

MEMENTO 1994

ECMA

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

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PREFACE

Information Technology and Telecommunications are key factors in today's economical and social environment. Effective interchange of commercial, technical, and administrative data, text and images is essential for the growth of economy in the world markets.

Open Systems and Distributed Networks based on world-wide recognized standards will not only provide effective interchange of information but also help to remove technical barriers to trade. In particular harmonized standards are recognized as prerequisite for the establishment of the European economic area.

For over thirty years ECMA has actively contributed to world-wide standardization in information technology and telecommunications. More than 160 ECMA Standards and 60 Technical Reports of high quality have been published.

In the coming years ECMA sees important challenges for information technology and telecommunication standardization, especially in the following areas:

- Multimedia Computing
- High Speed Telecommunications
- IT Security
- High Capacity Storage Media
- Software Engineering
- Application Portability

Standardization provides the means for economical solutions for complex technologies. Moreover, it is most effective if it is performed in a precompetitive mode and parallel with product development with all interested parties involved.

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 base for international and European Standards. To ensure close co-operation ECMA has established formal liaison with most European and international standardization bodies.

ECMA Standards are developed by highly qualified experts from information technology and telecommunication industry with the commitment to provide in a consensus mode technical solutions ready for implementation in product development and conformity testing.

The benefit of ECMA membership is twofold:

- Early knowledge of technological trends and better understanding of information technology and telecommunication standards requirements.
- A platform where technical contributions of member companies are evaluated by experts who through a most effective mode of operation develop ECMA Standards and Technical Reports of high quality in a very short time.

The participation of the majority of leading information technology and telecommunication companies in ECMA ensures not only the acceptance of ECMA Standards in European and International standardization but also their world-wide implementation.

The President

Geneva, December 1992

PURPOSE AND MEMBERSHIP

The Purpose of ECMA 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 order to facilitate and standardize the use of information processing and telecommunication systems.
- To encourage the correct use of standards by influencing the environment in which they are applied.
- To promulgate various standards applicable in the functional design and use of information processing and telecommunication systems. Promulgation of ECMA Standards and Technical Reports shall require approval by at least two-thirds of all the ordinary members.

The Association shall consist of ordinary and associate members and such other classes of members as may be created by the ordinary members at a General Assembly.

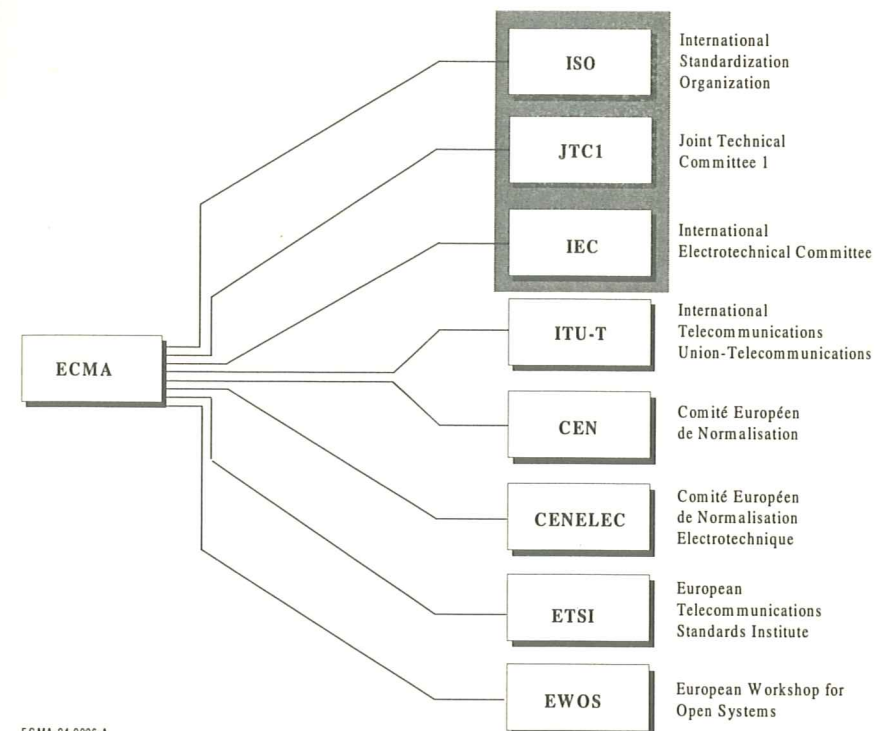
Ordinary members shall be companies which develop, manufacture and market in Europe hardware or software products or services in the field of information technology or telecommunications used to process digital information for

business, scientific, control, communication or other similar purposes. Products or services used exclusively for military purposes shall not be considered in this regard.

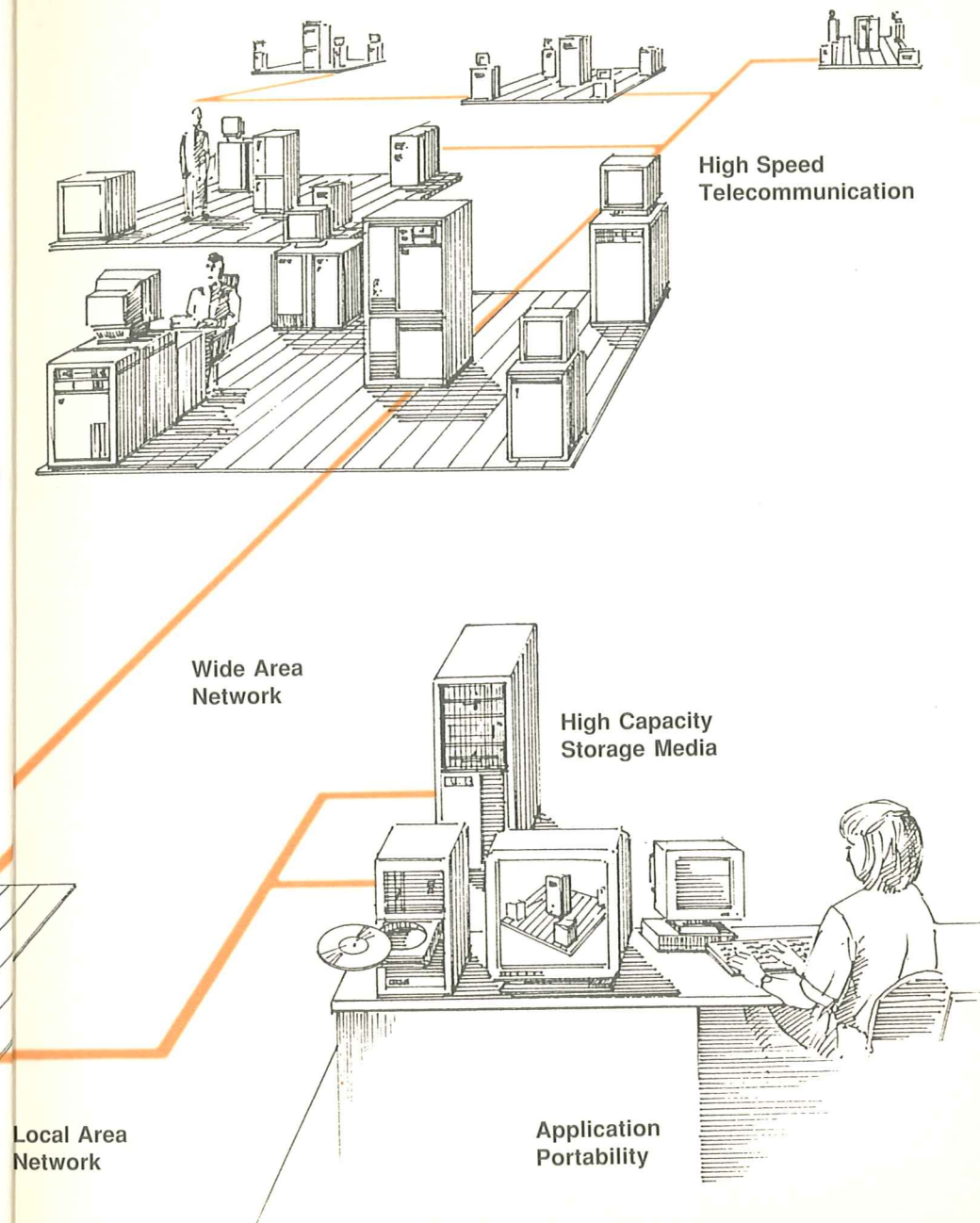
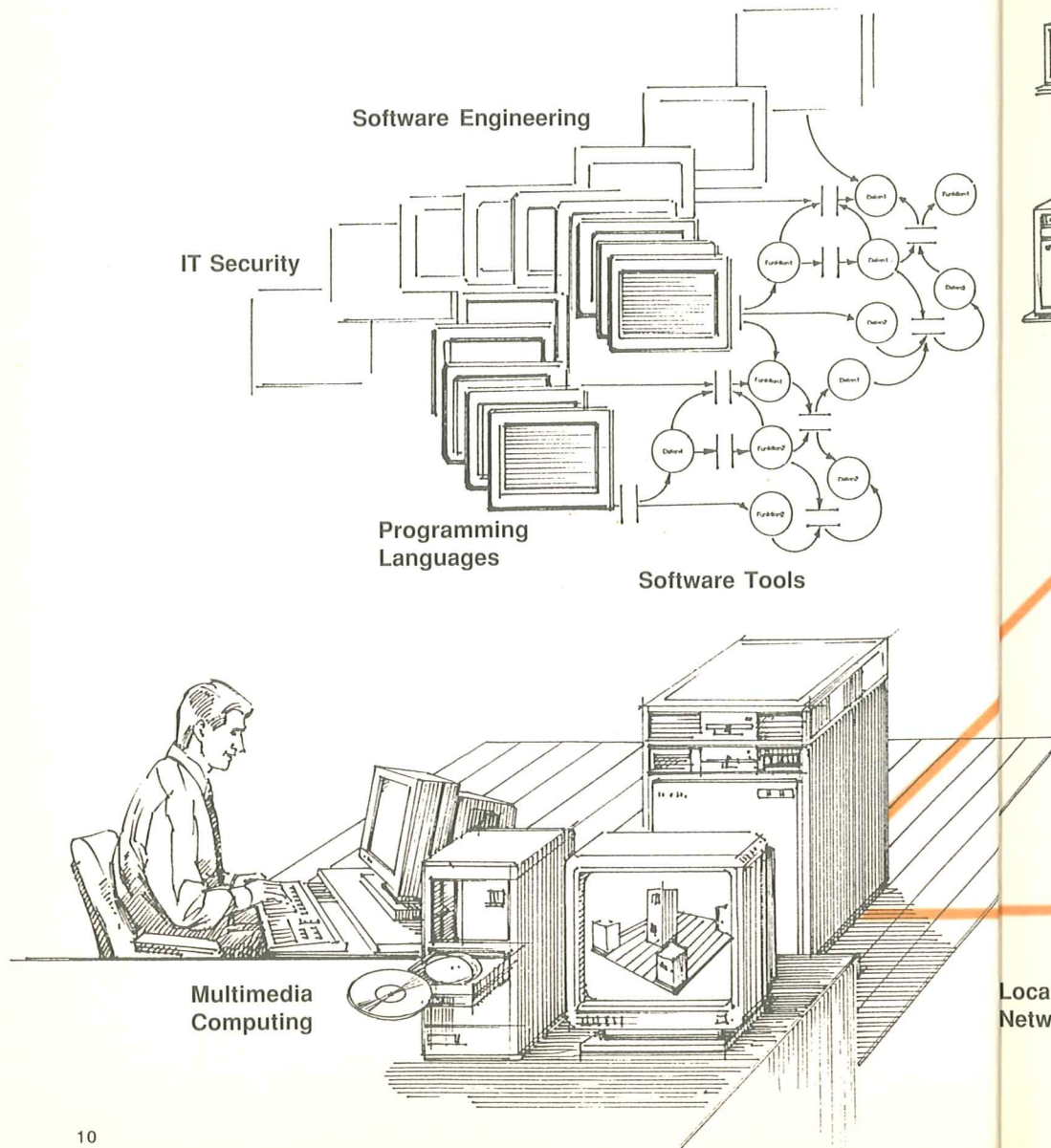
A company may be admitted as associate member which has interest and experience in Europe in matters related to one or more of the TCs of the Association. No company qualifying for ordinary membership can be elected associate member.

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

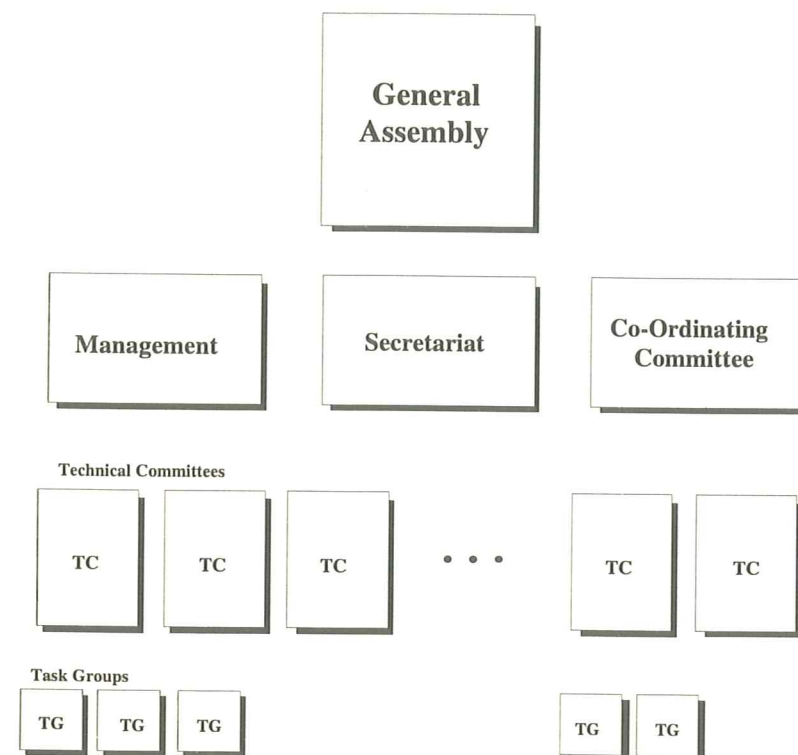
ECMA'S ROLE IN INTERNATIONAL STANDARDIZATION



ECMA has close working relations - such as liaisons, co-operation agreements, memberships - with European and international standardization bodies.



ECMA ORGANIZATION



ECMA-94-0007-A

Management

President
W. Brodbeck
IBM

Vice-President
D. Gann
HP

Treasurer
P. A. Trudgett
BT

Secretariat

Secretary General
J. van den Beld

Senior Technical Officer
L. Lauri

Technical Officer
C. Brockway

Co-Ordinating Committee

Chairman
S. Statt (NCR/AT&T)

Members
H. Abramowicz (Ericsson)
M. Bermange (Rank Xerox)
F. Deignan (ICL)
U. Hartmann (Siemens Nixdorf)
Ms. V. Horsnell (Digital)

GENERAL ASSEMBLY

Alcatel Mr. D. Unger	Panasonic Mr. T. Yoshino
Apple Mr. S. Ettles	Philips
AT&T Mr. S. Statt	Mr. H. C. de Ruyter van Steveninck
BASF Mr. P. Felleisen	Rank Xerox Mr. M. S. Bermange
BT Dr. P. A. Trudgett	Ricoh Mr. N. Ohkubo
Bull Mr. A. Le Maoût	Siemens Nixdorf Mr. U. Hartmann
Callscan Mr. R. Huffadine	Sony Dr. R. Lagadec
Compaq Mr. R.W. Stearns	Storage Tek Mr. S. D. Cheatham
Conner Mr. R.C. Richmond	Sun Mr. G. Robinson
Data General Mr. M.J. Dowling	Telenorma Mr. A. Kessler
Digital Ms. V. Horsnell	3M Mr. A. De Vita
Ericsson Mr. H. Abramowicz	Toshiba Mr. M. Sokat
Exabyte Mr. C. Mulder	Unisys Mr. J. L. Hill
GPT Mr. M. Trought	
Hitachi Mr. M. Ishigaki	
HP Mr. D. Gann	
IBM Mr. W. Brodbeck	
ICL Mr. F.J. Deignan	
JVC Mr. T. Tojo	
Kao Mr. K. Kasutani	
Kodak Mr. P. R. Ashe	
Maxoptix Mr. G. Knight	
Most Mr. L.W. Payne	
NEC Mr. Y. Kikumoto	
Northern Telecom Dr. A.H. Robinson	

ORDINARY MEMBERS

ALCATEL NV 33, rue Emeriau F-75015 PARIS France	✓	Telefonaktiebolaget LM Ericsson Telefonplan S-126 25 STOCKHOLM Sweden	✓
Apple Computer Europe Inc. Le Toronto 54 Route de Sartrouville F-78230 LE PECQ France	✓	GPT Ltd Vanwall Park Vanwall Road MAIDENHEAD SL6 4UN United Kingdom	✓
AT&T Global Information Solutions 206 Marylebone Road LONDON NW1 6LY United Kingdom	+	Hewlett-Packard S.A. 150 Route du Nant-d'Avril CH-1217 MEYRIN 2 Switzerland	✓
BT 81 Newgate Street LONDON EC1A 7AJ United Kingdom	✓	Hitachi Ltd European Operation Centre Wallbrook Business Centre Green Lane HOUNSLOW TW4 6NW United Kingdom	✓
Bull S.A. 121, avenue de Malakoff F-75116 PARIS France	✓	IBM Europe Tour Pascal, Cedex 40 F-92075 PARIS LA DEFENSE France	✓
Compaq Computer GmbH Arabellstr. 30 D-8000 MUNICH 81 Germany	✓	ICL, International Computers Ltd ICL House Putney LONDON SW15 1SW United Kingdom	✓
Digital Equipment Co. Ltd Worton Grange Industrial Estate Imperial Way READING RG2 0TL United Kingdom	✓	Kodak Aktiengesellschaft Postfach 60 03 45 D-7000 STUTTGART 60 Germany	✓

NEC (UK) Ltd
NEC House
1 Victoria Road
LONDON W3 6UL
United Kingdom

Nederlandse Philips Bedrijven B.V.
P.O. Box 218
NL-5600 MD EINDHOVEN
The Netherlands

Northern Telecom Europe Ltd
1B Portland Place
LONDON W1N 3AA
United Kingdom

Rank Xerox Ltd
Bessemer Road
WELWYN GARDEN CITY AL7 1HE
United Kingdom

Siemens Nixdorf
Informationssysteme AG
Otto-Hahn-Ring 6
D-81730 MUNICH
Germany

Sony Europa GmbH
Hugo-Eckener-Str. 20
D-50829 COLOGNE
Germany

Telenorma GmbH
Mainzer Landstr. 128-146
D-60277 FRANKFURT
Germany

3M Italia S.p.A.
CP 118
I-81100 CASERTA
Italy

Toshiba Europe (I.E.) GmbH
Hammfelddamm 8
D-4040 NEUSS 1
Germany

Unisys
Bakers Court
Bakers Road
UXBRIDGE UB8 3RG
United Kingdom

ASSOCIATE MEMBERS

BASF Magnetics GmbH
D-68165 MANNHEIM
Germany

Callscan Development Group
Unit 2 Holt Court South
Jennes Road
BIRMINGHAM B7 4EJ
United Kingdom

Conner Peripherals, Inc.
European Customer Service
Archive Way
WOKINGHAM RG11 2PL
United Kingdom

Data General Europe
30 Rue Grange Dame Rose
F-92366 MEUDON LA FORET
France

Exabyte Corporation, Ltd
Queensbridge House
60 Upper Thames St.
LONDON EC4V 3BD
United Kingdom

JVC Information Products GmbH
Grüner Weg 12
D-61169 FRIEDBERG
Germany

Kao Corporation GmbH
Mündelheimer Weg 50
D-4000 DÜSSELDORF 30
Germany

Maxoptix Europe Ltd
Suite 1, Edbrooke House
St. John's Road
WOKING GU21 1SE
United Kingdom

Most Inc. - Europe
Kreuzstr. 34
D-4000 DÜSSELDORF 1
Germany

Panasonic Europe (HQ) Ltd
(E-TEC), Monzastr. 4c
D-63225 LANGEN
Germany

Ricoh Europe B.V.
Groenelaan 3
NL-1186 AC AMSTELVEEN
The Netherlands

Storage Technology Corporation
Storage Tek House
Albert Drive
WOKING GU21 5JY
United Kingdom

SUN Microsystems Europe
Bagshot Manor, Green Lane
BAGSHOT GU19 5NL
United Kingdom

OTHER ORGANIZATIONS

Participation in the technical work of ECMA is open to experts from organizations not qualifying for membership, e.g. national institutes or user organizations (Art. 7.2 of the Rules). Such experts are considered as full members of the Technical Committees and as such, will be exercising voting rights. Presently the following experts are participating in the work of ECMA.

Dr. M. Albrecht
Physikalisch-Technische
Bundesanstalt (PTB)
Postfach 33 45
D-38023 BRAUNSCHWEIG
Germany

Mr. H. Barlow
CCTA, HM Treasury
Gildengate
Upper Green Lane
NORWICH NR3 1DW
United Kingdom

Mr. W.F. Bohn
Universität Hannover
D-3000 HANNOVER
Germany

Mr. C. Colket
AJPO, Ada Joint Program Office
The Pentagon, 3E114
WASHINGTON, DC 20301-3081
USA

Prof. S. Ghernaouti
Ecole des HEC
de l'Université de Lausanne
CH-1015 LAUSANNE
Switzerland

Mr. J. Hyon
Jet Propulsion Laboratory
4800 Oak Grove Drive
PASADENA, CA 91109
USA

Mr. R.H. Hysert
Department of National Defence
SBI Building
P.O. Box 9703, Terminal
OTTAWA, Ontario K1G 3Z4
Canada

Mr. M. Imber
EIA, Electronics Industries
Association
LBMS
Evelyn House
62 Oxdorf Street
LONDON W1N 9NF
United Kingdom

Mr. T. Kathöfer
CADLAB
Bahnhofstr. 12
D-4790 PADERBORN
Germany

Prof. Dr. U. Kelter
Universität Siegen
Postfach 101240
D-5900 SIEGEN
Germany

Ms. T. Kirkendall
NIST, National Institute of
Standards
and Technology
A266, Technology Building
GAITHERSBURG, MD 20899-0001
USA

Mr. I. MacMillan
SBC Technology Resources Inc.
550 Maryville Center Drive
ST. LOUIS, Miss. 63141
USA

Mr. M.W. Morron
Chairman of PIMB Association
73 Kiln Road
READING RG4 8UF
United Kingdom

Dr. A. Nakassis
NIST, National Institute of
Standards
and Technology
B204, Technology Building
GAITHERSBURG, MD 20899-0001
USA

Dr. F. Oquendo
CRISS Research Centre
University of Grenoble
BP 47 X
F-38040 GRENOBLE Cedex 9
France

Mr. R.M. Rankin
Defence Research Agency
St. Andrews Road
GREAT MALVERN WR14 3PS
United Kingdom

Mr. F. Richard
Matra Communication/DRCE
BP 26
F-78892 BOIS-D'ARCY Cedex
France

Mr. T.R. Rhodes
NIST, National Institute of
Standards
and Technology
Computer Systems Laboratory
GAITHERSBURG, MD 20899-0001
USA

Dr. J. Solomond
AJPO, Ada Joint Program Office
The Pentagon, 3E114
WASHINGTON, DC 20301-3081
USA

Mr. G. Thepaut
Centre National d'Etudes des
Télécommunications (CNET)
BP 40
F-22301 LANNION Cedex
France

Mr. E.F. Troy
NIST, National Institute of
Standards
and Technology
A-216, Technology Building
GAITHERSBURG, MD 20899-0001
USA

Prof. Dr. H. Weber
Universität Dortmund
Postfach 50 05 00
D-4600 DORTMUND 50
Germany

Prof. M.V. Zelkowitz
Computer Science Department
University of Maryland
COLLEGE PARK, MD 20742
USA

TECHNICAL COMMITTEES

Active Committees

Codes	TC 1
Product Safety	TC 12
Volume and File Structure	TC 15
Magnetic Tapes and Tape Cartridges	TC 17
Flexible Disk Cartridges	TC 19
Electromagnetic Compatibility	TC 20
Acoustics	TC 26
Optical Disk Cartridges	TC 31
Communication, Networks and Systems Interconnection	TC 32
Portable Common Tool Environment	TC 33
IT Security	TC 36
Public Windows Interface (under investigation)	TC37

Committees having accomplished their task

General Programming Languages	TC 2
Problem Analysis and Flow Charting	TC 3
Optical Character Recognition	TC 4
ALGOL	TC 5
COBOL	TC 6
Magnetic Ink Character Recognition	TC 7
FORTTRAN	TC 8
Data Transmission	TC 9
PL/1	TC 10
Numerical Control	TC 11
Keyboards	TC 13
Paper Sizes	TC 14
Rigid Magnetic Disks	TC 16
I/O Interface	TC 18
BASIC	TC 21
Database	TC 22
Open Systems Interconnection	TC 23
Communications Protocols	TC 24
Data Networks	TC 25
Ada	TC 27
Ergonomics of Work Stations	TC 28
Document Architecture and Interchange	TC 29
SCSI Small Computer Systems Interface	TC 30
Office Devices	TC 34
User System Interface	TC 35

TC 1 - CODES

Scope:

Definition of common character sets (including alphabets, digits, punctuation marks, special symbols and control functions) and their coded representation suitable for input/output media, data transmission and text communication in order to facilitate interchange of information between DP equipment. To define the implementation of codes on media.

Programme of work:

1. Determination of common sets which shall take into account the European and international requirements for graphic characters, and control function representations in data handling and programming, in accordance with computer and auxiliary equipment characteristics.
2. Consideration shall be given in defining the coded character sets to permit possible expansion and contraction.
3. To participate in the work of ITU-T and ISO/IEC JTC1 to develop a standard character set and coding for text communication.
4. To assume responsibility for the maintenance of the ECMA Standards prepared by TC1.
5. To maintain liaison with other standards organizations in order to present ECMA proposals to them and to make comments on their proposals.

Officers:

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Dr. J. Bettels (Digital)

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Mr. M. Ksar (HP)

Mr. J. B. Paterson

Mr. G. Wright (Sun)

TC 12 - PRODUCT SAFETY

Scope:

To consider national and international safety regulations with a view to establishing 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 recommendation 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 assume responsibility for the maintenance of ECMA Standards prepared by TC 12.
5. 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

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Mr. T. Wentholt (Rank Xerox)

Vice Chairman

Vacancy

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TC 15 - 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 TC15.
5. To maintain liaison with other standards organizations in order to present ECMA proposals to them and to make comments on their proposals.

Officers

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Dr. K. Meissner (Digital)

Dr. Y. Ochiai (Sony)

Mr. R.K. Rolfe (IBM)

Mr. T. J. Whitcher (Kodak)

Mr. T. K. Wong (Sun)

Mr. M. Yoshioka (ICL/Fujitsu)

TC 17 - MAGNETIC TAPES AND TAPE CARTRIDGES

Scope:

To identify and standardize the minimum number of parameters necessary to ensure interchangeability of magnetic tapes and tape cartridges using appropriate methods of recording and taking account of existing standards.

Programme of work:

1. To develop standards for 3,81 mm, 6,30 mm, 8 mm and 12,65/12,7 mm wide magnetic tape cartridges.
2. To monitor the revision of International Standards for magnetic tapes and tape cartridges.
3. To develop standards for algorithms for the lossless compression of data.
4. To assume responsibility for the maintenance of ECMA Standards prepared by TC17.
5. To maintain liaison with other standards organizations in order to present ECMA proposals to them and to make comments on their proposals.

Officers

Chairman

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Mr. G. Saliba (Digital)

Mr. S. Takagi (Sony)

Mr. G. Taylor (Storage Tek)

Mr. G. Thepaut (CNET)

Mr. T. Tojo (JVC)

Mr. J. Wolf (IBM)

TC 19 - FLEXIBLE DISK CARTRIDGES

Scope:

To identify and standardize the physical properties and the relevant track format of flexible disk cartridges for digital applications in order to ensure interchangeability.

Programme of work:

1. To identify the requirements of low-cost and compact digital data recording for data collection and data entry systems as well as for easy mailing and to review the extent to which existing designs possibly derived from existing standards in other areas, fulfil these requirements.
2. To specify the physical properties, recording method and track location of magnetic flexible disk cartridges in order to ensure interchangeability.
3. To specify the relevant track format and code representation for these disks to ensure interchangeability.
4. To assume responsibility for the maintenance of ECMA Standards prepared by TC 19.
5. To maintain liaison with other standards organizations in order to present ECMA proposals to them and to make comments to their proposals.

Officers:

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Vice Chairman

Mr. P. Felleisen (BASF)

Members

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Mr. T.G. Badar (3M)

Mr. K. Bennison (ICL)

Mr. E. Boehm (3M)

Mr. S. D. Cheatham (Storage Tek)

Mr. C. R. Claber (Storage Tek)

Mr. D.J. Driscoll (Compaq)

Mr. H. Harcken (PTB)

Mr. E. Herter (NEC)

Mr. T. Kobayashi (Sony)

Mr. H. Kubota (Toshiba)

Mr. I. Nakashima (Sony)

Mr. S. Takagi (Sony)

Dr. T. Tetsutani (Kao)

Mr. G. Thepaut (CNET)

Mr. A. De Vita (3M)

TC 20 - ELECTROMAGNETIC COMPATIBILITY

Scope:

To study the condition necessary to guarantee reciprocal electromagnetic compatibility between information technology equipment and the external environment, to prepare corresponding standards and to contribute to international standardization.

Programme of work:

1. To survey existing international and national standards concerned with electromagnetic compatibility.
2. To establish measuring methods and limits for electromagnetic interference generated by information technology equipment.
3. To establish standards for methods of assessment and suitable levels for the immunity of information technology equipment to electromagnetic interference.
4. To assume responsibility for the maintenance of ECMA Standards prepared by TC20.
5. To maintain liaison with other standards organizations in order to present ECMA proposals to them and to make comments on their proposals.

Officers:

Chairman

Mr. S. Ettles (Apple)

Vice Chairman

Mr. J. Osude (BT)

Members

Mr. D.L. Ball (ICL)

Mr. J. Benham (Data General)

Mr. P. Boers (Digital)

Mr. S. Dombrowski (3M)

Mr. M.J. Dowling (Data General)

Mr. A. Emery (Siemens Nixdorf)

Mr. R. Gehrmann (HP)

Mr. H. R. Hofmann (AT&T)

Mr. E. Krog-Jensen (Ericsson)

Mr. Y. L'Ollivier (Bull)

Mr. R. C. Marshall (Rank Xerox)

Mr. S. McConkey (Compaq)

Mr. C. McGibbon (Rank Xerox)

Mr. D. E. C. Moehr (Siemens Nixdorf)

Mr. D. Mylrea (Digital)

Mr. R. Schäfer (Unisys)

Mr. R. Schuth (Data General)

Mr. S. Scott (IBM)

Mr. S. Statt (AT&T)

Mr. H. Talboom (Alcatel)

Mr. M. Tétreault (Digital)

Mr. S. Usuda (VCCI)

Mr. M. C. Vrolijk (Philips)

Mr. T. Wentholt (Rank Xerox)

Mr. M. A. Wright (BT)

Mr. P. Zahra (Sun)

TC 26 - 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

Mr. D. Baines (ICL)

Vice Chairman

Vacancy

Members

Mr. R. D. Hellweg (Digital)

Mr. D. S. Gaunt (IBM)

Mr. M. Giesler (Unisys)

Mr. E. Klotz (Siemens Nixdorf)

Mr. B. Lotz (Digital)

Mr. G. Leroi (Bull)

Mr. S. Muggleworth (Rank Xerox)

Mr. R. Neville (Data General)

Mr. J. Osborn (Sun)

TC 31 - OPTICAL DISK CARTRIDGES

Scope:

To identify and develop the minimum number of standards necessary for data interchange by means of optical data disk cartridges.

Programme of work:

1. To develop standards for optical disk cartridges of 90 mm, 120 mm, 130 mm and 300 mm.
2. To assume responsibility for the maintenance of ECMA Standards prepared by TC31.
3. To monitor technological developments in the field of optical disk cartridges.
4. To maintain liaison with other standards organizations in order to present ECMA proposals to them and to make comments to their proposals.

Officers:

Chairman

Mr. M. Deese (Sony)

Vice Chairman

Dr. P.G.P. Weijenbergh (Philips)

Members

Dr. Y. Aoki (Sony)

Mr. P. R. Ashe (Kodak)

Mr. T.G. Badar (3M)

Mr. K. Bennison (ICL)

Mr. C. R. Claber (Storage Tek)

Mr. W. Glinka (Maxoptix)

Mr. K. Hallam (Most)

Mr. S. Heil (Panasonic)

Mr. D. Hekimi (Sony)

Mr. T. Holst (Ericsson)

Mr. M. Ishigaki (Hitachi)

Mr. G. Knight (Maxoptix)

Mr. J. E. Kulakowski (IBM)

Mr. A. Le Maoût (Bull)

Mr. K. Miwa (IBM)

Mr. Y. Miyazawa (Hitachi)

Dr. Y. Mizoguchi (Hitachi)

Mr. J. Neumann (Hitachi)

Dr. Y. Ochiai (Sony)

Mr. L.W. Payne (Most)

Mr. K. Saldanha (HP)

Mr. G. Thepaut (CNET)

Mr. M. Wingert (Sony)

Mr. E. J. Wolkener (Siemens Nixdorf)

TC32 - COMMUNICATION, NETWORKS AND SYSTEMS INTERCONNECTION

Scope:

To take the overall responsibility for the ISO Reference Model for Open Systems Interconnection (OSI) within ECMA. To develop service and protocol standards for the seven layers of the Reference Model and Distributed Applications.

To study services and protocol standards in relation to networking services including Management. To prepare co-ordinated viewpoints of interest to ECMA and their users. To standardise selected facilities within these services for selected applications. To develop interface Standards for the connection of information technology equipment (ITE) to Private Telecommunication Networks (PTN).

Programme of work:

1. To be responsible for, and co-ordinate, the work of the Task Groups within TC32. To approve drafts prepared by the Task Groups for submission to the General Assembly and deal with all matters requiring voting within TC32.

2. To maintain an ECMA view of the OSI Reference Model and to contribute to its maintenance and extension.

3. service and protocol Standards for all layers of the Reference Model.

4. To develop a set of OSI management standards.

5. To develop Standards for applications that are functionally integrated using both computing and switched networks.

6. To study the scope, definitions and standardisation possibilities of local communication systems (e.g. LAN, PTNX); to develop Standards where a need is identified.

7. To study ITU-T/ETSI defined Integrated Services Digital Networks (ISDN) and propose modifications for private communications.

8. To maintain liaison with other ECMA TCs as appropriate.

9. To maintain liaison with ITU-T, IEC, ISO and ETSI.

10. To maintain liaison with other standards organizations in order to present ECMA proposals to them and make comments on their proposals.

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TC32-TG11 - COMPUTER SUPPORTED TELECOMMUNICATION APPLICATIONS (CSTA)

Scope:

To develop and refine architectural frameworks and the requirements on, and the use of, services and network control protocols allowing computing and switching networks to cooperate in support of functionally integrated applications. To develop OSI Application Layer protocols for the execution of transactions between computing and switching applications.

The work continues to focus on bi-directional operations between computer and private telephony networks. The work takes into account the requirements of other telecommunication services within both the private and public telecommunication domains.

Programme of work:

1. To study aspects of CSTA, with special emphasis on:

- application descriptions and scenarios;
- functional requirements for integrated telephony;
- protocol architecture appropriate for the defined scenarios;
- implications for system security and integrity;
- functional requirements for integrated data access, accounting, data input/output and other applications;

- the management of CSTA objects.
- support for PTN and other ISDN's

2. To produce Technical Reports outlining enhanced architecture and additional services of CSTA.

3. To produce OSI Application Layer Based Standards specifying the services, functional entities and protocols required to enable CSTA operation in a variety of environments.

4. To liaise with standards organisations studying similar topics including groups working within ECSA-ANSI T1S1, ITU-T and ISO/IEC JTC 1/SC6, to promote a unified international standard.

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TC32-TG12 - PRIVATE TELECOMMUNICATION NETWORKS - MANAGEMENT

Scope:

To develop Technical Reports and Standards for the management of Private Telecommunication Networks (PTNs), such management being based upon the work of ITU-T and ETSI on Telecommunication Management Network (TMN), adapted and extended to suit PTNs.

PTN Management seeks to encompass the management of all aspects which can go to make up a PTN. Thus the work seeks to integrate the Simple Network Management Protocol (SNMP), which is commonly used for the management of equipment supporting the TCP/IP protocol, with PTN management.

Programme of work:

1. To adapt and expand the set of TMN Management Service descriptions so that they can be applied to PTN Management, and publish these as Technical Reports.
2. To develop an architecture to allow interworking of SNMP with PTN management.
3. In collaboration with the IETF, to specify the interworking of SNMP in a PTN environment.
4. To study jointly with ITU-T and ETSI the area of management interworking between PTNs and

public networks so as to develop suitable specifications.

5. To establish a set of instructions which is compatible with ETSI and ITU-T to guide the development of management information to be exchanged at PTN Management interfaces.

6. To adapt and extend TMN management information models to be suitable for a PTN environment, and develop new models as appropriate.

7. To monitor and contribute to the work of other International and European bodies studying matters related to PTN Management.

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TC32-TG13 - PRIVATE TELECOMMUNICATION NETWORKS - NETWORKING AND SERVICES

Scope:

To develop Technical Reports and Standards for Private Telecommunication Networks (PTN) and Services.

Programme of work:

1. To develop service Standards for the connection of terminals, computers, and Wide Area Networks (WAN) to a PTN, utilising, and remaining compatible with, existing Standards and recommendations, as far as possible.
2. To develop Standards for intra-PTN services, thereby supporting harmonised telecommunication services on multi-vendor PTN, and to align these services as far as possible with the public ISDN telecommunications services.
3. To cooperate with other standardization bodies in the development of Standards for the architecture of PTN in relation to:
 - interconnection of PTN exchanges
 - connection of terminal equipment (TE);
 - interconnection with LAN;
 - interconnection with private and public WAN.
4. To develop Standards for the Stage 1 and Stage 2 aspects of PTN Services for publication by ETSI.

5. To co-ordinate the liaison with ITU-T, and ISO/IEC JTC1 in the field of ISDN services.

6. To monitor and to contribute to the work of other international and European bodies studying matters related to PTN Services (e.g. ISDN and LAN developments).

TC32-TG14 - PRIVATE TELECOMMUNICATION NETWORKS - SIGNALLING

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Scope:

To develop Technical Reports and Standards for signalling in Private Telecommunication Networks (PTN).

Programme of work:

1. To develop interface protocol signalling Standards for the connection of terminals, computers, LAN and Wide Area Networks (WAN) to a PTN, utilising, and remaining compatible with, existing Standards and recommendations.
2. To develop Standards for intra-PTN signalling protocols, thereby supporting harmonised telecommunication services on multi-vendor PTN.
3. To monitor and to contribute to the work of other international and European bodies studying matters related to PTN Services (e.g. ISDN and LAN developments).
4. To co-ordinate the liaison with ITU-T and ETSI in the field of ISDN protocol standards.
5. To develop Standards for the Stage 3 aspects of PTN Services for publication by ETSI.
6. To co-ordinate the liaison with ITU-T, and ISO/IEC JTC1 in the field of ISDN signalling.
7. To monitor and to contribute to the work of other international and European bodies studying matters

related to PTN Services (e.g. ISDN and LAN developments).

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TC 33 - PORTABLE COMMON TOOL ENVIRONMENT (PCTE)

Scope:

To standardize a Public Tool Interface (PCTE : Portable Common Tool Environment) implementable on a wide range of operating environments, to ensure a suitable foundation for portable, integrated tools and tool sets for systems engineering. To standardize the specification of data interchange facilities required to interchange data between PCTE repositories or between PCTE and non-PCTE repositories. To standardize schemas allowing data to be shared between tools in a given PCTE repository.

Programme of work:

1. To work with ISO/IEC JTC1 to attain global approval for and to maintain actively the ECMA PCTE standards.
2. To define the abstract specification and bindings of new services in the domain of:
 - object orientation, and
 - high performance access to fine grain objects.
3. To develop new bindings and standardize them through ECMA and other standardization bodies as appropriate.
4. To produce the standard specification of a facility allowing two different repositories (of which at least

one complies with PCTE) to exchange their data.

5. To facilitate the sharing of data between tools by producing the standard specification of PCTE schemas covering systems engineering domains, in liaison with the appropriate standardization bodies.

6. To maintain Technical Report ECMA TR/55, specifying a reference model for CASE frameworks, in liaison with the U.S. National Institute of Standards and Technology (NIST).

7. To produce a Technical Report defining how ECMA PCTE maps to the reference model.

8. To provide strategic direction for the work of the Task Groups of TC33.

9. To maintain liaisons with appropriate TCs of ECMA and with other standardization bodies and industry consortia with the goal of enhancing PCTE.

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TC 33 - TGOO - OBJECT ORIENTATION

Scope:

To prepare the specification and language bindings for new services in the domain of O-O and Fine Grained data, and to validate these extensions by means of technical support documents. To maintain the current standards.

Programme of work:

1. To maintain the PCTE standards in answer to industry's requests.
2. To identify requirements to extend the existing PCTE standard with new complementary and compatible services in the domain of:
 - object orientation, and
 - high performance access to fine grained objects.
3. To define the abstract specification and bindings of the new services.
4. To develop new bindings for PCTE and for the new complementary services, in particular:
 - CORBA IDL,
 - C++,
 - ADA 9x.
5. To ensure uniqueness of the proposed extensions by means of either liaisons or joint work with industry and standardization bodies sharing similar objectives.
6. To liaise with groups producing PCTE conformance tests in order to ensure that conformance test methods are compatible with the PCTE standards.

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TC 33 - TGDI - DATA INTEGRATION

Scope:

To write standards and technical reports enabling data integration of independently supplied tools through the use of a PCTE repository by a variety of means, including data interchange and common data schemas.

Programme of work:

1. To identify requirements for the interchange of data between different data repositories, of which one or more complies with PCTE.
2. To define PCTE Schema Definition Sets corresponding to Subject Areas of the CDIF integrated meta-model.
3. To define a programme of work for the production of standards and technical reports aiding the interchange of data between different data repositories, of which one or more complies with PCTE.
4. To investigate the route towards the publication of common data schemas for PCTE.
5. To write a technical report defining the PCTE pre-defined Schema Definition Sets in graphical format as an aid in communication with other standards groups.
6. To liaise technically with other organisations concerned with relevant standards for data interchange, information models and data repositories, including the EIA CDIF

Technical Committee and relevant ISO/IEC JTC1 Subcommittees.

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TC 36- IT SECURITY

Scope:

1 To provide a framework for the standardization of security evaluation criteria for commercial and governmental IT products and systems.

2 To provide a framework for the provision of logical (as opposed to physical) security in an Open System environment including relevant management functions.

Programme of work:

To co-ordinate and supervise the work of TC36-TG1 and TC36-TG9.

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TC36-TG1 - IT SECURITY EVALUATION CRITERIA

Scope:

To provide a framework for the standardization of security evaluation criteria for commercial and governmental IT products and systems.

To develop, within this framework, a set of standards for such criteria based on established criteria such as TCSEC (Trusted Computer System Evaluation Criteria) and ITSEC (Information Technology Security Evaluation Criteria).

Programme of work:

1. To develop a framework covering those areas for which security evaluation criteria can be standardized.
2. To prioritize the areas identified within the framework with emphasis on the criteria covered by ITSEC and TCSEC.
3. To develop a set of standards for security evaluation criteria.
4. To maintain liaison with other standards organizations in order to present ECMA proposals to them and to make comments on their proposals.

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TC36-TG9 - SECURITY IN OPEN SYSTEMS

Scope:

To provide a framework for the provision of logical (as opposed to physical) security in an Open System environment including relevant Management functions.

To develop standards for security-related services and protocols or protocol elements as required for this environment.

Programme of work:

1. To maintain Technical Report ECMA TR/46 on Security Framework.

2. To maintain Standard ECMA-138 on DATA Elements and Service Definitions.

3. To develop standards for Supportive Security applications and protocols or protocol elements as required in a distributed application environment. This work will include considerations of quality of security and related characteristics of cryptographic facilities. Priority will be given to requirements of the Distributed Offices Applications environment.

4. To liaise, within ECMA, with TC32 regarding the provision of security facilities at the lower layers of the OSI model.

5. To liaise with the relevant working groups in ISO/IEC JTC1/SC18, SC21 and SC27, as well as ITU-T regarding security in Open Systems and the

promotion of security standards developed by TC32 where appropriate liaison arrangements do not exist.

6. To advise TC32 of work items with regard to security.

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ECMA-11	Alphanumeric Character Set OCR-B for Optical Recognition, 3rd Edition (March 1976)	ISO 1073-2
ECMA-13	File Structure and Labelling of Magnetic Tapes for Information Interchange, 4th Edition (December 1985)	ISO 1001
ECMA-15	Printing Specifications for Optical Character Recognition, 2nd Edition (August 1975)	ISO 1831
ECMA-17	Graphic Representation of the Control Characters of the ECMA 7-Bit Coded Character Set for Information Interchange (November 1968)	ISO 2047
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ECMA-30	OCR-B Subsets for Numeric Applications, 2nd Edition (March 1976)	
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ECMA-55	Minimal BASIC (January 1978)	ISO 6373

ECMA-56	Self-Loading Cartridges for 12,7 mm Wide Magnetic Tapes (September 1978)	ISO 6098
ECMA-59	Data Interchange on 200 mm Flexible Disk Cartridges Using Two-Frequency Recording at 13 262 ftprad on Both Sides (August 1979)	
ECMA-62	Data Interchange on 12,7 mm 9-Track Magnetic Tape - 32 ftpmm, NRZ1, 32 cpmm - 126 ftpmm, Phase Encoding, 63 cpmm - 356 ftpmm, NRZ1, 246 cpmm GCR, 2nd Edition (March 1985) (for reference see also ISO 1863, ISO 3788 and ISO 5652)	ISO 1864
ECMA-64	Magnetic Disk for Data Storage Devices, 160 000 Flux Transitions per Track, 356 mm Diameter, 2nd Edition (September 1982)	ISO 6901
ECMA-65	Magnetic Disk for Data Storage Devices, 107 500 Flux Transitions per Track, 266 mm and 356 mm Diameter (September 1980)	ISO 6902
ECMA-66	Data Interchange on 130 mm Flexible Disk Cartridges Using Two-Frequency Recording at 7 958 ftprad on One Side (September 1980)	ISO 6596
ECMA-68	Reels for 12,7 mm Wide Magnetic Tapes (Sizes 16, 18 and 22) (January 1981)	ISO 8064
ECMA-69	Data Interchange on 200 mm Flexible Disk Cartridges Using MFM Recording at 13 262 ftprad on Both Sides (January 1981)	ISO 7065
ECMA-70	Data Interchange on 130 mm Flexible Disk Cartridges Using MFM Recording at 7 958 ftprad on 40 Tracks on Each Side, 2nd Edition (June 1986)	ISO 7487
ECMA-71	HDLC-Selected Procedures (January 1981)	
ECMA-73	Magnetic Disk for Data Storage Devices 95 840 Flux Transitions per Track, 200 mm Outer Diameter, 63,5 mm Inner Diameter, 2nd Edition (September 1982)	ISO 7297

ECMA-74	Measurement of Airborne Noise Emitted by Computer and Business Equipment, 3rd Edition (December 1992)	ISO 7779
ECMA-76	Magnetic Disk for Data Storage Devices, 158 000 Flux Transitions per Track, 210 mm Outer Diameter, 100 mm Inner Diameter (September 1982)	ISO 7298
ECMA-77	Magnetic Disk for Data Storage Devices, 83 000 Flux Transitions per Track, 130 mm Outer Diameter, 40 mm Inner Diameter (September 1982)	ISO 7928
ECMA-78	Data Interchange on 130 mm Flexible Disk Cartridges Using MFM Recording at 7 958 ftprad on 80 Tracks on Each Side, 2nd Edition (June 1986)	ISO 8378
ECMA-79	Data Interchange on 6,30 mm Magnetic Tape Cartridges Using IMFM Recording at 252 ftpmm, 2nd Edition (September 1985)	ISO 8063
ECMA-80	Local Area Networks (CSMA/CD Baseband) Coaxial Cable System, 2nd Edition (March 1984)	
ECMA-81	Local Area Networks (CSMA/CD Baseband) Physical Layer, 2nd Edition (March 1984)	
ECMA-82	Local Area Networks (CSMA/CD Baseband) Link Layer, 2nd Edition (March 1984)	
ECMA-83	Safety Requirements for DTE-to-DCE Interface, 2nd Edition (September 1985)	
ECMA-84	Data Presentation Protocol (September 1982)	
ECMA-85	Virtual File Protocol (September 1982)	
ECMA-86	Generic Data Presentation - Services Description and Protocol Definition (March 1983)	
ECMA-87	Generic Virtual Terminal - Service and Protocol Description (March 1983)	

ECMA-88	Basic Class Virtual Terminal - Service Description and Protocol Definition (March 1983)	ISO 9040 and 9041
ECMA-89	Local Area Networks - Token Ring Technique 2nd Edition (March 1985)	
ECMA-91	Flexible Disk Cartridges - File Structure and Labelling for Information Interchange (March 1984)	ISO 7665
ECMA-92	Connectionless Internetwork Protocol (March 1984)	
ECMA-94	8-Bit Single-Byte Coded Graphic Character Sets - Latin Alphabets No. 1 to No. 4, 2nd Edition (June 1986)	ISO 8859-1, -2, -3 and -4
ECMA-96	Syntax of Graphical Data for Multiple-Workstation Interface (GDS) (September 1985)	
ECMA-97	Local Area Networks - Safety Requirements, 2nd Edition (December 1992)	
ECMA-98	Data Interchange on 6,30 mm Magnetic Tape Cartridge Using NRZ1 Recording at 394 ftpmm - Streaming Mode (September 1985)	ISO 8462
ECMA-99	Data Interchange on 130 mm Flexible Disk Cartridges Using MFM Recording at 13 262 ftpmad 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 ftpmad on 80 Tracks on Each Side, 2nd Edition (December 1988)	ISO 8860
ECMA-101	Open Document Architecture (ODA) and Interchange Format, 2nd Edition (December 1988)	ISO 8613

ECMA-102	Rate Adaptation for the Support of Synchronous and Asynchronous Equipment Using the V. Series Type Interface on a PCSN, 2nd Edition (July 1987)	
ECMA-103	Physical Layer at the Basic Access Interface between Data Processing Equipment and Private Switching Networks, 2nd Edition (December 1987)	
ECMA-104	Physical Layer at the Primary Rate Access Interface between Data Processing Equipment and Private Switching Networks (September 1985)	
ECMA-105	Data Link Layer Protocol for the D-Channel of the Interfaces at the Reference Point between Terminal Equipment and Private Telecommunication Networks, 4th Edition (June 1993)	I-ETS 300 169
ECMA-106	Layer 3 Protocol for Signalling over the D-Channel of Interfaces at the S Reference Point between Terminal Equipment and Private Telecommunication Networks for the Control of Circuit-Switched Calls, 3rd Edition (December 1993)	ETS 300 192
ECMA-107	Volume and File Structure of Flexible Disk Cartridges for Information Interchange (December 1985)	ISO 9293
ECMA-108	Measurement of High Frequency Noise Emitted by Computer and Business Equipment, 2nd Edition (June 1989)	ISO 9295
ECMA-109	Declared Noise Emission Values of Computer and Business Equipment, 3rd Edition (December 1992)	ISO 9296
ECMA-110	Ergonomics - Requirements for Monochromatic Visual Display Devices (December 1985)	

ECMA-112	X.25 (1980) Subnetwork-Dependent Convergence Protocol (December 1985)	
ECMA-113	8-Bit Single-Byte Coded Graphic Character Sets - Latin/Cyrillic Alphabet, 2nd Edition (July 1988)	ISO 8859-5
ECMA-114	8-Bit Single-Byte Coded Graphic Character Sets - Latin/Arabic Alphabet (June 1986)	ISO 8859-6
ECMA-115	Common Secondary Keyboard Layout for Languages Using a Latin Alphabet (June 1986)	
ECMA-116	BASIC (June 1986)	
ECMA-117	Domain Specific Part of Network Layer Addresses (June 1986)	
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, 2nd Edition (December 1987)	ISO 9660
ECMA-120	Data Interchange on 12,7 mm 18-Track Magnetic Tape Cartridges, 3rd Edition (December 1993)	ISO 9661
ECMA-121	8-Bit Single-Byte Coded Graphic Character Sets - Latin/Hebrew Alphabet (July 1987)	ISO 8959-8
ECMA-123	In Band Parameter Exchange in Private Pre-ISDN Networks Using Standard ECMA-102, 2nd Edition (June 1990)	
ECMA-125	Data Interchange on 90 mm Flexible Disk Cartridges Using MFM Recording at 15 916 ftrpad on 80 Tracks on Each Side (December 1987)	ISO 9529
ECMA-126	Ergonomics - Requirements for Colour Visual Display Devices (December 1987)	
ECMA-127	Remote Procedure Call (RPC) Using OSI, 2nd Edition (June 1990)	

ECMA-128	8-Bit Single-Byte Coded Graphic Character Sets - Latin Alphabet No. 5 (July 1988)	ISO 8859-9
ECMA-129	Safety of Information Technology Equipment (ITE) (July 1988)	IEC 950
ECMA-130	Data Interchange on Read-only 120 mm Optical Data Disks (CD-ROM) (July 1988)	ISO 10149
ECMA-131	Referenced Data Transfer (July 1988)	
ECMA-132	Method for Measuring Printer Throughput, 2nd Edition (June 1991)	ISO 10561
ECMA-133	Reference Configurations for Calls Through Exchanges of Private Telecommunication Networks (April 1989)	
ECMA-134	Method for the Specification of Basic and Supplementary Services of Private Telecommunication Networks (April 1989)	prETS 300 387
ECMA-135	Scenarios for Interconnections Between Exchanges of Private Telecommunication Networks (April 1989)	
ECMA-136	Ergonomics - Requirements for Non-CRT Visual Display Units (June 1989)	
ECMA-137	Document Filing and Retrieval (DFR) (December 1989)	ISO 10166
ECMA-138	Security in Open Systems - Data Elements and Service Definitions (December 1989)	
ECMA-139	3,81 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DDS Format (June 1990)	ISO/IEC 10777
ECMA-140	Document Printing Application (DPA) (June 1990)	ISO/IEC 10775
ECMA-141	Data Link Layer Protocol at the Q Reference Point for the Signalling Channel between two Private Telecommunication Network Exchanges, 2nd Edition (June 1993)	I-ETS 300 170

ECMA-142	Specification, Functional Model and Information Flows for Control Aspects of Circuit Mode Basic Services in Private Telecommunication Networks (June 1990)	ETS 300 171 ISO/IEC DIS 11574
ECMA-143	Layer 3 Protocol for Signalling between Exchanges of Private Telecommunication Networks for the Control of Circuit-Switched Calls, 2nd Edition (December 1992)	ETS 300 172 2nd Edition ISO/IEC 11572
ECMA-144	8-Bit Single-Byte Coded Character Sets - Latin Alphabet No. 6, 2nd Edition (December 1992)	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 ftrpad on 80 Tracks on Each Side (December 1990)	ISO/IEC 10994
ECMA-148	Identification Supplementary Services in Private Telecommunication Networks - Specification, Functional Model, Information Flows, 2nd Edition (June 1993)	ETS 300 173
ECMA-149	Portable Common Tool Environment (PCTE) - Abstract Specification, 2nd Edition (June 1993)	ISO/IEC DIS 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, 2nd 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, 2nd 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 (June 1991)	ISO/IEC 11560
ECMA-154	Data Interchange on 90 mm Optical Disk Cartridges, Read Only and Rewritable, M.O. (June 1991)	ISO/IEC 10090
ECMA-155	Addressing in Private Telecommunication Networks (June 1991)	ETS 300 189 ISO/IEC DIS 11571
ECMA-156	Generic Stimulus Procedure for the Control of Supplementary Services Using the Keypad Protocol at the S Reference Point, 2nd Edition (June 1993)	ETS 300 190
ECMA-157	Protocol for Signalling over the D-Channel of Interfaces at the S Reference Point between Terminal Equipment and Private Telecommunication Networks for the Support of Identification Supplementary Services, 2nd Edition (June 1993)	ETS 300 191
ECMA-158	Portable Common Tool Environment (PCTE) - C Programming Language Binding, 2nd Edition (June 1993)	ISO/IEC DIS 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, 2nd Edition (December 1992)	

ECMA-161	PTN - Signalling at the S Reference Point - Generic Feature Key Management Protocol for the Control of Supplementary Services (SSIG-FK), 2nd Edition (June 1993)	ETS 300 240
ECMA-162	Portable Common Tool Environment (PCTE) - Ada Programming Language Binding, 2nd Edition (June 1993)	ISO/IEC DIS 13719-3
ECMA-163	Private Telecommunication Networks (PTN) - Specification, Functional Model and Information Flows - Name Identification Supplementary Services (NISD), 2nd Edition (December 1993)	ETS 300 237
ECMA-164	PTN - Signalling between Private Telecommunication Exchanges - Protocol for the Support of Name Identification Supplementary Services (QSIG-NA), 2nd Edition (June 1993)	ETS 300 238
ECMA-165	PTN - Signalling between Private Telecommunication Exchanges - Generic Functional Protocol for the Support of Supplementary Services (QSIG-GF), 2nd Edition (June 1993)	ETS 300 239 ISO/IEC DIS 11582
ECMA-166	Information Technology Equipment - Routine Electrical Safety Testing in Production (June 1992)	prEN 50116
ECMA-167	Volume and File Structure of Write-Once and Rewritable Media Using Non-Sequential Recording for Information Interchange (June 1992)	ISO/IEC 13346
ECMA-168	Volume and File Structure for Read-Only and Write-Once Compact Disk Media for Information Interchange (June 1992)	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-172	Procedure for Measurement of Emissions of Electric and Magnetic Fields from VDUs from 5 Hz to 400 kHz (June 1992)	
ECMA-173	PTN - Specification, Functional Model and Information Flows - Diversion Supplementary Services (CFSD) (June 1992)	ETS 300 256
ECMA-174	PTN - Inter-exchange Signalling Protocol - Diversion Supplementary Services (QSIG-CF) (June 1992)	ETS 300 257
ECMA-175	PTN - Specification, Functional Model and Information Flows - Path Replacement Additional Network Feature (PRSD) (June 1992)	ETS 300 258
ECMA-176	PTN - Inter-exchange Signalling Protocol - Path Replacement Additional Network Feature (QSIG-PR) (June 1992)	ETS 300 259
ECMA-177	PTN - Specification, Functional Model and Information Flows - Call Transfer Supplementary Service (CTSD) (June 1992)	ETS 300 260
ECMA-178	PTN - Inter-exchange signalling Protocol - Call Transfer Supplementary Service (QSIG-CT) (June 1992)	ETS 300 261
ECMA-179	Services for Computer-Supported Telecommunications Applications (CSTA) (June 1992)	

ECMA-180	Protocol for Computer-Supported Telecommunications Applications (CSTA) (June 1992)	
ECMA-181	Uncertainty of Measurement as Applied to Type Approval of Products (December 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	PTN - Specification, Functional Model and Information Flows - Call Completion Supplementary Services (CCSD) (December 1992)	prETS 300 365
ECMA-186	PTN - Inter-exchange Signalling Protocol - Call Completion Supplementary Services (QSIG-CC) (December 1992)	prETS 300 366
ECMA-187	ODA-API - Application Profile Interface for Handling Compound Documents (June 1993)	
ECMA-188	ODA-API - Constituent Level Interface for Handling Compound Documents (June 1993)	
ECMA-189	Information Interchange on 300 mm ODCs of the WORM Type Using the SSF Method (June 1993)	ISO/IEC CD 13403
ECMA-190	Information Interchange on 300 mm ODCs of the WORM Type Using the CCS Method (June 1993)	ISO/IEC CD 13614
ECMA-191	PTN - Specification, Functional Model and Information Flows - Call Offer Supplementary Service (COSD) (June 1993)	prETS 300 361

ECMA-192	PTN - Inter-Exchange Signalling Protocol - Call Offer Supplementary Service (QSIG-CO) (June 1993)	prETS 300 362
ECMA-193	PTN - Specification, Functional Model and Information Flows - Do Not Disturb and Do Not Disturb Override Supplementary Services (DND(O)SD) (June 1993)	prETS 300 363
ECMA-194	PTN - Inter-Exchange Signalling Protocol - Do Not Disturb and Do Not Disturb Override Supplementary Services (QSIG-DND(O)) (June 1993)	prETS 300 364
ECMA-195	Data Interchange on 130 mm Optical Disk Cartridges - Capacity: 2 GigaBytes per Cartridge (September 1993)	ISO/IEC CD 13842
ECMA-196	Data Interchange on 12,7 mm 36-Track Magnetic Tape Cartridges (December 1993)	
ECMA-197	Data Interchange on 12,7 mm 112-Track Magnetic Tape Cartridges - DLT2 Format (December 1993)	ISO/IEC DIS 13962
ECMA-198	3,18 mm Wide Magnetic Tape Cartridge for Information Interchange - Helical Scan Recording - DDS-2 Format using 120 m Length Tapes (December 1993)	ISO/IEC DIS 13923
ECMA-199	Immunity of VDUs to Power Frequency Magnetic Fields (December 1993)	
ECMA-200	Immunity of Information Technology Equipment to Lightning Surges (December 1993)	
ECMA-201	Data Interchange on 90 mm Optical Disk Cartridges - Capacity: 230 MBytes per Cartridge (December 1993)	ISO/IEC DIS 13963
ECMA-202	PTN - Specification, Functional Model and Information Flows - Call Intrusion Supplementary Service (CISD) (December 1993)	

- ECMA-203** PTN - Inter-Exchange Signalling Protocol - Call Intrusion Supplementary Service (QSIG-CI) (December 1993)
- ECMA-204** PTN - Inter-Exchange Signalling Protocol - Supplementary Service Interactions (QSIG-IA) (December 1993)
- ECMA-205** Commerically Oriented Functionality Class for Security Evaluation (COFC) (December 1993)
- ECMA-206** Association Context Management including Security Context Management (December 1993)

TECHNICAL REPORTS

- ECMA TR/3** Continuous Sprocket-Punched Stationery Part II (Physical Properties, Fastenings, Packaging and Storage) (March 1992)
- ECMA TR/7** Continuous Sprocket-Punched Stationery Part I (Recommended Sizes) (December 1973)
- ECMA TR/8** Recommended OCR Paper Specification, 2nd Edition (January 1977)
- ECMA TR/11** Guidelines for Magnetic Tape Handling and Storage (January 1981)
- ECMA TR/13** Network Layer Principles (September 1982)
- ECMA TR/16** Interface Characteristics for a DTE to Operate with European Rec.X.25 Networks (September 1983)
- ECMA TR/17** Permission to Connect - PTT Requirements for Obtaining Approval to Connect Apparatus to the Network (September 1983)
- ECMA TR/18** The Meaning of Conformance to Standards (September 1983)
- ECMA TR/20** Layer 4 to 1 Addressing (March 1984)
- ECMA TR/21** Local Area Networks - Interworking Units for Distributed Systems (March 1984)
- ECMA TR/22** Ergonomics - Recommendations for VDU Work Places (March 1984)
- ECMA TR/23** Electrostatic Discharge Susceptibility (September 1984)
- ECMA TR/24** Interface between Data Processing Equipment and Private Automatic Branch Exchange (March 1985)
- ECMA TR/25** OSI Sub-Network Interconnection Scenarios Permitted within the Framework of the ISO-OSI Reference Model (March 1985)
- ECMA TR/26** Planning and Installation Guide for CSMA/CD 10 MBit/s Baseband Local Area Networks, 2nd Edition (June 1990)
- ECMA TR/27** Method for the Prediction of Installation Noise Levels (March 1985)

ECMA TR/33 Visual Displays - Health Aspects (December 1985)

ECMA TR/34 Maintenance at the Interface Between Data Processing Equipment and Private Switching Network (June 1986)

ECMA TR/35 Particular Safety Requirements for Equipment to be Connected to Telecommunication Networks (December 1986)

ECMA TR/36 Guidelines on Additional Parameters Recommended for Procurement Specifications for 12,7 mm Magnetic Tapes (December 1986)

ECMA TR/37 Framework for OSI Management (December 1986)

ECMA TR/38 End System Routing (December 1986)

ECMA TR/39 Compliance Verification (COVER) Report, 3rd Edition (December 1992)

ECMA TR/40 Electrostatic Discharge Immunity Testing of Information Technology Equipment (July 1987)

ECMA TR/41 ODA - Document Specification Language (July 1987)

ECMA TR/43 Packetized Data Transfer in Private Switching Networks (December 1987)

ECMA TR/44 An Architectural Framework for Private Networks, 2nd Edition (December 1989)

ECMA TR/45 Information Interchange for Remote Maintenance at the DPE-to-PSN Interface (December 1987)

ECMA TR/46 Security in Open Systems - A Security Framework (July 1988)

ECMA TR/47 Configuration Management Service Definition (July 1988)

ECMA TR/48 Study of the Translation of the ODA Formatted Form into Page Description Languages (December 1988)

ECMA TR/49 Support Environment for Open Distributed Processing (December 1989)

ECMA TR/50 Inter-Domain Intermediate System Routeing (December 1989)

ECMA TR/51 Requirements for Access to Integrated Voice and Data Local and Metropolitan Area Networks (June 1990)

ECMA TR/52 Computer-Supported Telecommunication Applications (June 1990)

ECMA TR/53 Handling of Bi-directional Texts, 2nd Edition (June 1992)

ECMA TR/54 A Management Framework for Private Telecommunication Networks (December 1990)

ECMA TR/55 Reference Model for Frameworks of Software Engineering Environments, 3rd Edition (June 1993)

ECMA TR/56 Information Technology Equipment - Recommended Measuring Method for Ozone Emission (June 1991)

ECMA TR/57 Private Telecommunication Networks (December 1991)

ECMA TR/58 Databases and Networking (June 1992)

ECMA TR/59 Object-Oriented Databases (June 1992)

ECMA TR/60 Supplementary Services and Additional Network Features in Private Telecommunication Networks (June 1992)

ECMA TR/61 User Interface Taxonomy (June 1992)

ECMA TR/62 Product Noise Emission of Computer Business Equipment (June 1993)

ECMA TR/63 Alphabetical Reference Index to IEC 950 (December 1993)

ECMA TR/64 Secure Information Processing versus the Context of Product Evaluation (December 1993)

LIST OF REPRESENTATIVES

NOT FOR PUBLIC RELEASE

Kindly note that the Ecma memento pages containing the contact details of the representatives have been intentionally removed.

Art. 1

CONSTITUTION AND HEAD OFFICE

1.1

An association to be known as "European Computer Manufacturers Association", abbreviated ECMA, 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:

2.1.1

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 order to facilitate and standardize the use of information processing and telecommunication systems.

2.1.2

To promulgate various standards applicable in the functional design and use of information processing and telecommunication systems.

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 ordinary members and such other classes of members as may be created by the ordinary members at a General Assembly.

3.2

The ordinary members shall fulfil the qualifications set forth under Article 3.3 of the present By-Laws, and be accepted according to Article 4.

3.3

Ordinary members shall be companies which develop, manufacture and market in Europe hardware or software products or services in the field of information technology or telecommunications used to process digital information for business, scientific, control, communication or other similar purposes. Products or services used exclusively for military purposes shall not be considered in this regard.

3.4

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

3.5

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

3.6

Applications for ordinary membership will not be accepted unless the proposed member develops, manufactures and markets some major data processing equipment which is not basically a copy of that of an existing ordinary member.

3.7

Additional classes of members which may be 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 at a General Assembly by a majority of two thirds of all the ordinary members.

3.8

Associate members

3.8.1

A company may be admitted as associate member which has interest and experience in Europe in matters related to one or more of the TCs of the Association. No company qualifying for ordinary membership can be elected associate member.

3.8.2

A prospective associate member shall declare the TCs in whose work it proposes to take part.

3.8.3

The restrictions of Articles 3.4 and 3.5 of the By-Laws shall apply to associate members.

3.8.4

Associate members shall be admitted by a majority of all the ordinary members.

3.8.5

An associate member is entitled fully to participate in the work of the authorized committees and receive all relevant papers. In addition, it may be authorized to participate in the work of such other committees as may be decided in General Assembly.

3.8.6

Art 4.1 of the Rules applies to associate members. Representatives of the associate members shall have the right to take part in the discussions at the General Assembly relevant to the TCs in which they participate. However, they have no vote in the General Assembly.

3.8.7

Associate membership shall be terminated in the cases listed in Art. 5.1; Art. 5.2 to 5.5 also apply.

3.8.8

The membership fee for associate members is one half of the fee for ordinary members. Rule 8 applies to associate members.

Art. 4

ACCEPTANCE OF NEW MEMBERS

4.1

Application for membership shall be made to the Secretariat.

4.2

Decisions on compliance with conditions shall be made by a two-thirds majority of all the ordinary members.

4.3

When it has been decided that the conditions are complied with, the applicant shall be admitted to the relevant class of membership.

Art. 5

TERMINATION OF ORDINARY MEMBERSHIP

5.1

Ordinary membership shall be terminated in the following cases:

- a. Withdrawal upon written notice given to the Secretary General, to take effect on receipt.
- b. The company ceasing to exist.
- c. The conditions for membership set forth in Articles 3.4 and 3.5 of the present By-Laws no longer being complied with.
- d. In the opinion of two-thirds of all the ordinary members the conditions set forth in Articles 3.3 and 3.6 no longer being complied with.
- e. 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 member may be expelled for failure to adhere to one or several agreed standards.

5.3

Any proposal to expel a member must be backed by at least one-fifth of all the ordinary members. The proposal to expel must 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 a member. Such expulsion will become effective 15 days after notification by registered mail.

5.5

Notwithstanding Article 4.3 a member which has been expelled can only be re-admitted on a two-thirds majority of all ordinary members.

Art. 6

STRUCTURE

6.1

- The Association shall consist of:
- a. The General Assembly.
 - b. The Management.
 - c. The Co-ordinating Committee.

6.2

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

6.3

The Management shall consist of a President, a Vice-President and a Treasurer. The Management shall be discharged by the President or, if circumstances require, by the Vice President.

6.4

The President and the Vice-President shall be individuals elected for one year by the ordinary members at a General Assembly. Only representatives of ordinary members can be nominated. The President and the Vice-President can be re-elected any number of times provided that neither serves more than two consecutive years.

6.5

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

6.6

There shall be a Treasurer whose duty shall be determined by the General Assembly. The Rules set out in 6.4 shall apply to this office, except that there shall be no limit in the number of consecutive years in office.

6.7

The Co-ordinating Committee shall comprise 6 members and make recommendations to the General Assembly regarding the formation, activities, reorganization or dissolution of Technical Working Committees.

Art. 7

GENERAL ASSEMBLY

7.1

The President will each year call at least two ordinary General Assemblies of the ordinary members. Written notice of the time and place of the Assembly shall be given at least thirty days before the date of the Assembly. The Agenda and supporting documents for the Assembly shall be circulated at least fifteen days before the Assembly.

7.2

Unless otherwise restricted by these By-Laws or the Rules of the Association, any action required or permitted to be taken at an Assembly may be taken without a meeting, provided that no ordinary member opposes such a procedure within 20 days from the mailing date.

7.3

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 assembly. The business transacted at any special assembly shall be limited to the purposes stated in the notice.

7.4

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

7.5

A majority of all the ordinary members must be present or represented by proxy at any General Assembly, 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.

7.6

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. 8

PROMULGATION OF STANDARDS AND TECHNICAL REPORTS

8.1

Promulgation of such documents by the Association shall require approval by at least two-thirds of all the ordinary members.

8.2

Proposed drafts shall be circulated by the Secretary General at least three months in advance of the General Assembly at which they will be voted upon.

8.3

It is not obligatory for members to follow any standard.

8.4

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

Art. 9

AD HOC COMMITTEES

9.1

The General Assembly may delegate authority for specific purposes to ad hoc committees. The tasks, terms of reference and membership of these committees will be adopted if a majority of all the ordinary members assent.

9.2

Unless otherwise decided at the time of its appointment each ad hoc

committee may co-opt additional members should it so desire.

9.3

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

Art. 10

SECRETARIAT

10.1

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

10.2

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

Art. 11

TECHNICAL WORKING COMMITTEES

11.1

Technical working committees will be formed by the Secretary General when so decided at a General Assembly.

11.2

Any ordinary member may participate in any technical working committee.

Art. 12

FISCAL YEAR

12.1

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

Art. 13

FINANCE

13.1

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

13.2

The Association shall be financed by an equal levy on all ordinary members and half this levy on all associate members. The fees are set by the ordinary members during an ordinary General Assembly and based on the current year budget. Such fees shall be used to finance the activity of the Association and its administrative expenses and shall not be returnable.

13.3

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

13.4

The President 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

must be approved by the ordinary members.

Art. 14 DISSOLUTION

14.1
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 members in proportion to their annual fees. Any surplus funds remaining after the liabilities have been discharged will be distributed to those which are members at the date of dissolution in proportion to their total contributions to the Association.

Art. 15 AMENDMENTS

15.1
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 must be included in the agenda and notified to the members according to the provisions of Articles 7.1 and 7.4.

15.2
Amendments shall require two-thirds approval of all the ordinary members.
Art 16 LITIGATION

16.1
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

1.1
The English language, as written in the United Kingdom, will be the official language of the Association.

2. SYSTEM OF MEASUREMENTS

2.1
The metric system of measurements will be used.

3. MINIMUM PERIOD OF MEMBERSHIP

3.1
There is no minimum period of membership.

4. REPRESENTATION OF MEMBERS

4.1
Each member shall designate the name of one of its officers or executives who shall represent them in General Assemblies and who shall have full authority to commit the member on all matters concerning the Association. Members shall notify the Association of any changes in their representation.

5. GENERAL ASSEMBLIES

5.1
Representatives may invite additional individuals from their respective member company to participate in an advisory capacity at a General Assembly.

5.2
The members entitled to attend and vote 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.

5.3
The President or in his absence the Vice-President shall preside at all General Assemblies. In absence of both, the members present or represented by proxy shall elect a Chairman for that particular meeting.

6. CO-ORDINATING COMMITTEE

6.1
An ad hoc Committee consisting of individuals elected by the General Assembly will be set up under the name of Co-ordinating Committee (CC), whose terms of reference will be as follows:

6.1.1
To prepare terms of reference for new Technical Working Committees in

accordance with the rules for the formation of a Technical Working Committee.

6.1.2

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

6.1.3

To review from time to time the terms of reference given to Technical Working Committees.

6.1.4

To have every six month meetings with Chairmen of Technical Working Committees at which the progress of the TCs will be reviewed and co-ordinated.

6.1.5

To make recommendations to the disbandment of Technical Working Committees.

6.1.6

To provide assistance to the Management as and when required.

6.2

The members and the Chairman of the Co-ordinating Committee shall be individuals elected for one year at a General Assembly by the ordinary members. The Chairman shall be eligible for re-election, subject to a maximum term of office of 3 consecutive years. The other members can be re-elected any number of times. Only representatives of ordinary members can be nominated.

7.

TECHNICAL WORKING COMMITTEES

7.1

Formation of Technical Working Committees:

7.1.1

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

7.1.2

Any proposal for the setting up of a TC must give the suggested terms of reference, including the scope, and be sent to the SG.

7.1.3

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

7.1.4

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

7.2

Operating procedure of TC-Rules and recommendations for the Technical Committees:

7.2.1

Members of TCs are:

- representatives of ECMA member Companies,
- other participants invited by the SG at the request of the TC or of the Management.

7.2.2

Members Companies of ECMA are entitled to send one or more representatives to any TC. These

representatives shall be employees of the member Companies.

7.2.3

Voting on any matter shall be by simple majority of TC members present at the meeting. Each member Company has only one vote. Several invited participants belonging to one organization, have only one vote between them.

7.2.4

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

7.2.5

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.

7.2.6

The provisional Chairman and Vice-Chairman nominated by the CC shall act for an initial period which shall be not less than 6 months from the date of the first meeting and which shall include the first 3 meetings.

7.2.7

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 member Company representatives.

7.2.8

The Chairman and Vice-Chairman, having been elected from among the member Company representatives, shall hold office for a term of 12

months. They shall be eligible for re-election, subject to a maximum term of office of 3 consecutive years.

7.2.9

Meetings of the TCs shall be conducted by the Chairman, according to the By-Laws and Rules of ECMA. An officer of the Secretariat shall act as Secretary at all TC meetings. The Vice-Chairman shall assist the Secretary and shall act for the Secretary if the latter is unable to attend.

7.2.10

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 Committee. The agenda shall be circulated to all members 3 weeks before each meeting; at the opening of the meeting it can be modified if wanted and must be approved.

7.2.11

The SG shall be responsible for the preparation of minutes of the meetings.

7.2.12

The minutes shall be distributed by the SG within 3 weeks to all members of the TC, to the Chairmen of all TCs, to the official representatives of the member companies, and to the members of the CC.

7.2.13

The first item on the agenda of each TC shall be the amendment and approval of the minutes of the

preceding meeting. The minutes, after approval, shall constitute the official record of the meeting of a TC.

7.2.14

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

7.2.15

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.

7.2.16

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

7.2.17

Any member of a TC has the right to ask for a minority report to be submitted if he so desires.

7.2.18

The work of all TCs will be discussed every 6 months at a meeting of the CC and the SG at which meetings the semi-annual report will be presented.

7.2.19

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

7.2.20

Under no circumstances should any technical contribution be decided

upon at a TC meeting unless it has been circulated to all Committee members at least 3 weeks before the meeting.

7.2.21

In the interest of economy and efficiency, alternate meetings will be held in Geneva.

7.3

Task Groups

7.3.1

Technical committees may form Task Groups for the accomplishment of specific tasks within the scope of the committee.

7.3.2

At least two members of the committees should agree to take an active part in the work of the Task Groups.

7.3.3

Terms of reference of the Task group shall be included in the minutes of the meeting of the Technical Committee at which the Task Group has been formed.

7.3.4

Task Groups shall report at each meeting to the committee on their activities; these reports shall appear in the minutes of the committee.

7.3.5

The Convenor of a Task Group shall be appointed by the Technical Committee upon nomination by the Task Group. He shall be eligible for re-election, subject to a maximum term of office of 3 consecutive years.

7.3.6

Alternate meetings of Task Groups will be held in Geneva.

8.

MEMBERSHIP FEES

8.1

The membership fees shall be based on an estimate for the current year's operating expenses with adjustments for any deviation between the estimated and actual expenses for the preceding years. Although the Association shall be non-profit-making, reserves may be accumulated if so decided by the General Assembly.

8.2

Any new member shall pay the full annual fee for the fiscal year in which it is admitted as member.

8.3

Every member on the date of the General Assembly which decides on the budget for the following fiscal year shall pay the full annual fee for that year.

8.4

Any withdrawing member shall pay a fee for the fiscal year following the year of withdrawal (Art. 5.1a of the By-Laws). This fee shall be equal to the annual fee for the year of withdrawal. Representatives of a withdrawing member may continue to attend TC meetings and to receive all

technical papers during the full fiscal year following the year of withdrawal.

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 members including those connected with ad hoc and Technical Working Committees 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 will be reviewed once a year by an Auditor appointed by the Treasurer and approved by the General Assembly.

1.
POLICY

General Declaration:

The General Assembly of ECMA shall not approve recommendations of Standards which are covered by patents when such patents will not be licensed by their owners on a reasonable and non-discriminatory basis.

1.1

In case the proposed Standard is covered by issued patents of ECMA members only:

Members of the General Assembly are asked to state the Company licensing policy with respect to these patents.

1.2

In case the proposed Standard is covered by issued patents by non ECMA members: A written statement from the patentee is required, according to which he is prepared to grant licences on a reasonable, non-discriminatory basis.

The General Assembly and/or the Management shall decide in this case which steps must be undertaken in order to obtain such a statement.

1.3

In case the proposed Standard is covered by patent applications of ECMA members (which is not known, neither during the work of the TC nor

at the time of the vote in the General Assembly):

1.3.1

Each member of the TCs and/or of the General Assembly of ECMA will determine whether any proposed standard may be covered by any patent for which his company has a pending application, if such a patent application exists, his continued participation to the relevant committee will imply that such a patent, when obtained later, will be made available from his company for licensing on a reasonable, non-discriminatory basis.

1.3.2

Each member of the TCs and/or of the General Assembly of ECMA will determine whether any proposed standard may be covered by any patent for which his company has a pending application; if such a patent application exists, the favourable vote of the Company to the General Assembly will imply that such a patent, when obtained later, will be made available from his company for licensing on a reasonable, non-discriminatory basis.

1.4

In case the proposed Standard is covered by patent applications of third parties (which is not known during the work of the TC nor at the time of the vote in the General Assembly): In this case practically nothing can be done at the time of the vote. When afterwards said patents are issued, it

should be tried to obtain reasonable, non-discriminatory licences. If this proves to be impossible, the standard will have to be cancelled.

2.
PROCEDURE

2.1

The questions related to protective rights are in the competence of the General Assembly of ECMA and should not be discussed at the TC level.

2.2

Each draft standard shall be submitted three months ahead of a General Assembly, by registered mail. All members are required to state within two months whether they claim any issued protective rights covering the subject matter of the proposed standard and/or have knowledge of such rights of third parties.

2.3

Replies to this request will be circulated in due time before the General Assembly.

2.4

When an answer is not received from a Company, the General Assembly may proceed to a vote on the assumption that this Company will act in accordance with the General Declaration, that is to license possible relevant issued patents on a reasonable and non-discriminatory basis.

Adopted at the General Assemblies of 29th March 1963, 2nd June 1966 and 15th December 1988.

HISTORY OF ECMA

By 1959 the growing use of computers, built by several different manufacturers, showed the necessity for standardization in operational techniques, such as programming, and also input and output codes. Such standards would make it possible to use data prepared for, or even by, a computer made by one manufacturer to be on a computer made by another with the minimum of alteration. Also it would avoid duplication of work in the preparation of, for example, programming languages by several manufacturers.

Though certain National Bodies had, before 1960, started work on standards in this field, e.g. paper tape and codes, there did not appear to be collaboration between them, nor between the manufacturers themselves. Different countries may have different requirements, so that it may not be necessary to have the same standards everywhere, but the standards should at least be compatible.

With the object of co-ordinating such work, the Heads of the Companies of longest standing in Europe in the data processing field (Compagnie des Machines Bull, IBM World Trade Europe Corporation and International Computers and Tabulators Limited) sent a joint letter to all the known computer manufacturers within Europe, inviting these companies to

send representatives to a meeting. This meeting was held on April 27, 1960, in Brussels; it was decided that an association of manufacturers should be formed which would be called European Computer Manufacturers Association, and a Committee was nominated to prepare the formation of the Association and to draw up By-Laws and Rules.

By December 1960 the form that the Association would take was fairly well defined and it had been decided that the headquarters should be in Geneva to be near the headquarters of the International Organization for Standardization and the International Electrotechnical Commission. In May 1961 the Association officially came into being and all those Companies which attended the original meeting became members.

Just prior to the official registration of ECMA, it was invited to be represented at a Round-Table Conference to be held in Geneva organized by ISO and IEC to discuss standardization in the general field of computers. This meeting resulted in the formation of TC97 and in the organization of its own Working Groups, and ECMA was asked to become a liaison member. In 1987, when TC97 became part of ISO/IEC JTC1, ECMA became A-liaison member of JTC1.

PAST PRESIDENTS / SECRETARY GENERAL

1961-1962 Mr. C. G. Holland-Martin (ICT)	1986-1987 Mr. C. Rossetti (STET)
1963-1964 Prof. Dr. J. Engelfriet (EL)	1988-1989 Mr. J. Dubos (Bull)
1965-1966 Mr. M. R. Pedretti (IBM)	1990 Mr. J. van den Beld (Philips)
1967-1968 Dr. J. M. M. Pinkerton (ICL)	1991-1992 Mr. G. Haberzettl (Siemens Nixdorf)
1969-1970 Mr. P. J. Davous (Bull)	
1971-1972 Dr. K. Scheidhauer (AEG-Tfk)	Past Secretary General
1973-1974 Dr. J. M. M. Pinkerton (ICL)	1961-1991 Mr. Dara Hekimi
1975 Mr. J. van Eijbergen (Philips)	
1976-1977 Mr. W. Heimann (Siemens)	
1978-1979 Mr. M. H. Johnson (Ferranti)	
1980-1981 Mr. J. van Eijbergen (Philips)	
1982-1983 Mr. H. Feissel (Cii HB)	
1984-1985 Mr. J. Scherpenhuizen (Digital)	

ECMA

European Computer Manufacturers Association
114 Rue du Rhône – Geneva
(Switzerland)

Phone: +41 22 735.36.34

Fax: +41 22 786.52.31

X.400: C=ch, A=arcom, P=ecma,

O=genevanet, OU1=ecma, S=helpdesk

Internet: helpdesk@ecma.ch