RESOLUTIONS

Approved Resolutions of the XXIII ISPRS Congress

Prague 2016

Resolutions of ISPRS
XXIII Congress

Resolution 0: Thanks to the Czech Society

The Congress commends:
To congratulate The Czech Society, its president and the Congress Director Lena Halounová, the Technical Program Director Václav Šafář , the Local Organizing Committee and the Congress PCO, Auletris, s.r.o., for their excellent work which has resulted in a very successful Congress

Technical Resolutions

Resolution I.1: Sensor Systems for Indoor Navigation and Mapping

The Congress

Noting:

- the widespread availability and ubiquity of relatively low-cost 2D/3D sensors, including RGB and RGB-D cameras, laser scanners,
- the increasing advancement in smartphone technology, and
- the strong growth in the indoor geospatial application field

Recognising:

- the need for rigorous yet highly automated calibration, orientation and object recognition algorithms, and
- the demand for fast, accurate and robust software tools to identify patterns in point clouds acquired in indoor environments

Recommends:

- investigation of the performance potential of indoor mapping systems based on low-cost 3D sensors, automated algorithms and software tools to support object recognition from point clouds acquired either directly by such as laser sensing, or indirectly by photogrammetry to be carried out.

Resolution I.2: Crowdsensing and Cooperative Navigation

The Congress

Noting:

- the increasing importance of sensor georeferencing for mapping and navigation,
- the use of multi-sensor platforms, and
- the rapidly growing volumes of crowdsensed data from different platforms

Recognising:

- the need for methods and solutions that can support data acquired by multi-sensing platforms

Recommends:

- the investigation of sensor orientation, calibration and data fusion methods for multi-sensor platforms to be carried out

Resolution I.3 Small Satellites and Constellations

The Congress

Noting:

- the increasing development of small satellite systems for earth observation especially by the private sector

Recognising:

- the availability of earth observation data derived from small satellites for remote sensing applications

Recommends:

- collaboration with the private sector on widespread applications of earth observation data derived from small satellites to be initiated

Resolution II.1: Image Interpretation and Machine Learning

The Congress

Noting:

- the growing importance of automatic image interpretation and understanding for photogrammetric modeling and remote sensing, ranging from low-level feature extraction to high-level semantic interpretation

Recognising:

- the contributions of ISPRS community to analysis, segmentation and classification of image, point clouds and 3D model data

Recommends:

- that the work on physical modeling and machine learning, including recent advances in deep learning, for data interpretation and analysis should be strengthened.

Resolution II.2: New Sensor Data Modalities

The Congress

Noting:

- the growing importance of new sensors and sensor combinations, including RGB-D cameras, multi-spectral, hyperspectral and UAV-based lidar sensing, advances in GNSS and IMU technology, crowd-based and ad-hoc sensor networks

Recognising:

- the contributions of ISPRS community to sensor calibration, sensor integration and integrated data processing for geo-spatial applications

Recommends:

- that analysis of new sensors and work on calibration, data fusion and information extraction from new sensors and their combinations should be strengthened.

Resolution II.3: Photogrammetry in Mobile Robotics

The Congress

Noting:

- the rapid development of technology for autonomous robotics, aerial, land-based and swimming drones, self-driving vehicles, as well as hand-held and virtual/augmented reality devices

Recognising:

- the contributions of the ISPRS community regarding both real-time sensing and data analysis on mobile platforms, and the generation and maintenance of reliable environment maps

Recommends:

- that the work on indoor and outdoor mapping; real-time processing; control and obstacle avoidance; visual-inertial odometry; and dynamic scene understanding should be strengthened.

Resolution III.1 Multi-dimensional Remote Sensing Dataset and its Quality

The Congress

Noting:

- the increasing availability of complex and multi-dimensional, including multi-temporal, multi-resolution, multi-platform, multi-source sensors, for remote sensing of big datasets related to natural and/or man-made Earth features;
- the general lack of rigorous, harmonized, optimized and accepted principles in terms of standards, quality, and error characterization of data and derived products

Recognising:

- the contributions of ISPRS community to develop innovative remote sensing techniques and tools combined with image processing algorithms for automated operational mapping;
- the difficulty and burden in developing and implementing appropriate, comprehensive, and generally accepted quality control techniques;
- the inchoate and rudimentary state of data quality standards

Recommends:

- that the operational use of accepted and novel techniques for the thematic mapping processes be strengthened;
- that those improvements should be accompanied by development and implementation of appropriate and comprehensive error characterization and data quality control techniques.

Resolution III.2: Remote Sensing Applications & Policies

The Congress

Noting:

- significant efforts towards realization of a myriad of applications of remote sensing by the research communities for sustainable development; scope for bridging the prevailing information gaps through the evolving scenarios of the Earth observation systems and analytical techniques;
- data policies on sharing, access and outreach of actionable and affordable information products for enabling appropriate decision making

Recognising:

- the need for better understanding of the Earth system for meeting the challenges of sustainable development goals;
- the benefits of automation in efficient generation of the standardized value added geospatial products and services;
- the merits of concerted and coordinated efforts by professional societies, industries, academia and research institutions, social media and other stakeholders for reaping societal benefits

Recommends:

- improved technique development, exploring the synergy of Earth observation systems for retrieval of parameters and their assimilation for predictive modelling;
- stronger emphasis on developing applications exploring the joint potential of different geospatial technologies on infrastructure, disaster resilience and natural resources management;
- more effective out-reach through sharing of data, algorithms and models, including capacity building;
- and ISPRS playing a pivotal role in integrating global efforts for policy decisions on sustainable development.

Resolution IV.1: Multi-dimensional data models and structures

The Congress

Noting:

- the increasing availability of huge, complex, multi-dimensional, multi-scale and potentially unstructured spatial data representing natural phenomena and man-made objects, above, below, on the surface, and indoor/outdoor

Recognising:

- the contributions of ISPRS community to representations, structures and algorithms for multi-scale, multi-dimensional and dynamic data, and modeling of data on moving objects

Recommends:

- that work on spatial data structures, indexing, and data fusion, and the use of functional programming and streaming algorithms be strengthened.

Resolution IV.2: Big spatial, VGI and Geosocial Media Data Integration, Visualization and Analysis

The Congress

Noting:

- the increasing availability of unprecedented amounts of big spatial data from traditional multi-sources to the internet of things and user-generated content, as well as planetary mapping, for sustainable development, smart cities and time-critical applications

Recognising:

- the contributions of ISPRS community to collection, processing, analysis, mining, simulation, visualization and quality assessment of moving and deformable object data, trajectory data, geosocial media data, and image and video data

Recommends:

- that work on open and real-time data, big data analytics, data-driven geography, data interpretation, uncertainty modeling, privacy and security issues, as well as parallel and distributed processing paradigms and planetary mapping be strengthened.

Resolution IV.3: Information Services via Mobile and Cyber Infrastructure

The Congress

Noting:

- the rapid advancement of cloud computing, clusters and grids, high-performance computing, open source, geo-sensor networks, mobile technologies, web service technologies, new visualization devices, rising interest in human-centered design of technology, and open geospatial standards

Recognising:

- the contributions of the ISPRS community to web service architecture, semantics and ontologies, sensor web, visual analytics, online and offline 3D/4D visualization, standards in the context of mobile/web/cloud-based geospatial services, and usability concerns

Recommends:

- that the work on dynamic geospatial services, deep web, linked data, online multi-dimensional visualization considering usability, designs for mobile web, seamless indoor/outdoor location-based services, community-driven and participatory applications, and global information services be strengthened.

Resolution V.1 Cooperation with International Organizations and Sister Societies on Education and Capacity Building

The Congress

Noting:

- that the technology and societal conditions of Earth observation and spatial information applications are developing rapidly;
- that these developments have led to the establishment of new international organizations such as Group on Earth Observations (GEO) and United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) for

coordination of earth observation and applications;
- that in many countries/regions the development of the Geo-information Sector is lagging behind and requires support to achieve global standards;
- that GI-organizations and professionals should continuously update and upgrade their knowledge

Recognising:
- that educational and training capacity in Geo-information are inadequate in many regions;
- the complexity and wide coverage of the domain and use of spatial information;
- the growing need for professionals and organizations working in the Geo-information fields

Recommends
- that ISPRS work with the international organisations to promote joint action programs for the provision of educational and training facilities;
- that ISPRS develop joint programs in Geo-information and share resources in education and training;
- that ISPRS encourage professional and academic participants to make their expertise available for knowledge transfer and exchange for capacity building.
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- Resolution V.2 Promotion of Web-based Education and Collaborative Research
- The Congress
- Noting:
- that the web-based technology is continuously developing and is useful for education and training;
- that the education and research resources including MOOC, test data, and open source software in Geo-informatics are rapidly increasing

Recognising:
- the need to promote sharing of education and research resources in the photogrammetry, remote sensing and spatial information sciences

Recommends:
- ISPRS stimulate web-based sharing of resources for education, research and collaboration; and
- promote online e-learning in Geo-information.

Resolution V.3 Promotion of the Profession to Students and Young Scientists

The Congress

Noting:
- that the numbers of students entering Geo-informatics programs are too low for the viability of the profession;
- the increasing possibilities for student mobility between institutions during their education and training

Recognising:
- the need to promote the profession and recruit young professionals for the Geo-informatics programs

Recommends:
- the continuation of the active promotion of ISPRS Youth Forum, Summer Schools, and the Student Consortium;
- to support cooperation with the ISPRS Youth Forum;
- encouragement of relevant organizations to facilitate international student exchange and technical training programs at all levels.