

Knowledge Transfer within the Wismut Environmental Rehabilitation Project

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Supported by:



on the basis of a decision
by the German Bundestag

Was something going on there
back in the days??



Active re-use of the area of the
former Lichtenberg open pit



Presentation outline

- Introduction, history
- Size and duration of the remediation project
- Approach and technical solutions for knowledge management
- Structures and contents, case demonstration
- Lessons learned

Legacies and radioactive residues (1945 – 1990)

- 5 Mines (≤ 1800 m depth)
- 1 Open pit (240 m depth)
- 60+ Waste rock dumps, low grade ore ($\Sigma 325 \text{ Mm}^3$)
- 2 Processing plants
- 7 Tailing ponds (6 km² area with $\Sigma 178 \text{ Mm}^3$)
- Material from clean-up areas



A landscape is changing its face ... In-situ remediation of waste rock dumps

Dump #366,
Schlema site

1994 1998

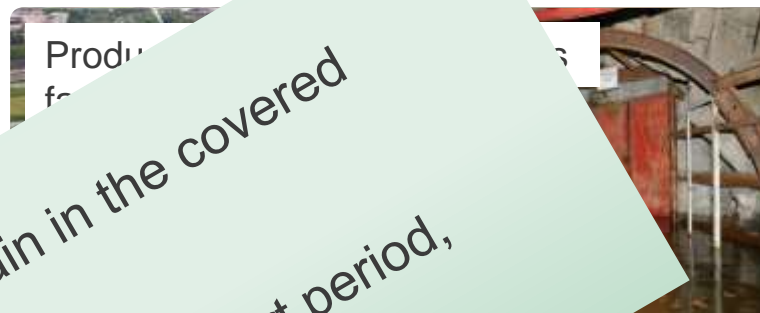
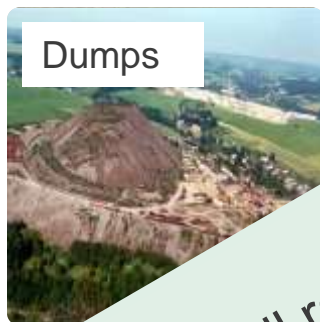
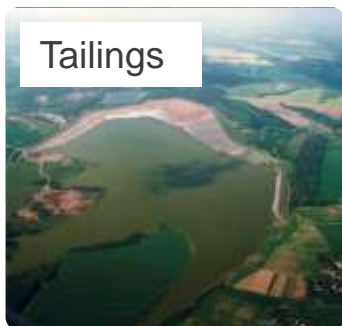
2000 2003 2012



Good to know about :

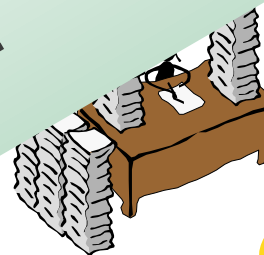
- Proof of the remediation success
Comparison with the remedial goals
- Remaining re-use restrictions after coverage of contaminated material
- Long term experience, transfer of know-how

During a long time of remediation ...



Kinds of

- (1) Contaminated material will remain in the covered underground to a high extend
- Material will be forgotten within a short period, if the access isn't an easy one.
- Should be stored in a repository
- ...



1993: 6.800 employees
2018: 1.000 employees

... 30 years later ...?



Access - Initial Approach

1. Technical Data Base „AL.VIS/W“



Multidisciplinary Information
system with GIS-Components

For daily work

(emission control, remediation
tasks, creating reports ...)

For long term
information about the
objects

For preservation of
remediation
know-how



2. Archive



Assembling of documents
after finishing the
remediation object



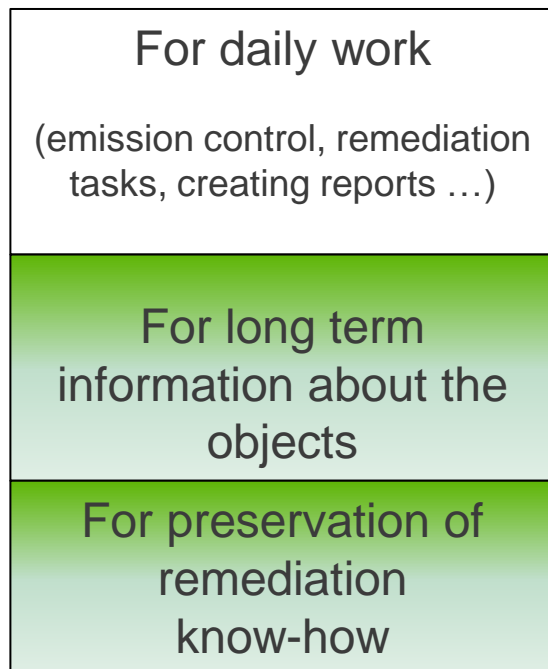
- Collect information **shortly after** their generation
- Gather it in a technical data base on a common platform
- Link the different issues to each other
- Create „assistants“ for a simple and efficient search

Access - Revised Approach

1. Technical Data Base

„AL.VIS/W“

Multidisciplinary Information system with GIS-Components



2. Dual Archive (Paper + File)

- Establishment of a standardized RD
- Well defined storage rules
- Linked to AL.VIS/W
- Swiftly compilation of historical docs
- Ongoing import during remediation



+



- Collect information **shortly after** their generation
- Gather it in a technical data base on a common platform
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Final Aim

for each of the 400 complex remediation documentations (RD)

1 physical available **Original** (or a copy),
well sorted at the final archive in Chemnitz



Paper RD

1 **Metadata Record** inclusive an exact storage notation

1 **Electronic Document** of the physical specimen

- *complete*
- *true*
- *long-term valid (pdf/A)*
- *appropriate for full-text search (→ OCR)*
- *performant searchable (size!)*

Electronic RD

Intuitive user-friendly Interface (Archiving is not an end in itself !)

Documents, embedded within the original context

Standardized Content (electronic + paper)

Hierarchic structure



Provided folder architecture



Standardized registers 1 - 17

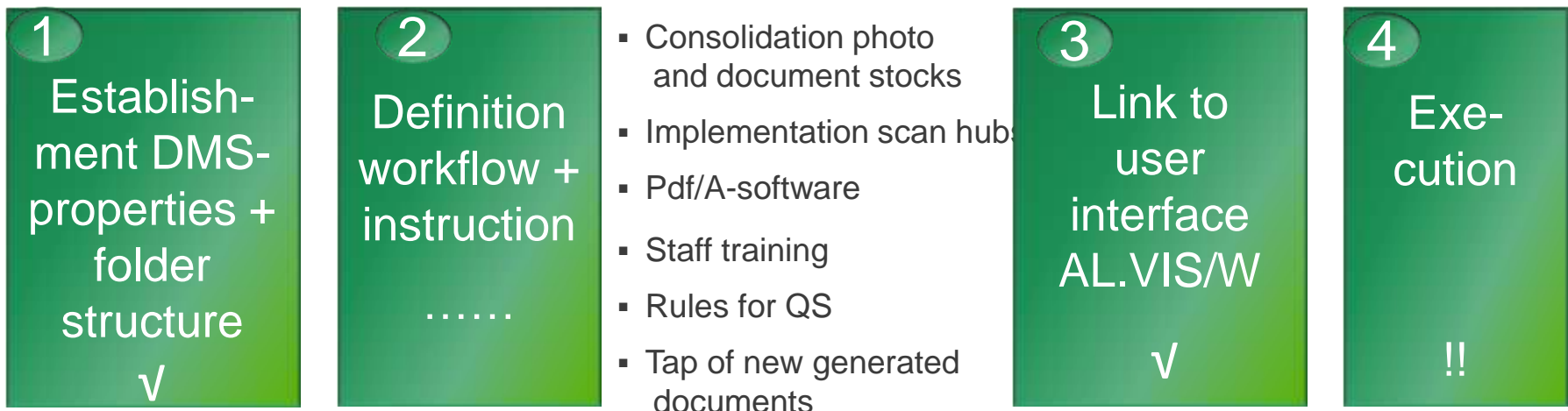
1. General information, vita
2. Planning and application documents
3. Administrative decisions
4. Self management reports/history
5. Internal supervising reports
6. External supervising reports
7. Reports from subcontracted services
8. Mine surveying documents / mine plans
9. Protocols
10. Photo documentation
11. Legally binding building acceptance
12. Examiners reports
13. Planning maintenance /after care
14. After care / long term management
15. Final certificate
16. Final documentation
17. Miscellaneous

Standardized issues


Department of Information Management (DIM)




- Definition of achievable, but sophisticated goals (content, technical realization, personal conditions)
- Study experiences at similarly running projects (US-DOE, CAN, FRA...)
- Analysis of the existing portfolio in Wismut, developing of solutions



How does it look like - User Interface ALVIS/W





 Introduction


Map acces: Object geometries, Maps, Topography , web map service, web file service...

Ronneburg
Seelingstädt
Crossen
Aue
Pöhla
Gittersee
Königstein













Overview access

 Object search






 Site search

 Semantic search

Environmental data base

 Groundwater	 Surface water	 Soil, Solids
 Air	 Climate	 UDB Data Agent
 Local dose rate	 Experimental part	 Column experiments
 GEO-Tech	 CPT v2	 Probes

More applications


 Properties	 Remediated areas	 Pictures
 Licences	 Engineering reports	

Oracle – DB (master data, records, geometries...)

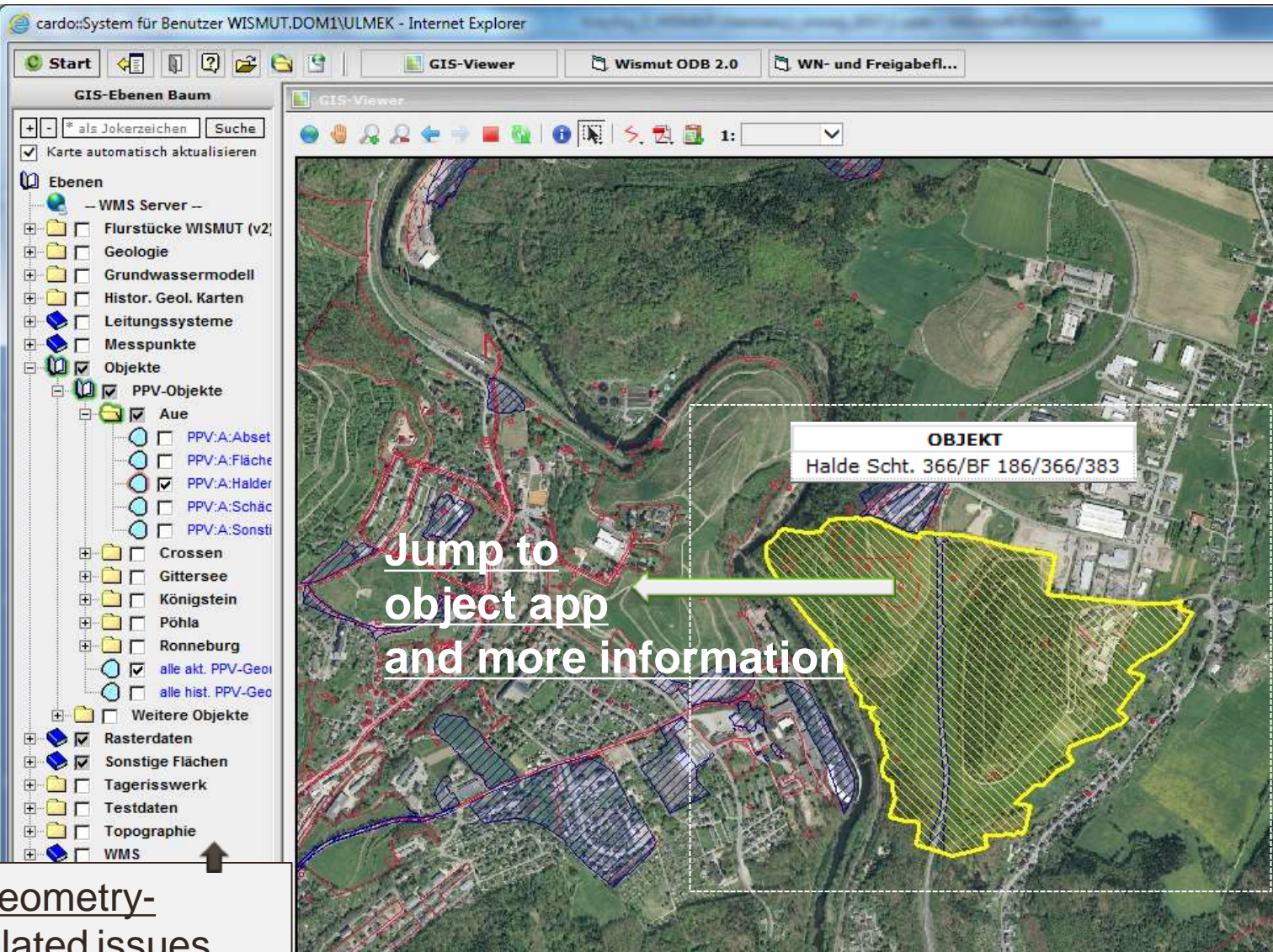
DMS-System

new

Documents of remediation



Map Access



The screenshot shows the WISMUT GIS-Viewer interface. The left sidebar contains the 'GIS-Ebenen Baum' (GIS Layer Tree) with the following structure:

- GIS-Ebenen Baum
 - als Jokerzeichen
 - Suche
 - Karte automatisch aktualisieren
 - Ebenen
 - WMS Server
 - Flurstücke WISMUT (v2)
 - Geologie
 - Grundwassermodell
 - Histor. Geol. Karten
 - Leitungssysteme
 - Messpunkte
 - Objekte
 - PPV-Objekte
 - Aue
 - PPV:A:Abset
 - PPV:A:Fläche
 - PPV:A:Halder
 - PPV:A:Schäc
 - PPV:A:Sonsti
 - Crossen
 - Gittersee
 - Königstein
 - Pöhla
 - Ronneburg
 - alle akt. PPV-Geol
 - alle hist. PPV-Geol
 - Weitere Objekte
 - Rasterdaten
 - Sonstige Flächen
 - Tagerissswerk
 - Testdaten
 - Topographie
 - WMS

The main map area displays an aerial view with various overlays. A yellow hatched area is highlighted, and a white box with the text 'OBJEKT Halde Scht. 366/BF 186/366/383' is overlaid on it. A white arrow points from the text 'Jump to object app and more information' to the highlighted area. A white box with the text 'Geometry-related issues' and an upward arrow points to the 'Objekte' section in the left sidebar.

Jump to object app and more information

Geometry-related issues

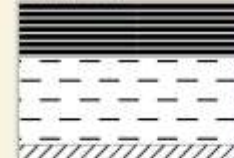
Covering Structures

Use restriction determined to parcel numbers.:

	RegNr	Gemarkung	Flurstück	Status	Eigentümer
<input checked="" type="checkbox"/>	3221	Alberoda	305/12	historisch	WISMUT/FREMD
<input checked="" type="checkbox"/>	852	Alberoda	307/3	historisch	WISMUT/FREMD
<input checked="" type="checkbox"/>	2929	Alberoda	453/1	historisch	WISMUT

- Mining residuals
- Radiation protection
- Other contamination

Lin	Funktion	Material	Mächtigkeit [m]	Schichtbezeichnung
1	Deckschicht	-	0,50	-
2	Füllschicht	-	0,80	Ausgleich-Frostschutz- Grundungs-Bankettschicht
3	Dämmschicht	ZL Sandst. Chemnitz, ZL Flakstetung 1999, ZL Halde 296, ZL Vorfeld Schacht 383, Neele Str., Normes	0,80	Unterboden (TL/TM und/oder UL/TL SU*)
4	Abdeckbasis	-	0,50	-



Final Certificate

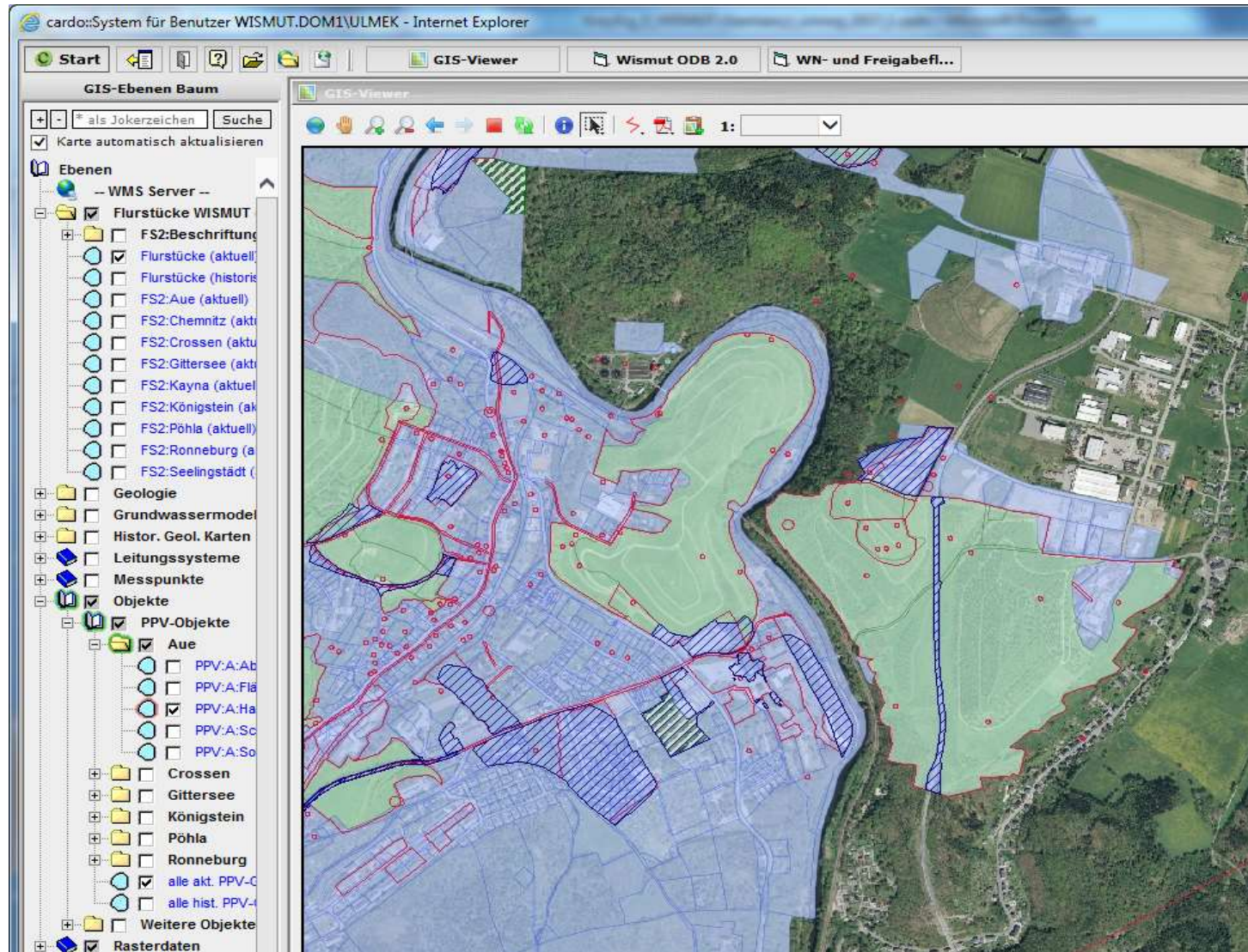
Permits,
environmental
measurements



das Sachs. Oberbergamt bestätigt den Eingang der o.g. Anzeige und stimmt den geplanten Sanierungsarbeiten der Bütchungsabnutzung im BA 1 Abschluss der Halde 360 im Bereich der Borme 420 in NN zu.

Joachim Baye
Referendar

Hausnummer:
Hausname (Zusatz):
Kategorie:
Stichtag:



Summary, lessons learned...

- Environmental remediation projects cover a wide range of issues over a long period (Wismut: 2045 ff)
 - There will partly remain contaminated material covered in the underground → Legacy management necessary !
-
- Preservation of knowledge and know-how in a dual way:
paper work + intelligent and easy accessible electronic system
 - Look with the perspective of future user generations.
 - Begin early ...
 - Don't underestimate the efforts, which are necessary!
(Workflow organization , quality assurance, maintenance of technical standards, soft skills...)

An aerial photograph of a landscape. In the lower-left, there are several large, rectangular solar panel arrays. A river or stream flows through the center of the image. The surrounding area is a mix of green fields, forests, and some buildings. The text "Was something going on there back in the days?" is overlaid in yellow.

Was something going on there back in the days?

Many thanks for your attention !

