

Memento 2019

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Preface

Information and Communication Technology (ICT) and Consumer Electronics (CE) are key factors in today's economic and social environment. Effective interchange of commercial, technical, and administrative data, with text, images and, increasingly, audiovisual information is vital for the growth of economy in the world markets. Through the increasing digitalization of media, automation of processes, and pervasive use of lightweight communicating devices (from notebooks to tablets to smart phones), information technology, telecommunications and consumer electronics are getting more and more integrated.

Standardization provides the means for economical solutions to complex technologies, and is required for data interchange and interoperability. Moreover, it is most effective when performed in a pre-competitive mode during product development and with all interested parties involved.

Ecma - one of the oldest worldwide standard bodies active in the area of ICT and CE standardization - was founded almost 60 years ago, in May 1961, and was registered in Switzerland as a not-for-profit organization.

From 1961 until 1994, ECMA (European Computer Manufacturers Association), then Ecma International (Ecma, for short) has actively contributed to worldwide standardization of ICT. So far 417 high quality Ecma Standards and 107 Technical Reports (and their updates) have been published.

Standardization is a never ending story especially in the area of ICT and CE, bursting with innovation and new usages. There are always new technologies waiting for urgent standardization. Therefore, we are optimistic about the next decades of standardization in Ecma.

Ecma standardization work has always been recognized as far-sighted and reflecting technological trends at an early stage. As a consequence, many Ecma Standards have been accepted as a basis for International and European Standards. To ensure close co-operation Ecma has established formal liaisons with European and international standardization bodies.

The liaison with ISO and in particular the A-liaison with ISO/IEC JTC 1 (and its predecessor TC97), goes back to 1961. This fruitful co-operation led in 1987 to the acceptance of the Fast-Track procedure by ISO (and IEC) on a proposal by Ecma. Ecma combines the agility of consortia with the quality of the de jure standardization organizations. By combining its efficient infrastructure and proven yet adaptive working methods with the well-established formal liaisons at International and European level, Ecma has established a strong position in the area of ICT and CE standardization.

Ecma Standards are developed by its members, which are highly qualified experts from information technology, consumer electronics and telecommunication industrial firms, from smaller companies, or from the academic or research community, with the commitment to provide, in a consensus mode, technical solutions ready for implementation in product development and testing.

The benefit of Ecma membership is the following:

- ◁ It provides early knowledge of technological trends and better understanding of technology standards requirements, especially in emerging technology areas.
- ◁ It provides a platform where technical contributions of member companies are evaluated by experts who via an effective process develop high quality Ecma Standards and Technical Reports in a very short time. In Ecma small working structures dominate, working is fast, working methods include active collaboration with Open Source communities, RAND and Royalty Free patent policies and consensus is usually easy to achieve.
- ◁ Also public reviews are made possible: the process is defined, but its use is not systematic (Technical Committees have a choice to use it for a given topic). In this way, it is possible to obtain input to and review of intermediate drafts either from the general public or from targeted organizations in liaison.
- ◁ Ecma adheres to WTO principles for standardization. For a given topic there needs to be a middle ground between speed and wider consensus. Ecma can do both. Ecma's experience, like elsewhere, is that the wider the consensus, the more time it takes.
- ◁ Ecma is part of the larger standardization landscape. There is a choice to have an Ecma standard as final step or to propose it to another SDOs, e.g. to JTC 1 for fast-track.

The participation in Ecma of many worldwide leading companies ensures not only the acceptance of Ecma Standards in European and International standardization, but also their worldwide implementation.

Our goal for the next decade is to continue to play a key role in the extraordinary development in IT, telecommunications and Consumer Electronics, via dissemination of new technologies, and by the delivery of first class standards to our members, partners and the standard user community. We aim to continue to bring in major contributions, to move technology from our members to mature standards and to c[| | æà [; æc ^ Á , ã c @Á c @^ Á , [; | ã q • Á { æb [; Á Û Ö U •

The President, Geneva, January 2019.

Purpose and Membership

The Purpose of Ecma International is:

- < To develop, in co-operation with the appropriate national, European and international organizations as a scientific endeavour and in the general interest, standards and technical reports in the fields of information and communications technologies.
- < To encourage the correct use of standards by influencing the environment in which they are applied.
- < To publish the Ecma Standards and Technical Reports - after their approval by at least two-thirds of all Ordinary Members - free of charge and freely copyable to all interested parties.

The Association shall consist of Company members (i.e., ordinary, associate, SME and SPC members), and not-for-profit (NFP) members (like universities).

Ordinary membership may be applied for by a company which has interest and experience in matters related to one or more Technical Committees of the Association, which wishes to exert the right to vote at the Technical Committees and at the General Assembly and which wishes to exert other exclusive rights defined in the By-laws and Rules.

All other membership classes have the right to vote on the Technical Committee level only.

Associate membership may be applied for by a company which has interest and experience in matters related to one or more of the Technical Committees of the Association but without the right to vote in the General Assembly.

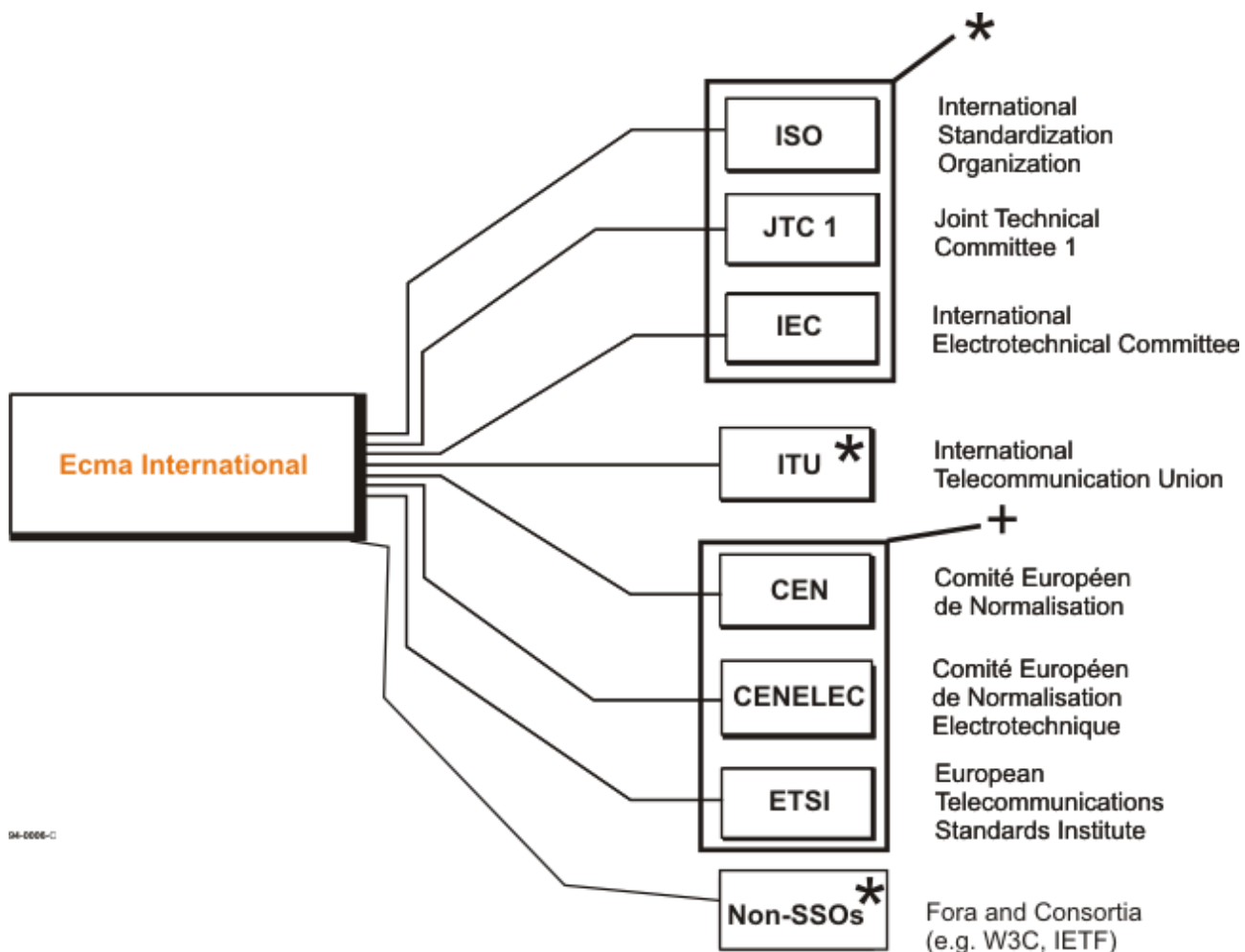
A company which has similar interests as an associate member and an annual, global turnover of less than one hundred million Swiss Francs, may be admitted as SME member (Small and Medium-sized Enterprise).

An organization - a company or other legal for-profit organization - which has similar interests as an associate member, an annual global turnover of less than Swiss Francs 10'000'000.- and no more than 25 employees, may be admitted as SPC member (Small Private Company).

NFP membership may be applied for by a non-profit-making organization. If an NFP is an organization with several organizations as members, then normally it can only become an NFP member in Ecma if its members do not qualify for Company membership in Ecma. NFPs may only participate in the work of no more than one Ecma Technical Committee.

The Association is a non-profit-making organization and does not devote itself in any commercial activity.

Ecma's role in International Standardization

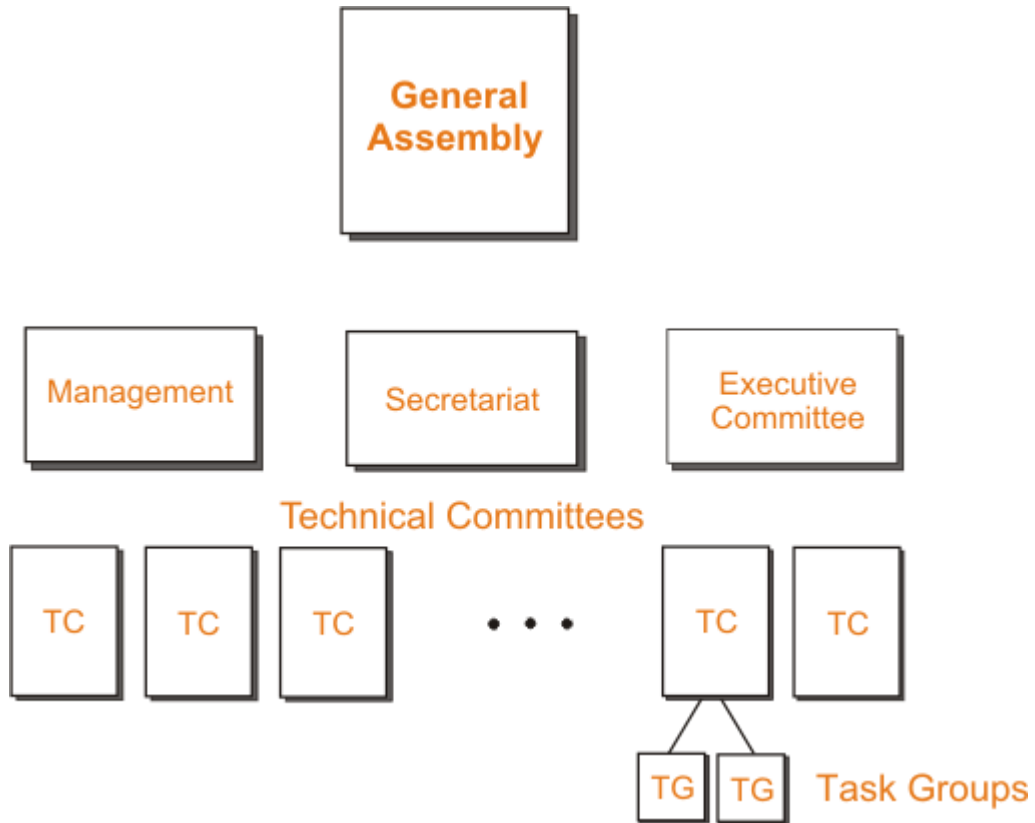


* SSO . Standard Setting Organization

+ ESOs . European Standardization Organizations

Ecma International has close working relations - such as liaisons, co-operation agreements, and memberships - with European and international standardization bodies as well as to some Fora and Consortia.

Organization of Ecma International*



94-0007-C

* Often called Ecma short for Ecma International.

Management

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(IBM)

Vice-President
Mr K. Yamashita
(Hitachi)

Treasurer
Mr K. Yamashita
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Dr I. Sebestyen

Deputy Secretary General
Mr P. Lüthi

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Ms I. Valet-Harper (Microsoft)

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Mr B. McAuliffe (HP Inc.)

From the Non Ordinary members
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Mr D. Ehrenberg (Igalia)



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Apple Mr E. Vangala
alternate: Mr D. Singer

Bloomberg Mr K. Fleming

Canon Mr R. Fujita

Facebook Mr J. Morrison

Fujitsu Mr H. Sakai
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GoDaddy.com Mr B. Farias

Google Mr W. Horwat

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Hitachi Mr M. Itou
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Technical Committees

Active Committees

Product Safety	TC12
Electromagnetic Compatibility and Electromagnetic Fields (EMC & EMF)	TC20
Acoustics	TC26
Information Storage	TC31
Multimedia Coding and Communications	TC32
Product-related Environmental Attributes	TC38
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Open XML Paper Specification (OpenXPS®)	TC46
Near Field Communications	TC47
Programming Languages	TC49
Close Proximity Electric Induction Data Transfer	TC50
Access Systems	TC51
Dart	TC52
Smart Wearable Systems and Sensor-based Devices	TC53

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Committees having accomplished their task

Codes (Coded Character Sets)	TC1
General Programming Languages	TC2
Problem Analysis and Flow Charting	TC3
Optical Character Recognition	TC4
ALGOL	TC5
COBOL	TC6
Magnetic Ink Character Recognition	TC7
FORTRAN	TC8
Data Transmission	TC9
PL/1	TC10
Numerical Control	TC11
Keyboards	TC13
Paper Sizes	TC14
Volume and File Structure	TC15
Rigid Magnetic Disks	TC16
Magnetic Tapes and Tape Cartridges	TC17
I/O Interface	TC18
Flexible Disk Cartridges	TC19
BASIC	TC21
Database	TC22
Open Systems Interconnection	TC23
Communications Protocols	TC24
Data Networks	TC25
Ada	TC27
Ergonomics of Work Stations	TC28
Document Architecture and Interchange	TC29
SCSI Small Computer Systems Interface	TC30
Portable Common Tool Environment (PCTE)	TC33
Office Devices	TC34
User System Interface	TC35
IT Security	TC36
Application Programming Interface for Windows (APIW)	TC37
Object Data Interfaces	TC40
Platform Independent Computing Environment	TC41
Interconnects	TC42
Universal 3D (U3D)	TC43
Holographic Information Storage Systems (HISS)	TC44
High Rate Wireless Communications	TC48

TC12 E Product Safety

Scope:

To consider national and international safety regulations to establish appropriate safety standards for information technology equipment so that they are intrinsically safe and safe for operating and maintenance personnel.

Programme of work:

1. To survey existing national and international standards and recommendations concerned with safety requirements.
2. To study the safety requirements associated with power control and distribution and establish recommendations where appropriate.
3. To consider short circuit and overcurrent protection, earthing, voltage exposure limits, mechanical design, etc., and establish recommendations where appropriate.
4. To develop principles and guidance to identify safeguards.
5. To investigate functional safety aspects.
6. TC20 handles EMF, which is a safety subject, because of their electromagnetic expertise.
7. To assume responsibility for the maintenance of Ecma Standards prepared by TC12.
8. To establish and maintain liaison with other standards organizations in order to present Ecma proposals to them and to make comments on their proposals.

Officers:

Chairman

Vacant

Secretary

Mr P. Lüthi (Ecma International)

Members

Mr P. Green (Intel)

Mr A. Kripahle (Fujitsu)

TC20 – Electromagnetic Compatibility and Electromagnetic Fields (EMC and EMF)

Scope:

Electromagnetic Compatibility and Electromagnetic Fields related to ICT and CE equipment.

Programme of work:

1. To survey Electromagnetic Compatibility (EMC) and Electromagnetic Field (EMF) standards of ICT & CE equipment.
2. To establish measurement methods and limits for the electromagnetic emission and immunity of Information Communication Technology (ICT) & Consumer Electronics (CE) equipment.
3. To establish assessment methods and limits for electromagnetic fields from ICT & CE equipment to prevent excessive human exposure.
4. To maintain Ecma Standards and Technical Reports prepared by TC20.
5. To maintain liaison with other standards organizations dealing with EMC and EMF, to comment on their proposals and to present Ecma proposals.

Officers:

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Vice-Chairman

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Mr H. Yokota (Hitachi)
Mr T. Zitzelsberger (Fujitsu)

TC26 Æ Acoustics

Scope:

To recommend standards for determining the noise outputs of different categories of individual items of information technology equipment intended for use in defined working environments; standards for determining total noise levels in the said working environments, these standards to include corresponding methods of measurement; preferred methods of predicting total levels if units of known noise output are installed together.

Programme of work:

1. To categorize the acoustical environments in which information technology equipment is required to work.
2. To survey the various recommendations and requirements for the acoustical environments of these areas .
3. To make recommendations for standard methods of measuring and specifying the noise output of equipment, taking into account the work of ISO/TC43.
4. To consider any special requirements that may arise during non-standard operation, e.g. servicing.
5. To consider what information should be supplied by the manufacturer to facilitate optimum installation and to make recommendations.
6. To follow developments affecting acoustical environment in places of work.
7. To assume responsibility for the maintenance of Ecma Standards prepared by TC26.
8. To maintain liaison with other standards organizations in order to present Ecma proposals to them and to make comments on their proposals.

Officers:

Chairman ad interim

Dr C. Oppenheimer (HP Inc.)

Vice-Chairman

Mr I. Kimizuka (IBM)

Secretary

Mr R. Hellweg (Ecma International)

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Mr Y. Xu (Apple)
Mr A. Yamaguchi (Fujitsu)
Mr S. Zimmerman (Microsoft)

TC26-TG1 – Noise and Vibration Measurement of Small Air-moving Devices

Scope:

- < To develop and maintain standard(s) and technical report(s) for the noise and vibration measurement and analysis of small air-moving devices (AMDs) used for cooling information technology and telecommunications equipment (ITTE);
- < To investigate noise and vibration issues of small AMDs used in the cooling of ITTE, and to propose recommended technical solutions.

Programme of work:

1. To maintain ECMA-275 (including investigation of ISO counterparts, ISO 10302 Parts 1 and 2).
2. To monitor technological developments and issues of noise and vibration from small AMDs and other related technologies for efficient cooling of ITTE.
3. To develop recommendations, e.g. standards, for small AMD noise and vibration issues.

Officers:

Convenor

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Secretary

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Members

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Mr E. Baugh (Apple)
Ms Y. Isoe (Ricoh)
Mr I. Kimizuka (IBM)

TC26-TG2 Ę Noise Measurement of MFDs and Related Product Categories

Scope:

- ◁ To develop and maintain standard(s) and technical report(s) for the noise measurement and analysis of multi-function devices (MFDs) and related product categories;
- ◁ To investigate noise and vibration issues of multi-function devices (MFDs) and related product categories, and to propose recommended technical solutions.

Programme of work:

1. To maintain Annex C of ECMA-74 (including investigation of ISO counterparts, ISO 7779 and its referred basic standards)
2. To monitor technological developments and issues of noise and vibration from MFDs and related product categories.
3. To develop recommendations, e.g. standards, for noise and vibration issues.

Officers:

Convenor

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Secretary

Mr R. Hellweg (Ecma International)

Members

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Ms Y. Isoe (Ricoh)
Dr C. Oppenheimer (HP Inc.)
Mr K. Shimoda (JBMIA)
Mr S. Tashiro (Konica Minolta)

TC26-TG3 È Psychoacoustic standards for IT and CE equipment

Scope:

< To develop psychoacoustic standards for IT and CE equipment.

Programme of work:

To be decided asap

Officers:

Convenor

Prof. Dr-Ing. R. Sottek (HEAD acoustics)

Secretary

Mr R. Hellweg (Ecma International)

Members

Prof. P. Davies (Purdue University)

Mr I. Kimizuka (IBM)

Dr C. Oppenheimer (HP Inc.)

TC31 E Information Storage

Scope:

To identify and develop the minimum number of standards necessary for data interchange and/or storage by means of necessary for determining the life expectancy of such media.

To study existing Ecma and ISO/IEC labelling, volume and file structure standards and, where necessary, initiate and pursue the development of volume and file structure standards.

Programme of work:

1. To develop standards for optical disks and disk cartridges of 60 mm, 80 mm, 90 mm, 120 mm , 130 mm, 300 mm and 356 mm.
2. To develop standards on methods for determining the life expectancy of optical storage media .
3. To assume responsibility for the maintenance of Ecma Standards prepared by TC31 .
4. To monitor technological developments in the field of optical disks and disk cartridges .
5. To maintain liaison with other standards organizations in order to present Ecma proposals to them and to make comments to their proposals .

Officers:

Chairman

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Vice-Chairman

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TC31-TG2 – Holographic Information Storage

Scope:

To maintain an overall view and strategy for standardization in the field of holographic information storage systems, and to identify and develop Standards, Technical Reports and Guidelines in this field. To monitor and pursue standardization at a global level with regard to ISO/IEC JTC 1 and the international standardization community in general, including but not limited to the AV, IT and computer interfaces community.

Programme of work:

1. To develop standards for media recorded by holographic means.

This includes but is not limited to:

- < the recording format;
- < the minimum number of parameters, test methods and reference materials necessary to ensure interchangeability of recorded media;
- < protective cases, cartridges or coverings with recording or reproduction devices and equipment.

2. To develop standards on methods for determining the life expectancy of holographic storage media.

3. To assume responsibility for the maintenance of Ecma Standards prepared by TC31-TG2.

4. To monitor technological developments in the field of holographic media.

5. To maintain liaison with other standards organizations in order to present Ecma proposals to them and to make comments to their proposals.

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TC31-TG3 E Volume and File Structure

Scope:

To facilitate the interchange of information on media by specifying the format on the recorded structures that contain descriptive information about volumes and the files/directories recorded on the media.

Programme of work:

1. To specify volume and file structure standards for media used in interchange.
2. To specify such standards so that they are independent, where possible, of the standards for the underlying medium.
3. To constitute a coherent family of standards where possible.
4. To assume responsibility for the maintenance of Ecma Standards prepared by TC31-TG3.
5. To maintain liaison with other standards organizations (SC 23, SC 29, OSTA) in order to present Ecma proposals to them and to make comments on their proposals.

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TC32 ̈ Multimedia Coding and Communications

Scope:

To maintain an overall view and strategy for standardization and to prepare and maintain Ecma Standards and Technical Reports required in the field of multimedia coding and communications, including transmission.

To monitor, coordinate and pursue standardization at a global level with regard to ISO/IEC JTC 1, including its SC06 and SC29, and the international standardization world in general.

To work together with ETSI within the framework for standardization under the terms of the Co-operation Agreement between ETSI and Ecma, for publication of European standards and technical reports.

To promote unified international standards.

General items addressed by standards and technical reports are architecture, service, protocol, interface, compatibility, management and applications aspects.

The field of communications includes:

- ◁ Computer Supported Telecommunications Applications (CSTA).
- ◁ Architecture, service and protocol aspects of narrowband and broadband Private Integrated Services Networks (PISNs).
- ◁ IP-based multimedia communications in a business environment, including interoperability of narrowband and broadband PISNs with IP networks.
- ◁ Personal Networks and their federations.

In scope are also energy efficient solutions for coding and transmission of 3D audio content, including, but not limited to:

- ◁ Spatial Audio.

Further subjects for standardization are:

- ◁ Test sequences and methods for quality assessment of multimedia output.

Programme of work:

1. To address requirements and strategic plans for standardization in the scope, and to align, harmonize and as far as possible remain compatible with standards for multimedia coding and communications as well as standards in related fields.
2. To be responsible for and co-ordinate the planning and work of the Task Groups within TC32. In particular, to review and approve work items of the task groups.
3. To review and approve draft Standards and Technical Reports prepared by the task groups for submission to the Ecma General Assembly and onwards submission to ISO/IEC JTC 1, ETSI and other standardization organizations as appropriate.
4. To maintain liaisons with other Ecma TCs working in related fields
5. To maintain liaison with, monitor and contribute to the work of ISO/IEC JTC 1, ITU-T, ETSI, IETF, and other international, regional and national standards organizations and consortia, to present Ecma proposals and to comment on their proposals.

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TC32-TG11 – Computer Supported Telecommunications Applications (CSTA)

Scope:

Develop and refine the Computer Supported Telecommunications (CSTA) standard.

CSTA specifies an Applications Interface and Protocols for monitoring and controlling calls and devices in a communications network.

These calls and devices may support various media and can reside in various network environments such as IP, Switched Circuit Networks and mobile networks. CSTA however, abstracts various details of underlying signalling protocols (e.g. SIP/H.323) and networks for the applications.

Programme of work:

1. To study aspects of CSTA, with special focus to:

- < improve CSTA and SIP interoperability;
- < improve CSTA and Web interoperability (leverage CSTA XML usage with e.g. WSDL/UDDI);
- < provide conferencing enhancements for collaboration applications;
- < provide finer grained media control;
- < improve support for non-voice media.

2. To produce Technical Reports illustrating how CSTA fits into various environments such as in call/contact centres, voice-browser and Internet environments.

3. To produce Standards specifying the services, functional entities and protocols required enabling CSTA operation in a variety of environments.

4. To liaise with organizations studying similar topics including groups working within ITU-T and ISO/IEC JTC 1/SC 6, IETF, W3C and ETSI, to promote unified international standards.

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TC32-TG14 – Private Integrated Services / Corporate Networks - Services and Signalling

Scope:

To develop Standards and Technical Reports for services and signalling in Private Integrated Services / Corporate Networks (PISNs/CNs).

Programme of work:

1. To develop service Standards and interface protocol signalling Standards for the connection of terminal equipment to a PISN/CN, utilising, and remaining compatible with, existing Standards and recommendations, as far as possible.
2. To develop Standards for intra-PISN/CN services and signalling protocols (i.e. QSIG/PSS1), thereby supporting harmonized telecommunications services on multi-vendor PISNs/CNs, and to align these services as far as possible with the public ISDN telecommunications services.
3. To co-operate with other standardization bodies in the development of Standards for the services and signalling of PISNs/CNs in relation to:
 - < interconnection of PISN exchanges;
 - < connection of terminal equipment (TE).
4. To develop Standards for the service description, information flows and signalling protocols of PISN/CN services.
5. To co-ordinate liaison with ITU-T, ISO/IEC JTC 1 and ETSI in the field of ISDN services and protocol standards.
6. To monitor and to contribute to the work of other international and European bodies studying matters related to PISN/CN services (e.g. ISDN developments).
7. To maintain existing standards for broadband private networks (B-PISN).
8. To maintain existing standards for architectural, naming numbering and addressing aspects of narrowband and broadband PISNs/CNs.

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TC32-TG17 È IP-based Multimedia Business Communications

Scope:

To develop Standards and Technical Reports for IP-based multimedia communications in a business environment.

Programme of work:

1. To identify requirements for IP-based multimedia communication in a corporate network environment, including architectural, addressing, mobility, service, protocol, interworking, QoS, security and management aspects.
2. To co-operate with the responsible Task Groups, Technical Committees and other standardization bodies in order to achieve where necessary Standards or Technical Reports in these areas.
3. To adapt, where necessary, existing standards for narrowband and broadband PISNs to the requirements of IP-based multimedia communication in a business environment.
4. To develop, where necessary, standards for IP-based interoperation of corporate networks with other networks.
5. To promote a worldwide unique set of standards for IP-related multimedia communication in a business environment.
6. To co-ordinate liaison on related matters with ITU-T, ETSI, TIA, IETF, IMTC and ISO/IEC JTC 1.
7. To monitor, and contribute to, related work in other bodies.

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TC32-TG22 ̈ Scalable Sparse Spatial Sound System (S5)

Scope:

To develop Standards and Technical Reports for a digital spatial audio system which uses Inverse Coding to achieve highly efficient coding of localization and ambiance information.

Programme of work:

1. To develop and maintain Standards/Technical Reports for an Inverse Coding based audio system covering:
 - < Requirements on data formats and preprocessing of the audio source
 - < Overall S5 architecture
 - < Coding format of Inverse Coding parameter data
 - < Recommendations/References regarding Base audio encoders
 - < Multiplexing of base audio stream and Inverse Coding parameter data
 - a) External multiplexing
 - b) Internal multiplexing by embedding Inverse Coding parameter data in audio stream
2. To develop and maintain Standards/Technical Reports on binaural rendering with Head Related Transfer Functions (HRTF).
3. To develop and maintain Standards/Technical Reports on highly efficient/low power binaural rendering with Head Related Transfer Functions (HRTF).
4. To develop and maintain Standards/Technical Reports on conformance testing tools for implementations.
5. To develop and maintain Standards/Technical Reports on quality testing tools for implementations.
6. To cooperate and liaise with Ecma TCs and external organizations and standardization bodies working in related technical fields (e.g. ISO/IEC JTC 1/SC 29/WG 11 (MPEG)).

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TC38 E Product-related Environmental Attributes

Scope:

To identify and describe the environmental attributes related to ICT (Information and Communication Technology) and CE (Consumer Electronics) products, during their entire life cycle, from conception to end-of-life treatment.

Programme of work:

1. To develop recommendations, e.g. Standards, on environmental attributes and the presentation thereof for ICT and CE products.
2. To monitor the development of environmental standards, regulations, conformity schemes and other requirements related to ICT and CE products.
3. To promote and maintain Ecma Standards covering product-related environmental attributes. To comment on standards and regulations from outside organizations.
4. To establish and maintain close liaison with other organizations and other fora working in the same or similar fields of activity.

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TC38-TG1 È Chemical Emissions

Scope:

Chemical Emissions.

Programme of work:

1. To survey existing national and international standards and recommendations.
2. To monitor regulatory developments.
3. To standardize and harmonise methods to determine the chemical emissions.
4. To maintain its published work.
5. To liaise with relevant standards organizations.

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TC38-TG3 E Environmental Declarations

Scope:

Environmental Declarations

Programme of work:

1. To survey existing national and international standards and recommendations.
2. To monitor regulatory developments.
3. To standardize and harmonise environmental declarations.
4. To maintain its published work.
5. To liaise with relevant standards organizations.

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TC39 Æ ECMAScript®

Scope:

Standardization of the general purpose, cross platform, vendor-neutral programming language ECMAScript. This includes the language syntax, semantics, and libraries and complementary technologies that support the language.

Programme of work:

1. To maintain and update the standard for the ECMAScript programming language.
2. To identify, develop and maintain standards for libraries that extend the capabilities of ECMAScript.
3. To develop test suites that may be used to verify correct implementation of these standards.
4. To contribute selected standards to ISO/IEC JTC 1.
5. To evaluate and consider proposals for complementary or additional technologies.

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TC45 Office Open XML Formats

Scope:

The initial goal of the Technical Committee was to produce a formal standard for office productivity applications within the Ecma International standards process, which is fully compatible with the Office Open XML Formats. The aim was to enable the implementation of the Office Open XML Formats by a wide set of tools and platforms in order to foster interoperability across office productivity applications and with line-of-business systems. Now that ISO/IEC JTC 1/SC 34/WG4 has taken over the management of the Office Open XML work, the Technical Committee is responsible for assisting WG4 with the ongoing maintenance and evolution of the standard.

Programme of work:

1. To produce a formal Standard for office productivity documents which is fully compatible with the Office Open XML Formats.

This includes:

a) Produce a standard which is fully compatible with the Office Open XML Formats, including full and comprehensive documentation of those formats in the style of an international standard, with particular attention given to enabling the implementation of the Office Open XML Formats by a wide set of tools and platforms in order to foster interoperability across office productivity applications and with line-of-business systems.

b) Produce a comprehensive set of W3C XML Schemas for the Office Open XML Formats, with particular attention given to self documentation of the schemas and testing of the XSDs for validation using a wide variety of XSD tools of the market and cross platform.

2. To contribute the Ecma Office Open XML Formats standards to ISO/IEC JTC 1 for approval and adoption by ISO and IEC.

Upon completion of the Previous Items, the role of the Technical Committee will be:

3. To assume responsibility for maintaining the Ecma Office Open XML standard.

4. To evaluate and consider proposals for complementary or additional technology.

5. To assume responsibility for the evolution of the Ecma standard while ensuring backward compatibility with the previous versions to guarantee continuity in the use of the current and future formats.

6. To establish and maintain liaison with other Ecma TCs and with other Standards Development Organizations (SDOs) as appropriate to facilitate and promulgate the work of the TC.

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TC46 Æ Open XML Paper Specification (OpenXPS®)

Scope:

The goal of the Technical Committee is to produce a formal standard for an XML-based electronic paper format and XML-based page description language which is consistent with existing implementations of the format called the Open XML Paper Specification (OpenXPS). The Technical Committee will use the format called the Open XML Paper Specification (OpenXPS) as a starting point with the aim to provide a standard, secure, and highly trustworthy format that enables a wide set of applications, devices, tools and platforms to implement compatible paginated-document workflows. An additional goal will be to enable the interoperability of independently created software and hardware systems that produce, consume or otherwise process XPS content. The Technical Committee will be responsible for the ongoing maintenance and evolution of the standard.

Programme of work:

1. Produce a formal standard for an XML-based electronic paper format and XML-based page description language which is consistent with existing implementations of the format called the Open XML Paper Specification, including:
 - ◁ Produce a fully documented and unambiguous standard for an XML-based electronic paper format and page description language;
 - ◁ Produce appropriate W3C XML Schemas to enable automatic verification of files written to the standard;
 - ◁ Enable interoperability between existing industry implementations of applications, devices, tools and platforms.
2. Assume responsibility for the ongoing maintenance and evolution of this Ecma International standard.
3. Support backwards compatibility with implementations targeted to prior versions of the standard.
4. Evaluate and consider proposal for complementary or related additional technologies.
5. Establish and maintain liaison with other Ecma TCs and with other Standards Setting Organizations (SSOs) as appropriate to facilitate and promulgate the work of the TC.
6. Evaluate and consider contributing the Ecma standard to an ISO and/or IEC TC for approval and adoption.

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TC47 Ę Near Field Communications*

Scope:

To develop Standards and Technical Reports for Near Field Communication Systems, for the realization of simple wireless communication between close coupled devices for network products and consumer equipment.

Programme of work:

1. To develop and maintain Standards and Technical Reports for Near Field Communication.
2. To cooperate and liaise with other organizations and standardization bodies, where appropriate, in particular with ISO/IEC JTC 1, to achieve and promote a unique worldwide set of standards in the area of Near Field Communication Systems.
3. To monitor NFC technology developments and to promote and support its use in suitable application areas.

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Mr S. Kusakabe (QUADRAC)

Dr M. Maywald (Fujitsu)

*will become TC51-TG1.

TC49 È Programming Languages

Scope:

To standardize:

- < the programming language C# (C "sharp");
- < the programming language Eiffel;
- < a Common Language Infrastructure (CLI);
- < a CLI binding for C++;
- < additional programming languages with cross-language bindings;
- < additional vendor-neutral, cross-language programming platforms.

Programme of work:

1. To develop a standard for the programming language C# (pronounced C "sharp").
2. To develop a standard for the Common Language Infrastructure (CLI).
3. To develop a standard for the programming language Eiffel.
4. To develop a standard set of language extensions to provide a CLI binding for C++.
5. To contribute the standards to ISO/IEC JTC 1.
6. To investigate the further direction of standards developed by TC49.
7. To evaluate and consider proposals for complementary or additional technology.
8. To maintain liaison with appropriate other Ecma TCs and TGs and with ISO/IEC JTC 1/SC 22.

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TC49-TG2 È C#

Scope:

To standardize the syntax and semantics of a modern, component-based, general purpose, object oriented, and type-safe programming language called C# (pronounced C sharp).

Programme of work:

1. Develop C# language standards.
2. Upon completion of item 1, to investigate the future direction of C# standards, and to evaluate and consider proposals for complementary or additional technology.
3. To establish and maintain liaison with other Ecma TCs and with other Standards Development Organizations (SDOs) as appropriate to facilitate and promulgate the work of the TG.

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TC49-TG3 Æ Common Language Infrastructure

Scope:

To standardize a common language infrastructure (CLI) to support C#, ECMAScript and other modern languages.

Programme of work:

1. Develop CLI standards including:

- < A common type system used across all supported programming languages;
- < Execution Engine Architecture;
- < A system architecture and type system;
- < Metadata syntax and semantic;
- < File format including validation rules;
- < Program verification rules that ensure type safety;
- < A common intermediate language format for code download and execution, along with metadata that describes the requirements and capabilities of the code;
- < A small set of base classes that provide language support and basic application portability.

2. Upon completion of item 1, to investigate the future direction of CLI standards, and to evaluate and consider proposals for complementary or additional technology.

3. To establish and maintain liaison with other Ecma TCs and with other Standards Development Organizations (SDOs) as appropriate to facilitate and promulgate the work of the TG.

Officers:

Convenor

Ms C. Eidt (Microsoft)

Secretary

Dr I. Sebestyen (Ecma International)

Members

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Dr N. Perry (Kahu Research)

Prof. P. Sestoft (IT University of Copenhagen)

Mr E. Stapf (ETH)



TC49-TG4 È Eiffel Language

Scope:

To standardize the syntax and semantics of a modern, component-based, general purpose, object oriented, and type-safe programming language called Eiffel.

Programme of work:

1. Develop Eiffel language standards.
2. Upon completion of item 1, to investigate the future direction of Eiffel language standards, and to evaluate and consider proposals for complementary or additional technology.
3. To establish and maintain liaison with other Ecma TCs and with other Standards Development Organizations (SDOs) as appropriate to facilitate and promulgate the work of the TG.

Officers:

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TC50 Æ Close Proximity Electric Induction Data Transfer

Scope:

High-Speed Close Proximity Wireless Communications using Longitudinal Electric Induction Coupling.

Programme of work:

1. To develop and maintain Standards and Technical Reports for the wireless data interface between devices, including physical and link layers using the unique properties of the electric induction coupling principle. Basic technology will be optimized for one-to-one, point-to-point topology for close proximity bi-directional data transfer between two active devices.
2. To cooperate and liaise with other organizations and standardization bodies.
3. To act as the registration authority for the Specifier ID Register.

Officers:

Chairman

Vacant

Secretary

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Mr T. Nohnishi (Konica Minolta)

Mr Y. Takeuchi (Konica Minolta)

TC51 Æ Access Systems

Scope:

- ◁ Access System specifies a common language, modular architecture template, interfaces and protocols for the interoperability between (distributed) modules and sub-systems for access to assets.
- ◁ Such assets may be physical such as buildings, transport means, care centres, computers or digitized assets and services e.g. health care.
- ◁ The Access System specification is a generic template for existing and new systems that provide access to specific assets.

Programme of work:

1. To develop and maintain Technical Reports and standards for interoperability between modules and sub-systems for access systems.
2. To monitor related standardization activities to avoid duplication, to promote synergies and to promote complementary efforts via internal and external liaisons with - and contribute to - the work of international SDOs.

Officers:

Chairman

Mr K. Yamashita (Hitachi)

Secretary

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Members

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Mr S. Miyake (Hitachi)

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Mr M. Takada (QUADRAC)



TC52 Æ Dart

Scope:

To standardize the syntax and semantics of a modern, object oriented programming language called Dart as well as standardizing core libraries and complementary technologies that support the language. This work should not use patents or if so then only royalty free patents. To aid in achieving that objective, this TC is using the Royalty-Free Patent Policy which is available [here](#).

Programme of work:

1. To Develop Dart language standards and standards for libraries that extend the capabilities of Dart.
2. Upon completion of item 1, to investigate the future direction of Dart language standards, and to evaluate and consider proposals for complementary or additional technology.
3. To develop test suites that may be used to verify the correct implementation of these standards.
4. To establish and maintain liaison with other Ecma TCs and with other Standards Development Organizations (SDOs) as appropriate to facilitate and promulgate the work of the TG.

Officers:

Chairman

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Secretary

Dr I. Sebestyen (Ecma International)

Members

Dr E. Ernst (Google)

Dr W. Horwat (Google)

Mr A. Møller (Aarhus University)

Mr L. Reichstein Holst Nielsen (Google)

TC53 – Smart Wearable Systems and Sensor-based Devices

Scope:

Internet of Things (IoT) is becoming a reality, and with it, the appearance of small intelligent devices linked together by large networks of intelligent devices are in the form of so called wearables.

Wearable sensor-based systems can comprise various types of small sensors, transmission modules and processing capabilities, and can thus capture various information ranging from monitoring of bodily activities to blood pressure, body temperature and heart rate in wearable devices, and external temperature, humidity, atmospheric pressure, location, and even altitude in small intelligent devices.

Programme of work:

1. To define requirements for the needed interfaces and protocols based on use cases.
2. To establish communication with user communities and other standardization bodies to harmonize and ensure interoperability (e. g. JTC 1/SC 41, IEC TC124, ITU-T SG20, W3C, etc.).
3. To continue to develop relevant pre-standardization material on wearable technologies.
4. To study the impact on privacy and data security.
5. To launch specific TGs as the need arises.
6. Standardization activities that would lead to an ECMAScript-based wearables platform and extensions to ECMAScript.
7. To study existing standardization work on the definition of formats of sensor data for general data interchange.

Officers:

Chair ad interim

Mr P. Hoddie (Moddable Tech)

Vice-Chair

Ms J. Burson (Bocoup)

Secretary

Mr P. Lüthi (Ecma International)

Members

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Mr P. Soquet (Moddable Tech)
Mr R. Waldron (Bocoup)
Mr K. Yamashita (Hitachi)
Prof. Chen Yiqiang (Institute of Computing Technology)

Index of Ecma Standards

This index contains the following categories: General, Software Engineering and Interfaces, Data Presentation, Data Communication, Data Interchange and Archiving by Physical Media, Systems Interconnection, Wireless Proximity systems, Multimedia.

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Ecma Standards and corresponding International and European Standards

In the third column of the table below you can find:

- ◁ the ISO/IEC equivalent to the Ecma Standard which can be downloaded as freely available standard from [ISO/IEC](#)
- ◁ the ETSI equivalent to the Ecma Standard which can be downloaded as limitedly freely available publication from [ETSI](#)

Legend:

ISO	International Standard published by ISO
IEC	International Standard published by IEC
ISO/IEC	International Standard published by ISO and IEC
DIS	Draft International Standard
ETSI ETS	ETSI European Telecommunications Standard (previous nomenclature)
ETSI EN	European Standard (telecommunications series)
ETSI ES	ETSI Standard
ETSI TS	ETSI Technical Specification
ETSI EG	ETSI Guide
ETSI ETR	ETSI European Telecommunications Technical Report (previous nomenclature)
ETSI TR	ETSI Technical Report

The ETSI TS and TR are approved by the parent technical committee. The others deliverables are approved by the ETSI community. For more detailed information on ETSI deliverables, see the [ETSI directives](#).

Ecma Standards in force (electronically available [here](#))

ECMA-6	7-Bit Coded Character Set, 6 th edition (December 1991)	ISO/IEC 646
ECMA-13	File Structure and Labelling of Magnetic Tapes for Information Interchange, 4 th edition (December 1985)	ISO 1001
ECMA-35	Character Code Structure and Extension Techniques, 6 th edition (December 1994)	ISO/IEC 2022
ECMA-43	8-Bit Coded Character Set Structure and Rules 3 rd edition (December 1991)	ISO/IEC 4873
ECMA-48	Control Functions for Coded Character Sets, 5 th edition (June 1991)	ISO/IEC 6429
ECMA-74	Measurement of Airborne Noise emitted by Information Technology and Telecommunications Equipment, 15 th edition (June 2018)	ISO 7779
ECMA-94	8-Bit Single-Byte Coded Graphic Character Sets - Latin Alphabets No. 1 to No. 4, 2 nd edition (June 1986)	ISO 8859-1, -2, -3 and -4
ECMA-99	Data Interchange on 130 mm Flexible Disk Cartridges using MFM Recording at 13 262 ftprad on Both Sides 3,8 Tracks per mm (September 1985)	ISO 8630
ECMA-100	Data Interchange on 90 mm Flexible Disk Cartridges using MFM Recording at 7 958 ftprad on 80 Tracks on Each Side - ISO Type 301, 2 nd edition (December 1988)	ISO 8860
ECMA-106	Private Telecommunication Networks (PTN) - Signalling Protocol at the S Reference Point - Circuit Mode Basic Services (SSIG-BC), 3 rd edition (December 1993)	ETS 300 192
ECMA-107	Volume and File Structure of Disk Cartridges for Information Interchange, 2 nd edition (June 1995)	ISO/IEC 9293
ECMA-108	Determination of High-frequency Sound Power Levels Emitted by Information Technology and Telecommunications Equipment, 6 th edition (December 2016)	ISO 9295
ECMA-109	Declared Noise Emission Values of Information Technology and Telecommunications Equipment, 7 th edition (December 2016)	ISO 9296
ECMA-113	8-Bit Single-Byte Coded Graphic Character Sets - Latin/Cyrillic Alphabet, 3 rd edition (December 1999)	ISO 8859-5
ECMA-114	8-Bit Single-Byte Coded Graphic Character Sets - Latin/Arabic Alphabet, 2 nd edition (December 2000)	ISO 8859-6
ECMA-118	8-Bit Single-Byte Coded Graphic Character Sets - Latin/Greek Alphabet (December 1986)	ISO 8859-7
ECMA-119	Volume and File Structure of CDROM for Information Interchange, 3 rd edition (December 2017)	ISO 9660
ECMA-120	Data Interchange on 12,7 mm 18-Track Magnetic Tape Cartridges, 3 rd edition (December 1993)	ISO 9661
ECMA-121	8-Bit Single-Byte Coded Graphic Character Sets - Latin/Hebrew Alphabet, 2 nd edition (December 2000)	ISO 8859-8
ECMA-125	Data Interchange on 90 mm Flexible Disk Cartridges using MFM Recording at 15 916 ftprad on 80 Tracks on Each Side - ISO Type 302 (December 1987)	ISO 9529
ECMA-128	8-Bit Single-Byte Coded Graphic Character Sets - Latin Alphabet No. 5, 2 nd edition (December 1999)	ISO 8859-9
ECMA-130	Data Interchange on Read-only 120 mm Optical Data Disks (CD-ROM), 2 nd edition (June 1996)	ISO/IEC 10149

ECMA-133	Private Integrated Services Network (PISN) - Reference Configuration for PISN Exchanges (PINX), 2 nd edition (December 1998)	ISO/IEC 11579-1 ETS 300 475-1
ECMA-139	3,81 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DDS Format (June 1990)	ISO/IEC 10777
ECMA-142	Private Integrated Services Network (PISN) - Circuit Mode 64kbit/s Bearer Services - Service Description, Functional Capabilities and Information Flows (BCSD), 3 rd edition (December 2001)	ISO/IEC 11574 EN 300 171
ECMA-143	Private Integrated Services Network (PISN) - Circuit Mode Bearer Services - Inter-Exchange Signalling Procedures and Protocol (QSIG-BC), 4 th edition (December 2001)	ISO/IEC 11572 EN 300 172
ECMA-144	8-Bit Single-Byte Coded Character Sets - Latin Alphabet No. 6, 3 rd edition (December 2000)	ISO/IEC 8859-10
ECMA-145	8 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording (December 1990)	ISO/IEC 11319
ECMA-146	3,81 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DATA/DAT Format (December 1990)	ISO/IEC 11321
ECMA-147	Data Interchange on 90 mm Flexible Disk Cartridges using MFM Recording at 31 831 fthead on 80 Tracks on Each Side - ISO Type 303 (December 1990)	ISO/IEC 10994
ECMA-148	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Identification Supplementary Services (ISSD), 3 rd edition (June 1997)	ISO/IEC 14136 ETS 300 173
ECMA-149	Portable Common Tool Environment (PCTE) - Abstract Specification, 4 th edition (December 1997)	ISO/IEC 13719-1
ECMA-150	3,81 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DDS-DC Format using 60 m and 90 m Length Tapes, 2 nd edition (June 1992)	ISO/IEC 11557
ECMA-151	Data Compression for Information Interchange - Adaptive Coding with Embedded Dictionary - DCLZ Algorithm (June 1991)	ISO/IEC 11558
ECMA-152	Data Interchange on 12,7 mm 18-Track Magnetic Tape Cartridges - Extended Format, 2 nd edition (December 1993)	ISO/IEC 11559
ECMA-153	Information Interchange on 130 mm Optical Disk Cartridges of the Write Once, Read Multiple (WORM) Type, using the Magneto-Optical Effect, 2 nd edition (June 1994)	ISO/IEC 11560
ECMA-154	Data Interchange on 90 mm Optical Disk Cartridges, Read Only and Rewritable, M.O., 2 nd edition (June 1994)	ISO/IEC 10090
ECMA-155	Private Integrated Services Networks - Addressing, 2 nd edition (June 1997)	ISO/IEC 11571 EN 300 189
ECMA-156	Private Telecommunication Networks (PTN) - Signalling at the S Reference Point - Generic Keypad Protocol for the Support of Supplementary Services (SSIG-KP), 2 nd edition (June 1993)	ETS 300 190
ECMA-157	Private Telecommunication Networks (PTN) - Signalling Protocol at the S Reference Point - Identification Supplementary Services (SSIG-ID), 2 nd edition (June 1993)	ETS 300 191

ECMA-158	Portable Common Tool Environment (PCTE) - C Programming Language Binding, 4 th edition (December 1997)	ISO/IEC 13719-2
ECMA-159	Data Compression for Information Interchange - Binary Arithmetic Coding Algorithm (December 1991)	ISO/IEC 12042
ECMA-160	Determination of Sound Power Levels of Computer and Business Equipment using Sound Intensity Measurements; Scanning Method in Controlled Rooms, 2 nd edition (December 1992)	ISO 9614-2
ECMA-161	Private Telecommunication Networks (PTN) - Signalling at the S Reference Point - Generic Feature Key Management Protocol for the Control of Supplementary Services (SSIG-FK), 2 nd edition (June 1993)	ETS 300 240
ECMA-162	Portable Common Tool Environment (PCTE) - Ada Programming Language Binding, 4 th edition (December 1997)	ISO/IEC 13719-3
ECMA-163	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Name Identification Supplementary Services (NISD), 3 rd edition (September 1997)	ISO/IEC 13864 ETS 300 237
ECMA-164	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Name Identification Supplementary Services (QSIG-NA), 4 th edition (December 2001)	ISO/IEC 13868 ETS 300 238
ECMA-165	Private Integrated Services Network (PISN) - Generic Functional Protocol for the Support of Supplementary Services - Inter-Exchange Signalling Procedures and Protocol (QSIG-GF), 4 th edition (June 2001)	ISO/IEC 11582 ETS 300 239
ECMA-167	Volume and File Structure for Write-Once and Rewritable Media using Non-Sequential Recording for Information Interchange, 3 rd edition (June 1997)	ISO/IEC 13346
ECMA-168	Volume and File Structure of Read-Only and Write-Once Compact Disk Media for Information Interchange, 2 nd edition (December 1994)	ISO/IEC 13490
ECMA-169	8 mm Wide Magnetic Tape Cartridge Dual Azimuth Format for Information Interchange - Helical Scan Recording (June 1992)	ISO/IEC 12246
ECMA-170	3,81 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DDS Format using 60 m and 90 m Length Tapes (June 1992)	ISO/IEC 12247
ECMA-171	3,81 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DATA/DAT-DC Format using 60 m and 90 m Length Tapes (June 1992)	ISO/IEC 12248
ECMA-173	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Call Diversion Supplementary Services (CFSD), 3 rd edition (December 2001)	ISO/IEC 13872 ETS 300 256
ECMA-174	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Call Diversion Supplementary Services (QSIG-CF), 3 rd edition (December 2001)	ISO/IEC 13873 ETS 300 257
ECMA-175	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Path Replacement Additional Network Feature (ANF-PRSD), 3 rd edition (December 1998)	ISO/IEC 13863 ETS 300 258
ECMA-176	Private Integrated Services Network (PISN) - Inter-exchange Signalling Protocol - Path Replacement Additional Network Feature (QSIG-PR), 4 th edition (December 2001)	ISO/IEC 13874 ETS 300 259

ECMA-177	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Call Transfer Supplementary Service (CTSD), 3 rd edition (December 2001)	ISO/IEC 13865 ETS 300 260
ECMA-178	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Call Transfer Supplementary Service (QSIG-CT), 3 rd edition (December 2001)	ISO/IEC 13869 ETS 300 261
ECMA-179	Services for Computer Supported Telecommunications Applications (CSTA) Phase I (June 1992)	
ECMA-180	Protocol for Computer Supported Telecommunications Applications (CSTA) Phase I (June 1992)	
ECMA-182	Data Interchange on 12,7 mm 48 Track Magnetic Tape Cartridges - DLT1 Format (December 1992)	ISO/IEC 13421
ECMA-183	Data Interchange on 130 mm Optical Disk Cartridges - Capacity: 1 Gigabyte per Cartridge (December 1992)	ISO/IEC 13481
ECMA-184	Data Interchange on 130 mm Optical Disk Cartridges - Capacity: 1,3 Gigabytes per Cartridge (December 1992)	ISO/IEC 13549
ECMA-185	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Call Completion Supplementary Services (CCSD), 2 nd edition (June 1997)	ISO/IEC 13866 ETS 300 365
ECMA-186	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Call Completion Supplementary Services (QSIG-CC), 4 th edition (December 2001)	ISO/IEC 13870 ETS 300 366
ECMA-189	Information Interchange on 300 mm Optical Disk Cartridges of the Write Once, Read Multiple (WORM) Type using the SSF Method (June 1993)	ISO/IEC 13614
ECMA-190	Information Interchange on 300 mm Optical Disk Cartridges of the Write Once, Read Multiple (WORM) Type using the CCS Method (June 1993)	ISO/IEC 13403
ECMA-191	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Call Offer Supplementary Service (COSD), 2 nd edition (June 1997)	ISO/IEC 14841 EN 300 361
ECMA-192	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Call Offer Supplementary Service (QSIG-CO), 4 th edition (December 2001)	ISO/IEC 14843 EN 300 362
ECMA-193	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Do Not Disturb and Do Not Disturb Override Supplementary Services (DND(O)SD), 2 nd edition (June 1997)	ISO/IEC 14842 EN 300 363
ECMA-194	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Do Not Disturb and Do Not Disturb Override Supplementary Services (QSIG-DND(O)), 4 th edition (December 2001)	ISO/IEC 14844 EN 300 364
ECMA-195	Data Interchange on 130 mm Optical Disk Cartridges - Capacity: 2 Gigabytes per Cartridge, 2 nd edition (June 1995)	ISO/IEC 13842
ECMA-196	Data Interchange on 12,7 mm 36-Track Magnetic Tape Cartridges (December 1993)	ISO/IEC 14251
ECMA-197	Data Interchange on 12,7 mm 112-Track Magnetic Tape Cartridges - DLT2 Format (December 1993)	ISO/IEC 13962

ECMA-198	3,81 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DDS-2 Format using 120 m Length Tapes, 2 nd edition (June 1995)	ISO/IEC 13923
ECMA-201	Data Interchange on 90 mm Optical Disk Cartridges - Capacity: 230 Megabytes per Cartridge, 2 nd edition (December 1994)	ISO/IEC 13963
ECMA-202	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Call Intrusion Supplementary Service (CISD), 2 nd edition (June 1997)	ISO/IEC 14845 EN 300 425
ECMA-203	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Call Intrusion Supplementary Service (QSIG-CI), 4 th edition (December 2001)	ISO/IEC 14846 EN 300 426
ECMA-205	Commercially Oriented Functionality Class for Security Evaluation (COFC) (December 1993)	
ECMA-206	Association Context Management including Security Context Management (December 1993)	
ECMA-207	Data Interchange on 90 mm Flexible Disk Cartridges - 326 Data Tracks on each Side - Capacity: 21 Mbytes - ISO Type 305 (June 1994)	ISO/IEC 14169
ECMA-208	System-Independent Data Format - SIDF (December 1994)	ISO/IEC 14863
ECMA-209	Data Interchange on 12,7 mm 128-Track Magnetic Tape Cartridges - DLT3 Format (December 1994)	ISO/IEC 14833
ECMA-210	12,65 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DATA-D3-1 Format, 2 nd edition (December 1995)	ISO/IEC 14840
ECMA-211	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Advice of Charge Supplementary Services (AOCSD), 3 rd edition (December 2001)	ISO/IEC 15049 EN 301 254
ECMA-212	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Advice of Charge Supplementary Services (QSIG-AOC), 3 rd edition (December 2001)	ISO/IEC 15050 EN 301 264
ECMA-213	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Recall Supplementary Service (RESD), 3 rd edition (December 2001)	ISO/IEC 15051 EN 301 257
ECMA-214	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Recall Supplementary Service (QSIG-RE), 3 rd edition (December 2001)	ISO/IEC 15052 EN 301 258
ECMA-217	Services for Computer Supported Telecommunications Applications (CSTA) Phase II (December 1994)	
ECMA-218	Protocol for Computer Supported Telecommunications Applications (CSTA) Phase II (December 1994)	
ECMA-219	Authentication and Privilege Attribute Security Application with Related Key Distribution Functions - Part 1, 2 and 3, 2 nd edition (March 1996)	
ECMA-220	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Call Interception Additional Network Feature (ANF-CINTSD), 3 rd edition (December 2001)	ISO/IEC 15053 EN 301 256

ECMA-221	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Call Interception Additional Network Feature (QSIG-CINT), 3 rd edition (December 2001)	ISO/IEC 15054 EN 301 265
ECMA-222	Adaptive Lossless Data Compression Algorithm (June 1995)	ISO/IEC 15200
ECMA-223	Data Interchange on 90 mm Optical Disk Cartridges - Capacity: 385 Megabytes per Cartridge (June 1995)	
ECMA-224	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Transit Counter Additional Network Feature (ANF-TCSD), 2 nd edition (June 1997)	ISO/IEC 15055 EN 301 047
ECMA-225	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Transit Counter Additional Network Feature (QSIG-TC), 2 nd edition (June 1997)	ISO/IEC 15056 EN 301 048
ECMA-226	Private Integrated Services Network (PISN) - Mapping Functions for the Employment of Dedicated Circuit Mode Connections as Inter-PTNX Connections (MAPPING-CM-STATIC) (June 1995)	EN 301 765
ECMA-230	Portable Common Tool Environment (PCTE) - IDL Binding (Interface Definition Language), 2 nd edition (December 1997)	ISO/IEC 13719-4
ECMA-231	Data Interchange on 12,7 mm 128-Track Magnetic Tape Cartridges - DLT 4 Format (December 1995)	ISO/IEC 15307
ECMA-232	Private Integrated Services Network (PISN) - Profile Standard for the Connection of Radio Paging Equipment (RPE) to a PISN (December 1995)	ETS 300 739
ECMA-234	Application Programming Interface for Windows (APIW) (December 1995)	
ECMA-235	The ECMA GSS-API Mechanism (March 1996)	
ECMA-236	3,81 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DDS-3 Format using 125 m Length Tapes (June 1996)	ISO/IEC 15521
ECMA-238	Data Interchange on 130 mm Optical Disk Cartridge of Type WORM (Write Once Read Many) using Irreversible Effects - Capacity: 2,6 Gbytes per Cartridge (June 1996)	ISO/IEC 15486
ECMA-239	Data Interchange on 90 mm Optical Disk Cartridges - HS-1 Format - Capacity: 650 Megabytes per Cartridge (June 1996)	ISO/IEC 15498
ECMA-240	Data Interchange on 120 mm Optical Disk Cartridges using Phase Change PD Format - Capacity: 650 Mbytes per Cartridge (June 1996)	ISO/IEC 15485
ECMA-241	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Message Waiting Indication Supplementary Service (MWISD), 4 th edition (February 2002)	ISO/IEC 15505 EN 301 260
ECMA-242	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Message Waiting Indication Supplementary Service (QSIG-MWI), 4 th edition (December 2001)	ISO/IEC 15506 EN 301 255
ECMA-244	Private Integrated Services Network (PISN) - Mapping Functions for the Employment of a Circuit Mode Basic Service and the Supplementary Service User-to-User Signalling as a pair of On-demand Inter-PINX Connections (Mapping-UUS), 2 nd edition (September 2000)	ISO/IEC 17309 EN 301 102

ECMA-245	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - PINX Clock Synchronization (SYNC-SIG), 2 nd edition (September 1997)	ISO/IEC 15507 EN 301 259
ECMA-246	8 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - AIT-1 Format, 2 nd edition (June 1998)	ISO/IEC 15780
ECMA-247	8 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - HH-1 Format, 2 nd edition (June 1998)	ISO/IEC 15718
ECMA-248	12,65 mm Wide Magnetic Tape Cassette for Information Interchange - Helical Scan Recording - DTF-1 Format, 2 nd edition (June 1998)	ISO/IEC 15731
ECMA-249	8 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DA-2 Format, 2 nd edition (June 1998)	ISO/IEC 15757
ECMA-250	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Common Information Additional Network Feature (ANF-CMNSD), 2 nd edition (December 1998)	ISO/IEC 15771 EN 301 819
ECMA-251	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Common Information Additional Network Feature (QSIG-CMN), 3 rd edition (December 2001)	ISO/IEC 15772 EN 301 820
ECMA-252	Broadband Private Integrated Services Network (B-PISN) - Inter-Exchange Signalling Protocol - Transit Counter Additional Network Feature (B-QSIG-TC) (December 1996)	ISO/IEC 15773
ECMA-253	Private Integrated Services Network (PISN) - Mapping Functions for the Employment of 64 kbit/s Circuit Mode Connection with 16 kbit/s Sub-multiplexing (Mapping/16), 2 nd edition (September 2000)	ISO/IEC 17310 EN 301 039
ECMA-254	Broadband Private Integrated Services Network (B-PISN) - Inter-Exchange Signalling Protocol - Generic Functional Protocol (B-QSIG-GF), 2 nd edition (December 1999)	ISO/IEC 19058
ECMA-258	Data Interchange on 12,7 mm 128-Track Magnetic Tape Cartridges - DLT 3-XT Format (June 1997)	ISO/IEC 15895
ECMA-259	Data Interchange on 12,7 mm 208-Track Magnetic Tape Cartridges - DLT 5 Format (June 1997)	ISO/IEC 15896
ECMA-260	Data Interchange on 356 mm Optical Disk Cartridges - WORM, using Phase Change Technology Capacity: 14,8 and 25 Gbytes per Cartridge (June 1997)	ISO/IEC 15898
ECMA-261	Broadband Private Integrated Services Network (B-PISN) - Service Description - Broadband Connection Oriented Bearer Services (B-BCSD) (June 1997)	ISO/IEC 15899
ECMA-262	ECMAScript® 2017 Language Specification, 9 th edition (June 2018)	ISO/IEC 16262
ECMA-263	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Call Priority Interruption and Call Priority Interruption Protection Supplementary Services (CPI(P)SD), 3 rd edition (December 2001)	ISO/IEC 15991 EN 301 655
ECMA-264	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Call Priority Interruption and Call Priority Interruption Protection Supplementary Services (QSIG-CPI(P)), 3 rd edition (December 2001)	ISO/IEC 15992 EN 301 656


ECMA-265	Broadband Private Integrated Services Network (B-PISN) - Inter-Exchange Signalling Protocol - Signalling ATM Adaptation Layer (B-QSIG-SAAL) (September 1997)	ISO/IEC 13246
ECMA-266	Broadband Private Integrated Services Network (B-PISN) - Inter-Exchange Signalling Protocol - Basic Call/Connection Control (B-QSIG-BC) (September 1997)	ISO/IEC 13247
ECMA-267	120 mm DVD - Read-Only Disk, 3 rd edition (April 2001)	ISO/IEC 16448
ECMA-268	80 mm DVD - Read-Only Disk, 3 rd edition (April 2001)	ISO/IEC 16449
ECMA-269	Services for Computer Supported Telecommunications Applications (CSTA) Phase III, 9 th edition (December 2011)	ISO/IEC 18051 TS 102 173
ECMA-270	Portable Common Tool Environment (PCTE) - Mapping from CASE Data Interchange Format (CDIF) to PCTE (December 1997)	
ECMA-271	Extended Commercially Oriented Functionality Class for Security Evaluation (E-COFC), 2 nd edition (December 1999)	
ECMA-272	120 mm DVD Rewritable Disk (DVD-RAM), 2 nd edition (June 1999)	ISO/IEC 16824
ECMA-273	Case for 120 mm DVD-RAM Disks (February 1998)	ISO/IEC 16825
ECMA-274	Data Interchange on 120 mm Optical Disk using +RW Format - Capacity: 3,0 Gbytes and 6,0 Gbytes, 2 nd edition (June 1999)	ISO/IEC 16969
ECMA-275	Measurement of airborne noise emitted and structure-borne vibration induced by small air-moving devices . Part 1: Airborne noise measurement and Part 2: Structure-borne vibration measurement, 4 th edition (December 2017)	
ECMA-276	Private Integrated Services Network (PISN) - Reference Configuration for PINX Extension Lines (June 1998)	ISO/IEC 11579-3
ECMA-277	Private Integrated Services Network (PISN) - Circuit Emulation Specification - Emulation of Basic Access by ATM Networks (June 1998)	
ECMA-278	Data Interchange on 12,7 mm 128-Track Magnetic Tape Cartridge - Parallel Serpentine Format, 2 nd edition (June 2000)	ISO/IEC 17913
ECMA-279	80 mm (1,23 Gbytes per side) and 120 mm (3,95 Gbytes per side) DVD-Recordable Disk (DVD-R) (December 1998)	ISO/IEC 20563
ECMA-280	Data Interchange on 130 mm Optical Disk Cartridges of Type WORM (Write Once Read Many) using Irreversible Effects - Capacity: 5,2 Gbytes per Cartridge (December 1998)	ISO/IEC 18093
ECMA-281	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Private User Mobility (PUM) - Registration Supplementary Service (PUMRSD), 3 rd edition (December 2001)	ISO/IEC 17875 EN 301 822
ECMA-282	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Private User Mobility (PUM) - Registration Supplementary Service (QSIG-PUMR), 3 rd edition (December 2001)	ISO/IEC 17876 EN 301 821
ECMA-283	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Private User Mobility (PUM) - Call Handling Additional Network Features (PUMCHSD), 2 nd edition (June 2000)	ISO/IEC 17877 EN 301 657

ECMA-284	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Private User Mobility (PUM) - Call Handling Additional Network Features (QSIG-PUMCH), 3 rd edition (December 2001)	ISO/IEC 17878 EN 301 810
ECMA-285	ASN.1 for Computer Supported Telecommunications Applications (CSTA) Phase III, 4 th edition (December 2011)	ISO/IEC 18052
ECMA-286	Data Interchange on 12,7 mm 208-Track Magnetic Tape Cartridges - DLT 6 Format, 2 nd edition (June 2000)	ISO/IEC 16382
ECMA-287	Safety of electronic equipment, 2 nd edition (December 2002)	
ECMA-288	3,81 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DDS-4 Format (June 1999)	ISO/IEC 17462
ECMA-289	Private Integrated Services Network (PISN) - Mapping Functions for the Employment of 64 kbit/s Circuit Mode Connections with 8 kbit/s Sub-Multiplexing (Mapping/8), 2 nd edition (September 2000)	ISO/IEC 17311 EN 301 924
ECMA-291	8 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording AIT-1 with MIC Format (December 1999)	ISO/IEC 18809
ECMA-292	8 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording AIT-2 with MIC Format (December 1999)	ISO/IEC 18810
ECMA-293	8 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - MammothTape-2 Format (December 1999)	ISO/IEC 18836
ECMA-294	B-ISDN and B-PISN - Digital Subscriber Signalling System No. two (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7) - Call Control in a Separated Call and Bearer Control Environment - Part 1: Protocol Specification (December 1999)	EN 302 092-1
ECMA-295	B-ISDN and B-PISN - Digital Subscriber Signalling System No. two (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7) - Call Control in a Separated Call and Bearer Control Environment - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma Specification (December 1999)	EN 302 092-2
ECMA-296	B-ISDN and B-PISN - Digital Subscriber Signalling System No. two (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7) - Prenegotiation - Part 1: Protocol Specification (December 1999)	EN 302 091-1
ECMA-297	B-ISDN and B-PISN - Digital Subscriber Signalling System No. two (DSS2), Broadband Inter-Exchange Signalling (B-QSIG), and Signalling System No. 7 (SS7) - Prenegotiation - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma Specification (December 1999)	EN 302 091-2
ECMA-298	Broadband Private Integrated Services Network (B-PISN) - Inter-Exchange Signalling Protocol - Separated Bearer Control (SBC) (B-QSIG-SBC) (December 1999)	EN 301 776
ECMA-299	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Single Step Call Transfer Supplementary Service (SSCT-SD), 2 nd edition (December 2001)	ISO/IEC 19459 EN 301 918

ECMA-300	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Single Step Call Transfer Supplementary Service (QSIG-SSCT), 2 nd edition (December 2001)	ISO/IEC 19460 EN 301 919
ECMA-301	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Wireless Terminal Location Registration Supplementary Service and Wireless Terminal Information Exchange Additional Network Feature (WTMLR-SD) (June 2000)	ISO/IEC 15428 EN 301 824
ECMA-302	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Wireless Terminal Location Registration Supplementary Service and Wireless Terminal Information Exchange Additional Network Feature (QSIG-WTMLR), 2 nd edition (December 2001)	ISO/IEC 15429 EN 301 825
ECMA-303	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Wireless Terminal Call Handling Additional Network Features (WTMCH-SD) (June 2000)	ISO/IEC 15430 EN 301 826
ECMA-304	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Wireless Terminal Call Handling Additional Network Features (QSIG-WTMCH), 2 nd edition (December 2001)	ISO/IEC 15431 EN 301 827
ECMA-305	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Wireless Terminal Authentication Supplementary Services (WTMAU-SD) (June 2000)	ISO/IEC 15432 EN 301 828
ECMA-306	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Wireless Terminal Authentication Supplementary Services (QSIG-WTMAU), 2 nd edition (December 2001)	ISO/IEC 15433 EN 301 829
ECMA-307	Corporate Telecommunication Networks - Signalling Interworking between QSIG and H.323 - Generic Functional Protocol for the Support of Supplementary Services (June 2000)	ISO/IEC 21409 TS 101 905
ECMA-308	Corporate Telecommunication Networks - Signalling Interworking between QSIG and H.323 - Call Transfer Supplementary Services, 2 nd edition (June 2001)	ISO/IEC 21410 TS 101 907
ECMA-309	Corporate Telecommunication Networks - Signalling Interworking between QSIG and H.323 - Call Diversion Supplementary Services, 2 nd edition (June 2001)	ISO/IEC 21411 TS 101 906
ECMA-310	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Simple Dialog Supplementary Service (SDSD) (June 2000)	ISO/IEC 21407 EN 301 920
ECMA-311	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Simple Dialog Supplementary Service (QSIG-SD), 2 nd edition (December 2001)	ISO/IEC 21408 EN 301 921
ECMA-312	Private Integrated Services Network (in PISN) - Profile Standard for the Use of PSS1 (QSIG) Air Traffic Services Networks, 3 rd edition (June 2003)	EN 301 846
ECMA-313	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Call Identification and Call Linkage Additional Network Feature (CIDLSD) (September 2000)	ISO/IEC 21888 EN 301 922
ECMA-314	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Call Identification and Call Linkage Additional Network Feature (QSIG-CIDL), 2 nd edition (December 2001)	ISO/IEC 21889 EN 301 923

ECMA-315	12,65 mm Wide Magnetic Tape Cassette for Information Interchange - Helical Scan Recording - DTF-2 (December 2000)	ISO/IEC 20061
ECMA-316	8 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - VXA-1 Format, 2 nd edition (December 2001)	ISO/IEC 20062
ECMA-317	Data Interchange on 300 mm Optical Disk Cartridges of Type WORM (Write Once Read Many) using Irreversible Effects - Capacity: 30 Gbytes per Cartridge (December 2000)	ISO/IEC 20162
ECMA-318	Private Integrated Services Network (PISN) - Use of QSIG at the C Reference Point between a PINX and an Interconnecting Network (December 2000)	ISO/IEC 20161 TS 101 914
ECMA-319	Data Interchange on 12,7 mm - 384-Track Magnetic Tape Cartridges - Ultrium-1 Format (June 2001)	ISO/IEC 22050
ECMA-320	Data Interchange on 12,7 mm - 448-Track Magnetic Tape Cartridges - SDLT1 Format (June 2001)	ISO/IEC 22051
ECMA-321	Streaming Lossless Data Compression Algorithm - (SLDC) (June 2001)	ISO/IEC 22091
ECMA-322	Data Interchange on 130 mm Magneto-Optical Disk Cartridges - Capacity: 9,1 Gbytes per Cartridge (June 2001)	ISO/IEC 22092
ECMA-323	XML Protocol for Computer Supported Telecommunications Applications (CSTA) Phase III, 6 th edition (December 2011)	ISO/IEC 18056 TS 102 174
ECMA-324	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Short Message Service (SMSSD) (June 2001)	ISO/IEC 21989 TS 101 990
ECMA-325	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Short Message Service (QSIG-SMS) (June 2001)	ISO/IEC 21990 TS 101 991
ECMA-326	Corporate Telecommunication Networks - Signalling Interworking between QSIG and H.323 - Call Completion Supplementary Services (June 2001)	ISO/IEC 21991 TS 101 989
ECMA-328	Determination of Chemical Emission Rates from Electronic Equipment - Part 1 (using-consumables), 9 th edition (December 2018), Part 2 (not using-consumables), 8 th edition (June 2017)	ISO/IEC 28360-1/-2
ECMA-329	8 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - AIT-3 Format (December 2001)	ISO/IEC 23651
ECMA-330	120 mm (4,7 Gbytes per side) and 80 mm (1,46 Gbytes per side) DVD Rewritable Disk (DVD-RAM), 3 rd edition (June 2005)	ISO/IEC 17592
ECMA-331	Cases for 120 mm and 80 mm DVD-RAM Disks, 2 nd edition (June 2004)	ISO/IEC 17594
ECMA-332	Corporate Telecommunication Networks - Signalling Interworking between QSIG and H.323 - Basic Services (December 2001)	ISO/IEC 23289 TS 102 036
ECMA-333	Private Integrated Services Network (PISN) - Mapping Functions for the Tunnelling of QSIG through H.323 Networks, 2 nd edition (December 2003)	ISO/IEC 23290 TS 102 037
ECMA-334	C# Language Specification, 5 th edition (December 2017)	ISO/IEC 23270
ECMA-335	Common Language Infrastructure (CLI), 6 th edition (June 2012)	ISO/IEC 23271

ECMA-336	Private Integrated Services Network (PISN) - Mapping Functions for the Tunnelling of QSIG through IP Networks (Mapping/IP-QSIG) (June 2002)	ISO/IEC 21992 TS 102 075
ECMA-337	Data Interchange on 120 mm and 80 mm Optical Disk using +RW Format - Capacity: 4,7 and 1,46 Gbytes per Side (Recording speed up to 4X), 4 th edition (June 2008)	ISO/IEC 17341
ECMA-338	80 mm (1,46 Gbytes per side) and 120 mm (4,70 Gbytes per side) DVD Re-recordable Disk (DVD-RW) (December 2002)	ISO/IEC 17342
ECMA-339	Corporate Telecommunication Networks - Signalling Interworking between QSIG and SIP - Basic Services, 2 nd edition (December 2006)	ISO/IEC 17343 TS 102 166
ECMA-340	Near Field Communication - Interface and Protocol (NFCIP-1), 3 rd edition (June 2013)	ISO/IEC 18092 TS 102 190
ECMA-341	Environmental Design Considerations for ICT & CE Products, 4 th edition (December 2010)	
ECMA-342	Ü æ] ã á Q U ĩ Á Q} c ^ ! & [] } ^ & c Á Û] ^ & ã	ISO/IEC 18372
ECMA-343	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Make Call Request Supplementary Service (MCRSD) (June 2003)	ISO/IEC 20113 TS 102 256
ECMA-344	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Make Call Request Supplementary Service (QSIG-MCR) (June 2003)	ISO/IEC 20114 TS 102 257
ECMA-345	Private Integrated Services Network (PISN) - Use of QSIG for Message Centre Access (MCA) Profile Standard (June 2003)	ISO/IEC 20115 TS 102 253
ECMA-346	Private Integrated Services Network (PISN) - Specification, Functional Model and Information Flows - Message Centre Monitoring and Mailbox Identification Supplementary Services (MCM-SD / MID-SD) (June 2003)	ISO/IEC 20116 TS 102 254
ECMA-347	Private Integrated Services Network (PISN) - Inter-Exchange Signalling Protocol - Message Centre Monitoring and Mailbox Identification Supplementary Services (QSIG-MCM / QSIG-MID) (June 2003)	ISO/IEC 20117 TS 102 255
ECMA-348	Web Services Description Language (WSDL) for CSTA Phase III, 5 th edition (June 2012)	ISO/IEC 18450
ECMA-349	Data Interchange on 120 mm and 80 mm Optical Disk using +R Format - Capacity: 4,7 and 1,46 Gbytes per Side (Recording speed up to 16X), 4 th edition (June 2008)	ISO/IEC 17344
ECMA-350	Data Interchange on 130 mm Rewritable and Write Once Read Many Ultra Density Optical (UDO) Disk Cartridges - Capacity: 30 Gbytes per Cartridge - First Generation, 3 rd edition (December 2006)	ISO/IEC 17345
ECMA-351	Data Interchange on 90 mm Optical Disk Cartridges - Capacity: 1,3 Gbytes per Cartridge (December 2003)	ISO/IEC 17346
ECMA-352	Near Field Communication Interface and Protocol -2 (NFCIP-2), 3 rd edition (June 2013)	ISO/IEC 21481 TS 102 312
ECMA-353	Data Interchange on 90 mm Optical Disk Cartridges - Capacity: 2,3 Gbytes per Cartridge (June 2004)	ISO/IEC 22533
ECMA-354	Application Session Services (June 2004)	ISO/IEC 22534 TS 102 344

ECMA-355	Corporate Telecommunication Networks - Tunnelling of QSIG over SIP, 3 rd edition (June 2008)	ISO/IEC 22535 TS 102 345
ECMA-356	NFCIP-1 - RF Interface Test Methods, 2 nd edition (June 2013)	ISO/IEC 22536 TS 102 346
ECMA-358	ICT Product Radiated Emissions: 1. 6 GHz (December 2004)	
ECMA-359	80 mm (1,46 Gbytes per side) and 120 mm (4,70 Gbytes per side) DVD Recordable Disk (DVD-R) (December 2004)	ISO/IEC 23912
ECMA-360	Corporate Telecommunication Networks - Signalling Interworking between QSIG and SIP - Call Diversion (December 2004)	ISO/IEC 23915 TS 102 393
ECMA-361	Corporate Telecommunication Networks - Signalling Interworking between QSIG and SIP - Call Transfer (December 2004)	ISO/IEC 23916 TS 102 392
ECMA-362	NFCIP-1 - Protocol Test Methods, 2 nd edition (December 2005)	ISO/IEC 23917 TS 102 394
ECMA-363	Universal 3D File Format, 4 th edition (June 2007)	
ECMA-364	Data interchange on 120 mm and 80 mm Optical Disk using +R DL Format . Capacity: 8,55 and 2,66 Gbytes per Side (Recording speed up to 8X), 3 rd edition (December 2007)	ISO/IEC 25434
ECMA-365	Data Interchange on 60 mm Read-Only ODC - Capacity: 1,8 Gbytes (UMD™) (June 2005)	ISO/IEC 25435
ECMA-366	WS-Session - Web Services for Application Session Services, 3 rd edition (December 2011)	ISO/IEC 25437 TS 102 440
ECMA-367	Eiffel: Analysis, Design and Programming Language, 2 nd edition (June 2006)	ISO/IEC 25436
ECMA-368	High Rate Ultra Wideband PHY and MAC Standard, 3 rd edition (December 2008)	ISO/IEC 26907 TS 102 455
ECMA-369	MAC-PHY Interface for ECMA-368, 3 rd edition (December 2008)	ISO/IEC 26908
ECMA-370	TED -  DECLARATION , 5 th edition (June 2015)	
ECMA-371	Data Interchange on 120 mm and 80 mm Optical Disk using +RW HS Format - Capacity: 4,7 and 1,46 Gbytes per Side (Recording speed 8X), 2 nd edition (June 2008)	ISO/IEC 26925
ECMA-372	C++/CLI (December 2005)	
ECMA-373	Near Field Communication Wired Interface (NFC-WI), 2 nd edition (June 2012)	ISO/IEC 28361
ECMA-374	Data Interchange on 120 mm and 80 mm Optical Disk using +RW DL Format . Capacity: 8,55 and 2,66 Gbytes per Side (Recording speed 2,4X), 2 nd edition (June 2008)	ISO/IEC 29642
ECMA-375	Case for 120 mm HVD-ROM disk (December 2006)	
ECMA-376	Office Open XML File Formats, 1st edition (December 2006), 2nd edition (December 2008), 3rd edition (June 2011) and 4th edition (December 2012). 5th edition of Part 3 (December 2015) and of Parts 1 & 4 (December 2016)	ISO/IEC 29500
ECMA-377	Information Interchange on Holographic Versatile Disc (HVD) Recordable Cartridges . Capacity: 200 Gbytes per Cartridge (May 2007)	

ECMA-378	Information Interchange on Read-Only Memory Holographic Versatile Disc (HVD-ROM) . Capacity: 100 Gbytes per disk (May 2007)	
ECMA-379	Test Method for the Estimation of the Archival Lifetime of Optical Media, 3 rd edition (June 2010)	ISO/IEC 10995
ECMA-380	Data Interchange on 130 mm Rewritable and Write Once Read Many Ultra Density Optical (UDO) Disk Cartridges . Capacity: 60 Gbytes per Cartridge . Second Generation (December 2007)	ISO/IEC 11976
ECMA-381	Procedure for the Registration of Assigned Numbers for ECMA-368 and ECMA-369 (December 2007)	ISO/IEC 13560
ECMA-382	120 mm (8,54 Gbytes per side) and 80 mm (2,66 Gbytes per side) DVD Recordable Disk for Dual Layer (DVD-R for DL), 2 nd edition (June 2010)	ISO/IEC 12862
ECMA-383	Measuring the Energy Consumption of Personal Computing Products, 3 rd edition (December 2010)	
ECMA-384	120 mm (8,54 Gbytes per side) and 80 mm (2,66 Gbytes per side) DVD Re-recordable Disk for Dual Layer (DVD-RW for DL) (December 2008)	ISO/IEC 13170
ECMA-385	NFC-SEC: NFCIP-1 Security Services and Protocol, 4 th edition (June 2015)	ISO/IEC 13157-1
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ECMA-388	Open XML Paper Specification (June 2009)	
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ECMA-390	Front-End Configuration Command for NFC-WI (NFC-FEC), 2 nd edition (June 2012)	ISO/IEC 16353
ECMA-391	Memory-Spot Interface and Protocol (MSIP-1) (December 2009)	
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ECMA-393	ProxZzy® for sleeping hosts, 2 nd edition (June 2012)	ISO/IEC 16317
ECMA-394	Recordable Compact Disc Systems CD-R Multi-Speed (December 2010)	
ECMA-395	Recordable Compact Disc Systems CD-RW Ultra-Speed (December 2010)	
ECMA-396	Test Method for the Estimation of Lifetime of Optical Media for Long-term Data Storage, 4 th edition (June 2017)	ISO/IEC 16963
ECMA-397	Short Distance Visible Light Communication (SDVLC) (December 2010)	ISO/IEC 17417
ECMA-398	Close Proximity Electric Induction Wireless Communications (June 2011)	ISO/IEC 17568
ECMA-399	Procedure for the Registration of Assigned Numbers for ECMA-398 (June 2011)	
ECMA-400	Smart Data Centre Resource Monitoring and Control, 3 rd edition (June 2015)	ISO/IEC 19395
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ECMA-403	NFCIP-2 Test Methods (June 2013)	ISO/IEC 19369
ECMA-404	The JSON Data Interchange Syntax, 2 nd edition (December 2017)	ISO/IEC 21778
ECMA-405	Data Interchange on Parallel Write/Read Disk Format for 5 Optical Disks (December 2013)	
ECMA-406	Disk Cassette for 5 Disks with 120 mm Diameter (December 2013)	
ECMA-407	Scalable Sparse Spatial Sound System (S5) . Base S5 Coding (June 2014)	
ECMA-408	Dart Programming Language Specification, 4 th edition (December 2015)	
ECMA-409	NFC-SEC-02: NFC-SEC Cryptography Standard using ECDH-256 and AES-GCM, 2 nd edition (June 2015)	ISO/IEC 13157-3
ECMA-410	NFC-SEC-03: NFC-SEC Entity Authentication and Key Agreement using Asymmetric Cryptography, 3 rd edition (June 2017)	ISO/IEC 13157-4
ECMA-411	NFC-SEC-04: NFC-SEC Entity Authentication and Key Agreement using Symmetric Cryptography, 3 rd edition (June 2017)	ISO/IEC 13157-5
ECMA-412	Framework for distributed real-time Access systems, 2 nd edition (June 2017)	ISO/IEC 20933
ECMA-413	Data Migration Method for BD Recordable and BD Rewritable Disks, 3 rd edition (December 2018)	
ECMA-414	ECMAScript [®] Specification Suite, 3 rd edition (December 2017)	ISO/IEC 22275
ECMA-415	NFC-SEC Test Methods (December 2016)	ISO/IEC 22425
ECMA-416	Scalable Sparse Spatial Sound System (S5) . Base S5 Coding in Frequency Domain (June 2018)	
ECMA-417	Architecture for a distributed real-time Access system (December 2018)	

Technical Reports in force (electronically available [here](#))

ECMA TR/18	The Meaning of Conformance to Standards (September 1983)	
ECMA TR/27	Method for the Prediction of Installation Noise Levels, 2 nd edition (June 1995)	
ECMA TR/36	Guidelines on Additional Parameters Recommended for Procurement Specifications for 12,7 mm Magnetic Tapes (December 1986)	
ECMA TR/46	Security in Open Systems - A Security Framework (July 1988)	
ECMA TR/53	Handling of Bi-directional Texts, 2 nd edition (June 1992)	
ECMA TR/55	Reference Model for Frameworks of Software Engineering Environments, 3 rd edition (June 1993)	
ECMA TR/57	Private Integrated Services Networks, 2 nd edition (June 1999)	ETSI EG 201 463
ECMA TR/58	Databases and Networking (June 1992)	
ECMA TR/59	Object-Oriented Databases (June 1992)	
ECMA TR/61	User Interface Taxonomy (June 1992)	
ECMA TR/62	Product Noise Emission of Computer Business Equipment (June 1993)	
ECMA TR/64	Secure Information Processing versus the Context of Product Evaluation (December 1993)	
ECMA TR/66	Mapping of PCTE to the ECMA/NIST Frameworks Reference Model (June 1994)	
ECMA TR/67	Compendium of PTN Management Services (December 1994)	ETSI ETR 245
ECMA TR/68	Scenarios for Computer Supported Telecommunications Applications (CSTA) Phase II (December 1994)	
ECMA TR/69	Reference Model for Project Support Environments (December 1994)	
ECMA TR/70	Ecma Product-related Environmental Declaration, 3 rd edition (June 2004)	
ECMA TR/71	DVD Read-Only Disk - File System Specifications (February 1998)	
ECMA TR/72	Glossary of Definitions and Terminology for Computer Supported Telecommunications Applications (CSTA) Phase III, 3 rd edition (June 2000)	ISO/IEC TR 18053
ECMA TR/73	H.323 / B-ISDN Signalling Interoperability (December 1998)	
ECMA TR/74	A Guide to the Application of the EMC Directive to ITE (June 1999)	
ECMA TR/75	Corporate Telecommunication Networks (CN) - Standardization Plan, 2 nd edition (June 2000)	ETSI EG 201 017
ECMA TR/76	Private Integrated Services Network (PISN) - Architecture and Scenarios for Private Integrated Services Networking (December 1999)	ISO/IEC TR 14475

ECMA TR/77	Telephony System with Integrated Internet Access - Overview (December 1999)	
ECMA TR/78	ECMA Protection Profile - E-COFC Public Business Class (December 1999)	
ECMA TR/79	Private Integrated Services Network (PISN) - Wireless Terminal Mobility (WTM) - WTM between networks - Requirements (February 2000)	
ECMA TR/80	Migrating to CSTA Phase III (June 2000)	
ECMA TR/81	Interoperation of PISNs with IP Networks (September 2000)	ISO/IEC TR 21890 ETSI TR 101 913
ECMA TR/82	Scenarios for Computer Supported Telecommunications Applications (CSTA) Phase III, 2 nd edition (June 2009)	
ECMA TR/83	One Standard - One Test, Supplier's Declaration of Conformity (11SDoC) - Scorecard objectives and concept (June 2001)	
ECMA TR/84	Common Language Infrastructure (CLI) - Information Derived from Partition IV XML File, 6 th edition (June 2012)	ISO/IEC TR 23272
ECMA TR/85	Using ECMA-323 (CSTA XML) in a Voice Browser Environment (December 2002)	ISO/IEC TR 18057 ETSI TR 102 171
ECMA TR/86	Corporate Telecommunication Networks - User Identification in a SIP/QSIG Environment (December 2003)	ETSI EG 202 303
ECMA TR/87	Using CSTA for SIP Phone User Agents (uaCSTA) (June 2004)	ISO/IEC TR 22767 ETSI TR 102 348
ECMA TR/88	Designing an Object Model for ECMA-269 (CSTA) (June 2004)	
ECMA TR/90	Session Management, Event Notification, and Computing Function Services - Amendments for ECMA-348 (December 2005)	
ECMA TR/91	Enterprise communication in next generation corporate networks (NGCN) involving public next generation networks (NGN) (December 2005)	ISO/IEC TR 26905 ETSI TR 102 478
ECMA TR/92	Corporate Telecommunication Networks . Mobility for Enterprise Communications, 2 nd edition (December 2010)	ISO/IEC TR 26927 ETSI TR 102 477
ECMA TR/93	Measuring Emissions from Modules (December 2007)	
ECMA TR/94	Assessment of the Human Exposure to Electromagnetic Fields for Low Power Electronic and Electrical Apparatus according to EN 50371:2002 (December 2007)	
ECMA TR/95	Next Generation Corporate Networks (NGCN) - General (June 2008)	ISO/IEC TR 12860 ETSI TR 102 633
ECMA TR/96	Next Generation Corporate Networks (NGCN) - Identification and Routing (June 2008)	ISO/IEC TR 12861 ETSI TR 102 634
ECMA TR/97	Guide for Assessment of Human Exposure to Electromagnetic Fields from Multimedia Products in accordance with IEC/EN 62311 (June 2009)	
ECMA TR/98	JPEG File Interchange Format (JFIF) (June 2009)	



ECMA TR/99	Constant Sound Power Fan Curves for Small Air-moving Devices, 2 nd edition (December 2010)	
ECMA TR/100	Next Generation Corporate Networks (NGCN) - Security of Session-based Communications (December 2009)	ISO/IEC TR 16166
ECMA TR/101	Next Generation Corporate Networks (NGCN) - Emergency Calls, 2 nd edition (December 2010)	ISO/IEC TR 16167
ECMA TR/102	Personal Networks . Overview and Standardization Needs (December 2010)	
ECMA TR/103	Business Trunking - NGCN-NGN Interfaces Implementation Guide (June 2011)	ETSI TR 183 069
ECMA TR/104	ECMAScript® Test Suite, 2nd edition (December 2016)	
ECMA TR/105	A Shaped Noise File Representative of Speech (December 2012)	
ECMA TR/106	Guidance and Comparison between 60950-1 and 62368-1 (February 2013)	
ECMA TR/107	An optional alternate background noise correction sensitive to the steadiness of background noise, 3 rd edition (December 2017)	

Ecma By-laws

Art. 1

Constitution and Head Office

1.1

Ecma International - further called Ecma - is an international industry association based in Europe, and has been constituted according to these By-laws and Articles 60 et seq. of the Swiss Civil Code.

1.2

The Headquarters of the Association is in Geneva.

Art. 2

Purpose

2.1

The purpose of the Association is to develop, in co-operation with the appropriate national, European and international organizations as a scientific endeavour and in the general interest standards and technical reports in the fields of information and communications technologies and to publish them free of charge in printed and electronic form.

2.2

The Association shall be a non-profit-making organization and shall devote itself to no commercial activity whatsoever.

Art. 3

Membership

3.1

The Association shall consist of the following classes of Ecma members:

- a) Companies
 - ! ordinary members
 - ! associate members
 - ! Small and Medium sized Enterprises members (SME)
 - ! Small Private Companies members (SPC)
- b) Not-For-Profit organizations (NFP)

Any other class of members shall be determined by the General Assembly with a two thirds majority of all ordinary members.

3.2

- a) For non-SPC members:

A proposed company member shall not be accepted if it holds at least 50 per cent of the capital of an existing company member nor if at least 50 per cent of its capital is held by an existing company member.

- b) For SPC members:

A proposed SPC member shall not be accepted if it holds at least 50 per cent of the capital of an existing company member nor if at least 35 per cent of its capital is held by an existing company member.

3.3

- a) For non-SPC members:

No two or more companies where at least 50 per cent of whose capital is held by the same company, which is not a company member itself, may be company members but shall be represented by one of these companies only.

- b) For SPC members:

No two or more SPCs where at least 35 per cent of whose capital is held by the same company, which is not a company member itself, may be SPC members but shall be represented by one of these SPCs only.

3.4

Additional classes of Ecma members established according to Article 3.1 shall have such qualifications and be entitled to such rights and privileges and have such obligations as shall be determined by the General Assembly with a two thirds majority of all the ordinary members.

3.5

Companies shall be admitted to any class of company membership in accordance with Art. 4.

3.6

Membership fees for all classes of company membership are decided by the General Assembly with a two thirds majority of all ordinary members.

3.7

Ecma membership shall be terminated in the cases set out in Art. 5.

3.8

Ordinary members

3.8.1

Ordinary membership may be applied for by a company which has interest and experience in matters related to one or more Technical Committees of the Association, and which wishes to exert the right to vote at the General Assembly and to exert other exclusive rights defined in the By-laws and Rules, such as serving on the Executive Committee and as Chairman of a Technical Committee.

3.8.2

The representative of each ordinary member will have one vote in the General Assembly.

Voting rights may be exerted with effect from the first full month upon admission as Ecma member.

3.9

Associate members

3.9.1

Associate membership may be applied for by a company which has interest and experience in matters related to one or more Technical Committees of the Association but without the right to vote in the General Assembly.

3.9.2

An associate member is fully entitled to participate in the work of Technical Committees and obtain all relevant papers.

3.9.3

Representatives of the associate members shall have the right to take part in the discussions of the General Assembly.

3.10

SME members

3.10.1

SME membership may be applied for by a company the annual turnover of which is less than Swiss Francs 100'000'000.-.

3.10.2

The rights of SME members are identical with those of associate members as specified in Art. 3.9.

3.11

SPC members

3.11.1

SPC membership may be applied for by an organization - a company or other legal for-profit organization - with no more than 25 employees and a global annual turnover of less than Swiss Francs 10'000'000.-.

3.11.2

The rights of SPC members are identical with those of associate members as specified in Art. 3.9, with the exception that an SPC member is only entitled to participate in one TC.

3.12

NFP members

3.12.1

Annual NFP membership may be applied for by a non-profit-making organization. Further yearly extensions of an NFP membership are possible, via application to the Secretary General by November of each year for the following year.

3.12.2

The rights of NFP members are identical with those of SPC members as specified in Art. 3.11.

Art. 4

Acceptance of a new Ecma member

4.1

Application for membership and membership class shall be made to the Secretary General in a written notice carrying an authorized signature.

The application shall specify that the applicant has received the By-laws, the Rules and the Code of Conduct in Patent Matters, and declare that it adheres to them without restriction.

4.2

Decisions on acceptance shall be made by the General Assembly with a two thirds majority of all the ordinary members. The accepted applicant shall indicate the Technical Committees in which they intend to participate.

Art. 5

Termination of Ecma membership

5.1

a) Membership of a company shall be terminated in the following cases:

! Withdrawal by the company member:

Withdrawal by a company can only occur at the end of a calendar year and requires a written three-month notice carrying an authorized signature to the Secretary General (to be received by the Ecma Secretariat before 1 October).

! The company ceasing to exist.

! The conditions for membership set forth in Articles 3.2 and 3.3 of the present By-laws no longer being complied with.

! By expulsion for violation of By-laws and Rules or for any other conduct prejudicial to the interest and correct functioning of the Association.

! By expulsion after failure to pay the membership fee during the year in which it becomes due. This will happen automatically on 31 December and shall not relieve the member of the obligation to pay such fees that are due or past due according to the terms of the invoice. In justified hardship cases the Ecma management may extend - on a case by case basis - the membership payment deadline.

b) Membership of an NFP shall be terminated in the following cases:

! At the end of the year, unless extension of NFP membership has been granted by the Ecma GA.

! Withdrawal upon written notice to the Secretary General, to take effect upon receipt.

! The NFP ceasing to exist.

! By expulsion for violation of By-laws and Rules or for any other conduct prejudicial to the interest and correct functioning of the Association.

5.2

No company member may be expelled for failure to adhere to one or several agreed standards.

5.3

Any proposal to expel an Ecma member shall be backed by at least one-fifth of all the ordinary members. The proposal to expel shall be on the agenda for the General Assembly at which it is to be discussed so as to give the member the opportunity to present its case.

5.4

A two-thirds majority of all the ordinary members is necessary to expel an Ecma member. Such expulsion will become effective 15 days after notification by registered mail.

5.5

An Ecma member which has been expelled can only be re-admitted by the General Assembly with a two-thirds majority of all ordinary members.

Art. 6

Change of class of company membership

6.1

If a company member wishes to change its membership class they shall apply for one of the other classes of membership according to the conditions set out in these By-laws.

6.2

An application for a change to a higher class of membership (more rights, higher fee) shall be made in a written notice carrying an authorized signature to the Secretary General before 1 October and it shall be noted by the GA.

6.3

An application for a change to a lower class of membership (less rights, lower fee) shall be made in a written notice carrying an authorized signature to the Secretary General before 1 October and it shall be noted by the GA.

6.4

If a company member does not fulfil the conditions of its current membership class due to modifications of the By-laws the company member is not obliged to change its current class of membership. However, the conditions of the modified By-laws shall apply.

Art. 7

Structure

7.1

The Association shall consist of:

The General Assembly.

The Management.

The Executive Committee.

7.2

The General Assembly shall consist of the ordinary members and shall be the highest authority of the Association. It shall control the Association and appoint and control its Management.

7.3

The Management shall consist of a President, a Vice-President and a Treasurer.

7.4

The President and the Vice-President shall be individuals elected for one year by the ordinary members at a General Assembly.

After a call for nominations by the Secretary General, the Executive Committee and all Ecma members may nominate candidates for election no later than 45 days before the General Assembly. Only representatives of ordinary members can be nominated. Candidates should have previously served on the Executive Committee for a reasonable amount of time.

The Secretary General shall post the names of nominees no later than 30 days before the General Assembly.

The President and the Vice-President can be re-elected any number of times provided that neither serves more than three consecutive years.

7.5

The President shall, through his signature, commit the Association in any business or transaction directly connected with the purpose of the Association.

7.6

In the absence of the President, the Vice President shall perform all the duties of the President, and when so acting shall have all the powers of the President.

7.7

There shall be a Treasurer whose duty shall be determined by the General Assembly. The Rules set out in 7.4 shall apply to his office, except that there shall be no limit in the number of consecutive years in office.

7.8

The Executive Committee makes recommendations to the General Assembly regarding business, legal and managerial matters and regarding the formation, activities, reorganization or dissolution of Technical Committees. The Executive Committee shall be composed of the three members of the Ecma Management, a maximum of eight members elected from representatives of ordinary members, and a maximum of two members elected from representatives of the remaining Ecma membership.

The members and the Chairman of the Executive Committee shall be individuals elected by simple majority for one year at a General Assembly by the ordinary members.

After a call for nominations by the Secretary General, the Ecma Management and all Ecma members may nominate candidates for election no later than 45 days before the General Assembly. The Secretary General shall post the names of nominees no later than 30 days before the General Assembly.

The Chairman shall be eligible for re-election, subject to a maximum term of office of three consecutive years. The other members can be re-elected any number of times. Only one representative per Ecma member can be elected.

7.9

Candidates for the two Ecma membership positions shall be representatives of an associate, SME, SPC or NFP member. Those candidates may be nominated after a call for nomination by the Secretary General as specified in 7.8. In the case where there is more than two individuals nominated, the two candidates receiving the highest number of votes shall be elected.

Art. 8

General Assembly

8.1

The President shall each year call at least two ordinary General Assemblies. Notice of the time and place of the General Assembly shall be given at least thirty days before the date of the General Assembly. The agenda and supporting documents for the General Assembly shall be made available at least fifteen days before the General Assembly.

8.2

Unless otherwise restricted by these By-laws or the Rules of the Association, any action required or permitted to be taken at a General Assembly may be taken without a meeting by a postal ballot, if it has been announced in advance and has been approved by the General Assembly.

8.3

Special General Assemblies for any purpose or purposes unless otherwise prescribed by these By-laws or the Rules of the Association may be called by the President, and shall be called by him at the request in writing of at least one-fifth of all the ordinary members. Such request shall state the purpose or purposes of the proposed General Assembly. The business transacted at any special General Assembly shall be limited to the purposes stated in the notice.

8.4

Notice of Special General Assemblies stating the time, place and object thereof, shall be given to each ordinary member at least three weeks before the date of the General Assembly and shall include the agenda and supporting documents for the General Assembly.

8.5

A majority of all the ordinary members shall be present or represented by proxy at any General Assembly, or respond to a postal ballot, in order to constitute a quorum for transaction of the business except as otherwise provided by these By-laws or the Rules of the Association.

8.6

Unless otherwise prescribed by these By-laws or the Rules of the Association, the vote of the majority of all the ordinary members shall decide any question.

Art. 9

Publication of Standards and Technical Reports

9.1

The adoption of such documents for publication by the Association shall require approval by at least two thirds of all the ordinary members.

9.2

Proposed drafts shall be made available by the Secretary General at least two months in advance of the date at which they will be voted upon.

9.3

It is not mandatory for Ecma members to implement any Ecma standard.

9.4

All documents when approved shall be made available to all interested parties without restriction.

Art. 10

Ad Hoc Committees

10.1

The General Assembly may delegate authority for specific purposes to ad hoc committees.

10.2

Unless otherwise decided at the time of its appointment each ad hoc committee may co-opt additional members should it so desire.

10.3

No ad hoc committee may meet for more than one year without being reappointed.

Art. 11

Secretariat

11.1

There shall be a permanent Secretariat of the Association responsible to the General Assembly.

11.2

A Secretary General shall be appointed by the General Assembly and shall be responsible for the operation of the Secretariat.

Art. 12

Technical Committees

12.1

Technical Committees (TCs) will be formed by the Secretary General when so decided at a General Assembly.

12.2

Any Ecma member may participate in any TC.

Art. 13

Fiscal year

The fiscal year shall commence on 1 January and end on 31 December.

Art. 14

Finance

14.1

The annual budget of the Association shall be approved by at least two thirds of the ordinary members represented at an ordinary General Assembly.

14.2

The Association shall be financed by its company members. The fees for each membership class are set in advance by the ordinary members during an ordinary General Assembly and are based on the budget for the following fiscal year. Such fees shall be used to finance the activity of the Association and its administrative expenses. Any surplus of income over the expenses shall be carried over to the next budget.

14.3

The Secretary General shall be responsible for expenditures within the budget.

14.4

The Management may authorize expenditures outside the budget to an amount not exceeding 10 per cent of the corresponding item in the current year budget. Any expense above this shall be approved by the majority of all ordinary members.

Art. 15

Dissolution

In the event of the dissolution of the Association, its assets are first used to discharge its liabilities. Any balance of liability shall be borne by the company members in proportion to their annual fees. Any surplus funds remaining after the liabilities have been discharged will be distributed to those which are company members at the date of dissolution in proportion to their total contributions to the Association.

Art. 16

Amendments

16.1

The By-laws and any Rules that may be adopted by the General Assembly can only be modified at an ordinary or special General Assembly. The proposed amendments shall be presented with the rationales for the change enclosed with the agenda and notified to the company members according to the provisions of Articles 8.1 and 8.4.

16.2

Amendments shall require approval by two thirds of all the ordinary members.

Art. 17

Litigation

Any dispute arising during the life of the Association or during its dissolution either between the members of the Association and its Management or between the members and the Association or between the members themselves as a consequence of the Association's activity shall be decided upon by the Courts of the Canton of Geneva. Swiss law is applicable in all cases.

Ecma Rules

1.

Language

The English language, as written in the United Kingdom, shall be the official language of the Association.

2.

System of measurement

The metric system of measurement according to ISO 1000 and the International System of Units (SI) according to ISO 3 1 shall be used.

3.

Representation of company members

Each company member shall appoint one of its officers or executives who shall represent this member in General Assemblies and who shall have full authority to commit the member on all matters listed in the agenda of the General Assembly. Company members shall notify the Association of any changes in their representation. Each company member may appoint one alternate representative.

4.

General Assemblies

4.1

Representatives may invite additional individuals from their respective member company to participate in an advisory capacity at a General Assembly.

4.2

The ordinary members at a General Assembly may be represented by a proxy. A written proxy shall be established indicating the item or items of the agenda to which it is restricted.

4.3

The President or in his absence the Vice-President shall preside at all General Assemblies. In absence of both, the ordinary members present or represented by proxy shall elect a Chairman for that particular meeting.

5.

Executive Committee

5.1

A Committee consisting of individuals elected by the General Assembly will be set up under the name of Executive Committee (ExeCom), whose terms of reference will be as follows:

5.1.1

To hold a meeting at least twice a year.

5.1.2

To prepare terms of reference for new Technical Committees in accordance with the rules for the formation of a Technical Committee.

5.1.3

To nominate a provisional Chairman and Vice-Chairman for each new Technical Committee.

5.1.4

To review and co-ordinate the progress of the TCs and, from time to time, review the terms of reference given to Technical Committees. Where required, Chairmen of TCs shall attend the meeting.

5.1.5

To make recommendations to the disbandment of Technical Committees.

5.1.6

To provide assistance and advice to the Management on business, legal and managerial matters and any other topic as and when required.

5.1.7

To propose nominations for the election of the Management at the General Assembly.

5.2

The members of the Ecma Management are members of the Executive Committee. Members of the Management may also be entitled to serve as Chairman of the Executive Committee as specified in Art. 7.8 of the Ecma by-laws.

6.

Technical Committees

6.1

Formation of Technical Committees (TCs):

6.1.1

TCs will be formed by the Secretary General (SG) when so decided at a General Assembly.

6.1.2

- a) Any proposal for the setting up of a TC shall include the suggested terms of reference, the scope, and be sent to the SG.
- b) Any new work item proposal in a TC or TG shall be supported by at least three Ecma members of which there is at most one NFP.

6.1.3

The ExeCom shall nominate a provisional Chairman and Vice-Chairman.

6.1.4

The SG shall then convene the first meeting of the TC.

6.2

Operating procedures - Rules and recommendations for the TCs:

6.2.1

Members of TCs are representatives of Ecma members.

6.2.2

Members of Ecma are entitled to send one or more representatives to any TC.

6.2.3

Voting on any matter shall be by simple majority of Ecma TC members. Each Ecma member has only one vote.

6.2.4

It is recommended that in the course of its ordinary work the TC should not use voting unless it is impossible to make progress without a vote.

6.2.5

One-time visitors can attend a meeting only at the invitation of the SG at the request of the TC. They have no voting rights.

6.2.6

Individuals can participate in the work of a TC as invited experts. They participate only at the invitation of the SG at the request of the TC. They have no voting rights. Invited experts shall comply with the Ecma policies and sign the appropriate form before participating.

6.2.7

The provisional Chairman and Vice-Chairman nominated by the ExeCom shall act for an initial period which shall be not less than six months from the date of the first meeting and which shall include the first three meetings.

6.2.8

At the first meeting of the TC which takes place after the end of the initial period, a Chairman and Vice-Chairman shall be elected from among the ordinary member representatives. However, when no ordinary member representative is available for such responsibility, the TC may appoint an individual as Chairman and / or Vice-Chairman among the remaining Ecma members and the GA shall be notified.

6.2.9

The Chairman and Vice-Chairman, having been elected from among the member company representatives, hold office for a term of 12 months and are eligible for re-election.

6.2.10

Meetings of the TCs shall be conducted by the Chairman, according to the By-laws and Rules of Ecma. A -representative of the Secretariat shall act as Secretary for all TC meetings. The Vice-Chairman or an appointed TC expert should assist the secretary and should act for the secretary if the latter is unable to attend.

6.2.11

Agenda for meetings of the TCs shall be prepared by the Chairman and an officer of the Secretariat taking into account suggestions made by members of the TC. The agenda shall be made available to all members three weeks before each meeting; at the opening of the meeting it can be updated and it shall be approved.

6.2.12

The secretary of a TC shall be responsible for the preparation of minutes of the meetings.

6.2.13

The minutes shall be made available by the secretary within three weeks after a meeting to all members of the TC, the General Assembly, and the ExeCom.

6.2.14

The first item on the agenda of each TC shall be the review and approval of the minutes of the preceding meeting. The minutes, after approval, shall constitute the official record of the meeting of a TC.

6.2.15

Any suggestions for the amendment of terms of reference of TCs shall be addressed to the SG for discussion between the TC Chairman and the ExeCom.

6.2.16

The Chairman is responsible for the preparation of a semi-annual report for each TC: He will be assisted by the Vice-Chairman and an officer of the Secretariat in this task and the report will be submitted to the General Assembly. The report will contain a description of the results achieved to date and an outline of the work to be carried out during the next year.

6.2.17

This report will be made available to all members of the TC for approval.

6.2.18

Any member of a TC has the right to ask for a minority report, which they shall provide, to be included into the semi-annual report.

6.2.19

The work of all TCs will be discussed every six months at a meeting of the ExeCom and the SG at which meetings the semi-annual reports will be presented.

6.2.20

First priority in discussion at the meetings of the TCs shall be given to items on the agenda.

6.2.21

Under no circumstances should any technical contribution be decided upon at a TC meeting unless it has been made available to all TC members at least three weeks before the meeting.

6.2.22

Face-to-face meetings may be held in Geneva or at any other place. Economy and efficiency shall be a factor in choosing the meeting place and the meeting mode. Electronic or a combination of electronic and face-to-face meetings are possible

7.

Task Groups (TGs)

7.1

A Technical Committee may form TGs for the accomplishment of specific tasks within the scope of the TC. In case of a Free TG (<http://www.ecma-international.org/memento/codeofconduct.htm>, http://www.ecma-international.org/memento/Policies/Ecma_Royalty-Free_Patent_Policy_Extension_Option.htm) the approval of the General Assembly is required.

7.2

At least two members of the TC shall agree to take an active part in the work of a TG.

7.3

Terms of reference of the TG shall be included in the minutes of the meeting of the Technical Committee at which the TG has been formed. The terms of reference require the approval of the General Assembly.

7.4

TGs shall report at each meeting to the TC on their activities; these reports shall appear in the minutes of the TC.

7.5

The Convenor of a TG shall be appointed by the TC upon nomination by the TG for 12 months and is eligible for re-appointment.

7.6

Face-to-face meetings may be held in Geneva or at any other place. Economy and efficiency shall be a factor in choosing the meeting place and the meeting mode. Electronic or a combination of electronic and face-to-face meetings are possible

8.

Membership and fees

8.1

The General Assembly shall set the annual membership fee for the following fiscal year based on the budget for that year.

Although the Association shall be non-profit making, reserves may be accumulated if so decided by the General Assembly.

For each class of company membership, the annual fee shall be:

Ordinary members: The full nominal fee

Associate members: One half of the full nominal fee

SME members: One quarter of the full nominal fee
 SPC members: Five percent of the full nominal fee.

There is no fee for NFPs (Not-For-Profit organizations).

8.2

Annual membership begins on the first day of the fiscal year and continues throughout that year.

Existing members as of the last day of the current fiscal year continue as members of the same class as of the first day of and throughout the following fiscal year, unless a change of the membership category has been approved (see 8.5).

The company membership fee is due within 60 days upon receipt of an invoice.

If the membership fee is not paid within four months upon receipt of the invoice the access right of the member to all Ecma activities may be automatically suspended without any further notice by Ecma.

8.3

The Secretary General shall indicate at the first ordinary General Assembly of the fiscal year the name(s) of the company member(s) having not paid the annual fee. The General Assembly shall decide on the sanctions to be taken, up to and including temporary suspension of all voting privileges.

8.4

Any withdrawing company member shall pay the full annual fee for the appropriate membership class for the fiscal year at the end of which the withdrawal becomes effective.

8.5

Any new company member admitted at the General Assembly held in the first half of a fiscal year shall pay one half of the full annual fee for its membership class in that fiscal year.

Any new company member admitted at the General Assembly held in the second half of a fiscal year shall not pay a fee for that fiscal year, but shall pay the full annual fee for its membership class in the following fiscal year.

Any upgraded (see By-laws Art.6.2) company member admitted at the General Assembly held in the first half of a fiscal year shall pay one half of the full annual fee for its new membership class for the second half of that fiscal year.

Any upgraded company member admitted at the General Assembly held in the second half of a fiscal year shall not pay an additional fee for its new membership class for that fiscal year, but shall pay the full annual fee for its new membership class in the following fiscal year.

Downgraded membership (see By-laws Art. 6.3) becomes effective at the beginning of the fiscal year following the fiscal year when the downgrading was approved.

9.

Operating expenses

9.1

Operating expenses of the Association shall consist of salaries, travel and office expenses of the Secretariat and publication costs.

9.2

Expenses of Ecma members including those connected with ad hoc committees, TCs and TGs are not part of the operating expenses of the Association.

9.3

The Secretary General of Ecma is responsible to the Treasurer for the operating expenses of the Association.

9.4

The general accounting of the Secretariat shall be reviewed once a year by an Auditor appointed by the Treasurer and approved by the General Assembly.

10.

Collaboration and liaison relationships

Ecma may want to collaborate or liaise with other organizations. There should be an agreement that defines the scope of the collaboration. The agreement should at least address:

- ! contribution of material to and from other organizations
- ! referencing material of other organizations (informative or normative)
- ! participation of representatives from other organizations in the work of Ecma and its Technical Committees
- ! clarification of all policy and procedural matters, such as IPRs (especially patent policy and copyrights, publications)
- ! possible creation of joint working groups (and their internal rules and procedures regarding the rights and duties of participating entities).

The General Assembly shall approve collaboration and liaison agreements.

Ecma IPR Policies

The current Ecma IPR policies are:

- < [Ecma Code of Conduct in Patent Matters](#) (based on the RAND policy)
(kindly download the patent statement form [here](#) in WORD file and [here](#) in PDF file)
(the Ecma list of patent statements is available [here](#))
- < [Royalty-Free patent policy extension option](#) (available [here](#) in WORD format and [here](#) in PDF format)
Related forms:
 - 1) Registration form for the RFTG (available [here](#) in WORD format and [here](#) in PDF format)
 - 2) Withdrawal form from the RF TC or TG (available [here](#) in WORD format and [here](#) in PDF format)
 - 3) Opt-out form for the RF policy (available [here](#) in WORD format and [here](#) in PDF format)
- < [Ecma text copyright policy](#)
- < [Ecma policy on submission, inclusion and licensing of software](#) (available [here](#) in WORD format and [here](#) in PDF format)
 - 1) the exhibit B is available [here](#) in DOC format and [here](#) in PDF format
 - 2) the designated employee contributors form (attachment 2 to the Ecma International Policy on Submission, Inclusion and Licensing of Software) is available [here](#) in WORD format
- < [Ecma trademark matters](#)

Ecma Code of Conduct in Patent Matters*

Version 2 (approved by the Ecma GA in June 2016)

1.

Ecma considers it is desirable that fullest available information should be disclosed to those selecting technology for Ecma International Standards and those interested in adopting Ecma International Standards¹. Ecma desires to develop standards for which licenses for any essential patents are available on a non-discriminatory basis and on reasonable terms and conditions. Therefore, Ecma desires that any party participating in a technical committee of Ecma International promptly disclose any patent or pending patent application that it believes contain claims that may be required to implement an Ecma International Standard, in accordance with the following provisions.

2.

If an Ecma International Standard is developed and a party may own or control a patent or application with claims that are required to implement such Ecma International Standard, three different situations may arise:

2.1

The patent holder is prepared to grant licenses free of charge to other parties on a non-discriminatory basis on reasonable terms and conditions. Negotiations are left to the parties concerned and are performed outside of Ecma International.

2.2

The patent holder is prepared to grant licenses to other parties on a non-discriminatory basis on reasonable terms and conditions. Negotiations are left to the parties concerned and are performed outside of Ecma International. For patented technology contributed to and incorporated into a Final Draft Ecma International Standard by a patent holder member, the patent holder member may select 2.1 or 2.2. If such patent holder member does not make a selection, 2.2 shall apply.

2.3

For patented technology contributed by a party other than the patent holder, the patent holder is not prepared to comply with the provisions of either Paragraph 2.1 or Paragraph 2.2.

3.

Whatever case applies (2.1, 2.2 or 2.3), the patent holder shall, for patents and pending applications it owns or controls that it believes contains claims that may be required to implement the identified Draft Ecma International Standard, provide a timely written statement to be filed with the Ecma Secretary General at the Ecma International Secretariat, using the attached [here](#) in WORD format and [here](#) in PDF format). Any licensing commitment selected will only apply to those claims that end up being required to implement the Final Ecma International Standard.

3.1

In the event the patent holder selects per Paragraph 2.1 and 2.2, the patent holder may identify specific patents associated with box 1 or box 2 of the Form. If an Ecma member does not identify specific patents on the list, the designated licensing commitment will apply to all of the Ecma member's claims in patents and pending applications it owns or controls that end up being required to implement the finalized Standard. The patent holder may submit multiple Forms to document additional patents, each Form applying to patents associated with one of the boxes. A patent holder may re-designate as follows: Box selections cannot be changed, except that identified patents may be re-designated from box 3 to box 1 or 2, or from box 2 to box 1. For licenses executed before a re-designation, the licensees may continue under the existing license or may request terms in accordance with the re-designation.

3.2

In the event a patent holder selects per Paragraph 2.3, the patent holder must identify the specific patents it owns or controls and believes are required to implement the Ecma Standard in a Form under box 3.

3.3

The Form must not include additional provisions, conditions, or any other clauses that may interpret, restrict or vary the terms of the selected box on the Form.

4.

Pursuant to Article 9 of the Ecma International by-laws, each Final Draft Ecma International Standard to be approved shall be submitted two months ahead of a General Assembly (GA).

4.1

Each Ecma member participating in the development of the proposed standard shall, and other Ecma members may, submit a Form at the latest two weeks before the GA (if the vote occurs at the GA) or the end of the postal voting period (if the vote is by mail), if they own or control any patents or patent applications that they believe are required to implement such standard. For so long as such Standard remains an approved Ecma International Standard, the member will be prepared to grant licenses for its essential claims in patents and patent applications in accordance with Paragraph 2 above. In the event Paragraph 2.3 is selected, a patent license may not be available and the technical committee should explore other options.

4.2

This Policy creates no duty for Ecma members to disclose patents or patent applications that are required to implement general licensing commitment shall apply to the claims in any patents or patent applications that are required to implement

use the opt-out mechanism to opt-out Identified Patents, which shall be effective as to material in Draft Standards in Opt-Out Review Windows that passed when the RFTC/RFTG Member Organization was not a participant in the RFTC/RFTG. For an RFTC/RFTG Member Organization that has previously withdrawn, the new opt-out shall only apply to material in Draft Standards in Opt-Out Review Windows that passed after that prior withdrawal. A party that joins during an Opt-Out Review Window will have the remainder of that Opt-Out Review Window to exclude a patent or patent application.

Ecma Text Copyright Policy

All Ecma Standards and Technical Reports are covered by the following [Ecma copyright notice](#).

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