LANDESAMT FÜR VERMESSUNG UND GEOINFORMATION

EuroSDR

Arbeitsgemeinschaft der Vermessungsverwaltungen der Länder der Bundesrepublik Deutschland

Motivation for dense image Matching workshop from LVG Bavaria and other NMCA in Germany and Europe

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1.Benchmark on image matching Workshop 2012 in Vienna

5 Test Data Sets

- Vaihingen DGPF data set by IFP	20 cm + 8 cm
- Algorta Data set by IGN Spain	25 cm
- Ticino data set by swisstopo (ADS)	50 cm
- Marseille data set by IGN France	10 cm

2 Participants in benchmark
2 Software solutions

- SGM of DLR
- MicMac of IGN France

2. Benchmark on image matching Workshop 2013 in Vienna

2 Test Data Sets

- Vaihingen DGPF data set by IFP 20 cm
- Munich 10 cm

11 Participants in benchmark
9 Software solutions

- SGM of DLR
- MicMac of IGN France
- nGATE
- Dense Matcher Ultramap
- Match-T
- Joaneum Graz
- Astrium France
- Intergraph ISAE
- RMA Brusssels
- Sure of ifp Stuttgart

Annual aerial image flights

typically:
GSD = 20 cm
Summer or with vegetation
RGBI
16 bit (> 8 bit)
(+ PAN)
Cyle = 3 .. 2 years

Additonally:
GSD = 10 cm
Non vegation flight
RGBI
16 bit
(+ PAN)

Digital Aerial Cameras

Frame cameras with area sensors

Z/I Imaging DMC, DMC_{II}
Digital Mapping Camera

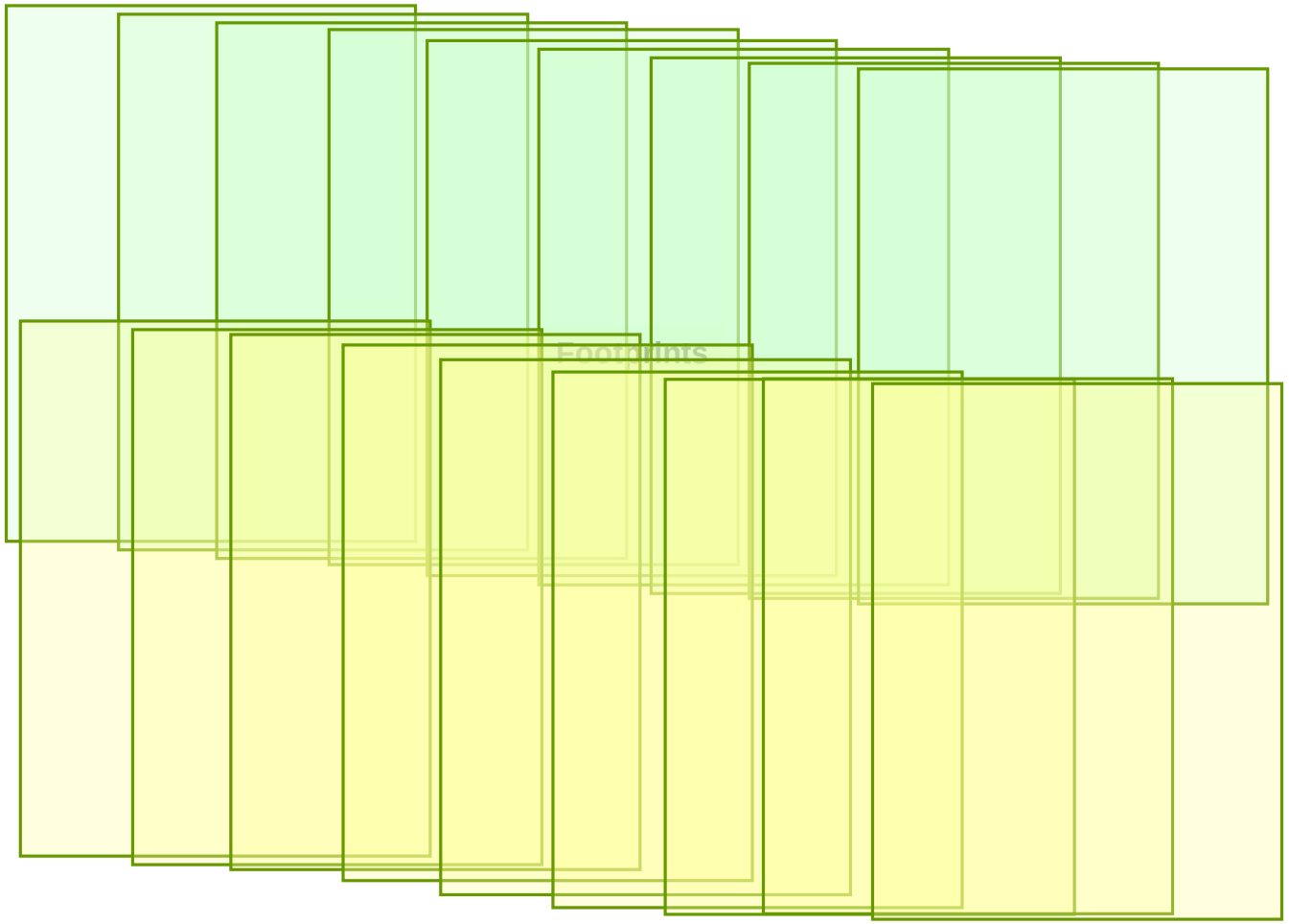
Vexcel / Microsoft
UltraCam XP, Eagle Falcon

line sensors
(not used in Germay)

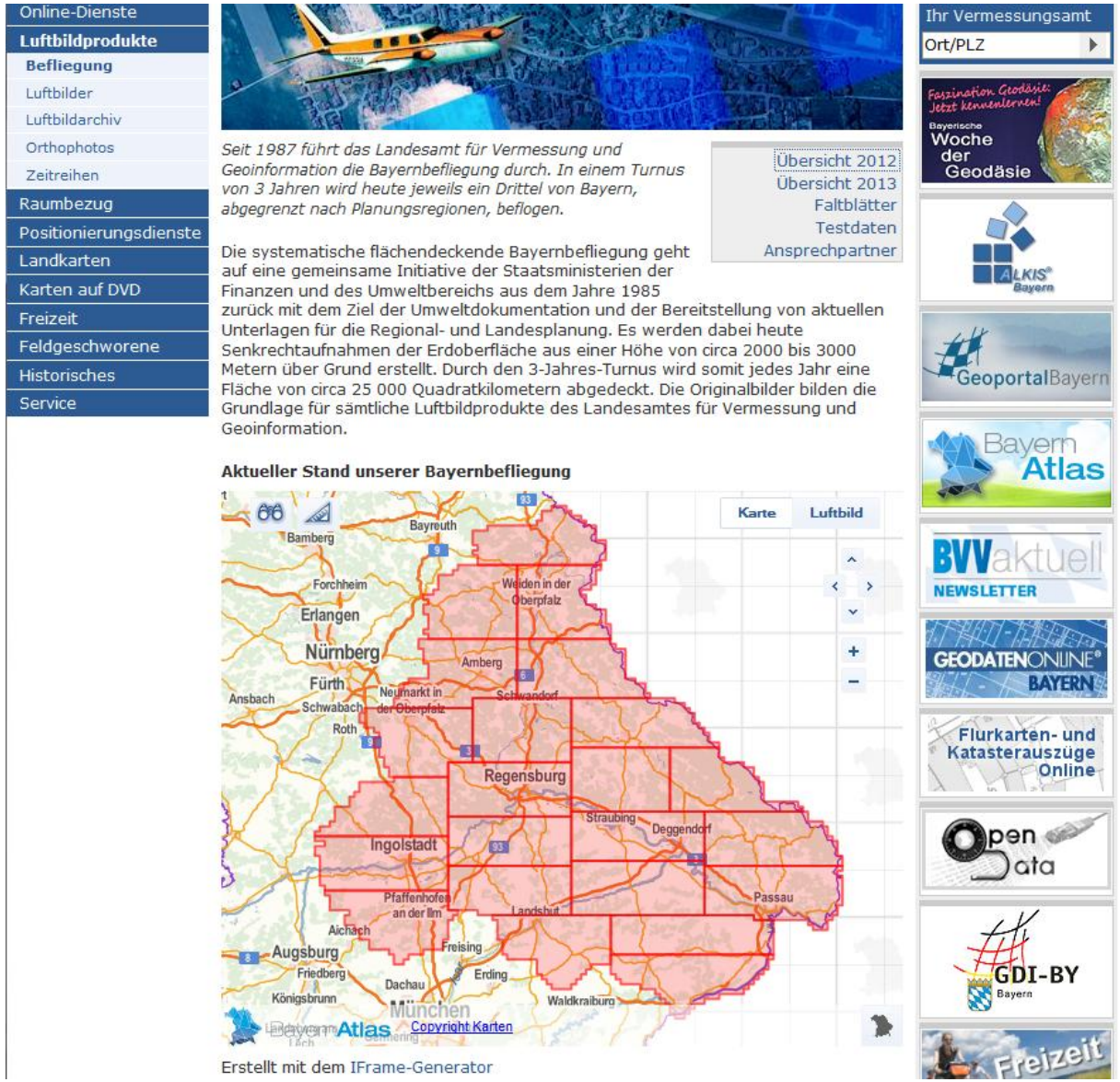
Leica ADS40/80
Airborne Digital Sensor

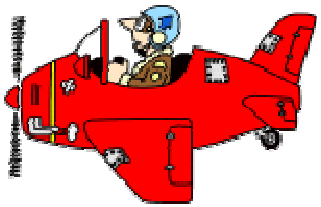
Flight parameters: Overlaps

Typic: GSD = 20/10 cm, long = 75-80% cross = 30%



Flight program and progress in the internet





Aerial images
+
Orientation (AT)
=
Oriented aerial image (OAI)

Classical product:
Digital OrthoPhoto DOP
In RGB and CIR

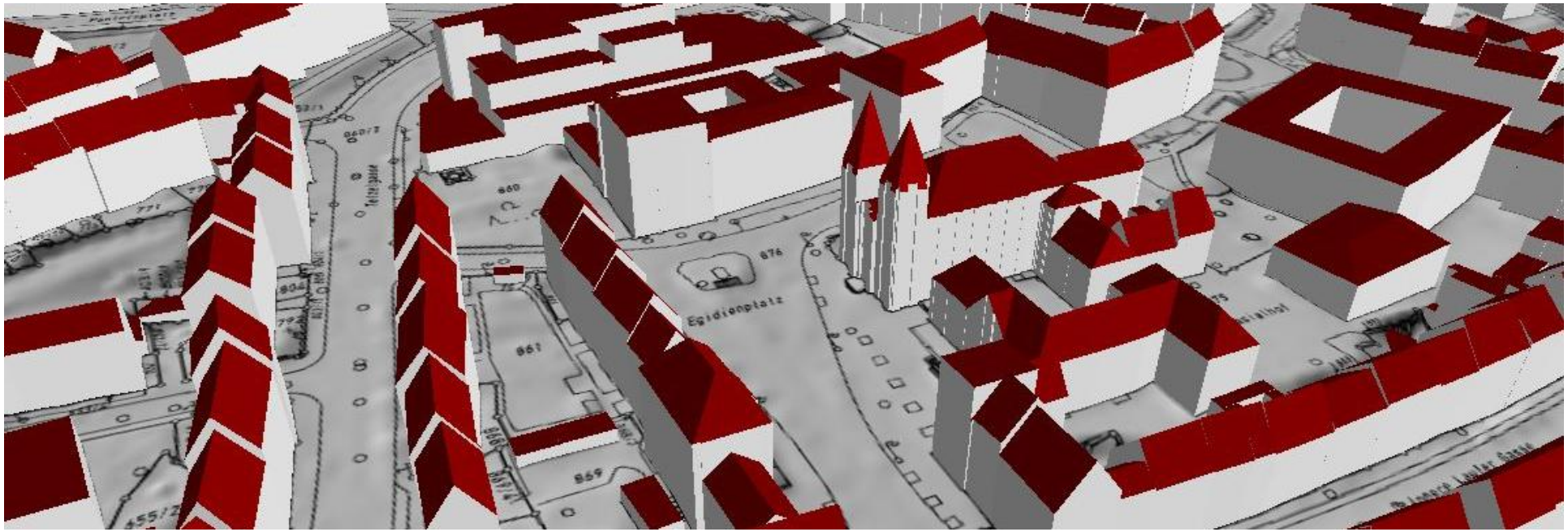
- **premium product**
- **Background infos**
- **viewing services**
- **classification**
- **almost all ressorts**
- **Google**
- **private users**

Stereoscopic use
on stereo stations
(3D-stations)
Stereo hardware
Good software
→ renaissance of
stereo interpretation

Dense Image Matching
to obtain
- 3D-Point clouds
- digital surface models iDSM
- NadirOrthophoto NOP

Use of iDSM by NMCA

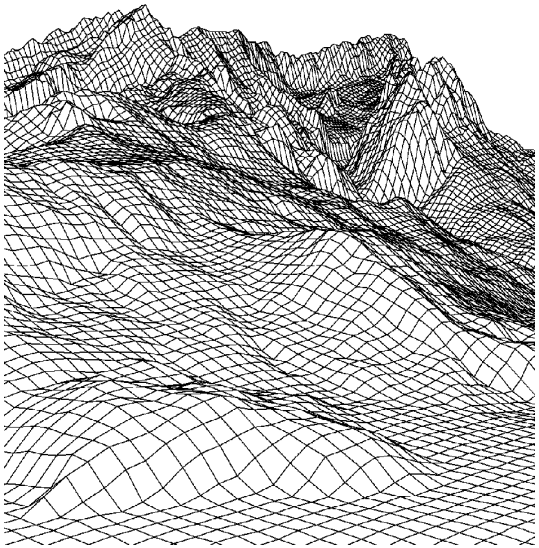
- 3D-building models LoD1 and LoD2



1. Generating 3D-Buildings in LoD1 and LoD2
2. first source for derivation: Lidar
3. gaps in lidar data are filled with iDSM
4. updating done by cadastral offices

Use of iDSM by NMCA

- **DTM (if bare ground is visible/accessible)**



Use of iDSM by NMCA

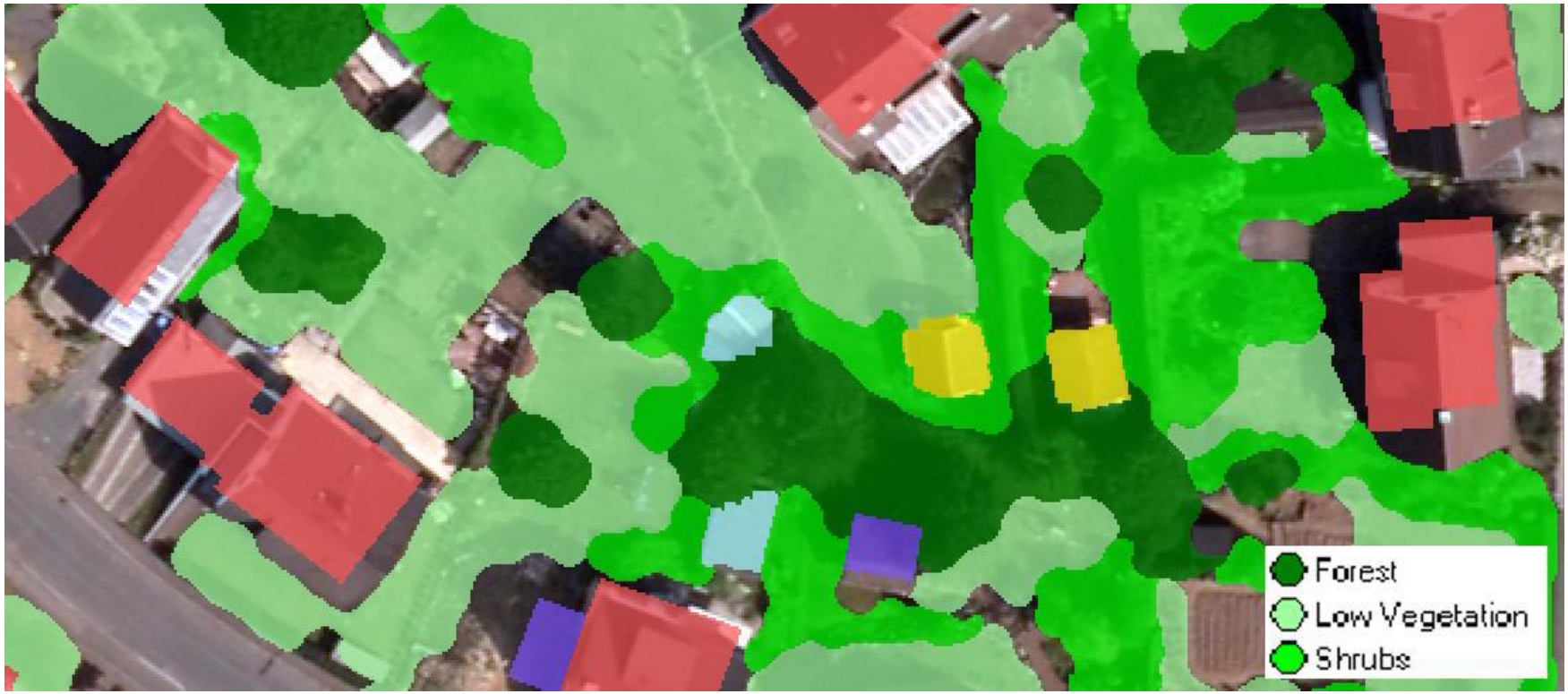
- DSM for visualisation
- with the joy stick through Bavaria

DSM grid spacing = 0.80 m
Texture:
DOP RGB GSD = 0.20 m
area of BY = 70.000 km²

partial updating possible

Use of iDSM by NMCA

- DSM as additional input for image analysis and classification
  Software: eCognition, Imagine Objectives, Monteverdi



Internal use of iDSM by NMCA

- LoD2, updating DTM, Geo-Visualisiation, analysis and classification
- .....

iDSM as a new product (similar to lDSM)

- forest administration
- landscape visualisation
- change detection and classification
- ..

Great interest in future developements:

- NadirOrthophoto NOP (gaps, radiometry, moving objects etc.)
- using 3D-Point clouds (viewer, editing tools etc.)
- ..

Open questions from the NMCAs:

- matching with PAN or RGB
- 8 or 16 bit
- Economical overlaps
- Vegetation versus non-vegetation image flights
- Influence of camera aperture angle on results
- Is multi stereo used? Redundancy
- What data format for storing DSM and point cloud is recommended
- Thinning out or resampling
- How to deal with data gaps
- Optimal hardware configuration
- .....

Thanks for your attention!

Stereo hardware


ungsverwaltung 2012
0
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Zum Au
Video