Dear Mr. President, dear Chen Jun,

DGPF, the Deutsche Gesellschaft für Photogrammetrie, Fernerkundung und Geoinformation e.V. is delighted to nominate Prof. Dr.-Ing. habil. Stefan Hinz (Karlsruhe Institute of Technology, KIT) as president for Technical Commission 1 "Sensor Systems". The application has been officially approved by the DGPF.

Prof. Hinz has broad experience in ISPRS-related science and academia. He studied Geodesy & Geoinformatics (Diploma 1998) and finished his doctorate in Photogrammetry and Remote Sensing in 2003, both at TU München. In 2004, he became vice director of TU München’s Remote Sensing Technology department and head of a Helmholtz-Young-Investigator-Group “Automatic image understanding in high resolution remote sensing”. In 2008, Prof. Hinz got the venia legendi (“habilitation”) in the field of Photogrammetry, Remote Sensing and Computer Vision. Short after, he became full professor for Remote Sensing and Computer Vision and director of the Institute for Photogrammetry and Remote Sensing of KIT. In addition, he was elected as Dean of the Faculty of Civil Engineering, Geo- and Environmental Sciences of KIT in 2012.

Stefan Hinz had various functions in ISPRS and DGPF. He served as scientific secretary and co-chair of ISPRS technical commission working groups “Automatic Object Extraction” (2000 - 2004), “Models and Algorithms for Road Extraction and Traffic Monitoring” (2004 - 2008), “Image Sequence Analysis” (2008 - 2012) and as co-chair of the intercommission working group “Pattern Analysis in Remote Sensing” (2012 - 2016) and he was co-organizer of various ISPRS events such as the ISPRS “PIA” and “CMRT” workshop series.

Prof. Hinz is member of the editorial board of the ISI-listed PFG-journal Photogrammetry – Remote Sensing – Geoinformation (since 2011), co-edited various issues of PFG and was guest editor of ISPRS Journal Theme Issue “Air- and Spaceborne Traffic Monitoring”. He published more than 200 articles in highly ranked journals and conference proceedings. As can be seen from his publication record, his research largely focused on bridging sensor technology with innovative image processing methods – especially in the field of SAR processing but also in 3D Computer Vision.
According to this broad experience, his high profile, and his extensive network DGPF believes that Stefan Hinz is an excellent candidate for being next president of ISPRS Technical Commission 1. DGPF will support his activity by additional funds.

**Prof. Dr. Raul Feitosa**, Universidade Católica of Rio de Janeiro (Brazil), is suggested as vice-president.

Thank you very much for considering this nomination.

Yours sincerely,

[Signature]

Prof. Thomas H. Kolbe
President, DGPF

**Attachments:** none, further documents like the CV and the strategy paper will be provided by Prof. Hinz
Rio de Janeiro, April 29th 2016

ISPRS Council
Attn. Christian Heipke
Leibniz University Hannover
Institute of Photogrammetry and GeoInformation,
Nienburger Str. 1m 30167
Germany

The Brazilian Society of Cartography, Geodesy, Photogrammetry and Remote Sensing (SBC), as Ordinary Member of ISPRS representing Brazil, is delighted to nominate Prof. Dr.-Ing. Raul Queiroz Feitosa (Pontifical Catholic University of Rio de Janeiro and Rio de Janeiro State University) as vice-president for Technical Commission 1 “Sensor Systems”.

Prof. Feitosa has a broad experience in science and academia. He studied Electrical Engineering (Master - 1983) in Aeronautics Institute of Technology and finished his doctorate in Computer Science in 1988, at University of Erlangen-Nürnberg in Germany. Since 1989 he is with Pontifical Catholic University of Rio de Janeiro, where he serves as Associate Professor and as head of the Computer Vision Laboratory. In 1994, he also joined Rio de Janeiro State University as visiting Professor, where he later became Associate Professor.

Prof. Feitosa is member of the editorial board of the Journal of the Brazilian Society of Cartography and associate editor of Boletim de Ciências Geodésicas, as well as guest editor of IEEE Journal of Selected Topics in Applied Earth. Prof. Feitosa is a co-founder and currently the president of the Brazilian Chapter of IEEE Geoscience and Remote Sensing Society. He published about 200 articles in highly ranked journal and conference proceedings, and has been involved in the organization of many scientific meetings in the field of remote sensing image analysis.

Based on the above-mentioned reasons the SBC fully supports the candidacy of Prof. Feitosa as vice-president, having Prof. Stefan Hinz from the University of Karlsruhe, Germany, as president of ISPRS Technical Commission 1.

If you have any question or need additional information, please do not hesitate to contact us by e-mail at trino.sbc@cartografia.org.br.

Yours sincerely,

Paulo Cesar Teixeira Trino

President of SBC

Sociedade Brasileira de Cartografia, Geodésia, Fotogrametria e Sensoriamento Remoto.
Proposal for

ISPRS Technical Commission 1
“Sensor Systems”
(2016 - 2020)

by

Stefan Hinz
Karlsruhe, Germany

Raul Feitosa,
Rio de Janeiro, Brazil

Boris Jutzi,
Karlsruhe, Germany
Introduction and Context

With a view to the new ISPRS commission structure, Commission I “Sensor Systems” is concerned with the design, construction, characterization, calibration and use of imaging and non-imaging sensors, sensor systems and sensor networks for photogrammetry, remote sensing and spatial information science. This includes the development of new and innovative technological concepts, yet likewise models and methods to optimally exploit, calibrate and thoroughly evaluate new sensors, networks and single sensor components.

As it is also reflected by the new commission title “Sensor Systems”, an imaging or non-imaging sensor can never be seen as an isolated unit. It is rather one of the core components of a comprehensive (geo-)data acquisition and exploitation process. The following proposal for the commission’s internal structure is designed along this systemic approach. Sensor concepts are focal points of the commission. Yet methodological challenges arising from these concepts are on a par with them – especially regarding exploiting, calibrating and characterizing the recorded data with a view to practical applications.

Commission structure

The recent years were characterized by rapid developments in various fields of sensor technology, design of smart sensor networks, small un-manned platforms (UAS) and new satellite imaging concepts or satellite constellations, respectively. This includes the sector of – often low-cost – industrial imaging sensors and likewise the development of highly sophisticated and specialized sensors for Earth Observation, thereby covering multiple modes of active or passive sensor technology and various scales of imaging.

Each of these aspects comes with its own inherent scientific challenges, which we intend to tackle by the following working group structure:

1. UAS and small multi-sensor platforms: concepts and applications
2. Terrestrial and mobile mapping
3. Satellite constellations for remote sensing
4. SAR and microwave sensing
5. Hyperspectral sensing
6. Multispectral and LIDAR Sensors: individual and combined sensing and processing
7. Navigation and platform guidance
8. Sensor system modelling, on-board processing and embedded systems
9. Calibration, benchmarks, and evaluation
Optionally, the list will be supplemented with a small number of inter-commission working groups. This issue will be discussed at the Prague congress.

Commission officers:

President: Prof. Dr. Stefan Hinz, Karlsruhe Institute of Technology, Germany
Vice-President: Prof. Dr. Raul Feitosa, Pontifical Catholic University of Rio de Janeiro, Brazil
Secretary: PD Dr. Boris Jutzi, Karlsruhe Institute of Technology, Germany

Short Biographies:

Prof. Stefan Hinz has a broad experience in ISPRS-related science and academia. He studied Geodesy & Geoinformatics (Dipl.-Ing. 1998) and finished his doctorate in Photogrammetry and Remote Sensing in 2003, both at TU Muenchen. In 2004, he became vice director of TU Muenchen’s Remote Sensing Technology department and, in 2008, he obtained the venia legendi ("habilitation") in the field of Photogrammetry, Remote Sensing and Computer Vision. Short after, Prof. Hinz became full professor for Remote Sensing and Computer Vision and director of the Institute for Photogrammetry and Remote Sensing of Karlsruhe Institute of Technology (KIT). Currently, he serves as Dean of the Faculty of Civil Engineering, Geo- and Environmental Sciences.

Since 1998, Prof. Hinz published more than 200 articles in highly ranked journals and conference proceedings (h-index: 26). His research largely focuses on bridging sensor technology with innovative image processing methods – especially in the fields of SAR processing and 2D/3D Computer Vision.

Prof. Hinz has had various functions in ISPRS and in the German Society for Photogrammetry, Remote Sensing and Geoinformation (DGPF). He served as scientific secretary and co-chair of ISPRS working groups since 2000 and as co-chair of the intercommission working group “Pattern Analysis in Remote Sensing” (2012 - 2016). He was co-organizer of various ISPRS events such as the ISPRS “PIA” and “CMRT” workshop series.

Prof. Raul Queiroz Feitosa studied Electronic Engineering in the Aeronautics Institute of Technology (ITA), São José dos Campos, Brazil, where he graduated in 1979. In 1988 he completed his PhD studies at the Friedrich Alexander University Erlangen-Nürnberg, Germany, where he obtained a doctorate degree in Computer Science. Since then he is with the Pontifical Catholic University of Rio de Janeiro (PUC-Rio) and since 1994 also with Rio de Janeiro State University, where he is Associate Professor.

In 2003 Prof. Feitosa created and, since then, coordinates the Computer Vision Laboratory of the Department of Electrical Engineering at PUC-Rio, a group of about 12 researchers most of them
funded through grants from Brazilian science organizations and from industry. His professional interests comprise digital image analysis with emphasis on remote sensing.

Prof. Feitosa published about 200 articles in highly ranked journal and conference proceedings, and has been involved in the organization of many scientific meetings in the field of remote sensing image analysis. Prof. Feitosa maintains an intensive interaction with universities and research institutes in and outside Brazil, and in particular with Germany. He has coordinated numerous cooperation projects involving European universities and companies with support of various international funding agencies.

**PD Dr. Boris Jutzi** received a Diploma in Electrical Engineering at University of Kaiserslautern, Germany, obtained his Ph.D. degree at Technische Universität München (TUM), Germany and the Venia Legendi at Karlsruhe Institute of Technology (KIT), Germany. Currently he is Associate Professor and head of the ‘Active Sensors & Computer Vision’ group at the Institute for Photogrammetry and Remote Sensing at KIT.

His main research interest is Photogrammetry, Remote Sensing, Computer Vision, Signal and Image Analysis, and Multi-Sensor Platforms. Since 2001, he published over 80 contributions, of which are about 50 peer-reviewed articles. According to Google Scholar ‘Boris Jutzi’ has been cited about 800 times and his h-index is currently 17. From 2013 up to now he was Editorial Advisory Board member of the ISPRS Journal of Photogrammetry and Remote Sensing (P&RS).

Since 2004 he served continuous for the International Society for Photogrammetry & Remote Sensing (ISPRS). He started 2004 as Working Group Officer (as scientific secretary) in ISPRS Technical Commission I, continued 2008 as Working Group Chair and since 2012 he is Vice President of the ISPRS Technical Commission I. He was Reviewer, Program Committee member and Co-organizer of various ISPRS events.

In summary, the proposed officers – with their geographically balanced scientific and academic background – bring broad experience in various fields into the commission.

**Thematic ambitions**

With the above structure, the commission presidents want to support scientific advancement in particular in the following fields:

- Innovative and integrated UAS-oriented sensor and (small) platform concepts
- Systems and methods for terrestrial and mobile mapping in complex indoor and outdoor environments
- Design and realization of sensors (including optical, IR, SAR, IfSAR, LiDAR, etc.) and constellations for digital aerial and spaceborne missions for Earth observation
- Small and low-cost active sensing (micro-LIDAR and -RADAR sensors)
• Geometric and radiometric properties, standards, and factors affecting data quality
• Benchmark definition, calibration and evaluation of optical and non-optical imaging sensors
• Integrated platform guidance, navigation, direct georeferencing (positioning and orientation) and integrated sensor orientation
• On-board (pre-)processing and concepts for embedded systems

Events and other activities:

The commission will organize and contribute to (at least) following events and activities:

Symposium of Commission 1:

The Symposium will be held during summer/fall 2018. The Symposium venue will probably be Karlsruhe, Germany, with optimum train connection to Frankfurt International Airport, so that international participants will have flexible and easy travelling options from all over the world.

We intend to organize the Symposium’s technical sessions in single-track fashion to support maximum information, interaction and communication. For allowing the presentation and publication of “cutting edge” technical papers as well as early concepts or latest, highly application-relevant results, we plan two submission possibilities: full papers to be assessed by peer-reviewing for ISPRS Annals and reviewing based on abstracts for ISPRS Archives.

Attached to the Symposium, several one- or half-day workshops and tutorials with special focus on young scientists and practitioners from industry and (non-)governmental agencies will be organized. This shall include, for instance, tutorials and workshops for UAS- and spaceborne data acquisition strategies, modern calibration methods, sensor-oriented SAR and hyperspectral data processing, multi-sensor fusion concepts etc.

The interaction between science and industry will be further supported by an exhibition and possibilities for demos and master classes of internationally leading companies in sensing and processing of geospatial information.

Further activities:

The commission will furthermore contribute to other ISPRS events such as

- Geospatial Week 2017 and 2019,
- EuroCOW
- PIA (Photogrammetric Image Analysis),
- HRIGI (High Resolution Imaging for Geospatial Information),
- CMRT (City Models, Roads and Traffic)
and others. The detailed set-up will be discussed with the other commission presidents and workshop organizers.

In addition, special emphasis will be put on the interaction with sister communities like IEEE Geoscience and Remote Sensing as well as other communities to better interdigitate the sensorial developments with data processing and analysis methods. The working group officers of Commission 1 will be encouraged to organize joint ISPRS and IEEE events such as JURSE (Joint Urban Remote Sensing Event) and workshops at IGARSS and other events.

All organization issues and publications will be done according to the ISPRS policies as stated in the IRPSR Orange book.

**Provisional financial plan:**

The commission will support easy and cheap communication via digital media wherever possible. Together with the German Society for Photogrammetry, Remote Sensing and Geoinformation (DGPF) the home institute of the commission officers will support travelling to all relevant official ISPRS meetings in the context of chairing Commission 1. Additional funds of the German Science Foundation (DFG) and of special German-Brazilian exchange programs of DAAD (German Academic Exchange Service) can also support travelling of the commission officers.

Karlsruhe university/KIT puts no further restrictions on travelling issues.

A very first estimate of the financial budget of the symposium reveals a total budget of 85T€ - 110T€, including all costs for staff, proceedings, rental of lecture rooms, exhibition areas, catering etc.

This leads - based on a very conservative estimate of sponsorship - to a regular registration fee of 390€ to 520€ (depending on the type of registration, e.g. w/wo. workshops, tutorials, dinner etc.), which goes well along preceding successful ISPRS events such as Geospatial Week 2015 or PIA+HRIGI 2015.

Of course, special discounts are planned for students and PhD candidates, in order to encourage young scientist to participate and interact with renown scientists.
CV Stefan Hinz

Prof. Stefan Hinz
*21.10.1972

Institute of Photogrammetry and Remote Sensing
KIT - Karlsruhe Institute of Technology
Englerstr. 7
76128 Karlsruhe

Professional experience

<table>
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<tr>
<th>Since</th>
<th>Position and Responsibilities</th>
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<tbody>
<tr>
<td>Oct. 2012</td>
<td>Dean of Faculty for Civil Engineering, Geo- and Environmental Sciences; Spokesman of Board of Deans</td>
</tr>
<tr>
<td>Nov. 2008</td>
<td>Professor for Remote Sensing and Image Processing, Head of Institute for Photogrammetry and Remote Sensing (IPF), KIT</td>
</tr>
<tr>
<td>Jan 2004 – Dec 2009</td>
<td>Head of Helmholtz Young Investigator Group “Automated Image Understanding for High Resolution Remote Sensing” jointly implemented by HGF, DLR and TUM</td>
</tr>
<tr>
<td>Oct 2003 – Oct 2008</td>
<td>Senior Research Associate (C1) and Vice-director, Remote Sensing Technology, TU Muenchen (TUM)</td>
</tr>
<tr>
<td>Mar 1999 – Jun 1999</td>
<td>DAAD full scholarship: guest researcher at Institute for Robotics and Intelligent Systems, University of Southern California, Los Angeles, USA</td>
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Education

<table>
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<tr>
<th>Date</th>
<th>Qualification</th>
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<tr>
<td>Dec 2008</td>
<td>Habilitation (‘venia legendi’) in Photogrammetry, Remote Sensing and Computer Vision at TU Muenchen; Title: Automatische Bewegobjekterkennung</td>
</tr>
<tr>
<td>Dec 2003</td>
<td>Doctoral dissertation at TU Muenchen, Title: Automatische Extraktion urbaner Straßennetze aus digitalen Luftbildern</td>
</tr>
<tr>
<td>Jul 1998</td>
<td>Diploma (Dipl.-Ing.) at TU Muenchen (Geodesy and Geoinformation)</td>
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<tr>
<td>1993 – 1998</td>
<td>Study of Geodesy and Geoinformation at TU Muenchen</td>
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Honours and Awards

- 2014 Best paper Honorable Mention, ISPRS Symposium “Photogrammetric Computer Vision”
- 2008 Best paper award, Computer Vision and Pattern Recognition WS-OTBVS
- 2005 Best paper award, Computer Vision and Pattern Recognition WS-OTBVS
Academic Service

- Since 2011: Associate Editor of Photogrammetry, Remote Sensing and Geoinformation (PFG)
- 2012 – 2016: Co-Chair of ISPRS Intercommission Working Group “Pattern Recognition in Remote Sensing”
- Since 2012: Permanent Member of German Geodetic Commission (DGK)
- 2009: Guest Editor of Photogrammetry, Remote Sensing and Geoinformation (PFG, 9/4)
- 2008 – 2012: Co-Chair of ISPRS Working Group “Image Sequence Analysis”
- Reviewing for numerous Journals in Computer Vision, Remote Sensing and Photogrammetry

Bibliometric Features

- H-index: 26
- >2300 citations
- >220 authored or co-authored articles

Selected 10 Publications

Raul Queiroz Feitosa was born in Santo André, Brazil, in 1956. Starting in 1975 he studied Electronic Engineering in the Aeronautics Institute of Technology (ITA), São José dos Campos, Brazil, where he graduated in 1979. Subsequently he joined Rhodia S.A., a company of the French group Rhône Poulenc, as Development Engineer. In 1983 he obtained the Mestrado em Engenharia degree, also from ITA. In 1985 he started his PhD. studies at the Friedrich Alexander University Erlangen-Nürnberg, Germany, where he obtained in 1988 the Doktor der Ingenieurwissenschaften degree in Computer Science. Since then he is with the Pontifical Catholic University of Rio de Janeiro (PUC-Rio) and since 1994 with Rio de Janeiro State University, where he is Associate Professor.

In 2003 he created and coordinates since then the Computer Vision Laboratory of the Department of Electrical Engineering at PUC-Rio, a group of about 12 researchers most of them funded through grants from Brazilian science organizations and from industry.

His professional interests comprise Digital Image Analysis with emphasis on Remote Sensing. He has acted as guest editor of the Brazilian Journal of Cartography, is associate editor of Boletim de Ciências Geodésicas and guest editor IEEE Journal of Selected Topics in Applied Earth. He is member of the IEEE Geoscience and Remote Sensing Society (GRSS) and the Brazilian Society of Cartography, Geodesy, Photogrammetry and Remote Sensing (SBC). Prof. Feitosa is a co-founder and currently the president of the Brazilian Chapter of IEEE-GRSS.

He published about 200 articles in highly ranked journal and conference proceedings, and has been involved in the organization of many scientific meetings in the field of remote sensing image analysis.

Prof. Feitosa maintains an intensive interaction with Universities and Research Institutes in and outside Brazil. He has coordinated numerous cooperation projects involving European universities and companies with support of various international funding agencies.
Dear Prof. Heipke,

I am highly delighted to be suggested as vice-president for ISPRS Technical Commission 1 (Sensor Systems) through the application of the German Society for Photogrammetry and Remote Sensing. With my background in Remote Sensing I can bring in many aspects of technology and methodology into the Commission's daily work. Having already organized numerous workshops and conferences I am happy to support the commission with this experience.

In addition, I would like to express that the Brazilian photogrammetric community and in particular myself have a long and successful tradition in co-operating with German universities, including Karlsruhe. Thus I am looking forward to working together with my colleague, Prof. Hinz, as president of Commission 1.

Prof. Raul Queiroz Feitosa, Dr.-Ing.