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CIM Systems Architecture - Vocabulary

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Vocabulary

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**CIM SYSTEMS ARCHITECTURE  
VOCABULARY****Contents List**

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**Foreword**

European Standardization in the field of AMT is undertaken by CEN TC 310, Advanced Manufacturing Technologies. In turn, its working group CEN/TC 310/WG 1, "Systems Architecture", hereafter referred to as TC 310 WG 1, is concerned with standardization work in the field of CIM Systems Architecture. This work is to be a pre-cursor and a contribution to the development of CEN and ISO standards in this area. In 1990 CEN/CENELEC WG-ARC (the pre-cursor to TC 310 WG1) completed the ENV 40.003, CIM Systems Architecture - Framework for Enterprise Modelling. In 1992 WG-ARC completed an Evaluation of Constructs for Function View as defined in ENV 40.003 - that evaluation has been published by CEN/CENELEC as a Technical Report R-IT-06.

In late 1992, WG-ARC was mandated to review national, European and international initiatives relating to Enterprise Model Execution and Integration Services (EMEIS) required for the execution of manufacturing enterprise models. This work is to be seen as a step toward establishing the requirements for a European standard in this area. The Statement of Requirements by TC 310 WG 1 constitutes the main outcome of that review.

The terms and definitions in this CEN Report are in line with ENV 40.003 and other standards documents from TC 310 WG 1.

This CEN Report is a preliminary step towards the drafting of a European Standard (ENV in the first phase) defining terms and definitions for CIM Systems Architecture.

This CEN Report refers to the work item M.0.3.1.4 in the work program of TC 310.

## 0. Introduction

During the preparation of standards documents further to ENV 40.003, a need has materialised for common and documented understanding of terms and definitions in the field of CIM Systems Architecture.

The selection of terms and the wording of definitions have, as far as possible, followed established usage. When there were contradictions, solutions agreeable to the majority have been sought.

The terms in this vocabulary are arranged in alphabetical order.

## 1. Scope

This CEN Report includes terms and definitions for currently used concepts relating to CIM Systems Architecture, Enterprise Modelling and Enterprise Models Execution and Integrating Services, as required by Advanced Manufacturing Technologies.

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**2 Terms and definitions****01 abstract machine**

The execution model which executes the model components.  
The execution model is underpinning the Model Development Language and is necessary to avoid ambiguity and ensure adequacy of the Model Development Language.

**02 abstraction**

The act or result of removing certain distinctions between things, so that we can see commonalities.

**03 action**

An element within the Generic Action Model which describes basic acts performed on subjects of the model to achieve some task(s).

**04 activity model**

A construct for the description of activities of a system.  
An activity is described by containing actions, unfulfilled functions, controlling orders, executing resources, the change of objects as well as by partial activities. But it is also able to describe the dynamic behaviour of a system, ie at what time are which activities to be executed. Especially which activities may be executed parallel or which are to be executed serial.

**05 actual implementation specification**

The result of the Process of Synthesis.  
The specification relates equipment and interconnection of such equipment as well as the composite of equipments. Some of the equipment may actually be realized through human resources.

**06 advanced manufacturing system - AMS**

A generic CIM type system that includes all aspects of manufacturing, such as business management, marketing, engineering, production.

**07 advanced manufacturing technologies - AMT**

The scope for standardization activities of CEN/TC 310.  
Standards are required in the areas such as Enterprise modelling and system architecture, Communication, Data, Information processing, Control equipment, Human aspects, mechanical aspects and System Operational aspects.

**08 aggregation**

A whole-part relationship in which things representing the components of something are associated with a thing representing the entire assembly.  
Emergence is a relationship between the observer and what he observes.

- 09 **application**  
A data processing solution to specific business needs.  
Computerised representation of the business procedures. A set of software units that together address a particular part of the business area.
- 10 **application (information processing)**  
The use of capabilities (service/facilities) provided by an information system specific to the satisfaction of a set of user requirements. [TSG-1 IAP].  
These capabilities include hardware, software and data.
- 11 **application activity model**  
A model that describes an application in terms of its processes and information flows.
- 12 **application architecture**  
A specification of the applications and their interfaces required to support business needs, including hardware/software components.  
The constituents are applications or groups of applications.
- 13 **application component**  
An Application Program considered in terms of its contribution to the composition of some computer application.
- 14 **application context**  
The intended use of product data within the application.  
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- 15 **application data independence**  
This exists when the application performs the function of operating on the data and does not perform the acquisition, management or return to storage of the data.  
These functions are performed by a data server.
- 16 **application enabler**  
A set of tools provided to simplify and control the process of creating application programs or data sets.  
It includes both the languages used at application development time and the ability to invoke run time facilities.
- 17 **application functions**  
The basic tasks that are to be performed by the application.
- 18 **application integration**  
The situation where separate applications perform separate functions but have communications and data passing between the applications.  
The set of applications allows flexibility in the addition, revision and deletion of various processing functions without causing disruption to the entire system.

- 19 **application interpreted model**  
An information model that uses the integrated resources necessary to satisfy the information requirements and constraints of an application reference model.
- 20 **application model**  
A set consisting of a function model of an application universe and the complementary information model.
- NOTE - Together the two models represent a logically consistent application universe, (as required for performance of professional work). Such a set of models is in parallel to sets consisting of an application activity model. They are complementary application reference models as they are used in STEP Part 1, 15 Sept 1992, for the purpose of application protocols.
- 21 **application object**  
An atomic (indivisible) element of an application reference model that defines a unique application concept and contains attributes specifying the data elements of the object.
- 22 **application package**  
A collection of items required to install a version of an application.
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- 23 **application platform**  
A set of resources on which an application will run.  
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- 24 **application portability**  
The ability to move application software between different machines and operation environments.
- 25 **application profile**  
This is used to refer to the combination of both Application Protocol and Implementation Protocol to form a Functional Standard which is implementable and usable.
- 26 **application program**  
A program capable of taking the highest level of control in a computer system, that is, it need not (but may) have another program call it - this is in contrast to a service, which executes only in response to a client request.
- 27 **application program interface - API**  
The formally defined programming language interface which is between an system control program or a licensed program and the user of the program.
- 28 **application universe**  
Totality of facts, things and functionalities implied in a given application.



- 29 **application universe model**  
A set consisting of a function model of an application universe and the complementary information model together the two models represent a logically consistent application universe, as required for performance of professional work.
- 30 **architecture**  
The description of the organizational structure of a business and/or its (automated) support.
- 31 **argument**  
A fact or circumstance that gives logical support to an assertion, claim, or proposal reflecting a design decision.
- 32 **aspects, describable**  
These are that subset of Perceived Aspects which are relevant in the realm of enterprise modelling, which should be selected, and provided by the framework for Enterprise Modelling in order to ensure consistency of models. Only real world things and their properties which belong to this categories are allowed to appear in the model.
- 33 **aspects, perceived** (standards.iteh.ai)  
These are that view of the world which enables the modeller to attribute meaning to what is observed. It can be linked to a filter in the head of the observer which has been formed and is continually adapted by experience, personality, politics, society, and the situation.
- 34 **aspects/views**  
These are user driven selected subsets from the system parts dimension. They are the filters which are used so that only relevant system parts are visible.
- 35 **attribute**  
A piece of information stating a property of something, taking one of a set of defined values. each value having a defined meaning.
- 36 **behaviour**  
An element is completely defined by its actions, how an element acts and reacts.
- 37 **binding**  
The configuration of components of a distributed application is defined by the bindings between them. Bindings may be static, established prior to run-time, or dynamic bindings, temporary, established at run-time.

38 **building block**

A concept or theory devised to integrate in an orderly way the diverse data on a phenomenon. For the purposes of information modelling, a building block is an information element that models generic elements of the field being modelled.

NOTE -Building blocks concern exclusively those elements that have a sense in the terms of the field they model. In other words, they get their legitimacy from the fact that they have counterparts in the field modelled (homomorphism).

- Requirement building blocks model enterprise elements;
- Design building blocks model elements of the field of the design modeller;
- Implementation building blocks model elements of the field of the implementation modeller.

The elements could be physical or logical, static or dynamic. A building block that has a structure which can be interpreted or instantiated (in case of an object) by a computer system is defined to be a model component. See Construct. Ref. ENV 40.003

39 **build time environment**

This is used when the applicable data and functional modules of applications are defined for any specific user, for their use in the run time environment.

It is an aid to both developers and users by organizing the definition of information, applications, and the control flow needed to perform the applications. It also provides the tools necessary to construct, modify and manage the run time environment.

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40 **business**

A series of structured activities or processes, each having a clearly understood purpose, involving more than one party, and directed towards some collectively defines goal, extending over a period of time.

41 **business data**

The set of enterprise-relevant data which is a common resource for business functions.

42 **business function**

A discrete group of related activities that supports one aspect of the mission of the enterprise.

NOTE - In total, the business functions provide complete support to the mission. Each business function therefore describes a convenient grouping of functionality that is seen as necessary because of the essential nature of the business, for example sales/marketing, product development or information management.

43 **business integration**

This deals with the integration of the different business functions such as design, production, marketing, finance etc. within the enterprise.

It also deals with the ability to accommodate, in a dynamic and flexible way, all changes occurring in those business functions.

**44 business modelling**

The problem solving and structuring proces, by which a business model is obtained.

**45 business process**

Defines the sequence of tasks which represent the business procedures that must be followed to achieve the desired business objectives.

Business Process Instances group lower level Business Processes and/or Enterprise Activity Instances by clustering them according to a specified flow of control.

**46 business system**

A system which performs one or more of the tasks of one or more business functions by transforming a set of inputs, using a set of rules and procedures, to produce a set of outputs.

**47 CIM**

Computer Integrated Manufacturing - CIM - is the joint application of Information technology and Manufacturing Technology to increase the productivity and responsiveness of manufacturing enterprises.

Whereby all functional, informational and organisational aspects of an enterprise are parts as an integrating whole.

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**48 CIM architecture**

Computer Integrated Mmanufacturing Architecture could be interpreted as style of construction or designing the information processing within the manufacturing enterprise.

**49 CIM framework**

Computer Integrated Manufacturing Framework.

A classification of relevant, interrelated models having to do with modelling CIM in industrial enterprises. These models are identified by considering relevant properties (dimensions) of the models represented by axes in a multi-dimensional modelling space. Each point in this modelling space represents a relevant model type or model class.

**50 CIM specific requirements for the EMEIS**

Computer Integrated Manufacturing Specific Requirements for the EMEIS are particular requirements above and beyond regular IT requirements are currently foreseen as the ability to support:

- On-going changes in the modus operandi of the enterprise.
- Life-cycle concerns for models and model components.
- Structures and objects composed of data of different kinds and from different sources.
- Co-ordination of the structures and objects.