
CERIF2006XML-1.1

Data Exchange Format Specification

Location:

<http://www.eurocris.org/>

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Abstract:

The CERIF2006XML-1.1 Data Exchange Format Specification is part of the CERIF2006-1.1 FDM release. It is intended to support data consistency and data quality across CERIF-based systems and applications during data exchanges. The Data Exchange Format is built on W3C XML standards.

CERIF (Common European Research Information Format) was developed with the support of the EC (European Commission) in two major phases: 1987-1990 and 1997-1999. It is a standard; technically it is an EU (European Union) Recommendation to member states. Since 2002 care and custody of CERIF has been handed by the EC to euroCRIS (www.eurocris.org) a not-for-profit organisation dedicated to the promotion of CRIS (Current Research Information Systems).

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1. Introduction

With the latest CERIF 2006 release a format for data interchange has been specified to ensure data consistency and data quality across applications. For the interchange format we make use of the widely known and popular XML format corresponding to the latest W3C XML recommendation from August 2006 [1].

The CERIF XML format is part of the CERIF 2006 Full Data Model (FDM) [2]. With the CERIF 2006 FDM release, CERIF entities have been structured into five groups:

- (1) Core CERIF Entities
- (2) 2nd Level CERIF Entities
- (3) CERIF Link Entities
- (4) Language-dependent CERIF Entities
- (5) CERIF Classification Entities

The CERIF XML interchange format is needed for data exchange operations at physical level. Therefore, the CERIF XML format conforms to the naming convention of the physical CERIF 2006 model [4]. For consistency of SQL scripts across common databases, the table and attribute names at the physical level have been shortened, to avoid uncontrolled truncations in table names with heterogeneous implementations. The table names at physical level are still understandable by human readers (see Appendix. 9.4 *Logical and Physical CERIF Entities*). For a more detailed view and a general introduction to CERIF we refer to the “CERIF2006-1.1 Full Data Model (FDM) Model Introduction and Specification” [2].

1.1 Purpose of CERIF XML

CERIF XML supports consistency and quality with data interchanges across applications and data providers within the CRIS community.

The provided CERIF XML examples comply with the latest CERIF 2006 release and give insight into the context of research information from another angle; still readable for human beings, the CERIF XML files allow for insight into the CERIF model structure without the knowledge of database formats and SQL scripts.

1.2 Scope of CERIF XML

The CERIF XML specification complies with the latest release of the CERIF 2006 – 1.1 FDM and includes the following components:

- This specification document “CERIF2006 XML – 1.1 Data Exchange Format Specification”.
- CERIF2006 XML 1.1 examples files for each entity.
- CERIF2006 XML 1.1 schema files for validation.
- A set of example roles and classification schemes such as “Person_OrganisationRoles” “Person_ProjectRoles” collected from Best Practice cases.

For a more detailed introduction into the CERIF model as such, we refer to [2]. The public CERIF 2006 related files and documents can be downloaded from the euroCRIS website. Additional files are available for members, for testcases: <http://eurocris.sharepoint.com/default.aspx>

2. CERIF Entities

With the latest release of the CERIF 2006 model the entity ResultPublication has become a core entity. For scalability and flexibility reasons all role and type definitions have been moved to the so called semantic layer which contains pre-defined classification schemes. With this normalization of the CERIF structure, the CERIF model took its first step towards a Service Oriented Architecture (SOA) concept by modularizing system components and offering them separately as services.

2.1 Core CERIF Entities

CERIF 2006 has four Core Entities: Project, OrganisationUnit, Person, and ResultPublication that all interact with each other (see figure 1).

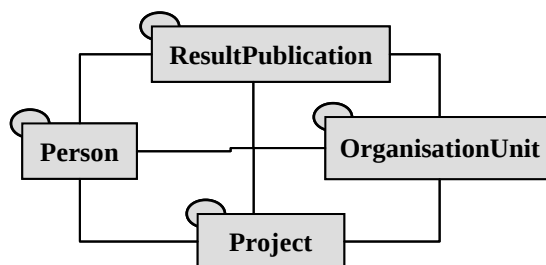


Figure 1: CERIF Core Entities

2.2 2nd Level CERIF Entities

Besides the core entities that represent key players (Person, OrganisationUnit) and their activities (Project, ResultPublication) CERIF captures the context of players and their interaction in the wider range of a research environment. Figure 2 demonstrates the core entities and some of the 2nd level entities within the complexity of their interactions.

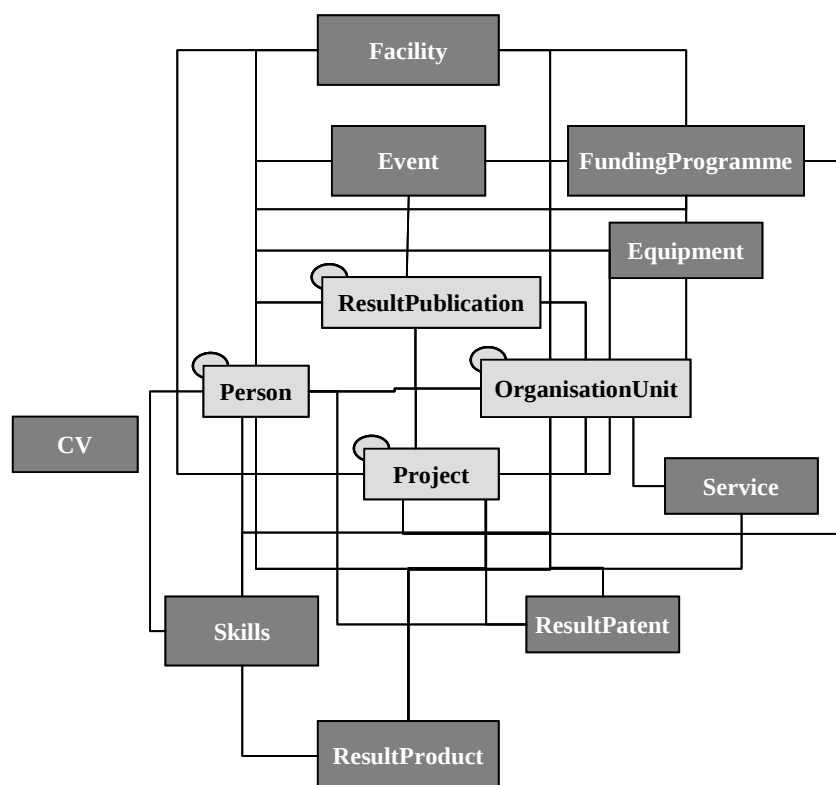


Figure 2: CERIF Core and 2nd Level Entities

2.3 CERIF Link Entities

For connecting the core and 2nd level entities, CERIF uses so called Link Entities (see figure 3). A link entity always connects two either core or 2nd level entities and stores additional information about the established connection.

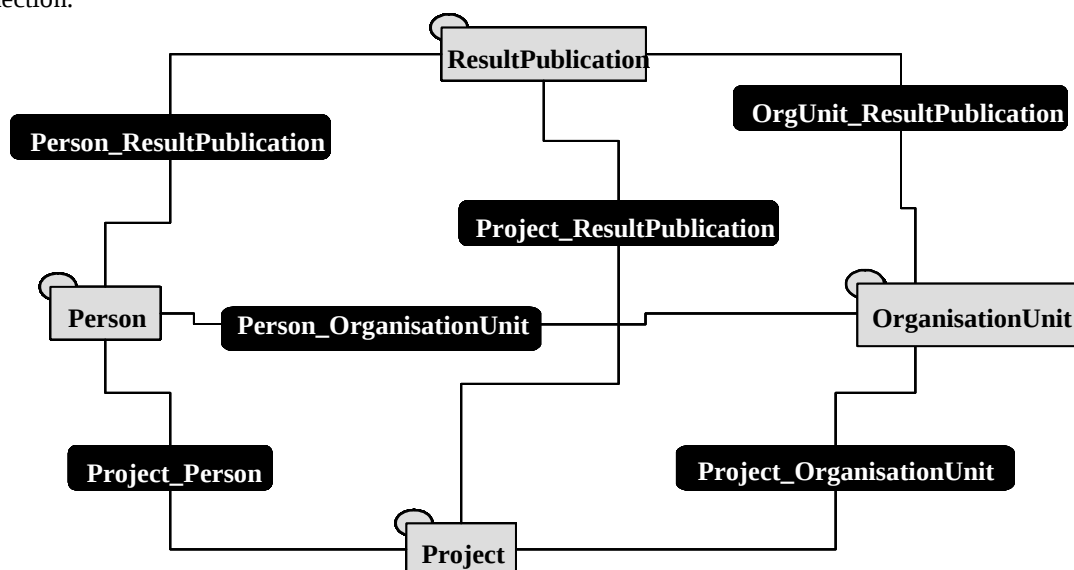


Figure 3: CERIF Link Entities connecting Core Entities

2.4 Language-dependent CERIF Entities

From figure 4 it becomes clear, that in a research environment many of the information are needed in different languages or in more than one language. CERIF therefore allows for multilingual entries.

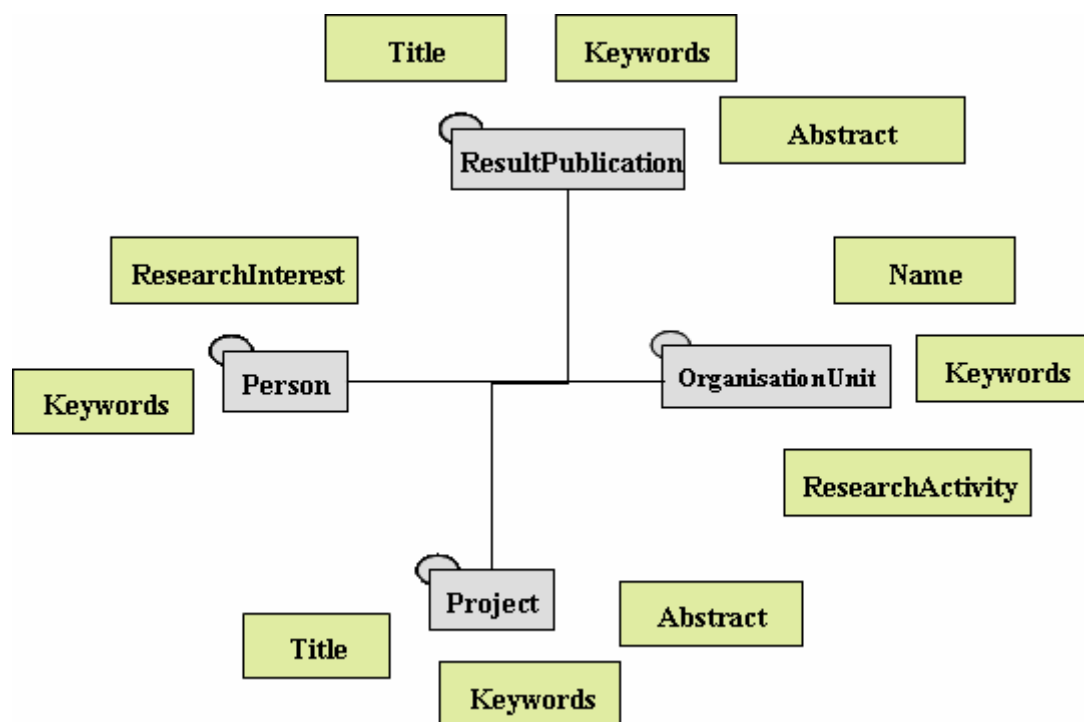


Figure 4: CERIF Core Entities supporting multilingual entries

2.5 CERIF Classification Entities

CERIF refers all core and 2nd level entities to pre-defined type schemes. Equally, link entities refer to pre-defined role schemes (figure 5). Definition and maintenance of role and type schemes is organized within the so called Semantic Layer or Classification Entities (figure 6).

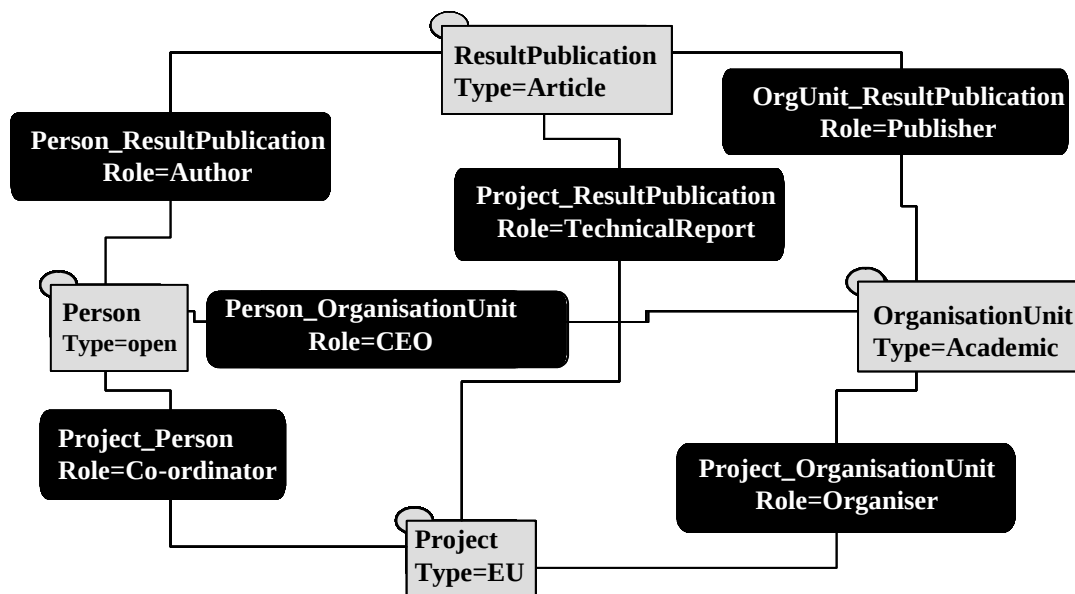


Figure 6: CERIF Core Entities and their Link Entities with role examples

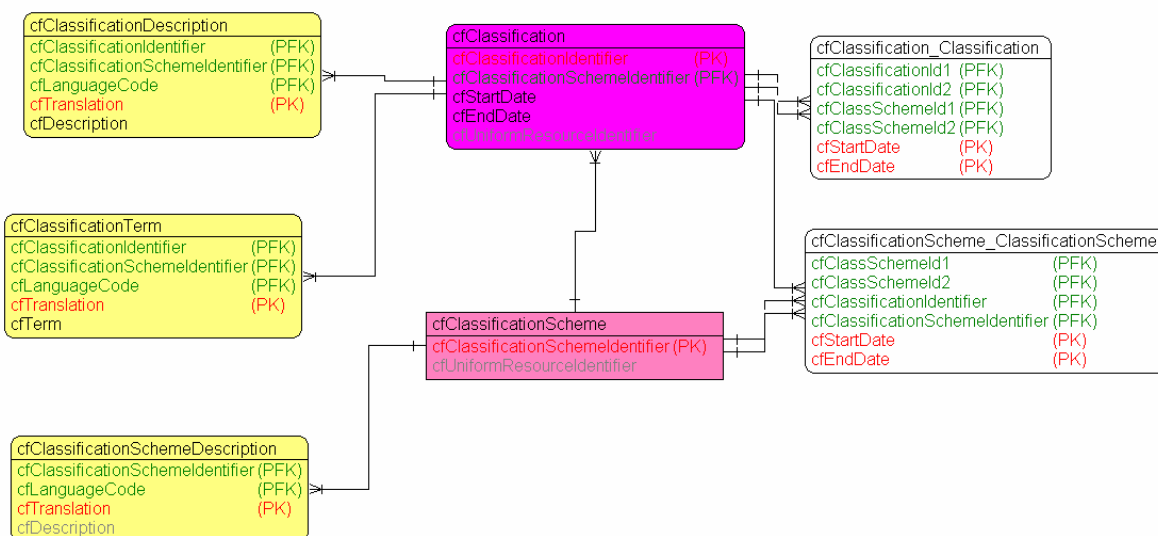


Figure 6: CERIF Classification Entities (modeled with Toad Data Modeler) – the so called Semantic Layer.

A list showing all CERIF entities is provided with the Appendix (9.3 List of CERIF Entities).

3. CERIF XML File Production

The following steps describe in brief a possible process to produce CERIF XML files from CERIF-based databases complying with the CERIF 2006-1.1 Full Data Model. A list of CERIF entities and CERIF XML examples is provided with the appendix. XML examples, and also the SQL scripts can be downloaded from the internal euroCRIS website.

STEP 0: Naming of CERIF XML Files

We recommend that the names of CERIF XML files indicate the entity name (at physical level) and the entity type (Core, 2nd Level, Link, Language-dependent, Classification), to ensure data integrity during the import process. CERIF XML files should thus follow a naming convention that implicitly supports an import order based on entity groups:

- (1) XML File Names for CERIF Classification Entities
 - cfClass-CLASS.xml
 - cfClassScheme-CLASS.xml
- (2) XML File Names for 2nd Level CERIF Entities
 - cfCurrency-2NDL.xml
 - cfCountry-2NDL.xml
 - cfLang-2NDL.xml
 - cfCV-2NDL.xml
 - cfEvent-2NDL.xml
 - cfExpSkills-2NDL.xml
 - cfFacil-2NDL.xml
 - ...
- (3) XML File Names for Core CERIF Entities
 - cfPers-CORE.xml
 - cfProj-CORE.xml
 - cfOrgUnit-CORE.xml
 - cfResPubl-CORE.xml
- (4) XML File Names for CERIF Link Entities
 - cfPers_OrgUnit-LINK.xml
 - cfProj_Pers-LINK.xml
 - cfProj_Class-LINK.xml
 - cfProj_Equip-LINK.xml
 - cfClass_Class-LINK.xml
 - cfCV_Class-LINK.xml
 - ...
- (5) XML File Names for Language-dependent CERIF Entities
 - cfProjAbstr-LANG.xml
 - cfProjKeyw-LANG.xml
 - cfProjTitle-LANG.xml
 - cfResPublAbstr-LANG.xml
 - cfClassDescr-LANG.xml
 - cfClassTerm-LANG.xml
 - cfClassSchemeDescr-LANG.xml
 - ...

STEP 1: XML Header

For all CERIF XML files the default XML version and a UTF-8 encoding has to be defined to support Unicode and thus allow for character sets in multiple languages.

```
<?xml version="1.0" encoding="UTF-8"?>
```

STEP 2: XML Root Element CERIF

Additional to the XML header, each CERIF XML file contains a CERIF root element. The CERIF root element nests all entity-related data belonging to individual source databases. For validation of the nested data, a schema reference *xsi:schemaLocation* has to be added according to W3C standards at the level of the CERIF root element. Moreover, according to W3C convention, namespace references *xmlns*; *xmlns:xsi* have to be added at the same level. To identify the CERIF release to which the data belong to, the date at which the data were produced, and the source database of the data, *release*, *date* and *sourceDatabase* attributes are mandatory.

```
<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEntityName cfEntityNameSchema.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEntityName"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">

  CERIF XML Data
  - per entity and
  - per source database
  - recommended!

</CERIF>
```

STEP 3: CERIF XML Structure

CERIF XML files can be prepared in either form:

- (1) a single CERIF XML file containing all entity-related data
- (2) many CERIF XML files containing per entity data only (recommended!)

We strongly recommend (2), to create XML files per entity and per source database for reasons of simplicity and for ease of validation, error detection and data integrity.

Each CERIF XML file contains the CERIF root element which itself nests entity elements (cfPers, cfOrgUnit, cfFacil, etc). Each entity element is prefixed with cf, corresponding to physical names of the CERIF 2006 tables.

```
<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEntityName cfEntityNameSchema.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEntityName"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfPers>
    ...
  </cfPers>
  <cfPers>
    ...
  </cfPers>
</CERIF>
```

```
<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEntityName cfEntityNameSchema.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEntityName"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfOrgUnit>
    ...
  </cfOrgUnit>
  <cfOrgUnit>
    ...
  </cfOrgUnit>
</CERIF>
```

Each XML entity element nests the table attributes as the XML elements. Attributes originating from language-dependent tables are consequently also nested within XML entity elements. However, all language code **cfLangCode** and translation **cfTrans** attributes from tables **are not transformed** into XML elements but rather into XML attributes inside language-dependent elements, to ensure that attributes correlate with their intended language definitions. The same holds for currency-dependent attributes **cfCurrencyCode**. They equally become attributes inside currency-dependent elements.

```
<?xml version="1.0" encoding="UTF-8"?>
<CERIF ...
  <cfPers>
    <cfPersId>ID</cfPersId>
    <cfURI>String</cfURI>
    <cfFamilyNames>String</cfFamilyNames>
    <cfFirstNames>String</cfFirstNames>
    <cfOtherNames>String</cfOtherNames>
    <cfSex>Selection</cfSex>
  </cfPers>

  <cfPers>
```

```

    <cfPersId>ID</cfPersId>
    <cfURI>String</cfURI>
    <cfFamilyNames>String</cfFamilyNames>
    <cfFirstNames>String</cfFirstNames>
    <cfOtherNames>String</cfOtherNames>
    <cfSex>Selection</cfSex>
  </cfPers>
</CERIF>

```

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF ...
  <cfPersResInt>
    <cfPersId>ID</cfPersId>
    <cfResInt cfLangCode="DE" cfTrans="o">String</cfResInt>
  </cfPersResInt>
  <cfPersResInt>
    <cfPersId>ID</cfPersId>
    <cfResInt cfLangCode="EN" cfTrans="o">String</cfResInt>
  </cfPersResInt>
</CERIF>

```

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF ...
  <cfPersKeyw>
    <cfPersId>ID</cfPersId>
    <cfKeyw cfLangCode="DE" cfTrans="o">String</cfKeyw>
  </cfPersKeyw>
  <cfPersKeyw>
    <cfPersId>ID</cfPersId>
    <cfKeyw cfLangCode="EN" cfTrans="o">String</cfKeyw>
  </cfPersKeyw>
</CERIF>

```

STEP 4: CERIF Tables -> CERIF XML Entities

(1) Core Tables become Core XML Entities

The transformation of a core table into a core XML entity is demonstrated with the core table **Person (cfPers)** that becomes a core XML entity **<cfPers>** nesting related elements.

<cfPers> nesting elements **</cfPers>**

(1.1) Core table fields become XML elements nested within XML entity elements

```

<cfPers>
  <cfPersId>ID</cfPersId>
  <cfURI>String</cfURI>
  <cfFamilyNames>String</cfFamilyNames>
  <cfFirstNames>String</cfFirstNames>
  <cfOtherNames>String</cfOtherNames>
</cfPers>

```

```

<cfPers>
  <cfPersId>ID</cfPersId>
  <cfURI>String</cfURI>
  <cfFamilyNames>String</cfFamilyNames>
  <cfFirstNames>String</cfFirstNames>
</cfPers>

```

(1.2) Field values become XML element values; empty fields are omitted.

(2) 2nd Level Tables become 2nd Level XML Entities

The transformation of 2nd level tables into 2nd level XML entities is equal to the transformation of core tables and is demonstrated with the 2nd level table **Event (cfEvent)** that becomes a core XML entity **<cfEvent>** nesting related elements.

<cfEvent> nesting elements **</cfEvent>**

(2.1) 2nd Level table fields become XML elements nested within XML entity elements

```

<cfEvent>
  <cfEventId>ID</cfEventId>
  <cfURI>String</cfURI>
  <cfLocation>String</cfLocation>
  <cfFeeOrFree>String</cfFeeOrFree>
  <cfStartDate>Date</cfStartDate>
  <cfEndDate>Date</cfEndDate>
</cfEvent>
<cfEvent>
  <cfEventId>ID</cfEventId>
  <cfURI>String</cfURI>
  <cfLocation>String</cfLocation>
  <cfStartDate>Date</cfStartDate>
  <cfEndDate>Date</cfEndDate>
</cfEvent>

```

(2.2) Field values become XML element values, empty fields are omitted.

(3) Link Tables become XML Link Entities

The transformation of CERIF link tables to CERIF XML link entities is demonstrated with the link table **Person_Organisation (cfPers_OrgUnit)** that becomes a link XML entity **<cfPers_OrgUnit>** nesting related elements.

<cfPers_OrgUnit> nesting elements **</cfPers_OrgUnit>**

(3.1) Link Table attributes become XML elements nested within XML entity elements

```

<cfPers_OrgUnit>
  <cfPersId>ID</cfPersId>
  <cfOrgUnitId>ID</cfOrgUnitId>
  <cfClassId>CLASSIFICATION_ID</cfClassId>
  <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId>
  <cfStartDate>Timestamp</cfStartDate>
  <cfEndDate>Timestamp</cfEndDate>
</cfPers_OrgUnit>
<cfPers_OrgUnit>

```

```

<cfPersId>ID</cfPersId>
<cfOrgUnitId>ID</cfOrgUnitId>
<cfClassId>CLASSIFICATIONID</cfClassId>
<cfClassSchemeId>CLASSIFICATIONSCHEMEID</cfClassSchemeId>
<cfStartDate>Timestamp</cfStartDate>
<cfEndDate>Timestamp</cfEndDate>
</cfPers_OrgUnit>

```

- (3.2) Field values become XML element values, except from cfCurrencyCode fields, which are transformed into attributes within currency-dependent elements, in order to be associated correctly with their intension. Field values become XML element values; empty fields are omitted.

```

<cfProj_FundProg>
  <cfProjId>ID</cfProjId>
  <cfFundProgId>ID</cfFundProgId>
  <cfClassId>CLASSIFICATION_ID</cfClassId>
  <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId>
  <cfAmount cfCurrencyCode="EUR">Float</cfAmount>
  <cfStartDate>Timestamp</cfStartDate>
  <cfEndDate>Timestamp</cfEndDate>
</cfProj_FundProg>

```

Each link table contains references to the Classification table (semantic layer), and thus, with all CERIF link entities, a Classification Id (cfClassId) and the Classification Scheme Id (cfClassSchemeId) has to be provided as well as a Timestamp for StartDate and EndDate.

(4) Language-dependent Tables become Language-dependent XML Entities

The transformation of language-dependent tables into language-dependent XML link entities is demonstrated with the language-dependent table **OrgUnitResearchActivity** (cfOrgUnitResAct) that becomes a language-dependent XML entity <cfOrgUnitResAct> nesting related elements.

<cfOrgUnitResAct> nesting elements </cfOrgUnitResAct>

- (4.1) Language table attributes become XML elements nested within XML entity elements, except from cfLangCode and cfTrans, which are transformed into attributes within XML elements, in order to be associated correctly.

```

<cfOrgUnitResAct>
  <cfOrgUnitId>ID</cfOrgUnitId>
  <cfResAct cfLangCode="DE" cfTrans="o">String</cfResAct>
</cfOrgUnitResAct>
<cfOrgUnitResAct>
  <cfOrgUnitId>ID</cfOrgUnitId>
  <cfResAct cfLangCode="EN" cfTrans="o">String</cfResAct>
</cfOrgUnitResAct>

```

- (4.2) Field values become XML element values except from cfLangCode and cfTrans field values which become values of attributes inside their corresponding elements; empty fields are omitted.

(5) Classification Tables become XML Classification Entities

The transformation of the Classification or ClassificationScheme table into XML is equal to the transformation of 2nd Level Tables. In the view of an XML interchange format semantics does not play a role.

CERIF XML operates at a purely technical operation and representation level. More information about the Semantic Layer can be found in the CERIF 2006-1.1 Full Data Model introduction and specification document [2]. XML examples are provided in the appendix and available at the euroCRIS website for members.

4. CERIF XML Validation

For validating the CERIF 2006 XML files, XML Schema files are provided. XML Schema is a format supported by W3C [5]. The validation of XML files with XML Schema ensures data quality and consistency across datasets and allows for error detection. Any import of CERIF XML data should be avoided if no validation of the XML files has been undertaken, to prevent from erroneous data in the repository.

To validate the CERIF XML files, XML Schema references have to be added to the CERIF root element, as explained in the previous section.

```
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEntityName cfEntityNameSchema.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEntityName"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
```

We recommend the creation of single entity and source database centered XML files also for reasons of validation. With huge XML files containing all data, validation can become a problem.

CERIF XML-based data will be validated against data type, structure and mandatory elements. The semantics of data values will not be validated and is considered to be in the responsibility of data suppliers.

XML Schema files for validation will be available from the euroCRIS website for download and validation reference.

5. CERIF Semantic Layer

The semantic layer of the CERIF data model can contain all kinds of role and type definitions as well as thematic classification systems or supported standards. Moreover, the semantic layer supports a transparent integration of data from different source databases. The following classifications will be prepared for import from the internal euroCRIS website:

5.1 XML Files from Best Practice Cases

- **Core and 2nd Level Entity Classification (mandatory in case of multiple Source Repositories)**
 - o Schema containing a list of the contributing Source Databases

- **Core and 2nd Level Entity Classification**
 - o Schemas for Project Types, Project Status, ...
 - o Schemas for Academic Titles, Honorific Titles, ...
 - o Schemas for Organisational Types
 - o Schemas for Publication Types

- **Link Entity Classification**
 - o Schemas for Roles, defining relations between Projects and OrgUnits
 - o Schemas for Roles, defining relations among OrgUnits
 - o Schemas for Roles, defining relations between Person and OrgUnits
 - o Schemas for Roles, defining relations between Project and Person
 - o Schemas for Roles, defining relations between Project and OrgUnit
 - o ...

5.2 XML Files for Supported Standards

- (ISO639-1) ISO Two-Letter Language Codes
- (ISO3166-1) ISO Country Codes
- (ISO4217) ISO Currency Codes

6. XML Import Process

In order to achieve quality and consistency with data, the following steps are recommended for importing CERIF XML data.

- (1) **Data Validation:** Only validated CERIF XML files should be imported.
- (2) **Data Separation:** XML files should be separated by source database **and** by entity (see chapter 3 XML File Generation).
- (3) **Assigning Source Database:** If XML data from multiple data sources will be imported into one physical database, then, the originating source database has to be identified. A collection of multiple source databases and their identifiers can be managed from the Semantic Layer.

For an import of data from heterogeneous sources the following is recommended.

- > Definition of a source databases in the cfClassification table (cfClassId)
- > Connection of this source databases with a Classification Scheme (cfClassSchemeId)
- > With source database definition at the Semantic Layer the import process can start.
- > During the import process all Core and 2nd Level database entries by default get a reference entry to the source database within their related Class-link tables (cfPers_Class, cfProj_Class, cfOrgUnit_Class, cfEvent_Class...)

The collection of source databases, their description and extension is maintained and pre-defined at the Semantic Layer with Classification Entities. For the data import we recommend a particular import order (see 4), which requires ClassificationSchemes to be imported (or defined) first. When importing to link tables, references (cfClassificationId, cfClassificationSchemeId) have to be set.

An identifier (URI) for the source database definition within the Semantic Layer can be extracted from the *sourceDatabase* attribute within the CERIF XML root elements.

- (4) **Referential Integrity:** To maintain referential integrity during the import process, the sequence of entities should be determined:

- (1) Import of Classification Entities
- (2) Import of 2nd Level Entities
- (3) Import of Core Entities
- (4) Import of Link Entities
- (5) Import of Language-dependent Entities

If only a single XML file with no separation of XML files based on entity is provided. The order of the XML entities inside the XML file should correspond to the above order, to guarantee referential integrity within the single XML file and later the importing repository. A validation of one single XML file could become problematic due to the size of the file and the complexity of the XML Schema. Error detection in huge XML files is more difficult as well. Therefore we strongly recommend for a separation of data.

- (5) **Error Handling:** No partial import should be allowed to ensure integrity of data.

Each of the steps is dependent on the previous one. If any step could not be successfully completed, then the next step will not be started. A particular import order within entity types themselves is not foreseen.

Requirements and System Constraints:

- Availability of a universal data import format at the repository, capable to accommodate different subsets of a data model from different data suppliers.
- Availability of an export format from the running systems of data suppliers.
- Mapping definition of system entities to CERIF entities.
- Unicode support in systems of data suppliers.

7. Non-CERIF Extensions

Data providers may also add non-CERIF fields and entities to XML files. Such additions:

- (1) could be mapped to CERIF entities if there is substantial overlap
- (2) could be ignored by the import process if there is only little overlap

An example for attribute extension at the link table Project_FundingProgramme (cfProj_FundProg) and its corresponding XML link entity <cfProj_FundProg> representation is given below:

Example Attributes for Extension at Link Table Project_FundingProgramme (cfPROJ_FUNDProg)

RC = RunningCosts (default=0, contractdata) in euro
 PC = PersonelCosts (default=0, contractdata) in euro
 OH = Overhead (default=0, contractdata) in euro
 EC = EquipmentCost (default=0, contractdata) in euro
 RCS = RunningCosts spent (default=0, spending) in euro
 PCS = PersonelCosts spent (default=0, spending) in euro
 OHS = Overhead spent (default=0, spending) in euro
 ECS = EquipmentCosts spent (default=0, spending) in euro

<!-- XML Link Entity Project_FundingProgramme containing extensions -->

```
<cfProj_FundProg>
  <cfProjId>ID</cfProjId>
  <cfFundProgId>ID</cfFundProgId>
  <cfClassSchemeId>CLASSIFICATIONSCHEMEID</cfClassSchemeId>
  <cfCLASSId>CLASSIFICATIONID</cfCLASSId>
  <cfAmount cfCurrencyCode="EUR">Float</cfAmount>
  <!-- CERIF Extension -->
    <cfRC cfCurrencyCode="EUR">Float</cfRC>
    <cfPC cfCurrencyCode="EUR">Float</cfPC>
    <cfOH cfCurrencyCode="EUR">Float</cfOH>
    <cfEC cfCurrencyCode="EUR">Float</cfEC>
    <cfRCS cfCurrencyCode="EUR">Float</cfRCS>
    <cfPCS cfCurrencyCode="EUR">Float</cfPCS>
    <cfOHS cfCurrencyCode="EUR">Float</cfOHS>
    <cfECS cfCurrencyCode="EUR">Float</cfECS>
  <!-- End of CERIF Extension -->
  <cfStartDate>Timestamp</cfStartDate>
  <cfEndDate>Timestamp</cfEndDate>
</cfProj_FundProg>
```

The extension of CERIF with introduced attributes (see above) allows for a yearly budgetting and for the calculation of spendings per project.

Data providers should contact the CERIF Taskgroup and the Best Practice Taskgroup for needed extensions. Proposals can be submitted to the CERIF Taskgroup via template¹. Suggestions will then be discussed within task groups and a decision towards extension will be taken and the CERIF model accordingly adapted.

¹ A template for the submission of CERIF extensions will be available from the euroCRIS website.

8. Future Work

In a current activity the *repository* of the Semantic Layer is being filled and extended with examples from Best Practice to support different application scenarios and requirements. XML files will be provided to fill the Semantic Layer.

More work on namespaces is being considered for the CERIF XML as they become even more important in the wider context of Service Oriented Architectures (SOA), to identify contextual service components.

9. Appendix

9.1 CERIF XML Examples

9.1.1 Core CERIF XML Entities (XML Examples)

```
<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfPers-CORE cfPers-CORE.xsd"
  xmlns="http://www.eurocris.org/cerif/cfPers-CORE"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfPers>
    <cfPersId>ID</cfPersId>
    <cfURI>String</cfURI>
    <cfFamilyNames>String</cfFamilyNames>
    <cfFirstNames>Timestamp</cfFirstNames>
    <cfOtherNames>Timestamp</cfOtherNames>
    <cfSex>n</cfSex>
  </cfPers>
  <cfPers>
    <cfPersId>0123456</cfPersId>
    <cfURI>http://www.dfki.de/~brigitte/</cfURI>
    <cfFamilyNames>Joerg</cfFamilyNames>
    <cfFirstNames>Brigitte</cfFirstNames>
    <cfSex>f</cfSex>
  </cfPers>
  <cfPers>
    <cfPersId>0123457</cfPersId>
    <cfFamilyNames>van Grootel</cfFamilyNames>
    <cfFirstNames>Geert</cfFirstNames>
    <cfSex>m</cfSex>
  </cfPers>
  ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfProj-CORE cfProj-CORE.xsd"
  xmlns="http://www.eurocris.org/cerif/cfProj-CORE "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfProj>
    <cfProjId>ID</cfProjId>
    <cfURI>String</cfURI>
    <cfAcronym>String</cfAcronym>
    <cfStartDate>Timestamp</cfStartDate>
    <cfEndDate>Timestamp</cfEndDate>
  </cfProj>
  <cfProj>
    <cfProjId>0143201</cfProjId>
    <cfURI>http://www.ist-world.org/</cfURI>
    <cfAcronym>IST World</cfAcronym>
    <cfStartDate>2005-04-01</cfStartDate>
    <cfEndDate>2007-09-30</cfEndDate>
  </cfProj>
  <cfProj>
    <cfProjId>0432123</cfProjId>
    <cfURI>http://www.lt-world.org/</cfURI>
```

```

        <cfAcronym>LT World</cfAcronym>
        <cfStartDate>2001-04-01</cfStartDate>
        <cfEndDate>2006-12-31</cfEndDate>
    </cfProj>
    <cfProj>
        ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfOrgUnit-CORE cfOrgUnit-CORE.xsd"
  xmlns="http://www.eurocris.org/cerif/cfOrgUnit-CORE "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
    <cfOrgUnit>
      <cfOrgUnitId>ID</cfOrgUnitId>
      <cfURI>String</cfURI>
      <cfAcronym>String</cfAcronym>
      <cfHeadCount>Integer</cfHeadCount>
      <cfTurnover cfCurrencyCode="EUR">Float</cfTurnover>
    </cfOrgUnit>
    <cfOrgUnit>
      <cfOrgUnitId>0432123</cfOrgUnitId>
      <cfURI>http://www.dfki.de/</cfURI>
      <cfAcronym>DFKI</cfAcronym>
    </cfOrgUnit>
    <cfOrgUnit>
      <cfOrgUnitId>0432125</cfOrgUnitId>
      <cfURI>http://www.dfki.de/lt/</cfURI>
      <cfAcronym>LT Lab</cfAcronym>
      <cfHeadCount>40</cfHeadCount>
    </cfOrgUnit>
    ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfResPubl-CORE cfResPubl-CORE.xsd"
  xmlns="http://www.eurocris.org/cerif/cfResPubl-CORE"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
    <cfResPubl>
      <cfResPublId>ID</cfResPublId>
      <cfURI>String</cfURI>
      <cfResPublDate>Date</cfResPublDate>
    </cfResPubl>
    <cfResPubl>
      <cfResPublId>0134543</cfResPublId>
      <cfURI>http://www.dfki.de/lt/publications_show.php?id=810</cfURI>
      <cfResPublDate>2006-07-01</cfResPublDate>
    </cfResPubl>
    <cfResPubl>
      <cfResPublId>ID</cfResPublId>
      <cfURI>http://www.dfki.de/lt/publications_show.php?id=782</cfURI>
      <cfResPublDate>2006-07-01</cfResPublDate>
    </cfResPubl>
    ...
</CERIF>

```

9.1.2 2nd Level CERIF XML Entities (XML Examples)

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfClass-CLASS cfClass-CLASS.xsd"
  xmlns="http://www.eurocris.org/cerif/cfClass-CLASS "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfClass>
    <cfClassId>ID</cfClassId>
    <cfClassSchemeId>ID</cfClassSchemeId>
    <cfStartDate>Timestamp</cfStartDate>
    <cfEndDate>Timestamp</cfEndDate>
    <cfURI>String</cfURI>
  </cfClass>
  <cfClass>
    <cfClassId>0000001</cfClassId>
    <cfClassSchemeId>0000011</cfClassSchemeId>
    <cfStartDate>2007-01-01T12:00:00-05:00</cfStartDate>
    <cfEndDate>2007-01-01T12:00:00-05:00</cfEndDate>
    <cfURI>Sourcedatabase IST World</cfURI>
  </cfClass>
  <cfClass>
    <cfClassId>0000002</cfClassId>
    <cfClassSchemeId>0000011</cfClassSchemeId>
    <cfStartDate>2007-01-01T12:00:00-05:00</cfStartDate>
    <cfEndDate>2007-01-01T12:00:00-05:00</cfEndDate>
    <cfURI>Sourcedatabase LT World</cfURI>
  </cfClass>
  ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/ cfClassScheme-CLASS cfClassScheme-CLASS.xsd"
  xmlns="http://www.eurocris.org/cerif/cfClassScheme-CLASS "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfClassScheme>
    <cfClassSchemeId>ID</cfClassSchemeId>
    <cfURI>String</cfURI>
  </cfClassScheme>
  <cfClassScheme>
    <cfClassSchemeId>0000011</cfClassSchemeId>
    <cfURI>Schema of Source Databases</cfURI>
  </cfClassScheme>
  <cfClassScheme>
    <cfClassSchemeId>0000020</cfClassSchemeId>
    <cfURI>Schema of Academic Titles</cfURI>
  </cfClassScheme>
  <cfClassScheme>
    <cfClassSchemeId>0000030</cfClassSchemeId>
    <cfURI>Schema of Electronic Address Types</cfURI>
  </cfClassScheme>
  ...
</CERIF>

```

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfCV-2NDL cfCV-2NDL.xsd"
  xmlns="http://www.eurocris.org/cerif/cfCV-2NDL"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfCV>
    <cfCVId>ID</cfCVId>
    <cfCVDoc>BLOB</cfCVDoc>
    <cfURI>String</cfURI>
  </cfCV>
  <cfCV>
    <cfCVId>0243456</cfCVId>
    <cfCVDoc>Binary CV Data [BLOB]</cfCVDoc>
  </cfCV>
  <cfCV>
    <cfCVId>0243456</cfCVId>
    <cfCVDoc>Containing Binary Code of a CV from i.e. a pdf file.</cfCVDoc>
  </cfCV>
  ...
</CERIF>

```

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEAddr-2NDL cfEAddr-2NDL.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEAddr-2NDL "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfEAddr>
    <cfEAddrId>ID</cfEAddrId>
    <cfPAddrId>ID</cfPAddrId>
    <cfURI>String</cfURI>
  </cfEAddr>
  <cfEAddr>
    <cfEAddrId>0154321</cfEAddrId>
    <cfPAddrId>0163245</cfPAddrId>
    <cfURI>brigitte.joerg</cfURI>
  </cfEAddr>
  <cfEAddr>
    <cfEAddrId>0175678</cfEAddrId>
    <cfPAddrId>0163245</cfPAddrId>
    <cfURI>brigitte.joerg@dfki.de</cfURI>
  </cfEAddr>
</CERIF>

```

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfPAddr-2NDL cfPAddr-2NDL.xsd"
  xmlns="http://www.eurocris.org/cerif/cfPAddr-2NDL "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfPAddr>
    <cfPAddrId>ID</cfPAddrId>
    <cfAddrline1>String</cfAddrline1>
    <cfAddrline2>String</cfAddrline2>
    <cfAddrline3>String</cfAddrline3>
    <cfAddrline4>String</cfAddrline4>
  </cfPAddr>

```

```

        <cfAddrline5>String</cfAddrline5>
        <cfCityTown>String</cfCityTown>
        <cfPostCode>String</cfPostCode>
        <cfCountryCode>String</cfCountryCode>
        <cfURI>String</cfURI>
    </cfPAddr>
    <cfPAddr>
        <cfPAddrId>0163245</cfPAddrId>
        <cfAddrline1>Stuhlsatzenhausweg 3</cfAddrline1>
        <cfAddrline2>Postfach</cfAddrline2>
        <cfCityTown>Saarbrücken</cfCityTown>
        <cfPostCode>66123</cfPostCode>
        <cfCountryCode>DE</cfCountryCode>
        <cfURI>DFKI Address</cfURI>
    </cfPAddr>
    ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/ cfEquip-2NDL cfEquip-2NDL.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEquip-2NDL "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
    <cfEquip>
      <cfEquipId>ID</cfEquipId>
      <cfOEMId>ID</cfOEMId>
      <cfEquipOwnId>ID</cfEquipOwnId>
      <cfURI>String</cfURI>
    </cfEquip>
    <cfEquip>
      <cfEquipId>0123654</cfEquipId>
      <cfOEMId>0132123</cfOEMId>
      <cfEquipOwnId>0142123</cfEquipOwnId>
      <cfURI>Smartboard</cfURI>
    </cfEquip>
    <cfEquip>
      <cfEquipId>0123655</cfEquipId>
      <cfOEMId>0132123</cfOEMId>
      <cfEquipOwnId>0142123</cfEquipOwnId>
      <cfURI>Sony Laptop für Smartboard</cfURI>
    </cfEquip>
    ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEvent-2NDL cfEvent-2NDL.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEvent-2NDL "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
    <cfEvent>
      <cfEventId>ID</cfEventId>
      <cfLocation>String</cfLocation>
      <cfFeeOrFree>Selection</cfFeeOrFree>
      <cfStartDate>Timestamp</cfStartDate>
      <cfEndDate>Timestamp</cfEndDate>
      <cfURI>String</cfURI>

```

```

    </cfEvent>
    <cfEvent>
      <cfEventId>0001121</cfEventId>
      <cfLocation>Bergen</cfLocation>
      <cfFeeOrFree>Fee</cfFeeOrFree>
      <cfStartDate>2006-05-11</cfStartDate>
      <cfEndDate>2006-05-13</cfEndDate>
      <cfURI>http://www.eurocris.org/CRIS2006/</cfURI>
    </cfEvent>
    <cfEVENT>
      <cfEventId>0001122</cfEventId>
      <cfLocation>Maribor</cfLocation>
      <cfFeeOrFree>Fee</cfFeeOrFree>
      <cfStartDate>2008-05-11</cfStartDate>
      <cfEndDate>2008-05-13</cfEndDate>
      <cfURI>http://www.eurocris.org/CRIS2008/</cfURI>
    </cfEvent>
  </CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfExpSkills-2NDL cfExpSkills-2NDL.xsd"
  xmlns="http://www.eurocris.org/cerif/cfExpSkills-2NDL "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfExpSkills>
    <cfExpSkillsId>ID</cfExpSkillsId>
    <cfURI>String</cfURI>
  </cfExpSkills>
  <cfExpSkills>
    <cfExpSkills>0011234</cfExpSkills>
    <cfURI>Database Modelling</cfURI>
  </cfExpSkills>
  <cfExpSkills>
    <cfExpSkillsId>0011235</cfExpSkillsId>
    <cfURI>Relational Databases</cfURI>
  </cfExpSkills>
  <cfExpSkills>
    <cfExpSkillsId>0011236</cfExpSkillsId>
    <cfURI>Research Information Applications</cfURI>
  </cfExpSkills>
  ...
</CERIF>

```

9.1.3 CERIF Link Entities (XML Examples)

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfClassScheme_ClassScheme-LINK
    cfClassScheme_ClassScheme-LINK.xsd"
  xmlns="http://www.eurocris.org/cerif/cfClassScheme_ClassScheme-LINK "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <!-- ClassificationScheme_ClassificationScheme Link Tables are also used for -->
  <!-- Mapping Definitions between related Classification Schemes -->
  <cfClassScheme_ClassScheme>
    <cfClassSchemeId1>CLASSIFICATIONSCHEME_ID1</cfClassSchemeId1>
    <cfClassSchemeId2>CLASSIFICATIONSCHEME_ID2</cfClassSchemeId2>
    <cfClassId>CLASSIFICATION_ID1</cfClassId>
    <cfClassSchemeId>CLASSIFICATIONSCHEMA_ID</cfClassSchemeId>
    <cfStartDate>Timestamp</cfStartDate>
    <cfEndDate>Timestamp</cfEndDate>
  </cfClassScheme_ClassScheme>
  <cfClassScheme_ClassScheme>
    <cfClassSchemeId1>PROJECTTYPESSCHEMEOld_ID</cfClassSchemeId1>
    <cfClassSchemeId2>PROJECTTYPESSCHEMENEW_ID</cfClassSchemeId2>
    <cfClassId>MAPPING_PROJECTTYPES_ID</cfClassId>
    <cfClassSchemeId>MAPPING_OLD2NEW_ID</cfClassSchemeId>
    <cfStartDate>2007-01-01T12:00:00-05:00</cfStartDate>
    <cfEndDate>2007-01-01T12:00:00-05:00</cfEndDate>
  </cfClassScheme_ClassScheme>
  ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfClass_Class-LINK cfClass_Class-LINK.xsd"
  xmlns="http://www.eurocris.org/cerif/cfClass_Class-LINK "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfClass_Class>
    <cfClassId1>CLASSIFICATION_ID1</cfClassId1>
    <cfClassSchemeId1>CLASSIFICATIONSCHEME_ID1</cfClassSchemeId1>
    <cfClassId2>CLASSIFICATION_ID2</cfClassId2>
    <cfClassSchemeId2>CLASSIFICATIONSCHEME_ID2</cfClassSchemeId2>
    <cfClassId>CLASSIFICATION_ID</cfClassId>
    <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId2>
    <cfStartDate>Timestamp</cfStartDate>
    <cfEndDate>Timestamp</cfEndDate>
  </cfClass_Class>
  <!-- Mapping Definitions -->
  <cfClass_Class>
    <cfClassId1>OrganisationType_LTWorld_ID</cfClassId1>
    <cfClassSchemeId1>OrganisationTypes_LTWorld_ID</cfClassSchemeId1>
    <cfClassId2>OrganisationType_ISTWorld_ID</cfClassId2>
    <cfClassSchemeId2>OrganisationTypes_ISTWorld_ID</cfClassSchemeId2>
    <cfClassId>CLASSIFICATION_ID</cfClassId2>
    <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId2>
    <cfStartDate>Timestamp</cfStartDate>
    <cfEndDate>Timestamp</cfEndDate>
  </cfClass_Class>

```

```

...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfPers_Class-LINK cfPers_Class-LINK.xsd"
  xmlns="http://www.eurocris.org/cerif/cfPers_Class-LINK "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfPers_Class>
    <cfPersId>PERSONID</cfPersId>
    <cfClassId>PERSON_euroCRIS_MEMBERSHIP_ID</cfClassId>
    <cfClassSchemeId>PERSON_MEMBERSHIPS_ID</cfClassSchemeId>
    <cfStartDate>Timestamp</cfStartDate>
    <cfEndDate>Timestamp</cfEndDate>
  </cfPers_Class>
  ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfOrgUnit_Class-LINK cfOrgUnit_Class-LINK.xsd"
  xmlns="http://www.eurocris.org/cerif/cfOrgUnit_Class-LINK "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfOrgUnit_Class>
    <cfOrgUnitId>ORGUNITID</cfOrgUnitId>
    <cfClassId>ORGANISATION_ACADEMICTYPE_ID</cfClassId>
    <cfClassSchemeId>ORGANISATIONTYPES_ID</cfClassSchemeId>
    <cfStartDate>Timestamp</cfStartDate>
    <cfEndDate>Timestamp</cfEndDate>
  </cfOrgUnit_Class>
  ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfProj_Class-LINK cfProj_Class-LINK.xsd"
  xmlns="http://www.eurocris.org/cerif/cfProj_Class-LINK "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfProj_Class>
    <cfProjId>0132433</cfProjId>
    <cfClassId>PROJECT_INTERNATIONALTYPE_ID</cfClassId>
    <cfClassSchemeId>PROJECTTYPES_ID</cfClassSchemeId>
    <cfStartDate>Timestamp</cfStartDate>
    <cfEndDate>Timestamp</cfEndDate>
  </cfProj_Class>
  ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfResPubl_Class-LINK cfResPubl_Class-LINK.xsd"
  xmlns="http://www.eurocris.org/cerif/cfResPubl_Class-LINK "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfResPubl_Class>

```

```

        <cfResPublId>RESULTPUBLICATIONID</cfResPublId>
        <cfClassId>PUBLICATION_BOOKTYPE_ID</cfClassId>
        <cfClassSchemeId>PUBLICATIONTYPES_ID</cfClassSchemeId>
        <cfStartDate>Timestamp</cfStartDate>
        <cfEndDate>Timestamp</cfEndDate>
    </cfResPubl_Class>
    ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfCV_Class-LINK cfCV_Class-LINK.xsd"
  xmlns="http://www.eurocris.org/cerif/cfCV_Class-LINK "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
    <cfCV_Class>
      <cfCVID>CVID</cfCVID>
      <cfClassId>CV_INDUSTRIALTYPE_ID</cfClassId>
      <cfClassSchemeId>CVTYPES_ID</cfClassSchemeId>
      <cfStartDate>Timestamp</cfStartDate>
      <cfEndDate>Timestamp</cfEndDate>
    </cfCV_Class>
    ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEAddr_Class-LINK cfEAddr_Class-LINK.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEAddr_Class-LINK "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
    <cfEAddr_Class>
      <cfEAddrId>EADDRID</cfEAddrId>
      <cfClassId>ELECTRONIC_EMAILTYPE_ID</cfClassId>
      <cfClassSchemeId>ELECTRONICADDRESSTYPES_ID</cfClassSchemeId>
      <cfStartDate>Timestamp</cfStartDate>
      <cfEndDate>Timestamp</cfEndDate>
    </cfEAddr_Class>
    ...
</CERIF>

```

9.1.4 Language-dependent CERIF Entities (XML Examples)

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfClassDescr-LANG cfClassDescr-LANG.xsd"
  xmlns="http://www.eurocris.org/cerif/cfClassDescr-LANG "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfClassDescr>
    <cfClassId>CLASSIFICATION_ID</cfClassId>
    <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId>
    <cfDescr cfLangCode="EN" cfTrans="o">String</cfDescr>
  </cfClassDescr>
  <cfClassDescr>
    <cfClassId>CLASSIFICATION_ID</cfClassId>
    <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId>
    <cfDescr cfLangCode="EN" cfTrans="o">String</cfDescr>
  </cfClassDescr>
  <cfClassDescr>
    <cfClassId>CLASSIFICATION_ID</cfClassId>
    <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId>
    <cfDescr cfLangCode="EN" cfTrans="o">String</cfDescr>
  </cfClassDescr>
  <cfClassDescr>
    <cfClassId>CLASSIFICATION_ID</cfClassId>
    <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId>
    <cfDescr cfLangCode="EN" cfTrans="o">String</cfDescr>
  </cfClassDescr>
  <cfClassDescr>
    <cfClassId>LTWORLD_ID</cfClassId>
    <cfClassSchemeId>INTERNATIONAL_COLLECTION_ID</cfClassSchemeId>
    <cfDescr cfLangCode="EN" cfTrans="o">LT World Source Database Identifier
      corresponding to the Schema for
      identifying International Sourcedatabases.</cfDescr>
  </cfClassDescr>
  ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfClassSchemeDescr-LANG cfClassSchemeDescr-LANG.xsd"
  xmlns="http://www.eurocris.org/cerif/cfClassSchemeDescr-LANG"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfClassSchemeDescr>
    <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId>
    <cfDescr cfLangCode="EN" cfTrans="o">String</cfDescr>
  </cfClassSchemeDescr>
  <cfClassSchemeDescr>
    <cfClassSchemeId>INTERNATIONAL_COLLECTION_ID</cfClassSchemeId>
    <cfDescr cfLangCode="EN" cfTrans="o">The international Schema contains sources
      mainly from NMS and ACC countries.</cfDescr>
  </cfClassSchemeDescr>
  ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfClassTerm-LANG cfClassTerm-LANG.xsd"
  xmlns="http://www.eurocris.org/cerif/cfClassTerm-LANG "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">

```

```

    <cfClassTerm>
      <cfClassId>CLASSIFICATION_ID</cfClassId>
      <cfClassSchemeId>CLASSIFICATIONSCHEME_ID</cfClassSchemeId>
      <cfTerm cfLangCode="EN" cfTrans="o">Term from a Taxonomy of applied Terms.</cfTerm>
    </cfClassTerm>
    <cfClassTerm>
      <cfClassId>Software_ID</cfClassId>
      <cfClassSchemeId>ICT-TAXONOMY_ID</cfClassSchemeId>
      <cfTerm cfLangCode="EN" cfTrans="o">Software</cfTerm>
    </cfClassTerm>
    ...
  </CERIF>

```

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEquipDescr-LANG cfEquipDescr-LANG.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEquipDescr-LANG "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfEquipDescr>
    <cfEquipId>2332123</cfEquipId>
    <cfDescr cfLangCode="EN" cfTrans="o">String</cfDescr>
  </cfEquipDescr>
  <cfEquipDescr>
    <cfEquipId>0123431</cfEquipId>
    <cfDescr cfLangCode="EN" cfTrans="o">Description of equipment.</cfDescr>
  </cfEquipDescr>
  ...
</CERIF>

```

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEquipKeyw-LANG cfEquipKeyw-LANG.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEquipKeyw-LANG "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfEquipKeyw>
    <cfEquipId>2332123</cfEquipId>
    <cfKeyw cfLangCode="EN" cfTrans="o">String</cfKeyw>
  </cfEquipKeyw>
  <cfEquipKeyw>
    <cfEquipId>0123431</cfEquipId>
    <cfKeyw cfLangCode="EN" cfTrans="o">Keywords referring to equipment.</cfKeyw>
  </cfEquipKeyw>
  ...
</CERIF>

```

```

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEquipName-LANG cfEquipName-LANG.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEquipName-LANG "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
  <cfEquipName>
    <cfEventId>2332123</cfEventId>
    <cfName cfLangCode="EN" cfTrans="o">String</cfName>
  </cfEquipName>
  <cfEquipName>

```

```

        <cfEventId>0123431</cfEventId>
        <cfName cfLangCode="EN" cfTrans="o">Name of equipment</cfName>
    </cfEquipName>
    ...
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xsi:schemaLocation="http://www.eurocris.org/cerif/cfEventDescr-LANG cfEventDescr-LANG.xsd"
  xmlns="http://www.eurocris.org/cerif/cfEventDescr-LANG "
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
    <cfEventDescr>
      <cfEventId>2332121</cfEventId>
      <cfDescr cfLangCode="EN" cfTrans="o">String</cfDescr>
    </cfEventDescr>
    <cfEventDescr>
      <cfEventId>0123433</cfEventId>
      <cfDescr cfLangCode="EN" cfTrans="o">Description of event.</cfDescr>
    </cfEventDescr>
    ...
  </CERIF>

  <?xml version="1.0" encoding="UTF-8"?>
  <CERIF
    xsi:schemaLocation="http://www.eurocris.org/cerif/cfEquipKeyw-LANG cfEventDescr-LANG.xsd"
    xmlns="http://www.eurocris.org/cerif/cfEventDescr-LANG "
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
      <cfEventKeyw>
        <cfEventId>2332121</cfEventId>
        <cfKeyw cfLangCode="EN" cfTrans="o">String</cfKeyw>
      </cfEventKeyw>
      <cfEventKeyw>
        <cfEventId>0123433</cfEventId>
        <cfKeyw cfLangCode="EN" cfTrans="o">Keywords corresponding to event.</cfKeyw>
      </cfEventKeyw>
      ...
    </CERIF>

    <?xml version="1.0" encoding="UTF-8"?>
    <CERIF
      xsi:schemaLocation="http://www.eurocris.org/cerif/cfEventName-LANG cfEventName-LANG.xsd"
      xmlns="http://www.eurocris.org/cerif/cfEventName-LANG "
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
        <cfEventName>
          <cfEventId>2332121</cfEventId>
          <cfName cfLangCode="EN" cfTrans="o">String</cfName>
        </cfEventName>
        <cfEventName>
          <cfEventId>0123433</cfEventId>
          <cfName cfLangCode="EN" cfTrans="o">Name of event.</cfName>
        </cfEventName>
        ...
      </CERIF>

    <?xml version="1.0" encoding="UTF-8"?>

```

<CERIF

```
xsi:schemaLocation="http://www.eurocris.org/cerif/cfExpSkillsDescr-LANG cfExpSkillsDescr-LANG.xsd"
xmlns="http://www.eurocris.org/cerif/cfExpSkillsDescr-LANG"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
```

```
<cfExpSkillsDescr>
  <cfExpSkillsId>2332121</cfExpSkillsId>
  <cfDescr cfLangCode="EN" cfTrans="o">String</cfDescr>
</cfExpSkillsDescr>
<cfExpSkillsDescr>
  <cfExpSkillsId>0000014</cfExpSkillsId>
  <cfDescr cfLangCode="EN" cfTrans="o">Knowledge and 10 years experience in
    Database Modelling ... </cfDescr>
</cfExpSkillsDescr>
<cfExpSkillsDescr>
  <cfExpSkillsId>0000014</cfExpSkillsId>
  <cfDescr cfLangCode="DE" cfTrans="o">Wissen und 10 Jahre Erfahrung im Bereich
    der Datenbankmodellierung ... </cfDescr>
</cfExpSkillsDescr>
```

</CERIF>

<?xml version="1.0" encoding="UTF-8"?>

<CERIF

```
xsi:schemaLocation="http://www.eurocris.org/cerif/cfExpSkillsKeyw-LANG cfExpSkillsKeyw-LANG.xsd"
xmlns="http://www.eurocris.org/cerif/cfExpSkillsKeyw-LANG "
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
```

```
<cfExpSkillsKeyw>
  <cfExpSkillsId>2332121</cfExpSkillsId>
  <cfKeyw cfLangCode="EN" cfTrans="o">String</cfKeyw>
</cfExpSkillsKeyw>
<cfExpSkillsKeyw>
  <cfExpSkillsId>0000014</cfExpSkillsId>
  <cfKeyw cfLangCode="EN" cfTrans="o">Databases</cfKeyw>
</cfExpSkillsKeyw>
<cfExpSkillsKeyw>
  <cfExpSkillsId>0000014</cfExpSkillsId>
  <cfKeyw cfLangCode="DE" cfTrans="o">Datenbanken</cfKeyw>
</cfExpSkillsKeyw>
```

</CERIF>

<?xml version="1.0" encoding="UTF-8"?>

<CERIF

```
xsi:schemaLocation="http://www.eurocris.org/cerif/cfExpSkillsName-LANG cfExpSkillsName-LANG.xsd"
xmlns="http://www.eurocris.org/cerif/cfExpSkillsName-LANG "
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
release="2006" date="YYYY-MM-DD" sourceDatabase="euroCRIS">
```

```
<cfExpSkillsName>
  <cfExpSkillsId>2332121</cfExpSkillsId>
  <cfName cfLangCode="EN" cfTrans="o">String</cfName>
</cfExpSkillsName>
<cfExpSkillsName>
  <cfExpSkillsId>0000014</cfExpSkillsId>
  <cfName cfLangCode="EN" cfTrans="o">Modelling of Database Structures.</cfName>
</cfExpSkillsName>
<cfExpSkillsName>
```

```
<cfExpSkillsId>0000014</cfExpSkillsId>
  <cfName cfLangCode="DE" cfTrans="o">Modellierung von Datenbankstrukturen.</cfName>
</cfExpSkillsName>
</CERIF>
```

9.1.5 CERIF Classification Entities (XML Examples)

From an XML transformation viewpoint, semantic is not relevant. The Classification and Classification Scheme Entities are equal to 2nd Level Entities. Therefore, examples for CERIF XML Classification and ClassificationScheme Entities have been given within the section of examples for CERIF XML 2nd Level and Link Entities.

For file name generation however, the Classification and ClassificationScheme XML files, have an individual suffix (Class), to ensure a correct import order and thus data integrity as explained within Step 0 of section 3 “CERIF XML File Generation”.

9.2 CERIF XML Schema Examples

CERIF XML Schemas are provided for validation of XML files. CERIF XML Schema files are available for download from the euroCRIS website. A validation of CERIF XML files is realised by referring to validating CERIF XML Schema files from within CERIF XML files, as explained within the section 3: *CERIF XML File Production*. The targetNamespace attribute in the following XML Schema example indicates to which CERIF XML entity (cfClass_Class-LINK) the schema belongs to. The following schema clearly belongs to the CERIF Link Entity cfClass_Class.

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="http://www.eurocris.org/cerif/cfClass_Class-LINK"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns="http://www.eurocris.org/cerif/cfClass_Class-LINK">
  <xs:element name="CERIF">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="cfClass_Class"/>
      </xs:sequence>
      <xs:attribute name="release" type="xs:string" use="required"/>
      <xs:attribute name="date" type="xs:date" use="required"/>
      <xs:attribute name="sourceDatabase" type="xs:string" use="required"/>
    </xs:complexType>
  </xs:element>
  <xs:element name="cfClass_Class">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="cfClassId1"/>
        <xs:element ref="cfClassId2"/>
        <xs:element ref="cfClassSchemeId1"/>
        <xs:element ref="cfClassSchemeId2"/>
        <xs:element ref="cfClassId"/>
        <xs:element ref="cfClassSchemeId"/>
        <xs:element ref="cfStartDate"/>
        <xs:element ref="cfEndDate"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="cfClassId1" type="cfClassId1Type"/>
  <xs:element name="cfClassId2" type="cfClassId2Type"/>
  <xs:element name="cfClassSchemeId1" type="cfClassSchemeId1Type"/>
  <xs:element name="cfClassSchemeId2" type="cfClassSchemeId2Type"/>
  <xs:element name="cfClassId" type="cfClassIdType"/>
  <xs:element name="cfClassSchemeId" type="cfClassSchemeIdType"/>
  <xs:element name="cfStartDate" type="xs:dateTime"/>
  <xs:element name="cfEndDate" type="xs:dateTime"/>
  <xs:simpleType name="cfClassId1Type">
    <xs:restriction base="xs:string">
      <xs:maxLength value="32"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="cfClassId2Type">
    <xs:restriction base="xs:string">
      <xs:maxLength value="32"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="cfClassSchemeId1Type">
    <xs:restriction base="xs:string">
      <xs:maxLength value="32"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="cfClassSchemeId2Type">
    <xs:restriction base="xs:string">
      <xs:maxLength value="32"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="cfClassIdType">
    <xs:restriction base="xs:string">
      <xs:maxLength value="32"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="cfClassSchemeIdType">
    <xs:restriction base="xs:string">
      <xs:maxLength value="32"/>
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
```

9.3 List of CERIF Entities

Following is a full list of the CERIF entities in alphabetic order, grouped by entity type, giving the Logical and Physical Name of entities in brackets.

9.3.1 Core CERIF Entities (*Logical (PhysicalName)*)

cfProject (cfProj)
cfPerson (cfPers)
cfOrgUnit (cfOrgUnit)
cfResultPublication (cfResPubl)

9.3.2 2nd Level CERIF Entities (*Logical (PhysicalName)*)

cfCountry (cfCountry)
cfCurrency (cfCurrency)
cfCurriculumVitae (cfCV)
cfElectronicAddress (cfEAddr)
cfEquipment (cfEquip)
cfEvent (cfEvent)
cfExpertiseAndSkills (cfExpSkills)
cfFacility (cfFacil)
cfFundingProgramme (cfFundProg)
cfLanguage (cfLanguage)
cfPostalAddress (cfPAddr)
cfPrizeAward (cfPrize)
cfPublicationReference (cfPublRef)
cfQualification (cfQqual)
cfResultPatent (cfResPat)
cfResultProduct (cfResProd)
cfService (cfSrv)
cfDCAudience (cfDCAudience)
cfDCContributor (cfDCContributor)
cfDCCoverage (cfDCCoverage)
cfDCCoverageSpatial (cfDCCoverageSpatial)
cfDCCoverateTemporal (cfDCCoverageTemporal)
cfDCCreator (cfDCCreator)
cfDCDate (cfDCDate)
cfDCDescription (cfDCDescription)
cfDCFormat (cfDCFormat)
cfDCLanguage (cfDCLanguage)
cfDCProvenance (cfDCProvenance)
cfDCPublisher (cfDCPublisher)
cfDCRelation (cfDCRelation)
cfDCResourceIdentifier (cfDCResourceIdentifier)
cfDCResourceType (cfDCResourceType)
cfDCRightsHolder (cfDCRightsHolder)
cfDCRightsManagement (cfDCRightsMM)
cfDCRightsManagementAccessRights (cfDCRightsMMAccessRight)
cfDCRightsManagementLicense (cfDCRightsMMLicence)
cfDCSource (cfDCSource)
cfDCSubject (cfDCSubject)
cfDCTitle (cfDCTitle)
cfDublinCore (cfDC)

9.3.3 CERIF Link Entities (Logical (PhysicalName))

cfClassification_Classification (cfClass_Class)
 cfClassScheme_ClassScheme (cfClassScheme_ClassScheme)
 cfCountry_Classification (cfCountry_Class)
 cfCurrency_Classification (cfCurrency_Class)
 cfCV_Classification (cfCV_Class)
 cfElectronicAddress_Classification (cfEAddr_Class)
 cfEquipment_Classification (cfEquip_Class)
 cfEquipment_FundingProgramme (cfEquip_FundProg)
 cfEvent_Classification (cfEvent_Class)
 cfEvent_FundingProgramme (cfEvent_FundProg)
 cfEvent_ResultPublication (cfEvent_ResPubl)
 cfExpertiseAndSkills_Classification (cfExpSkills_Class)
 cfFacility_Classification (cfFacil_Class)
 cfFacility_FundingProgramme (cfFacil_FundProg)
 cfFundingProgramme_Classification (cfFundProg_Class)
 cfFundingProgramme_FundingProgramme (cfFundProg_FundProg)
 cfLanguage_Classification (cfLanguage_Class)
 cfOrganisationUnit_Classification (cfOrgUnit_Class)
 cfOrganisationUnit_DublinCore (cfOrgUnit_DC)
 cfOrganisationUnit_ElectronicAddress (cfOrgUnit_EAddr)
 cfOrganisationUnit_Equipment (cfOrgUnit_Equip)
 cfOrganisationUnit_Event (cfOrgUnit_Event)
 cfOrganisationUnit_ExpertiseAndSkills (cfOrgUnit_ExpSkills)
 cfOrganisationUnit_Facility (cfOrgUnit_Facil)
 cfOrganisationUnit_FundingProgramme (cfOrgUnit_FundProg)
 cfOrganisationUnit_OrgUnit (cfOrgUnit_OrgUnit)
 cfOrganisationUnit_PostalAddress (cfOrgUnit_PAddr)
 cfOrganisationUnit_PrizeAward (cfOrgUnit_Prize)
 cfOrganisationUnit_ResultPatent (cfOrgUnit_ResPat)
 cfOrganisationUnit_ResultProduct (cfOrgUnit_ResProd)
 cfOrganisationUnit_ResultPublication (cfOrgUnit_ResPubl)
 cfOrganisationUnit_Service (cfOrgUnit_Srv)
 cfPerson_Classification (cfPers_Class)
 cfPerson_CV (cfPers_CV)
 cfPerson_DublinCore (cfPers_DC)
 cfPerson_ElectronicAddress (cfPers_EAddr)
 cfPerson_Equipment (cfPers_Equip)
 cfPerson_Event (cfPers_Event)
 cfPerson_ExpertiseAndSkills (cfPers_ExpSkills)
 cfPerson_Facility (cfPers_Facil)
 cfPerson_FundingProgramme (cfPers_FundProg)
 cfPerson_Language (cfPers_Language)
 cfPerson_Country (cfPers_Country)
 cfPerson_OrganisationUnit (cfPers_OrgUnit)
 cfPerson_Person (cfPers_Pers)
 cfPerson_PostAddress (cfPers_PAddr)
 cfPerson_PrizeAward (cfPers_Prize)
 cfPerson_Qualification (cfPers_Qual)
 cfPerson_ResultPatent (cfPers_ResPat)
 cfPerson_ResultProduct (cfPers_ResProd)
 cfPerson_ResultPublication (cfPers_ResPubl)
 cfPerson_Service (cfPers_Srv)
 cfPostAddress_Classification (cfPAddr_Class)
 cfProject_Classification (cfProj_Class)
 cfProject_DublinCore (cfProj_DC)
 cfProject_Equipment (cfProj_Equip)

cfProject_Event (cfProj_Event)
 cfProject_Facility (cfProj_Facil)
 cfProject_FundingProgramme (cfProj_FundProg)
 cfProject_OrganisationUnit (cfProj_Orgunit)
 cfProject_Person (cfProj_Pers)
 cfProject_PrizeAward (cfProj_Prize)
 cfProject_Project (cfProj_Proj)
 cfProject_Service (cfProj_Srv)
 cfProject_ResultPatent (cfProj_ResPat)
 cfProject_ResultProduct (cfProj_ResProd)
 cfProject_ResultPublication (cfProj_ResPubl)
 cfResultPatent_Classification (cfResPat_Class)
 cfResultPatent_FundingProgramme (cfResPat_FundProg)
 cfResultProduct_Classification (cfResProd_Class)
 cfResultProduct_FundingProgramme (cfResProd_FundProg)
 cfResultPublication_Classification (cfResPubl_Class)
 cfResultPublication_DublinCore (cfResPubl_DC)
 cfResultPublication_FundingProgramme (cfResPubl_FundProg)
 cfResultPublication_ResultPublication (cfResPubl_ResPubl)
 cfService_Classification (cfSrv_Class)

9.3.4 *Language-dependent CERIF Entities (Logical (PhysicalName))*

cfClassificationDescription (cfClassDescr)
 cfClassificationTerm (cfClassTerm)
 cfClassificationSchemeDescription (cfClassSchemeDescr)
 cfCountryName (cfCountryName)
 cfCurrencyEntityName (cfCurrencyEntityName)
 cfCurrencyName (cfCurrencyName)
 cfEquipmentDescription (cfEquipPDescr)
 cfEquipmentKeywords (cfEquipKeyw)
 cfEquipmentName (cfEquipName)
 cfEventDescription (cfEventDescr)
 cfEventKeywords (cfEventKeyw)
 cfEventName (cfEventName)
 cfExpertiseAndSkillsDescription (cfExpSkillsDescr)
 cfExpertiseAndSkillsKeywords (cfExpSkillsKeyw)
 cfExpertiseAndSkillsName (cfExpSkillsName)
 cfFacilityDescription (cfFacilDescr)
 cfFacilityKeywords (cfFacilKeyw)
 cfFacilityName (cfFacilName)
 cfFundingProgrammeDescription (cfFundProgDescr)
 cfFundingProgrammeKeywords (cfFundProgKeyw)
 cfFundingProgrammeName (cfFundProgName)
 cfLanguageName (cfLanguageName)
 cfOrganisationUnitKeywords (cfOrgUnitKeyw)
 cfOrganisationUnitName (cfOrgUnitName)
 cfOrganisationUnitResearchActivity (cfOrgUnitResAct)
 cfPersonResearchInterest (cfPersResInt)
 cfPersonKeywords (cfPersKeyw)
 cfProjectAbstract (cfProjAbstr)
 cfProjectKeywords (cfProjKeyw)
 cfProjectTitle (cfProjTitle)
 cfResultPatentAbstract (cfResPatAbstr)
 cfResultPatentKeywords (cfResPatKeyw)
 cfResultPatentTitle (cfResPatTitle)
 cfResultProductDescription (cfResProdDescr)
 cfResultProductKeywords (cfResProdKeyw)

cfResultProductName (cfResProdName)
cfResultPublicationAbstract (cfResPublAbst)
cfResultPublicationKeywords (cfResPublKeyw)
cfResultPublicationTitle (cfResPublTitle)
cfServiceDescription (cfSrvDescr)
cfServiceKeywords (cfSrvKeyw)
cfServiceName (cfSrvName)

9.3.4.1 Language-dependent attributes including cflangCode and cfTrans

cfAbstr
cfDescr
cfKeyw
cfName
cfQualDescr
cfPublName
cfResAct
cfResInt
cfTerm
cfTitle

9.3.4.2 Currency-dependent attributes

cfBudget
cfAmount
cfPrice
cfTurnover

9.3.5 CERIF Classification Entities (Logical (PhysicalName))

cfClassification (cfClass)
cfClassificationScheme (cfClassScheme)

9.4 Logical / Physical CERIF Entity Names in alphabetical Order

The following table 1 gives an overview of all CERIF 2006 entities, their corresponding attributes with logical and physical names (including cf prefixes).

Table 1: List of Entities with Logical and Physical Names

Logical CERIF2006 Entities	Physical CERIF2006 Entities
cfClassification	cfClass
cfClassification_Classification	cfClass_Class
cfClassificationDescription	cfClassDescr
cfClassificationScheme	cfClassScheme
cfClassificationScheme_ClassificationScheme	cfClassScheme_ClassScheme
cfClassificationSchemeDescription	cfClassSchemeDescr
cfClassificationTerm	cfClassTerm
cfCountry	cfCountry
cfCountry_Classification	cfCountry_Class
cfCountryName	cfCountryName
cfCurrency	cfCurrency
cfCurrency_Classification	cfCurrency_Class
cfCurrencyEntityName	cfCurrencyEntName
cfCurrencyName	cfCurrencyName
cfCurriculumVitae	cfCV
cfCurriculumVitae_Classification	cfCV_Class
cfDublinCore	cfDC
cfDublinCoreAudience	cfDCAudience
cfDublinCoreContributor	cfDCCContributor
cfDublinCoreCoverage	cfDCCCoverage
cfDublinCoreCoverageSpatial	cfDCCCoverageSpatial
cfDublinCoreCoverageTemporal	cfDCCCoverageTemporal
cfDublinCoreCreator	cfDCCreator
cfDublinCoreDate	cfDCDate
cfDublinCoreDescription	cfDCDescription
cfDublinCoreFormat	cfDCFormat
cfDublinCoreLanguage	cfDCLanguage
cfDublinCoreProvenance	cfDCProvenance
cfDublinCorePublisher	cfDCPublisher
cfDublinCoreRelation	cfDCRelation
cfDublinCoreResourceIdentifier	cfDCResourceIdentifier
cfDublinCoreResourceType	cfDCResourceType
cfDublinCoreRightsHolder	cfDCRightsHolder
cfDublinCoreRightsManagement	cfDCRightsMM
cfDublinCoreRightsManagementAccessRights	cfDCRightsMMAccessRights
cfDublinCoreRightsManagementLicense	cfDCRightsMMLicense
cfDublinCoreSource	cfDCSource
cfDublinCoreSubject	cfDCSubject
cfDublinCoreTitle	cfDCTitle
cfElectronicAddress	cfEAddr
cfElectronicAddress_Classification	cfEAddr_Class
cfEquipment	cfEquip
cfEquipment_Classification	cfEquip_Class
cfEquipment_FundingProgramme	cfEquip_FundProg
cfEquipmentDescription	cfEquipDescr
cfEquipmentKeywords	cfEquipKeyw
cfEquipmentName	cfEquipName
cfEvent	cfEvent
cfEvent_Classification	cfEvent_Class

cfEvent_FundingProgramme	cfEvent_FundProg
cfEvent_ResultPublication	cfEvent_ResPubl
cfEventDescription	cfEventDescr
cfEventKeywords	cfEventKeyw
cfEventName	cfEventName
cfExpertiseAndSkills	cfExpSkills
cfExpertiseAndSkills_Classification	cfExpSkills_Class
cfExpertiseAndSkillsDescription	cfExpSkillsDescr
cfExpertiseAndSkillsKeywords	cfExpSkillsKeyw
cfExpertiseAndSkillsName	cfExpSkillsName
cfFacility	cfFacil
cfFacility_Classification	cfFacil_Class
cfFacility_FundingProgramme	cfFacil_FundProg
cfFacilityDescription	cfFacilDescr
cfFacilityKeywords	cfFacilKeyw
cfFacilityName	cfFacilName
cfFormalisedDublinCoreRightsManagementPricing	cfFDCRightsMMPricing
cfFormalisedDublinCoreRightsManagementPrivacy	cfFDCRightsMMPrivacy
cfFormalisedDublinCoreRightsManagementRights	cfFDCRightsMMRights
cfFormalisedDublinCoreRightsManagementSecurity	cfFDCRightsMMSecurity
cfFundingProgramme	cfFundProg
cfFundingProgramme_Classification	cfFundProg_Class
cfFundingProgramme_FundingProgramme	cfFundProg_FundProg
cfFundingProgrammeDescription	cfFundProgDescr
cfFundingProgrammeKeywords	cfFundProgKeyw
cfFundingProgrammeName	cfFundProgName
cfLanguage	cfLang
cfLanguage_Classification	cfLang_Class
cfLanguageName	cfLangName
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cfOrganisationUnit_Classification	cfOrgUnit_Class
cfOrganisationUnit_DublinCore	cfOrgUnit_DC
cfOrganisationUnit_ElectronicAddress	cfOrgUnit_EAddr
cfOrganisationUnit_Equipment	cfOrgUnit_Equip
cfOrganisationUnit_Event	cfOrgUnit_Event
cfOrganisationUnit_ExpertiseAndSkills	cfOrgUnit_ExpSkills
cfOrganisationUnit_Facility	cfOrgUnit_Facil
cfOrganisationUnit_FundingProgramme	cfOrgUnit_FundProg
cfOrganisationUnit_OrganisationUnit	cfOrgUnit_OrgUnit
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cfOrganisationUnit_PrizeAward	cfOrgUnit_Prize
cfOrganisationUnit_ResultPatent	cfOrgUnit_ResPat
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cfOrganisationUnit_ResultPublication	cfOrgUnit_ResPubl
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cfOrganisationUnitName	cfOrgUnitName
cfOrganisationUnitResearchActivity	cfOrgUnitResAct
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cfPerson_DublinCore	cfPers_DC
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cfPerson_Equipment	cfPers_Equip
cfPerson_Event	cfPers_Event
cfPerson_ExpertiseAndSkills	cfPers_ExpSkills
cfPerson_Facility	cfPers_Facil

cfPerson_FundingProgramme	cfPers_FundProg
cfPerson_Language	cfPers_Language
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cfPersonResearchInterest	cfPersResInt
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cfPostAddress_Classification	cfPAddr_Class
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cfPrizeAward_Classification	cfPrize_Class
cfProject	cfProj
cfProject_Classification	cfProj_Class
cfProject_DublinCore	cfProj_DC
cfProject_Equipment	cfProj_Equip
cfProject_Event	cfProj_Event
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cfProject_FundingProgramme	cfProj_FundProg
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cfProject_Person	cfProj_Pers
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cfResultPublicationKeywords	cfResPublKeyw

cfResultPublicationTitle cfService cfService_Classification cfServiceDescription cfServiceKeywords cfServiceName	cfResPublTitle cfSrv cfSrv_Class cfSrvDescr cfSrvKeyw cfSrvName
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