# ISO/IEC/IEEE 31320-2:2012-09 (E)

## Information technology - Modeling Languages - Part 2: Syntax and Semantics for IDEF1X97 (IDEFobject)

## Contents


Page

1. Overview ... 1

1.1 Scope ... 1
1.2 Purpose ... 2
1.3 Evolution of IDEF1X ... 3
1.4 Conformance ... 9

2. References ... 10

3. Definitions, acronyms, and abbreviations ... 10

3.1 Definitions ... 10
3.2 Abbreviations and acronyms ... 24

4. IDEF1X language overview ... 24

4.1 IDEF1X language constructs ... 25
4.2 IDEF1X notation ... 26

5. Class ... 31

5.1 Introduction ... 31
5.2 State class ... 35
5.3 Value class ... 41
5.4 Generalization ... 48
5.5 Relationship ... 57

6. Responsibility ... 65

6.1 Introduction ... 65
6.2 Request ... 70
6.3 Property ... 74
6.4 Attribute ... 87
6.5 Participant property ... 97
6.6 Operation ... 105
6.7 Constraint ... 113
6.8 Note ... 121

7. Rule and constraint language ... 123

7.1 Introduction ... 123
7.2 Realization ... 125
7.3 Message ... 127
7.4 Typing ... 130
7.5 Dynamic binding ... 133
7.6 Assignment ... 136
7.7 Propositions ... 137
7.8 Sentences ... 138
7.9 Type checking ... 140
7.10 Constraint checking ... 140
7.11 Query ... 141

7.12 Total ordering ..... 141
7.13 Implementation-dependent ..... 142
7.14 Lexical characteristics ..... 142
7.15 RCL syntax ..... 143

8. Model infrastructure constructs ..... 146

8.1 View ..... 147
8.2 Identity-style view level ..... 153
8.3 Environment ..... 155
8.4 Glossary ..... 158
8.5 Model ..... 160

9. Key-style modeling ..... 162

9.1 Entity ..... 163
9.2 Domain/value class ..... 165
9.3 Key-style view ..... 165
9.4 Attribute ..... 167
9.5 Relationship ..... 170
9.6 Entity generalization ..... 178
9.7 Primary and alternate key ..... 182
9.8 Foreign key ..... 184
9.9 Common ancestor constraint ..... 188
9.10 Key-style view level ..... 191
9.11 Key-style glossary ..... 195
9.12 Key-style notes ..... 196
9.13 Key-style lexical rules ..... 196

10. Formalization ..... 197

10.1 Introduction ..... 197
10.2 IDEFobject metamodel ..... 200
10.3 Definition clausal form ..... 207
10.4 Vocabulary ..... 212
10.5 Axioms of base theories ..... 217
10.6 Rewriting an IDEFobject view to definition clausal form ..... 219
10.7 Formalization of the modeling constructs ..... 232
10.8 Summary of the formal meaning of a view ..... 264

Annex A (informative) Bibliography ..... 265

Annex B (informative) Comparison of IDEF1X93 and IDEF1X97 constructs ..... 267

Annex C (informative) Examples ..... 270

Annex D (informative) Built-in classes ..... 289

Annex E (informative) IEEE list of participants ..... 304