CONTENTS

INTRODUCTION ..... - 7 -
1 Scope ..... - 11 -
2 Normative references ..... - 11 -
3 Terms, definitions, symbols, abbreviations and conventions ..... - 11 -
3.1 Terms and definitions ..... - 11 -
3.2 Abbreviations ..... - 16 -
3.3 Conventions ..... - 17 -
4 FDT overview ..... - 17 -
4.1 State of the art ..... - 17 -
4.2 Objectives of FDT ..... - 18 -
4.2.1 General features ..... - 18 -
4.2.2 Device and module manufacturer benefits ..... - 18 -
4.2.3 System manufacturer and integrator benefits ..... - 19 -
4.2.4 Other applications ..... - 19 -
4.3 FDT model ..... - 20 -
4.3.1 General ..... - 20 -
4.3.2 Frame Applications ..... - 21 -
4.3.3 Device Type Manager ..... - 22 -
4.3.4 Communication Channel concept ..... - 23 -
4.3.5 Presentation object ..... - 25 -
5 Structure of the IEC and ISA-62453 series ..... - 26 -
5.1 Structure overview ..... - 26 -
5.2 Part 2 – Concepts and detailed description ..... - 27 -
5.3 Parts 3xy – Communication profile integration ..... - 27 -
5.3.1 General ..... - 27 -
5.3.2 Communication profile integration – IEC 61784 CPF 1 ..... - 28 -
5.3.3 Communication profile integration – IEC 61784 CPF 2 ..... - 28 -
5.3.4 Communication profile integration – IEC 61784 CP 3/1 and 3/2 ..... - 28 -
5.3.5 Communication profile integration – IEC 61784 CP 3/4, CP 3/5 and 3/6 - 28 -
5.3.6 Communication profile integration – IEC 61784 CPF 6 ..... - 28 -
5.3.7 Communication profile integration – IEC 61784 CPF 9 ..... - 28 -
5.3.8 Communication profile integration – IEC 61784 CPF 15 ..... - 29 -
5.4 IEC Parts 4x – Object model integration profiles ..... - 29 -
5.4.1 General ..... - 29 -
5.4.2 Object model integration profile – Common object model ..... - 29 -
5.5 IEC Parts 5xy – Communication profile implementation ..... - 29 -
5.5.1 General ..... - 29 -
5.5.2 Communication profile integration – IEC 61784 CPF 1 ..... - 29 -
5.5.3 Communication profile integration – IEC 61784 CPF 2 ..... - 30 -
5.5.4 Communication profile integration – IEC 61784 CP 3/1 and 3/2 ..... - 30 -
5.5.5 Communication profile integration – IEC 61784 CP 3/4, CP 3/5 and 3/6 - 30 -
5.5.6 Communication profile integration – IEC 61784 CPF 6 ..... - 30 -

5.5.7 Communication profile integration – IEC 61784 CPF 9 ..... - 30 -
5.5.8 Communication profile integration – IEC 61784 CPF 15 ..... - 30 -
5.6 IEC Parts 6x – DTM styleguides ..... - 31 -
5.6.1 General ..... - 31 -
5.6.2 Device Type Manager (DTM) styleguide for common object model ..... - 31 -
6 Relation of the ~~IEC~~ ISA-62453 series to other standardization activities ..... - 31 -
7 Migration to DTM ..... - 35 -
8 How to read ~~IEC~~ ISA-62453 ..... - 37 -
8.1 Architecture ..... - 37 -
8.2 Dynamic behavior ..... - 37 -
8.3 Structured data types ..... - 38 -
8.4 Fieldbus communication ..... - 38 -
Annex A (informative) UML notation ..... - 43 -
Annex B (informative) Implementation policy ..... - 45 -
Bibliography ..... - 46 -

Figure 1 − Different tools and fieldbusses result in limited integration ..... - 18 -
Figure 2 – Full integration of all devices and modules into a homogeneous system ..... - 19 -
Figure 3 – General architecture and components ..... - 20 -
Figure 4 – FDT software architecture ..... - 22 -
Figure 5 – General FDT client/server relationship ..... - 24 -
Figure 6 – Typical FDT channel architecture ..... - 25 -
Figure 7 – Channel/parameter relationship ..... - 25 -
Figure 8 – Structure of the IEC 62453 series ..... - 26 -
Figure 9 – Standards related to ~~IEC~~ ISA-62453 – in an automation hierarchy ..... - 32 -
Figure 10 – Standards related to ~~IEC~~ ISA-62453 – grouped by purpose ..... - 35 -
Figure 11 – DTM – implementations ..... - 37 -
Figure A.1 – Note ..... - 39 -
Figure A.2 – Class ..... - 39 -
Figure A.3 – Association ..... - 39 -
Figure A.4 – Composition ..... - 40 -
Figure A.5 – Aggregation ..... - 40 -
Figure A.6 – Dependency ..... - 40 -
Figure A.7 – Abstract class, generalization and interface ..... - 40 -
Figure A.8 – Multiplicity ..... - 41 -
Figure A.9 – Elements of UML statechart diagrams ..... - 41 -
Figure A.10 – Example of UML state chart diagram ..... - 42 -
Figure A.11 – UML use case syntax ..... - 43 -
Figure A.12 – UML sequence diagram ..... - 44 -

Table 1 – Overview of related standards ..... - 33 -