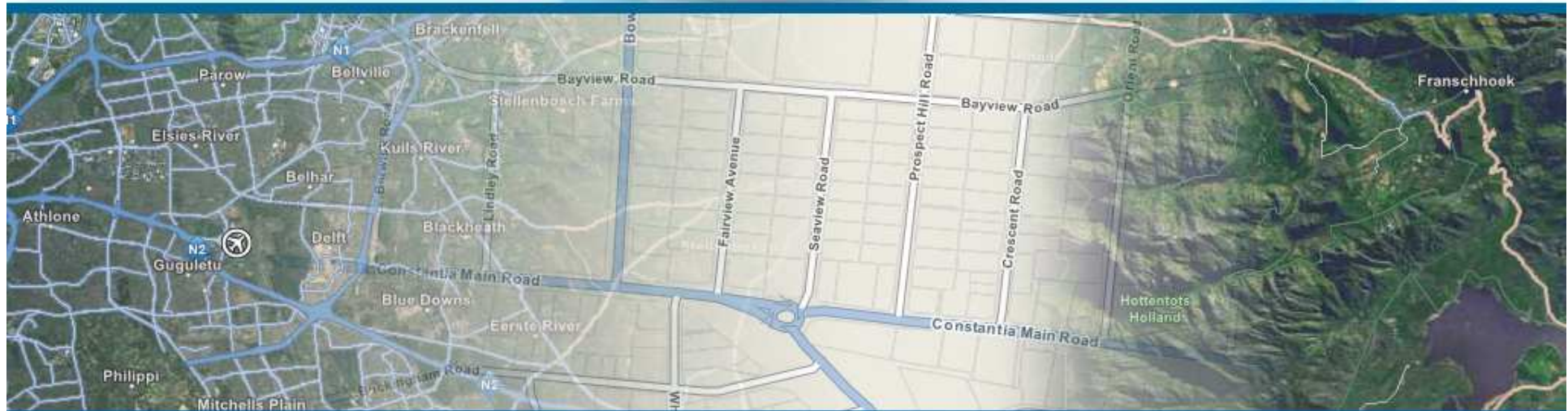




ISO/TC 211 - Geodetic Reference Frame and Coordinate System Standards

An Overview



ICG-11, WG-D, Sochi, Russian Federation

Larry Hothem, 2016-11-09





Content

- **ISO Technical Committee (TC) 211 – Geographic Information and Geomatics**
- **UN Resolution on GGRF and support by TC211**
- **Geodetic standards relevant to ICG/WG-D**
 - 19161 - ITRS (new)
 - 19111 – Coordinate Reference System – underway is revision joint with OGC
 - 19127 - Geodetic Register (revised 2016)
- **ISO Geodetic Registry**

OGC – Open Geospatial Consortium

ISO/TC 211

Geographic information/Geomatics

- ISO Technical Committee (TC) 211, **Geographic information/Geomatics**, is one among over 200 ISO technical committees working on development and maintenance of a variety of standards.
- TC 211 is developing a **suite of standards for geographic and geospatial information** that forms a basis to support the understanding and usage of geographic information.
- contribute to a unified approach to **addressing global ecological and humanitarian problems**
- ease the **establishment of geospatial infrastructures** on local, regional and global level
- contribute to **sustainable development**

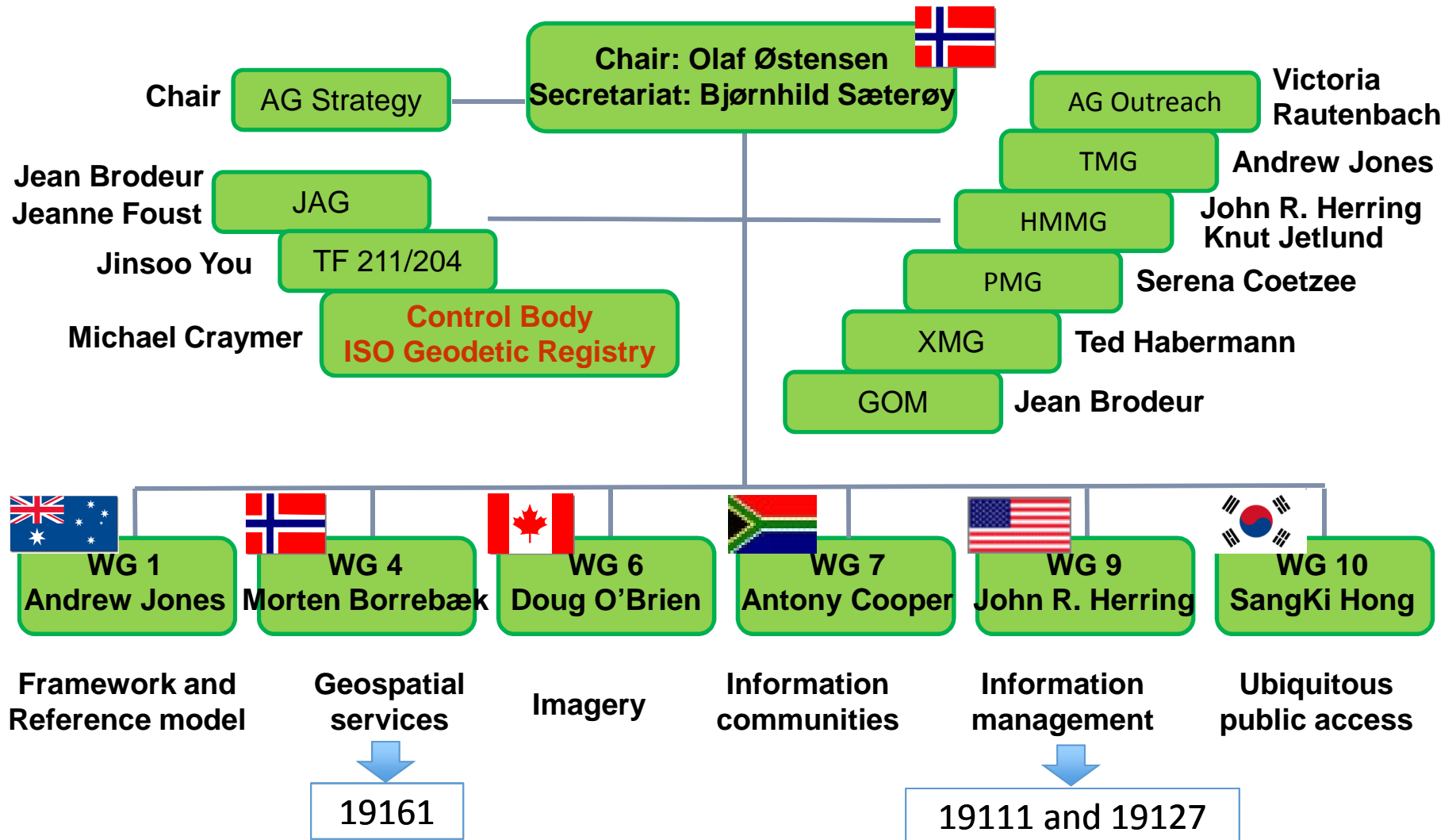
ISO/TC 211 provides ...

... a structure for representing geographic information in a consistent, standardized manner. It includes the **geodetic framework** for identifying where information was collected, and as required for modeling, representing, encoding and disseminating the information.

... a significant focus is on metadata (i.e. data about data) - facilitate the assessment of current and future data.



ISO/TC 211 organization





GGIM – UN COMMITTEE ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT



UN Resolution – A global geodetic reference frame (GGRF) for sustainable development

(1 of 2)

*“Recognizing the importance of international cooperation, as no one country can do this alone, to realize the **global geodetic reference frame** and services to underpin **Global Navigation Satellite Systems (GNSS)** technology and provide the framework for all geospatial activity, as a **key enabler of spatial data interoperability**, disaster mitigation and sustainable development”*



GGIM – UN COMMITTEE ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT



UN Resolution – A global geodetic reference frame (GGRF) for sustainable development (2 of 2)

*“Urges Member States to implement **open sharing of geodetic data, standards and conventions**, on a voluntary basis, to contribute to the global reference frame and regional densifications through relevant national mechanisms and intergovernmental cooperation, and in coordination with the International Association of Geodesy (IAG)”*

ISO/TC 211 support for GGRF

Geodetic standards

- **19111** – Spatial referencing by coordinates
- **19127** – Geodetic register

New standard

- **19161** – Geodetic references – Part 1: The International Terrestrial Reference System (ITRS)



19161-1 – Geodetic references – Part 1: The International Terrestrial Reference System (ITRS)

➤ Proposed standard preceded by published technical report (TR)

- TR 19161 – Geodetic references
- Preparation of TR led by France's national standards body
- Initiative is outcome of Resolution adopted by IAG at 2007 IUGG Assembly
- TR recommended development of standards related to ITRS, vertical references, geodetic terms & definitions, etc.

➤ 19161-1

- Project team led by France's national standards body
 - Claude Boucher, Leader, and
 - Thierry Gattacceca, Technical Editor - France

Scope of 19161-1

Standard provides the basic information and the requirements related to the:

- **International Terrestrial Reference System (ITRS), specifically its definition, realizations and access.**

It will:

- **endorse definition(s) and terminology** adopted by the International Union of Geodesy and Geophysics (IUGG), the International association of Geodesy (IAG) and the International Astronomical Union (IAU)
- **describe various realizations** (such as ITRF, WGS-84, ETRS89, etc.)
- **provide required methods of realizing the ITRS.**
- **describe various ways of getting positions expressed in a realization of the ITRS**

19111 – Spatial referencing by coordinates

- **Data model of how coordinates, reference frames and transformations are represented**

- **ISO Geodetic Registry** must conform to this standard

- **Principal objectives for current revision work:**
 - New version represents modern dynamic reference frames & geoid-based vertical datums
 - Represent reference frames defined as transformations from other reference frames (e.g., from ITRF)
 - Use modern terminology (e.g., that are used in the IERS Conventions)
 - Harmonize with standard for entering information into the **ISO Geodetic Registry**

19127 – Geodetic register

- Defines the management and operation of the **ISO Geodetic Registry** and identifies the required data elements
- In final stages - draft international standard (DIS) was adopted earlier this year
 - Project team lead: Patrick Vorster, South Africa
- Standard is in compliance with 19161 and 19111

The ISO Geodetic Registry

- **A database (register)**
 - Sponsored by IAG
 - Defining global and regional geodetic reference frames
 - Transformations between geodetic reference frames
 - Conforms to ISO standards (19111, 19161, 19127, etc.)

- **Geodetic Registry Control Body (CB)**
 - Chair, Mike Craymer, Canada; Larry Hothem, Vice-Chair
 - CB members, representing 14+ countries, meet monthly by video conference
 - CB approves the content of the register
 - Validates information using authoritative sources

- **Current goal - public release in 2017**

Thank you



Additional Information about ISO/TC 211

Who are we ? ...member list

Active members (P-members), 37countries

Australia

Austria

Belgium

Canada

Chile

China

Czech Republic

Denmark

Finland

France

Germany

Hungary

India

Iran

Italy

Japan

Rep. of Korea

Lithuania

Malaysia

Mexico

Netherlands

New Zealand

Norway

Peru

Poland

Russian Federation

Saudi Arabia

Serbia

Singapore

South Africa

Spain

Sweden

Switzerland

Thailand

Turkey

United Kingdom

United States of America



Who are we ? ...member list

Observing members (O-members), 30 countries

Argentina

Azerbaijan

Bahrain

Botswana

Brunei Darussalam

Colombia

Croatia

Cuba

Cyprus

Estonia

Greece

Hong Kong

Iceland

Indonesia

Ireland

Israel

Kenya

Mauritius

Mongolia

Montenegro

Morocco

Oman

Pakistan

Philippines

Romania

Slovakia

Slovenia

Swaziland

Tanzania

Ukraine



External liaisons 1 of 2

- CEOS/WGISS, Committee on Earth Observation Satellites
- DGIWG, Defence Geospatial Information Working Group
- Energetics
- ESA, European Space Agency
- EuroSDR, European Spatial Data Research
- FIG, International Federation of Surveyors
- GSDI, Global Spatial Data Infrastructure
- IAG, International Association of Geodesy
- ICA, International Cartographic Association
- ICAO, International Civil Aviation Organization
- IEEE Geoscience and Remote Sensing Society
- IHB, International Hydrographic Bureau
- IOGP, International Association of Oil and Gas Producers
- ISCGM, International Steering Committee for Global Mapping
- ISPRS, International Society for Photogrammetry and Remote Sensing
- JRC, European Commission Joint Research Centre,
- OASIS, Organization for the Advancement of Structured Information Standards
- OGC, Open Geospatial Consortium, Inc.
- OMG, Object Management Group

External liaisons 2 of 2

- PAIGH, Panamerican Institute of Geography and History
- SCAR, Scientific Committee on Antarctic Research
- Small Business standards
- UN Economic Commission for Africa
- UN Economic Commission for Europe, Statistical Division
- UN SD United Nations Statistics Division, as Secretariat for the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)
- UN-GGIM Americas, Regional Committee of the UN Global Geospatial Information Management Americas
- UN-GGIM-AP, Regional Committee of United Nations Global Geospatial Information Management for Asia and the Pacific
- UNGEGN, United Nations Group of Experts on Geographical Names
- UNGIWG, United Nations Geographic Information Working Group
- UN FAO, Food & Agriculture Organization of the United Nations
- UPU, Universal Postal Union
- WMO, World Meteorological Organization
- World Bank
- CEN/TC 287, Geographic Information
- CEN/TC 278, Intelligent transport systems

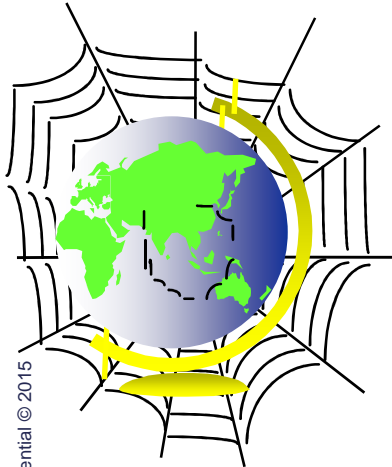
ISO/TC 211 web-site

You will find updated information on
ISO/TC 211 at:

<http://www.isotc211.org>

containing:

- Organization
- Scope and work programme
- Resolutions
- Document register
- Calendar
- News and information
- Presentations (slides)
- List of events



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