Framework Programmable Platform for the Advanced Software Development Workstation


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TECHNICAL REPORT
Framework Programmable Platform
for the Advanced Software
Development Workstation

Demonstration Framework
Document Volume II:
Framework Process Description
RICIS Preface

This research was conducted under auspices of the Research Institute for Computing and Information Systems by Dr. Richard J. Mayer, Thomas M. Blinn, Dr. Paula S. deWitte, John W. Crump and Keith A. Ackley of Knowledge Based Systems, Inc. Dr. Charles McKay served as RICIS research coordinator.

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Framework Programmable Platform for the Advanced Software Development Workstation (FPP/ASDW)


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Introduction to Volume II

In this second volume of the Demonstration Framework Document, the graphical representation of the demonstration framework is given. This second document was created to facilitate the reading and comprehension of the demonstration framework. It is designed to be viewed in parallel with Section 4.2 of the first volume to help give a picture of the relationships between the UOBs of the model. The model is quite large and the design team felt that this form of presentation would make it easier for the reader to get a feel for the processes described in this document. The following pages contain the IDEF3 diagrams of the processes of an Information System Development. Volume I describes the processes and the agents involved with each process, while this volume graphically shows the precedence relationships among the processes. Figure 1 illustrates the parts of an IDEF3 Description.

![Figure 1 Reading an IDEF3 Diagram]

One of the primary mechanisms used for communicating information about a situation is to describe an ordered sequence of events or activities. The IDEF3 Process Flow Description Capture Method was developed to provide a mechanism for collecting and documenting processes. IDEF3 captures precedence and causality relations between situations and events in a form that is natural to domain experts.

The basic syntactic unit of IDEF3 is the unit of behavior (UOB). A UOB can be a function, activity, action, act, process, operation, event, scenario, decision, or procedure. UOBs can have decompositions and elaborations. Decompositions are associated descriptions in terms of other UOBs. As shown in Figure 1, a UOB which has a decomposition is drawn with a shadow box. Those UOBs that are drawn without a shadow have no decomposition.

UOBs are connected through the use of junctions and links. Junctions provide semantic mechanisms for representing the convergence and
divergence of process flows within a network of UOBs. The types of
junctions are 'and', 'or', and 'exclusive or', after the logical operators.
Junctions can be synchronous or asynchronous, which is delineated by the
number of vertical bars. Synchronous junctions have two vertical bars,
whereas, asynchronous junctions have one. Fan in and fan out junctions
are indicated by the location of the dot.

UOBs are numbered according to their position, reading from left to right,
top to bottom. As one goes down into decompositions, the parent's numbers
are retained and the children's numbers are appended separated by a
period. Thus, the numbering process is recursive.

This document is arranged with the diagrams ordered depth first. That is,
the top level diagram is followed by the first UOBs decomposition. This then
is followed by it's first UOBs decomposition, and so on until no more
decompositions. As with the numbering scheme, the arrangement of the
UOBs in a single decomposition is done left to right, top to bottom. After
exploring the diagrams in the following pages, the pattern should be
recognized easily.
Perform IS Concept & Initiation

Develop Info. Sys. Requirements

Design IS

Coordinate IS Implementation

Integrate & Test IS Components
DeComposition of Develop Management Strategy & Constraints
Decomposition of Define New Procedures & Standards
Decomposition of Perform Requirements Analysis

- Analyze Requirements (24.6)
- Synthesize Requirements (24.7)
- Evaluate External Interface (24.4)
- Define External Interface (24.5)
Review Requirements of Product Specification

Evaluate Requirements Review & Status Reports

Document Results
Decomposition of Conduct Engineering Design
De decomposition of Integrate & Test IS Components
Decomposition of Conduct Integration Tests & Reviews

- Conduct Verification of Product vs Design Spec
  - 5.4.1
- Prepare for Validation
  - 5.4.2
- Document V&V Activities
  - 5.4.3
Decomposition of Manage Deliver IS Phase

- Collect Metric Information 6.11
- Document Metric Information 6.12
- Evaluate Metric Information 6.13
- Re-evaluate Risk Areas 6.14
- Document Changes to Plans 6.15
Decomposition of Maintain IS

1. Collect Metric Information
2. Document Metric Information
3. Evaluate Discrepancy Reports
4. Evaluate Change Proposals
5. Document Discrepancy Reports
Decomposition of Maintain IS