



Human Resources Training, Qualification and Knowledge Management in Reactor Physics Analysis

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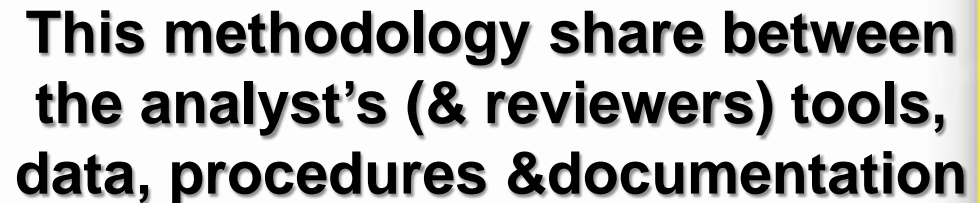


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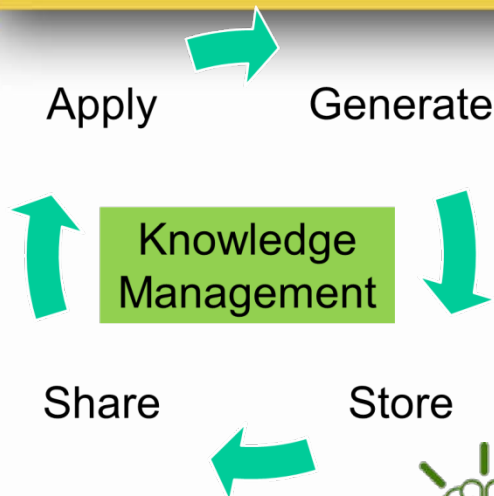
- The analysts develops accurate models to simulate the system and their capacity can only be evaluated through his/her knowledge & experience**
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## 2.1 - Knowledge Management Concepts



**Apply** (**must not be analyst dependent**).

- In all the process of the organization.
- In the frame of the projects.
- Proper tool for each type of process/analysis.
- Opportunities to improve tools & methodologies.

**Generate**

- Normally from the outside of the organization.
- External courses.
- Academic Activities (thesis).
- Acquire and transform for the organization needs.
- Inter-organizations Meeting (GARCAR, Developers & Users, etc.).

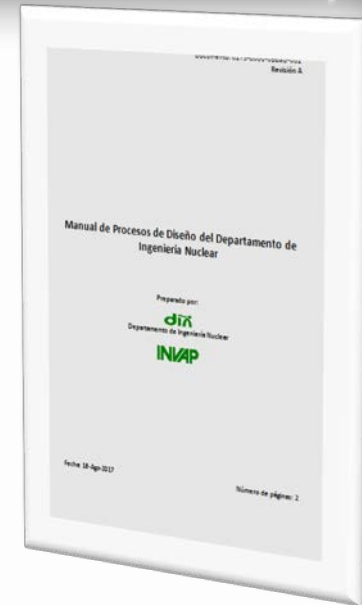


***The comfort zone is the cemetery of creativity, innovation and learning.***

## 2.2 - Knowledge Management Concepts

### Store (can not be only in the head of the people)

- Presentations.
- *Design Manual*.
- Useful for training of novel personnel.
- Training, Re-training of personnel.
- Preserve Organization Knowledge.



### Share

- Internal courses.
- Collaborative work. Internal meetings.
- Internal reviews.
- Make or update procedures.
- Mentoring.



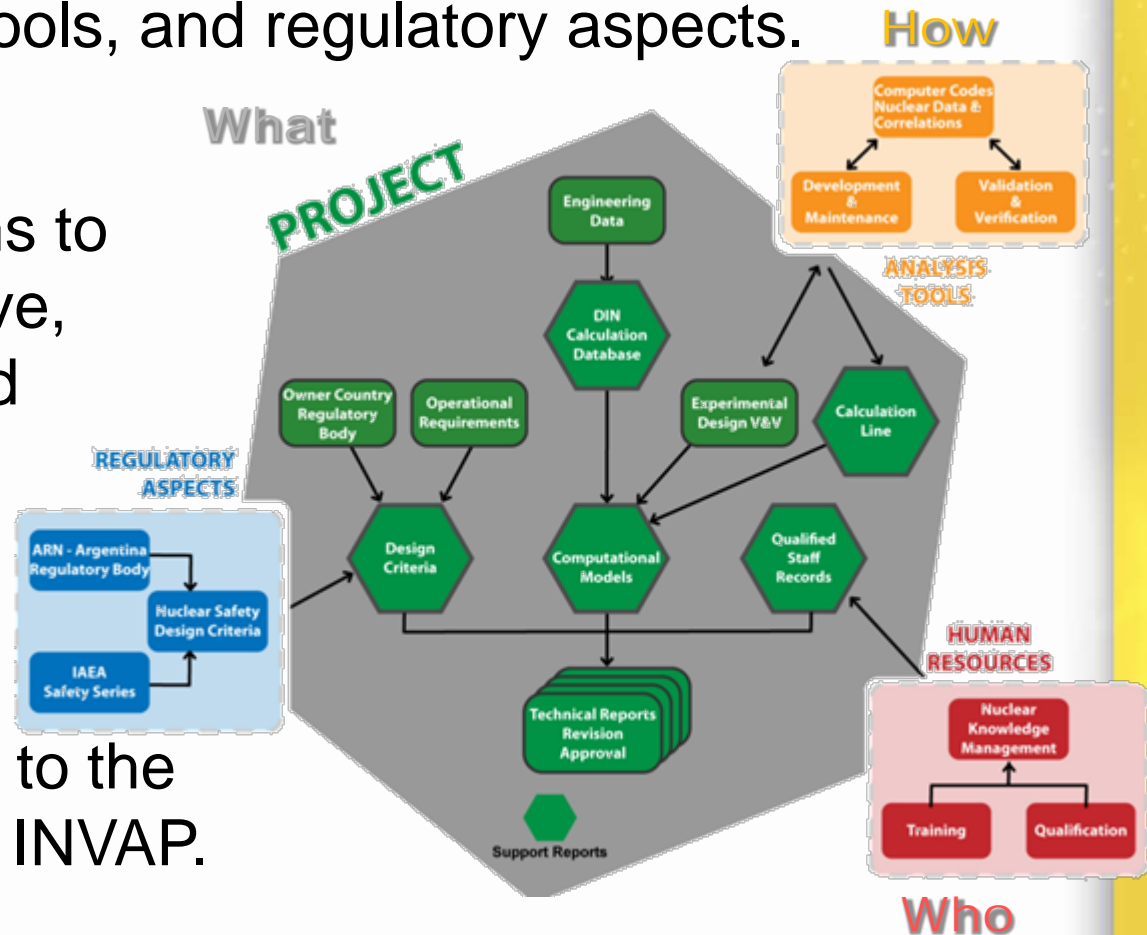


## 3.1 Our Experience

The NKM within the DIN seeks to preserve and improve the operational capability of the department.

An integrated and systematic plan of human resources, processes, analysis tools, and regulatory aspects.

This management aims to identify, share, preserve, distribute, improve and expand the strategic and operational knowledge used in the processes of its concern, adding value to the activities performed in INVAP.

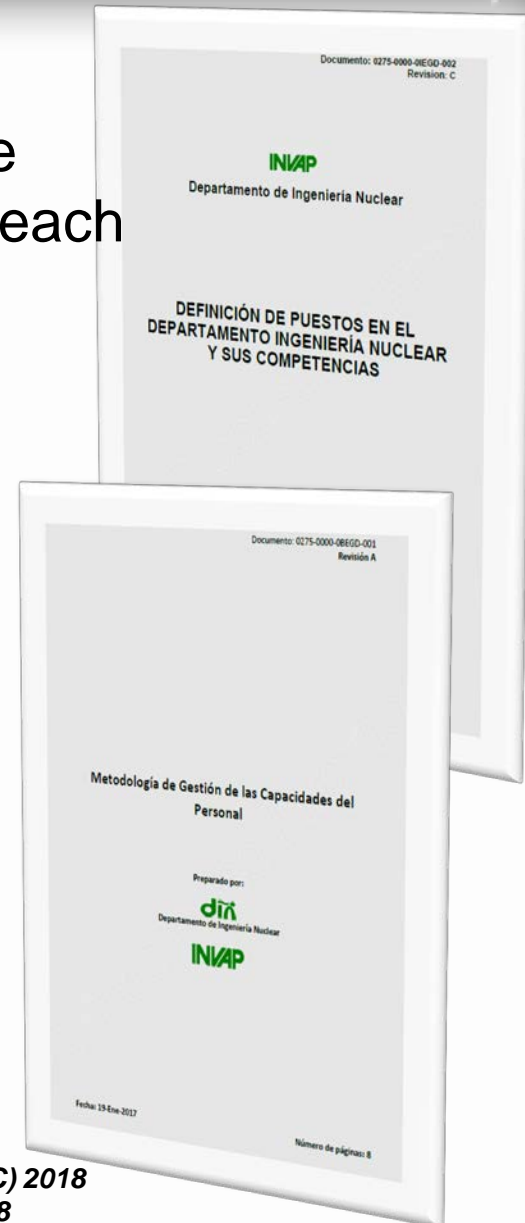


## 3.2 Our Experience: RRHH

The DIN has clearly defined the roles and competencies of its structure, describing the knowledge, skills and attitudes required for each position

The management of these competencies is clearly described:

- Internal and external courses.
- Mentoring.
- On-the-job training.
- Retraining.
- Teamwork.
- Academic activities.



## 3.3 Our Experience: RRHH

Dynamics of the personnel.

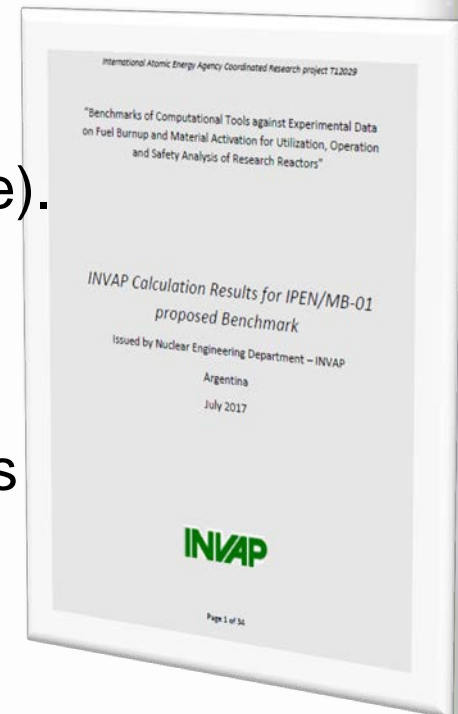
- Selection of personnel (its induction, training and qualification),
- Talent management, (its recognition, performance evaluation),
- Career plan (technical experts, human resource management, project coordinator)
- Handling contingencies.



Training (not only formal acquisition of knowledge).

DIN promotes:

- self-training,
- acting as trainer of internal courses,
- technical advisor in Eng., Master or PhD thesis
- participating in IAEA CRP activities.

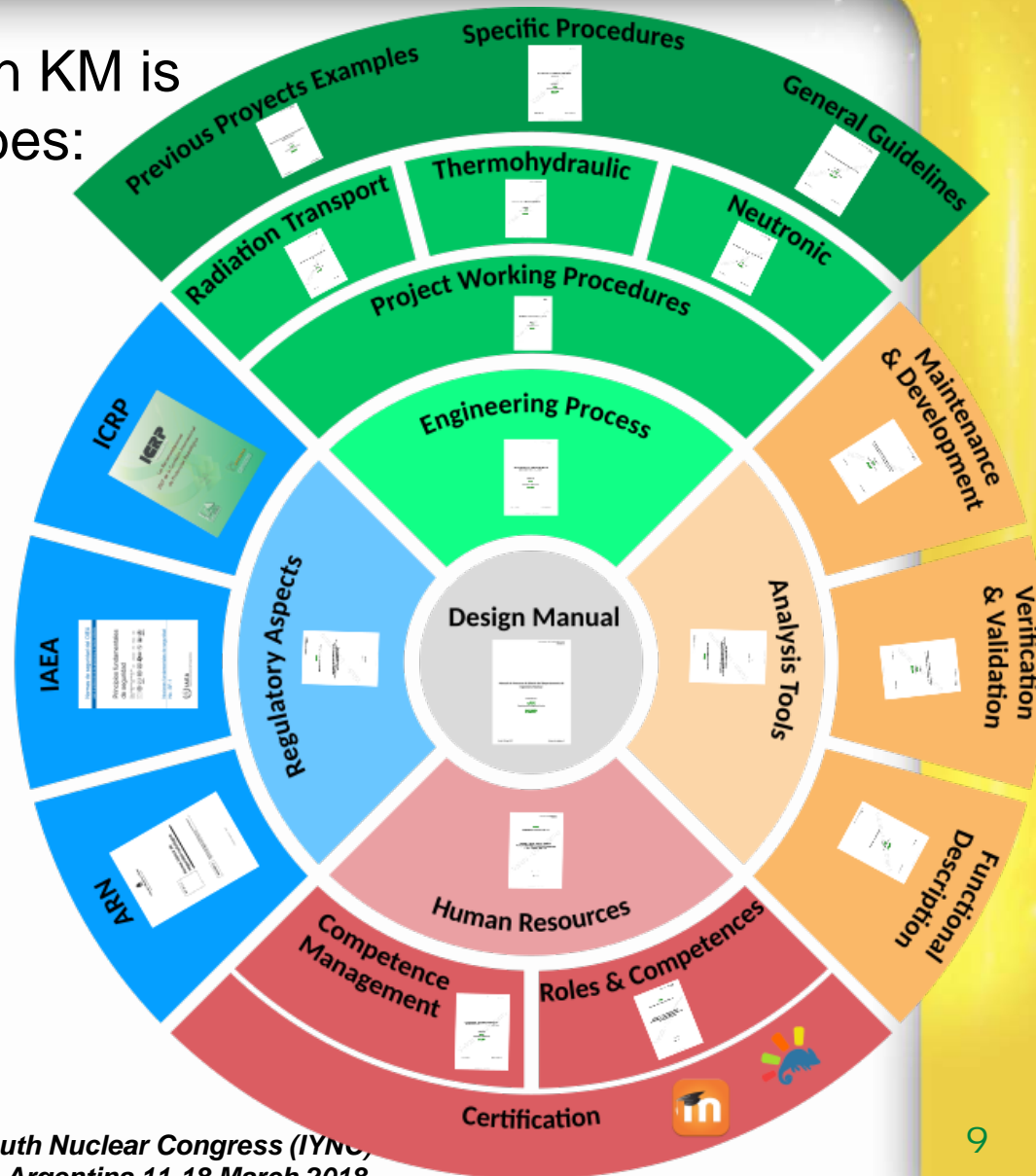




## 3.4 Our Experience: Design Manual

A very important component in KM is the ***design manual***. It describes:

- All the processes.
- Descriptive guide for the application of specific procedures.
- All stages of a project. (Pr. & Detailed Eng. Comm.)
- Covers the essential areas:
  - Regulatory Aspects.
  - Engineering Processes.
  - Analysis Tools.
  - Human Resources.



### *Knowledge*

- A previous educational background is required.
- We prefer Nuclear Engineers.
- Non-nuclear engineer (CEATEN post-graduate course).
- Reactor Calculation and Analysis subject (Inst. Balseiro).

### *Skills*

- Learning capabilities.
- Flexibility (different calculation tools / different tasks).
- Capability to communicate their calculation or analysis.

### *Attitude*

- Openness to receive a critical review.
- Participation in a collaborative working environment.
- Work under a procedural environment.

*Induction is a short learning period:*

- Learn about design and calculation methodology & procedures.
- A period of preliminary calculation:
  - Depends on previous experience.
  - One or more calculations of a previous INVAP project.
- Mentor assignment:
  - Assistance for the trainee.
  - Training process for the trainer.

**Analyst gets the first level of qualification**

*Training (re-training):*

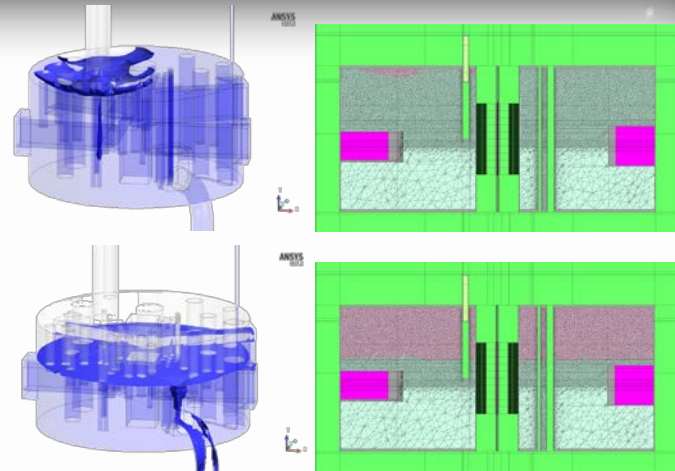
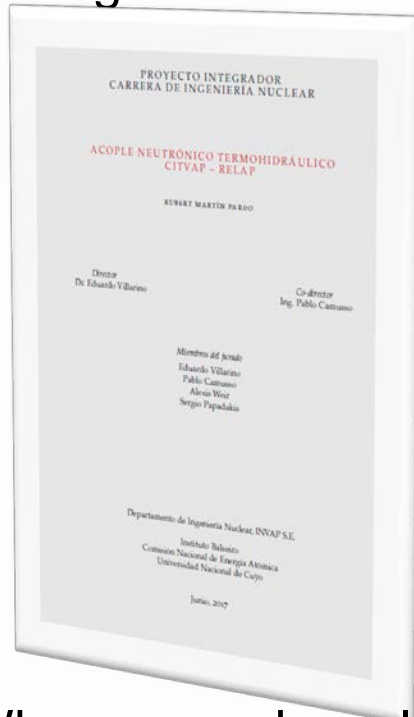
- On the Job training.
- Benchmark calculation of non INVAP reactor designs.
- Participating in the IAEA CRP's.

**Analyst gets the second level of qualification**

## 5. Generating Knowledge

DIN promotes academic related activities

- participating as scientific advisors in Eng., Magister or PhD thesis.



- DIN promotes non project activities:
  - R&D activities.  
(state-of-art, multi-physics, etc.)
  - Validation in a wide spectra of RR.
  - IAEA CRP activities.
- When a new knowledge (method, process, capability) is generated, DIN performs two actions:
  - It is shared through an internal presentation or course.
  - It is properly documented (manual, course and/or procedure).

INVAP has more than 30 years of experience designing and building research reactors with high demanding requirements:

- Validated computational tools.
- Very well established calculation methodology and procedures.
- Qualified staff

DIN NKM seeks to preserve and improve the operational capability of the department:

- An integrated and systematic plan of human resources.
- processes, analysis tools, and regulatory aspects.
- Design manual.



### *Staff Qualification*

- Clearly defined the roles and competencies (knowledge, skills and attitudes).
- Career Plan.
- Induction and training (first level of qualification).
- Training and re-training (second level of qualification).

### *Generating Knowledge*

- A clearly defined plan is used to have a continuous improvement process for:
  - Calculation codes and utilities.
  - Calculation methodologies, and procedures.
  - Knowledge of the analyst's.

# INVAP

*Questions?  
Thanks for your attention!*



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