

**IRSN**

INSTITUT  
DE RADIOPROTECTION  
ET DE SÛRETÉ NUCLÉAIRE

# IRSN ACTIVITIES IN THE FIELD OF NUCLEAR SECURITY

## Nuclear Defence Expertise Division



Système de management  
de la qualité IRSN certifié

# Summary

Organization of nuclear activities

Evaluation and expertise

National accountancy

Transport

Inspections

exercises

International activities

R&D support activities



# FRENCH NATIONAL CONTROL SYSTEM

## A set of regulations: laws and related application texts

- ✓ to prevent loss, theft or diversion of nuclear materials
- ✓ to protect installations against malevolent action (sabotage)
- ✓ in compliance with rules set up by the IAEA

## A set of complementary measures:

- ✓ physical protection measures
- ✓ follow up and accounting measures
- ✓ control measures (inspections)

## The involvement of competent authorities and operators:

- ✓ performance based approach
- ✓ first responsibility of the operators
- ✓ control by competent authorities

# FRENCH NATIONAL CONTROL SYSTEM

Two main actors at the regulatory level:

➤ **the Competent authority:**

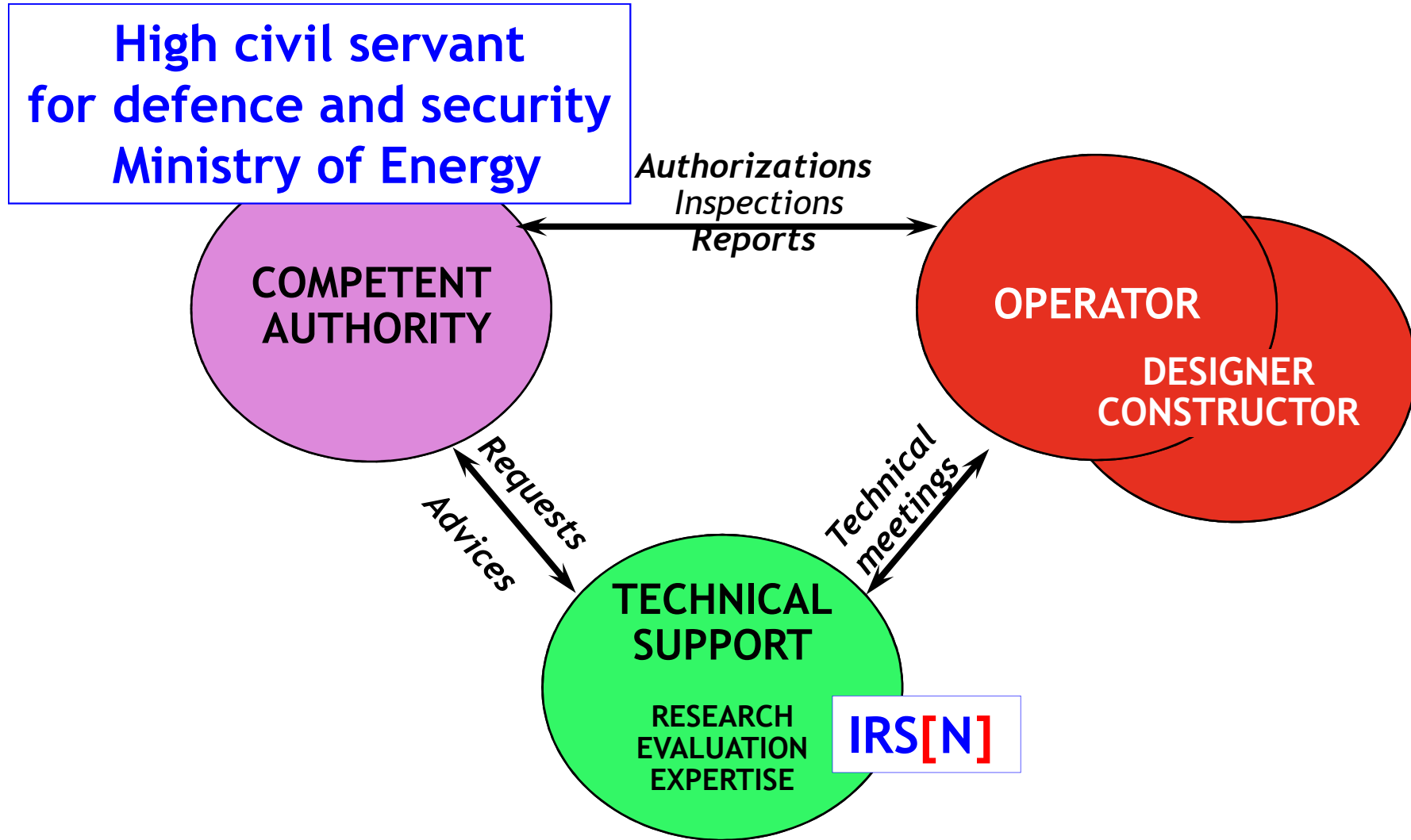
Ministry of energy

High civil servant for defence and security

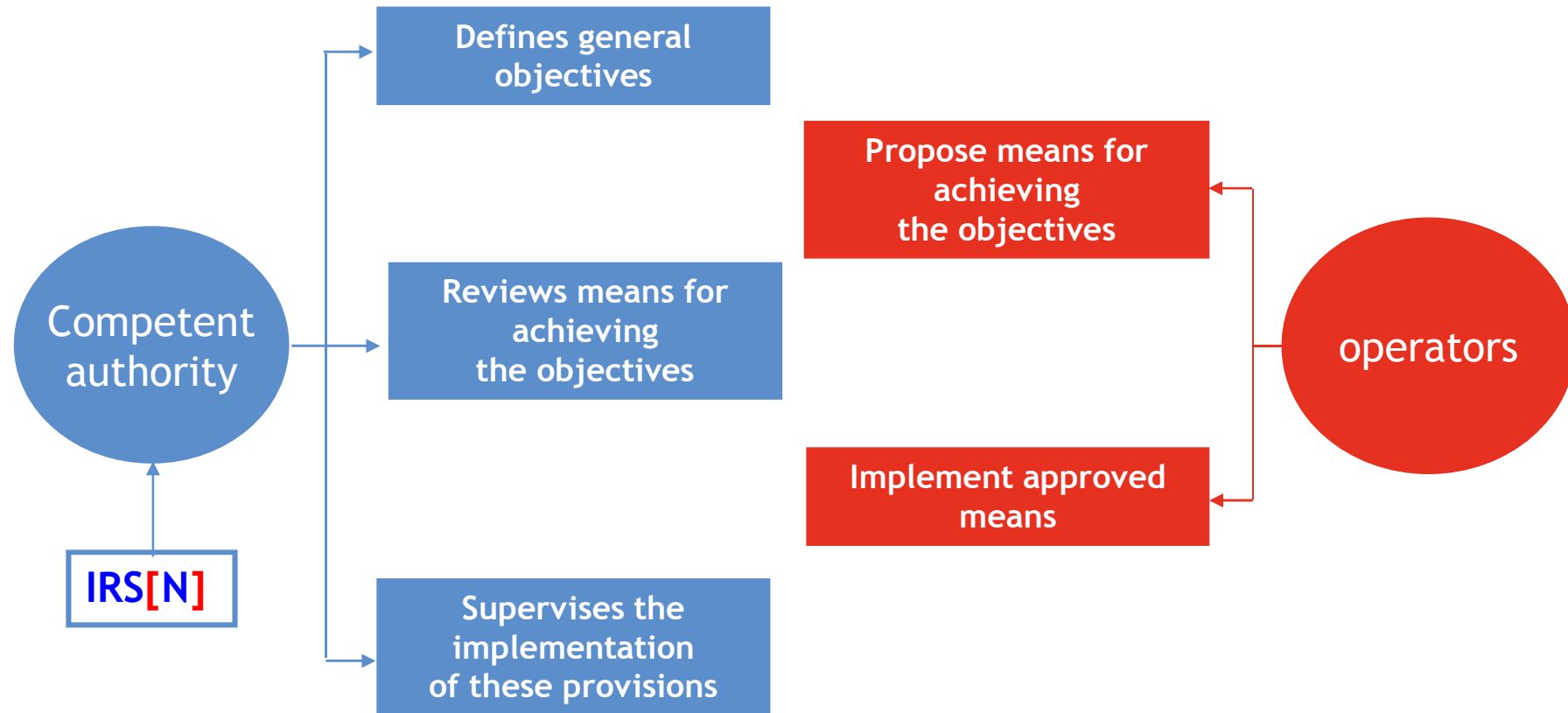
➤ **Its technical support:**

Institute for radiation protection and nuclear safety

# ORGANIZATION



# RESPONSIBILITIES



# Role of IRSN in the field of nuclear security to support the competent authority

- **Carry out evaluations and expertises on**
  - physical protection of NM and facilities
  - accounting for, control and inventories of NM
  - physical protection of transports
- **Carry out inspections**
- **Monitoring of nuclear material transports**
- **Centralisation of nuclear material accountancy**
- **Research & Development**
- **Take part in emergency response organization**
- **Drafting and updating regulation**

# Nuclear security: two areas

- *UNAUTHORIZED REMOVAL (THEFT AND DIVERSION) OF NUCLEAR MATERIAL IN USE AND STORAGE AND DURING TRANSPORT:  
=>IMPROVISED NUCLEAR DEVICE*



- *SABOTAGE INVOLVING NUCLEAR MATERIAL OR AGAINST NUCLEAR FACILITY:  
=>RADIOLOGICAL HAZARD*





# EVALUATION & EXPERTISE

## ■ Protection of Nuclear Material against theft:

Documents, files, data submitted by operators to the Competent Authority, relative to the nuclear material protection and control regulations (authorisation files, security studies, inventory reports,...)

## ■ Protection against sabotage:

Evaluation of the sensitivity of facilities and of their vulnerability to internal and external threats

# Regulatory process for security studies

- The study should show that the objectives fixed by the CA have been achieved
- The conclusions should identify and quantify any possible weaknesses
- The study is performed by the operator
- The study is assessed by IRSN which gives advices to the CA
- The CA notify its position to the operator with possible requirements for improvement

# OPERATIVE MISSIONS

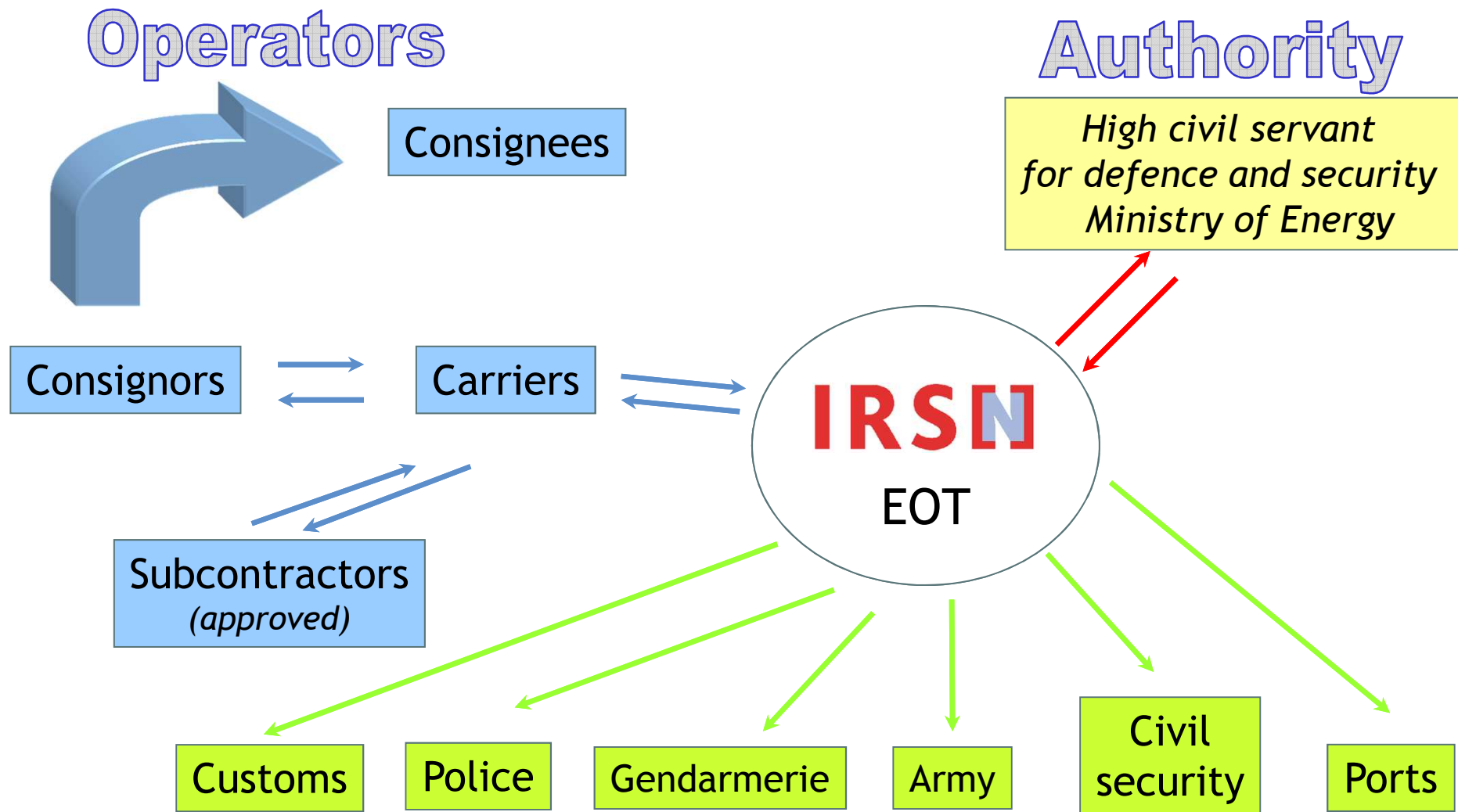
## ■ Centralised accountancy:

- Centralisation of accountancy declarations received from the operators, elaboration and transmission of reports to national and international safeguards organisations

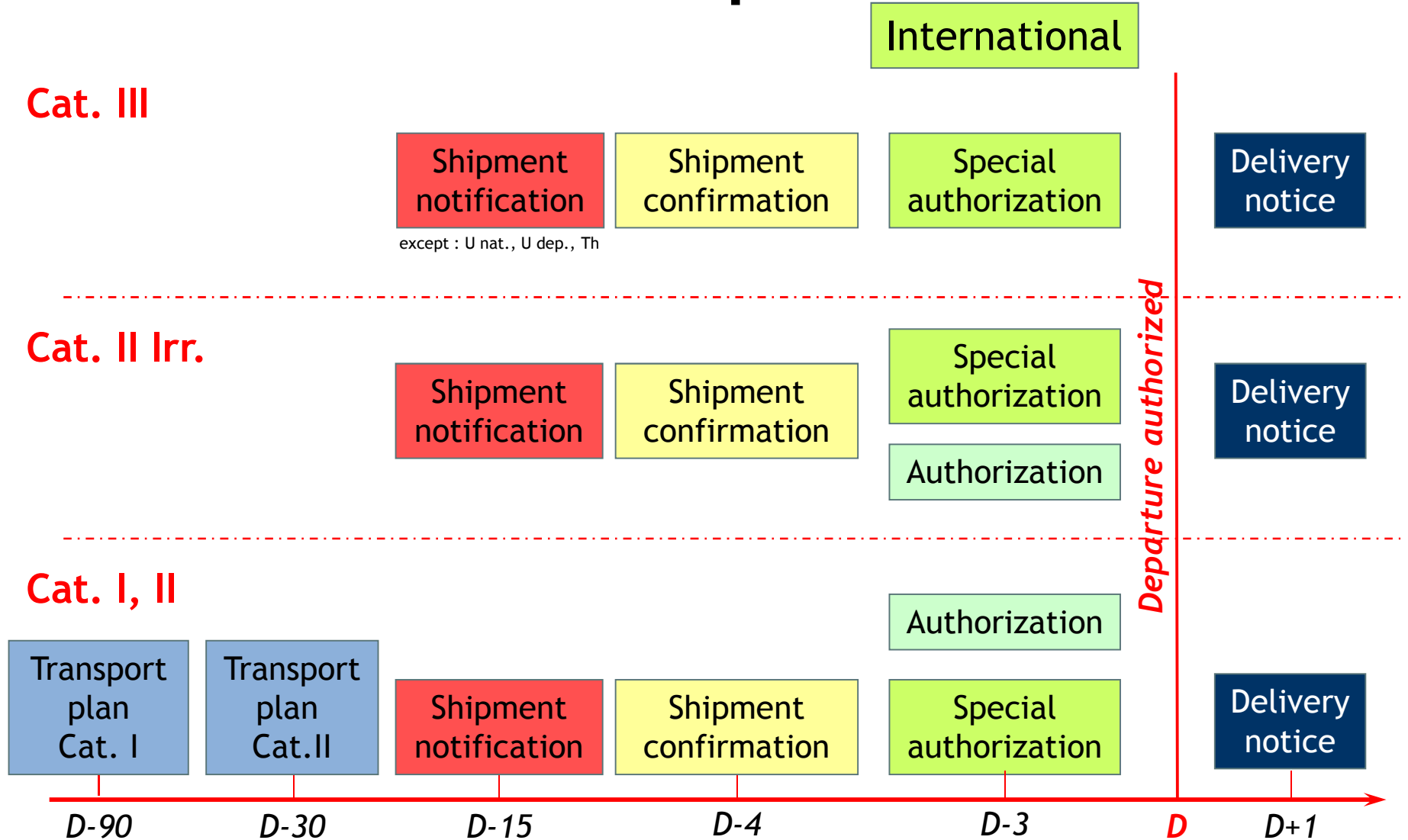
## ■ Transport monitoring and intervention:

- Real time monitoring of sensitive nuclear material transports (tracking and communication)
- Assessment of transport plans, routes and procedures
- Preparation and follow-up of regulatory documentation

# Transport Control Center



# Notification and authorization of transports



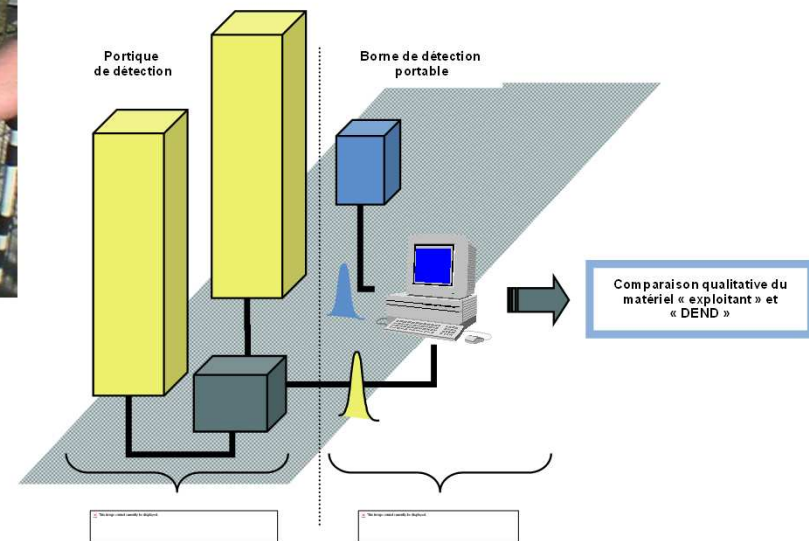
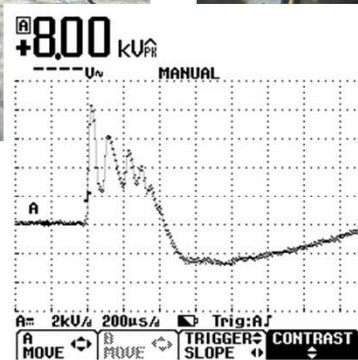
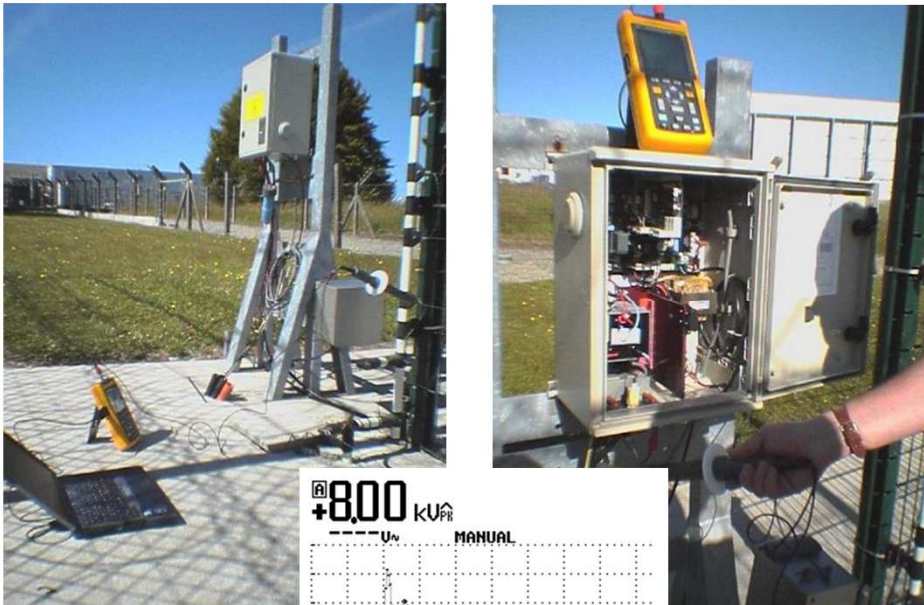
# INSPECTIONS

## Inspections:

- ✓ Field inspections
- ✓ Scheduled or unannounced
- ✓ Standard or worksite inspections
- ✓ Compliance with the reference framework by the nuclear licensees
- ✓ Performed with the help of IRSN on behalf of the CA

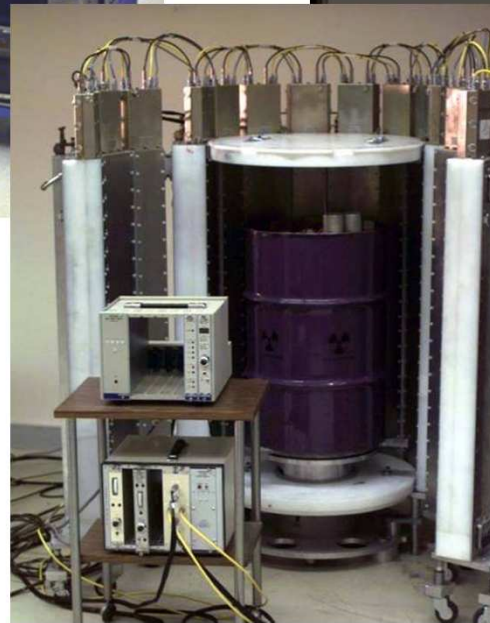
# Inspection with measuring operations

## physical protection



# Inspection with measuring operations

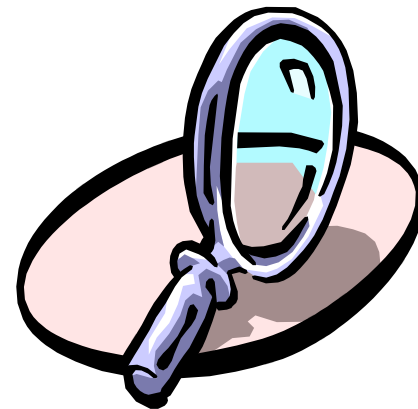
## Nuclear material





# Inspections during transport

- ✓ Regulation documents
- ✓ Respect of instructions and routes
- ✓ Physical protection and surveillance
- ✓ Access to facilities and resting places
- ✓ ...
- ✓ Always unattended
- ✓ At any time, any place
- ✓ At any step of the transport (departure, arrival, on the road, at the border, in ports, airports, stations...)



# EXERCISES IN THE FIELD OF SECURITY

## 3 types of exercises:

### ■ Exercises at a local level

- Involve the operator alone or the operator and local law enforcement agencies

### ■ Exercises at a national level

### ■ Exercises of NM inventories in case of emergency

# EXERCISES AT NATIONAL LEVEL

- **Frequency: 1 every two years for all sites**
- **Involved entities**
  - The operator
  - Local and special law enforcement agencies
  - Local and national authorities
- **Scope**
  - Management of interfaces and coordination of means between authorities and the operator
  - Verification of the implementation of intervention and emergency plans
- **Planning (about 1 year of preparation)**
- **Working groups**
  - Scenario
  - Logistics
  - Experience data

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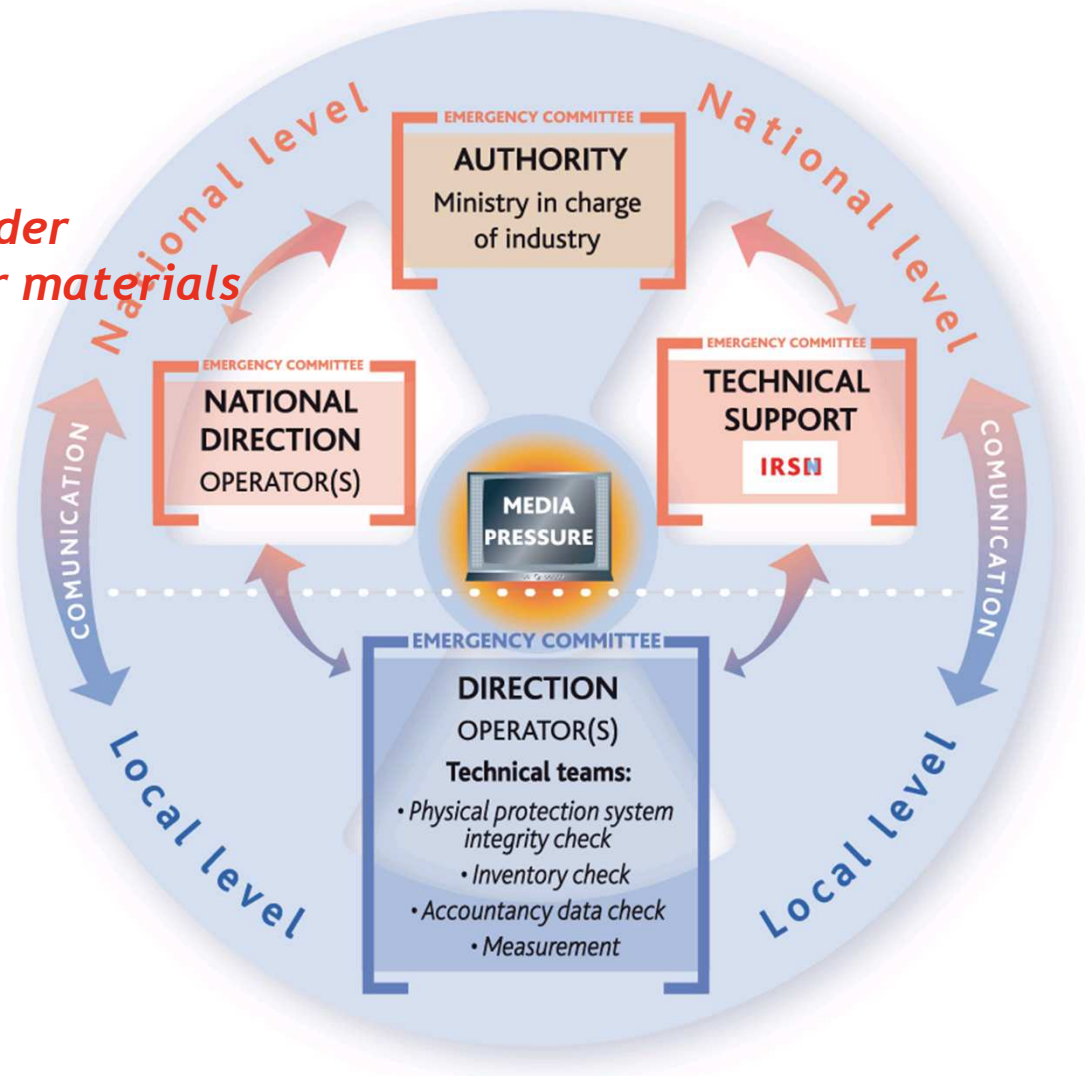


# EXERCISES AT NATIONAL LEVEL

## Scope:

*"the Ministry of Energy can order a physical inventory of nuclear materials and compare it with audited records under all circumstances".*

**Frequency:**  
1 per year for all sites



# INTERNATIONAL ACTIVITIES

- **Drafting of documents**
  - Nuclear security fundamentals
  - nuclear security recommandations
    - INFCIRC/225
    - Radioactive materials
  - Technical guides (Security culture, Vital areas, Transport, DBT ...)
- **IPPAS missions**
  - IPPAS (Bulgarie, Roumania, Hongria, Pologne, Tchèque, Bélarus, Congo, Ukraine, Chili, Mexico, Iran ...)
- **Training PP A&C**
  - Albuquerque, Santa Fé, St Petersburg, Beijing, Algeria, Morocco
  - Workshops DBT, VAI, Insider

# R&D PROGRAMMES

- Development and adaptation of NDA instruments and techniques to support inspection activities
- Review and development of remote monitoring systems for sensitive transports
- Performance evaluation of equipment and instruments
- Development of assessment methodologies and tools
- Generic studies to evaluate the consequences of actions of sabotage on installations and structures
- Specific studies to evaluate the consequences of actions of sabotage on transport equipment

**Thank you for your  
attention**



More information on [www.irsn.org](http://www.irsn.org)

# SOME FIGURES FOR THE YEAR 2009

## ➤ 382 analysis

- 117 in physical protection of facilities
- 123 in accounting for and control
- 91 about physical inventories
- 51 about physical protection of transports

## ➤ 264 inspections

- 55 in physical protection of facilities
- 63 in accounting for and control
- 60 during transports
- 71 for transport equipment
- 15 related to the declaration regime



# SOME FIGURES FOR THE YEAR 2009

- **259 facilities holding nuclear materials**
  - 54 in category I
  - 73 in category II
  - 132 in category III
- **1 777 transports of nuclear materials**
  - 1 200 by road
  - 366 by rail
  - 183 by sea
  - 28 by air