National Standards Authority of Ireland

IRISH STANDARD

ENV 13550:1999

ICS 25.040.40
35.240.70

ADVANCED MANUFACTURING TECHNOLOGY - SYSTEMS ARCHITECTURE - ENTERPRISE MODEL EXECUTION AND INTEGRATION SERVICES

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This Irish Standard was published under the authority of the National Standards Authority of Ireland and comes into effect on:

April 14, 2000

Price Code J

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN PRESTANDARD
PRÉNORME EUROPÉENNE
EUROPÄISCHE VORNORM

ENV 13550

October 1999

ICS 25.040.40; 35.240.70

English version

Advanced Manufacturing Technology - Systems Architecture - Enterprise Model Execution and Integration Services

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EUROPAISCHES KOMITEE FÜR NORMUNG

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Ref. No. ENV 13550:1999 E

CONTENT

Foreword

This European Prestandard has been prepared by Technical Committee CEN/TC 310 "Advanced Manufacturing Technologies", the secretariat of which is held by BSI.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard has been prepared under mandate BC-IT-225B given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

Introduction

Clause 1 sets out the formal statement of scope for the Enterprise Model Execution and Integration Services (EMEIS) which are needed to provide the functionalities needed in enterprise engineering for creating and using enterprise models. They are organised into:

- Model Development Services (MDS) to support the co-operative development, analysis, management and release of model components, partial models and executable particular models of business entities of some enterprise (Clause 4),
- Model Execution Services (MXS) to provide for the operational use of models (Clause 5), and
- Shared Services applicable to both the development and the operational environments (Clause 6).

Annex A describes the previous work on which this ENV depends, how the formal statement of scope has been interpreted, and the staged model development process which the services have been defined to support.

Annex B lists other standards identified as relevant to this ENV and Annex C contains a supporting bibliography.

Figure 1 shows the spectrum of model components and models in different phases of model development and execution. It also shows the dependencies of model engineering and operations on EMEIS (Model Development Services, Model Execution Services, Shared Services) and in turn the services on which EMEIS depends for properties such as system distribution and system-wide information access (Base IT Services). The remainder of this standard is organised to correspond to these four classes of service.

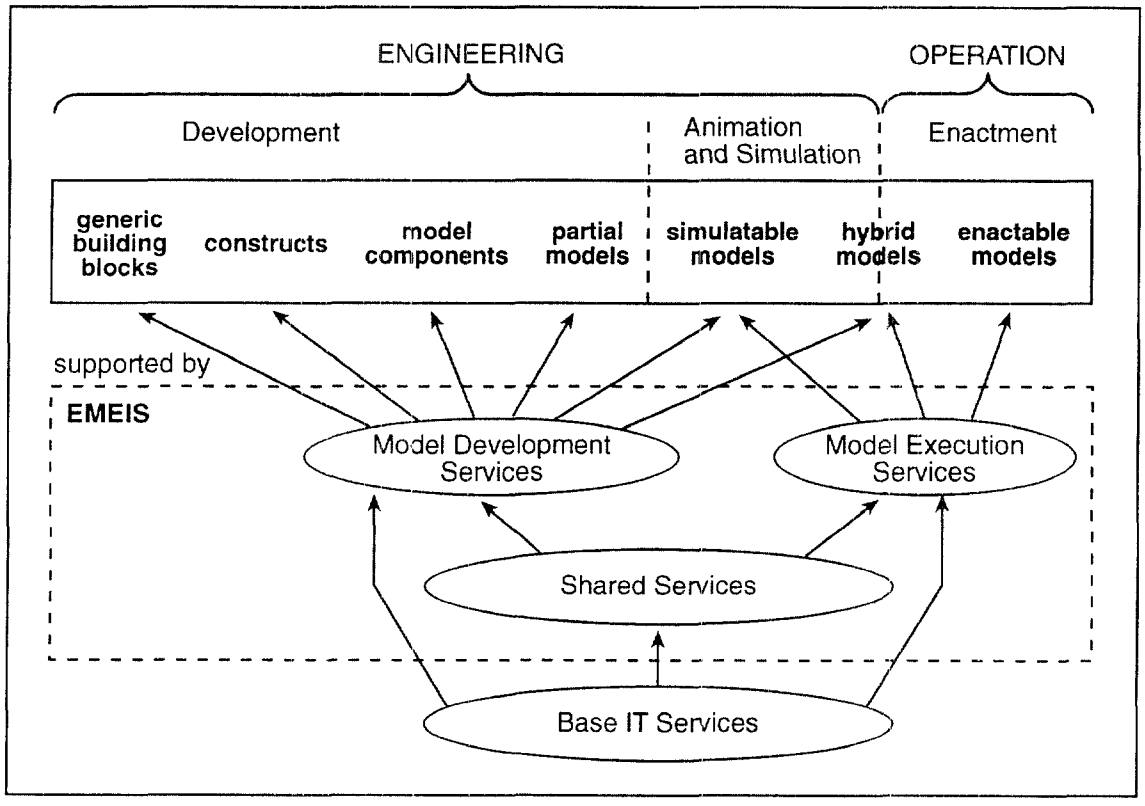

Figure 1: EMEIS in support of phases of model usage

As described in Clauses 4.1 and 4.2, models are developed for execution by a process of specialising partial models which are themselves composed of building blocks (model components). They are then released for execution (simulation or enactment) in which events trigger the scheduling of activities, the acquisition of the necessary information and resources and finally the controlled simulation or enactment of those activities.

This execution scenario is generally applicable to both model simulation and model enactment. However model enactment in support of enterprise operations (model-based control) generates additional requirements, e.g. for real-time monitoring, security, information access privileges and availability of and communication with enterprise resources. In contrast, simulation operates on simulated resources and does not generate output signals to affect manufacturing operations.

During model development and when models are used to visualise and evaluate alternative courses of action (animation), it is possible for models to be executed in hybrid fashion, with parts of the model being used to drive the manufacturing process directly, while other parts are used in simulation mode and possibly driven by manual intervention rather than enterprise events. For this reason an instance of a part of the model will be qualified by its execution status (animation, simulation or enactment) and its relationships to other models.