

Contents

Notice of Disclaimer	iii
List of Figures	vii
1. Introduction	1-1
2. Testing Fault Tolerance Using Software Fault Insertion	2-1
2.1 Definition of Faults, Errors, and Failures	2-1
2.2 Why Use SFIT?	2-2
2.3 Previous Work of SFIT	2-2
3. Duality Model	3-1
4. Categorization of Software Faults, Errors, and Failures	4-1
4.1 Fault Categorization	4-1
4.2 Error and Failure Category	4-2
5. SFIT Methodology	5-1
5.1 Software Architecture Analysis	5-4
5.1.1 Service Manager Analysis (SMA)	5-4
5.1.2 Fault Manager Analysis (FMA)	5-5
5.1.3 Fault Tolerance Interface (FT-interface) Analysis	5-6
5.2 Test Set Selection	5-6
5.3 Assess Test Coverage	5-7
5.4 SFIT for Subsequent Software Releases	5-8
6. Sample SFIT Test Plans	6-1
6.1 Modules Selection for SFIT	6-1
6.2 Test Plan for Recovery Actions	6-2
6.3 Test Plan for Audit Functions	6-4
7. SFIT Practices	7-1
Appendix A: References	A-1
Appendix B: Acronyms	B-1

List of Figures

Figure 3-1	Duality Model	3-1
Figure 5-1	SFIT Methodology	5-2
Figure 5-2	FT-interface	5-6