

# ISO/IEC 15476-3:2006-01 (E)

## Information technology - CDIF semantic metamodel - Part 3: Data definitions

---

<b>Contents</b>		<b>Page</b>
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Conformance .....</b>	<b>2</b>
2.1	General .....	2
2.2	Input conformance .....	2
2.3	Output conformance .....	2
2.4	Round-trip conformance .....	3
<b>3</b>	<b>Normative references .....</b>	<b>3</b>
<b>4</b>	<b>Terms and definitions .....</b>	<b>4</b>
4.1	From other International Standards .....	4
4.1.3	For this International Standard .....	4
<b>5</b>	<b>Symbols (and abbreviated terms) .....</b>	<b>5</b>
5.1	Naming, diagramming and definition conventions .....	5
5.2	Abbreviations .....	5
<b>6</b>	<b>Data definition subject area overview .....</b>	<b>5</b>
6.1	Introduction .....	5
6.2	Data Typing .....	5
6.3	The General Structuring Mechanism .....	5
6.3.1	Introduction .....	5
6.3.2	Meta-entities and Meta-relationships .....	5
6.3.3	DefinitionObject and ComponentObject .....	7
6.4	Alternate Decompositions .....	8
6.5	Pointers and Arrays .....	10
6.6	Data Types .....	10
6.7	Constraining Data Type and Attribute Values .....	11
6.8	Units for Numeric DataTypes .....	12
6.9	Void and Unknown Data Types .....	13
6.10	Computable Languages .....	13
6.11	Formats for Computable Values .....	13
6.12	Diagrams .....	16
<b>7</b>	<b>Data definitions subject area summary .....</b>	<b>21</b>
7.1	AttributableMetaObject classification hierarchy .....	21
7.2	MetaEntity summary .....	23
7.3	MetaRelationship summary .....	37
<b>8</b>	<b>Data definitions subject area specification .....</b>	<b>39</b>
8.1	Introduction .....	39
8.1.1	Subject area definition .....	39
8.2	Meta-entity definitions .....	39
8.2.1	AggregateDataType .....	39
8.2.2	ApproximateNumericType .....	40
8.2.3	ArrayQualifier .....	41
8.2.4	Attribute .....	42
8.2.5	BasicDataType .....	42
8.2.6	BinaryCodedDecimalType .....	43
8.2.7	BinaryType .....	43
8.2.8	BooleanType .....	44

8.2.9	BoundedArrayQualifier .....	44
8.2.10	CartesianComplexType .....	45
8.2.11	ComplexType .....	46
8.2.12	DataType .....	47
8.2.13	DateType .....	48
8.2.14	DayTimeIntervalType .....	49
8.2.15	DefinitionObject .....	49
8.2.16	EnumerationType .....	49
8.2.17	ExactNumericType .....	50
8.2.18	FixedDecimalType .....	51
8.2.19	FixedLengthBinaryType .....	52
8.2.20	FixedLengthStringType .....	54
8.2.21	IntegerType .....	55
8.2.22	MagnitudeType .....	55
8.2.23	MoneyType .....	56
8.2.24	NLFixedLengthStringType .....	57
8.2.25	NLVariableLengthStringType .....	58
8.2.26	NumericType .....	59
8.2.27	PackedDecimalType .....	59
8.2.28	PointerQualifier .....	60
8.2.29	PolarComplexType .....	60
8.2.30	QualifiedDataType .....	62
8.2.31	Qualifier .....	62
8.2.32	RefinedDataType .....	63
8.2.33	SerialType .....	63
8.2.34	StringType .....	65
8.2.35	TemporalType .....	66
8.2.36	TimeIntervalType .....	66
8.2.37	TimeStampType .....	67
8.2.38	TimeType .....	68
8.2.39	UnboundedArrayQualifier .....	69
8.2.40	Unit .....	70
8.2.41	ValueDomain .....	74
8.2.42	ValueDomainEnumeration .....	75
8.2.43	ValueDomainGroup .....	76
8.4.44	ValueDomainProcedure .....	77
8.2.45	ValueDomainRange .....	78
8.2.46	ValueDomainRule .....	80
8.2.47	VariableLengthBinaryType .....	81
8.2.48	VariableLengthStringType .....	82
8.2.49	VoidType .....	84
8.2.50	YearMonthIntervalType .....	84
8.3	Meta-relationship definitions .....	85
7.3.1	ArrayQualifier.HasType.DataType .....	85
7.3.2	DataType.TakesValueFrom.ValueDomain .....	85
7.3.3	NumericType.IsMeasuredIn.Unit .....	86
8.3.1	RootEntity.IsRelatedTo.RootEntity .....	86
8.3.2	QualifiedDataType.IsQualificationOf.DataType .....	86
8.3.3	QualifiedDataType.IsQualifiedBy.Qualifier .....	87
8.3.4	RefinedDataType.IsRefinementOf.DataType .....	87
8.3.5	ValueDomainGroup.Contains.ValueDomain .....	88
Table of Illustrations Figure 1 - CDIF family of International Standards .....		1
Figure 2 - Part of general Structuring Mechanism for data definitions subject area .....		6
Figure 3 - Meta-model fragment for simple attribution with defined DataTypes .....		6
Figure 4 - Instance Diagram showing simple attribution with defined DataTypes .....		7

<b>Figure 5 - Instance diagram of attributes sharing the same structured definition .....</b>	<b>8</b>
<b>Figure 6 - Instance diagram of alternate Data Structures .....</b>	<b>9</b>
<b>Figure 7 - Concepts of shared attribute values and definitions .....</b>	<b>10</b>
<b>Figure 8 - Usage of ValueDomainGroup and ValueDomain .....</b>	<b>12</b>
<b>Figure 9 - Data Definition Subject Area - Main Diagram .....</b>	<b>16</b>
<b>Figure 10</b>	<b>17</b>
<b>Figure 11 - MagnitudeType Subtypes .....</b>	<b>18</b>
<b>Figure 12 - NumericType Subtypes .....</b>	<b>19</b>
<b>Figure 13 - Subtypes and meta-relationships for Qualifier .....</b>	<b>20</b>
<b>Figure 14 - ValueDomainGroup and related meta-entities .....</b>	<b>20</b>
<b>Table of Tables Table 1 - Formats for Computable Values .....</b>	<b>13</b>
<b>Table 2 - Notation Used for Computable Values .....</b>	<b>15</b>
<b>Table 3 - Function Values for Computable Values .....</b>	<b>15</b>