

**10.0.06—
2019/
12006-3:2007**

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(ISO 12006-3:2007,
Building construction — Organization of information about construction works —
Part 3: Framework for object-oriented information, IDT)



2019

1 (-) -

2 70S « -

3 5 2019 . N9 282- -

4 12006-3:2007 « -

3. - -

» (ISO 12006-3:2007 «Building construction — Organization of information about construction works — Part 3: Framework for object-oriented information», IDT). -

1.5—2012 (3.5). -

5 12006-3—2017

29 2015 . 162- « 26 -

) « 1 -

» -

() « -

» -

(www.gost.ru)

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System of standards on information modeling of buildings and structures. Building construction. Organization of information about construction works. Part 3. Framework for object-oriented information

— 2019—09—01

1

2

8

ISO 10303-11. Industrial automation systems and integration — Product data representation and exchange — Part 11: Description methods: The EXPRESS language reference manual (

11. EXPRESS)

ISO/IEC 10646, Information technology — Universal Coded Character Set (UCS) (UCS)

3

String () String, UNICOD [6] / 10646. UTF-8. UTF-6 8- UCS

Transformation Format 8 [4].

4

4.1

8

10303-11.

EXPRESS

4.2 EXPRESS EXPRESS-G. 4.3 () 4.4 ().

4.2

EXPRESS-G

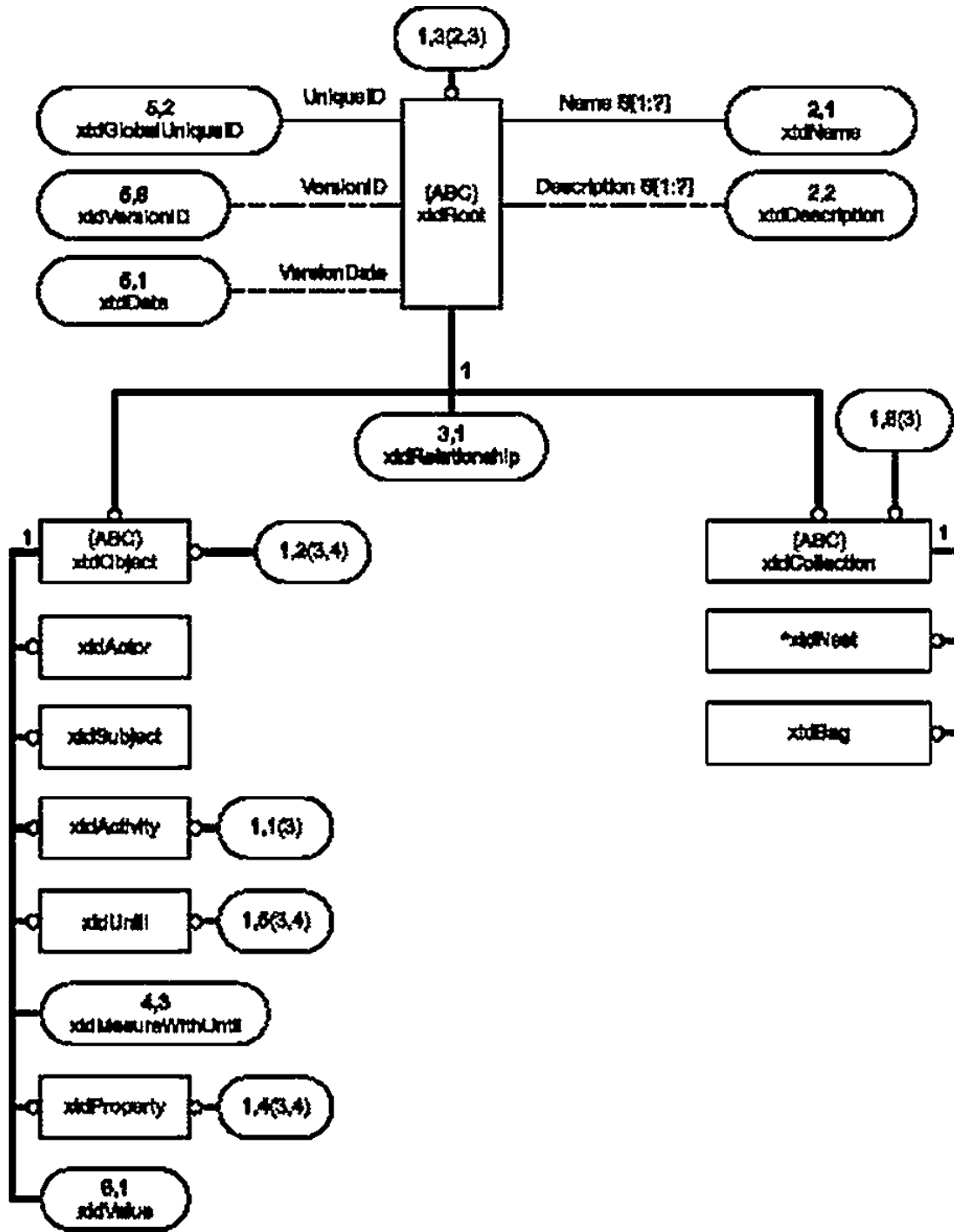
EXPRESS-G EXPRES-G

(1—6).

4.3.

10.0.06—2019

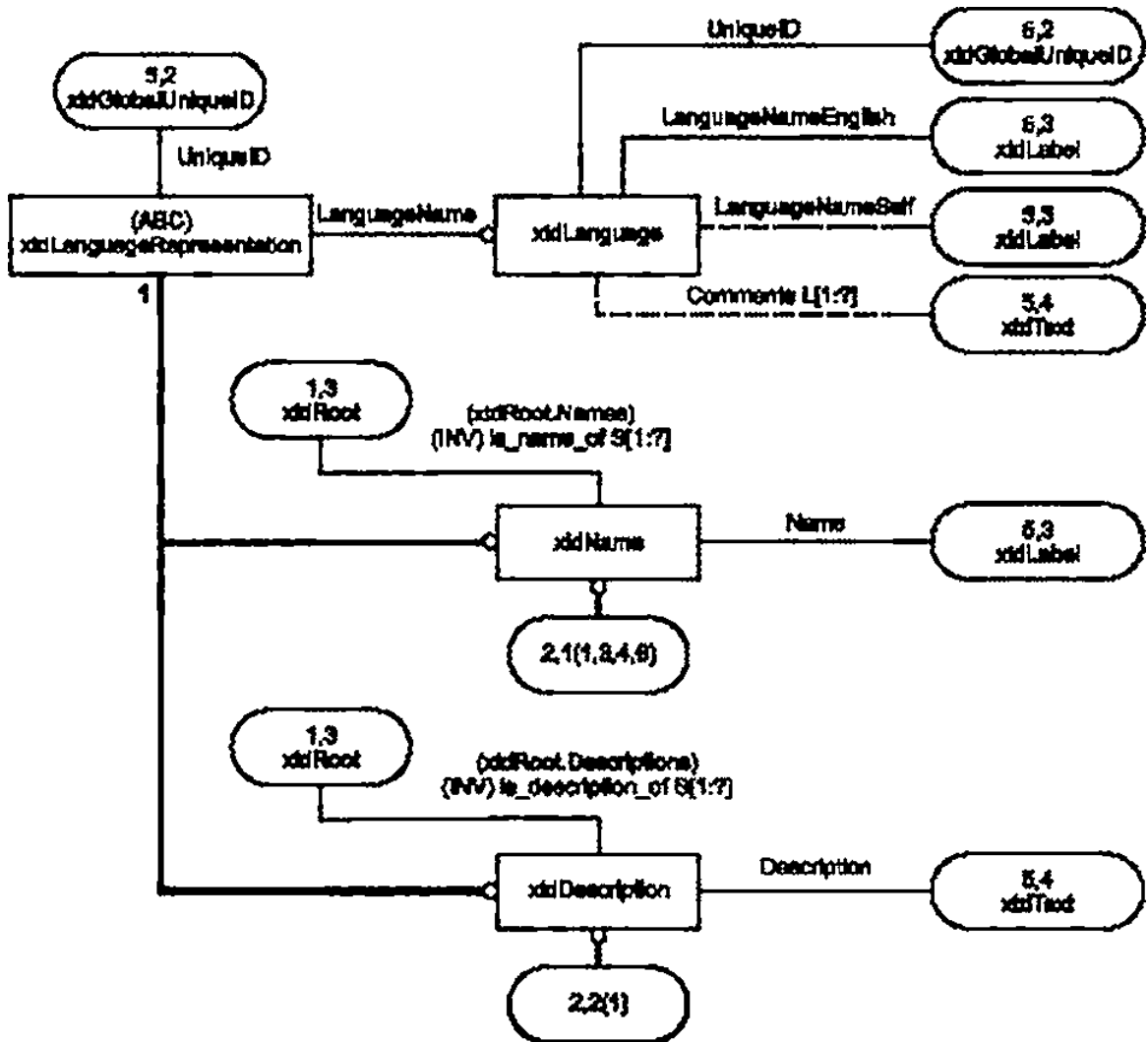
	1	xtdObject, xtdRelationship	xtdCollection.		xtdRoot.
	2	xtdName	xtdDescription.	xtdLanguageRepresentation	xtdRoot
	3			xtdRelationship	,
				xtdObjects.	xtdCollections
					xtdExternalDocuments
	4	perties	xtdMeasureWithlnit	xtdProperties	xtdObjects
	5				xtdRelAssignsPro-
					xtdRelAssignsMeasures.
		EXPRESS.			,
	6			xtdValue	xtdExternalDocument.

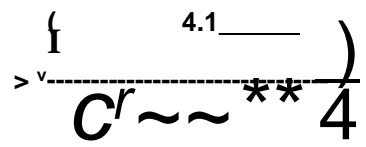
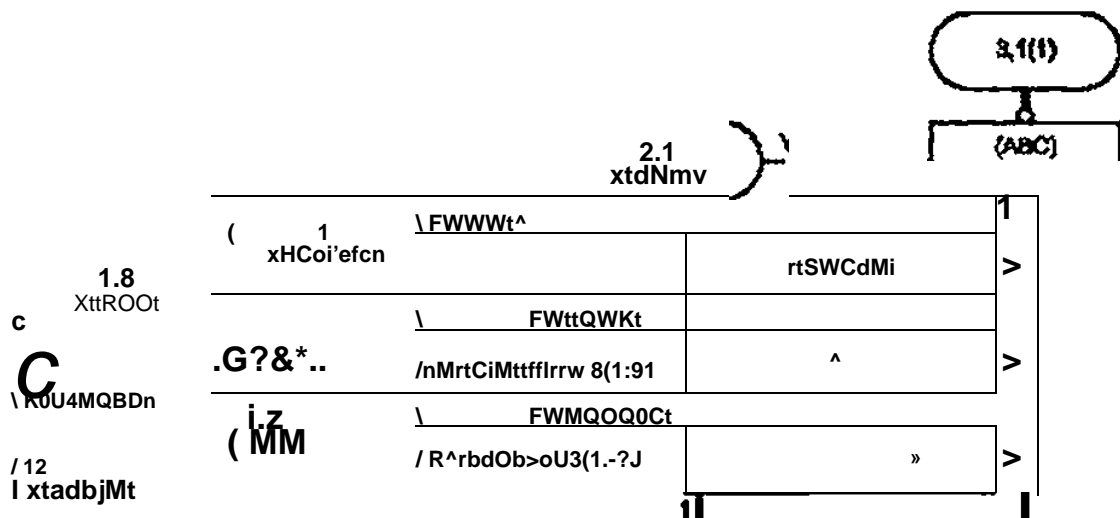


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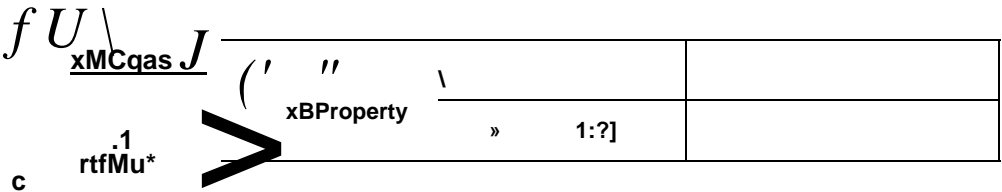
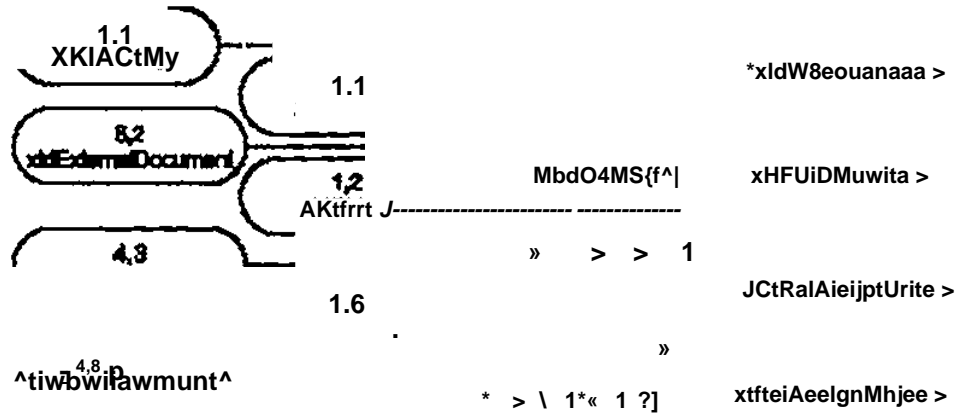
1

EXPRESS-G.

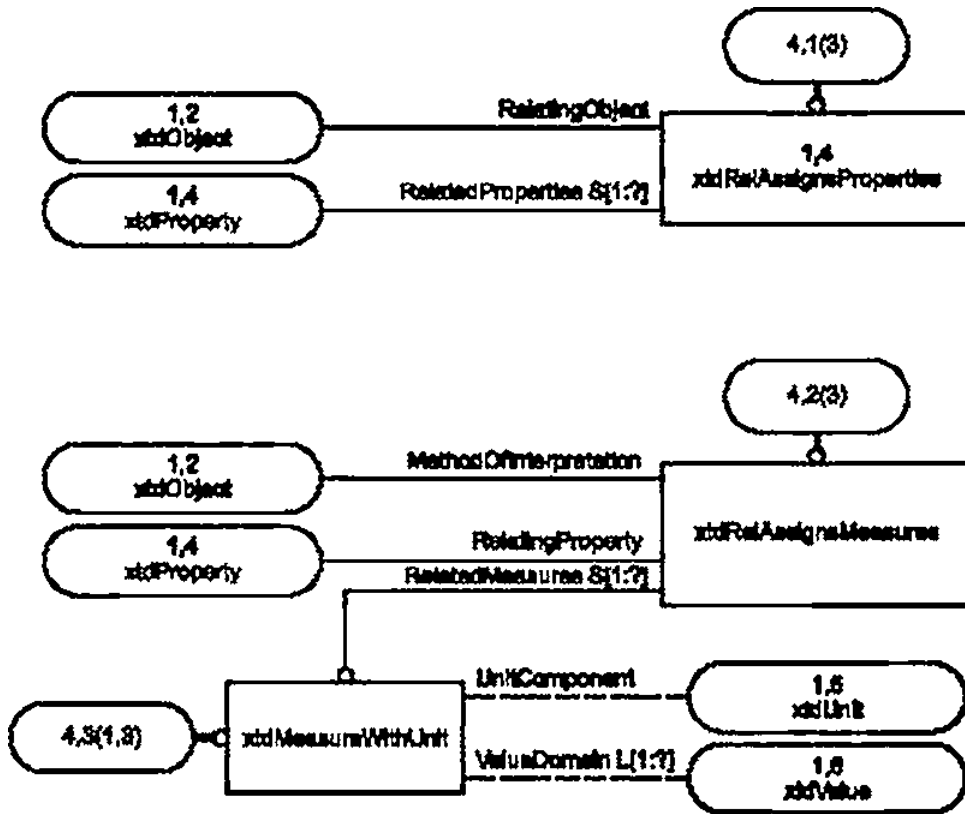




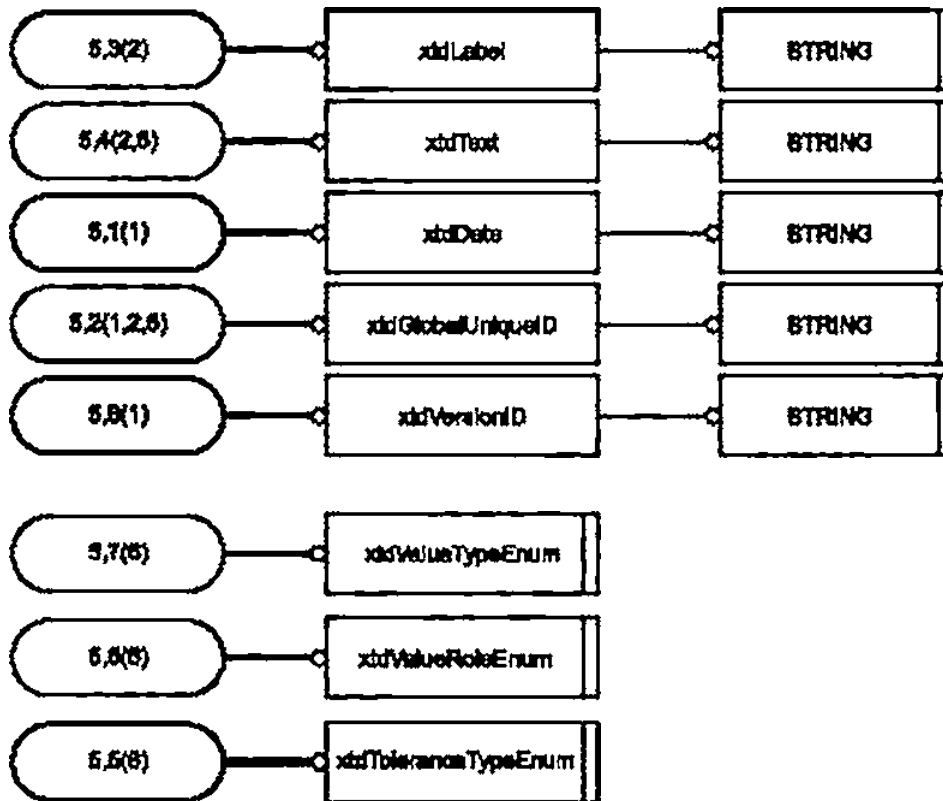
•jBriRaWHUpon >



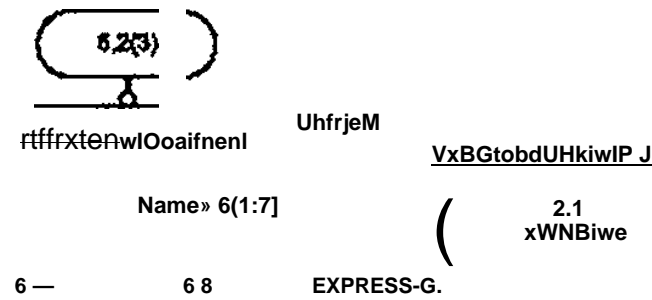
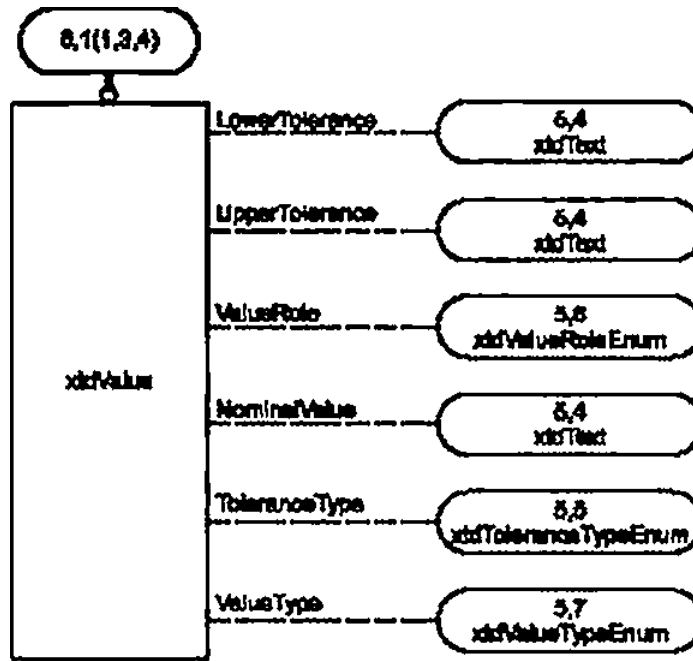
3 — 3 EXPRESS-G.



4 — 4 EXPRESS-G.



5 — 5 8 EXPRESS-G.



4.3 EXPRESS

EXPRESS.

EXPRESS-_____:

ISO_12006_3_VERSION_3

EXPRESS-_____:

*> SCHEMA ISO_12006_3_VERSION_3;

4.3.1 xtdDate

xtdDate —

STRING,

— «YYYY.MM.OO»

— 31 2000

«2000.05.31»

EXPRESS-_____:

*> TYPE xtdDate = STRING;
END_TYPE;

4.3.2 xtdGlobalUniqueID

xtdGlobalUniqueID —

STRING,

Management Group),

IP-

128-

22

64

(BASE 64).

64

1

2

3

4

5

6

0123456789012345678901234567890123456789012345678901234567890123

"0123456789ABCDEFGHIJKLMNopqrstuvwxyz_";

— 22-

«93 9 4 _899402 9\$0013»

http://Avwww.openQ_rouo.org/dce/info/dfaft-leach-

uuids-oukls-01.txt.

EXPRESS- _____ :

•)

TYPE xtdGlobalUniqueID = STRING;
END_TYPE;

<*

4.3.3 xtdLabel

xtdLabel —

STRING,

UNICODE

EXPRESS- _____ :

•)

TYPE XtdLabel STRING;
ENDJTYPE;

<*

4.3.4 xtdText

xtdText —

STRING,

UNICODE

EXPRESS- _____ :

*)

TYPE XtdText = STRING;
END_TYPE;

(

4.3.5 xtdVersionID

xtdVersionID —

STRING,

UNICODE

— «1 ». «12», «1.1»

EXPRESS- _____ :

•)

TYPE xtdVersionID » STRING;
END_TYPE;

<*

4.3.6 xtdToleranceTypeEnum

xtdToleranceTypeEnum —

Realvalue —

Percentage —

EXPRESS-_____;

•>

XtdToleranceTypeEnum = ENUMERATION OF
REALVALUE.
PERCENTAGE);

END_TYPE;

(•

4.3.7 xtdValueRoleEnum

xtdValueRoleEnum —

Nominal —

Maximum —

Minimum —

EXPRESS-_____;

*>

TYPE XtdValueRoleEnum » ENUMERATION OF
(NOMINAL,
MAXIMUM,
MINIMUM);

END-TYPE;

C

4.3.8 xtdValueTypeEnum

xtdValueTypeEnum —

xtdString —

xtdNumber —

xtdInteger —

xtdReal —

xtdBoolean —

xtdLogical —

EXPRESS-_____;

STRING
STRING,
INTEGER.
REAL.
BOOLEAN.
LOGICAL.

•>

TYPE XtdValueTypeEnum = ENUMERATION OF
(XTDSTRING,
XTDNUMBER,
XTDINTEGER,
XTDREAL,
XTDBOOLEAN,
XTDLOGICAL);

END-TYPE;

C

4.3.9 xtdActivity

xtdActivity — xtdObject.

xtdSubject.

— « »

EXPRESS-_____.

*1

ent it y xtdActivity

SUBTYPE OF(xtdObject);
 END_ENTITY;

<*

4.3.10 xtdActor

xtdActor — xtdObject, xtdSubject -
 xtdActivity.

1 — « » xtdActor.

2 — « » xtdActor.

3 — « » xtdActor.

EXPRESS-_____:

*)

ENTITY XtdActor
 SUBTYPE OF(xtdObject);
 END_ENTITY;

<*

4.3.11 xtdBag

xtdBag — xtdCollection, -
 . xtdBag.

EXPRESS-_____:

*)

ENTITY xtdBag
 SUBTYPE OF(JxtdCollection);
 END_ENTITY;

{*

4.3.12 xtdCollection

xtdCollection . XtdCollection
 xtdNest xtdBag.

EXPRESS-_____:

*)

ENTITY xtdCollection
 ABSTRACT SUPERTYPE OF (ONEOF{XtdNest, XtdBag})
 SUBTYPE OF(xtdRoot);
 END_ENTITY;

<*

4.3.13 xtdDescription

xtdDescnption
 — « ,
 » — « »

EXPRESS-_____:

*)

ENTITY xtdDescription
 SUBTYPE OF(xtdbanguageRepresentation);
 Description :xtdText;
 INVERSE
 is_description_of :SE7T (1:?) OF xtdRoot FOR Descriptions; END_ENTITY;

_____:

Description
 — xtdText,

4.3.14 xtdExternalDocument

xtdExtetalDocument , -

- 1 — «ISO 31»
2 — «NS 3420»

EXPRESS-

ENTITY xtdExternalDocument;

UniqueID :xtdGlobalUniqueID;
Names :SET [1:?] OF xtdName

END_ENTITY;

(•

_____:

UniqueID

Names

4.3.15 xtdLanguage

xtdLanguage

EXPRESS-_____:

ENTITY xtdLanguage;

LanguageNameInEnglish :xtdLabel;
LanguageNameInSelf :OPTIONAL xtdLabel;
Comments :OPTIONAL LIST (1:?) OF xtdText;
UniqueID :xtdGlobalUniqueID;

END_ENTITY;

C

_____:

LanguageNameInEnglish

3166-1 [1]

- 1 — «English» —
2 — «German» —

3166-1

LanguageNameInSelf

- 1 — «Deutsch» —
2 — « » —
3 — «British English» —

Comments

UniqueID

4.3.16 xtdLanguageRepresentation

xtdLanguageRepresentation

EXPRESS-_____:

ENTITY xtdLanguageRepresentation

ABSTRACT SUPERTYPE OF {ONEOF(xtdName, xtdDescription

LanguageName :xtdLanguage;
UniqueID :xtdGlobalUniqueID;

END_ENTITY;

(•

_____ :
 LanguageName

xtdLanguageRepresentation.

UnlquelD

4.3.17 xtdMeasureWithUnit

xtdMeasureWithUnit — xtdObject. xtdProperty

1 — «1 » — xtdMeasureWithUnit » -
 <1».
 2 — « 88 » — XtdMeasureWithUnit « 88 » -

EXPRESS- _____ :

*)

ENTITY XtdMeasureWithUnit
 SUBTYPE OF (xtdObject);
 UnitCocnponent :OPTIONAL xtdUnit;
 ValueDomain :OPTIONAL LIST (1:?) OF xtdValue;
 END_ENTITY;

<*

_____ :
 UnitComponent

ValueDomain

4.3.18 xtdName

xtdName —

1 — «Beam» «truss» —
 2 — « » — «beam».

EXPRESS- _____ :

*)

ENTITY xtdName
 SUBTYPE OF(xtdLanguageRepresentation);
 Name :xtdLabel;
 INVERSE
 is_najne_of :SET {Xs?} OF xtdRoot FOR Names;
 END,ENTITY;

(

_____ :
 Name

4.3.19 xtdNest

xtdNest — xtdCollection,

— « » — xtdNest. —

xtdProperty.

EXPRESS- _____ :

*)

ENTITY xtdNest
 SUBTYPE OF(xtdCollection);
 WHERE
 WRL :S1ZEOF(QUERY(Result <* SELFxtdRelCollects.RelatedThings |

NOT(TYPEOF(SELFxtdRelCollects.RelatingCollection) =
 TYPEOF(Result))) = 0 ;

END_ENTITY;

('

_____ ;
 WR1 — , . .

4.3.20 xtdObject

xtdObject — xtdRoot. , -

xtdProperty, xtdMeasureWithUnit, xtdActor. xtdUnit. xtdSubject. xtdValue and xtdActivity.

EXPRESS-_____ ;

*)

ENTITY XtdObject

ABSTRACT SUPERTYPE OF (ONEOF(xtdSubject, xtdActivity, xtdUnit,
 xtdProperty, xtdMeasureWithUnit, xtdActor, xtdValue))

SUBTYPE OF(xtdRoot);

END^ENTITY;

('

4.3.21 xtdProperty

xtdProperty — xtdObject,
 xtdObject.

1 — « » — xtdProperty.

2 — « » — xtdProperty. « -

» xtdSubject « ».

3 — « » — xtdProperty.

4 — « » — xtdProperty.

5 — « » — xtdProperty.

6 — « » — xtdProperty.

EXPRESS-_____

*>

ENTITY xtdProperty

SUBTYPE OF(xtdObject);

END_ENTITY;

C

4.3.22 xtdRelActsUpon

xtdRelActsUpon — xtdRelAssociates. xtdObject. -
 xtdObjects.

1 — « ».

2 — « ».

EXPRESS-_____.

*>

ENTITY XtdRelActsUpon

SUBTYPE OF(xtdRelAssociates)

WHERE

WR1 :SIZEOF(QUERY(Result <* RelatedObjects | RelatingObject:=:
 Result)) < 0;

END.ENTITY;

('

_____ ;
 WR1 — , ,

4.3.23 xtdRelAssignsCollections

xtdRelAssignsCollections — xtdRelationship,
 xtdCollection xtdObject.

EXPRESS-_____:

```
ENTITY xtdRelAssignsCollections
  SUBTYPE OF{xtdRelationship};
  RelatingObject :xtdObject;
  RelatedCollections :SET [1:?] OF xtdCollection;
END_ENTITY;
```

_____:

RelatingObject

RelatedCollections

4.3.24 xtdRelAssignsMeasures

```
xtdRelAssignsMeasures — xtdRelationship.
  xtdMeasureWithUnit xtdProperty.
```

EXPRESS-_____:

```
ENTITY xtdRelAssignsMeasures SUBTYPE OF(xtdRelationship);
  RelatingProperty :xtdProperty;
  RelatedMeasures :SET [1:?] OF xtdMeasureWithUnit
  MethodOfInterpretation :OPTIONAL xtdName;
END_ENTITY;
```

_____:

RelatingProperty

RelatedMeasures

MethodOfInterpretation

— « » —

4.3.25 xtdRelAssignsProperties

```
xtdRelAssignsProperties — xtdRelationship.
  xtdProperty xtdObject.
```

— « » — *xtdProperty*, *xtdObject* « ».

EXPRESS-_____:

*)

```
ENTITY xtdRelAssignsProperties SUBTYPE OF(xtdRelationship)
  RelatedProperties :SET [1:?] OF xtdProperty;
  RelatingObject :xtdObject;
END_ENTITY;
```

_____:

RelatedProperties

RelatingObject

4.3.26 xtdRelAssignsPropertyWithValues

```
xtdRelAssignsPropertyWithValues — xtdRelationship.
```

```

EXPRESS-c _____ :
* >
ENTITY xtdRelAssigns Proper tyIVithValues
  SUBTYPE OF(xtdRelationship);
  RelatedProperty                :xtdProperty;
  RelatingObject                 :xtdObject;
  RelatedValues                  :LIST [1:?] OF UNIQUE XtdValue;
END_ENTITY;
(
  _____ :
  RelatedProperty
  ,
  RelatingObject
  ,
  RelatedValues
  ,
  4.3.27 xtdRelAssignsUnits
  xtdRelAssignsUnits —          xtdRelationship.
xtdMeasureWithUnit             xtdUnit.
EXPRESS-_____ :
* >
ENTITY xtdRelAssignsUnits
  SUBTYPE OF(xtdRelationship);
  RelatingMeasure                :xtdMeasureWithUnit;
  RelatedUnits                   : SET (1:?) OF XtdUnit;
END_ENTITY;
("
  _____ :
  RelatingMeasure
  ,
  RelatedUnits
  ,
  4.3.28 xtdRelAssignsValues
  xtdRelAssignsValues —        xtdRelationship.
xtdMeasureWithUnit             xtdValue.
EXPRESS-_____ :
* >
ENTITY XtdRelAssignsValues SUBTYPE OF(xtdRelationship);
  RelatingMeasure                :xtdMeasureWithUnit;
  RelatedValues                  :LIST [1:?) OF UNIQUE xtdValue;
END_ENTITY;
C
  _____ :
  RelatingMeasure
  ,
  RelatedValues
  ,
  4.3.29 xtdRelAssociates
  xtdRelAssociates —          xtdRelationship.
xtdObject                       xtdObject.
EXPRESS-_____ :
* >
ENTITY xtdRelAssociates
  SUPERTYPE OF (ONEOF(xtdRelComposes, xtdRelGroups, xtdRelSpecializes,
  xtdRelActsUpon))
  SUBTYPE OF(xtdRelationship);

```

```

RelatingObject          :xtdObject;
RelatedObjects          :SET (1:?) OF xtdObject;
WHERE
  WR1                    :SIZEOF(QUERY{Result <* RelatedObjects | RelatingObject::=
                          Result}) * 0;

```

END_ENTITY;

<*

```

_____ :
RelatingObject
,
RelatedObjects
,
_____ :
WR1 — , ,

```

4.3.30 xtdRelCollects

```

xtdRelCofiects — xtdRelationship.
  xtdCollection. xtdCollection      xtdNest  xtdBag.
EXPRESS-_____ :

```

*)

```

ENTITY xtdRelCollects
  SUBTYPE OF(xtdRelationship);
  RelatedThings          :SET [1:?! OF xtdRoot:
  RelatingCollection     :xtdCollection;
END_ENTITY;

```

```

_____ :
RelatedThings
,
RelatingCollection
,

```

4.3.31 xtdRelComposes

```

xtdRelComposes — xtdRelAssodates.      xtdObject
  xtdObject.      xtdObject.
— «      » •      » — (      ) «      ».
EXPRESS-_____ :

```

*)

```

ENTITY xtdRelComposes
  SUBTYPE OF(xtdRelAssociates);
WHERE
  WR1                    :SIZEOF(QUERY(Result < * SELF. RelatedObjects |
                          NOT(TYPEOF(SELF.RelatingObject) = TYPEOF(Result)))) s 0 ;
  WR2                    :SIZEOF(QUERY(Result2 <* RelatedObjects| RelatingObject::=
                          Result2)> = 0;
END_ENT1TY;

```

<*

```

_____ :
WR1 — xtdSubject      xtdSubject
,
WR2 — ,

```

4.3.32 xtdRelDocuments

```

xtdRelDocuments — xtdRelationship.
,

```

EXPRESS- _____ :

```
*>
ENTITY xtdRelDocuments
  SUBTYPE OF(xtdRelationship);
  RelatedObjects                :SET [1:?] OF xtdObject;
  RelatingDocument             :xtdExternalDocument;
END_ENTITY;
```

```
(*
  _____ :
  RelatedObjects
```

```
  RelatingDocument
```

4.3.33 xtdRelGroups

```
xtdRelGroups — xtdRelAssociates.
                xtdObject      xtdObject.
```

EXPRESS- _____ :

```
*>
ENTITY xtdRelGroups
  SUBTYPE OF{xtdRelAssociates!;
  WHERE
  WR1                :SIZEOF(QUERY(Result <* RelatedObjects | RelatingObject
                        Result) > s 0);
END_ENTITY;
```

```
C
  _____ :
  WR1 —
```

4.3.34 xtdRelSequences

```
XtdRelSequences— xtdRelabonship,
                  xtdActivity.      xtdActivity      xtdActivity.
```

EXPRESS- _____ :

```
*>
ENTITY xtdRelSequences
  SUBTYPE OF(xtdRelationship);
  RelatingActivity          :OPTIONAL xtdActivity;
  RelatedActivity          :OPTIONAL xtdActivity;
  WHERE
  WR1                      :RelatedActivity:<>: RelatingActivity;
  WR2                      :EXISTS(RelatingActivity) OR EXISTS(RelatedActivity);
END_ENTITY;
```

```
("
  _____ :
  RelatingActivity
```

```
  RelatedActivity
```

```
  _____ :
  WR1 —
```

```
  WR2 —
```

4.3.35 xtdRelSpeclalizes

```
xtdRelSpeclalizes — xtdRelAssociates.
```

```
  1 — «          » —          «          ».
  2 — «          » —          «          ».
```

EXPRESS-_____ :
 *)
 ENTITY xtdRelSpecializes
 SUBTYPE OF(xtdRelAssociates);
 WHERE
 WR1 :SIZEOF(QUERY(Result <* RelatedObjects | RelatingObject:=:
 Result)) « 0;
 WR2 :SIZEOF(QUERY(Result <* SELF.RelatedObjects |
 NOT(TYPEOF(SELF.RelatingObject) = TYPEOF(Result)))) = 0 ;
 END_ENTITY;

<*
 _____ :
 WR1 — , ,
 WR2 — , ,
 . . xtdSubject xtdSubject.
 4.3.36 xtdRelationship
 xtdRelationship — xtdRoot. , ,

EXPRESS-_____ :
 *)
 ENTITY xtdRelationship
 ABSTRACT SUPERTYPE OF (ONEOF(xtdRelAssociates, xtdRelAssignsProperties,
 xtdRelAssignsMeasures, xtdRelCollects,
 xtdRelAssignsCollections, xtdRelSequences,
 xtdRelDocuments. xtdRelAssignsUnits,
 xtdRelAssignsValues, xtdRelAssignsPropertyWithValues))
 SUBTYPE OF(XtdROOT);
 ViewSelector :OPTIONAL xtdName;
 END_ENTITY;

(*
 _____ :
 ViewSelector , ,
 — , ,
 «IFC 2x2»
 , IFC 2x2.
 4.3.37 xtdRoot
 xtdRoot — , ,
 , , xtdObject.

xtdRelationship xtdCollection.
EXPRESS-_____ :

*)
 ENTITY XtdRoot
 ABSTRACT SUPERTYPE OF IONEOF(xtdObject, xtdRelationship,
 xtdCollection));
 VersionDate rOPTIONAL xtdDate;
 VersionID :OPTIONAL xtdVersionID;
 UniqueID :xtdGlobalUniqueID;
 Descriptions :OPTIONAL SET [1:?J OF xtdDescription];
 Names :SET [1:?J OF XtdName];
 END_ENT1TY;

<*
 _____ :
 VersionDate

VersionID

UniqueID

Descriptions

Names

4.3.38 xtdSubject

```

xtdSubject — xtdObject.
              . xtdSubject
1 — «      » — xtdSubject
2 — «      » — xtdSubject.
3 — «      » — xtdSubject
4 — «      » — xtdSubject.
5 — «      » — xtdSubject
6 — «      » — xtdSubject.
    
```

```

*1
entity xtdSubject
  SUBTYPE OF(xtdObject);
END.ENTITY;
    
```

4.3.39 xtdUnit

```

xtdUnit — xtdObject.
          « »
          « / » — xtdUnit
          « »
EXPRESS-:
    
```

```

*>
ENTITY xtdUnit
  SUBTYPE OF(xtdObject);
END_ENTITY;
    
```

4.3.40 xtdValue

```

xtdValue— xtdLanguageRepresentation. xtdProperty.
1 — «Vertikaal schuivend» — « »
EXPRESS-:
    
```

```

entity xtdValue
  SUBTYPE OF(xtdObject);
  LowerTolerance :OPTIONAL xtdText;
  NominalValue :OPTIONAL xtdText;
  UpperTolerance :OPTIONAL xtdText;
  ValueType :OPTIONAL xtdValueTypeEnum
  ValueRole :OPTIONAL xtdValueRoleEnum;
  ToleranceType :OPTIONAL xtdToleranceTypeEnum;
END.ENTITY;
    
```

```

LowerTolerance
NominalValue
    
```

10.0.06—2019

UpperTolerance

ValueType

ValueRole

ToleranceType

*)

END_SCHEMA;

4.4

EXPRESS')

EXPRESS.

SCHEMA ISO_12006_3_VERSION_3;

TYPE xtdDate = STRING;

END-TYPE;

TYPE xtdGlobalUniqueID = STRING;

END_TYPE;

TYPE xtdLabel « STRING;

END-TYPE;

TYPE XtdTexC » STRING;

END_TYPE;

TYPE xtdToleranceTypeEnum = ENUMERATION OF

(REALVALUE,
PERCENTAGE);

END_TYPE;

TYPE xtdValueRoleEnum = ENUMERATION OF

{NOMINAL,
MAXIMUM,
MINIMUM);

END-TYPE;

TYPE xtdValueTypeEnum = ENUMERATION OF

(XTDSTRING,
XTDNUMBER,
XTDINTEGER,
XTDREAL,
XTDBOOLEAN,
XTDLOGICAL);

END_TYPE;

TYPE XtdVersionID = STRING;

END_TYPE;

ENTITY xedActivity

SUBTYPE OF(xedObject);

END-ENTITY;

')

12006-3.

EXPRESS,


```

entity xtdActor
  SUBTYPE OF(xtdObject);
END-ENTITY;

ENTITY xtdBag
  SUBTYPE OF(xtdCollection);
END-ENTITY;

ENTITY xtdCollection
  ABSTRACT SUPERTYPE OF {ONEOFJxtdNest, xtdBag})
  SUBTYPE OF(xtdRoot);
END_ENTITY;

ENTITY xtdDescription
  SUBTYPE OF(xtdLanguageRepresentation);
  Description : xtdText;
  INVERSE
    is_description_of : SET (1:?1 OF xtdRoot FOR Descriptions;
END-ENTITY;

ENTITY xtdExternalDocument;
  UniqueID : XtdGlobalUniqueID;
  Names : SET [1:?] OF xtdName;
END,ENTITY;

ENTITY xtdLanguage;
  LanguageNameInEnglish :      xtdLabel;
  LanguageNameInSelf       : OPTIONAL xtdLabel;
  Comments                  : OPTIONAL LIST (1:?) OF xtdText;
  UniqueID                  : XtdGlobalUniqueID;
END_ENTITY;

ENTITY xtdLanguageRepreentation
  ABSTRACT SUPERTYPE OF (ONEOFFxtdName, xtdDescription));
  LanguageName : xtdLanguage;
  UniqueID : xtdGlobalUniqueID;
END_ENTITY;

ENTITY xtdMeasureWithUnit
  SUBTYPE OF(xtdObject);
  Unitcomponent : OPTIONAL xtdUnit;
  ValueDomain : OPTIONAL LIST (1:?) OF xtdValue;
END_ENTITY;

ENTITY xtdName
  SUBTYPE OF(xtdLanguageRepresentation);
  Name : xtdLabel;
  INVERSE
    is_name_of : SET (1:?) OF xtdRoot FOR Names;
END_ENTITY;

ENTITY xtdNest
  SUBTYPE OF(xtdCollection);
  WHERE
    WR1 :      S12E0F(QUERY(Result <• SELF\xtdRelCollects.RelatedThings |
NOT{TYPEOF(SELF\xtdRelCollects.RelatingCollection) = TYPEOF(Result)})) = 0 ;
END-ENTITY;

```

```

entity xtdObject
  ABSTRACT SUPERTYPE OF (ONEOF(xtdSubject, xtdActivity, xtdUnit, xtdProperty,
xtdMeasureWithUnit, xtdActor, xtdValue))
  SUBTYPE OF(xtdRoot);
END-ENTITY;

```

```

entity xtdProperty
  SUBTYPE OF(xtdObject);
END-ENTITY;

```

```

ENTITY xtdRelActsUpon
  SUBTYPE OF(xtdRelAssociates);
  WHERE
    WR1 : SIZEOF(QUERY(Result < ' RelatedObjects | RelatingObject:=: Result))3
0;
END_ENTITY;

```

```

ENTITY xtdRelAssignsCollections
  SUBTYPE OF(xtdRelationship);
  RelatingObject : xtdObject;
  RelatedCollections : SET (1:?) OF xtdCollection;
END_ENTITY;

```

```

ENTITY xtdRelAssignsMeasures
  SUBTYPE OF(xtdRelationship);
  RelatingProperty : xtdProperty;
  RelatedMeasures : SET 1:?] OF xtdMeasureWithUnit;
  MethodOfInterpretation : OPTIONAL xtdNane;
END_ENTITY;

```

```

entity xtdRelAssignsProperties
  SUBTYPE OF(xtdRelationship);
  RelatedProperties : SET [1:?] OF xtdProperty;
  RelatingObject : xtdObject;
END-ENTITY;

```

```

ENTITY xtdRelAssignsPropertyWithValues
  SUBTYPE OF(xtdRelationship);
  RelatedProperty : xtdProperty;
  RelatingObject : xtdObject;
  RelatedValues : LIST (1:?) OF UNIQUE xtdValue;
END-ENTITY;

```

```

ENTITY xtdRelAssignsUnits
  SUBTYPE OF(xtdRelationship);
  RelatingMeasure : xtdMeasureWithUnit;
  RelatedUnits : SET (1:?) OF xtdUnit;
END_ENTITY;

```

```

ENTITY xtdRelAseignsValues
  SUBTYPE OF(xtdRelationship);
  RelatingMeasure : xtdMeasureWithUnit;
  RelatedValues : LIST [1:?] OF UNIQUE xtdValue;
END_ENTITY;

```

```

ENTITY xtdRelAssociates

```

```

    SUPERTYPE OF (ONEOF(xtdRelComposes, xtdRelGroups, xtdRelSpecializes,
xtdRelActsUpon)>
    SUBTYPE OF(xtdRelationship);
    RelatingObject : xtdObject;
    RelatedObjects : SET (1:?) OF xtdObject;
    WHERE
        WR1 : SIZEOF<QUERY<Result          RelatedObjects | RelatingObject:=: Result>>«
0;
END_ENTITY;

ENTITY xtdRelationship
    ABSTRACT SUPERTYPE OF (ONEOF(xtdRelAssociates, xtdRelAssignsProperties,
xtdRelAssignsMeasures, xtdRelCollects, xtdRelAssignsCollections,
xtdRelSequences, xtdRelDocuments, xtdRelAssignsUnits, xtdRelAssignsValues,
xtdRelAssignsPropertyWithValues))
    SUBTYPE OF(xtdRoot);
    ViewSelector : OPTIONAL xtdName,-
END_ENTITY;

ENTITY xtdRelCollects
    SUBTYPE OF(xtdRelationship)
    RelatedThings          : SET [!:] OF xtdRoot;
    RelatingCollection : xtdCollection;
END_ENTITY;

ENTITY xtdRelComposes
    SUBTYPE OF(xtdRelAssociates);
    WHERE
        WR1          SIZEOF(QUERY(Result          <*          SELF.RelatedObjects |
NOT(TYPEOF(SELF.RelatingObject) = TYPEOF(Result))) a 0 ;
        WR2 : SIZEOF(QUERY(Result2 <* RelatedObjects | RelatingObject:=: Result2})
» 0;
END_ENTITY;

ENTITY xtdRelDocuments
    SUBTYPE OF(xtdRelationship);
    RelatedObjects : SET [1:] OF xtdObject;
    RelatingDocument : xtdExternalDocument;
END_ENTITY;

ENTITY xtdRelGroups
    SUBTYPE OF(xtdRelAssociates);
    WHERE
        WR1 : SIZEOF(QUERY(Result <* RelatedObjects | RelatingObject:=: Result))= 0;
END_ENTITY;

ENTITY xtdRelSequences
    SUBTYPE OF(xtdRelationship);
    RelatingActivity : OPTIONAL xtdActivity;
    RelatedActivity : OPTIONAL xtdActivity;
    WHERE
        WR1 : RelatedActivity:<>: RelatingActivity,-
        WR2 : EXISTS(RelatingActivity) OR EXISTS(RelatedActivity);
END_ENTITY;

ENTITY xtdRelSpecializes
    SUBTYPE OF(xtdRelAssociates);
    WHERE

```

```

WR1 : SIZEOF(QUERY(Result <* RelatedObjects | RelatingObject:»: Result!)= 0;
WR2 : SIZEOF(QUERY(Result < * SELF.RelatedObjects
NOT(TYPEOF(SELF.RelatingObject) s TYPEOF(Result))) » 0 ;
END_ENTITY;

```

```

ENTITY XtdROOT
  ABSTRACT SUPERTYPE OF (ONEOF(xtdObject, xtdRelationship, xtdCollection));
  VersionDate : OPTIONAL xtdDate;
  VersionID : OPTIONAL xtdVersionID;
  UniqueID : xtdGlobalUniqueID;
  Descriptions : OPTIONAL SET (I:?! OF xtdDescription;
  Names : SET {1:?} OF xtdName;
END_ENTITY;

```

```

ENTITY xtdSubject
  SUBTYPE OF(xtdObject);
END_ENTITY;

```

```

ENTITY xtdUnit
  SUBTYPE OF(xtdObject);
END_ENTITY;

```

```

ENTITY xtdValue
  SUBTYPE OF(xtdObject);
  LowerTolerance: OPTIONAL xtdText;
  NominalValue : OPTIONAL xtdText;
  UpperTolerance: OPTIONAL xtdText;
  ValueType : OPTIONAL xtdValueTypeEnum;
  ValueRole : OPTIONAL xtdValueRoleEnum;
  ToleranceType : OPTIONAL xtdToleranceTypeEnum;
END_ENTITY;

```

```

END_SCHEMA;

```

()

.1

.2

[—Z]. [—z] [0—9].

8

.4

.5 xtd

«xtd». «xtd» — extensible taxonomy definition («

.6

()

.7

«xtd» , «Ret» () (SET (!:?]) (SET [1:?])
« () ; . xtdRetComposes , « »

.8

()

.1

ISO 10303*11		10303-11—2009 « 11. EXPRESS»
ISO/IEC 10646	—	
* — :	9.10	ISO/IEC 10646:2017 -
- IDT —		

()

9.10

ISO/IEC 10646:2017

9 UCS

9.1

UCS

mat 8-brt. 16-bit. 32-bit — UTF-8. UTF-16 UTF-32 (. Unicode Transformation For-
 . 8- ,16- . 32-).

9.2 UTF-8

UTF-8

UCS,

UCS -

2.

• UCS «BASIC LATIN» () UTF-8

ISO/IEC 4673. . .

0000

001F

20 7 .

8

007F -

11

ISO/IEC 4873

. . . 8

8- -

ISO/IEC 2022.

•

00 7F

UTF-8

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UTF-8

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UTF-8,

UCS.

2 —

UTF-8

	t-	2-	3-	4-
000000 000				
zzzzzzzzzzzzzzzzzzzz	1110zzzz			
OOOuuuuuzzzzzzzzzzzzzzzzzzzz	11110	10UUZZZZ		

UTF-8.

D800-DFFF.

UCS.

3

()

UTF-8.

UTF-8.

3.

3 —

UTF-8

	1-	2-	3-	4-
0000-007F	00-7F			
0080-07FF	C2-DF	80-BF		
0800-OFFF	0	A0-8F	80-BF	
1000-CFFF	1-	80-BF	80-BF	
DOOO-D7FF	ED	80-9F	80-BF	
E000-FFFF	EE-EF	80-BF	80-BF	

	1-	2- !	3- !	4-
10000-3FFFF	F0	90-BF	80-BF	80-BF
40000-FFFFF	F1-F3	80-BF	80-BF	80-BF
100000-10FFFF	F4	80-8F	80-BF	80-BF

9.2. UTF-8

0- 1. F5-FE.

9.3 UTF-16

UTF-16 UCS.

16- UTF-16. UCS 16- 0000-D7FF E000-FFFF 4.

UTF-16 BMP (. Bitmap Picture — «

UTF-16 UCS.

4 UTF-16.

10000

vrwww = -).

4 — UTF-16

	UTF-16
	110110WWVAVXXXXXX 110111

UTF-16. BMP UCS-2. BMP UCS. UCS-2

9.4 UTF-32 (UCS-4)

UTF-32 (UCS-4) UCS.

UCS 32- UTF-32 UCS-4

0000 0800 — 0000 DFFF UCS. UTF-32

10 UCS

10.1 UCS.

«FEFF ZERO WIDTH NO-BREAK SPACE» ()

UTF-16. UTF-32BE, UTF-32LE. UTF-32.

10.2 UTF-8

UTF-8 UTF-8

8 UTF-8 <EF BF>.

10.3 UTF-16BE	UTF-16BE	()	UTF-16.	().
			big-endian	
123.				
UTF-16BE BREAK SPACE» (		<FE FF>		«FEFF ZERO WIDTH NO-
10.4 UTF-16LE	UTF-16LE	(	UTF-16.).
UTF-16LE BREAK SPACE» (		<FE FF>		«FEFF ZERO WIDTH NO-
10.5 UTF-16	UTF-16		UTF-16.	-
	UTF-16	<FE FF>		-
	, a <FF FE> —		UTF-16	-
10.6 UTF-32BE	UTF-32BE	(	UTF-32.).
UTF-32BE NO-BREAK SPACE (		<00 00 FE FF>		FEFF ZERO WIDTH
10.7 UTF-32LE	UTF-32LE	(	UTF-32,).
UTF-32LE NO-BREAK SPACE (		<FF FE 00 00>		FEFF ZERO WIDTH
10.8 UTF-32	UTF-32		UTF-32.	-
	UTF-32	<00 00 FE FF>		-
	, a <FF FE 00 00> —		UTF-32	-

- (1) ISO 3166-1, Country Codes
- (2) ISO 10303-41, Industrial automation systems and integration — Product data representation and exchange — Part 41: integrated generic resource: Fundamentals of product description and support
- (3) ISO 10303-221, Industrial automation systems and integration — Product data representation and exchange — Part 221: Application protocol: Functional data and their schematic representation for process plants
- (4) ISO/IEC 10646. Information technology — Universal Multiple-Octet Coded Character Set (UCS). Annex D (Technically equivalent to the definitions in the Unicode Standard)
- (5) ISO 12006-2, Building Construction — Organization of information about construction works — Part 2: Framework for classification of information
- (6) ISO 15926-2, Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities — Part 2: Data model
- (7) ISO 16739-1. Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries — Part 1: Data schema
- (8) The Unicode Consortium. The Unicode Standard. Version 4.0. Boston, MA. Addison-Wesley, 2003. ISBN 0-321-18578-1

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