CERIF 2008 – 1.1 XML
Data Exchange Format Specification

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Abstract:

The CERIF 2008 – 1.1 XML Data Exchange Format Specification is one component of the CERIF 2008 – 1.1 FDM release. It aims to support consistent and quality XML data interchange across systems and applications, based on the CERIF model. With this document we present the CERIF XML specification and recommend the organisation of CERIF XML files according to the presented conceptual structure. The CERIF XML Data Exchange Format is based on a W3C recommendation.

CERIF (the Common European Research Information Format) is also a formal model to support the management of Research Information and to enable interoperation between Research Information Systems. The CERIF model is considered as a standard; recommended by the European Union to its Member States. It has been developed with support by the European Commission in two major phases: 1987-1990 and 1997-1999. In 2002 the European Commission handed over care and custody of CERIF to euroCRIS (http://www.eurocris.org) a not-for-profit organisation dedicated to the promotion of CRISs (Current Research Information Systems).

Status:
This document will be updated alongside major CERIF model updates.

Location:
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1. Introduction

The CERIF XML Interchange Format is one of several components of the CERIF 2008 – 1.1 Full Data Model (FDM) release. It is intended to support and enable consistent and quality data interchange across systems and applications. CERIF XML builds on the widely known and popular XML format recommended by the W3C [3].

With the CERIF 2008 – 1.1 Full Data Model Introduction and Specification document, the CERIF model has been conceptually structured into entity types and features [1]. In between the types it distinguishes core, result, link and 2nd level entities, as features it considers multilinguality and semantics. This conceptual structure is also represented by colors in all model related documents and screenshots. For more information about CERIF types and features we refer to [1]. With this document, we distinguish CERIF entities and features accordingly:

<table>
<thead>
<tr>
<th>CERIF Entity Types</th>
<th>CERIF Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Entities [core]</td>
<td>Multiple Language [lang]</td>
</tr>
<tr>
<td>Result Entities [result]</td>
<td>Semantics [class]</td>
</tr>
<tr>
<td>2nd Level Entities [2nd]</td>
<td>Additional [add]</td>
</tr>
<tr>
<td>Link Entities [link]</td>
<td></td>
</tr>
</tbody>
</table>

This presented conceptual structure is only a virtual structure and as such not inherent in the physical data model, and therefore also not incorporated with the SQL scripts and the physical representation of CERIF XML content. It supports the management of the CERIF XML files; in particular, their ordering, as recommended, during data interchanges. A list of the conceptually structured CERIF entities is attached in the Appendix. Figure 1 shows core, result and 2nd level CERIF entities, and their relationships from an abstract perspective. For a deeper insight to the physical level, including attributes, data types and keys, we refer to the screenshots in [1].

![Figure 1: CERIF 2008 – 1.1 entities and some relationships](image-url)
A CERIF-based XML interchange happens with operations at the physical level and therefore conforms to the naming (short names) at physical level. Because in some databases the length of a table name is restricted to a particular number of characters, we have shortened the table names at physical level to ensure the consistency of SQL scripts by avoiding uncontrolled truncations. The table names are still understandable by human readers. Every table name includes a prefix ‘cf’ for CERIF.

1.1 Purpose of CERIF XML

CERIF XML aims to support and enable consistency and quality data interchanges across applications and between data providers by offering a structured, and modularized XML format based on the CERIF model.

1.2 Scope of CERIF XML

The CERIF 2008 – 1.1 XML Data Exchange and Format Specification includes CERIF XML examples and some corresponding CERIF XML Schema files for the validation of CERIF XML Exchange files.

1.3 CERIF 2008 – 1.1 Full Data Model Components

The entire CERIF 2008 – 1.1 release comprises the following components:

  separate document available from the euroCRIS website

- CERIF 2008 – 1.1 FDM: SQL scripts for most common databases
  available from the euroCRIS website for members only

- CERIF 2008 – 1.1 XML: Data Exchange Format Specification
  this document

- CERIF 2008 – 1.1 XML Examples
  available from the euroCRIS website for members only

- CERIF 2008 – 1.1 XML Schema Files
  CERIF XML validation files available from the euroCRIS website

- CERIF 2008 – 1.1 Semantics [2]
  separate document available from the euroCRIS website

CERIF 2008 – 1.1 related files and more documents and background information about CERIF and CRISs can be downloaded from the public euroCRIS website: http://www.eurocris.org/cerif/cerif-releases/cerif-2008/. The physical SQL scripts and XML examples files are available for members only*.

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* The CERIF 2008 – 1.1 release was modeled with Toad Data Modeler\(^1\) by Quest Software\(^1\) which allows to draw ERM diagrams, to generate SQL scripts for most common databases (Oracle, Microsoft, IBM, etc.), to reverse engineer from databases, to create screenshots of the model and model parts, and to model at physical and logical level. The resulting CERIF SQL scripts are generated automatically from the physical level.
2. CERIF XML File Production

The following steps describe in brief a possible process to produce CERIF XML files from CERIF-based databases according to the conceptual structure as introduced in the specification document “CERIF 2008 – 1.1 Full Data Model – Introduction and Specification” [1], and indicated in the introduction of this document. A full list of the CERIF entities, and some CERIF XML examples have been provided with the appendix. The XML examples and 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 the table name), and the entity type or feature (core, 2nd, link, lang, class, add). To ensure data integrity during the import process, the CERIF XML files should follow this naming convention and we recommend the following order for a file generation:

(1) XML File Names for CERIF Classification Entities
   • cfClass-CLASS.xml
   • cfClassScheme-CLASS.xml

(2) XML File Names for 2nd Level CERIF Entities
   • cfCall-2ND.xml
   • cfGrant-2ND.xml
   • cfCurrency-2ND.xml
   • cfCountry-2ND.xml
   • cfLang-2ND.xml
   • cfCV-2ND.xml
   • cfEvent-2ND.xml
   • …

(3) XML File Names for Core CERIF Entities
   • cfPers-CORE.xml
   • cfProj-CORE.xml
   • cfOrgUnit-CORE.xml

(4) XML File Names for CERIF Result Entities
   • cfResPubl-RES.xml
   • cfResPat-RES.xml
   • cfResProd-RES.xml

(5) 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
   • …

(6) XML File Names for Language-dependent CERIF Entities
   • cfProjAbstr-LANG.xml
CERIF 2008 – 1.1 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 of different languages.

```xml
<?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 information of individual source databases. For a validation of the nested data the schema reference xsi:schemaLocation has to be added according to W3C standards. Moreover, according to W3C convention, namespace references xmlns; xmlns:xsi have to be added at the same level. To identify the one 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
<?xml version="1.0" encoding="UTF-8"?>
<CERIF
http://www.eurocris.org/fileadmin/cerif-2008/XML-SCHEMAS/cfEntityName-EntityType.xsd"
  xmlns="http://www.eurocris.org/fileadmin/cerif-2008/XML-SCHEMAS/cfEntityName-EntityType"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2008-1.1" date="2010-04-05" sourceDatabase="name of source db" >

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

</CERIF>
```
Step 3: CERIF XML Structure

We strongly recommend to create CERIF XML files as many XML files, containing only per entity (cfPerson, cfOrgUnit, cfProject, …) data, and per source database data. A single CERIF XML file mixing data for all CERIF entities cannot be validated with the provided CERIF XML Schema files. In particular, the complexity of the structure, but also the size of the file would become a serious problem when containing all data within one large XML file. For reasons of simplicity, and for ease of validation, error detection and data integrity we strongly recommend to create per entity structured XML files corresponding to single CERIF entities. The presented examples in this document only show per entity structured XML records.

Each CERIF XML file contains the CERIF root element nesting the entity elements (i.e. cfPers, cfOrgUnit, cfFacil, etc); each entity element is prefixed with cf, corresponding to the physical names of the CERIF tables.

```
<?xml version="1.0" encoding="UTF-8"?>
<CERIF ...>
  <cfPers>
    ...
  </cfPers>
  ...
</CERIF>
```

**CERIF XML example structure for person records in the file cfPers-CORE.xml**

```
<?xml version="1.0" encoding="UTF-8"?>
<CERIF ...>
  <cfOrgUnit>
    ...
  </cfOrgUnit>
  ...
</CERIF>
```

**CERIF XML example file for organization records in the file cfOrgUnit-CORE.xml**

At the record level, each XML entity element nests the table attributes (cfId, cfURI, …) as XML elements.

```
<?xml version="1.0" encoding="UTF-8"?>
<CERIF ...>
  <cfPers>
    <cfPersId>1</cfPersId>
    <cfURI>http://www.dfki.de/~brigitte</cfURI>
    <cfSex>f</cfSex>
  </cfPers>
</CERIF>
```
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CERIF XML example file for person records in the file cfPers-CORE.xml

<?xml version="1.0" encoding="UTF-8"?>
<CERIF ...>
  <cfPersId>1</cfPersId>
  <cfURI>http://www.anyhomepageurl.org/</cfURI>
  <cfBirthdate>1970-01-07</cfBirthdate>
  <cfSex>m</cfSex>
</cfPers>
</CERIF>

CERIF XML example file for person research interest records in the file cfPersResInt-LANG.xml

<?xml version="1.0" encoding="UTF-8"?>
<CERIF ...>
  <cfPersResInt>
    <cfPersId>1</cfPersId>
    <cfResInt cfLangCode="DE" cfTrans="o">Brigitte Jörg interessiert sich für Forschungsinformationssysteme, deren Modellierung und Repäsentation sowie deren formale Semantik. Darüberhinaus beschäftigt sie sich mit ontologiebasierten Wissenschaftsinformationssystemen.</cfResInt>
  </cfPersResInt>
  <cfPersResInt>
    <cfPersId>1</cfPersId>
    <cfResInt cfLangCode="EN" cfTrans="o">Brigitte Jörg is interested in CRISs, conceptual modelling and knowledge (ontology) engineering.</cfResInt>
  </cfPersResInt>
</CERIF>

CERIF XML example file for person keyword records in the file cfPersResKeyw-LANG.xml

<?xml version="1.0" encoding="UTF-8"?>
<CERIF ...>
  <cfPersKeyw>
    <cfPersId>1</cfPersId>
    <cfKeyw cfLangCode="DE" cfTrans="o">Wissenschaftsinformationssysteme; Modellierung</cfKeyw>
  </cfPersKeyw>
  <cfPersKeyw>
    <cfPersId>1</cfPersId>
    <cfKeyw cfLangCode="EN" cfTrans="o">CRIS; Conceptual Modeling; Ontology Engineering</cfKeyw>
  </cfPersKeyw>
</CERIF>
Step 4: CERIF Entities → CERIF XML Entities

(1) Core Entities become Core XML Entities
The transformation of a core entity into a core CERIF XML entity is demonstrated with the core entity **person** (cfPers) that becomes a core CERIF XML entity `<cfPers>` nesting related information. The entity attributes become XML elements nested within the core elements. The attribute values become XML element values; empty attributes are omitted.

```
cfPers
  <cfPersId> ID </cfPersId>
  <cfBirthdate> Date </cfBirthdate>
  <cfSex> Selection </cfSex>
</cfPers>
```

**Figure 2: CERIF Person entity structure**

(2) Result Entities become Result XML Entities
The transformation of a result entity into a result CERIF XML entity is demonstrated with the result entity **publication** (cfResPubl) that becomes a result CERIF XML entity `<cfResPubl>` nesting related information. The entity attributes become XML elements nested within the result elements. The attribute values become XML element values; empty attributes are omitted.

```
cfResPubl
  <cfResPublId> ID </cfResPublId>
  <cfResPublDate> Date </cfResPublDate>
  <cfNum> String </cfNum>
  <cfVol> String </cfVol>
  <cfEdition> String </cfEdition>
  <cfSeries> String </cfSeries>
  <cfIssue> String </cfIssue>
  <cfStartPage> String </cfStartPage>
  <cfEndPage> String </cfEndPage>
  <cfTotalPages> String </cfTotalPages>
  <cfISSN> String </cfISSN>
</cfResPubl>
```

**Figure 3: CERIF Result Publication entity structure**

(3) 2nd Level Entities become 2nd Level XML Entities
The transformation of 2nd level entities into 2nd level XML entities is equal to the transformation of the core and result entities and is demonstrated with the 2nd level entity **event** (cfEvent) that becomes a 2nd level XML entity `<cfEvent>` nesting related information. The entity attributes become XML elements nested within the entity elements. The attribute values become XML element values; empty attributes are omitted.

```
cfEvent
  <cfEventId> ID </cfEventId>
  <cfURI> String </cfURI>
```

**Figure 4: CERIF Event entity structure**
(4) Link Entities become XML Link Entities
The transformation of CERIF link entities into CERIF XML link entities is demonstrated with the link table Person_Organisation (cfPers_OrgUnit) that becomes an XML link entity <cfPers_OrgUnit> nesting related elements. The entity attributes become XML elements nested within XML entity elements.

### Figure 5: CERIF Person_OrgUnit entity structure

- `<cfPers_OrgUnit>`
  - `<cfPersId>`
  - `<cfOrgUnitId>`
  - `<cfClassId>`
  - `<cfClassSchemeId>`
  - `<cfFraction>`
  - `<cfStartDate>`
  - `<cfEndDate>`

### cfPers_OrgUnit-LINK.xml record structure

- `<cfPers_OrgUnit>`
  - `<cfPersId>`
  - `<cfOrgUnitId>`
  - `<cfClassId>`
  - `<cfClassSchemeId>`
  - `<cfFraction>`
  - `<cfStartDate>`
  - `<cfEndDate>`

Attribute values become XML element values, except from cfCurrencyCode attributes, which are transformed into XML attributes within currency-dependent elements, in order to be associated correctly with their intension; empty attributes are omitted. Each link entity contains references to the classification and classification scheme entity (semantic layer) [1, 2]. For all CERIF link entities, a classification id (cfClassId) and its associated classification scheme id (cfClassSchemeId) as well as a time stamped startDate and endDate are mandatory.
Language-dependent Entities become Language-dependent XML Entities
The transformation of language-dependent entities into language-dependent XML entities is demonstrated with the entity `OrgUnitResearchActivity (cfOrgUnitResAct)` that becomes a language-dependent XML entity `<cfOrgUnitResAct>` nesting related information. Language entity attributes become XML elements nested within the entity elements except from `cfLangCode` and `cfTrans`, which are transformed into attributes within XML elements in order to be associated correctly with the values. Attribute values become XML element values except from `cfLangCode` and `cfTrans` values, which become values of attributes inside their corresponding elements; empty attributes are omitted.

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

Figure 7: CERIF OrganisationUnitResearchActivity entity structure

Classification Entities become XML Classification Entities
The transformation of classification entities into XML classification entities is demonstrated with the entity `Classification (cfClass)` that becomes a XML class entity `<cfClass>` nesting related information. Class entity attributes become XML elements nested within XML entity elements. The attribute values become XML element values; empty attribute are omitted.

```
<cfClass>
  <cfClassId>ID</cfClassId>
  <cfClassSchemeId>ID</cfClassSchemeId>
  <cfStartDate>Timestamp</cfStartDate>
  <cfEndDate>Timestamp</cfEndDate>
  <cfURI>String</cfURI>
</cfClass>
```

Figure 8: CERIF Classification table

CERIF XML operates at a purely technical operation and representation level. More detailed information about the entire CERIF data model can be found in the CERIF 2008 – 1.1 Full Data Model – Introduction and Specification document [1]. For the CERIF Semantics we refer to the CERIF 2008 – 1.1 Semantics document [2]. Some XML examples are provided in the appendix and validated CERIF example xml files are available at the euroCRIS website for members.
3. CERIF XML Validation

For validating the CERIF 2008 – 1.1 XML files, XML Schema files are provided. XML Schema is a format supported by W3C [3]. 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
http://www.eurocris.org/fileadmin/cerif-2008/XML-SCHEMAS/cfEntityName-EntityType.xsd"
   xmlns="http://www.eurocris.org/fileadmin/cerif-2008/XML-SCHEMAS/cfEntityName-EntityType"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
>
```

We strongly recommend the creation of single entity and source database centered XML files also for reasons of validation.

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

The XML Schema files for validation are available from the euroCRIS website for download and for reference.
4. XML Import Process

In order to achieve quality and consistency with data, the following steps are recommended while 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 type as recommended in chapter 2 - XML File Production.

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 [1].

   For data import from heterogeneous sources we recommend the following:

   - Definition of a source database in the cfClassification table (cfClassId)
   - Connection of this source database with a Classification Scheme (cfClassSchemeId)
   - With source database definition at the Semantic Layer the import process can start
   - During the import process all Core, Result, 2nd Level database entries should get a reference entry to the source database within their Entity-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 within the Semantic Layer by Classification entities [1]. For the data import we recommend a particular import order (see 4), which requires Classification data to be imported (or defined) first, as during imports, the references to the link tables (cfClassId, cfClassSchemeId) have to be set.

   An identifier (URI) for the source database definition within the Semantic Layer may 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 Result Entities
   (5) Import of Link Entities
   (6) Import of Language-dependent Entities
   (7) Import of Additional Entities

   If only a single XML file with no separation of entity types 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 storage and thus validation of one single XML file is not supported by the current CERIF XML Schema files and due to size and complexity may become a serious problem. Therefore, we do strongly recommend the separation of data according to the presented entity types.

5 Error Handling: No partial import should be allowed to ensure the 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 should not be started. A particular import order in between the CERIF XML files 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.
5. Non-CERIF Extensions

Data providers may also add non-CERIF attributes 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 entity Project_FundingProgramme and its corresponding XML link entity <cfProj_FundProg> representation is given below:

```
Example Attributes for Extension at Link Entity Project_FundingProgramme (cfProj_FundProg)

RC = Running Costs (default=0, contractdata) in euro
PC = Personnel Costs (default=0, contractdata) in euro
OH = Overhead (default=0, contractdata) in euro
EC = Equipment Costs (default=0, contractdata) in euro
RCS = Running Costs spent (default=0, spending) in euro
PCS = Personnel Costs spent (default=0, spending) in euro
OHS = Overhead spent(default=0, spending) in euro
ECS = Equipment Costs spent (default=0, spending) in euro

<cfProj_FundProg>
  <cfProjId>ID</cfProjId>
  <cfFundProgId,ID</cfFundProgId>
  <cfClassSchemeId>CLASSIFICATIONSCHEMENEID</cfClassSchemeId>
  <cfCLASSId>CLASSIFICATIONID</cfCLASSId>
  <cfFraction>Float</cfFraction>
  <cfAmount cfCurrencyCode="EUR">Float</cfAmount>
  <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>
</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 task group and the Best Practice task group for needed extensions. Proposals can be submitted to the CERIF task group, where the suggestions will then be discussed and a decision towards extension will be taken and the CERIF model accordingly adapted – if of general interest for the Research Domain.
6. Future Work
More work on namespaces is being considered for future CERIF XML specifications.
7. Appendix

7.1 CERIF XML Examples

7.1.1 CERIF CORE XML Entities (XML Examples)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<CFERIF
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    release="2008-1.1" date="2010-04-05" sourceDatabase="euroCRIS">
    <cfPers>
        <cfPersId>person-keith-jeffery</cfPersId>
        <cfSex>m</cfSex>
    </cfPers>
    <cfPers>
        <cfPersId>person-anne-asserson</cfPersId>
        <cfSex>f</cfSex>
    </cfPers>
    <cfPers>
        <cfPersId>person-brigitte-joerg</cfPersId>
        <cfURI>http://www.dfk.de/~brigitte/</cfURI>
        <cfSex>f</cfSex>
    </cfPers>
    <cfPers>
        <cfPersId>person-geert-van-grootel</cfPersId>
        <cfSex>m</cfSex>
    </cfPers>
</CFERIF>
```

```xml
<?xml version="1.0" encoding="UTF-8"?>
<CFERIF
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    release="2008-1.1" date="2010-04-05" sourceDatabase="euroCRIS">
    <cfProj>
        <cfProjId>project-ist-world</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>project-it-world</cfProjId>
        <cfURI>http://www.it-world.org/</cfURI>
        <cfAcronym>LT World</cfAcronym>
        <cfStartDate>2001-04-01</cfStartDate>
        <cfEndDate>2006-12-31</cfEndDate>
    </cfProj>
    <cfProj>
        ...  
    </cfProj>
</CFERIF>
```
7.1.2 CERIF Result XML Entities (XML Examples)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<CERIF
xmins:xsi="http://www.w3.org/2001/XMLSchema-instance"
release="2008-1.1" date="2009-04-05" sourceDatabase="euroCRIS">
  <cfResPubl>
    <cfResPubIdId>publication-joerg-et-al</cfResPubIdId>
    <cfResPublDate>2008</cfResPublDate>
    <cfStartPage>107</cfStartPage>
    <cfEndPage>123</cfEndPage>
  </cfResPubl>
  <cfResPubl>
    <cfResPubIdId>publication-veda-c-storey</cfResPubIdId>
    <cfURI>http://www.springerlink.com/content/j23263j02m850617/</cfURI>
    <cfResPublDate>1993</cfResPublDate>
    <cfNum>1</cfNum>
    <cfVol>17</cfVol>
    <cfStartPage>455</cfStartPage>
    <cfEndPage>488</cfEndPage>
    <cfISSN>1066-8888</cfISSN>
  </cfResPubl>
</CERIF>
```

7.1.3 CERIF 2nd Level XML Entities (XML Examples)

```xml
<?xml version="1.0" encoding="UTF-8"?>
```
<?xml version="1.0" encoding="UTF-8"?>
<CERIF
xmin:xsi="http://www.w3.org/2001/XMLSchema-instance"
release="2008-1.1" date="2010-04-05" sourceDatabase="euroCRIS">
  <cfEAddr>
    <cfEAddrId>eaddress-skype.joerg</cfEAddrId>
    <cfURI>brigitte.joerg</cfURI>
  </cfEAddr>
  <cfEAddr>
    <cfEAddrId>eaddress-email.joerg</cfEAddrId>
    <cfURI>brigitte.joerg@dfki.de</cfURI>
  </cfEAddr>
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
xmin:xsi="http://www.w3.org/2001/XMLSchema-instance"
release="2008-1.1" date="2010-04-05" sourceDatabase="euroCRIS">
  <cfPAddr>
    <cfPAddrId>paddress-dfki</cfPAddrId>
    <cfAddrline1>Stuhlsatzenhausweg 3</cfAddrline1>
    <cfAddrline2>Postfach</cfAddrline2>
    <cfCityTown>Saarbrücken</cfCityTown>
    <cfPostCode>66123</cfPostCode>
    <cfCountryCode>DE</cfCountryCode>
  </cfPAddr>
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
xmin:xsi="http://www.w3.org/2001/XMLSchema-instance"
release="2008-1.1" date="2010-04-05" sourceDatabase="euroCRIS">
  <cfEquip>
    <cfEquipId>equip-smart</cfEquipId>
    <cfOEMId>013212300</cfOEMId>
    <cfEquipOwnId>0142123</cfEquipOwnId>
  </cfEquip>
  <cfEquip>
    <cfEquipId>equip-sony-smart</cfEquipId>
    <cfOEMId>013212301</cfOEMId>
    <cfEquipOwnId>0142123</cfEquipOwnId>
  </cfEquip>
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
7.1.4 CERIF Multiple Language Entities (XML Examples)

<?xml version="1.0" encoding="UTF-8"?>
<CERIF
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2008-1.1" date="2010-04-05" sourceDatabase="euroCRIS">

<cfClassDescr>
  <cfClassId>class-manager</cfClassId>
  <cfClassSchemeId>class-scheme-org-structure</cfClassSchemeId>
  <cfDescr cfLangCode="EN" cfTrans="o">A manager is a person that ...</cfDescr>
</cfClassDescr>

<cfClassDescr>
  <cfClassId>class-manager</cfClassId>
  <cfClassSchemeId>class-scheme-org-structure</cfClassSchemeId>
  <cfDescr cfLangCode="DE" cfTrans="h">Ein Manager ist eine Person, die ...</cfDescr>
</cfClassDescr>

<cfClassDescr>
  <cfClassId>class-ceo</cfClassId>
  <cfClassSchemeId>class-scheme-org-structure</cfClassSchemeId>
  <cfDescr cfLangCode="EN" cfTrans="o">A CEO is a person that ...</cfDescr>
</cfClassDescr>

<cfClassDescr>
  <cfClassId>class-ceo</cfClassId>
  <cfClassSchemeId>class-scheme-org-structure</cfClassSchemeId>
  <cfDescr cfLangCode="DE" cfTrans="h">Ein CEO ist eine Person, die ...</cfDescr>
</cfClassDescr>

...</CERIF>
Das Schema "Organisations-Struktur" ermöglicht die Strukturierung von Aufgaben- und Stellen …

The scheme "Organisations-Struktur" allows for the structuring of tasks and entities …
7.1.5 CERIF Link Entities (XML Examples)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<CFIRF
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2008-1.1" date="2010-04-05" sourceDatabase="euroCRIS">
  <cfResPubl_Class>
    <cfResPublId>publication-joe</cfResPublId>
    <cfClassId>class-conf-proceedings</cfClassId>
    <cfClassSchemeId>class-scheme-cerif-publication-types</cfClassSchemeId>
    <cfFraction>1.00</cfFraction>
    <cfStartDate>2008-10-01T00:00:00:00</cfStartDate>
    <cfEndDate>2009-12-31T00:00:00:00</cfEndDate>
  </cfResPubl_Class>
  ...
</CFIRF>

<?xml version="1.0" encoding="UTF-8"?>
<CFIRF
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  release="2008-1.1" date="2010-04-05" sourceDatabase="euroCRIS">
  <cfPers_OrgUnit>
    <cfPersId>person-joe</cfPersId>
    <cfOrgUnitId>orgunit-dki</cfOrgUnitId>
    <cfClassId>class-is-affiliated-with</cfClassId>
    <cfClassSchemeId>class-scheme-pers-orgunit-roles</cfClassSchemeId>
    <cfFraction>1.00</cfFraction>
    <cfStartDate>2004-04-01T00:00:00:00</cfStartDate>
    <cfEndDate>2009-12-31T00:00:00:00</cfEndDate>
  </cfPers_OrgUnit>
  ...
</CFIRF>
```
7.1.6 CERIF Classification Entities (XML Examples)

```xml
<?xml version="1.0" encoding="UTF-8"?>
  <cfClass>
    <cfClassId>class-manager</cfClassId>
    <cfClassSchemeId>class-scheme-org-structure</cfClassSchemeId>
    <cfStartDate>1990-01-01T00:00:00Z</cfStartDate>
    <cfEndDate>2099-12-31T00:00:00Z</cfEndDate>
  </cfClass>
  <cfClass>
    <cfClassId>class-conf-proceedings-article</cfClassId>
    <cfClassSchemeId>class-scheme-cerif-publication-types</cfClassSchemeId>
    <cfStartDate>2009-01-19T00:00:00Z</cfStartDate>
    <cfEndDate>2099-12-31T00:00:00Z</cfEndDate>
  </cfClass>
  <cfClass>
    <cfClassId>class-journal-article</cfClassId>
    <cfClassSchemeId>class-scheme-cerif-publication-types</cfClassSchemeId>
    <cfStartDate>2009-01-19T00:00:00Z</cfStartDate>
    <cfEndDate>2099-12-31T00:00:00Z</cfEndDate>
  </cfClass>
</CERIF>

<?xml version="1.0" encoding="UTF-8"?>
  <cfClassScheme>
    <cfClassSchemeId>class-scheme-cerif-publication-types</cfClassSchemeId>
  </cfClassScheme>
  <cfClassScheme>
    <cfClassSchemeId>class-scheme-org-structure</cfClassSchemeId>
  </cfClassScheme>
</CERIF>
```
7.2 CERIF XML Schema Examples

CERIF XML schemas are provided for the validation of CERIF XML files. They 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 section 3. The CERIF XML schemas are built according to the XML Schema specification as recommended by the W3C [4]. The targetNamespace attribute in the following XML Schema example indicates to which CERIF XML entity (i.e. cfClass_CLASS-LINK) the schema belongs. The following example schema belongs to the CERIF Link entity cfClass_CLASS and thus, validates cfClass_CLASS-LINK.xml files.

```xml
<?xml version="1.0" encoding="UTF-8"?>
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="CERIF">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="cfClass_CLASS"/>
        <xs:element ref="cfClassId1"/>
        <xs:element ref="cfClassId2"/>
        <xs:element ref="cfClassSchemeId1"/>
        <xs:element ref="cfClassSchemeId2"/>
        <xs:element ref="cfFraction"/>
        <xs:element ref="cfStartDate"/>
        <xs:element ref="cfEndDate"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <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>
```
7.3 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 parentheses.

7.3.1 CERIF Core Entities (Logical (PhysicalName))
- cfProject (cfProj)
- cfPerson (cfPers)
- cfOrgUnit (cfOrgUnit)

7.3.2 CERIF Result Entities (Logical (PhysicalName))
- cfResultPublication (cfResPubl)
- cfResultPatent (cfResPat)
- cfResultProduct (cfResProd)

7.3.3 CERIF 2nd Level Entities (Logical (PhysicalName))
- cfCall (cfCall)
- cfCitation (cfCite)
- cfCountry (cfCountry)
- cfCurrency (cfCurrency)
- cfCurriculumVitae (cfCV)
- cfElectronicAddress (cfEAaddr)
- cfEquipment (cfEquip)
- cfEvent (cfEvent)
- cfExpertiseAndSkills (cfExpSkills)
- cfFacility (cfFacil)
- cfFunding (cfFund)
- cfGrant (cfGrant)
- cfLanguage (cfLanguage)
- cfMetrics (cfMetrics)
- cfPostalAddress (cfPAaddr)
- cfPrizeAward (cfPrize)
- cfPublicationReference (cfPublRef)
- cfQualification (cfQqual)
- cfService (cfSrv)

7.3.4 CERIF Link Entities (Logical (PhysicalName))
- cfCall_FundingProgramme (cfCall_FundProg)
- cfCitation_Classification (cfCite_Class)
- cfClassification_Classification (cfClass_Class)
- cfClassScheme_ClassScheme (cfClassScheme_ClassScheme)
- cfCountry_Classification (cfCountry_Class)
- cfCurrency_Classification (cfCurrency_Class)
- cfCV_Classification (cfCV_Class)
- cfElectronicAddress_Classification (cfEAaddr_Class)
- cfEquipment_Classification (cfEquip_Class)
- cfEquipment_FundingProgramme (cfEquip_FundProg)
- cfEvent_Event
- 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)
cGrant_FundingProgramme (cGrant_FundProg)
cLanguage_Classification (cLanguage_Class)
cMetrics_Classification (cMetrics_Class)
cOrganisationUnit_Classification (cOrgUnit_Class)
cOrganisationUnit_DublinCore (cOrgUnit_DC)
cOrganisationUnit_ElectronicAddress (cOrgUnit_EAddr)
cOrganisationUnit_Event (cOrgUnit_Event)
cOrganisationUnit_ExpertiseAndSkills (cOrgUnit_ExpSkills)
cOrganisationUnit_Facility (cOrgUnit_Facil)
cOrganisationUnit_FundingProgramme (cOrgUnit_FundProg)
cOrganisationUnit_OrgUnit (cOrgUnit_OrgUnit)
cOrganisationUnit_PostalAddress (cOrgUnit_PAddr)
cOrganisationUnit_PrizeAward (cOrgUnit_Prize)
cOrganisationUnit_ResultPatent (cOrgUnit_ResPat)
cOrganisationUnit_ResultProduct (cOrgUnit_ResProd)
cOrganisationUnit_ResultPublication (cOrgUnit_ResPubl)
cOrganisationUnit_Service (cOrgUnit_Srv)
cPerson_Classification (cPers_Class)
cPerson_CV (cPers_CV)
cPerson_DublinCore (cPers_DC)
cPerson_ElectronicAddress (cPers_EAddr)
cPerson_Equipment (cPers_Equip)
cPerson_Event (cPers_Event)
cPerson_ExpertiseAndSkills (cPers_ExpSkills)
cPerson_Facility (cPers_Facil)
cPerson_FundingProgramme (cPers_FundProg)
cPerson_Language (cPers_Language)
cPerson_Country (cPers_Country)
cPerson_OrganisationUnit (cPers_OrgUnit)
cPerson_Person (cPers_Pers)
cPerson_PostAddress (cPers_PAddr)
cPerson_PrizeAward (cPers_Prize)
cPerson_Qualification (cPers_Qual)
cPerson_ResultPatent (cPers_ResPat)
cPerson_ResultProduct (cPers_ResProd)
cPerson_ResultPublication (cPers_ResPubl)
cPerson_Service (cPers_Srv)
cPersonName_Person (cPersName_Pers)
cPostAddress_Classification (cPAddr_Class)
cProject_Classification (cProj_Class)
cProject_DublinCore (cProj_DC)
cProject_Equipment (cProj_Equip)
cProject_Event (cProj_Event)
cProject_Facility (cProj_Facil)
cProject_FundingProgramme (cProj_FundProg)
cProject_OrganisationUnit (cProj_Orgunit)
cProject_Person (cProj_Pers)
cProject_PrizeAward (cProj_Prize)
cProject_Project (cProj_Proj)
cProject_Service (cProj_Srv)
cProject_ResultPatent (cProj_ResPat)
cProject_ResultProduct (cProj_ResProd)
cProject_ResultPublication (cProj_ResPubl)
cResultPatent_Classification (cResPat_Class)
7.3.5 CERIF Multiple Language Features (Logical (PhysicalName))

 cfCallName (cfCallName)
 cfCallDescription (cfCallDescr)
 cfCallKeywords (cfCallKeyw)
 cfCitationDescription (cfCiteDescr)
 cfCitationTitle (cfCiteTitle)
 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 (cfFaciliDescr)
 cfFacilityKeywords (cfFaciliKeyw)
 cfFacilityName (cfFaciliName)
 cfFundingProgrammeDescription (cfFundProgDescr)
 cfFundingProgrammeKeywords (cfFundProgKeyw)
 cfFundingProgrammeName (cfFundProgName)
 cfGrantName (cfGrantName)
 cfGrantDescription (cfGrantDescr)
 cfGrantKeywords (cfGrantKeyw)
 cfLanguageName (cfLanguageName)
 cf MetricsDescription (cfMetricsDescr)
 cfMetricsName (cfMetricsName)
 cfOrganisationUnitKeywords (cfOrgUnitKeyw)
 cfOrganisationUnitName (cfOrgUnitName)
 cfOrganisationUnitResearchActivity (cfOrgUnitResAct)
 cfPersonResearchInterest (cfPersResInt)
7.3.6 Additional Entities (Logical (PhysicalName))

cfPersonName (cfPersName)
cfDublinCore (cfDC)
cfDCAudience (cfDCAudience)
cfDCContributor (cfDCContributor)
cfDC Coverage (cfDCCoverage)
cfDCCoverageSpatial (cfDCCoverageSpatial)
cfDCCoverageTemporal (cfDCCoverageTemporal)
cfDC Creator (cfDCCreator)
cfDCDate (cfDCDate)
cfDCDescription (cfDCDescription)
cfDC Format (cfDCFormat)
cfDC Language (cfDCLanguage)
cfDC Provenance (cfDCProvenance)
cfDC Publisher (cfDCPublisher)
cfDC Relation (cfDCRelation)
cfDC ResourceIdentifier (cfDCResourceIdentifier)
cfDC ResourceType (cfDCResourceType)
cfDC RightsHolder (cfDCRightsHolder)
cfDC Rights Management (cfDCRightsMM)
cfDC Rights Management Access Rights (cfDCRightsMMAccessRight)
cfDC Rights Management License (cfDCRightsMMLicense)
cfDC Source (cfDCSource)
cfDC Subject (cfDCSubject)
cfDC Title (cfDCTitle)
cfFormalisedDublinCoreRightsManagementPricing (FDCRightsMMPricing)
cfFormalisedDublinCoreRightsManagementPrivacy (FDCRightsMMPrivacy)
cfFormalisedDublinCoreRightsManagementRights (FDCRightsMM)
cfFormalisedDublinCoreRightsManagementSecurity (FDCRightsMMSecurity)

7.3.7 CERIF Classification Entities (Logical (PhysicalName))

cfClassification (cfClass)
cfClassificationScheme (cfClassScheme)
7.3.8 CERIF Attributes

7.3.9 Attribute in all Link Tables
   cfFraction (cfFraction)

7.3.9.1 Language-dependent attributes including cflangCode and cfTrans
   cfAbstract (cfAbstr)
   cfDescription (cfDescr)
   cfKeywords (cfKeyw)
   cfName (cfName)
   cfResearchActivity (cfResAct)
   cfResearchInterest (cfResInt)
   cfTerm (cfTerm)
   cfTitle (cfTitle)

7.3.9.2 Currency-dependent attributes
   cfBudget (cfBudget)
   cfAmount (cfAmount)
   cfPrice (cfPrice)
   cfTurnover (cfTurn)
7.4 Logical / Physical CERIF Entity Names

The following table 1 gives an overview of all CERIF 2008 – 1.1 entities with logical and physical names, including cf prefixes.

<table>
<thead>
<tr>
<th>Logical CERIF2008 - 1.1 Entities</th>
<th>Physical CERIF2008-1.1 Entities</th>
</tr>
</thead>
<tbody>
<tr>
<td>cfCall</td>
<td>cfCall</td>
</tr>
<tr>
<td>cfCall_FundingProgramme</td>
<td>cfCall_FundProg</td>
</tr>
<tr>
<td>cfCallDescription</td>
<td>cfCallDescr</td>
</tr>
<tr>
<td>cfCallKeywords</td>
<td>cfCallKeyw</td>
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<td>cfCallName</td>
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<td>cfCurrencyName</td>
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<td>cfCV</td>
</tr>
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<td>cfCV_Class</td>
</tr>
<tr>
<td>cfDublinCore</td>
<td>cfDC</td>
</tr>
<tr>
<td>cfDublinCoreAudience</td>
<td>cfDCAudience</td>
</tr>
<tr>
<td>cfDublinCoreContributor</td>
<td>cfDCcontributor</td>
</tr>
<tr>
<td>cfDublinCoreCoverage</td>
<td>cfDCCoverage</td>
</tr>
<tr>
<td>cfDublinCoreCoverageSpatial</td>
<td>cfDCCoverageSpatial</td>
</tr>
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<td>cfDCCoverageTemporal</td>
</tr>
<tr>
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<td>cfDCreator</td>
</tr>
<tr>
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<td>cfDCDate</td>
</tr>
<tr>
<td>cfDublinCoreDescription</td>
<td>cfDCDescription</td>
</tr>
<tr>
<td>cfDublinCoreFormat</td>
<td>cfDCFormat</td>
</tr>
<tr>
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<td>cfDCLanguage</td>
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<tr>
<td>cfDublinCoreProvenance</td>
<td>cfDCProvenance</td>
</tr>
<tr>
<td>cfDublinCorePublisher</td>
<td>cfDCPublisher</td>
</tr>
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<td>cfDCRelation</td>
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cfDublinCoreRightsManagement
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cfDublinCoreRightsManagementLicense
cfDublinCoreSource
cfDublinCoreSubject
cfDublinCoreTitle
cfElectronicAddress
cfElectronicAddress_Classification
cfEquipment
cfEquipment_Classification
cfEquipment_Funding
cfEquipmentDescription
cfEquipmentKeywords
cfEquipmentName
cfEvent
cfEvent_Classification
cfEvent_Event
cfEvent_Funding
cfEvent_ResultPublication
cfEventDescription
cfEventKeywords
cfEventName
cfExpertiseAndSkills
cfExpertiseAndSkills_Classification
cfExpertiseAndSkillsDescription
cfExpertiseAndSkillsKeywords
cfExpertiseAndSkillsName
cfFacility
cfFacility_Classification
cfFacility_Funding
cfFacilityDescription
cfFacilityKeywords
cfFacilityName
cfFormalisedDublinCoreRightsManagementPricing
cfFormalisedDublinCoreRightsManagementPrivacy
cfFormalisedDublinCoreRightsManagementRights
cfFormalisedDublinCoreRightsManagementSecurity
cfFundingProgramme
cfFundingProgramme_Classification
cfFundingProgramme_FundingProgramme
cfFundingProgrammeDescription
cfFundingProgrammeKeywords
cfFundingProgrammeName
cfGrant
cfGrant_FundingProgramme
cfGrantDescription
cfGrantKeywords
cfGrantName
cfLanguage
cfLanguage_Classification
<p>| cfPostAddress_Classification          | cfPAddr_Class          |
| cfPrizeAward                        | cfPrize              |
| cfPrizeAward_Classification         | cfPrize_Class        |
| cfProject                           | cfProj               |
| 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_ResultPatent              | cfProj_ResPat        |
| cfProject_ResultProduct             | cfProj_ResProd       |
| cfProject_ResultPublication         | cfProj_ResPubl       |
| cfProject_Service                   | cfProj_Srv           |
| cfProjectAbstract                   | cfProjAbstr          |
| cfProjectKeywords                   | cfProjKeyw           |
| cfProjectTitle                      | cfProjTitle          |
| cfPublicationReference              | cfPublRef            |
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8. References


