NUCLEAR KNOWLEDGE LOSS RISK MANAGEMENT

(LESSONS LEARNED, IMPLEMENTATION EXPERIENCES)

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<table>
<thead>
<tr>
<th></th>
<th>AGENDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ČEZ INTRODUCTION</td>
</tr>
<tr>
<td>2</td>
<td>KNOWLEDGE MANAGEMENT MODEL</td>
</tr>
<tr>
<td>3</td>
<td>KM PROCESS STATUS IN ČEZ, a.s.</td>
</tr>
<tr>
<td>4</td>
<td>NUCLEAR KNOWLEDGE LOSS RISK MANAGEMENT IN ČEZ NPPs</td>
</tr>
<tr>
<td>5</td>
<td>KM &amp; COMPETENCY MANAGEMENT</td>
</tr>
<tr>
<td>6</td>
<td>CLOSING</td>
</tr>
</tbody>
</table>
ČEZ GROUP IS INTERNATIONAL POWER SUPPLIER

ČEZ in Poland
- 100% share in Skawina
- 100% share in Elcho

ČEZ in Czech Republic

ČEZ in Romania
- 100% share in ČEZ Distributie, ČEZ Vanzare
- Wind parks Fântânele and Cogealac
- Hydro power station Resita

ČEZ in Turkey
- 50% share in SEDAS
- 37.36% share in Akenerji

ČEZ in Bulgaria
- 67% share in 3EDCs
- 100% share in TPP Varna

Source: ČEZ, národní statistiky, 2012
CZECH NUCLEAR POWER PLANTS

Temelin: Started in 2000 (2x 1000 MW)

Dukovany: Started in 1985 (3x 450 MW, 1x500 MW)
Knowledge / experience itself has not value if it is not achievable, properly applied and used to reach the company's values and goals. The KM principle in ČEZ includes: the capture, sharing and using of unique knowledge.
TYPES OF KNOWLEDGE

1. Know – what
2. Know – why
3. Know – how
4. Know – who

KNOW – WHO

- Who is Expert@Risk?
- How to identify Experts?
- How to treat them?
- Why are they important for us?
The Strategic Knowledge Management reference model consists of a KM process linked to the overall business model of strategy-business-product and performance control as shown in the following diagram:
KM PROCESS STATUS IN ČEZ, A.S.
The main target of KM introduction is to reduce the risks associated with the possible loss of the unique knowledge and its holders.

**Generational replacement (retirement)**
- The risk of loss of the unique knowledge, experience and know-how

**Increasing demand from abroad for skilled professionals**
- Risk of loss of significant professionals going abroad

**Development of NPPs, increasing security requirements**
- The experts transition from the operation business; increasing demands on the quality of work

**Limited transfer of knowledge and experience, rapid increase of capacity**
- Experience is not transferable only by copying from team to team

**Experience is not used for the improvement of the processes**
- Significant findings are not applied properly. All projects start „from zero“.
In the years 2007/2008 the Knowledge Management has emerged as one of the prime concerns in our HRM system. Based on the KM best practice data gathering, surveys and analyses, the detailed concept has been proposed and implemented primarily in our nuclear production units.

**Main objectives:**

- To identify, maintain and develop the unique knowledge
- To share the critical knowledge and the best practices
- To save the organization from critical capabilities and minimize the duplication effort
- To set up the succession planning system for the knowledge holders with potential knowledge loss
- To create effective system for the knowledge record sharing and its updating
- Further implementation of KM within production division as well as extension into another divisions
HOW FAR DID WE GET

2007
Concept & Strategy of KM in ČEZ
Pilot project in NPP Temelin

2008
KM process implementation in NPP Temelin

2009

2010
Roll out div. Investment
Roll out div. International

2011
KM process implementation in NPP Dukovany

2012

2013
Roll out in dept. Central engineering and dept. Safety

Content & Roles
Supporting tools (IT, motivation, communication)
KM GENERAL PRINCIPLES IN DETAIL

KM implementation requires the effective investment to the following 6 dimensions:

**Hard dimensions**
- Content and Structure
  (map of knowledge areas, experience reports, documentation)
- Process and Organization
  (roles and competences, process of debriefing)
- Technology and Infrastructure
  (intranet KM portal, shared KM database)

**Soft dimensions**
- Cooperation and Culture
  (motivation, communication, benefits)
- Persuasion and Leadership
  (management support, process documentation)
- Impact and Resilience
  (plan of implementation, inputs and outputs monitoring)
NUCLEAR KNOWLEDGE LOSS RISK MANAGEMENT IN ČEZ NPPs
STRUCTURE OF KNOWLEDGE AREAS IN OUR NPPs IS COMPATIBLE WITH MAJOR PROCESSES

No. 1 – 9 indicates the number of Knowledge Area
IDENTIFICATION OF UNIQUE KNOWLEDGE HOLDERS (EXPERTS)

Experts Identification follows this steps:

1st round of identification (top mngt, middle mngt.)
- Initial interviews
- Creating of Knowledge@Risk and Experts@Risk lists
- Risk evaluation

2nd round of identification (larger team)
- Initial interviews with recommended experts
- Risk evaluation within each knowledge area

Priority setting (risk evaluation)
- Workshop (managers & experts)
- Highest risk identification
- Priorities setting in area of succession programs

Knowledge Management
- Update of priorities, setting goals, risk evaluation
- Plan of debriefings and knowledge reports
- Implementation of succession programs
Seznam nositelů významných zkušeností (Expert@Risk)

<table>
<thead>
<tr>
<th>Jméno experta - nositele významných zkušeností</th>
<th>Navrhovatel(é)</th>
<th>Téma (zkušenost)</th>
<th>Ob�st zkušenosti</th>
<th>Míra exotizíčnosti</th>
<th>Riziko odchodu</th>
<th>Riziko pozice</th>
<th>Datum odchodu do SD</th>
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KM ROLES AT ČEZ, A.S.

ČEZ Management Board

Board KM Owner

ČEZ HQ

Production Unit Management

Knowledge Manager

Knowledge Area

KA1 – Knowledge Area

Sponsor of KA1

Lead Expert of KA1

Expert of KA1

KM Administrator

KM Coordinator

ČEZ HQ

Line reporting
KM Status report
Content evaluation
Structure evaluation
ČEZ KM PROCESS MODEL

I. PHASE
- Identification of the knowledge at risk (Knowledge@Risk list)
- Identification of the knowledge at risk holders (Experts@Risk list)

II. PHASE
- Debriefing (structured interview)
- Experience Report
- Succession program
  - and / or

III. PHASE
- Knowledge publication (SW database, KM Portal)
- End - user

Continuous update of the process inputs and outputs
Continuous internal communication and motivation of all KM process participants
WHAT WE UNDERSTAND KNOWLEDGE MANAGEMENT IS

- Experience Reports
- Debriefing Reports
- Expert Profiles
- DMS

**HR Processes:**
- Systematic approach to training
- Tutoring
- Succession planning
- Exit interviews
- KM KPIs

**Others:**
- Peer assist visits, conferences
- Communities of practice
- Alumni programs
EXAMPLE OF ORGANISED KNOWLEDGE TRANSFER

Knowledge & Experience, Competency

Knowledge Transfer (training)

Experience Reports => Portals

KM EXPERT

LECTURER
KM & COMPETENCY MANAGEMENT
ORGANIZATIONAL COMPETENCY MODEL IN ENERGY

Knowledge:

The capacity for effective action

Competence:

The ability to put skills, knowledge and attitudes into practice in order to perform a task or role in an effective and efficient manner to established standard.

Competence = Knowledge & Skills & Attitude

Competency:

A statement that defines knowledge area, skills and behaviour that is required to perform a particular role in certain standard.

ČEZ KM approach:

Our KM process is based on: identified, captured and shared knowledge. Knowledge must be achievable, properly applied and used to reach the company’s values and goals.

Unique knowledge & experience & qualification
## Search Skills and Expertise

<table>
<thead>
<tr>
<th>RJ</th>
<th>Name</th>
<th>Function</th>
<th>Job Relevance</th>
<th>Expert Knowledge</th>
<th>Reference Projects</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE</td>
<td>ANTON JAROSLAV</td>
<td>V3 analysis for system efficiency</td>
<td>PÉČE O ZAŘÍZENÍ</td>
<td>VS support, system optimization, user interface design</td>
<td>VS support, system optimization, user interface design</td>
<td>ZOZ</td>
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<tr>
<td>TE</td>
<td>BENEDA MILAN</td>
<td>VZT - VZT office</td>
<td>PÉČE O ZAŘÍZENÍ</td>
<td>Knowledge of VZT system, management of VZT system</td>
<td>Participation in system optimization</td>
<td>ZOZ</td>
</tr>
<tr>
<td>TE</td>
<td>BIGAS JIRIING</td>
<td></td>
<td>PÉČE O ZAŘÍZENÍ</td>
<td>Knowledge of VZT system, management of VZT system</td>
<td>Participation in system optimization</td>
<td>ZOZ</td>
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<tr>
<td>TE</td>
<td>JIRI HILK</td>
<td>správce HIL - SYS online</td>
<td>PÉČE O ZAŘÍZENÍ</td>
<td>System integration, VZT system documentation</td>
<td>Participation in system optimization</td>
<td>ZOZ</td>
</tr>
</tbody>
</table>
# The Way to Find and Share the Knowledge & Skills & Expertise (2)

## Search Experience Report

<table>
<thead>
<tr>
<th>Lokalita</th>
<th>Oblast</th>
<th>Dlouhé oblast zrušení</th>
<th>Téma ZoZ (odkaz na ZoZ)</th>
<th>Klíčová slova</th>
<th>Autor</th>
<th>Abstrakt</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE</td>
<td>KOORDINACE</td>
<td>PŘÍPRAVA TRANSPORTNÍHO ZAŘÍZENÍ A TRANSPORTNÍCH ČEST V PROSTORU BLOKŮ PŘI GO</td>
<td>KTMT</td>
<td>DEJMEK VÁCLAV</td>
<td></td>
<td>Transporty zařízení z KTMT do BAPP a zpět v průběhu GO až do cesty na kruhovou cestu odstavky. Z toho důvodu je nezbytně nutné přidat transportní zařízení v průběhu realizace projektu.</td>
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<tr>
<td>TE</td>
<td>KOORDINACE</td>
<td>REVIZNÍ PRÁCE ELEKTRO NA BAPP</td>
<td>BAPP</td>
<td>KILBERGER VLADIMÍR</td>
<td></td>
<td>V ZOZ jsou shromážděny zprávy z revizního práce na BAPP v roce 2011. Revize se opakují každý třetí (3) rok.</td>
</tr>
<tr>
<td>TE</td>
<td>KOORDINACE</td>
<td>REVIZNÍ PRÁCE ELEKTRO NA NTKS</td>
<td>NTKS</td>
<td>KILBERGER VLADIMÍR</td>
<td></td>
<td>Rozvaděč OPG, provoz bez režimování, provoz NTKS.</td>
</tr>
<tr>
<td>TE</td>
<td>KOORDINACE</td>
<td>REVIZNÍ PRÁCE ELEKTRO NA PPK</td>
<td>PPK</td>
<td>KILBERGER VLADIMÍR</td>
<td></td>
<td>Bylo naplánováno provedení revizní práce na rozvaděči vysokého napětí OJEC pro POMOCNÉ PLOVENNÉ KONTINU. Zásobování teplom pro elektriku a město Týn nad Vltavou.</td>
</tr>
<tr>
<td>TE</td>
<td>KOORDINACE</td>
<td>REVIZNÍ PRÁCE ELEKTRO NA SVJP</td>
<td>SVJP</td>
<td>KILBERGER VLADIMÍR</td>
<td></td>
<td>Revize transformátorů a rozvaděčů za provozu SVJP. Zároveň se přidělovačům provozu SVJP. Zároveň se přidělovačům pro jednak nového koordinátoru elektro na SVJP.</td>
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### OUR PRIORITIES FOR SUCCESSFUL KM IMPLEMENTATION

#### LESSONS LEARNED

#### KEY ACTIVITIES OF FURTHER KM IMPLEMENTATION

<table>
<thead>
<tr>
<th>Activity</th>
</tr>
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<tbody>
<tr>
<td>Support and motivation of the employees involved in KM</td>
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<tr>
<td>Management support in production units</td>
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<tr>
<td>Capacity of KM team both in HQ and local units</td>
</tr>
<tr>
<td>Capacity (headcount) enabling experience transfer within the process of successorship</td>
</tr>
<tr>
<td>Process description in internal documentation</td>
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<tr>
<td>Internal Communication (PR)</td>
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<tr>
<td>Upgraded IT support</td>
</tr>
<tr>
<td>Updated methods, procedures &amp; process documentation</td>
</tr>
<tr>
<td>Implementation of KM concept into other department / units</td>
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#### OBJECTIVES IN 2014

- Upgraded IT support
- Updated methods, procedures & process documentation
- Implementation of KM concept into other department / units
Knowledge management is a long term process that has its phases and stages and assumes a corporate culture of open sharing and transfer of knowledge between all employees at all levels.
THANK YOU FOR YOUR ATTENTION

QUESTIONS?

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