



Stuttgart, September 30, 2003

**Informal meeting on September 26, 2003 at Fachhochschule Stuttgart
Minutes**

Attendees Eberhard Gülch, Toni Schenk, Michael Cramer

This informal meeting focused on the most recent activities on camera calibration in North-America. T. Schenk (Ohio State University OSU) presents some of the activities in this field.

- USGS is responsible for conventional analogue airborne camera calibration in the US only. No new digital sensor technologies are considered till now.
- Dean Merchant (former professor at OSU) initiated a first project together with USGS to cover new fields of digital camera calibration. There are activities to establish several calibration centres in the US which will take over the present USGS tasks extended with new aspects like digital sensor calibration. First results from this project are already available and presented during the ASPRS spring meeting 2003 in Anchorage/Alaska. The final report of this project (if publicly available) will be made available to EuroSDR (Action item ► *T. Schenk*). T. Schenk will inform D. Merchant on the EuroSDR activities. Appropriate material (i.e. power point presentation) will be provided by ► *M. Cramer* (Action item).
- ISPRS Commission I (Stan Morain) is organizing an ISPRS WG I/2 International Workshop on Radiometric & Geometric Calibration (www.edudevweb.com/isprs/) in Gulfport Mississippi, USA December 3-5, 2003. Within this meeting the OSU project and other activities on calibration of earth-observing sensors are presented. The conference proceedings will be made available to EuroSDR (Action item ► *T. Schenk*).
- A special panel discussion is dedicated on the establishing of international test fields for radiometric and geometric calibration that
 - meet standard requirements,
 - cover a variety of terrain and ground cover illumination characteristics,
 - are maintained by recognized organizations, and

- are made available for sensor calibration overflights by authorized organizations.

Karsten Jacobsen (University of Hannover) is one of the panel members. If possible, he should use this opportunity to inform the US community on the EuroSDR initiative on digital camera calibration. (Action item) ► *M. Cramer* will contact K. Jacobsen. A strong connection between north-american and european initiatives is aspired.

- OSU already uses own test site at Columbus airport for independent testing of cameras from Department of Transportation. Till now mainly tests of traditional analogue systems are performed, new and digital sensor are coming up, i.e. LIDAR in combination with imaging sensors. The NASA Stennis test side is based on the personal activity of a few NASA members. As far as T. Schenk knows NASA does not serve as an official certification institution.
- There is a clear necessity visible in the US to provide recommendations for digital sensor system users on variability of system calibration parameters and re-calibration cycle intervals.
- For the aspired EuroSDR project the following recommendations are given:
 - Project should focus on the calibration task only, combination of LIDAR and imaging sensor is registration problem.
 - The geometric accuracy of object points is dependent on the quality of measured image points. The influence of different point extraction methods (manual, semi-automatic, automatic), varying radiometry and future automation could be addressed in the project.
 - The physical process of image formation and the influence of different spectral bands on the resulting image geometry could be addressed in future activities. There is a tendency to describe all effects during image formation by physical meaningful parameters. Only remaining non-modelled (small) distortion effects should be compensated with additional parameters, like polynomials.
 - The modelling of sensor has to be separated from the calibration task itself. During data processing different sensor models are used in the individual software packages. There is a need to analyse the full processing chain.
 - The calibration of focusable digital cameras (mainly small-format systems used in close-range applications) is not considered in the EuroSDR project, although these systems will gain in importance for reconstruction of 3D city models and texture mapping of facades. Nonetheless, there are almost no funds available at official survey state offices for such applications in the moment.

Minutes compiled by

M. Cramer