The IAEA/ICTP School of Nuclear Knowledge Management
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Practical Approach to KM Maturity Assessment in Nuclear Organisations

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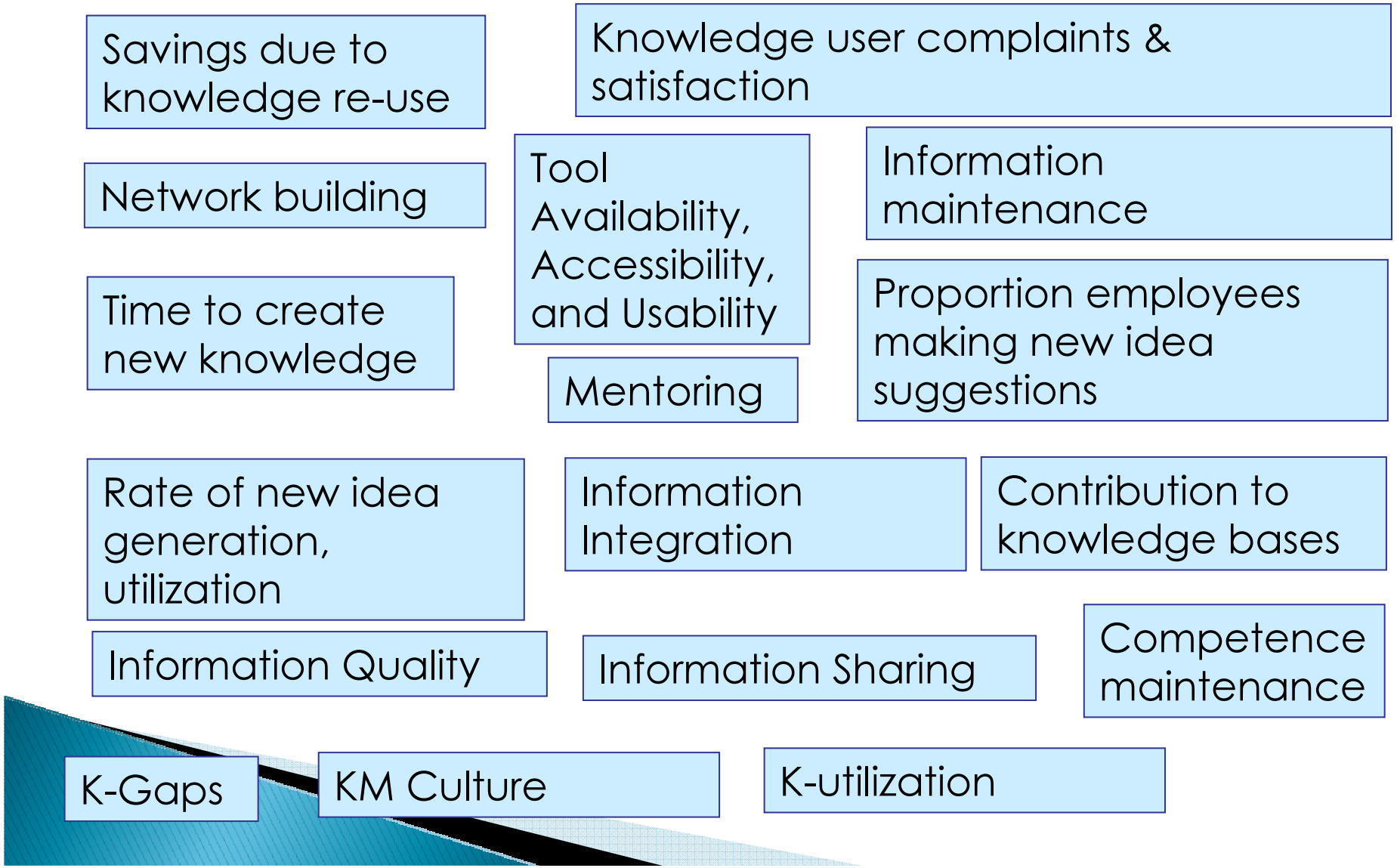
Contents

- Purpose of a KM assessment
- The IAEA self assessment model
- Self assessment process
- Summary
- Questions

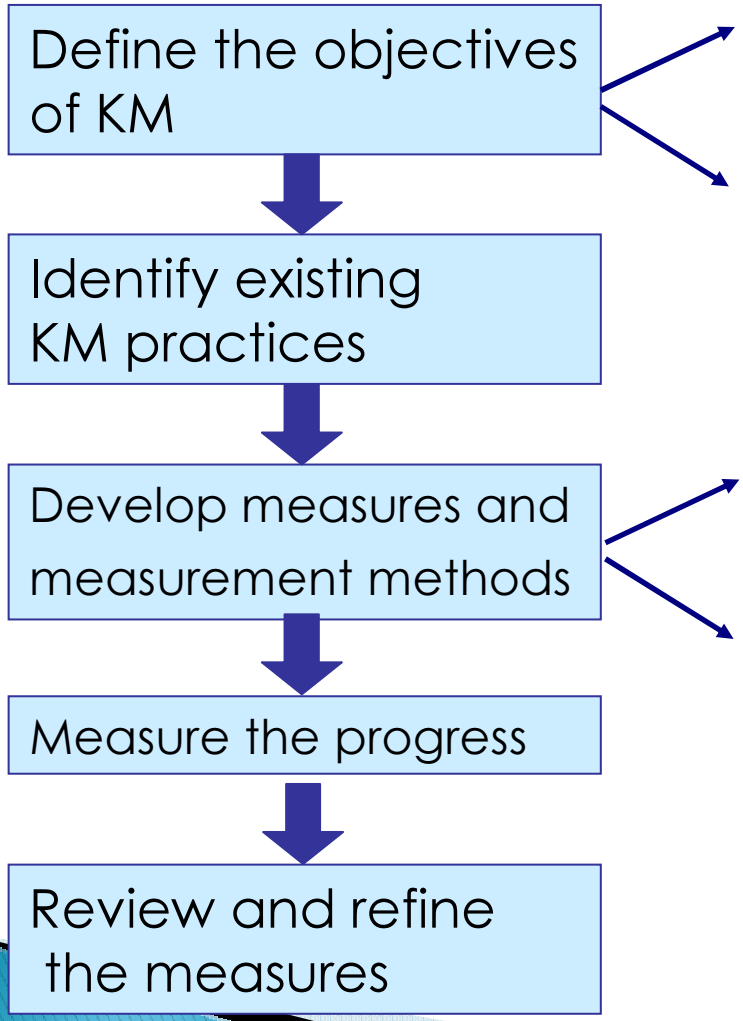
Objectives

- To evaluate existing knowledge management practices
- Determine areas in need of improvement
- Provide feedback needed for improvement is adequate
- Ensure KM supports informed decision making (all levels)
- Ensure KM objectives aligned with strategy
- To communicate management goals or priorities
- To promote and motivate desired behaviour of employees (motivate knowledge sharing etc.)
- To stimulate learning and innovation

Example KM Performance Indicators



KM Performance Assessment Stages



- Identify knowledge flows and core competencies
- Consider different stakeholders and their goals and definitions of success

- Measures should be reliable, valid, actionable etc.
- Define what data will be collected and how it will be collected and how often

KM Self Assessment

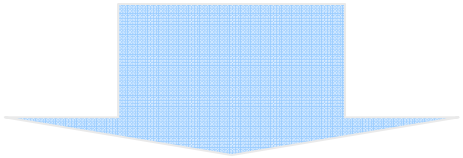
The main purpose of KM self assessment is:

- To understand existing KM strengths & development areas in the organisation
- To help prioritize areas for action
- To support the implementation of an IAEA KM expert mission

The generic self assessment model for NPPs is currently described in IAEA TECDOC 1586.
A separate model for R&D organisations is also available

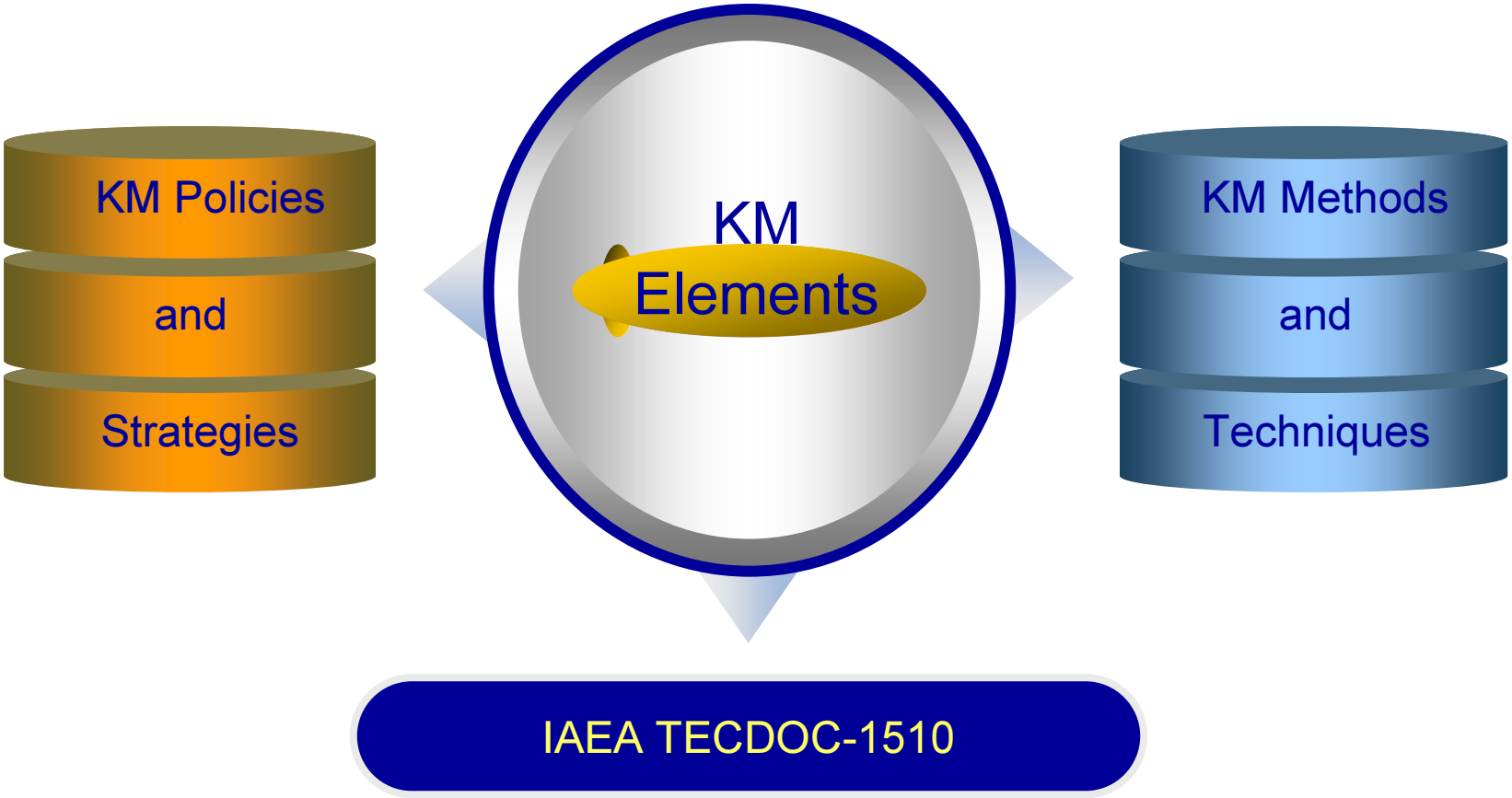
KM Self Assessment is NOT About -

- Compliance monitoring
- Judging organizational performance



- Each organization is in a different stage of NKM maturity
- Each organization has its own NKM methodologies

Knowledge Management Elements

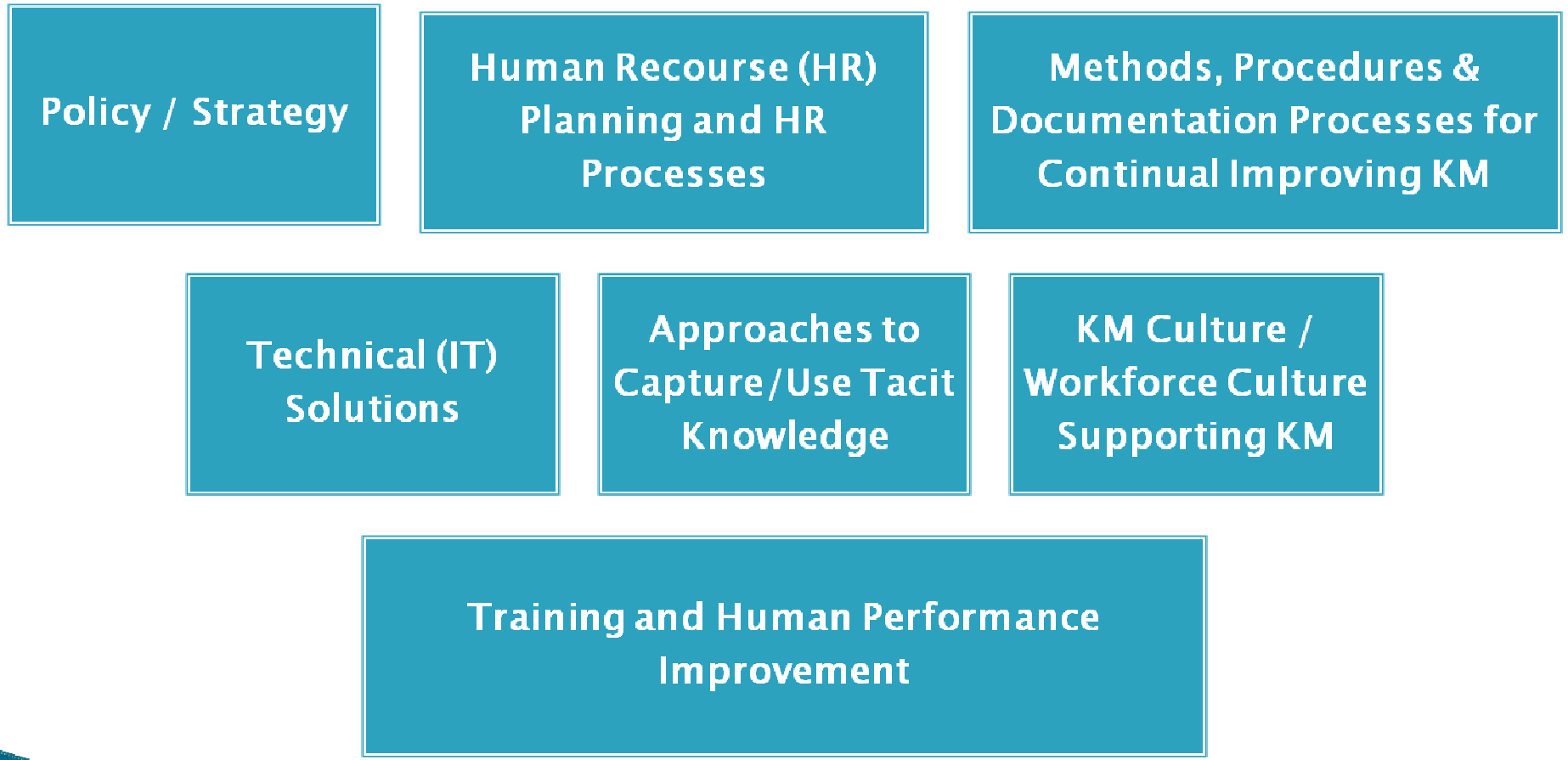


IAEA TECDOC Series No. 1510, October 2006 “Knowledge Management for Nuclear Industry Operating Organizations”

Relevant documents

- IAEA-TECDOC-1399 – Ageing Workforce: Transfer of Knowledge To The Next Generation
- IAEA-TECDOC-1510 – Knowledge Management for Nuclear Industry Operating Organizations
- STI/PUB/1248 – Risk Management of Knowledge Loss in Nuclear Industry Organizations
- STI/PUB/1266 – Managing Nuclear Knowledge IAEA Proceedings
- STI/PUB/1235 – Managing Nuclear Knowledge: Strategies and Human Resource Development
- IAEA Safety Standards No. GS-G-3.1, Application of the Management System for Facilities and Activities, 2006

IAEA KM Assessment Tool (for NPPs)



IAEA KM Assessment Tool (for R&D Organizations)

Policy/Strategy

Human Resource (HR) Planning and HR Processes

Methods, Procedures & Documentation Processes

Technical (T) Solutions

Approaches to Capturing Tact Knowledge

KM Culture/Workforce Culture

Competence Development

External Collaboration

Introductory Questions

Introductory Questions - To be asked before the Assist Visit Begins

No.	Keywords	Description of Criteria	Research domains								Comments
			Basic research	Applied research	Design R&D	nuclear R&D facilities	Non nuclear R&D Facilities	Technical support & services	Education		
1	Activity domains	What activity domains do you have in your institute?									
2	Activity domains	What percentage of total funds are allocated to each domain?									
3	Activity domains	What percentage of research staff are involved to each domain?									

			Yes	No	
4	Activity domains	Is the organogram provided?			
5		Do you have a long term strategy for the organisation?			

No.	Keywords	Description of Criteria	Structure of funds								Comments
			National public funding	International funding	NPP and utility funding	Regulator	Other				
4	Activity domains	What are your sources of funding (in percentage)?									

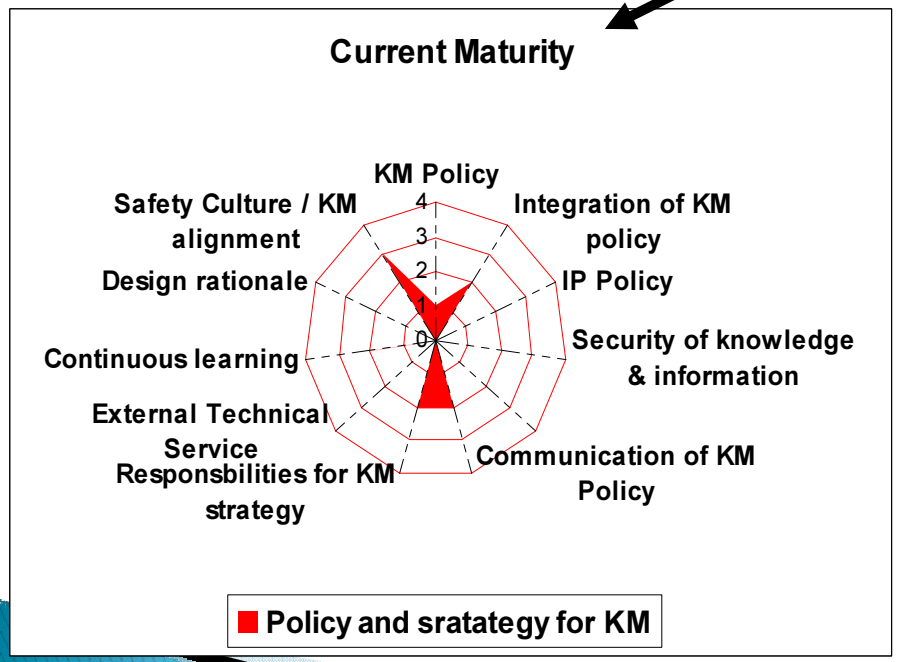
No.	Keywords	Description of Criteria	Knowledge domains							Comments
5	Activity domains	Please list your knowledge domains! (e.g. reactor physics, thermohydraulics, radiation protection, nuclear engineering, radiations chemistry, I&C,...)								

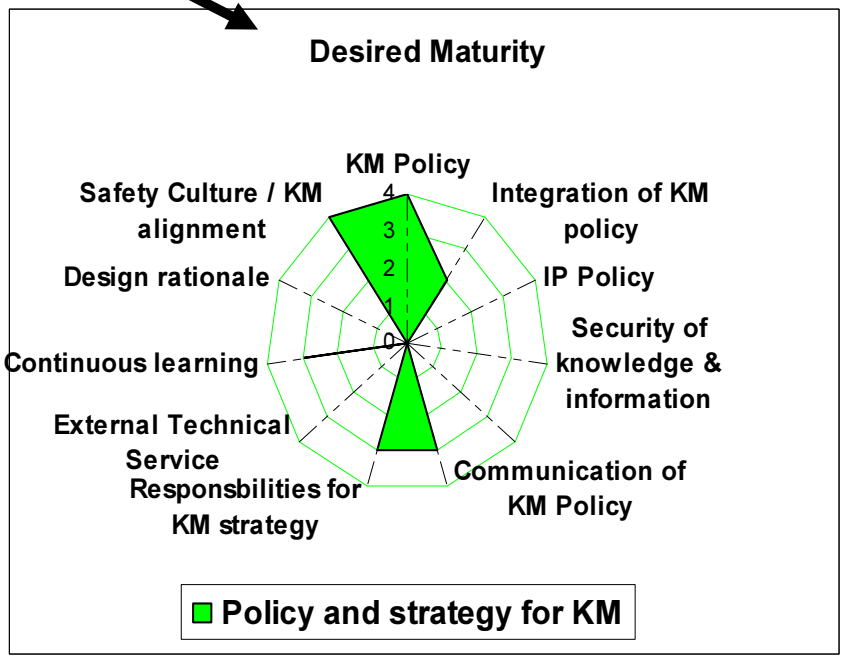
IAEA KM Self Assessment Tool

The self assessment model is available as an interactive Excel spreadsheet with graphical output:

KM Assessment Basis = Present Situation

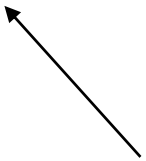
KM Assessment Basis = Desired Situation





Example of Assessment Questions (for Policy/Strategy)

1	**Does the organisation have a written policy for implementing its KM strategy?**
2	**Is this KM policy integrated into the management system?**
3	**Do you have an Intellectual Property (IP) policy?**



Simple questions – unambiguous in meaning

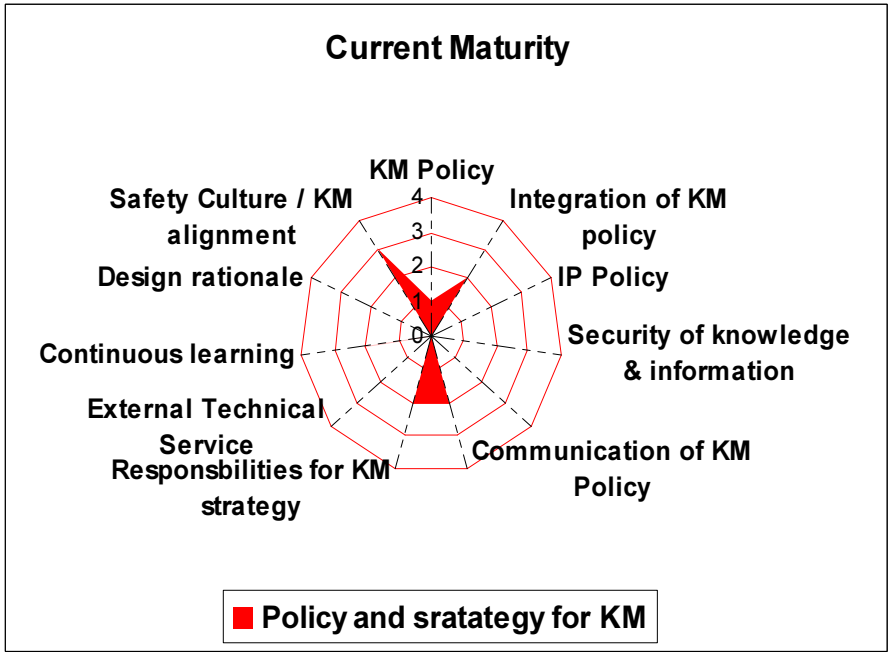
Self Assessment Metrics/Scoring

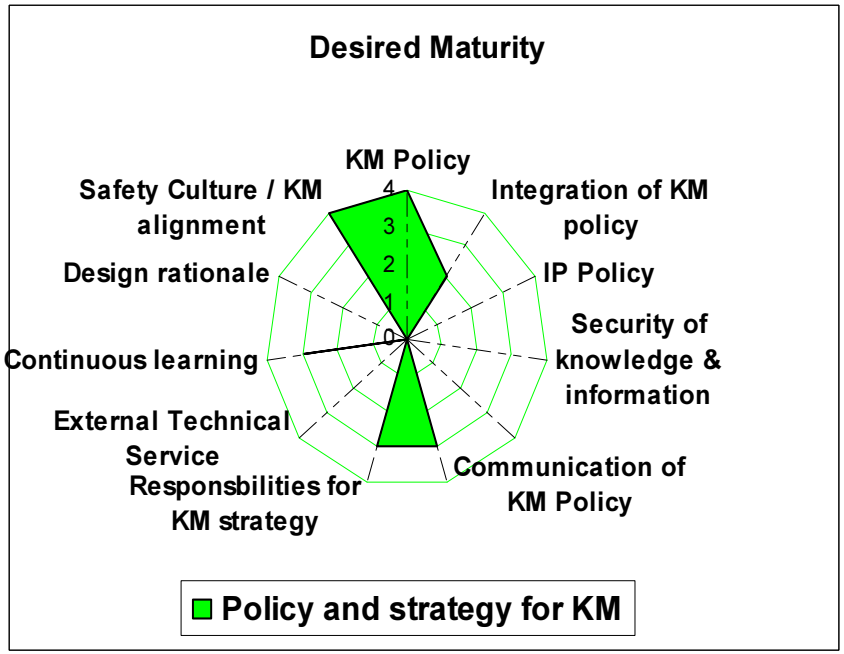
Rating	Extent Currently	Extent Desired
0	Not utilized at all	Not utilized at all
1	To a little extent	To a little extent
2	To some extent	To some extent
3	To a great extent	To a great extent
4	To a very great extent	To a very great extent

1. KM Policies and Strategies

1. Written policies for implementing KM strategy
2. KM policy integrated into management system
3. Written policy for IP
4. Written policy for knowledge and information security
5. Best practice adoption/international standards
6. Communication strategy
7. Identification of KM responsibilities
8. Managers are personally involved in the KM program
9. Processes in place to capture design rationale
10. Organization's strategic focus supports a continuous learning environment

1. KM Policies and Strategies

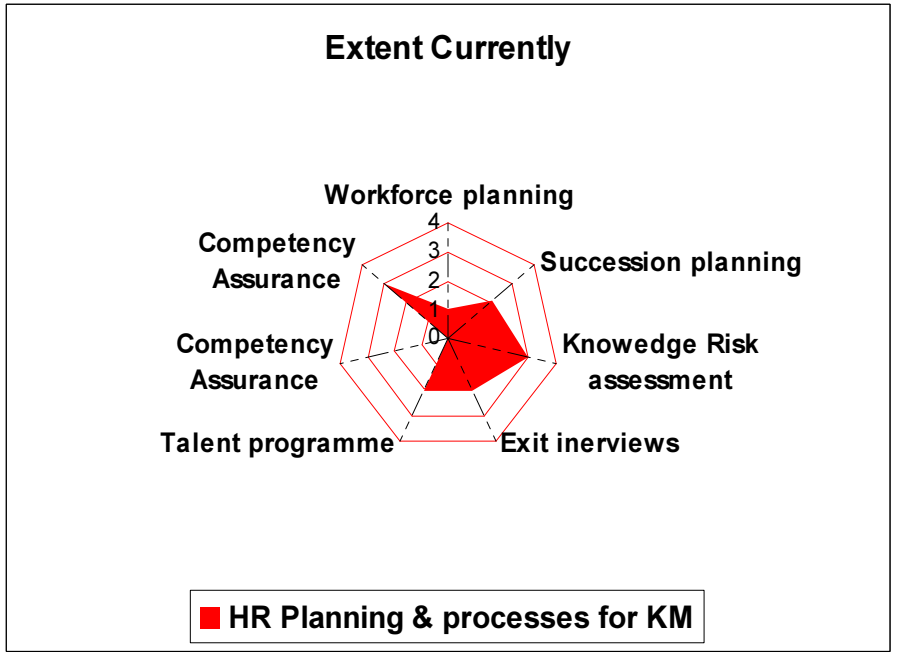


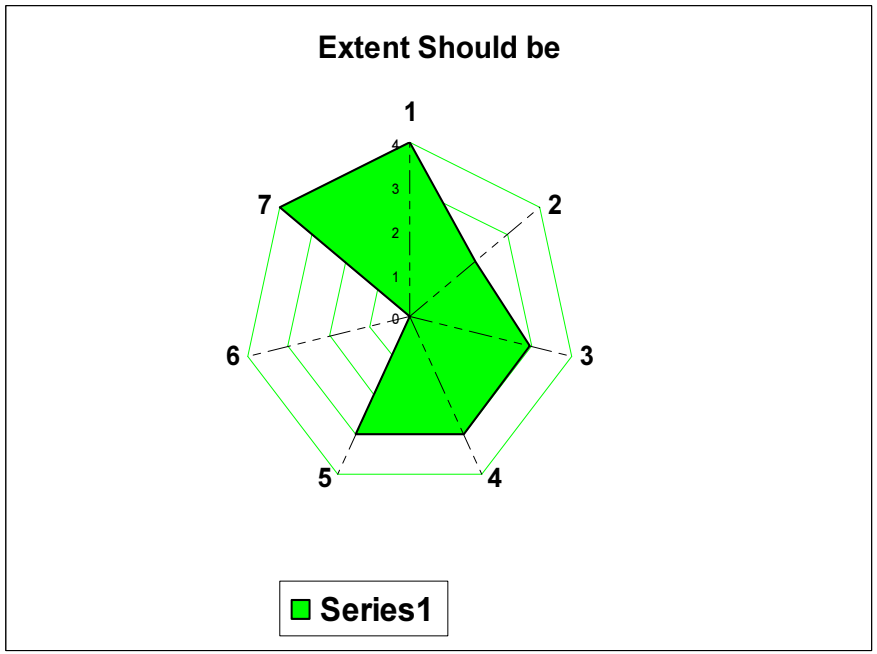


2. HR Planning and HR Processes

1. Workforce planning – a comprehensive workforce planning methodology
2. Succession planning
3. **Risk assessment for critical knowledge loss**
4. Exit interviews
5. Talent programme for leadership/technical talent
6. Competence assessment of technicians
7. Competence assessment of Scientists

2. HR Planning and HR Processes

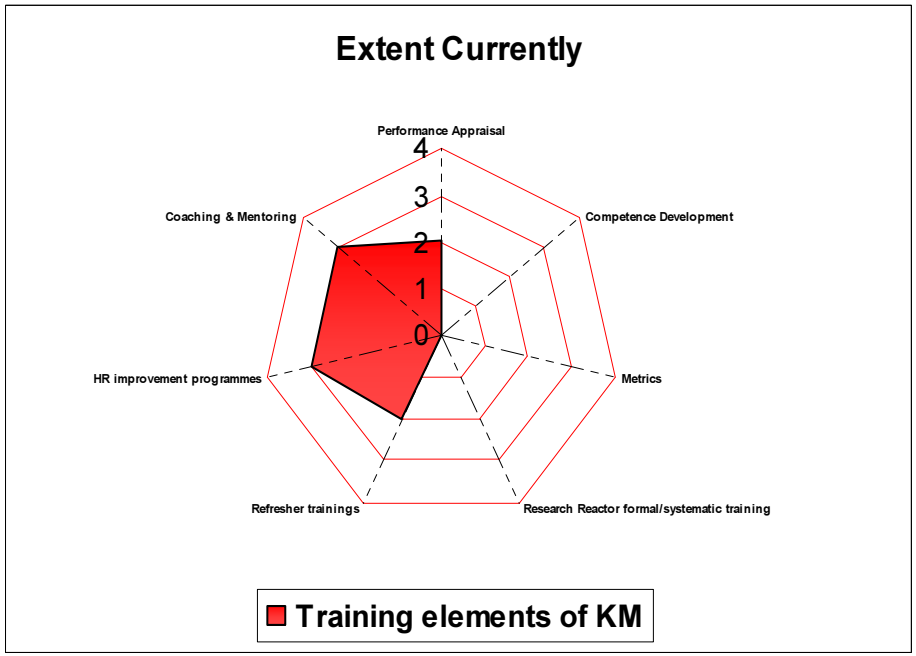


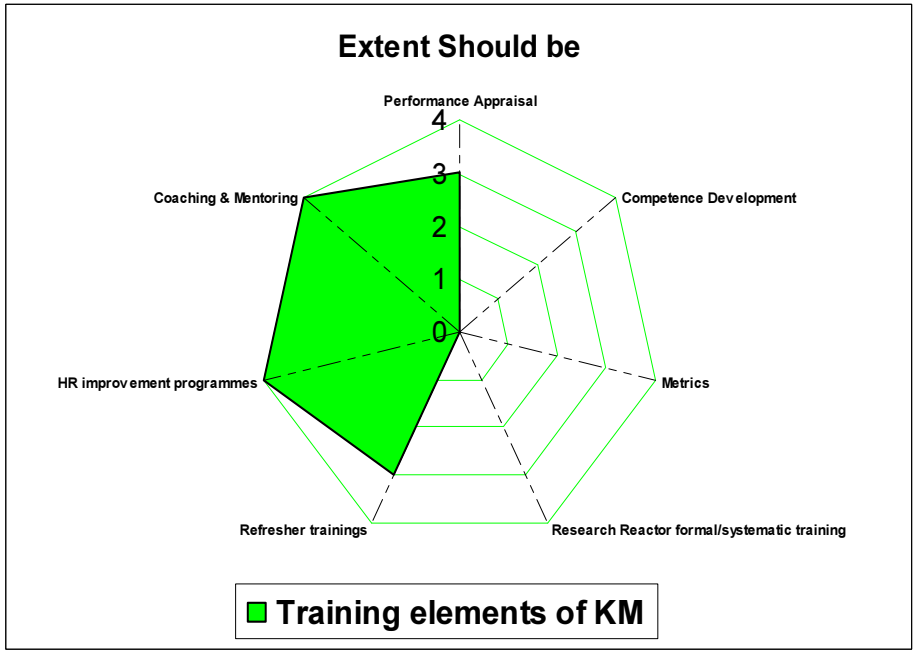


3. Competence Development

1. Performance appraisals
2. Knowledge sharing at conferences, internal seminars, publications
3. Metrics for above
4. Formal training for nuclear facility operators
5. Refresher training
6. Formal human performance programme
7. Coaching & mentoring approach

3. Competence Development

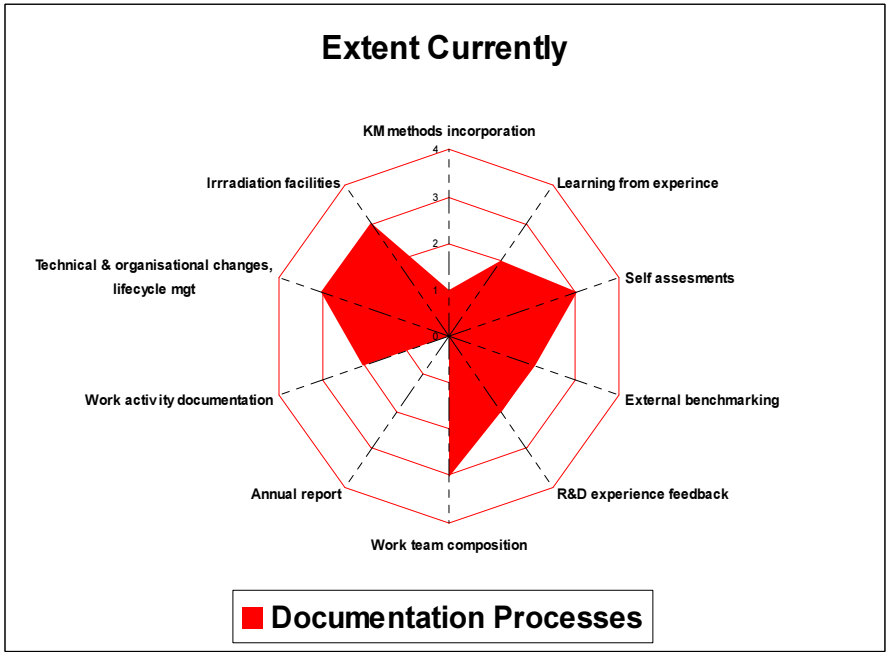


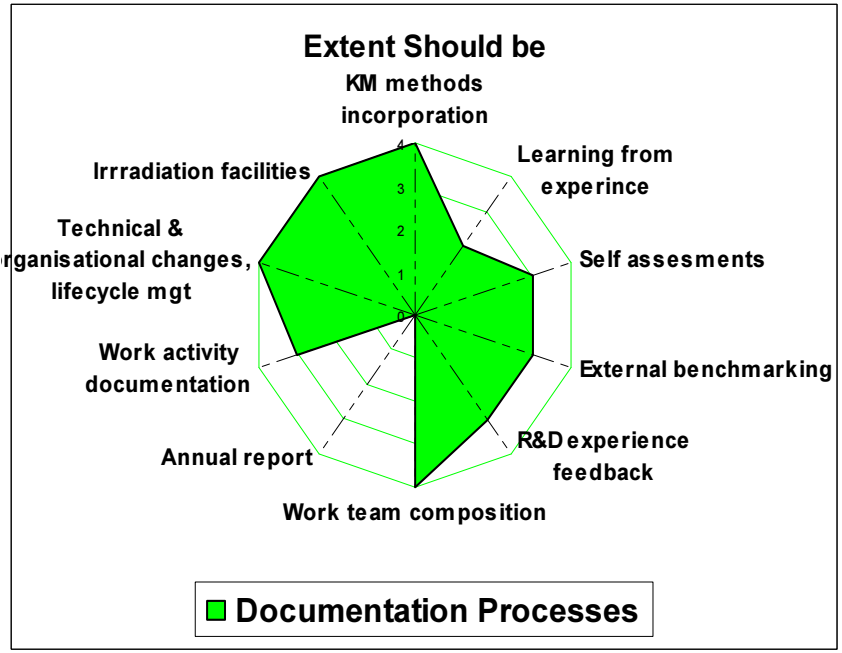


4. Methods, Procedures & Processes for Improvement

1. KM methods incorporated into procedures
2. Learning from experience
3. Use of self assessments
4. Use of external benchmarking for good practice
5. Feedback from R&D experience
6. Work team composition considerations
7. Publication of annual scientific report
8. Documentation of all work activities
9. Prompt update of information to represent technical and organisational change
10. Updated configuration information for nuclear irradiation facilities

4. Methods, Procedures & Processes for Improvement





5. Technical (IT) Solutions

Alignment of IT & KM strategies

Integrated approach to information management

Utilisation of:

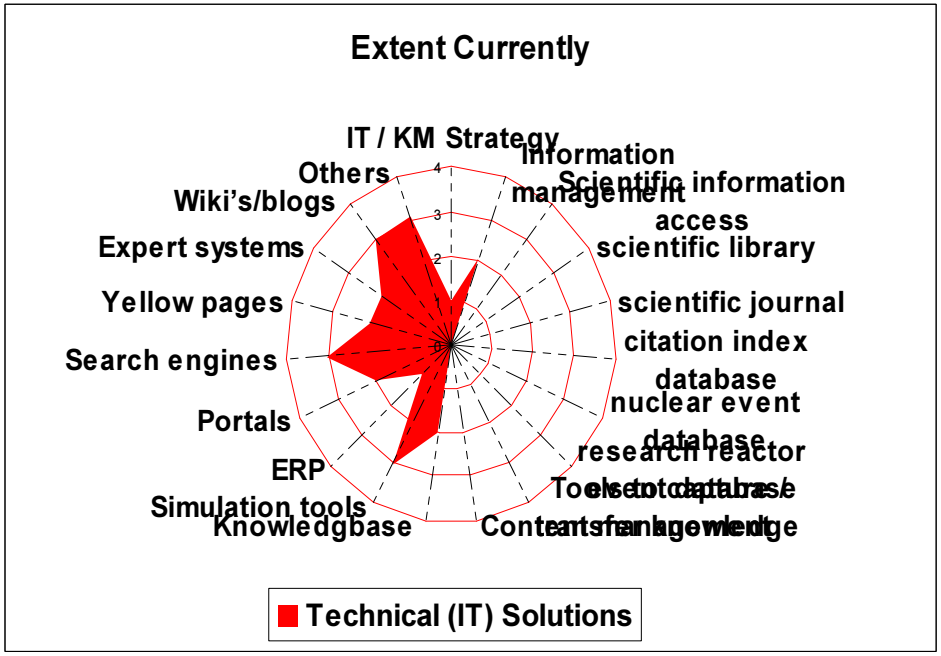
- **Scientific library**
- **Scientific journal**
- **Citation index database**
- **Nuclear event database**
- **Research reactor event database**

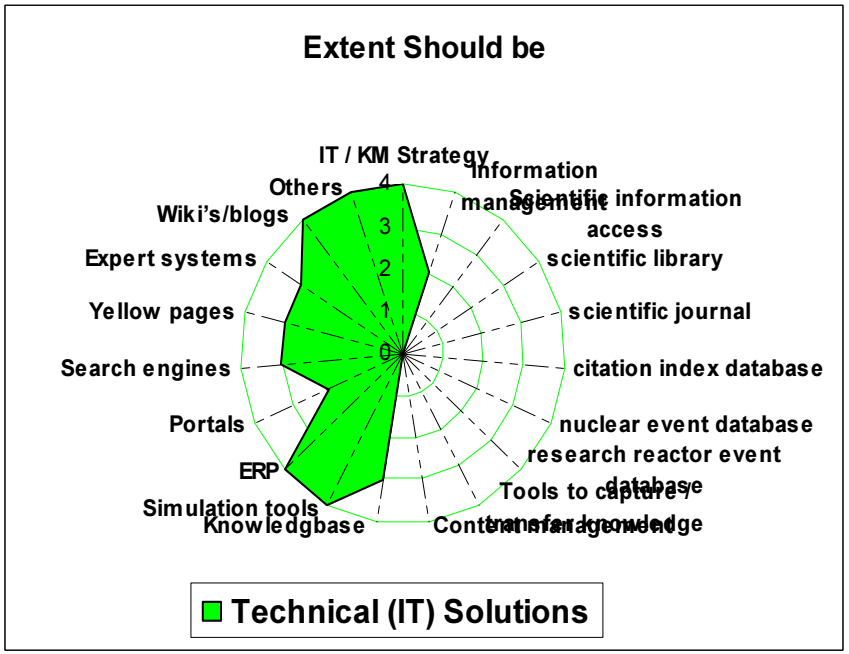
Use of training programs for simulators, CBT, mutimedia simulations etc. to capture transfer knowledge

It support tool use, e.g

- **Knowledgebase**
- **Simulation tools**
- **Knowledge search engines**
- **Expert yellow pages**
- **Expert systems**
- **Wikis/blogs**
- **Others**

5. Technical (IT) Solutions

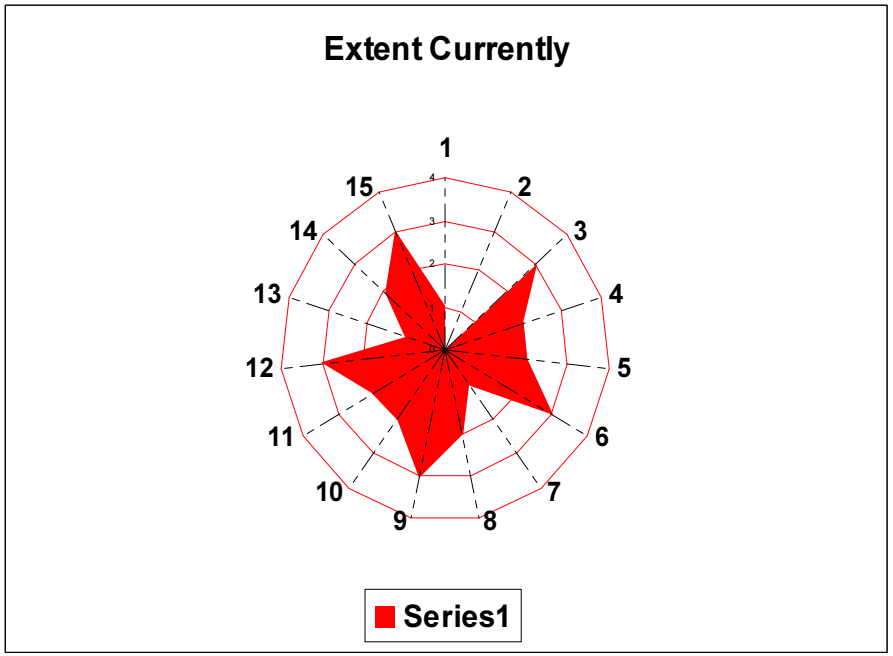


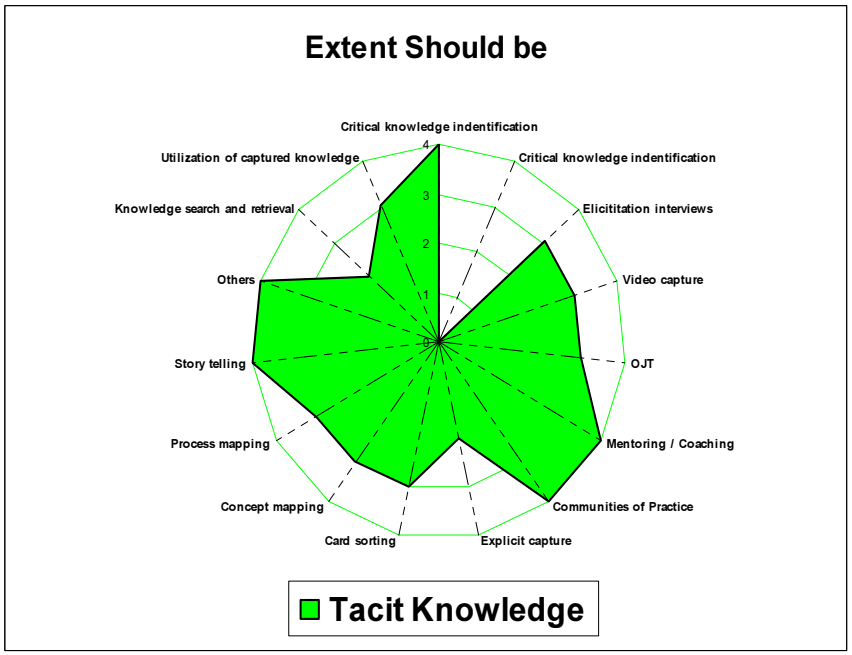


6. Approaches to Capture/Use Tacit Knowledge

1. Taxonomy development
2. Process for critical knowledge ID
3. Processes for knowledge elicitation/harvesting, eg.
   - Interviews
   - Video capture
   - OJT dialogue
   - Mentoring/coaching
   - Communities of Practice (CoPs)
   - Explicit capture (narrative documentation)
   - Card sorting
   - Concept mapping
   - Process mapping
   - Story telling
   - Others
4. Knowledge retention to facilitate search/retrieval
5. Processes for utilization of captured knowledge

6. Approaches to Capture/Use Tacit Knowledge

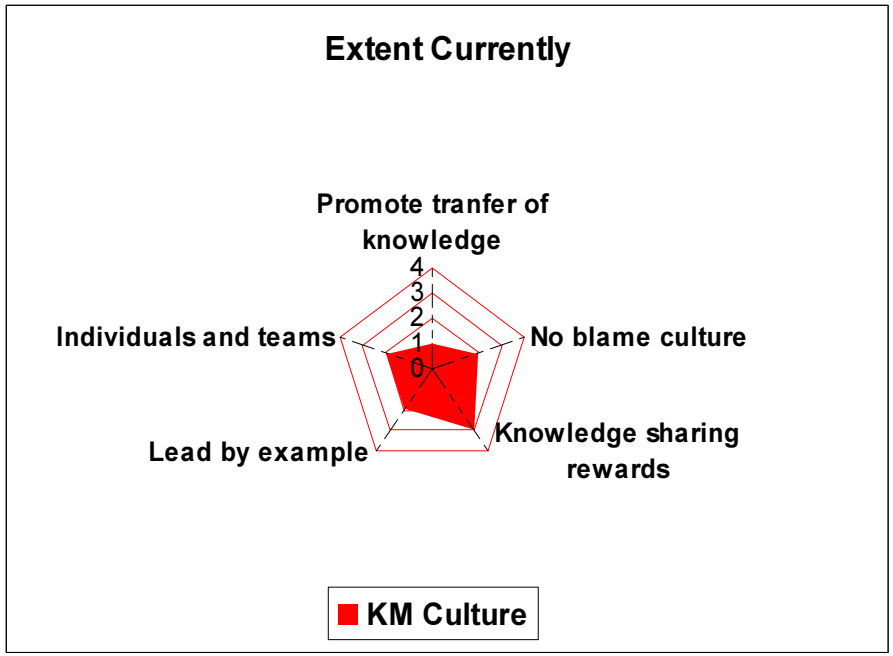


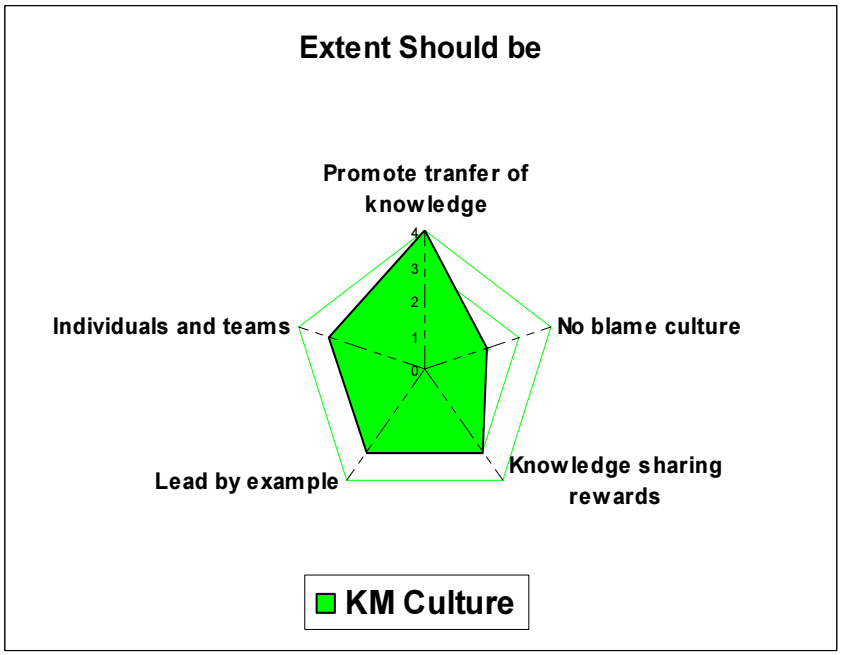


7. KM Culture/Workforce Culture Supporting KM

1. Culture to promote transfer of knowledge
2. No blame environment – reporting incidents/events and sharing from lessons learned
3. Rewarding of knowledge sharing
4. Leadership/commitment
5. Encouragement of trust, ethics, cooperation, collaboration amongst teams

7. KM Culture/Workforce Culture Supporting KM

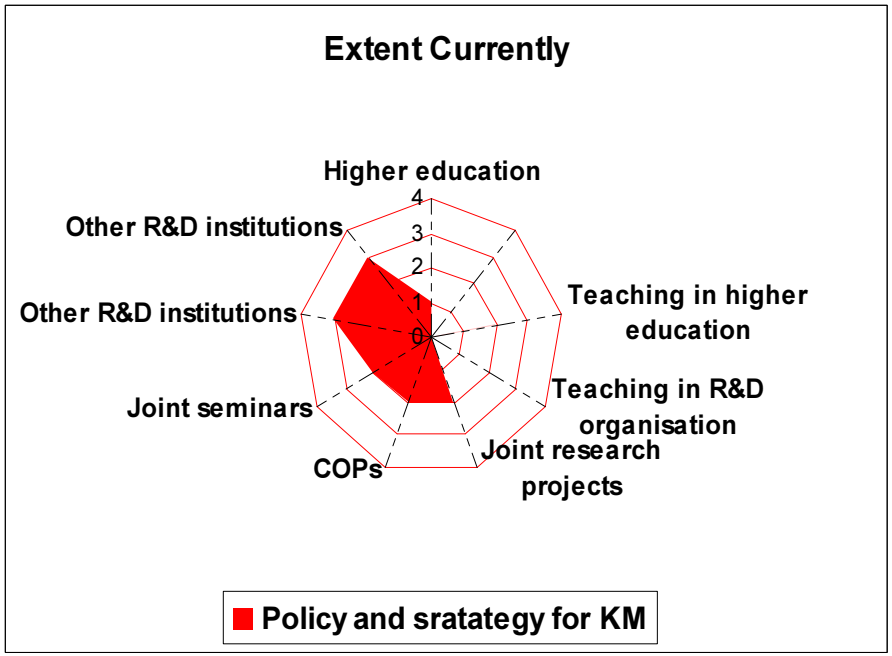


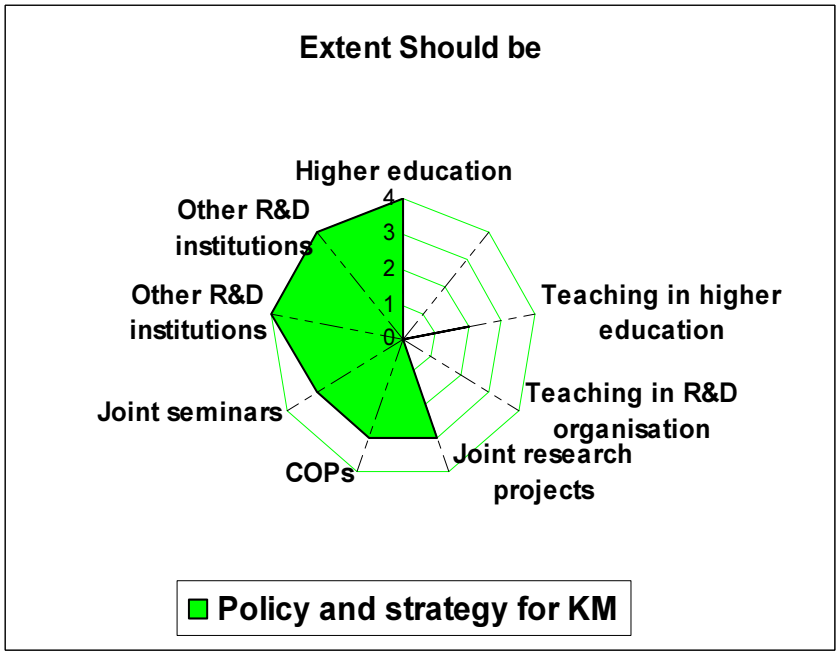


8. External Collaboration

1. Regular collaboration with higher educational institutes
2. Does this include:
   - Teaching by research staff (at educational institutes)
   - Teaching by educational staff (at the R&D organisation)
   - Participation in joint research projects
   - Participation in COPs
   - Participation in joint seminars
3. Regular collaboration with other R&D institutions
4. Regular collaboration with foreign institutions

8. External Collaboration





Self Assessment Process

Discussion With Senior Management

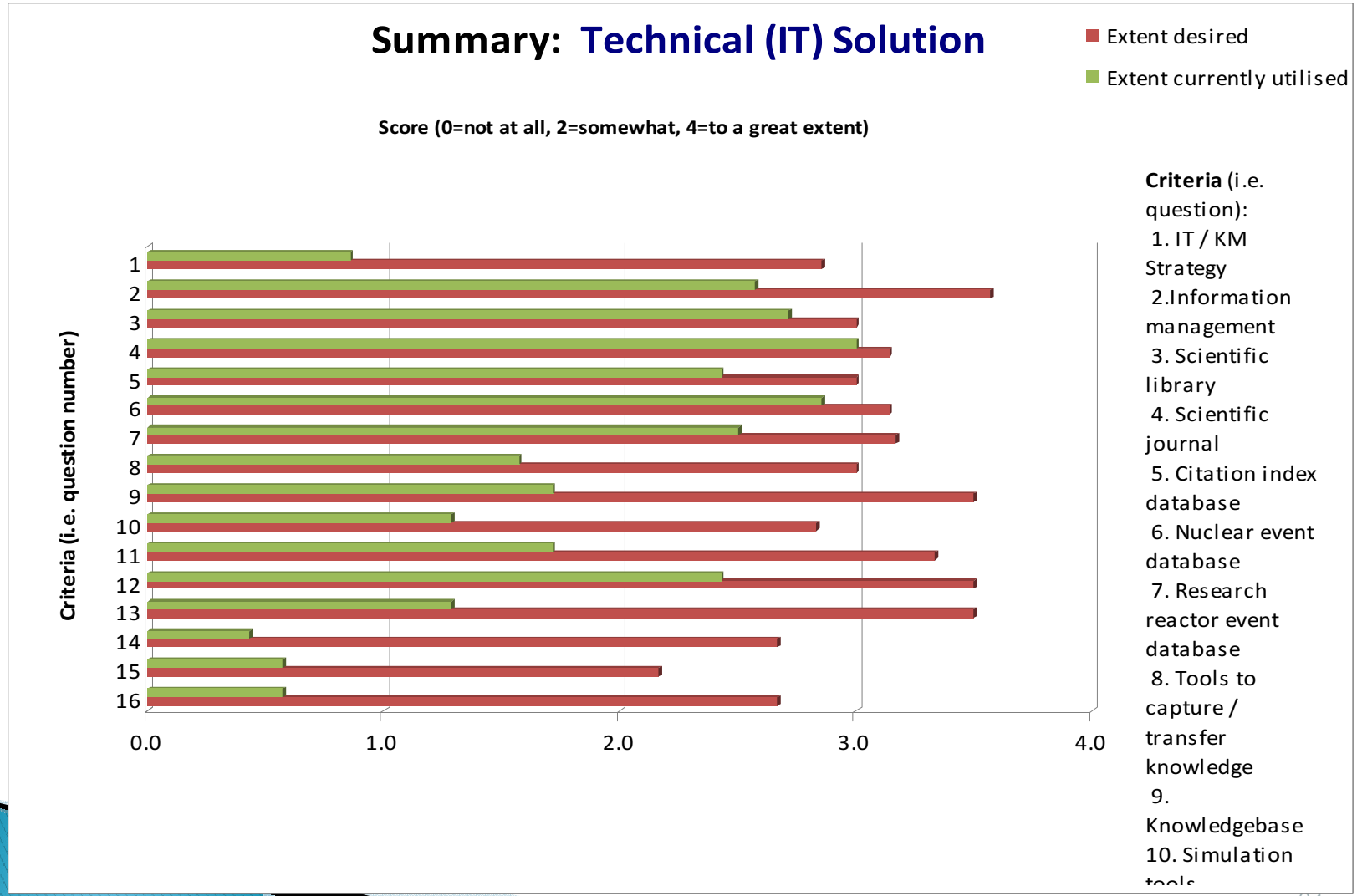
Facilitated Group Discussion

NPP Assessment Tool Experience

The methodology presented in this presentation has been successfully applied during IAEA KM assist missions to the following organizations:

- Krsko NPP of Slovenia
- Paks NPP of Hungary
- Ignalina NPP of Lithuania
- Kozloduy NPP of Bulgaria
- Darlington and Bruce NPPs of Canada
- Zaporozhe NPP of Ukraine
- Bariloche R&D organisations – Argentina

Chalk River example



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Summary

The IAEA KM assessment tool has been developed to help organizations to:

- Understand existing KM strengths & development areas in the organisation
- Help prioritize areas for action
- Support the implementation of an IAEA KM expert mission

- It has been successfully applied at several NPPs
- IAEA supporting documentation and tools are available to assist organizations

Thank You For Your Attention

Questions ?

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