IT-SUPPORTED STATE-LAND MANAGEMENT IN A TRANSITIONAL ENVIRONMENT

- Examples from Eastern Germany and Mongolia -

BVVG
Bodenverwertungs- und -verwaltungs GmbH

TOPICS

1 BVVG´S LAND INFORMATION SYSTEM

- History and main components
- IT-strategy and development
- Identification of market values
- Sales and lease support

2 THE „LANDMANAGER SOFTWARE PACKAGE“ A LAND INFORMATION SYSTEM FOR MONGOLIA

- History
- Key elements

3 LESSONS LEARNED

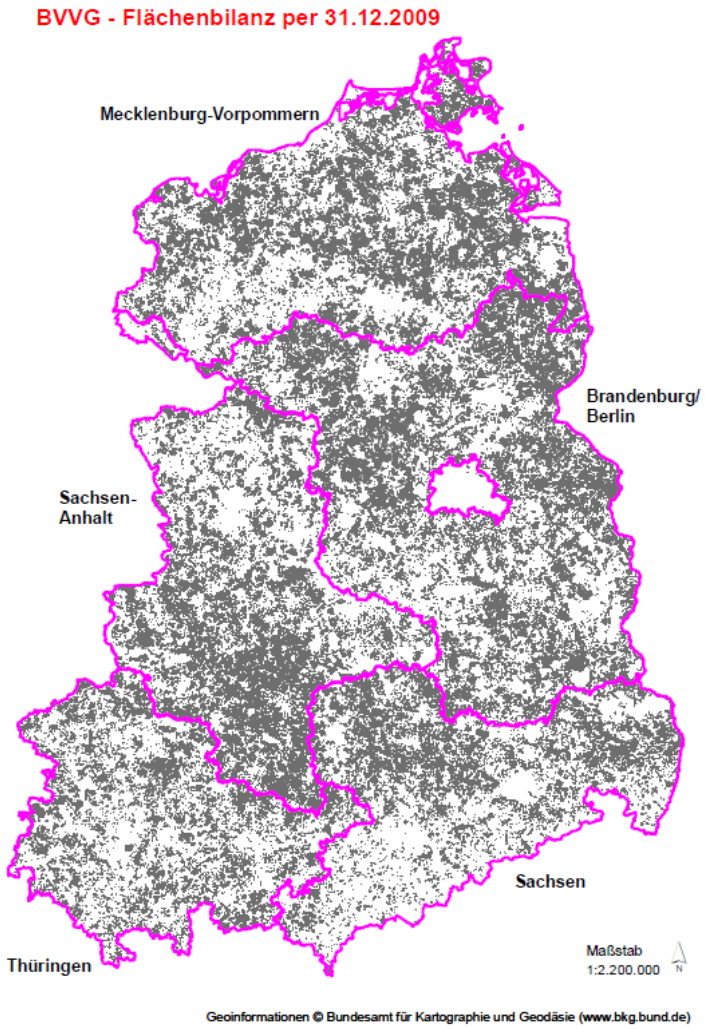
HISTORY

BVVG´s Mission:

- Founded in 1992 as subsidiary of the *German Treuhandanstalt* (THA-Privatization Agency)
- Sources of property: mainly expropriations between 1945 to 1949 and between 1949 to 1989
- 1992: approx. 1.8 m ha of agricultural land and 1.4 m ha of forestry land

Tasks:

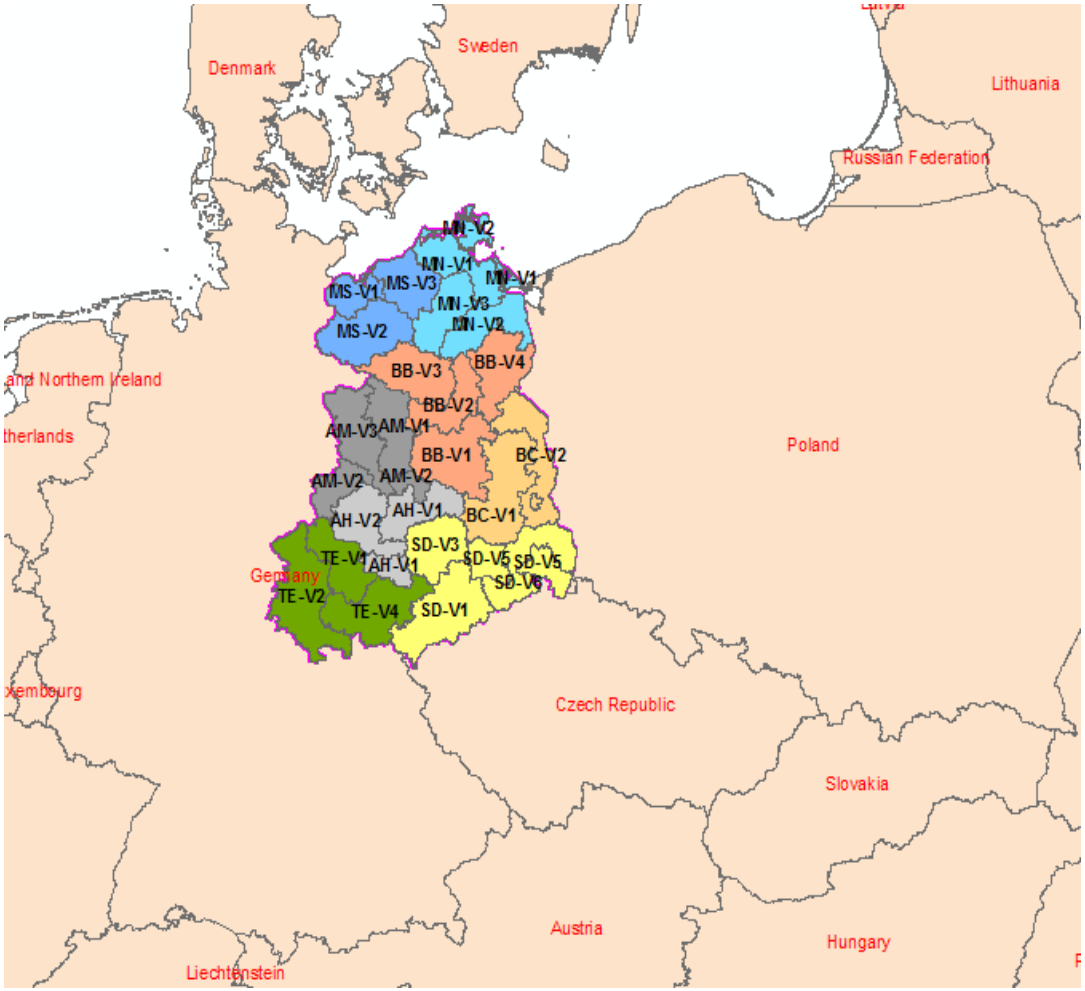
- Interim management (short and long-term lease) until decision on restitution/allocation/privatisation
- Privatisation according a Land Purchase Programme and selling at market value



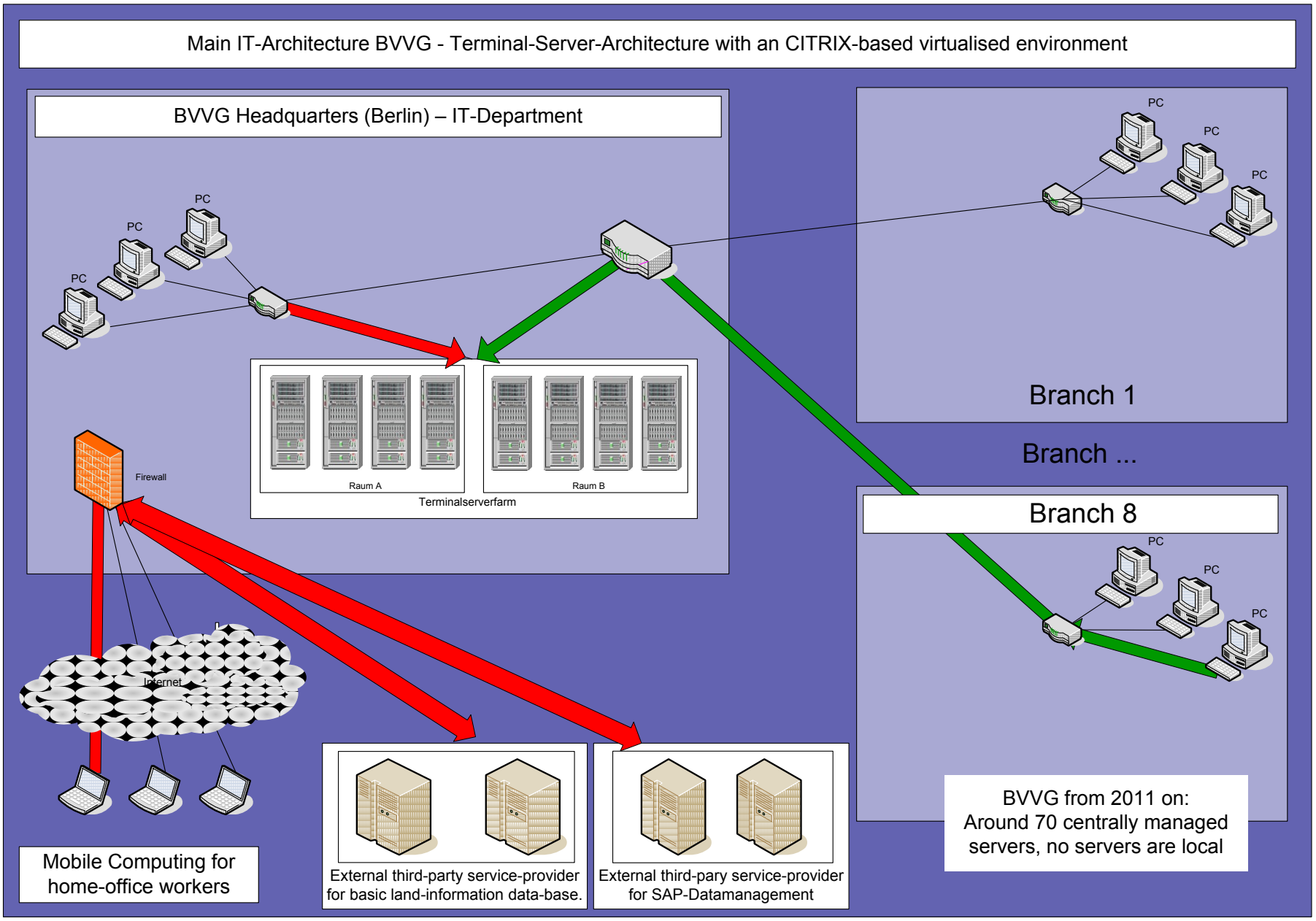
BVVG

BVVG´s Institutional Design

- Up to 12 Branches (in 2012: 8 ➔ 2016: 4) for operational business
- Headquarters for central management, monitoring and supervision of tasks
- IT-Department at BVVG headquarters as precondition for centralized IT-support and information management

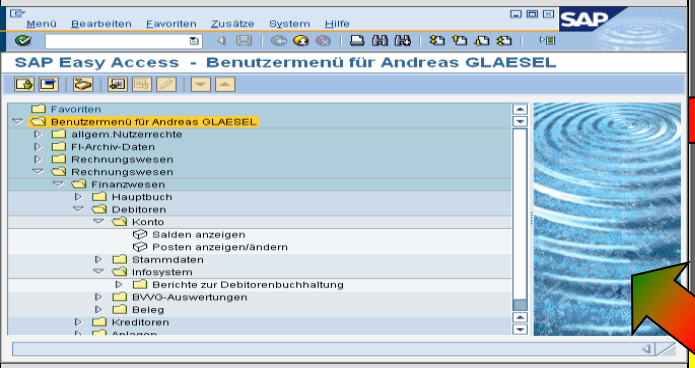


BVVG


Main IT-Architecture BVVG - Terminal-Server-Architecture with an CITRIX-based virtualised environment
BVVG Headquarters (Berlin) – IT-Department
PC
PC
PC
Raum A
Raum B
Terminalserverfarm
Firewall
Internet
Mobile Computing for home-office workers
External third-party service-provider for basic land-information data-base.
External third-pary service-provider for SAP-Datamanagement
Branch 1
PC
PC
PC
Branch ...
Branch 8
PC
PC
PC
BVVG from 2011 on:
Around 70 centrally managed servers, no servers are local

BVVG

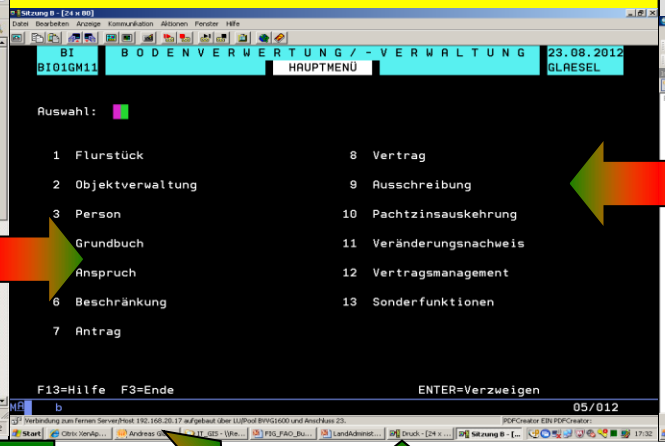
Enterprise Resource Planning with SAP



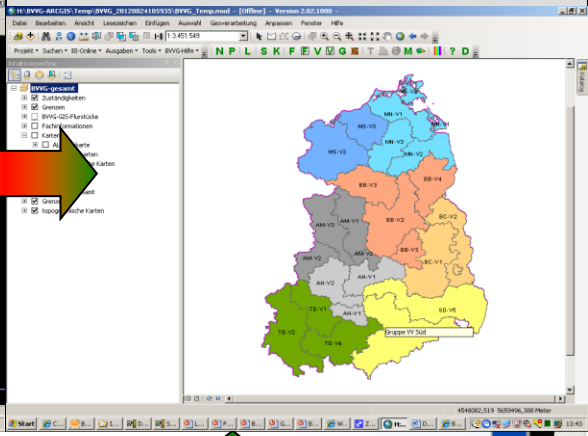
Email & Knowledge Database via Intranet

BVVG-Webpage

Basic Land Information Database



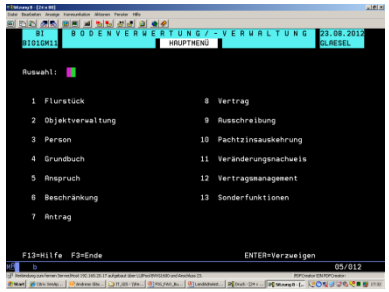
BVVG-GIS (ESRI)



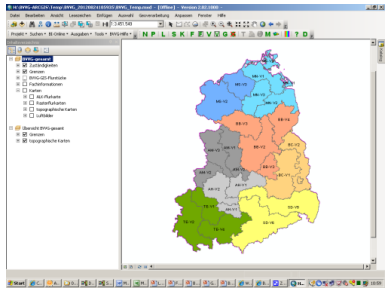
Other office-applications for automated business letters, contracts, Reporting/query tools, Archiving tools etc.

Online data-exchange with cadastre agencies of the five federal states and the federal agency for cadastre and mapping

Data Management of Large Data Sets



- Ca. 12 GB alphanumerical data
- More than 600 tables, views and catalogues
- Approx. 8,000,000 parcels with approx. 7,000,000 ha (historic and current data)



- Vector data – approx. 40 GB

  I.e. cadastral maps, infrastructure, regional planning, contaminated sites
- Raster data – approx. 210 GB

  I. e. aerial imagery, topographical maps

- Approx. 30 TB

  for unstructured data (guideline-databases, internal Email/communication etc.)

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It-Strategy and Development

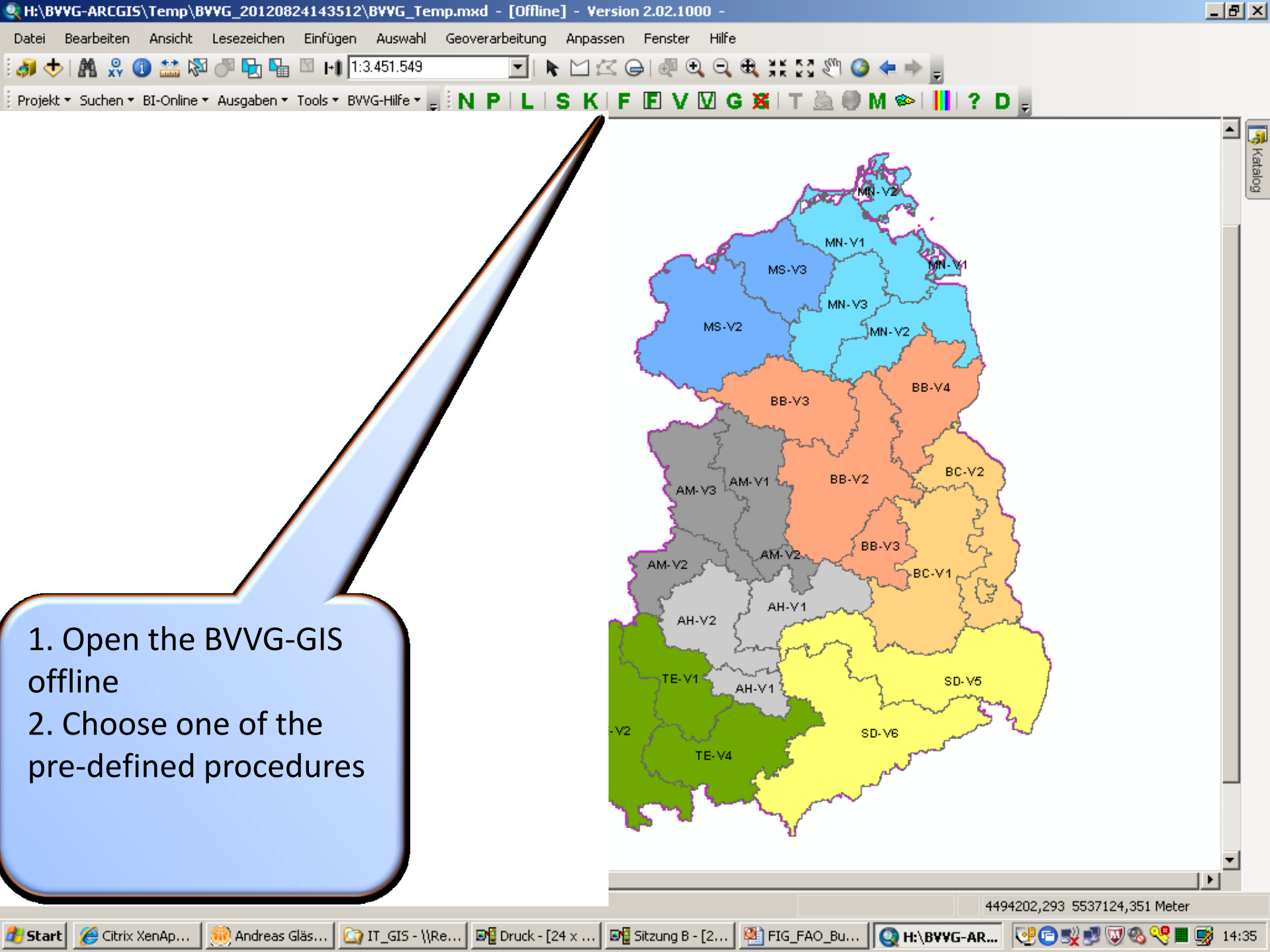
Experiences

- A short/mid- and long term IT-strategy is useful for planning larger and smaller IT-investments and developments
- IT change management following a in-depth survey of new requirements
- Implementation of new features within the framework of already installed software/hardware.
- High human resource capabilities for IT is an important asset
- Development of applications is needed even after 20 years running the system, because of new legal/political requirements and for more efficient business processes
- For the basic land information database (since 20 years)
  - a permanent internal developer team (5 persons)
  - a permanent IBM developer team on site (3 persons) - excluding administrators
- For the GIS:
  - a BVVG-developer team (2 persons)
  - an IBM permanent team (3 Persons) on site - excluding administrators

PRACTICAL EXAMPLE

BVVG´s Land Information System for valuing of an asset due to tendering

BVVG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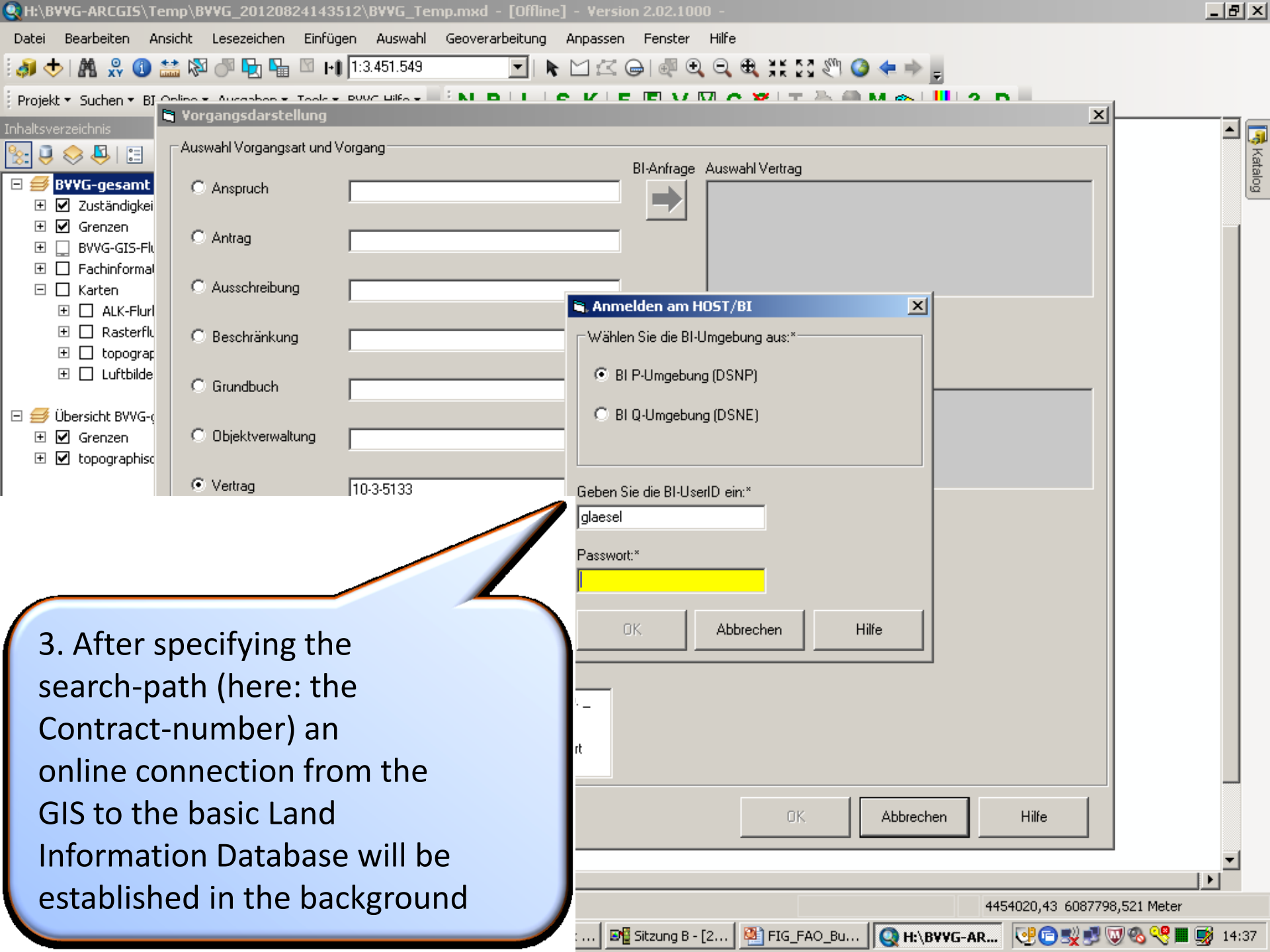
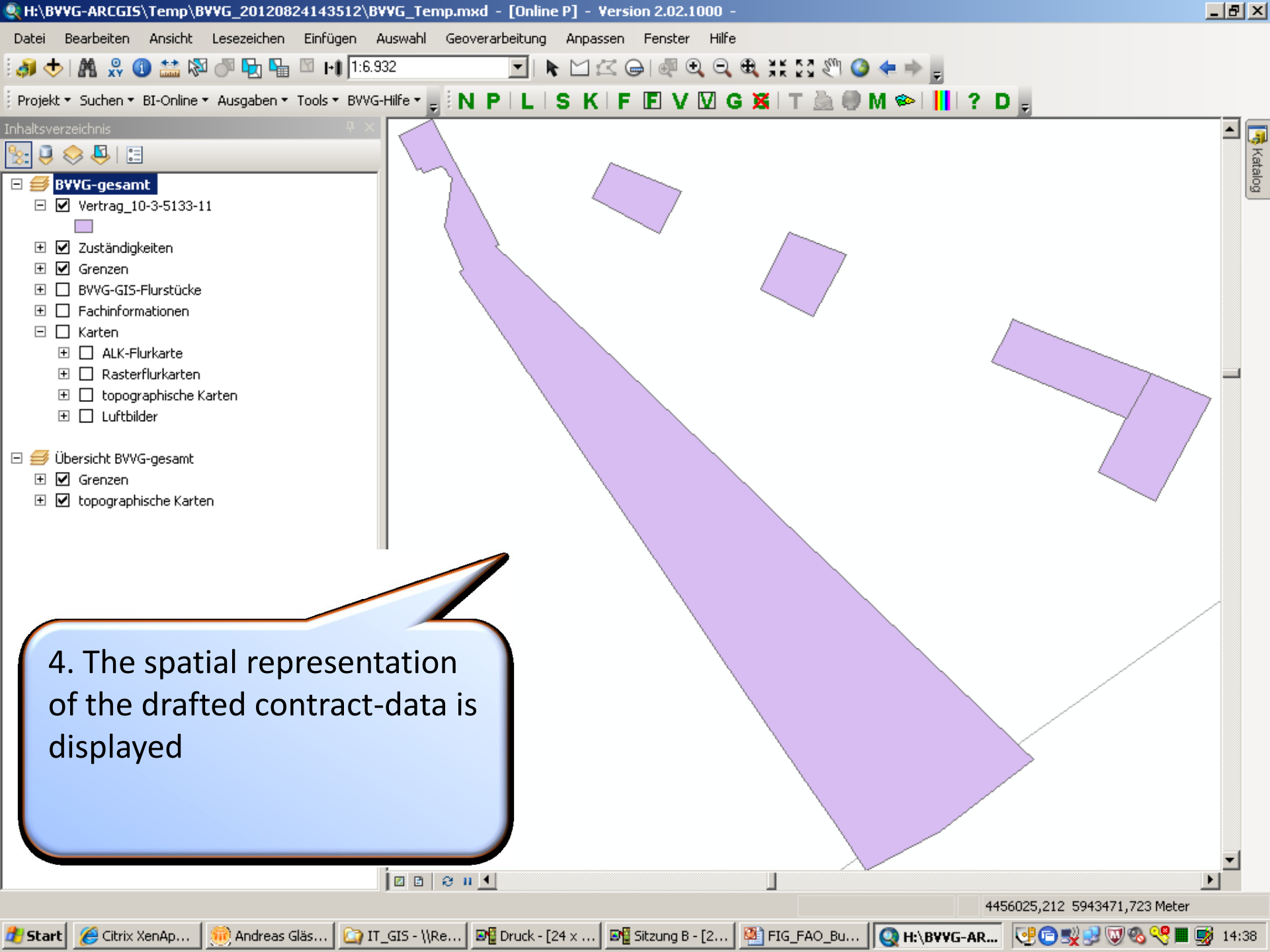
Datei Bearbeiten Ansicht Lesezeichen Einfügen Auswahl Geoverarbeitung Anpassen Fenster Hilfe
1:3.451.549
Projekt Suchen BI-Online Ausgaben Tools BVVG-Hilfe
N P L S K F V G T M ? D
Katalog
MN-V2
MN-V1
MS-V3
MN-V1
MN-V3
MS-V2
MN-V2
BB-V3
BB-V4
AM-V3
AM-V1
BB-V2
BC-V2
AM-V2
BB-V3
AM-V2
BC-V1
AH-V1
AH-V2
TE-V1
AH-V1
SD-V5
SD-V6
TE-V4
1. Open the BVVG-GIS offline
2. Choose one of the pre-defined procedures
4494202,293 5537124,351 Meter
Start
Citrix XenAp...
Andreas Gläs...
IT_GIS - \\Re...
Druck - [24 x ...
Sitzung B - [2...
FIG_FAO_Bu...
H:\BVVG-AR...
14:35



3. After specifying the search-path (here: the Contract-number) an online connection from the GIS to the basic Land Information Database will be established in the background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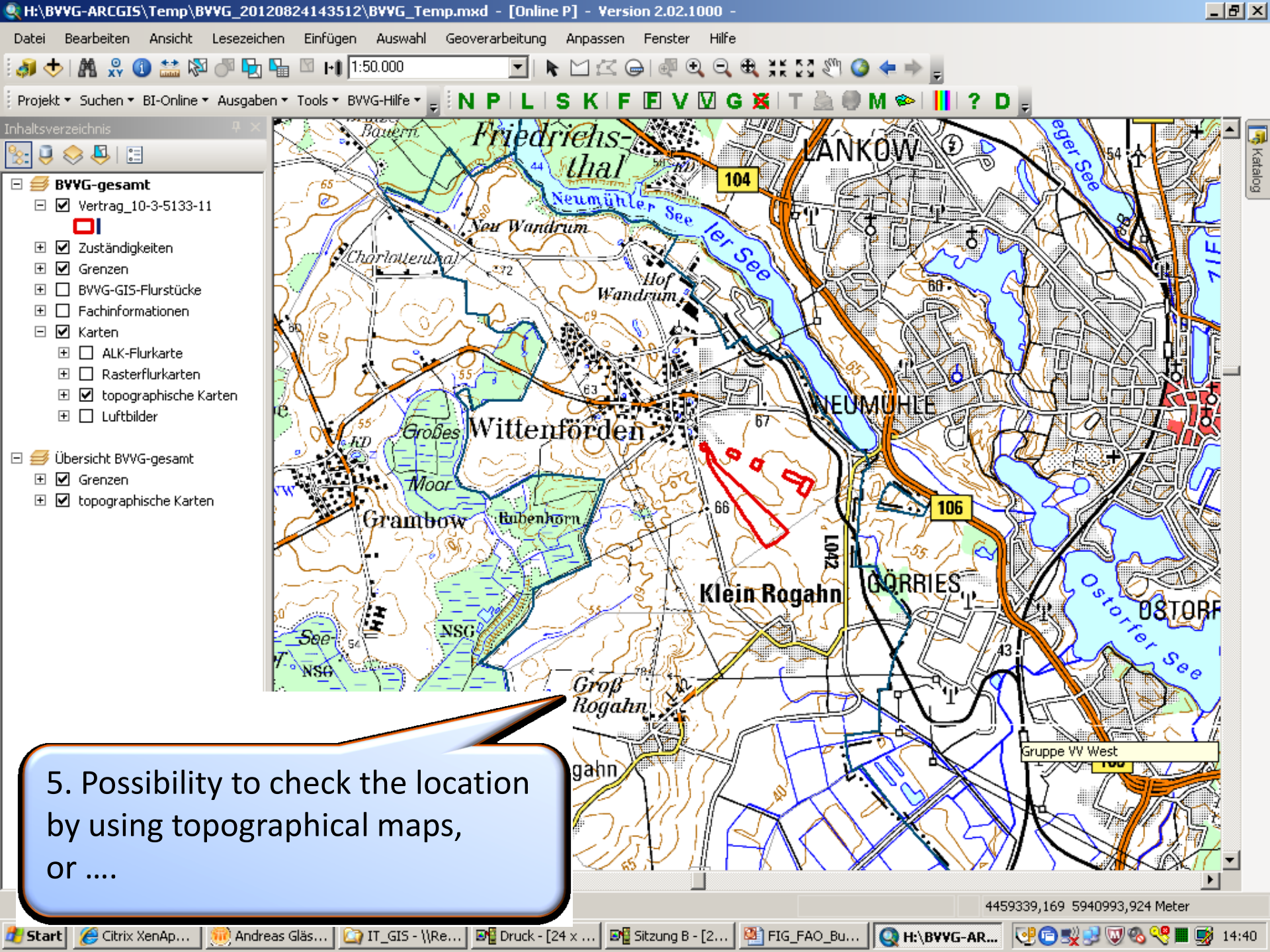
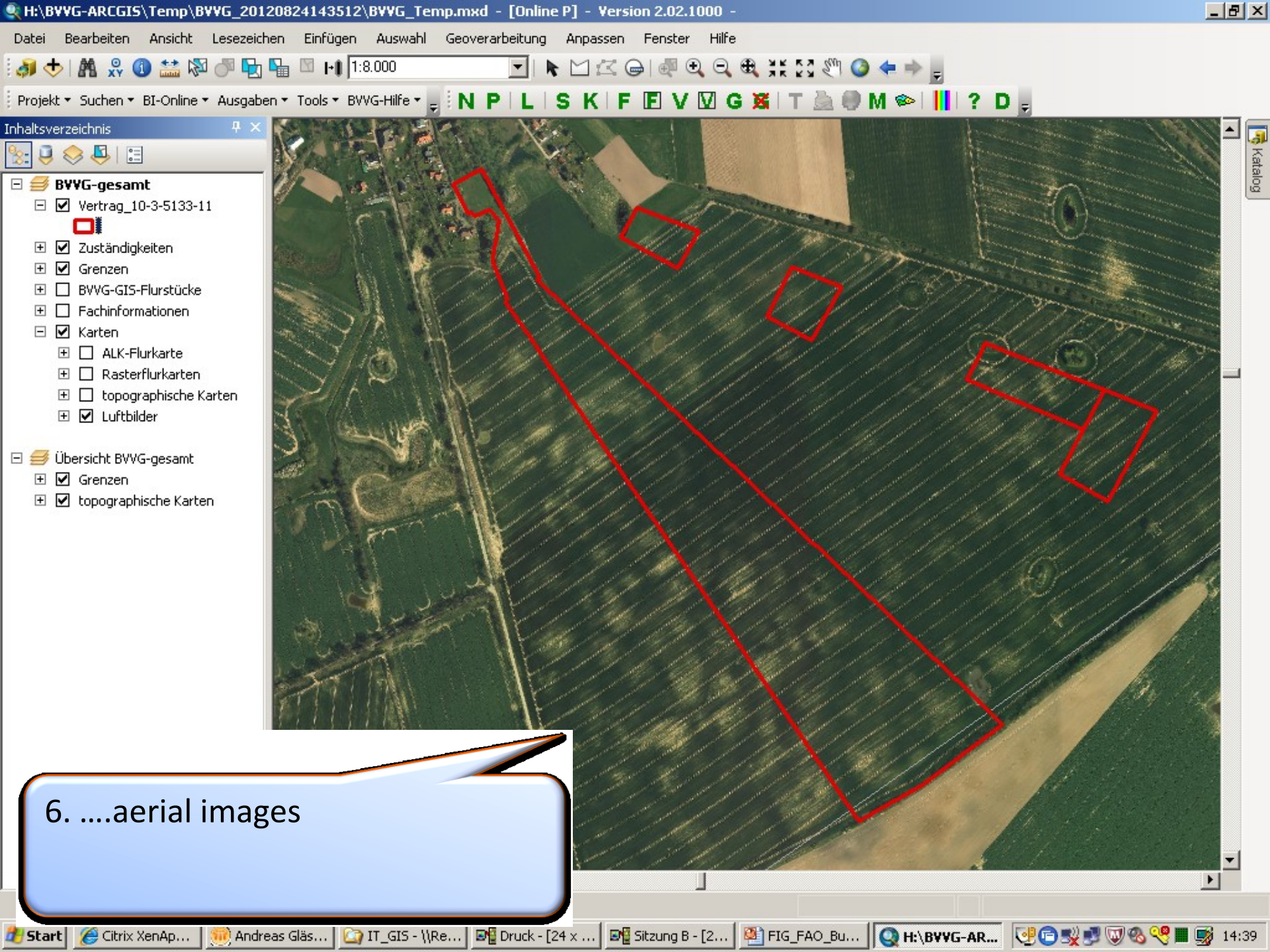
1:6.932
Projekt Suchen BI-Online Ausgaben Tools BVVG-Hilfe
Inhaltsverzeichnis
BVVG-gesamt
Vertrag_10-3-5133-11
Zuständigkeiten
Grenzen
BVVG-GIS-Flurstücke
Fachinformationen
Karten
ALK-Flurkarte
Rasterflurkarten
topographische Karten
Luftbilder
Übersicht BVVG-gesamt
Grenzen
topographische Karten
Katalog
4. The spatial representation of the drafted contract-data is displayed
4456025,212 5943471,723 Meter
Start
Citrix XenAp...
Andreas Gläs...
IT_GIS - \\Re...
Druck - [24 x ...
Sitzung B - [2...
FIG_FAO_Bu...
H:\BVVG-AR...
14:38



5. Possibility to check the location by using topographical maps, or ….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1:8.000
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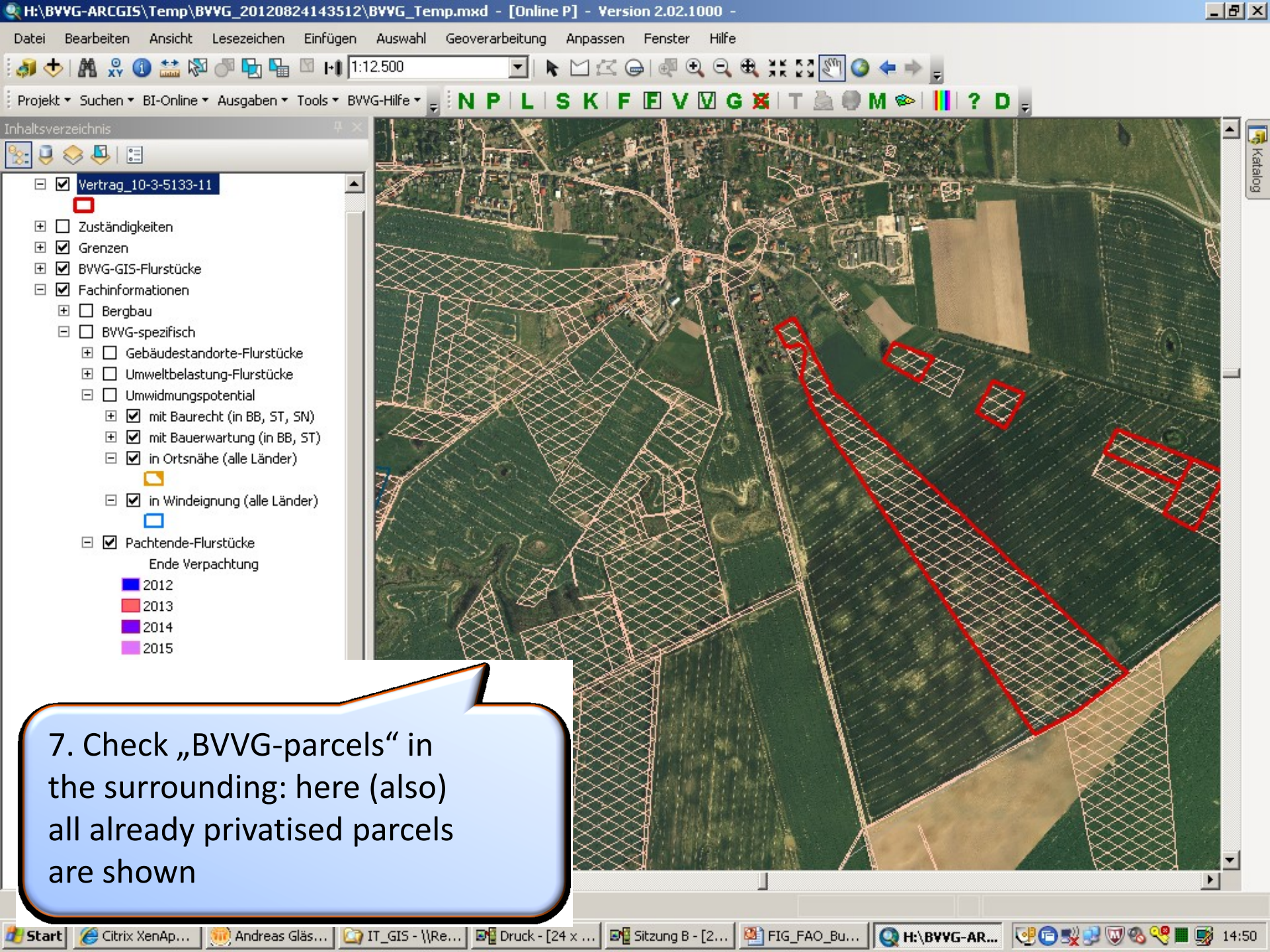
Inhaltsverzeichnis
BVVG-gesamt
Vertrag_10-3-5133-11
Zuständigkeiten
Grenzen
BVVG-GIS-Flurstücke
Fachinformationen
Karten
ALK-Flurkarte
Rasterflurkarten
topographische Karten
Luftbilder
Übersicht BVVG-gesamt
Grenzen
topographische Karten
Katalog
6. ….aerial images
Start
Citrix XenAp...
Andreas Gläs...
IT_GIS - \\Re...
Druck - [24 x ...
Sitzung B - [2...
FIG_FAO_Bu...
H:\BVVG-AR...
14:39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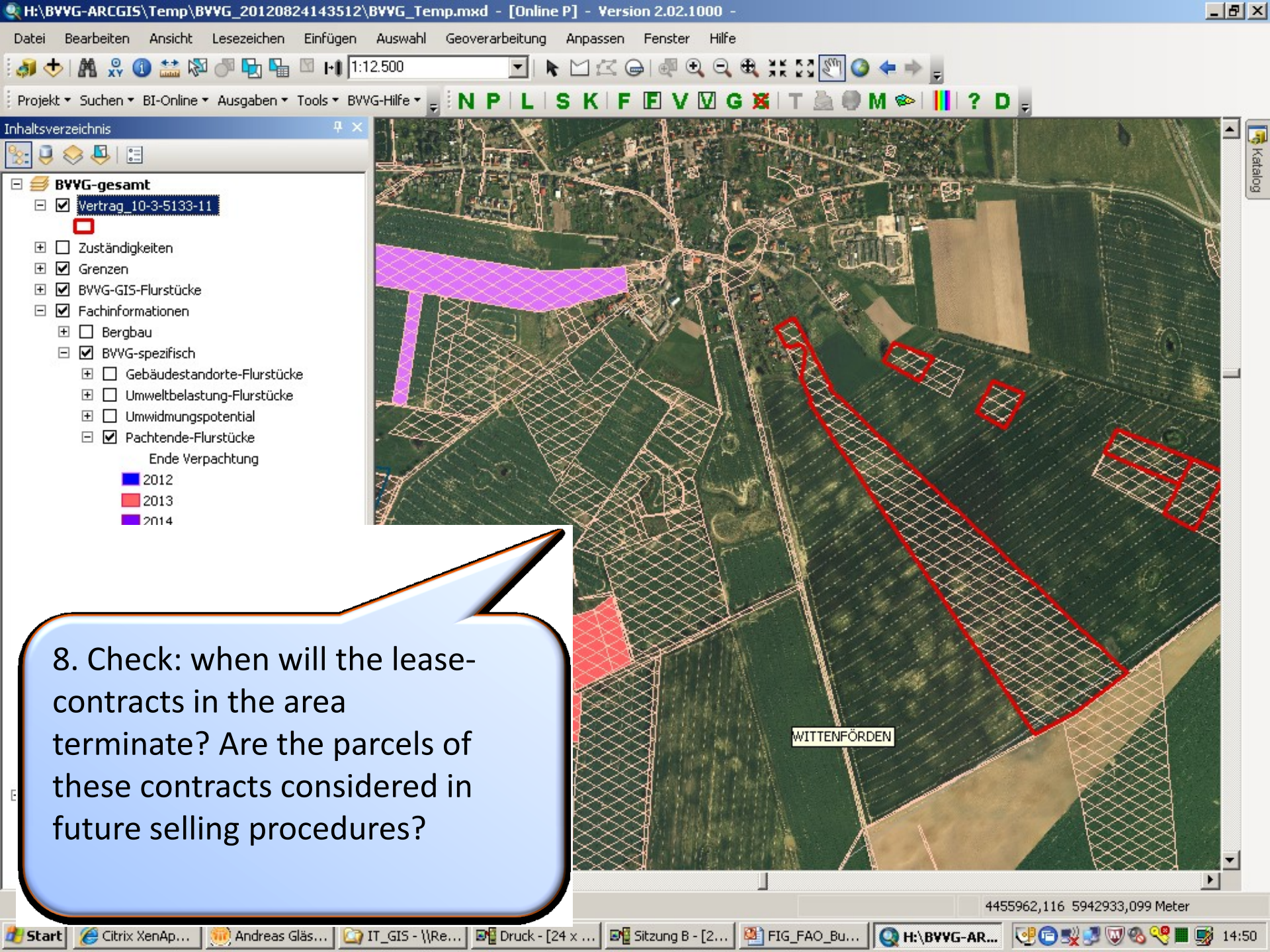
Datei Bearbeiten Ansicht Lesezeichen Einfügen Auswahl Geoverarbeitung Anpassen Fenster Hilfe
1:12.500
Projekt Suchen BI-Online Ausgaben Tools BVVG-Hilfe
Inhaltsverzeichnis
Vertrag_10-3-5133-11
Zuständigkeiten
Grenzen
BVVG-GIS-Flurstücke
Fachinformationen
Bergbau
BVVG-spezifisch
Gebäudestandorte-Flurstücke
Umweltbelastung-Flurstücke
Umwidmungspotential
mit Baurecht (in BB, ST, SN)
mit Bauerwartung (in BB, ST)
in Ortsnähe (alle Länder)
in Windeignung (alle Länder)
Pachtende-Flurstücke
Ende Verpachtung
2012
2013
2014
2015
Katalog
7. Check „BVVG-parcels“ in the surrounding: here (also) all already privatised parcels are shown
Start
Citrix XenAp...
Andreas Gläs...
IT_GIS - \\Re...
Druck - [24 x ...
Sitzung B - [2...
FIG_FAO_Bu...
H:\BVVG-AR...
14:50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Grenzen
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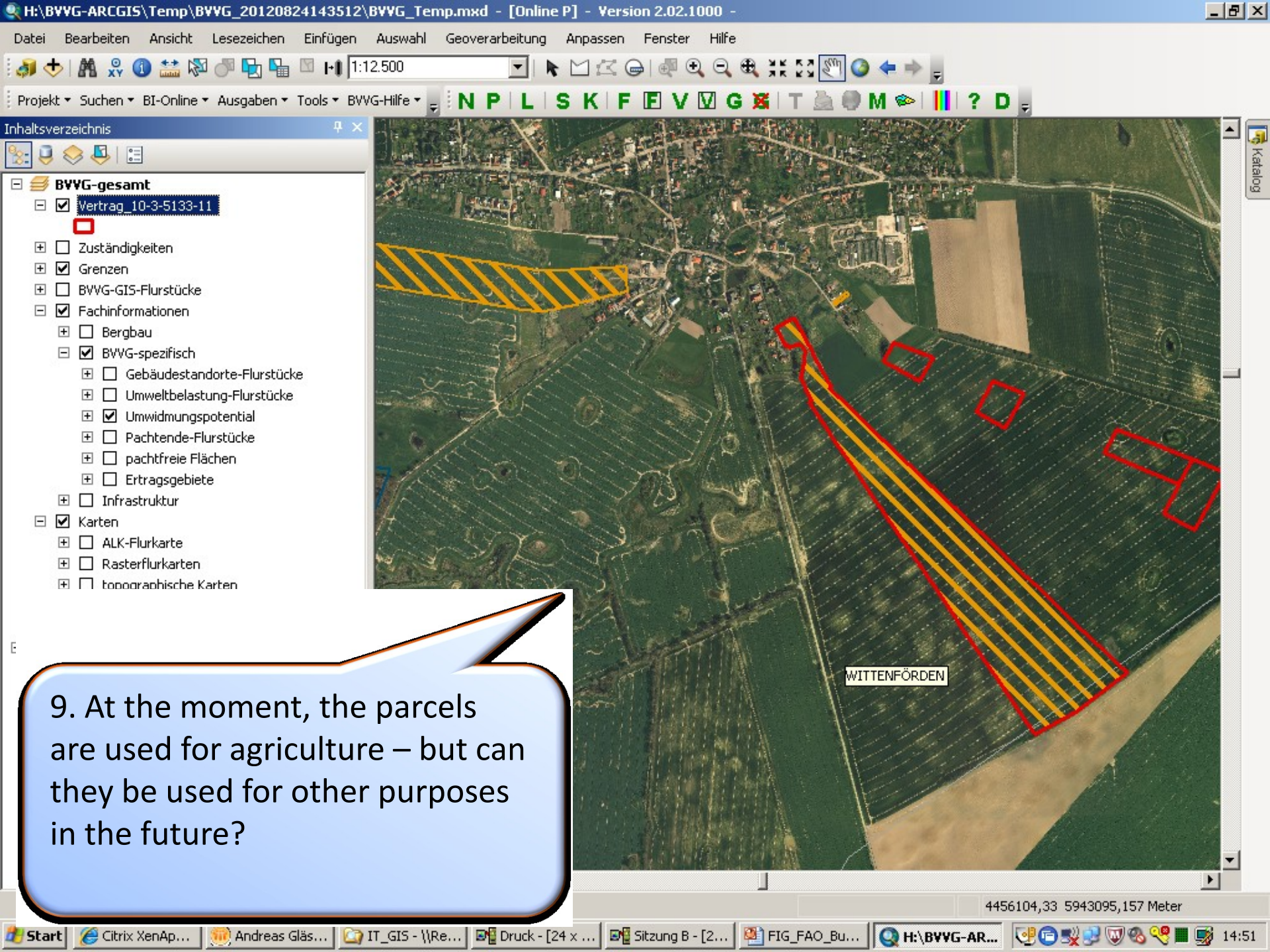
Fachinformationen
Bergbau
BVVG-spezifisch
Gebäudestandorte-Flurstücke
Umweltbelastung-Flurstücke
Umwidmungspotential
Pachtende-Flurstücke
Ende Verpachtung
2012
2013
2014
WITTENFÖRDEN
8. Check: when will the lease-contracts in the area terminate? Are the parcels of these contracts considered in future selling procedures?
4455962,116 5942933,099 Meter
Katalog
Start
Citrix XenAp...
Andreas Gläs...
IT_GIS - \\Re...
Druck - [24 x ...
Sitzung B - [2...
FIG_FAO_Bu...
H:\BVVG-AR...
14:50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Gebäudestandorte-Flurstücke
Umweltbelastung-Flurstücke
Umwidmungspotential
Pachtende-Flurstücke
pachtfreie Flächen
Ertragsgebiete
Infrastruktur
Karten
ALK-Flurkarte
Rasterflurkarten
topographische Karten
WITTENFÖRDEN
9. At the moment, the parcels are used for agriculture – but can they be used for other purposes in the future?
4456104,33 5943095,157 Meter
Katalog
Start
Citrix XenAp...
Andreas Gläs...
IT_GIS - \\Re...
Druck - [24 x ...
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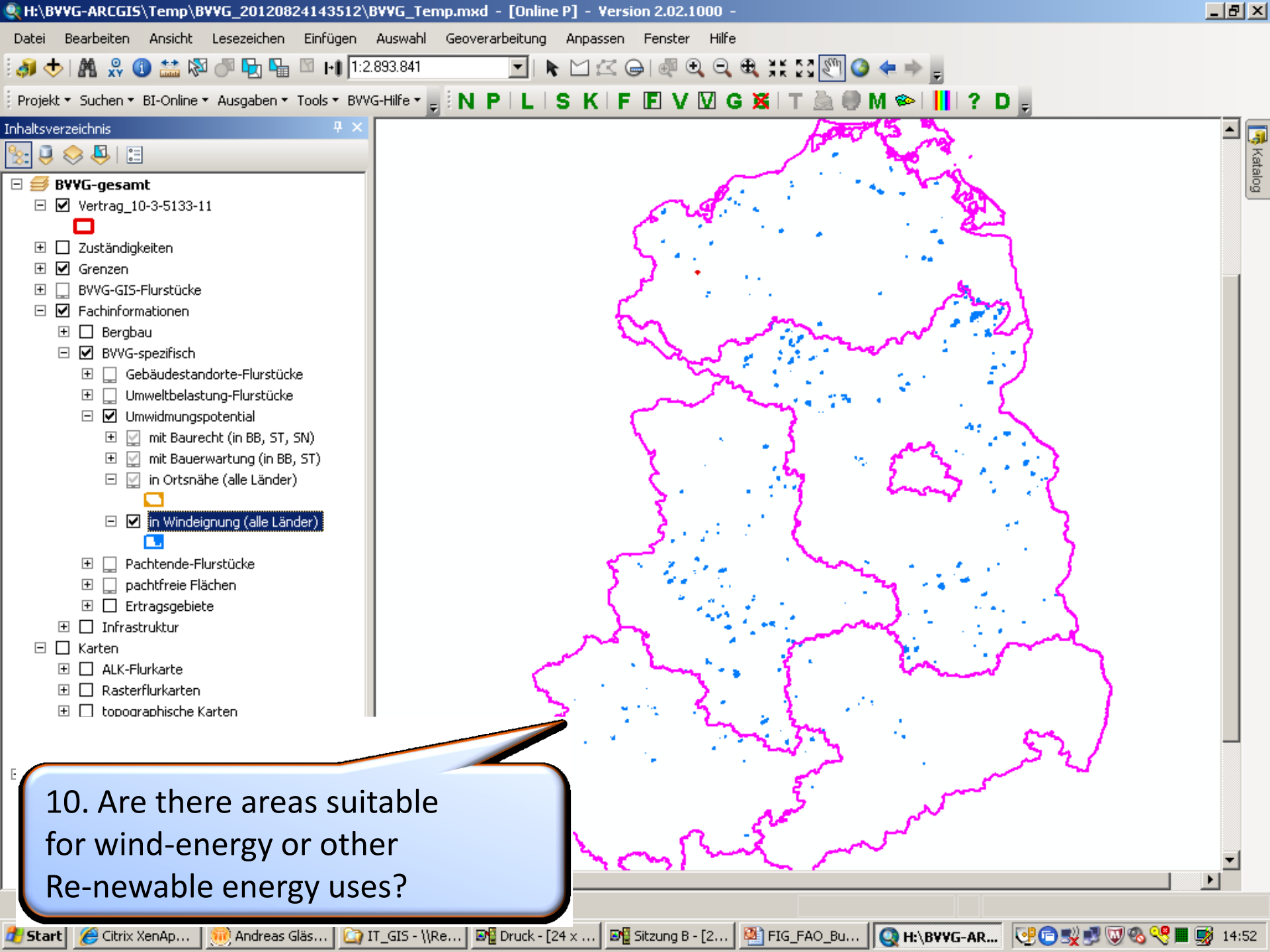
FIG_FAO_Bu...
H:\BVVG-AR...
14:51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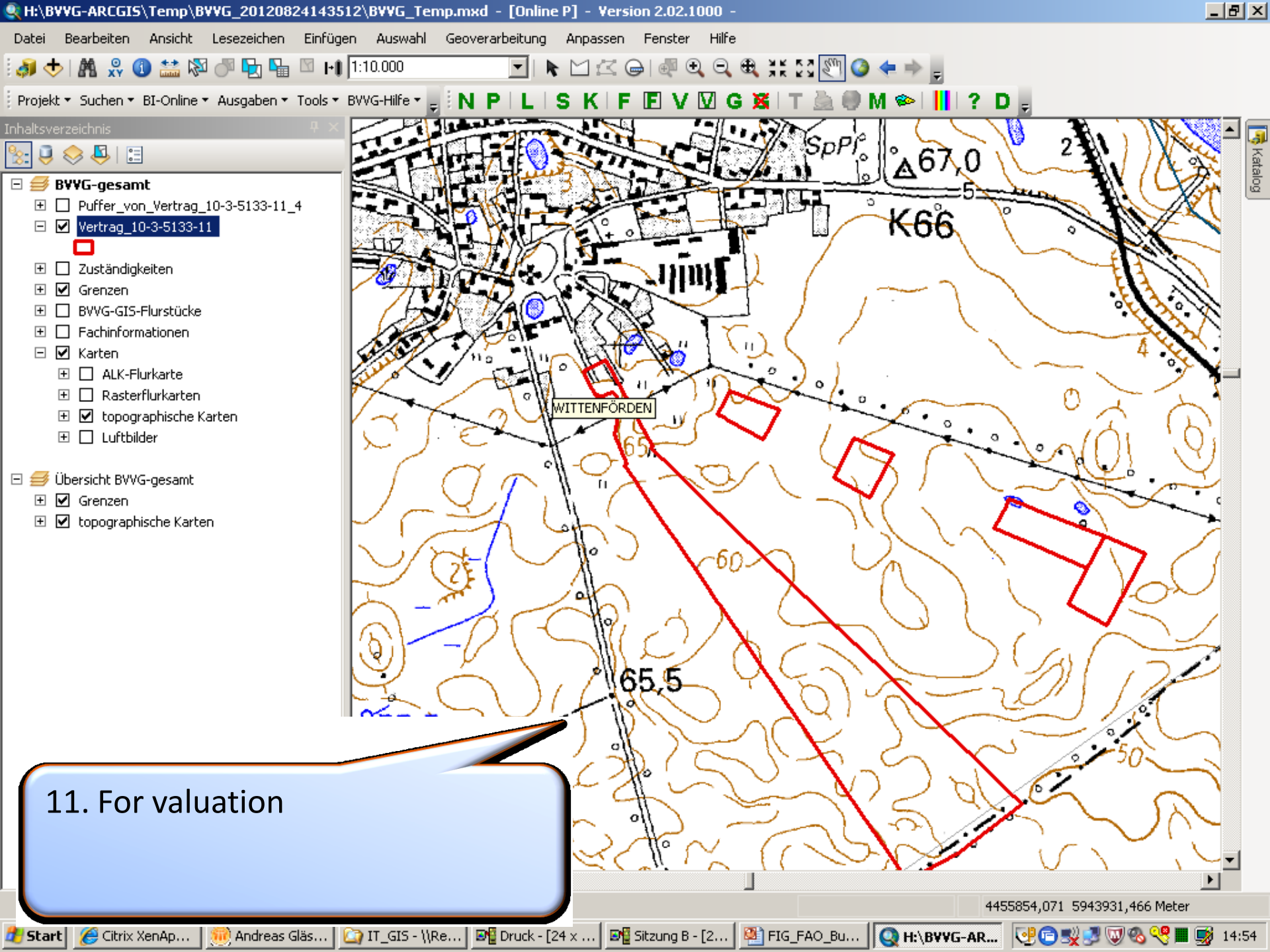
Gebäudestandorte-Flurstücke
Umweltbelastung-Flurstücke
Umwidmungspotential
mit Baurecht (in BB, ST, SN)
mit Bauerwartung (in BB, ST)
in Ortsnähe (alle Länder)
in Windeignung (alle Länder)
Pachtende-Flurstücke
pachtfreie Flächen
Ertragsgebiete
Infrastruktur
Karten
ALK-Flurkarte
Rasterflurkarten
topographische Karten
Katalog
10. Are there areas suitable for wind-energy or other Re-newable energy uses?
Start
Citrix XenAp...
Andreas Gläs...
IT_GIS - \\Re...
Druck - [24 x ...
Sitzung B - [2...
FIG_FAO_Bu...
H:\BVVG-AR...
14:52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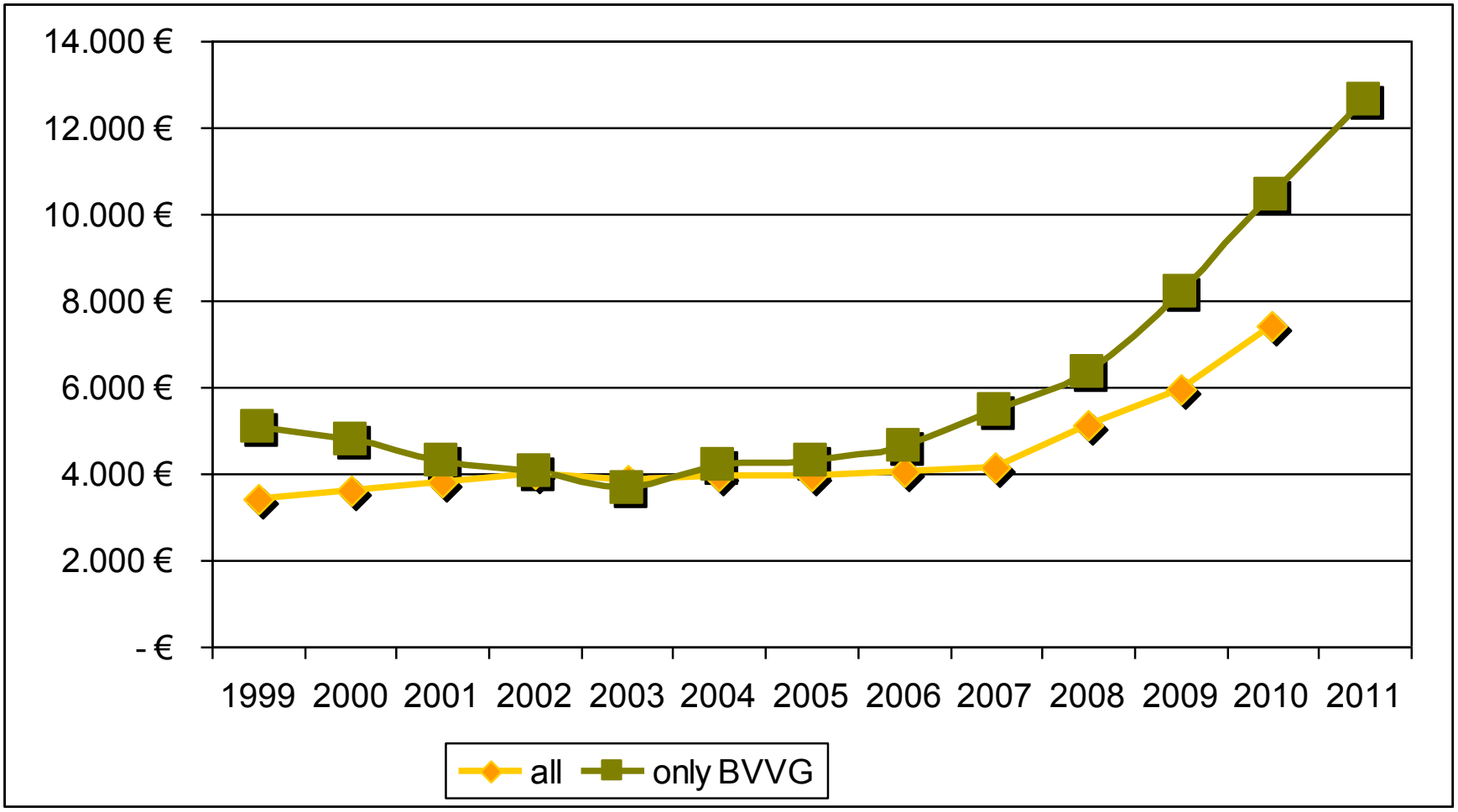
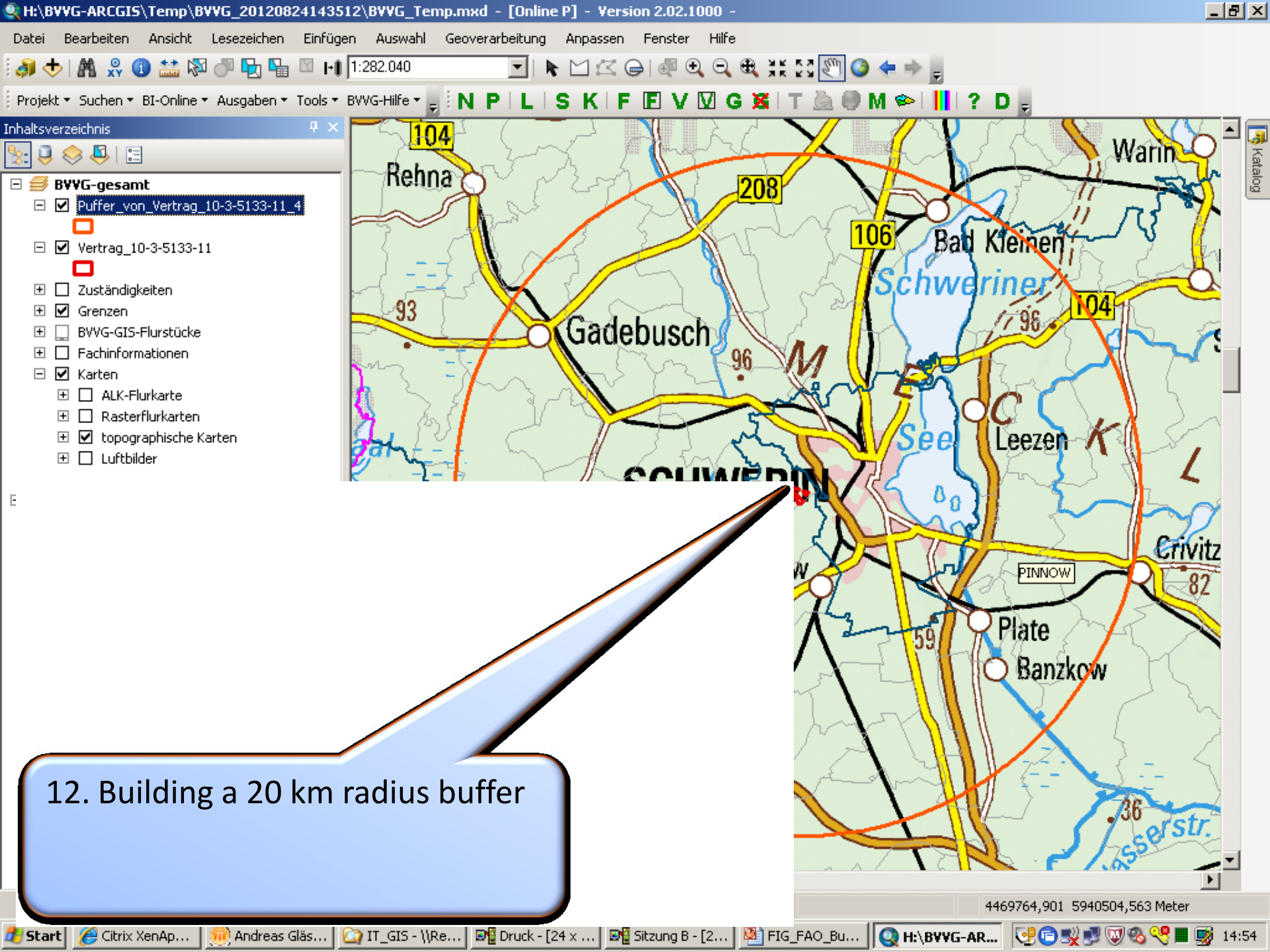
ALK-Flurkarte
Rasterflurkarten
topographische Karten
Luftbilder
Übersicht BVVG-gesamt
Grenzen
topographische Karten
SpPf
67,0
K66
WITTENFÖRDEN
65,5
4455854,071 5943931,466 Meter
Katalog
11. For valuation
Start
Citrix XenAp...
Andreas Gläs...
IT_GIS - \\Re...
Druck - [24 x ...
Sitzung B - [2...
FIG_FAO_Bu...
H:\BVVG-AR...
14:54

Selling prices for agricultural areas in Eastern Germany 1999 – 2011 (EUR/ha)

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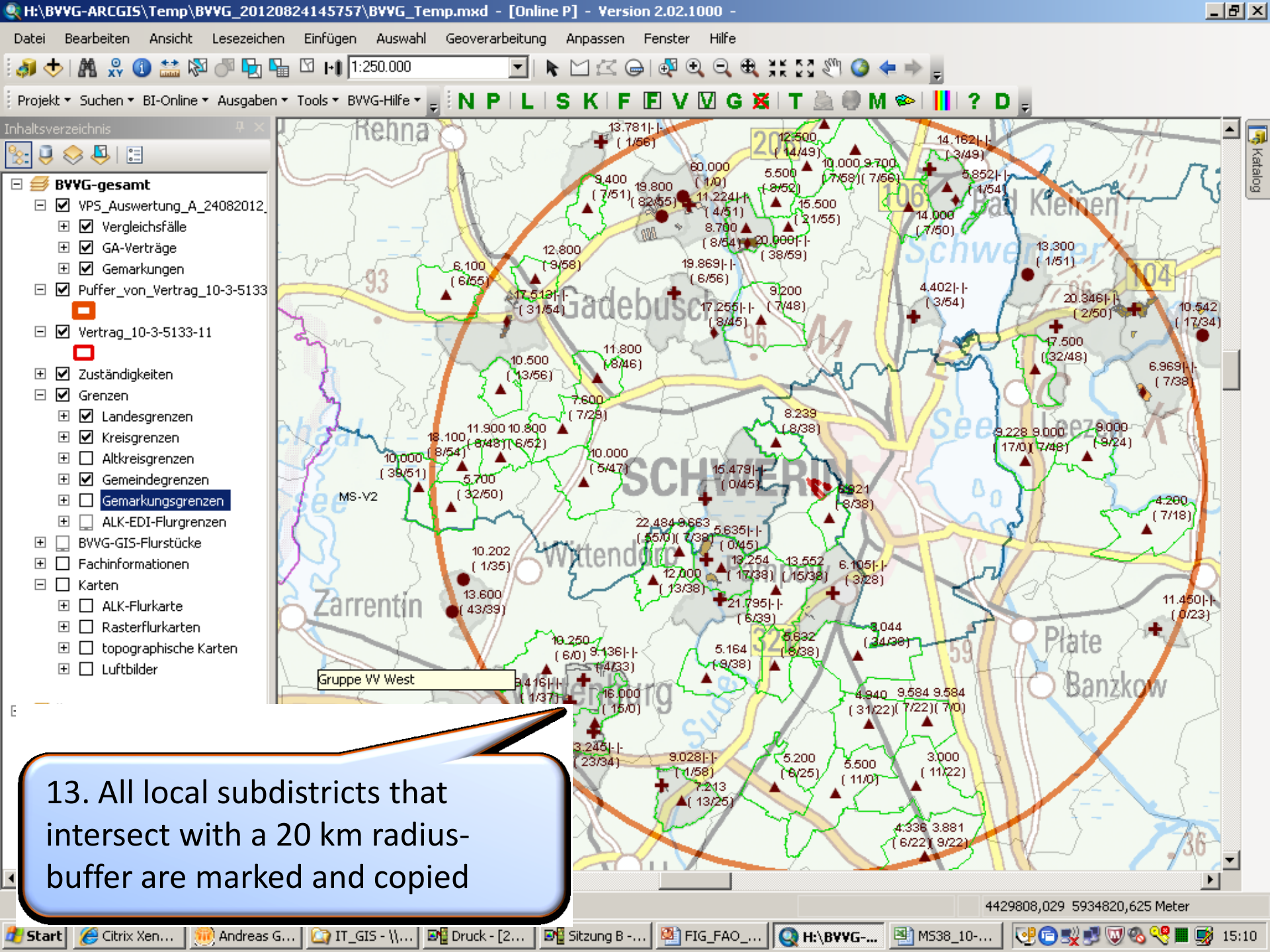
ALK-Flurkarte
Rasterflurkarten
topographische Karten
Luftbilder
Rehna
Gadebusch
Bad Kleinen
Schweriner See
Leezen
PINNOW
Plate
Banzkow
Crivitz
104
208
106
93
96
82
59
36
12. Building a 20 km radius buffer
4469764,901 5940504,563 Meter
Start
Citrix XenAp...
Andreas Gläs...
IT_GIS - \\Re...
Druck - [24 x ...
Sitzung B - [2...
FIG_FAO_Bu...
H:\BVVG-AR...
14:54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Inhaltsverzeichnis
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VPS_Auswertung_A_24082012_
Vergleichsfälle
GA-Verträge
Gemarkungen
Puffer_von_Vertrag_10-3-5133
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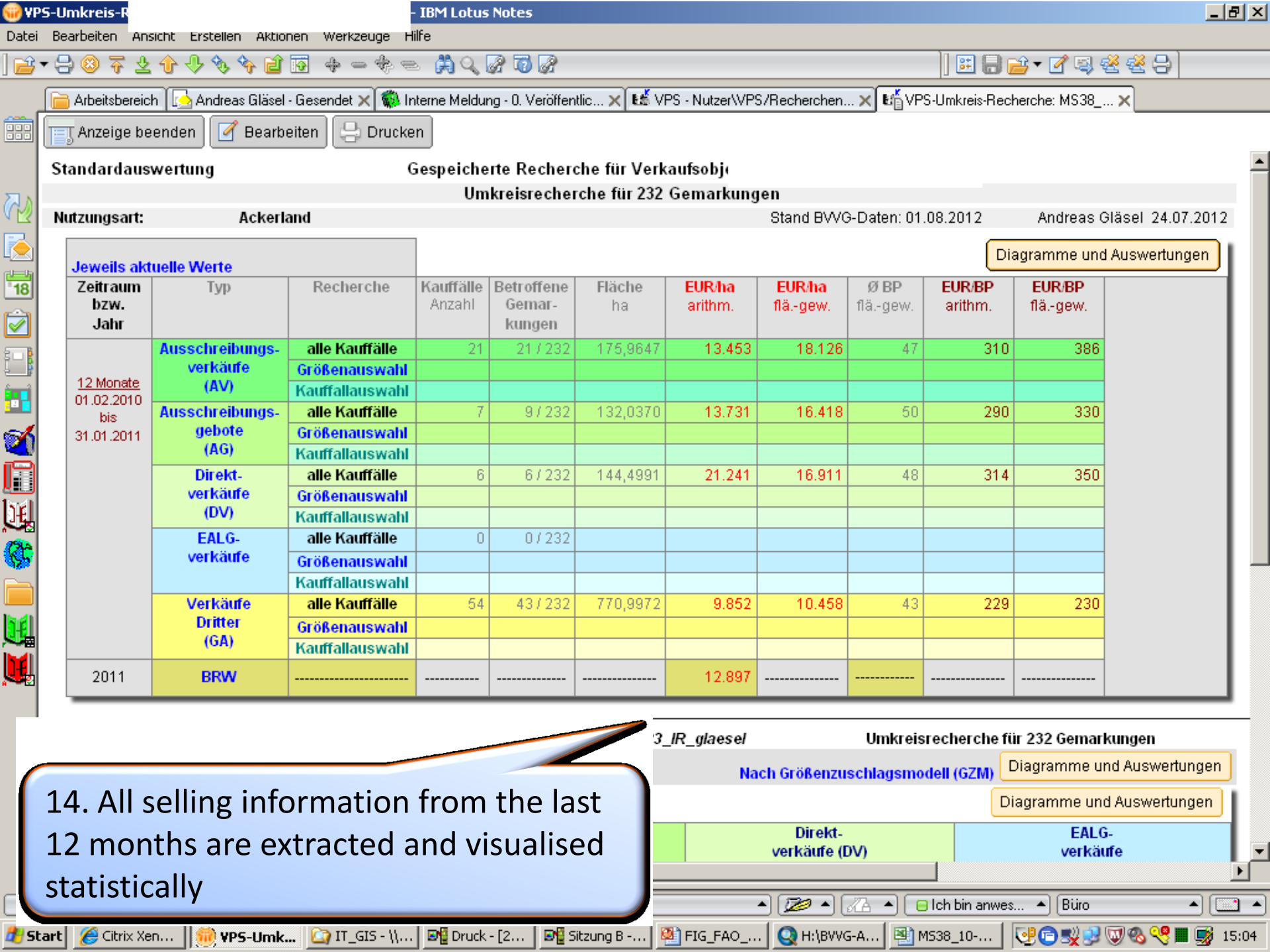
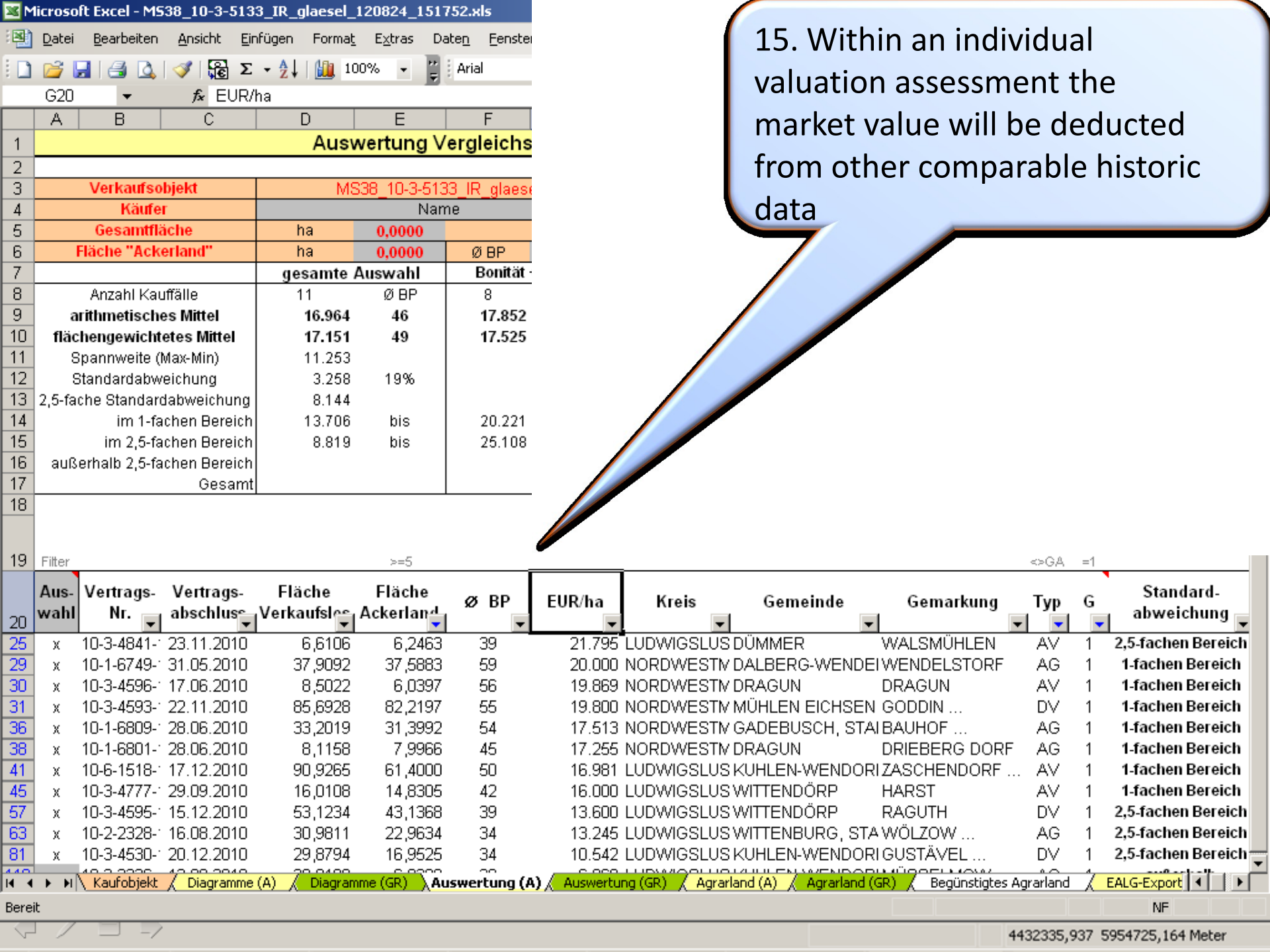
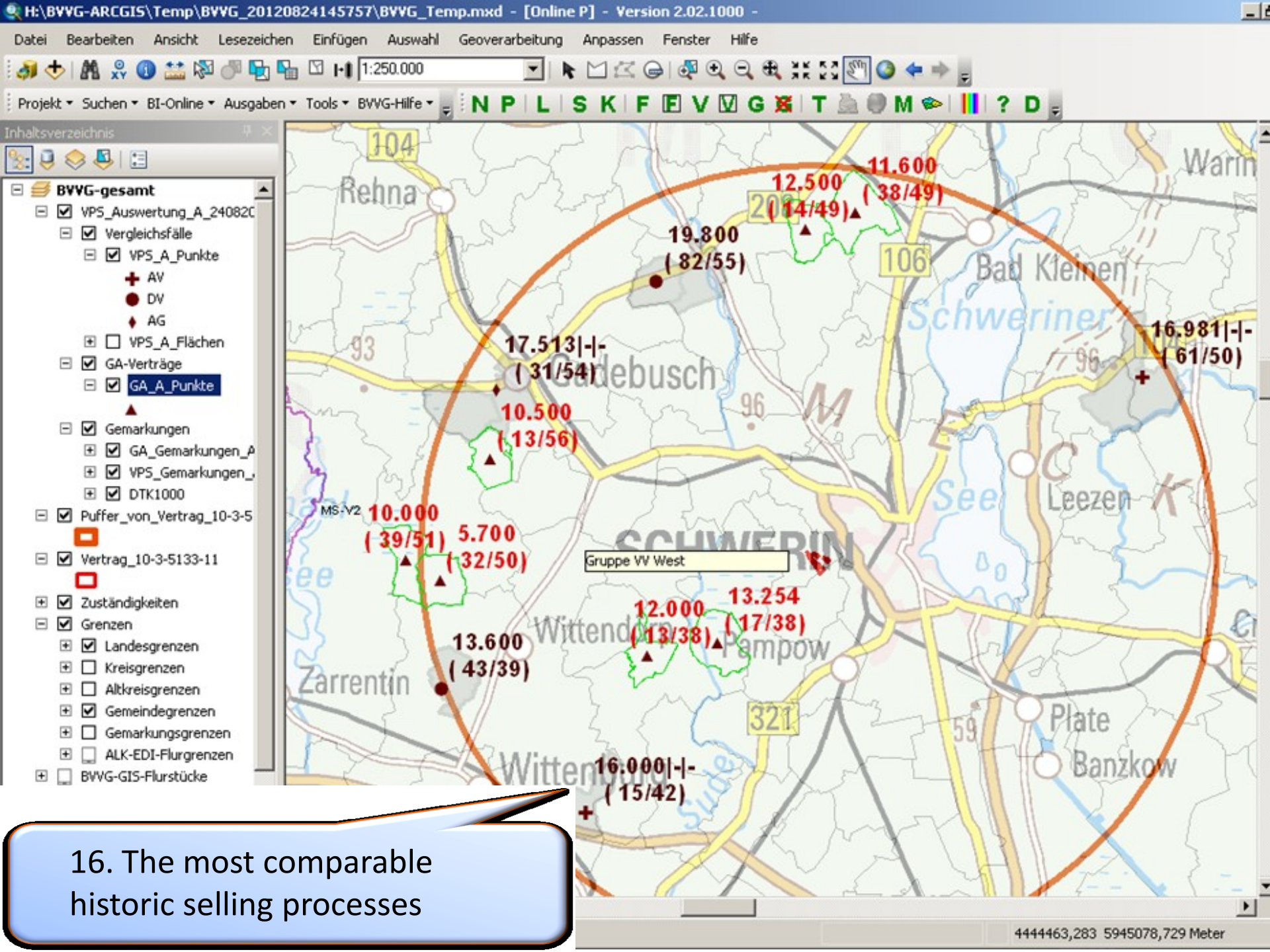
Grenzen
Landesgrenzen
Kreisgrenzen
Altkreisgrenzen
Gemeindegrenzen
Gemarkungsgrenzen
ALK-EDI-Flurgrenzen
BVVG-GIS-Flurstücke
Fachinformationen
Karten
ALK-Flurkarte
Rasterflurkarten
topographische Karten
Luftbilder
Katalog
Rehna
Gadebusch
Schwerin
Bad Kleinen
Zarrentin
Wittendörp
Plate
Banzkow
MS-V2
Gruppe VV West
4429808,029 5934820,625 Meter
13. All local subdistricts that intersect with a 20 km radius-buffer are marked and copied
Start
Citrix Xen...
Andreas G...
IT_GIS - \\...
Druck - [2...
Sitzung B -...
FIG_FAO_...
H:\BVVG-...
MS38_10-...
15:10

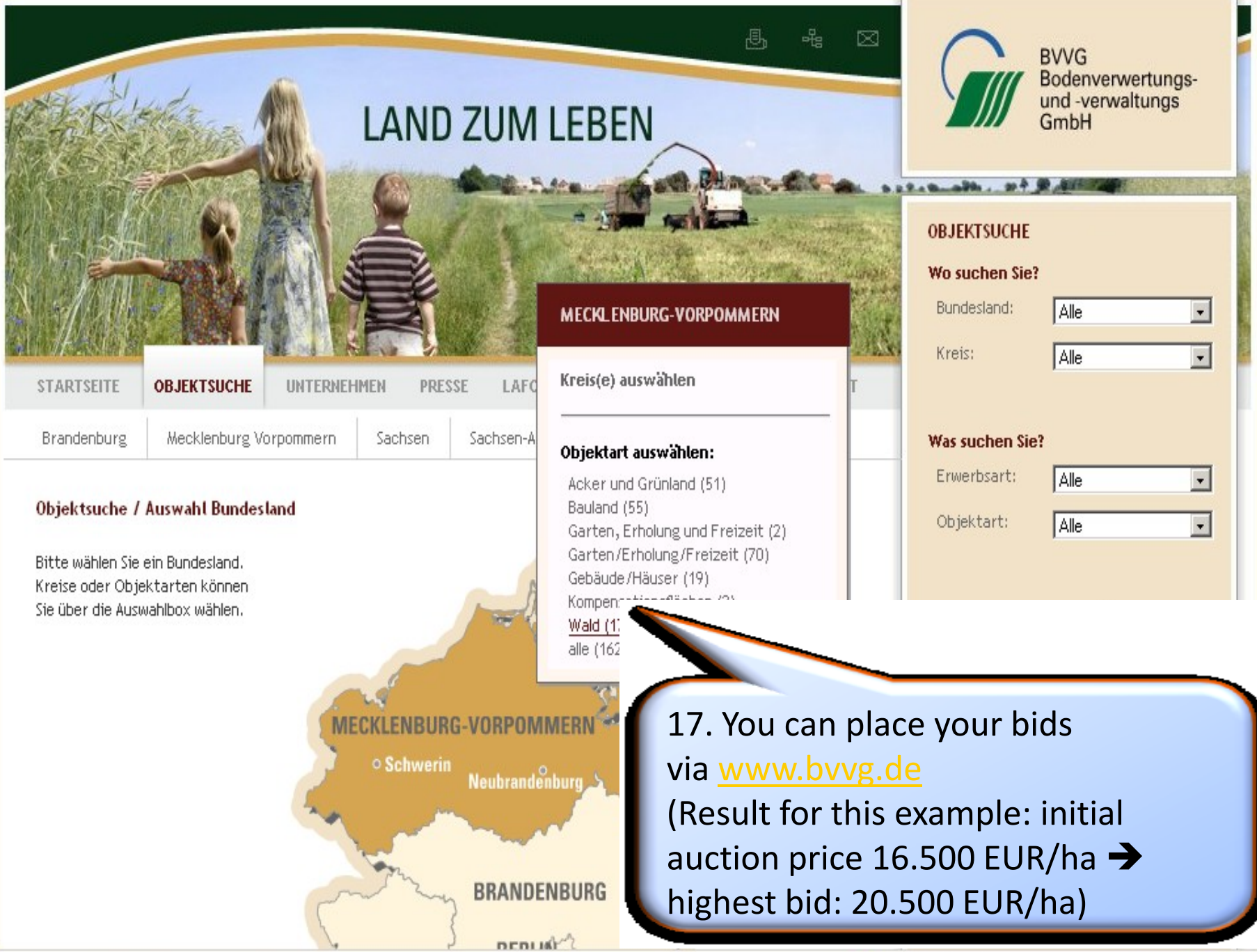


14. All selling information from the last 12 months are extracted and visualised statistically


Microsoft Excel - M538_10-3-5133_IR_glaesel_120824_151752.xls
Datei Bearbeiten Ansicht Einfügen Format Extras Daten Fenster
100%
Arial
G20
EUR/ha
Auswertung Vergleichs
Verkaufsobjekt
MS38_10-3-5133_IR_glaes
Käufer
Name
Gesamtfläche
ha
0,0000
Fläche "Ackerland"
ha
0,0000
Ø BP
gesamte Auswahl
Bonität
Anzahl Kauffälle 11 Ø BP 8
arithmetisches Mittel 16.964 46 17.852
flächengewichtetes Mittel 17.151 49 17.525
Spannweite (Max-Min) 11.253
Standardabweichung 3.258 19%
2,5-fache Standardabweichung 8.144
im 1-fachen Bereich 13.706 bis 20.221
im 2,5-fachen Bereich 8.819 bis 25.108
außerhalb 2,5-fachen Bereich
Gesamt
15. Within an individual valuation assessment the market value will be deducted from other comparable historic data
Filter
>=5
<>GA
=1
Aus-wahl
Vertrags-Nr.
Vertrags-abschluss
Fläche Verkaufsloc
Fläche Ackerland
Ø BP
EUR/ha
Kreis
Gemeinde
Gemarkung
Typ
G
Standard-abweichung
x 10-3-4841- 23.11.2010 6,6106 6,2463 39 21.795 LUDWIGSLUS DÜMMER WALSMÜHLEN AV 1 2,5-fachen Bereich
x 10-1-6749- 31.05.2010 37,9092 37,5883 59 20.000 NORDWESTM DALBERG-WENDEI WENDELSTORF AG 1 1-fachen Bereich
x 10-3-4596- 17.06.2010 8,5022 6,0397 56 19.869 NORDWESTM DRAGUN DRAGUN AV 1 1-fachen Bereich
x 10-3-4593- 22.11.2010 85,6928 82,2197 55 19.800 NORDWESTM MÜHLEN EICHSEN GODDIN ... DV 1 1-fachen Bereich
x 10-1-6809- 28.06.2010 33,2019 31,3992 54 17.513 NORDWESTM GADEBUSCH, STAI BAUHOF ... AG 1 1-fachen Bereich
x 10-1-6801- 28.06.2010 8,1158 7,9966 45 17.255 NORDWESTM DRAGUN DRIEBERG DORF AG 1 1-fachen Bereich
x 10-6-1518- 17.12.2010 90,9265 61,4000 50 16.981 LUDWIGSLUS KUHLEN-WENDORI ZASCHENDORF ... AV 1 1-fachen Bereich
x 10-3-4777- 29.09.2010 16,0108 14,8305 42 16.000 LUDWIGSLUS WITTENDÖRP HARST AV 1 1-fachen Bereich
x 10-3-4595- 15.12.2010 53,1234 43,1368 39 13.600 LUDWIGSLUS WITTENDÖRP RAGUTH DV 1 2,5-fachen Bereich
x 10-2-2328- 16.08.2010 30,9811 22,9634 34 13.245 LUDWIGSLUS WITTENBURG, STA WÖLZOW ... AG 1 2,5-fachen Bereich
x 10-3-4530- 20.12.2010 29,8794 16,9525 34 10.542 LUDWIGSLUS KUHLEN-WENDORI GUSTÄVEL ... DV 1 2,5-fachen Bereich
Kaufobjekt
Diagramme (A)
Diagramme (GR)
Auswertung (A)
Auswertung (GR)
Agrarland (A)
Agrarland (GR)
Begünstigtes Agrarland
EALG-Export
Bereit
NF
4432335,937 5954725,164 Meter



16. The most comparable historic selling processes


LAND ZUM LEBEN
BVVG
Bodenverwertungs-
und -verwaltungs
GmbH
OBJEKTSUCHE
Wo suchen Sie?
Bundesland:
Alle
Kreis:
Alle
Was suchen Sie?
Erwerbsart:
Alle
Objektart:
Alle
STARTSEITE
OBJEKTSUCHE
UNTERNEHMEN
PRESSE
Brandenburg
Mecklenburg Vorpommern
Sachsen
MECKLENBURG-VORPOMMERN
Kreis(e) auswählen
Objektart auswählen:
Acker und Grünland (51)
Bauland (55)
Garten, Erholung und Freizeit (2)
Garten/Erholung/Freizeit (70)
Gebäude/Häuser (19)
Wald (1
alle (162
Objektsuche / Auswahl Bundesland
Bitte wählen Sie ein Bundesland.
Kreise oder Objektarten können
Sie über die Auswahlbox wählen.
MECKLENBURG-VORPOMMERN
Schwerin
Neubrandenburg
BRANDENBURG
17. You can place your bids
via www.bvvg.de
(Result for this example: initial
auction price 16.500 EUR/ha ➔
highest bid: 20.500 EUR/ha)
http://www.bvvg.de/INTERNET/internet.nsf/HTML/KARTE#
Lokales Intranet
100%

PRACTICAL EXAMPLE

The „LandManager software package“ a land information system for Mongolia

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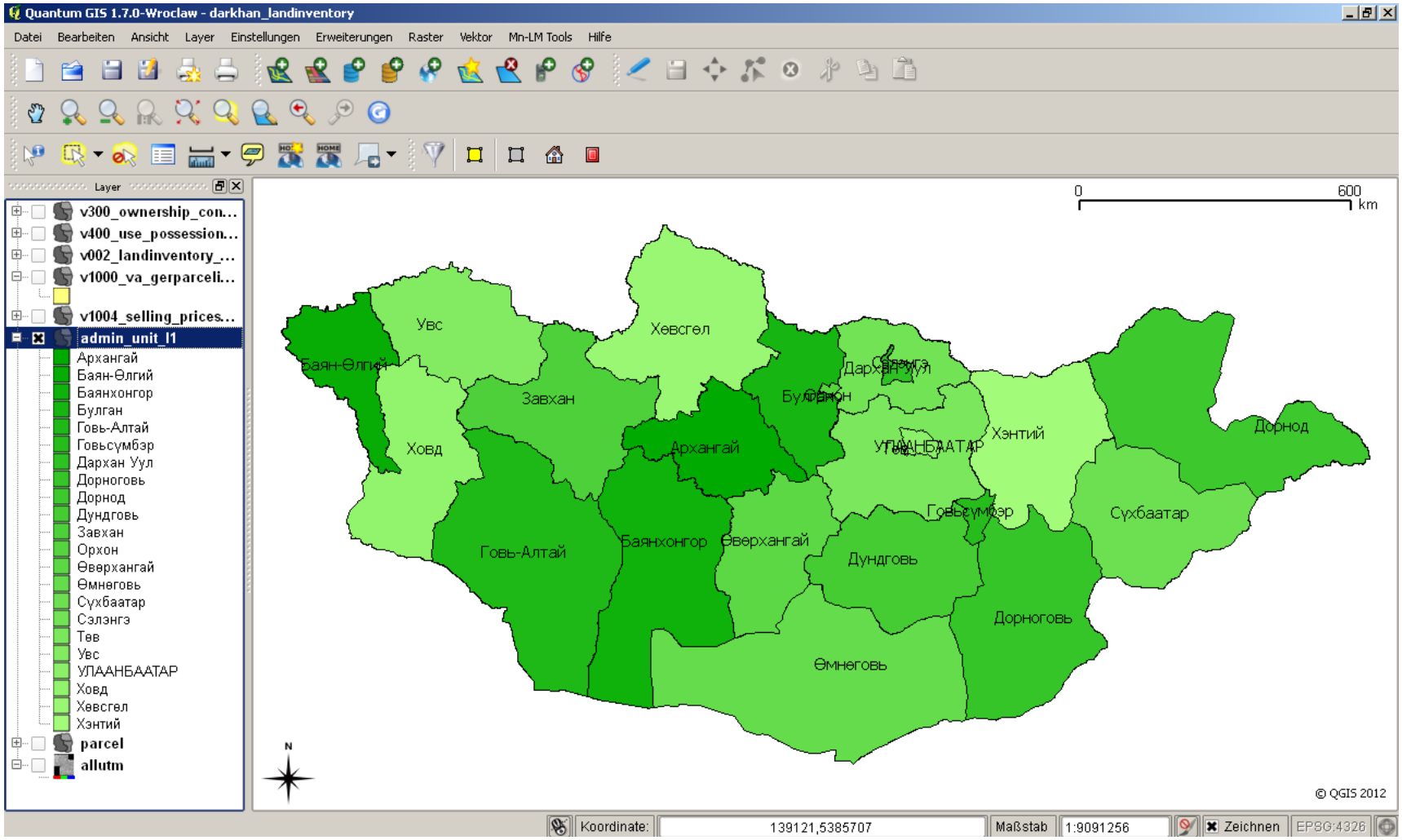
THE „LANDMANAGER SOFTWARE PACKAGE“ MONGOLIA



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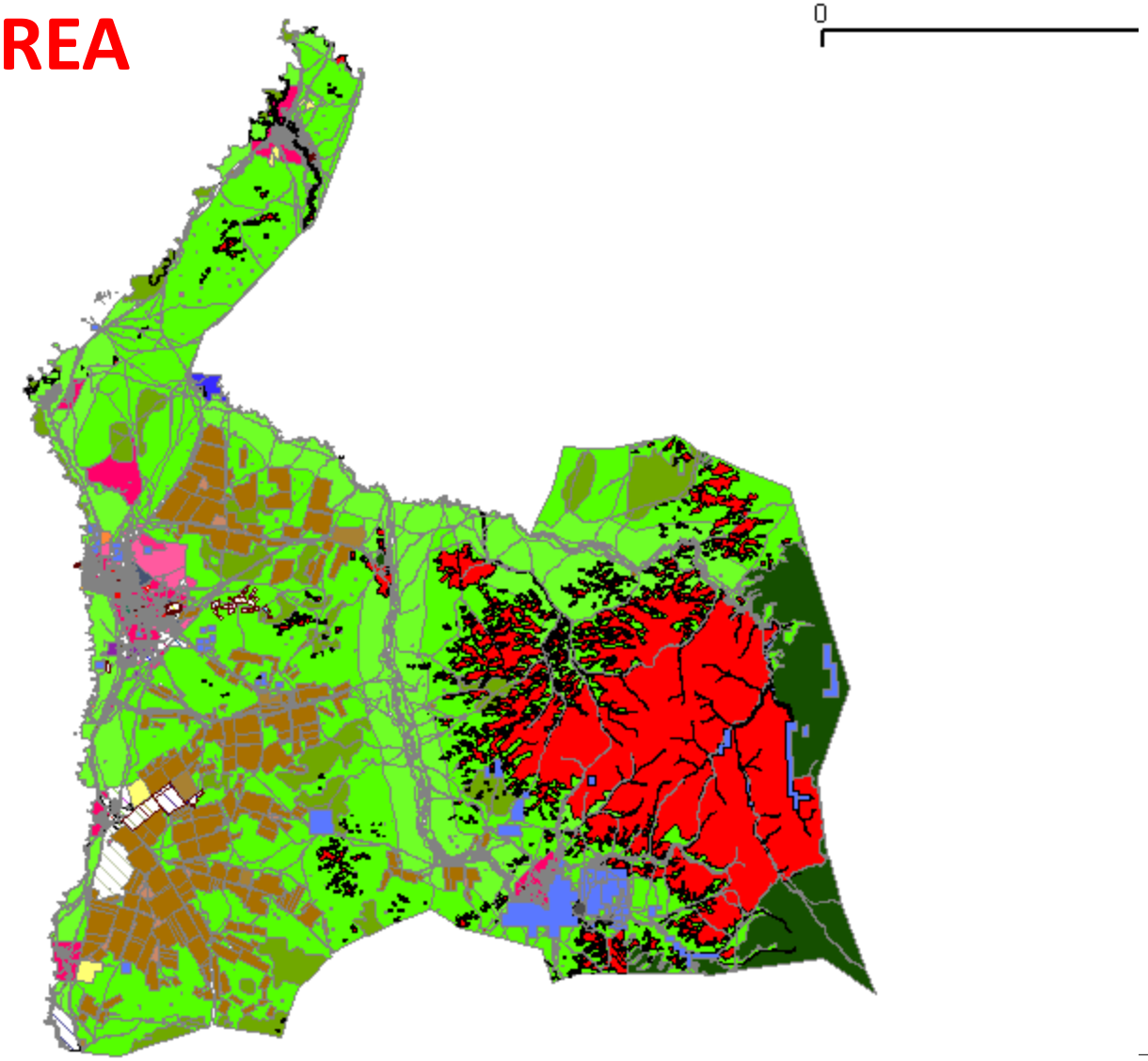
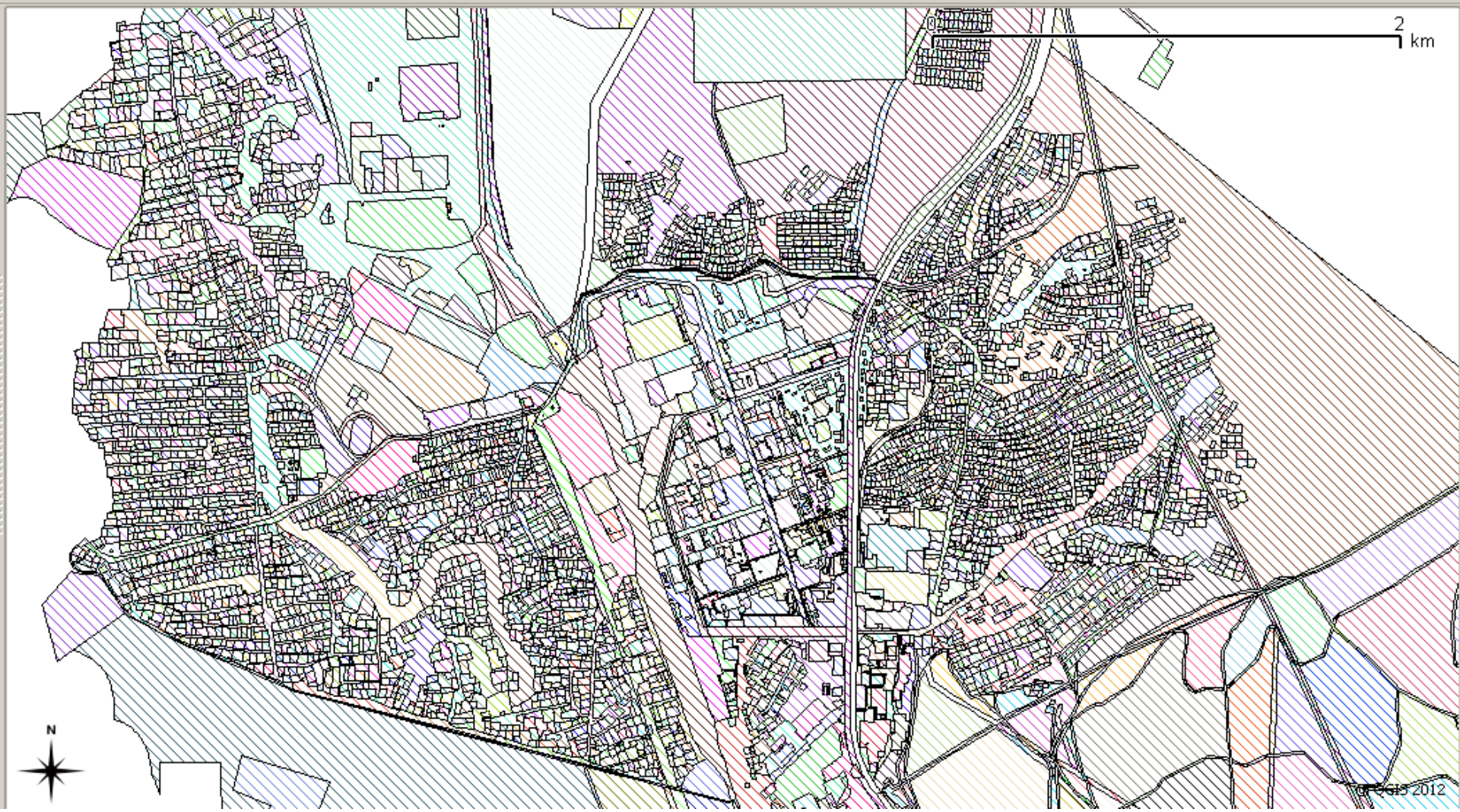
CADASTRAL DATA ON ALL PARCELS WHOLE AREA



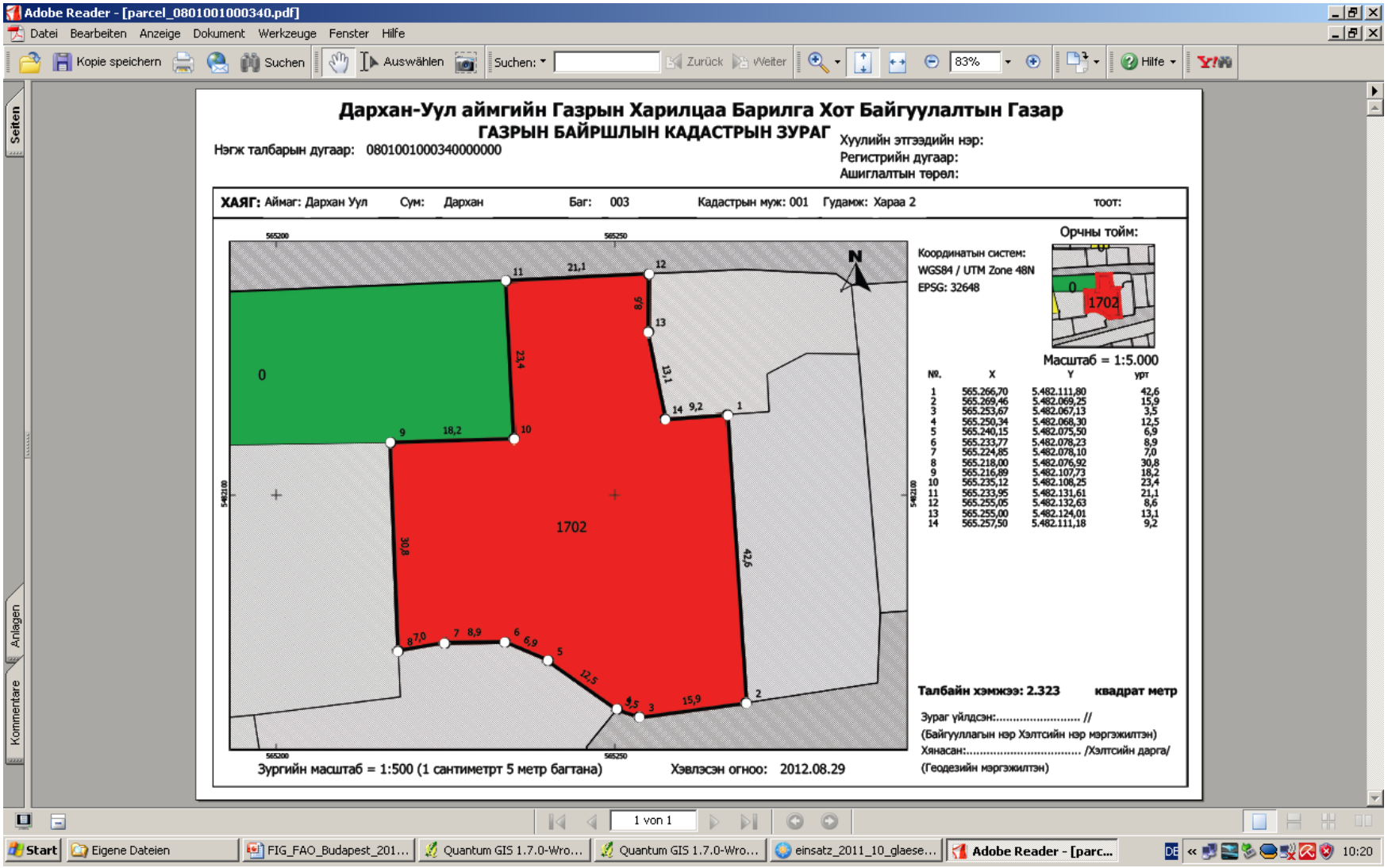
BVVG

CADASTRAL SERVICES



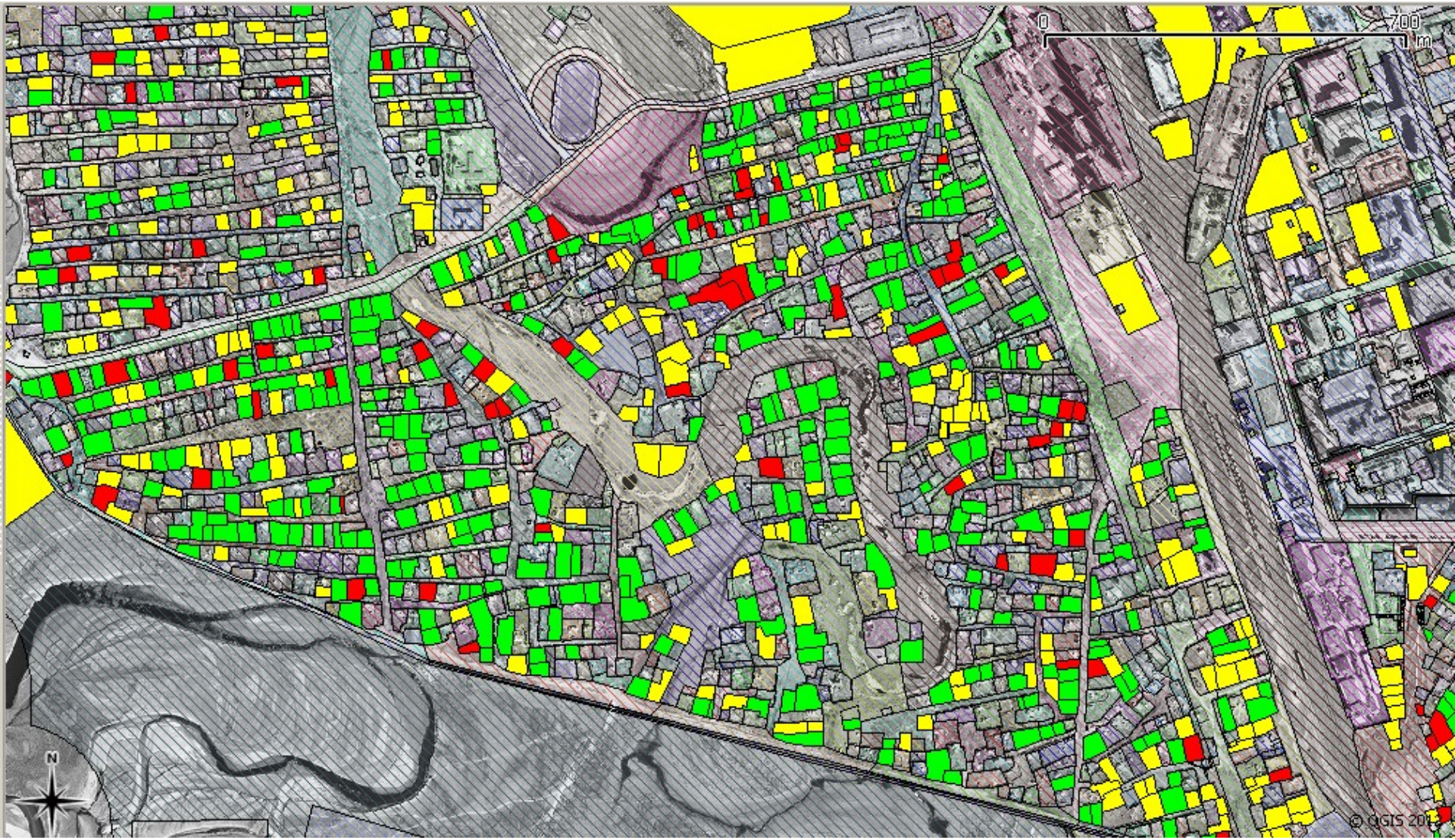
BVVG

CADASTRAL SERVICES II



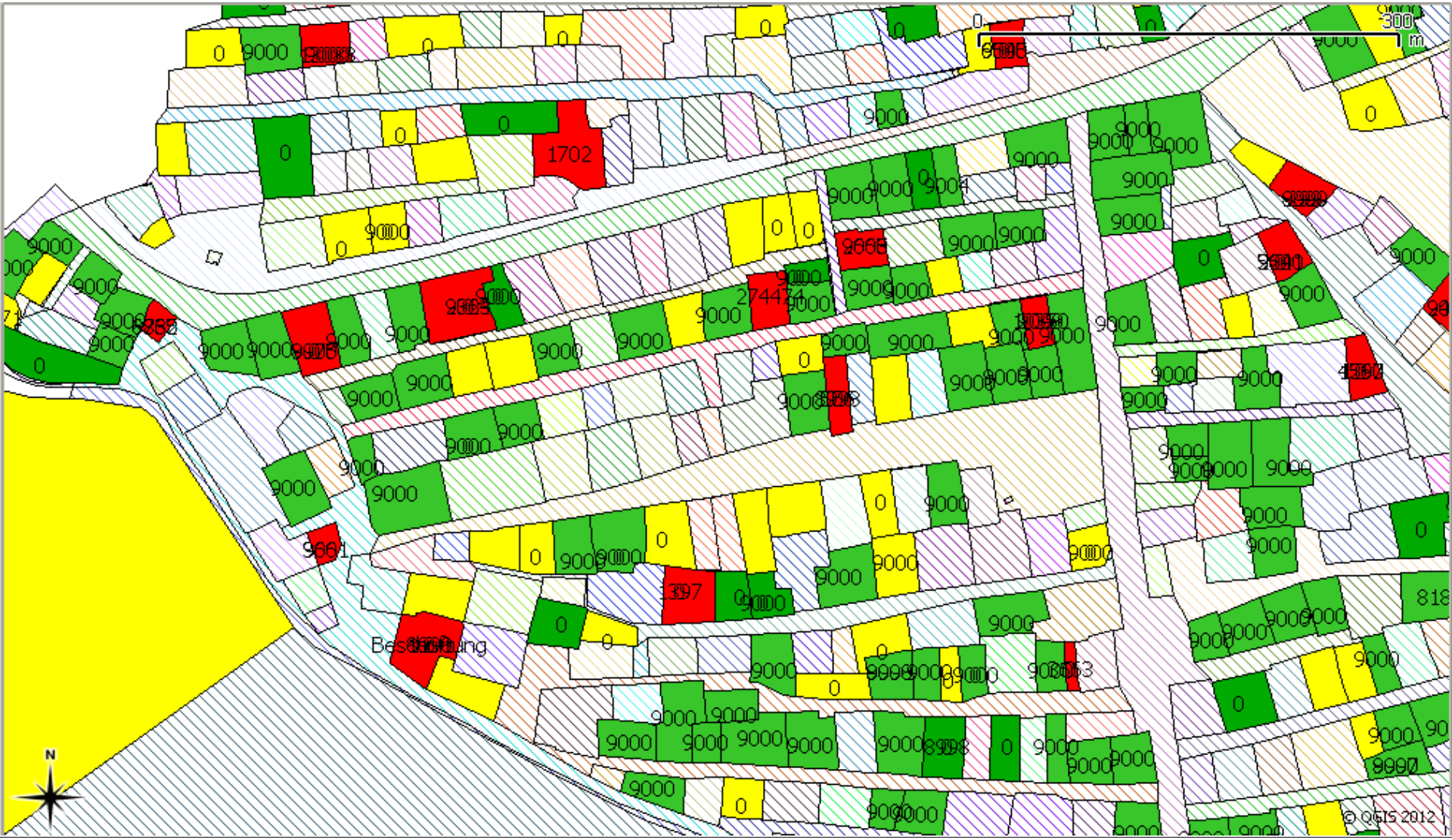
BVVG

MONITORING LAND TRANSFERS



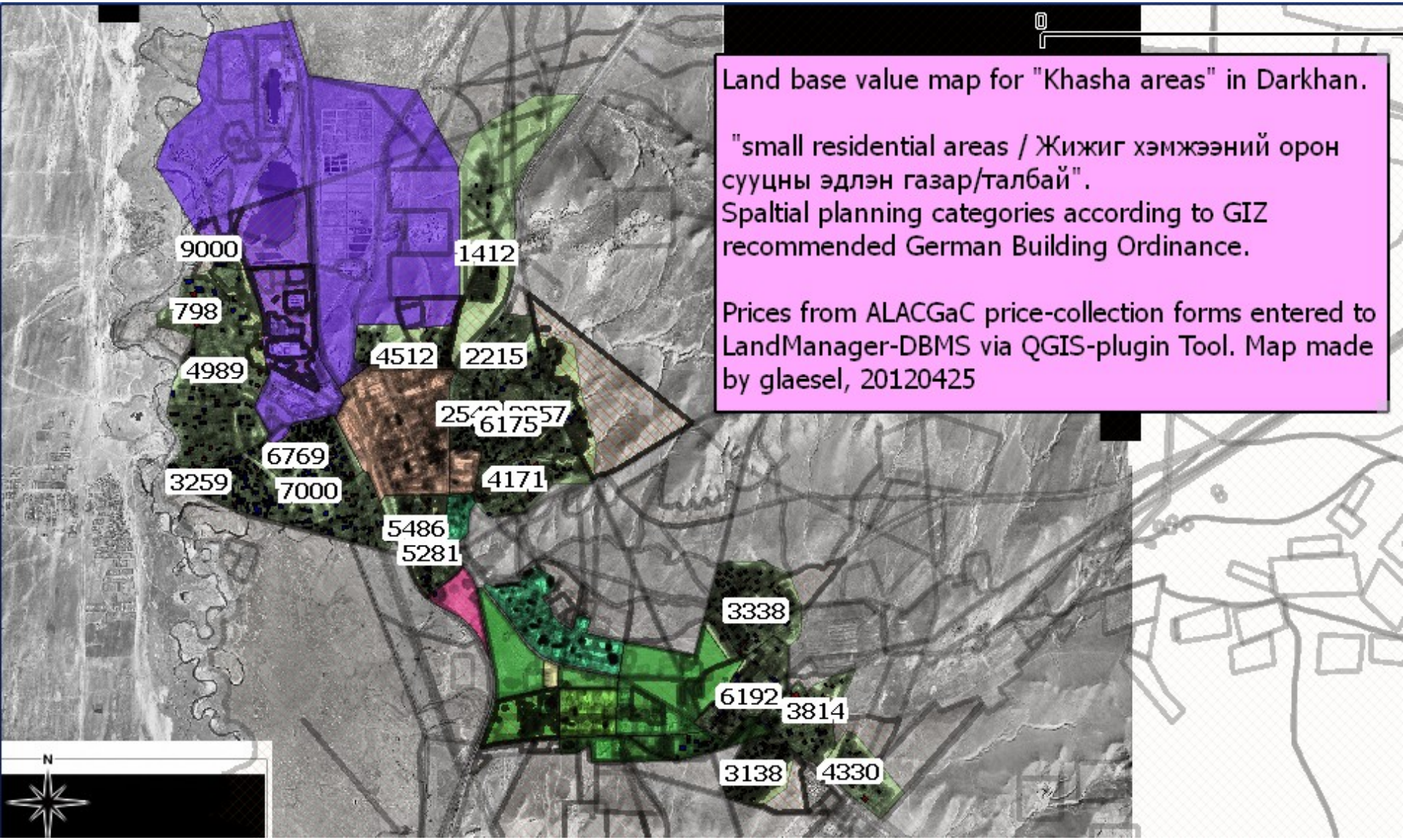
BVVG

ESTABLISHING LAND MARKET MONITORING



BVVG

FOR DEDUCTING HISTORIC VALUES



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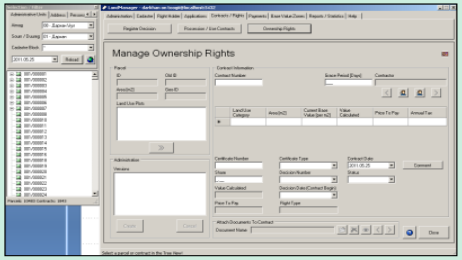
The „LandManager – Software Package“

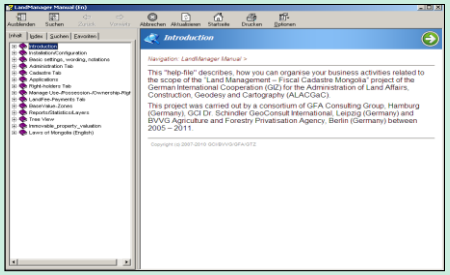
„LandManager – Graphical User interface“

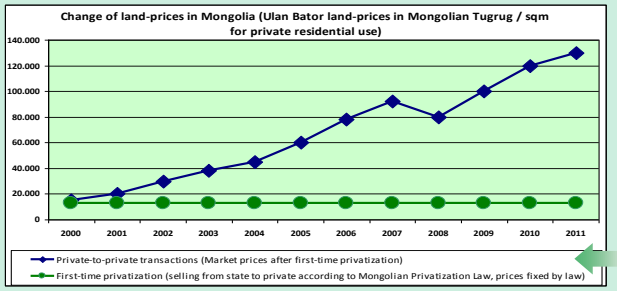
- Managing non-spatial data on applications for land rights and other land contracts
- Collecting leasing/selling prices
- Base leasing rates/prices



„LandManager – HelpFile“

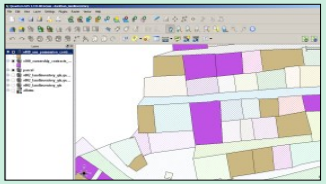
- Capacity development and self-learning
- Knowledge transfer/database



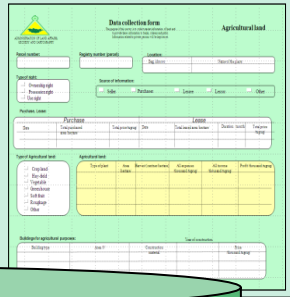


„LandManager – OSS: QuantumGIS plug-in Tools“

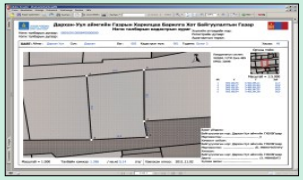
- Surveying and updating of parcels
- Cadastre maintenance

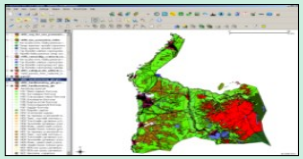


- Collecting valuation-related information from private land transactions

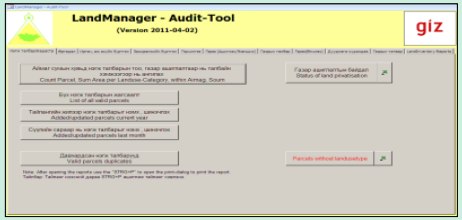


- Visualization, cadastral maps and spatial analysis



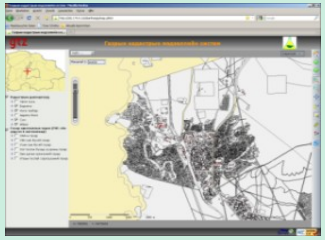


LandManager – Back-end
(stores data, standard reports and layers)
(OSS: PostgreSQL RDBMS with PostGIS-extension)



„LandManager – AuditTool“

- Standard reports and continuous auditing
- ALACGaC-Management Information System
- Internal and external reporting (including income from privatizing/leasing state-owned land)
- Monitoring of the land market (development of leasing/selling prices)



„LandManager – WebGIS“

- Easy access to cadastral data and valuation related information

Standard interfaces for other office or financial management software

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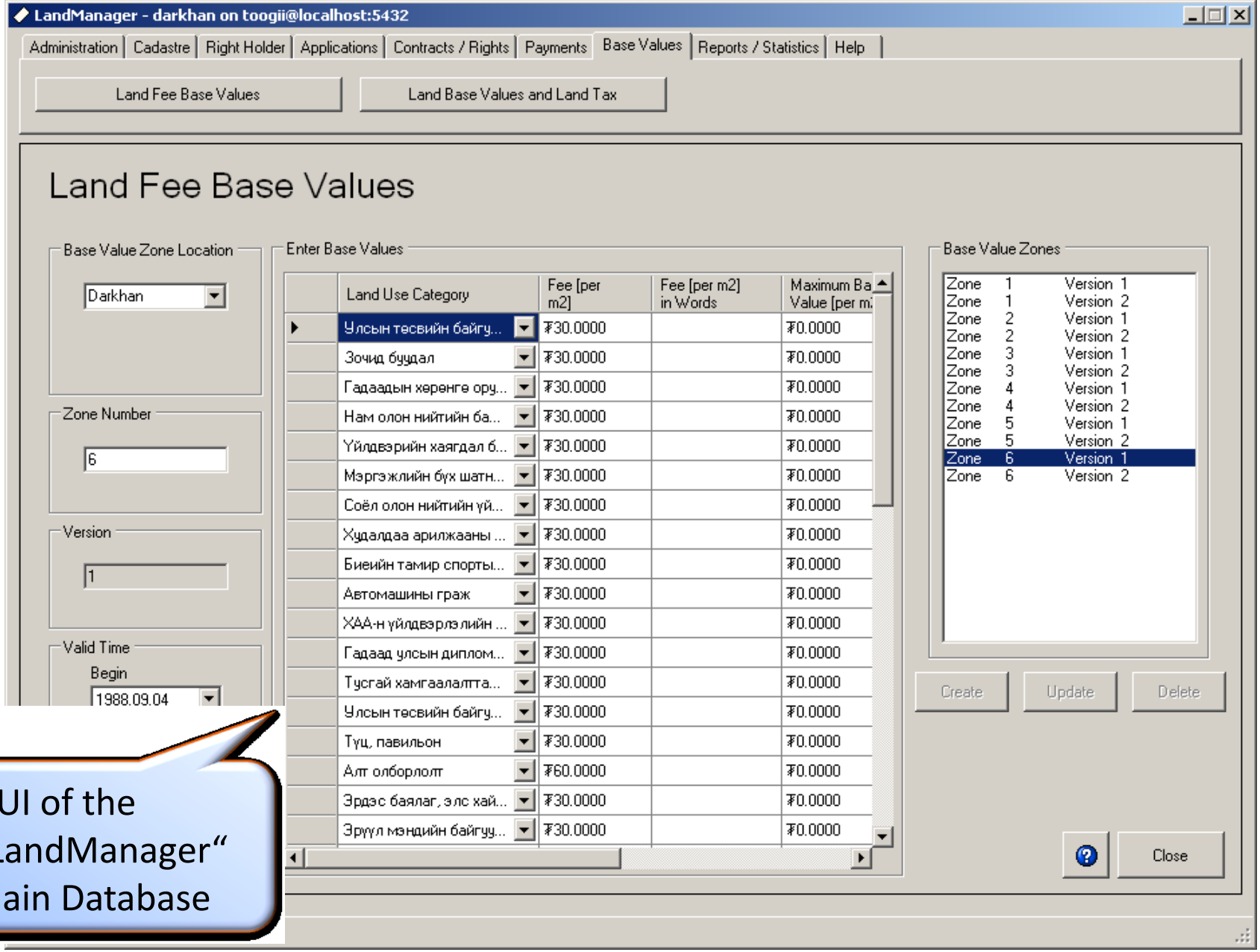

GUI of the „LandManager“ main Database

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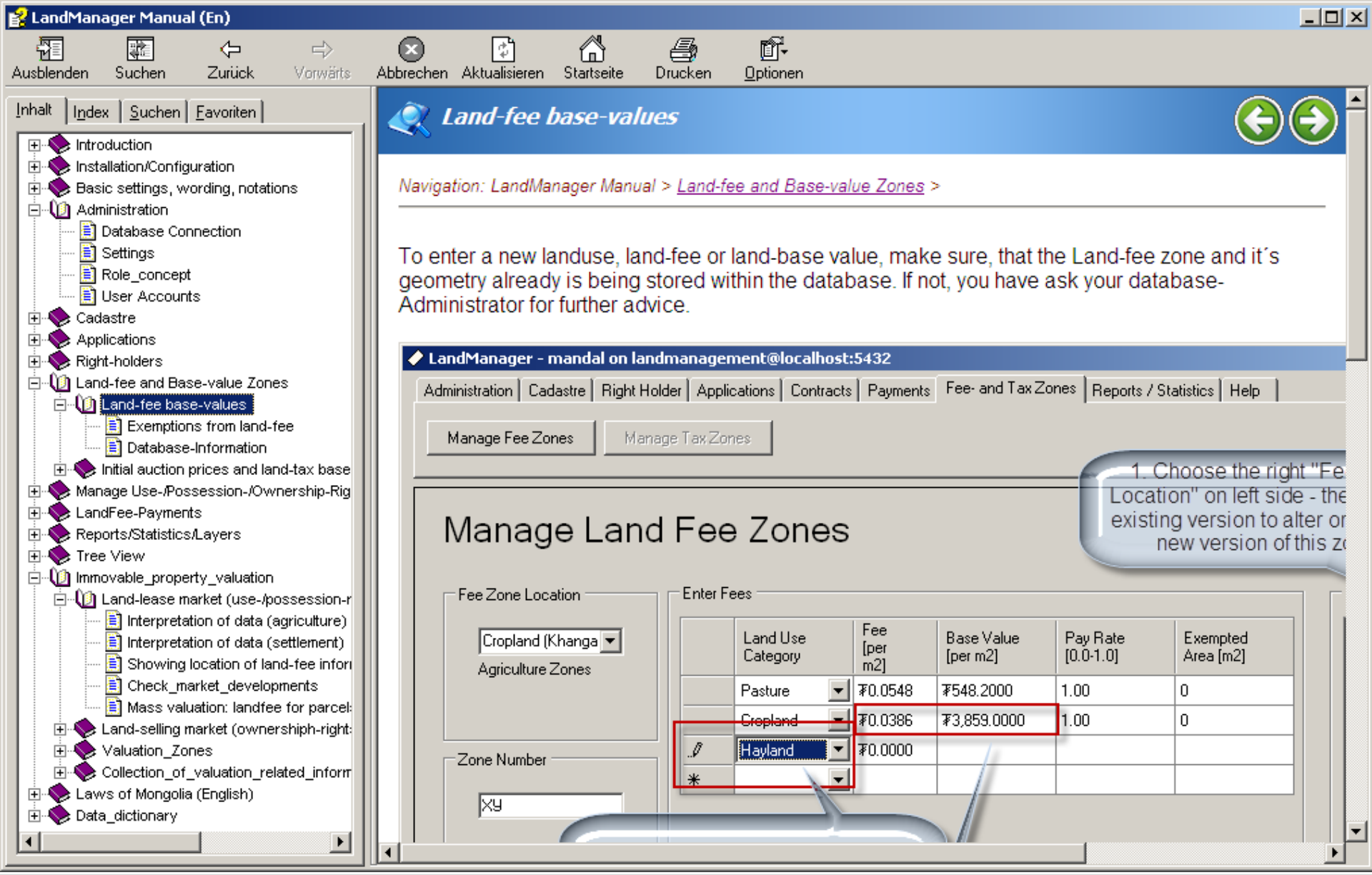
LandManager Manual (En)
Ausblenden
Suchen
Zurück
Vorwärts
Abbrechen
Aktualisieren
Startseite
Drucken
Optionen
Inhalt
Index
Suchen
Favoriten
Introduction
Installation/Configuration
Basic settings, wording, notations
Administration
Database Connection
Settings
Role_concept
User Accounts
Cadastre
Applications
Right-holders
Land-fee and Base-value Zones
Land-fee base-values
Exemptions from land-fee
Database-Information
Initial auction prices and land-tax base
Manage Use-/Possession-/Ownership-Rig
LandFee-Payments
Reports/Statistics/Layers
Tree View
Immovable_property_valuation
Land-lease market (use-/possession-r
Interpretation of data (agriculture)
Interpretation of data (settlement)
Showing location of land-fee infor
Check_market_developments
Mass valuation: landfee for parcel
Land-selling market (ownershiph-right
Valuation_Zones
Collection_of_valuation_related_inform
Laws of Mongolia (English)
Data_dictionary
Land-fee base-values
Navigation: LandManager Manual > Land-fee and Base-value Zones >
To enter a new landuse, land-fee or land-base value, make sure, that the Land-fee zone and it´s geometry already is being stored within the database. If not, you have ask your database-Administrator for further advice.
LandManager - mandal on landmanagement@localhost:5432
Administration
Cadastre
Right Holder
Applications
Contracts
Payments
Fee- and Tax Zones
Reports / Statistics
Help
Manage Fee Zones
Manage Tax Zones
1. Choose the right "Fe
Location" on left side - the
existing version to alter or
new version of this z
Manage Land Fee Zones
Fee Zone Location
Cropland (Khanga
Agriculture Zones
Zone Number
XY
Enter Fees
Land Use Category
Fee [per m2]
Base Value [per m2]
Pay Rate [0.0-1.0]
Exempted Area [m2]
Pasture
₮0.0548
₮548.2000
1.00
0
Cropland
₮0.0386
₮3,859.0000
1.00
0
Hayland
₮0.0000

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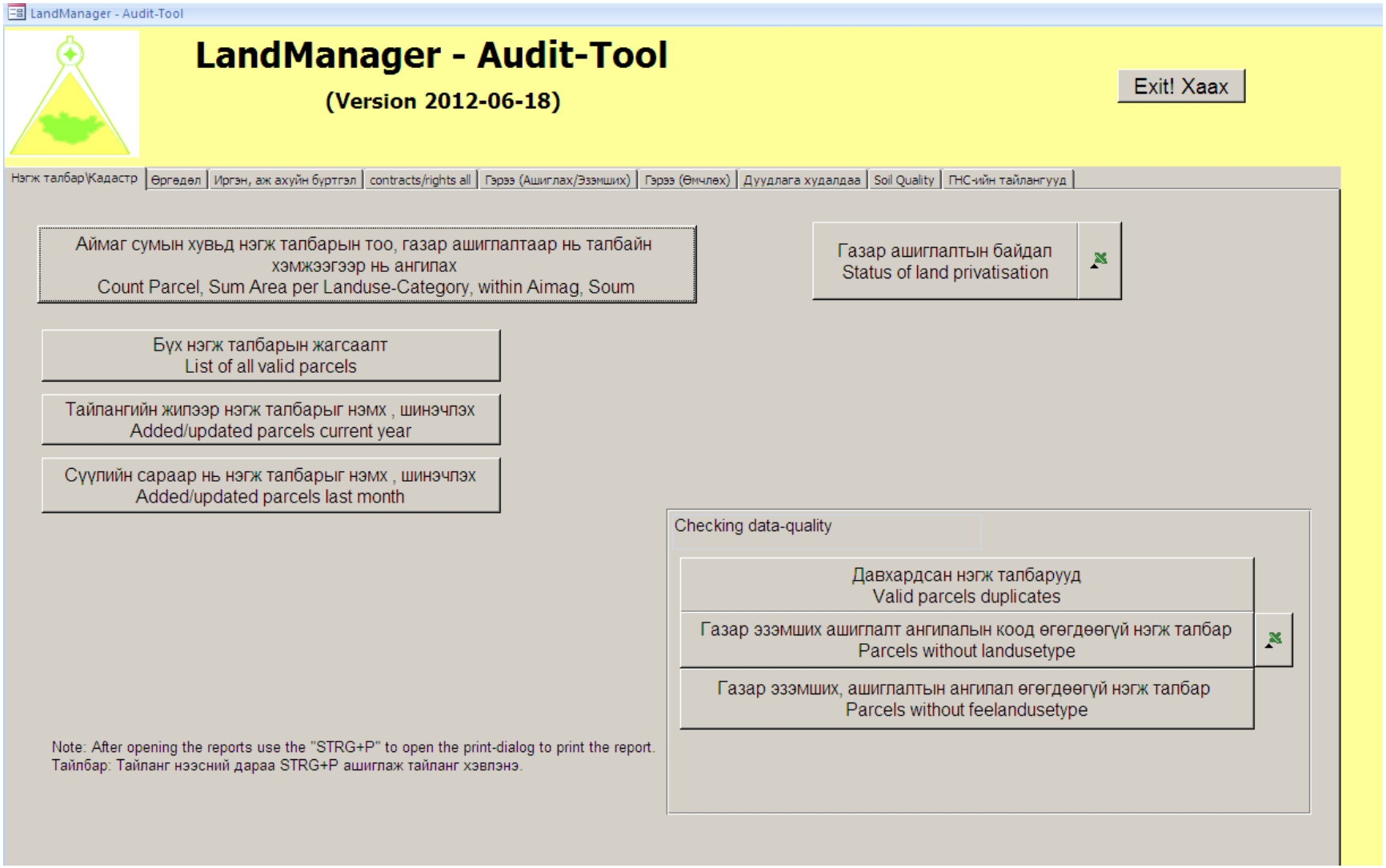
THE „LANDMANAGER – AUDIT TOOL“



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v004_aimag_soum_landuse_sum_area_pivot

Drop Filter Fields Here

Drop Column Fields Here

aimag	soum_name	lcode1_mn	lcode2_mn	Sum of sum_area_ha	Sum of count
⊟ Дархан Уул	⊟ Дархан	⊞ Зам, шугам сүлжээний газар		470	415
		⊞ Улсын тусгай хэрэгцээний газар		136	17
		⊞ Усны сан бүхий газар		35	2
		⊟ Хөдөө аж ахуйн газар	Бэлчээр	803	29
			Усалгаагүй тариалан	77	7
			Усалгаатай тариалан	20	3
			ХАА-н барилга, байгууламжий	26	14
			Total	926	53
		⊞ Хот, тосгон, бусад суурины газар		5518	10799
		Total		7085	11286
	⊟ Орхон	⊞ Зам, шугам сүлжээний газар		688	139
		⊞ Улсын тусгай хэрэгцээний газар		12	4
		⊞ Усны сан бүхий газар		4	1
		⊞ Хөдөө аж ахуйн газар		36263	1492
		⊞ Хот, тосгон, бусад суурины газар		4197	706
		Total		41164	2342
	⊟ Хонгор	⊞ Зам, шугам сүлжээний газар		1696	294
		⊞ Ойн сан бүхий газар		16275	23
		⊞ Улсын тусгай хэрэгцээний газар		1226	27
		⊞ Усны сан бүхий газар		1316	10
		⊞ Хөдөө аж ахуйн газар		173568	1727
			ины газар	6096	1056
				200177	3137
			й газар	81	92
			ний газар	0	1
				77	10
				4033	162
			ины газар	4231	1146
				8422	1411
				256848	18176

Producing statistics for monitoring progress in the privatisation process, prices, and mass valuation of the assets.

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LESSONS LEARNED

- An IT-based land information system is a valuable tool to support these assignments
- State-land management and privatisation is a long-term task especially when including the development of a land-market monitoring system
- Accordingly, the development on an IT-system which supports state-land management is a long-term task. It has to be adapted to changing management and privatising conditions and to additonal or new requirements which will occur during the management and privatisation period.
- Therefore, it‘s recommended to develop an IT-strategy for planning and organising the development and maintenance of the IT-support (e.g. using an IT-Service management framework like ITIL)

LESSONS LEARNED

- The IT-architecture and applications should support the transfer of know-how between headquarters and distant branchoffices to empower self-learning capabilities and avoid high travel costs
- For a faster ROI an It-based LI-system should be developed and deployed in defined steps (IT-strategy) instead of designing a perfect IT-system that ends as stillborn project
- The system should contain a complete inventory of all assets and include a management information system for internal and external (financial) reporting.

THANK YOU FOR YOUR ATTENTION !

CONTACTS

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