

25 January 2018

English only

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**Committee on the Peaceful  
Uses of Outer Space**  
**Scientific and Technical Subcommittee**  
**Fifty-fifth session**  
Vienna, 29 January - 9 February 2017

**Request for observer status with the Committee on the Peaceful Uses of  
Outer Space: application of the International Organization for  
Standardization (ISO)**

**Note by the Secretariat**

1. At its thirty-third session, in 1990, the Committee considered guidelines for granting observer status with the Committee to international intergovernmental and non-governmental organizations. The possible criteria suggested by the Outer Space Affairs Division to the Committee at the time were the following:

(a) As part of its programme, the organization should be concerned with matters falling within the competence of the Committee on the Peaceful Uses of Outer Space;

(b) The aims and purposes of the organization should be in conformity with the spirit, purposes and principles of the Charter of the United Nations;

(c) The organization should be a recognized international organization and should have an established headquarters, an executive officer, and a constitution, a copy of which is deposited with the Secretary-General of the United Nations. In the case of a non-governmental organization, it should be a non-profit organization.

2. Having considered the matter, the Committee at its thirty-third session, agreed, that in the future non-governmental organizations which request observer status with the Committee should have consultative status with the Economic and Social Council (ECOSOC) and should, as part of their programmes, be concerned with matters falling within the competence of the Committee.

3. At its fifty-third session, in 2010, the Committee agreed that observer status would be granted to non-governmental organizations on a provisional basis, for a period of three years, pending information on the status of their application for consultative status with the Economic and Social Council. The Committee also agreed that the provisional observer status could be extended for an additional year, if necessary. The Committee further agreed that it would grant permanent observer

status to such non-governmental organizations upon confirmation of their consultative status with the Council.

4. While the Committee's decision did not specifically include the elements referred to in 2 (c) above, it has been the practice of the Committee, since its decision in 1990, to have before it the constitution or statutes of the organization or entity requesting observer status.

5. On 11 September 2017 the Office for Outer Space Affairs received an application for observer status with the Committee on the Peaceful Uses of Outer Space from the International Organization for Standardization (ISO). The following related correspondence received from the ISO is attached to this document:

(a) Letter from the ISO containing a background information and justifying the intention to become a permanent observer of the Committee;

(b) Statutes of the ISO (in English only);

(c) A short extract, confirming the ISO's non-profit status by the State of Geneva;

(d) Summary information about the ISO;

(e) "ISO in figures 2016";

(f) Technical Committee ISO/TC 20 "Aircraft and space vehicles": Business Plan.



Ref. ISO Status - UN COPUOS

2017-09-11

Ms. Simonetta Di Pippo  
Director  
Office for Outer Space Affairs  
United Nations Office at Vienna  
Vienna International Centre  
Wagramerstrasse 5  
A-1220 Vienna, AUSTRIA

## ISO Central Secretariat Request for Observer Status to UN COPUOS

Dear Ms. Di Pippo:

On behalf of the International Organization for Standardization (ISO), I am writing to formally apply for the status of Observer Organization to the Committee on the Peaceful Uses of Outer Space (COPUOS).

ISO is an independent, non-governmental international organization with a membership of 163 national standards bodies based in Geneva, Switzerland. Through its members, it brings together experts to share knowledge and develop voluntary, consensus-based, market relevant International Standards that support innovation and provide solutions to global challenges.

ISO has general consultative status with the UN Economic and Social Council (ECOSOC) and maintains equivalent status with nearly all other bodies and specialized agencies of the UN system. It is well established that the UN system is a key partner for ISO, since most UN specialized agencies and bodies working in fields related to technical harmonization or technical assistance have liaison status with ISO.

As such, we recognize there may be mutual interest in the work being done in UNOOSA and COPUOS relative to our own standard development taking place in ISO/TC20 (Aircraft and Space Vehicles) and ISO/TC20/SC14 (Space Systems and Operations) – space debris being one of possibly several areas of shared concern.

Attached you will find the following supporting documents for our application:

- ISO Statutes
- ISO/TC20 Strategic Business Plan
- ISO in Brief
- ISO Facts and Figures

We very much appreciate your consideration and look forward to your positive response. If there are any additional questions or concerns, please feel free to contact us at any time.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sophie Clivio', written in a cursive style.

Sophie Clivio  
Director, Standardization and Technical Policy

cc:

Rusty Rentsch, ISO/TC20 Chair  
Chris Carnahan, ISO/TC20 Secretary  
Paul Gill, ISO/TC20/SC14 Chair  
Nick Tongson, ISO/TC20/SC14 Secretary

ISO  
**Statutes**

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**Statuts**  
de l'ISO

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**Устав**  
ИСО



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**ISO Statutes**

Eighteenth edition, 2016

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**Statuts de l'ISO**

Dix-huitième édition, 2016

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**Устав ИСО**

Восемнадцатое издание, 2016 г.

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© International Organization for Standardization



The International Organization for Standardization was created in February 1947 as the result of a conference attended by representatives of 25 national standards bodies and held in London (United Kingdom) in October 1946.

The first Statutes and Rules of Procedure of the Organization were drafted at the London Conference and formally adopted when ratification had been received from 15 of the national standard bodies present at the Conference. Revised versions have been published since then.

These Statutes were adopted under General Assembly Resolution 8/2012 and amended by General Assembly Resolutions 5/2013 and 11/2014.

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L'Organisation internationale de normalisation a été créée en février 1947 à la suite d'une conférence à laquelle assistaient des représentants de 25 organismes nationaux de normalisation; cette conférence s'est tenue à Londres (Royaume-Uni) en octobre 1946.

Les premiers Statuts et Règles de procédure de l'Organisation ont été rédigés à la Conférence de Londres et officiellement adoptés après ratification par 15 des organismes nationaux de normalisation présents à la Conférence. Des versions révisées ont été publiées depuis lors.

Les présents Statuts ont été adoptés aux termes de la Résolution de l'Assemblée générale 8/2012 et amendés par les Résolutions de l'Assemblée générale 5/2013 et 11/2014.

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Международная организация по стандартизации была создана в феврале 1947 г. в результате конференции, состоявшейся в октябре 1946 г. в Лондоне (Великобритания), в которой приняли участие представители 25 национальных органов по стандартизации.

Первое издание Устава и Правил процедуры Организации были разработаны на Лондонской Конференции и официально приняты после их ратификации 15 национальными органами по стандартизации, участвовавшими в Конференции. С тех пор публиковались пересмотренные тексты этих документов.

Настоящий Устав был принят Резолюцией Генеральной ассамблеи 8/2012 и изменен Резолюциями Генеральной ассамблеи 5/2013 и 11/2014.





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# Statutes

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## Title

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### Article 1

1.1 The name of the Organization shall be the International Organization for Standardization, hereinafter referred to as the “Organization”. The abbreviated title shall be “ISO”.

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## Object

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### Article 2

2.1 The object of the Organization shall be to promote the development of standardization and related activities in the world with a view to facilitating international exchange of goods and services and to developing cooperation in the spheres of intellectual, scientific, technological and economic activity.

2.2 As means to these ends, *inter alia*, the Organization may:

2.2.1 Take action to facilitate worldwide harmonization of standards and related activities;

2.2.2 Develop and issue International Standards, and take action for their worldwide implementation;

2.2.3 Arrange for exchange of information regarding work of its members and of its technical committees;

2.2.4 Cooperate with other international organizations interested in related matters, particularly by undertaking studies relating to standardization projects at their request.

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## Members

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### Article 3

**3.1** The members of the Organization shall be the member bodies as defined in **Article 3.1.1** and the correspondent and subscriber members as defined in **Article 3.1.2**.

**3.1.1** The member bodies shall be those national standards bodies most broadly representative of standardization in their respective countries and which have been admitted into the Organization in accordance with procedures defined by Council.

**3.1.2** National bodies interested in standardization in countries without a member body may be registered either as correspondent or subscriber members with no voting rights, in accordance with procedures defined by the Council.

**3.2** Only one body in each country may be admitted to membership.

**3.3** As of 1 October 2012, only the national standards bodies from those countries officially recognized by the United Nations Organization (UNO) may become members of the Organization.

**3.4** ISO membership ceases:

- a) For non-payment of dues as provided in procedures developed by Council;
- b) By written notice from a member of the Organization to the Council at least six months before the end of the calendar year;
- c) By exclusion, decided by the Council.

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## Authority

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### Article 4

**4.1** A decision by vote of the member bodies, either in the General Assembly or by letter ballot, shall constitute a decision of the Organization.

**4.2** Decisions of the Organization in the form of approved International Standards constitute recommendations to the members, each member remaining free either to follow or not to follow them.

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## Structure and Officers of the Organization

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### Article 5

**5.1** The organs of the Organization shall be a General Assembly, a Council, a President's Committee, a Technical Management Board, technical committees, and a Central Secretariat.

**5.2** The Officers of the Organization shall be a President (including when serving as President-elect), three Vice-Presidents, a Treasurer, and a Secretary-General.

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## General Assembly

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### Article 6

**6.1** The General Assembly shall be constituted by a meeting of the Officers and of delegates nominated by the member bodies. Each member body may nominate not more than three official delegates, although the latter may be accompanied by observers.

**6.2** The Chair of the General Assembly is the President.

**6.3** As a general rule, the General Assembly shall be held once each year.

**6.4** During its session the General Assembly shall hold the powers of the Organization, except as herein otherwise provided.

**6.5** During its session, items may be dealt with by the General Assembly, even if such items are not on the agenda, subject to the agreement of at least five member bodies.

**6.6** The General Assembly:

- a) Shall approve a report on the current operations and forward planning submitted by Council to the General Assembly;
- b) Shall approve the annual dues of the members, upon recommendation from the Council;
- c) Shall approve the audited financial statements of the Organization, upon recommendation from the Council;
- d) Shall endorse the ranking criteria for Council membership, upon recommendation from the Council;
- e) Shall elect or appoint the:
  - e.1) President
  - e.2) Vice-Presidents
  - e.3) Council members
  - e.4) Financial auditors of the Organization's accounts.

**6.7** In the General Assembly each member body shall have one vote. Voting by proxy shall be as set out in the Rules of Procedure of the General Assembly.

**6.8** Correspondent and subscriber members may attend the General Assembly as observers.

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## Council

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### Article 7

**7.1** The operations of the Organization shall be governed, in accordance with the policy laid down by the member bodies, by a Council consisting of the ISO Officers, twenty member bodies appointed or elected in accordance with the Rules of Procedure of the General Assembly, and the chairs of the policy development committees as defined under **Article 7.5**. Only the twenty appointed or elected Council members are entitled to vote. In the event that the votes of the member bodies are equally divided, the President, or the Vice-President, policy, when acting as President, shall have a vote. In no event may the ISO Officers or the chairs of the policy development committees represent any member body on the Council.

**7.2** The ISO President shall chair the Council. If the President is unable to chair the Council, it shall be chaired by a Vice-President, as defined in **Articles 13.3, 13.4 and 13.5**.

**7.3** The Council shall report on the current operations and forward planning of the Organization to the General Assembly at each of its sessions.

**7.4** In addition to other responsibilities defined in the Statutes, the Council:

- a) Shall establish the vision, mission and values for the Organization;
- b) Shall set the strategy for the Organization, and ensure that the organizational structure of the Organization is appropriate to implement the said strategy;
- c) Shall monitor the implementation of the strategy set by the Council;
- d) Shall approve the annual ISO Central Secretariat budget;
- e) Shall decide the authority and scope of work of the Secretary-General and rules for conducting the affairs of the Organization;
- f) Shall approve new member bodies' applications;
- g) Shall approve member exclusions;
- h) Shall approve the ranking criteria for Technical Management Board membership;
- i) Shall elect or appoint the:
  - i.1) Secretary-General
  - i.2) Treasurer
  - i.3) Technical Management Board members
  - i.4) Chairs of policy development committees and advisory committees
- j) Shall take into consideration the interests of all members of the Organization when taking any decision.

**7.5** Policy development committees and advisory committees may be established by Council. They shall be open to all member bodies and correspondent members. The Council shall approve the work programmes of such committees.

**7.6** Standing committees may be established by Council to provide advice to Council. Examples of such committees could include those that provide advice on strategic or financial matters. The Council shall determine the membership and terms of reference of such standing committees.

**7.7** Council shall develop and maintain Rules of procedure for Council and its sub-committees and policy groups; such Rules of procedure shall not be in contradiction to the ISO Statutes.

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## President's Committee

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### Article 8

**8.1** The President's Committee shall consist of the ISO Officers as defined in **Article 5.2**, and shall be chaired by the President. If the President is unable to chair the President's Committee, it shall be chaired by a Vice-President, as defined in **Articles 13.3, 13.4** and **13.5**.

**8.2** The President's Committee shall advise Council and oversee the implementation of the decisions taken by the Council and the General Assembly.

**8.3** The President's Committee shall report to Council in accordance with procedures defined by the Council.

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## Technical Management Board

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### Article 9

**9.1** The Technical Management Board shall consist of a chair and fifteen member bodies appointed or elected by the Council in accordance with the Rules of Procedure of Council.

**9.2** The chair of the Technical Management Board shall be one of the Vice-Presidents as defined in **Article 13.4**. The Vice-Presidents, policy and finance, shall be authorized to participate as observers.

**9.3** The Technical Management Board, within the framework of policies established by the Organization, shall have responsibility for the general management of the technical committee structure. It shall approve the establishment and dissolution of technical committees, and revisions of the directives for the work of the technical committees. It shall deal with all matters of strategic planning, coordination, performance, and monitoring of technical committee activities. To further these responsibilities, the Technical Management Board shall develop and maintain its own Rules of Procedure.

**9.4** The Technical Management Board may establish ad hoc technical advisory groups as deemed necessary to accomplish its responsibilities.

**9.5** The Technical Management Board shall report to the Council at such intervals as the Council may determine.

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## **Technical committees**

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### **Article 10**

**10.1** A request for undertaking standards development work in a technical field may be initiated by one or more member bodies, by a technical committee or a policy development committee established by the Council, by the Secretary-General or by an organization outside the Organization.

**10.2** Technical committees shall be established by the Technical Management Board and shall work under its authority.

**10.3** Each member body interested in a subject for which a technical committee has been authorized shall have the right to be represented on that committee.

**10.4** The scope and programme of work for each technical committee shall be approved by the Technical Management Board. Disapprovals shall be justified in writing.

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## **Central Secretariat**

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### **Article 11**

**11.1** The Central Secretariat shall comprise the Secretary-General and such staff as the Organization may require. The Central Secretariat shall be located at the same place as the seat of the Organization.

**11.2** Each member of the Organization shall respect the international character of the responsibilities of the Central Secretariat staff and shall not seek to influence them in the discharge of their responsibilities.



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## President

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### Article 12

**12.1** The term of office of the President shall consist of one year as President-elect followed by a two- or three-year term as President. The President shall be elected by the member bodies, either in the General Assembly or by letter ballot, in accordance with the Rules of Procedure of the General Assembly.

**12.2** The President shall be a citizen of a country which has a member body in the Organization.

**12.3** The President shall chair the General Assembly, the Council and the President's Committee. If the President is unable to chair a meeting of any of the above organs, it shall be chaired by a Vice-President, as defined in Articles 13.3, 13.4 and 13.5.

**12.4** For the purpose of advancing the goals and strategic objectives of the Organization, the President, with the consent of the Council, may establish ad hoc advisory groups consisting, *inter alia*, of external executive leaders from organizations having a substantial interest in international standardization. Members of such groups shall be invited by the President to participate as individuals rather than as representatives of member bodies. Recommendations of such groups shall be made to the Council for any subsequent action.

**12.5** The President shall regularly review the performance and compensation of the Secretary-General and his top-level managers, in consultation with the three Vice-Presidents and the Treasurer, taking into consideration the authority and scope of work of the Secretary-General as defined in Article 15.5.

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## Vice-Presidents

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### Article 13

**13.1** The three Vice-Presidents, one for policy, one for finance and one for technical management, shall be appointed by the General Assembly as Officers of the Organization.

**13.2** They shall be citizens of countries which have a member body in the Organization.

**13.3** The Vice-President, policy, shall assist the President and the Council in the development of proposals and decisions relating to basic policies of the Organization, and shall deputize for the President whenever the latter is unable to act. The Vice-President, policy, shall chair any standing committee established by the Council to provide advice on policy matters.

**13.4** The Vice-President, technical management, shall chair the Technical Management Board and shall deputize for the Vice-President, policy, whenever the latter is unable to act.

**13.5** The Vice-President, finance, shall chair any standing committee established by the Council to provide advice on financial matters and shall deputize for the Vice-President, technical management, whenever the latter is unable to act.

**13.6** The Vice-President, policy, and Vice-President, finance, shall be appointed for a two-year term. The Vice-President, technical management, shall be appointed for a two-year term, preceded by one year as Vice-President elect, concurrent with the final year of service of the previous Vice-President, technical management.

**13.7** The term of office of the Vice-Presidents, technical management and finance, will start in the alternate year to that of the term of the Vice-President, policy. The Vice-President elect, technical management, will be determined in the same year as the Vice-President, policy.

**13.8** The three Vice-Presidents shall be eligible for re-appointment for a second term of office in accordance with the Rules of Procedure of the General Assembly.

**13.9** In case of death, resignation or inability of the President, the Vice-President, policy, shall take over the duties of the President until a new President has been elected.

**13.10** In case of death, resignation or inability of both the President and the Vice-President, policy, the Vice-President, technical management, shall take over their duties until a new President has been elected and/or a new Vice-President, policy, appointed.

**13.11** In case of death, resignation or inability of the President and the Vice-Presidents, policy and technical management, the Vice-President, finance, shall take over their duties until a new President has been elected and/or new Vice-Presidents, policy or technical management, appointed.

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## Treasurer

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### Article 14

**14.1** The Treasurer shall be appointed by the Council for three-year terms of office. The Treasurer shall be eligible for re-appointment for a second term of office in accordance with the Rules of Procedure of Council.

**14.2** The Treasurer shall be a citizen of a country which has a member body in the Organization and preferably of the country in which the seat of the Organization is located.

**14.3** The Treasurer shall act as trustee for the funds of the Organization and shall advise the Council on all financial matters. The Treasurer shall advise the Secretary-General in the preparation of the annual budget and on the financial administration of the Organization.

**14.4** The Treasurer shall present audited annual financial reports to the General Assembly together with observations and recommendations, as appropriate.

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## Secretary-General

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### Article 15

**15.1** The Secretary-General shall be the chief executive officer of the Organization and the head of the Central Secretariat. He shall be appointed by the Council for a five-year term of office, eligible, at Council's option, for one further term in accordance with the Rules of Procedure of Council.

**15.2** The Secretary-General shall act as a signatory on behalf of the Organization.

**15.3** Any document creating a commitment of the Organization to a third party, or otherwise related to such a commitment, shall bear two signatures. Authorized signatories are the Secretary-General and members of the Central Secretariat staff so designated by him and approved by the Treasurer. The Secretary-General may, with the approval of the Treasurer, designate other signatories in special cases.

**15.4** The Secretary-General may take part in all meetings of the Organization, and to express any views, but shall have no vote.

**15.5** Except as elsewhere provided in these Statutes, the Council shall define the authority and scope of work of the Secretary-General under the Council's Rules of Procedure.

**15.6** The Council shall set out rules under which the Secretary-General shall conduct the affairs of the Organization and these shall be periodically reviewed by the Council.

**15.7** In the performance of his duties, the Secretary-General shall not seek or receive instructions from any member or from any authority external to the Organization, except as specifically provided for in the Statutes.

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## **Relations with other international organizations**

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### **Article 16**

**16.1** The Organization may cooperate with other international organizations interested partially or wholly in standardization or related activities. The conditions of cooperation shall be established by the Council.

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## **Finance**

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### **Article 17**

**17.1** The funds of the Organization shall be derived from the dues and contributions of the members, and from the sale of publications. The acceptance of funds from other sources (gifts, etc.) shall be at the discretion of the Council.

**17.2** The dues of the members shall be as provided for in the Rules of Procedure.

**17.3** The financial responsibility of each member in respect of commitments of the Organization shall be limited to its annual dues.

**17.4** The Council may approve work to be undertaken in the field of the Organization at the request of or on behalf of other international organizations, and may accept reimbursement for expenses incurred.

**17.5** The Council shall submit to the member bodies an approved budget for the ensuing year.

**17.6** The Treasurer shall take the steps necessary for the safe-keeping and proper administration of the funds of the Organization.

**17.7** The accounts of the Organization, duly verified by a professional accountant appointed by the General Assembly, whose certificate shall be accepted as proof of their correctness, shall be presented to the General Assembly annually for approval.

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## Seat and nature of the Organization

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### Article 18

**18.1** The seat of the Organization shall be determined by the Organization and shall unless otherwise determined by the Organization be in Geneva, Switzerland.

**18.2** As long as the seat of the Organization is in Switzerland, steps shall be taken if necessary to secure for the Organization civil personality in accordance with Article 60 et seq of the Swiss Civil Code. If the seat of the Organization is moved elsewhere and similar legal steps are considered advantageous, such steps shall be taken if approved by the Council and ratified by the General Assembly.

**18.3** Any disputes between members of the Organization and/or its Officers requiring legal proceedings shall be exclusively subject to the laws of Switzerland under the jurisdiction of the Courts of the Republic and Canton of Geneva, unless the seat of the Organization is moved elsewhere in accordance with **Article 18.2**.

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## Languages

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### Article 19

**19.1** The languages of the Organization shall be English, French and Russian. The member body for the Russian Federation shall provide all interpretation and translation into or from the Russian language.

**19.2** International Standards and guides issued by the Organization and minutes of meetings of the General Assembly and the Council shall be in English, French and Russian.

**19.3** The member bodies may, under their sole responsibility, prepare translations into other languages of publications and documents covered by **Article 20** and issued by the Organization. Translations of current International Standards, technical reports and guides shall be recognized by the Organization as official translations if their accuracy has been certified to the Secretary-General by a member body using the relevant language. Translations so certified shall include a statement to the effect that they have been recognized by the Organization as official translations.

**19.4** The work of the Council, the President's Committee and the Technical Management Board, as well as of the technical committees and the policy development committees, may be in any one or more of the three languages mentioned in **Article 19.2**, whichever is or are appropriate.

**19.5** The correspondence of the Organization may be in any one or more of the three languages mentioned in **Article 19.2**, whichever is or are appropriate. The mutual correspondence between members may be in other languages.

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## **Publications and documents of the Organization**

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### **Article 20**

**20.1** The Organization may issue *inter alia* the following types of documents:

**20.1.1** International Standards;

**20.1.2** Publicly available specifications, technical specifications, industry technical agreements, technical reports, guides and documents for study purposes;

**20.1.3** Reports on progress of work within the technical committees;

**20.1.4** Minutes of meetings of the General Assembly, the Council, the President's Committee, the Technical Management Board, the technical committees and the policy development committees;

**20.1.5** Various publications and documents related to the work of the Organization and its members.

**20.2** The publications and documents of the Organization protected by copyright may be reproduced or distributed by member bodies under such conditions as the Council may determine.

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## **Amendments to the Statutes and fundamental changes in policy**

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### **Article 21**

**21.1** Amendments to the Statutes may be proposed by the General Assembly, the Council, or at least five member bodies. An affirmative vote of three-fourths of the member bodies voting shall be required for the adoption of the amendment. The names of the member bodies voting for or against shall be reported to the Council and be available to member bodies.

**21.2** The same conditions as in **Article 21.1**, above, shall be followed in the case of any change in policy considered fundamental by the General Assembly or the Council.

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## Rules of Procedure

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### Article 22

**22.1** These Statutes are implemented by means of Rules of Procedure, as defined in Articles 22.2, 22.3, and 22.4, which shall be consistent with the Statutes.

**22.2** Rules of Procedure under the responsibility of the General Assembly. Amendments to the Rules of Procedure may be proposed by the General Assembly, the Council, or at least five member bodies. An affirmative vote by the majority of the member bodies voting shall be required for the adoption of the amendment.

**22.3** Rules of Procedure under the responsibility of Council. An affirmative vote by the majority of the member bodies serving on Council shall be required for the adoption of amendments to the Rules of Procedure for Council and the President's Committee.

**22.4** Rules of Procedure under the responsibility of the Technical Management Board. An affirmative vote by the majority of the member bodies serving on the Technical Management Board shall be required for the adoption of amendments to the Rules of Procedure for the Technical Management Board and technical committees.

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## Legal provisions

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### Article 23

**23.1** The law of the country in which the Organization has its seat shall apply in any or all cases not specifically provided for in these Statutes.

**23.2** In cases of divergence of interpretation of these Statutes, the French version shall be deemed authentic.

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## Dissolution of the Organization

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### Article 24

**24.1** A proposal for the dissolution of the Organization shall be supported either by the General Assembly, or the Council, or at least one-fourth of the member bodies before a ballot is taken. An affirmative vote of three-fourths of the member bodies voting shall be required for the dissolution of the Organization.

**24.2** In the event of the dissolution of the Organization, the Council shall determine the manner of disposal of the funds and properties owned by the Organization.





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Восемнадцатое издание

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Case Postale 401 • CH – 1214 Vernier, Geneva • Switzerland  
[www.iso.org](http://www.iso.org)



### Organisation internationale de normalisation (ISO)

inscrite le 08 mai 2014

Association

Réf.	Nom
1	Organisation internationale de normalisation (ISO)
	<b>Siège</b>
3	Vernier
	<b>Adresse</b>
3	chemin de Blandonnet 8, 1214 Vernier
	<b>Autres adresses</b>
3	case postale 401, 1214 Vernier
	<b>Dates des Statuts</b>
1	20.09.2013
	<b>But, Observations</b>
1	<u>But:</u> favoriser le développement de la normalisation et des activités connexes dans le monde, en vue de faciliter entre les nations les échanges de marchandises et les prestations de services et de réaliser une entente dans les domaines intellectuel, scientifique, technique et économique (cf. statuts pour but complet).
2	Le numéro IDE CHE-227.504.926 étant erroné, il est remplacé par le numéro IDE suivant: CHE-105.816.788

Réf.	Ressources
1	cotisations; contributions des membres; vente des publications

Réf.			Membres et personnes ayant qualité pour signer		
Inscr	Mod	Rad.	Nom et Prénoms, Origine, Domicile	Fonctions	Mode Signature
	11		<b>Walter</b> John Gordon, du Canada, à Ottawa, CAN	membre* président	sans signature
	4		<b>Xiaogang</b> Zhang, de Chine, à Liaoning, CHN	membre* président	sans signature
11			<b>Daverveldt</b> Petrus Henricus, des Pays-Bas, à La Haye, NL	membre* vice-président	sans signature
11			<b>Evans</b> Bronwyn Joy, d'Australie, à Paddington, AUS	membre* vice-présidente	sans signature
	11		<b>Steedman</b> Robert Scott, de Grande-Bretagne, à Londres, GBR	membre* vice-président	sans signature
5			<b>McKinley</b> Kevin, du Canada, à Genolier	membre* secrétaire	signature individuelle
11			<b>Christin</b> Jérôme Dominique, de Valeyres-sous-Montagny, à Collonge-Bellerive	membre* trésorier	sans signature
4			<b>Azaryan</b> Yenok, d'Arménie, à Yérévan, ARM	membre*	sans signature
11			<b>Baharin</b> Fadilah, de Malaisie, à Cyberjaya, MYS	membre*	sans signature
11			<b>Bell</b> David Martyn, de Grande-Bretagne, à Mitcham Surrey, GB	membre*	sans signature
1			<b>Bhatia</b> Saranjit Singh, des USA, à Washington, USA	membre*	sans signature
11			<b>Brito Marquina</b> Avelino, d'Espagne, à Madrid, E	membre*	sans signature
4			<b>Choy</b> Sauw Kook, de Singapour, à Singapour, SGP	membre*	sans signature

Réf.			Membres et personnes ayant qualité pour signer		
Inscr	Mod	Rad.	Nom et Prénoms, Origine, Domicile	Fonctions	Mode Signature
1			<b>Costes</b> Alain Bernard Marie, de France, à Saint-Denis, F	membre*	sans signature
11			<b>Dargham</b> Léna, du Liban, à Ghouma Batroum, LBN	membre*	sans signature
11			<b>Diaz Guevara</b> César Eduardo, d'Equateur, à Quito, ECU	membre*	sans signature
11			<b>Fischer</b> Urs Martin, de Zurich, à Zurich	membre*	sans signature
11			<b>Idermark</b> Jan Thomas, de Suède, à Stockholm, SWE	membre*	sans signature
9			<b>Korkmaz</b> Sebahittin, de Turquie, à Ankara, TUR	membre*	sans signature
4			<b>Ljupco</b> Davcev, de Macédoine, à Skopje, MKD	membre*	sans signature
9			<b>Makamo</b> Mandla Franck, d'Afrique du Sud, à Pretoria, ZAF	membre*	sans signature
9			<b>Marquardt</b> Rüdiger, d'Allemagne, à Potsdam, D	membre*	sans signature
4			<b>Mehlomakulu</b> Bonakele, d'Afrique du Sud, à Prétoria, ZAF	membre*	sans signature
1			<b>Nadarajan</b> Ratna Devi, de Malaisie, à Petaling Jaya, MYS	membre*	sans signature
11			<b>Rodrigues Fragoso</b> Ricardo, du Brésil, à Sao Paulo, BRA	membre*	sans signature
1			<b>Shihong</b> Tian, de Chine, à Beijing, CHN	membre*	sans signature
11			<b>Slana</b> Zdenka, de République Tchèque, à Prague, CZE	membre*	sans signature
1			<b>Wakai</b> Hiroo, du Japon, à Tokyo, JPN	membre*	sans signature
1			<b>PricewaterhouseCoopers SA</b> (CHE-390.062.005), succursale à Genève	organe de révision	
5			<b>Bakès Clivio</b> Sophie Marie Christiane, de France, à Cheserex		procuration collective à 2
10			<b>Châtelet</b> Stéphane, de France, à Cessy, F		procuration collective à 2
5			<b>de Luze Hauguel</b> Véronique Jacqueline Isabelle, de France, à Beaumont, F		procuration collective à 2
5			<b>Fleury</b> Nicolas, de Val Terbi, à Arzier		procuration collective à 2
8			<b>Gerundino</b> Daniele, d'Italie, à Thoiry, F		procuration collective à 2
8			<b>Gros-Louis</b> Sandy, du Canada, à Rolle		procuration collective à 2
8			<b>Mac Curtain</b> Sean, d'Irlande, à Préverengas		procuration collective à 2

\*du comité

Réf.	JOURNAL		PUBLICATION FOSC		Réf.	JOURNAL		PUBLICATION FOSC	
	Numéro	Date	Date	Page/Id		Numéro	Date	Date	Page/Id
1	7841	08.05.2014	13.05.2014	0/1498405	2	8327	15.05.2014	20.05.2014	0/1511969
3	3859	06.03.2015	11.03.2015	0/2036055	4	9586	15.06.2015	18.06.2015	0/2215829
5	12415	31.07.2015	05.08.2015	0/2307171	6	15575	30.09.2015	05.10.2015	0/2407349
7	18174	16.11.2015	19.11.2015	0/2491999	8	3069	18.02.2016	23.02.2016	0/2683845
9	8042	10.05.2016	13.05.2016	0/2832069	10	22184	23.12.2016	29.12.2016	0/3255619
11	6737	12.04.2017	19.04.2017	0/3474695					

Genève, le 25 octobre 2017

*Fin de l'extrait*

**Seul un extrait certifié conforme, signé et muni du sceau du registre, a une valeur légale.**



10

**ISO** in brief  
Great things happen **when the world agrees.**

We are ISO,  
the International Organization  
for Standardization



We are an independent,  
non-governmental organization.



We are a global network of  
national standards bodies with  
one member per country.



Our job is to make International  
Standards.



We are coordinated by a Central  
Secretariat in Geneva, Switzerland.



We are not for profit : selling our  
standards allows us to finance  
their development in a neutral  
environment, to maintain them  
and to make new ones.



ISO provides a platform for  
developing practical tools through  
common understanding and  
cooperation with all stakeholders.

163\* members

21 350\*  
International Standards

100  
new standards each month

238\*  
technical committees

ἴσος

Notice that our acronym  
doesn't match our name?

It's not meant to.

"ISO" is derived from  
the Greek word *isos* (equal),  
so that it's the same in  
all languages.

\* September 2016

We bring together experts to share knowledge  
and develop International Standards  
that provide solutions to global challenges.

## What is an International Standard?

An International Standard  
is a **document containing  
practical information and  
best practice.**

It often describes **an agreed  
way of doing something  
or a solution to a global  
problem.**



In short, ISO standards help:



Make products **compatible**,  
so they fit and work well with  
each other



Identify **safety issues**  
of products and services



Share **good ideas** and  
**solutions**, technological  
know-how and best  
management practices

## Paper sizes

Standards for paper sizes (A4 family) **make life easier for printer, photocopiers and office supplies manufacturers**, because they know their products will work with available paper formats.

Examples of standards  
in our everyday life.

## Freight containers

More goods can **travel the world smoothly by air, sea and land** thanks to containers defined in International Standards, boosting the global economy.

## Credit cards

Credit cards can be used anywhere **because they meet standards** that specify dimensions, **technology and communication** protocols to work with dispensers and payment systems.

## Codes for countries

**The world sees eye to eye** by using standardized codes for countries and currencies.

## Currencies

# How do you benefit from International Standards?



## Industry:

- Become more competitive by offering products and services that are accepted globally.
- Enter new markets easily.
- Raise profits by offering products with increased quality, compatibility and safety.
- Reduce costs by not reinventing the wheel and using available resources better.
- Benefit from the knowledge and best practice of leading experts around the world.

## Regulators:

- Harmonize regulations across countries to boost global trade.
- Increase credibility and trust throughout the supply chain.
- Make it easier for countries to outsource and specialize.

## Society:

- Wider choice of safe and reliable products and services at competitive prices.
- Best practice and concerted action at the organizational level to practically address global challenges like climate change and sustainability.





## Why are we unique ?

**Our global network.** ISO members come from virtually every country in the world.

**Our brand.** ISO is recognized globally and associated with confidence.

**Our integrity.** We have been publishing the standards the world needs since our creation in 1947. Today the ISO brand is recognized globally.

**Our commitment to consensus.** We work with more than 700 organizations and over 100 000 experts from different industries and sectors.

**Our partnerships.** We work closely with the International Electrotechnical Commission (IEC) and the International Telecommunication Union (ITU). We also have a strategic partnership with the World Trade Organization (WTO) to promote free and fair trade.

# How does ISO work?

ISO only develops a standard if there is a market need for it.



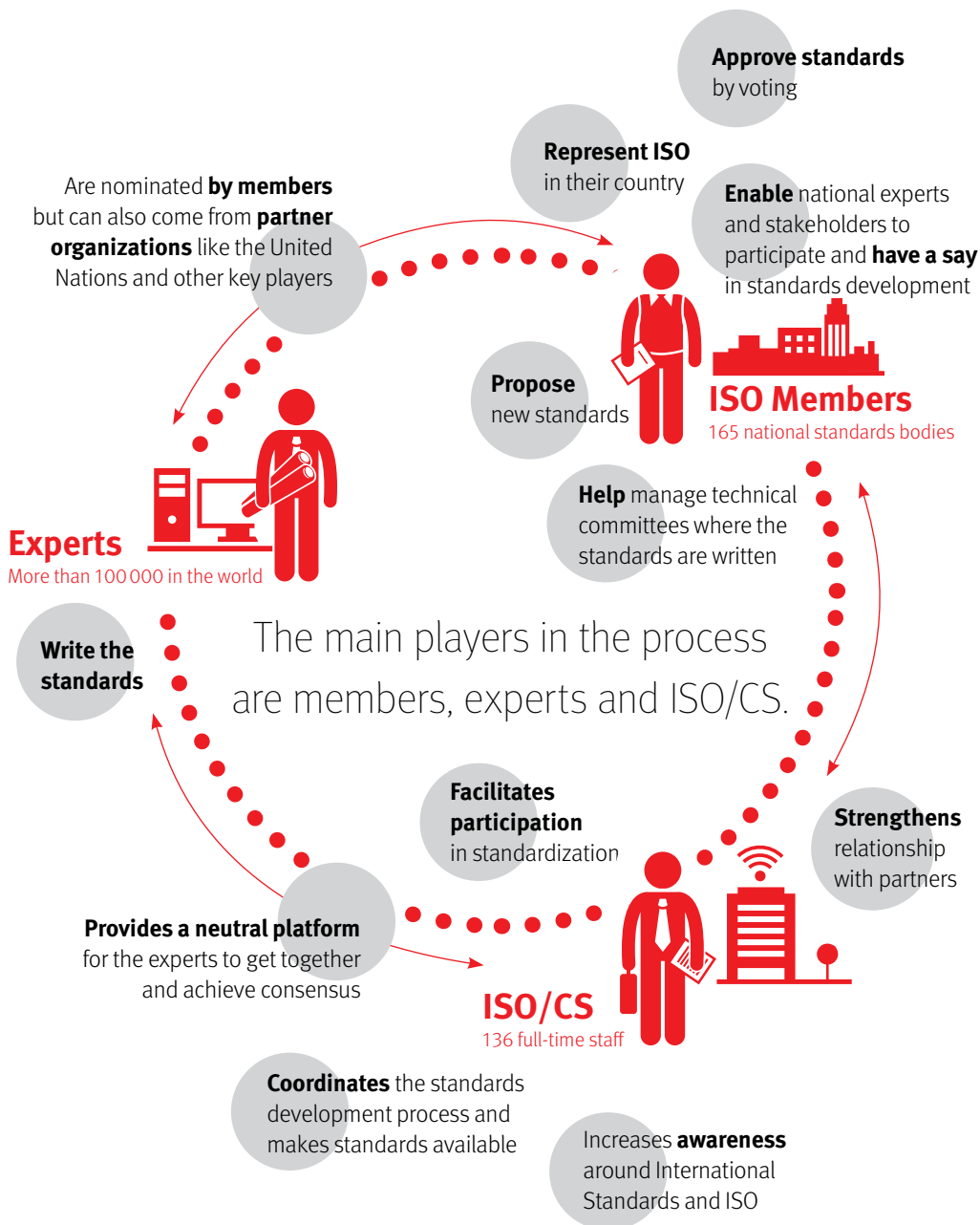
International standards are created by the people who will use and be impacted by them. We call them **EXPERTS** and they come from industry, government, consumer organizations, academia, non-governmental organizations, and more.



It is the **MEMBERS** role to identify the experts and ensure an active voice for their country.



The ISO Central Secretariat – **ISO/CS** – coordinates the development process and publishes the standards.



# Get involved!



Would you like to have your say on the rules governing world trade?



Do you want to know which standards can benefit your business?



Do you have a good idea for a much needed standard?

Contact your ISO member at  
[www.iso.org/isomembers](http://www.iso.org/isomembers)

**International  
Organization  
for Standardization**

ISO Central Secretariat  
Chemin de Blandonnet 8  
CP 401  
1214 Vernier, Geneva  
Switzerland

**iso.org**

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# ISO in figures 2016

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## Members

**163** national standards bodies, comprising  
**119** member bodies,  
**40** correspondent members,  
**4** subscriber members.

## Technical committee structure

**3555** technical bodies, comprising  
**247** technical committees,  
**508** subcommittees,  
**2674** working groups and  
**126** ad hoc study groups.

## Staff

### *Technical secretariats*

**38** member bodies provide the administrative and technical services for the secretariats of committees of the ISO technical programme. These services involve a full-time staff equivalent to **500** persons.

### *Central Secretariat in Geneva*

**144** full-time staff from  
**20** countries coordinate the worldwide activities of ISO

## Development of International Standards

### *Total at 31 December 2016*

**21478** International Standards and standards-type documents.

These standards represented a total output of **973 914** pages in English and French (terminology is also often provided in other languages).

### *In 2016*

**1381** International Standards and standards-type documents published.

This output represented a total of **79283** pages for 2016.

## Work in progress in 2016

**1855** new projects (work items) registered.

**4797** work items appeared on the programmes of work of the technical committees.

The breakdown was as follows:

**1648** work items at preparatory stage,

**754** committee drafts,

**2595** Draft International Standards (DIS) and Final Draft International Standards (FDIS).

## Meetings

**14** technical meetings were in progress, on average, each working day of the year somewhere in the world.

**1509** technical meetings were held in

**45** countries, comprising

**169** meetings of technical committees,

**376** meetings of subcommittees,

**964** meetings of working groups or ad hoc groups.

## Liaisons

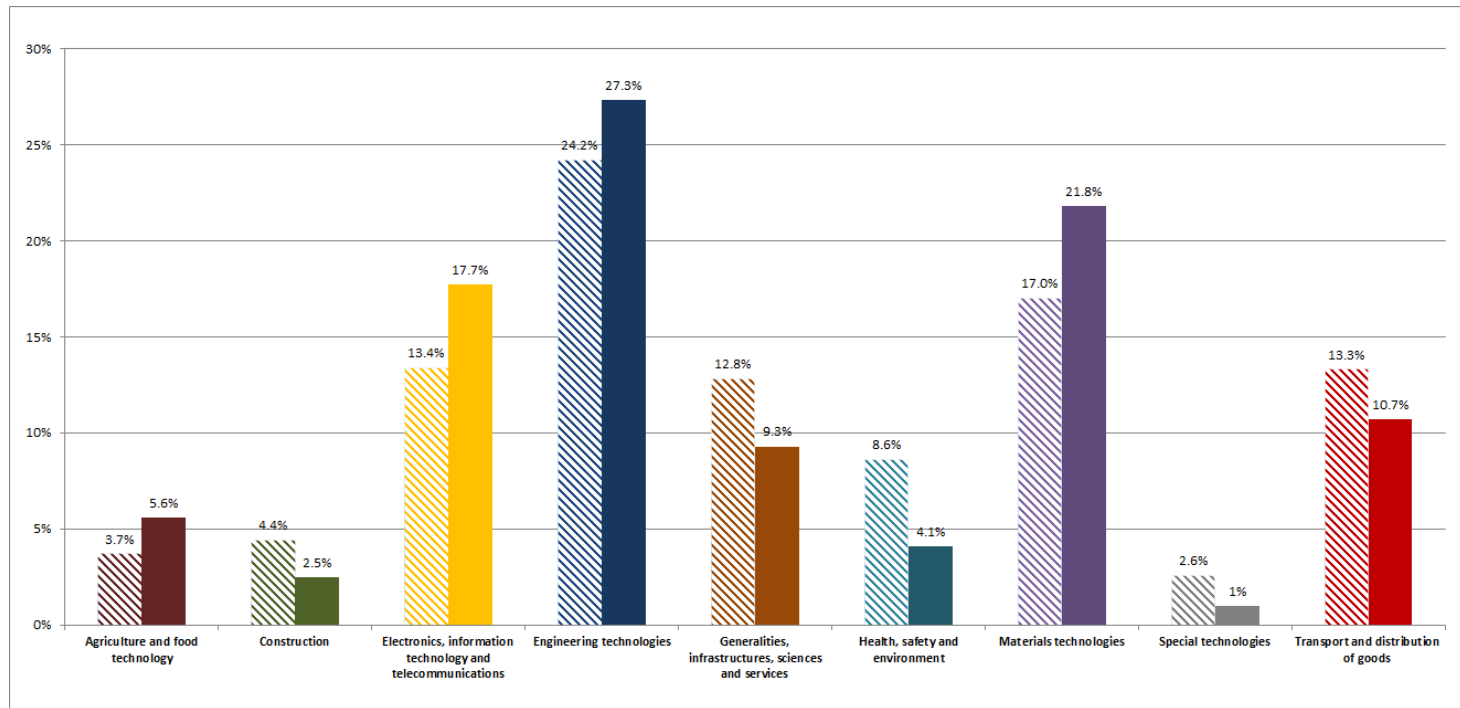
**711** international organizations were in liaison with ISO technical committees and subcommittees.

*(Liaisons Category A & B)*

# Portfolio of ISO standards and Work programme

SECTORS	Work items 2016				International Standards					
	New Work Items (WI) registered in 2016	%	Total active work items (WI)	%	New International Standards	%	No. of pages	Total International Standards	%	No. of pages
Agriculture and food technology	63	3.4%	186	3.7%	45	3.3%	1543	1 207	5.6%	34382
Construction	65	3.5%	219	4.4%	37	2.7%	2079	528	2.5%	21808
Electronics, information technology and telecommunications	310	16.7%	671	13.4%	252	18.2%	29945	3 796	17.7%	288773
Engineering technologies	380	20.5%	1209	24.2%	353	25.6%	16112	5 856	27.3%	262100
Generalities, infrastructures, sciences and services	213	11.5%	640	12.8%	133	9.6%	6981	1 998	9.3%	98550
Health, safety and environment	169	9.1%	428	8.6%	99	7.2%	4870	877	4.1%	40877
Materials technologies	273	14.7%	850	17.0%	267	19.3%	10281	4 697	21.8%	147963
Special technologies	51	2.8%	130	2.6%	17	1.2%	530	215	1%	5565
Transport and distribution of goods	331	17.8%	664	13.3%	178	12.9%	6942	2 304	10.7%	73896
<b>TOTAL</b>	<b>1855</b>	<b>100%</b>	<b>4997</b>	<b>100%</b>	<b>1381</b>	<b>100%</b>	<b>79283</b>	<b>21 478</b>	<b>100%</b>	<b>973914</b>

(as based on the International Classification for Standards [ICS])



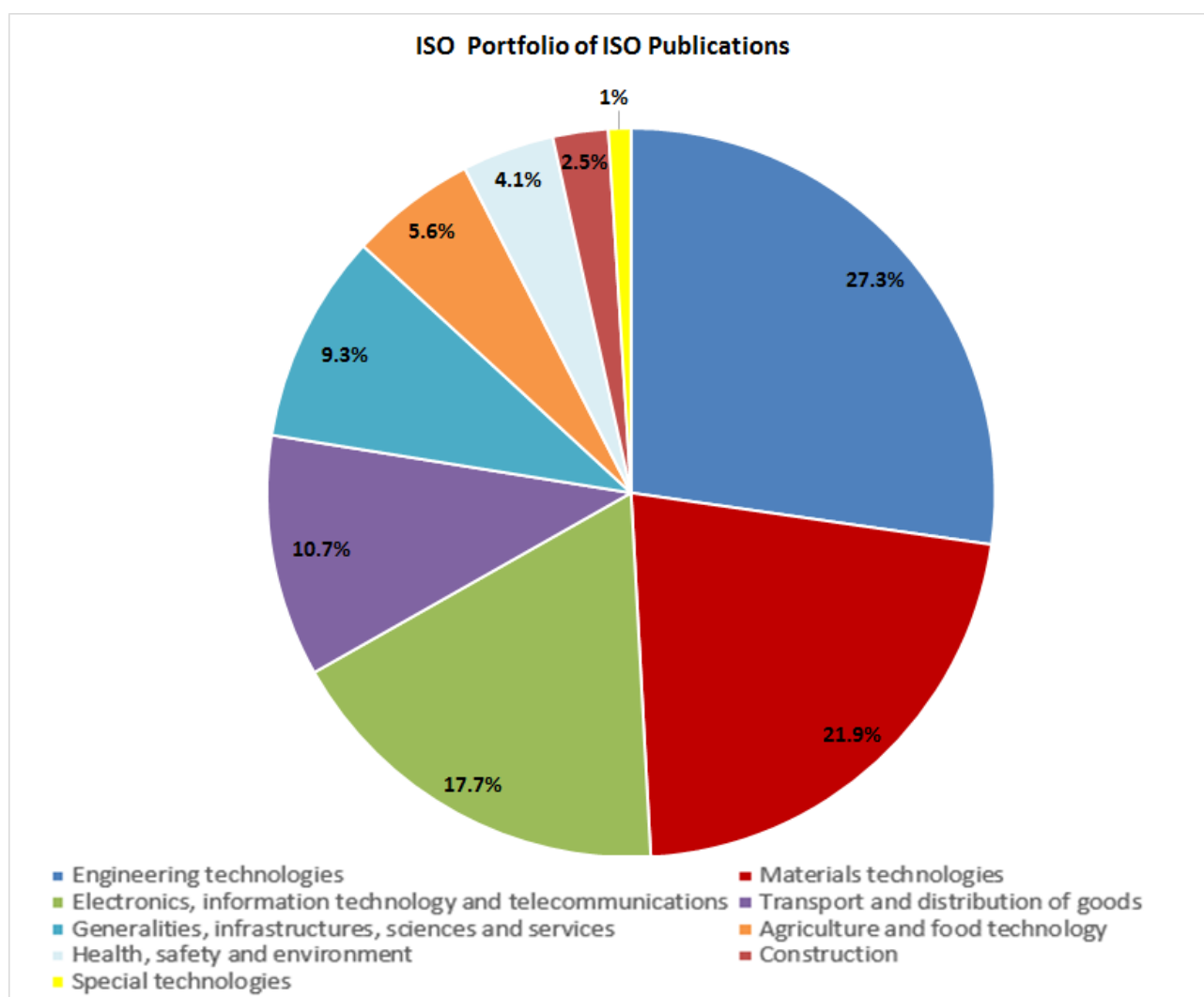


## Portfolio of ISO standards and Draft International Standards

by technical sector at the end of 2016

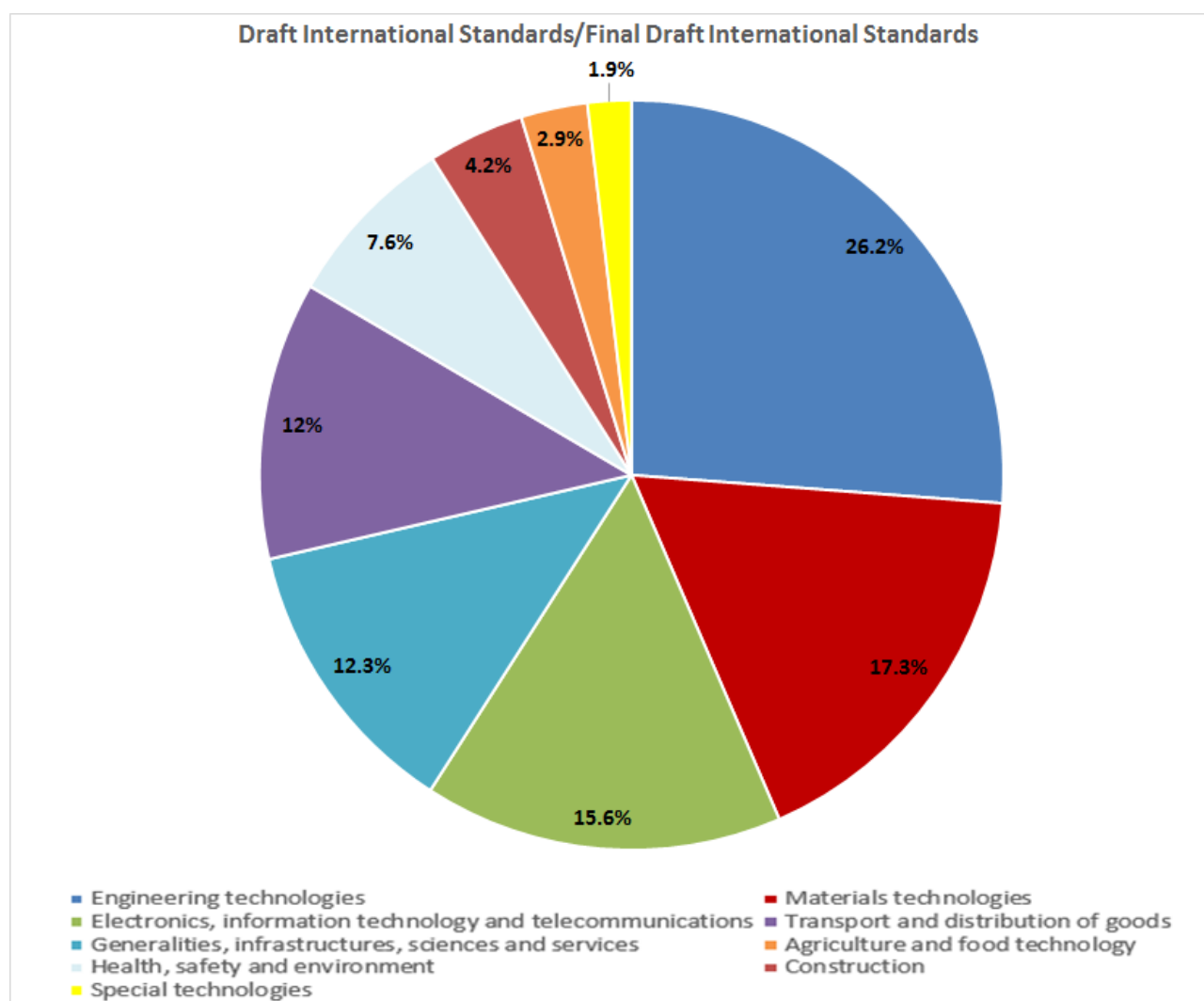
### Breakdown by ICS Sectors International Standards

ICS Sectors	International Standards	%
Engineering technologies	5 856	27.3%
Materials technologies	4 697	21.9%
Electronics, information technology and telecommunications	3 796	17.7%
Transport and distribution of goods	2 304	10.7%
Generalities, infrastructures, sciences and services	1 998	9.3%
Agriculture and food technology	1 207	5.6%
Health, safety and environment	877	4.1%
Construction	528	2.5%
Special technologies	215	1%
	<b>21478</b>	<b>100%</b>



## Draft&amp; Final Draft International Standards

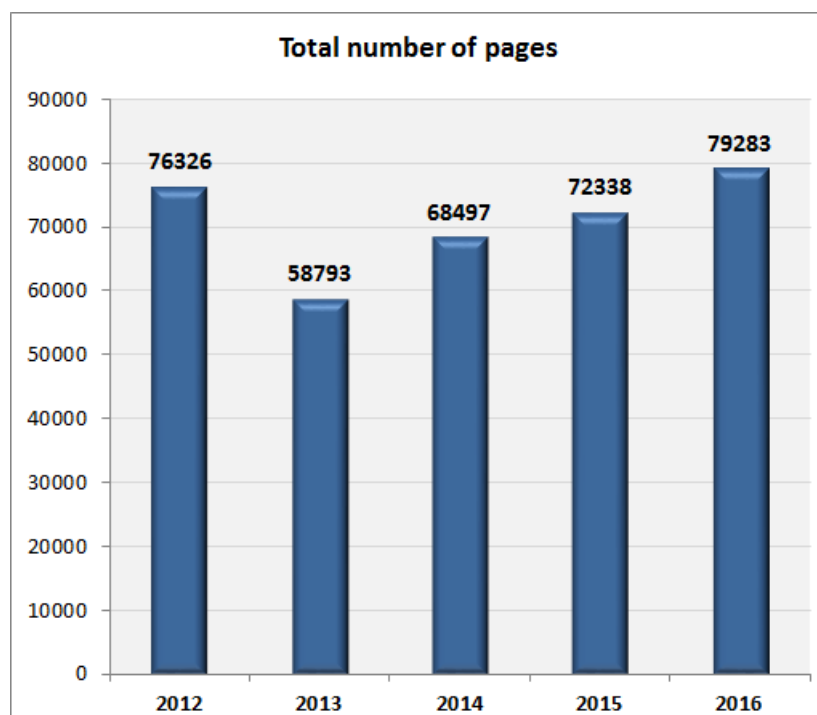
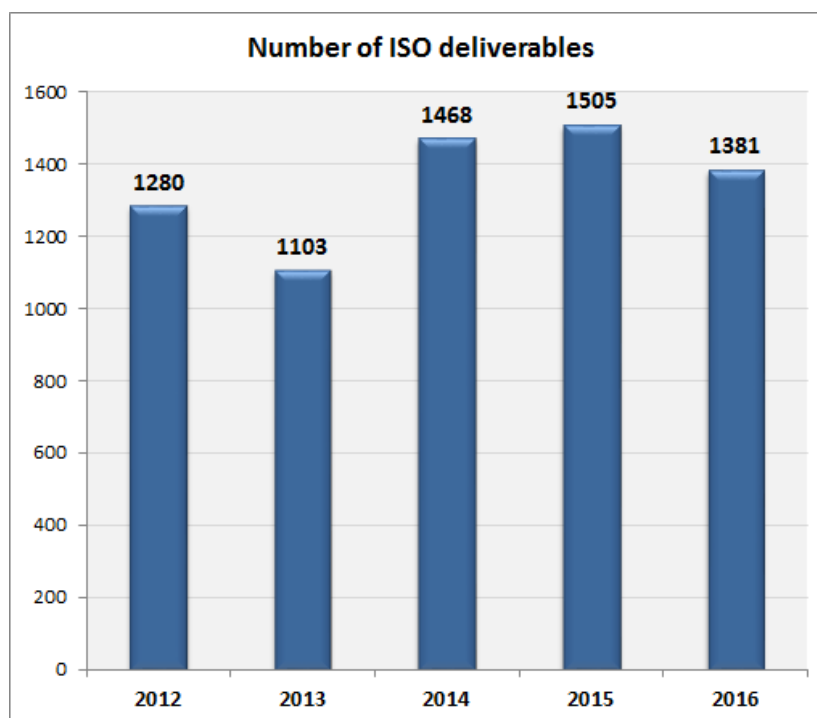
ICS Sectors	Draft International Standards/Final Draft International Standards	%
Engineering technologies	721	26.2%
Materials technologies	477	17.3%
Electronics, information technology and telecommunications	431	15.6%
Generalities, infrastructures, sciences and services	339	12.3%
Transport and distribution of goods	331	12%
Health, safety and environment	208	7.6%
Construction	115	4.2%
Agriculture and food technology	80	2.9%
Special technologies	52	1.9%
	2754	100%



## Data for Yearly production: Number of ISO Deliverables total number of pages

(2012-2016)

	Number of ISO deliverables	Total number of pages
2012	1280	76326
2013	1103	58793
2014	1468	68497
2015	1505	72338
2016	1381	79283



## ISO member bodies' contribution to the standards process

ISO member	Number of secretariats	Number of convenorships	ISO member	Number of secretariats	Number of convenorships
Algeria [IANOR]	0	1	Kenya [KEBS]	1	1
Argentina [IRAM]	1	9	Korea, Republic of [KATS]	19	101
Australia [SA]	24	60	Lebanon [LIBNOR]	0	1
Austria [ASI]	5	26	Luxembourg [ILNAS]	0	1
Belarus [BELST]	0	1	Malaysia [DSM]	5	11
Belgium [NBN]	3	38	Mexico [DGN]	1	3
Brazil [ABNT]	8	24	Morocco [IMANOR]	0	1
Cambodia [ISC]	0	1	Netherlands [NEN]	18	85
Canada [SCC]	15	91	New Zealand [NZSO]	0	6
China [SAC]	72	142	Norway [SN]	10	31
Colombia [ICONTEC]	2	2	Poland [PKN]	2	0
Cyprus [CYS]	0	1	Palestine, State of [PSI]	0	1
Czech Republic [UNMZ]	0	2	Panama [COPANIT]	0	1
Denmark [DS]	5	26	Philippines [BPS]	0	1
Egypt [EOS]	0	4	Portugal [IPQ]	1	6
Estonia [EVS]	0	1	Qatar [QS]	0	1
Finland [SFS]	3	7	Russian Federation [GOST R]	8	7
France [AFNOR]	73	228	Senegal [ASN]	1	0
Germany [DIN]	131	420	Singapore [SPRING SG]	0	2
Ghana [GSA]	1	1	Slovenia [SIST]	0	1
Hungary [MSZT]	0	1	South Africa [SABS]	10	18
Iceland [IST]	0	1	Spain [AENOR]	5	23
India [BIS]	8	16	Sri Lanka [SLSI]	0	1
Indonesia [BSN]	0	2	Sweden [SIS]	25	77
Iran, Islamic Republic of [ISIRI]	5	10	Switzerland [SNV]	15	41
Iraq [COSQC]	0	1	Thailand [TISI]	0	6
Ireland [NSAI]	0	1	Tunisia [INNORPI]	1	1
Israel [SII]	4	13	Turkey [TSE]	2	1
Italy [UNI]	20	46	Uganda [UNBS]	0	1
Jamaica [BSJ]	1	1	Ukraine [DSTU]	1	2
Japan [JISC]	76	227	United Kingdom [BSI]	72	318
Jordan [JSMO]	0	1	United States [ANSI]	110	499
Kazakhstan [KAZMEMST]	0	1	Yemen [YSMO]	0	1



## **BUSINESS PLAN - ISO/TC 20 - Aircraft and space vehicles**

### **EXECUTIVE SUMMARY**

- a) The principle markets utilizing ISO/TC 20 standards are aircraft and space systems manufacturers and operators. With expanding international participation and cooperation in aerospace design and manufacturing, it is important for the industry sector, governments, users, public interest groups, suppliers, etc., to adopt international standards to facilitate this global market.
- b) The international demand for cooperation in outer space exploration and research with the development of telecommunication capacity, weather prediction, navigations, etc., is fostering an expanding commercial space market place resulting in an international customer base for aerospace products. The customer base for aerospace products is international. Products must be capable of being certified, operated and maintained in all nations that a buyer (commercial airline, space launch provider, etc.) intends to operate.
- c) To serve this market manufacturers of aerospace products from across the globe have found it necessary to work together under partnerships, consortia and buyer/supplier relationships for design, development, manufacture, operation and maintenance. Safety, reliability and interoperability are fundamental to all aspects of this market. This requires that a systematic approach be taken with respect to all aspects of aerospace products. This also means that all aerospace products are the subject of rigorous requirements established by national and international regulatory agencies.
- d) Some of the qualitative benefits are: improvement of product quality, reduction in the variety of standards called for a specific product, reduction in the number of different standards to be managed in aeronautics by operating customers such as airlines, maintenance and support facilities, common terminology to allow for communication of complicated design requirements, common test methods, and systems definitions, facilitation of product and system certification, and coordination of aerospace standards activities.
- e) The main objectives of ISO/TC 20 are:
  - 1. To set a clear target for the standardization work of TC 20.
  - 2. To make a specific priority list of standardization work of TC 20 for public review and comment.
  - 3. To address the impact of emerging technology that may lead to potential standardization work in the aerospace arena. To attract more participation from interested parties in these subjects.
  - 4. To ensure that internationally accepted standards exist for the design, construction, test and evaluation, operation, air traffic management, maintenance, and disposal of components, equipment and systems of aircraft and space vehicles, including issues related to safety, reliability and the environment. And as required, produce, maintain and assure these standards are produced cost effectively and correspond to users' and market needs and to support the technical projects of the sector.



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## 1. INTRODUCTION

### 1.1 ISO Technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of regular reviews. The aim is:

- To align the ISO work programme with expressed business environment needs and trends
- To allow ISO/TCs to prioritize among different projects
- To identify the benefits expected from the availability of International Standards
- To ensure adequate resources for projects throughout their development.

### 1.2 International standardization and the role of ISO

- a) The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.
- b) Three bodies are responsible for the planning, development and adoption of International Standards: [ISO](#) (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of [IEC](#) (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of [ITU](#) (International Telecommunication Union).
- c) ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 140 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.
- d) The principal deliverable of ISO is the [International Standard](#).
- e) An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its [Technical Committees](#) are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.
- f) ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

## 2. BUSINESS ENVIRONMENT OF THE ISO/TC

### 2.1 Description of the Business Environment

- a) The following political, economic, technical, regulatory, legal and social dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

- b) The market covered by the scope of this committee includes the entire spectrum of aerospace industry for the design, manufacture, test and evaluation, operation and maintenance of components, equipment and subsystems for general aviation, commercial aircraft and space systems. It also serves the military aerospace market to the extent that military aerospace products can utilize commercial aerospace standards.

## 2.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:

The global aerospace and defence (A&D) sector, valued at US\$920.6 billion (2009), grew at 8.7 percent CAGR for the period spanning 2005 to 2009. Defence is the largest segment accounting for around 71.8 percent (US\$660.8 billion) of the sector's total value, with the rest (US\$259.8 billion) comprising the civil aviation sector. The United States is the largest market, accounting for 59 percent of the global aerospace and defence sector value, followed by Europe with 22 percent share and Asia-Pacific with 19 percent share. Boeing (USA) is the leading market player with 7.4 percent share of the sector's value followed by EADS (Netherlands) with 6.5 percent share, Lockheed Martin Corporation (USA) with 4.9 percent share and BAE Systems Plc (UK) with 3.8 percent share.

The aerospace industry is hopeful about the future as the sector is expected to grow at a 5-year CAGR of 5.3 percent between 2009 and 2014. The market is predicted to be valued at US\$1,190.5 billion by end of 2014. This positive outlook can be attributed to a positive GDP growth outlook, rising incomes, improving health of airlines, and the large order backlogs with air-framers (Boeing, EADS). Demand for air travel is pegged to economic growth. In the second half of 2009 the world's economy began to recover from the sharp economic downturn. On a geographical basis, GDP is expected to grow at an average 2.7 percent in North America and 1.9 percent in Europe but as fast as 7.4 percent in China for the next 20 years. With the growth of North American and European economies expected below the global 20-year average of 3.2 percent, airline passenger and fleet growth rates in Europe are anticipated to be proportionately slower in comparison to emerging.

Source: [http://www.imap.com/imap/media/resources/Aerospace\\_8\\_1FED752787A1E.pdf](http://www.imap.com/imap/media/resources/Aerospace_8_1FED752787A1E.pdf) (accessed 7/18/2014)

### 2.2.1 Description of the market structure and the major market players

- a) Maturity of domestic markets has driven companies to pursue international expansion more aggressively. The information technology revolution, the rise of newly industrializing countries, and the growing confluence of cultural tastes have all contributed to unprecedented global business opportunities. Aircraft and space vehicle manufacturers and operators with global presence maintain headquarters in the USA, Europe, and Asia. The USA and Europe hold most of the market share in the aerospace industry, but demands for aerospace standardization work will grow to meet the expanding world-wide market for aerospace applications, especially in maturing technologies and new designs. The increasingly global nature of the aerospace industry has also increased the demand for International Standards, which can be used to facilitate co-production efforts, reduce costs, and eliminate differing regulatory standards that have become a major trade barrier.
- b) The balance between the key elements in national industries will vary in accordance with domestic strengths and priorities such as technological capability, the relative importance of civil and military applications and the imperatives of import and export.



## 2.2.2 Particularities of the Industry

To understand the competitiveness of the aerospace industry one needs to know the particularities of this unique industry. The following eight points depict the peculiarities of the aerospace industry. These strongly influence the structure and evolution of the production organisation, the localisation of activities and – last but not least – the relationship between the stakeholders:

- a) High technological level;
- b) Technological complexity;
- c) High and increasing development costs;
- d) Long break even periods and small markets;
- e) Heavy upfront investments and exceptionally long cycle time;
- f) Programme lives;
- g) High interdependencies between civil and defence markets;
- h) Strategic industry.

## 2.2.3 Structure of the market: Suppliers/Manufacturers

### 2.2.3.1 Major product categories and their relative market shares

Aircraft and Aircraft Parts	51.7%
Engines and Engine Parts	15.6%
MRO	19.6%
Space Launches and MFG	12.4%
Training	0.7%

### 2.2.3.2 Growth sectors in the market

The growth sectors in the market are mainly:

- Aircraft structural parts and engine components
- Missile systems
- Launch vehicles
- Spacecraft
- Ground Infrastructure

### 2.2.3.3 Major technologies used in the production and use of major products

The major technologies used in the production and use of major products are:

- Metallic and non-metallic materials (composites)
- Computer and communication technologies
- Gas turbine technology
- Rocket propulsion technology

### 2.2.3.4 Resources for aerospace work

Resources for aerospace work will be increasing to meet the growing global markets for aerospace applications, especially for maturing technologies and new designs, which will affect standardization activities.



**Civil aircraft sales**

Civil aircraft sales increased slightly from 2009 through 2010, \$98.5Bn, about 10% improvement noted in 2011 and continued on an upward trend in 2012. Sales in 2013 are estimated to rise approximately 11%.

**Space sales**

<b>Space Systems Products and Services Market Analysis*</b>	<b>2010</b>
Commercial Infrastructure and Support Industries (Satellite Manufacturing, Launch)	\$87.39B
Commercial Space Products and Services	\$102B
Commercial Transportation Services (Tourism)	\$0.01B
U.S. Government Space Budgets	\$64.63B
Other Government Space Budgets	\$22.49B
<b>Totals</b>	<b>\$276.52B</b>

\*The Space Report 2011, The Space Foundation.

The following are dependent on National Defence Policies:

**Military aircraft sales**

Sales of military aircraft, engines, and parts have decreased. Reduced exports were largely responsible for the military aircraft sector's sales decline during the year. Fewer foreign deliveries of fighters and military transports pulled military aircraft exports down. The military aircraft sector is fundamentally driven by the US and EU Defence funding for aircraft procurement.

**Missile sales**

US DoD's funding of missile research and development, with its emphasis on missile defense, has aided industry in maintaining its technological prowess during this period of declining production.

**2.2.4 Structure of the market: Customers/Buyers (descriptive and quantitative)**

The near-future market outlook for the global demand for aircraft and space vehicles is uncertain. From 2003 through 2012, the market experienced spectacular growth. However, the growth cycle appears to be maturing and trending toward more modest increases.

**2.2.4.1 North America**

**a. United States**

In the United States (U.S.), aerospace industry sales are expected to reach \$218 billion in 2012, up 4.9 percent from 2011. This year marked the third consecutive year of growth for the U.S. aerospace industry. U.S. aerospace orders were stable since 2010, at around \$242B. Aerospace backlog, has been increasing since 2009 after a sharp decrease in 2008. The U.S. aerospace industry is vitally important to the domestic economy. It is the leading net exporter in the country and provides employment for more than 630,000 workers. Its products and services are the backbone of many other industries that are dependent on air transportation and worldwide communications. Despite the challenging current market conditions, the aerospace industry is an integral component of modern society and business.

Consequently, when the overall economy improves, the aerospace industry will rebound accordingly. Although Japan is the largest single country export market for the United States aerospace industry, combined U.S. aerospace exports to France, the United Kingdom, and Germany, the EU's three largest aerospace markets, illustrate the importance of the region for both the U.S. and EU aerospace markets. European aerospace companies supply the full range of aerospace products and services, from large civil aircraft, to satellites, to subassemblies and components. Consequently, European firms are both important partners and competitors for U.S. firms.

#### b. Canada

According to the Aerospace Industries Association Canada, Canada's aerospace sector generates more than \$22 billion and exports 80% of its output. Aircraft and Engine sale make up over 68 percent of this revenue. Investments of over \$2 Billion make the aerospace industry the second largest R&D investor in Canada. Aerospace is responsible for the employment of 160,000 Canadians.

#### c. Mexico

The Mexican Federation of Aerospace Industries, A.C. ([FEMIA®](#)), a nonprofit association which integrates the majority of the of the aerospace companies in Mexico reports that the country's Aerospace industrial sector has more than 31,000 workers in 260 companies, in the manufacturing, services, and design engineering areas, and MRO. The industry has expanded rapidly in recent years, with aerospace exports increasing 279 percent since 2005 to more than \$4.5 billion in 2011. Aerospace parts manufactured in Mexico include turbine fuselage and landing gear components, harnesses and cables, audio and video systems, and heat exchangers.

### 2.2.4.2 Europe

Europe is one of the most important markets for commercial aerospace products and space co-operation, and is also an important source for components of worldwide aerospace products. Aerospace industry sales Turnover: 171.5 Billion €. Aerospace R&D expenditure: 16.3 billion €. Aerospace Employment: 479,600, in accordance with "Facts and Figures 2011" published by ASD, ([http://www.asd-europe.org/fileadmin/user\\_upload/Client\\_documents/Attachments/Facts\\_\\_\\_Figures/ASD\\_Facts\\_and\\_Figures\\_2011.pdf](http://www.asd-europe.org/fileadmin/user_upload/Client_documents/Attachments/Facts___Figures/ASD_Facts_and_Figures_2011.pdf))

Europe's civil aviation sector has performed relatively well recently, despite the challenging and uncertain economic environment. Growth continues in the large civil aircraft, regional aviation, and helicopter sectors. However, the general and business aviation sector has been hurt by the worldwide downturn. Aerospace industry sales improved by nearly 23.4 percent from 2008 to 2011, reaching 171.5 billion€. From 2008 to 2011, European aerospace employment averaged 47,000.

The German air and space industry experienced growth of the overall industry 4.1% of total revenue reached 25.7 billion Euros (Previous year: EUR 24.7 billion). The number of employees increased 2.1%, from 95,400 to 97,400. Expenditures on research and development in 2011, was around 16.8% of industry sales at a similar level as in previous years.

According to ADS, the UK aerospace industry turnover for 2011 was £24.2 Bn; of which 92% was Aircraft and Rotary Wing sales.

### 2.2.4.3 Asia

China, India, Indonesia, Japan, Kazakhstan, Korea,, Russian, and the Ukraine account for the bulk of aerospace manufacturing activity in the Asia-Pacific region. As measured by sales, Japan has the sixth-

largest aerospace industry worldwide.

Japan's aerospace production sales mostly come from the production of primary components and parts for foreign commercial and domestic military aircraft for defense and rescue.

In addition to supplying manufactured aerospace products to many airframers including Boeing and Airbus, Japan also manufactures aircraft engines. In 2010, total aerospace sales slipped 11 percent from a recent high of \$11.5 billion, in part due to delays in the Boeing 787 program. Exports increased nearly 20 percent, reaching \$6.4 billion in 2012, while imports rose more than 55 percent to \$11.2 billion. Exports rose primarily because of several international joint projects, including the Boeing 777 and 787 aircrafts, and the V2500 and CF34 engines.

The future for China's general aviation and helicopter sector appears promising, as China is investing heavily in its civil aircraft industry and because of the tremendous growth potential of the country's domestic air travel industry. The Commercial Aircraft Corporation of China (COMAC) oversees the development of China's \$7.1 billion indigenous 150-seat jet airliner program that will compete directly with Boeing and Airbus. China hopes to have its new 150-seater airliner in service by 2020 and is aiming at a potential domestic market of 2,200 narrow-bodied airliners. China's main weaknesses lie in engine and systems technology, although international collaboration on the 150-seat airliner will go some way to raising capabilities.

#### 2.2.4.4 South America

The Brazilian Aerospace Industry is the largest in South America. The companies of this industrial conglomerate are involved in every stage of aeronautic, space and defense activities, including design, manufacturing, sales, customer support, and aerospace services.

The aeronautical segment offers a variety of products such as airplanes, helicopters, structural segments, engines, aircraft/engines parts, on board systems and equipment, and air traffic control systems.

Embraer, based in Brazil, is the world's third largest manufacturer of commercial aircraft. The defense segment presents aircraft designed to meet specific mission's requirements as well as weapon systems, equipment, non-guided and guided weapons, and systems integration. <sup>1</sup>The AIAB (Aerospace Industries Association of Brazil) reports that the industry had sales of \$ 6.8 Billion in 2011, 7.5 billion in 2012 and 7.5 billion in 2013. Aerospace employment reached 26,239 people in 2013. To consolidate the Brazilian space industry, the Brazilian Space Agency (AEB), according the National Program of Space Activities (PNAE) 2012-2021, developed an intensive program to foster the capacity building in the Brazilian space sector. The construction of the Geostationary Defense and Strategic Communications Satellite (SGDC), to be built by a joint-venture company created by the state owned Telebras and a branch of the Embraer, is an example of this program. In order to implement this program, started in 2012, the Brazilian Space Agency (AEB) will invest \$4 billion, with 47% allocated to satellite mission project, 17% to space access projects, 26% to space infrastructure and 10% to other spacial and complementary projects.

Brazil has relevant space cooperation agreements with other countries. With China, Brazil has a "global strategic partnership" to develop and produce the CBERS project – China-Brazil Earth Resources

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Satellite. Brazil and Ukraine formed a bi-national company “Alcântara Cyclone Space (ACS), for commercial launches using the Ukrainian vehicle from the Alcântara Launch Center (CLA). Brazil, also, has partnership with Germany and Argentina (SABIA – Mar end Multi- Mission Platform- PMM) and others.

In the National Program of Space Activities (PNAE) 2012-2021, the Brazilian Space Agency (AEB), also, stated that the standardization and certification of the Brazilians space activities are vital and a high priority, to this end, the Brazilians are adopting regulations that meets international standards in terms of space safety, quality of products and services, as well as universally accepted agreements and contracts.

The most representative Aerospace Industry in Argentina is FAdeA, “Fábrica Argentina de Aviones “Brigadier San Martín”, a new state-owned company created at the end of 2009. The FAdeA employs approximately 1,000 people and had annual sales about \$100 million, largely from maintenance contracts with the Argentina Air Force. Some of most relevant programs are: manufacturing of the advanced trainer and light attack IA-63 Pampa aircraft; modernization of the Argentine aircraft IA-58 Pucara, maintenance and modernization of C-130 Hércules, and Fokker F-27 and F-28.

The National Commission on Space Activities (Comisión Nacional de Actividades Espaciales - CONAE) is the Argentine space agency, which coordinates all activities connected with the peaceful uses of outer space. CONAE is currently executing the National Space Plan “Argentina in Space” for 2004-2015.

#### 2.2.4.5 Australia

Australia has a long history of aerospace manufacturing, and continues to provide world-class innovative products and services to the domestic and global aerospace sector. With capabilities ranging from the production of specialized components, to full maintenance, repair and overhaul services, the Australian aerospace industry is particularly well positioned to supply the Asia-Pacific region, a forecasted major aviation growth region.

Australia also possesses a significant and growing Unmanned Aerial Systems (UAS) manufacturing sector. There is currently a lot of activity directed towards the progression of aviation safety regulations for UAS in Australia, with regulations developed by the Civil Aviation Safety Authority (CASA) enabling the Australian UAS industry to grow to what it is today. The Australian Aerospace Industry UAS Sub-Committee has recently submitted a review of regulations and guidance material to CASA to assist in shaping the future of the Australian UAV industry.

The Australian aerospace industry has approximately 830 firms that employ 14,000 people; the industry has an annual turnover of more than \$4 billion. Of this sum, 25% is exported.

Source: <http://www.industry.gov.au/industry/aerospace/Pages/default.aspx> (accessed 7/18/2014)

### 2.2.5 Major factors related to suppliers, manufacturers, and customers

- a) The major factors related to suppliers, manufacturers, and customers have an impact on the development of the markets (i.e. materials, environment, disposal requirements). Examples: REACh, US regulations and other similar environmental regulations restricting the use and/or disposal of materials and substances.
- b) The major emerging factor is the increasing pressure on suppliers, manufacturers, and customers to compete in the global market place while addressing the growing requirements for protecting the

environment and the rapid development of IT. These two drivers will often result in requirements for standards directly involved in fostering the use of materials, products, systems, services, and practices that are environmentally sound and energy efficient with demands for higher performance at lower cost, for competition and for innovation. All these have therefore become the top priority for all regions in the world. The understanding of aircraft and space vehicles performance and providing relevant requirements in the International Standards is therefore a vital issue.

- c) Market requirements for new technology and product innovation, higher performance, reduction of costs as well as environmental and social aspects will also be the major factors impacting suppliers and manufacturers.
- d) International air commerce is increasing both in volume and number of carriers. This requires increased attention to sufficient ground handling of aircraft, passengers, luggage and cargo. Common communication tools, such as symbols and labels will also be required.
- e) The sharing of aircraft fleets is becoming a common practice. Leasing companies own and maintain an increasing share of aircraft. Increasingly independent companies provide maintenance and this trend of flexible sustainment is transitioning to the support of military aircraft. This places added importance on support commonality and increases the need for international standardization.
- f) International participation and cooperation in aerospace design and manufacture is expanding. The number of prime manufacturers is decreasing through acquisitions and mergers causing the consolidation of multiple design systems. At the same time, there is a growing reliance on global suppliers who have increased responsibility for product design, fabrication, system integration and field support. These suppliers provide their products to multiple customers and in many instances multiple industries. International standards are needed to facilitate this process. Major new aircraft design programs are fostering international cooperation: It is recognized that manufacturers and operators of aerospace systems would benefit from better consolidation and standardization of fasteners, hydraulic components and other types of utility hardware. Accomplishing this improvement world-wide will require a body of internationally accepted product standards which have been selected to avoid duplicate standards. Currently there is a large body of functionally acceptable regional, national and company standards available from which these could be selected.
- g) The international demand for telecommunication capability, weather prediction, navigation etc. in both the developed and developing nations has fostered an expanding commercial space marketplace. Further, as the industrial space capability (both for spacecraft manufacturing and launch vehicle development) expands in the various nations, this market place becomes increasingly competitive at both the system and component levels. International standards for expressing both requirements as well as capabilities (or performance) and the means of verifying performance are therefore essential to facilitate fair and equitable trade that will result in reliable commercial space systems.
- h) Collaboration on major international space programs (International Space Station, lunar and interplanetary exploratory missions, earth observation missions, etc.) has become essential due to ever increasing costs of such programs. The pooling of the various national aerospace resources as well as the program costs will continue to be a way of life in mankind's continuing endeavour to explore the space horizons as well as preserve the natural resources of planet Earth. International standards are essential to ensure such programs can be reliably integrated in a cost-effective manner. Failure to respond to these trends will encourage the growth of national and regional standards that may not be compatible with each other.
- i) Protecting the earth's environment has become a priority issue for all regions. Standards are directly involved in fostering the use of materials, products, systems, applications, and practices that are environmentally sound and energy efficient.
- j) New more efficient air traffic control systems such as SESAR and NextGen will be deployed in the near future. Aircraft and ground support systems will be required to communicate and be



interoperable with these new technologies.

- k) Demand is expected to increase for communication bandwidth for use in unmanned aircraft systems.
- l) Security and Cybersecurity.

## 2.2.6 Outside Environment Issues

- a) Language barriers still exist among experts from non-English speaking countries. They need more time to review and study documents, and fail sometimes to efficiently express their technical views.
- b) Different regions of the world use different processes for approving suppliers and qualifying standards parts. International acceptance of product standards requires an internationally accepted process for approving suppliers and for qualifying parts.
- c) Technology growth is often faster than the current standard development cycle.
- d) Legal/regulatory issues may necessitate modifications of the content and target dates for specific projects in the work program.

## 2.2.7 Other relevant international, regional or national standards or voluntary initiatives

- a) There is increased emphasis on commercial and industrial standards in lieu of government developed standards. As government-developed standards are replaced with commercial and industrial standards it is important that full consideration be given to making the replacement standards suitable for the global marketplace.
- b) There are many organizations that issue internationally used standards and are involved in Standardization activities. ISO/TC 20 will pay specific attention to standardization efforts by the following organizations:

**ADS** - ADS is the premier trade organisation advancing the UK Aerospace, Defence, Security and Space industries.

**AIA** Aerospace Industries Association - The Aerospace Industries Association represents the United States leading manufacturers and suppliers of civil, military, and business aircraft, helicopters, unmanned aircraft systems, space systems, aircraft engines, missiles, materiel, and related components, equipment, services, and information technology.

**AIAA** American Institution of Aeronautics and Astronautics - AIAA's mission is to address the professional needs and interests of the past, current, and future aerospace workforce and to advance the state of aerospace science, engineering, technology, operations, and policy to benefit our global society.

**ASD-STAN** – The legal successor of AECMA-STAN, this Standardization Committee is the recognized body in Europe for the preparation and promotion of European Standards (EN) for aerospace applications and is an Associated Body (ASB) to CEN, the European Body for Standardization.

**ASTM International** - ASTM International is one of the largest voluntary standards development organizations in the world-a trusted source for technical standards for materials, products, systems, and services.

**CEN** - The European Committee for Standardization (CEN) is a business facilitator in Europe, removing trade barriers for European industry and consumers. Its mission is to foster the European economy in global trading, the welfare of European citizens and the environment. Through its services it provides a platform for the development of European Standards and other technical specifications. CEN is a major provider of European Standards and technical specifications with the exception of electrotechnology (CENELEC) and telecommunication (ETSI). CEN's 31 National Members work together to develop voluntary European Standards (ENs).



**CCSDS** - Development of well integrated space data and information transfer systems recommendations for standardization, with the primary objective of enabling cross-support at national and international levels, with the use of resources which can observe interoperable profiles, associated to management and operational guidelines that can solidly and effectively contribute to the reduction of: Risk, Cost and of Project development timelines, in a very wide scope of space missions.

**DIN** -The German Institute for Standardization is a private organization providing standardization services in Germany. Because standardization is a form of industry self-regulation, DIN sees itself as a business partner in all sectors of the economy. In an agreement with the German Federal Government DIN is recognized as the sole national standards body representing German interests in international standardization. In return, DIN sees that the interests of society as a whole are taken into consideration in the standardization process.

**EUROCAE** - EUROCAE, the European Organisation for Civil Aviation Equipment was formed in Lucerne on 24 April 1963. EUROCAE has now been operating for more than 40 years as a non-profit organisation whose membership exclusively comprises aviation stakeholders made up of Manufacturers (aircraft, airborne equipment, ATM systems and ground equipment), Services Providers, National and International Aviation Authorities and Users (Airlines, Airports, operators) from Europe and elsewhere. From the outset, EUROCAE has developed performance specifications and other documents exclusively dedicated to the Aviation community. EUROCAE documents are widely referenced as a means of compliance to European Technical Standard Orders (ETSOs) and other regulatory documents.

**EUROCONTROL** - European Organization for the Safety of Air Navigation, is an intergovernmental organization bringing together 39 Member States and the European Community. Founded in 1960, it is a civil-military organization that has developed into a vital European repository of air traffic management (ATM) excellence, both leading and supporting ATM improvements across Europe. Today, EUROCONTROL is committed to building a Single European Sky that will deliver the ATM performance required for the 21st century and beyond.

**IAQG** - The International Aerospace for Quality Group is a cooperative global organization of companies providing aviation or space products (including platforms and systems) or services, and aviation, land or sea based systems for defense applications. The purpose of the IAQG is to implement initiatives that make significant improvements in quality and reductions in cost throughout the value stream by establishing and maintaining dynamic co-operation based on trust between international aerospace companies. The focus is to continually improve the processes used by the supply chain to deliver consistently high quality products, thereby reducing non - value added activities and cost. The Supply Chain Management Handbook (**SCMH**) is provided by the IAQG to assist with the advancement of quality practices.

**ECSS**– European Cooperation for Space Standardization – ECSS has the goal of the development of a single coherent set of space standards for use by the European space community. ECSS has an agreement with ISO/TC 20/SC 14 Subcommittee to harmonize work plans and coordinate activities. ECSS holds a liaison with ISO TC20/SC13 Subcommittee and with CCSDS.

**IEC** International Electrotechnical Commission - The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes international standards for all electrical, electronic and related technologies. These serve as a basis for national standardization and as references when drafting international tenders and contracts.

**IEEE** - Institute of Electrical and Electronics Engineers (IEEE). IEEE is the world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity. The IEEE Standards Association (IEEE-SA) is a leading consensus building organization within IEEE that brings together a broad range of individuals and organizations from a wide range of technical and geographic points of origin to facilitate standards development and





standards related collaboration. With collaborative thought leaders in more than 160 countries, the IEEE-SA promotes innovation, enables the creation and expansion of international markets and helps protect health and public safety.

[ITU](#)- International Telecommunication Union

[NSBs](#) (national standardisation bodies) - The standardization requirements for individual countries may be addressed by their national standards bodies. These bodies determine if the standardization needs are satisfied through international standards or independently developed.

[RTCA](#)- RTCA, Inc. is a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management (CNS/ATM) system issues.

[SAE International](#) – SAE International supports the technical and professional needs of the mobility industries. SAE International is the single largest developer of globally recognized, accepted and used aerospace standards. SAE works closely with industry, government agencies and regulatory bodies to develop standards which meet the needs of the aerospace industry.

[US Department of Defense](#) – The United States Department of Defense has historically been one of the largest producers of standards used by the aerospace industry. Many US DoD standards have become de facto international standards used by the global aerospace industry.

[SSFA](#) – The Strategic Standardization Forum for Aerospace is a standards forum consisting of US Aerospace Companies, global and regional aerospace standards developers, US government agencies and regulatory bodies, and airline representatives who work together to address standardization issues which cross multiple stakeholder groups.

## 2.2.8 Recognition and Utilisation of ISO/TC 20 Standards

- a) It is very important to recognize and utilize ISO/TC 20 standards, in order to increase existing or create new trade opportunities, to challenge national standards as being restrictive trade barriers, to unify technical requirements in the purpose of unifying markets, to strongly link between global trade and global production, and finally to rapidly open new markets around the world. In addition to the member bodies of the committee, users of TC 20 standards (suppliers, manufacturers, regulatory agency, liaison organizations and stakeholders) may be invited to participate in meetings and its sub-committees' meetings to assist in the standards development process. If more people understand that the value of a standard is not only determined primarily by its usefulness in gaining market acceptance of the product and the success of the standard in improving safety and quality of the product, but also is widely recognized and used, then more TC 20 standards will be utilized by them. Many of these standards are based on or form the basis of many basic product standards developed by national and regional aerospace standards developing organizations worldwide. An International Standard which states the consensus rules for designing, manufacturing, testing, inspecting, or installing a product or service on the commercial market holds significant value, and strengthens a company's position in national and foreign markets, ensures product quality and safety, and sets them ahead of their competition.
- b) 560 ISO standards have been developed and issued by ISO/TC 20 making it one of ISO's most active technical committees. ISO/TC 20 standards also provide international definitions for the space environment and for space systems interchangeability and interoperability.

The SI system will be the basic measurement system for TC 20 standards. However, the aerospace industry has a huge legacy of technical standards based on the English (inch-based) system which needs to be continuously supported for reasons of safety and quality. Therefore, English system standard will continue to be issued and adopted whenever required by industry.

c)



### **3. BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC**

- a) An assessment of the specific benefits already realized or expected from the work of the ISO/TC 20 is based on general trends in Manufacturers policy and demands made by end-customers.
- b) These benefits shall be dealt with through the following steps:
  - identification of the present context relating to Standardization in Aeronautics, Space and Defense
  - identification of qualitative benefits
  - tentative identification of quantitative benefits

#### **3.1 Present context relating to Standardization in Aeronautics, Space and Defence**

Since 2000, a new context has developed for the aeronautics, space and defence industry which is evolving more as a global Industry:

##### **3.1.1 Aeronautics**

- a) It had been practice in the past, when customers were still largely under national or governmental influence, that prime manufacturers in aeronautics develop their own individual standards for their own products with very little use of internationally recognized standards. That old practice has had a significant and long lasting impact on the variety of existing domestic standards used on existing aircraft fleets (at least in Europe), since any change in standard usage for a given product is considered as a modification of the approved design and requires that an approval process of that modification be implemented.
- b) It has now become quite clear that common interests within the aeronautics industry are channelled through the usage of a limited number of common international technical standards. Key factors in that new context are:
- c) Airlines in civilian aeronautics operating in a very competitive environment: most of them have become large organizations, driven by the market, and they are frequently complaining about the large variety of standards used on existing aircraft, which is for them a significant costly burden for support and maintenance.
- d) While conformity assessment and standards are two separate activities, they are closely related. Certification of aerospace products by regulatory agencies (FAA, EASA) is based on the use of and conformance to standards. To the extent that the Aeronautics sector has started to harmonize standards and standards related data, the certification process is greatly facilitated and the associated costs are reduced (see International Aerospace Quality Group which represents one of the new strategies for global standardization, and has been established to help the aerospace industry implement the ISO 9000 Quality Management System).
- e) The International Civil Aviation Organization (ICAO) has been functioning as an international standards developer for the aerospace industry in the areas of aircraft operations, noise, emissions, etc. These standards function as general regulations and need to be supported by specific standards.
- f) The aeronautics industry needs to better articulate and understand the relationship between standards and conformity assessment. The industry needs to harmonize standards which form the basis for regulations. Qualification and certification are major cost drivers helping conformity assessment schemes which are mutually recognized and cost effective.
- g) Military customers have introduced a new philosophy for their procurement: Having a large number of specific Military Standards created and monitored by Governmental Agencies has been found

costly and inappropriate in the recent past. Consequently, new and existing military programs are now calling for civilian standards, or, appropriate industry standards (see section 3.1.4).

### 3.1.2 Space

- a) The recent history of standardization shows that the major launch provider establishes the framework of standards for space systems. Space systems are defined as Space segments, Ground Segments and services (or applications). In general, requirements are set for each project individually. Agencies provide system requirements as standards for project application in general. Europe started in the mid 90s to provide a coherent, single set of user-friendly standards for use in all European as well as national (within Europe) space activities. Use of these standards has proliferated beyond Europe, esp. into the Asian-pacific sector.
- b) In respect to the development of standards for Space Data Systems, a pioneering NASA-ESA effort in the late 70s and early 80s resulted in an effort of international scale, with the creation of the Consultative Committee for Space Data Systems - CCSDS, in 1982. Since then, an increasing number of CCSDS recommendations for standards and for Best practices resulted, with almost immediate application to space missions. In the early 90s CCSDS products started their migration to the ISO domain, to become ISO Standards and to involve countries with non-existent or a still-growing space program. Currently, well above 600 space missions, worldwide, have already adopted those Space Data Systems standards, for the benefit of their capabilities, which continue to involve the use of interoperable and of cross-supportable systems, configured in different combinations of ground, space link and onboard systems which, in many cases, operate under a true international scenario.
- c) Private and public actors involved in space operations are increasingly aware of the threat of space debris. Some of these organizations have been applying measures to mitigate debris generation for many years. However, the population of debris continues to grow, and the probability of potentially-damaging collisions is increasing correspondingly. Because remediating the space environment is challenging with existing technologies, the most effective way to ensure the long-term sustainability of space activities at present is to standardize the implementation of debris mitigation measures, including collision avoidance. Standardization will have a major role in the coming years to help regulatory bodies and operators create and apply, in an efficient manner, appropriate space debris regulations and best practices.
- d) As the Commercial Space industry re-energizes, the benefits of industry standardization will be critical to cost, quality and the transfer of the space development and manufacturing processes to serial production. ISO/TC 20 needs to ensure that globally relevant standards exist to meet our technical needs in space. We may consider now Space sector has a growing role for standards and that International cooperation in space industry is going to expand drastically, which imposes that involved countries and companies have to agree on a unified set of general requirements and procedures if they want to succeed together and reduce costs. There is a potential for new standards given the increase in commercial space activity, and space tourism markets.

### 3.1.3 Aeronautics and Space

- a) The U.S. Aerospace Industry has been, at the end of 90's and for European aerospace Industry at beginning of 2000's, merging into a small number of large companies (or groups of companies), and they are facing a common pressure from both sides: Their common customers are now asking for a reduced variety of standards, as already mentioned ahead, and, at the other end of the chain, their common suppliers are requesting more harmonized technical standards and practices.
- b) In commercial aerospace market, international standards addressing requirements, capabilities, performances and means of verifying performances are essential to facilitate fair and equitable trade

and to remove technical barriers to trade and open markets in various regions of the world.

- c) Within international cooperation, harmonized standards appear necessary to ensure that products can be integrated in a reliable and cost-effective manner.
- d) Open competition and cost reduction have led to further globalization of aerospace industry structure and supply chain, which is made easier by the development of E-techniques in all areas of activity. Such a global structure requires International Standards as well.
- e) Developing standards that facilitate interoperability to reduce costs leads to increased collaboration between countries and companies

#### **3.1.4 Defence**

- a) Military specifications and standards have been fundamental to the aerospace industry for the past 50 years. These documents not only support all the military platforms, but because of the close relationship between civil and military designs they form a large part of the standards used by commercial aviation.
- b) However. Ministries of Defence involved in the procurement of aerospace products have adopted policies which recognize the value and need for using global standards developed by the private sector. Organizations such as NATO encourage the use of ISO and other internationally recognized and used standards for the design, manufacture and operation of military platforms. Additionally, government policies promote working with the private sector through organizations such as ISO to create standards necessary for military aerospace products to the greatest extent possible, especially when those standards address dual use applications with civil products. ISO/TC 20 will continue to reach out to the defence industry to promote TC 20 and its sub-committees as a preferred venue to develop globally relevant standards.

#### **3.2 Qualitative benefits**

- a) Improvement of quality of products which can be expected from optimization in the supply chain resulting from international harmonization of technical and process standards, where the best expertise in the world has been taken into account.
- b) Reduction in the variety of standards called for a specific product, which means some reduction of product complexity, coherency between design, production and test methods to promote performance requirements as a primary objective, larger quantities to be procured for the same component or service, some reduction in cost at delivery of individual products.
- c) Reduction in the number of different standards to be managed in aeronautics by operating customers such as airlines, maintenance and support, for a given fleet of aircraft or engines bought on the market, from different manufacturers, which means some cost reduction for the operators.
- d) Common terminology to allow for communication of complicated design requirements, common test methods, and systems definitions.
- e) Support the facilitation of product and system certification – Aerospace products must be certified by national, regional and international bodies to ensure safety and performance. To the extent that these products utilize accepted international standards, certification is easier and more readily accepted from one certifying body to another.
- f) Provision of a response to relevant social, safety, health, environmental concerns, or regulations.
- g) Coordination of Aerospace Standards Activities -- In addition to TC 20, there are many other ISO and IEC technical committees working on standards in a variety of areas of concern to the aerospace industry, for example, software and configuration management. Liaisons established by ISO/TC 20 can provide a resource-effective way of monitoring or participating in these activities and ISO/TC 20 can also provide a basis for other international standards, through their use as normative references.

### 3.3 Quantitative benefits

- a) Significant decrease of the number of different standards used for a given aircraft or space program, either military or civilian, has been observed in the last twenty years, as a result of national industry achievements in standardization. There exist example cases where manufacturers have been able to reduce the number of different part standards used to build a specific aerospace product from close to 3000 standards down to less than 2000 standards over a period of 20 years. It shall be mentioned that such a harmonization effort remains limited by the reverse trend for specific standards preference, where innovation and market positioning are high incentives for the establishment of innovative domestic standards. Nevertheless, international harmonization through ISO may remain a final target when innovative standards have become mature and largely used.
- b) Suppliers generally declare that progress in standards harmonization always means easier and more reliable supplier processes.
- c) Potential impact on costs has been evaluated through various ISO studies (such information is available on the [ISO/IEC INVENTORY OF STUDIES ON THE ECONOMIC AND SOCIAL BENEFITS OF STANDARDIZATION](#)): Some industries find that the economic benefits of using Standards for Engineering, Manufacturing and procurement yielded an economic benefit ranging from 0.5% to 2.5% of total sales. While it was not specific to the aerospace industry a correlation can be made that benefits would be realized as well in the use of aerospace industry standards. Further study would be required to validate this hypothesis.

### 3.4 Main priorities in the work of the TC 20 committee

- a) The main priorities in the work of the committee and how the priorities are related to trends in the business, technological, environmental and social environment of the field addressed by the work of the ISO committee are the following:
  - To lead to cost savings through implementation of TC 20 standards;
  - To remove technical barriers to trade and open markets in various regions of the world;
  - To address relevant social, safety, health or environmental concerns;
  - To facilitate the harmonization of national and regional standards;
  - To support the implementation of other International Standards;
  - To be cited as normative references in other International Standards.
  - To enable interoperability and collaborative, world-wide cross-support among space data systems, as has already been substantiated by an ever increasing number of spaceflight missions.
- b) For the next 5-10 years, ISO/TC 20 will work to achieve the above benefits through the development of relevant aerospace standards. ISO/TC 20 will be giving special attention to meeting emerging standardization needs in the following areas:
  - Environmental issues including emissions, resource use and waste, sustainability, and end-of-life reclamation
  - UAVs/UAS
  - Air Traffic Control and Air Traffic Management
  - Environment and multi-domain applications
  - Implementation of national, regional and international regulations related to the reduction and elimination of hazardous chemicals and materials
  - Interoperability
  - Inspection, testing, and repair and replacement of parts, materials, components, subassemblies and systems related to ageing aircraft.



- Airport infrastructure and data exchange standards
- c) The above list could have an impact on the current TC 20 structure and may require the establishment of new subcommittees or working groups.

#### 4. REPRESENTATION AND PARTICIPATION IN THE ISO/TC

##### 4.1 Countries/ISO members bodies that are P and O members of the ISO committee

- Participating countries: 11
- Observing countries: 26

**Secretariat: USA ( ANSI )**  
As of July 2014

Participating Countries	Observing Countries
Brazil ( ABNT)	Argentina ( IRAM )
China ( SAC)	Austria ( ASI )
France ( AFNOR)	Belarus ( BELST )
Germany ( DIN)	Belgium (NBN)
Italy( UNI)	Bulgaria ( BDS )
Japan ( JISC)	Croatia ( HZN )
Kazakhstan ( KAZMEMST)	Czech Republic ( UNMZ )
Russian Federation ( GOST R)	Denmark ( DS )
Ukraine ( DSSU)	Finland ( SFS )
United Kingdom ( BSI)	Hong Kong, China (ITCHKSAR)
USA ( ANSI )	<i>(Correspondent member)</i>
	India (BIS)
	Hungary ( MSZT )
	Indonesia ( BSN )
	Iran, Islamic Republic of ( ISIRI )



	Israel( SII)
	Korea, Republic of ( KATS)
	Netherlands ( NEN )
	New Zealand ( SNZ )
	Pakistan ( PSQCA )
	Poland ( PKN )
	Romania ( ASRO )
	Serbia ( ISS )
	Slovakia ( SUTN )
	Sweden ( SIS )
	Tunisia ( INNORPI )

Please click on the following link for an updated list: ISO/TC 20 [Participating and observing countries](#).

## 4.2 Analysis of the participation

- a) Section 4.1 shows the current participation of ISO members in the work of ISO/TC20. It will be noted that all the nations with a significant aerospace industry are either P or O members of TC 20 and/or its subcommittees. There are 12 P-members and 24 O-members as of October 2013. Among the P-members, 70% come from developed countries, and 30% from developing countries and countries with economies in transition. Most of the participants are from North America, Europe and Asia. There is little participation from Africa or the Middle East. Those member nations with the most active aerospace industries are the most active in TC 20 work. Most major manufacturers of aerospace systems, propulsion systems, components, and parts have some representation through their national member bodies. Participation by aerospace system operators, i.e., airlines, space launch providers, etc., however, is weak.
- b) An analysis of the trends for participation in TC 20 and its subcommittees shows a slow decline in the number of subject matter experts participating in the development of the standards and fewer aerospace companies supporting the work of TC 20. The challenge for TC 20 is to re-engage industry and to identify those projects which will benefit industry and therefore will be supported by aerospace companies and national bodies.
- c) 4.2.3.1 shows the organizations with which TC 20 maintains an interest. The relationship with ASD-STAN, AIA, AIAA, CCSDS, ECSS and SAE is strong while the relationship with many of the others is weak. An important part of TC 20's business plan is to improve participation of all interested stakeholders and to strengthen liaison relationships with all organizations listed in 4.2.1.
- d) TC 20, in order to support the global aerospace industry, will continue to try to minimize the barriers



posed by geography and travel constraints. Countries which are not able to participate physically in TC 20 meetings should be encouraged to contribute via electronic on-line tools and processes.

- e) With the growing importance of IT systems, communications protocols, and information technologies to the aerospace industry, ISO/TC 20 will continue to evaluate the need to form new liaisons with those organizations and technical committees which develop these types of standards. This will be increasingly important due to international efforts to modernize the global Air Traffic Management systems, the push to migrate unmanned air systems into commercial airspace, and the rapid and continual update of on-board entertainment and passenger connectivity systems.

#### **4.2.1 Organizations in liaison with ISO/TC 20**

##### 4.2.1.1 ISO committees in liaison:

JTC 1/SC 31

ISO/TC 4 - Rolling bearings

ISO/TC 14 - Shafts for machinery and accessories

ISO/TC 31 - Tyres, rims and valves

ISO/TC 37 - Terminology and other language and content resources

ISO/TC 79 - Light metals and their alloys

ISO/TC 104 - Freight containers

ISO/TC 131 - Fluid power systems

ISO/TC 135 - Non-destructive testing

ISO/TC 142 - Cleaning equipment for air and other gases

ISO/TC 176 - Quality management and quality assurance

ISO/TC 197 - Hydrogen technologies

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##### 4.2.1.2 IEC committees in liaison:

IEC/TC 107

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A complete list of ISO [Technical Committees](#) is available on the ISO web-site.

##### **4.2.1.3 ISO/TC 20 and its SCs also maintain a close interest with the following organizations:**

- ACI Airport Council International
- AIA/NASC Aerospace Industries Association/National Aerospace Standards Committee
- ASD-STAN European Association of Aerospace Industries - Standards Program
- ASTM International
- A4A Airlines for America
- CCSDS Consultative Committee for Space Data Systems
- COSPAR Committee on Space Research
- EASA European Aviation Safety Agency
- ECSS European Cooperation on Space Standardization
- EUROCAE The European Organization for Civil Aviation Equipment





- EUROCONTROL
- FAA Federal Aviation Administration
- IAOPA International Council of Aircraft Owner and Pilot Associations
- IAQG International Aerospace Quality Group
- IATA International Air Transportation Association
- ICAO International Civil Aviation Organization
- IEC International Electrotechnical Commission
- IMO International Maritime Organisation(<http://www.imo.org>)
- NASA National Aeronautics and Space Administration
- RTCA RTCA Incorporated
- SAE International (Aerospace Technical Standards Committees)
- Strategic Standardization Forum for Aerospace
- UNOOSA United Nations Office for Outer Space Affairs<http://www.oosa.unvienna.org/oosa/index.html>
- WMO World Meteorological Organization



## **5. OBJECTIVES OF ISO/TC AND STRATEGIES FOR THEIR ACHIEVEMENT**

### **5.1 Defined objectives of ISO/TC 20**

- a) To ensure that internationally accepted standards exist for the design, construction, test and evaluation, operation, air traffic management, maintenance and disposal of components, equipment and systems of aircraft and space vehicles, including issues related to safety, reliability and the environment.
- b) As required, produce, maintain and assure these standards are cost effective and correspond to users' and market needs and that they support the technical projects of the sector
- c) Reduce the time to deliver aerospace business driven standards to the end user. ISO/TC 20 will continue to look for process improvements, which will reduce the standards delivery cycle to be competitive with those of other major aerospace standards developing organizations.

### **5.2 Identified strategies to achieve the ISO/TC's defined objectives**

- a) Encourage active participation in TC 20 activities by regulatory agencies.
- b) Further standardization for credential and educational demands (international standards for certification) recognizing the work done by the IAQG (e.g. EN/AS/JS 9100 and EN/AS/JS 9130).
- c) Support the reduction of efforts for control and certifications for multiple national and international audit processes and certifications through recognition of and cooperation with certification organizations such as PRI and ASD-CERT.
- d) Reinforce communication between ISO/TC 20 and its mirror committees to facilitate the use and adoption of TC 20 standards.
- e) Encourage development of standards offering dual use potential (civil and military)
- f) Protection of the environment, by more involvement in the development of standards which address environmental issues and their effects on the manufacture, operation, and end-of-life of aerospace products (e.g., noise, emissions, fuel consumption, recycling, SSA etc.)
- g) Improve the visibility on all SCs work programmes and promote more transversal work modes. Cross checking involving each SC has to be implemented within TC 20 to increase cross fertilization.
- h) Define a process to pick out common topics to escalate them at the right level within ISO Organisation (interface with others TCs).
- i) Encourage active participation in TC 20 activities by Research and Development or, innovation organisations.

### **5.3 Standard Operating Procedures**

- a) Take into account aircraft, defence and space vehicle international standardization needs and understand where those needs are already being met by other standardization bodies. Organize TC 20 subcommittees and working groups as necessary to provide standards in those areas not adequately served by existing activities.
- b) Identify what standards exist elsewhere and those needs that are not adequately served by existing standards developing organizations (SDOs). Establish programs of work as required to address these standardization gaps
- c) Support the reduction in the number of national standards and promote global standardization by encouraging the migration of national and European standards to the ISO-level or through recognition of already globally used standards developed by other organizations
- d) Maintain and encourage consistent links with national, regional or international organizations (i.e. IEC) publishing standards, to coordinate preparation and maintenance standards procedures



- e) Encourage active mutual participation in TC 20 activities by standards developing organizations listed in 2.2.7
- f) Recognize standardization issues raised by other bodies concerned with development and maintenance of international standards for aircraft and space vehicles. When required, provide a forum to discuss and resolve these issues
- g) Focus on achieving international commonality on the basic subjects of :
  - terminology, coding, definitions
  - testing methods
  - widely used technical specifications
  - dimensional and functional interfaces
  - procedures and methods for qualification
  - Prioritize activities by taking the following into account:
    - Elimination of trade barriers
    - Safety, health and protection of life and environment
    - Interface, interchangeability and interoperability
    - Fitness for purpose (performance requirements)
    - Coherency between design, production and test methods

## **6. FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC WORK PROGRAMME**

The degree to which this business plan will be successfully implemented depends on how well TC 20 can deal with industry, ISO process, and outside environment issues:

### **6.1 Industry Issues**

- a) There is a perception throughout the aerospace industry that the ISO process is not responsive to industries' needs. ISO/TC 20 has to ensure that all secretariats (TC, SC and WG) are supported by a professional National Standardisation Organisation to ensure that all ISO processes are well known and well applied. This has to ensure a minimum development time as well as the further development of the ISO Standardisation Processes according to the Standardisation needs.
- b) For the foreseeable future, resources for aerospace standardization work could be lower than has been historically the case (see 6.2 Process Issues). There will be competition for these resources from the business needs of individual companies as well as from industry, national, regional and international standardization efforts. Commitment of resources at a company level to support international standardization efforts will be driven primarily by specific business requirements and priorities as well as the inherent fluctuations of the global economy.
- c) Industry and regional standards developing organizations each have their own business interests in promoting/protecting the standards that they develop.
- d) Support of ISO by national working-groups and not duplicating ISO standards with national standards.
- e) Due to lack of engagement in the international standards development process, some manufacturers tend to be more comfortable with company generated and controlled standards and to a lesser extent industry and national/regional standards.
- f) Low priority given by top management due to short term objectives and return on investment, i.e. standardization has a medium/long term R.O.I.
- g) Availability of project leaders and experts are in question.
- h) Validation of a test method is dependent upon funding being available to undertake the necessary



pre/co-normative research.

- i) Expertise with sufficient resources from industries is not always made available as expected.
- j) Reviews by companies, answers to the votes, added value comments are based on voluntary contribution and could be insufficiently elaborated.
- k) Many of the existing widely used standards utilize the inch system of measurement.
- l) It is costly to introduce new part numbers into an aerospace product because of the rigorous certification requirements. Also most new commercial aircraft are derivatives of existing aircraft. That means that to benefit from common parts inventories, it is often not cost effective to introduce new standards at the time of developing a new aircraft. A way is needed to adopt such standards into the ISO system without changing the prime identifier of the standard.

## 6.2 ISO Process Issues

- a) Most secretariats support ISO TC 20 sub-committee activities on a part time basis, so at times it is difficult for them to complete or progress the programme or work, in addition to the fulfilment of regular secretariat duties including delivery of meeting agendas, organization of meetings, and formatting standards in the ISO template, etc. Sometimes it is difficult to find the required five P-members willing to participate in a project.
- b) There is a continuing difficulty in having adequate member attendance at TC 20 and its SC meetings to do contributions. The cost for attending meetings continues to be a concern as well.

## 6.3 Use of Livelink for ISO/TC 20 and all of the TC 20 Sub Committees

ISO/TC 20 and all of its SCs are afforded access to Livelink collaboration tool and should use Livelink to manage their work.

## 7. STRUCTURE, CURRENT PROJECTS AND PUBLICATIONS OF THE ISO/TC

This section gives an overview of the ISO/TC's structure, scopes of the ISO/TCs and any existing subcommittees and information on existing and planned standardization projects, publication of the ISO/TC and its subcommittees.

### 7.1 [Structure of the ISO committee](#)

### 7.2 [Current projects of the ISO technical committee and its subcommittees](#)

### 7.3 [Publications of the ISO technical committee and its subcommittees](#)

#### Reference information

[General information on the principles of ISO's technical work](#)  
*Glossary of terms and abbreviations used in ISO/TC Business Plans*