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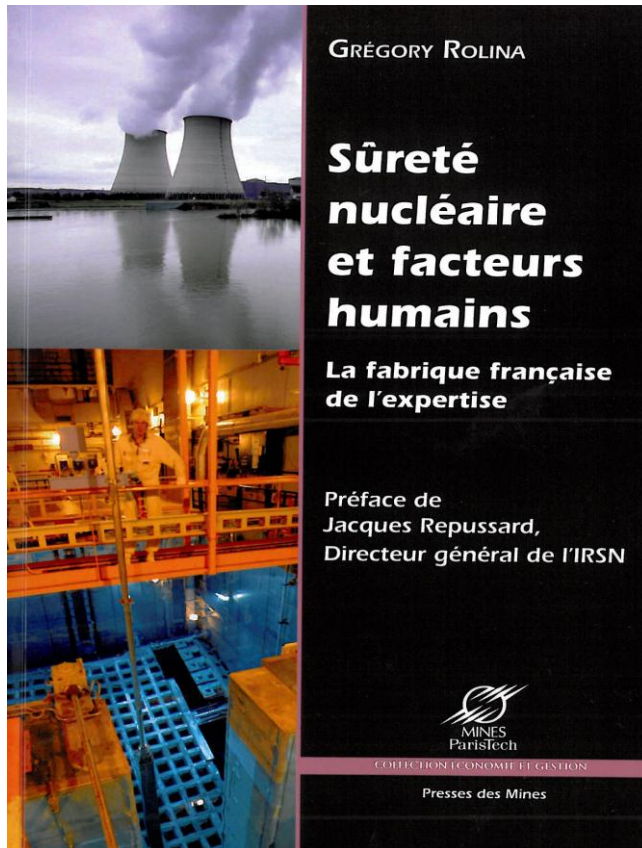
INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

Assessing Nuclear Safety from a “Human and Organizational Factors” perspective: Lessons learned from an International Benchmarking

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Background



Assessment framework:

- Limited use of general guidelines and standards,
- Common assessment principles on a high-level basis,
- For each facility, development of a specific HOF assessment framework in order to tackle actual facility's issues.

Assessment content:

- Assessments not only address implementation of rules and management tools,
- But also aim at evaluating the effects of these formal artifacts on operators' activity in real work situation.
- For this, IRSN HOF specialists perform technical discussions with the licensees, and also complete "field studies" including interviews with workers and observations of operators' activity.

Are the development of specific HOF assessment frameworks and the performance of "field studies" specific to France?

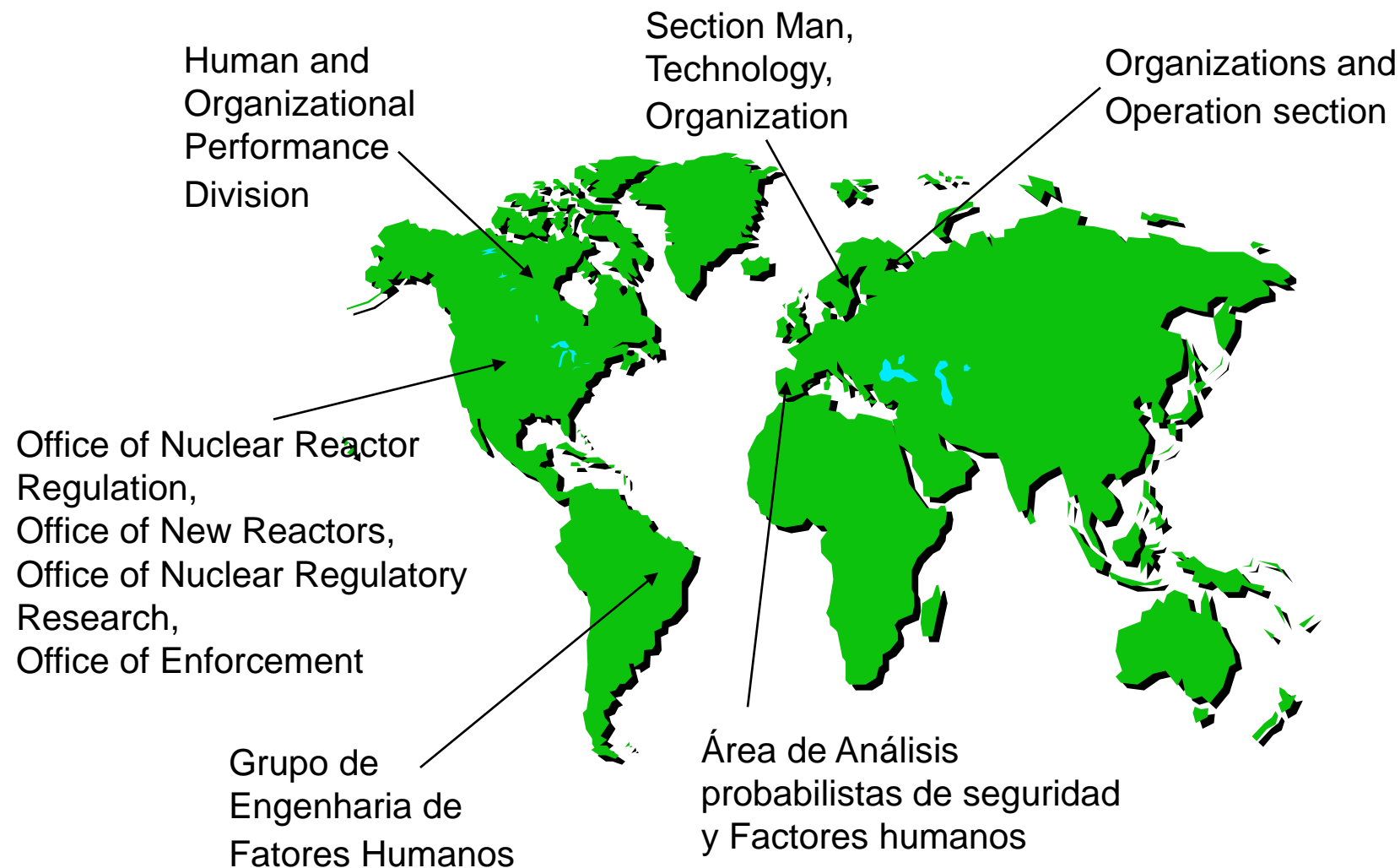
Methodology



➤ Five days spent in each country, about 70 interviews:

- Elements of HOF assessments' institutional history;
- Topics and facilities assessed by HOF specialists;
- Organizational patterns of HOF assessments within the institutional model;
- Reference frames, investigation methods, databases used for HOF assessments;
- Analysis, monitoring and capitalization of the HOF assessments' results;
- Organization and management of the HOF specialists' team

The development of HOF Groups within Regulatory Bodies (1/2)

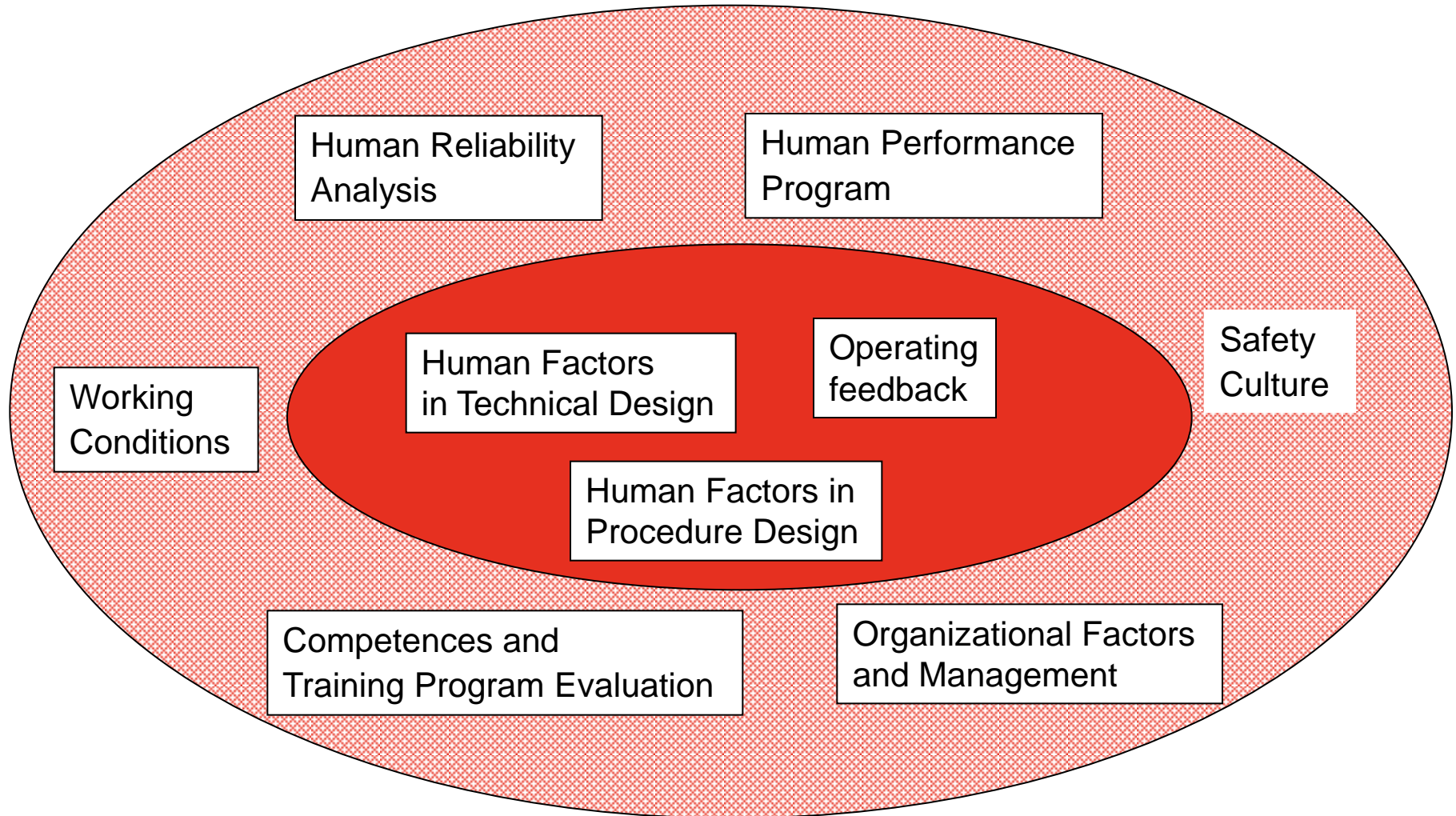


The development of HOF Groups within Regulatory Bodies (2/2)

	FRANCE	CANADA	SWEDEN	FINLAND	USA	SPAIN	BRAZIL
Number of employees	440 + 1600	800	240	370	3800	450	150
Number of nuclear facilities (civil)	146 (58 power reactors in op.)	34 (18 power reactors in op.)	12 (10 power reactors in op.)	6 (4 power reactors in op.)	161 (104 power reactors in op.)	12 (8 power reactors in op.)	9 (2 power reactors in op.)
Number of HOF specialists	1+16	15	9	4	25,5	5	2,5
Rate HOF specialists / employees	0,8%	1,9%	3,8%	1,1%	0,6%	1,1%	1,7%
Rate HOF specialists / nuclear facilities	0,12	0,44	0,75	0,67	0,16	0,42	0,27

(2010)

A rather shared set of HOF topics



HOF assessment: Inspection

1. Aim

- a. Assessing the compliance to HOF frameworks

2. Use of generic HOF frameworks

- a. Integration of HOF into Design Process
- b. Management of Operation Feedback
- c. Competencies Management
- d. Safety Culture

3. Compliance assessment

- a. Definition of rules, management's tools and other organizational arrangements
- b. Real implementation of these formal artifacts
- c. Indicators of artifacts ' Performance

4. Data collection

- a. Mainly with interviews and documents analysis.

HOF assessment: Investigation

1. Aim

- a. Assessing the relevance and sufficiency of the HOF integration

2. Elaboration of Specific HOF frameworks adapted to

- a. Facilities : power reactor, decommissioning facility, research laboratories
- b. Licensees' organization : centralized versus decentralized
- c. Management process : competency management, sub-contracting process,

3. Robustness and efficiency assessment

- a. Definition of rules, management's tools and other organizational arrangements
- b. Real implementation of these artifacts
- c. Indicators of artifacts' Performance
- d. Effects of these formal artifacts on operators' activity in real work situation

4. Data collection

- a. Interviews and documents analysis
- b. Observation of actors' activity in real work situation

Inspection or Investigation : should we choose ?

1. Institutional parameters

- a. Existence of a detailed and legal HOF framework
- b. Existence of TSO with research activities

2. Structure of the country's nuclear fleet

3. HOF background

- a. Cognitive psychology
- b. Anthropology

Conclusion

1. Contingency variables

- a. Inspection versus investigation
- b. Structure of the country's nuclear fleet
- c. Content and development of the HOF legal framework
- d. Existence of a TSO

2. A domain of expertise faced to challenges

- a. Being legitimate inside the regulatory institutions for existing,
- b. Facing epistemic questions for judging,
- c. Managing a special relationship with licensees for generating effects

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