ISPRS 2004

2000 - 2004

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Commission I - Sensors, Platforms and Imagery

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Commission I – Terms of Reference

- Design and realization of aerial and spaceborne missions for earth observation
- Standardization of definitions and measurements of sensor related parameters
- Design, construction. characterization, installation, testing, calibration and evaluation of imaging sensors and scanners
- Integration of imaging and other systems
- Integrated platform guidance, navigation, positioning and orientation
- Design, performance and techniques of data reception and pre-processing
- Geometric and radiometric properties of image data, quality standards, and factors (environmental and others) affecting data quality
- Technical systems for recording sensor data, film scanners and auxiliary data (time, position, attitude, etc.) and media (film, magnetic, optical, etc.)

WG I/1: Define Standards for **Sensor Parameters**

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WG I/1 Terms of Reference

- Identify and define a common set of sensor and sensor system parameters
- Promote adoption of standardized parameters among sensor manufacturers
- Design data model for, and populate, an electronic database of sensors, platforms, and launch status of new satellite sensors
- Collaborate with CEOS to develop a comprehensive database of sensor and platform specifications
- Pursue organizations to collaborate in support of data model and database maintenance
- Participate in ISO TC 172/SC1, SC9
- Liaise with CEOS member organizations to identify and appoint cross-over WG membership

WG I/2: Sensor Calibration and Testing

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WG I/2 Terms of Reference

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- Promote adoption of standardized parameters among manufacturers
- Design data model for, and populate, an electronic database of sensors, platforms, and launch status of new satellite sensors
- Collaborate with CEOS to develop a comprehensive database of sensor and platform specifications
- Pursue organizations to collaborate in support of data model and database maintenance
- Participate in ISO TC 172/SC1, SC9
- Liaise with CEOS member organizations to identify and appoint cross-over WG membership

WG I/3: Active Sensor Systems

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WG I/3: Terms of Reference

- Collaborate with CEOS to identify global test sites for evaluating SAR, LIDAR, and InSAR systems
- Assess precision and accuracy of active sensors that generate DEM data
- Evaluate data recording and preprocessing systems to generate optimal data sets for analysis and measurement
- Recommend best practices for integrating attitude and position information with data processing algorithms

WG I/4: Advanced Sensor Systems

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WG I/4: Terms of Reference

- Small satellites Earth for observation-complexity, reliability, and comparative costs
- Platform guidance, navigation and positioning, integration of GPS, and orientation systems
- Performance of high resolution and hyperspectral imaging systems for Earth system science
- Monitor and report developments of new sensors such as smart sensors. polarization sensors. pollution monitors, laser altimeters, and precipitation radar

WG I/5: Platform and Sensor Integration

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WG I/5: Terms of Reference

- Define best practices for recording and presenting sensor data together with auxiliary platform data-GPS, INS, orbital definition

- Liaise with Commission-III
- Capability of high resolution earth observation systems
- Relation and long-time stability of attitude and position information to sensor orientation

WG I/6: Airborne Optical Sensor Systems

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WG I/6: Terms of Reference

- Assess data quality for advanced aerial digital camera and video systems
- Integrate airborne digital camera and video systems into user applications
- Install, test, and calibrate airborne digital camera and video systems on aerial platforms
- Develop guidelines for designing aerial missions for small format and video data acquisition

Commission II – Systems for Spatial Data Processing, Analysis and Representation

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Commission II – Terms of Reference

- Design and development of systems for measurement, processing, analysis, representation and storage of image and geospatial data
- Study and evaluation of system integration and modeling aspects for

data and information processing

- Analysis of systems and their components for automated and semiautomatic digital processing systems
- Development of systems and technologies for microwave and lidar data processing
- Design of systems for production and update of geoinformation
- Interoperability of spatial information systems
- Study of real-time mapping technologies

- Standardization of data transfer formats and processes

WG II/1: Real-Time Mapping Technologies

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WG II/1 Terms of Reference

- Design and development of integrated real time mobile data collection systems and autonomous vehicle navigation systems
- Real and near-real time processing of mobile mapping data
- System aspects related to sensor calibration, data reduction and optimization and sensor information processing
- Automation of information extraction from mobile mapping sensor data
- Integration of navigation and mapping sensors

WG II/2: Systems for SAR and LIDAR Processing

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WG II/2 Terms of Reference

- Evaluation and assessment of systems for processing SAR and LIDAR data
- Systems for generation and editing of DEMs from InSAR and LIDAR
- Multi-frequency SAR, multipolarized SAR, reflectance data from LIDAR, multi-pulse and array sensor systems for applications
- Systems for integration of SAR, LIDAR and optical systems
- Data quality, calibration and standards of SAR and LIDAR
- Liaison with other groups such as CEOS and OEEPE

WG II/3: Integrated Systems for Information Services

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- Systems for integrating existing geospatial data and new acquired spatial information as well as administrative data for spatial data custodians

WG II/3 Terms of Reference

- Assessment and development of database archiving and maintenance strategies
- Integrated services involving economic, technical and political aspects
- Geo-spatial information distribution and accessibility systems using internet (including cost and pay models)
- Development and validation of endto-end spatial data access systems
- Liaison with CEOS WGISS and other relevant organizations

WG II/4: Image Data Standard

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WG II/4 Terms of Reference

- Analysis of the requirements for standardized image data exchange formats
- Characterization and evaluation of universal sensor models
- Development of a metadata standards which includes all necessary sensor parameters within their technical and their application environment
- Collaborate with WG I/1, OGC and ISO/TC211 on imagery and related standards

WG II/5: Design and Operation of Spatial Decision Support Systems

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WG II/5 Terms of Reference

- Development of concepts, implementation techniques and tools of image-based spatial decision support systems (SDSS)s
- Integration of different types of data (field and object) and systems in SDSS
- Integration of knowledge-based system and artificial intelligence with SDSS for problem solving and decision-making support
- Cooperation between users, producers and system designers for integrated SDSS

WG II/6: Spatial Analysis and Visualization Systems

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WG II/6 Terms of Reference

- Web-based systems for mapping and value-added data analysis
- Mobile-based systems for visualization and value-added analysis
- Systems for on-demand visualization and value-added data analysis
- Image-based systems for visualization and value-added data analysis
- Integration of 3-D, temporal and dynamic aspects into spatial analysis and visualization systems

Inter-Commission (IC) WG II/IV: Systems for Automated Geo-spatial Data Production and Updating from Imagery

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IC WG II/IV Terms of Reference

- Advancement of digitary photogrammetric workstations
- Development of new functionality for digital airborne cameras and GPS/INS integration
- Evaluation and implementation of semi-automated systems for object capture and update
- Facilitate the integration and interfacing of photogrammetric, CAD, and GIS systems
- Transition of experimental systems for data acquisition and revision into operational and commercial solutions (co-operation between academia/ research and industry)
- GIS-driven change detection, spatial data capture and revision.
- Consistency estimation and quality control of spatial data.

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Commission III – Terms of Reference

- Development of algorithms for the analysis of remotely sensed data
- Development of automated feature and attribute extraction techniques and methodologies from multi-sensor,

multi-resolution, multi-spectral, and multi-temporal imagery

- Fundamental research into image understanding and object recognition
- Integrated sensor orientation
- Image sequence analysis
- Development of algorithms for including features in the orientation processes
- Research on the spatial, spectral and temporal properties of natural and human-formed objects and their image signatures
- Analysis of characteristics of hyperspectral and multi-sensor data
- Study of the relationship between object models in object recognition and GIS

WG III/1: Sensor Pose Estimation

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WG III/1 Terms of Reference

- Block adjustment: projective vs. perspective transformation
- Registration algorithms
- Orientation procedures for 3-D scene reconstruction
- Block triangulation for airborne digital sensors and cameras
- Use of features as entities in image orientation processes

WG III/2: Surface Reconstruction from Images as Information Source

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WG III/2 Terms of Reference

- Stereo matching
- Shape from X
- 3-D versus 2.5D (in collaboration with WG III/3)
- Improvement provided by automated object identification and by image/scene understanding (in collaboration with WG III/4)

WG III/3: 3-D Reconstruction from Airborne Laser Scanner and INsar Data

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WG III/3 Terms of Reference

- Algorithms for point cloud processing (in collaboration with WG III/2 on surface reconstruction)
- Data fusion (in collaboration with WG III/6)
- Products: Digital surface models, digital elevation models, 3-D city and landscape models
- Applications: (in collaboration with WGs VII/3, VII/4, VII/5 on coastal mapping, flood prediction, urban planning, telecommunications planning, monitoring of power lines, noise and gas propagation, tax verification, real estate sales etc.)

WG III/4: Automated Object Extraction

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WG III/4 Terms of Reference

- Segmentation and aggregation/grouping of image features based on classification and computer vision approaches
- 3-D object extraction and image/scene understanding (in collaboration with WG III/2)
- Knowledge representation and

manipulation, control structures, management of uncertainty, and learning, i.e., automatic model generation

- Geometric, semantic and temporal modeling of man-made and natural objects including their relations in satellite, aerial and close-range imagery
- Utilization of prior knowledge, especially in the form of CAD models, GIS, or results from digital surface model analysis
- Performance evaluation (quality control, test procedures) in collaboration with WGs III/7 and III/8
- Liaise with the Computer Vision community.

WG III/5: Algorithms for Industrial Vision

Chair

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WG III/5 Terms of Reference

- Calibration: Off-line versus on-line, geometric versus radiometric calibration; active versus passive systems, non-stereo and shape-from-X techniques
- Reconstruction: real-time versus non-real time, 2D versus 2.5D versus 3-D
- Recognition: object-centered versus viewer-centered, quantitative versus qualitative
- Model and appearance based inspection
- Micro-surfaces: sensor models, active image acquisition, microscopic shape-from-X
- Performance and Reliability: assessment of the investigated industrial vision algorithms, in collaboration with WG III/8 and WG

WG III/6: Multi-Source Vision

Chair

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WG III/6 Terms of Reference

- Information fusion from multiresolution multi-source data such as SAR, multi-spectral, hyper-spectral, panchromatic and laser scanner data
- Modeling of uncertainty in multisource computer vision
- Using additional knowledge sources, such as GIS, to support object extraction
- Evaluation of the effectiveness and efficiency of multi-source information fusion.

WG III/7: Modeling Large Scale Urban Environments

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WG III/7 Terms of Reference

- Integrated/simultaneous analysis of terrestrial and aerial imagery for urban model and texture extraction
- Automated generation of urban models with level-of-detail and inferred attribution
- Merging of information from remotely sensed imagery, traditional cartographic products, CAD models, and urban GIS
- Techniques for integration of GPS, automated image matching, and interactive construction of virtual environments
- Photo-realistic rendering for a moving user
- Optical tracking and navigation for augmented reality.

WG III/8: Reliability and Performance of Algorithms

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WG III/8: Terms of Reference

- Data set: B&W and color mages, various stereo overlaps, airborne laser and InSAR reference data
- Digital airborne data source: test data sets
- Reference terrain models and digital map data
- Simulation: data sets for optical,

SAR and laser sources for parameter tuning of algorithms

- Specifications: rules for the validation of algorithms and the tuning of algorithm parameters
- New quality criteria: surface shape

rendering with discontinuities, slope breaks, surface roughness, quality versus compression rates of DSM triangulation techniques collaboration with WGs III/2 and III/7)

- Accuracy versus robustness: definition, evaluation and tradeoffs - Establishment οf evaluation protocols and organization international algorithm comparison

Commission IV – Spatial Information Systems and Digital Mapping

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Commission IV - Terms Reference

- Fundamentals of spatial modelling and spatial data structures
- Integration of image analysis and spatial information systems
- Spatial database design and spatial data access
- Metadata and clearing houses
- Dynamic spatial information systems and spatial revision processes
- Digital landscape modelling and visualization, orthoimages, digital terrain models and 3-D city models
- Interfacing 3-D city models and Computer Aided Facility management
- Spatial database generation from SAR, interferometric SAR, lidar lasers, and other aerial and satellite sensor systems
- Digital topographic, thematic and global mapping
- Extraterrestrial mapping

WG IV/1: Spatial and Temporal **Data Modelling and Analysis**

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WG IV/1 Terms of Reference

- Fundamentals of spatio-temporal spaces
- Spatio-temporal database design and development
- Spatio-temporal query and analysis
- Three-dimensional GIS modelling
- Multi-dimension and multi-scale models in GIS
- Spatial data quality and spatial model quality in the context of spatiotemporal GIS

WG IV/2: Federated Databases and Interoperability

Chair

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WG IV/2 Terms of Reference

- Conceptual aspects of inter-operable database environments
- Distributed spatial data models
- Connectivity, data sharing, open models and transparent geo-processing - Link and integration of imagery,
- DEM, attribute and vector data from federated databases
- Generic access, search and retrieval methods for heterogeneous databases
- Concurrence control and security for federated databases
- Spatial data standardization (OGC, ISO/TC211)
- Inter-operation specifications for spatial data
- Internet GIS, based heterogeneous databases
- Collaboration with Commission II (WG II/3, II/4)

WG IV/3: Data Generalization and **Data Mining**

Chair

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WG IV/3 Terms of Reference

- Methods for the generalization, aggregation and abstraction of image and vector data
- Data structures for the representation, processing and integration of multi-source and multi-scale data
- Concepts and techniques for hierarchical data analysis related to image and map object classification
- Methods and algorithms for the cartographic presentation of spatial objects with special focus on real-time, integrated approaches
- Enhancement of spatial data mining through inference using hierarchical classification and aggregation techniques, and synergy between image and map objects
- Cooperation with the ICA Commission on Map Generalization

WG IV/4: Spatial Data Infrastructures

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WG IV/4 Terms of Reference

- Design and access of large spatial databases
- Development of comprehensive metadata, quality evaluation procedures and their standardization
- Development of techniques for data integration in spatial information systems

- Logical and mathematical data modelling for mapping of spatial data infrastructures
- Development of basic framework concepts for the selection, aggregation and integration of fundamental data

WG IV/5: Image-Based Geospatial Databases

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WG IV/5 Terms of Reference

- Design aspects and characteristics of image-based geospatial databases
- Image queries and content-based geospatial information retrieval methods
- Geospatial knowledge management, synthesis, propagation, and communication in image databases
- Integration of digital images and GIS for spatial reasoning
- Imagery in digital libraries and webbased GIS environments
- Multimedia in integrated spatial information systems
- Cooperation with WG II/5

WG IV/6: Landscape Modelling and Visualization

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WG IV/6 Terms of Reference

- Assessment of traditional and new remote sensing data for generating and visualizing landscape models (e.g., orthoimages, DSMs, DTMs and 3-D city models)
- Integration of multi-source and multi-scale data in local and regional landscape modelling and visualization applications
- Application and examination of dynamic and kinematic models for integrating multi-temporal landscape data sets and revising spatial databases
- Application and assessment of advanced visualization, virtual reality and multimedia methods for 2-D, 3-D and 4-D mapping tasks in stand-alone or web-based environments
- Collaboration with WG III/7

WG IV/7: Data Integration and Digital Mapping

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WG IV/7 Terms of Reference

- Determination of the characteristics and issues related to data fusion at image, feature and information level in collaboration with WG III/6
- Integration of multi-type air- and spaceborne imagery as well as GIS and map data for the enhancement of spatial databases
- Techniques for high quality topographic, thematic and 3D urban mapping requirements and applications using multi-source data
- Mapping from high resolution satellite imagery
- Quality estimation and evaluation of the fused spatial data
- Monitoring of object changes from multi-source and multi-temporal data
- Integration of 3-D spatial databases with simulation models for event representation

WG IV/8: Global Environmental Database

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WG IV/8 Terms of Reference

- Collection and dissemination of state-of-the-art information and knowledge on development of global environmental databases
- Evaluation, characterization and assessment of global environmental databases
- Promotion of integrated global environmental databases
- Cooperation with related initiatives -Kyoto Protocol, Global Mapping, UN Cartographic Initiative addressing environmental global databases management
- Publication of the second volume of the book "Global Environmental Databases"
- Cooperation with WG VI/4 and WG VII/6

WG IV/9: Extraterrestrial Mapping

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WG IV/9 Terms of Reference

- Status and technical definition of coordinate systems and geodetic control networks for mapping of planets and satellites
- Documentation of basic spacecraft data-sets for extraterrestrial mapping, current and planned extraterrestrial map-making activities, and planetary cartographic products
- Development and documentation of new techniques for data acquisition and extraterrestrial mapping
- Development of GIS applications to support extraterrestrial exploration and science
- Web-based delivery of extraterrestrial map products and GIS data
- Cooperation with related working groups from ICA, IAU, NASA and ESA

Commission V – Close-Range and Vision Techniques

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Commission V - Terms of Reference

- Investigation of systems as algorithms for real-time imaging
- Development, evaluation and promotion of vision metrology technology with special consideration of CAD/CAAD and spatial information systems
- Integration of three-dimensional modeling concepts into image analysis processes
- Integration of multiple sensors and data fusion for advanced object extraction
- Design and development of image sequence analysis procedures

- Development of vision-based techniques for visualization, virtual environments and animation
- Support and promotion of a variety of existing and potential applications, e.g. industrial, heritage, mobile mapping, medical, biomechanics and robotics

WG V/1: Automation for Vision Metrology Systems and Industrial Applications

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WG V/1 Terms of Reference

- Development of off-line and on-line systems, digital imaging systems and solutions for metrology and robot vision
- Development of algorithms and procedures for automated sensor orientation and system calibration
- Mathematical models and algorithms for vision metrology with emphasis in automation
- System performance evaluation in theoretical and practical aspects in collaboration with WG III/8
- Sensor fusion and the integration of disparate data types
- Target and feature recognition in multi-image correspondence
- Range image acquisition, localization and segmentation
- New sensors and areas of application for vision metrology
- Cooperation with CMSC

WG V/2: Scene Modelling and Virtual Reality

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WG V/2 Terms of Reference

- Creation of accurate and realistic looking virtual reality (VR) models from real scenes and objects
- Knowledge-assisted 3-D scene understanding and reconstruction for VR applications

- Integration of computer graphics and VR technology with close-range vision techniques
- Improvement of performance aspects, such as speed and automation, of all procedures of 3-D scene reconstruction
- Design strategies for multi-sensor data collection and integration for complex scenes and environments
- Identifying new VR applications requiring high precision 3-D models created with photogrammetric techniques
- Increasing the collaboration between ISPRS and computer graphics, computer vision, and computational geometry groups

WG V/3: Medical Image Analysis and Human Motion

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WG V/3 Terms of Reference

- Development of real-time medical imaging systems
- Use of photogrammetric and computer vision techniques for data analysis in medical imagery
- Dynamic analysis of human motion
- 3-D medical imaging for anthropometry and expression analysis
- 3-D representation and visualization and medical VR, including support to tele-medicine
- Fostering cooperation between ISPRS and the communities of medical/biomedical engineering, sports science and human/apparel engineering

WG V/4: Image Analysis and Spatial Information Systems for Applications in Cultural Heritage

Chair

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WG V/4 Terms of Reference

- Development and integration of close-range vision techniques and spatial information systems for recording, 3-D reconstruction, modeling and visualization of structures and items of Cultural Heritage
- Incorporation of innovative technologies and development of new products
- Development of low-cost and rapid techniques in documentation and monitoring of the cultural heritage
- Development of standard procedures and products in cooperation with related disciplines
- Use of Internet and VR techniques to facilitate promotion of cultural heritage
- Close cooperation with national and international groups (e.g. CIPA), as well as ISPRS WGs VII/4 and VII/5

WG V/5: Quick Response and Distributed Computing for Close-Range Application

Chair

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WG V/5 Terms of Reference

- Methodologies and applications of integrating close range and air-/spaceborne imagery.
- of office-to-field - Integration solutions for data collection, remote data access, and mobile management
- Integration of indoor and outdoor 3-D models in urban and industrial areas
- Distributed multimedia geospatial databases incorporating close range imagery and other types of geospatial information
- Wireless field computing applications for geodata acquisition and processing

WG V/6: Visualization Animation

Chair

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WG V/6 Terms of Reference

- Development of image-based techniques for integration of live figures and environment generation tasks into the animation process and procedures
- Study of methods and techniques to support the interaction of real and virtual objects
- Encouragement of collaboration the computer animation community for the exchange of knowledge, techniques and applications
- Promotion of application-specific photogrammetric technology through collaboration with related ISPRS Working Groups and through presentations at technical meetings of the animation community

INTER-COMMISSION (IC) WG V/III: Image Sequence Analysis

Chair

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IC WG V/III Terms of Reference

- Algorithms and processes in image sequence analysis, temporal analysis, time-constrained solutions dynamic analysis and tracking
- Integration of image data with navigation sensor data and multisensor information
- Devices for image sequence acquisition and storage
- Systems and applications in robot vision, machine vision, medical imaging, autonomous navigation, motion analysis, deformation analysis and data capture for VR

Commission VI – Education and Communication

President

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Commission VI -Terms Reference

- Promotion of education and training fundamental, advanced

professional levels

- Promotion of technology transfer, taking into account regional needs and resources
- Development of computer-assisted teaching and training, and distance learning
- Development and promotion of communications with and between members and other international organizations through the Internet and other appropriate electronic means

WG VI/1: Education and Training

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WG VI/1 Terms of Reference

- Identification and promotion of educational and training opportunities, taking into account regional needs
- promotion Identification. organization (in cooperation with

educational and research institutions) of educational material (courses, tutorials, glossaries etc.), especially in electronic form

- Collection and dissemination of information on higher level education
- Organization of educational and training activities, especially at ISPRS events and with the cooperation of ISPRS members
- Promotion of scientific publications in our fields and collection and of dissemination respective bibliographic information
- Co-operation with firms, esp. Sustaining Members, for training at technical level (e.g. operators) and support of educational and training activities in developing countries
- Co-operation with International Spatial Information Societies, UM and other relevant organizations on education and training
- Stimulating the development of materials for promoting ISPRS scientific and professional activities in elementary and secondary education

WG VI/2: Computer Assisted **Teaching**

Chair

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WG VI/2 Terms of Reference

- Collection, analysis, dissemination and promotion of materials, software and data (hard copy and/or soft copy) for computer assisted teaching
- Investigation of the role of computer assisted teaching in modern education

training such as material, methodologies, and tools

Assessment and evaluation of highly interactive multimedia materials and the transformation of tertiary level courses in remote sensing, photogrammetry, SIS

WG VI/3: International Cooperation and **Technology** Transfer

Chair

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WG VI/3 Terms of Reference

- Development of matrices of joint activities with ISPRS Regional Members and other international organizations
- Development of activities to foster relationships between Regional Member organizations and the relevant WG
- Development of connections with international organizations to urge the promotion and use of photogrammetry, remote sensing, GIS and related disciplines
- Further development of international cooperation and public relations for ISPRS professions and stimulation of young professionals for cooperation in ISPRS activities
- Identification of channels international cooperation in education and stimulation of international and regional organizations to support and

fund activities promoted by ISPRS (in co-operation with the Council)

- Identification and use of support mechanism addressing needs for technology transfer, i.e. knowledge transfer and improvement of the infrastructure, especially in developing countries
- Establish links and liaise with ISU.

WG VI/4: Internet Resources and **Distance Learning**

Chair

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WG VI/4 Terms of Reference

- Development of Education Forum through Internet about remote sensing, and photogrammetry cooperation with WG VI/1
- Identification and provide links to sources of geospatial data and accessibility through Internet Map Server Applications

- Development and maintenance Web Directory about Tutorials on Remote Sensing, SIS and Photogrammetry
- Development of Technical Guides for Distance Learning implementation through Internet
- Maintenance of ISPRS Internet guidelines
- Identification and dissemination of RS, SIS and photogrammetry applications provided in Internet
- Co-operation with WG IV/8, II/3 and II/6

Commission VII - Resource and Environmental Monitoring

President

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Commission VII – Terms of Reference

- Spectral, spatial, and temporal radiation properties of objects
- Methodology of computer-aided interpretation and analysis of sensor data
- Environmental studies, resource inventories, and interpretative aspects of thematic mapping as applied in studies of vegetation, forestry, agriculture, soils, land and water use, geology, geomorphology, hydrology, oceanography, coastal zones, snow and ice, atmospheric sciences, archaeology, human settlements and engineering
- Integration of remote sensing and GIS techniques for spectral, spatial, temporal and process modeling, and monitoring of resources and the environment
- Applications of remotely sensed data for disaster monitoring, mitigation and assessment
- Use of remotely sensed data and global databases to support sustainable development and application in determination of indices of change to support global modeling and monitoring.

WGVII/1: Fundamental Physics and Modelling

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WGVII/1 Terms of Reference

- Study of spectral, spatial and temporal signatures of various earth surface features (land and ocean) with special reference to hyper spectral and microwave aspects
- Studies to understand view angle effects on spectral signatures
- System studies to define a set of sensors / constellation of satellites for theme applications and radiometric and geometric calibration requirements; in conjunction with WG I/2
- Investigations in the area of retrieval of geophysical parameters
- Cooperation with WG III/5 on advance information extraction techniques, classifiers, and data fusion techniques
- Co-operation with institutions maintaining data bases on spectral signatures, CEOS CalVal WG and EARSeL SIG on Imaging Spectrometry

WGVII/2: Sustainable Agriculture & Eco-System Approach

Chair

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WGVII/2 Terms of Reference

- Improve crop monitoring and yield modelling methodology with synergistic use of space, agrometeorology and in-situ observations in GIS environment
- Investigate the interaction of agriculture with ecosystems, especially management that reduces agricultural impacts on the environment
- Geo-information and management requirements for the ecosystem approach
- Ensure optimal use of agriculture inputs for precision farming employing high spatial and spectral resolution and other data
- Improve models for assessment, efficient utilization and conservation of water resources for agriculture using optical, thermal and microwave data with other data
- Integrated studies for cropping systems in various regional set-ups for attaining sustainable agriculture

WG VII/3: Integrated Monitoring Systems for Resource Management

Chair

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WG VII/3 Terms of Reference

- Modelling and management of natural resources using integration of RS. in-situ measurements and other data in GIS environment
- Use of spatial information systems for generating alternate scenarios to facilitate monitoring and optimal management: forestry, geology, hydrology, coastal zones, snow and ice
- Contribute to the establishment of reliable indicators of sustainability
- Cooperation with international environmental programmes such as IGBP and ICORSE for development of process-based models to sustainability

WG VII/4: Human Settlement and **Impact Analysis**

Chair

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WG VII/4 Terms of Reference

- Data analysis for urban land studies and for improved urban planning using aerial and high spatial resolution spaceborne data
- Remote observations for monitoring urban environment and detection
- Use of Remote Sensing & GIS for infrastructure development for rural settlements
- Study impact of urbanization, industrial growth, mega-engineering structures on ecological and social environment, urban sustainability; tracking of disease vectors
- Documentation, conservation and management of natural heritage and cultural landscapes in co-operation with UNESCO / ÎCOMOS / CÎPA
- Interface with IHDP

WG VII/5: Disaster Monitoring, Mitigation and Damage Assessment

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WG VII/5 Terms of Reference

- Identification of potential risk zones for different type of disasters such as forest fire, cyclone, floods, volcanoes, earthquake, and land slides etc.
- Integrated observation communication strategies for disaster detection, monitoring and damage

assessment in co-operation with CEOS and IGOS

- Enhance predictive modelling capabilities
- Development disaster of management plans for pre, during and post disaster situations
- Foster the creation of more effective information systems to support disaster management activities.

WG VII/6: Monitoring and **Modelling Global Change**

Chair

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WG VII/6 Terms of Reference

- Use of long term regional and global data bases using historical and satellite data over terrestrial eco-systems, snow and glaciers, atmosphere, oceans to monitor and model global change in cooperation with WG IV/8
- Evolve standards for data exchange and quality evaluation of satellite derived bio-geophysical parameters
- Develop strategies and algorithms for assimilating remotely sensed data in global change models
- Co-operation with international programmes, e.g. International Global Atmospheric change Chemistry (IGAC), to support implementation of international policies and treaties