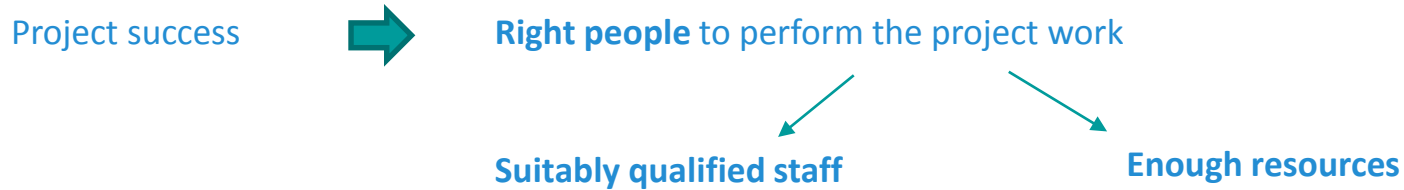




**NUVIA**  
PROCESS

**EDUCATION AND TRAINING IN NUCLEAR DECOMMISSIONING FIELDS**

**YOUNG GENERATION INDUSTRIAL EXPERIENCES IN  
DECOMMISSIONING**



Point of view of an industrial company involved in decommissioning project work

## Performing these nuclear decommissioning activities

### Engineering

- To develop the scenario
- To select the techniques
- To design the tools required

### Management

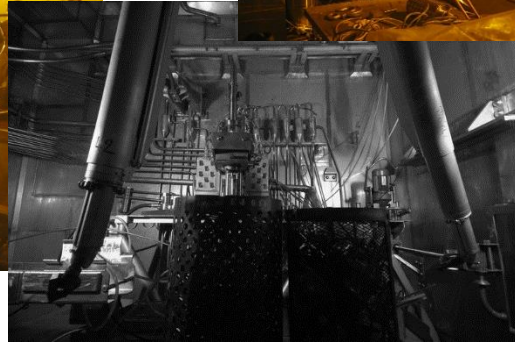
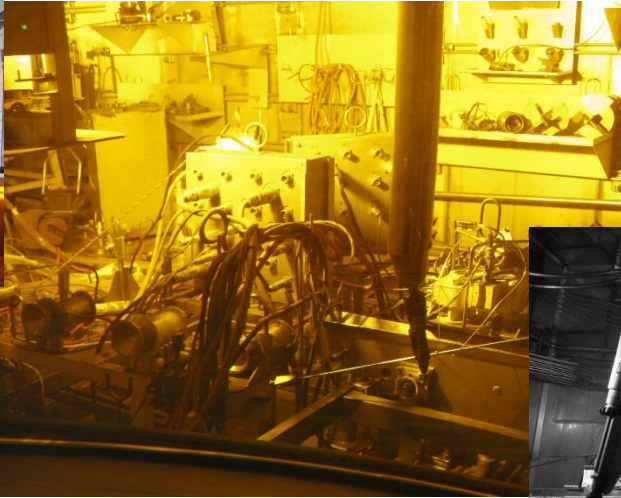
- To manage the budget
- To manage project progress
- To supervise the labour, staff safety, radioprotection

### Labour

To carry out operations as defined in the specification and programme

## ILLUSTRATION THROUGH A DECOMMINISIONING PROJECT EXAMPLE

## PROJECT : HOT CELL DEMOLITION



**OBJECTIVE:** Equipment removal / Cell decontamination / Hot cell demolition

# SKILLS AND KNOWLEDGE

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## PROJECT : HOT CELL DEMOLITION

<b>Scenario development</b>	→	Based on dismantling principles and experience
<b>Nuclear safety report</b>	→	Nuclear and non-nuclear risk management (contamination & radiation, criticality, fire, earthquake, handling...)
<b>Waste characterization, nuclear measurement</b>	→	Nuclear engineering
<b>Radioprotection</b>	→	Radiation interaction sciences adapted to the operations on site
<b>Tool design : remote or contact activities</b>	→	Mechanical, electronic & electrical engineering
<b>Decontamination techniques</b>	→	Chemical engineering
<b>Waste management</b>	→	Based on waste management rules & experience
<b>Demolition techniques</b>	→	Civil engineering

All these skills are required at different levels:

- ❖ **Operators** (dismantling, decontamination, waste packaging...)
- ❖ **Teleoperators**
- ❖ **Technicians on site** (maintenance, radioprotection, waste characterization, nuclear measurement...)
- ❖ **Technicians** (designers, operational procedures development...)
- ❖ **Engineers** (tool design, technique development, nuclear safety ...)
- ❖ **Operations managers** (works supervisors, works managers)
- ❖ **Senior project managers:** site managers, project directors

## ACADEMIC TRAINING WITH NUCLEAR SCIENCES PROGRAMMES IN FRANCE:

### - PROJECT MANAGEMENT

- ENGINEERING COLLEGE : project management, sciences (mechanical, chemistry, electronic...)
- MASTER'S DEGREE
  - ✓ ITDD (technical degree)– Grenoble University
  - ✓ NUCLEAR ENERGY (engineering degree) – ENSPC Paris

### - ENGINEERING AND TECHNICAL STUDIES

- MASTER'S DEGREE
- LICENCE Dismantling-Decontamination-Abestos & Waste – Nîmes : technical degree
- 2 years technical degree for design training

### - NUCLEAR SAFETY ENGINEERING

- ATOMIC ENGINEERING: all nuclear subjects (waste, physics, neutronics, safety, reactors...) –INSTN (engineering degree)
- ECOLE DES MINES Nantes (engineering degree): Nuclear safety & environment
- MASTER'S DEGREE :
  - ✓ ENSAM (6th year university degree) - Aix en Provence
  - ✓ ITDD (technical degree)– Grenoble University

## ACADEMIC TRAINING WITH NUCLEAR SCIENCE PROGRAMMES IN FRANCE :

### - RADIOPROTECTION

- Radioprotection European Master Degree (technical degree)
- 1 or 2 year Technical degree – INSTN (Institut National des Sciences et Techniques Nucléaires)

All these training programmes are directly linked to industrial companies who present their feedback



**Sponsored by the french nuclear companies : CEA, AREVA, EDF, ANDRA, NUVIA...**

Decommissioning issues are **not an exact science**  
but:



**Compilation of feedback identifies successes, difficulties, failures to explain...**



## OPERATOR TRAINING:

- DECONTAMINATION OPERATORS
  - High school technical degree with nuclear environment programme
- DISMANTLING OPERATORS/ TELEOPERATORS: no specific academic training but mechanical, electrical, electronic, building capabilities

**ACADEMIC TRAINING IS NOT SUFFICIENT**



**PRACTICE TRAINING, TIPS, FEEDBACK, RULES ARE NECESSARY**

Executing operations in a nuclear environment needs specific skills which cannot be integrated without any practical experience:

Staff safety

Correct training execution

# FINDING SUITABLE RESOURCES

4

Our answer to this lack of competences :

NUVIA Internal training and tutoring



NUVIA dismantling techniques school

The decommissioning activities are **new activities**



**Real career evolution opportunities**

**Vertically:** from operator to manager

**Transversally:** from one speciality to another

In the world, **more and more facilities** will have to be dismantled in the **future** (power plants, research reactors, fuel production facilities...)

The projects are become **bigger and bigger**

**Huge career opportunities**

**Technical challenges**

**Knowledge transfer challenge**

Decommissioning activities offer the biggest prospects in the nuclear field.

To guarantee enough resources to perform the activities



Promote decommissioning prospects to attract future employees to suitable training programmes

Nuclear decommissioning companies must be linked to the academic programmes guaranteeing efficient and effective training.

**FEEDBACK MUST BE SHARED**