected, 06 to 10 December 2010)**



GNSSN Links (Public Site)



GNSSN → <http://gnssn.iaea.org>

RegNet → <http://gnssn.iaea.org/regnet>

RCF → <http://gnssn.iaea.org/regnet/Pages/rcf.aspx>

IRRS → <http://gnssn.iaea.org/regnet/pages/irrs.aspx>

INES → <http://gnssn.iaea.org/regnet/Pages/INES.aspx>

OSART → <http://gnssn.iaea.org/regnet/Pages/osart.aspx>

Education and
Training → http://gnssn.iaea.org/Pages/education_training.aspx

Conclusions



Conclusions

- **Global Nuclear Safety and Security Network will play a more prominent role in strengthening and continuously improving the Global Nuclear Safety and Security Framework**
- **Enhancement of collaboration and coordination among the global and regional networks is crucial for facing current and future dynamic and complex challenges**
- **Further promotion of other regional and global networks is needed to enhance capacity building and safety infrastructure through sharing of knowledge, experience and lessons learned (e.g. Global TSO Network)**
- **Commitment and support from all stakeholders is essential**



...Thank you for your attention
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