SC4N777

ISO Technical Committee 184: Industrial automation systems and integration

Subcommittee 4: Industrial data

ISO TC 184/SC4 N777

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SC4 Strategic Plan

The Vision of Industry

Enterprise information available in a digital form, where and when it is required

- **without ambiguity or loss of completeness,**

- **within and between enterprises,**

- **throughout the lifecycle**

Mission of SC4

To develop, maintain and deliver a consistent and coherent set of standards for the capture, storage, exchange, sharing and archiving, in a neutral form, of the scientific, technical and industrial information required to create, maintain, operate and dispose of products*.

*A product may be any thing or substance produced by a natural or artificial process

Objectives

For the User:

U1. Standard suitable for supporting enterprise processes

U2. Scope and information content understandable in user terms

U3. Implementations that conform to the standard, and interoperate

U4. Independence of data from hardware and software

U5. Stability of existing data through time

U6. An integrated suite of standards to provide a variety of viewpoints of evolving enterprise data requirements through the lifecycle and the supply chain

U7. Compatible with other enterprise information standards and application-level standards

U8. Efficient data processing, communication and storage

U9. Extendable to exploit emerging information technologies

For the Implementor:

I1. Ease of implementation with good documentation

I2. Standardised implementation methods

I3. Compatibility of information between versions of the standard

I4. Separate data definitions and implementation technology

I5.   Conformance testing framework and methods

For the Standardiser:

S1.   Standard language for data definition

S2.   Integrated data schema

S3.   Acceptance across users and implementors

S4.   Use of the standard by other standards groups

S5.   Efficient capture of user requirements

S6.   Efficient development process

Strategies to achieve the Objectives

Operational Strategy:

- O1 View as a manufacturing process, and embed effective management and training processes to ensure a consistent and coherent approach to the work (

- Objectives Supported:

- S5 Efficient capture of user requirements

- S6 Efficient development process

- O2 Configuration management of information structure and phased publication of standards to ensure consistency of published work

- Objectives Supported:

- U5 Stability of existing data through time

- U6 An integrated suite of standards to provide a variety of viewpoints of evolving enterprise data requirements through the lifecycle and the supply chain

- I3 Compatibility of information between versions of the standard

- O3 Automated support tools for documentation, to eliminate transcription errors

- Objectives Supported:

- S6 Efficient development process

- O4 Involve implementors

- Objectives Supported:

- I1 Ease of implementation with good documentation

- I2 Standardised implementation methods

- I4 Separate data definitions and implementation technology

- S3 Acceptance across users and implementors

- O5 Involve users from different sectors to ensure that the standards meet industrial needs

- Objectives Supported:

- U1 Standard suitable for supporting enterprise processes

- S3 Acceptance across users and implementors

- S5 Efficient capture of user requirements

- O6 Define specific liaison arrangements with other organisations to evaluate the impact of their standards, to exploit their results, and to avoid duplication and contradiction

- Objectives Supported:

- U7 Compatible with other enterprise information standards and application-level standards

- S6 Efficient development process

- O7 Assist other standards bodies to exploit SC4 standards

- Objectives Supported:

- S4 Use of the standards by other standards groups

- O8 Demonstrate potential for improved business operations

- Objectives Supported:

- S3 Acceptance across users and implementors

- O9 Evaluate the effectiveness of the strategy

- Objectives Supported:

- S6 Efficient development process

- S3 Acceptance across users and implementors

- U1 Standard suitable for supporting enterprise processes

- O10 Develop a marketing policy for SC4

- Objectives Supported:

- S3 Acceptance across users and implementors

- S4 Use of the standards by other standards groups

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Technical Strategy:

- T1 Maintain clear definition of scope and required functionalities to cover supply chain and lifecycle

- Objectives Supported:

- U2 Scope and information content understandable in user terms

- U7 Compatible with other enterprise information standards and application-level standards

- T2 Manage relationships between SC4 projects, work items and areas of scope

- Objectives Supported:

- U2 Scope and information content understandable in user terms

- S6 Efficient development process

- T3 Develop taxonomy of user applications

- Objectives Supported:

- U1 Standard suitable for supporting enterprise processes

- U6 An integrated suite of standards to provide a variety of viewpoints of evolving enterprise data requirements through the lifecycle and the supply chain

- U7 Compatible with other enterprise information standards and application-level standards

- S4 Use of the standards by other standards groups

- T4 Develop modular and extensible information structure

- Objectives Supported:

- U6 An integrated suite of standards to provide a variety of viewpoints of evolving enterprise data requirements through the lifecycle and the supply chain

- I4 Separate data definitions and implementation technology

- S1 Standard language for data definition

- S2 Integrated data schema

- T5 Create unambiguous definitions of data elements

- Objectives Supported:

- I4 Separate data definitions and implementation technology

- S1 Standard language for data definition

- S2 Integrated data schema

- T6 Develop data definition language and modelling methods

- Objectives Supported:

- S1 Standard language for data definition

- S2 Integrated data schema

- T7 Establish conformance testing framework and methods

- Objectives Supported:

- U3 Implementations that conform to the standard, and interoperate

- I5 Conformance testing framework and methods

- T8 Separate data definitions from implementation methods to facilitate exploitation of new technology

- Objectives Supported:

- U4 Independence of data from hardware and software

- U8 Efficient data processing, communication and storage

- U9 Extendable to exploit emerging information technologies

- I4 Separate data definitions and implementation technology

- S1 Standard language for data definition

- T9 Provide mapping between user view and integrated schema

- Objectives Supported:

- U2 Scope and information content understandable in user terms

- S2 Integrated data schema

- S5 Efficient capture of user requirements

- S6 Efficient development process

Tactics to achieve the Strategies

Operational Strategy:

- View as a manufacturing process, and embed effective management and training processes to ensure a consistent and coherent approach to the work

  - Define overall process for SC4

  - Identify problems and barriers in existing processes

  - Develop quality standards development processes and procedures

  - Work programme reporting and monitoring

  - Develop training materials

- Configuration management of information structure and phased publication of standards to ensure consistency of published work

  - Development plan for the integrated resources

  - Publication plan with clear milestones

  - Rework of existing standards

  - Evaluation of impact of change on standardisers, implementors and users

- Automated support tools for documentation, to eliminate transcription errors

  - Documentation assembled from modules - common source database for text/graphics modules accessible to all developers

  - Develop SGML DTDs

  - Investigate hypertext presentation form

  - ISO standard templates

- Involve implementors

  - Implementors forums, with briefings on directions

  - Feedback of implementation issues into development

  - Encourage involvement in planning and development work

  - Build industrial customer demand to implementors

- Involve users from different sectors to ensure that the standards meet industrial needs

  - Publicise existing company participation in STEP in and across sectors

    - Automotive, aerospace, shipbuilding, construction, process industries

  - Publicise success stories - national and international implementation

  - Specific promotional activity at national and international level, with consistent message

  - Improved links to CALS

  - Government lobbying based on strong economic interests

- Define specific liaison arrangements with other organisations to evaluate the impact of their standards, to exploit their results, and to avoid duplication and contradiction

    - Identify prospective liaisons - formal standards bodies and relevant consortia, e.g. OMG

    - Establish contact and determine relevance of work

    - Establish correct level of liaison - monitor/exchange/participate/joint activity, and formalise agreement to avoid ambiguity and misunderstanding of scopes

    - Develop basic MoU for different levels of cooperation - noting ISO charging

- Assist other standards bodies to exploit SC4 standards

    - Identify prospective users

    - Establish contact and determine relevance of work

    - Establish correct level of liaison - monitor/exchange/participate/joint activity

    - Develop basic MoU for different levels of cooperation - noting ISO charging

- Demonstrate potential for improved business operations

    - Success stories

    - Manage expectations of industry to avoid disappointment

    - Promote in business terms

- Evaluate the effectiveness of the strategy

    - Keep under regular review

    - Confidential survey of participants in SC4 work

- Develop a marketing policy for SC4

    - Demonstrate benefits to users

    - Market to the developers

    - Build industry support

    - Open procurement

Technical Strategy:

- Maintain clear definition of scope and required functionalities to cover supply chain and lifecycle

    - Clarify existing scopes

    - Build consensus

- Manage relationships between SC4 projects, work items and areas of scope

    - Single definition of WG scopes

    - Identify dependencies and relationships between projects

    - Ensure work items consistent with scope

    - Enforce cooperation between related projects

- Facilitate use of existing results as easier and cheaper solution

- Improve integration of P-LIB, Parametrics, MANDATE and ISO 15926 into STEP structure

- Develop taxonomy of user applications

    - Increase use of planning projects to identify potential reuse of common information, prior to extensive modelling effort

    - Link to information structure

- Develop modular and extensible information structure

    - Relate reference models, information models and testing requirements into modules

    - Promote use of modules in generating APs

- Create unambiguous definitions of data elements

    - More rigorous external review of definitions - displayed on Web site for comment

    - Consider use of controlled languages

    - Dictionary!

- Develop data definition language and modelling methods

    - EXPRESS and usage rules

    - Modelling rules should take account of implementation issues

    - Extensions should be driven by modelling requirements

    - Harmonisation with existing languages - make requirements known to developers of other languages

    - Consider mapping to other languages

- Establish conformance testing framework and methods

    - Use common approach to JTC1 (ISO 9464) for test results

    - Definition of test cases

    - Define ISO conformance level for certification

    - Mutual recognition of test results

- Separate data definitions from implementation methods to facilitate exploitation of new technology

    - Integrated resources independent from implementation methods

- Provide mapping between user view and integrated schema

    - Standardised language required