

JORD



ISO 15926 TSP CONTENT, FIXES AND ENHANCEMENTS

JORD (Joint Operational Reference Data) Project enhancing the PCA Reference Data Service (RDS) Operation in partnership with FIATECH

Summary –

This is the second in a series of three reports from JORD on ISO 15926 Template Pattern Specifications (TSP) and their implementation in the PCA RDL. These reports include specification of TSP (the first report), an overview of TSP content (the second report), and methodology for verification and validation of TSP conformance and compliance (the current report).

This report gives an overview of the current content in the PCA RDL relating to templates, points out where the content is inconsistent and incomplete relative to ISO 15926 Part 7, and gives a summary list of required fixes and enhancements. It also references other sources and representations of templates.

The report does not claim to be complete or correct with respect to the many details relevant to representation and implementation of templates. However, it may hopefully serve as an outline of template-related content that is currently available in the PCA RDL and what can and should be done to make it more available and useful for real-world business applications.

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1 Introduction

The deliverables for phase 2 of JORD Breakdown A: Compliance, Validation

& Methodology project are as follows:

- specifications of a set of Template Signature Patterns (TSP) described as Project Part A3,
- enhancement of the RDL to accommodate the specified TSP, described as Project Part A4,
- procedures to validate TSP Content and Business Interfaces, described as Project Part A5.

This document addresses the *second* of those deliverables by describing relevant content available in the PCA RDL as well as in other sources. It builds on work completed in the first phase of the JORD project/program:

- [JORD Compliance Specification](#) a technical definition of compliance.
- [JORD Mapping Methodology](#) a methodological basis for ensuring compliant usage.

These documents recognize the need for templates and tools (procedures) which are sufficiently practical for business users and sufficiently rigorous for modelling and implementation experts. Development of such tools and technology are part of JORD Breakdown B.

Chapter 2 gives an overview of the different types of Templates included in the PCA RDL.

Chapter 3 lists and references other template implementations.

Chapter 4 contains a list of fixes and enhancements of the Templates in the PCA RDL in order to make them consistent with basic requirements from ISO 15926.

Appendices A through G contain lists of Templates from the PCA RDL and other sources.

2 Overview of templates in the PCA RDL

This chapter gives an overview of “what, where and how” templates are represented. The PCA RDL includes representation of sets Templates based on ISO 15926 Part 7. Representation of the same set of templates using OWL compliant with ISO 15926 Part 8is in a separate endpoint.

2.1 ISO 15926 Part 7 representation in the PCA RDL endpoint

Templates are defined in [ISO 15926 Part 7](#) by a Template Signature (TS), a Template Axiom (TA) given in a formal language such as First Order Logic (FOL), and its Template Axiom Expansion (TAE) defined by relevant entities and relations from the [ISO 15926 Part 2 DataModel](#). In this document we are not going into TAs and their expansion (known as “lifted form”), but refer to the [template specifications](#) on the www.15926.org website for an in-depth explanation and various examples. For further detail on definition and representation of templates, see the [JORD TSP Specification](#).

Figure 2.1 shows the specialization hierarchy among the classes that represent the various types of templates in the PCA RDL (<http://posccaesar.org/endpoint/>).

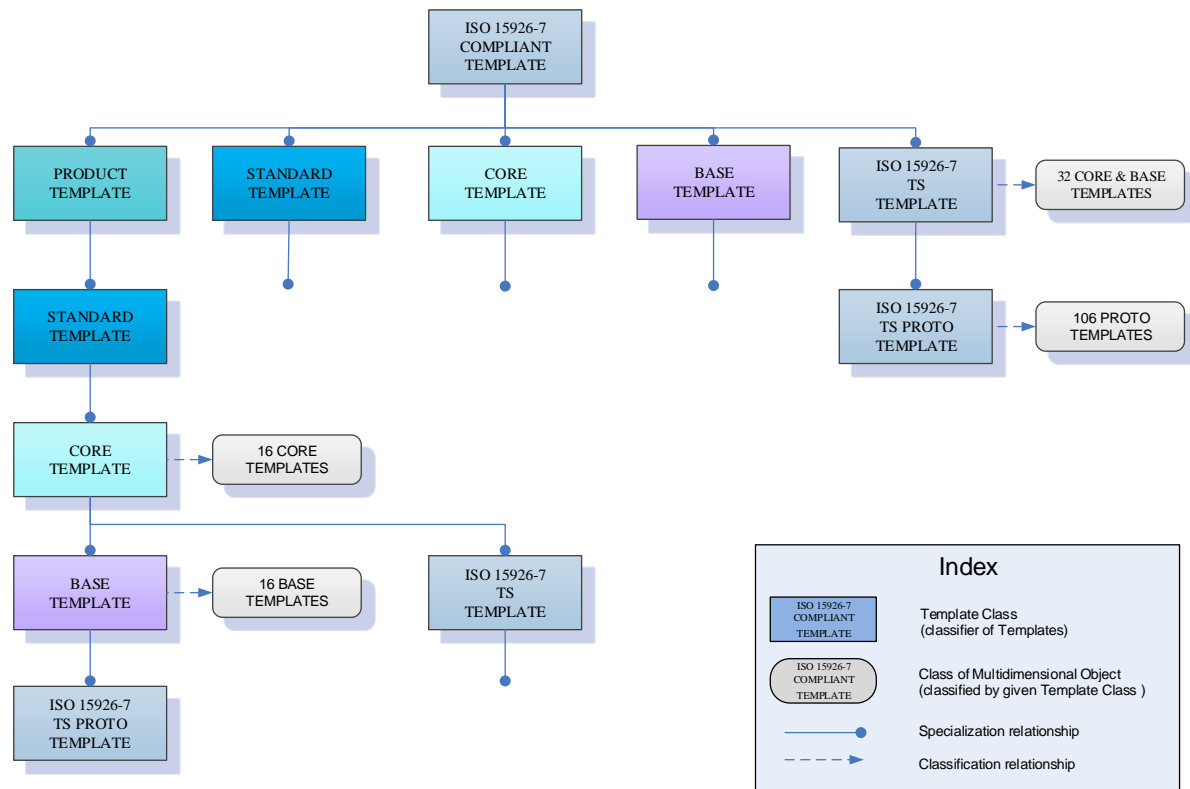


Figure 2.1: An overview of the current hierarchy of Templates in the PCA RDL

As can be seen from the figure, the hierarchy is structured with types of Templates defined as specializations of each other:

- [ISO 15926-7 COMPLIANT TEMPLATE](#): The top-level template, defined according to the requirements of ISO 15926-7 TS.

Under this top-level template, two different types of templates are defined using specialization relationships (subclasses). The first set includes those templates that are defined by sets of classes in ISO 15926 Parts 2 and 4.

- [ISO 15926-7 PRODUCT TEMPLATE](#): An ISO 15926-7 compliant template with only ISO 15926-2 entity types and "core", "standard" or "manufactured item" reference data items in (the expansion of) its characteristic axiom. This class currently has no members. It can be specialized to
- [ISO 15926-7 STANDARD TEMPLATE](#): A specialized ISO 15926-7 compliant template with only ISO 15926-2 entity types and "core" or "standard" reference data items in (the expansion of) its characteristic axiom. This class currently has no members. It can be specialized to
- [ISO 15926-7 CORE TEMPLATE](#): A further specialization of ISO 15926-7 compliant template with only ISO 15926-2 entity types and "core" reference data items in (the expansion of) its characteristic axiom. This class has 16 members, as listed in Appendix A. It can be specialized to
- [ISO 15926-7 BASE TEMPLATE](#): A further specialization of ISO 15926-7 compliant template with only ISO 15926-2 entity types in (the expansion of) its characteristic axiom. This class has 16 members, as listed in Appendix B.
- [ISO 15926-7 TS TEMPLATE](#): A template defined in ISO 15926-7 TS. This class has 32 members, which are the 16 members of the Core Template class and 16 members of the Base Template class, as listed in Appendix C. In the PCA RDL it is (also) represented as a specialization (subclass) of ISO 15926-7 Core Template (see figure 2.1 above).

The second set of templates include those that are defined by, and correspond to the relationships in ISO 15926 Part 2 Data Model.

- [ISO 15926-7 TS-PROTO TEMPLATE](#): A proto-template defined in ISO 15926-7 TS. This class has 106 members that cover the Relationships in the ISO 15926 ISO 15926-2, as listed in Appendix D.

Notice in figure 2.1 how the specialization hierarchies are interrelated, which gives rise to a complex structure where the same template class is repeated several times as the specialization hierarchy is expanded.

2.2 ISO 15926 Part 8 representation in the P8 endpoint

The set of Templates represented in accordance with the [ISO 15926 Part 8](#) is available in a separate P8-endpoint (<http://posccaesar.org/sandbox/p8/>).

This endpoint contains 150 Templates, listed in Appendix E. This includes all of the templates represented according to ISO 15926 Part 7 in the PCA RDL, as well as thirteen extra templates not represented in the PCA RDL (and one Template with different name). This set of additional Templates is listed in figure 2.2 below.

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#BeginningOfIndividual>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#BeginningOfTemporalPart>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassifiedInvolvement>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassInvolvementStatusBeginning>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassInvolvementSuccession>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#IndirectPropertyScaleReal>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#InstanceOfIndirectProperty>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#InvolvementStatus>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#InvolvementStatusBeginning>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#StatusApproval>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#SuccessionOfInvolvementByReference>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#SuccessionOfInvolvementInActivity>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#TimeRepresentation>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#RealMagnitudeOfProperty>
(This P8 Template replaces ISO 15926-7 MAGNITUDE OF PROPERTY in the PCA RDL).

Figure 2.2: Overview of additional Templates in the P8-endpoint vs. the PCA RDL

3 Template representations in other endpoints

Several past and ongoing projects have addressed definition and representation of Template Patterns and Signatures, and while there is not yet final agreement on all details of how Templates should be represented or structured, there has been significant advances towards a common approach that is both formal and practical. The sections below summarize two efforts that contribute significant formality (15926.org) and practicality (IIP) – and a tool that can be used to create and modify templates and template content (the dot15926 editor).

3.1 *Template lifted form in 15926.org*

The Template representations in the PCA RDL do not explicitly describe how the templates use the ISO 15926-2 Data Model. A formal “lifting” describes Templates in terms of ISO 15926-2 entity types according to the Role restrictions in the Template Axiom Expansion.

Such “lifted form” descriptions are available for 280 Templates in the [ISO15926.org](http://15926.org/15926_template_specs.php?sid) endpoint at http://15926.org/15926_template_specs.php?sid. These Templates include and extend the Templates in the PCA RDL endpoint. A list of URIs for these templates is given in Appendix F.

3.2 *Template applications in iRing Tools*

For applications in the process industry, a range of technical specifications is covered by some five hundred template patterns defined in the FIATECH [IIP \(ISO 15926 Information Pattern\) project](#),

These patterns are part of [iRing Tools](#), and can be viewed in the [iRing TIP Manager](#). The structure of these templates can be viewed in the [iRing Tools Part 8 Sandbox](#). See Appendix G for further details.

3.3 *Template editing capabilities in the dot15926 editor*

The dot15926 editor from [techinvestlab](#) supports work with templates, including creation of new template, specialization from existing templates, and editing of template signatures and role restrictions.

The .15926 Editor is preconfigured to search, navigate and edit popular reference data files distributed publicly, including ISO 15926-4, PCA RDL and ISO 15926-8 templates, and can be downloaded from <http://techinvestlab.ru/dot15926Editor>.

4 Required fixes and enhancements

This chapter gives lists of technical and business issues that must be addressed in order to make the PCA RDL and associated endpoints consistent with the JORD TSP Specification Report. This includes both fixes to the existing Templates, and addition of new Template content.

The JORD TSP verification and Validation Report will contain SPARQL queries that can be used to carry out such fixes and enhancements.

4.1 Required fixes for technical conformance

In order to ensure technical conformance to the JORD TSP Specification and ISO 15926, all Templates must be represented according to the JORD TSP Specification and ISO 15926. This requires some minor updates of the current class structure and display functionality.

1. Implement the Registration TSP by adding Generic Type, Realization Level and Lifecycle Whole-Part as RDL classes.
2. Simplify the ISO 15926 Part 7 Template hierarchy by making 15926-7 Proto Template a direct subclass of 15926-7 TS-Compliant Template, and remove its subclass relationship with 15926-7 Core Template and ISO 15926-7 TS-Template.
3. Update all Template content names so that the Template content in the RDL is consistent with the JORD TSP Specification, including Templates, Role names, Role restrictions and meta-data.
4. Add any missing Patterns to cover all basic Templates needed. This should be evaluated against the twenty subclasses of Class Of Relationships in the ISO 15926-2 Data Model, to see if any additional relationships should be included (e.g., a Pattern covering Class Of Relationship With Signature).
5. Make the ISO 15926 Part 7 & Part 8 implementations consistent by adding the 13 missing Templates listed in figure 2.2 above.
6. Improve display of ISO 15926 Part 7 Template structure and content by adding display functionality to Linked Pages for Template Instances so that they include hyperlinks to Parameter Values.

The TSP Verification and Validation Rapport contains an assessment of technical conformance against the Compliance Specification from JORD Phase 1.

4.2 Required enhancements for business compliance

In order to ensure compliance of the PCA RDL with relevant business needs, selected modifications and additions are required to both content and representation.

1. Support projects and companies that seek to upload their templates into the PCA RDL, or link their templates to existing Templates in the PCA RDL.
2. Add requested Templates in the RDL to support needs from end users and business applications, and link these new templates as subclasses of existing templates.
3. Add examples of Composite Templates to illustrate how the Basic Templates specified in the JORD TSP Specification can be specialized, extended and assembled.
4. Review meta-data in the PCA RDL against business requirements for lifecycle management of Template Patterns, Signatures and Instances.

The TSP Verification and Validation Rapport contains an assessment of business compliance against the Compliance Specification from JORD Phase 1.

Appendix A: ISO 15926-7 Core Templates in the PCA RDL

Core Templates are defined as Templates for which all the reference data in the expansion of its axiom are RD-item representing an ISO 15926-2 Entity Type or Classes that are commonly used as subdivisions corresponding to terms used in common language. This class currently has 16 members (Templates that are classified as Core Templates).

[ISO 15926-7 BEGINNING END LOCATION OF ACTIVITY](#)

[ISO 15926-7 CARDINALITY END 1 MAX](#)

[ISO 15926-7 CARDINALITY END 1 MIN](#)

[ISO 15926-7 CARDINALITY END 1 MIN MAX](#)

[ISO 15926-7 CARDINALITY END 2 MAX](#)

[ISO 15926-7 CARDINALITY END 2 MIN](#)

[ISO 15926-7 CARDINALITY END 2 MIN MAX](#)

[ISO 15926-7 CARDINALITY MAX](#)

[ISO 15926-7 CARDINALITY MIN](#)

[ISO 15926-7 CARDINALITY MIN MAX](#)

[ISO 15926-7 DIMENSION UNIT NUMBER RANGE OF SCALE](#)

[ISO 15926-7 LOCATION OF ACTIVITY](#)

[ISO 15926-7 PROPERTY RANGE RESTRICTION OF CLASS](#)

[ISO 15926-7 SPECIALIZATION AS END 1 UNIVERSAL RESTRICTION](#)

[ISO 15926-7 SPECIALIZATION AS END 2 UNIVERSAL RESTRICTION](#)

[ISO 15926-7 SYMBOL OF SCALE](#)

Note that these Templates may also be viewed in the “new version” of the PCA RDL Browser at <http://data.posccaesar.org/rdl/> by typing in the name of the Template in the search box.

Appendix B: ISO 15926-7 Base Templates in the PCA RDL

Base Templates are defined as Templates with only RD-item representing an ISO 15926-2 Entity Type in the expansion of its template axiom. All Proto Templates are Base Templates, but it is possible to design additional Base templates using (only) Base RD-items. This class currently has 16 members (Templates that are classified as Base Templates).

[ISO 15926-7 BEGINNING END OF INDIVIDUAL](#)

[ISO 15926-7 CLASSIFICATION OF CLASS](#)

[ISO 15926-7 CLASSIFICATION OF CLASS OF INDIVIDUAL](#)

[ISO 15926-7 CLASSIFICATION OF CLASS OF RELATIONSHIP](#)

[ISO 15926-7 CLASSIFICATION OF INDIVIDUAL](#)

[ISO 15926-7 CLASSIFICATION OF RELATIONSHIP](#)

[ISO 15926-7 CLASSIFIED IDENTIFICATION](#)

[ISO 15926-7 IDENTIFICATION BY NUMBER](#)

[ISO 15926-7 INSTANCE OF RELATION](#)

[ISO 15926-7 LOWER UPPER MAGNITUDE OF PROPERTY RANGE](#)

[ISO 15926-7 LOWER UPPER OF NUMBER RANGE](#)

[ISO 15926-7 LOWER UPPER OF PROPERTY RANGE](#)

[ISO 15926-7 MAGNITUDE OF PROPERTY](#)

[ISO 15926-7 PROPERTY RANGE MAGNITUDE RESTRICTION OF CLASS](#)

[ISO 15926-7 RELATION OF INDIVIDUALS TO INDIVIDUALS](#)

[ISO 15926-7 SPECIALIZATION OF INDIVIDUAL RELATION](#)

Note that these Templates may also be viewed in the “new version” of the PCA RDL Browser at <http://data.posccaesar.org/rdl/> by typing in the name of the Template in the search box.

Appendix C: ISO 15926-7 TS Templates in the PCA RDL

TS Templates are defined as Templates with ordered lists of Template Roles - defined in ISO 15926-7 as a restricted form of ClassOfMultidimensionalObject. This class currently has 32 members (Templates that are classified as TS Templates). Note that these Templates are also included in either the Core or Base Template set.

[ISO 15926-7 BEGINNING END LOCATION OF ACTIVITY](#)

[ISO 15926-7 BEGINNING END OF INDIVIDUAL](#)

[ISO 15926-7 CARDINALITY END 1 MAX](#)

[ISO 15926-7 CARDINALITY END 1 MIN](#)

[ISO 15926-7 CARDINALITY END 1 MIN MAX](#)

[ISO 15926-7 CARDINALITY END 2 MAX](#)

[ISO 15926-7 CARDINALITY END 2 MIN](#)

[ISO 15926-7 CARDINALITY END 2 MIN MAX](#)

[ISO 15926-7 CARDINALITY MAX](#)

[ISO 15926-7 CARDINALITY MIN](#)

[ISO 15926-7 CARDINALITY MIN MAX](#)

[ISO 15926-7 CLASSIFICATION OF CLASS](#)

[ISO 15926-7 CLASSIFICATION OF CLASS OF INDIVIDUAL](#)

[ISO 15926-7 CLASSIFICATION OF CLASS OF RELATIONSHIP](#)

[ISO 15926-7 CLASSIFICATION OF INDIVIDUAL](#)

[ISO 15926-7 CLASSIFICATION OF RELATIONSHIP](#)

[ISO 15926-7 CLASSIFIED IDENTIFICATION](#)

[ISO 15926-7 DIMENSION UNIT NUMBER RANGE OF SCALE](#)

[ISO 15926-7 IDENTIFICATION BY NUMBER](#)

[ISO 15926-7 INSTANCE OF RELATION](#)

[ISO 15926-7 LOCATION OF ACTIVITY](#)

[ISO 15926-7 LOWER UPPER MAGNITUDE OF PROPERTY RANGE](#)

[ISO 15926-7 LOWER UPPER OF NUMBER RANGE](#)

[ISO 15926-7 LOWER UPPER OF PROPERTY RANGE](#)

[ISO 15926-7 MAGNITUDE OF PROPERTY](#)

[ISO 15926-7 PROPERTY RANGE MAGNITUDE RESTRICTION OF CLASS](#)

[ISO 15926-7 PROPERTY RANGE RESTRICTION OF CLASS](#)

[ISO 15926-7 RELATION OF INDIVIDUALS TO INDIVIDUALS](#)

[ISO 15926-7 SPECIALIZATION AS END 1 UNIVERSAL RESTRICTION](#)

[ISO 15926-7 SPECIALIZATION AS END 2 UNIVERSAL RESTRICTION](#)

[ISO 15926-7 SPECIALIZATION OF INDIVIDUAL RELATION](#)

[ISO 15926-7 SYMBOL OF SCALE](#)

Note that these Templates may also be viewed in the “new version” of the PCA RDL Browser at <http://data.posccaesar.org/rdl/> by typing in the name of the Template in the search box.

Appendix D: ISO 15926-7 TS-PROTO Templates in the PCA RDL

TS-Proto Templates are defined as Templates corresponding one to one with the Relationships in the ISO 15926 Part 2 Data Model. This class currently has 105 members (Templates that are classified as TS-Proto Templates).

[ISO 15926-7 APPROVAL](#)

[ISO 15926-7 ARRANGEMENT OF INDIVIDUAL](#)

[ISO 15926-7 ASSEMBLY OF INDIVIDUAL](#)

[ISO 15926-7 BEGINNING](#)

[ISO 15926-7 BOUNDARY OF NUMBER SPACE](#)

[ISO 15926-7 BOUNDARY OF PROPERTY SPACE](#)

[ISO 15926-7 CAUSE OF EVENT](#)

[ISO 15926-7 CLASS OF APPROVAL](#)

[ISO 15926-7 CLASS OF ARRANGEMENT OF INDIVIDUAL](#)

[ISO 15926-7 CLASS OF ASSEMBLY OF INDIVIDUAL](#)

[ISO 15926-7 CLASS OF CAUSE OF BEGINNING OF CLASS OF INDIVIDUAL](#)

[ISO 15926-7 CLASS OF CAUSE OF ENDING OF CLASS OF INDIVIDUAL](#)

[ISO 15926-7 CLASS OF CLASS OF COMPOSITION](#)

[ISO 15926-7 CLASS OF CLASS OF DEFINITION](#)

[ISO 15926-7 CLASS OF CLASS OF DESCRIPTION](#)

[ISO 15926-7 CLASS OF CLASS OF IDENTIFICATION](#)

[ISO 15926-7 CLASS OF CLASS OF RELATIONSHIP WITH SIGNATURE](#)

[ISO 15926-7 CLASS OF CLASS OF REPRESENTATION](#)

[ISO 15926-7 CLASS OF CLASS OF REPRESENTATION TRANSLATION](#)

[ISO 15926-7 CLASS OF CLASS OF RESPONSIBILITY FOR REPRESENTATION](#)

[ISO 15926-7 CLASS OF CLASS OF USAGE OF REPRESENTATION](#)

[ISO 15926-7 CLASS OF CLASSIFICATION](#)

[ISO 15926-7 CLASS OF COMPOSITION OF INDIVIDUAL](#)

[ISO 15926-7 CLASS OF CONNECTION OF INDIVIDUAL](#)

[ISO 15926-7 CLASS OF CONTAINMENT OF INDIVIDUAL](#)

[ISO 15926-7 CLASS OF DEFINITION](#)

[ISO 15926-7 CLASS OF DESCRIPTION](#)

[ISO 15926-7 CLASS OF DIMENSION FOR SHAPE](#)

[ISO 15926-7 CLASS OF DIRECT CONNECTION](#)

[ISO 15926-7 CLASS OF FEATURE WHOLE PART](#)

[ISO 15926-7 CLASS OF FUNCTIONAL MAPPING](#)

[ISO 15926-7 CLASS OF IDENTIFICATION](#)

[ISO 15926-7 CLASS OF INDIRECT CONNECTION](#)

[ISO 15926-7 CLASS OF INDIRECT PROPERTY](#)

[ISO 15926-7 CLASS OF INDIVIDUAL USED IN CONNECTION](#)

[ISO 15926-7 CLASS OF INTENDED ROLE AND DOMAIN](#)

[ISO 15926-7 CLASS OF INVOLVEMENT BY REFERENCE](#)

[ISO 15926-7 CLASS OF ISOMORPHIC FUNCTIONAL MAPPING](#)

[ISO 15926-7 CLASS OF LEFT NAMESPACE](#)

[ISO 15926-7 CLASS OF NAMESPACE](#)

[ISO 15926-7 CLASS OF PARTICIPATION](#)

[ISO 15926-7 CLASS OF POSSIBLE ROLE AND DOMAIN](#)
[ISO 15926-7 CLASS OF RECOGNITION](#)
[ISO 15926-7 CLASS OF RELATIONSHIP WITH SIGNATURE](#)
[ISO 15926-7 CLASS OF RELATIVE LOCATION](#)
[ISO 15926-7 CLASS OF REPRESENTATION OF THING](#)
[ISO 15926-7 CLASS OF REPRESENTATION TRANSLATION](#)
[ISO 15926-7 CLASS OF RESPONSIBILITY FOR REPRESENTATION](#)
[ISO 15926-7 CLASS OF RIGHT NAMESPACE](#)
[ISO 15926-7 CLASS OF SCALE CONVERSION](#)
[ISO 15926-7 CLASS OF SPECIALIZATION](#)
[ISO 15926-7 CLASS OF TEMPORAL SEQUENCE](#)
[ISO 15926-7 CLASS OF TEMPORAL WHOLE PART](#)
[ISO 15926-7 CLASS OF USAGE OF REPRESENTATION](#)
[ISO 15926-7 CLASSIFICATION](#)
[ISO 15926-7 COMPARISON OF PROPERTY](#)
[ISO 15926-7 COMPOSITION OF INDIVIDUAL](#)
[ISO 15926-7 CONNECTION OF INDIVIDUAL](#)
[ISO 15926-7 CONTAINMENT OF INDIVIDUAL](#)
[ISO 15926-7 COORDINATE SYSTEM](#)
[ISO 15926-7 DEFINITION](#)
[ISO 15926-7 DESCRIPTION](#)
[ISO 15926-7 DIFFERENCE OF SET OF CLASS](#)
[ISO 15926-7 DIMENSION OF INDIVIDUAL](#)
[ISO 15926-7 DIMENSION OF SHAPE](#)
[ISO 15926-7 DIRECT CONNECTION](#)
[ISO 15926-7 ENDING](#)
[ISO 15926-7 FEATURE WHOLE PART](#)
[ISO 15926-7 FUNCTIONAL MAPPING](#)
[ISO 15926-7 IDENTIFICATION](#)
[ISO 15926-7 INDIRECT CONNECTION](#)
[ISO 15926-7 INDIRECT PROPERTY](#)
[ISO 15926-7 INDIVIDUAL USED IN CONNECTION](#)
[ISO 15926-7 INTENDED ROLE AND DOMAIN](#)
[ISO 15926-7 INTERSECTION OF SET OF CLASS](#)
[ISO 15926-7 INVOLVEMENT BY REFERENCE](#)
[ISO 15926-7 LEFT NAMESPACE](#)
[ISO 15926-7 LIFECYCLE STAGE](#)
[ISO 15926-7 LOWER BOUND OF NUMBER RANGE](#)
[ISO 15926-7 LOWER BOUND OF PROPERTY RANGE](#)
[ISO 15926-7 MULTIDIMENSIONAL SCALE](#)
[ISO 15926-7 NAMESPACE](#)
[ISO 15926-7 OTHER RELATIONSHIP](#)
[ISO 15926-7 PARTICIPATION](#)
[ISO 15926-7 POSSIBLE ROLE AND DOMAIN](#)
[ISO 15926-7 PROPERTY FOR SHAPE DIMENSION](#)
[ISO 15926-7 PROPERTY QUANTIFICATION](#)
[ISO 15926-7 PROPERTY SPACE FOR CLASS OF SHAPE DIMENSION](#)

[ISO 15926-7 RECOGNITION](#)
[ISO 15926-7 RELATIVE LOCATION](#)
[ISO 15926-7 REPRESENTATION OF THING](#)
[ISO 15926-7 RESPONSIBILITY FOR REPRESENTATION](#)
[ISO 15926-7 RIGHT NAMESPACE](#)
[ISO 15926-7 SCALE](#)
[ISO 15926-7 SPECIALIZATION](#)
[ISO 15926-7 SPECIALIZATION BY DOMAIN](#)
[ISO 15926-7 SPECIALIZATION BY ROLE](#)
[ISO 15926-7 SPECIALIZATION OF INDIVIDUAL DIMENSION FROM PROPERTY](#)
[ISO 15926-7 TEMPORAL BOUNDING](#)
[ISO 15926-7 TEMPORAL SEQUENCE](#)
[ISO 15926-7 TEMPORAL WHOLE PART](#)
[ISO 15926-7 UNION OF SET OF CLASS](#)
[ISO 15926-7 UPPER BOUND OF NUMBER RANGE](#)
[ISO 15926-7 UPPER BOUND OF PROPERTY RANGE](#)
[ISO 15926-7 USAGE OF REPRESENTATION](#)

Note that these Templates may also be viewed in the “new version” of the PCA RDL Browser at <http://data.posccaesar.org/rdl/> by typing in the name of the Template in the search box.

Appendix E: ISO 15926-8 representation of Templates

The endpoint <http://posccaesar.org/sandbox/p8/#> contains ISO 15926-8 OWL-representations of instances of the meta-templates defined in ISO 15926-7.

The contents includes

- 45 Initial Templates (32 TS-Templates and 13 additional templates),
- 105 TS-Proto Templates,
- 4 sample templates relating to Piping System Assembly.

Note that these templates do not (yet) have associated Linked Data pages, so their structure and content cannot be viewed by following the official ISO link. Note that the Templates marked with **red text** below are the 13 additional Templates that are not represented in the PCA RDL.

Type <http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#InitialSetTemplate>.

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#BeginningEndLocationOfActivity>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#BeginningEndOfIndividual>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#BeginningOfIndividual>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#BeginningOfTemporalPart>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#CardinalityEnd1Max>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#CardinalityEnd1Min>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#CardinalityEnd1MinMax>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#CardinalityEnd2Max>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#CardinalityEnd2Min>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#CardinalityEnd2MinMax>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#CardinalityMax>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#CardinalityMin>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#CardinalityMinMax>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassificationOfClass>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassificationOfClassOfIndividual>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassificationOfClassOfRelationship>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassificationOfIndividual>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassificationOfRelationship>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassifiedIdentification>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassifiedInvolvement>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassInvolvementStatusBeginning>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ClassInvolvementSuccession>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#DimensionUnitNumberRangeOfScale>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#IdentificationByNumber>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#IndirectPropertyScaleReal>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#InstanceOfIndirectProperty>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#InstanceOfRelation>

<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#InvolvementStatus>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#InvolvementStatusBeginning>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#LocationOfActivity>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#LowerUpperMagnitudeOfPropertyRange>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#LowerUpperOfNumberRange>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#LowerUpperOfPropertyRange>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#PropertyRangeMagnitudeRestrictionOfClass>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#PropertyRangeRestrictionOfClass>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#RealMagnitudeOfProperty>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#RelationOfIndividualsToIndividuals>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#SpecializationAsEnd1UniversalRestriction>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#SpecializationAsEnd2UniversalRestriction>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#SpecializationOfIndividualRelation>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#StatusApproval>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#SuccessionOfInvolvementByReference>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#SuccessionOfInvolvementInActivity>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#SymbolOfScale>
<http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#TimeRepresentation>

The TS-Proto Templates

Type <http://standards.iso.org/iso/ts/15926/-8/ed-1/tech/reference-data/p7tpl#ProtoTemplate>.

Appendix F: 15925.org representation of Templates

ISO 15926.org endpoint has 280 Templates at http://15926.org/15926_template_specs.php?sid, which are divided into four groups:

- Templates for Classes - both design classes and RDL classes: 99 Templates
- Templates for Whole Life Individuals: 51 Templates
- Templates for Temporal Parts of Possible Individuals or subtypes thereof : 70 Templates (the 'temporal whole' may be an instance of WholeLifeIndividual or a temporal part thereof)
- Templates for Individuals: 60: Templates.

The members of these four sets are listed below, with a hyperlink to the relevant definition page. Which describes the content and structure, and includes a detailed illustration of the “lifted form” of the various templates. For a more detailed explanation see

http://15926.org/publications/templates/introduction/index.htm#Lifted_Templates

TEMPLATES FOR CLASSES - both design classes and RDL classes	
DescriptionOfClassOfIndividualWithSign	DESCRIPTION
DescriptionOfClassOfIndividualWithClassifiedSign	DESCRIPTION
DocumentTypeAboutAClassOfIndividualApplicableYesNo	DOCUMENT
DocumentDefinitionByExample	DOCUMENT
DefinitionOfAnInformationRepresentation	DOCUMENT
CompositionOfClassOfInformationRepresentation	DOCUMENT
ContentsOfADocument	DOCUMENT
TranslationOfClassOfInformationRepresentation	DOCUMENT
DocumentApproval	DOCUMENT
DocumentPublishing	DOCUMENT
DocumentRevision	DOCUMENT
RepresentationOfClassOfIndividualOnDocument	DOCUMENT
RepresentationOfClassOfIndividualContainedInDocument	DOCUMENT
CollectionOfTemplates	DOCUMENT
CollectionOfClassesOfState	DOCUMENT
DefinitionOfADataset	DOCUMENT
SkillOfClassOfPerson	FUNCTION
FunctionalMappingWith2Properties	FUNCTION
FunctionalMappingWith2Numbers	FUNCTION
FunctionalMappingWith3Properties	FUNCTION
PlantDesignFulfilsProcessDesign	FUNCTION
ProductClassFulfilsClassOfFunctionPlace	FUNCTION
IdentificationOfClassOfIndividual	IDENTIFICATION
ClassifiedIdentificationOfClassOfIndividual	IDENTIFICATION

DeprecationOfLabelOfUrClass	IDENTIFICATION
IdentificationOfClassOfIndividualInLanguage	IDENTIFICATION
ClassifiedIdentificationOfClassOfIndividualInLanguage	IDENTIFICATION
IdentificationOfClassOfIndividualWithSign	IDENTIFICATION
IdentificationOfClassOfIndividualWithClassifiedSign	IDENTIFICATION
ClassOfContainmentDefinition	LOCATION
ClassOfRelativeLocationDefinition	LOCATION
PositionOfClassMembersInACoordinateSystem	LOCATION
SpecializationByCompoundType	MATERIAL
SpecializationByCrystallineStructureType	MATERIAL
SpecializationByBiologicalMatterType	MATERIAL
SpecializationByCompositeMaterialType	MATERIAL
SpecializationByParticulateMaterialType	MATERIAL
SpecializationByPhase	MATERIAL
TwoDimensionalRealNumber	NUMBER
ThreeDimensionalRealNumber	NUMBER
NumberRangeWithBoundingRealValues	NUMBER
NumberSpaceWithBoundingNumberSpace	NUMBER
PropertyRangeWithBoundingReferenceProperties	PROPERTY-CLASSOF
PropertyWithVarianceOfClassOfIndividual	PROPERTY-CLASSOF
PropertyWithPercentageVarianceOfClassOfIndividual	PROPERTY-CLASSOF
ReferencePropertyRangeWithValues	PROPERTY-CLASSOF
ReferencePropertyRangeOfClassOfIndividual	PROPERTY-CLASSOF
PropertyRangeOfClassOfIndividual	PROPERTY-CLASSOF
PropertyRangeOfClassOfIndividualWithValues	PROPERTY-CLASSOF
PropertyRangeOfClassOfIndividualWithPointValue	PROPERTY-CLASSOF
TwoDimensionalPropertyRange	PROPERTY-CLASSOF
ReferenceClassOfIndirectProperty	PROPERTY-INDIRECT
ClassOfIndividualHasIndirectPropertyWithBoundingValues	PROPERTY-INDIRECT
ClassOfIndividualHasIndirectPropertyWithMaximumValue	PROPERTY-INDIRECT
ClassOfIndividualHasIndirectPropertyWithPointValue	PROPERTY-INDIRECT
ClassOfIndividualHasIndirectPropertyWithMinimumValue	PROPERTY-INDIRECT
ClassOfIndividualHasConditionalIndirectProperty	PROPERTY-INDIRECT
PropertyOfClassOfIndividual	PROPERTY and STATUS
StatusOfClassOfIndividual	PROPERTY and STATUS
PropertyOfClassOfIndividualWithValue	PROPERTY and STATUS
PropertyOfClassOfIndividualWithValueAndStatus	PROPERTY and STATUS
ConditionalPropertyOfClassOfIndividualWithValue	PROPERTY and STATUS
TwoDimensionalPropertyOfClassOfIndividualWithValues	PROPERTY and STATUS
MonotypePropertyRatioOfClassOfIndividual	PROPERTY and STATUS
ReferencePropertyWithValue	PROPERTY and STATUS
ScaleDefinition	PROPERTY and STATUS
TwoDimensionalScale	PROPERTY and STATUS

ActivityCausesEffectiveClass	PROPERTY and STATUS
ActivityCausesDeprecatedClass	PROPERTY and STATUS
ClassOfRelationshipWithDualParticipation	RELATIONSHIP-OTHER
EmploymentOfClassOfPersonByClassOfOrganization	RELATIONSHIP-OTHER
ManufacturingOfProductClassByClassOfOrganization	RELATIONSHIP-OTHER
ClassOfRelationshipWithParticipationAndReference	RELATIONSHIP-OTHER
DifferenceOf2Classes	SET OPERATIONS
DisjointnessOf2Classes	SET OPERATIONS
EnumeratedSetOf2Classes	SET OPERATIONS
EnumeratedSetOf3Classes	SET OPERATIONS
IntersectionOf2Classes	SET OPERATIONS
RelativeComplementOf2Classes	SET OPERATIONS
UnionOf2Classes	SET OPERATIONS
ClassOfShapeOfClassOfIndividual	SHAPE
ClassOfShapeDimensionDefinition	SHAPE
DimensionedShapeOfClassOfIndividual	SHAPE
ClassOfShapeWithEnumeratedShapeDimensions	SHAPE
DefinitionOfShapeRepresentationWithExternalCode	SHAPE
DefinitionOfShapeOfClassOfIndividual	SHAPE
ClassOfStreamSource	STREAM
ClassOfStreamDestination	STREAM
ClassOfCompositionDefinition	STRUCTURE
ClassOfArrangementDefinition	STRUCTURE
ClassOfAssemblyDefinition	STRUCTURE
ClassOfAssemblyDefinitionWithSpecializedPart	STRUCTURE
ClassOfFeatureWholePartDefinition	STRUCTURE
ClassOfDirectConnectionDefinition	STRUCTURE
ClassifiedClassOfDirectConnectionDefinition	STRUCTURE
ClassOfIndirectConnectionDefinition	STRUCTURE
ClassifiedClassOfIndirectConnectionDefinition	STRUCTURE
ClassOfIndividualUsedInDirectConnectionDefinition	STRUCTURE
ClassOfIndividualUsedInIndirectConnectionDefinition	STRUCTURE

TEMPLATES FOR WHOLELIFEINDIVIDUALS

ParticipationOfWholeLifeIndividualInActivity	ACTIVITY
InvolvementByReferenceOfWholeLifeIndividualInAnActivity	ACTIVITY
MeasuringAPropertyOfAnWholeLifeIndividual	ACTIVITY
ActivityCausesBeginningOfWholeLifeIndividual	ACTIVITY
ActivityCausesEndingOfWholeLifeIndividual	ACTIVITY
ClassificationOfWholeLifeIndividual	CLASSIFICATION
DescriptionOfWholeLifeIndividual	DESCRIPTION
ClassifiedDescriptionOfWholeLifeIndividual	DESCRIPTION
DescriptionOfWholeLifeIndividualInLanguage	DESCRIPTION

ClassifiedDescriptionOfWholeLifeIndividualInLanguage	DESCRIPTION
DescriptionOfWholeLifeIndividualWithSign	DESCRIPTION
DescriptionOfWholeLifeIndividualWithClassifiedSign	DESCRIPTION
RepresentationOfWholeLifeIndividualOnDocument	DOCUMENT
RepresentationOfWholeLifeIndividualContainedInDocument	DOCUMENT
BeginningOfWholeLifeIndividual	EXISTENCE
BeginningOfWholeLifeIndividualAtClassifiedEvent	EXISTENCE
EndingOfWholeLifeIndividual	EXISTENCE
EndingOfWholeLifeIndividualAtClassifiedEvent	EXISTENCE
IdentificationOfWholeLifeIndividual	IDENTIFICATION
ClassifiedIdentificationOfWholeLifeIndividual	IDENTIFICATION
DeprecationOfLabelOfWholeLifeIndividual	IDENTIFICATION
IdentificationOfWholeLifeIndividualWithSign	IDENTIFICATION
IdentificationOfWholeLifeIndividualWithClassifiedSign	IDENTIFICATION
ContainmentOfAWholeLifeIndividual	LOCATION
RelativeLocationOfAWholeLifeIndividual	LOCATION
PositionOfAWholeLifeIndividualInACoordinateSystem	LOCATION
ClassificationOfWholeLifeIndividualWithCompoundType	MATERIAL
ClassificationOfWholeLifeIndividualWithBiologicalMatterType	MATERIAL
ClassificationOfWholeLifeIndividualWithCompositeMaterialType	MATERIAL
ClassificationOfWholeLifeIndividualWithParticulateMaterialType	MATERIAL
ClassificationOfWholeLifeIndividualWithPhase	MATERIAL
WholeLifeIndividualHasIndirectPropertyWithValue	PROPERTY-INDIRECT
WholeLifeIndividualHasConditionalIndirectProperty	PROPERTY-INDIRECT
MonetaryValueOfWholeLifeIndividual	PROPERTY-INDIRECT
PropertyWithValueOfWholeLifeIndividual	PROPERTY and STATUS
TwoDimensionalPropertyWithValuesOfWholeLifeIndividual	PROPERTY and STATUS
StatusOfWholeLifeIndividual	PROPERTY and STATUS
WholeLifeProductManufacturedByOrganization	RELATIONSHIP-OTHER
RelationBetweenWholeLifeIndividualAndClassOfRelationship	RELATIONSHIP-OTHER
ShapeOfWholeLifeIndividual	SHAPE
ShapeWithDimensionOfWholeLifeIndividual	SHAPE
WholeLifeStreamHasSource	STREAM
WholeLifeStreamHasDestination	STREAM
CompositionOfAWholeLifeIndividual	STRUCTURE
ArrangementOfAWholeLifeIndividual	STRUCTURE
AssemblyOfAWholeLifeIndividual	STRUCTURE
FeatureOfWholeLifeIndividual	STRUCTURE
DirectConnectionOfTwoWholeLifeIndividuals	STRUCTURE
IndirectConnectionOfTwoWholeLifeIndividuals	STRUCTURE
WholeLifeIndividualUsedInADirectConnection	STRUCTURE
WholeLifeIndividualUsedInAnIndirectConnection	STRUCTURE

TEMPLATES FOR TEMPORAL PARTS OF POSSIBLE INDIVIDUAL OR SUBTYPES THEREOF	
ParticipationOfTemporalPartInWholeLifeActivity	ACTIVITY
ParticipationOfTemporalPartInTemporalPartActivity	ACTIVITY
InvolvementByReferenceOfClassInTemporalPartActivity	ACTIVITY
InvolvementByReferenceOfTemporalPartInWholeLifeActivity	ACTIVITY
InvolvementByReferenceOfIndividualInTemporalPartActivity	ACTIVITY
InvolvementByReferenceOfTemporalPartInTemporalPartActivity	ACTIVITY
MeasuringAPropertyOfATemporalPart	ACTIVITY
MeasuringAPropertyOfATemporalPartOverAPeriodInTime	ACTIVITY
ApprovalWithStatusByTemporalPart	ACTIVITY
ActivityCausesBeginningOfTemporalPart	ACTIVITY
TemporalPartActivityCausesBeginningOfIndividual	ACTIVITY
TemporalPartActivityCausesBeginningOfTemporalPart	ACTIVITY
ActivityCausesEndingOfTemporalPart	ACTIVITY
TemporalPartActivityCausesEndingOfIndividual	ACTIVITY
TemporalPartActivityCausesEndingOfTemporalPart	ACTIVITY
ClassificationOfTemporalPart	CLASSIFICATION
DescriptionOfTemporalPart	DESCRIPTION
ClassifiedDescriptionOfTemporalPart	DESCRIPTION
DescriptionOfTemporalPartInLanguage	DESCRIPTION
ClassifiedDescriptionOfTemporalPartInLanguage	DESCRIPTION
DescriptionOfTemporalPartWithSign	DESCRIPTION
DescriptionOfTemporalPartWithClassifiedSign	DESCRIPTION
RepresentationOfTemporalPartOnDocument	DOCUMENT
RepresentationOfTemporalPartContainedInDocument	DOCUMENT
BeginningOfTemporalPart	EXISTENCE
BeginningOfTemporalPartAtClassifiedEvent	EXISTENCE
PlacingATemporalPartInAContext	EXISTENCE
EndingOfTemporalPart	EXISTENCE
EndingOfTemporalPartAtClassifiedEvent	EXISTENCE
SkillOfTemporalPartOfPerson	FUNCTION
FunctionalPhysicalObjectFulfilsUnitOperation	FUNCTION
InstallationOfMaterializedPhysicalObjectInFunctionPlace	FUNCTION
IdentificationOfTemporalPart	IDENTIFICATION
ClassifiedIdentificationOfTemporalPart	IDENTIFICATION
IdentificationOfTemporalPartWithSign	IDENTIFICATION
IdentificationOfTemporalPartWithClassifiedSign	IDENTIFICATION
ContainmentOfTemporalPart	LOCATION
RelativeLocationOfTemporalPart	LOCATION
PositionOfATemporalPartInACoordinateSystem	LOCATION
ClassificationOfTemporalPartWithCompoundType	MATERIAL
ClassificationOfTemporalPartWithBiologicalMatterType	MATERIAL
ClassificationOfTemporalPartWithCompositeMaterialType	MATERIAL

ClassificationOfTemporalPartWithParticulateMaterialType	MATERIAL
ClassificationOfTemporalPartWithPhase	MATERIAL
IndirectPropertyOfTemporalPart	PROPERTY-INDIRECT
IndirectPropertyWithValueOfTemporalPart	PROPERTY-INDIRECT
MonetaryValueOfTemporalPart	PROPERTY-INDIRECT
PropertyOfTemporalPart	PROPERTY and STATUS
PropertyWithValueOfTemporalPart	PROPERTY and STATUS
ConditionalPropertyWithValueOfTemporalPart	PROPERTY and STATUS
TwoDimensionalPropertyWithValuesOfTemporalPart	PROPERTY and STATUS
MonotypePropertyRatioOfTemporalPart	PROPERTY and STATUS
StatusOfTemporalPart	PROPERTY and STATUS
EmploymentOfTemporalPartOfPersonByOrganization	RELATIONSHIP-OTHER
ProductManufacturedByTemporalPartOrganization	RELATIONSHIP-OTHER
RelationBetweenTemporalPartAndClass	RELATIONSHIP-OTHER
LifecycleStageOfTemporalPart	RELATIONSHIP-OTHER
ShapeOfTemporalPart	SHAPE
ShapeWithDimensionOfTemporalPart	SHAPE
TemporalPartStreamHasSource	STREAM
TemporalPartStreamHasDestination	STREAM
PropertyOfTemporalPartOfStreamAtRelativeLocationAndTime	STREAM
CompositionOfTemporalPart	STRUCTURE
ArrangementOfTemporalPart	STRUCTURE
AssemblyOfTemporalPart	STRUCTURE
FeatureOfTemporalPart	STRUCTURE
DirectConnectionOfTwoTemporalParts	STRUCTURE
IndirectConnectionOfTwoTemporalParts	STRUCTURE
TemporalPartUsedInADirectConnection	STRUCTURE
TemporalPartUsedInAnIndirectConnection	STRUCTURE

TEMPLATES FOR INDIVIDUALS

ParticipationOfIndividualInActivity	ACTIVITY
InvolvementByReferenceOfClassInActivity	ACTIVITY
InvolvementByReferenceOfIndividualInActivity	ACTIVITY
MeasuringAPropertyOfAnIndividual	ACTIVITY
MeasuringAPropertyOfAnIndividualOverAPeriodInTime	ACTIVITY
ApprovalWithStatusByIndividual	ACTIVITY
ActivityCausesBeginningOfIndividual	ACTIVITY
ActivityCausesEndingOfIndividual	ACTIVITY
ClassificationOfIndividual	CLASSIFICATION
DescriptionOfIndividual	DESCRIPTION
ClassifiedDescriptionOfIndividual	DESCRIPTION
DescriptionOfIndividualInLanguage	DESCRIPTION

ClassifiedDescriptionOfIndividualInLanguage	DESCRIPTION
DescriptionOfIndividualWithSign	DESCRIPTION
DescriptionOfIndividualWithClassifiedSign	DESCRIPTION
RepresentationOfIndividualOnDocument	DOCUMENT
RepresentationOfIndividualContainedInDocument	DOCUMENT
BeginningOfIndividual	EXISTENCE
BeginningOfIndividualAtClassifiedEvent	EXISTENCE
EndingOfIndividual	EXISTENCE
EndingOfIndividualAtClassifiedEvent	EXISTENCE
SkillOfAPerson	FUNCTION
IdentificationOfIndividual	IDENTIFICATION
ClassifiedIdentificationOfIndividual	IDENTIFICATION
DeprecationOfLabelOfIndividual	IDENTIFICATION
IdentificationOfIndividualWithSign	IDENTIFICATION
IdentificationOfIndividualWithClassifiedSign	IDENTIFICATION
ContainmentOfAIndividual	LOCATION
RelativeLocationOfAIndividual	LOCATION
PositionOfAnIndividualInACoordinateSystem	LOCATION
ClassificationOfIndividualWithCompoundType	MATERIAL
ClassificationOfIndividualWithBiologicalMatterType	MATERIAL
ClassificationOfIndividualWithCompositeMaterialType	MATERIAL
ClassificationOfIndividualWithParticulateMaterialType	MATERIAL
ClassificationOfIndividualWithPhase	MATERIAL
IndirectPropertyOfIndividual	PROPERTY-INDIRECT
IndividualHasIndirectPropertyWithValue	PROPERTY-INDIRECT
IndividualHasConditionalIndirectProperty	PROPERTY-INDIRECT
MonetaryValueOfIndividual	PROPERTY-INDIRECT
PropertyOfIndividual	PROPERTY and STATUS
PropertyWithValueOfIndividual	PROPERTY and STATUS
TwoDimensionalPropertyWithValuesOfIndividual	PROPERTY and STATUS
StatusOfIndividual	PROPERTY and STATUS
EmploymentOfPersonByOrganization	RELATIONSHIP-OTHER
ProductManufacturedByOrganization	RELATIONSHIP-OTHER
RelationBetweenIndividualAndClass	RELATIONSHIP-OTHER
ShapeOfIndividual	SHAPE
ShapeWithDimensionOfIndividual	SHAPE
StreamHasSource	STREAM
StreamHasDestination	STREAM
PropertyOfStreamAtRelativeLocationAndTime	STREAM
CompositionOfAnIndividual	STRUCTURE
ArrangementOfAIndividual	STRUCTURE

AssemblyOfAnIndividual	STRUCTURE
FeatureOfIndividual	STRUCTURE
DirectConnectionOfTwoIndividuals	STRUCTURE
IndirectConnectionOfTwoIndividuals	STRUCTURE
IndividualUsedInADirectConnection	STRUCTURE
IndividualUsedInAnIndirectConnection	STRUCTURE
AggregateOfMonotypeIndividual	STRUCTURE

Appendix G: IIP representation of Templates

An endpoint with templates from the [ISO 15926 Information Pattern \(IIP\)](http://www.iso15926.org) projects undertaken by FIATECH is available at <http://www.iringsandbox.org/repositories/SandboxPt8/query>(or alternatively at <http://posccaesar.org/sandbox/iip/>)

The endpoint has 30 Base templates and 648 specialized templates (the number is increasing with time) and a total of 3678subjects (classes, templates and meta-template instances).

The format resembles ISO 15926 Part8 (but is not completely P8 compliant).

The various Templates are represented with URI and Name - but the URIs are “dead” (i.e., no information about template content or structure is available).

As an illustration, the first tenTemplates returned from a SPARQL query to list all Templates is given below.

uri	label
http://rdl.rdlfacade.org/data#R25091390879	ABOVE@en
http://tpl.rdlfacade.org/data#R93761651329	AboveBelowRackLocation@en
http://rdl.rdlfacade.org/data#R88A05AF20DAA412DB8F9F021277CA329	ACCESS CONTROL LIST NAME@en
http://tpl.rdlfacade.org/data#R72450C3223FB4FEEAA519B598EABB097	AccessControlListName@en
http://rdl.rdlfacade.org/data#R8946C8A49C8A47DEA3C200E292374625	ACTION REQUIRED BY CLIENT@en
http://rdl.rdlfacade.org/data#RD7039D458A2240CDA6B6F902F313E96D	ACTION REQUIRED BY EPC@en
http://rdl.rdlfacade.org/data#RDF7CC62ABA54B2DA7067C2EEC155572	ACTION REQUIRED CLASS@en
http://rdl.rdlfacade.org/data#RAED367FF823B4D40A67F6104320AB069	ACTION STATUS CLASS@en
http://rdl.rdlfacade.org/data#RF8A6F62931014AF5868CBD909B2B6566	ACTION STATUS DESCRIPTION@en
http://tpl.rdlfacade.org/data#RE535FAE8F8F74183AD14A5B32FAC542D	ActionRequired@en