Framework Programmable Platform for the Advanced Software Development Workstation


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TECHNICAL REPORT
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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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Demonstration Framework Document
Volume II: Framework Process Description

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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.

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

SMAP Information System Life Cycle Process
Decide Whether to Proceed

2.5
Decomposition of Establish Risk & Management Control Mechanisms
Define Specific Increments
2.3.6.1

Prioritize Approach
2.3.6.2

Document Incremental Processes
2.3.6.3

Decomposition of Define Incremental Development Processes
Review Requirements of Product Specification

Evaluate Requirements Review & Status Reports

Document Results

2.5.1

2.5.2

2.5.3
Initiate Selection Process

Initiate Evaluation Process

Initiate Identification Process

Decomposition of Conduction Procurement & Selection Process

T0°
Define System Architecture

Allocate Requirements To Subsystems

Conduct V&V Activities

Define Interface

Decomposition of Conduct Engineering Design
Complete Design Review

Evaluate Status Report 3.4.2

Evaluate Reviews 3.4.3

Decomposition of Decide Whether To Proceed

Conduct Reviews 3.4.1
Conduct Risk & Management Control Activities

Manage Coordination Phase

Prepare for Integration Test Activities

Review Design of Subsystems and Components

Initiate Subsystem Lifecycle

Decomposition of Coordinate IS Implementation
Decomposition of Manage Coordination Phase
Review Designs for Subsystems & Components

Review Requirements for Subsystems & Components

Review Interface Specifications

Document Review Findings

Decomposition of Coordinate Interaction & Implementation of Components
Conduct Verification Of Product vs Design Specs

Prepare for Validation

Document V&V Activities

5.4.1

5.4.2

5.4.3
Evaluate Reviews
5.5.1

Evaluate Status Reports
5.5.2

Perform Test Readiness Review
5.5.3

Decomposition of Decide Whether To Proceed
Conduct Testing of System

Analyze Acceptance Test Results

Conduct Acceptance Review

Document Acceptance Review

Perform V&V Activities

Decomposition of Conduct Formal Testing
Decomposition of Conduct Configuration Audits