

TABLE OF CONTENTS

CHAPTER 1	INTRODUCTION	1
	Scope	1
	Audiences for the Ada 95 Adoption Handbook	1
	Audience Prerequisites	2
	Goals of This Handbook.....	2
	Objectives	3
	Reading This Handbook	3
	Related Documents	3
CHAPTER 2	WHY ADOPT ADA 95?	5
	Summary of Adoption Issues	5
	What Is Ada 95?	6
	Ada 95 Builds Incrementally on Ada 83	6
	Why Was Ada 95 Developed?	6
	Why Use Ada 95 Over Ada 83?	7
	Features and Benefits of Ada 95	7
	Increased Functionality	7
	Faster Development of Systems	9
	Why Use Ada 95 Rather Than Language X?	9
	Ada 95 Provides New and Unique Features	9
	Moving from Procedural Languages: FORTRAN, C, COBOL, JOVIAL, CMS-2, etc.	11
	Choosing among Object-Oriented Languages: Ada 95, C++, Smalltalk, etc.	11
	Using with 4GLs: dBASE, Focus, etc.	12
	Trial Ada 95 Technology Available	12
	Stability of the Ada 95 Definition	12
	DOD's Policy on Ada 95	13
	Early Results of Using Ada 95.....	14
	Support for Migration Systems and Multi-Language Development	14
	Conclusion	16
CHAPTER 3	ADA 95 ADOPTION: PROSPECTS, ISSUES, AND ACTIONS	17
	Project Planning Impacts of the Transition to Ada 95	19

Assessment	19
Issue: How Does One Determine the Cost and Schedule Impact of Ada 95 Versus Using Ada 83?	19
Issue: How Does One Determine the Cost and Schedule Impact of Ada 95 Versus Using Another Language?	20
Issue: What Will Be the Impact of Ada 95 on Overall Project Quality?	20
Building upon Early Experience with Ada 95	21
Issue: What Were the Experiences of the Early Users of Ada 95 Compilers?	21
Issue: Who Has Already Begun Using Ada 95?	21
Issue: Where Are the Experiences of the Early Adopters Recorded?	22
Tools and Environment	22
Ada 95 Compiler Maturity	23
Issue: What Is the Status of Ada 95 Compilers? What Is Their Projected Schedule of Availability?	23
Issue: How Mature Are the Compilers for Ada 95?	24
Issue: How Does One Judge the Stability and Maturity of Ada Compilers?	24
Ada 95 Compiler Validation	25
Issue: What Is the Policy on Ada 95 Compiler Validation? ...	25
Issue: Under What Circumstances Can Subsets and Extensions of Ada 95 Exist?	25
Other Ada 95 Tools	26
Issue: What Is the Status of Other Ada 95 Support Tools? What Is Their Projected Schedule of Availability?	26
Issue: How Can the Cost of Tools for Ada 95 Adoption Be Justified and Financed by a Project?	26
Upward Compatibility	27
Assessment	28
Issue: How Upwardly Compatible Is Ada 95?	28
Mitigation	29
Issue: What Should Be Done to Assess the Upward Compatibility of Existing Ada 83 Software?	29
Issue: How Do I Preserve My Investment in Software Written in Ada 83?	30
Issue: How Do I Maximize My Existing Investment in Ada 83 Tools?	30
Issue: How Do I Preserve My Investment in Legacy Software That <i>Was Not</i> Written in Ada 83?	31
Technology Transfer	32
Assessment and Mitigation	32
Issue: What Is the Impact Ada 95 Education and Training on the Project?	32
Issue: What Is the Availability of Ada 95 Training? What Options are Available to Acquire an Ada 95-Trained Workforce?	33
Issue: What Is the Cost of Ada 95 Training? How Does It	

Compare to the Cost of Training People in Ada 83 or in Other Languages?	34
Software Development Methodologies	35
Ada 95 and Software Development Methods	35
Issue: What Issues Are Introduced by Using Various Software Development Methods with Ada 95?	35
Issue: What Should Be Done When Simultaneously Changing Both Language and Development Method on a New Project?	36
Tool Support for Methods	37
Issue: How Do CASE Tools Support Ada 95?	37
COTS, Legacy Software, and Multi-Language Software Development	37
COTS Bindings	38
Issue: What Bindings Are Available for Ada 95 Development?	38
Multi-Language Software Development	40
Issue: How Easy Is It to Interface Ada 95 with Other Languages?	40
Issue: How Easy Is It to Interface Other Languages with Ada 95?	40
Issue: How Can Ada 95 Be Used in an “Open Systems” Development Effort?	40
The Adoption Process and Personnel	41
Transitioning from Ada 83 to Ada 95	42
Issue: What Are the Necessary Steps to Assess the Impact of the New Technology?	42
Issue: What Are the Necessary Steps to Minimize the Possibility of Adopting Ada 95 Technology and Tools Before Their Readiness?	43
Issue: What Steps Are Necessary to Avoid Adopting the Technology (and Tools) Too Late to Enjoy a Competitive Advantage?	44
Issue: What Can Be Done to Avoid Unanticipated Social Issues Arising from the Transition?	45
Transitioning from Another Language to Ada 95	45
Issue: How Best Can the Issues of Paradigm and Mindset Shifts from One Language (Culture) to Another Be Managed?	45
Issue: How Best Can the Issues of Secondary Technology Be Managed?	46
Becoming Informed about Ada 95 Adoption	46
Issue: What Are the Best Sources of First-Hand Information on Ada 95?	46
Issue: Who Can I Contact with Questions, Comments and Lessons Learned?	47
CHAPTER 4 WHEN TO INITIATE THE ADA 95 ADOPTION	49
Contracted Development	49
The Timing of the Transition	49

Actions to Take When Initiating Ada 95 Adoption during Each Procurement Phase	50
In-House Development	52
The Timing of the Transition	52
Actions to Take When Initiating Ada 95 Adoption during Each Development Phase	53
Choosing a Transition Strategy	54

CHAPTER 5

IMPACT OF ADA 95 ADOPTION ON THE SOFTWARE PROCESS	55
Contracted Development	55
Acquisition Strategy Planning and Preparation	55
Source Capabilities	56
Competition.....	56
Contracting Considerations	56
Budgeting and Funding.....	57
Schedule	57
Evaluation Criteria	57
Software Procurement	57
Source Selection Organization (SSO)	58
Mailing List	58
Evaluation	58
Pre-award Survey	58
Contract Performance Monitoring and Evaluation	58
Contract Monitoring	58
Joint Transition	59
In-House Development	59
Development Planning.....	59
Budgeting and Funding.....	59
Schedule	59
Software Development	60
Performance Monitoring	60

APPENDIX A

SOURCES FOR ADDITIONAL ADA 95 INFORMATION	61
Organizations to Contact.....	61
Government	61
User Groups.....	62
Trade Association	63
Meetings	63
Ada Conferences	64
General Software Conferences that Include Ada.....	65
Local Meetings	66
Electronic Sources of Information.....	74
Electronic Mailing Lists.....	74
USENET Newsgroups.....	76

	Internet File Servers	77
	Dial-up Bulletin Boards	78
	Books and Magazines	78
	Books	78
	Magazines	79
	Referenced Documents	79
APPENDIX B	SAMPLE RFP INSERTS	81
	Section C	
	Description, Specs, Work Statement	82
	Section H	
	Special Contract Requirements	82
	Section L	
	Instructions, Conditions, Notices to Offerors	83
	Section M	
	Evaluation Factors for Award	85
APPENDIX C	CONTRACTED DEVELOPMENT CHECKLISTS	89
	Pre-RFP Acquisition Strategy and Planning	89
	Procurement	93
	Post-Award Contract Performance Monitoring and Evaluation ..	94
APPENDIX D	IN-HOUSE DEVELOPMENT CHECKLISTS	95
	Development Planning	95
	Software Creation	99
	Post-Deployment Software Support	100
	COMMENTS/CHANGE REQUESTS TO ADA 95 ADOPTION HANDBOOK	LAST PAGE

LIST OF TABLES

Table 1: Key Management Benefits in the Switch to Ada 95 5

Table 2: Key Technology Reasons to Switch to Ada 95 6

Table 3: Benefits of Using the New Features of Ada 95 in Various Systems 8

Table 4: Comparison of the OOP Features of Ada 95 and Popular OOPLs 10

Table 5: Representative Efforts 15

Table 6: Example of Some Support Tools and Their Availability (as of Fall 1995) 26

Table 7: Current Ada 95 Binding Development Efforts 39

Table 8: Balancing the Issues of Adopting Ada 95 Too Early and Too Late 43

Table 9: Issues of Adopting Ada 95 during Different Procurement Phases 51

Table 10: Issues of Adopting Ada 95 during Different Development Phases 53

LIST OF FIGURES

Figure 1: The Incremental Nature of Ada 95 — Ada 83 Plus Enhancements 6

Figure 2: Early Use of Ada 9X Memorandum 13

Figure 3: Risk Management Technique Definitions 18