

Tenth Session of the UN Committee of Experts on Global Geospatial Information Management 2020, New York

Report: UN-GGIM Geospatial Societies Network

<http://www.fig.net/jbgis/>

Summary

This document provides a report from the UN-GGIM Geospatial Societies Thematic) to the Tenth Session of the UN Committee of Experts on Global Geospatial Information Management, 2020, New York.

UN-GGIM Geospatial Societies (UN-GGIM GS)

The UN GGIM Geospatial Societies Thematic Group is a coalition of the Presidents, Secretaries-General or equivalent office bearers or their nominees that lead recognized international organisations involved in the coordination, development, management, standardisation or regulation of geospatial information and related matters. These organisations are:

- IEEE Geoscience and Remote Sensing Society (GRSS)
- International Association of Geodesy (IAG)
- International Cartographic Association (ICA)
- International Federation of Surveyors (FIG)
- International Geographical Union (IGU)
- International Map Industry Association (IMIA)
- International Society for Digital Earth (ISDE)
- International Society of Photogrammetry and Remote Sensing (ISPRS)

UN GGIM GS meets formally once each year, typically when the UN-GGIM Committee of Experts meet, and informally when schedules permit. This report provides an update on the activities of the organisations listed above where they have been provided.

IEEE Geoscience and Remote Sensing Society (GRSS)

Activities and Areas of Work

The Geoscience and Remote Sensing Society (GRSS) is one of 38 professional Societies in the Institute of Electrical and Electronics Engineers (IEEE). It is one of the world's leading scientific and technical societies in remote sensing and geospatial information. One of its objectives is to support decision making for the sustainable development of earth resources and humanitarian well-being by extending the use of remote sensing related applications into developing as well as developed countries through research, capacity building and education in the geospatial disciplines.

The GRSS Society membership has grown significantly during the past two years, both geographically and in membership with a large increase in the number of members in Asia, South America and Europe. At the end of 2019 GRSS membership numbered more than 4100 coming from 92 countries. In addition, the number of local and regional GRSS Chapters increased from 62 in 2016 to 82 at the end of 2019. In addition, 13 Student Chapters have been established to support spatial information

education opportunities for students and young graduates. Chapters play a very important role in bringing together scientists and researchers in the geo-spatial sciences to address and share information on local research priorities and to tap into the financial and technical resources and support offered by the GRSS Society. Details of GRSS chapters and their locations can be found at <http://www.grss-ieee.org/community/chapters/>.

The 39th annual IGARSS symposium, *IGARSS 2019*, focusing on the theme 'Global-Environment Observation and Disaster Mitigation' was held in Yokohama, Japan from Sunday July 28th through Friday August 2nd, 2019 at the Convention Center "PACIFICO Yokohama". Over 3100 abstracts were received and the Conference was attended by 2814 participants.

Partnerships and Regional and International Collaboration

GRSS Inter-Societal activities have increased substantially in the past two years. This is part of a deliberate policy in order to foster greater cooperation and GRSS engagement with the many other societies and organizations involved in the study of earth observation and the sustainable development of our planet.

GRSS now has more than 13 MOUs or similar formalized relationships with organisations including; the Canadian Remote Sensing Society (CRSS); African Association for Remote Sensing of the Environment (AARSE); Asian Association on Remote Sensing (AARS); Digital Globe Foundation and DBAR; Regional Centre for Mapping of Resources for Development (RCMRD), Nairobi Kenya; Spanish Association for Remote Sensing (AET): Sociedad Latinoamericana en Percepción Remota y Sistemas de Información Espacial (SELPER); International Society for Photogrammetry and Remote Sensing (ISPRS); Geoinformation Society of Nigeria (GEOSON) and the Open Geospatial Consortium for Earth Imaging (OGC).

In addition, GRSS is a Participating Organisation in the Group on Earth Observations (GEO) and a Member of its Programme Board. GRSS has also participated as a member of the '*Expert Advisory Group for Advancing a Results Oriented GEOSS*' preparing a report reviewing GEO-EO activities into the future for the GEO Executive Committee, and is a member of the '*Pacific Engagement Advisory Group*' setup by the GEO Executive to work closely with the Pacific Island Nations in developing a strategic programme to meet EO and application needs within Island State Nations.

Priority Issues and Challenges

The COVID-19 outbreak is not only affecting our lives and activities, but it also has an impact on our Society organisations as well. This is indeed a challenging time for everyone, and it is a time when the term "community of communities" applies to our Society when we try to help each other whenever possible and certainly work together to avoid disruptions in our collaborative scientific activities. The GRSS flagship conference, IGARSS 2020, provides an opportunity for our community to gather every year, and since our attendees come from more than 50 countries all over the world, IGARSS is a truly international conference. The conference was scheduled for July 19-24, 2020 in Waikoloa, Hawaii, USA, but current travel restrictions will prevent an on-site venue. The conference will now be held as a completely online and virtual event from 26 September to 2 October, 2020. (www.igarss2020.org).

Another of the major initiatives planned for GRSS in 2020 was to engage more communities geographically in the technical and scientific use of remotely sensed imagery for humanitarian objectives through organization of regional conferences. Three regional conferences were being organised. The first, the 'Mediterranean and Middle East Geoscience and Remote Sensing Symposium' held in early March in Tunisia was an outstanding success (2020.m2garss.org). However, the 'Latin America GRSS and ISPRS Remote Sensing Conference' (LAGIRS 2020), to be in late March in Chile had to be cancelled (2020.lagirs.org/) and the 'Indian Geoscience and Remote Sensing Symposium 2020' to be held in early December 2020 (www.ingarss2020.org) is now in doubt.

Perspectives and Future Plans

GRSS is committed to providing greater community access to geospatial analytics and information derived from EO data that can be both educational and influential in helping understand and implement the necessary changes that are needed in order to meet sustainable development goals and humanitarian needs. To this end a series of webinars on environmental issues related to the atmosphere, oceans and freshwater, soils and vegetation, etc., are being planned and made available on the GRSS website. As noted in our 2019 UNGGIM Report, while GRSS has a diverse global membership, less than 15% of members are female. Hence the need for a major initiative to address this imbalance and for the Society to become more inclusive overall. At the IGARSS19 Conference held in Yokohama July 2019, a ‘Women in GRSS Forum’ was held to provide professional women with the opportunity to facilitate knowledge sharing, create communities and provide ongoing support through sessions under the banner “Inspire, Develop, Empower, and Advance”. This is now an ongoing initiative within the GRSS Executive and Administrative Committee.

International Association of Geodesy (IAG)

Activities and Areas of Work

The main activity in 2019 was the General Assembly of the IAG, which was organized during the General Assembly of the International Union of Geodesy and Geophysics, IUGG, in Montreal, Canada, on July 8-18, 2019. The general report is published in Comptes Rendus http://www.iugg.org/assemblies/2019montreal/IUGG_GA_2019_Comptes_Rendus_FULL.pdf There were a total of 3952 participants registered, 437 of them with IAG priority. There were 234 Symposia and 18 Workshops with 4580 presentations, 469 in IAG Symposia. IAG organized one Union Symposium, 7 Joint Symposia with other associations, 6 IAG Symposia, and 20 business meetings. In addition, IAG co-sponsored 8 Union Symposia and 15 Joint Symposia. 72 travel awards for IAG participants were granted from IUGG and IAG, and two Young authors Award presented in the General Assembly. Two specific IAG Awards for meritorious work of IAG associates were presented at the General Assembly, the Levallois Medal for distinguished service to the IAG, and Guy Bomford Prize for outstanding contributions of a young scientist to geodetic studies.

The IAG General Assembly, the Council of national delegates, the Executive Committee (EC), and the Office carry out the administration of IAG. The IAG Council consists of the delegates appointed by the Adhering Bodies of the IUGG member countries and is responsible for governance, strategic policy and direction of the IAG. Two Council meetings were at the IUGG General Assembly 2019 in Montreal with the election of IAG Officers for the period 2019-2023 and a Review of the Statutes and Bylaws. The IAG Executive Committee (EC) elected met during the General Assembly, and second time in December 2019 in San Francisco. The IAG Bureau consists of the IAG President, the Vice President and the Secretary General. It meets regularly by teleconferences to administer the day-to-day affairs.

The scientific structure of IAG comprises four Commissions (Reference Frames, Gravity Field, Earth Rotation and Geodynamics, Positioning and Applications), four Inter-Commission Committees, 12 International Scientific Services, the Global Geodetic Observing System (GGOS), and the Communication and Outreach Branch (COB). The Services generate scientific products by means of Operation, Data and Analysis Centers. The GGOS is IAG’s observing system to monitor the geodetic and the global geodynamic properties of the Earth as a system. GGOS works with the IAG Services to facilitate the production of geodetic products and to promote its use to the scientific community, policy makers and the public. The COB provides communication, public information and outreach links, in particular via the IAG Website (<http://www.iag-aig.org>) and the monthly Newsletters.

The contribution of IAG to the Global Geodetic Reference Frame (GGRF) within the United Nations' Global Geospatial Information Management (UN-GGIM) has been an essential activity, in particular in view of IAG's involvement in the UN-GGIM Subcommittee on Geodesy and planning for the Global Geodetic Center of Excellence.

Partnerships and Regional and International Collaboration

Besides the close cooperation with the other IUGG Association and the UN-GGIM relation, the official liaisons of IAG include

- Advisory Board on the Law of the Sea (ABLOS)
- Group on Earth Observation (GEO)
- International Science Council (ISC) Commission on Space Research (COSPAR)
- International Astronomic Union (IAU) Commission A2 "Rotation of the Earth"
- International Standards Organization (ISO) TC 211
- United Nations Initiative on Global Geospatial Information Management (UN-GGIM)
- UN-GGIM: Geospatial Societies (previously Joint Board of GIS, JBGIS)
- United Nations Office for Outer Space Affairs (UNOOSA)
- UNOOSA Space-based Information for Disaster Management and Emergency Response (UN-SPIDER)
- UNOOSA International Committee on Global Navigation Satellite Systems (ICG)

Representatives of IAG participated in the meetings of these bodies and reported to the IAG EC. The reports of all IAG components (Commissions, Inter-commission Committees, Global Geodetic Observing System (GGOS), IAG Office and Communication and Outreach Branch will be published in the IAG reports.

Priority Issues and Challenges

A continuing priority is the IAG involvement in the Global Geodetic Reference Frame (GGRF) Subcommittee on Geodesy (SCoG) of the United Nations' Global Geospatial Information Management (UN-GGIM). Priority issues in this respect are the improvement and sustainability of the geodetic infrastructure that underpins all geodetic reference products provided by IAG Services. In addition, several IAG Study and Working Groups are established, dedicated to address clearly defined well-focused scientific topics of limited scope within the field of the IAG's Commissions, Services and the Global Geodetic Observing System (GGOS).

The common research with other IUGG Associations is another priority issue, e.g. in joint (sub)commissions. Research in marine geodesy, climate change, and new sensors and technologies (e.g. optical and atomic clocks, quantum sensors) shall be intensified, e.g. in the new inter-commission committee adopted in the General Assembly.

Perspectives and Plans

The technical and scientific development of geodesy is continuing in the next decade. Space techniques are improving in quantity and quality. New sensors (e.g. optical and atomic clocks, quantum sensors) allow measurements of new parameters, and powerful computers extend the horizon of processing huge amounts of data. The objective of geodesy expanded to the observation and quantification of global change (climate and dynamics of the solid, fluid and gaseous Earth). Increased demands of accuracy and real-time applications will cast new challenges in the future.

The IAG strategy discussion led to the adoption of actualized IAG Statutes and Bylaws to include these challenges into a modified structure of the IAG research components in the period 2019-2023. The IAG scientific services have to conform to all the requirements by adopting, developing and applying modern technologies. IAG contribution to the SCoG and the Global Geodetic Center of Excellence will be one of the central targets in the coming years.

IAG is part of the **International Union of Geodesy and Geophysics (IUGG)** which report follows

Activities and Areas of Work

The International Union of Geodesy and Geophysics (IUGG), established in 1919, such as the International Research Council (IRC), is the international organization dedicated to advancing, promoting, and communicating knowledge of the Earth system, its space environment, and the dynamical processes causing change. Through its constituent Associations, Commissions, and services, IUGG convenes international assemblies and workshops, undertakes research, assembles observations, gains insights, coordinates activities, liaises with other scientific bodies, plays an advocacy role, contributes to education, and works to expand capabilities and participation worldwide. IUGG is committed to the principle of free exchange of data and knowledge among nations, and encourages unreserved scientific participation by all people.

IUGG is comprised of eight semi-autonomous International Associations, each responsible for a specific range of topics or themes within the overall scope of Union activities. Owing to the interactive nature of the subject fields managed by the Associations, six Union Commissions and the Working Group on History have been established which serve the Union and the international geophysical community by promoting the study of particular interdisciplinary problems. The Union Commissions are reviewed and renewed at each IUGG General Assembly. In addition, IUGG establishes inter-Association Commissions, and relationships with other scientific bodies with similar interests.

The year 2019 was a remarkable one in the IUGG's history and in the history of the science-policy-society interface.

IUGG General Assembly 2019

The 27th IUGG General Assembly was held in Montréal, Canada from 8 to 18 July, bringing together about 4,000 Earth and space scientists from 94 countries. The Scientific Program of the General Assembly consisted of 234 symposia and workshops, with 558 sessions in total. Among more than 4,500 presentations at the General Assembly were 9 Union lectures, 437 invited presentations, 2,329 oral presentations, and 1,814 poster presentations. Delegates from 37 IUGG Adhering Bodies attended the Union Council Meeting and approved/elected:

- [New IUGG and Association Officers](#)
- [IUGG Liaison Officers](#) to various intergovernmental and international scientific bodies
- [The IUGG Budget for 2020-2023](#)
- Berlin, Germany as the venue for the 28th IUGG General Assembly in 2023
- Three [resolutions](#)
- The admissions of Algeria as a Regular Member, of Serbia and Uruguay as Associate Members and the transfer of North Macedonia to Associate Membership
- that Least Developed Countries (as defined by the United Nations) can now become IUGG Regular Members in Category 1 by paying annual contributions at the level of 25% of the Category 1 membership dues

William Richard Peltier (Canada) received the [IUGG Gold Medal](#), 7 distinguished scientists were elected as [IUGG Fellows](#), IUGG Fellowship was also conferred on 27 former IUGG Executive Committee and Finance Committee members and Association Secretaries General. Ten researchers received the [IUGG Early Career Scientist Award](#).

For further information see IUGG's E-Journals from [August 2019](#) and [September 2019](#).

IUGG celebrated its Centennial 1919-2019

IUGG celebrated its 100th anniversary at UNESCO headquarters in Paris, France on 29 July 2019. More than 150 people joined the event. H.S.H. Prince Albert II of Monaco received IUGG Honorary Membership for his “outstanding contributions to the promotion of climate change, water, biodiversity and oceanographic research”, from the IUGG President. For further information see IUGG’s E-Journal for [September 2019](#).

A Special Volume “[The International Union of Geodesy and Geophysics: From Different Spheres to a Common Globe](#)” of the Journal “History of Geo- and Space Sciences” consisting of papers on the history of IUGG and its Associations was published.

Several activities in Member countries have been supported via the IUGG Grants Program to celebrate the IUGG Centennial in 2019. Major Centennial events were organised in [Argentina](#) and [Japan](#).

Partnerships and Regional and International Collaboration

The work of IUGG is related to that of many other scientific organizations. Some of these are inter-governmental such as those affiliated with the United Nations; some are Interdisciplinary Bodies of ISC, and others are organizations of particular interest to specific Associations. From time to time, it has been deemed beneficial for IUGG to name liaisons to specific organizations in order to promote communication and co-operation.

In 2019, IUGG was involved in various activities and showed its strength in international cooperation and science promotion incl.

- *Research programs and projects.* IUGG together with the International Union of Geological Sciences ([IUGS](#)) continued to support the International Lithosphere Program ([ILP](#)).
- *Science education.* IUGG and the Abdus Salam International Centre for Theoretical Physics ([ICTP](#)) in Trieste, Italy, have continued their cooperation in geophysical and geodetic education and science collaboration. IUGG co-sponsored six geoscience education events held at ICTP in Trieste, Italy as well as in Brazil, Rwanda, and the Philippines.
- *New publication.* The International Association for Geomagnetism and Aeronomy (IAGA) produced a volume for the IUGG Special Publications series “[Geomagnetism, Aeronomy and Space Weather. A Journey from the Earth's Core to the Sun](#)” that was published by Cambridge University Press.
- *Cooperation.* (i) IUGG continued to strengthen its cooperation with ISC scientific unions including the GeoUnions and others such as the International Union of Biological Sciences (IUBS). For further information visit the IUGG Website, [Liaisons and Representatives](#).

Perspectives and Future Plans

As presented in the [IUGG Strategic Plan 2016-2023](#), the Mission and Core Principles of IUGG will be addressed by focusing on several Major Goals and implementing structural and organizational changes in order to reach them:

IUGG Visibility & Effectiveness

- Promote IUGG and its Associations, e.g. by organizing more joint events (major IUGG-badged/themed annual event, highlight inter-association meetings, etc.), emphasizing the unique contributions of IUGG and its Associations, prepare “white papers” or summary reports on key topics, etc.

- Promote the products and services offered by the Associations within the community and to policy-makers, e.g. through the National Correspondents and Liaison Officers, special events, etc.
- Contribute to promoting and enhancing fundamental research in the geosciences, to understanding of the contributions the Earth and space sciences make to everyday life, and to solving crucial geo-problems in collaboration and coordination with international (e.g. the International Council for Science) or intergovernmental (e.g. U.N. organizations, the Preparatory Commission on Comprehensive Nuclear-Test-Ban Treaty Organization - CTBTO, the Group on Earth Observations - GEO) major initiatives and programs
- Develop an IUGG Communications (Implementation) Strategy that addresses the above goals, and measures their effectiveness

IUGG Research Collaboration & Education

- Encourage greater collaboration with Sister/Partner Organizations, the private industry, national and space agencies
- Encourage early-career geoscientists to participate in international science activities, e.g. through appropriate Association-level strategies, travel grants, etc.
- Encourage countries and agencies to provide free access to data and information, and to initiate collaborative projects that have Regional and Global scope
- Encourage the education of future generations of geoscientists, taking into account challenges and inequities such as gender inequalities, the need to offer education for individuals with diverse backgrounds, the need for greater cross-disciplinary knowledge, etc.
- Develop an IUGG Research Collaboration (Implementation) Strategy that addresses the above goals, and measures their effectiveness

IUGG Management

- Strengthen the role of the IUGG Council, e.g. by making decisions through electronic voting, increasing participation of its members, etc.
- Make more effective use of Business Meetings (Bureau / Executive Committee / Council Meetings), e.g. by reducing oral reporting (focus on written reporting instead)
- Make use of modern technology where possible to reduce the need for travel, e.g. teleconferencing
- Strengthen the National Committees, e.g. by giving clear roles to the National Correspondents of the Associations
- Strengthen the links to Sister/Partner Organizations through the Liaison Officers
- Develop guidelines for Individual membership of Associations, e.g. harmonizing terminology, expectations, voting, representations, etc.
- Develop an attractive National Membership Program to encourage countries to become a member of IUGG
- Facilitate early-career geoscientists playing greater roles in IUGG and its Associations, e.g. by encouraging National Committees to identify such people, to mentor them, provide internship opportunities, etc.

International Cartographic Association (ICA)

Activities, Areas of Work

The International Cartographic Association (ICA), founded in 1959, has as its aim to promote the discipline of cartography internationally. It offers its expertise and knowledge of technological developments to other organizations via events, meetings, workshops, and publications. Its activities happen through the work of its Commissions and Working Groups. These deal with a wide range of topics that cover much of the discipline.

Following the election and approval of a new ICA Executive Committee and 28 Commissions in July 2019, all positions required by the ICA Statutes and By-Laws have been filled and are proceeding with their responsibilities. In November 2019, the ICA Executive Committee and the Commission Chairs met in back-to-back meetings in Ghent, Belgium. Themes of *Maps make a difference* and *Cartography is more relevant than ever today in an increasingly complex world* served as guiding principles for the productive work sessions.

The work program of the UN-GGIM serves as an influence to applicable activities within the ICA. Some examples follow in this report.

Partnerships and Regional and International Collaboration

The ICA works together with the other geospatial societies with the UN-GGIM. In the ISC (International Science Council), we work together with the Geo-unions. Via our Commissions and Working Groups we are active in ISO/TC 211 and OSGeo. The ICA recently joined the OGC as an Associate Member.

Priority Issues and Challenges

The ICA is planning its 30th International Cartographic Conference (ICC) scheduled for July 19-23, 2021 in Florence Italy. Planning progresses with decisions on conference topics for the ICC followed by a call for abstracts.

COVID-19 creates significant challenges for the ICA as with other international organizations. We are monitoring the situation closely and making the necessary adjustments to our plans. In June, the ICA Executive Committee met virtually for a highly successful two-day meeting. Other ICA meetings have been postponed to later periods. The ICA website serves as the principal communication channel for timely updates.

The ICA is currently completing a book project ‘Mapping for a Sustainable World’, the follow-up to the SDG poster project. The book is a co-publication between ICA and the United Nations Geospatial Information Section. It will be published in both hardcopy and as an epub during the summer of 2020. From the book’s preface:

“Maps help us to better understand the relationship between humans and their environment, and to monitor SDG indicators and communicate their uneven global footprints. These visualizations support decision-making by local and national authorities as well as promote public awareness of global issues to encourage these authorities to act. However, many of the maps and diagrams about the SDG indicators are produced without awareness of established cartographic design guidelines. Flawed and misleading designs often result. Problems also regularly originate from inappropriate data-handling, distracting base maps, inappropriate map elements, and the (mis)use of software defaults. Cartography 4 describes the art, science and technology of making and using maps. Drawing from cartography, this book offers guidelines for mapping geographic datasets related to the SDGs by introducing basic principles of map design and use, discussing established best practices and success stories, and explaining how different mapping techniques support understanding of the SDGs”

Perspectives and Future Plans

In addition to the work of the ICA Commissions, five new Working Groups were approved by the ICA Executive Committee to address additional important themes for the ICA. Several of these build on prior efforts that ensure the relevancy of cartography through the ICA. They include:

- Cartographic Body of Knowledge (to continue progress from the last term)
- Cartography and Sustainable Development (aligning to the UN-GGIM and the SDGs)
- History of ICA
- New Research Agenda in Cartography

- Digital Transformation of National Mapping Agencies (including alignment to UN IGIF)

International Federation of Surveyors (FIG)

Activities and Areas of Work

The year 2019 was not only the start of the presidency of Rudolf Staiger (Germany); it was also the induction of two new Vice presidents namely Jixiang Zhang (China) and Diane Dumashie (UK) and at the same time the start for ten new Commission Chairs.

The FIG Working Week 2020 was to be held in Amsterdam, the Netherlands, 10-14 May 2020. Due to the COVID19 pandemic, the Working Week and also the General Assembly had to be cancelled. The General Assembly was postponed until 2021. FIG Working Week 2021 should have taken place in Accra, Ghana, but the Ghanaian local organisers showed a real FIG spirit and generously offered the Dutch to take over the Working Week in 2021.

Instead, FIG Council, Commissions, Networks, Task Forces and the local organisers prepared 26 articles that covered the theme of the Working Week “Surveyors for Land and Water Management” and other topics that should have been presented during the Working Week. The articles are available here: www.fig.net/fig2020

One element of the Council 4-year Work Plan is to work on a long term strategy for FIG. On 15 and 16 September 2019, FIG Council organized and carried out a workshop with stakeholders under the headline “FIG 2028”. Tom Kennie, who was a FIG Vice President during the British bureau (1994-1998) and now one of FIG honorary members, facilitated this workshop in a brilliant and foresighted way.

It is of high priority for the current Council to be in a permanent contact with our member associations. The Vice Presidents Diane Dumashie, Jixiang Chang, Mikael Lilje and Orhan Ercan represented FIG in Australia, Cameroun, China and Ghana. FIG-Director Louise Friis-Hansen visited South-Africa and Ghana for preparatory meetings for the upcoming events (working week 2021 and Congress 2022).

As President, Rudolf Staiger was able to visit our associations in Poland, Kenya, Germany, Netherlands, Italy, Russia, Austria and Nigeria. In most of the visits, there were special occasions like 50th or 100th anniversaries or National Congresses.

The latest visit, in February 2020 led the President to Nigeria. SURCON, the roof-organisation of our three Nigerian members, invited for the festive induction of 347 newly licensed surveyors. The President of the Republic of Nigeria received for the first time in history a delegation of Nigerian surveyors, and FIG President Staiger had the honour to give a speech on behalf of FIG and our profession. A summary of this speech was broadcasted on the national TV news in Nigeria, which was not only a very good promotion for FIG and our member associations, but at the same for our entire profession.

There is one new FIG publications:

No 75 – “[FIG and Me](#)” - "My Twenty Five Years in the International Surveying arena" is written by FIG Honorary President Earl James and tells his story from the years 1988-1996 as a surveyor with an international agenda and his time in FIG.

Partnerships and Regional and International Collaboration

Through our international collaboration with FIG members, the sister professional associations, regional professional bodies as well as UN bodies and the World Bank, FIG aims to transform all surveyors into global surveyors. Surveyors who will have a global education for the progress of

surveying in all its fields and applications everywhere; but also surveyors who will have an understanding of global challenges and will be able to develop the profession for the betterment of all parts of our world.

FIG works closely together with several UN organizations. We have diverse relationships with our partner and stakeholders. This allows us to offer our professional expertise in all kind of projects. At the same time, it gives us the opportunity to amplify not only the voice of our federation but also our entire profession.

Currently Vice President Diane Dumashie, a long-term, highly respected expert in this field, is representing FIG as co-lead of the Professional Cluster of UN-Habitat/Global Land Tool Network (GLTN), and she is due to this position also part of the Steering Committee of GLTN.

Over the last 15 months, FIG was present at major events of our strategic partners. FIG President Staiger represented FIG at the 11th session of the Working Party on Land Administration of UN-ECE in February in Geneva (Switzerland).

The World Bank organized the 20th Annual Conference on Land and Poverty from March 25 to 29, 2019 in Washington D.C. under the theme of "Catalyzing Innovation" with more than 1500 participants from all over the world. Together with the Vice Presidents Dumashie and Ercan, President Staiger could promote the FIG-approach "Fit-for-Purpose" there as an efficient contribution of the surveyor to future land administration projects, especially for those countries where until now a land registration system is non-existent.

In 2019, FIG experienced a very special honour as FIG President Staiger was invited as representative of our federation to be part of the closing panel where the major results and achievements are presented to the big audience.

Priority Issues and Challenges

"Surveying is a modern profession acting globally for a good and better infrastructure of our society and our planet earth. FIG wants to keep and even improve its role as the premier non-governmental organisation that is representing the interests of all surveyors worldwide." This is the vision described in the work plan.

In a direct relationship to our vision is the motto: "Volunteering for the future". It sounds simple and trivial, but it is touching a very crucial point: Although we have an Office (in Denmark), FIG is primarily an organisation of volunteers.

Perspectives and Future Plans

At the General Assembly 2019 FIG President Rudolf Staiger presented the 4-year Council Work Plan (2019-2022).

The motto for the new term is "Volunteering for the Future" aiming both internally to be certain that there are representatives working on the FIG agenda around the world, and externally that the volunteers work for the future of FIG. Another aim is to develop a long-term-strategy for FIG, called FIG 2028.

Over the last 30 years, FIG became a globally acting organisation representing the full range of a modern surveying profession. To keep the position as the premier international representation of surveyors, FIG cannot ignore the dramatic changes in technology and society that have occurred in the last decades in order to stay relevant for our profession and society.

FIG will continue to work in the commissions, with sister organizations and with FIG members on the UN Sustainable Development Goals. Surveyors and their products play an essential role in the majority of the 17 SDGs. To respond to this, FIG Council has established a Task Force to work on SDG's, hereunder to identify the professional fields in which surveyors can contribute the most to fulfilling the SDG's, to propose ways in which the surveying community can contribute, and to coordinate the SDG activities.

Maintaining the significance of the surveying profession remains an important target for FIG. Council will continue to keep and strengthen our partnership with UN agencies, the World Bank, other international agencies, and sister organizations.

The Volunteer Community Surveyor Program (VCSP) is an innovative volunteer programme that intends to be a powerful driver for both social impact and professional development. The VCSP leverages on the skills, experience, talents and education of young surveyors and matches these competences with the needs of GLTN, particularly in GLTN's county-level implementation plans and programmes. The VCSP is run by the FIG Young Surveyors Network, in partnership with the Global Land Tool Network (GLTN) which is facilitated by UN-Habitat. VCSP is a global initiative that started in late 2017 when the FIG Young Surveyors Network worked with the GLTN and FIG to deploy 13 Volunteer Community Surveyors (VCS). The focus of that Pilot was to work with GLTN's NGO partners to implement the Social Tenure Domain Model, which is a pro-poor land information tool. It bridges the gap between formally registered land and customary/informal land rights. During the coming 4 years, VCSP is planned to scale up.

Matters/Issues for Consideration

Last year FIG proposes that an issue for further consideration might be "How to increase fruitful cooperation and how to join efforts within the UNGGIM Geospatial Societies to further improve the cooperation among the Geospatial Societies and to support UN-GGIM. With the current UN-GGIM Future Trends document there is an even stronger urge to get all members on UN-GGIM-GS more involved in making these future trends come alive.

International Geographical Union (IGU)

Activities and Areas of Work

Several IGU Commissions have been focusing on GGIM tasks and activities. IGU Commission on Geography of Information, Innovation and Technology organised following meetings :

- 2018 April – Commission supported for a session as part of the AAG annual meeting in New Orleans.
- 2018 August – IGU regional conference in Quebec, Canada. The commission had 7 sessions, and total of 30 presentations from 12 countries (Belgium, Canada, China, Côte d'Ivoire, Israel, Japan, Finland, France, Poland, Portugal, Spain, USA). There were also 3 poster presentations associated with the commission.
- 2018 October – Commission participated the Finnish Geographical Society Annual Meeting held in Helsinki, Finland.
- 2019 – July – Commission organized a researcher meeting and roundtable discussion in Milan 8.7.2019. The title of the event was "About Innovation: The Geographies of Disruptions. The seminar was the second of the cycle about Urban Innovation. Place and Policy Making for Production and Consumption, promoted by DASTU (Politecnico di Milano) around features and challenges of urban and regional innovation processes.
- 2019 July – Commission organized a roundtable session as a part of the AESOP 9.–13.7.2019 (Association of European Schools of Planning) global congress in Venice, Italy. The meeting was organized in collaboration with the Commission and Milan Polytechnic.

IGU Commission on Biogeography and Biodiversity organised Geographical Information System (GIS) International Capacity Building Training Program 2019 in Kampala, Uganda, 28th January – 1st February 2019.

Relatively less developed societies are often constrained by the financial resources to support and enhance their scientific excellence. We, therefore, conducted an intensive one week GIS capacity building program-cum-training using SAGA software at the Africa Population Institute, Kampala, Uganda, led by Dr. Benita Rumanzi during 28th January to 1st February 2019. The SAGA is a powerful open source GIS software supported, developed and regularly updated at the Institute of Geography, University of Hamburg. The SAGA GIS training, which was attended by 26 participants, began with the opening lecture by Prof. Dr. Schickhoff, while the hand on experience with Africa specific case studies was provided by the Dr. Jan Weiberg from the University of Hamburg. The detailed report of the training program is available at the <http://igubiogeography.com>.

IGU Commission on Geographic Information Science. The commission published the website of the symposium of SDH 2020, and posted the CFP and posters of the Spatial Data Handling 2020 on Google group.

IGU Commission on Land Use and Cover Change organized. From 24th to 26th of September, the IGU Thematic Conference titled Transformation of Traditional Cultural Landscapes was held at the premises of the Faculty of Humanities, University of Primorska in Koper, Slovenia. The initiative for the conference came from the Land Use and Land Cover Change Commission, with participation of additional four IGU Commissions: the Biogeography and Biodiversity Commission, the Local and Regional Development Commission, The Mediterranean Basin Commission and the Land Degradation and Desertification Commission. As a result of this cooperation between the five IGU Commissions, the conference topics were the following: Transformation of Traditional Cultural Landscapes; Mediterranean Landscape: Transitions, Prospects and Challenges; The Challenges Regarding the Planning and Organization of the Cultural Landscape; Land Management Practices and Global Changes; Conservation of Biodiversity in Changing Environment; Heritage of Lost Landscapes: Identification, Reconstruction and Presentation; Past and Present Land Degradation in the Mediterranean and Other Environments; The Concepts and Tools in Landscape Transformation; Land Use Data Sources from 19th Century; and Functions of the Cultural Landscape in Local and Regional Development.

Partnerships and Regional and International Collaboration

IGU Springer Series brought out collaborative Series by Seema Sahdev • R. B. Singh • Manish Kumar, Editors: *Geoecology of Landscape Dynamics*. The Geoecology has been effectively applied to deal with various types of problems of geo-ecosystem such as natural resource management, ecosystem and landscape characterization, landscape degradation, soil, environment, climate change and vegetation modelling, providing new insights to identify the influence of the changes on biodiversity, ecological stability and land use and land cover, generally on the course of landscape processes and characteristics. The book aims to identify the ecological indicators of the quality of functioning and the structure of the formation mechanism for geographical landscape integration and put forth the application related to natural resources management in various environments such as mountain, plains, river basin, island, coastal, etc. The book highlights the indicators which can be used for quantifying sustainability in a geospatially explicit manner.

The book discusses land inventory mapping concept for green building to curb the global warming in cities, morphometric analysis of soil resources and inventory for meeting the challenges of land degradation. The book highlights the recent application areas of spatial information techniques in the field of land use, land cover dynamics, monitoring and modelling of urban sprawl, hydrological modelling,

sustainable land management options, sustainable energy development and sustainable economic growth: <https://www.springer.com/gp/book/9789811520969>

Priority Issues and Challenges

Globally, the concerns for the environment and the human well beings have increased due to the threats imposed from the climate change & disasters, environmental degradation, pollution of natural resources, water scarcity and proliferation of slums. Finding appropriate solutions to these threats/challenges are not simple as these are generally complex and require state-of-the-art technology for the collection, measurement, handling, analyzing large volumes of different data sets. However, the recent advances in sensor technology, coupled with the rapid development of computational power, have greatly enhanced our abilities to capture, store and analyze the surrounding physical environment. *Geo-intelligence for Sustainable Development* explores different dimensions of GI technology in developing a computing framework for location-based, data integrating earth observation and predictive modelling to address these issues at all levels and scales. Under IGU Springer Series we are planning a volume. This volume provides an insight into the applications of GI technology in different fields of spatial and social sciences and attempts to bridge the gap between them.

Perspectives and Future Plans

IGU planning to bring Innovations in geospatial technology such as miniature sensors, Cloud and Artificial Intelligence, duly augmented by delivery platforms like small satellites and drones. Today, the most location offers the much needed fourth pillar (along with AI, IoT and Big Data) to the Fourth Industrial Revolution, enabling disruptive innovations and driving smart solutions for the future generations who are facing challenges of growing consumerism and depleting resources. All this makes it all the more important to observe, monitor and manage our Planet Earth in real time. The ‘Geospatial Way’ is the future and probably the most efficient and effective way to collect, process and utilize information in the overall Global Sustainable Development Agenda. It is a given today that integrated geospatial infrastructure and knowledge platforms have direct correlation with human development and quality of life. The Geospatial Readiness Index has clearly indicated that countries which have better geospatial institutional infrastructure and policies also have a higher level of adoption of geospatial technology, and have benefitted across almost every walk of socio-economic activities, furthering their mission of sustainable development.

Under the New third world Vision, the government should address core issues like water, health, education, sanitation, housing and infrastructure for all. Leveraging the power of geospatial information and technologies will only help the country address its multi-dimensional goals of financial growth combined with sustainable development faster.

A National Geospatial Infrastructure and Knowledge Platform, comprising comprehensive and updated information about the natural, human, industrial and community resources of the country, would not only serve as an instrument of effective planning, implementation and monitoring of national programs, but also provide the foundation for good governance, innovation, entrepreneurship and knowledge economy. Although there has been great amount of awareness about geospatial technology, fragmented and isolated approaches have been obstructing growth of the geospatial industry in the country and its subsequent role in national development.

Case Study of India :Geospatial Strategy for New India –New The Think Tank held several meetings in the past one year and deliberated on emerging technology trends/innovations, and estimated potential value and role of geospatial industry in building a ‘New India’. It also suggested strategies and mechanisms towards building an integrated geospatial infrastructure and knowledge platform that would facilitate greater adoption and utilization of the technologies in national development programs. The Think Tank believes that a National Geospatial Infrastructure and Strategy will serve

as one of the important pillars of New India by making significant contribution in overall planning, implementation and monitoring of national programs.

International Map Industry Association (IMIA)

Activities and Areas of Work

1.1 Summary

The [International Map Industry Association](#) (IMIA) is [a truly global organization that represents the business of maps](#). IMIA is where mapmakers, publishers, geospatial technology companies, distributors, location-based services and content producers come together to conduct the business of maps.

1.2 Introduction, Background

IMIA fulfills two of its key foundational values, networking and education, through a number of activities across our regions around the world. This is accomplished through multiple events and publishing relevant content via our website, blog, member newsletter and social media. These cover trends, issues and opportunities in the mapping and geospatial industry, which includes, but is not limited to the UN Sustainable Development Goals (SDGs), UN-GGIM Integrated Geospatial Information Framework (IGIF), and sharing best practices.

1.3 Activities, Areas of Work

- IMIA held its [Mapping Leaders Forum in Washington DC](#) January 30, 2020, followed by a meeting of the IMIA Board and invited members. This regional single-day event is designed to bring together leaders in the mapping community from government, commercial and other mapping and geospatial organizations.
- IMIA had a Business Networking and Social Event in London, UK, February 2020, bringing together many IMIA members from Europe and the Americas.
- In response to the COVID-19, IMIA will be hosting an online virtual Mapping Leaders Forum September 16, 23, and 30, 2020. Information on this and other [future IMIA Events](#) can be found here.
- The IMIA plans to continue its presence at the [Frankfurt Bookfair](#) with a collective stand for IMIA member companies and a networking event.

1.4 Priority Issues

- IMIA are finalizing the consolidation of the three IMIA regional organizations, each with its own board of directors; i) Americas, ii) Europe, Africa and Middle East, and iii) Asia Pacific, into a consolidated International Map Industry Association with one board of directors with representation from each of the former regional boards. This is designed to streamline administration and does not alter our overall stated mission. This new structure will better position the Association to provide value to its members and position it for growth in the burgeoning geospatial economy.
- IMIA is pursuing Memorandum of Understanding (MOU) agreements with a number of mapping and geospatial professional organizations, many of which are expected to be formally announced in the next year.

1.5 Perspectives/Outlook, Future Plans

As the only Association solely focusing on the business of maps, we see a bright future for the Association to support the growing ecosystem of businesses in the mapping and geospatial industry. We have created a new model for connecting leaders in the industry that we are implementing around the globe.

International Society for Digital Earth (ISDE)

Activities and Areas of Work

The International Society for Digital Earth (ISDE), founded in 2006 is a non-political, non-governmental and not-for-profit international organization principally promoting academic exchange, science and technology innovation, education, and international collaboration towards Digital Earth. ISDE aims to implement the evolving concept of Digital Earth through the use of geo-referenced data, digital technologies and knowledge to model earth systems, including its cultural and social aspects represented by human societies living on the planet.

One of ISDE's series academic activities, the 11th International Symposium on Digital Earth (ISDE11) jointly with celebrating the 20th Anniversary of Digital Earth symposium series, were successfully held in Florence, Italy, from 24-27 September 2019. With the theme of "Digital Earth in a Transformed Society", the symposium attracted more than 400 representatives from more than 20 countries and related international organizations. At the closing ceremony, all delegates adopted the *2019 Florence Declaration on Digital Earth*. The ISDE11 Proceedings was published by IOP (<https://iopscience.iop.org/issue/1755-1315/509/1>).

ISDE published the first scientific book of Digital Earth, namely "*Manual of Digital Earth*" on 18 November 2019. This book contains 26 chapters and was contributed by more than 100 authors from 18 countries worldwide. It mainly covers the current status and future directions for Digital Earth research, a systematic analysis of the theories, methods, and technical systems of Digital Earth, and a summary of the key achievements to date, and predicts the likely direction and probable future developments within the discipline. The book is an open access publication and the number of downloads has exceeded 533,000 so far.

ISDE hosted the first China Digital Earth Conference (CDEC1) on 18-20 November in Beijing China jointly with the Chinese Academy of Sciences (CAS). With the theme of "Big Earth Data for Sustainable Development", more than 800 participants from governmental departments, research institutes and universities, enterprises, attended the conference. The CDEC1 Proceedings was published by IOP (<https://iopscience.iop.org/issue/1755-1315/502/1>). The biannual China Digital Earth Conference mechanism has been setup, and the second CDEC will be held in Deqing, Zhejiang Province in 2021.

ISDE conducted a survey on the "Digital Earth Vision Towards 2030" in a wide range of Digital Earth community in February 2020, and received more than 300 hundred feedbacks. The survey result shows a good reflection of opinions and thoughts of surveyees, which would provide basic materials for the discussion on the ISDE Workshop of "Digital Earth Vision towards 2030" held in Middle of July 2020.

ISDE publishes two international journals. The *International Journal of Digital Earth* was first published in March 2008 and was searched by SCI 18 months after its publication. In June 2020, the journal received its impact factor 3.097, ranking 17th among 50 Geographical journals globally; and its Scopus CiteScore 2019 is 7.2, ranking 11th in 187 General Earth and Planetary Science journals. The other journal is *Big Earth Data*, which was launched in December 2017, and is the first open-access international academic journal relevant to big data in the filed of geosciences. It has been included by DOAJ in 2018 and Scopus in May 2020.

Partnerships and Regional and International Collaboration

Being a Participating Organization in GEO, ISDE actively participates in GEO's activities. In November 2019, ISDE attended the GEO conference and promoted the intention of the University of

Qatar to hold a seminar on "Digital Earth technology supporting environmental sustainable development".

ISDE was accepted as a new member of the United Nation Committee of Experts on Global Geospatial Information Management - Geospatial Societies (UN-GGIM GS), on August 7th 2019.

ISDE actively exploring the involvement and participation in the activity of The Global Summit, which was virtually held in July 2020 (physically based in Tokyo, Japan).

Priority Issues and Challenges

In addition to the biennially organized International Symposium on Digital Earth and the two international journals, ISDE also organizes Digital Earth Summits during the interval of the Symposia and other academic events. In October 2020, the 8th Digital Earth Summit will be held online, which is postponed because of COVID-19, and will be held through the web, (physically based in Moscow Russia). Besides, on 19-21 July 2020 ISDE will organize a high level workshop of "Digital Earth Vision towards 2030", inviting about 20-25 leading scientists in the field of Digital Earth to discuss and then produce one or two papers to publish in relevant journals.

ISDE is making effort to prepare the 12th International Symposium on Digital Earth in July 2021 in Salzburg, Austria by organizing virtual meetings with local organizing committee of the Symposium. Meanwhile, the half year of 2020, ISDE will also look on the preparation of the 2nd China Digital Earth Conference in 2021.

Perspectives and Future Plans

ISDE has established its Sub-committee to organize regular academic events. To meet the requirement of specific research areas, ISDE is managing to set up several working groups to carry out specific research projects.

ISDE will also explore partnership with institutions of mainstream industries primarily dealing with SDGs, human development, climate change etc.

In 2020, the impact of COVID-19 brings people an opportunity to think about other different ways to carry out academic events mainly based on internet. ISDE is exploring a suitable approach to organize the Summit and Workshop. ISDE is also planning to use social media to post videos of keynote speeches, so as to make the presentations at the virtual academic conference more visible worldwide.

International Society for Photogrammetry and Remote Sensing (ISPRS)

Activities and Areas of Work ISPRS is a very active society in organising scientific events of various types (workshops, conferences, symposia, Geospatial Week, Congress). There are around 50 – 60 events per year where ISPRS is either the main organiser - ISPRS sponsored events, or when not the main organizer - ISPRS co-sponsored events.

Congress is the top-level event, taking place every four years in the summer Olympic Game years. The plan for this year was to hold the Congress in June, in Nice. However, the covid-19 crisis caused that the Congress be postponed to 4 – 10 July 2021. The decision was made at the end of the reviewing process of accepted papers. It was, therefore, decided to publish the proceedings - [The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences](#) and the [ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences](#) in 2020, and a new call for papers will be made for the Congress in 2021.

A shortened virtual replacement of the 2020 Congress is planned for authors who are interested in this type of presentation. Date and details will be soon announced at <http://www.isprs2020-nice.com>. The ISPRS policy of a 4-month buffer between other events and Congress, Geospatial Weeks and Symposia, means that no ISPRS events are organized 4 months before and after these. Due to the covid-19 situation, no ISPRS events have taken place so far this year: some were cancelled (LAGIRS 2020, organised in cooperation with IEEE GRSS) or held virtually (GIS Ostrava 2020). The scientific activities of the commissions are therefore concentrated on science, education, and publications in the two ISPRS journals - the [ISPRS Journal of Photogrammetry and Remote Sensing](#) and [ISPRS International Journal of Geo-Information](#).

At present, ISPRS financially supports projects which were selected within the [2020 Education and Capacity Building Initiative](#), the second such call. Four rounds of Scientific Initiatives have also been financed – in 2014, 2015, 2017, and 2019. Results of the initiatives are published in ISPRS journals and proceedings.

ISPRS also cooperates closely with other international bodies – [International Science Council](#) (ISC, previously ICSU), [ISC GeoUnions](#), [UN-GGIM: Geospatial Societies](#), [GEO](#), [Asian Association on Remote Sensing](#) (AARS) and [African Association of Remote Sensing of Environment](#) (AARSE). ISPRS has been taking care of youth working in photogrammetry, remote sensing, and geospatial sciences. The [ISPRS Student Consortium](#), founded in 2004 and sponsored by ISPRS, is such an example. An important sponsorship is dedicated to participation at ISPRS events in the form of travel grants.

[The ISPRS Keynote Speaker Programme](#) has been initiated to provide an opportunity for ISPRS Ordinary Members (OdM), Associate Members (AsM), and Regional Members (RgM) to support events organised under their umbrella by inviting top quality international experts, in order to attract more participants and enhance the scientific quality of the event.