



“Regulatory Activities and Challenges”

Symposium "Current and Future Challenges for Nuclear Power Regulators"

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New Built Activities

Main Activities

- **Establishment of IAEA Safety Standards for nuclear installations**
- **Conduct Safety Review Services**
- **Promotion of Education and Training**
- **Support of Agency Technical Cooperation Programmes**
- **Servicing International Conventions and Codes of Conduct**



Areas of Work

- **Governmental & Regulatory Framework**
- **Site Evaluation**
- **Safety Assessment**
- **Operational Safety**





Current Regulatory Challenges

- **Open and Transparent Regulatory Process is the precondition for public and international confidence and also for regulator performance improvement**
- **Balance between Stability and Change in Regulation**
- **Continuous Improvement of internal and external communication**
- **National Responsibility and International Commitment**
- **Stakeholder Involvement at national and international level**
- **Robust Professionalism and Safety Culture overcoming Complacency**
- **International Coordination and Collaboration among Regulators**



Development of Regulatory Framework

- Focus Areas:
 - **Dedicated IAEA Safety Standards**
 - **Regulatory Independence and Effectiveness**
 - **Safety Infrastructure**
 - **Regulatory Approaches**
 - **New Build Licensing**
 - **Establishment of Regulatory Requirements**
 - **Inspection Program (Construction, Commissioning, Operation)**

Structure of the Safety Requirements

General Safety Requirements

Part 1 Governmental and
Regulatory Framework

Part 2 Leadership and Management
for Safety

Part 3 Radiation Protection and
Safety of Radiation Sources

Part 4 Safety Assessment
for Facilities and Activities

Part 5 Predisposal Management
of Radioactive Waste

Part 6 Decommissioning and
Termination of Activities

Part 7 Emergency Preparedness
and Response

Specific Safety Requirements

1. Site Evaluation for
Nuclear Installations

2. Safety of Nuclear Power Plants

2.1 Design and Construction
2.2 Commissioning and Operation

3. Safety of Research Reactors

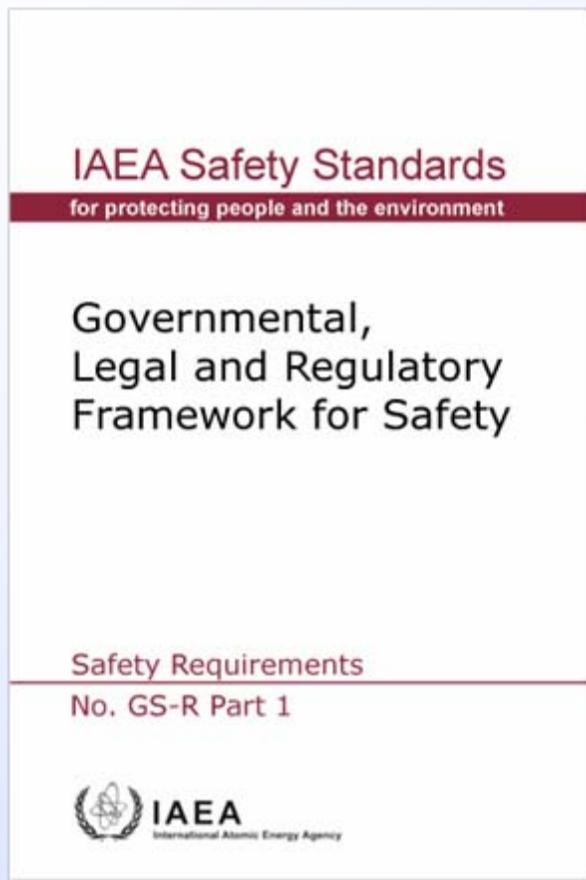
4. Safety of Nuclear Fuel
Cycle Facilities

5. Safety of Radioactive Waste
Disposal Facilities

6. Safe Transport of
Radioactive Material



IAEA Safety Requirements “GSR Part 1”



GSR Part 1 (2010)

Approved by BoG – March 2010

**“Governmental, Legal and
Regulatory Framework for
Safety”**

(36 overarching requirements)



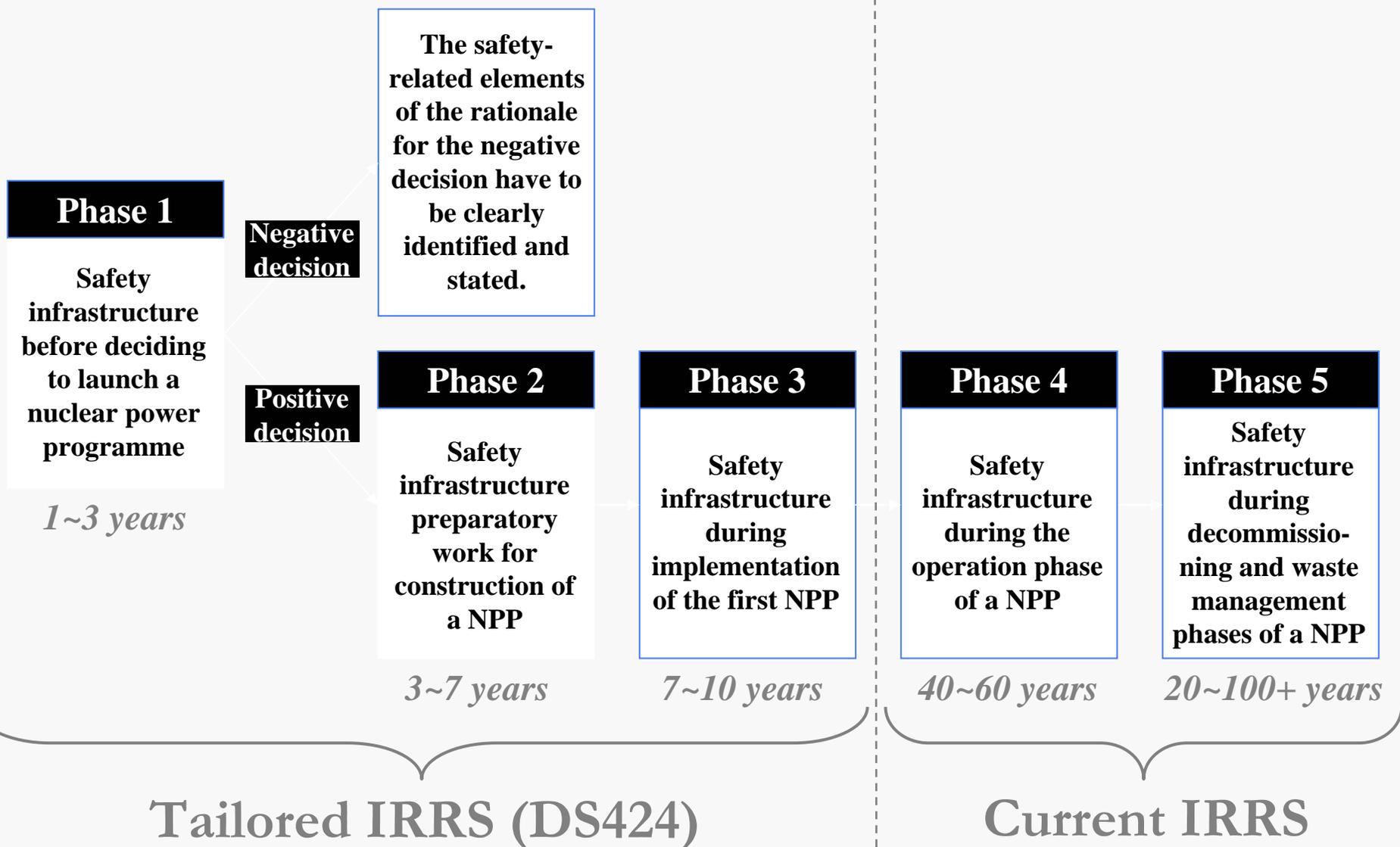
Governmental, Legal and Regulatory Framework for Safety

1. Responsibilities and functions of the government (*R 1-13*)
2. Global nuclear safety régime (*R 14-15*)
3. Responsibilities and functions of the regulatory body (*R 16-36*)

The IRRS is structured in accordance with GSR Part 1.

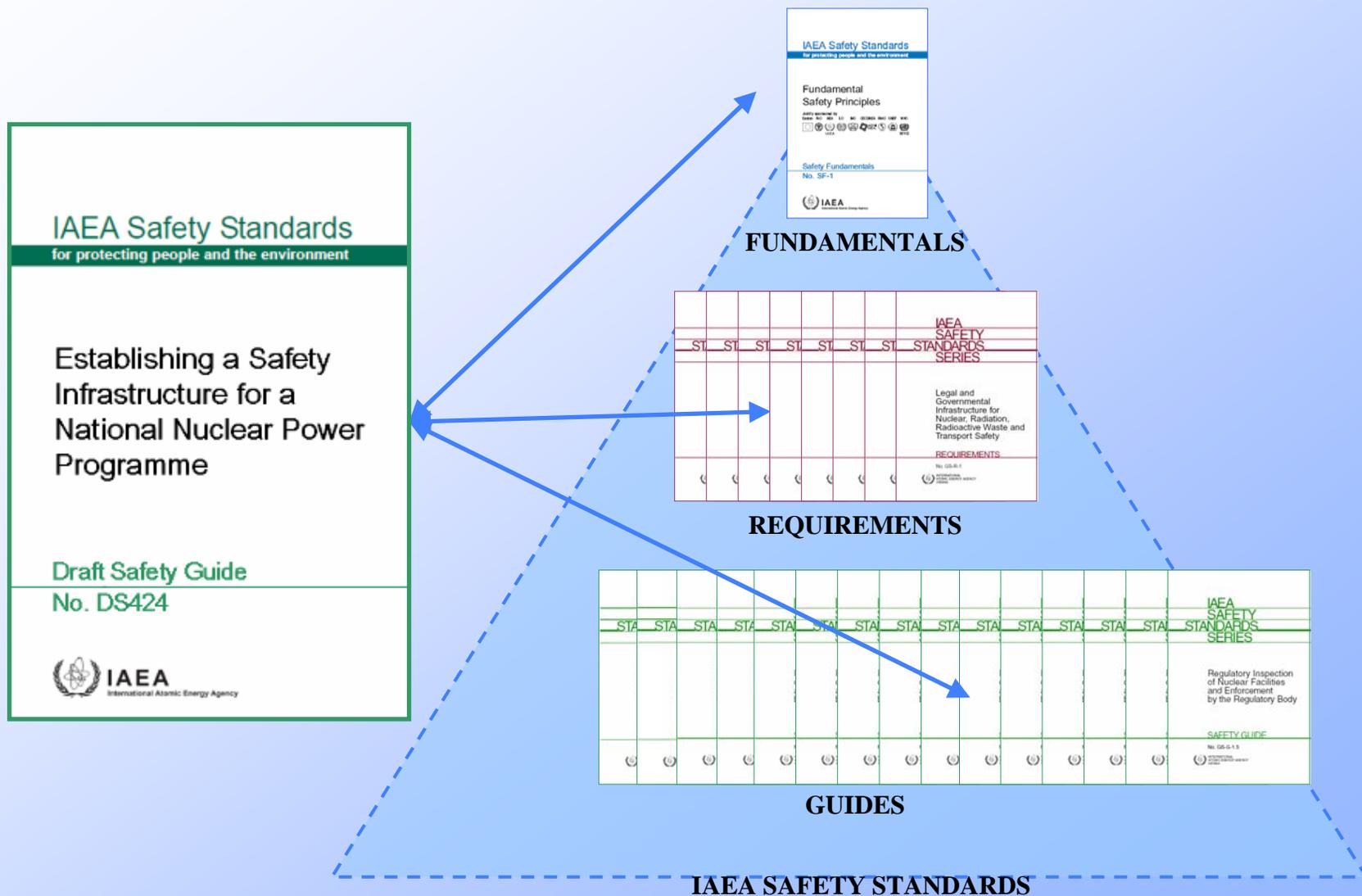


Phases of Safety Infrastructure development

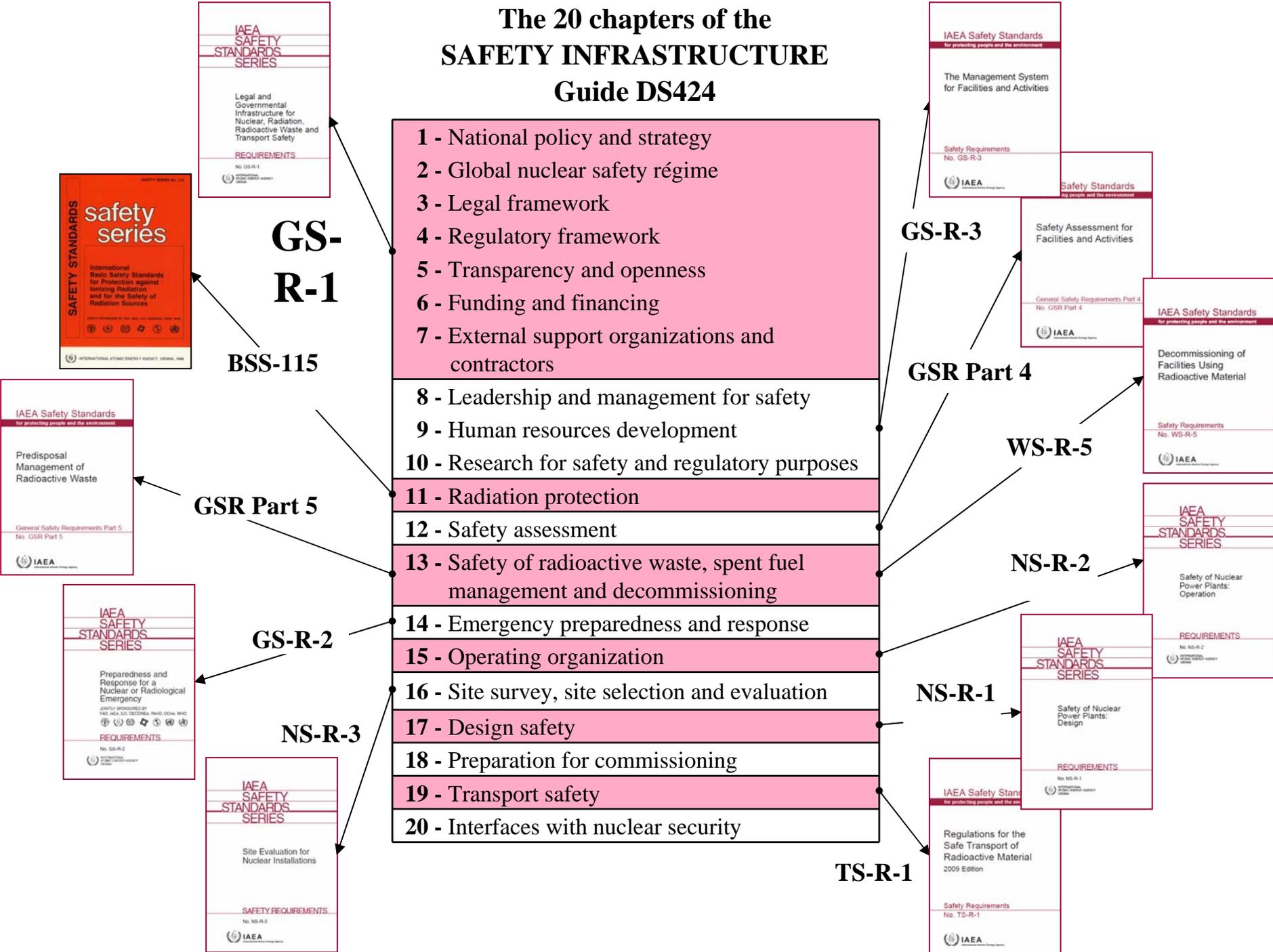


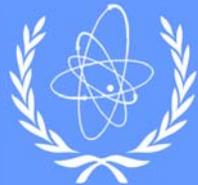


The central role of the Safety Infrastructure Guide DS424



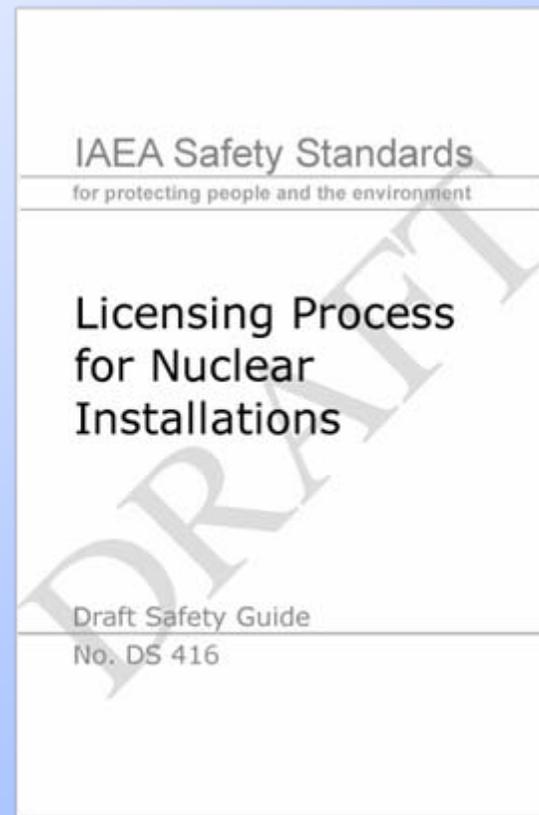
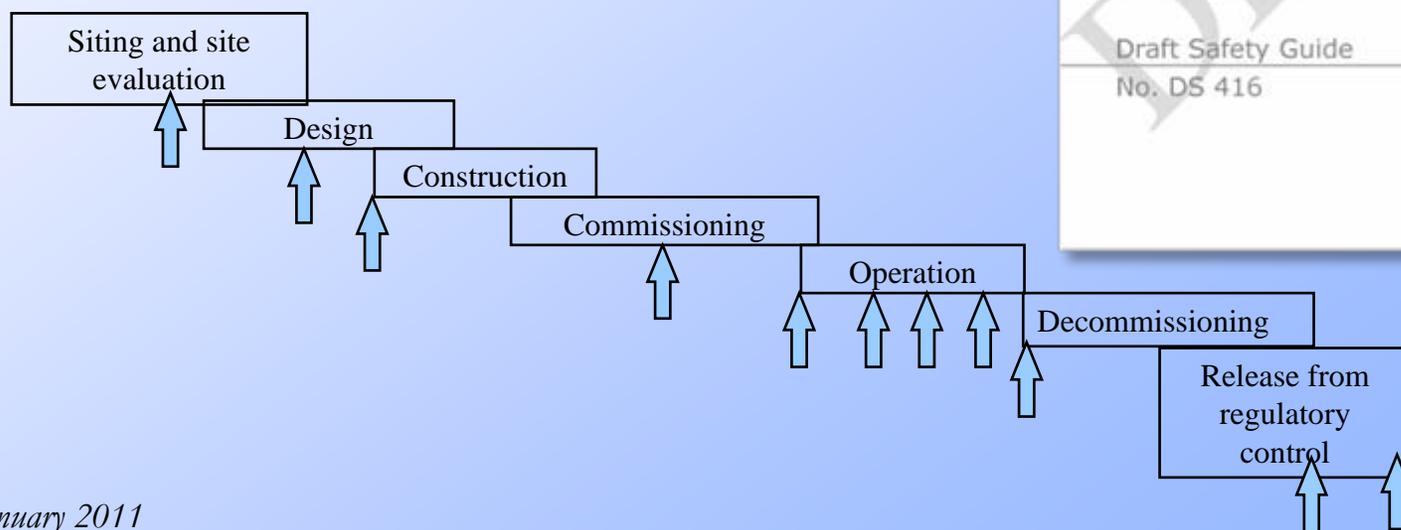
The 20 chapters of the SAFETY INFRASTRUCTURE Guide DS424





Steps of the Licensing Process

- Depends on national legislation but often covers:
 - *siting and site evaluation*
 - *design,*
 - *construction,*
 - *commissioning,*
 - *operation,*
 - *decommissioning and*
 - *release from regulatory control*





- **Licensing of a Country's First Nuclear Power Plant (INSAG)**
 - *Human Resources Development*
 - *Licensing Framework*
 - *Regulations:*
 - 1) Technology Neutral: adoption of the IAEA Safety Standards
 - 2) Technology decided: adoption regulations similar to those used to license similar NPP
 - *Competences focussed on key technical areas and external expertise*
 - *Ownership*
 - *Site Approval, Design Review and Regulatory Oversight for Manufacturing and Construction*



Safety Guide on Construction of Nuclear Installations

- Identifies safety significant construction activities which construction organisation should ensure to be planned, specified, checked and reviewed in preparation for and during construction in the areas of civil, architectural, mechanical, electrical, I&C and software for ensuring safety, security and quality.
- Complement the existing guidance on management systems as necessary based on recent experience – including supervision of contractors and vendors and safety culture.
- Ensure that the nuclear installation is constructed in accordance with the approved design and safety commitments as stipulated by NS-R-1 requirements on construction.



Regulatory Oversight on Construction of NPPs

- » **To identify relevant IAEA Safety Requirements and associated recommendations from IAEA Safety Guides related to regulatory inspection programmes of new nuclear power projects within one document;**
- » **To provide information on key technical considerations and activities related to the regulatory body's development of their regulatory inspection programme.**
- » **Presents approaches, practices and experience of Member States that have been involved in recent new nuclear plant construction projects;**



COUNTRIES EMBARKING ON NUCLEAR POWER - GENERAL CONTEXT

Renewed interest for nuclear energy

- **Different situations:**
 - **Countries which never stopped construction**
 - **Countries which stopped construction of new plants, but will resume**
 - **Interested Countries (65)**

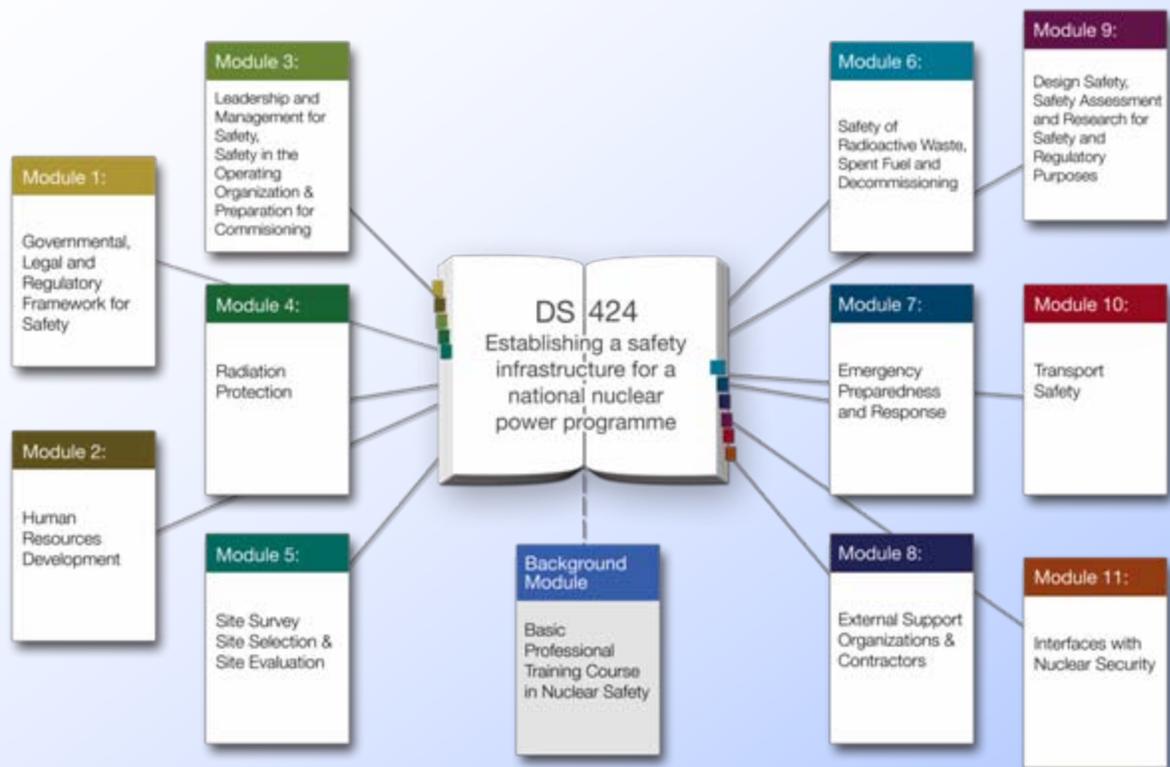


Regulatory Approaches

- **Impact on the decision making process**
- **Several Strategies/Approaches**
- **Benefits and difficulties with regard to the different strategies**
- **National context, culture, legal system and administrative work**
- **prescriptive, case-based, outcome-based, risk-based, process-based, and self-assessment strategies**



Safety Infrastructure



– *DS424: “Establishment a Safety Infrastructure for a National Nuclear Power Plant”- approved by CSS*

Current work:

- Safety Infrastructure Status and Application
- Self-Assessment for Safety Infrastructure
- Safety Infrastructure Packages



1) Safety Infrastructure Status and Application

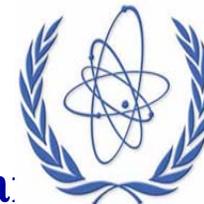
- Safety Infrastructure : 200 Actions for 20 Safety Issues (all infrastructure areas)

Action	Action verification	Considerations	Output/Product
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2) Safety Infrastructure - Self Assessment

- Since 2008, a Self-Assessment Methodology and Supporting Tools (question-sets and Software – SAT) have been used by Member States (MS) in establishing, maintaining and improving a regulatory infrastructure for safety associated with IRRS
- for Member States having already a national safety infrastructure in place



IAEA

SAT

- Therefore, there is a need to develop similar arrangements for embarking countries to support the establishment of the Safety Infrastructure for a Nuclear Power Programme

➔ SASIT* Project

* *Self Assessment for new Safety Infrastructure Tool*

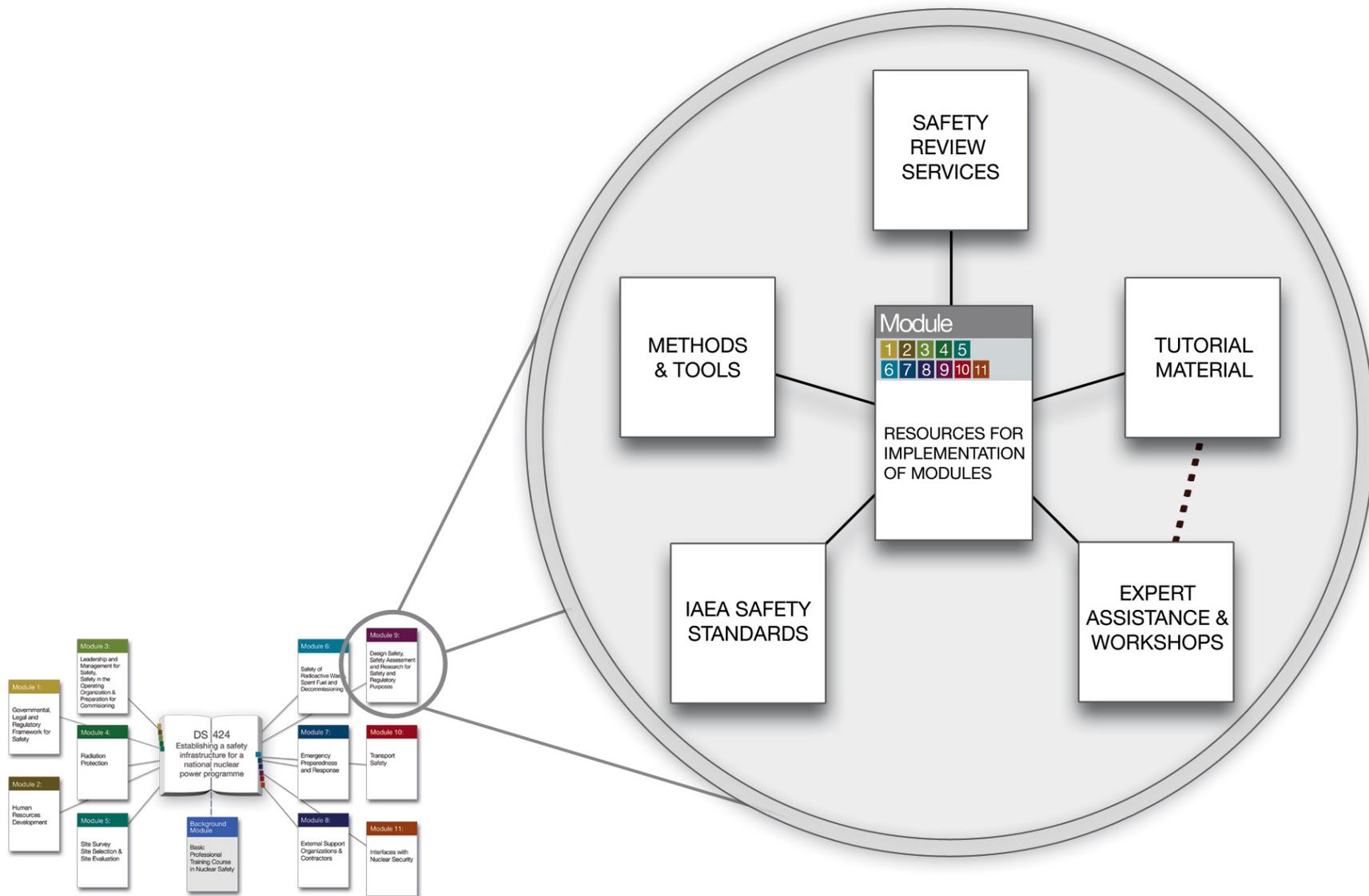


2) Safety Infrastructure - Self Assessment

- To provide the embarking Member States with a Self Assessment Methodology and Tools (Software and Question-sets) based on **DS 424** for assessing and reviewing the status of the existing safety infrastructure against the IAEA Safety Standards
- For the development of a new Self Assessment Methodology and Tools, following characteristics need to be considered:
 - Methodology
 - Questionnaire
 - Final self assessment report



3) Development of Safety Packages





Regulatory Coordination Forum - RCF

- **Established in June 2010**
- **ToR include the RCF Core Group, 15 members - 7 recipient and 8 provider MS. Core Group serves RCF steering committee.**
 - ✓ **Identify relevant regulatory requirements and gaps at the initial process;**
 - ✓ **Promote coordination and collaboration and fill these gaps;**
 - ✓ **Develop, plan, implement, monitor, and evaluate the results of RCF activities and feed them back to the RCF for continuous improvement;**
 - ✓ **Share and mutually learn regulatory experience and utilize lessons learned; and**
 - ✓ **Promote and advise on the regulatory peer reviews (e.g. IRRS) and advisory services for capacity building and infrastructure development**



Regulatory Coordination Forum - RCF

- **JNRC RCF test case - Amman, 4 – 8 September 2010**
- **Core Group RCF Plenary during the IAEA GC September 2010, decided a Regulatory Cooperation Forum (RCF) coordination meeting in Vienna on 11-12 November 2010.**
- **Coordination of regulatory support for Jordan Nuclear Regulatory Commission (JNRC). To provide additional experience for the RCF programme of identifying regulatory support gaps using DS424 and coordinating the support by provider Member States.**
- **DS424 Safety Infrastructure Actions:
Who/What/When/Where/Resources for “filling the Gaps”**



Safety Review Services

Regulatory Framework and Activities

- IRRS – Integrated Regulatory Review Service



Site and Seismic Safety Review Services

- Site Evaluation Missions

Safety Assessment Activities

- Safety Assessment and Design Review Services
- GRSR – Generic Reactor Safety Review

Operational Safety

- OSART – Operational Safety Review Team
- SCART – Safety Culture Assessment Review Team

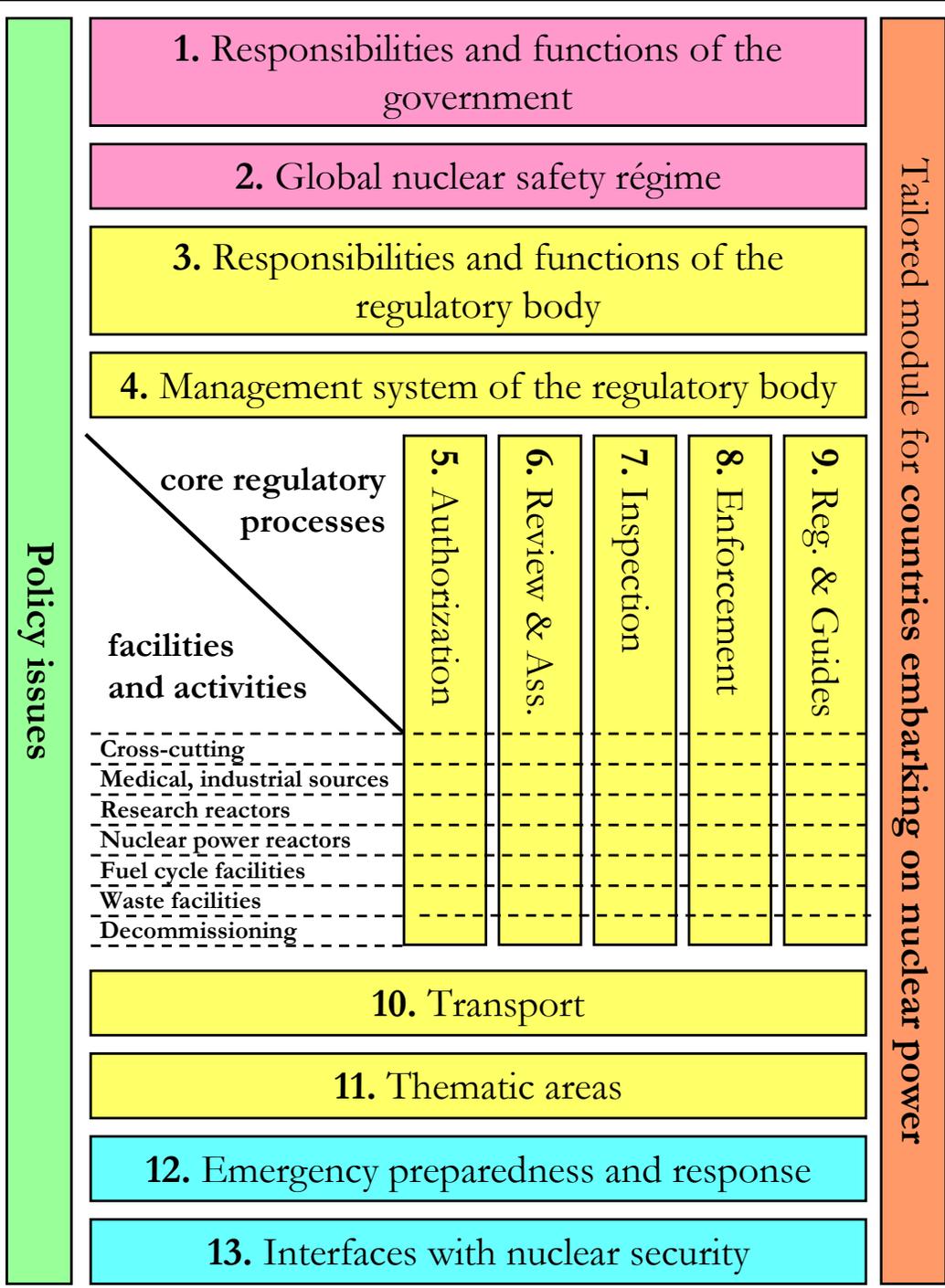


IRRS

Structure



24 January 2011





Missions conducted or to be conducted

- Romania, (Follow-up) 2006
- UK, 2006 (Reduced scope, 1st Mission)
- France, 2006 (First Full Scope)
- Australia, Japan, Mexico, 2007
- Spain, Ukraine, Germany, 2008
- France (F), Canada, Vietnam, UK (2nd Mission), Russia, 2009
- Iran, China, Ukraine (F), USA, 2010
- Spain (F), Romania, S. Korea, Slovenia, Canada (F), Switzerland, Poland, 2011
- Follow-ups, Sweden, UAE, Czech Rep., Slovakia, Finland 2012
- Follow-ups, Pakistan, Bulgaria, South Africa 2013
- + Ongoing Requests from Smaller Programmes



- **EC / IAEA**
 - ✓ **Cooperation on IRRS in connection with the European Directive on Nuclear Safety**
 - ✓ **Cooperation on Strengthening Regulatory Infrastructure for countries embarking on nuclear power**
- **ENSREG / IAEA - MoU**



Convention on Nuclear Safety

- **Some discussion on Safety Issues from 4th Review Meeting and current situation**
- **Officers' Meeting, 1 - 2 March 2011, will be held in Vienna**
- **The Convention has now 71 Contracting Parties and 11 Signatory States that have not yet ratified the CNS.**
- **In 2010, five countries (it can be changed by the end of the year), namely Kazakhstan, Saudi Arabia, Vietnam, Tunisia and Bosnia and Herzegovina became CNS Contracting Parties**
- *Lesson learned from IAEA Services should be a tool for discussion (e.g. IRRS)*



Conclusions

- **Since last years significant improvements were carried out in the IAEA Safety Standards taking into account current and best practices**
- **IAEA assistance on the safety infrastructure for countries embarking on nuclear power is based on the accumulated experience from Member States**
- **Safety Review Services are being expanded and adapted in a modular approach (e.g. IRRS) to meet the needs and expectations of Member States**



Conclusions

- **Significant improvements were carried out in the IRRS programme: Modular Approach, Guidelines, Self-assessment, New areas and Policy Discussions**
- **Hiring new dedicated professional staff to strength Regulatory Activities and IRRS Programme quality and consistency and Improve sharing of information**
- **Opportunities for IAEA to improve work, services, safety standards in the regulatory area and Better understanding of MS regulatory needs**
- **Additional documents and activities are being produced to support safety in key regulatory areas**



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