

- C E R I F -

Common European Research Information Format

Tutorial

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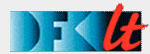
Berlin, Germany



Introduction of Speaker

Brigitte Jörg

M.A. Information Science
Information Systems, Economics

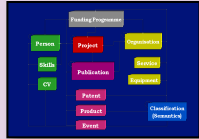


Researcher, Project Manager
DFKI GmbH, Language Technology Lab,
Manager Virtual Information Center
Berlin



CERIF TG Leader, Board Member
euroCRIS

- **Contact:**
brigitte.joerg @ dfki.de
<http://www.dfki.de/~brigitte/>



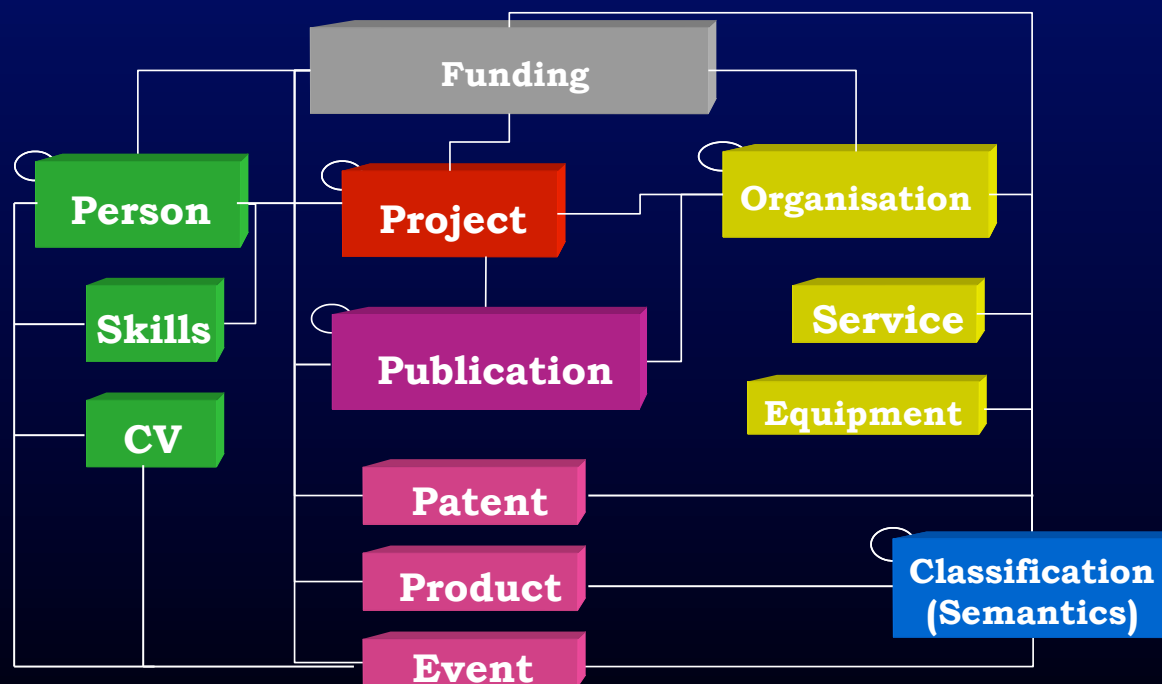
Outline

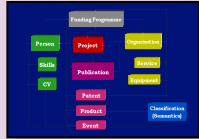
- **Grounding Explanations**
- **The CERIF Model**
 - Entities
 - Model Structure
 - Model Components
 - Semantic Layer
- **CERIF Semantics**
- **Use and Implementations**
- **Ongoing and Next Steps**
- **Discussion**



The CERIF Model

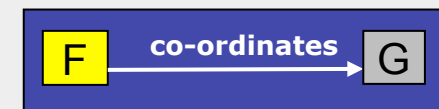
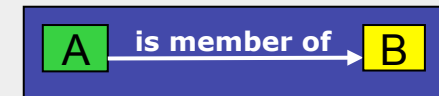
Common European Research Information Format





What is a model ?

- ... is a simplified view to describe a particular area of interest
- ... allows for a better communication between parties (mutual understanding)
- ... supports (re-)design decisions
- ... supports workflow identification
- ... supports documentation
- ... supports formalization
- ... can be exchanged, re-used, iterated, extended





What is Metadata ?

„Metadata is **structured data** which **describes the characteristics** of a resource.“

An Introduction to Metadata, by Chris Taylor, University of Queensland

“Metadata is sometimes defined literally as 'data about data,' but the term is normally understood to mean **structured data about resources** that can be used to help support a wide range of operations. These might include, for example, **resource description** and **discovery**, the **management of information resources** and their long-term preservation.”

Metadata in a Nutshell, by Michael Day, UKOLN



What is Metadata ?

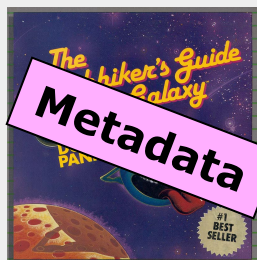
Radio Series:

Title: The Hitchhiker's Guide to the Galaxy

Description: science fiction comedy series created by Douglas Adams. Originally a radio comedy broadcast on BBC Radio 4 in 1978, [...]

Source: Wikipedia

Date of Query: May 30, 2008



Game Cover Image: The Hitchhiker's Guide to the Galaxy

Source: <http://legotron.com/>

Retrieved: May 30, 2008

Links:

<http://www.bbc.co.uk/cult/hitchhikers/>

HTML-Title: Cult - Hitchhiker's Guide to the Galaxy

[http://en.wikipedia.org/wiki/](http://en.wikipedia.org/wiki/The_Hitchhiker's_Guide_to_the_Galaxy)

[The Hitchhiker's Guide to the Galaxy](http://en.wikipedia.org/wiki/The_Hitchhiker's_Guide_to_the_Galaxy)

HTML-Title: The Hitchhiker's Guide to the Galaxy



Book:

Title: The Hitchhiker's Guide to the Galaxy

Date of Publication: 1979

Series of five Books:

Title: The Hitchhiker's Guide to the Galaxy

Between: 1979 - 1982

Structure:

- Type of Resource
- Title
- Description
- Source
- Date
- Author, Creator, ...

TV Series:

Title: The Hitchhiker's Guide to the Galaxy

Screened: 1981

Computer Game:

Title: The Hitchhiker's Guide to the Galaxy

Released: 1984

Comic Book Adaptations:

Title: The Hitchhiker's Guide to the Galaxy

Between: 1993 - 1996



What is semantic, formal Metadata ?

Metadata Categories

- **Descriptive Metadata** [intellectual contents]
- **Administrative Metadata**
 - Technical [file formats ...]
 - Rights Management [permissions ...]
 - Provenance [creation, subsequent treatment, ...]
 - ...
- **Structural Metadata** [internal structure of items: page order ...]
- **Contextual Metadata**
 - Project Context [funding programme, participating organisations ...]
 - Publication Context [number of authors, external authors, first ...]
 - Usage Context [downloads, requests, ...]
 - ...

Semantics, Formalization
= based on a Model

Semantics, Formalization
= based on a Model

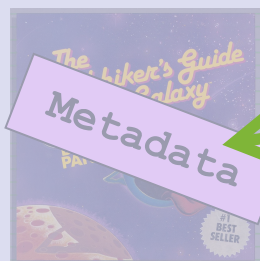




What is semantic, formal Metadata ?

Radio Series:

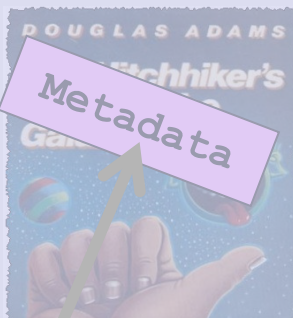
Title: The Hitchhiker's Guide to the Galaxy
Description: science fiction comedy series created by Douglas Adams. Originally a radio comedy broadcast on BBC Radio 4 in 1978, [...]
Source: Wikipedia
Date of Query: May 30, 2012



Game Cover
 Hitchhiker's Guide to the Galaxy
Source: <http://www.bbc.co.uk/cult/hitchhikers/>
Retrieved: May 30, 2012

Links:

<http://www.bbc.co.uk/cult/hitchhikers/>
HTML-Title: Cult of the Hitchhiker's Guide to the Galaxy
http://en.wikipedia.org/wiki/The_Hitchhiker's_Guide_to_the_Galaxy
HTML-Title: The Hitchhiker's Guide to the Galaxy



Book:

Title: The Hitchhiker's Guide to the Galaxy
Date of Publication: 1979

Series of five Books:

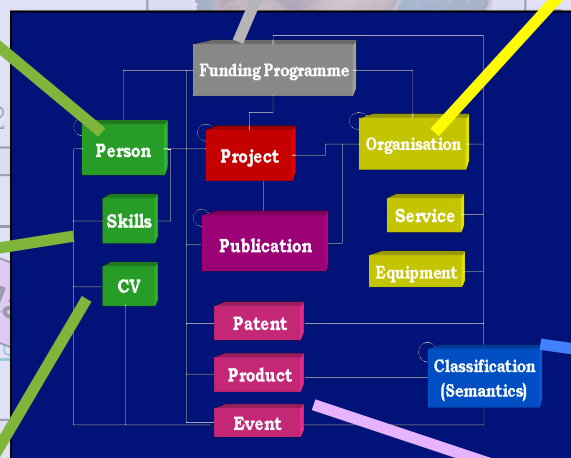
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Structure:
 • Type of Resource
 • Title
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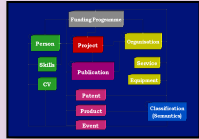
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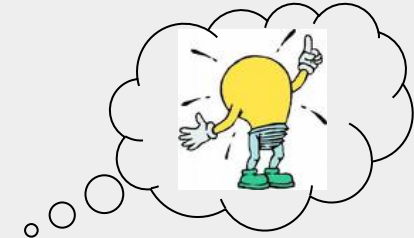




What is Research Information ?

Data/Metadata or Information about:

- Scientists
- Project Managers
- Ongoing and Completed Projects
- Research Departments
- Funding Organisations and Programmes
- Research Results
- Publications
- Equipment
- Facilities
- their timely Relationships (**Semantics**) ...





What is a CRIS ?

Current Research Information System = CRIS

... that means

- Timeliness
- Vitality

... information about

- People +
- Organisations +
- Projects +
- Funding Programmes +
- Research Results +
- ...

... driven by

- A Concept
- A Model

... incorporated as a

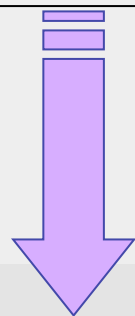
- Implementation (ICT)

an **integrated approach** towards managing research information



What is a CRIS ?

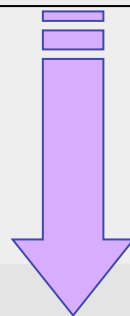
Current Research Information System = CRIS



... that means

- Timeliness
- Vitality

changing relationships



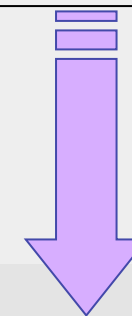
Metadata

... information about

- People +
- Organisations +
- Projects +
- Funding Programmes +
- Research Results
- ...

heterogenous entities

Integration



... driven by

- A Concept
- A Model

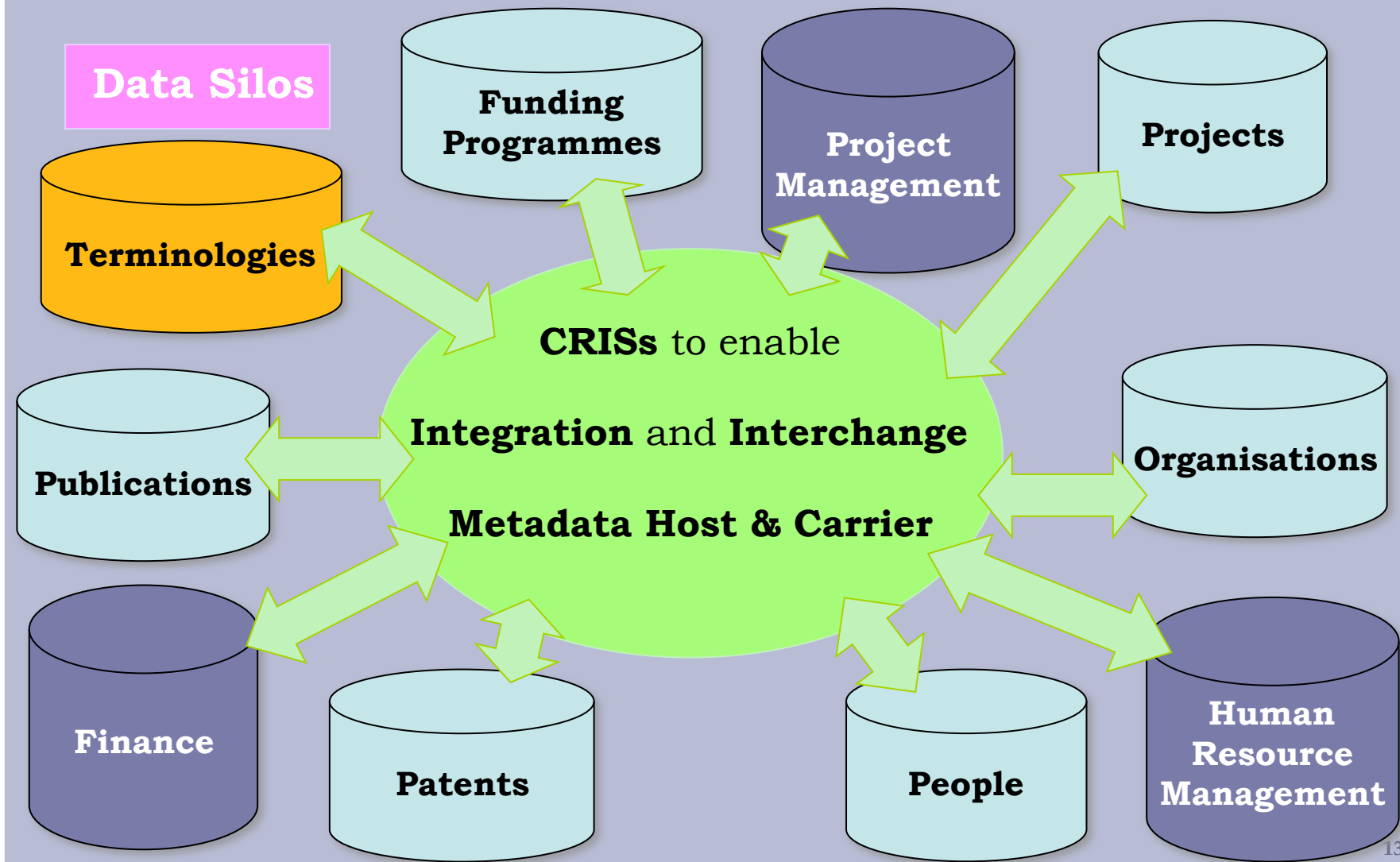
... incorporated as a

- Implementation (ICT)



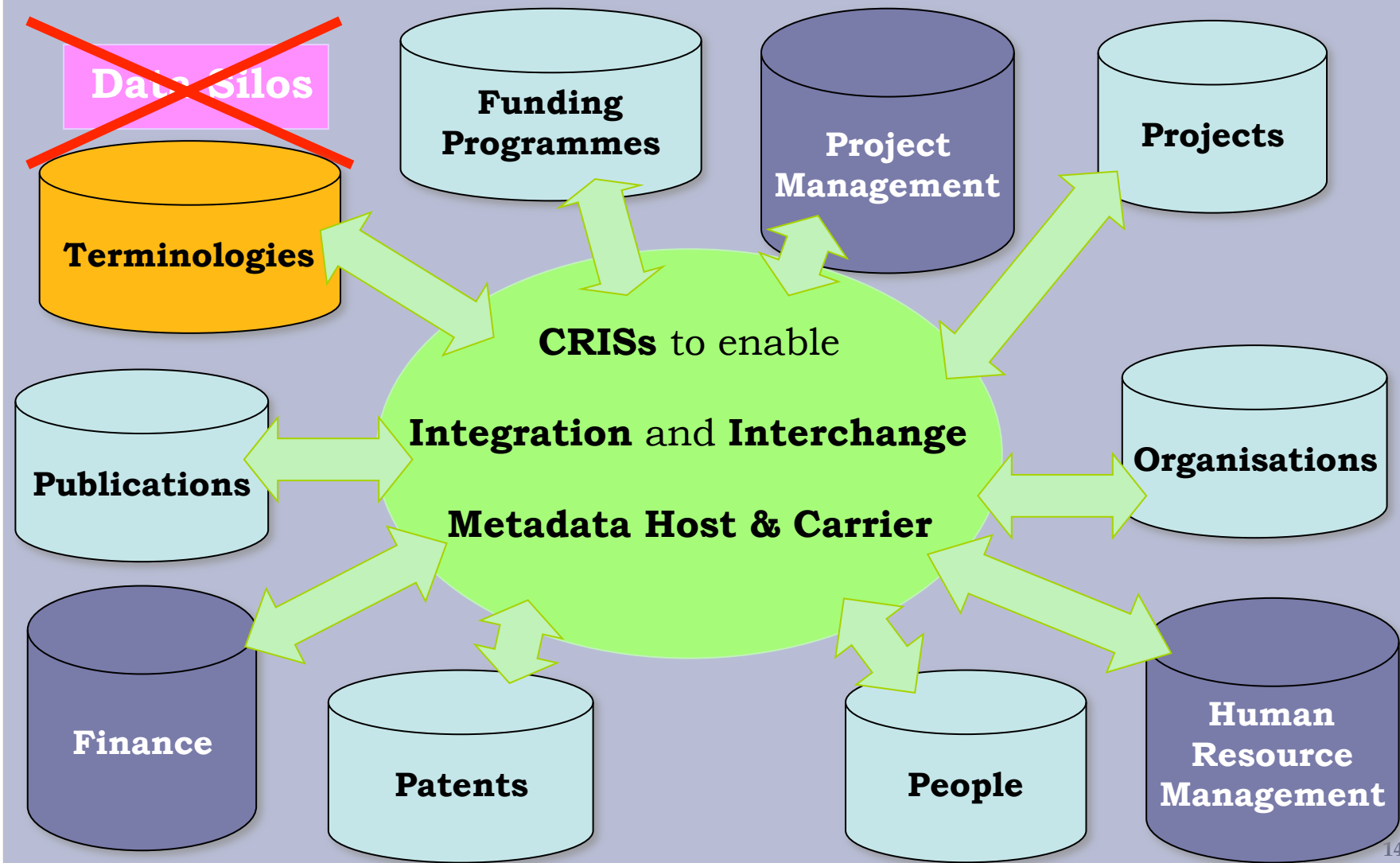
an **integrated approach** towards managing research information

What CRISs aim at ?



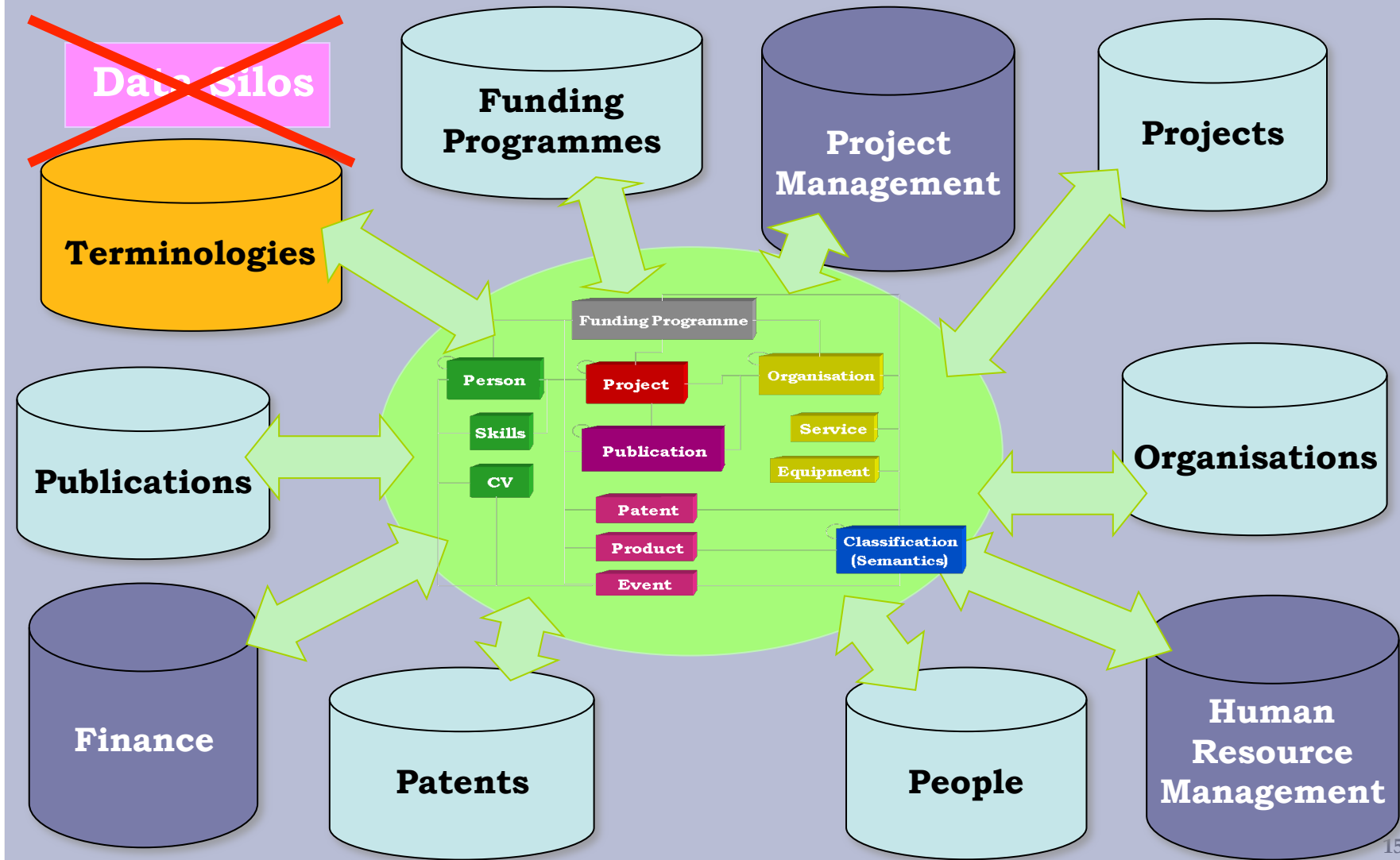
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What CRISs aim at ?



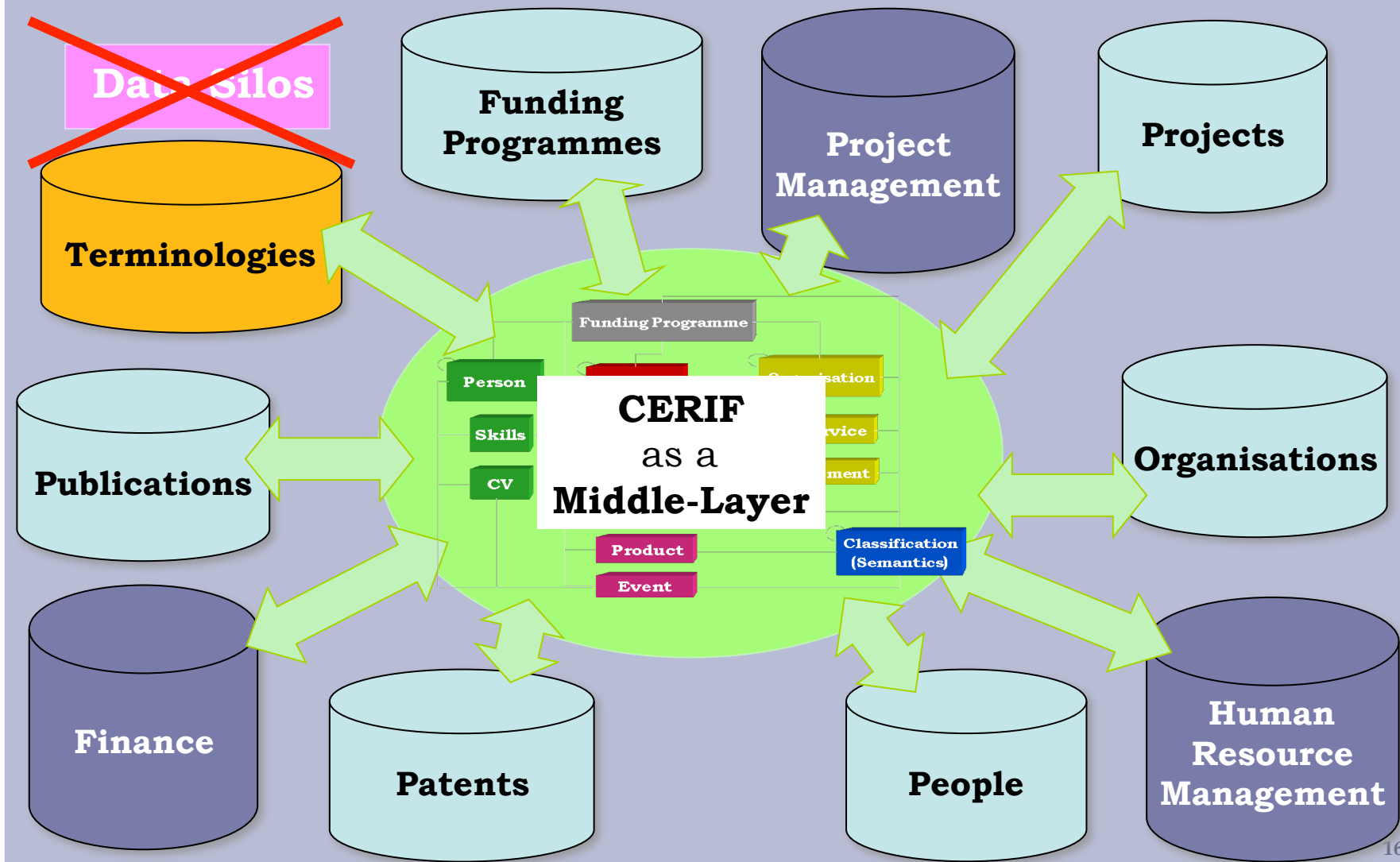
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What CRISs aim at ?



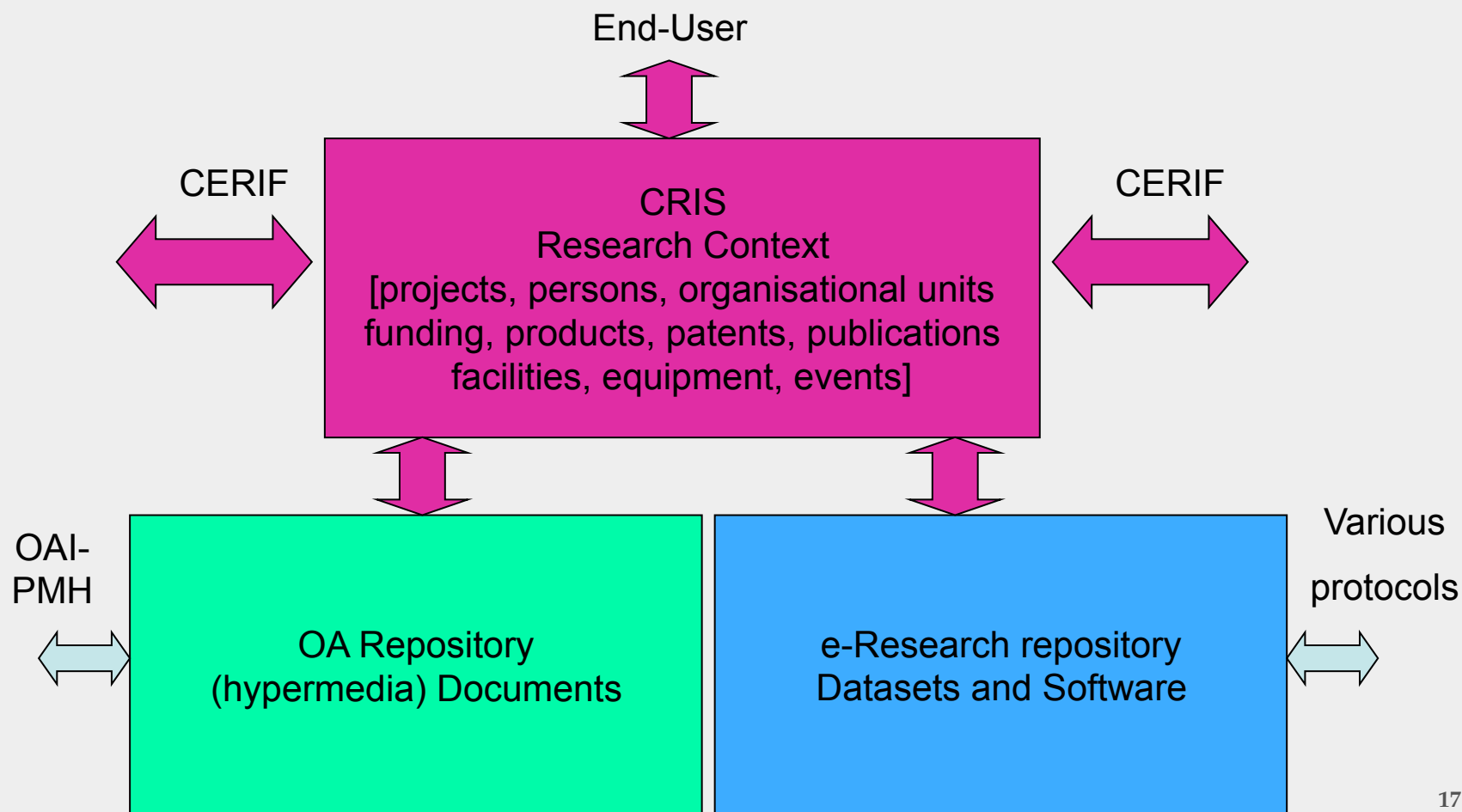
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What CRISs aim at ?

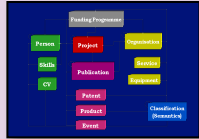


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CRIS and Repositories at 1 institution (Slide by Keith Jeffery)



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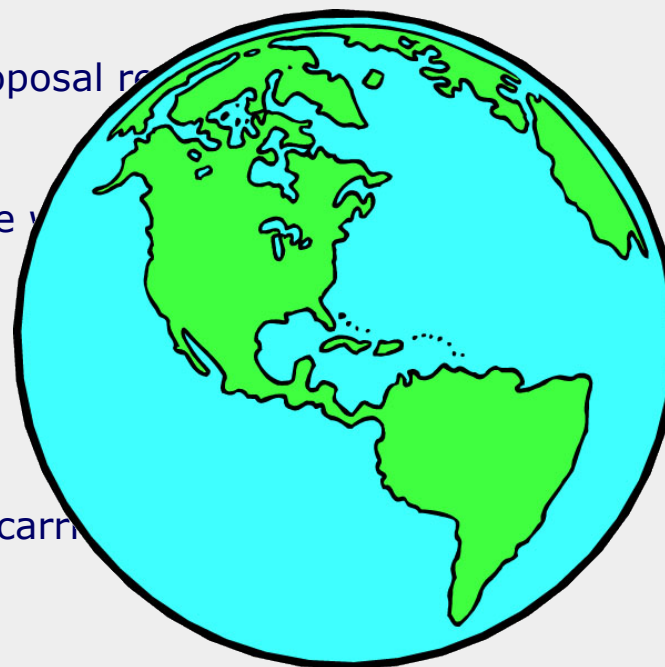
Who are CRIS users ?

- **Researchers**
to find partners, track competitors, form collaborations
- **Research Managers**
to assess performance, assess output, find proposal reviewers
- **Research Strategists**
to decide on priorities and resourcing, compare with other countries
- **Publication Editors**
to find potential authors, find paper reviewers
- **Intermediaries / Brokers**
to find research products, identify ideas to be carried forward
- **Media**
to communicate results
- **General Public**
for interest



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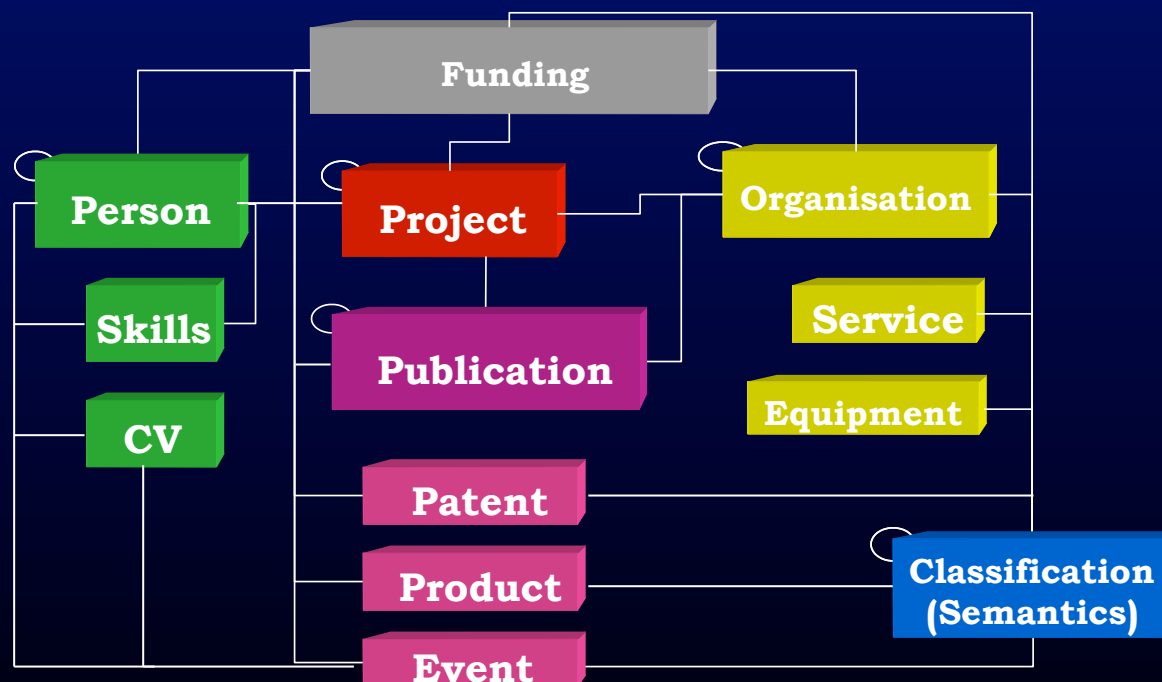


Research is International

**Research Information involves
various Entities**



Common European Research Information Format





What is CERIF ?

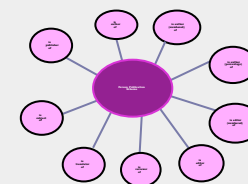
the Common European Research Information Format

- **Conceptual Level** (Specification)
A description of the concepts of research involved entities and their relationships
- **Logical Level** (Conceptual Model)
A formal description of the research involved entities and their relationships according to a concept
- **Physical Level** (Database Scripts)
A formal machine readable description of the entities and their relationships according to a concept
- **Semantic Layer** (current Formal Semantics)
A formalized controlled vocabulary describing a general contextual semantics of the research domain inline with the conceptual, logical and machine description



SQL Script

```
CREATE Table Person
CREATE Table Project
CREATE Table OrgUnit
```



The CERIF Evolution



Similar Ideas
UN/UNESCO
OECD
CODATA

EU Working Group on Research Databases Workshop

CERIF 91

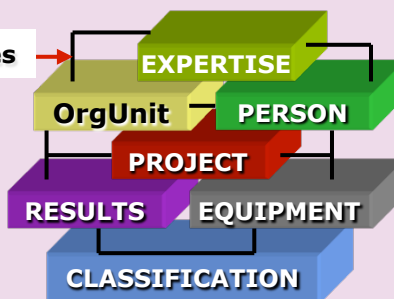
PROJECT

Acronym: ERGO
Participant:
Keith Jeffery, Anne Asserson, many more
Organisations:
Rutherford Appleton, University of Bergen, ...

- Networking of DBs
- Exchange of Records
- EC Recommendation to Member States

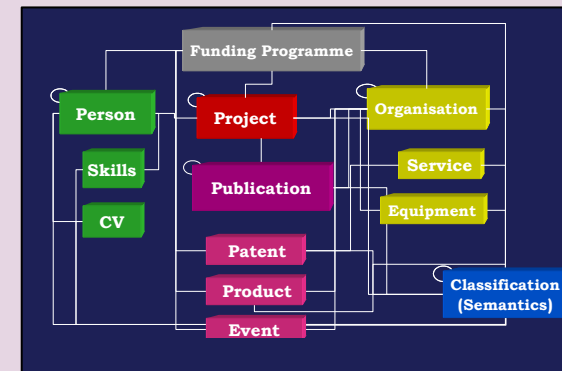
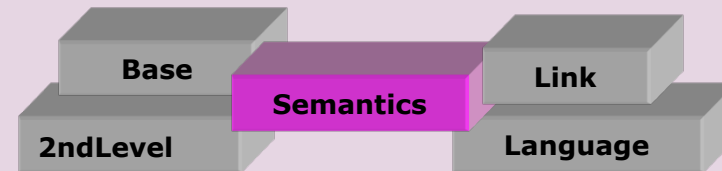
CERIF 2000 Model

Roles



- Data Model
- Multilinguality
- Controlled Vocabulary
- Roles / Types
- User-driven
- EC Recommendation to Member States

CERIF 2006 / 2008 Model



- Data Model
- Model Normalization
 - Robust/Consistent Structure
 - Extensible Structure
 - Semantic Layer
- XML Exchange Specification
- Elaboration on Publication
- CERIF Core Semantics (2008 1.2)

FORMAL SEMANTICS

+ Linked Data

+ CERIF Ontology

euroCRIS
Current Research Information Systems

1987

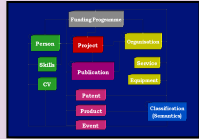
1991

2000

2006

2008

2011/2012



What is CERIF ?

Common European Research Information Format

- **CERIF is an EU Recommendation to Member States**

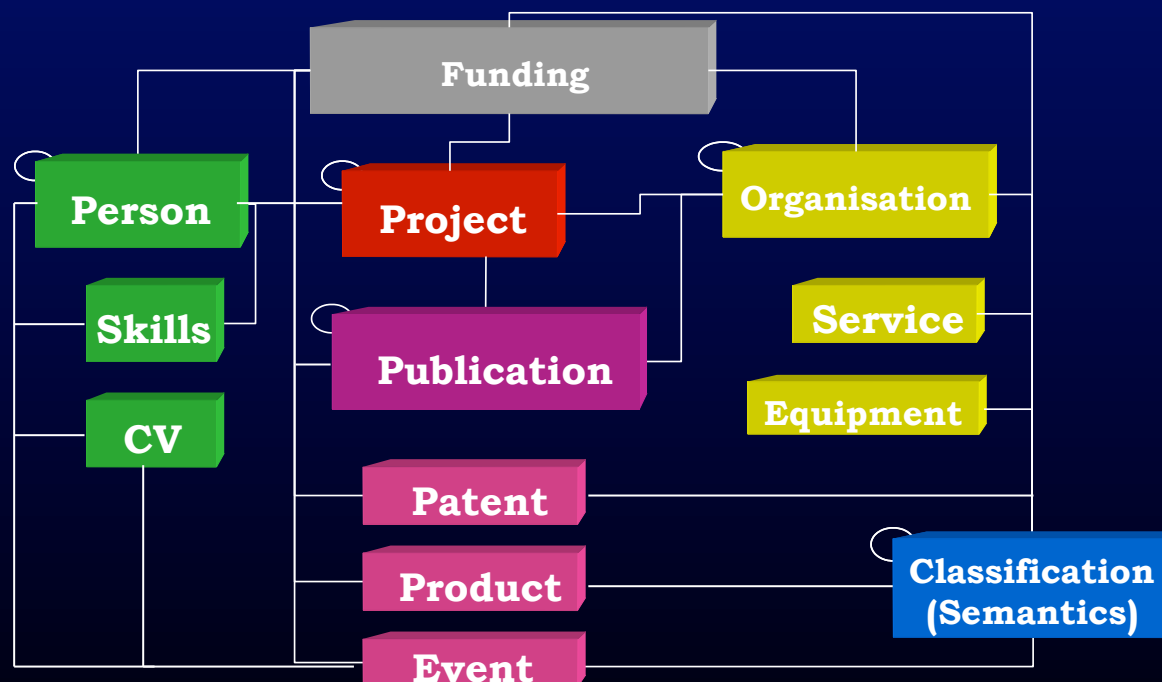
<http://cordis.europa.eu/cerif/>

- **The European Commission (EC) has authorised euroCRIS to maintain and develop CERIF and its usage**

<http://www.eurocris.org/cerif/cerif-releases/>



Common European Research Information Format





One View of the CERIF Model Structure

CERIF Entity Types

- Base Entities ■
- Result Entities ■
- 2nd Level Entities ■
- Link Entities ■

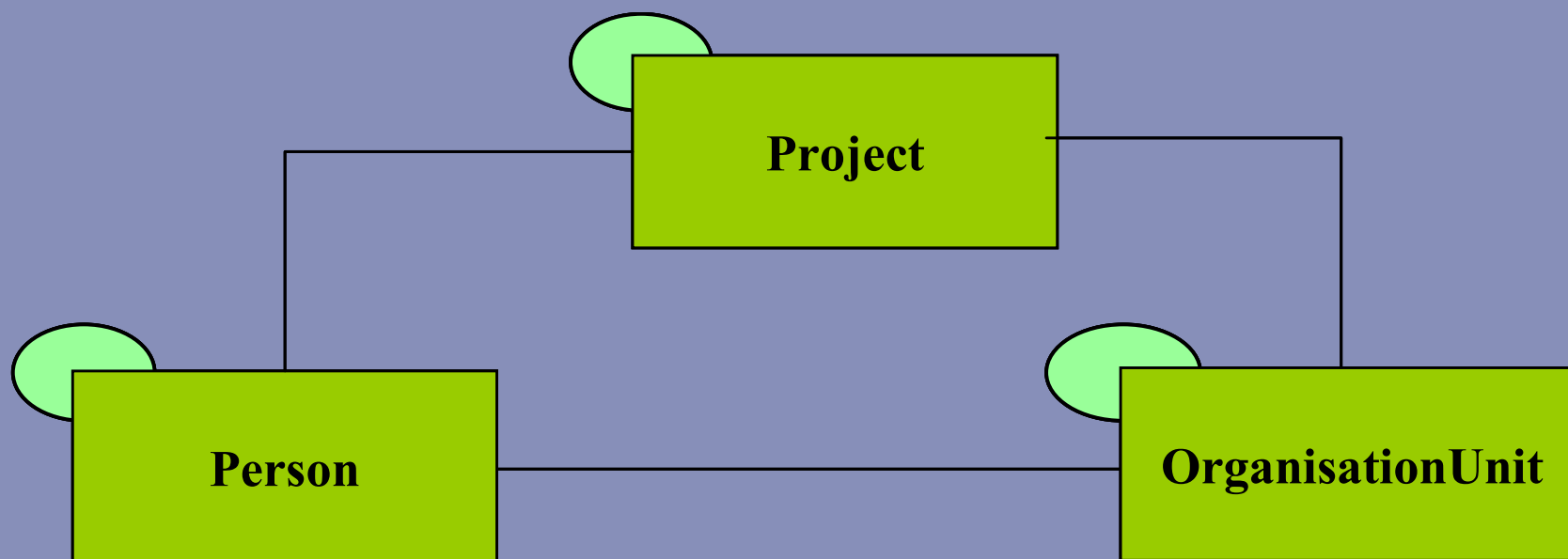


CERIF Features

- Multiple Language ■
- Semantics ■



CERIF Base Entities





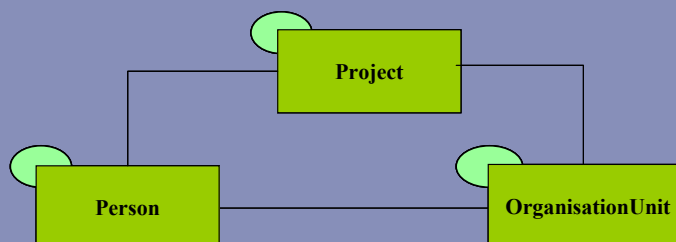
CERIF Base Entities in Detail

Project

ID
URI
Acronym
StartDate
EndDate
Title
Abstract
Keywords

Person

ID
URI
Gender
FirstNames
OtherNames
FamilyNames
NameVariants
ResearchInterest
Keywords

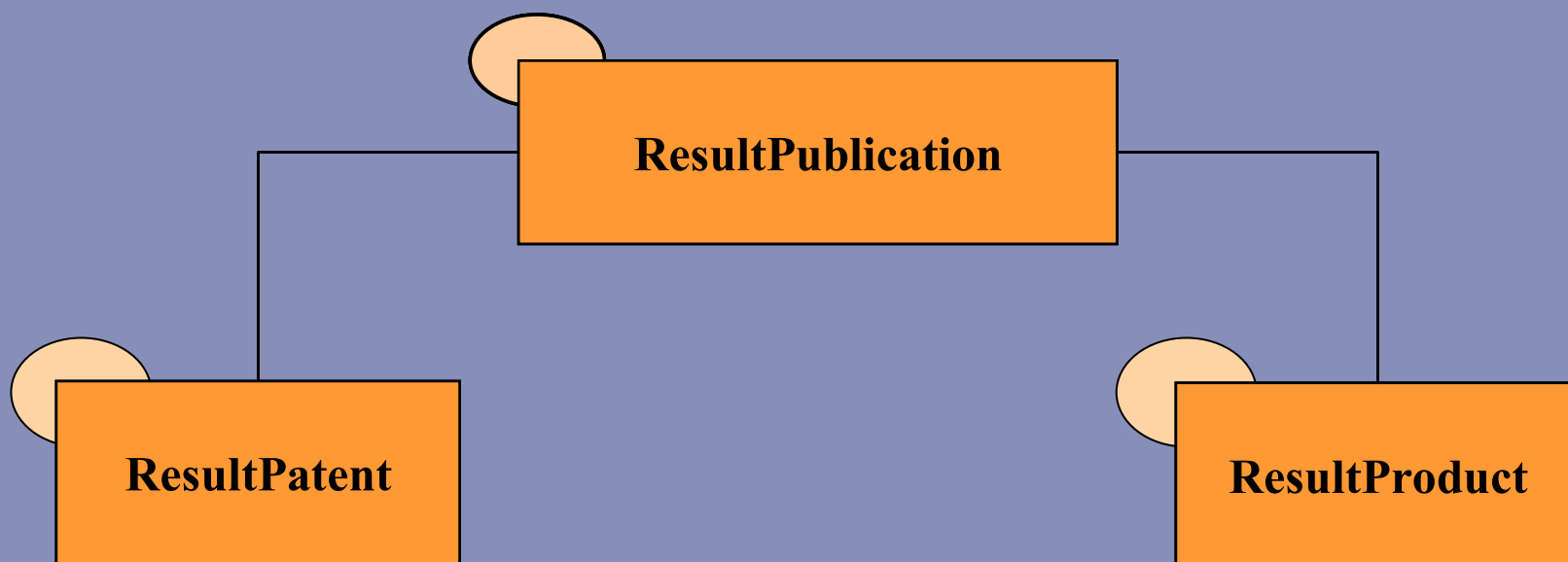


OrganisationUnit

ID
URI
Acronym
Name
HeadCount
CurrencyCode
Turnover
ResearchActivity
Keywords

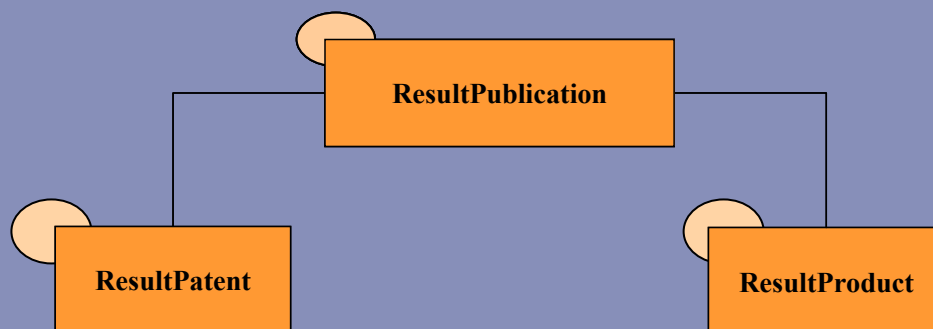


CERIF Result Entities





CERIF Result Entities in Detail



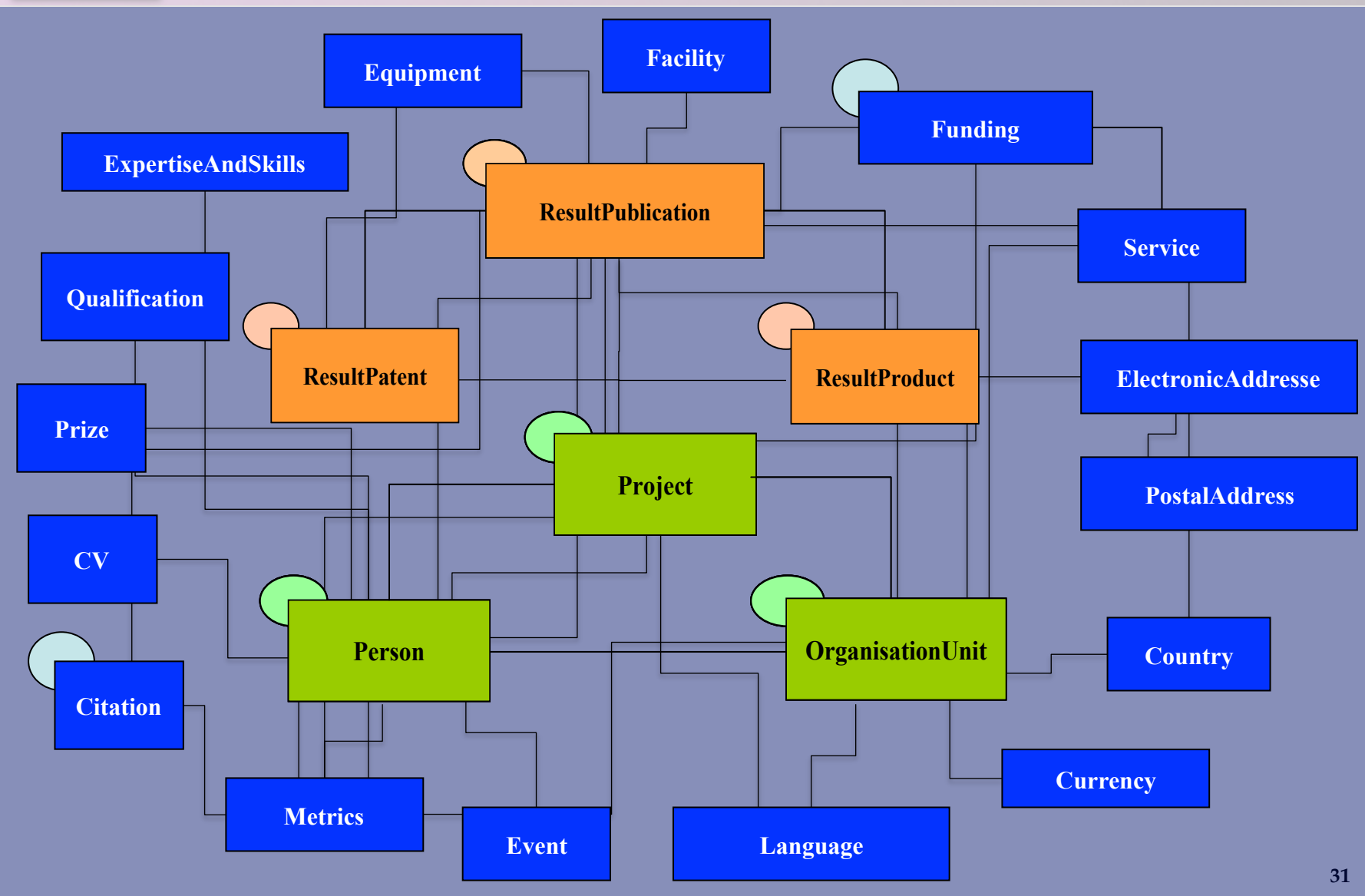
ResultProduct
 ID
 URI
 InternationalID

ResultPatent
 ID
 URI
 PatentNumber
 Title
 CountryCode
 RegistrationDate
 ApprovalDate
 Description
 Keywords

ResultPublication
 ID
 URI
 Title
 Subtitle
 Abstract
 Bibl. Note
 PublicationDate
 TotalPages
 StartPage
 EndPage
 Keywords

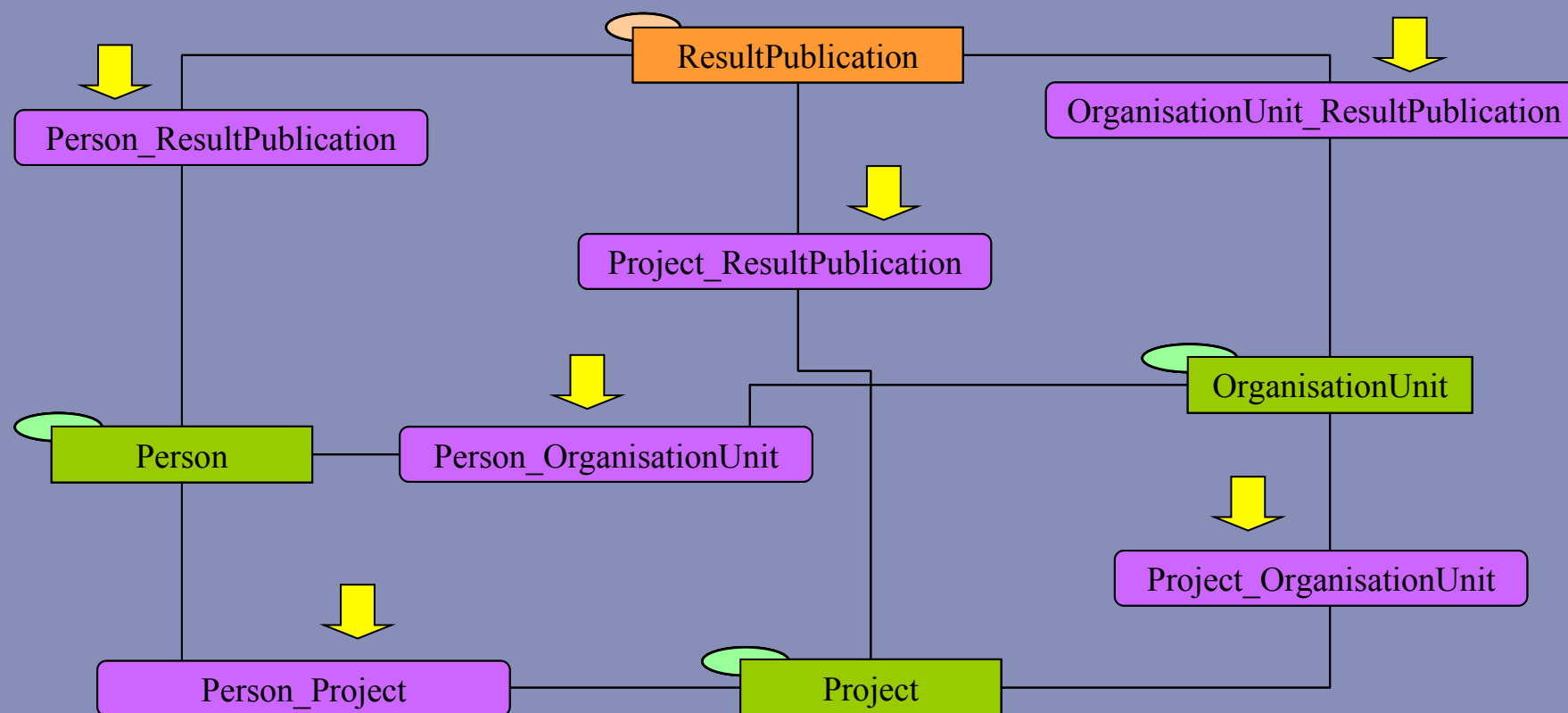


CERIF Base, Result and 2nd Level Entities



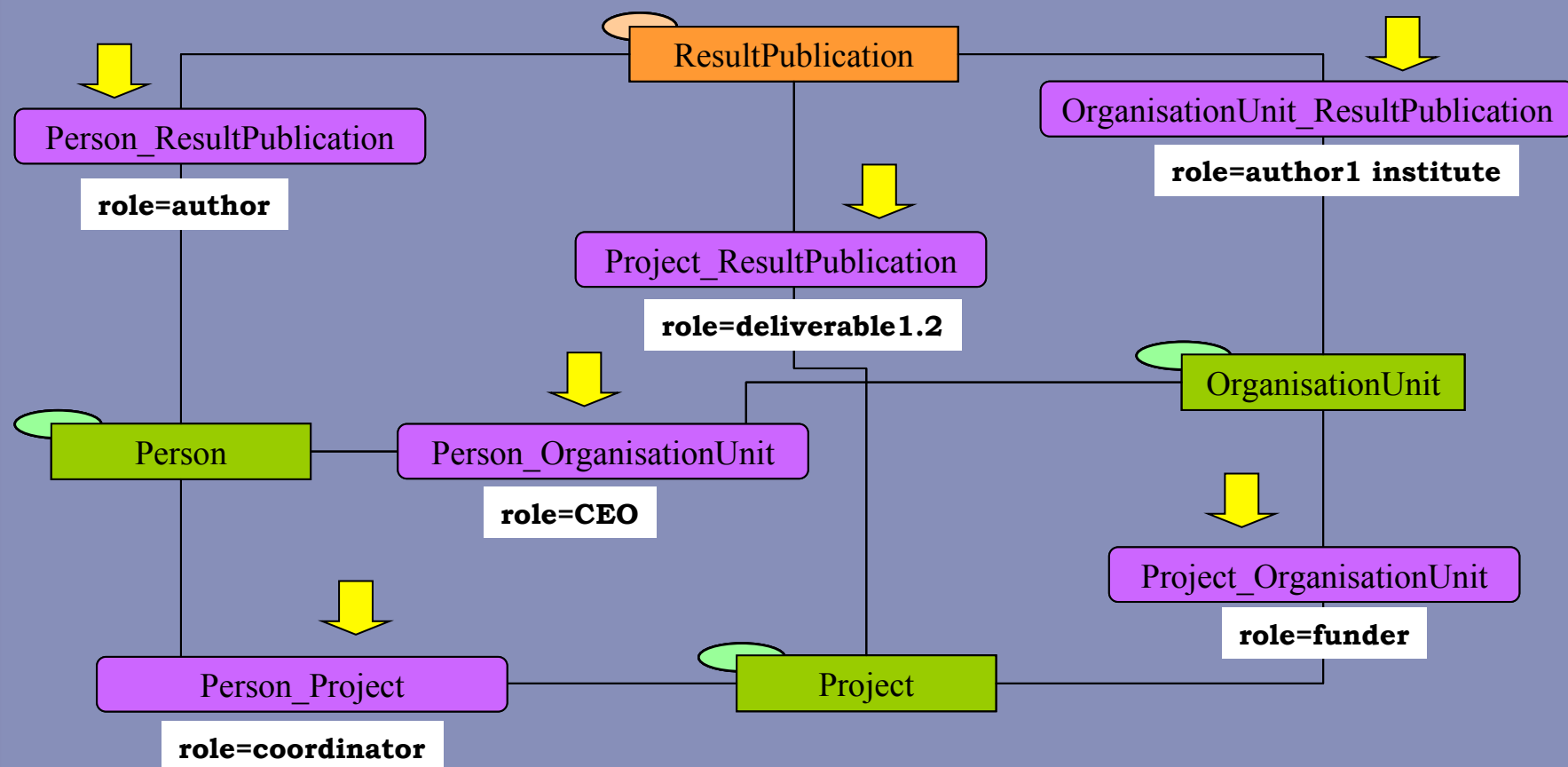


Some CERIF Link Entities





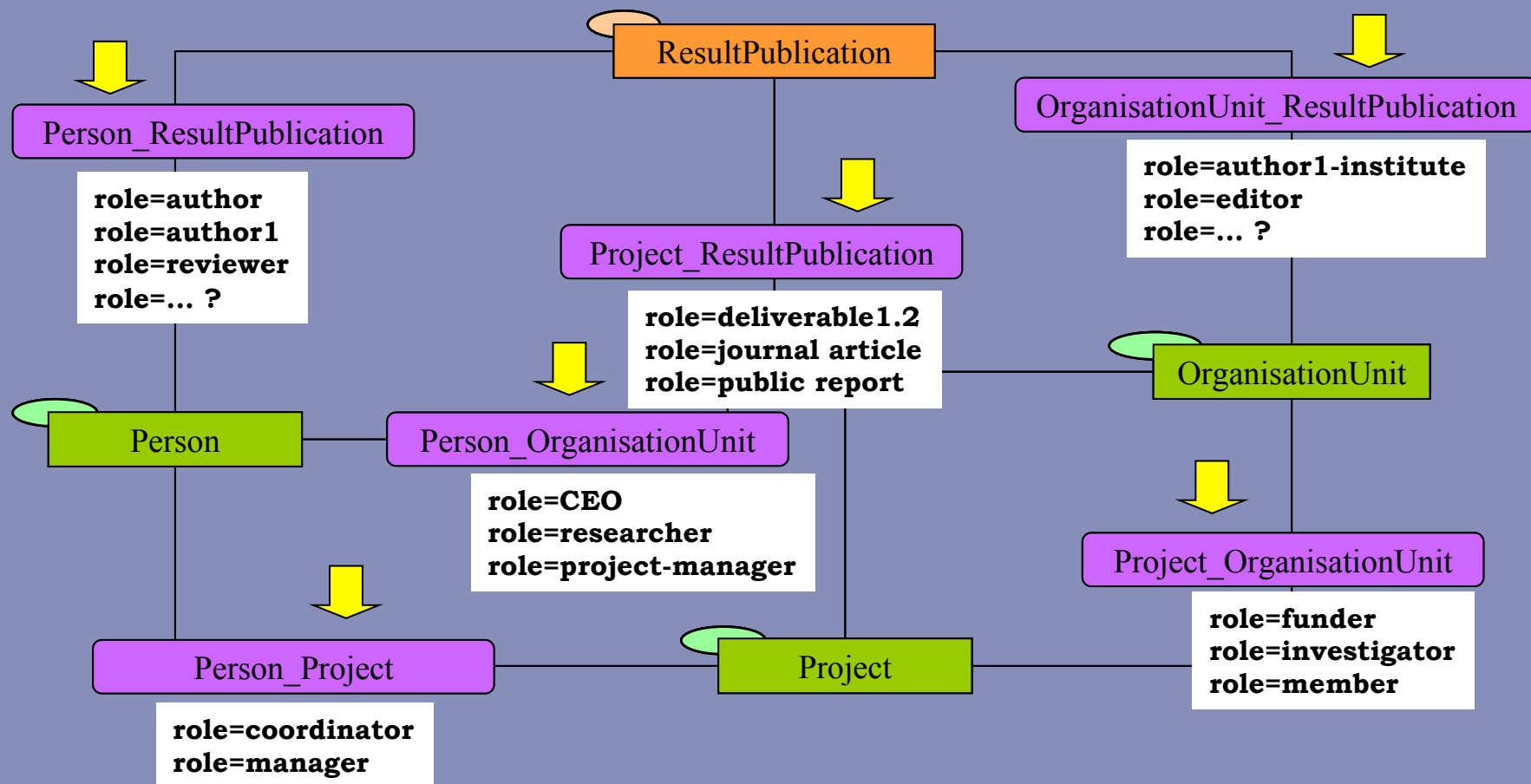
Some CERIF Semantic Features



Semantic Features associated with Link Entities

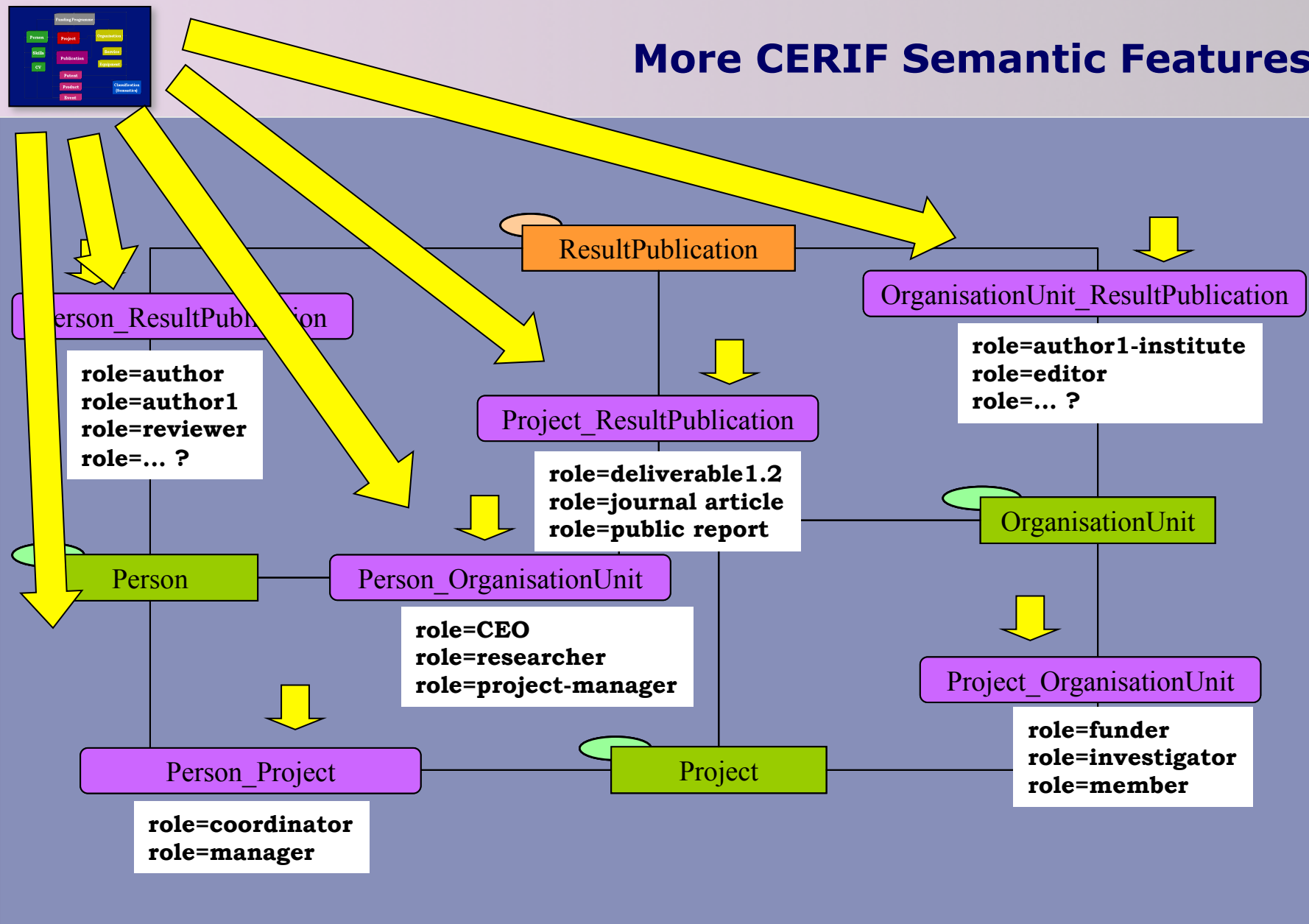


More CERIF Semantic Features



Semantic Features associated with Link Entities

More CERIF Semantic Features

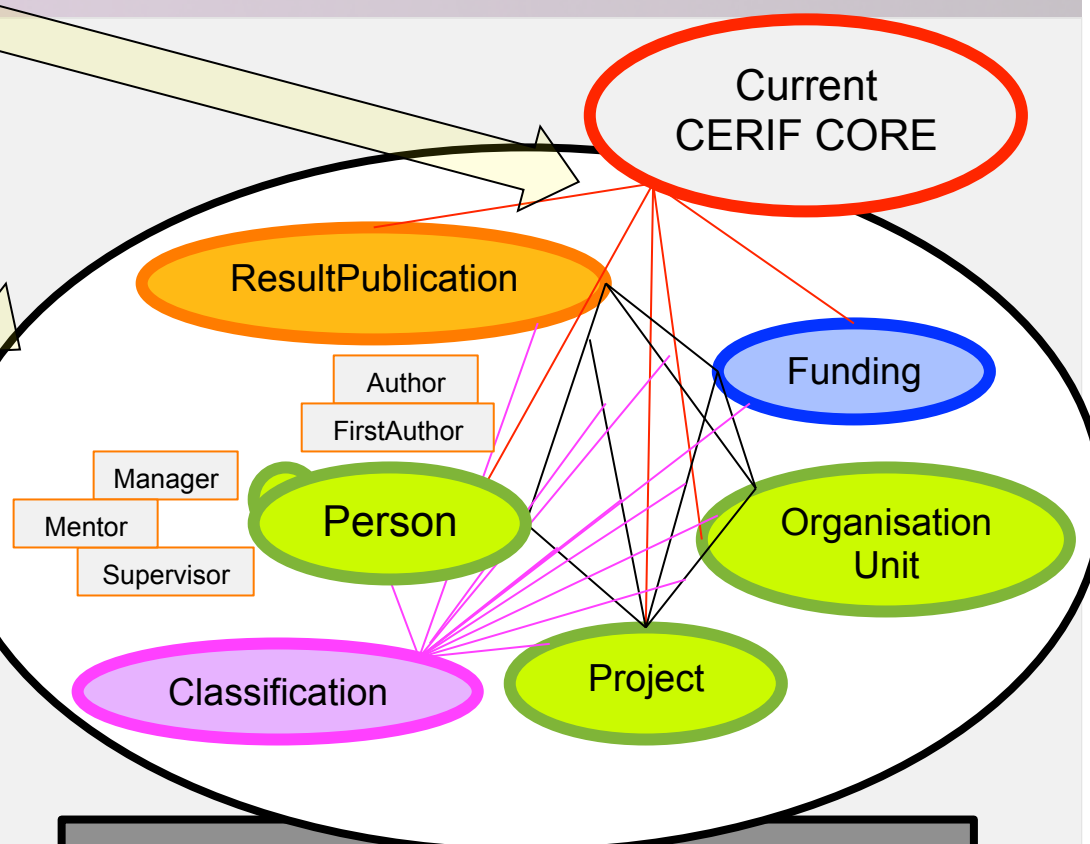


Semantic Features associated with Link Entities



Current CORE Entities

- cfPerson_Person
- cfPerson_Classification
- cfPerson_OrganisationUnit
- cfPerson_Project
- cfPerson_ResultPublication
- cfPerson_Funding
- cfOrganisationUnit_OrganisationUnit
- cOrganisationUnit_Classification
- cfOrganisationUnit_Project
- cfOrganisationUnit_ResultPublication
- cfOrganisation_Funding
- cfProject_Project
- cfProject_Classification
- cfProject_ResultPublication
- cfProject_Funding
- cfResultPublication_ResultPublication
- cfResultPublication_Classification
- cfResultPublication_Funding
- cfFunding_Funding
- cfFunding_Classification

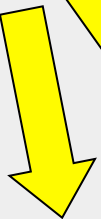
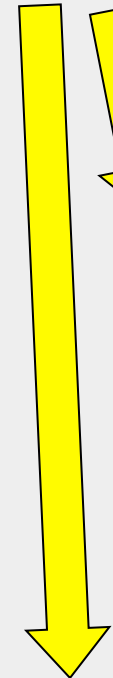
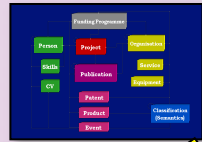


CERIF 2008 – 1.2 Semantics

maintained within the Semantic Layer

cfPerson_Person: Manager
 cfPerson_Person: Mentor
 cfPerson_Person: Supervisor

CERIF 2008 – 1.2 Semantics



cfPerson_Person-Roles

Manager
Mentor
- Supervisor

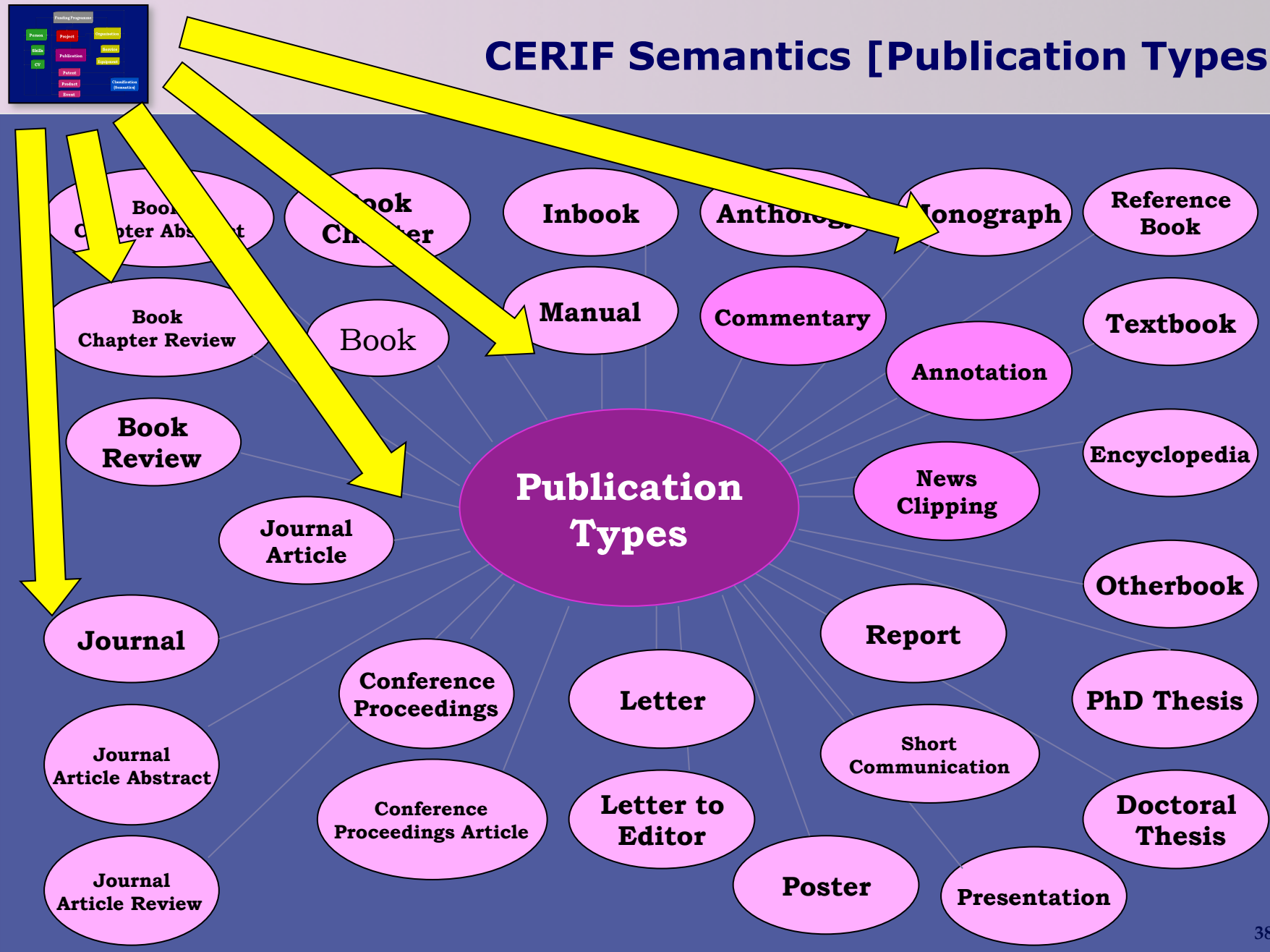
cfPerson_OrganisationUnit-Roles

- Affiliation
- Subaffiliation
- Head
- Employee
- Member
- Director
- Deputy Director
- Dean
- Principle
- Head of Department
- Group Leader
- Manager
- Associate
- Fellow
- Reviewer
- Contractor
- Subcontractor

cfPerson_OrganisationUnit-Roles

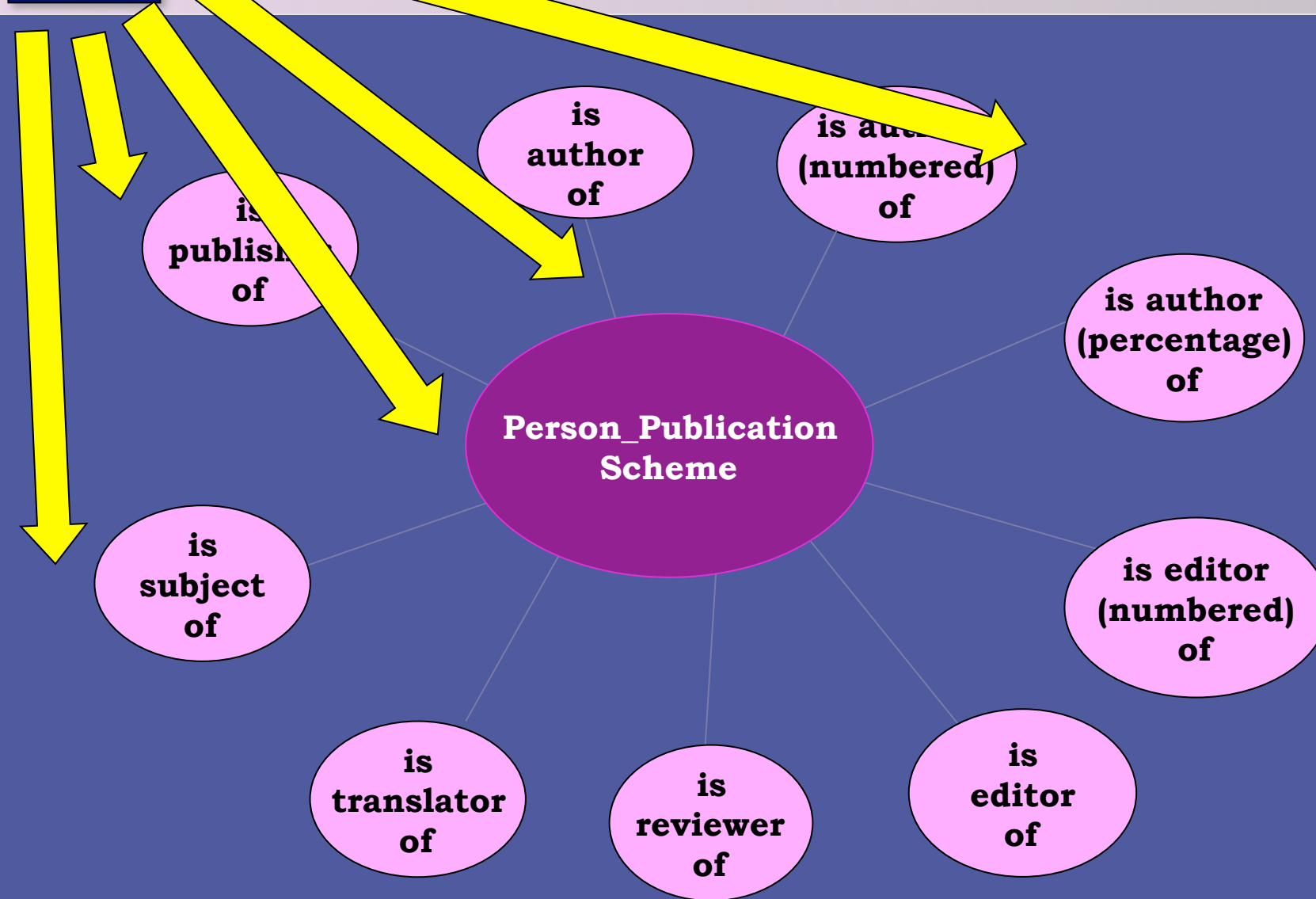
- Administrator
- Researcher
- Junior Researcher
- Senior Researcher
- Consultant
- Junior Consultant
- Senior Consultant
- Lecturer
- Junior Lecturer
- Senior Lecturer
- Guest Lecturer
- Professor
- Assistant Professor
- Honorary Professor
- Visiting Professor
- Doctor (med)
- Research Fellow
- PostDoc
- ...

CERIF Semantics [Publication Types]

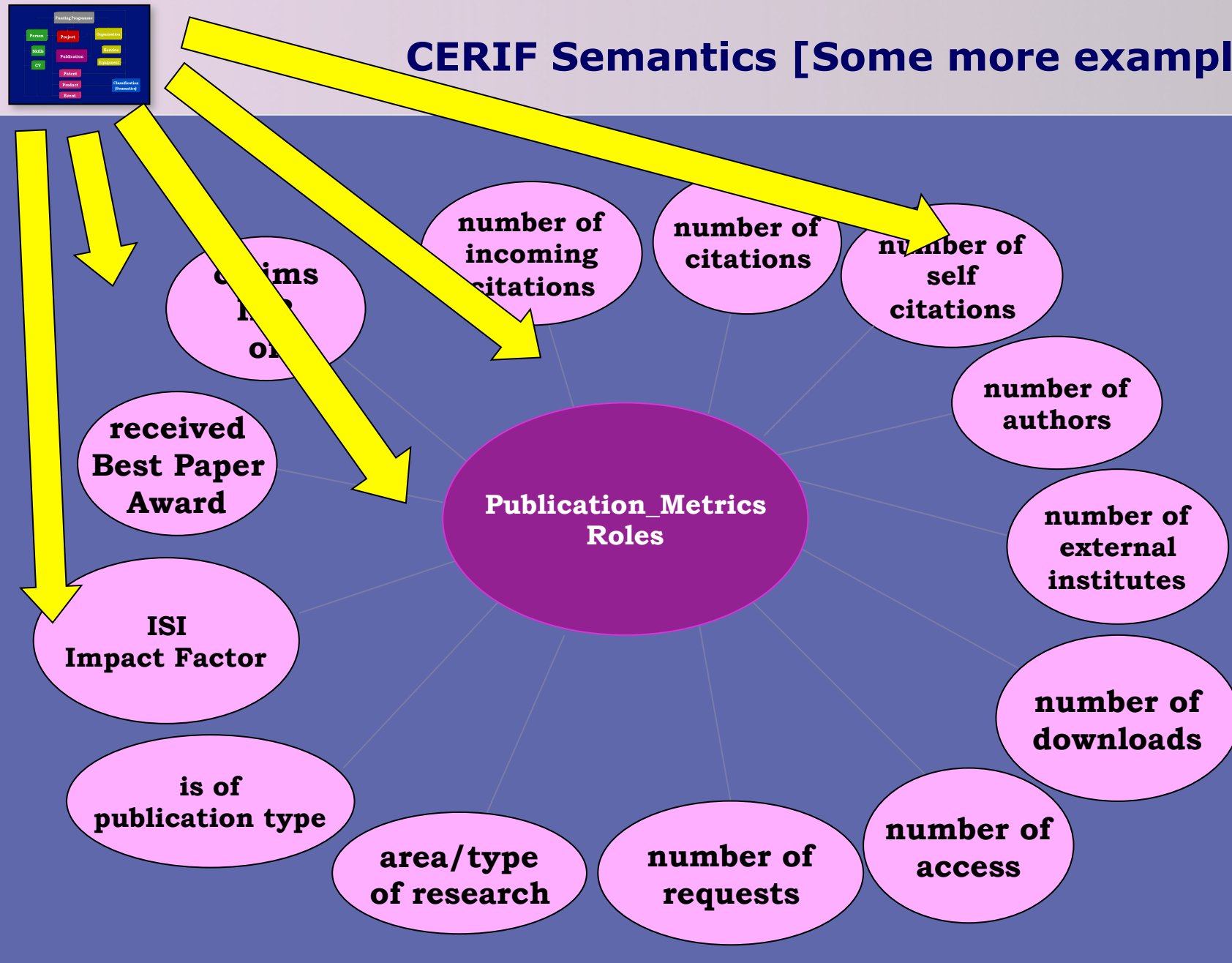




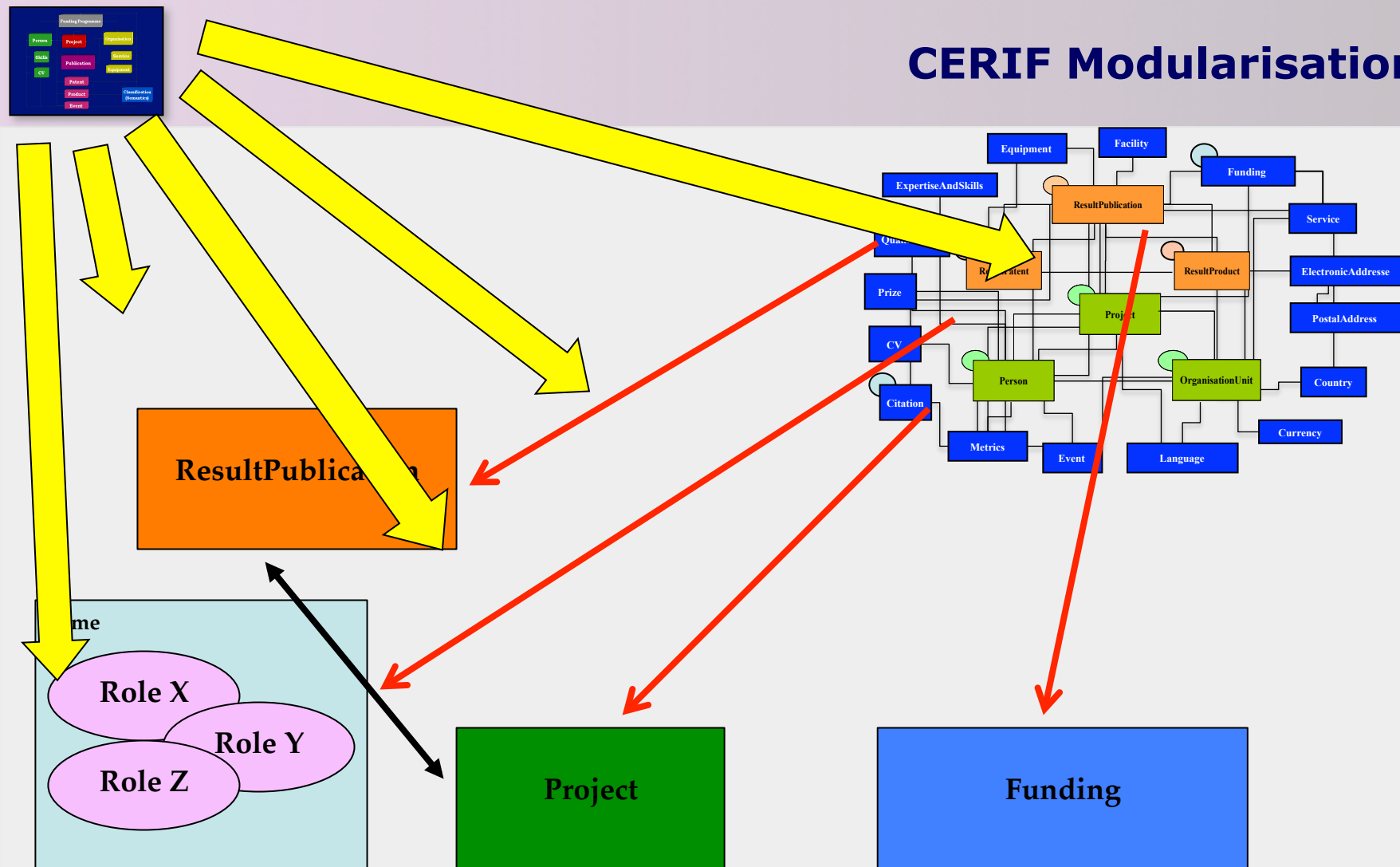
CERIF Semantics [Person-Publication Roles]



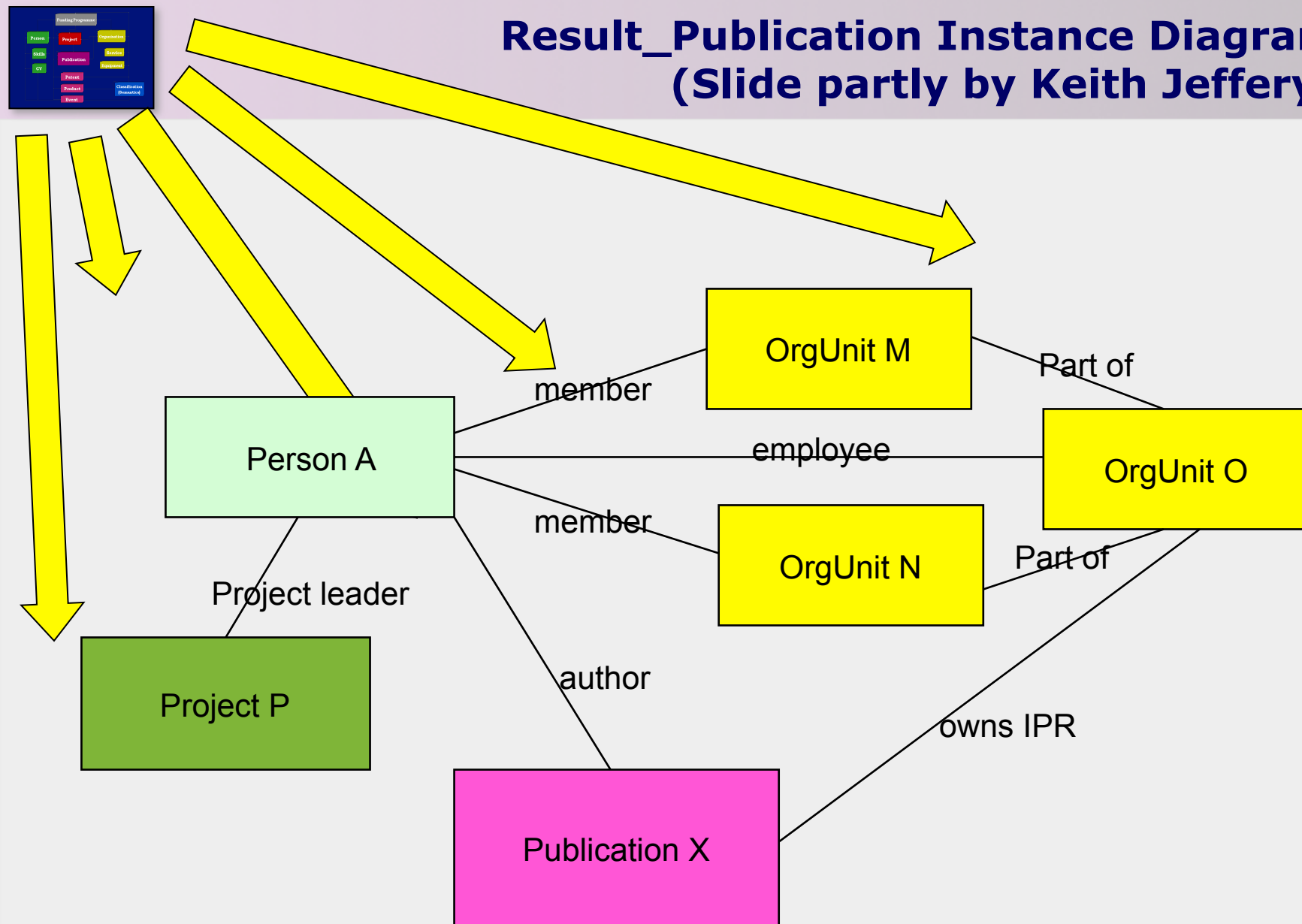
CERIF Semantics [Some more examples]



CERIF Modularisation

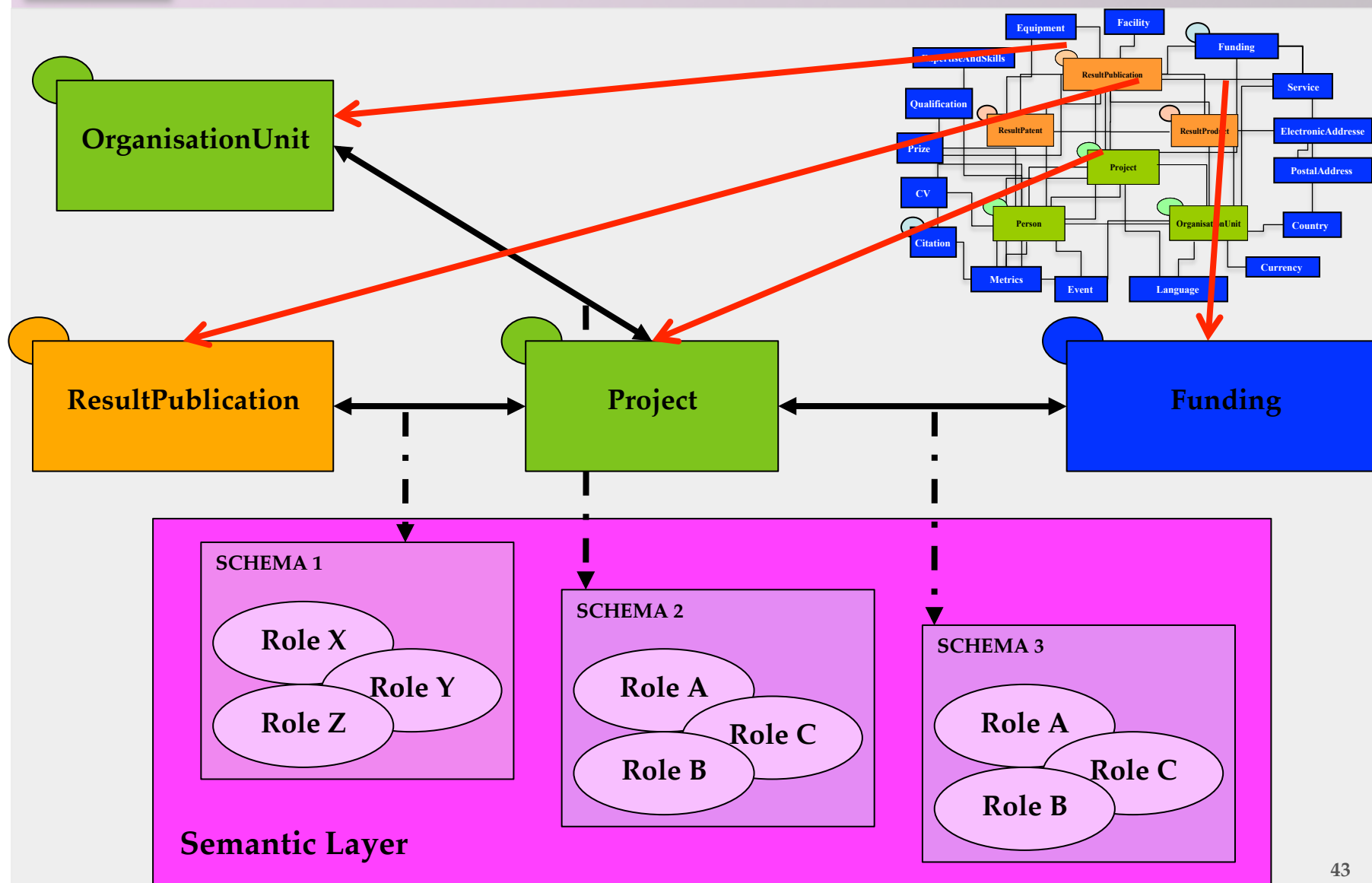


Result_Publication Instance Diagram (Slide partly by Keith Jeffery)





CERIF Modularisation



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CERIF Semantic Layer

- **Allows to capture any Schema or Structure**
 - Flat Lists
 - Classification Systems (i.e. SKOS, FOAF, ...)
 - Taxonomies
 - Ontologies
- **Open / Extensible in all directions**
 - New Schemas
 - New Concepts / Terms
 - New Relationships
- **Enables to manage**
 - Roles / Types Semantics
 - Subject Headings
 - Archiving (Time component)
- **Allows for simple Mappings between Schemas**



Maintaining the CERIF Semantics

CERIF 2008 – 1.2 Person-Person Roles

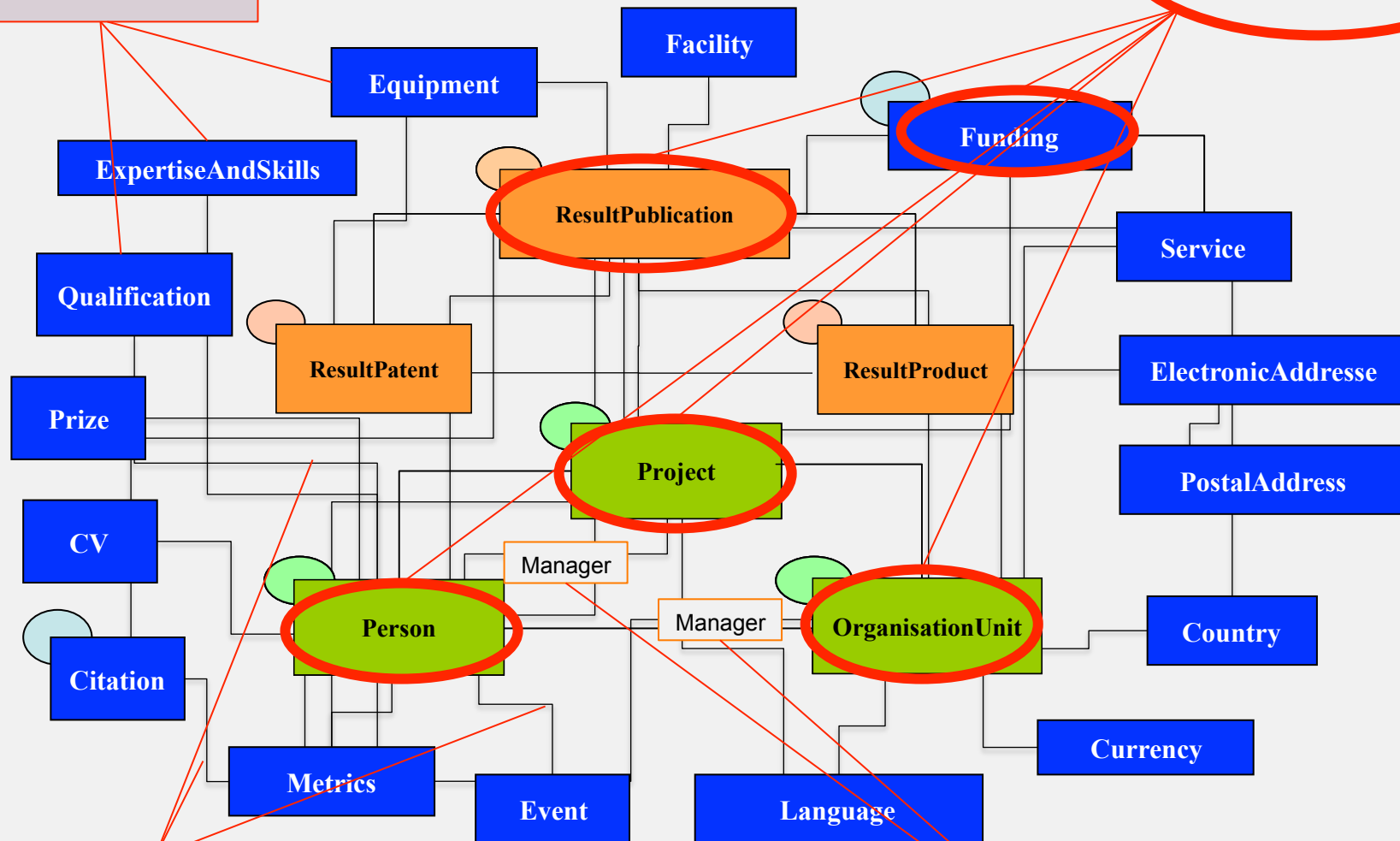
cfPerson_Person Terms	Descriptions	Source of Descriptions
Manager	in a person-person relationship takes the responsibility of managing persons.	CERIF TG / euroCRIS
Mentor	a wise and trusted guide and advisor	http://wordnetweb.princeton.edu/perl/webwn?s=mentor
Supervisor	one who supervises or has charge and direction of	http://wordnetweb.princeton.edu/perl/webwn?s=supervisor

- **SBVR Vocabulary Term (Concept)**
- **SBVR Description**
- **SBVR Definition**
- **SBVR Example**
- **SBVR Synonym**
- **SBVR Source**

What we currently have ...

CERIF Entities

Current
CERIF CORE



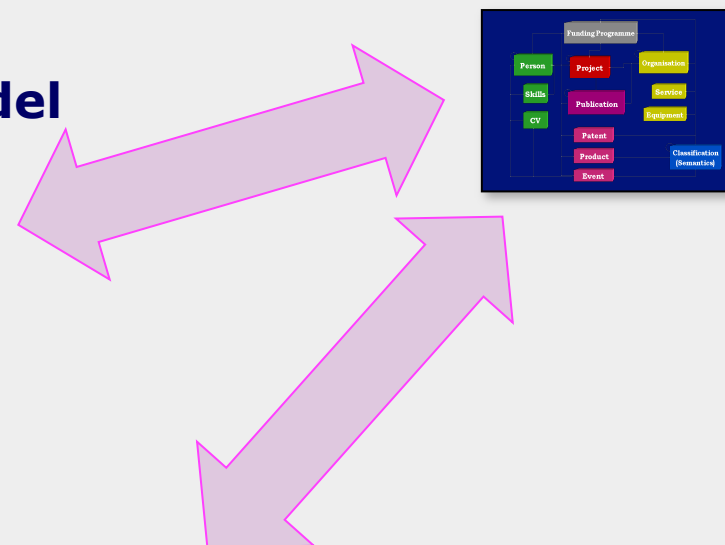
CERIF Relationships

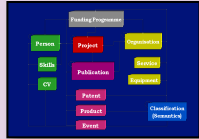
CERIF Semantics



CERIF Strength

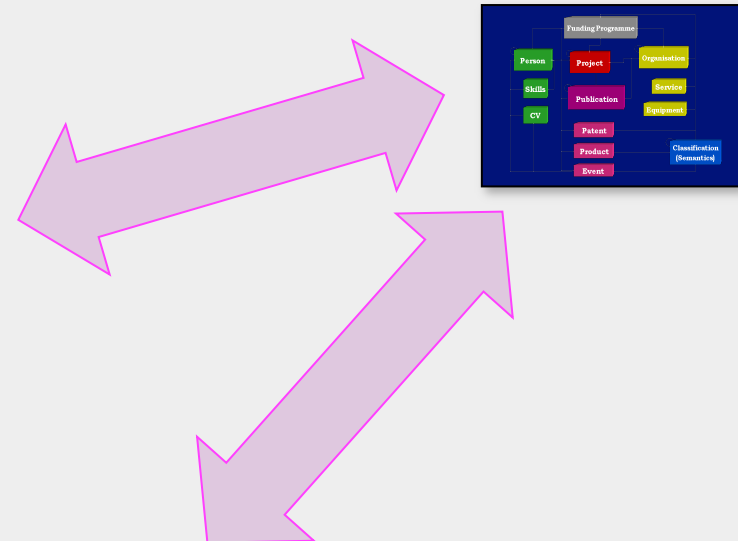
- **A generic Research Domain Model**
- **Generic (binary) Relationships**
- **Scalability**
- **Sustainability**





CERIF Assets / Components

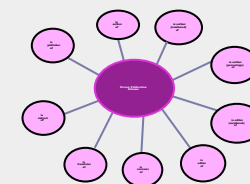
- **Conceptual Descriptions (Research Domain)**
- **Relational Model (SQL)**
- **Formal (Semantic) Descriptions (SBVR)**
- **Exchange Format (XML, XML Schema)**





CERIF XML Interchange Format

- Based on W3C Standards
- Refers to XML Schema for Validation
- XML files corresponding to CERIF Structure
-> Entities / Separation of Relationships
- Available Specification Document as part of the CERIF 2008 Release



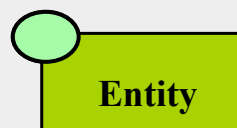
<http://www.euroCris.org/cerif/cerif-releases/>



CERIF Interchange Format: CERIF XML

■ According to the CERIF Model Structure

- Base Entities
- Result Entities
- 2nd Level Entities
- Link Entities
- Multilingual Features
- Semantic Features



1:1

Interchange Entity

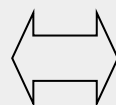
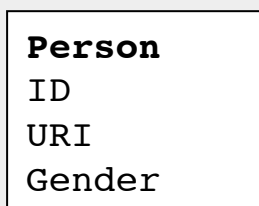
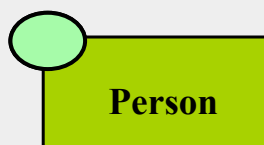


1:1

Interchange Entity

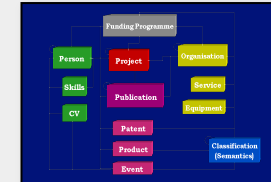
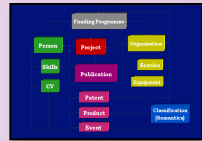


CERIF Interchange Format



```
<XML>
<PERSON>
  <ID>1</ID>
  <URI>http://www.linkedin.com1</URI>
  <Gender>female</Gender>
</PERSON>
<PERSON>
  <ID>2</ID>
  <URI>http://www.linkedin.com2</URI>
  <Gender>male</Gender>
</PERSON>
---
</XML>
```

CERIF Interchange Format

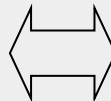


ResultPublication



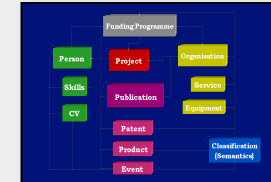
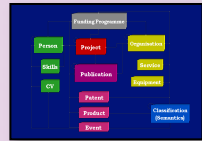
ResultPublication

ID
URI
PublicationDate
Num
Vol
Edition
Series
Issue
TotalPages
StartPage
EndPage
ISBN
ISSN



```
<XML>
<ResultPublication>
  <ID>1</ID>
  <PublicationDate>2006</PublicationDate>
  <URI>http://www.epubs.org/ID1</URI>
</ResultPublication>
<ResultPublication>
  <ID>2</ID>
  <PublicationDate>2005</PublicationDate>
  <URI>http://www.greynet.org/thegrey
    journal.html?ID2</URI>
</ResultPublication>
---
</XML>
```

CERIF Interchange Format

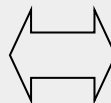


Person_Publication



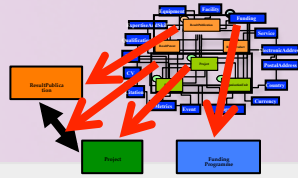
Person_Publication

personID
publicationID
ClassID
ClassSchemeID
Fraction
StartDate
EndDate



```
<XML>
<Person_ResultPublication>
  <personID>1</personID>
  <publicationID>1</publicationID>
  <ClassID>1</ClassID>
  <ClassSchemeID>1</ClassSchemeID>
  <Fraction>0.3</Fraction>
  <StartDate>2010-01-01</StartDate>
  <EndDate>2010-12-31</StartDate>
</Person_ResultPublication>
<Person_ResultPublication>
  <personID>2</personID>
  <publicationID>1</publicationID>
  <ClassID>1</ClassID>
  <ClassSchemeID>1</ClassSchemeID>
  <Fraction>0.3</Fraction>
  <StartDate>2010-01-01</StartDate>
  <EndDate>2010-12-31</StartDate>
</Person_ResultPublication>
---
</XML>
```

53



CERIF Example (Integrated Person)

CERIF Person example database entry				Semantic Layer (CERIF Semantics)	
Data	Attribute	Table	Type	Classification (ClassIds)	Classification Scheme
person-brigitte-joerg	cfPersId	cfPers	base		
f	cfGender	cfPers	base		
http://www.dfki.de/~brigitte/	cfURI	cfPers	base		
Joerg	cfFamilyNames	cfPers	add		
Brigitte	cfFirstNames	cfPers	add		
Brigitte is interested in Research Information and Research Information Systems.	cfResInt	cfPersResInt	lang		
Information Systems, Research Information, Ontologies	cfKeyw	cfProjKeyw	lang		
person-brigitte-joerg	cfPersId2	cfPersName Pers	link	spellingVariant*	PERS PERS NAME*
classification-MA	cfClassId	cfPers_Class	link	M.A.*	ACADEMIC-TITLES*
publ-analyzing-european-rtd	cfResPublId	cfPers_ResPubl	link	Author*	cfPERS-PUBL*
publ-analytic-services-for-era	cfResPublId	cfPers_ResPubl	link	Author*	cfPERS-PUBL*
orgunit-dfki	cfOrgUnitId	cfPers_OrgUnit	link	Affiliation*	cfPERS_ORGUNIT*
orgunit-lt-lab	cfOrgUnitId	cfPers_OrgUnit	link	Subaffiliation*	cfPERS_ORGUNIT*
orgunit-euroCRIS	cfOrgUnitId	cfPers_OrgUnit	link	Board-Member*	cfPERS_ORGUNIT*
orgunit-CERIF-TG	cfOrgUnitId	cfPers_OrgUnit	link	TG-Leader*	cfPERS_ORGUNIT*
project-ist-world	cfProjId	cfProj_Pers	link	Coordinator[fract=0.7]*	cfPROJ_PERS*
project-lt-world	cfProjId	cfProj_Pers	link	Participant[fract=0.3]*	cfPROJ_PERS*

CERIF XML Example (Person)

Diagram illustrating the King James Version (KJV) Bible, showing a central purple circle labeled "KING JAMES VERSION" connected to twelve surrounding pink circles, each containing a Bible verse. A large red arrow points down towards the diagram.

- Matthew 28:19-20
- Mark 16:7-8
- Luke 24:44-48
- John 1:1-3
- John 1:9-14
- John 1:18
- John 1:29-34
- John 1:35-42
- John 1:43-51
- John 1:52-57
- John 1:58-68
- John 1:69-91

```
<cfPers_OrgUnit>
  <cfPersId>BrigitteJoerg</cfPersId>
  <cfOrgUnitId>DFKI</cfOrgUnitId>
  <cfClassId>Affiliation</cfClassId>
  <cfClassSchemeld>REF2010-Evaluation</cfClassSchemeld>
  <cfFraction>1.0</cfFraction>
  <cfStartDate>2010-01-01</cfStartDate>
  <cfEndDate>2010-12-31</cfEndDate>
</cfPers_OrgUnit>
```



CERIF Example (Integrated Project)

CERIF Project example database record				Semantic Layer (CERIF Semantics)	
Data	Attribute	Table	Type	Classification (ClassIds)	Classification Scheme
project-ist-world	cfProjId	cfProj	base		
IST World	cfAcro	cfProj	base		
http://www.ist-world.org/	cfURI	cfProj	base		
2005-04-01	cfStartDate	cfProj	base		
2007-11-30	cfEndDate	cfProj	base		
Knowledge Base for RTD Competencies in IST	cfTitle	cfProjTitle	lang[en,o]		
Wissensbasis für RTD Kompetenzen im Bereich IST	cfTitle	cfProjTitle	lang[de,h]		
IST, Research Information, NMS, Portal,	cfKeyw	cfProjKeyw	lang		
The objective of the project is to set up and populate an information portal with innovative functionalities ...	cfAbstr	cfProjAbstr	lang		
classification-2004-ist-3	cfClassId	cfProj_Class	link	2004-IST-3*	FP6-IST*
publ-analyzing-eu-rtd	cfResPublId	cfProj_ResPubl	link	Originator*	cfPROJ-PUBL*
publ-cris-research-activity	cfResPublId	cfProj_ResPubl	link	Originator*	cfPROJ-PUBL*
publ-analytic-services-for-the-era	cfResPublId	cfProj_ResPubl	link	Originator*	cfPROJ-PUBL*
fund-fp6	cfFundId	cfProj_Fund	link	Funder*	cfPROJ-FUND*
orgunit-dfki	cfOrgUnitId	cfProj_OrgUnit	link	Coordinator*	cfPROJ-ORG*
orgunit-dfki	cfOrgunitId	cfProj_OrgUnit	link	2006-[fract=0.5]*	06-Budget-Alloc*
orgunit-dfki	cfOrgunitId	cfProj_OrgUnit	link	2007-[fract=0.2]*	07-Budget-Alloc*

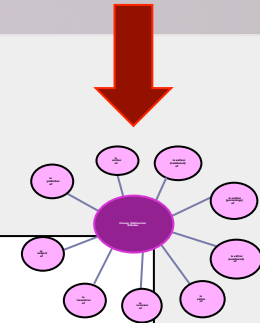
CERIF XML Example (Project)

```
<cfProj>
  <cfProjId>LT-World</cfProjId>
  <cfAcro>LT World</Acro>
  <cfURI>http://www.lt-world.org</URI>
</cfProj>
```

```
<cfProjTitle>
  <cfProjId>LT-World</cfProjId>
  <cfTitle lang="EN">Language Technology World</Title>
</cfProjTitle>
```

```
<cfProj_OrgUnit>
  <cfProjId>LT-World</cfProjId>
  <cfOrgUnitId>DFKI</cfOrgUnitId>
  <cfClassId>Coordinator</cfClassId>
  <cfClassSchemeld>Project-OrgUnit-Roles</cfClassSchemeld>
  <cfFraction>1.0</cfFraction>
  <cfStartDate>2001-01-01</cfStartDate>
  <cfEndDate>2009-12-31</EndDate>
</cfProj_OrgUnit>
```

```
<cfProj_Class>
  <cfProjId>LT-World</cfProjId>
  <cfClassId>National</cfClassId>
  <cfClassSchemeld>Project-Types</cfClassSchemeld>
  <cfFraction>1.0</cfFraction>
  <cfStartDate>2001-01-01</cfStartDate>
  <cfEndDate>2009-12-31</EndDate>
</cfProj_Class>
```





CERIF Example (Integrated Organisation)

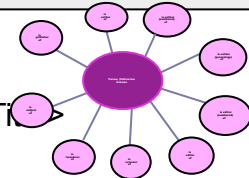
CERIF OrganisationUnit example database entry					
Semantic Layer (CERIF Semantics)					
Data	Attribute	Table	Type	Classification (ClassIds)	Classification Scheme
orgunit-eurocris	cfOrgUnitId	cfOrgUnit	base		
EUR	cfCurrCode	cfOrgUnit	base		
http://www.eurocris.org/	cfURI	cfOrgUnit	base		
euroCRIS	cfAcro	cfOrgUnit	base		
European Current Research Information Systems	cfName	cfOrgUnitName	lang		
euroCRIS is a professional ...	cfResAct	cfOrgUnitResAct	lang		
classification-nfp	cfClassId	cfOrgUnit_Class	link	not-for-profit*	ORGUNIT_CLASS*
person-keith-jeffery	cfPersId	cfPers_OrgUnit	link	President*	cfPERS-ORGUNIT*
person-harrie-lalieu	cfPersId	cfPers_OrgUnit	link	Secretary*	cfPERS-ORGUNIT*
person-geert-van-grootel	cfPersId	cfPers_OrgUnit	link	Treasurer*	cfPERS-ORGUNIT*
person-anne-asserson	cfPersId	cfPers_OrgUnit	link	Strategy*	cfPERS-ORGUNIT*
person-wolfgang-adamczak	cfPersId	cfPers_OrgUnit	link	Conference*	cfPERS-ORGUNIT*
person-maximilian- stempfhuber	cfPersId	cfPers_OrgUnit	link	CRIS-Architecture*	cfPERS-ORGUNIT*
person-nikos-houssos	cfPersId	cfPers_OrgUnit	link	TG-Leader-Projects*	cfPERS-ORGUNIT*
person-brigitte-joerg	cfPersId	cfPers_OrgUnit	link	TG-Leader-CERIF*	cfPERS-ORGUNIT*
person-sergey-parinov	cfPersId	cfPers_OrgUnit	link	TG-Leader-Best-Practice*	cfPERS-ORGUNIT*
person-ed-simons	cfPersId	cfPers_OrgUnit	link	TG-Leader-IR-CERIF*	cfPERS-ORGUNIT*
paddr-Voorschoten	cfPAddrId	cfOrgUnit_PAddr	link	PostOfficeBox*	ORGUNIT_PADDR*
eaddr-eurocris@eurocris.org	cfEAddrId	cfOrgUnit_EAddr	link	Email*	ORGUNIT_EADDR*
eaddr-eurocris	cfEAddrId	cfOrgUnit_EAddr	link	Skype*	ORGUNIT_EADDR*



CERIF Example (Integrated Publication)

CERIF ResultPublication example database entry	Attribute	Table	Type	Semantic Layer (CERIF Semantics)	
				Classification (ClassIds)	Classification Scheme
publication-joerg-et-al	cfResPublId	cfResPubl	result		
2008-01-01	cfResPublDate	cfResPubl	result		
107	cfStartPage	cfResPubl	result		
123	cfEndPage	cfResPubl	result		
978-961-6133-38-8	cfISBN	cfResPubl	result		
http://www.eurocris.org/ fileadmin/Upload/Events /Conferences/CRIS2008/ Papers/cris2008_Joerg.p df	cfURI	cfResPubl	result		
Analyzing European Research Competencies	cfTitle	cfResPublTitle	lang		
Results from a European SSA Project	cfSubtitle	cfResPublSubtitle	lang		
With this paper we will present the approach of analyzing research competencies across EU countries	cfAbstr	cfResPublAbstr	lang		
IST, ERA, CRIS, CERIF, Research Competencies, NMS, Analysis,	cfKeyw	cfResPublKeyw	lang		
classification-conf-proc- article	cfClassId	cfResPubl_Class	link	Conference Proceedings Article*	cfRESPUBL-CLASS*
publ-get-the-good-cris	cfResPublId2	cfResPubl_ResPubl	link	Part*	cfRESPUBL-RESPUBL*
person-brigitte-joerg	cfPersId	cfPers_ResPubl	link	FirstAuthor[fract=0.25]*	cfPERS-RESPUBL*
person-hans-uszkoreit	cfPersId	cfPers_ResPubl	link	Author*	cfPERS-RESPUBL*
person-jure-ferlez	cfPersId	cfPers_ResPubl	link	Author*	cfPERS-RESPUBL*
person-mitja-jermol	cfPersId	cfPers_ResPubl	link	Author*	cfPERS-RESPUBL*
project-ist-world	cfProjId	cfProj_ResPubl	link	Originator*	cfPERS-RESPUBL*
event-cris-2008	cfPersId	cfResPubl_Event	link	Presentation*	RESPUBL-EVENT*

Example (Publication)



```
<cfResPubl>
  <cfResPublId>JoergEtAl2008</cfResPublId>
  <cfResPublDate>2008-01-01</ResPublDate>
  <cfStartPage>107</cfStartPage>
  <cfEndPage>123</cfEndPage>
  <cfISBN>978-961-6133-38-8</cfISBN>
  <cfURI>http://www2.dfki.de/lt/publications.php?author=brjo01</URI>
</cfResPubl>
```

```
<cfResPublTitle>
  <cfResPublId>JoergEtAl2008</cfResPublId>
  <cfTitle lang="EN">Analyzing European Research Competencies</Title>
</cfResPublTitle>
```

```
<cfPers_ResPubl>
  <cfPersId>Brigitte-Joerg</cfPersId>
  <cfResPublId>JoergEtAl2008</cfResPublId>
  <cfClassId>FirstAuthor</cfClassId>
  <cfClassSchemeld>REF-AuthorScheme-2010</cfClassSchemeld>
  <cfFraction>0.5</cfFraction>
  <cfStartDate>2010-01-01</cfStartDate>
  <cfEndDate>2010-12-31</EndDate>
```

```
</cfPers_ResPubl>
```

```
<cfPers_ResPubl>
  <cfPersId>Keith-Jeffery</cfPersId>
  <cfResPublId>JoergEtAl2008</cfResPublId>
  <cfClassId>2ndAuthor</cfClassId>
  <cfClassSchemeld>REF-AuthorScheme-2010</cfClassSchemeld>
  <cfFraction>0.5</cfFraction>
  <cfStartDate>2010-01-01</cfStartDate>
  <cfEndDate>2010-12-31</EndDate>
```

```
</cfPers_ResPubl>
```

```
<cfResPubl_Class>
  <cfResPublId>JoergEtAl2008</cfResPublId>
  <cfClassId>Conference-Article</cfClassId>
  <cfClassSchemeld>REF-PublicationTypes-2010</cfClassSchemeld>
  <cfFraction>1.0</cfFraction>
  <cfStartDate>2010-01-01</cfStartDate>
  <cfEndDate>2010-12-31</EndDate>
</cfResPubl_Class>
```



CERIF XML Interchange Format

- Based on W3C Standards
- Refers to XML Schema for Validation
- XML files corresponding to CERIF Structure
-> Entities / Separation of Relationships
- Available Specification Document as part of the CERIF 2008 Release



<http://www.euroCris.org/cerif/cerif-releases/>

Towards a CERIF Ontology



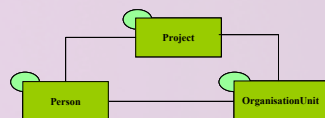
- owl:Thing
 - cerif:CERIF2008-1.2
 - cerif:CERIF_ERM_Model
 - cerif:Additional_Entities
 - cerif:Basic_Entities
 - cerif:Classification_Entities
 - cerif:CurrentCore_Entities
 - cerif:Link_Entities
 - cerif:Multilingual_Entities
 - cerif:Second_Level_Entities
 - cerif:CERIF_Ontology
 - cerif:Funding
 - cerif:Organisation
 - cerif:Person
 - cerif:Publication
 - cerif:Schemes
 - cerif:Terminology
 - cerif:CERIF_Roles
 - cerif:CERIF_Types
 - cerif:CERIF_Time
 - cerif:Semantic_Layer
 - cerif:Schemes
 - cerif:Terminology
 - cerif:CERIF_Roles
 - cerif:CERIF_Types
 - cerif:Publication_Types
 - iso:ISO-Codes

Property	Value	Lang
rdfs:comment		

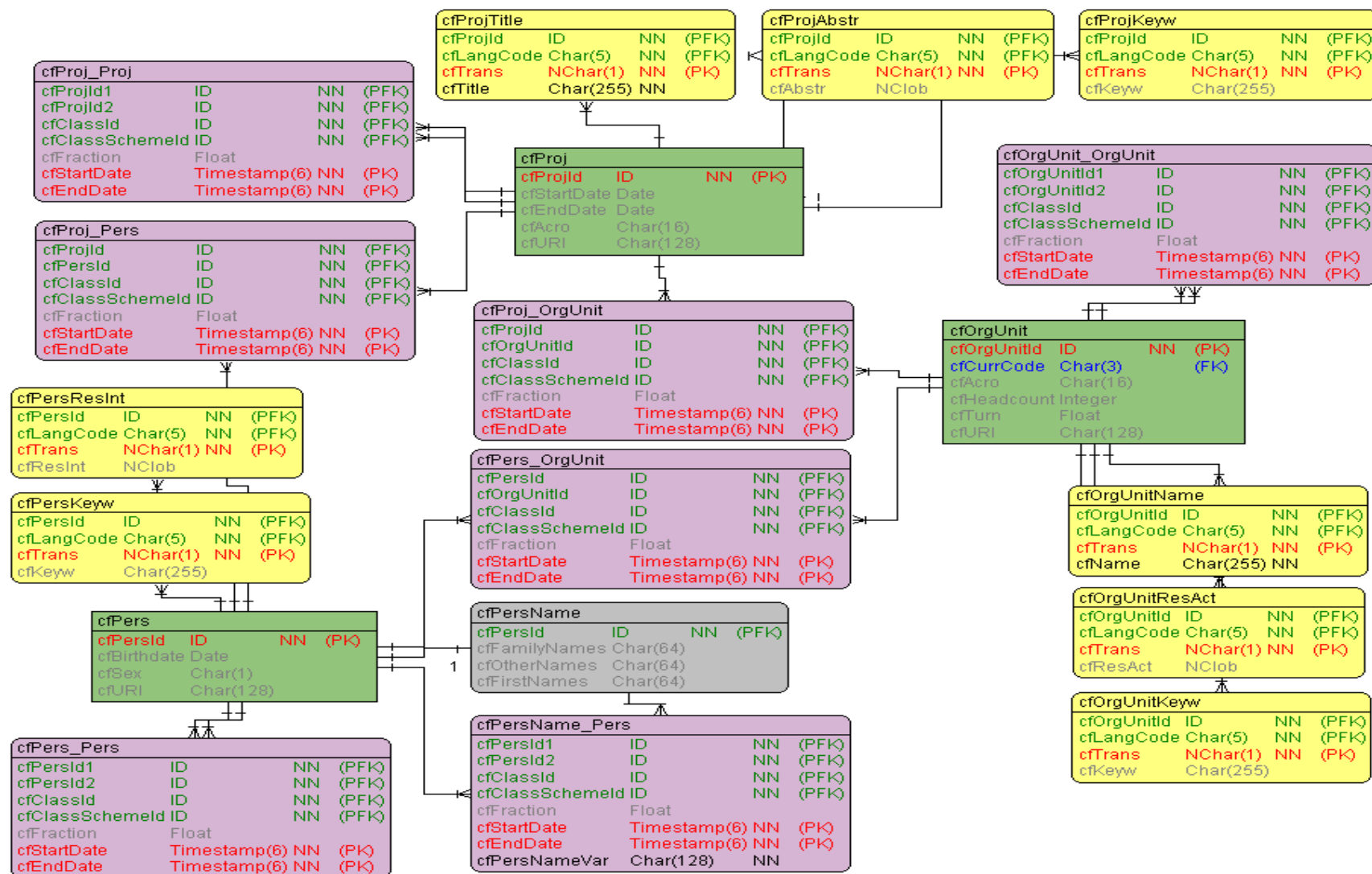
Properties and Restrictions	
cerif:StartPage	(multiple int)
cerif:Abstr	(multiple string)
cerif:author_number	(multiple int)
cerif:author_percentage	(multiple float)
cerif:BiblNote	(multiple string)
cerif:derived_from	(multiple cerif:Publication)
cerif:Edition	(multiple string)
cerif:EndPage	(multiple int)
cerif:has_author	(multiple cerif:Person)
cerif:has_author_numbered	(multiple cerif:Person)
cerif:has_author_percentage	(multiple cerif:Person)
cerif:has_commissioner	(multiple cerif:Person)
cerif:has_desendants	(multiple cerif:Publication)
cerif:has_editor	(multiple cerif:Person)
cerif:has_group_authors	(multiple cerif:Person)
cerif:has_part	(multiple cerif:Publication)
cerif:has_publisher	(multiple cerif:Organisation)

not final

Superclasses	Disjoints
cerif:ResPubl_Class	
cerif:ResPubl	
cerif:ResPublBiblNote	
cerif:ResPubl_Pers	
cerif:ResPublNameAbbrev	
cerif:ResPublAbstr	
cerif:ResPubl_Fund	
cerif:ResPublKeyw	
cerif:ResPublSubtitle	
cerif:CERIF_Ontology	

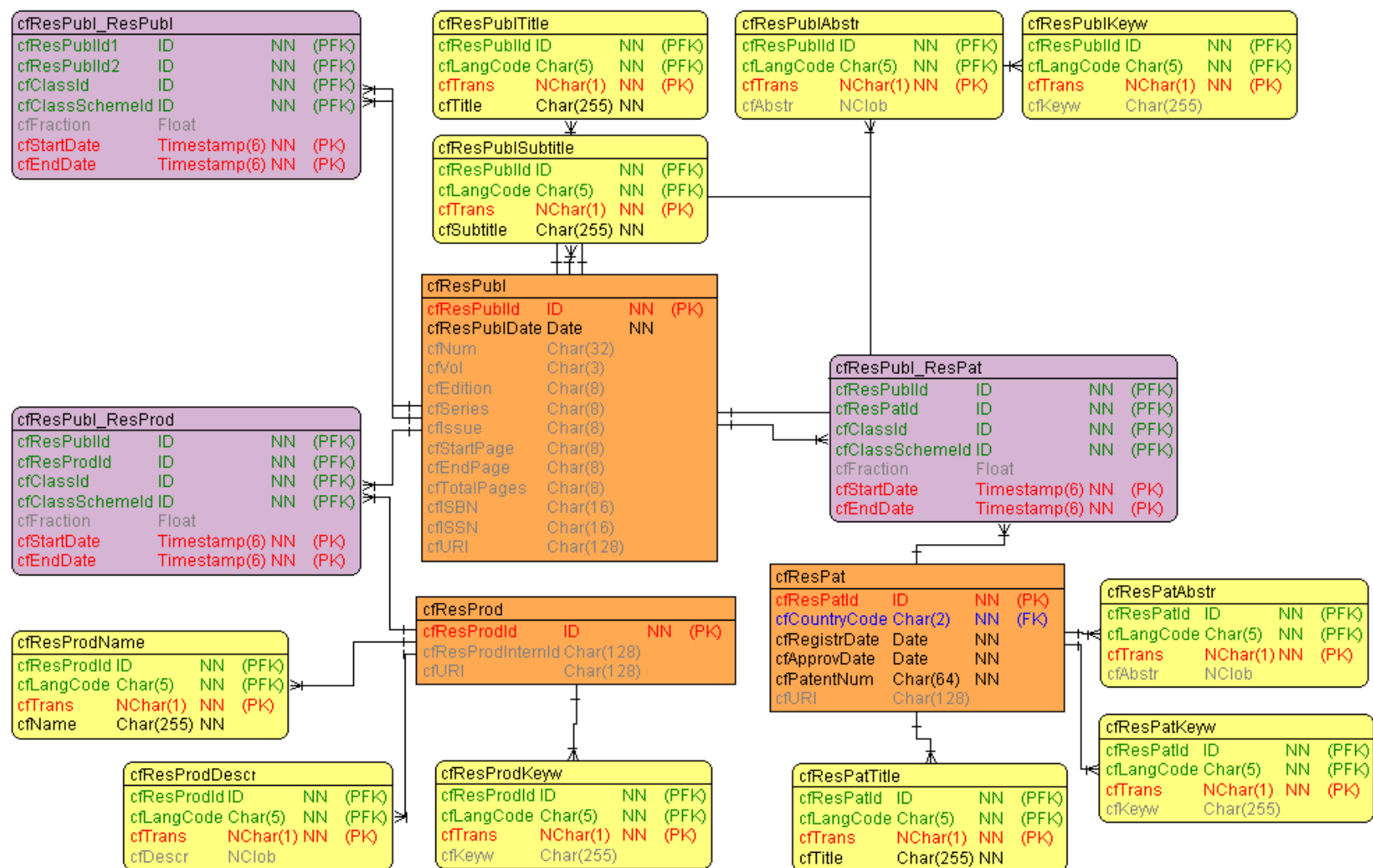


CERIF Base Entities in Detail (ERM View)



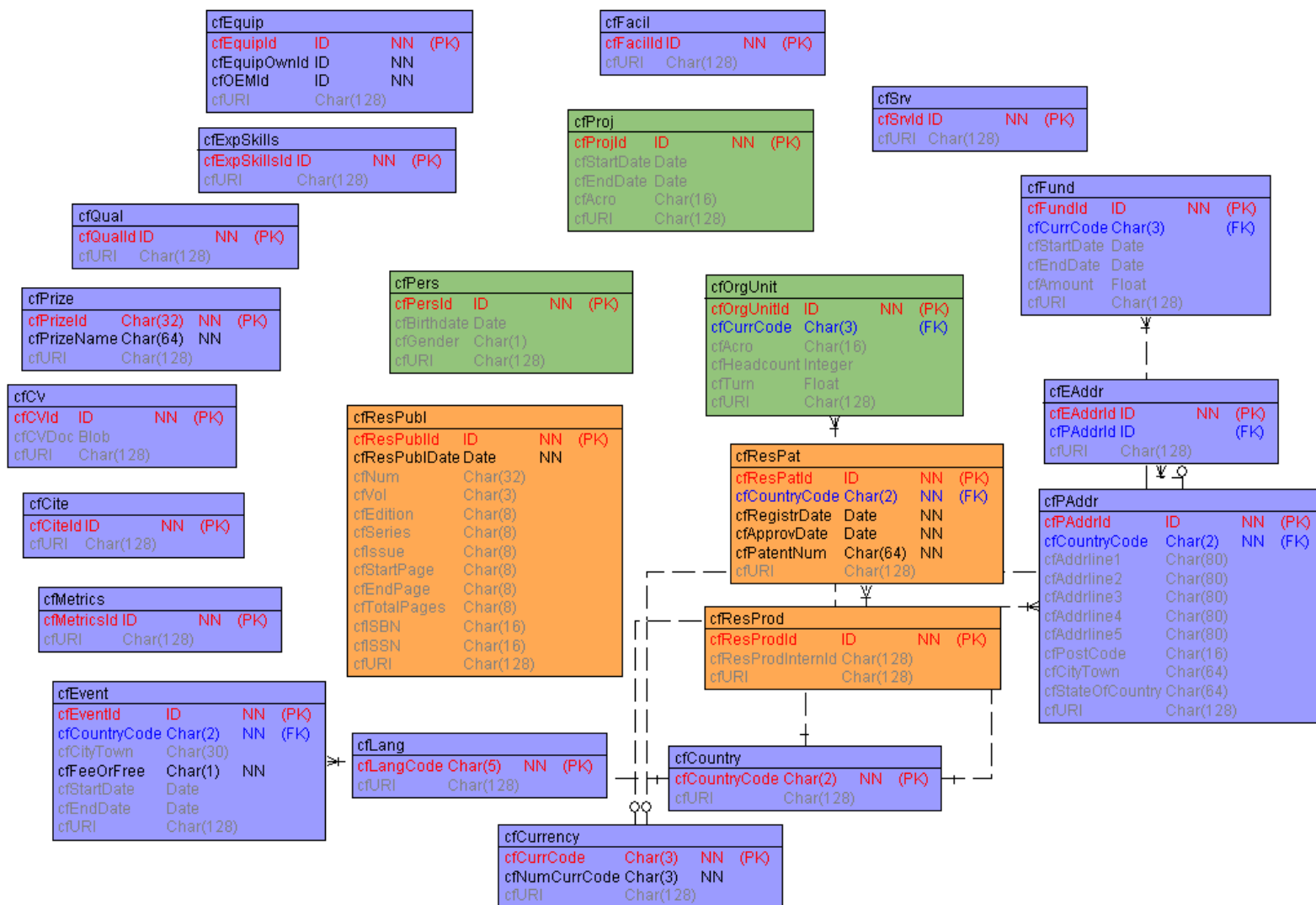


CERIF Result Entities in Detail (ERM View)





CERIF 2nd Level Entities (ERM View)





Some CERIF Link Entities (ERM View)

cfPers_Pers				
cfPersId1	ID	NN	(PFK)	
cfPersId2	ID	NN	(PFK)	
cfClassId	ID	NN	(PFK)	
cfClassSchemeld	ID	NN	(PFK)	
cfFraction	Float			
cfStartDate	Timestamp(6)	NN	(PK)	
cfEndDate	Timestamp(6)	NN	(PK)	

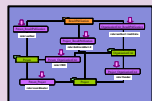
cfProj_OrgUnit				
cfProjId	ID	NN	(PFK)	
cfOrgUnitId	ID	NN	(PFK)	
cfClassId	ID	NN	(PFK)	
cfClassSchemeld	ID	NN	(PFK)	
cfFraction	Float			
cfStartDate	Timestamp(6)	NN	(PK)	
cfEndDate	Timestamp(6)	NN	(PK)	

cfOrgUnit_Equip				
cfOrgUnitId	ID	NN	(PFK)	
cfEquipId	ID	NN	(PFK)	
cfClassId	ID	NN	(PFK)	
cfClassSchemeld	ID	NN	(PFK)	
cfFraction	Float			
cfStartDate	Timestamp(6)	NN	(PK)	
cfEndDate	Timestamp(6)	NN	(PK)	
cfCurrCode	Char(3)		(FK)	
cfAvailability	Char(64)			
cfConditions	Char(255)			
cfPrice	Float			

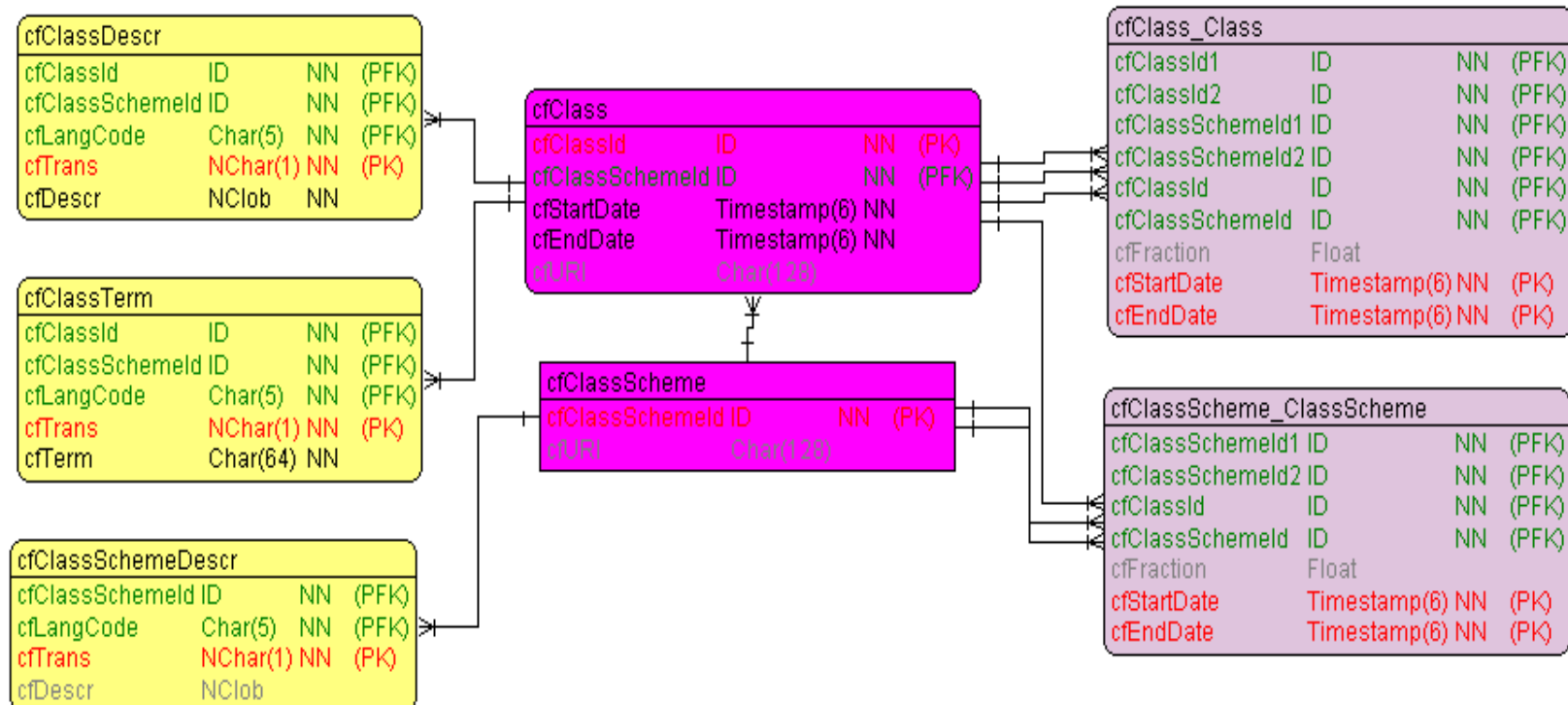
cfOrgUnit_Class				
cfOrgUnitId	ID	NN	(PFK)	
cfClassId	ID	NN	(PFK)	
cfClassSchemeld	ID	NN	(PFK)	
cfFraction	Float			
cfStartDate	Timestamp(6)	NN	(PK)	
cfEndDate	Timestamp(6)	NN	(PK)	

cfClass_Class				
cfClassId1	ID	NN	(PFK)	
cfClassId2	ID	NN	(PFK)	
cfClassSchemeld1	ID	NN	(PFK)	
cfClassSchemeld2	ID	NN	(PFK)	
cfClassId	ID	NN	(PFK)	
cfClassSchemeld	ID	NN	(PFK)	
cfFraction	Float			
cfStartDate	Timestamp(6)	NN	(PK)	
cfEndDate	Timestamp(6)	NN	(PK)	

cfProj_Pers				
cfProjId	ID	NN	(PFK)	
cfPersId	ID	NN	(PFK)	
cfClassId	ID	NN	(PFK)	
cfClassSchemeld	ID	NN	(PFK)	
cfFraction	Float			
cfStartDate	Timestamp(6)	NN	(PK)	
cfEndDate	Timestamp(6)	NN	(PK)	



CERIF Semantic Layer (ERM View)





Some CERIF Multiple Language Features (ERM View)

cfProjectTitle
cfProjectIdentifier (PFK)
cfLanguageCode (PFK)
cfTranslation (PK)
cfTitle

cfProjectAbstract
cfProjectIdentifier (PFK)
cfLanguageCode (PFK)
cfTranslation (PK)
cfAbstract

cfProjectKeywords
cfProjectIdentifier (PFK)
cfLanguageCode (PFK)
cfTranslation (PK)
cfKeywords

cfResultPublicationTitle
cfResultPublicationIdentifier (PFK)
cfLanguageCode (PFK)
cfTranslation (PK)
cfTitle

cfResultPublicationSubtitle
cfResultPublicationIdentifier (PFK)
cfLanguageCode (PFK)
cfTranslation (PK)
cfSubtitle

cfResultPublicationAbstract
cfResultPublicationIdentifier (PFK)
cfLanguageCode (PFK)
cfTranslation (PK)
cfAbstract

cfOrganisationUnitName
cfOrganisationUnitIdentifier (PFK)
cfLanguageCode (PFK)
cfTranslation (PK)
cfName

cfOrganisationUnitKeywords
cfOrganisationUnitIdentifier (PFK)
cfLanguageCode (PFK)
cfTranslation (PK)
cfKeywords

cfOrganisationUnitResearchActivity
cfOrganisationUnitIdentifier (PFK)
cfLanguageCode (PFK)
cfTranslation (PK)
cfResearchActivity



Current and Ongoing

CERIF 2008 – 1.2 (November 2010)

- CERIF Model Introduction and Specification
- CERIF XML Data Exchange Format Specification
- CERIF Formal Semantics (Model-driven Vocabulary)
- CERIF SQL Scripts
- CERIF XML Schemas
- CERIF XML Examples

Ongoing:

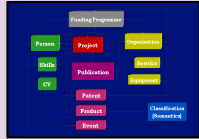
- Current Core Semantics to be finalized with collibra (SBVR)
- CERIF XML Grouping / XML Schemas (via Ontology)
- Towards a CERIF Ontology
- Multiple Identifiers
- CERIF Interoperation Compatibility Model
- Infrastructure (Equipment / Facilities)
- Impact / Research Output
- Generate RDF Triples from CERIF Link Entities -> Linked Data



CERIF TG Activities

CERIF TG Meetings

- Brigitte Jörg, DFKI, DE (**CERIF TG Leader**)
 - Keith Jeffery, STFC, UK
 - Anne Asserson, UiB, NO
 - Geert van Grootel, EWI, BE
 - Jan Dvořák, InfoScience, CZ
 - Henrik Rasmussen, atira, DK
 - Luc Strijbosch, avedas, DE
 - Thomas Vestdam, atira, DK
 - Danica Zendulcova, CVTISR, SK
 - Adrian Price, KU, DK
-
- **CERIF Mailinglist**
 - **CERIF Discussion Forum**



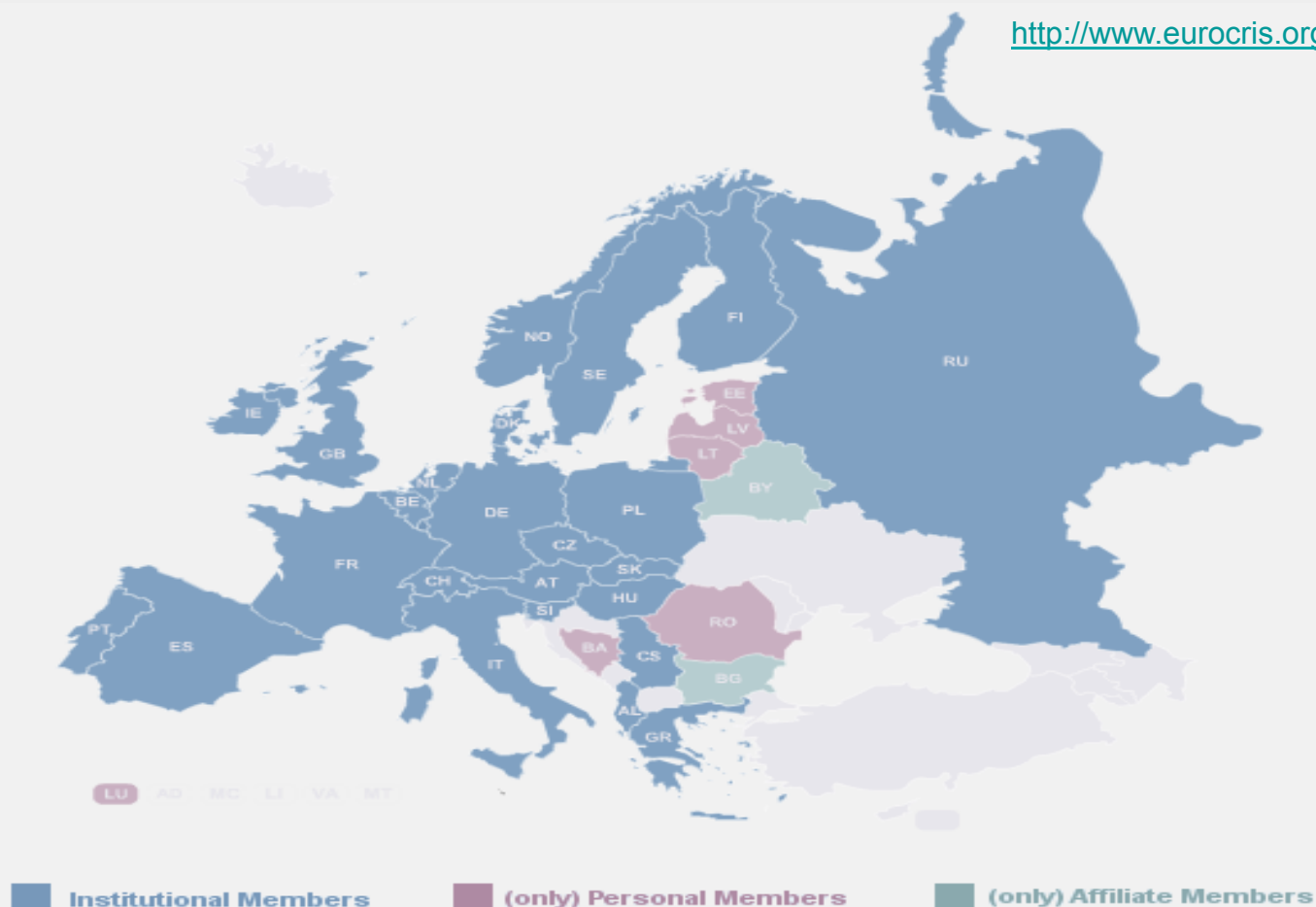
C E R I F Use and Implementation

- **Increased International Membership**
- **Increased Consultation**
- **Projects / Activities / Implementations**



euroCRIS Membership (May 2011)

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

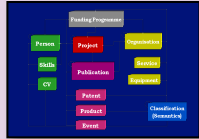


Members outside of Europe:
Australia - Canada - China - Iran - Malaysia - Mexico - South Korea - USA



Projects / Activities / Implementations

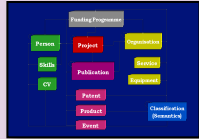
- **UK Projects**
 - **CERIFY, BRUCE, MICE, IRIOS**
 - **Research Councils: Research outcomes project (ROP)**
 - **HEFCE: Research Excellence Framework (REF)**
 - **JISC:**
 - **Commissioned study (EXRI): recommended CERIF**
 - **Convened experts from stakeholders: accepted**
 - **Supporting several projects to demonstrate:**
 - **Business case for using CERIF**
 - **Feasibility of interoperation universities-universities and universities-funders using CERIF**
- **EU FP7-Infrastructures-2011-2**
 - **ENGAGE**
 - **OpenAirPlus**
 - **EuroRIs-Net+**



Projects / Activities / Implementations

- **Norway: FRIDA -> CRISTin**
- **Belgium: FRIS**
- **Denmark: PURE**
- **Sweden: Converis**
- **Netherlands: NARCIS / METIS**
 -> Tender (CERIF-based system)
- **Plans in Italy, Germany, Switzerland, Greece, Czech Republic, Slovakia, Russia, Austria, Slovenia**
- **euroHORCS recommended convergence to CERIF**
- **CERIF Requirement in recent Tender (ERC)**
- **ESF; MERIL project**
- **Reference by OpenAIRE**

- **Collaboration with VOA3R**
- **PURE, atira**
- **Converis, avedas**
- **Symplectic, UK**
- **uniCRIS, US**
- **Research in View (a CRIS), Thomson Reuters**
- **Contact with Elsevier**



Upcoming Events

- **Joint VOA3R-CERIF TG Meeting,
End of July, University of Alcala, Spain**
- **CERIF TG Meeting, CVTISR Bratislava
August 2011**
- **euroCRIS Seminar, Brussels
September 2011**
- **Membership Meeting, Lille
November 2011**

- non-for-profit organisation, legally registered in The Netherlands
- promotion and improvement of communication and interaction between global CRISs
- work together to create value for members / the community
- Task Groups: Projects, CERIF, CRIS-IR, Best Practise, CRIS Architecture
- Strategic seminars from 2003 onwards
- maintain and publish the CERIF recommendation (Common European Research Information Format) and any standards endorsed by euroCRIS
- strategic partners: EC, ESF, EARMA, ALLEA, ICSU/CODATA, ERCIM, JISC, APA
- organize and run the CRIS series of conferences with associated workshops and other events;
- organize bi-annual Membership Meetings





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