International Civil Aviation Organization and ISO/TC 211
ICAO Convention

- ICAO was established in 1944 on basis of the Convention on International Civil Aviation
- Since that time 188 States signed the Convention and became members of the Organization
- Standardization and planning of international civil aviation are the major ICAO tasks
Standardization in civil aviation is ensured through 18 Annexes to the Convention which major parts are Standards and Recommended Practices (SARPs).

- SARPs concern specifications for physical characteristics, configuration, material, performance, personnel or procedure.
- SARPs are adopted/approved by ICAO Council in accordance with the Convention.
Standard

⇒ Specification, which uniform application is recognized as necessary for the safety or regularity of international air navigation and to which States have to comply

⇒ If impossible to comply, notification by State to the Council is compulsory
Recommended Practice

⇒ Specification, which uniform application is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which States endeavor to conform
Other Annex Parts

- Appendices comprising material grouped separately, but forming part of the SARPs
- Definitions of non self-explanatory terms used in the SARPs, do not have independent status as a change would affect the SARPs
- Tables and Figures add to or illustrate SARPs and have the same status
Civil Aviation Today

To resolve technical and operational (congestion) problems in civil aviation, new communication, navigation and surveillance (CNS) systems are required to support the global air traffic management (ATM).

The global ATM operational concept is based on users requirements and is intended to ensure that the expectations of the ATM community are met.
Global ATM

The global ATM system should be interoperable, based on worldwide standards, procedures and uniform principles which will ensure operational compatibility of ATM systems and facilitate homogeneous global, regional and national air traffic flows.
Area Navigation

⇒ New ATM environment requires flexibility in navigational use of airspace and this could only be achieved by implementing the area navigation (RNAV)

⇒ RNAV is ensured by ground as well as satellite-based navigation systems which are used to define a series of waypoints required to navigate from point A to B
To ensure operational use of RNAV globally, definition of one common geodetic system on which all established waypoints would be referenced, was necessary.
Common Geodetic System

This was achieved by adoption in 1994 of the World Geodetic System-1984 (WGS-84) as the common geodetic reference system for international aviation.
From January 1998, published aeronautical geographical coordinates (lat and long) must be expressed in terms of the WGS-84 geodetic reference datum.
Implementation of RNAV increased the need for operational use of airborne computer-based navigation systems.

Those airborne systems rely on the use of aeronautical and other data.

Corrupt or erroneous data can potentially affect air navigation safety.
Air navigation safety is the ICAO highest priority and to ensure the availability of data of required quality, ICAO specified that each State must take all necessary measures to introduce a properly organized quality system and implement quality management.
ICAO recommended that the quality system should be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards.
Aviation and Terrain

» From the first flight 100 years ago terrain presented and it continues to present danger to air navigation
» Terrain is identified as the single highest cause of aircraft accidents
» ICAO and aviation industry are committed to work towards the significant reduction of those types of accidents
Significant flight safety improvements could be achieved by in-flight and ground-based applications that use quality electronic terrain information.

Presently, one of the high priority ICAO task is to develop SARPs governing the provision and exchange of electronic terrain and obstacle information of required quality.
Initially the minimum set of user requirements applicable to terrain and obstacle data, was defined.

Numerical requirements for source data necessary to accommodate the most stringent application requirements, have also been defined.
The data numerical requirements were derived solely on the bases of user requirements and not on the basis of acquisition cost of data.

A common interchange standard for terrain and obstacle data is a key factor for the implementation of safety related applications in aviation domain.
ISO 19100 Series of Standards

→ Being aware of the importance and usefulness of the work done in ISO/TC 211, ICAO applied and was accepted as Class A Liaison Member of the committee in 2001

→ ICAO and aviation industry decided to make use of ISO/TC 211 developed standards in geographic information and a proposal for new SARPs on the basis of ISO 19100 series of standards was communicated to States this year for comment
Interoperability

⇒ The information environment is becoming wider and richer every day and to ensure best use of such wealth, interoperability among different systems worldwide is of paramount importance.

⇒ Worldwide interoperability could only be achieved through international standardization and in this respect, both ISO/TC 211 and ICAO are significant contributors.
Thank You