Preface

"*Nothing is more sustainable than change."* This public statement carries the proceedings of the 51st Photogrammetric Week, which come along with the most recent developments in photogrammetry and other closely related scientific fields. As ever, since the introduction of the Photogrammetric Week series by Dr. Carl Pulfrich 1909, it summarizes new hardware and software, algorithms and workflows to change the way of photogrammetric thinking in data collection, data processing, and data dissemination. Photogrammetry has undergone several paradigm shifts – its methods and systems have changed completely over the years. Fortunately, the spirit of the Photogrammetric Week series did not change at all. It was, is and will be a further education course, which, owing to the lack of space, can treat selected topics only. These topics are presented by international thought leaders and the OpenPhowo partners – companies offering hardware, software and workflows. Therefore, a systematic and detailed review is often not possible. On the other hand, however, a one week course has a special attraction. It is the stimulating atmosphere of a collection of individual views in the mornings, the demonstrations in the afternoons, and the social events in the evenings, which makes every Photogrammetric Week very special. Therefore, the Photogrammetric Week series has been a story of success, since many, many years!

For this reason, the Photogrammetric Week '07, which is traditionally held in Stuttgart, from September 03 to 07, has made again a selection of three topics to be presented by Keynote and Invited Speakers in the mornings and demonstrations by the OpenPhowo partners in the afternoons. An attractive social program complements the scientific program to leave ample room for open discussions, intercultural relations and friendships.

Following the structure of previously published proceedings of this bi-annual further education course, this year the following three topics are discussed:

- Digital image data collection – strength and weakness
- Geocoding of photogrammetric imagery, and
- Photogrammetry goes public.

The introductory chapter contains a brief overview of the opening lecture dealing with Gigapixel displays and the portfolio of the OpenPhowo partners.

Since 2002 about 200 digital airborne camera systems have been sold in total, by the three manufacturers Intergraph, Leica Geosystems, and Vexcel Inc (now Microsoft Photogrammetry). That means, many projects were flown and experiences gained. It is therefore logical to discuss the strength and the weaknesses of the existing data collection systems. The perspectives are manifold: interests are directed to the vendor's and the user's point of view, geometric and radiometric aspects, short-term and long-term calibration stability. Here, the systems ADS40, DMC and UltraCamD are competing with each other. Some new systems will be launched, such as the UltraCamX and a compact system offered by RolleiMetric. Radar and LIDAR data are complementary to airplane image data collection or may be substitutes entirely. The keynote will focus on trends in digital imaging. Standardization of aerial image data and image formats has become a key issue – a challenge to be overcome with the help of manufacturers, users and mapping agencies.

The second chapter highlights the progress of about 20 years of history in online geocoding. This business started with experiments using kinematic DGPS in the 1980s, also first Inertial Navigation Systems were examined for aerial applications. In the meantime, integrated GPS/INS systems solve easily the problem of sensor location and orientation, with high accuracy and reliability. Two vendors deliver competing IMUs: Applanix and IGI – both are referring to their latest developments. The European Galileo satellite system will operate from 2012, with high expectations according to

accuracy, availability and services. In future, we can use a combination of GPS, Glonass and Galileo satellites, for the benefit of online geocoding. It is also shown, that online geospatial data production is carried out without GPS. Here, low-cost airborne carriers such as small helicopters are used to solve the photogrammetric data collection task.

The third chapter deals with the public awareness of photogrammetry and its related fields. What are our contributions to visual interfaces like Google Earth and Microsoft's Virtual Earth? Who is going to fill their data bases? What about standards for geospatial data infrastructures? Everybody can now download/upload geospatial data just for fun, to render it by own photographs (geoblogging), and to extract additional information. But we miss still metadata for data quality. It seems today, that 3D city and landscape models are entering the huge market of car navigation and pedestrian guiding. Tiny displays are used here, with constrained pixel resolutions, and therefore the problem of generalization is to overcome. The next step are 3D Augmented Reality models, under research and development, for example, within the Corporate Research Center (SFB) NEXUS. Podcasting, a standard in public life, is used successfully in many fields since more than two years. Positive experiences are reported to use it in photogrammetry, digital signal processing, geoinformatics and statistical inference. But besides the enthusiasm for new media – the Photogrammetric Week series should be experienced on-campus, also in the future!

The invited speakers of the Photogrammetric Week series, who are the authors of the essays, are always carefully selected as international thought leaders from academia, industry and consulting. With this book we continue our overall objective to represent the state-of-the-art of photogrammetric research and development. The reader can take profit from the profound knowledge of the authors. Since many years, photogrammetry goes along with the rapid developments in ICT, electronics and geoinformatics. It still is and will be in the future a fascinating geospatial imagery engine. The 51st Photogrammetric Week continues the tradition to be a forum stimulating new developments, co-operations, and standardizations. Hopefully, also this book will contribute to bridge the gaps of several geospatial disciplines.

The aforementioned main topics structure the book into three chapters. For this reason, the reader has fast access to the corresponding contributions. Not all papers match exactly the corresponding chapter headline, but may give an overview of neighbouring fields of interest as well.

This book could not be made possible without the help and discipline of the Keynote and Invited Speakers of the 51st Photogrammetric Week. The editor gratefully acknowledges their cooperation to finish the papers in due time. As ever, since the introduction of pre-printed Phowo proceedings 1993, the Institute for Photogrammetry (ifp), Universitaet Stuttgart, carried out the final word processing for the book layout. Sincere thanks goes to Markus Englich, who did again a great job and met the deadline of the publisher. Let me also thank Martina Kroma and Werner Schneider for their support in organisation matters. The book is also available in softcopy format (CD/DVD-ROM) for fast digital data access. Last but not least, we thank the publishing house Wichmann, Heidelberg, for publishing the book.

Stuttgart, September 2007 Dieter Fritsch