

# Information management at the Paks 2 project

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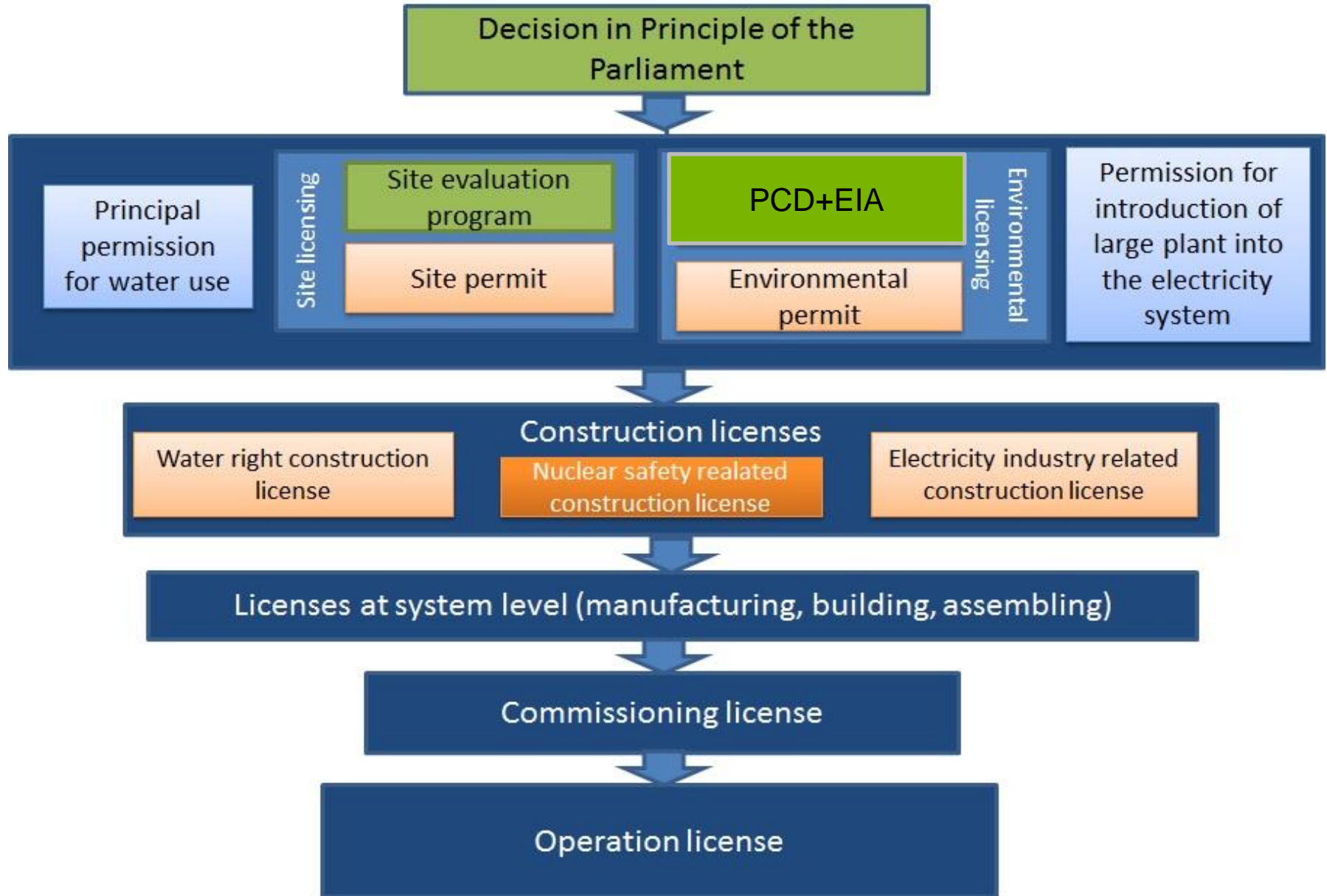
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# New units at Paks NPP

- Paks NPP: extension on the agenda since the 80's
- 2008: New energy policy, including new nuclear units
- 30th March, 2009: decision-in-principle of the Hungarian Parliament about new units
- 2012: establishment of MVM Paks II. Nuclear Power Plant Development Ltd
- January 2014: Intergovernmental agreement on the peaceful use of nuclear energy by Russia and Hungary
  - Two VVER-1200 type reactors at the Paks site
  - Russian loan for the 80% of construction costs
  - Key point of the IGA: 40% localization level (share of domestic suppliers)
  - Nuclear fuel supply is available from the Russian party
  - Spent fuel management (interim storage or reprocessing in Russia), while the spent fuel or the residual waste (in case of reprocessing) will be transferred back to Hungary



# The licensing process



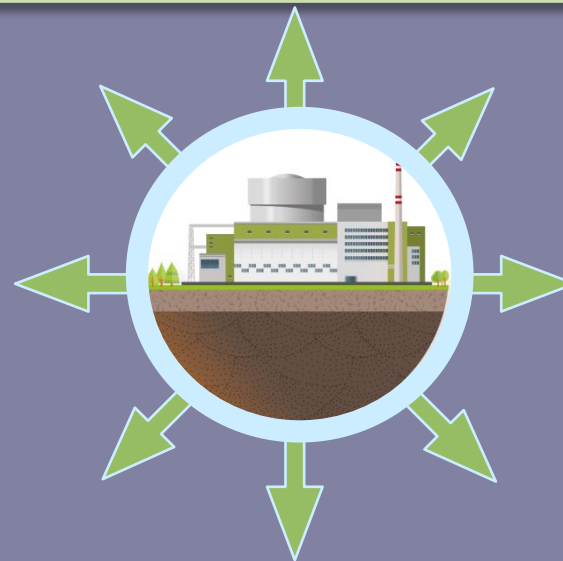
# Environmental Impact Assessment (EIA)

➤ EIA submitted to the authority on 19. 12. 2014

The main contents of the EIA:

- Basic information about the project
- Impact of the discharged cooling-water into the River Danube (heat plume)
- Water and air quality assessments
- Noise- and vibration assessment
- Radioactive and conventional waste management
- Flora and fauna analysis
- Environmental radiation, and radiation exposure of the population living near the site
- The economic and social effects of the project

**Environmental licensing**

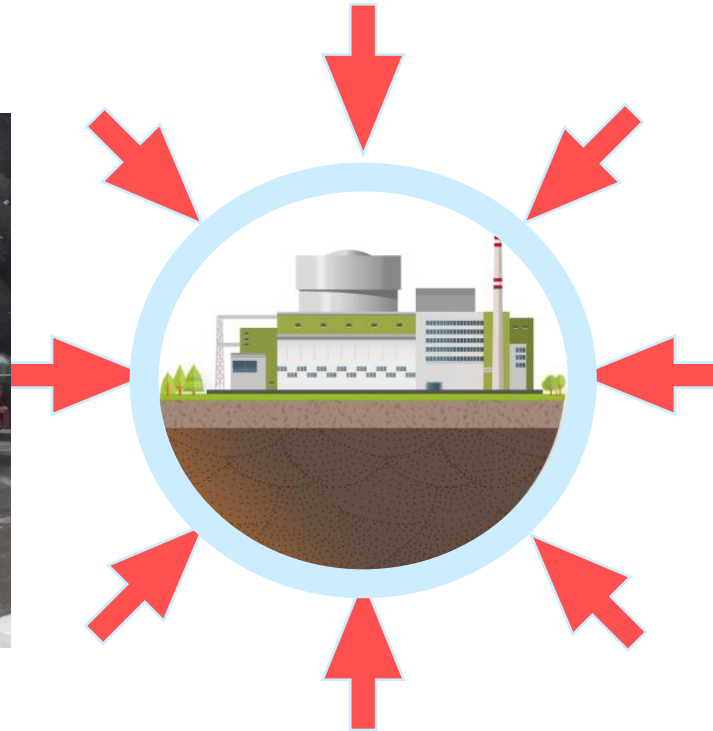


The main goal of the assessment is to determine the effects of the NPP units on the environment at the different stages of the plant lifecycle

# Main parts of the site licensing

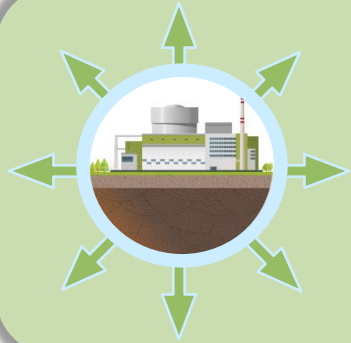
Anthropogenic  
external hazards

Natural external  
hazards

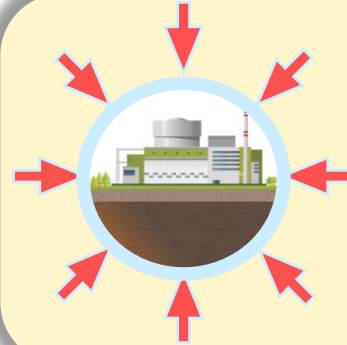


The aim of the investigation is to prove that such circumstances do not exist that could make the site unsuitable for NPP construction. Further objectives are identification of external hazards and definition of the site parameters.

# Main licensing processes under progress

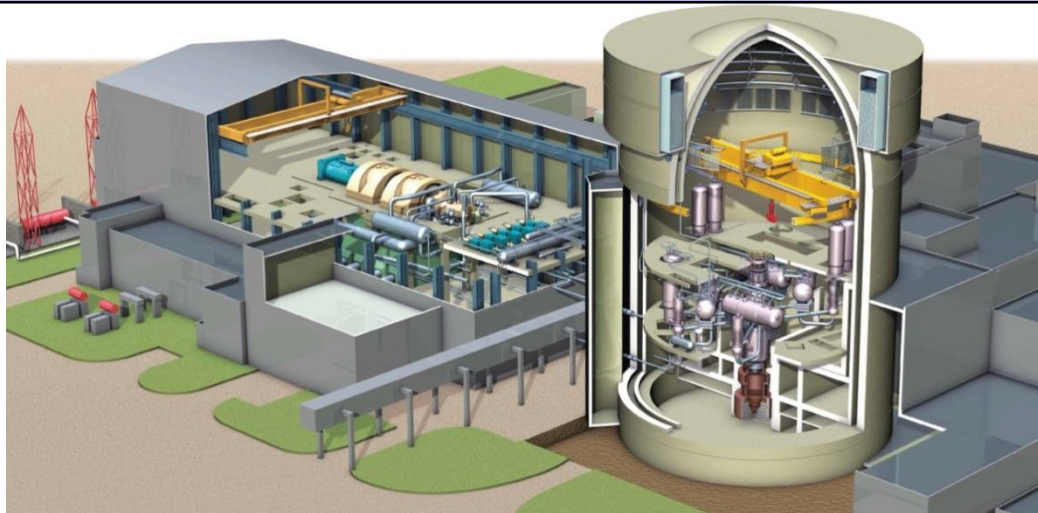


**Environmental  
licensing**



**Site licensing**

**Construction licensing**



# Information management at the Paks 2 project

- The Hungarian Act on Atomic Energy highlights the importance of safety and the responsibilities

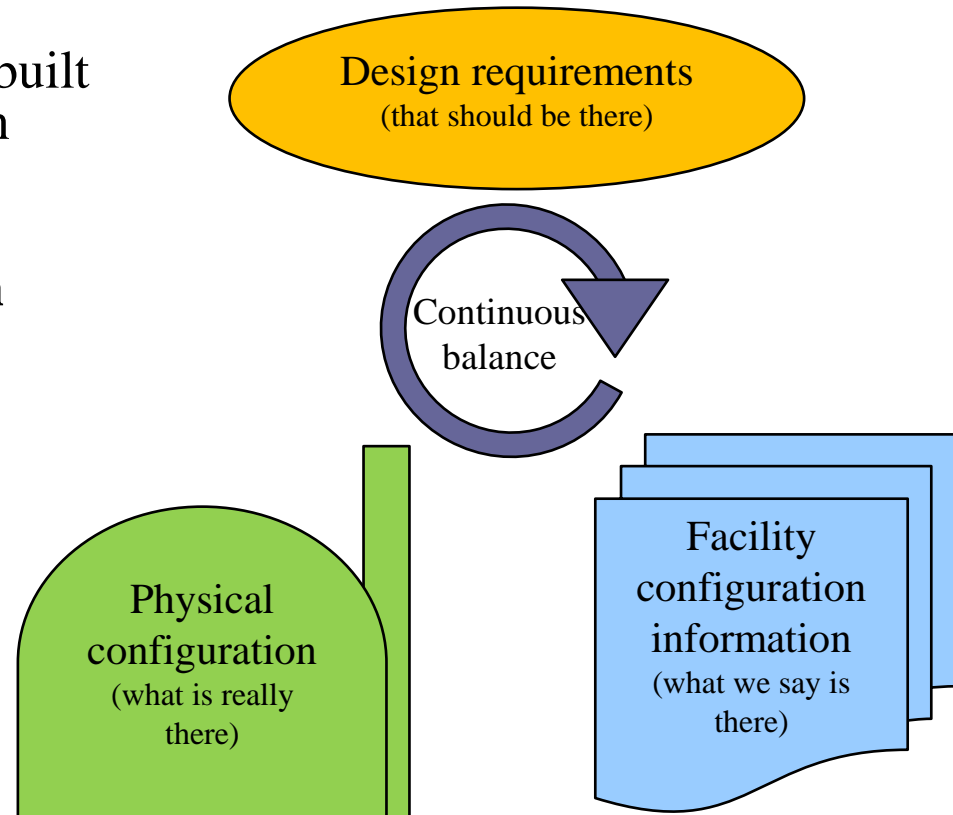
Hungarian Nuclear Safety Code - 9.3.1.0100. [...]

The preservation of the documentation and information important to the safety, and the access of the Licensee to such documentation and information shall be ensured for the entire service life of the nuclear power plant unit.

- The licensee needs all – relevant – data that is generated during the design, licensing and construction of the plant
  - Enormous amount of information → special information management system is necessary!
- Access to these data shall be possible in the pre-construction phase, during construction, commissioning and operation .

# Information management

- Important aspects concerning the IMS – role in configuration management
  - The Hungarian NSC requires the establishment of a configuration managements system from the very beginning of the design in order to ensure that the design requirements, the as-built status and the documentation describing the as-built status of the nuclear facility are in harmony with each other.
  - The configuration management system shall include **information on the design, construction, commissioning, operation, and maintenance information** for the identification and management of the actual configuration of the nuclear facility.





# Information management

- Important aspects concerning the IMS – role in configuration management
- The configuration management system shall ensure that the plant fulfils the requirements
- For the configuration management system, the Hungarian NSC requires that the following shall be part of the program:
  - a) technical database and its IT background,
  - b) documentation management system,
  - c) change management,
  - d) training and practicing for the operation of the configuration management system, and
  - e) supervision and revision of the configuration management system.
- The NSC also requires the protection of the data against loss of information due to deliberate or inadvertent cause of damage.



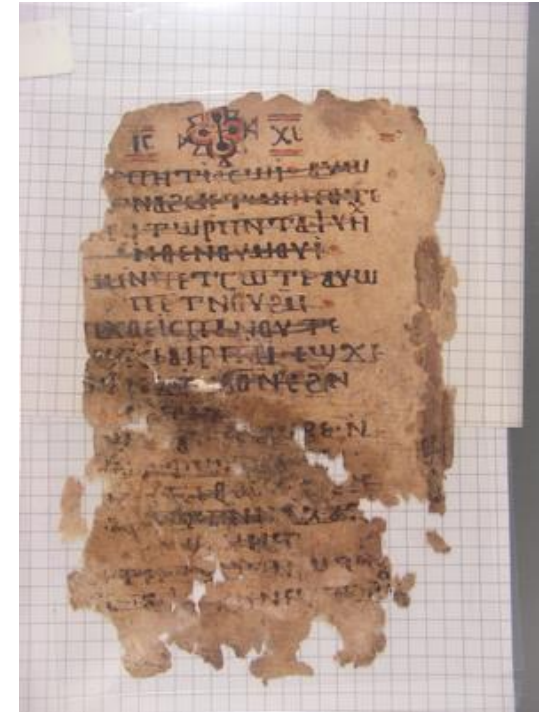
# Information management

- According to the NSC, a computer based technical database shall be available from the commencement of the design work.
  - This database shall include – among others – information on the design, construction, commissioning, operation, and maintenance of the nuclear facility.
  - The technical database shall be established to ensure that the stored data and information can be protected and retrieved during the entire service life of the nuclear facility, irrespective of any change in the computer background.
  - The hard copies of the documentation shall be in agreement with the information stored in the computerized database.
  - Quality of all tools and softwares shall be assured according to standards and codes applied



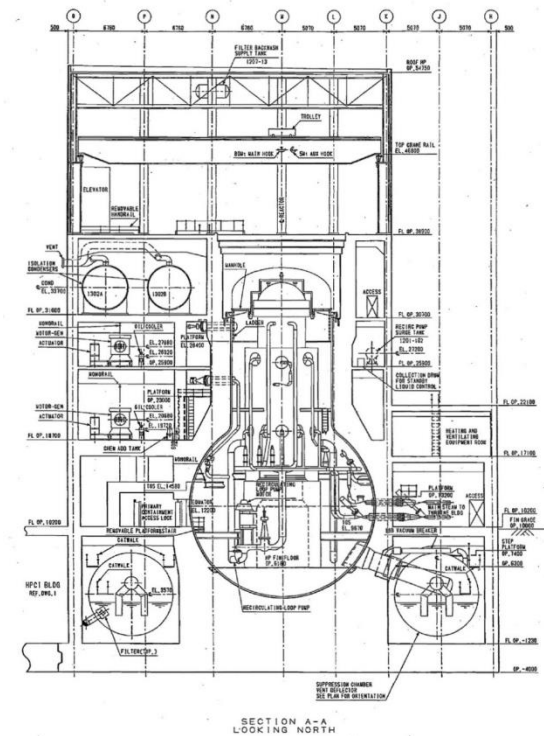
# Information management

- During the construction, all construction and licensing documentation shall meet the Hungarian legal requirements (NSC)!
- Formerly, usually paper-based documentation system (stored in file archives) → different problems:
  - Change management is very difficult
  - Our experiences at the Paks NPP have also shown the difficulties of exploring the differences between the as planned and the as built states



# Information management

- Nowadays usually computer-based documentation are used → numerous advantages
  - Flexible systems, modifications are easy to perform
  - Application of modern 3D design tools, including tools for analysis
  - Databases are easy to search
  - Using appropriate documentation system, tracking of changes is not a demanding problem (compared to the paper-based systems)



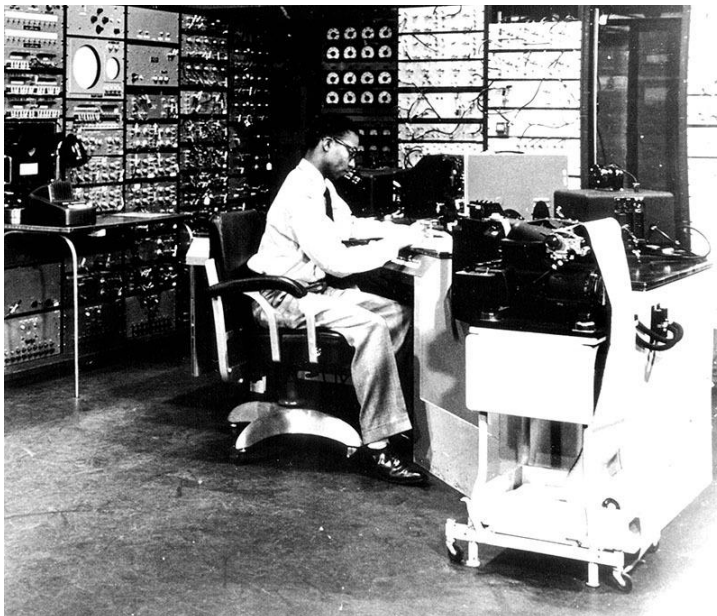
Sample of a traditional drawing (Source: internet)



Multi-D program of NIAEP (Source: NIAEP)

# Information management

- As a result of computerization, new problems emerge:
  - Cyber security!
  - Fast changes of IT → change of softwares, hardwares
  - Compatibility problems (different platforms)
  - Information management shall be planned for an extreme long term (at least for 80 years!)



A computer 60 years ago – yes, the whole room



A computer today. What will it look like in 2076?

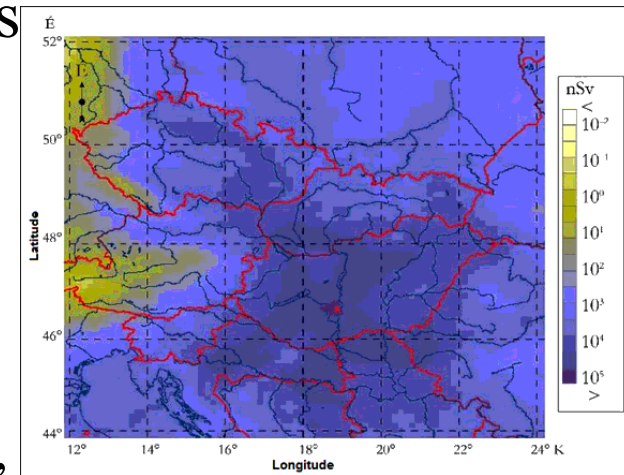
# Information management

- Further challenges is the sharing of information between the Owner and the Contractor, or Contractor and sub-contractors, respectively.
- Ensuring information flow between the parties is inevitable
- Commitment and sustained efforts are necessary from all parties!
- Importance of change management → multi-step iterations necessary.



# Information management at the Paks 2 project

- Information management from the Owner's viewpoint
  - Not all data originate from the cooperation with the Supplier
  - Own data comes for example from the collected data during the environmental impact assessment or the site assessment, the applied softwares, the performed simulations, results, licensing documentation, etc.
  - The establishment of the Owner's own IT system is necessary
  - This system shall accept and process the information from the Supplier as well
  - The Supplier has an own information management system, from which data can be given to the Owner

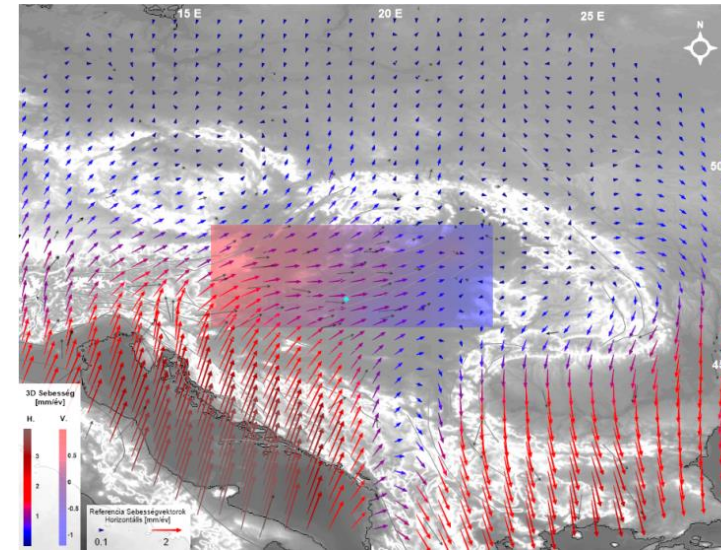


Simulation result from the EIA



# Information management at the Paks 2 project

- In case of the Paks2 project, all data have been stored redundantly (and physically separated) since the start of the project



Measured data from the Geological Research Program

**Information management is a demanding task, but is inevitable because of the Licensee's responsibility for the nuclear safety!**