

CONTENTS

<u>Section</u>	<u>Page</u>
1 INTRODUCTION.....	1-1
1.1 SCOPE.....	1-1
1.2 PURPOSE.....	1-1
1.3 APPLICABILITY.....	1-1
1.4 RATIONALE.....	1-2
1.5 MANDATORY SECURITY SECTION.....	1-3
1.6 DOCUMENT STRUCTURE.....	1-4
1.7 REFERENCES.....	1-4
2 OVERVIEW.....	2-1
2.1 GENERAL.....	2-1
2.2 VIEWPOINTS AND VIEWPOINT SPECIFICATIONS.....	2-1
2.3 OVERVIEW OF VIEWPOINTS.....	2-2
2.4 ENTERPRISE VIEWPOINT.....	2-3
2.5 FUNCTIONAL VIEWPOINT.....	2-5
2.6 CONNECTIVITY VIEWPOINT.....	2-6
2.7 COMMUNICATIONS VIEWPOINT.....	2-8
2.8 INFORMATION VIEWPOINT.....	2-11
2.9 CORRESPONDENCES BETWEEN VIEWPOINTS.....	2-12
3 BASIC CONCEPTS.....	3-1
3.1 GENERAL.....	3-1
3.2 DEFINITIONS.....	3-1
3.3 GRAPHICAL REPRESENTATIONS.....	3-6
3.4 CHARACTERISTICS OF OBJECTS.....	3-6
4 ENTERPRISE VIEWPOINT.....	4-1
4.1 OVERVIEW.....	4-1
4.2 CONCEPTS.....	4-1
4.3 ENTERPRISE OBJECTS.....	4-2
4.4 CHARACTERISTICS OF ENTERPRISE OBJECTS.....	4-3
4.5 EXAMPLES OF SPACE DATA SYSTEMS DESCRIBED WITH ENTERPRISE VIEWPOINT.....	4-5
4.6 SECURITY ISSUES IN THE ENTERPRISE VIEWPOINT.....	4-7

CONTENTS (continued)

<u>Section</u>	<u>Page</u>
5 FUNCTIONAL VIEWPOINT	5-1
5.1 OVERVIEW	5-1
5.2 CONCEPTS	5-1
5.3 FUNCTIONAL OBJECTS	5-2
5.4 CHARACTERISTICS OF FUNCTIONAL OBJECTS.....	5-4
5.5 EXAMPLE OF A SPACE DATA SYSTEM DESCRIBED FROM THE FUNCTIONAL VIEWPOINT	5-6
5.6 EXAMPLE OF SPACE DATA SYSTEM WITH INFORMATION MANAGEMENT INFRASTRUCTURE	5-7
5.7 SECURITY ISSUES IN THE FUNCTIONAL VIEWPOINT	5-8
6 CONNECTIVITY VIEWPOINT	6-1
6.1 OVERVIEW	6-1
6.2 CONCEPTS	6-1
6.3 CHARACTERISTICS OF CONNECTIVITY OBJECTS	6-2
6.4 NODES	6-6
6.5 LINKS.....	6-7
6.6 EXAMPLES OF SPACE DATA SYSTEMS DESCRIBED WITH CONNECTIVITY VIEWS	6-8
6.7 SECURITY ISSUES IN THE CONNECTIVITY VIEWPOINT.....	6-13
7 COMMUNICATIONS VIEWPOINT	7-1
7.1 OVERVIEW	7-1
7.2 CONCEPTS	7-1
7.3 CHARACTERISTICS OF COMMUNICATIONS OBJECTS	7-2
7.4 PROTOCOL ENTITIES.....	7-5
7.5 EXAMPLES OF SPACE DATA SYSTEMS DESCRIBED WITH COMMUNICATIONS VIEWPOINT	7-6
7.6 PROTOCOL REPRESENTATIONS IN THE COMMUNICATIONS VIEWPOINT	7-7
7.7 SECURITY ISSUES IN THE COMMUNICATIONS VIEWPOINT	7-8
8 INFORMATION VIEWPOINT	8-1
8.1 OVERVIEW	8-1
8.2 CONCEPTS	8-1
8.3 CHARACTERISTICS OF INFORMATION OBJECTS	8-2

CONTENTS (continued)

<u>Section</u>	<u>Page</u>
8.4 INFORMATION OBJECT VIEWS	8-4
8.5 EXAMPLE OF SPACE DATA SYSTEM FUNCTIONS WITH INFORMATION VIEWPOINT	8-5
9 DERIVING OTHER VIEWS FROM THE BASIC VIEWPOINTS	9-1
9.1 GENERAL.....	9-1
9.2 CROSS SUPPORT SERVICE VIEWS.....	9-1
9.3 LAYERED VIEW EXAMPLE.....	9-3
9.4 EXAMPLE MAPPING FUNCTIONAL TO CONNECTIVITY VIEW.....	9-5
ANNEX A NOTES ON USE OF RASDS	A-1
ANNEX B FORMAL METHODS AND TOOLS.....	B-1
ANNEX C RASDS AND DODAF COMPARISON.....	C-1
ANNEX D GLOSSARY AND ACRONYMS	D-1

Figure

2-1 Simple Example of Enterprise View	2-5
2-2 Simple Example of a Functional View	2-6
2-3 Simple Connectivity View Example.....	2-7
2-4 Example Connectivity View Showing Implemented Functions.....	2-8
2-5 Simple Example of Communications View.....	2-10
2-6 Communications View with Protocol Entities and Engineering Objects.....	2-11
2-7 Example of Information View Showing Basic Object Model.....	2-12
2-8 RASDS Top Level Object Relationships	2-13
3-1 Icons Used in This Document.....	3-6
3-2 Representation of Objects.....	3-7
4-1 Attributes of Enterprise Objects	4-4
4-2 Example of an Enterprise View (Mission A)	4-6
4-3 Example of Multi-Agency Enterprise View (Mission Q).....	4-7
5-1 Functional Object Interfaces.....	5-4
5-2 Example of Functional View (Functional Objects and Interactions)	5-6
5-3 Example of Information Flows between Objects	5-7
5-4 Representative Functional Objects and Information Management Infrastructure Elements.....	5-8
6-1 Attributes of Nodes.....	6-2
6-2 Example of Connectivity View (Nodes for Mission A)	6-8
6-3 Example of Connectivity View (Nodes for Mission Q)	6-9
6-4 Example of Connectivity View (Node Decomposition).....	6-10

CONTENTS (continued)

<u>Figure</u>	<u>Page</u>
6-5 Example of Connectivity View with Allocated Engineering Objects	6-11
6-6(a) Functional View of Image Compression	6-12
6-6(b) Connectivity View of Software Compression Approach.....	6-12
6-6(c) Connectivity View of Hardware-Only Compression Approach.....	6-12
7-1 Attributes of Protocol Entities	7-2
7-2 Example of Communications View Showing Protocol Stack and Nodes	7-6
7-3 PDU Example, Space Packet Protocol	7-7
7-4 Example State Machine Diagram—SLE RCF.....	7-8
8-1 Attributes of Information Objects.....	8-2
8-2 Information Object Representations	8-4
8-3 Example of Functional View with Representation of Information Objects	8-6
9-1(a) Enterprise View of a Cross Support Service	9-1
9-1(b) Connectivity View of a Cross Support Service	9-2
9-1(c) Communications View of a Cross Support Service.....	9-3
9-2 Simple Example of Layered View.....	9-4
9-3 Example of Functional View of Framing and Coding.....	9-5
9-4 Example of Trade Study Mapping Functional to Connectivity View	9-6
B-1 SysML Diagram Types (SysML Partners)	B-3
C-1 DoDAF Elements and Relationships (Partial).....	C-6
C-2 DoDAF and RASDS	C-8

Table

4-1 Example Enterprise Objects	4-3
5-1 Example Functional Objects.....	5-3
5-2 Typical Infrastructure Objects	5-4
6-1 Typical Nodes	6-6
6-2 Typical Links	6-8
7-1 Typical Protocol Entities	7-5
C-1 DoDAF Views and Products and RASDS Viewpoints	C-3