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A Proposal for Restructuring the ISPRS Technical Commissions

Executive Summary

A number of developments and assessments have led to this proposal for the restructuring of the ISPRS commissions. They include:

- The geospatial information market has become larger and more interesting to the Information and Communications Technology (ICT) community, and also to the general public. As a result, our area of interest faces stronger competition from other disciplines.
- The number of scientific ISPRS meetings has risen, as has the number of meetings outside ISPRS that are relevant to our community.
- Scientific and technical progress has given rise to overlap in the topics covered by the different ISPRS commissions, resulting in a fragmentation of activities and increasing duplication of effort.
- During recent General Assemblies there has been only a limited number of Ordinary Members interested in hosting a Technical Commission.

Council therefore feels that there is a need to explore the potential for a revision of the ISPRS commission structure with the aim of increasing the visibility and impact of our discipline and of our society. This can be best reached by focussing endeavours on the most important issues of the time, and by increasing the size and prominence of our scientific and technical meetings. This document presents the rationale for change, and makes a preliminary proposal for a revised ISPRS commission structure, together with an implementation plan and timetable. The overall goal is to better position our society as a relevant, vibrant and forward-looking organisation for the 21st Century.

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In line with the ISPRS Strategic Plan, which calls for a concentration of Society efforts on the most important issues of our field, Council suggests examining and re-defining the ISPRS commission structure. The aims of this re-structuring effort are threefold:

- To increase the relevance of the society and its work in the global geospatial world in science, government, industry and end user communities;
- To concentrate the efforts of the society on the most relevant issues and thus reduce the existing lack of focus in some of our activities;
- To enhance the attractiveness of hosting a Technical Commission for Ordinary Members and individuals acting as Technical Commission Presidents.

It is suggested to re-structure ISPRS into fewer commissions, for example four focussing on the topics of:

- Earth Observation;
- Photogrammetry;
- Spatial Information Science;
- Policies, Education and Outreach.

In order to maximise multi-national participation in ISPRS, we further suggest the formal introduction of the position of a Vice-Technical Commission President (V-TCP), simultaneously encouraging the V-TCP to originate from an Ordinary Member different to that of the Technical Commission President (TCP).

An additional possibility to engender involvement of Ordinary Members not hosting a Technical Commission, and scientists in such countries, is the introduction of Regional Meetings, in particular in areas far away from symposia venues. In this way it is anticipated that global participation of all ISPRS members will be enhanced.

The proposed changes are to be discussed during 2014 and voted on by postal ballot in 2015. Assuming approval, this schedule provides Ordinary Members interested in hosting one of the (new) commissions for the period 2016-2020 sufficient time to formulate their ideas and develop their bids ahead of the XXIII ISPRS Congress and General Assembly in Prague in 2016.

Version 0: Jan. 3, 2014	initial draft
Version 1: Jan. 27, 2014	based on comments from Council
Version 2: Feb. 23, 2014	based on discussion at CM in Vienna on Feb. 12 and comments from IPAC and ISAC chairs
Version 3: Mar. 1st, 2014	based comments from Council, ISAC and IPAC chairs
Version 4: Apr. 30, 2014	based on comments from senior ISPRS members and discussion during Council Meeting, April 15-17, 2014

A Proposal for Restructuring the ISPRS Technical Commissions

Development of Technical Commissions in ISPRS

The current ISPRS Technical Commission structure has been in place for a long time, the last significant change being in 2004 with the result of:

- Deletion of the commission on Image Exploitation Systems (then numbered TC II);
- Addition of a new commission on geospatial information (GI) theory (new TC II);
- Addition of a new commission on remote sensing applications (TC VIII).

The rationale for change in 2004 included the following:

- Special exploitation systems (such as photogrammetric analytical plotters, rectification instruments, etc.) had ceased to exist and/or no longer played an important role. All image exploitation was being undertaken on general purpose computers and using software.
- GI had become increasingly important, and ISPRS wanted to also work in the theory of GI (data structure, database design, representation of objects and the real world, etc.).
- Remote sensing needed more prominence and capacity in ISPRS; in particular with respect to the use of remotely sensed imagery for societal benefits.

Increasing the number of commissions from 7 to 8 (rather than reducing them, which had also been discussed) carried the hope that a greater diversity of nations could actively participate directly in the work of ISPRS by hosting a commission and organising an international symposium.

Analysis 10 years on

- ISPRS has eight commissions: one on sensors and platforms in remote sensing; one on policy, education and outreach; and two each for photogrammetry, remote sensing and GI.
- The distinction between the topics covered by the different commissions is no longer clear. There is overlap between Commissions III and V, II and IV, as well as I and VII and the more technical parts of VIII. To some extent the same holds true for Commission VI and the more policy related parts of VIII. There is increasing and substantial duplication of effort.
- There are a relatively high number of scientists in our community who are interested in holding the position of Working Group (WG) officer. The fact that many WGs have not only one but two Co-chairs in addition to a WG secretary, as well as the current structure of TC I with “Key Support Personnel”, along with regional coordinators of some WGs, are signs of this attractiveness (Note, the role of WG officers and their responsibilities are not particularly well defined). Many of those seeking a position as WG officer are at the beginning of their careers. Thus, to a number of people, ISPRS is an attractive organisation and for the most part, these people are relatively young and motivated to work in and for the society.
- The 2004 idea to motivate more Ordinary Members to bid for commissions did not work. In recent terms most candidate Ordinary Members were elected to commissions without being challenged at all. Twice (2004-08 and 2012-16) it became necessary for one Ordinary Member to host two commissions concurrently, because there was insufficient interest from other Ordinary Members. The reasons for the lack of interest in hosting a commission are not entirely clear. A possible explanation is that the logistics of organising a symposium appear to be too complex. Additional factors may be that the financial risk and commitment (risk of a deficit for the symposium, commitment to provide travel support for the term of office of the TCP, etc.) are regarded as too high. For some Ordinary Members the lack of suitable and committed candidates for the position of TCP maybe another reason.
- The idea to jointly organise a symposium between two commissions (e.g. those with a significant overlap), which is a possibility in the ISPRS Statutes & Bylaws, has so far not been taken up. Even with two commissions held by one nation, two separate symposia were/are being organised.

- In a number of instances, symposia are not held as stand-alone meetings, but as additions to other events. These are mostly national level events, but there are also several examples where symposia have been held together with meetings of international scientific sister organisations. While such a combination fosters stronger relations between the organising Ordinary Member or sister society and ISPRS, it decreases the visibility of ISPRS as a separate organisation.
- The number of scientific ISPRS meetings has risen, as has the number of meetings outside ISPRS that are relevant to our community. While it should be noted that some regular ISPRS meetings have proved to be very popular and provided good visibility to ISPRS, it is doubtful whether all ISPRS meetings have the desired size and impact to be, and remain, sustainable.
- A number of ISPRS officers, as well as junior and senior scientists affiliated with ISPRS, have raised concerns about the current commission structure. As one of the issues, the large and growing number of relatively small scientific meetings is being increasingly questioned.

Some generic developments in Photogrammetry, Remote Sensing and Spatial Information Science

Some of these observations are more related to the ISPRS commission structure than others, and many of them are drawn from the ISPRS Strategic Plan. The observations are listed here to give a more complete general picture.

- The geospatial information market has become larger and more interesting to Information and Communications Technology (ICT) vendors such as Google and Microsoft, and also to the general public. One of the reasons is the much easier availability of digital imagery (from the ground, air and space). Images can now be acquired using inexpensive and easy-to-use sensors (e.g. digital cameras, smartphones) and sometimes also platforms (e.g. unmanned aerial vehicles). Digital images are now also omnipresent in the Internet. Digital globes such as Google Earth/Streetview and Microsoft Bing Maps are proof of these developments. The success of events such as InterGeo and the interest of Geospatial Media & Communications Pvt. Ltd. to establish a yearly Geospatial World Forum provide further evidence.
- Developments in ICT resulted in, and still promote, a merger of the different sub-disciplines of surveying and mapping. A smartphone, which combines positioning with image capture and cartographic visualisation, when being used for navigation purposes, is a good example of this development. The speed of change is high, and not all mapping organisations seem able to keep pace with such rapid evolution.
- Developments in ICT are also a driving force behind globalisation, as geographic distances become less important. The Internet, and in particular the Geospatial (or Spatial) Data Infrastructure (GDI or SDI), has become key to all aspects of geospatial data, from acquisition via crowd sourcing, to processing, management and analysis in federated databases and data sharing via standardised web services. As a consequence of globalisation, global presence is increasingly necessary for an international society such as ISPRS.
- The separation between close range and aerial photogrammetry - very clear a few decades ago - has become increasingly blurred. The main reason for this development is the fact that aerial campaigns have become much more diverse with less/non-standardised sensors including oblique imagery, multiple (and changing) overlap, and direct sensor orientation. Also the fact that imagery is increasingly combined with range information from lidar, has an impact here, since integration happens along similar lines for close range and aerial images. Finally, close range image blocks are now at least as large as aerial blocks in the number of images, and both are being processed with similar or even the same software.
- Photogrammetry, remote sensing and spatial information science no longer belong to a niche market, but face strong competition from other areas; both in research and development, and in the commercial world. Competition comes from disciplines such as electrical engineering, navigation and robotics, general computer science and geography. This development is also true for ISPRS when looking at the research directions and results of computer vision, navigation, robotics, radar remote sensing, geographic information science, etc.

There is, therefore, a need to increase the visibility and the impact of our discipline and of our society. Apart from strategic partnerships with other key players in the field (e.g. ICA), for ISPRS this means primarily to increase its size as well as the importance (at least partly measured in size and regular frequency) of its meetings.

For science (and scientists), the ranking and indexing of the ISPRS publication channels (both journals, Annals and Archives) is of utmost importance. While our flagship publication, the *ISPRS Journal of Photogrammetry and Remote Sensing*, ranks third amongst peer reviewed remote sensing journals, there is a need to increase the publication status of the relatively new open access *ISPRS Journal of Geo-Information* and ISPRS conference publications. Apart from special exceptions, we will have enough interest in our meetings of the future only with ISI indexing for the proceedings (in this context it should be noted that in 2013 ISPRS submitted an application to include the Archives in the ISI index, and will do for the Annals as soon as we have sufficient legacy to anticipate a positive response).

A proposal for change

The current overlap among commissions and the resulting redundancy has some advantages, for example, in situations where, for whatever reason, a commission is unable to achieve all its goals. It is also clear that a large number of officer positions (created as a result of numerous commissions) carries the advantage that more individuals and more Ordinary Members can play an active role in the society, thereby potentially improving the global representation of ISPRS.

However, fragmentation and redundancy can result in a lack of focus and thus blur the effectiveness of the overall message. Moreover, the somewhat artificial separation between theory and applications in TC II+IV, TC III +V and TC VII+VIII is not helpful to initiate discussions between research, development and practice.

While scientists have developed a strong desire to hold positions as WG officers over the years, ISPRS has seen a lack of interest from Ordinary Members willing to host a commission. As noted above, the reasons for this lack of interest and/or ability to host commissions are complex and not well understood. At the same time ISPRS needs to generate more interest in its activities to stay (and become more) visible in the fast moving field of information from imagery.

We therefore need to consider the attractiveness of hosting a commission, both to the Ordinary Members and the individuals who serve as TCPs. While ISPRS does not have the financial resources to present monetary incentives, a large and successful symposium creating significant visibility for all parties (Ordinary Member, TCP, ISPRS) is certainly a benefit. Experience has shown that the overwhelming majority of ISPRS Symposia in the last few decades have generated a surplus. Larger symposia will also be more attractive to industry to support exhibitions, which further increases the chances of a financially positive result. If desired by the TCP, a loan to prepare the symposium (to be paid back shortly afterwards) is another potential measure that could be implemented to help the Ordinary Member and the TCP in financial matters. The fact that the TCP typically also acts as an editor of a high profile scientific set of proceedings (an issue connected to the indexing of the ISPRS proceedings mentioned above) is an additional benefit for TCPs coming from a scientific background.

In line with the ISPRS Strategic Plan, which calls for a concentration of Society efforts on the most important issues of our field, it is therefore suggested to re-define the ISPRS commission structure. The aims of this restructuring effort are threefold:

- To increase the relevance of the society and its work in the global geospatial world in science, government, industry and end user communities;
- To concentrate the efforts of the society on the most relevant issues and thus reduce the existing lack of focus in some of our activities;
- To enhance the attractiveness of hosting a Technical Commission for Ordinary Members and individuals acting as Technical Commission Presidents.

In this process, the currently established scientific and professional communities within ISPRS must be carefully considered. By not doing so, any re-structuring carries the risk of first losing and then having to re-engage these communities, which is clearly undesirable. Moreover, particularly from the outside, a reduction in the number of commissions could be seen as a sign that our core disciplines have become less influential and less significant, which could have undesired consequences when comparing our new structure to that of our sister societies. Therefore, a change in the commission structure has to be carried out with utmost care and needs substantial support from all stakeholders. It might also be sensible to consider substituting the term "commission" with another term to emphasize the wide breadth of change being considered in order to successfully meet tomorrow's challenges.

It is suggested to re-structure ISPRS into fewer commissions, for example four (note that all titles are work in-progress and the lists of sub-topics per commission are incomplete at this stage):

1. Earth Observation (former TC I, parts of TC IV, VII and VIII)
 - Sensors and platforms from air and space
 - Physical modelling and spectral signatures
 - Topographic mapping
 - Land cover and land use mapping
 - Hyperspectral remote sensing
 - Radar remote sensing
 - Environmental monitoring in support of sustainable development
 - Mapping of renewable and non-renewable resources
 - Earth imagery for disaster management
 - Planetary remote sensing
2. Photogrammetry (former TC III and V)
 - Ground-based platforms and sensors, incl. unmanned aerial vehicles
 - Multi-image geometry and multi-image orientation
 - Dense matching and 3D reconstruction
 - Image and scene understanding
 - Laser scanning and 3D point clouds
 - Image sequence analysis
 - Mobile mapping
 - Cultural heritage
 - Simulation and animation
 - Vision metrology and
 - Robotics, navigation and real-time processing
3. Spatial Information Science (former TC II and most parts of IV)
 - Geospatial databases and big data
 - Spatio-temporal data models
 - Data quality
 - Geosensor networks
 - Data mining and geostatistics
 - Visualisation, augmented and virtual reality
 - Web services and service oriented architectures and Geospatial Data Infrastructure
 - The Internet of Things (Semantic Web)

4. Policies, Education and Outreach (former TC VI and policy parts of VIII)
 - Geospatial education and training
 - ISPRS Student Consortium activities
 - Curriculum development and computer-assisted distance learning
 - Technology transfer and capacity development
 - Cooperation with sister societies, the United Nations and other international bodies

The first three commissions are larger in scope than the current commissions, and consequently could expect to have more working groups than currently exist in each commission alone. This enlargement is seen to be necessary for at least two reasons: (a) the field of the commissions is widened with respect to the current situation and it is therefore reasonable to increase the number of WGs; and (b) as there is a significant interest in people from our community participating as WG officers, we should accommodate this interest.

The fourth proposed commission needs special attention. In the past it has sometimes been difficult to find sufficient interested participants to ensure a successful work programme and related symposium. Possible solutions may be: (a) to organise summer schools during the symposium and thus attract a larger number of students; (b) to organise sessions on policy, education and outreach at the other symposia rather than organising a separate symposium for this commission; and (c) to combine the symposium with similar activities of our sister societies. More discussion is necessary in this area.

In concert with the new commissions, a Vice-Technical Commission President (V-TCP) should be officially introduced (some current commissions already have Vice Presidents, but at present their role and responsibilities are not defined the Statutes & Bylaws). One option is encouraging, or perhaps requiring, the V-TCP to originate from an Ordinary Member different from that of the Technical Commission President (TCP). In this way, a larger multi-national participation can be ensured, and Ordinary Members that believe organising a symposium is beyond its capability or interest, may still become active in society management.

The V-TCPs may also have a role in organising a meeting of multiple WGs in the odd years. They could, for example, host a meeting in the ISPRS Geospatial Week series, such as the multiple workshop event held in Antalya in November 2013 and scheduled for Montpellier in September 2015.

An additional possibility to maintain engagement of Ordinary Members not active in hosting a Technical Commission, and scientists in such countries, is the introduction of Regional Meetings, in particular in areas far away from symposia venues. In this way it is anticipated that global participation of all ISPRS members will be enhanced.

Implementation issues

It is the aim of Council that the new structure should become effective immediately following the XXIII ISPRS Congress, to be held in Prague during 2016, for the 2016-2020 quadrennial term. Implementation on this time-scale requires bidding for commissions to take place under the new structure. Each bid from an Ordinary Member would contain a proposal for a TCP and one for a V-TCP, the latter preferably (but not necessarily) with support from his/her own Ordinary Member of origin.

This schedule is demanding and can only be realised if the new structure is accepted by postal ballot after an intensive discussion, but in good time before the Prague Congress. This proposal is intended to serve as a starting point for an open discussion involving all interested members and stakeholders of ISPRS. Council will also use the 2014 symposia as a platform to discuss the proposal and invite comments on the revised structure. In parallel, there will be a consultation period where everybody can voice her/his ideas, comments, refinements, and criticism, e.g. using a special forum on the ISPRS website.

The suggested time schedule is as follows:

- Announcement of the restructuring plan to all ISPRS members, and also via the web, at the beginning of May, with an open invitation to comment until July 25, 2014.
- In parallel, discussions during the ISPRS symposia in May (China) and June (Italy), refined discussion during the symposia in September (Switzerland, Turkey).
- Refinement of the suggestions, preparation of a consolidated draft and distribution to ISPRS members in early October 2014, with a deadline for comments by end of November 2014.
- In parallel, further discussion during the ISPRS symposia in October (Canada) and November (US).
- Final discussion and finalisation of the proposal during the ISPRS symposium and Joint Meeting in December (India).
- Postal ballot in the first half of 2015, announcement of the results by June 2015 at the latest (note that the number and the names of Technical Commissions are defined in the Bylaws, which can be changed by postal ballot. Only the term "Technical Commissions" as such is mentioned in the Statutes IV and XIII).

This schedule provides Ordinary Members interested in hosting one of the (new) commissions for the period 2016-2020 sufficient time to formulate their ideas and develop their bids ahead of the XXIII ISPRS Congress and General Assembly in Prague in 2016.