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Part 10: Formal specifications

AMENDMENT 1: Formal specification of the document profile

Traitement de l'information — Bureautique — Architecture des documents de bureau (ODA) et format d'échange —

Partie 10: Spécifications formelles

AMENDEMENT 1: Spécification formelle du profil de document

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Foreword

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Part 10:
Formal specifications

AMENDMENT 1: Formal specification of the document profile

Annex B

(normative)

Formal specification of the document profile

B.1 Introduction

This annex gives a formal specification of the document profile as described in part 4 of ISO 8613. This annex is composed of 4 clauses:

Clause B.1 provides a general introduction, including a list of all definitions which are given in clauses B.2 and B.3.

Clauses B.2 and B.3 give all the definitions related to the document profile. Clause B.2 contains the definition for the structure of the document profile; clause B.3 contains the definitions for the attributes which appear in the document profile.

Clause B.4 is an index to the terms (definitions, operators, attribute names) used in clauses B.2 and B.3.

Any time a clause number is specified in the semi-formal descriptions this refers to a clause number in ISO 8613-4.

What follows is the outline of the formula which specifies the document profile. The dots indicate formal text fragments which have been left out for the sake of readability. The full formula can be obtained by replacing each line (apart from the *and*) with the definition which is referenced by the superscript of the predicate symbol or operator symbol, respectively. The variables used in the definition of the predicate have to be replaced by those appearing in the outline (if they are different).

NOTE — A definition is a formula, hence it may never yield an undefined result, whatever value has been inserted for the variable.

... IsDocumentProfile$^{4.1}(cst)$ ...
and ... IsProfileAttributeSet$^{4.2}(as)$ ...
and ... IsSetOfProfCharSeq$^{4.3}(v)$ ...
and ... IsProfCharSeq$^{4.4}(v)$ ...
and ... IsProfileCharacter$^{4.5}(v)$ ...
and ... IsExternalReferenceValue$^{4.6}(v)$ ...
and ... IsASN1ObjectIdentifier$^{4.7}(v)$ ...
and ... IsResourcesValue$^{4.8}(v)$ ...
and ... IsDocumentApplicationProfileValue$^{4.9}(v)$ ...
and ... IsDocumentApplicationProfileDefaultsValue$^{4.10}(v)$ ...
and ... IsProfileDefaultableCharacterContentArchitectureAttribute$^{4.11}(v)$ ...
and ... IsProfileDefaultableRasterGraphicsContentArchitectureAttribute$^{4.12}(v)$ ...
and ... IsProfileDefaultableGeometricGraphicsContentArchitectureAttribute$^{4.13}(v)$ ...
and ... IsContentArchitectureClassesValue$^{4.14}(v)$ ...
and ... IsODAVersionValue$^{4.15}(v)$ ...
and ... IsCharacterSetsValue$^{4.16}(v)$ ...
and ... IsPageDimensionsValue$^{4.17}(v)$ ...
and ... IsMediumTypesValue$^{4.18}(v)$ ...
and ... IsLayoutPathsValue$^{4.19}(v)$ ...
and ... IsProtectionsValue$^{4.20}(v)$ ...
and ... IsBlockAlignmentsValue$^{4.21}(v)$ ...
and ... IsFillOrdersValue$^{4.22}(v)$ ...
and ... IsTransparenciesValue$^{4.23}(v)$ ...
and ... IsColoursValue$^{4.24}(v)$ ...
and ... IsBordersValue$^{4.25}(v)$ ...
and ... IsPagePositionsValue$^{4.26}(v)$ ...
and ... IsTypesOfCodingValue$^{4.27}(v)$ ...

and ... IsProfileCodingAttributesValue$^{4.28}(v)$ ...
and ... IsProfileCharacterCodingSpecification$^{4.29}(v)$ ...
and ... IsProfileRasterGraphicsCodingSpecification$^{4.30}(v)$ ...
and ... IsProfileGeometricGraphicsCodingSpecification$^{4.31}(v)$ ...
and ... IsPresentationFeaturesValue$^{4.32}(v)$ ...
and ... IsProfileCharacterPresentationFeature$^{4.33}(v)$ ...
and ... IsProfileRasterGraphicsPresentationFeature$^{4.34}(v)$ ...
and ... IsProfileGeometricGraphicsPresentationFeature$^{4.35}(v)$ ...
and ... IsFontsListValue$^{4.36}(v)$ ...
and ... IsFontReference$^{4.37}(v)$ ...
and ... IsSetOfReferenceProperties$^{4.38}(v)$ ...
and ... IsReferencePropertiesValue$^{4.39}(v)$ ...
and ... IsISO9541Part2AttributeSet$^{4.40}(v)$ ...
and ... IsDateAndTimeValue$^{4.41}(v)$ ...
and ... IsRevisionHistoryValue$^{4.42}(v)$ ...
and ... IsRevisionValue$^{4.43}(v)$ ...
and ... IsPreparersValue$^{4.44}(v)$ ...
and ... IsOwnersValue$^{4.45}(v)$ ...
and ... IsAuthorsValue$^{4.46}(v)$ ...
and ... IsCopyrightValue$^{4.47}(v)$ ...
and ... IsSetOfDatesValue$^{4.48}(v)$ ...
and ... IsDateAndTimeSeq$^{4.49}(v)$ ...
and ... IsDateValue$^{4.50}(v)$ ...
and ... IsDistributionListValue$^{4.51}(v)$ ...
and ... IsAdditionalInformationValue$^{4.52}(v)$ ...
and ... IsSetOfExternalReferences$^{4.53}(v)$ ...
and ... IsLocalFileReferenceValue$^{4.54}(v)$ ...
and ... IsAuthorizationValue$^{4.55}(v)$ ...
and ... IsSetOfPersonalNames$^{4.56}(v)$ ...
and ... IsPersonalName$^{4.57}(v)$ ...
and ... IsAlternativeFeaturesSetsValue$^{4.58}(v)$ ...
and ... IsASN1ObjectIdentifierSet$^{4.59}(v)$ ...
and ... IsEncipheredDocumentProfilesValue$^{4.60}(v)$ ...
and ... IsPrivilegedRecipientInformationValue$^{4.61}(v)$ ...
and ... IsKeyInformationValue$^{4.62}(v)$ ...
and ... IsMethodInformationValue$^{4.63}(v)$ ...
and ... IsKeyAdditionalInformationValue$^{4.64}(v)$ ...
and ... IsKeyMethodValue$^{4.65}(v)$ ...
and ... IsEncipheredDocumentProfileId$^{4.66}(v)$ ...
and ... IsODASecurityLabelValue$^{4.67}(v)$ ...
and ... IsPreEncipheredDocumentBodyPartsValue$^{4.68}(v)$ ...
and ... IsPreEncipheredDocumentBodyPartId$^{4.69}(v)$ ...
and ... IsPostEncipheredDocumentBodyPartsValue$^{4.70}(v)$ ...
and ... IsPostEncipheredDocumentBodyPartId$^{4.71}(v)$ ...
and ... IsSealedDocumentBodyPartsValue$^{4.72}(v)$ ...
and ... IsDocumentSealValue$^{4.73}(v)$ ...
and ... IsSeqOfConstituentIds$^{4.74}(v)$ ...
and ... IsConstituentId$^{4.75}(v)$ ...
and ... IsSealMethodValue$^{4.76}(v)$ ...
and ... IsSealedInformationValue$^{4.77}(v)$ ...
and ... IsLocationValue$^{4.78}(v)$ ...
and ... IsSealedDocumentProfilesValue$^{4.79}(v)$ ...
and ... IsSealedDocumentProfileId$^{4.80}(v)$ ...

NOTE — Other predicates or operators which are used here, but are defined in clause 6, are not listed here.

B.2 The Document Profile

Semiformal Description 4.1

Predicate "is a document profile"

A document profile is a set of profile attributes. The attributes 'content architecture classes', 'document architecture class', 'document reference', 'interchange format class' and 'ODA version' are mandatory, the other ones are optional.

Definition 4.1

$\forall cst$
$({}_{0}\,\mathrm{IsDocumentProfile}(cst)$ *iff*
$\mathrm{IsProfileAttributeSet}^{4.2}(cst)$ *and*
$\mathrm{NAMS}^{1.18}(cst) \supseteq$ ['content architecture classes'; 'document architecture class';
'document reference'; 'interchange format class';
'ODA version'] *and*
$\mathrm{NAMS}^{1.18}(cst) \subseteq$ ['abstract'; 'access rights';
'additional information'; 'alternative feature sets';
'alternative representation character sets'; 'authorization';
'authors'; 'block alignments';
'borders'; 'coding attributes';
'colours'; 'comments character sets';
'content architecture classes'; 'copyright';
'creation date and time'; 'distribution list';
'document application profile'; 'document application profile defaults';
'document architecture class'; 'document date and time';
'document reference'; 'document size';
'document type'; 'enciphered document profiles';
'enciphered profiles'; 'expiry date and time';
'external-document class'; 'fill orders';
'fonts list'; 'generic layout structure';
'generic logical structure'; 'interchange format class';
'keywords'; 'languages';
'layout paths'; 'layout styles';
'local file references'; 'local filing date and time';
'medium types'; 'number of objects per page';
'number of pages'; 'ODA security label';
'ODA version'; 'organizations';
'owners'; 'page dimensions';
'page positions'; 'post-enciphered body parts';
'post-enciphered document body parts'; 'post-sealed document body parts';
'pre-enciphered body parts'; 'pre-enciphered document body parts';
'preparers'; 'pre-sealed document body parts';
'presentation features'; 'presentation styles';
'profile character sets'; 'protections';
'purge date and time'; 'references to other documents';
'release date and time'; 'resource-document';
'resources'; 'revision history';
'sealed document profiles'; 'sealed profiles';
'security classification'; 'specific layout structure';
'specific logical structure'; 'start date and time';
'status'; 'subject';
'superseded documents'; 'title';
'transparencies'; 'types of coding';

```
45                    'unit scaling';                    'user-specific codes'] and
46    (1 'document application profile defaults' ∈ NAMS^1.18(cst) impl
47      'document application profile' ∈ NAMS^1.18(cst) 1)0)
```

B.3 Attributes of the document profile

Semiformal Description 4.2

Predicate "is a profile attribute set" (clause 5.2, table B.1)

In this definition the attribute names are linked with the ranges of the attribute values.

Definition 4.2

```
1   ∀ as
2   (0 IsProfileAttributeSet(as) iff
3     (1 IsNeNom^1.2(as) and
4       ∀ a ∈̂ as •
5       (2 N a = 'abstract' impl IsProfCharSeq^4.4(C a) 2) and
6       (3 N a = 'access rights' impl IsSetOfProfCharSeq^4.3(C a) 3) and
7       (4 N a = 'additional information' impl IsAdditionalInformationValue^4.52(C a) 4) and
8       (5 N a = 'alternative feature sets' impl IsAlternativeFeaturesSetsValue^4.58(C a) 5) and
9       (6 N a = 'alternative representation character sets' impl IsCharacterSetsValue^4.16(C a) 6) and
10      (7 N a = 'authorization' impl IsAuthorizationValue^4.55(C a) 7) and
11      (8 N a = 'authors' impl IsAuthorsValue^4.46(C a) 8) and
12      (9 N a = 'block alignments' impl IsBlockAlignmentsValue^4.21(C a) 9) and
13      (10 N a = 'borders' impl IsBordersValue^4.25(C a) 10) and
14      (11 N a = 'coding attributes' impl IsProfileCodingAttributesValue^4.28(C a) 11) and
15      (12 N a = 'colours' impl IsColoursValue^4.24(C a) 12) and
16      (13 N a = 'comments character sets' impl IsCharacterSetsValue^4.16(C a) 13) and
17      (14 N a = 'content architecture classes' impl IsContentArchitectureClassesValue^4.14(C a) 14) and
18      (15 N a = 'copyright' impl IsCopyrightValue^4.47(C a) 15) and
19      (16 N a = 'creation date and time' impl IsDateAndTimeValue^4.41(C a) 16) and
20      (17 N a = 'distribution list' impl IsDistributionListValue^4.51(C a) 17) and
21      (18 N a = 'document application profile' impl IsDocumentApplicationProfileValue^4.9(C a) 18) and
22      (19 N a = 'document application profile defaults' impl
23        IsDocumentApplicationProfileDefaultsValue^4.10(C a) 19) and
24      (20 N a = 'document architecture class' impl
25        C a ∈ ['formatted';'processable';'formatted processable'] 20) and
26      (21 N a = 'document date and time' impl IsDateAndTimeValue^4.41(C a) 21) and
27      (22 N a = 'document reference' impl IsExternalReferenceValue^4.6(C a) 22) and
28      (23 N a = 'document size' impl IsNat(C a) 23) and
29      (24 N a = 'document type' impl IsProfCharSeq^4.4(C a) 24) and
30      (25 N a = 'enciphered document profiles' impl IsEncipheredDocumentProfilesValue^4.60(C a) 25) and
31      (26 N a = 'enciphered profiles' impl C a = 'present' 26) and
32      (27 N a = 'expiry date and time' impl IsDateAndTimeValue^4.41(C a) 27) and
33      (28 N a = 'external-document class' impl IsExternalReferenceValue^4.6(C a) 28) and
34      (29 N a = 'fill orders' impl IsFillOrdersValue^4.22(C a) 29) and
35      (30 N a = 'fonts list' impl IsFontsListValue^4.36(C a) 30) and
36      (31 N a = 'generic layout structure' impl
37        C a ∈ ['factor set';'partial generator set';'complete generator set'] 31) and
38      (32 N a = 'generic logical structure' impl
39        C a ∈ ['factor set';'partial generator set';'complete generator set'] 32) and
40      (33 N a = 'interchange format class' impl C a ∈ ['A';'B'] 33) and
```

```
41  (34 N a = 'keywords' impl IsSetOfProfCharSeq^4.3(C a) 34) and
42  (35 N a = 'languages' impl IsSetOfProfCharSeq^4.3(C a) 35) and
43  (36 N a = 'layout paths' impl IsLayoutPathsValue^4.19(C a) 36) and
44  (37 N a = 'layout styles' impl C a = 'present' 37) and
45  (38 N a = 'local file references' impl IsLocalFileReferenceValue^4.54(C a) 38) and
46  (39 N a = 'local filing date and time' impl IsDateAndTimeSeq^4.49(C a) 39) and
47  (40 N a = 'medium types' impl IsMediumTypesValue^4.18(C a) 40) and
48  (41 N a = 'number of objects per page' impl IsNat(C a) 41) and
49  (42 N a = 'number of pages' impl IsNnInt^1.7(C a) 42) and
50  (43 N a = 'ODA security label' impl IsODASecurityLabelValue^4.67(C a) 43) and
51  (44 N a = 'ODA version' impl IsODAVersionValue^4.15(C a) 44) and
52  (45 N a = 'organizations' impl IsSetOfProfCharSeq^4.3(C a) 45) and
53  (46 N a = 'owners' impl IsOwnersValue^4.45(C a) 46) and
54  (47 N a = 'page dimensions' impl IsPageDimensionsValue^4.17(C a) 47) and
55  (48 N a = 'page positions' impl IsPagePositionsValue^4.26(C a) 48) and
56  (49 N a = 'post-enciphered body parts' impl C a = 'present' 49) and
57  (50 N a = 'post-enciphered document body parts' impl
58    IsPostEncipheredDocumentBodyPartsValue^4.70(C a) 50) and
59  (51 N a = 'post-sealed document body parts' impl IsSealedDocumentBodyPartsValue^4.72(C a) 51) and
60  (52 N a = 'pre-enciphered body parts' impl C a = 'present' 52) and
61  (53 N a = 'pre-enciphered document body parts' impl
62    IsPreEncipheredDocumentBodyPartsValue^4.68(C a) 53) and
63  (54 N a = 'preparers' impl IsPreparersValue^4.44(C a) 54) and
64  (55 N a = 'pre-sealed document body parts' impl IsSealedDocumentBodyPartsValue^4.72(C a) 55) and
65  (56 N a = 'presentation features' impl IsPresentationFeaturesValue^4.32(C a) 56) and
66  (57 N a = 'presentation styles' impl C a = 'present' 57) and
67  (58 N a = 'profile character sets' impl IsCharacterSetsValue^4.16(C a) 58) and
68  (59 N a = 'protections' impl IsProtectionsValue^4.20(C a) 59) and
69  (60 N a = 'purge date and time' impl IsDateAndTimeValue^4.41(C a) 60) and
70  (61 N a = 'references to other documents' impl IsSetOfExternalReferences^4.53(C a) 61) and
71  (62 N a = 'release date and time' impl IsDateAndTimeValue^4.41(C a) 62) and
72  (63 N a = 'resource-document' impl IsExternalReferenceValue^4.6(C a) 63) and
73  (64 N a = 'resources' impl IsResourcesValue^4.8(C a) 64) and
74  (65 N a = 'revision history' impl IsRevisionHistoryValue^4.42(C a) 65) and
75  (66 N a = 'sealed document profiles' impl IsSealedDocumentProfilesValue^4.79(C a) 66) and
76  (67 N a = 'sealed profiles' impl C a = 'present' 67) and
77  (68 N a = 'security classification' impl IsProfCharSeq^4.4(C a) 68) and
78  (69 N a = 'specific layout structure' impl C a = 'present' 69) and
79  (70 N a = 'specific logical structure' impl C a = 'present' 70) and
80  (71 N a = 'start date and time' impl IsDateAndTimeValue^4.41(C a) 71) and
81  (72 N a = 'status' impl IsProfCharSeq^4.4(C a) 72) and
82  (73 N a = 'subject' impl IsProfCharSeq^4.4(C a) 73) and
83  (74 N a = 'superseded documents' impl IsSetOfExternalReferences^4.53(C a) 74) and
84  (75 N a = 'title' impl IsProfCharSeq^4.4(C a) 75) and
85  (76 N a = 'transparencies' impl IsTransparenciesValue^4.23(C a) 76) and
86  (77 N a = 'types of coding' impl IsTypesOfCodingValue^4.27(C a) 77) and
87  (78 N a = 'unit scaling' impl IsPairOfPosInt^1.9(C a) 78) and
88  (79 N a = 'user-specific codes' impl IsSetOfProfCharSeq^4.3(C a) 79)1)0)
```

Semiformal Description 4.3

Predicate "is a set of profile character sequences"

A set of profile character sequences is a set where each element is a profile character sequence.

Definition 4.3

1 $\forall v$
2 $(_0$ IsSetOfProfCharSeq(v) *iff*
3 IsNeCol$^{1.1}$(v) *and* $\forall m \in v$ (IsProfCharSeq$^{4.4}$(m)) $_0)$

Semiformal Description 4.4

Predicate "is a profile character sequence" (e.g., clause 5.2.7)

A profile character sequence is a catenation of characters from the document profile character set.

Definition 4.4

1 $\forall v$
2 $(_0$ IsProfCharSeq(v) *iff*
3 IsNeCat$^{1.3}$(v) *and* $\forall m \hat{\in} \hat{} v \bullet$ (IsProfileCharacter$^{4.5}$(C m)) $_0)$

Semiformal Description 4.5

Predicate "is a profile character" (e.g., clause 5.2.7)

A profile character is considered an atomic construct in the formal specification.

Definition 4.5

1 $\forall v$
2 $(_0$ IsProfileCharacter(v) *iff*
3 IsAtom$(v)_0)$

Semiformal Description 4.6

Predicate "is an external reference value" (e.g., clause 5.2.7)

An external reference value is either an ASN.1 object identifier or a sequence of characters from the document profile character set.

Definition 4.6

1 $\forall v$
2 $(_0$ IsExternalReferenceValue(v) *iff*
3 $(_1$ IsASN1ObjectIdentifier$^{4.7}$(v) *or* IsProfCharSeq$^{4.4}$(v) $_1)_0)$

Semiformal Description 4.7

Predicate "is an ASN.1 object identifier" (e.g., clause 5.2.7)

An ASN.1 object identifier is considered an atomic construct in the formal specification.

Definition 4.7

1 $\forall v$
2 $(_0$ IsASN1ObjectIdentifier(v) *iff*
3 IsAtom$(v)_0)$

Semiformal Description 4.8

Predicate "is a resources value" (clause 5.2.9)

The value of the attribute **'resources'** is a set where each element consists of a pair, the first part being a sequence of characters from the minimum subrepertoire of ISO 6937-2, the second part being an object class identifier.

Definition 4.8

1 $\forall v$
2 $(_0$ IsResourcesValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v \; \exists l, r$
5 $(_1\, a = [\rightarrow l \rightarrow r \rightarrow]$ *and*
6 IsISO6937MSString$^{1.20}(l)$ *and* IsObjectClassId$^{2.83}(r)\ _1)_0)$

Semiformal Description 4.9

Predicate "is a document application profile value" (clause 5.3.1)

The value of the attribute **'document application profile'** is either an ASN.1 object identifier or the integer 2.

Definition 4.9

1 $\forall v$
2 $(_0$ IsDocumentApplicationProfileValue(v) *iff*
3 $(_1$ IsASN1ObjectIdentifier$^{4.7}(v)$ *or* $v = 2_1)_0)$

Semiformal Description 4.10

Predicate "is a document application profile defaults value" (clause 5.3.2)

A document application profile defaults value is either a non-empty nomination, where the names are 'content architecture class', 'dimensions', 'transparency', 'colour', 'border', 'layout path', 'page position', 'medium type', 'block alignment' and/or 'type of coding' and the component is a value of the corresponding attribute as defined in ISO 8613-2, or it is a defaultable attribute from the character content architecture, the raster graphics architecture or the geometric graphics architecture.

Definition 4.10

1 $\forall v$
2 $(_0$ IsDocumentApplicationProfileDefaultsValue(v) *iff*
3 $(_1 (_2$ IsNeNom$^{1.2}(v)$ *and*
4 NAMS$^{1.18}(v) \subseteq$ ['content architecture class'; 'dimensions'; 'colour'; 'border'; 'layout path';
5 'page position'; 'transparency'; 'medium type'; 'block alignment';
6 'type of coding'] *and*
7 $\forall a \hat{\in} \hat{} v \bullet$
8 $(_3$ N $a =$ 'content architecture class' *impl* IsContentArchitectureClassValue$^{2.88}$(C $a)_3$) *and*
9 $(_4$ N $a =$ 'dimensions' *impl* IsDimensionsValue$^{2.99}$(C $a)_4$) *and*
10 $(_5$ N $a =$ 'transparency' *impl* IsTransparencyValue$^{2.103}$(C $a)_5$) *and*
11 $(_6$ N $a =$ 'colour' *impl* IsColourValue$^{2.104}$(C $a)_6$) *and*
12 $(_7$ N $a =$ 'border' *impl* IsBorderValue$^{2.100}$(C $a)_7$) *and*
13 $(_8$ N $a =$ 'layout path' *impl* IsLayoutPathValue$^{2.102}$(C $a)_8$) *and*
14 $(_9$ N $a =$ 'page position' *impl* IsPairOfNnInt$^{1.8}$(C $a)_9$) *and*
15 $(_{10}$ N $a =$ 'medium type' *impl* IsMediumTypeValue$^{2.105}$(C $a)_{10}$) *and*
16 $(_{11}$ N $a =$ 'block alignment' *impl* IsBlockAlignmentValue$^{2.108}$(C $a)_{11}$) *and*
17 $(_{12}$ N $a =$ 'type of coding' *impl* IsTypeOfCodingValue$^{2.120}$(C $a)_{12})_2$) *or*
18 IsProfileDefaultableCharacterContentArchitectureAttribute$^{4.11}(v)$ *or*
19 IsProfileDefaultableRasterGraphicsContentArchitectureAttribute$^{4.12}(v)$ *or*
20 IsProfileDefaultableGeometricGraphicsContentArchitectureAttribute$^{4.13}(v)_1)_0$)

Semiformal Description 4.11

Predicate "is a profile defaultable character content architecture value" (clause 5.3.2)

A profile defaultable character content architecture value is one of the attributes (name and value) which is classified as defaultable in ISO 8613-6. It is considered an atomic construct in the formal specification of the document profile. This predicate is formally defined in annex C, definition 6.1.

Definition 4.11

1 $\forall v$
2 $(_0$ IsProfileDefaultableCharacterContentArchitectureAttribute(v) *iff*
3 IsAtom$(v)_0$)

Semiformal Description 4.12

Predicate "is a profile defaultable raster graphics content architecture value" (clause 5.3.2)

A profile defaultable raster graphics content architecture value is one of the attributes (name and value) which is classified as defaultable in ISO 8613-7. It is considered an atomic construct in the formal specification of the document profile. This predicate is formally defined in annex D, definition 7.1.

Definition 4.12

```
1   ∀ v
2   (₀ IsProfileDefaultableRasterGraphicsContentArchitectureAttribute(v) iff
3     IsAtom(v)₀)
```

Semiformal Description 4.13

Predicate "is a profile defaultable geometric graphics content architecture value" (clause 5.3.2)

A profile defaultable geometric graphics content architecture value is one of the attributes (name and value) which is classified as defaultable in ISO 8613-8. It is considered an atomic construct in the formal specification of the document profile. This predicate is formally defined in annex E, definition 8.1.

Definition 4.13

```
1   ∀ v
2   (₀ IsProfileDefaultableGeometricGraphicsContentArchitectureAttribute(v) iff
3     IsAtom(v)₀)
```

Semiformal Description 4.14

Predicate "is a content architecture classes value" (clause 5.3.4)

The value of the attribute 'content architecture classes' is a non-empty set where each element is a content architecture class value.

Definition 4.14

```
1   ∀ v
2   (₀ IsContentArchitectureClassesValue(v) iff
3     IsNeCol^1.1(v) and
4     ∀ a ∈ v (IsContentArchitectureClassValue^2.88(a)) ₀)
```

Semiformal Description 4.15

Predicate "is an ODA version value" (clause 5.3.6)

An ODA version value is a catenation of two elements. The first element is a sequence of characters from the document profile character set, the second element is a date value in accordance with ISO 8601.

Definition 4.15

```
1   ∀ v
2   (₀ IsODAVersionValue(v) iff
3     ∃ l, r
4     (₁ v = [ → l → r → ] and
5       IsProfCharSeq^4.4(l) and IsDateValue^4.50(r) ₁)₀)
```

Semiformal Description 4.16

Predicate "is a character sets value" (e.g., clause 5.3.7.1)

This value consists of escape sequences in accordance with ISO 2022 and ISO 2375. It is considered an atomic construct in the formal specification.

Definition 4.16

```
1   ∀ v
2   (₀ IsCharacterSetsValue(v) iff
3     IsAtom(v)₀)
```

Semiformal Description 4.17

Predicate "is a page dimensions value" (clause 5.3.7.4.1)

The value of the attribute 'page dimensions' is a set of pairs of positive integers.

Definition 4.17

```
1   ∀ v
2   (₀ IsPageDimensionsValue(v) iff
3     IsNeCol^1.1(v) and
4     ∀ a ∈ v (IsPairOfPosInt^1.9(a)) ₀)
```

Semiformal Description 4.18

Predicate "is a medium types value" (clause 5.3.7.4.2)

The value of the attribute 'medium types' is a set where each element is a medium type value.

Definition 4.18

```
1   ∀ v
2   (₀ IsMediumTypesValue(v) iff
3     IsNeCol^1.1(v) and
4     ∀ a ∈ v (IsMediumTypeValue^2.105(a)) ₀)
```

Semiformal Description 4.19

Predicate "is a layout paths value" (clause 5.3.7.4.3)

The value of the attribute 'layout paths' is a set where each element is a layout path value.

Definition 4.19

```
1   ∀ v
2   (₀ IsLayoutPathsValue(v) iff
3     IsNeCol^1.1(v) and
4     ∀ a ∈ v (IsLayoutPathValue^2.102(a)) ₀)
```

Semiformal Description 4.20

Predicate "is a protections value" (clause 5.3.7.4.4)

The value of the attribute 'protections' is a set where each element is a protection value.

Definition 4.20

1 $\forall v$
2 $(_0$ IsProtectionsValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v$ (IsProtectionValue$^{2.106}(a)$) $_0)$

Semiformal Description 4.21

Predicate "is a block alignments value" (clause 5.3.7.4.5)

The value of the attribute 'block alignments' is a set where each element is a block alignment value.

Definition 4.21

1 $\forall v$
2 $(_0$ IsBlockAlignmentsValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v$ (IsBlockAlignmentValue$^{2.108}(a)$) $_0)$

Semiformal Description 4.22

Predicate "is a fill orders value" (clause 5.3.7.4.6)

The value of the attribute 'fill orders' is a set where each element is a fill order value.

Definition 4.22

1 $\forall v$
2 $(_0$ IsFillOrdersValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v$ (IsFillOrderValue$^{2.110}(a)$) $_0)$

Semiformal Description 4.23

Predicate "is a transparencies value" (clause 5.3.7.4.7)

The value of the attribute 'transparencies' is a set where each element is a transparency value.

Definition 4.23

1 $\forall v$
2 $(_0$ IsTransparenciesValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v$ (IsTransparencyValue$^{2.163}(a)$) $_0)$

Semiformal Description 4.24

Predicate "is a colours value" (clause 5.3.7.4.8)

The value of the attribute 'colours' is a set where each element is a colour value.

Definition 4.24

1 $\forall v$
2 $(_{o}$ IsColoursValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v$ (IsColourValue$^{2.104}(a)$) $_{o})$

Semiformal Description 4.25

Predicate "is a borders value" (clause 5.3.7.4.9)

The value of the attribute 'borders' is a set where each element is a border value.

Definition 4.25

1 $\forall v$
2 $(_{o}$ IsBordersValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v$ (IsBorderValue$^{2.100}(a)$) $_{o})$

Semiformal Description 4.26

Predicate "is a page positions value" (clause 5.3.7.4.10)

The value of the attribute 'page positions' is a set where each element is a pair of non-negative integers.

Definition 4.26

1 $\forall v$
2 $(_{o}$ IsPagePositionsValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v$ (IsPairOfNnInt$^{1.8}(a)$) $_{o})$

Semiformal Description 4.27

Predicate "is a types of coding value" (clause 5.3.7.4.11)

The value of the attribute 'types of coding' is a set where each element is a type of coding value.

Definition 4.27

1 $\forall v$
2 $(_{o}$ IsTypesOfCodingValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v$ (IsTypeOfCodingValue$^{2.120}(a)$) $_{o})$

Semiformal Description 4.28

Predicate "is a profile coding attributes value" (clause 5.3.7.5)

The value of the attribute 'coding attributes' is a nomination where the name is 'character coding attributes', 'raster-graphics coding attributes' and/or 'geometric-graphics coding attributes'. The corresponding component is a character coding specification, raster graphics coding specification or geometric graphics coding specification.

Definition 4.28

```
1   ∀ v
2   (0 IsProfileCodingAttributesValue(v) iff
3     IsNeNom1.2(v) and
4     NAMS1.18(v) ⊆ ['character coding attributes'; 'raster-graphics coding attributes';
5                    'geometric-graphics coding attributes'] and
6     ∀ b ∈ ^v •
7     (1 (2 N b = 'character coding attributes' impl
8         IsProfileCharacterCodingSpecification4.29(C b) 2) and
9       (3 N b = 'raster-graphics coding attributes' impl
10        IsProfileRasterGraphicsCodingSpecification4.30(C b) 3) and
11      (4 N b = 'geometric-graphics coding attributes' impl
12        IsProfileGeometricGraphicsCodingSpecification4.31(C b) 4)1)0)
```

Semiformal Description 4.29

Predicate "is a profile character coding specification" (clause 5.3.7.5)

A profile character coding specification is considered an atomic construct in the formal specification of the document profile. The formal specification of a character coding specification is given in annex C, definition 6.2.

Definition 4.29

```
1   ∀ v
2   (0 IsProfileCharacterCodingSpecification(v) iff
3     IsAtom(v)0)
```

Semiformal Description 4.30

Predicate "is a profile raster graphics coding specification" (clause 5.3.7.5)

A profile raster graphics coding specification is considered an atomic construct in the formal specification of the document profile. The formal specification of a raster graphics coding specification is given in annex D, definition 7.2.

Definition 4.30

```
1   ∀ v
2   (0 IsProfileRasterGraphicsCodingSpecification(v) iff
3     IsAtom(v)0)
```

Semiformal Description 4.31

Predicate "is a profile geometric graphics coding specification" (clause 5.3.7.5)

A profile geometric graphics coding specification is considered an atomic construct in the formal specification of the document profile. The formal specification of a geometric graphics coding specification is given in annex E, definition 8.2.

Definition 4.31

```
1   ∀ v
2   (0 IsProfileGeometricGraphicsCodingSpecification(v) iff
3     IsAtom(v)0)
```

Semiformal Description 4.32

Predicate "is a presentation features value" (clause 5.3.7.6)

The value of the attribute 'presentation features' is a nomination where the name is 'character presentation features', 'raster-graphics presentation features' and/or 'geometric-graphics presentation features'. The corresponding component is a character presentation feature, a raster graphics presentation feature or a geometric graphics presentation feature.

Definition 4.32

```
1   ∀ v
2   (0 IsPresentationFeaturesValue(v) iff
3     IsNeNom1.2(v) and
4     NAMS1.18(v) ⊆ ['character presentation features'; 'raster-graphics presentation features';
5                    'geometric-graphics presentation features'] and
6     ∀ b ∈̂ v •
7     (1 (2 N b = 'character presentation features' impl IsProfileCharacterPresentationFeature4.33(C b) 2) and
8       (3 N b = 'raster-graphics presentation features' impl
9         IsProfileRasterGraphicsPresentationFeature4.34(C b) 3) and
10      (4 N b = 'geometric-graphics presentation features' impl
11        IsProfileGeometricGraphicsPresentationFeature4.35(C b) 4)1)0)
```

Semiformal Description 4.33

Predicate "is a profile character presentation feature" (clause 5.3.7.6)

A profile character presentation feature is considered an atomic construct in the formal specification of the document profile. The formal specification of a character presentation feature is given in annex C, definition 6.3.

Definition 4.33

```
1   ∀ v
2   (0 IsProfileCharacterPresentationFeature(v) iff
3     IsAtom(v)0)
```

Semiformal Description 4.34

Predicate "is a profile raster graphics presentation feature" (clause 5.3.7.6)

A profile raster graphics presentation feature is considered an atomic construct in the formal specification of the document profile. The formal specification of a raster graphics presentation feature is given in annex D, definition 7.3.

Definition 4.34

1 $\forall v$
2 $(_0$ IsProfileRasterGraphicsPresentationFeature(v) *iff*
3 IsAtom$(v)_0)$

Semiformal Description 4.35

Predicate "is a profile geometric graphics presentation feature" (clause 5.3.7.6)

A profile geometric graphics presentation feature is considered an atomic construct in the formal specification of the document profile. The formal specification of a geometric graphics presentation feature is given in annex E, definition 8.3.

Definition 4.35

1 $\forall v$
2 $(_0$ IsProfileGeometricGraphicsPresentationFeature(v) *iff*
3 IsAtom$(v)_0)$

Semiformal Description 4.36

Predicate "is a fonts list value" (clause 5.3.9.2)

The value of the attribute 'fonts list' is a set of one or more pairs, where the first element of the pair is an integer and the second element is a font reference.

Definition 4.36

1 $\forall v$
2 $(_0$ IsFontsListValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall b \in v \; \exists l, r$
5 $(_1 b = [\rightarrow l \rightarrow r \rightarrow]$ *and*
6 IsInt(l) *and* IsFontReference$^{4.37}(r)$ $_1)_0)$

Semiformal Description 4.37

Predicate "is a font reference" (clause 5.3.9.2)

A font reference is a non-empty nomination where the name is 'reference properties', 'user-readable comments' and/or 'user-visible name'. At least the name 'reference properties' must be specified. For the name 'reference properties' the component is a set of reference properties. For the names 'user-readable comments' and 'user-visible name' the components are character sequences.

Definition 4.37

1 $\forall v$
2 $(_0$IsFontReference(v) *iff*
3 IsNeNom$^{1.2}(v)$ *and*
4 NAMS$^{1.18}(v) \supseteq$ ['reference properties'; 'user-readable comments'; 'user-visible name'] *and*
5 'reference properties' $\in$ NAMS$^{1.18}(v)$ *and*
6 $\forall a \in \hat{} v \bullet$
7 $(_1 (_2$N a = 'reference properties' *impl* IsSetOfReferenceProperties$^{4.38}$(C $a)_2$)
8 $(_3$N a = 'user-readable comments' *impl* IsCharSeq$^{2.133}$(C $a)_3$)
9 $(_4$N a = 'user-visible name' *impl* IsCharSeq$^{2.133}$(C $a)_4$) $_1)_0$)

Semiformal Description 4.38

Predicate "is a set of reference properties" (clause 5.3.9.2)

A set of reference properties is a non-empty collection whose elements are reference properties values.

Definition 4.38

1 $\forall v$
2 $(_0$IsSetOfReferenceProperties(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall a \in v$ IsReferencePropertiesValue$^{4.39}(a)_0$)

Semiformal Description 4.39

Predicate "is a reference properties value" (clause 5.3.9.2)

A reference properties value is a non-empty nomination where the name is 'precedence number', 'properties' and/or 'user-readable comments'. At least the name 'properties' must be specified. For the name 'precedence number' the component is a non-negative integer. For the name 'properties' the value is an ISO 9541, Part2, attribute set. For the name 'user-readable comments' the component is a character sequences.

Definition 4.39

1 $\forall v$
2 $(_0$IsReferencePropertiesValue(v) *iff*
3 IsNeNom$^{1.2}(v)$ *and*
4 NAMS$^{1.18}(v) \supseteq$ ['precedence number'; 'properties'; 'user-readable comments'] *and*
5 'properties' $\in$ NAMS$^{1.18}(v)$ *and*
6 $\forall a \in \hat{} v \bullet$
7 $(_1 (_2$N a = 'precedence number' *impl* IsNnInt$^{1.7}$(C $a)_2$)
8 $(_3$N a = 'properties' *impl* IsISO9541Part2AttributeSet$^{4.40}$(C $a)_3$)
9 $(_4$N a = 'user-readable comments' *impl* IsCharSeq$^{2.133}$(C $a)_4$) $_1)_0$)

Semiformal Description 4.40

Predicate "is an ISO 9541, Part 2, attribute set" (clause 5.3.9.2)

An ISO 9541, Part 2, attribute set is considered an atomic construct in the formal specification of the document profile.

Definition 4.40

```
1   ∀ v
2   (o IsISO9541Part2AttributeSet(v) iff
3     IsAtom(v)o)
```

Semiformal Description 4.41

Predicate "is a date and time value" (e.g., clause 5.4.2.1)

A date and time value is a date character string and, optionally, a time of day character string, in accordance with ISO 8601. It is considered an atomic construct in the formal specification.

Definition 4.41

```
1   ∀ v
2   (o IsDateAndTimeValue(v) iff
3     IsAtom(v)o)
```

Semiformal Description 4.42

Predicate "is a revision history value" (clause 5.4.2.8)

The value of the attribute 'revision history' is a non-empty sequence of revision values.

Definition 4.42

```
1   ∀ v
2   (o IsRevisionHistoryValue(v) iff
3     IsNeCat^1.3(v) and
4     ∀ a ∈̂ ^v • (IsRevisionValue^4.43(C a))o)
```

Semiformal Description 4.43

Predicate "is an revision value" (e.g., clause 5.4.2.8)

A revision value is a nomination where the name is either 'revision date and time' (the corresponding component is a data and time value), 'version number' (the component is an integer), 'version reference' (the component is an external reference value), 'user comments' (the component is a sequence of characters from the document profile character set) or 'revisers'. For the last case, the component is a nomination again, where the (nomination) name is 'names' (the component is a set of personal names), 'position' and/or 'organization' (the corresponding components are sequences of characters from the document profile character set). At least one of these three sub-parameters must be specified.

Definition 4.43

```
1   ∀ v
2   (0 IsRevisionValue(v) iff
3     IsNom(v) and
4     NAMS1.18(v) ⊆ ['revisers'; 'revision date and time'; 'user comments';
5                    'version number'; 'version reference'] and
6     ∀ a ∈̂ ^v •
7     (1 (2 N a = 'revisers' impl
8         (3 IsNeNom1.2(C a) and
9           NAMS1.18(C a) ⊆ ['names'; 'position'; 'organization'] and
10          ∀ b ∈̂ ^(C a) •
11          (4 (5 N b = 'names' impl IsSetOfPersonalNames4.56(C b) 5) and
12            (6 N b ∈ ['position'; 'organization'] impl IsProfCharSeq4.4(C b) 6)4)3)2) and
13      (7 N a = 'revision date and time' impl IsDateAndTimeValue4.41(C a) 7) and
14      (8 N a = 'user comments' impl IsProfCharSeq4.4(C a) 8) and
15      (9 N a = 'version number' impl IsProfCharSeq4.4(C a) 9) and
16      (10 N a = 'version reference' impl IsExternalReferenceValue4.6(C a) 10)1)0)
```

Semiformal Description 4.44

Predicate "is a preparers value" (clause 5.4.3.2)

The value of the attribute 'preparers' is a set of nominations. For each nomination, the (nomination) name is 'personal name of preparer' (the corresponding component is a personal name) and/or 'preparers organization' (the corresponding component is a sequence of characters from the document profile character set). At least one of these parameters must be specified.

Definition 4.44

```
1   ∀ v
2   (0 IsPreparersValue(v) iff
3     IsNeCol1.1(v) and
4     ∀ b ∈ v
5     (1 IsNeNom1.2(b) and
6       NAMS1.18(b) ⊆ ['personal name of preparer'; 'preparers organization'] and
7       ∀ a ∈̂ ^b •
8       (2 (3 N a = 'personal name of preparer' impl IsPersonalName4.57(C a) 3) and
9         (4 N a = 'preparers organization' impl IsProfCharSeq4.4(C a) 4)2)1)0)
```

Semiformal Description 4.45

Predicate "is an owners value" (clause 5.4.3.3)

The value of the attribute 'owners' is a set of nominations. For each nomination, the (nomination) name is 'personal name of owner' (the corresponding component is a personal name) and/or 'owners organization' (the corresponding component is a sequence of characters from the document profile character set). At least one of these parameters must be specified.

Definition 4.45

1 $\forall v$
2 $(_0$IsOwnersValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall b \in v$
5 $(_1$IsNeNom$^{1.2}(b)$ *and*
6 NAMS$^{1.18}(b) \subseteq$ ['personal name of owner';'owners organization'] *and*
7 $\forall a \hat{\in} \hat{} b \bullet$
8 $(_2(_3$N $a =$ 'personal name of owner' *impl* IsPersonalName$^{4.57}$(C a) $_3)$ *and*
9 $(_4$N $a =$ 'owners organization' *impl* IsProfCharSeq$^{4.4}$(C a) $_4)_2)_1)_0)$

Semiformal Description 4.46

Predicate "is an authors value" (clause 5.4.3.4)

The value of the attribute 'authors' is a set of nominations. For each nomination, the (nomination) name is 'personal name of author' (the corresponding component is a personal name) and/or 'authors organization' (the corresponding component is a sequence of characters from the document profile character set). At least one of these parameters must be specified.

Definition 4.46

1 $\forall v$
2 $(_0$IsAuthorsValue(v) *iff*
3 IsNeCol$^{1.1}(v)$ *and*
4 $\forall b \in v$
5 $(_1$IsNeNom$^{1.2}(b)$ *and*
6 NAMS$^{1.18}(b) \subseteq$ ['personal name of author';'authors organization'] *and*
7 $\forall a \hat{\in} \hat{} b \bullet$
8 $(_2(_3$N $a =$ 'personal name of author' *impl* IsPersonalName$^{4.57}$(C a) $_3)$ *and*
9 $(_4$N $a =$ 'authors organization' *impl* IsProfCharSeq$^{4.4}$(C a) $_4)_2)_1)_0)$

Semiformal Description 4.47

Predicate "is a copyright value" (clause 5.4.4.1)

The value of the attribute 'copyright' is a set of nominations. For each nomination, the name is 'copyright information' (the corresponding component is a set of sequences of characters from the document profile character set) and/or 'copyright dates' (the corresponding component is a date value).

Definition 4.47

```
1   ∀ v
2   (0 IsCopyrightValue(v) iff
3     IsNeCol1.1(v) and
4     ∀ b ∈ v
5     (1 IsNeNom1.2(b) and
6       NAMS1.18(b) ⊆ ['copyright information';'copyright dates'] and
7       ∀ a ∈̂ ~b •
8       (2 (3 N a = 'copyright information' impl IsSetOfProfCharSeq4.3(C a) 3) and
9         (4 N a = 'copyright dates' impl IsSetOfDatesValue4.48(C a) 4)2)1)0)
```

Semiformal Description 4.48

Predicate "is a set of dates value" (clause 5.4.4.1)

A set of dates value is a set where each element of the set is a date value.

Definition 4.48

```
1   ∀ v
2   (0 IsSetOfDatesValue(v) iff
3     IsNeCol1.1(v) and
4     ∀ b ∈ v (IsDateValue4.50(b)) 0)
```

Semiformal Description 4.49

Predicate "is a date and time sequence" (clause 5.4.2)

A date and time sequence is a catenation where each element is a date and time value.

Definition 4.49

```
1   ∀ v
2   (0 IsDateAndTimeSeq(v) iff
3     IsNeCat1.3(v) and
4     ∀ b ∈̂ ~v • (IsDateAndTimeValue4.41(C b)) 0)
```

Semiformal Description 4.50

Predicate "is a date value" (clause 5.4.2)

A date value is a date character string in accordance with ISO 8601. It is considered an atomic construct in the formal specification.

Definition 4.50

```
1   ∀ v
2   (0 IsDateValue(v) iff
3     IsAtom(v)0)
```

Semiformal Description 4.51

Predicate "is a distribution list value" (clause 5.4.4.4)

The value of the attribute 'distribution list' is a set of nominations. For each nomination, the (nomination) name is 'personal name of recipient' (the corresponding component is a personal name) and/or 'recipients organization' (the corresponding component is a sequence of characters from the document profile character set). Both parameters are optional.

Definition 4.51

```
1  ∀ v
2  (0 IsDistributionListValue(v) iff
3    IsNeCol^1.1(v) and
4    ∀ b ∈ v
5    (1 IsNeNom^1.2(b) and
6      NAMS^1.18(b) ⊆ ['personal name of recipient'; 'recipients organization'] and
7      ∀ a ∈̂ ^b •
8      (2 (3 N a = 'personal name of recipient' impl IsPersonalName^4.57(C a) 3) and
9        (4 N a = 'recipients organization' impl IsProfCharSeq^4.4(C a) 4)2)1)0)
```

Semiformal Description 4.52

Predicate "is an additional information value" (clause 5.4.4.5)

The value of the attribute 'additional information' can have any value. It is considered an atomic construct in the formal specification.

Definition 4.52

```
1  ∀ v
2  (0 IsAdditionalInformationValue(v) iff
3    IsAtom(v)0)
```

Semiformal Description 4.53

Predicate "is a set of external references" (clause 5.4.5.1)

A set of external references is a set where each element of the set is an external reference.

Definition 4.53

```
1  ∀ v
2  (0 IsSetOfExternalReferences(v) iff
3    IsNeCol^1.1(v) and
4    ∀ b ∈ v (IsExternalReferenceValue^4.6(b)) 0)
```

Semiformal Description 4.54

Predicate "is a local file reference value" (clause 5.4.6)

The value of the attribute 'local file references' is a set of nominations. For each nomination, the (nomination) name is 'file name', 'location of the document' and/or 'user comments'. Each component is a sequence of characters from the document profile character set.

Definition 4.54

```
1   ∀ v
2   (₀ IsLocalFileReferenceValue(v) iff
3     IsNeCol^1.1(v) and
4     ∀ b ∈ v
5     (₁ IsNeNom^1.2(b) and
6       NAMS^1.18(b) ⊆ ['file name'; 'location of the document'; 'user comments'] and
7       ∀ a ∈̂ ^b • (IsProfCharSeq^4.4(C a)) ₁)₀)
```

Semiformal Description 4.55

Predicate "is an authorization value" (clause 5.4.8.1)

An authorization value is either a personal name or a sequence of characters from the document profile character set.

Definition 4.55

```
1   ∀ v
2   (₀ IsAuthorizationValue(v) iff
3     (₁ IsPersonalName^4.57(v) or IsProfCharSeq^4.4(v) ₁)₀)
```

Semiformal Description 4.56

Predicate "is a set of personal names"

A set of personal names consists of elements which are personal names.

Definition 4.56

```
1   ∀ v
2   (₀ IsSetOfPersonalNames(v) iff
3     IsNeCol^1.1(v) and
4     ∀ a ∈ v (IsPersonalName^4.57(a)) ₀)
```

Semiformal Description 4.57

Predicate "is a personal name" (Annex A of ISO 8613-4)

A personal name is a nomination where the (nomination) name is 'surname' (must be present), 'givenname', 'initials', 'title' (optional). The components are sequences of characters from the document profile character set.

Definition 4.57

```
1   ∀ v
2   (₀ IsPersonalName(v) iff
3     IsNeNom^1.2(v) and 'surname' ∈ NAMS^1.18(v) and
4     NAMS^1.18(v) ⊆ ['surname'; 'givenname'; 'initials'; 'title'] and
5     ∀ a ∈̂ ^v • (IsProfCharSeq^4.4(C a)) ₀)
```

Semiformal Description 4.58

Predicate "is an alternative features sets value" (clause 5.3.6a)

An alternative features sets value is a non-empty sets whose elements are ASN.1 object identifier sets.

Definition 4.58

```
1   ∀ v
2   (0 IsAlternativeFeaturesSetsValue(v) iff
3     IsNeCol1.1(v) and
4     ∀ a ∈ v IsASN1ObjectIdentifierSet4.59(a)0)
```

Semiformal Description 4.59

Predicate "is an ASN.1 object identifier set" (clause 5.3.6a)

An ASN.1 object identifier set is a non-empty sets whose elements are ASN.1 object identifier.

Definition 4.59

```
1   ∀ v
2   (0 IsASN1ObjectIdentifierSet(v) iff
3     IsNeCol1.1(v) and
4     ∀ a ∈ v IsASN1ObjectIdentifier4.7(a)0)
```

Semiformal Description 4.60

Predicate "is an enciphered document profiles value" (clause 5.5.5)

An enciphered document profiles value is a non-empty nomination with the names 'privileged recipient information' and 'protected document part identifier'. For the name 'privileged recipient information' the value is a privileged recipient information value. For the name 'protected document part identifier' the value is an enciphered document profile identifier.

Definition 4.60

```
1   ∀ v
2   (0 IsEncipheredDocumentProfilesValue(v) iff
3     IsNeNom1.2(v) and
4     NAMS1.18(v) = ['privileged recipient information';'protected document part identifier'] and
5     ∀ a ∈̂ ^v •
6     (1 (2 N a = 'privileged recipient information' impl IsPrivilegedRecipientInformationValue4.61(C a) 2)
7       (3 N a = 'protected document part identifier' impl IsEncipheredDocumentProfileId4.66(C a) 3)1)0)
```

Semiformal Description 4.61

Predicate "is a privileged recipient information value" (clause 5.5.5)

A privileged recipient information value is a non-empty nomination with the names 'key information', 'method information' and 'privileged recipients'. For the name 'key information' the value is a key information value. For the name 'method information' the value is a method information value. For the name 'privileged recipients' the value is a set of personal names.

Definition 4.61

```
1  ∀ v
2  (₀ IsPrivilegedRecipientInformationValue(v) iff
3    IsNeNom^1.2(v) and
4    NAMS^1.18(v) = ['key information'; 'method information'; 'privileged recipients'] and
5    ∀ a ∈̂ ~v •
6    (₁ (₂ N a = 'key information' impl IsKeyInformationValue^4.62(C a) ₂)
7      (₃ N a = 'method information' impl IsMethodInformationValue^4.63(C a) ₃)
8      (₄ N a = 'privileged recipients' impl IsSetOfPersonalNames^4.56(C a) ₄)₁)₀)
```

Semiformal Description 4.62

Predicate "is a key information value" (clause 5.5.5)

A key information value is a non-empty nomination with the names 'additional information' and 'key method'. For the name 'additional information' the value is a key additional information value. For the name 'key method' the value is a key method value.

Definition 4.62

```
1  ∀ v
2  (₀ IsKeyInformationValue(v) iff
3    IsNeNom^1.2(v) and
4    NAMS^1.18(v) = ['additional information'; 'key method'] and
5    ∀ a ∈̂ ~v •
6    (₁ (₂ N a = 'additional information' impl IsKeyAdditionalInformationValue^4.64(C a) ₂)
7      (₃ N a = 'key method' impl IsKeyMethodValue^4.65(C a) ₃)₁)₀)
```

Semiformal Description 4.63

Predicate "is a method information value" (clause 5.5.5)

A method information value is a sequence of two elements where the first one is an ASN.1 object identifier and the second one a character sequence.

Definition 4.63

```
1  ∀ v
2  (₀ IsMethodInformationValue(v) iff
3    ∃ a, b
4    (₁ v = [ → a → b → ] and
5      IsASN1ObjectIdentifier^4.7(a) and IsCharSeq^2.133(b) ₁)₀)
```

Semiformal Description 4.64

Predicate "is a key additional information value" (clause 5.5.5)

A key additional information value is a sequence of two elements where the first one is a character sequence and the second one an octet string.

Definition 4.64

1 $\forall v$
2 $(_0$ IsKeyAdditionalInformationValue(v) *iff*
3 $\exists a, b$
4 $(_1 v = [\rightarrow a \rightarrow b \rightarrow]$ *and*
5 IsCharSeq$^{2.133}(a)$ *and* IsOctetString$^{1.10}(b)$ $_1)_0)$

Semiformal Description 4.65

Predicate "is a key method value" (clause 5.5.5)

A key method value is a sequence of two elements where the first one is an ASN.1 object identifier and the second one a character sequence.

Definition 4.65

1 $\forall v$
2 $(_0$ IsKeyMethodValue(v) *iff*
3 $\exists a, b$
4 $(_1 v = [\rightarrow a \rightarrow b \rightarrow]$ *and*
5 IsASN1ObjectIdentifier$^{4.7}(a)$ *and* IsCharSeq$^{2.133}(b)$ $_1)_0)$

Semiformal Description 4.66

Predicate "is an enciphered document profile identifier" (clause 5.5.5)

An enciphered document profile identifier is a sequence of two non-negative integers where the first one is 7.

Definition 4.66

1 $\forall v$
2 $(_0$ IsEncipheredDocumentProfileId(v) *iff*
3 IsPairOfNnInt$^{1.8}(v)$ *and* HEAD$^{1.13}(v) = 7_0)$

Semiformal Description 4.67

Predicate "is an ODA security label value" (clause 5.5.1)

An ODA security label value is a non-empty nomination with the names 'ODA label data' and 'ODA label text'. For the name 'ODA label data' the value is an octet string. For the name 'ODA label text' the value is a character sequence.

Definition 4.67

```
1   ∀ v
2   (0 IsODASecurityLabelValue(v) iff
3     IsNeNom1.2(v) and
4     NAMS1.18(v) = ['ODA label data'; 'ODA label text'] and
5     ∀ a ∈̂ v •
6     (1 (2 N a = 'ODA label data' impl IsOctetString1.10(C a) 2)
7       (3 N a = 'ODA label text' impl IsCharSeq2.133(C a) 3)1)0)
```

Semiformal Description 4.68

Predicate "is a pre-enciphered document body parts value" (clause 5.5.6)

A pre-enciphered document body parts value is a non-empty nomination with the names 'privileged recipient information' and 'protected document part identifier'. For the name 'privileged recipient information' the value is a privileged recipient information value. For the name 'protected document part identifier' the value is a pre-enciphered document body part identifier.

Definition 4.68

```
1   ∀ v
2   (0 IsPreEncipheredDocumentBodyPartsValue(v) iff
3     IsNeNom1.2(v) and
4     NAMS1.18(v) = ['privileged recipient information'; 'protected document part identifier'] and
5     ∀ a ∈̂ v •
6     (1 (2 N a = 'privileged recipient information' impl IsPrivilegedRecipientInformationValue4.61(C a) 2)
7       (3 N a = 'protected document part identifier' impl IsPreEncipheredDocumentBodyPartId4.69(C a) 3)1)0)
```

Semiformal Description 4.69

Predicate "is a pre-enciphered document body part identifier" (clause 5.5.6)

A pre-enciphered document body part identifier is a sequence of two non-negative integers where the first one is 8.

Definition 4.69

```
1   ∀ v
2   (0 IsPreEncipheredDocumentBodyPartId(v) iff
3     IsPairOfNnInt1.8(v) and HEAD1.13(v) = 80)
```

Semiformal Description 4.70

Predicate "is a post-enciphered document body parts value" (clause 5.5.7)

A post-enciphered document body parts value is a non-empty nomination with the names 'privileged recipient information' and 'protected document part identifier'. For the name 'privileged recipient information' the value is a privileged recipient information value. For the name 'protected document part identifier' the value is a post-enciphered document body part identifier.

Definition 4.70

```
1   ∀ v
2   (0 IsPostEncipheredDocumentBodyPartsValue(v) iff
3     IsNeNom1.2(v) and
4     NAMS1.18(v) = ['privileged recipient information';'protected document part identifier'] and
5     ∀ a ∈̂ ~v •
6     (1 (2 N a = 'privileged recipient information' impl IsPrivilegedRecipientInformationValue4.61(C a) 2)
7       (3 N a = 'protected document part identifier' impl IsPostEncipheredDocumentBodyPartId4.71(C a) 3)1)0)
```

Semiformal Description 4.71

Predicate "is a post-enciphered document body part identifier" (clause 5.5.7)

A post-enciphered document body part identifier is a sequence of two non-negative integers where the first one is 9.

Definition 4.71

```
1   ∀ v
2   (0 IsPostEncipheredDocumentBodyPartId(v) iff
3     IsPairOfNnInt1.8(v) and HEAD1.13(v) = 90)
```

Semiformal Description 4.72

Predicate "is a sealed document body parts value" (clauses 5.5.3 and 5.5.4)

A sealed document body parts value is a nomination with the names 'document body part seal', 'privileged recipients', 'sealed constituents' and 'seal identifier'. For the name 'document body part seal' the value is a document seal value. For the name 'privileged recipients' the value is a set of personal names. For the name 'sealed constituents' the value is a sequence of constituent identifiers. For the name 'seal identifier' the value is an integer.

Definition 4.72

```
1   ∀ v
2   (0 IsSealedDocumentBodyPartsValue(v) iff
3     IsNeNom1.2(v) and
4     NAMS1.18(v) = ['document body part seal';'privileged recipients';
5                    'sealed constituents';'seal identifier'] and
6     ∀ a ∈̂ ~v •
7     (1 (2 N a = 'document body part seal' impl IsDocumentSealValue4.73(C a) 2)
8       (3 N a = 'privileged recipients' impl IsSetOfPersonalNames4.56(C a) 3)
9       (4 N a = 'sealed constituents' impl IsSeqOfConstituentIds4.74(C a) 4)
10      (5 N a = 'seal identifier' impl IsInt(C a) 5)1)0)
```

Semiformal Description 4.73

Predicate "is a document seal value" (clauses 5.5.2, 5.5.3 and 5.5.4)

A document seal value is a nomination with the names 'seal', 'seal method' and 'sealed information'. For the name 'seal' the value is an octet string. For the name 'seal method' the value is a seal method value. For the name 'sealed information' the value is a sealed information value.

Definition 4.73

1 $\forall v$
2 $(_0$ IsDocumentSealValue(v) *iff*
3 IsNeNom$^{1.2}(v)$ *and*
4 NAMS$^{1.18}(v)$ = ['seal'; 'seal method'; 'sealed information'] *and*
5 $\forall a \in \hat{} v \bullet$
6 $(_1 (_2$ N a = 'seal' *impl* IsOctetString$^{1.10}$(C a) $_2)$
7 $(_3$ N a = 'seal method' *impl* IsSealMethodValue$^{4.76}$(C a) $_3)$
8 $(_4$ N a = 'sealed information' *impl* IsSealedInformationValue$^{4.77}$(C a) $_4)_1)_0$)

Semiformal Description 4.74

Predicate "is a sequence of constituent identifiers" (clauses 5.5.3 and 5.5.4)

A sequence of constituent identifiers is a non-empty catenation whose components are constituent identifiers.

Definition 4.74

1 $\forall v$
2 $(_0$ IsSeqOfConstituentIds(v) *iff*
3 IsNeCat$^{1.3}(v)$ *and*
4 $\forall a \in \hat{} v \bullet$ IsConstituentId$^{4.75}$(C a) $_0$)

Semiformal Description 4.75

Predicate "is a constituent identifier" (clauses 5.5.3 and 5.5.4)

A constituent identifier is either an object identifier, object class identifier, layout style identifier or presentation style identifier.

Definition 4.75

1 $\forall v$
2 $(_0$ IsConstituentId(v) *iff*
3 IsObjectId$^{2.80}(v)$ *or* IsObjectClassId$^{2.83}(v)$ *or* IsLayoutStyleId$^{2.107}(v)$ *or* IsPresentationStyleId$^{2.117}(v)$ $_0$)

Semiformal Description 4.76

Predicate "is a seal method value" (clauses 5.5.3 and 5.5.4)

A seal method value is a nomination with the names 'fingerprint information', 'fingerprint method', 'sealing information' and 'sealing method'. For the names 'fingerprint information' and 'sealing information' the value is a key information value. For the names 'fingerprint method' and 'sealing method' the value is a method information value.

Definition 4.76

1 $\forall v$
2 $(_0$ IsSealMethodValue(v) *iff*
3 IsNeNom$^{1.2}(v)$ *and*
4 NAMS$^{1.18}(v)$ = ['fingerprint information'; 'fingerprint method';
5 'sealing information'; 'sealing method'] *and*
6 $\forall a \in \hat{} v \bullet$
7 $(_1 (_2$ N a = 'fingerprint information' *impl* IsKeyInformationValue$^{4.62}$(C a) $_2)$
8 $(_3$ N a = 'fingerprint method' *impl* IsMethodInformationValue$^{4.63}$(C a) $_3)$
9 $(_4$ N a = 'sealing information' *impl* IsKeyInformationValue$^{4.62}$(C a) $_4)$
10 $(_5$ N a = 'sealing method' *impl* IsMethodInformationValue$^{4.63}$(C a) $_5)_1)_0)$

Semiformal Description 4.77

Predicate "is a sealed information value" (clauses 5.5.3 and 5.5.4)

A sealed information value is a nomination with the names 'fingerprint', 'location', 'seal originator' and 'time'. For the name 'fingerprint' the value is an octet string. For the name 'location' the value is a location value. For the name 'seal originator' the value is a personal name. For the name 'time' the value is a date and time value.

Definition 4.77

1 $\forall v$
2 $(_0$ IsSealedInformationValue(v) *iff*
3 IsNeNom$^{1.2}(v)$ *and*
4 NAMS$^{1.18}(v)$ = ['fingerprint'; 'location'; 'seal originator'; 'time'] *and*
5 $\forall a \in \hat{} v \bullet$
6 $(_1 (_2$ N a = 'fingerprint' *impl* IsOctetString$^{1.10}$(C a) $_2)$
7 $(_3$ N a = 'location' *impl* IsLocationValue$^{4.78}$(C a) $_3)$
8 $(_4$ N a = 'seal originator' *impl* IsPersonalName$^{4.57}$(C a) $_4)$
9 $(_5$ N a = 'time' *impl* IsDateAndTimeValue$^{4.41}$(C a) $_5)_1)_0)$

Semiformal Description 4.78

Predicate "is a location value" (clauses 5.5.3 and 5.5.4)

A location value is a sequence of two elements where the first one is an ASN.1 object identifier and the second one a character sequence.

Definition 4.78

1 $\forall v$
2 $(_0$ IsLocationValue(v) *iff*
3 $\exists a, b$
4 $(_1 v = [\rightarrow a \rightarrow b \rightarrow]$ *and*
5 IsASN1ObjectIdentifier$^{4.7}(a)$ *and* IsCharSeq$^{2.133}(b)$ $_1)_0)$