

IRSN

INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

Faire avancer la sûreté nucléaire

Safety Issues of Decommissioning Projects from an Organizational Perspective

Workshop on International Workshop on
Application of Advanced Plant Information Systems
for Nuclear Decommissioning and Life-cycle
Management

December 4th - Lillehammer



Système de management
de la qualité IRSN certifié

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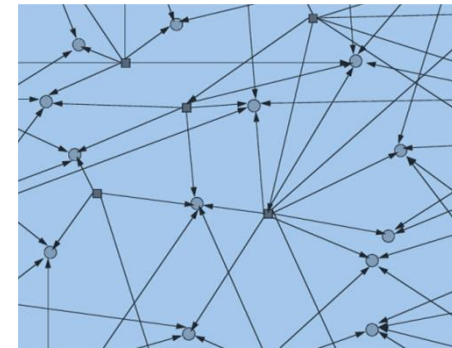
Decommissioning projects are complex projects

Sources of complexity

A **multitude of interdependencies** between actors belonging to **different organizations**, intervening at the **same time or at different times and places**, who must nevertheless achieve a **common organizational performance** that integrates safety requirements, quality, etc.

Specific organizational issues regarding risk management

- Multiplication of organizational boundaries, increase in complexity and in sources of uncertainties to be managed.



Plant Information Model (PIM) & complex projects

■ A technical substrate serving the supply chain in complex projects

- Integrated information system & database
- Allow integration and “interoperability” between all actors of the supply chain

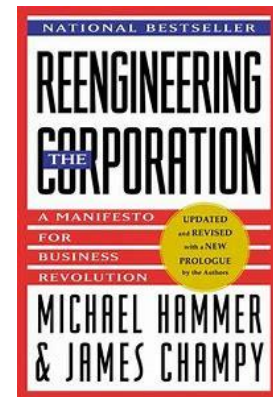
*“Recent exponential growth in computer, network, and wireless capabilities, coupled with more powerful software applications, has made it possible to apply information technologies in all phases of a facility life cycle, **creating the potential for streamlining historically fragmented operations**”*

(IAEA about PIM)



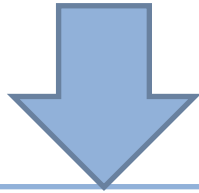
■ A feedback of other industries: the case of ERP and Business Process Reengineering

- an uncertain return on investment
- a forgotten essential dimension: the fact that the actors participate actively in the articulation between their contributions, which does not result from a single technical system

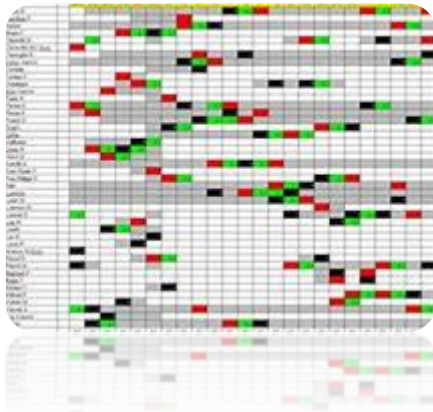


Need to articulate the implementation of the PIM with a **precise knowledge of the human activity**

Precise knowledge about human activity: illustrations



PLANNING MANAGEMENT

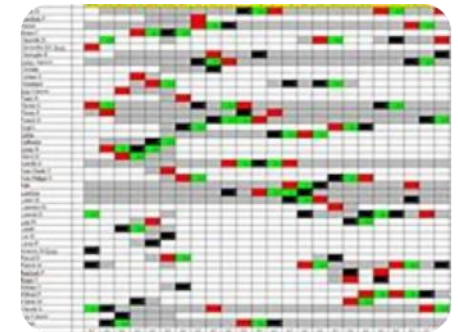


SUPPLY CHAIN PERSPECTIVE



Planning Management: a support for a reliable performance...

- Empirical studies in complex projects have shown that Planning & its associated tools, the schedules, can participate in **sustaining reliable performance**
 - Planning plays a key role in **coordinating the various occupational groups**, while supporting the confrontation of points of view that help in managing interdependencies
 - Planning enables the different actors to **anticipate activities that need to be carried out** and the related risks
 - Schedules are used by actors to **manage unexpected events** and thus planning can support organizational resilience



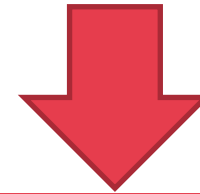
- To ensure this positive contribution to reliable performance, 4 main organizing principles have been identified by these studies

... if four main organizing principles are taken into account

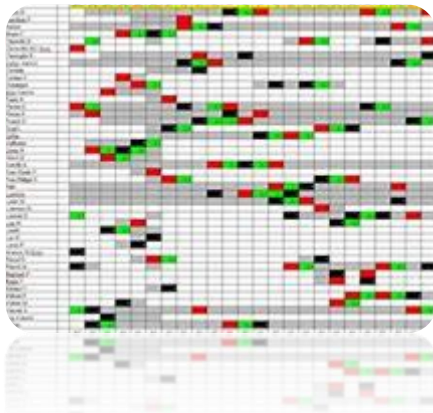
1. The **commitment of all the stakeholders** involved in a complex project towards planning
2. A sufficient level of technical and organizational **expertise of planners**
3. **Organizational slack** in the implementation of schedules
4. Coherence between planned activities and **other managerial tools** (e.g. performance indicators)



Precise knowledge about human activity: illustrations



PLANNING MANAGEMENT



SUPPLY CHAIN PERSPECTIVE



Ensuring an integrated performance through a supply chain perspective: the essential role of human activity

Today, a simplistic presupposed about complexity

- The overall performance results from the sum of the different performances at each step.
- This sum can be relegated to integrating technical systems (ERP, PIM, etc.).

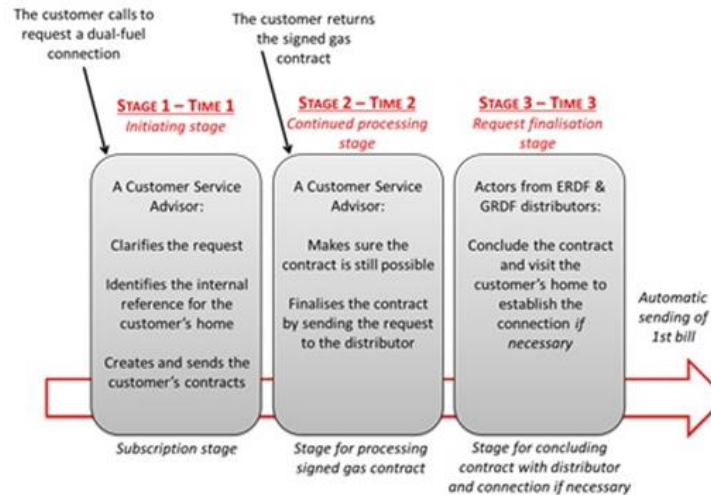


The integrated performance does not result from the sum of the different performances at each step but mainly results from the **activity of the actors**, who articulate their respective contributions → **cross-functional collective activity**

This human activity **emerges** at the cross-functional mesh, and is at the foundation of **integrated performance**.



An example of cross-functional collective activity in the domain of services



At first glance, one might think that the whole is equal to the sum of each part of the process, and that if each one does his job correctly at each step, then the customer will be satisfied and his request processed **BUT**

At each step people do more than their own work to make it possible to articulate their contribution here and now with the contributions of other actors in the same process

As people do not work in the same place or at the same time, this articulation is done in the information system, in a place not planned for that. Actors have appropriated the information system for their cooperation

PIM, a technical potential to promote cross-functional collective activity in complex projects

■ PIM must be replaced in a larger socio-technical system

■ A real potential, but not a magical solution for integrated performance

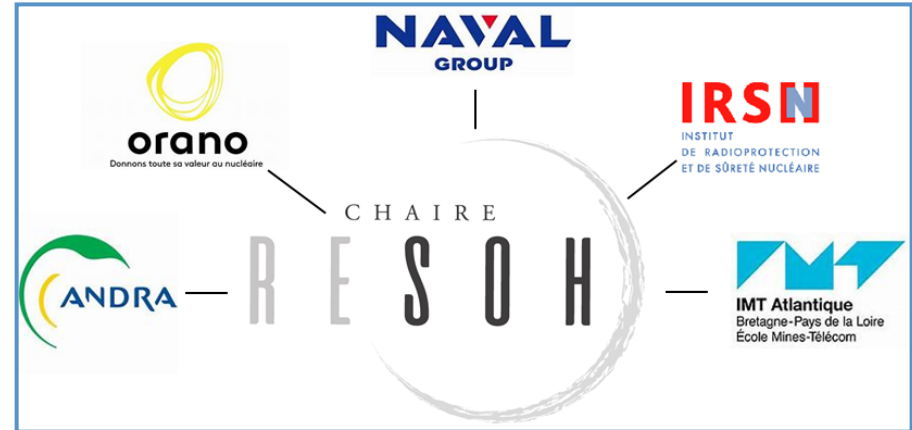
- must allow cross-functional collective activity
- must foster cooperation between all the actors involved in the decommissioning project
- is not the only one at stake: a set of managerial, organizational and educational provisions must also accompany its implementation

Imply a **strong cooperation between specialists of the technique and specialists of HOF**

A research conducted within the framework of the RESOH Chair

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Training and research chair

- Space for scientific exchange and production in the field of the human and organizational aspects of safety
- Overall theme: working together towards "safe industrial performance". Desire to avoid isolating industrial performance from safety
- Association of nuclear operators and the technical support of the French Nuclear Safety Authority

Thank you for your attention