3/540/SPS

STRATEGIC POLICY STATEMENT

IEC/TC or SC	Secretariat	Date
TC3	Sweden	1999-03-22

Title of TC

TC3 - Documentation and graphical symbols

Title of SCs

SC3B - Documentation

SC3C - Graphical symbols for use on equipment

SC3D - Data sets for libraries

A. Background

TC3 is one of the first Technical Committees created within IEC. In the field of installations, systems and product engineering TC3 deals with the relevant documentation, documents, including specification of the information needed in the documents, as well as with graphical symbols for use in documents and graphical symbols for use on equipment.

TC3 with its Sub-Committees are horizontal committees within IEC. It means preparing co-ordinated generic, basic standards which are valid for all other (product) committees.

The work is presently allocated to three Sub-Committees: SC3B and SC3C were given responsibilities in 1968 and SC3D created in 1988 further to an ACET proposal.

The former Sub-Committee SC3A was disbanded 1998, and its task moved to the parent committee.

Scope: *To prepare standards for the electrotechnical and related fields regarding:*

- *methods and rules associated with the human interpretation of information. This refers to:*
  - *presentation of information in technical documentation;*
  - *graphical symbols for use in technical documentation;*
  - *graphical symbols for the human interaction with equipment;*
- *methods and rules associated with the handling of information in computer sensible form. This refers to:*
  - *information models for the purpose of technical documentation and the exchange of technical information, and the identification of further needs for such models;*
  - *definition of data element types and data sets for use in information models and technical documentation, and for exchange of technical information.*

It includes definition and co-ordination of the information required during the whole life cycle of a device, system, or plant.

The work should be carried out in close co-operation with concerned Technical Committees and international organisations.

Liaisons:

- *In the field of documentation, documents and graphical symbols for documents: ISO/TC10, TC145, ITU.*
- *In the field of information technology: IEC/TC93, ISO/TC184/SC4, ISO/IEC JTC1*
- *In the field of graphical symbols for use on equipment: ISO/TC145, ITU, CIRM, IFAC, OMIL, ETSI*
- *The committee is also represented in ACET and SB3.*

***P-members*:** 22 (AU, AT, BE, CH, CN, CZ, DE, DK, ES, FI, FR, GB, HU, IT, JP, NL, NO, PT, RO, RU, SE, YU)

O-members: 10 (BG, IN, KR, MY, PL, SG, SK, SI, ZA, UA)

Of the above scope, the task regarding:

– *graphical symbols for use in technical documentation*

is handled within the parent committee, and the other tasks in the sub-committees.

Included:

– *Rules for symbol elements, rules for (basic or) general symbols, rules for qualifying (or additional) symbols, rules for different forms and orientations of symbols.*

Working Groups

– *TC3/WG1 Revision of IEC 60617-1 through -11.*

The following Joint Working Group is formally linked to TC3, since its work may affect more than one Sub-Committee:

– *IEC/TC3-ISO/TC184 JWG9: Electrotechnical applications of ISO 10303 (STEP)*

Validation Team for IEC 60617 in database form is *in the process of being set up.*

Number of issued publications: 15 (IEC 60617-1 -- 13 (13 parts), IEC 61352, IEC61734 (from SC3A to TC3)

Number of projects in development

– ***Maintenance work:*** *IEC 60617 in database form (replacing a whole set of projects related to each part, which will go into this single project).*

SC3B Documentation

Scope: To prepare standards for the electrotechnical and related fields regarding:

– *presentation of information in technical documentation;*
– *information models for the purpose of technical documentation and the exchange of technical information, and the identification of further needs for such models;*
– *definition of data element types and data sets for use in information models and technical documentation, and for exchange of technical information.*

Included:

– *Rules for the application of graphical symbols in diagrams (the "outside" of the symbol), rules for the manipulation of complete symbol variants (but not the "inside" of the different variants);*
– *Rules for the presentation of diagram information, that is, the integration of graphical symbols and supplementary data;*
– *Rules for reference designations and the application of terminal designations;*
– *Rules for document designations;*
– *Rules for different kinds of documents, including rigorous descriptions of document architecture's, being the basis for computer-based interchanged of documents;*
– *Rules for the structuring of documentation;*
– *Co-ordination within TC3 of activities in the field of computer-aided design;*
– *Rules for technical data for objects relevant to plant and systems engineering, outside the scope of SC3D and not covered by other product committees.*

Not included:

– *Rules for the contents ("inside") of graphical symbols; (This is handled by the parent committee.)*
– *Rules for technical data for components/devices (This is handled by SC3D. SC3B is responsible for their presentation in lists and diagrams).*

P-members: *22 (*AU, AT, BE, CH, CN, CZ, DE, DK, ES, FI, FR, GB, HU, IT, JP, NL, NO, PT, RO, RU, SE, YU)

O-members: 10 (BG, IN, KR, MY, PL, SG, SK, ZA, TR, UA)

Liaisons: ISO (ISO/TC 10 (incl. -SC1, -SC8) - ISO/TC 145 - ISO/TC 184/SC 4)

Working Groups

– *SC3B/WG2: Computer aided design aspects on documents and documentation*

– *IEC/SC3B-ISO/TC10 JWG7: Preparation of instructions and manuals*

– *SC3B/WG8: Preparation of parts lists*

– *IEC/SC3B-ISO/TC10 JWG12: Letter codes for reference designations*

– *SC3B/WG14: Revision of IEC 60848*

– *IEC/SC3B - ISO/TC10 JWG15: Management data (meta data) associated with documents*

Maintenance Teams

- *MT 61082 Maintenance team for IEC 61082*
- *MT 61175 Maintenance team for IEC 61175*
- *MT 61355 Maintenance team for IEC 61355*
- *MT 61666 Maintenance team for IEC 61666*
- *MT 81714 Maintenance team for IEC/ISO 81714*

The maintenance teams are presently not fully populated, but maintenance team convenors have been appointed.

Number of issued publications: 14 (IEC 60848, IEC 61082-1 (+2 Am.), -2, -3,-4, -6, IEC61175, IEC 61286, IEC 61346-1, -4, IEC 1355, IEC 61666, IEC 81714-2, -3)

Number of projects in development:

- ***New work:*** *5 (IEC 61346-3, IEC 62023, IEC 62027, IEC 62045, IEC 62079)*
- ***Maintenance work:*** *2 (IEC 60848 Ed.2, IEC 61346-2 (replacing part of IEC 750 Ed.1))*

SC3C Graphical symbols for use on equipment

Scope: To prepare standards for the electrotechnical and related fields regarding:

- *graphical symbols for the human interaction with equipment*

Included:

- *basic design rules for graphical symbols used on electrotechnical equipment*
- *the design of graphical symbols for particular applications*

P-members: 20 (AU, AT, BE, CH, CN, CZ, DE, DK, ES, FI, FR, GB, HU, IT, JP, NL, PT, RO, SU, YU)

O-members: 12 (BG, IN, KR, MY, NZ, NO, PL, SG, SK, ZA, SE, UA)

Liaisons: SC17B, TC26, SC32C, SC34D, TC44, TC59, TC61, SC62A, TC66, TC74, TC75, TC76, TC78, TC92, SC100C, TC145, ISO/IEC JTC1/SC18, ITU-T

Working groups

- *ISO/TC145 - IEC/SC3C JWG11: responsible for the revision of IEC 60416 as part of new joint ISO /IEC standard*

Publications

- *IEC 60416 General principles for the creation of graphical symbols for use on equipment*
- *IEC 60417 Graphical symbols for use on equipment (new symbols are included in the supplements which are published regularly)*

SC3D Data sets for libraries

Scope: To prepare standards for the electrotechnical and related fields regarding:

- *definition of data element types and data sets for use in information models and technical documentation, and for exchange of technical information.*

P-members: 18 (AT, CN, CZ, DK, FI, DE, HU, IT, JP, NL, PT, RO, RU, ES, SE, US, GB, YU)

O-members: 13 (AU, BE, BG, IN, KR, MY, NO, PL, SG, SK, CH, TR, SI, UA)

Liaisons:

- *type A: IEC/TC93 -- ISO/TC184/SC4 -- ISO/IEC JTC1/SC14*
- *type D: European project CIREP -- SI2/ECIX*

Working Groups:

- *SC3D/WG1: Classification and coding of component packages*
- *SC3D/WG2: Classification of components and definition of technical data elements*

Number of issued publications: 4 (IEC 61360-1, -2, -3, -4)

Number of projects in development:

- ***New work:*** *1 (IEC 61357)*
- ***Maintenance work****: 1 (IEC 61360-1 The maintenance work is carried out in SC3D/WG2).*

B. Environment

B.1 Business environment

Documentation is part of the product, system or installation. As users and societies are increasingly dependant on complex systems the demand for installations or systems that are safer and easier to operate is growing: such a situation cannot be managed successfully unless appropriate documentation is a component of the installation or system.

Documents and information from different sources need to be integrated. A trend in the business environment is that companies concentrate on their core business and purchase products and sub-systems from other suppliers. Consequently, the complete information and its representation by documentation is composed from information and documentation from the suppliers. This increases the need for standardised structuring of the information and appropriate presentation rules in order to achieve a good overall documentation.

Multi-diciplinary environment. Complex systems often involve different technologies, of which electrotechnology is just one. This calls for co-ordinated methods and rules over the technological boundaries, and standardisation in this area therefore has to be run in close co-operation with similar standards bodies for other areas.

The whole life cycle of a product, system or installation needs documentation. Documents link the different phases. The same information is often used in the different phases of the life cycles, although it may be differently presented in documents due to the needs along the phases. Standardisation in the documentation area has traditionally focused on the requirements for engineering and manufacturing. The information and related documentation for the later phases in the life cycle must now be given a more prominent interest. There is also a more outspoken need that information created in the earlier phases is easily re-used in the later phases.

Information technology changes the products, systems and installations. The use of information technology in plants and installations standardises the connections among components further, and the traditional documentation of circuits can be expected to decrease in importance. On the other hand the need for the understanding of the overall functionality will remain, therefore the documentation on higher conceptual levels, which are not necessarily ”electrical”, can be expected to increase in importance. With increasing complexity the traditional documentation describing how the product is will be too complex for the user. It is not possible for him or her to decide what to do in a given situation. Instead the documentation must foresee these situations and give direct guidance on how to act. Electronic documentation will to a high degree be either physically integrated into the product or made available via computer networks.

B.2 Market demand

General

The traditional documentation and symbols standards (e.g. IEC 60617, IEC 60417, IEC 61082) are widely used, and have over a long period of time belonged to the ”best sellers”. They can be expected to be so for a foreseeable future, since they are used in the daily work in the whole electrotechnical design and engineering area. This kind of standards can now be considered to be rather stable and will for the future only need to be maintained and on-line accessible.

Information technology related standards (ISO10303-210, -212, IEC 61360) manifest themselves as functional standards , i.e. standards serving a utilitarian purpose such as providing the possibility to communicate among CAD (Computer-Aided Design), CAE (Computer-Aided Engineering), CAM (Computer-Aided Manufacturing), PDM (Product Data Management), EDM (Electronic Document Management) and other related systems. They influence the daily work (of a design engineer, etc) only indirectly. The end-user demand is for the *functionality* in their tools, not for the standards. The functionality may be satisfied by relatively few CAx suppliers, and the standards themselves will therefore never be any best-sellers, but may nevertheless be even more important to the industry than the traditional ones. Furthermore, they can not be properly produced without the application know-how. Because of this indirect connection with the daily work, it is, however, very difficult to get

the right experts into the work.

There is an increasing demand for the standards to be distributed electronically, not only on CD-ROMs, but in networks. For the above mentioned “collection of item” standards, there is a demand for direct access by industrial users to the databases.

The present market conditions as stated above are quite different from what they were 15 years ago. In the early 80’s there was a demand for well specialised and sector narrow standards for which industry readily provided experts in order to set up the necessary standard.

Today, on one hand, most of the necessary standards have been set up and need only maintenance: a task which is less rewarding than setting up and has an administrative-like appearance. On the other hand, moving from the product-oriented to the system-oriented standardisation approach (and the influence from the use of IT) leads to combine together standards which were formerly separated and possibly inconsistent. The required integration does not necessarily attract the participation of companies experts, who feel less concerned, but brings closer together administrative-like structures in charge of the standards.

In short, as new pinpoint targets diminish, so does participation of experts: industry appears less inclined to participate in maintaining and combining standards and seems to seek a broader broader participation from the statutory administration structures.

These factors of the present market demand: shortage of experts, system-oriented tendency, standards administration tasks, could lead to a general consultation on the issues and possibly to a new structure for the entire technical committee.

Comments to the specific areas dealt with

Rules for structuring and identification systems

Principles for structuring and identification (dealt with in SC3B), earlier a subject that could be handled discipline by discipline, has because of the integration that the use of IT-tools in the design and engineering leads to, become increasingly important. The basic problem to solve is that when, in different disciplines, in different IT tools and during different phases of the lifecycle, the same object is referred to, it has to be known by all to be just that, in order to allow that information on its properties can be shared or transferred. A typical example can be a signal, which is partly transferred as a conventional electric signal, partly on a bus, and partly stored in a process computer. Such a signal may be handled in a electrical CAD system and in tools for programming of the process computer, and these need to exchange information on it.

The structuring principles laid down in IEC 61346 are central and considered capable of dealing with this problem in an appropriate way. IEC 61175, IEC 61355, IEC 61666 are standards based on it, as well as ISO 10303-212 (The STEP AP for electrotechnical design and installation.) However, the full capability of IEC 61346 is only taken into service by a limited segment of the market, and incompatible identification systems for some application areas exist. Therefore marketing and more concrete guidelines for specific areas, such as process control, may be necessary to develop.

IEC 61346 series in conjunction with IEC 61175 supplies the required links between software objects, e.g. programmable logic controllers languages as in IEC 61311 and the related hardware objects.

Rules for the preparation of document kinds

IEC 61082 is adopted in most countries in the world, and also practically applied, with the exception of areas where the impact of (old) ANSI for some application areas are still strong.

With the completion of IEC 62027 and IEC 62079, originally intended to be part of the 61082 series, and presently on the CDV stage, the required set of document kinds for conventional electrotechnical engineering purposes can be seen as fairly complete, and will only need to be maintained for the future.

Integrated approaches to engineering solutions combining e.g. conventional electrotechnology and control by means of process computers is however an area that is not yet fully explored, and for which the need is increasing in order to increase the efficiency of engineering.

IEC 60848, presently under revision, is one document kind to be used for the earliest phase of the life cycle of a product or plant: the functional specification, an area that might need further work.

The later phases of the product/plant life cycle has not been thoroughly investigated with regard to document standardisation needs. True is that the document kinds already standardised are being used during these phases, but document kinds *produced in those phases*, is an entirely new group for which a need may exist for standardisation. Driver behind this is the trend on the market to outsource the maintenance of industrial plants, something that involves organisations specialised on this and therefore also a need for standards.

Rules for document and documentation management

IEC 61355 that defines document kinds and provides a system for classification and coding, is a standard, the importance of which has been increasing with the introduction of electronic document management (EDM) systems. This standard provides one classification attribute. Others are intended to be dealt with the newly started project IEC 620245 for management data (or meta data) for documents. A lot of organisations are today introducing electronic document management systems, and the need for these standards is urgent.

IEC 62023 on structuring of documentation provides the link between plant or product structuring and document management.

G*raphical symbols for diagrams*

The use of internationally standardised graphical symbols contribute to the effective and efficient preparation of documentation for products and installations, as well as to the enhanced understanding of the documents, thus increasing the success of these products in both regional and global markets.

The common ISO/IEC policy in the field of technical documentation of products, which includes common general principles for the creation of graphical symbols for use in technical documentation of products and the co-ordinated standardisation of these symbols. This will result in common international standards on graphical symbols intended to be widely used in electrical and non-electrical applications.

The market for the standards in this area has traditionally been design and engineering companies. With the use of CAD systems today a new market is possible to explore, and that is the CAD system suppliers. This, however, will require that the symbols are delivered electronically as symbol libraries, with associated functionality, easily adaptable to and processible in different design and engineering systems.

G*raphical symbols for use on equipment*

The use of internationally standardised graphical symbols can contribute to the effective, efficient and safe use of products, thus increasing the success of these products in both regional and global markets.

SC3C develops new symbols for manufacturers producing equipment for the key consumer and professional areas, for example household domestic appliances, audio/video equipment, data processing equipment and medical equipment. Internationally standardised graphical symbols can improve the usability and safety of the products, thus contributing to increased sales. SC3C symbols can address specialists and general public as well.

As the number of people using electronic equipment increases, the importance of the work of SC3C increases correspondingly. In order to provide an improved basis for the quality and consistency of the work, IEC 60416 is being revised in co-operation with ISO TC145.

It should be noted that the market for graphical symbols for equipment is quite different form that for graphical symbols for diagrams. The symbols here are copied and put on equipment by manufacturers, and are not, so far, associated with any technical functionality when used. This, however, can change when they are used on screens, where a dynamic behaviour may be required.

Information modelling for the application of CAx systems

In this area the work carried on ISO 10303-210 and –212 is believed to cover the most urgent needs. The market demand for efficient communication among different CAx systems (including communication in time, i.e. long time archiving) is high, although there is not yet any common acceptance of the fact that there are no simpler solutions to this problem. The above information models are designed to serve as a long-living transport and/or data sharing vehicle.

Semantical definitions associated with objects within the design and engineering phases

Information models provide an architecture to exchange or to share data among CAx-systems. The above information models are not designed to provide extensive semantic information associated with the objects dealt with in a given industrial context. The need of separate companion standards providing semantic definitions associated with such objects will provide high quality data and allow an automated data processing by computers. This area however is not yet fully explored and for which the need is increasing in order to increase the quality of information.

Data elements

The standards produced in this area answer the need of the electrotechnical industry for an IEC library of unambiguous data definitions i.e. a library including representations of technical facts, concepts or instructions in a form suitable for support of communication and information sharing.

Whereas the original work was mainly focused on electronic components, the work now addresses the whole field of electrotechnology as requested by the industry.

The common EXPRESS model standard for instance, produced between ISO/TC184/SC4/WG2 and IEC/SC3D/WG2 is accepted in both ISO and IEC. Close co-operation is maintained with relevant committees dealing with other areas of industry.

1. There is a rapidly increasing world wide demand for computer-sensible information, coming from original information providers (OIPs), value added producers (VAPs) and equipment producers (EPs) for a variety of business functions for management and exchange of technical product information.

2. The communication infrastructure developments over recent years provide for ever increasing opportunities for information exchange in electronic form.

3. Standardisation of data formats is essential to facilitate efficient and cost effective communication of computer-sensible information.

4. In view of the above, the market requires the timely availability of standards and there is thus a need for a shorter time to market of relevant standards.

Resources within IEC should be mobilized to serve these goals, which i.a. means that product committees will have to specify data elements within their respective areas of expertise.

B.3 Trends in technology and trade

Information technology changes the way of working. The move to computer-based documentation has practically been completed with respect to the *production* of the documents. Focus today is on a fully electronic *management* and *distribution* and *use* of documentation, as well as *the information needed* to generate the documentation automatically.

Computer networks are increasingly being used not only as a means for distribution of ready-made

documents, but also as a tool in the design process, among co-operating partners. This includes different suppliers as well as the customer and other organisations and institutions that are involved in the engineering and production of products. The application of information technology makes it possible change the working method from a sequentially-oriented to concurrently-oriented. In order to reach this functionality, it is essential that the information is not only computer processible (i.e. the data is in such a format that it can be read and stored by a computer), but also *computer interpretable*, (i.e. the data is in such a format that a computer in addition can *take action* based on the content).

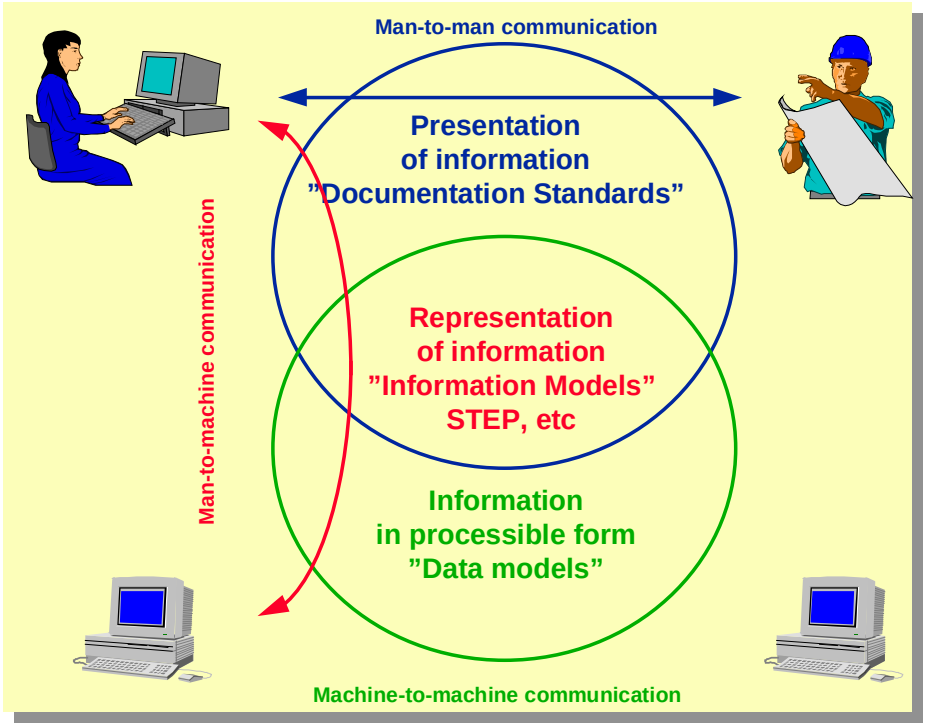

Fig. 1 - Illustration of the relation between traditional documentation standards and IT-related standards

While traditional documentation and symbols standards have focused very much on what things should look like to a human (”man-to-man communication”), it is becoming more important to look at the meaning, and to express this in such a formal way that also a computer can make use of it (”man-to machine-communication”). The work on information models, in SC3B, and on data element types, in SC3D, have this focus. See Figure 1.

It may need to be stressed that these two groups of standards are both needed.

With regard to the internal work of the committee the use of regular IT-tools is now fully implemented, and the intent is now to improve the working procedures further.

Many of the standards produced consist of principle or methodological parts and “collections of items”, where this principles and methods have been applied. This is for example true for: graphical symbols for diagrams, management data (meta data for document management) for documents, under work in SC3B, graphical symbols for use on equipment, produced by SC3C and data element types for electric components, produced by SC3D.

The principle and methodological parts can easily be dealt with in accordance with the normal standardisation procedure and with long maintenance cycles. The “collection of items” , however, has appeared to be desirable to manage in databases with web access. With an adapted procedure (“work flow”) this allows for standardisation “item by item”, and the resulting standardised item obtained much quicker. Appropriate proposals for such procedures have been elaborated and are attached to this SPS. These will allow a feed back to industry requirements within a shorter time.

This introduces a change in the view of what a standard is: the content of such a databases is the

"real standard" and the published standard, on paper or CD-ROM, is just print-outs.

B.4 Ecological environment

Documentation methods have no direct impact on the ecological environment, although there may be some indirect effects: the use of IT-tools and electronic distribution of documents, has a potential for decrease of the paper consumption and physical transportation of documents.

The documentation methods should therefore be specified is such a way that electronic production, distribution and use of electronic documents is facilitated. This means for example that logic structuring of documentation, in order to facilitate the navigation in a document set, and steps taken to enhance the readability of the document on the screen are factors to be observed.

C- Work programme

C.1 Current work

TC3 (parent committee)

With the disbanding of SC3A the following work is now managed by the parent committee TC3. For this purpose the National Committee of Switzerland supports an assistant Secretariat, with Mr.Fornalski as Assistant Secretary to TC3.

IEC 61352 TR3 Ed. 1, Mnemonics and symbols for integrated circuits is being printed.

IEC 60617: the setting up of the graphical symbols database has high priority. This work includes:

- the confirmation that the database implemented by the IEC/CO fulfils the requirements specified by the TC3 Task force on graphical symbols;
- initial loading of graphical symbols of IEC 60617-2 -- 11 by the IEC/CO;
- training workshop for experts from the National Committees that will assist in the restructuring of the information to fit into the database;
- do the actual restructuring with the assistance of the NC experts;
- setting up of a Validation Team (VT) for IEC 60617;
- validate that the symbols and other information entered into the database is equivalent to that of the existing publication
- (make a print)

When the material in the database has bee validated the work will continue with the introduction of the material developed by the former SC3A/WG1, now TC3/WG1, for the revision of IEC 60617-2 -- 11.
This material is intended to be processed and validated in accordance with the new database procedure.

The maintenance of IEC 60617 in database form will be dealt with as one project.

IEC 60617-1 Ed. 2 containing some general rules and indices, will be finished in its present form. However, future updating of the index parts will not be necessary, since it will be replaced by search functionality in the database.

Restructuring IEC 617-12 and -13 with the aim to merge them into one publication to reduce the volume and price. This project is put on hold (stage 0), following the decision to disband SC3A/WG2 in Charlottenlund and the lack of reaction from the National Committees. With the introduction of the database for graphical symbols the goal for this project has to be reconsidered, and new resources sought.

The work on ISO/IEC14617 continues in ISO and has now reached ISO/DIS stage, including parts -1 to -5 containing basic symbols to both IEC and ISO standards. No immediate activities are planned from the TC3 side.

SC3B

In the field of *rules for structuring and identification systems:*

- *IEC 61346 Structuring principles and reference designation*, is planned to consist of four parts: Of these: *IEC 1346-1 Part 1: Basic rules and Part 4 (TR): Discussion of concepts*, have been published. *Part 2: Classification of objects and codes for classes* is on the CDV stage. *Part 3 (TR): Application guidelines*, is on the 1st CD stage

- The work on IEC 61346-2 and –3 is carried out in JWG12. One meeting is planned for Part 2 and 2-3 meetings for Part 3 during 1999.

In the field of *rules for the preparation of document kinds*:

- IEC 60848 Ed.1 and material developed for an amendment are now the basis for a new edition of this standard. It is on 2CD stage: *IEC 60848 Specification language (GRAFCET) for sequential function charts*
- *IEC 62027 Preparation of parts lists;* and
- *IEC 62079 Preparation of instructions*, are on the CDV stage.

IEC 60848 is prepared by SC3B/WG14. The preparation of a CDV and the subsequent resolution of the comments is likely to require 3 – 4 meetings during 1999.

IEC 62027 (and IEC 62023) are prepared in SC3B/WG8. Although the resources for these projects has been limited the whole time, the comments have not been so serious so far, and the projects have now advanced so far that completion can be managed during 1999 with existing resources. No further meetings are expected to be needed for these standards.

IEC 62079 Ed. 1 is prepared by JWG7. The draft has been circulated for comments and voting, and been approved for circulation as an FDIS. However, there were a substantial number of comments which will require working group meetings for resolution.

In the field of *document and documentation management*

- *IEC 62023 Structuring of technical information and documentation*, is on the CDV stage
- *IEC 62045 Management data (meta data) for documents* has been started. Because of interest from the ISO side (including mechanical, process and construction) this project is now developed in co-operation with ISO in a Joint Working Group (IEC SC3B - ISO TC10 JWG15).

IEC 62023 is dealt with in parallel with IEC 62027, and is not expected to require any meetings or any other substantial resources during 1999.

For IEC 62045 four meetings are planned to be held during 1999. Resources are expected to be well covered through the co-operation with ISO.

In the field of *rules for the application of graphical symbols in CAx systems*:

- *ISO 11714-1 Design of graphical symbols for use in technical documentation of products, Part 1: Basic rules*, developed jointly with ISO/TC145 has been published by ISO. It will be renumbered to ISO 81714-1.
- *IEC 81714-2 Design of graphical symbols for use in technical documentation of products, Part 2: Specification for graphical symbols in a computer sensible form including graphical symbols for a reference library, and requirements for their interchange,* is in the process of printing.
- IEC 81714-3 *Design of graphical symbols for use in technical documentation of products, Part 3: Classification of connect nodes, networks and their enco*ding has been published by IEC.

This series is completed for the time being.

In the field of *information modelling for the application of CAx systems* co-operation has earlier been established with ISO/TC184/SC4 in IEC/TC3- ISO/TC184/SC4 JWG9. The joint effort in this group is intended to provide those resource and application information models that are required for electrotechnical applications in STEP (Standard for the Exchange of Product model data = series ISO 10303). Work is going on for two *Application Protocols*

Following the decision of the JTMB the formal processing, publication and maintenance of these electrotechnical standards is managed by ISO:

- *ISO 10303-210 Printed circuit assembly, design and manufacture*. The document is now circulated as DIS/CDV.
- *ISO 10303-212 Electrotechnical design and installation*. The document is now circulated as a DIS/CDV.
- *ISO/IEC 10303-220: Printed circuit assembly manufacturing planning.* (WGD only, no activity; will be reactivated after finalizing of *ISO/IEC 10303-210*.)

The application protocols serve the purpose as reference models for data exchange between CAx-systems as well as information model for database implementations for company internal use, allowing on-line access to all systems working on such database. Database implementation will be one important step for concurrent engineering.

The interoperability among different application protocols of different branches, e.g. process industry, mechanical and electrical industry is of vital importance for those companies designing systems and plants.

Strong relations between the development of such models and the presentation of the information in documents are required. Information not contained in an application model can otherwise not be retrieved and presented in a document. Therefore the information model development needs as input any documentation standard to define precisely the pieces of information intended to be presented in a document.

Existing and future documentation standards should therefore serve also as parts of a strategy for the development of the above information models

SC3C

Maintenance of IEC 60417

- Symbols already standardised: 638
- Symbols under consideration: 70

Main drafts:
- symbols for use on medical equipment
- symbols for use on data processing equipment
- symbols for safety related applications
- symbols for special timer functions
- symbols for switching power on and off

Revision of IEC 60416

The revision of IEC 60416 is being carried out by ISO/TC145 - IEC/SC3C JWG11. The joint standard will have four parts covering principles for the creation of graphical symbols, the use of arrows, the use of graphical symbols for use on screen and displays (icons), and the application of graphical symbols.

SC3D

Revision of IEC 61360-1

The publication of a second CD dealing with the first amendments and extensions to IEC 61360-1 was circulated in November 1998. In parallel, the common EXPRESS model will also need to be updated in co-operation with the relevant ISO TC.

Revision of IEC 61360-2

IEC 61360-2 was published in April 1998. By the application of the templates in clause 8 some errors has been found. For that reason a completely new clause 8 shall be prepared and a CDV shall be circulated. After approval of this new clause, a complete new standard IEC 61360-2 will be published.

Maintenance and validation IEC 61360-3

Due to organisational matters the maintenance and validation activities are not yet operational. This topic is again under discussion in SC3D and may result in an update of IEC 61360-3.

In order to get the Maintenance Agency according to IEC 61360-3 operational:

- Validation Agencies are still to be formed;
- an effort need be made to promote the current work , and participation of the relevant expert TCs and SCs in the validation groups has to be organised.

Updating of IEC 61360-4

As the maintenance and validation agencies has not yet become operational, SC3D has decided in his last meeting to collect the existing requests for new data element type definitions in a Committee Draft for Voting.

This draft is planned to become a supplement to IEC 61360-4.

Classification and coding of packages

The first publication on classification and coding of packages was issued in Q4/1997. A second CD is planned for Q1/1999. A liaison with TC47 is in the process of being set up.

Meeting frequency

For the working groups it is scheduled to have three two-day meetings per year. Additional ad-hoc communication during the year is done by e-mail.

C.2 Resources/infrastructure needed

TC3 (parent committee)

Database for graphical symbols

In order to be able to process proposals for new symbols more effectively and efficiently, new processes for the validation of proposals and the maintenance of IEC 60617 are under discussion, see 3/539/DC. As the new procedures assume a database and access to drafts via Internet, the relevant infrastructure is necessary.

SC3B

Database for management data for documents (data element types)

In order to be able to manage the data element types defined in project IEC 62045 more effectively and efficiently, it is envisage to use a process for maintenance and validation similar to that for graphical symbols for diagrams, described in document 3/539/DC. This procedures assumes a database and access to drafts via Internet.

SC3C

Database for graphical symbols

In order to be able to process proposals for new symbols more effectively and efficiently, new processes for the validation of proposals and the maintenance of IEC 60417 are being submitted, see 3C/414/INF. As the new procedures assume a database and access to drafts via the Internet, the relevant infrastructure is necessary.

SC3D

- A need exists for an IEC server for access of the IEC database, organisation, standards, etc
- We search for a broader participation to the working groups.
- Low cost barriers for ad hoc (experts) participation.
- Liaisons should be tuned to the intended objective on terms to be agreed by both committees.

D- Future work

TC3 (parent committee)

Revision of the Scope and Title

Considering what type of work that is actually going on and the type of work that will need to be done in the future, it is felt that the present title does not convey the right image of the committee and should therefore be revised. A proposal is in preparation for the next TC3 meting.

IEC 60617 Graphical symbols for diagrams, will be continuously maintained in accordance with the new procedure. Any major revision needed is not planned until 2010 (following the immediate changes due to the introduction of the database).

The content of IEC 60617-12 -- 13, will need to be entered into the database as well. Since these parts are structurally different from the other, the principles for doing it will first need to be investigated. These two parts contain not only symbols, but a large part of tutorial material (it is partly written as a "book"), which is not easily managed in the database with present design. These parts may have to be split in a pure graphical symbols part, that can be entered into the database, and a free standing tutorial part.

The co-ordination and harmonization with ISO 14617 (80617?) is a work that will need to be reactivated, due to market needs. This work is expected to be possible to manage, and even facilitated, with the graphical symbols database.

SC3B

The future work will, apart from completion of the current work and maintenance of existing standards, focus on:

- *Principles for structuring and identification,* in different disciplines, in different IT tools and during different phases of the lifecycle, as mentioned already above under B2. In this context its expected to use the contacts established in SB3, e.g. through a task force.

- *Integrated documentation*, covering especially the integration between electrotechnical systems and process control. Also in this case SB3 is expected to be of counsel.

- *Marketing and possibly development of guidelines*.

SC3C

Symbols for the general public

Although a number of symbols in IEC 60417 are normally used by specialists, for example in the medical area, symbols are increasingly being developed for the general public in using equipment in domestic and other environments. There is a need to identify users and their special requirements at an earlier stage during the development of new symbols. This also applies to other critical aspects of the context of use of the symbols. Appropriate information should therefore be included by proposers with new work items and subsequent drafts.

Electronic media

There is an increasing need to move towards electronic media for the distribution of documents (in line with the policy of IEC and electronic publication. This will improve the efficiency of our work and make the information in IEC 60417 more accessible to users, in a format appropriate for their needs

SC3D

In the framework of IEC61360-1 and 61360-2 we foresee further developments in extending the fields for operation to other areas of technology, depending on the industrial need and technology innovation.

In the field of IEC 61360-3 and 61360-4 the on-going maintenance of the library of data element type

definitions, classifications and terms is foreseen.

E - Maintenance cycles

TC3 (parent committee)

Publication no.	Date of publication	Publication date for proposed amendment or revision	Responsibility (Maintenance Team, Working Group)
IEC 60617-1 Ed. 2	Planned 1999	Will be replaced by functionality in the database	-
IEC 60617 in database	Planned 1999	Ongoing per item *) Major review 2010	Validation Team 60617 Maintenance Team for major review only
IEC 60617-12 -- -13 adapted to database form	Not yet planned	-	MT (Not yet appointed)
IEC TR 61734 Ed. 1	1999	2005	MT (Not yet appointed)
IEC TR 61352 Ed. 1	1999	2005	MT (Not yet appointed)

*) Because new graphical symbols need to be approved and added to IEC 60617 on a continuous basis, a special maintenance procedure is required (see proposal in 3/539/DC).

SC3B

Publication no.	Date of publica-tion	M cycle (years)	Publication date for proposed amendment or revision	Responsibility Maintenance Team, MT convenor
IEC 60848 Ed. 1	1988-12	10	2000 second edition, now in preparation in 3B/WG14	MT (Not yet appointed)
IEC 61082-1 Ed. 1	1991-12, 1995-03, 1996-07	10	2003	MT61082, Mr. T. Viitanen
IEC 61082-2 Ed. 1	1993-12	10	2004	MT61082, Mr. T. Viitanen
IEC 61082-3 Ed. 1	1993-12	10	2005	MT61082, Mr. T. Viitanen
IEC 61082-4 Ed. 1	1996-03	10	2006	MT61082, Mr. T. Viitanen
IEC 61082-6 Ed. 1	1997-04	-	Need not be revised. Replaced by functionality in electronic documents.	
IEC 61175 Ed. 1	1993-07	10	2003	MT61175, Mr. K-A Thorn
IEC 61286 Ed. 1	1995-10	-	To be mapped to ISO/IEC 10646. Could be withdrawn after that.	
IEC 61346-1 Ed. 1	1996-03	10	2007	MT61346, Mr. E. Selvik
IEC 61346-2 Ed. 1	(1999)	10	2007	MT61346, Mr. E. Selvik
IEC 61346-3 Ed. 1	(1999)	5	2004	MT61346, Mr. E. Selvik
IEC 61346-4 Ed. 1	1998-01	-	Can be withdrawn in connection with the next revision of the other parts. Needs not to be revised.	
IEC 61355 Ed. 1	1997-04	5	2007	MT61355, Mr. H. Brückner
IEC 61666 Ed. 1	1997-05	10	2007	MT61346, Mr. E. Selvik

SC3B

Publication no.	Date of publica-tion	M cycle (years)	Publication date for proposed amendment or revision	Responsibility Maintenance Team, MT convenor
IEC 62027 Ed. 1	(1999)	10	2009	MT61082, Mr. T. Viitanen
IEC 62023 Ed. 1	(1999)	10	2009	Mr. P.-Å. Svensson
IEC 62045-1, -2, -3 Ed. 1	(2000)	Too early to decide now.	2000? first edtion	Mr. F. Reuter
IEC 62079 Ed. 1	(2000)	5?	2000 first edition, now in preparation in JWG7	Not yet appointed
ISO 81714-1 Ed. 1	1996, 1998 under new number	5 (systematic review primarily in ISO)	2001	Mr. F. Reuter Joint work with ISO TC10.
IEC 81714-2 Ed. 1	1998-11	5 (systematic review primarily in IEC)	2003	Mr. F. Reuter Joint work with ISO TC10.
IEC 81714-3 Ed. 1	1998-11	5 (systematic review primarily in IEC)	2003	Mr. F. Reuter Joint work with ISO TC10.

SC3B has decided that it is not necessary to have a complete maintenance team in operation between planned revisions, but in order to have an established point of contact for proposals for changes and modifications, one person per standard series should be appointed.

This person is likely also to be ***maintenance team convenor***, and is therefore called so.

The maintenance team convenor should ***report once a year*** to the technical committee on the situation with regard to changes needed, so that the technical committee gets an overview of the work required and when to start the setting up of the complete maintenance team.

SC3C

Publication no.	Date of publication	Publication date for proposed amendment or revision	Responsibility (Maintenance Team, Working Group)
IEC 60417-1 Ed. 1	1998-08	To be maintained in the database	
IEC 60417-2 Ed. 1	1998-08	To be maintained in the database	
IEC 60417 in database		On-going *)	Maintenance team
IEC 60416 Ed. 2	1988-07	December 1999 **)	JWG11

*) Because new graphical symbols need to be approved and added to IEC 60417 on a continuous basis, a special maintenance procedure is required (see proposal in 3C/406/INF).

**) It is intended that IEC 60417 becomes part of a new multi-part ISO/IEC standard on the creation of graphical symbols for use on equipment.

SC3D

Publication no.	Date of publication	Publication date for proposed amendment or revision	Responsibility (Maintenance Team, Working Group)
IEC 61360-1 Ed. 1	1995-04	2000-12	SC3D/Working group 2
IEC 61360-2 Ed. 1	1998-04		
Revision Amendment		1999-12 2001-03	SC3D/Working group 2
IEC 61360-3 Ed. 1	1995-10		
IEC 61360-4 Supplement	1997-04	2000-12	SC3D/Working group 2

Name or signature of the secretary

Per-Åke Svensson