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Interim Australian Standard™

Transport information and control systems—Reference model architecture(s) for the TICS sector

Part 4: Reference model tutorial

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PREFACE

This Australian Interim Standard was prepared by Joint Standards Australia/Standards New Zealand Committee IT-023, Transport Information and Control Systems.

There was a consensus among the representatives on the Joint Committee to produce it as an Australian Standard. This Interim Standard is identical with and has been reproduced from ISO/TR 14813-4:2000, *Transport information and control systems—Reference model architecture(s) for the TICS sector*, Part 4: *Reference model tutorial*.

The objective of this Interim Standard is to give designers of transport information and control systems a tutorial, using unified modelling language, drawing on examples from the transport information and control systems domain.

This Interim Standard is Part 4 of AS 14813, *Transport information and control systems—Reference model architecture(s) for the TICS sector*, which will be published as Interim Standards as follows:

Part 1: TICS fundamental services
Part 2: Core TICS reference architecture
Part 3: Example elaboration
Part 4: Reference model tutorial (this Standard)
Part 5: Requirements for architecture description in TICS Standards
Part 6: Data presentation in ASN.1

Standards Australia invites comment on this Interim Standard from persons and organizations concerned with the subject. The date for expiry of comment is 3 May 2003 at which time (or earlier) this Interim Standard will be confirmed, withdrawn or revised in the light of comments received.

During the life of this document the Committee will monitor all comment as it is received.

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(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

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AUSTRALIAN STANDARD

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1 Scope

The architecture of an information and control system merges hardware and software considerations into a coordinated and integrated system view. The system architecture is a high level abstraction, or model, of the system. A system architecture should embrace both today's applications and the applications that are expected in the future. Architecture begins with the definition of the conceptual services (e.g. Part 1 - TICS fundamental services). There are several identifiable stages of system architecture development.

- Reference architecture
- Logical architecture
- Physical architecture

The reference architecture is generic and non-prescriptive and captures the concepts of the system. A logical architecture elaborates the functions that will provide the conceptual behaviour, and in so doing it provides some detail about the modularity. A physical architecture is reached when the actual distribution of the system modules is defined, thus leading to important implications for communications.

This technical report develops a TICS Reference Architecture. The objective in defining a TICS Reference Architecture is to provide a concise reference point which is both educational and a framework for the standards process. The Reference Architecture will be used by the Working Groups to develop their own logical and physical architectures in a cohesive manner.

This Part introduces the model that is applied in developing the Reference Architecture in Parts 2 and 3. A tutorial on the application of the model is provided using examples from the TICS sector.

2 Modelling an architecture

In order to document an architecture, graphical and textual components of a model are required. A unified process and the Unified Modelling Language (UML)[1] developed by Ivar Jacobson, Grady Booch and James Rumbaugh addresses this requirement for the software industry. The result is a component-based process that is use-case driven, architecture-centric, iterative, and incremental.

In Part 2 and 3 of this technical report the abstraction that is the TICS Reference Architecture is described in four views of the Unified Modelling Language:

1. Use Case diagram
2. Class diagram
3. Package diagram
4. Sequence (Interaction) diagram

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