IAEA
Atoms for Peace and Development

Introduction to Knowledge Management

Regional Workshop
12-15 July 2022
Virtual Event

Content

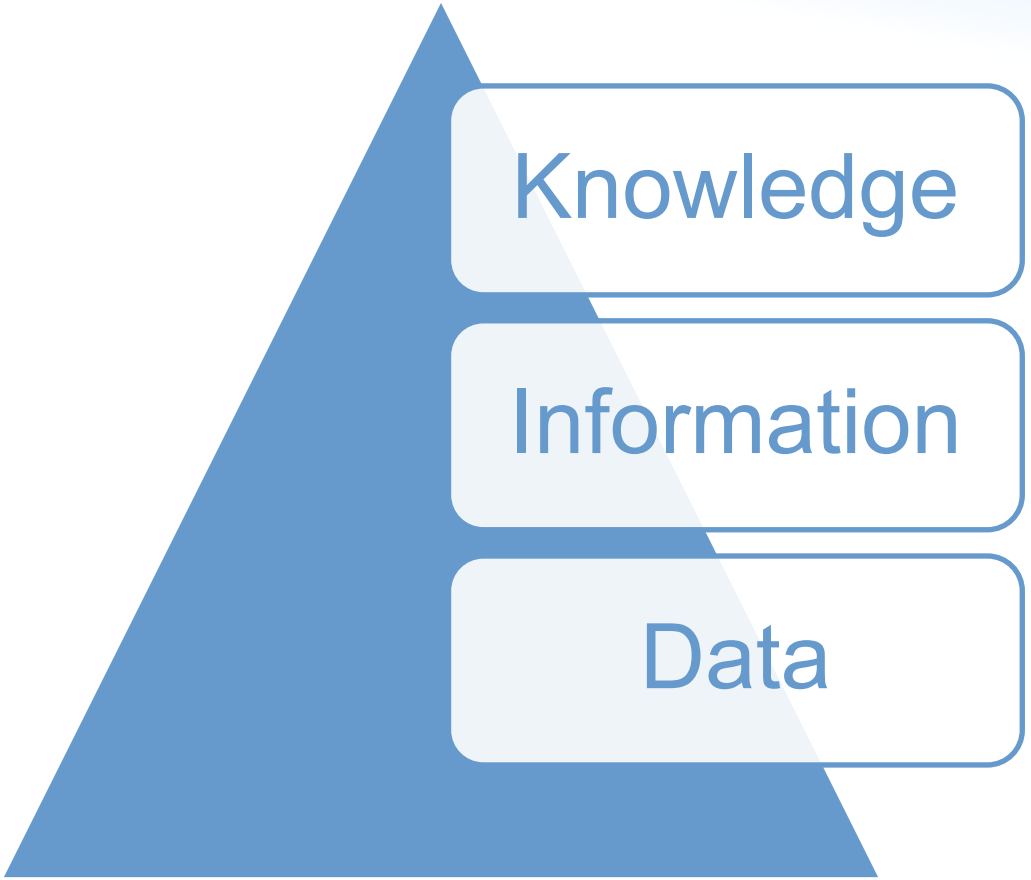
- What is Knowledge Management (KM)?
- What are the types of knowledge?
- Why is KM important?
- What are the challenges and risks?
- Who are the stakeholders?

Knowledge Management

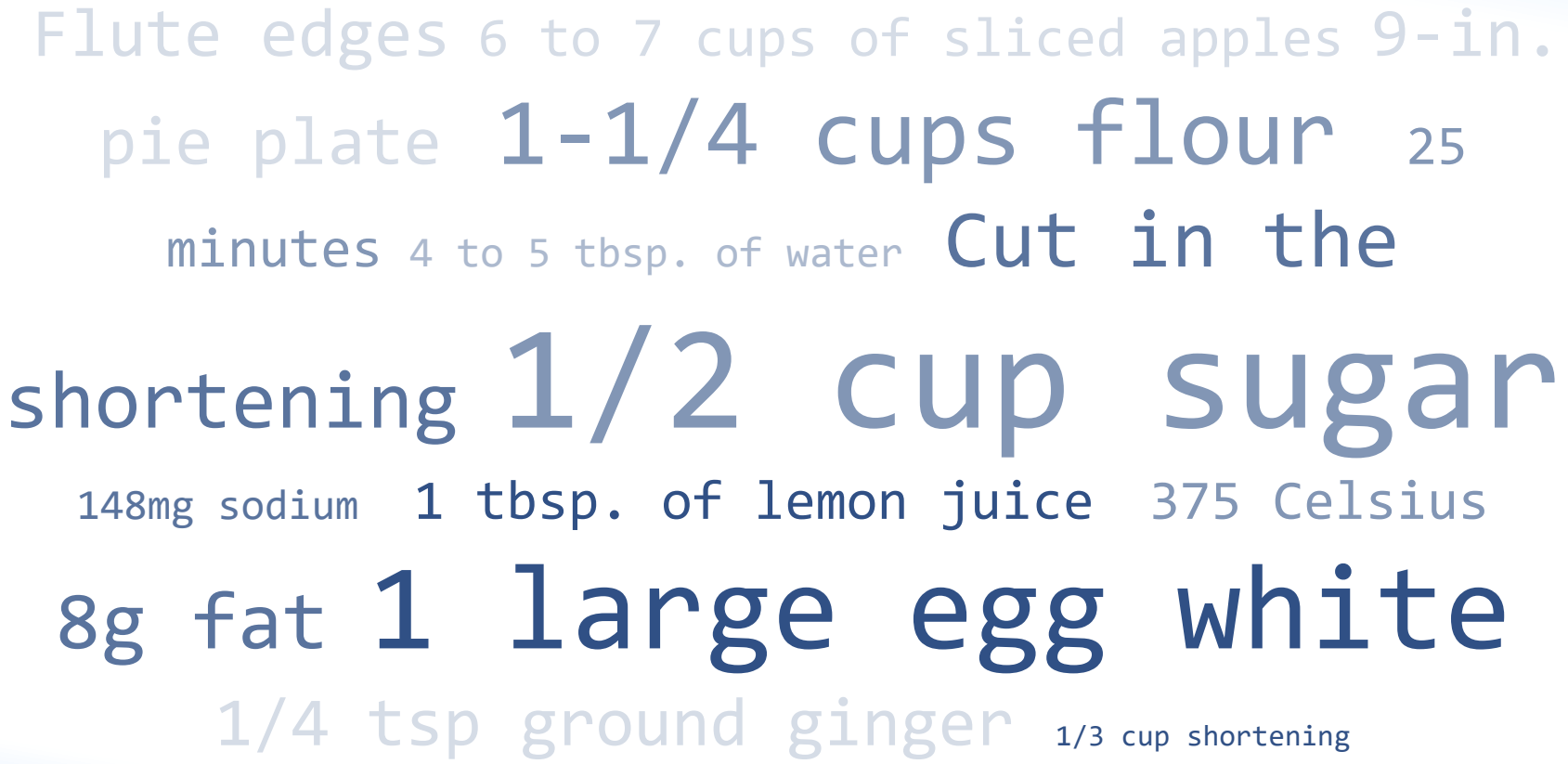
Knowledge management is “the coordination and exploitation of organizational knowledge resources, in order to create benefit and competitive advantage” (Drucker 1999).

Knowledge management is “an integrated, systematic approach to identifying, acquiring, transforming, developing, disseminating, using, sharing, and preserving knowledge, relevant to achieving specified objectives” (IAEA-TECHDOC-1586).

Knowledge Pyramid



Data


Flute edges
6 to 7 cups of sliced apples
9-in. pie plate
1-1/4 cups flour
25 minutes
4 to 5 tbsp. of water
Cut in the shortening
1/2 cup sugar
148mg sodium
1 tbsp. of lemon juice
375 Celsius
8g fat
1 large egg white
1/4 tsp ground ginger
1/3 cup shortening

Information

Pie Crust Recipe

Ingredients:
1-1/4 cups all-purpose flour
½ tsp salt
1/3 cup shortening
4 to 5 tbsp. of water

Directions:

1. In a large bowl, combine flour and salt; cut in the shortening. Add water, tossing with a fork until a ball forms. Roll out pastry to fit a 9-in. pie plate.
2. Transfer pastry to pie plate. Trim pastry to 1/2 in. beyond edge of pie plate; flute edges. Fill or bake shell according to recipe directions.

Nutritional Facts:
144 calories, 8g fat (2g saturated fat), 0 cholesterol, 148mg sodium, 15g carbohydrate (0 sugars, 1g fiber), 2g protein.

Knowledge

Add chilled shortening until it's crumbly.

Add water by eye, it should feel shaggy.

Don't overwork the dough.

Knowledge is how we apply the information to achieve our goal

Types of Knowledge

Explicit – "Know-what"

Explicit knowledge is contained in documents, drawings, calculations, designs, databases, procedures and manuals

Tacit – "Know-how"

Tacit knowledge is held in a person's mind, it is rooted in experience, judgment and insight

Challenges of Managing Explicit Knowledge

- Are people aware of its existence?
- Can people access it easily when needed?
- Is the knowledge updated or discarded when appropriate?

Challenges of Transferring Tacit Knowledge

Experts possess years of accumulated tacit knowledge however:

- It takes time and effort to capture/transfer
- Not all experts are interested in sharing their knowledge or are good mentors
- Those who do want to share their knowledge say they find it difficult to describe all they know

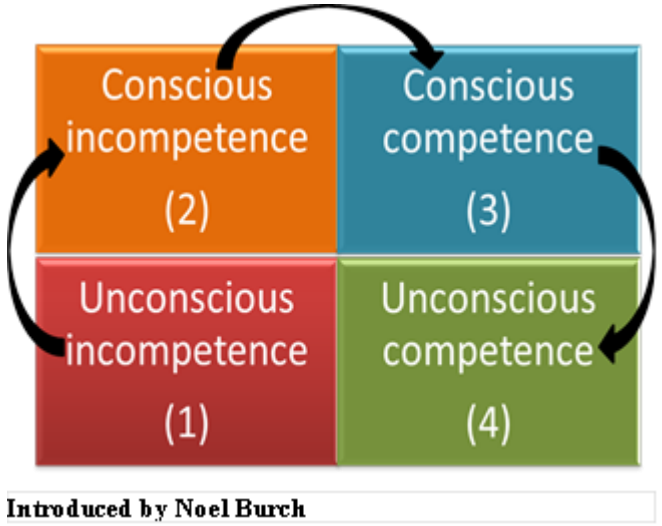
Four Stages of Competence

(1) employee is not aware of knowledge needed

(2) employee is aware of knowledge needed and their gap

(3) employee will need focus to demonstrate knowledge

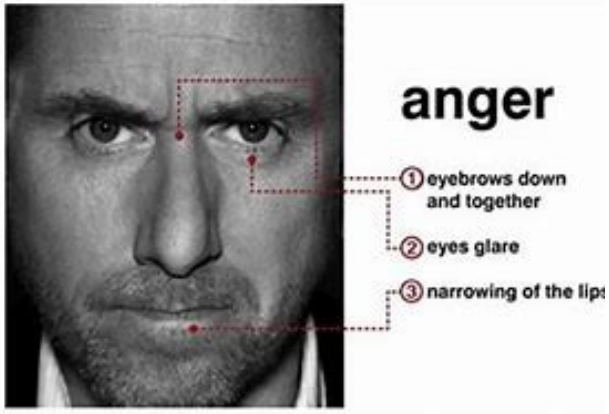
(4) employee performs work instinctually

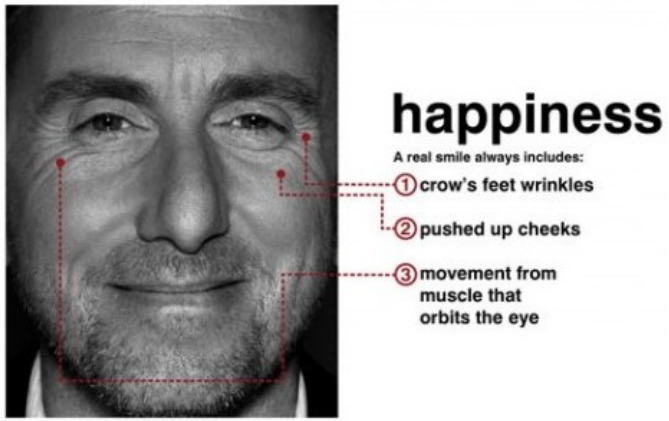


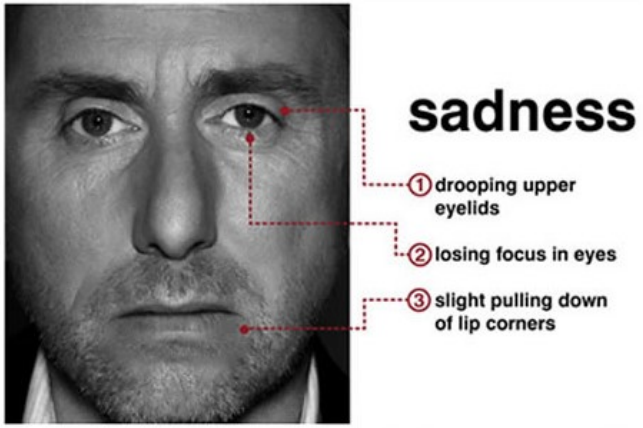
Articulation or Externalization

Articulation or externalization is the process of making tacit knowledge explicit

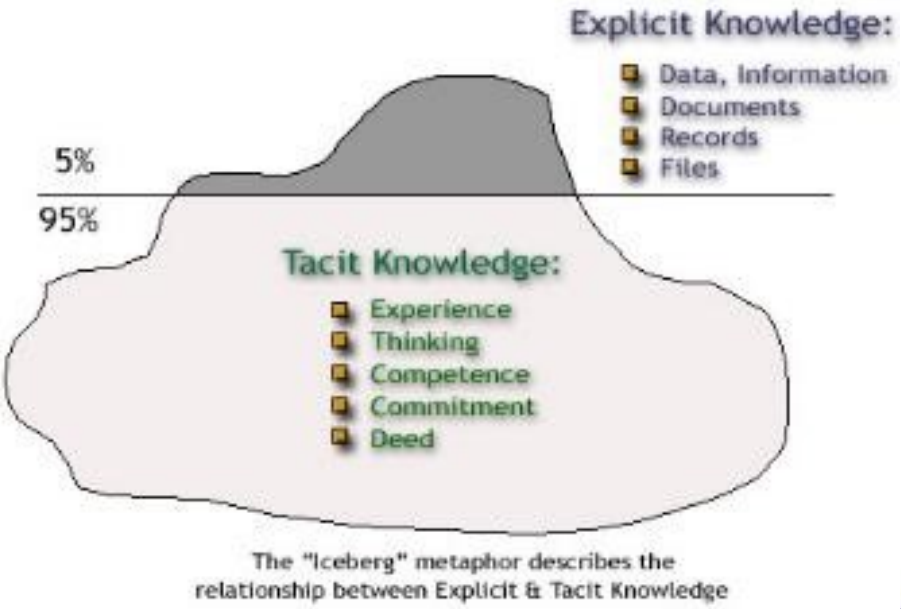
How would you explain / document how to read facial expressions?



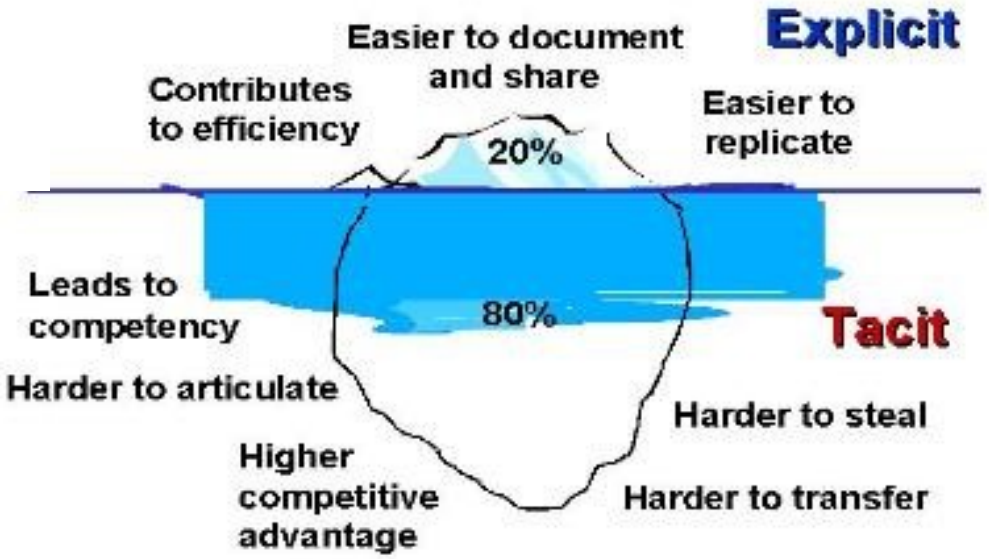




Types of Knowledge



The "Iceberg" metaphor describes the relationship between Explicit & Tacit Knowledge



Nuclear Knowledge

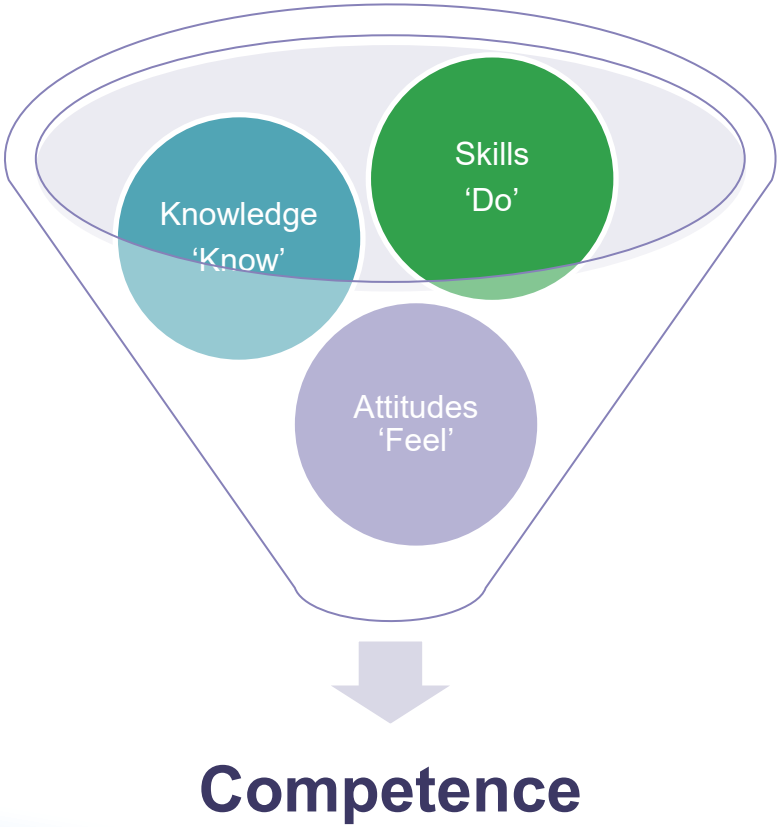
- **Knowledge** is acquiring, understanding and interpreting information to enable action
- **Nuclear knowledge** is any knowledge related to the nuclear domain
- **Nuclear safety knowledge** is knowledge relevant or required for nuclear and radiation safety

Critical Knowledge

- Knowledge established in the context of a particular position that is deemed **imperative for the incumbent** of said position to posses before being allowed to perform associated duties and tasks independently

Competence

- Competence is the sum of an individual's knowledge, skills and attitudes



Unique Challenges

Nuclear knowledge:

- Is **complex** and involves many science and engineering disciplines
- Requires **education and training**
- Loss could have a **significant impact** on safety and security (as well as on **costs**)
- Involves capture and sharing over **long timescales**
- Management is legally mandated and **regulated**
- Involves **multiple stakeholders** at different levels

Benefits of KM

- Knowledge Management has been identified by the IAEA as one of the key factors that can contribute to the **safe, secure and efficient** operation of nuclear activities and facilities in Member States

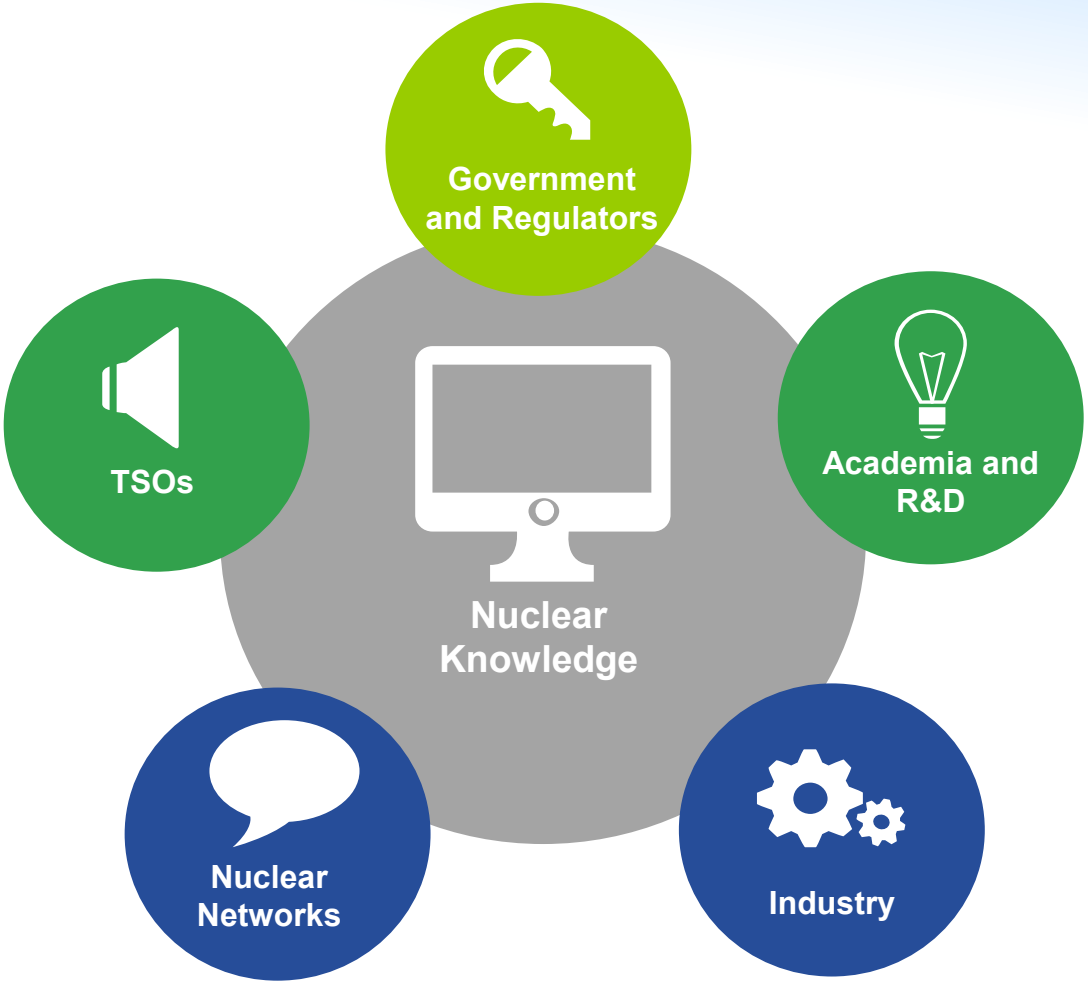
- Knowledge Management (KM) enables:
  - Efficiency
  - Better decision making
  - Increased individual and organizational performance
  - Potential for increased innovation

Knowledge Loss Risks

Knowledge loss:

- Could affect safety, security and non-proliferation goals
- Costly to replace
- Decreases productivity due to duplication of work
- Limits innovation potential and deters top talent
- Could be compounded by evolving technology

Multi-Stakeholder Environment



Conclusions

- Knowledge loss is an on-going threat
- Deliberate focus on knowledge management will decrease the risks associated with knowledge loss
- The IAEA, through its various departments, publications and activities, sets the stage for Member States to clearly recognize and meet their responsibilities for managing nuclear knowledge

Useful IAEA Reference

Planning and Execution of Knowledge Management Assist Mission for Nuclear Organizations, IAEA 2008

The purpose of this technical document is to provide a basic structure and common reference for KM missions

Annex: Definitions of terms in the field of nuclear knowledge management

IAEA-TECDOC-1586

Thank you

Questions?