

Geo-Information in Land Use and Development Acquisition – Availability - Application

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Preliminary Remarks



At least 80% of public and private decision-making is based on some spatial or geographic aspects

The ISO BULLETIN, July 2001

A balance between public and private interests in land use and land development requires measurable, objective, and traceable basic data

In accordance to the main topic of the 37th EFLUD symposium, August 2009

Geoinformation is part of the infrastructure of a country

Personal credo of authors



Content



- „New“ Dimensions in Geoinformation
- New Instruments, Methods, and Systems in Geoinformation
- ICT in Austrian Land Reform Authorities
 - Use of Technologies and of Data
 - Data Quality and Data Exchange
 - Competences and Educational Aspects
- Conclusions



„New“ Dimensions: Spatial Aspects

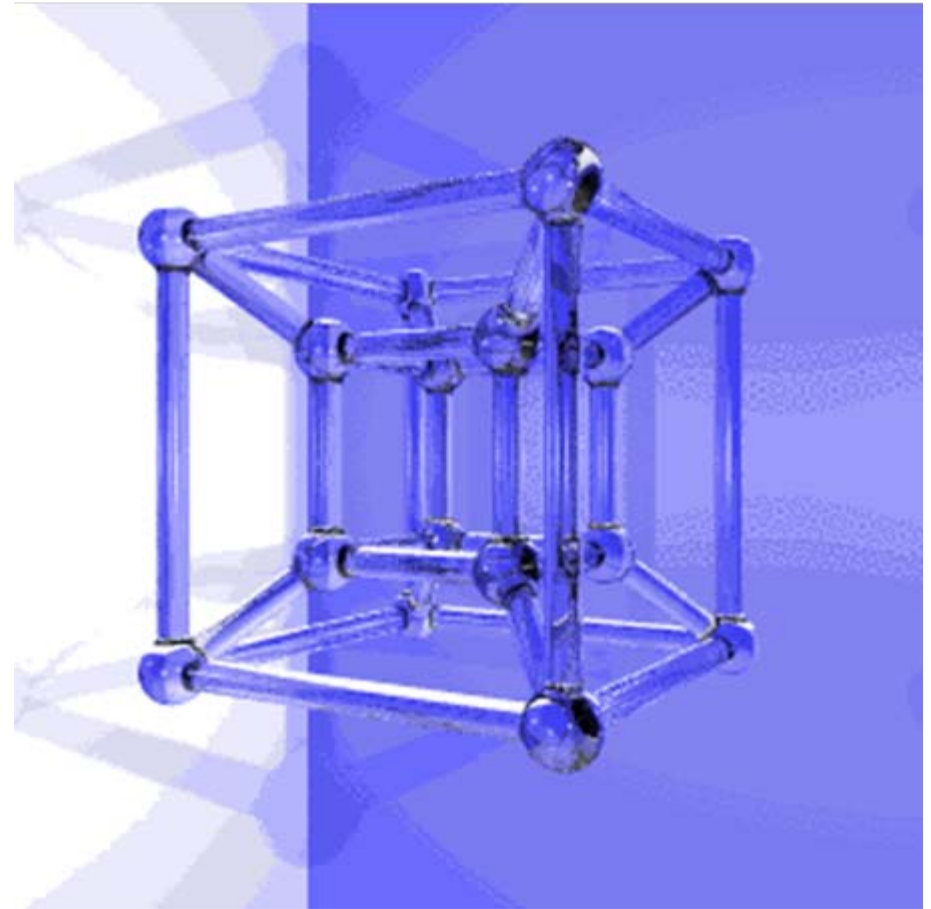


„3D instead of 2.5D“

Improved geometric
resolution of objects

Improved thematic
(radiometric und spectral)
resolution of objects

Improved geometric and thematic
accuracy of objects



Bilduelle: www.upload.wikimedia.org



„New“ Dimensions: Time Aspects



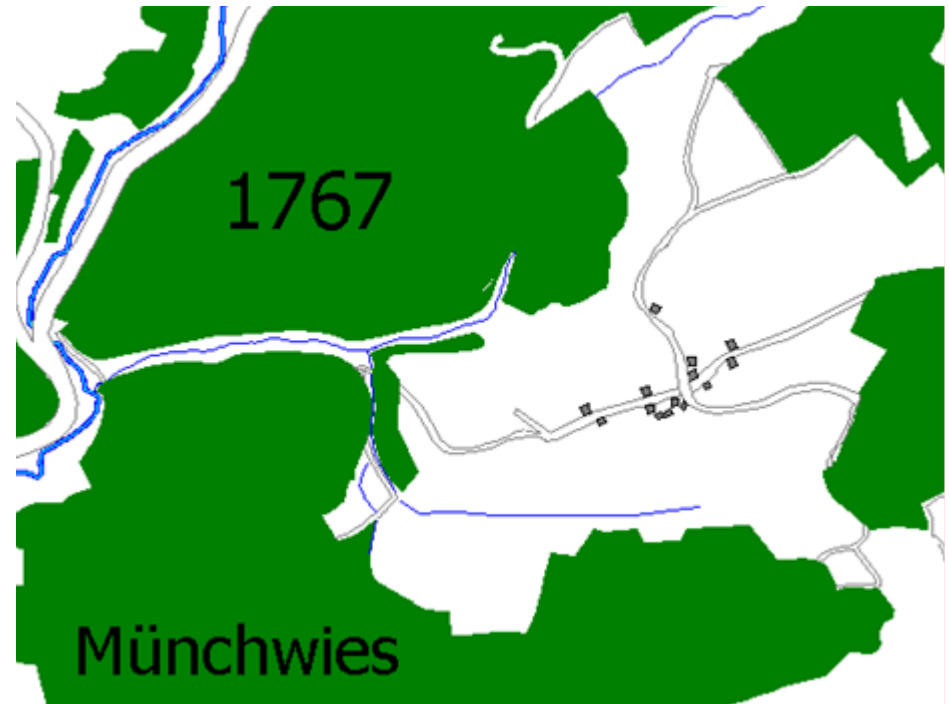
„Time Series“

Acquisition of high resolution natural data in real „real time“

Increased rates (increased frequency) of data acquisition (Automatisation)

Acquisition of temporal and spatial changes of nature (change detection)

Data acquisition methods independent from weather and light conditions



Bilduelle: www.muenchwies.de



„New“ Dimensions: Virtuality



„Digital Earth“

Availability of geodata independent of time and position

Modelling & Simulations

Improved data exchange due to metadata & standards (standards)



Bildquelle: www.oneclinical.com

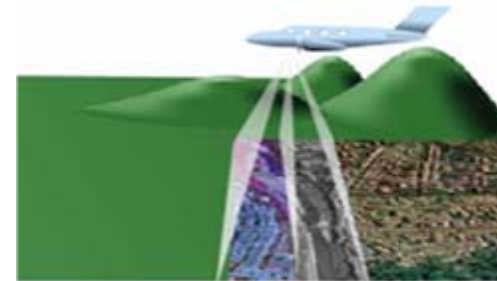


New Systems and Methods

Total Stations and GNSS



Laser Scanners



Digital Photogrammetry

Semi- automatic and full-automatic image processing methods



Web-technology



GIS-Modelling & GIS simulations techniques

Total Stations

- Integrated Surveying Software (Coordinates)
- Automatic Target Recognition (Reflector)
- Graphic Display

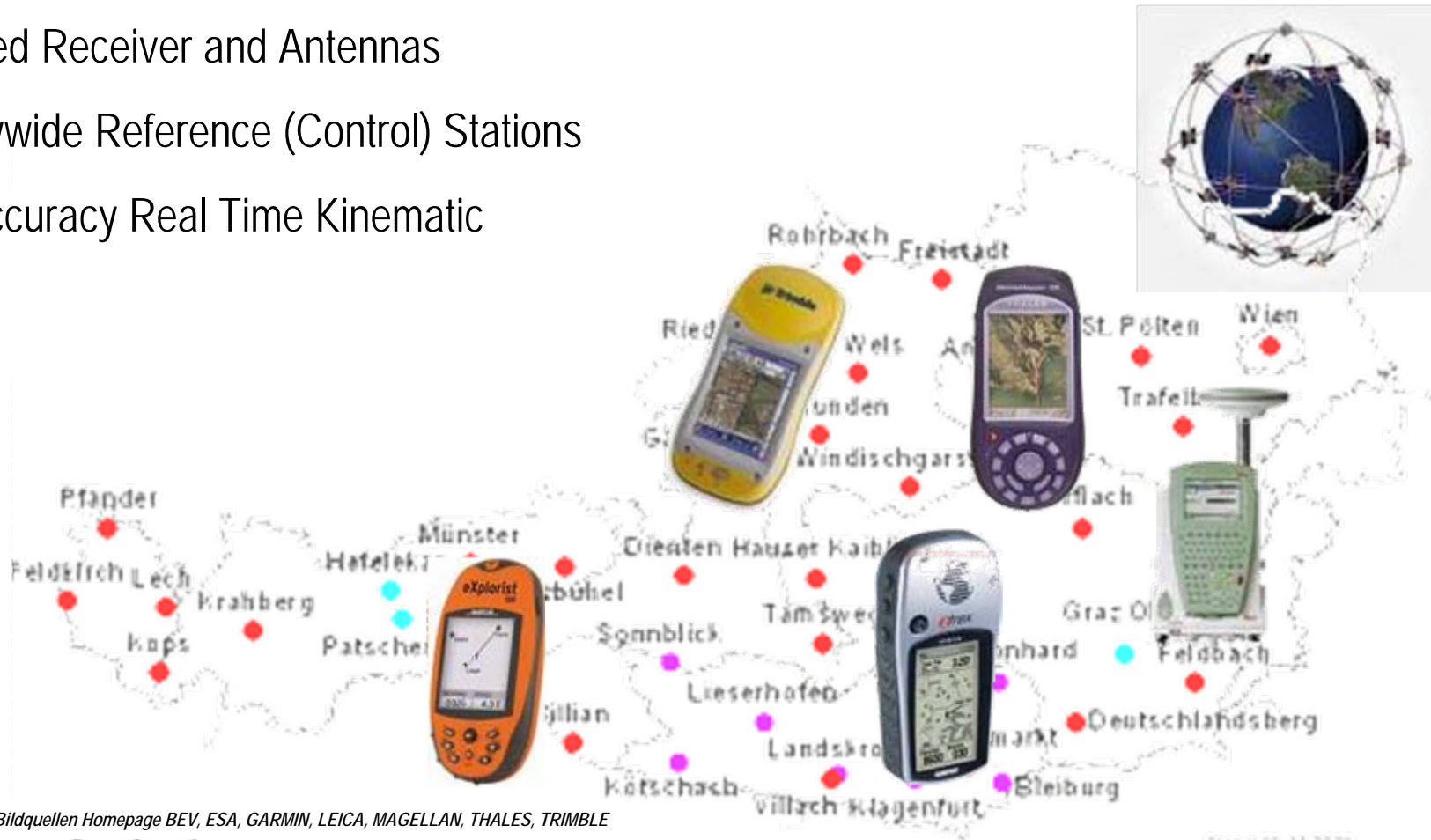


Bildquellen: Homepage LEICA, SOKKIA, TRIMBLE

GNSS



- Improved Receiver and Antennas
- Countrywide Reference (Control) Stations
- High Accuracy Real Time Kinematic



Bildquellen Homepage BEV, ESA, GARMIN, LEICA, MAGELLAN, THALES, TRIMBLE

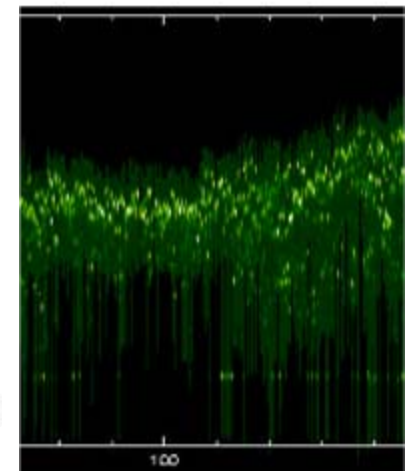
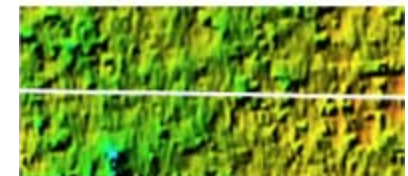
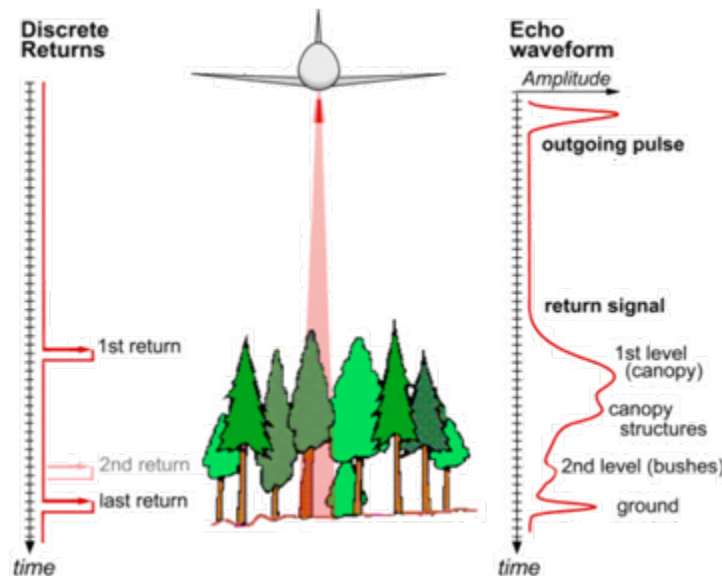
Frank G. 30.11.2006



Laserscanning



- High Acquisition Rate
(Millionens of Points / Minute)
- High Point Density
(up to 10 cm -Airborne)
- High Accuracy
(± 10 cm Height Accuracy - airborne)
- DTM & DOM
(first / last pulse – multi-pulse)
- New Products:
 - *City Models*
 - *True-Orthophotos*
 - *3D-Visualisations*
 - ...



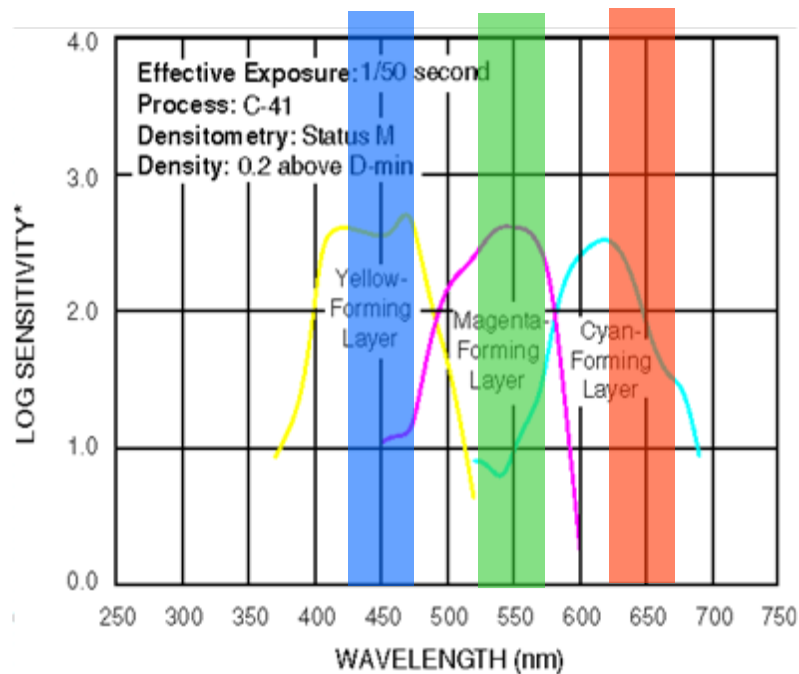
Bildquellen: RIEGL - Litemapper



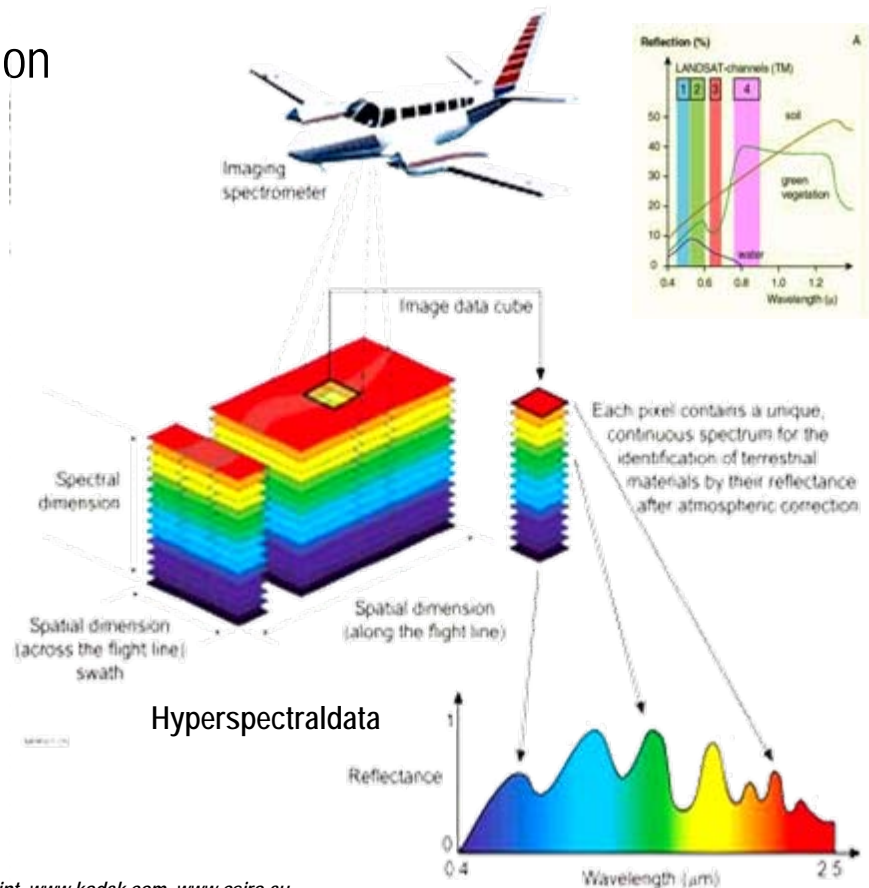
Digital Photogrammetry



- Improved spectral and radiometric resolution
- Real-Time Measurement of Exterior Orientation
- Automatic DSM Measurements



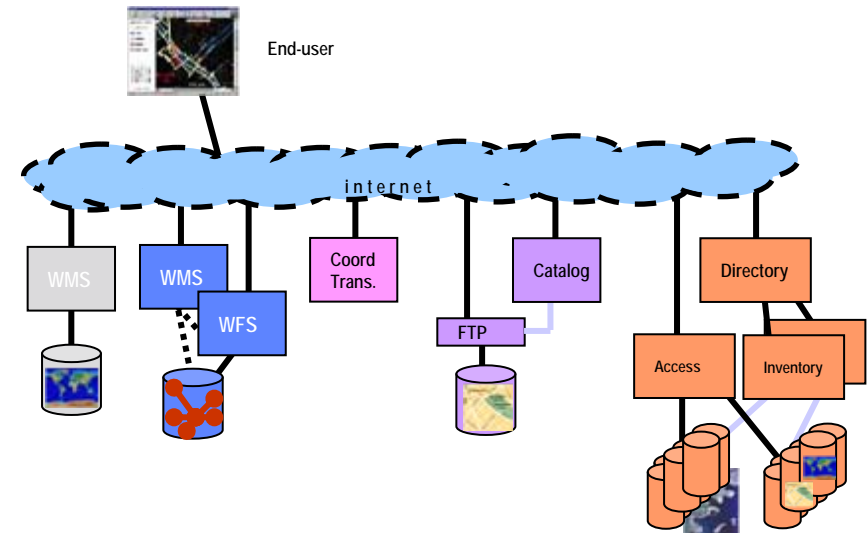
Bildquellen: www.eduspace.esa.int, www.kodak.com, www.csiro.au



Web-Technologie & Web-GIS



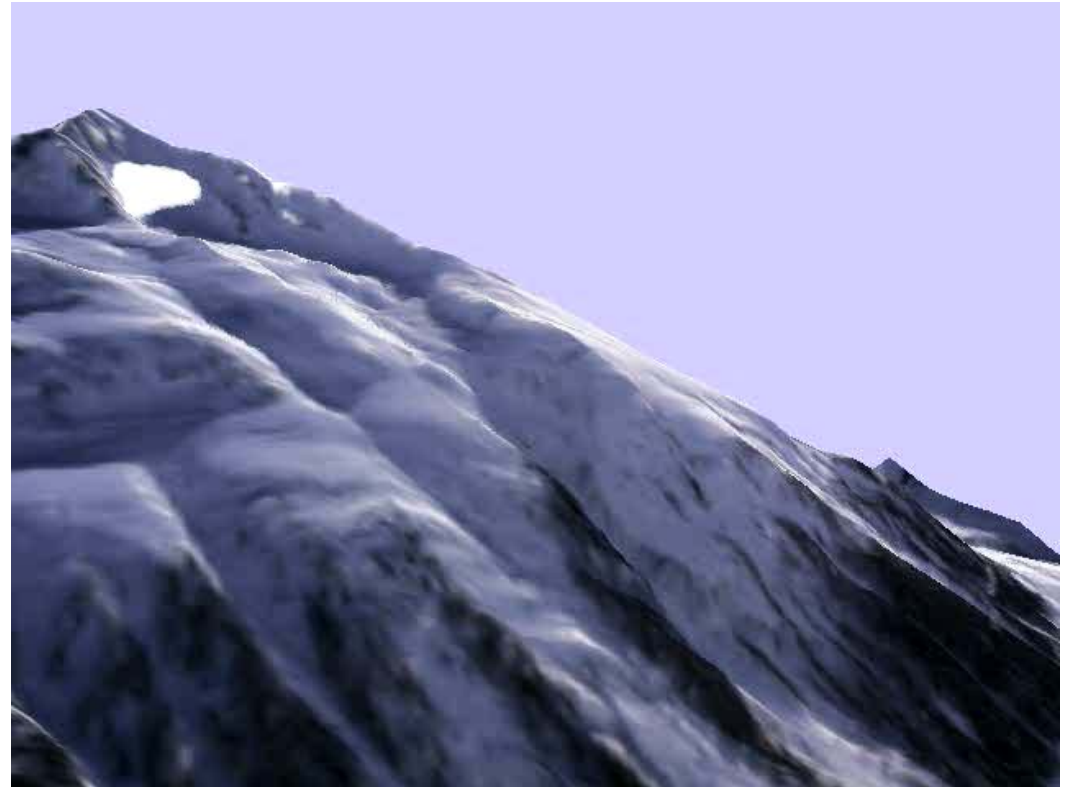
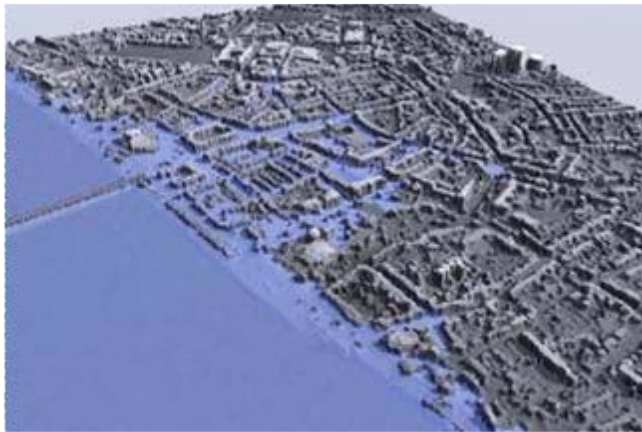
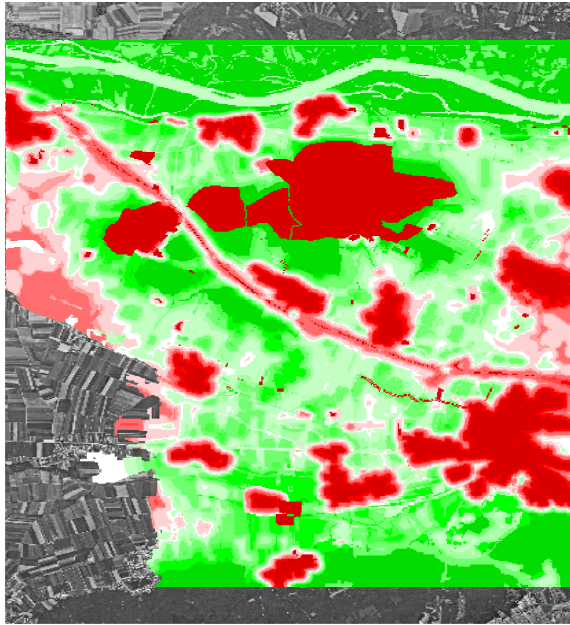
- Improved Geodata - Infrastructure
 - Availability of Geodata (local, regional, national))
 - Interoperationality (Standards ISO 19100-Serie)
 - Metadata (ISO 19115; CSW 2.2)
- Decentralisation of Information
- Real Time Access to Geodata
- Increase Interaktivität using Web 2.0 (Informations Exchange, Forums, Blogs, ...)



Bildquelle: M.Mittlböck



Modelling and Simulation



Bildquellen: www.galtuer.gv.at, www.geolas.com, www.uni-kassel.de, BOKU-IVFL



The Project



Title

Use of geoinformation and of modern ICT to improve the efficiency of land reform (LC) processes

Objective

Investigation on the competence and on the intensity in the use of geoinformation and of modern ICT at Austrian and Hungarian Land Reform Authorities(LC)

Partners

 University of Natural Resources and Applied Life Sciences Vienna – Department of Landscape, Spatial and Infrastructure Sciences

Reinfried MANSBERGER, Walter SEHER



University of West Hungary – Faculty of Geoinformation, Székesfehérvár

GOMBAS Katalin, KATONA János, NYIRI Judit, PODÖR Andrea, UDVARDY Péter

financed by the Austrian – Hungarian Action



Approach of Implementation: Methodology



Input:

REALITY
CHECK

ANALYSIS

Output:

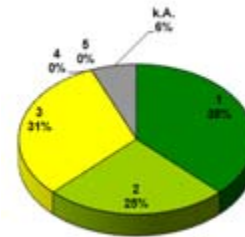
FINAL REPORT
Conclusion
Recommendations

Methodology:

- Questionnaire
- Interviews
- On-site visits

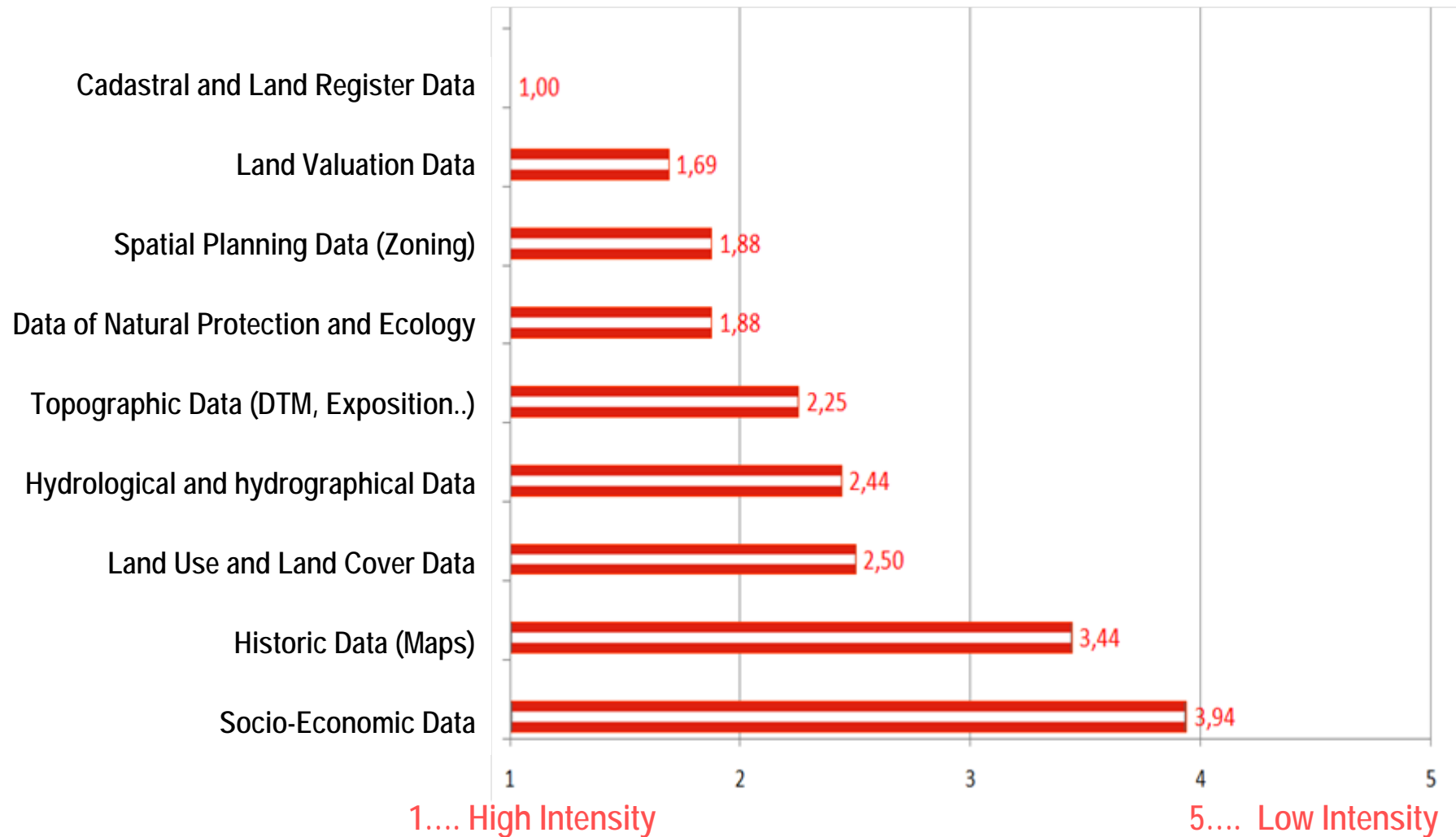
Methodology:

- Analysis of Input



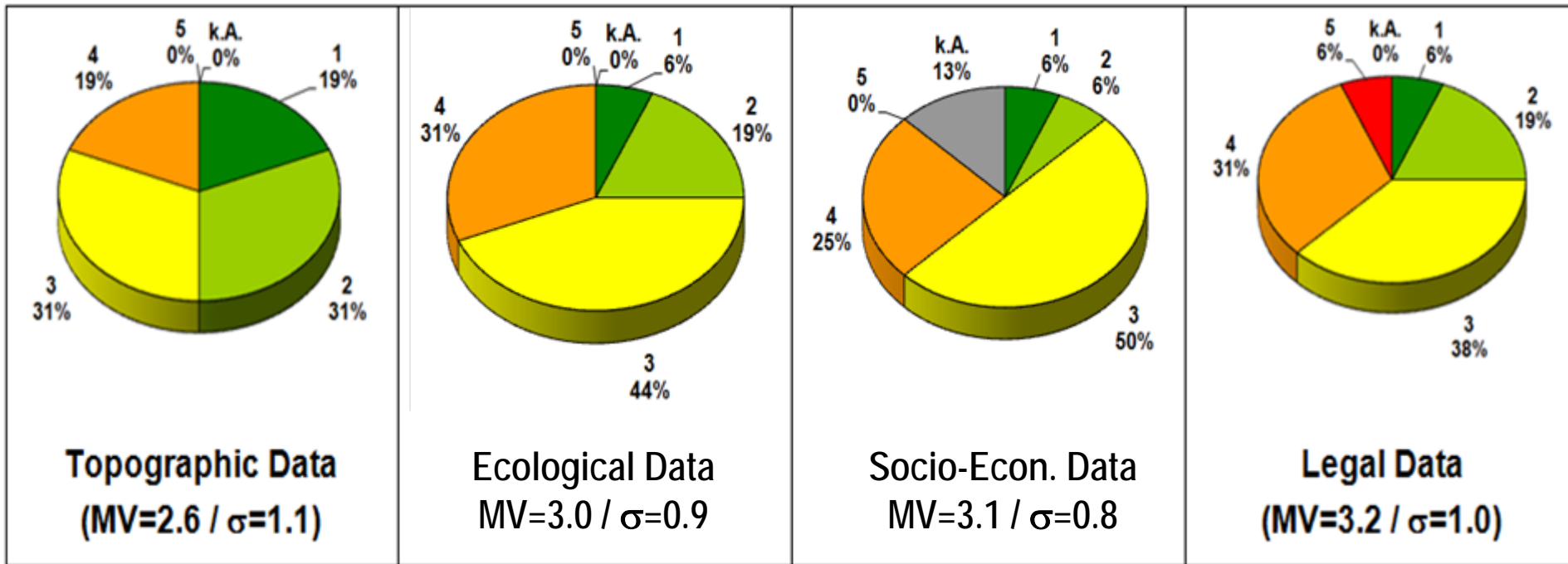
Use of Geodata:

Intensity of Use of Specific Geodata at LRA



Use of Geodata:

Potential for Improvement of Data Quality ¹



1 High Potential

5.... Low Potential

k.A. ... No Answer

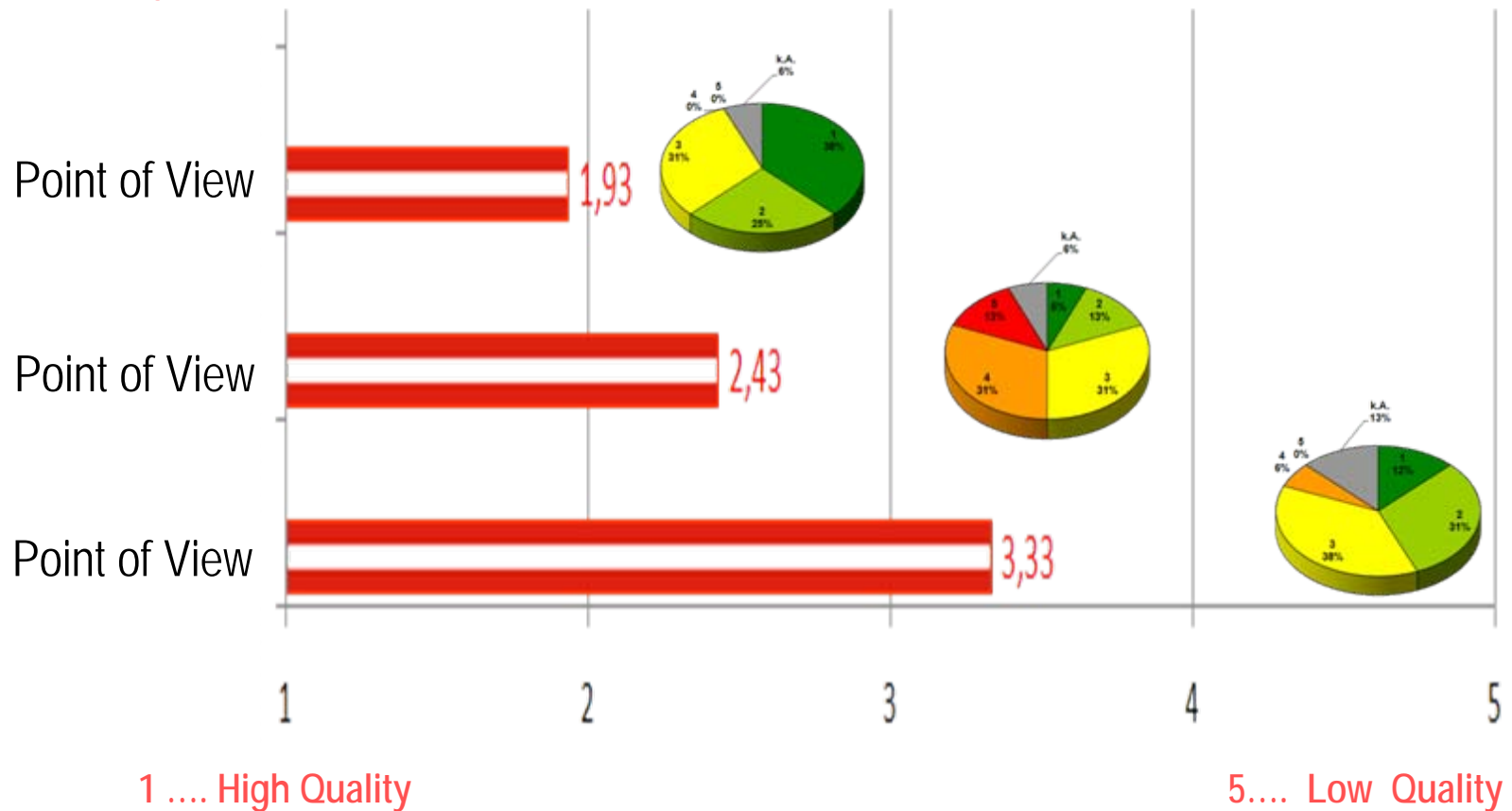
¹ accuracy, resolution



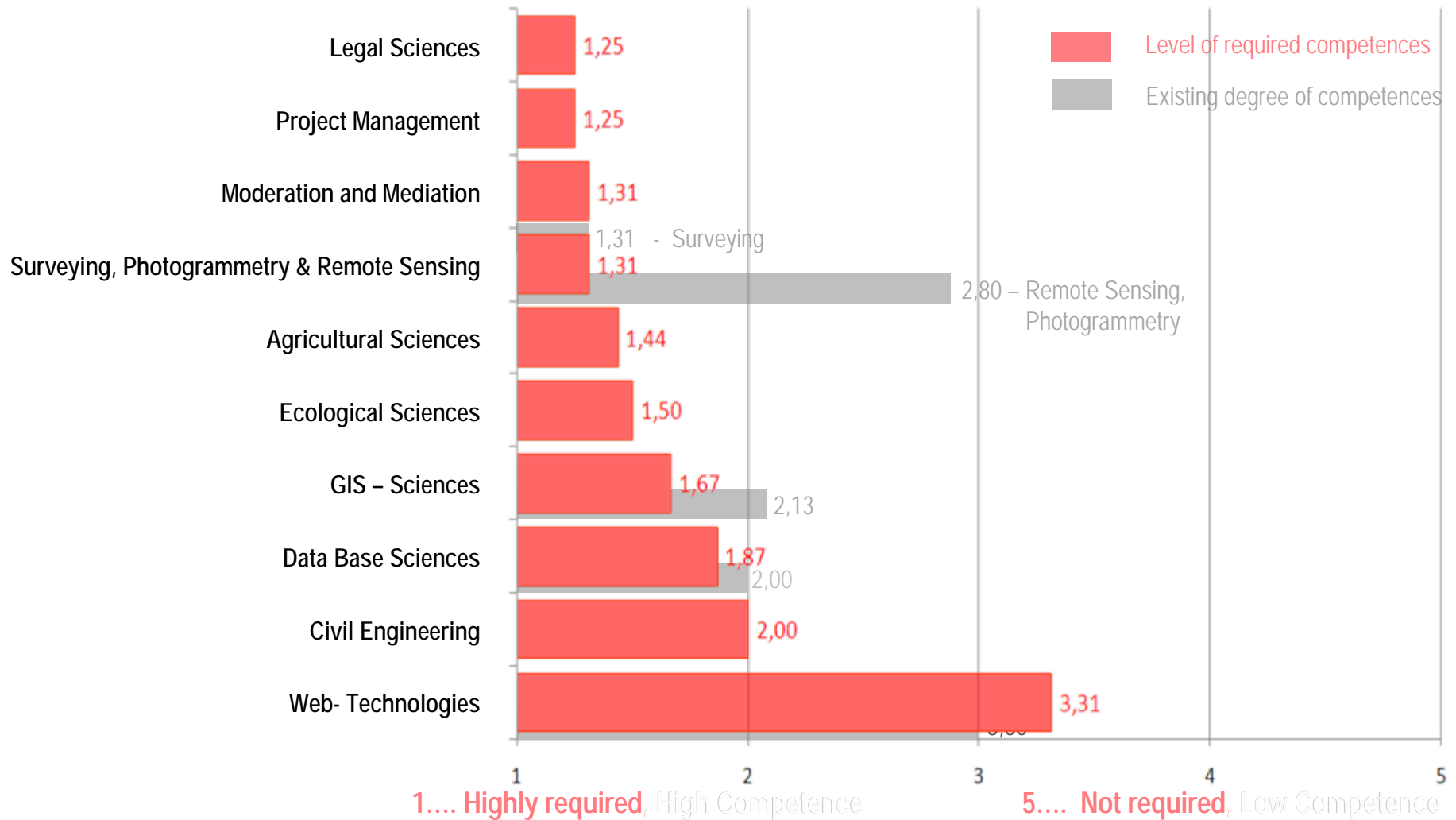
Use of Geodata: Quality of Data Exchange with other Institutions



Financial - Legal - Technical ??



Knowledge for LC Processes: Required Competences – Existing Competences

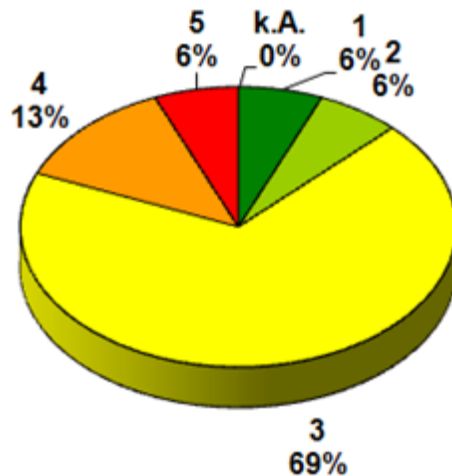


Education & Training

Education meeting Requirements for LCA



Academic Education & Training

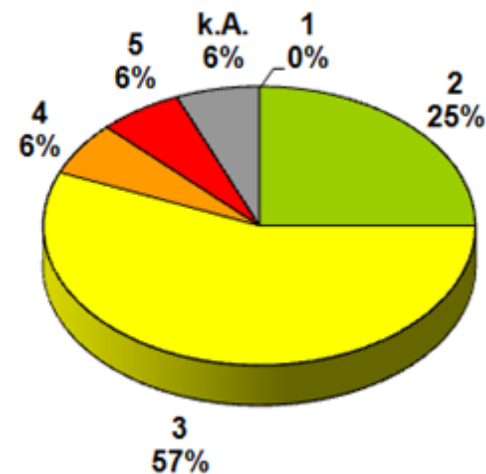


(MW = 2.8 / σ = 0.8)

1 High Satisfaction



Continuous Professional Development



(MW = 3.1 / σ = 0.9)

k.A. ... No Answer



Conclusions and Recommendations



- Various geodata are required and used in an extended way for land consolidation processes
- Improved availability and improved (geometric, thematic, temporal) resolution of geodata
- Land Surveying (incl. Remote Sensing & GIS) is an essential task in LC projects
- High potential for the use of GIS – modelling techniques and modern communication technologies at Land Reform Authorities
- Data exchange between public institution has to be improved (especially from a financial point of view) – INSPIRE?
- Academic education and training as well as continuous professional development (CPD / LLL) in the field of geoinformation & ICT has to be improved



What remains to be said



THANK YOU
for Your Attention

Questions ?





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