

*Polytechnic  
University*

**Computer and Information  
Sciences**

---

**Software Engineering Standards**

**CS 4523 - Software Design Description**

**Version 1.0**

Document Number: SDD-001

Team Number  
Team Members (Name and email)

---

## REVIEW AND APPROVALS

Printed Name and Title	Function (Author, Reviewer, Approval)	Date	Signature
Professor Strauss	Author	Fall 2006	

---

**REVISION LEVEL**

<b>Date</b>	<b>Revision Number</b>	<b>Purpose</b>
Fall 2006	Version 1.0	Initial Release

---

## Table Of Contents

<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1 PURPOSE .....	1
1.2 SCOPE .....	1
1.3 IDENTIFICATION .....	1
1.4 DOCUMENT SUMMARY .....	1
1.5 SYSTEM OVERVIEW .....	1
1.6 DOCUMENT OVERVIEW .....	2
<b>2. REFERENCE DOCUMENTS.....</b>	<b>2</b>
<b>3. SYSTEM WIDE DESIGN DECISIONS .....</b>	<b>2</b>
3.1 SOFTWARE COMPONENT ARCHITECTURAL DESIGN .....	2
3.2 SOFTWARE ARCHITECTURE GENERAL DESCRIPTION .....	2
3.3 SOFTWARE ITEM COMPONENTS .....	3
3.4 COMPONENT INTERFACE IDENTIFICATION .....	3
3.5 SOFTWARE COMPONENT CONCEPT OF EXECUTION .....	3
<b>4. SOFTWARE ITEM DETAILED DESIGN.....</b>	<b>3</b>
4.1 STRUCTURE .....	3
4.1.1 <i>Software Unit Detailed Design</i> .....	3
4.2 STATIC RELATIONSHIP OF SOFTWARE UNIT .....	3
4.2.1 <i>Run-time Object Instances</i> .....	3
4.3 BEHAVIOR .....	3
4.3.1 <i>Interaction Diagrams</i> .....	3
4.3.2 <i>Collaboration Diagrams</i> .....	4
4.3.3 <i>Activity Diagrams</i> .....	4
4.4 CONCEPT OF EXECUTION .....	4
4.5 INTERFACE DESIGN .....	4
4.5.1 <i>Interface Identification and Diagrams</i> .....	4
4.5.2 <i>Unique identifier of Interface</i> .....	4
<b>5. IMPLEMENTATION ARCHITECTURE (NOT REQUIRED).....</b>	<b>4</b>
5.1 ALL ACTIVE AND PASSIVE CLASSES ASSIGNED TO COMPONENTS .....	4
5.2 DIAGRAMS OF PHYSICAL PACKAGING OF LOGICAL COMPONENTS.....	4
<b>6. DEPLOYMENT ARCHITECTURE .....</b>	<b>4</b>
6.1 PHYSICAL DEPLOYMENT ARCHITECTURE DIAGRAM.....	4
<b>7. DICTIONARIES .....</b>	<b>5</b>
<b>8. SOFTWARE ITEM COMPUTER RESOURCE UTILIZATION .....</b>	<b>5</b>
<b>9. REQUIREMENTS TRACEABILITY.....</b>	<b>5</b>
9.1 SOFTWARE COMPONENT-LEVEL REQUIREMENTS TRACEABILITY .....	5
<b>10. SYSTEM DESIGN TESTING .....</b>	<b>5</b>

---

<b>11.</b>	<b>RATIONALE</b> .....	<b>5</b>
<b>12.</b>	<b>NOTES</b> .....	<b>5</b>
<b>13.</b>	<b>APPENDICES</b> .....	<b>5</b>
13.1	DICTIONARIES .....	5
13.2	UML DIAGRAMS, IF NOT INCLUDED IN THE BODY OF THE DOCUMENT .....	6
13.3	SCHEDULE TRACKING .....	7
13.4	DEFECT TRACKING .....	8

## 1. INTRODUCTION

---

### 1.1 Purpose

The purpose of this document is to define the contents of the

The document is used to communicate overall quantitative and qualitative system characteristics to operations management, technical support, training, and operators.

### 1.2 Scope

This document may describe software-only products, hardware, or a combination of each. However, hardware only products are not described in this standard. This standard is applicable to all forms of software products media, including application, infrastructure, embedded systems, and operational scripts. It is formally delivered as part of the software product release package.

### 1.3 Identification

This paragraph contains the system name, subsystem (if applicable), and release number to which this operations document pertains. It also identifies any related operations document that should be available to the reader.

### 1.4 Document Summary

This subsection summarizes the purpose and motivations for this operations document, as well as the intended audience for the document. The purpose in most cases will be to:

### 1.5 System Overview

---

## 1.6 Document Overview

Format and content

Title Page (formatted the same as standard cover)

Review/Approval Signatures

Table of Revisions (revision number, date, purpose)

Approval page (if required)

Preface (information the reader should be familiar with)

Table of Contents

List of Figures

Life cycle and Methodology, tools, and techniques used for descriptions and/or documentation (for example Object Oriented: UML – Use cases, Class and Object diagrams, Interaction diagrams, Key Event diagrams, Sequence Diagrams, Dictionaries, etc.)

## 2. REFERENCE DOCUMENTS

---

Full standard bibliographic reference format and must include proposal and SPMP

## 3. SYSTEM WIDE DESIGN DECISIONS

---

### 3.1 Software Component Architectural Design

### 3.2 Software Architecture General Description

---

### **3.3 Software Item Components**

### **3.4 Component Interface Identification**

### **3.5 Software Component Concept of Execution**

---

## **4. SOFTWARE ITEM DETAILED DESIGN**

This section is also referred to as the Process Architecture

### **4.1 Structure**

#### ***4.1.1 Software Unit Detailed Design***

Class or Module Diagrams

### **4.2 Static Relationship of Software Unit**

#### ***4.2.1 Run-time Object Instances***

Shows the relationship between object instantiations – for example threads, queuing mechanisms

### **4.3 Behavior**

#### ***4.3.1 Interaction Diagrams***

---

### ***4.3.2 Collaboration Diagrams***

### ***4.3.3 Activity Diagrams***

## **4.4 Concept of Execution**

## **4.5 Interface Design**

### ***4.5.1 Interface Identification and Diagrams***

### ***4.5.2 Unique identifier of Interface***

## **5. IMPLEMENTATION ARCHITECTURE (NOT REQUIRED)**

---

### **5.1 All Active and Passive Classes Assigned to Components**

Includes all files (.CPP, Header, DLL, EXE, etc.) and middleware

### **5.2 Diagrams of Physical Packaging of Logical Components**

## **6. DEPLOYMENT ARCHITECTURE**

---

### **6.1 Physical Deployment Architecture Diagram**

---

## **7. DICTIONARIES**

---

## **8. SOFTWARE ITEM COMPUTER RESOURCE UTILIZATION**

---

## **9. REQUIREMENTS TRACEABILITY**

---

### **9.1 Software Component-Level Requirements Traceability**

## **10. SYSTEM DESIGN TESTING**

---

## **11. RATIONALE**

---

## **12. NOTES**

---

## **13. APPENDICES**

---

### **13.1 Dictionaries**

---

## 13.2 UML diagrams, if not included in the body of the document

Identified in body of document

### 13.3 Schedule Tracking

Time (hours)

Artifact or Deliverable	Who (individual and team)	Estimated	Actual	Difference
SPMP	Individual members			
	Team summary			

Artifact or Deliverable	Who (individual and team)	Estimated	Actual	Difference
RAS	Individual members			
	Team summary			

Artifact or Deliverable	Who (individual and team)	Estimated	Actual	Difference
SDD	Individual members			
	Team summary			

#### Cumulative

Who (individual and Team)	Estimated	Actual	Difference
Each Individual			
Team summary			

## 13.4 Defect Tracking

Counts

Artifact or Deliverable	Who (individual and team)	Estimated	Actual	Difference
SPMP	Individual members			
	Team summary			

Artifact or Deliverable	Who (individual and team)	Estimated	Actual	Difference
RAS	Individual members			
	Team summary			

Artifact or Deliverable	Who (individual and team)	Estimated	Actual	Difference
SDD	Individual members			
	Team summary			

### Cumulative

Who (individual and team)	Estimated	Actual	Difference
Individual members			
Team summary			

- Gantt or Microsoft Project Schedule