eurocomp
The newsletter of the Space Components Steering Board

Introduction

Welcome to the inaugural issue of the European Space Components Steering Board (SCSB) Newsletter. This biannual publication, published in April and October, aims to keep you informed of the various activities being co-ordinated, sponsored, and encouraged by the SCSB participants. The objective is to further the availability and use of European Electrical, Electronic, and Electromechanical (EEE) components in European space programmes. We believe that the SCSB represents a very special form of, and forum for multi-interest and multi-national co-operation and we, the Editorial Board, intend that this Newsletter should contribute to and foster that spirit of co-operation.

In this issue……

For those of you who may not be familiar with the SCSB, our Editorial hopes to provide a brief background and the scope of this Board. For those of you familiar with the SCSB, this overview will serve as a reinforcement of that foremost European initiative. In both instances, it shows the depth of the undertaking the Board feels is required to meet the technical and economic demands that current space programmes place on EEE components.

The Implementation Team, a group charged with installing the policy decisions of the SCSB, highlights some of their ongoing activities. In future issues, more detailed and specific results from their studies will be presented.

Equally, the Component Technology Board emphasises the important role that strategic components will play in the near future, and sets out an ambitious plan of work to achieve its mandate.

Also in this issue, we briefly introduce two soon to be released concrete results of the SCSB. The European Preferred Parts List will be the successor to the ESAPreferred Parts List, and the European Space Components Information Exchange System, a development to enhance the interchange of useful component data. These "products" will serve as catalysts to improve the way in which we do our work.

The publication of a newsletter is a long term commitment. This issue is only an introduction. In future issues, we hope that by presenting the results of our work, we can engage in useful dialogue with the space community and benefit from a broad concurrence as we move toward our goals.

Editorial

"Eurocomp" is directed at everyone involved in EEE space component activities in space agencies, user industries and component manufacturers, with the aim of providing information on the activities of the Space Components Steering Board (SCSB) and its sub-committees. In this first Editorial we will explain how the SCSB came into being.

The SCSB was formed in 1996 on the basis of the recommendations prepared by the Space Components Ad-Hoc Committee (SCAHC). In 1994/5, this Committee performed a comprehensive and critical review of the existing and future prospects in Europe for space components and derived a coherent and harmonised long-term action plan commensurate with user needs, market demands and envisaged trends. Issued in January 1996, the SCAHC's report contained far-ranging Recommendations, the essence of which were as follows:

R1: Maintain the ESA/SCC system of specifications including related qualification programmes and quality-assurance controls, but improve its organisational, operational, technical and quality-assurance approach in order to meet users'needs and to be compatible with market trends.

R2: Standards and specifications for components shall reflect a higher degree of delegation from customer to suppliers with reduced customer controls.

R3: Whenever possible, European component specifications and standards should be based on international standards and should be promoted to obtain international recognition.

R4: Implement a stringent system for the reduction of the diversity of components for use in space, based on the usage of a European Preferred Parts List, giving preference to European components.

R5: Establish a Reliability System for European Space Components.

R6: Establish an information-exchange system on component data with access open to all European users.

R7: Enable the mutual recognition of industrial performance in the various component disciplines, including component engineering, radiation-hardness assurance, auditing and inspection (with formal certification of the latter), through the provision of relevant and regular training opportunities.

R8: Improve the availability of strategically important components, giving preference to European sources (microprocessors, MMICs, rad-hard ASICs, etc.).

R9: Implement, in full partnership with the users, manufacturers, commercial customers and agencies, a European Space Component Research and Technology Programme assuring coherence with other market sectors, and cost-effectiveness.

R10: Establish a permanent Component Steering Board representing the interests of all of the European space partners, to monitor market trends, to provide financing and to review the technology programmes and its synergies, and advise on necessary policy changes.

Following the acceptance of the SCAHC proposals by the participating bodies, in June 1996 the SCSB was established, in response to recommendation R10, with the mandate to implement these recommendations. For this purpose, the SCSB established the following sub-committees:

- An Implementation Team (IT), which elaborated the SCAHC proposed work-plan, producing work-package descriptions and planning information for implementation of recommendations R1 through R7.
- A Component Technology Board (CTB), which prepares and supervises the component technology strategic plan and implementation programme in accordance with recommendations R8 and R9.

The SCSB draws its membership in a balanced manner from the European national space agencies and ESA, the user community through Eurospace, and component manufacturers representing the technology spectrum.

These implementation activities are being funded by ASI, BNSC, CNES, DLR and ESA. Several of the studies have already been completed and others are in an advanced state. Furthermore, the SCSB has recently agreed to form itself into a new and permanent structure to be approved by its participating bodies before the end of the year.

The Implementation Team

The Implementation Team is a subgroup of the Space Component Steering Board. Its role is to draw up, implement and control component-related programmes in the field of methodologies, infrastructure and standardisation, as approved by the SCSB, considering external interfaces and approval authorities.

Technical Updating

The European space community has expressed the firm belief that Europe needs its own uniform specification system for electronic (EEE) components, and recommended that the system of specifications, as elaborated by the ESA/SCC, be maintained. However, significant improvements to the technical and quality-assurance contents have been encouraged in the framework of the IT activities.

As a consequence, each of the ESA/SCC generic specifications has been reviewed, together with the pertinent ESA/SCC basic specifications, in cooperation with the manufacturers and users, with the goal of improving efficiency without compromising the resulting quality or reliability of the components.

The prime aim of this updating exercise is to significantly reduce component costs by introducing up-to-date knowledge regarding failure modes into the system, by removing redundant or unnecessary tests and requirements, by bringing screening and test flows in line with the standard practices of the manufacturing industry, by benefitting from in-process controls, and by reducing end-item testing as far as possible.

Plastic Encapsulated Devices

An analysis of the possible introduction of Plastic Encapsulated Devices (PEDs) into the existing ESA/SCC system has been carried out. The main objective of this feasibility study was to determine whether PEDs should be covered by the ESA/SCC system in order to achieve the widest use of all available components.

It was concluded that they should indeed be introduced into the system and a proposal has been made on how this can be achieved without jeopardizing the reliability of equipment in which PEDs will be used. The related Implementation Team proposal, approved by the SCSB, covers the specific details for procurement, screening and testing within the ESA/SCC system.

An important part of this objective, and one of the first items to be addressed, is the modernising of the ESA/SCC system. Along with other changes envisaged, this is intended to lead to a significant reduction in the cost of components without compromising underlying quality and reliability. To achieve this, special consideration is being given to:

- reducing the lead time for components and their qualification programmes
- enhancing the availability of space components
- introducing a new quality concept.

The Implementation Team is responsible for managing a number of work packages funded by the European space agencies and ESA, and contracted out to various institutions or companies. These packages encompass:

- Review and Updating of the ESA/SCC System
  - New organisation
  - Technical updating
  - Introduction of the QML concept
  - Introduction of the Performance concept
  - Introduction of Plastic Encapsulated Devices (PEDs).
- Provision of a Component Information Exchange System (Database)
- Creation of a European Preferred Parts List.
- Mutual Recognition (through training courses in component disciplines).
- Component Reliability Study.
- ECSS (European Cooperation for Space Standardization)
  - updating of essential component specifications and preparation of new specifications.
- Promotion of the European system.

In order to review if the available documents are in line with work statements and to suggest corrective actions to the contractual authority, the monitoring of work was done by so called "project support teams" composed of 2 on 3 members of the IT assisted when necessary by experts.

Two of the foreseen studies - concerned with the technical updating of the ESA/SCC system and the introduction of plastic encapsulated devices into the system - have already been completed. The results are discussed briefly in the accompanying panels. Other study results will be presented in the forthcoming issues of Eurocomp.

The Component Technology Board

The Component Technology Board (CTB) is a functional subcommittee of the Space Component Steering Board. The CTB formulates the strategic and technical recommendations related to European space component technologies. It is also responsible for the co-ordination of the collectively funded European space component and technology research programmes and the related development, evaluation, and quality-assurance programmes.

With the main objective of broadening and enhancing the component technology base available to the European space industry, the CTB has formulated a medium-term European space components programme aimed at:

- Identifying and supporting new or emerging technologies that will enhance the competitive position of European space industry.
- Reducing European dependence on foreign suppliers, in particular for certain strategically important technologies.
- Ensuring synergy with other market sectors.
- Minimising duplication of activities and optimising the usage of available resources.

This has resulted in a five-year strategic plan (see Panel).

One of the key outputs from the CTB is a programme of work extending up to five years and addressing the long-term and strategic considerations as well as the short-term component technology needs of the European space community. The first five-year strategic plan reflects the analysis of space-system needs and trends, as well as component technologies status and trends, and contains the following dossiers:

- Silicon Integrated Circuits
- Microwave & Millimetre Wave Component Technologies
- Hybrids, Multi-Chip Modules (MCM), Interconnections & Micropackaging Technologies
- Photonic Components.

The CTB is currently preparing to implement the first slice of this five-year plan, and progress will be reported in future issues of Eurocomp.

Upcoming Events

ESCCON 2000 Conference

20 – 24 March 2000, ESTEC, The Netherlands

The European Space Components Conference is organised by ESA under the auspices of the European Space Components Steering Board. ESCCON 2000 will be held at a time when small satellites, constellations and new applications have created unprecedented demands on cost, availability and assurance of electronic components. New management concepts and standardisation and procurement methods have responded to the changes in the World market. In particular, various space component initiatives have drastically improved the situation in Europe. The Conference will accordingly reflect recent achievements, discuss today's problems and challenges and review future prospects and risks.

Further information is available at:

www.estec.esa.nl/CONFANNOUN/00a02/index.html

Eurospace Workshop on Electronic Component Reliability

20 March 2000, ESTEC, The Netherlands

In conjunction with ESCCON 2000, Eurospace, the Association of the European Space Industry, will host an International Workshop devoted to Electronic Component Reliability at ESTEC (NL) on 20 March 2000, with ESA support.

For the last 25-30 years, MIL-HDBK-217 has remained the accepted worldwide failure-rate standard. However the future of MIL-HDBK-217 has become uncertain. If it is not updated and extended to cover new component technologies, the world will soon be lacking any common standard for use in reliability predictions.The purpose of the Workshop is therefore to discuss : (a) the present situation of MIL-HDBK-217 and its future evolution (b) the alternative to MIL-HDBK-217 to obtain electronic component failure-rate data for spacecraft reliability assessment (c) possible European contributions to future alternatives to MIL-HDBK-217.

Further details can be found at:

www.estec.esa.nl/CONFANNOUN/00a02/index.html and *www.eurospace.org.*

The European Preferred Parts List (ECSS-Q-60-01)

The management of the European Preferred Parts List (EPPL) is described in ECSS document Q-60-01. The List itself falls under the authority of the Space Components Steering Board (SCSB) in partnership with ESA, national space agencies and European space industry, and as such contributes to the promotion of European space policy. The List is established and maintained by a contractor applying the rules and selection criteria of ECSS-Q-60-01. A group of experts, the Technical Authority, has been nominated by the SCSB to supervise this activity.

The objective of the EPPLis to direct the user to a limited number of component types, covering all design applications, to achieve cost reduction and procurement effectiveness. Type reduction and standardisation are the most important filters in the establishment of the List. This activity is based on component knowledge (comparison) and information obtained both from manufacturers and users.

The European Preferred Parts List is divided into two parts:

– Part I components have sufficient data to permit their use without any special provision, on condition that they meet the application requirements.
– Part II components have minimum evaluation data demonstrating capability to satisfy space-application requirements, but additional testing effort may be necessary to satisfy specific programme requirements.

The European Preferred Parts List will be available on the World Wide Web after acceptance by the Technical Authority, the SCSB Chairman and the approval of the ECSS Technical Panel Chairman. Updating of the list is initially foreseen every six months.

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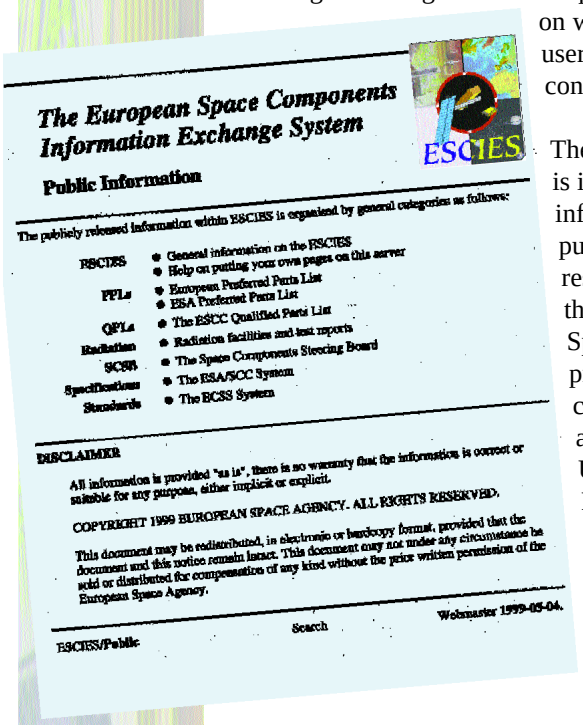
The European Space Components Information Exchange System

ESCIES (pronounced "s-keys"), currently being prototyped at ESTEC, is a Web Site and underlying database intended to hold components information and to make it freely available to registered users. These users will be the European space community active in the SCSB's varied activities. Following on from the original SCAHC recommendation for a Components Information Exchange System, ESTEC commissioned a study on how best to implement it. The results of this study were reported in two parts. The first part of the study was a community-wide consultation on the ‘what’, ‘where’and ‘why’definitions for the system. In the first instance, it found widespread support across the space-component community. Companies confirmed a need for this pan-European system, as well as expressing a willingness to contribute data to sustain it. This part of the report concluded by defining the types of data that the community would want to make available.

The second part of the report concentrated on the ‘how’segment of the system. The result of this part of the study indicated the use of the WWW. This model is therefore the basis for the prototype. This article will report on this aspect of the system.

The Web Server has already been running on the ESTEC Intranet (inside the firewall) for some months and has been demonstrated both to the Implementation Team and to participants in the latter’s Presentation Day in July. The organisation of the site is based on private or public data, data topic and then data set by data provider. As an information-exchange system with many potential data providers, it is felt important that users can

identify the source of the data clearly and be able to contact the data provider for further information. A "feedback form" is provided for this purpose. User registration is catered for by an online form and differing access rights can be requested depending on whether or not the user will also be contributing data.


The European Space Components Information Exchange System

ESCIES

Public Information

The publicly released information within ESCIES is organised by general categories as follows:

ESCIES
- General information on the ESCIES
- Help on putting your own pages on this server

PPLs
- European Preferred Parts List
- ESA Preferred Parts List

QPLs
- The ESCC Qualified Parts List

Radiation
- Radiation facilities and test reports

SCSB
- The Space Components Steering Board

Specifications
- The ESA/SCC System

Standards
- The ECSS System

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ESCIES/Public Search Webmaster 1999-05-04.

The public data area is intended for information that is published without restriction, such as the ESA/SCC Specifications. The private data area can only be accessed with a User ID and a Password, and certain data sets within it may require further user verification to be provided.

A generic search engine is being built that works with all of the site's HTML documents, making use of selected keywords. The search will be context-sensitive so that if, for example, a search is selected from the EPPL area, only the EPPL data will be searched. Alternatively, a menu choice will allow a search of the whole ESCIES site for the keyword, which for example could be a part type.

In addition to HTML, much of the prototype consists of PDF documents. For these, different search strategies, including full text search, are being investigated. Presently, the favoured approach is one similar to that for the HTML documents through the use of keywords. This enables a rapid and integrated search approach for the site irrespective of file type.

The development of ESCIES is proceeding well and the results being obtained with the prototype are encouraging. Anybody seeking further information or wishing to contribute data at an early stage is encouraged to contact Tony Gouder at ESTEC (e-mail agouder @estec.esa.nl).

The ESCIES Web Site is being developed under ESTEC contract by TERMA Elektronik AS. ●

SCSB Implementation Team Presentation Day

The Space Components Steering Board (SCSB) scheduled a day of presentations on the Implementation Team's activities on 7 July 1999 at ESA/ESTEC, in Noordwijk (NL). The purpose of the event was to inform the space-components community of the status of the Team's activities. Overviews of important initiatives such as the European Qualified Manufacturers Listing (QML) and Performance Specifications, among others, were presented.

The day's overall agenda was as follows :
- Presentation of the complete spectrum of the Team's activities
- ESCIES Demonstration
- ESA/SCC Technical Update
- ESA/SCC QML Presentation
- ESA/SCC Performance Study
- European PPL
- PED Activity.

A total of 60 participants - users, component manufacturers and space agencies - attended the Presentation Day. A small poll afterwards showed most of them considered it a day well spent and that the information they had received was extremely useful. They also asked to receive regular information on the Implementation Team's activities in the future.

The Presentation Handouts are available via the World Wide Web from the ESAexternal home page at :

www.estec.esa.nl/qcswww/sccpage.html ●

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