



VIENNA
UNIVERSITY OF
TECHNOLOGY

INSTITUTE OF
PHOTOGRAMMETRY
AND REMOTE SENSING

Photogrammetry and Remote Sensing Beyond the Centenary

Norbert Pfeifer

Vienna University of Technology

Institute of Photogrammetry and Remote Sensing
I.P.F.

Statements

- „Photogrammetry is completed“
Professor Rinner, 1970ies
- „Remote Sensing has always been the method of the future“
Saying in Forest Science
- „Mr. Pfeifer, you are doing too much laser scanning“
Colleague from TU Graz

Old stuff, that never will work, and – above all – the wrong subject ? ...

... One photogrammetrists perspective onto the bright future !

Economic Predictions

- *Mapping Opportunities*, Gewin, 2004: Nature 427(6972)
21st Century **growth markets** seen by US Bureau of Labour
 - Nano-technology
 - Bio-technology
 - **Geo-technology**
- *The economic value of the Dutch geo-information sector*, Castelein et al., 2010: Int.J. Spatial Data Infrastructure Research
Geo-Information sector is 0.25% of Dutch GDP

- Sponsors of ISPRS Centenary Celebration



Obvious Demands

- *Geoinformation for Disaster and Risk Management*, Altan et al. (eds.), 2010: Launched at UNOOSA July 2, 2010.



Joint Board of Geoinformation Societies United Nations Office for Outer Space Affairs

**Geoinformation for
Disaster and Risk Management**
Examples and Best Practices



Obvious Demands

- *Geoinformation for Disaster and Risk Management*, Altan et al. (eds.), 2010: Launched at UNOOSA July 2, 2010.
- Climate Change and Adaptation
 - Earth Observation
 - Monitoring
 - Remote Sensing



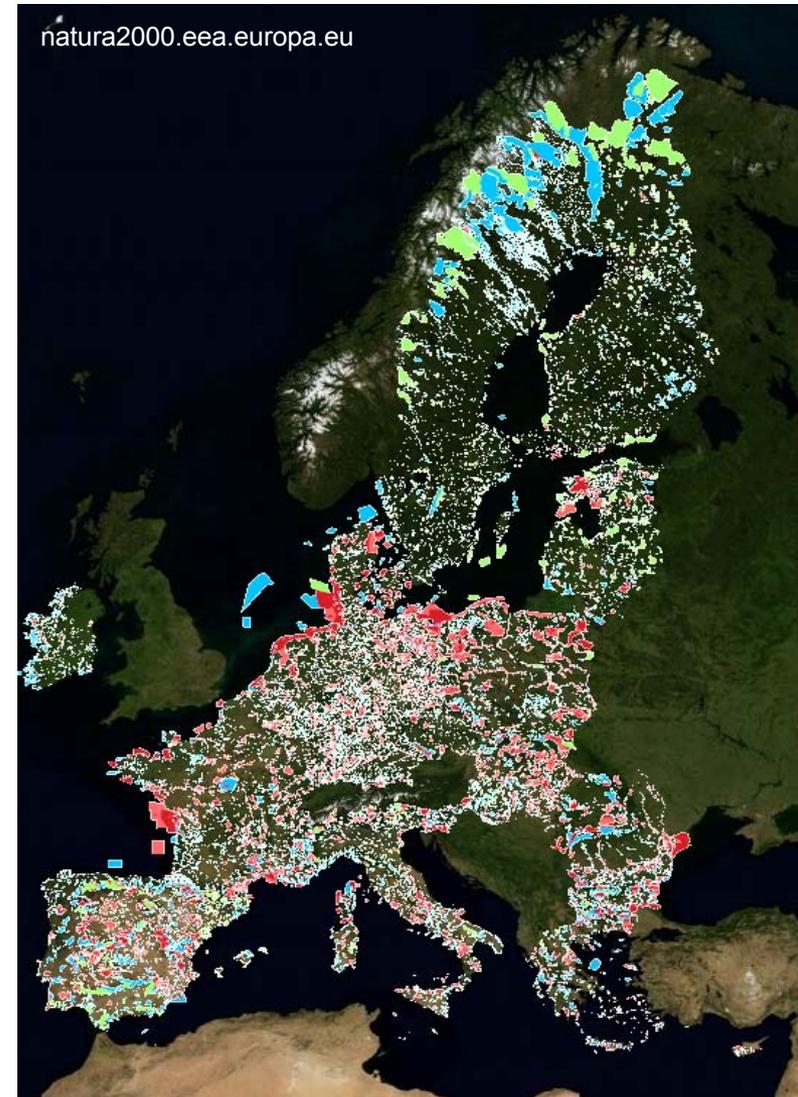
Obvious Demands

■ Resources

- Forests is 25% of land mass
- UN -Year of Biodiversity 2010
- Megacities, space consumption
- Cultural Heritage



Afghan Buddha Statues, TU Wien, Faculty of Architecture and Spatial Planning



Presentation outline

the art and science of inferring metric information from images

Photogrammetry and its neighboring disciplines

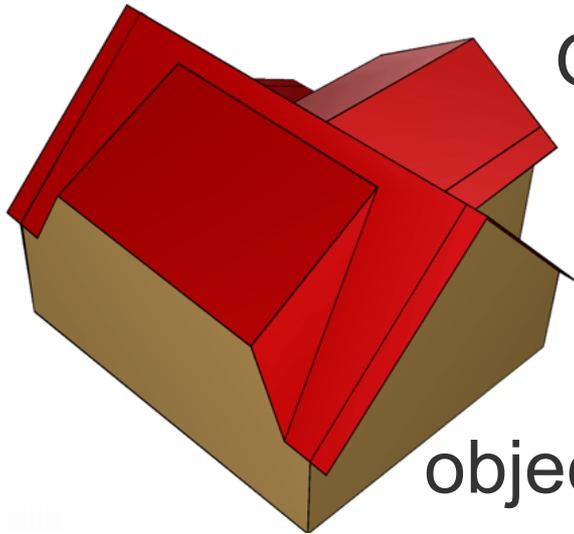
What is our **mission** ?

Beyond the Centenary

Sensors, Methods, and Applications

Photogrammetry

Geo...
Geometry the Earth

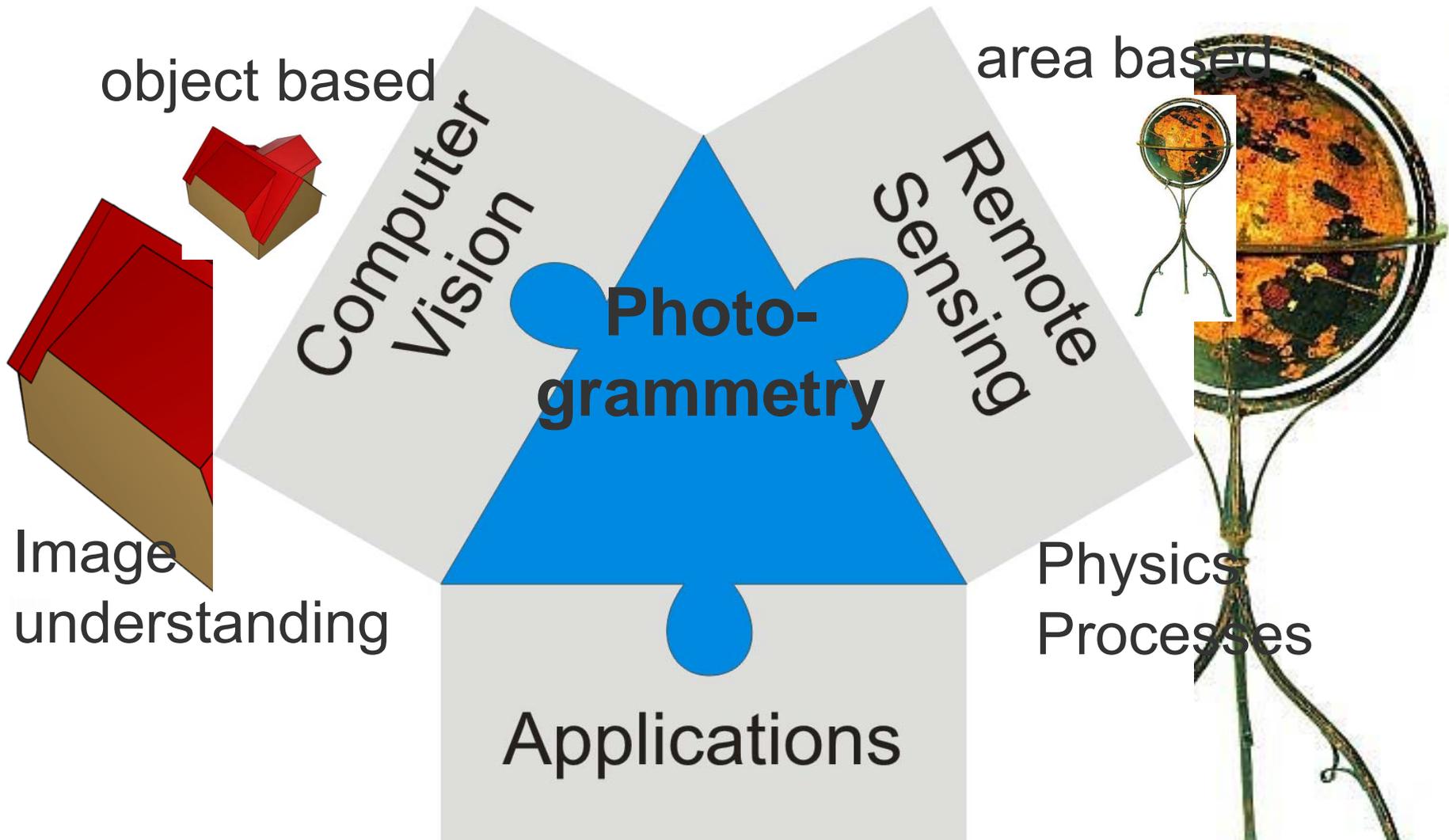


object-based

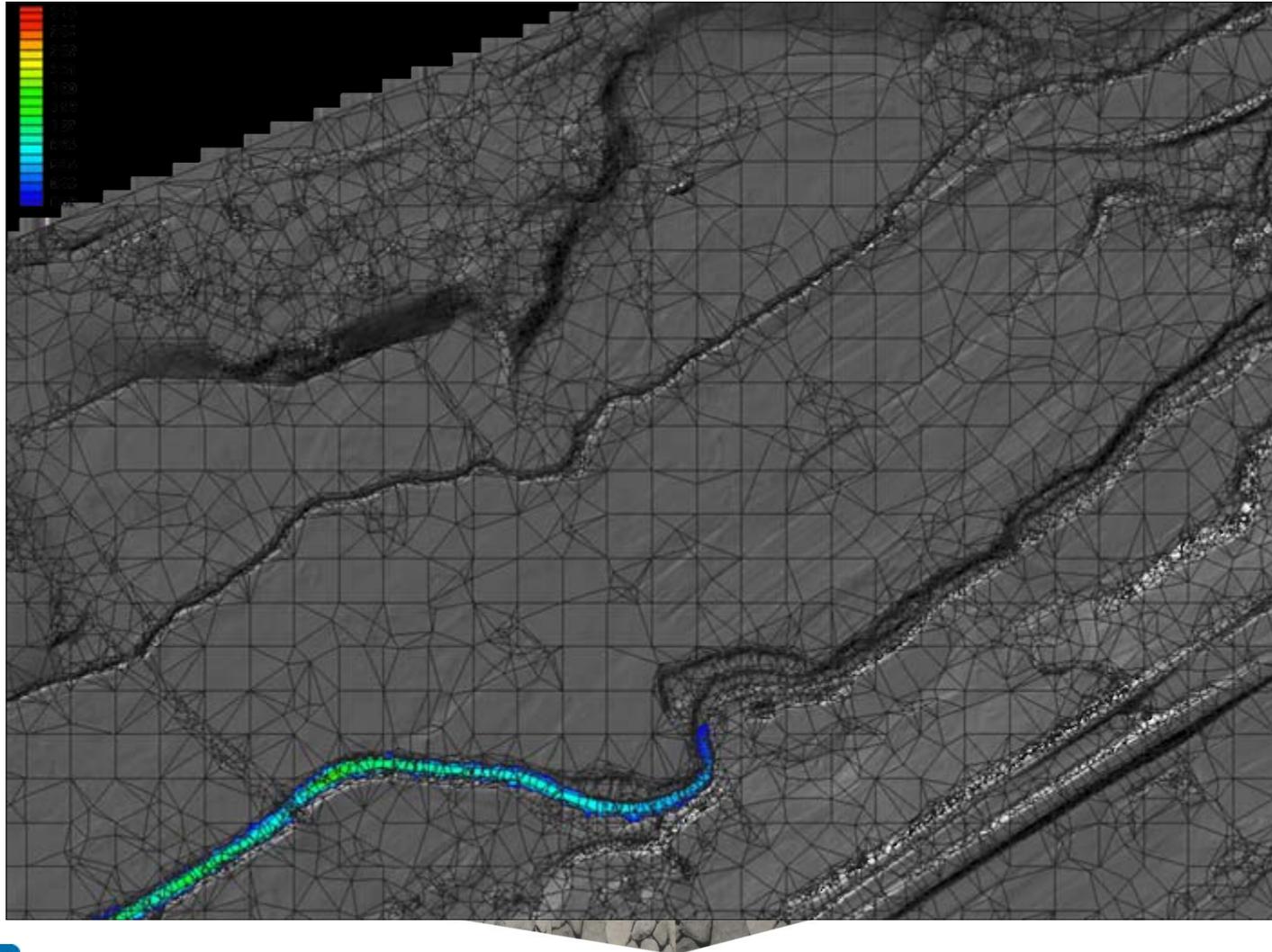


area-based

Photogrammetry



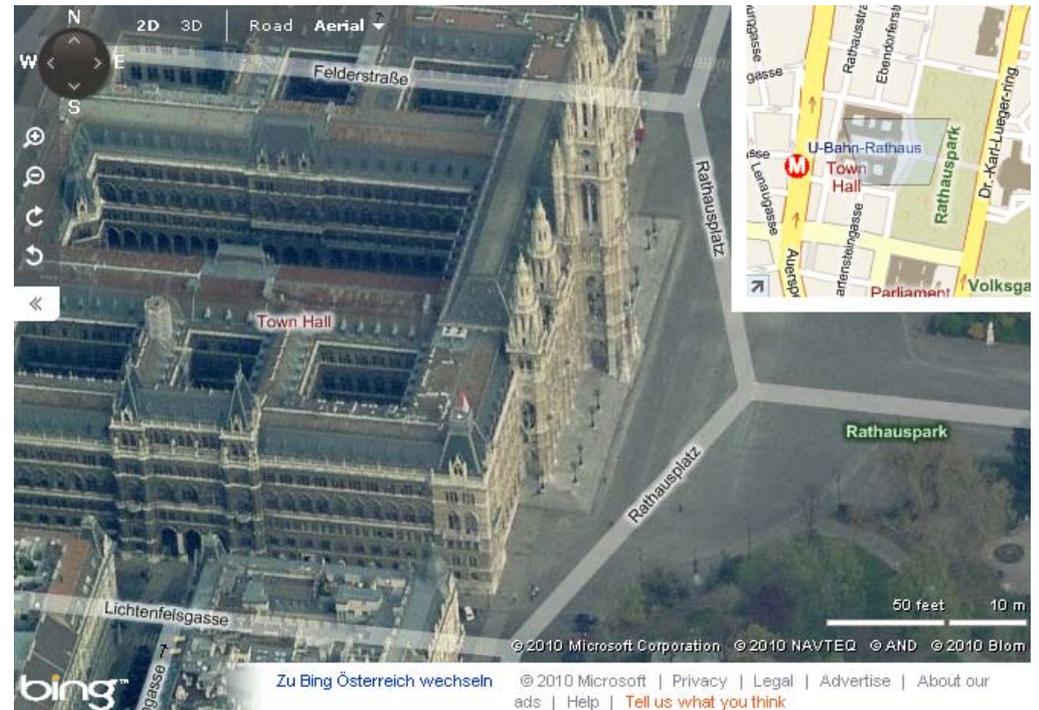
from States to Processes



Omnipresent Geo-data

Geo-data infrastructures (GDI) and ubiquitous geo-information

- Virtual Globes: NASA, Google, Microsoft, ...
- Navigation
- LBS
- Web 2.0 geodata mash-ups



Omnipresent Geo-data

Spatial data infrastructures (SDI) and ubiquitous geo-information

- Virtual Globes: NASA, Google, Microsoft, ...

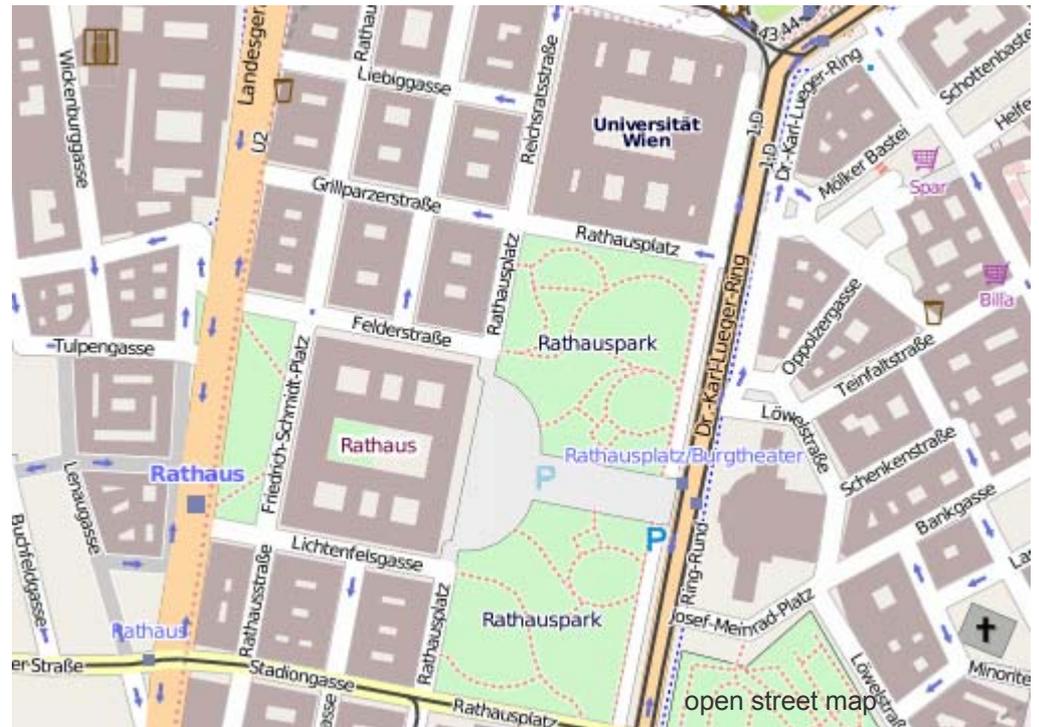
- Navigation
- LBS
- Web 2.0 geodata mash-ups

- Wiki mapping, collaborative mapping, crowd sourcing, ...

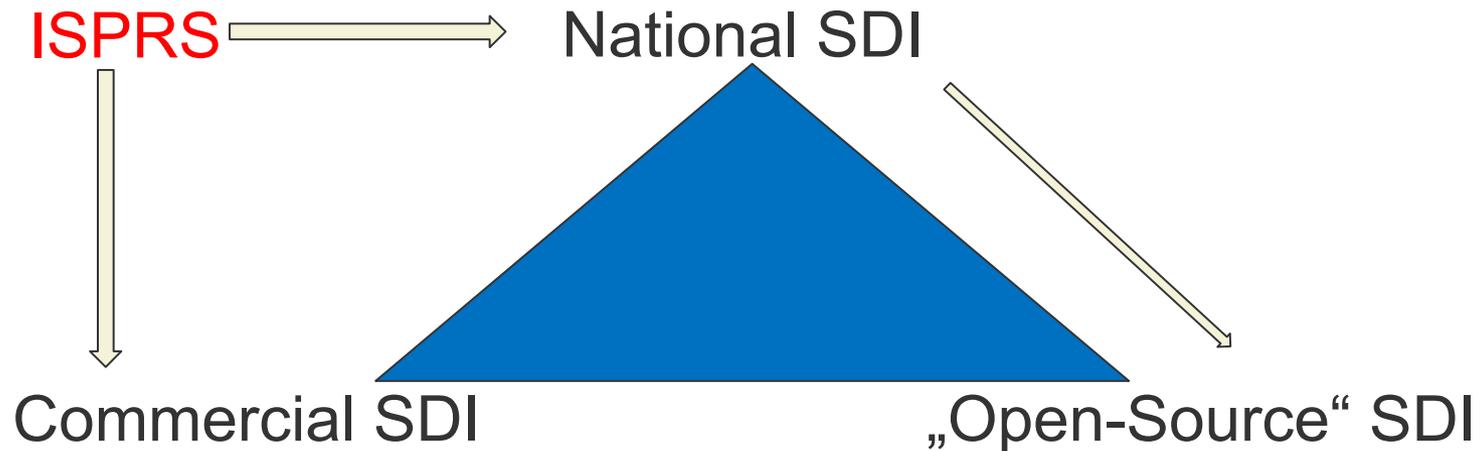
- interest driven
- update stream

- Free global Geo-data

- SRTM
- CBERS, ...



Omnipresent Geo-data



- Methods for collaboration still open
- Academic contribution to Open Source GDI very little
- Free national Orthophotos, US-Lidar for the nation
- EuroSDR: Crowd sourcing for updating national databases

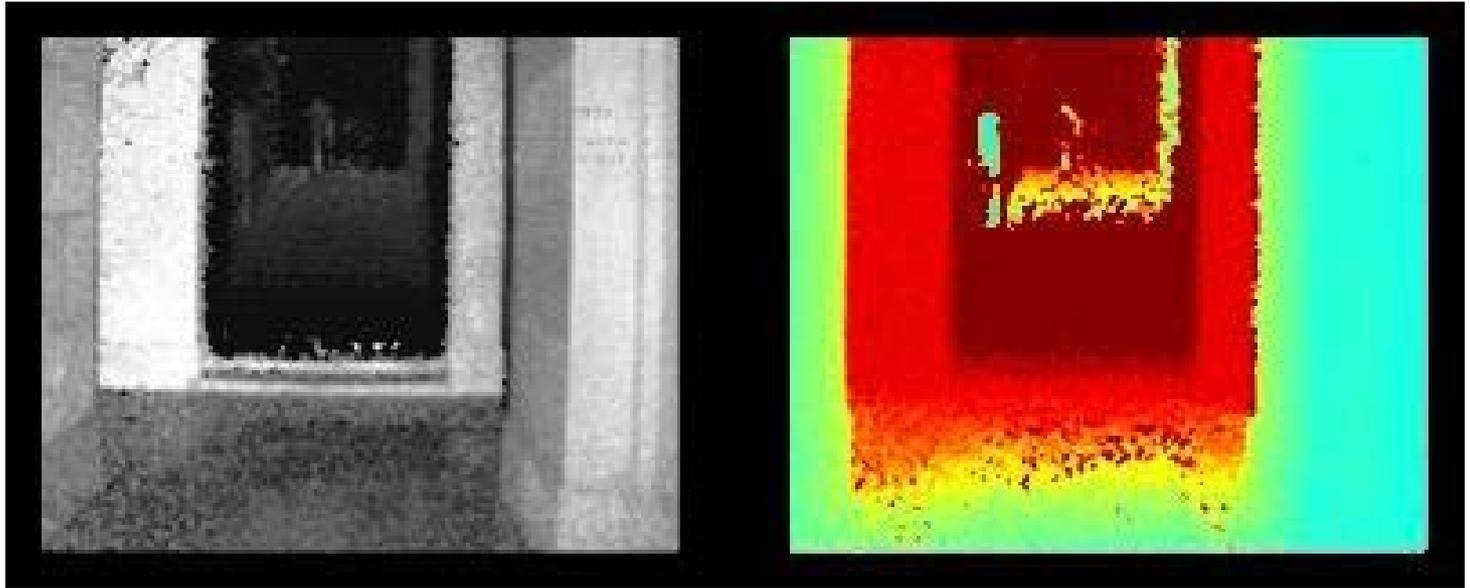
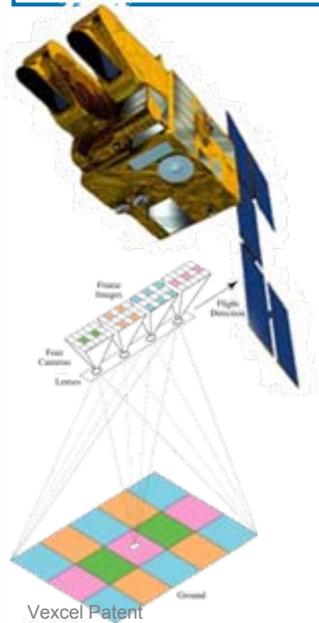
ISPRS Mission

geo-data and 3D models
for a sustainable development
of the natural and cultural environment

How to reach this during the next 100 years ?

- Exploit new sensor technology
- Increase automation in modeling
- Adopt new applications
- Strengthen Sensor – Method – Application feedback

New Sensors



Improve Automation

- Photogrammetry: Lack of Automation
- Remote Sensing: Lack of Reliability / Transferability

Efficient
representation and retrieval
of implicit and explicit
knowledge and experience

New Applications

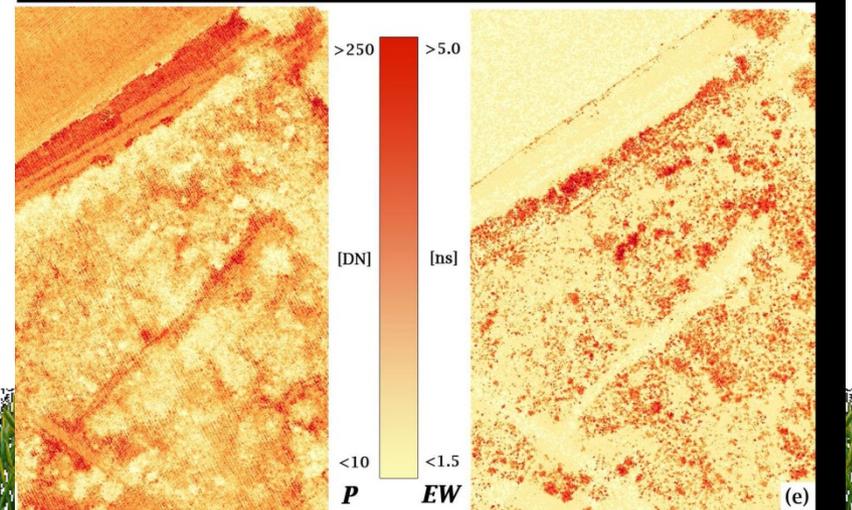
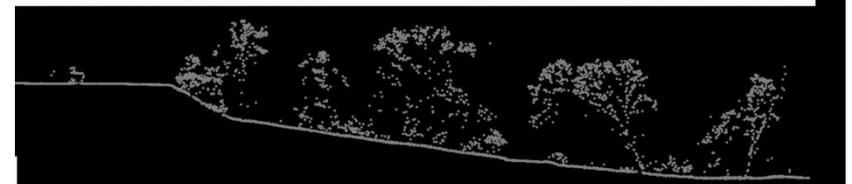
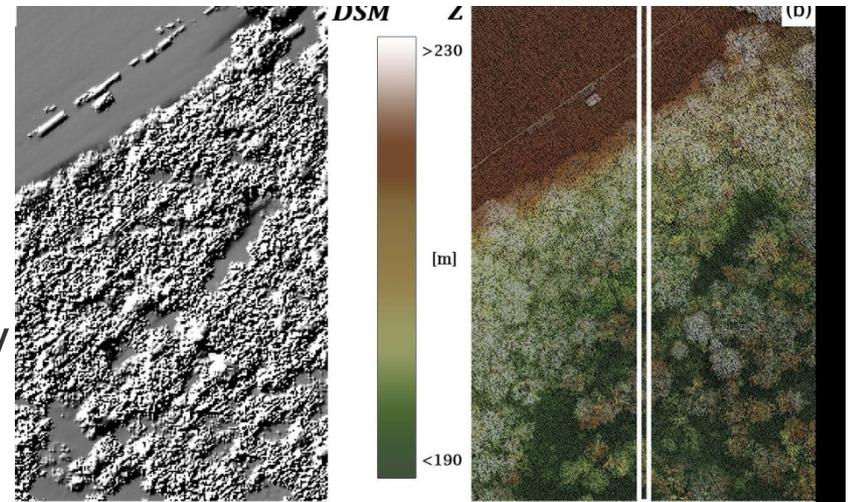
- Cartography, Urban Planning, GDI
- Industry, Cultural Heritage

Quantification Processes

- Geography, Geomorphology, Geology
- Biology, Ecology, Forestry



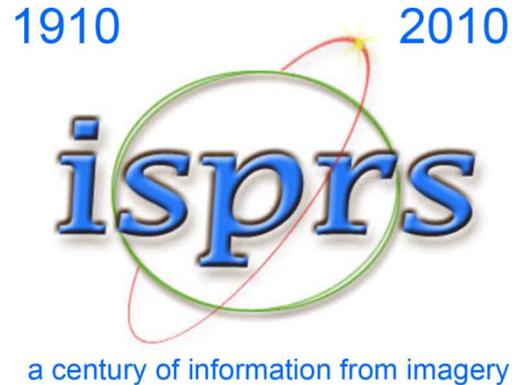
Simon Buckley, Norway



Conclusions

- Plenty of questions to be answered and problems to be solved
- ISPRS impact on development in sensors & methods
- Openness for applications & sensors essential
- Modeling of geo-physical (and geo-social!) processes
- Integration of geometry and physics
3D model → global geo-physical 3D model

Happy birthday ISPRS !



VIENNA
UNIVERSITY OF
TECHNOLOGY

INSTITUTE OF
PHOTOGRAMMETRY
AND REMOTE SENSING