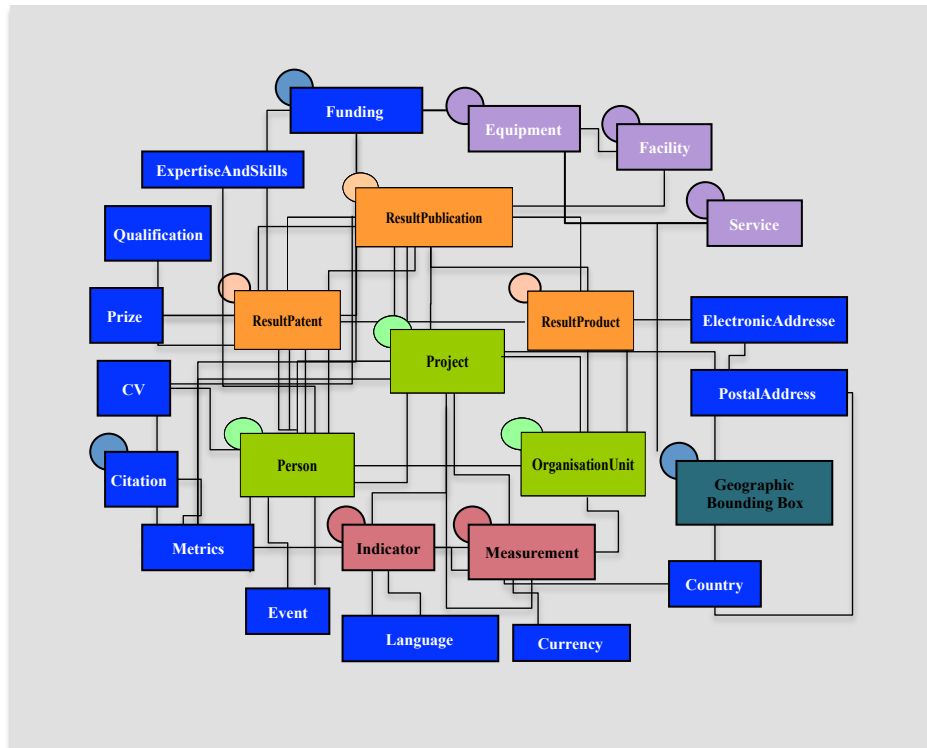


# CERIF 1.3 Tutorial

- towards 2.0 -



Speaker: **Brigitte Jörg**  
euroCRIS, DFKI GmbH

February 9<sup>th</sup>, 2012  
UKOLN, University of Bath,

# Introduction of the Speaker

## **Brigitte Jörg**

M.A. Information Science  
Information Systems, Business 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 (1.3) Model
  - Entities
  - Structure
  - Components
  - Semantic Layer
- CERIF Semantics (Formalized Vocabulary)
- CERIF XML
- Use Cases and Examples
- Open Issues & Questions

# Grounding Explanations



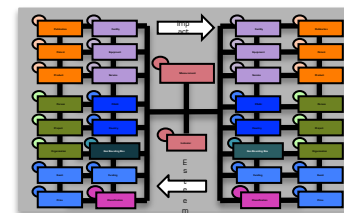
- What is a Model?
- What is Metadata?
- What is Formal, Semantic Metadata?
- What is Research Information?
- What is a CRIS?

# What is a Model?

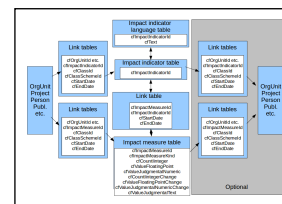
... is a simplified view to describe a particular area of interest



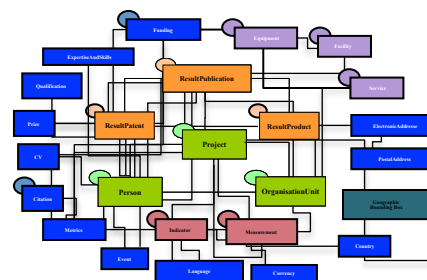
... allows for a better communication between parties (mutual understanding)



... supports (re-)design decisions



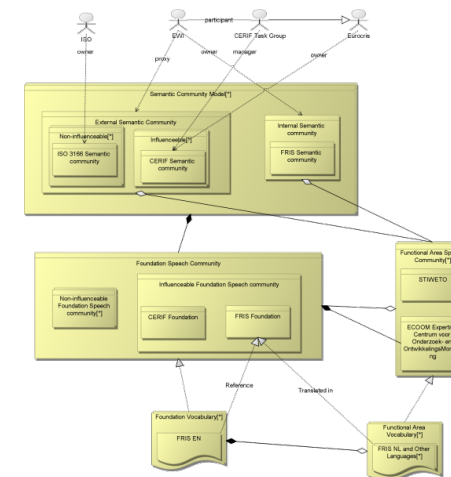
... supports workflow identification



... 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:** is a 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

Metadata

**Book:**

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

Metadata

**Series of five Books:**

**Title:** The Hitchhiker's Guide to the Galaxy.  
**Between:** 1979 - 1982

**TV Series:**

**Title:** The Hitchhiker's Guide to the Galaxy  
**Screened:** 1981

Metadata

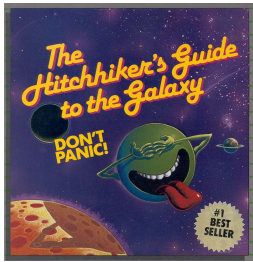
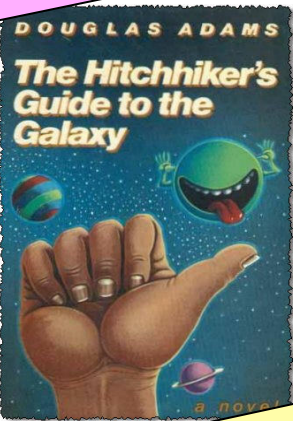
**Computer Game:**

**Title:** The Hitchhiker's Guide to the Galaxy  
**Released:** 1984

**Comic Book Adaptions:**

**Title:** The Hitchhiker's Guide to the Galaxy  
**Between:** 1993 - 1996

Metadata



**Game Cover Image:** The Hitchhiker's Guide to the Galaxy  
**Source:** <http://egotron.com>  
**Retrieved:** May 30, 2008

Metadata

Data about Data

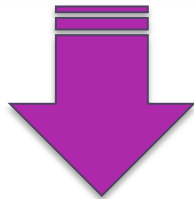
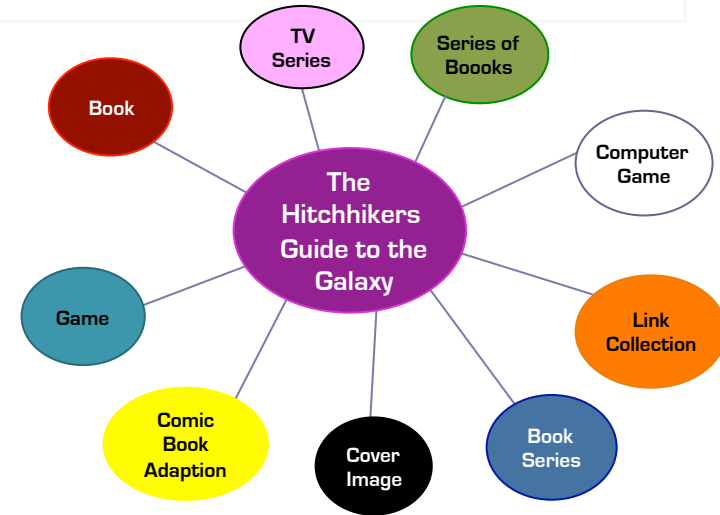
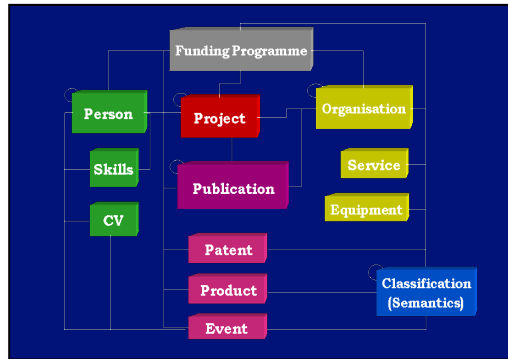
**Structure:**

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

**Links:**

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

# What is formal, semantic Metadata?



**Radio Series:**  
Title: The Hitchhiker's Guide to the Galaxy  
Description: is a 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

**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

**TV Series:**  
Title: The Hitchh...  
Screened: 1981

**Computer Game:**  
Title: The Hitchhiker's Guide to the Galaxy  
Released: 1984

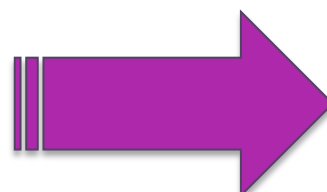
**Comic Book Adaption:**  
Title: The Hitchhiker's Guide to the Galaxy  
Between: 1983 - 1996

**Game Cover Image:** The Hitchhiker's Guide to the Galaxy  
Source: <http://goatrog.com/>  
Retrieved: May 30, 2008

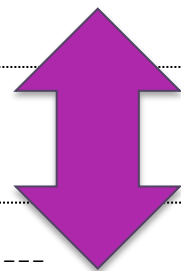
**Structure:**  
• Title of Resource  
• Title  
• Description  
• Source  
• Date  
• Author/Creator...

**Link:**  
<http://www.bbc.co.uk/cult/hitchhikers/>  
HTML Page Content: The Hitchhiker's Guide to the Galaxy  
[http://www.wikipedia.org/wiki/The\\_Hitchhiker's\\_Guide\\_to\\_the\\_Galaxy](http://www.wikipedia.org/wiki/The_Hitchhiker's_Guide_to_the_Galaxy)  
HTML Title: The Hitchhiker's Guide to the Galaxy

```
<XML>
<owl:Class name="Publication"/>
<owl:Class name="Comic Book Adaption"/>
<owl:Class name="Game"/>
</XML>
```

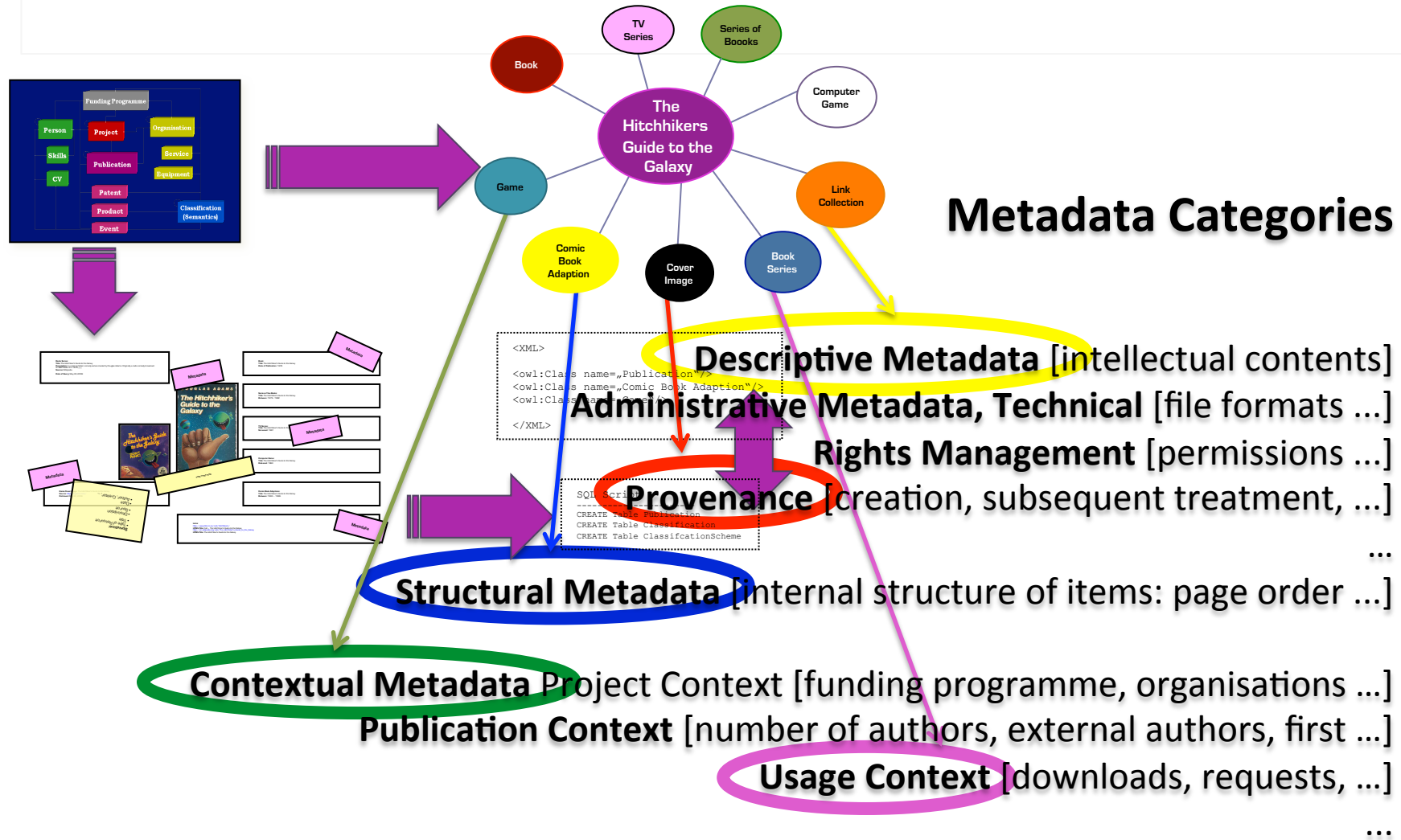


```
SQL Script
-----
CREATE Table Publication
CREATE Table Classification
CREATE Table ClassificationScheme
```





# What is formal, semantic Metadata?



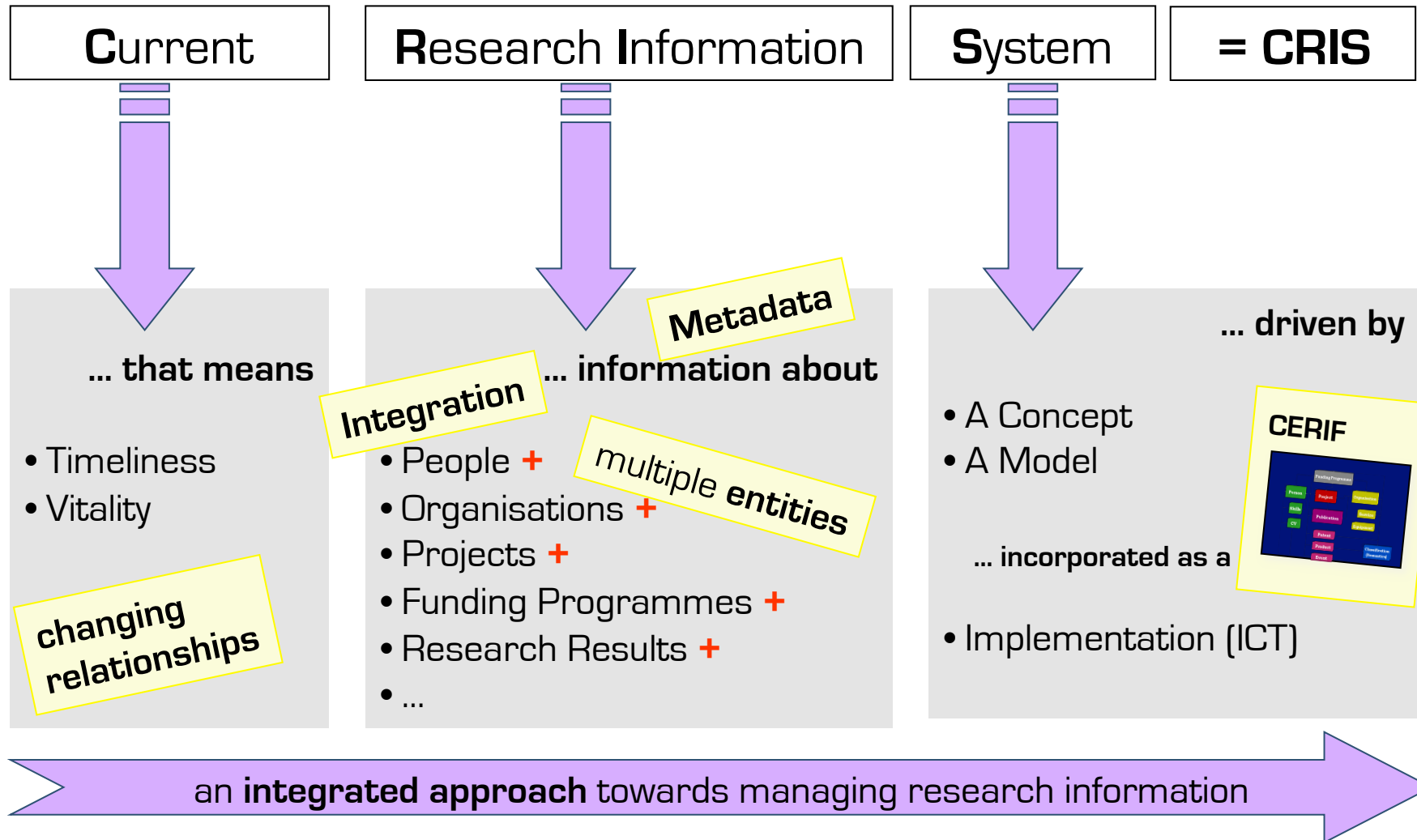
# What is Research Information?

## Data/Metadata or Information about:

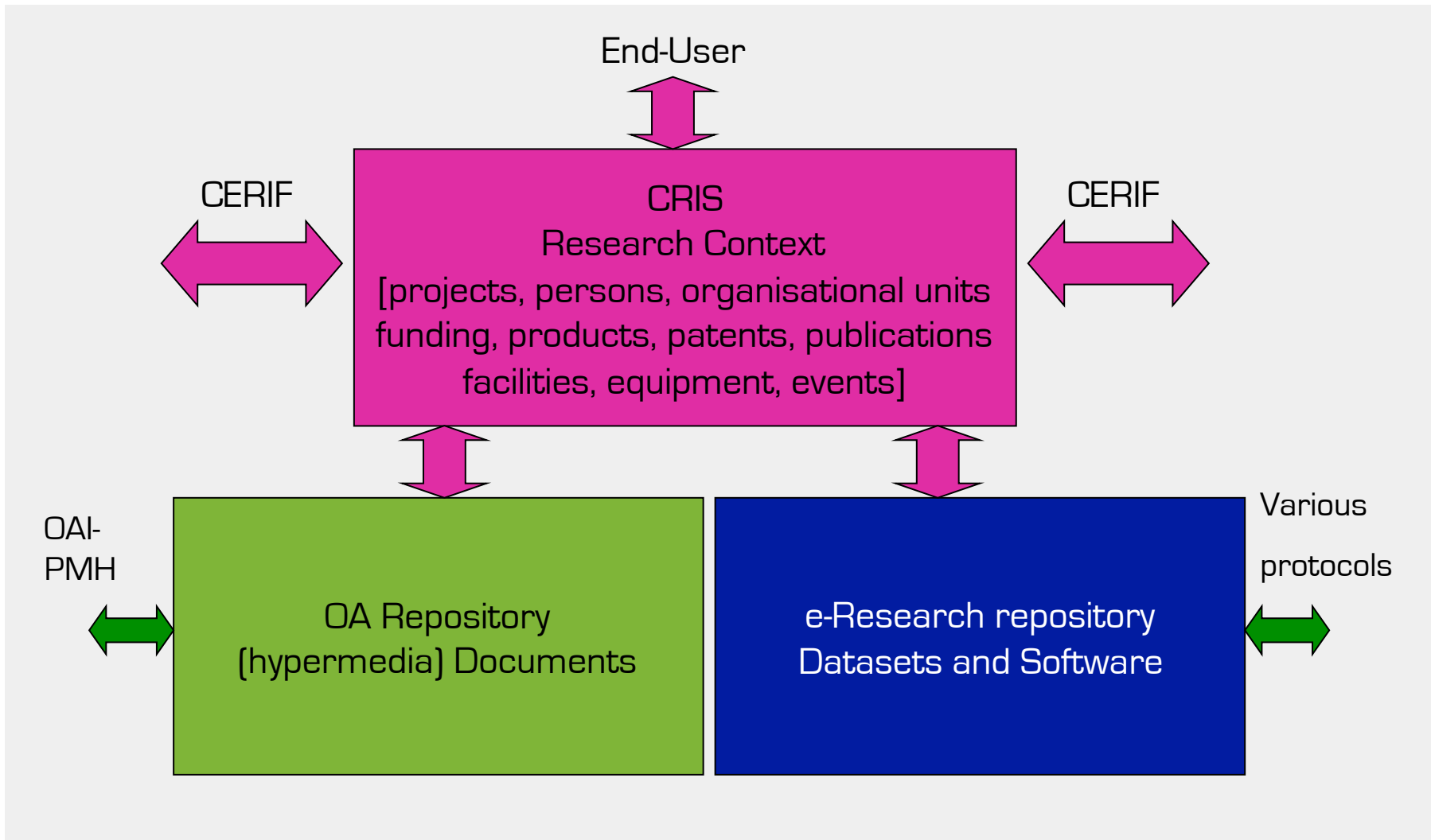
- Scientists
- Project Managers
- Ongoing and Completed Projects
- Research Departments
- Funding Organisations and Programmes
- Research Results, Research Outcome,
- Publications, Patents, Data
- Facilities, Equipment, Services
- Addresses, Geographic Bindings, Languages
- **their timely Relationships (Semantics) ...**



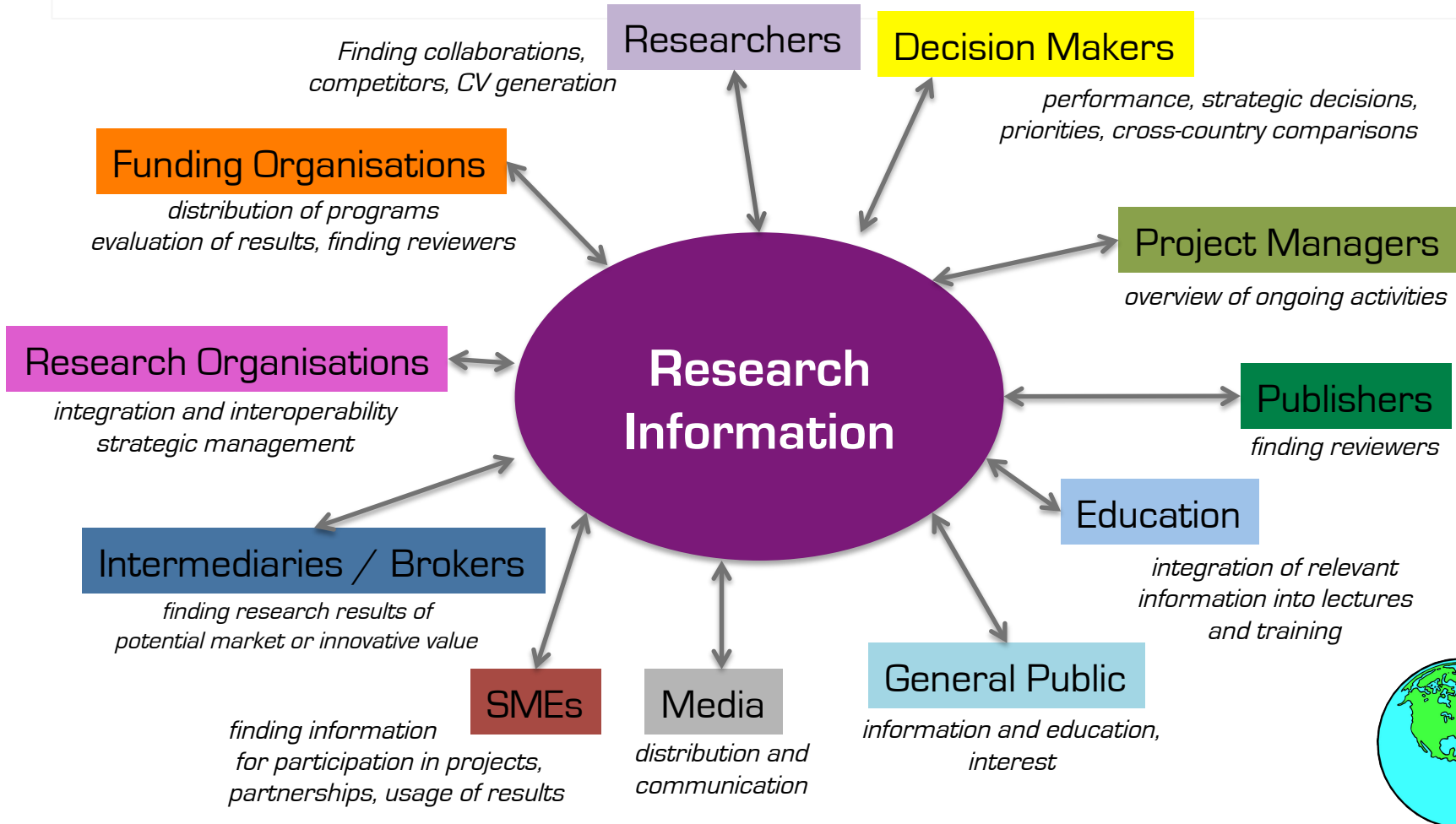
# What is a CRIS?



# CRIS and Repositories at 1 institution (slide by Keith Jeffery)



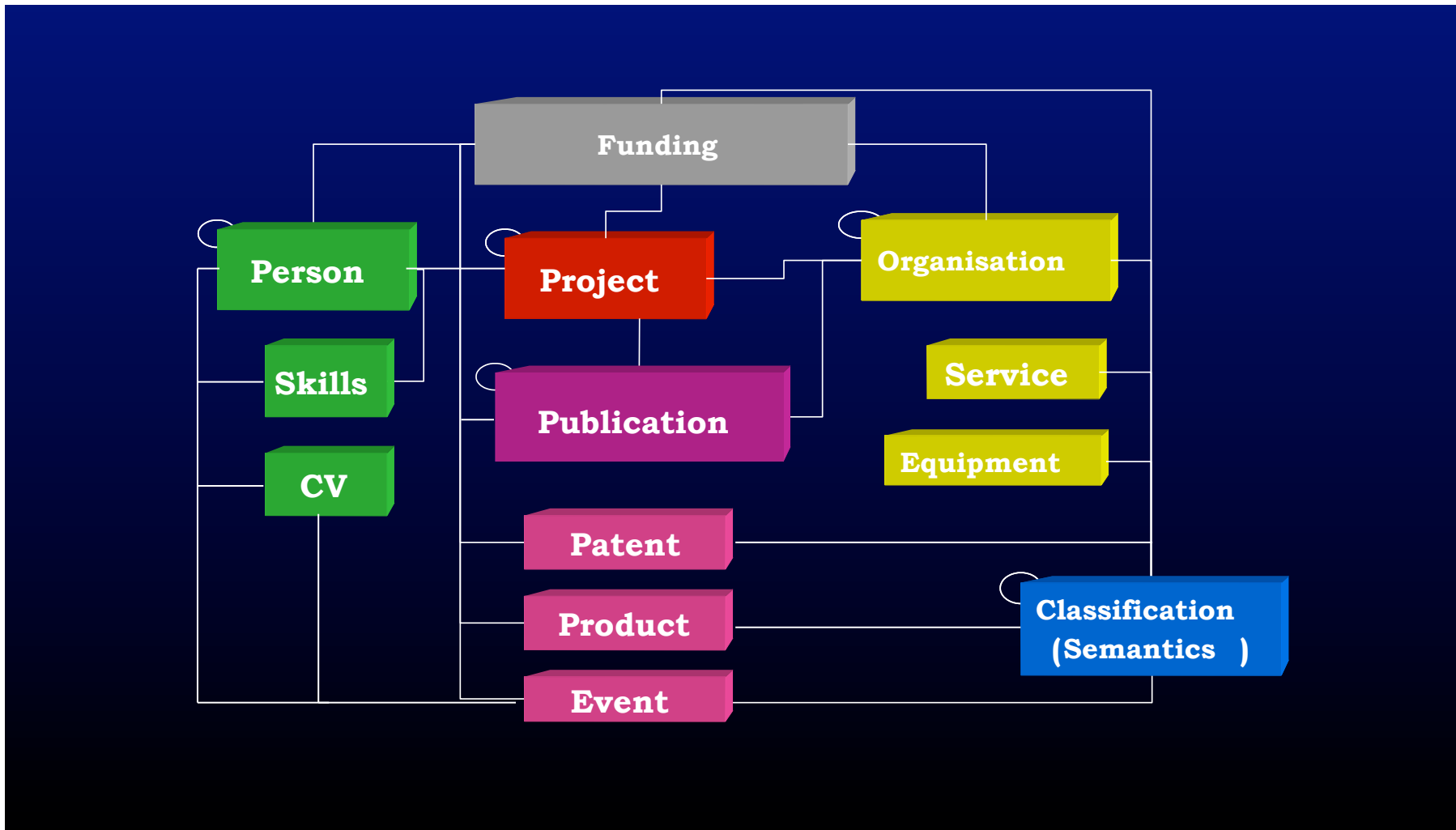
# Who is in need of Research Information?



# What kind of questions do we want to answer?

- How many articles has author X published in 2007 as a first author?
- How often have articles by author X been cited?
- Did author X publish with institutionally external authors?
- In how many FP7 projects does/did organisation Z participate?
- How many publications have resulted from project Y?
- How many people have been employed in the course of FP6 projects from the 1st call in the NMS?
- How many PhD students have participated in FP6 projects?
- How many women have been involved in FP6 projects?
- How often have articles in journal A been requested in 2007?
- How many articles have been published in the field of B?

# Common European Research Information Format

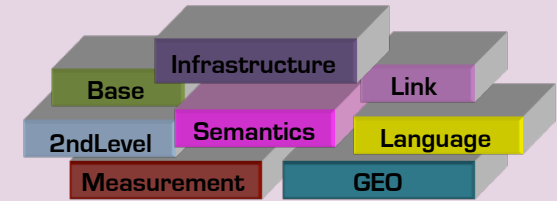
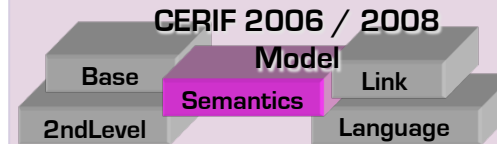


# The CERIF Evolution

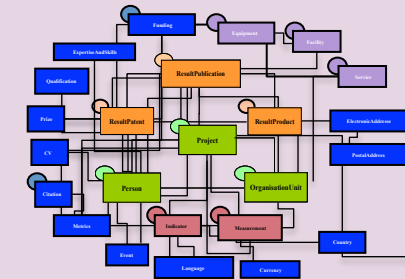
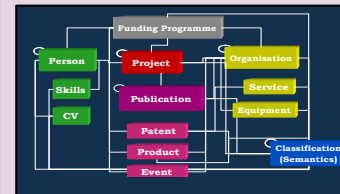
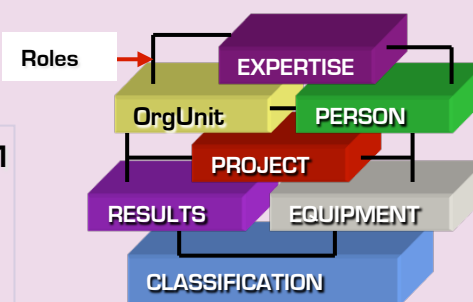
## CERIF 1.3

Similar Ideas  
UN/UNESCO  
OECD  
CODATA

EU  
Working Group  
on Research  
Databases  
Workshop



## CERIF 2000 Model



## CERIF 91

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

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

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

- Data Model
- Infrastructure
  - Facility, Equipment, Service
- Measurement & Indicator
  - Entities and Link Tables
- Geographic Bounding Box
- CERIF 1.3 Vocabulary
  - UUIDs
  - Terms
  - Schemes

+ Linked Data  
+ CERIF Ontology

FORMAL SEMANTICS

1987

1991

2000



2006

2008

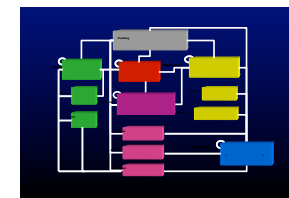
2011/2012



# Common European Research Information Format

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** (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
```



# 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/Index.php?page=CERIFreleases&t=1>

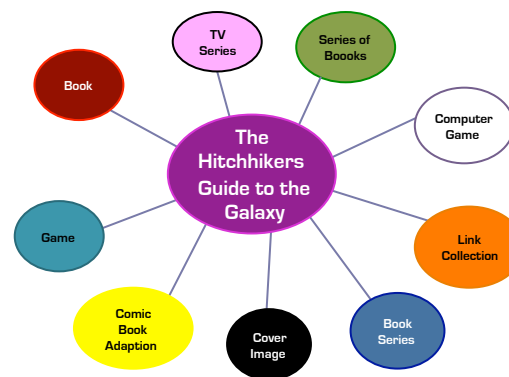
# CERIF Model Structure (Views)

## CERIF Entity Types

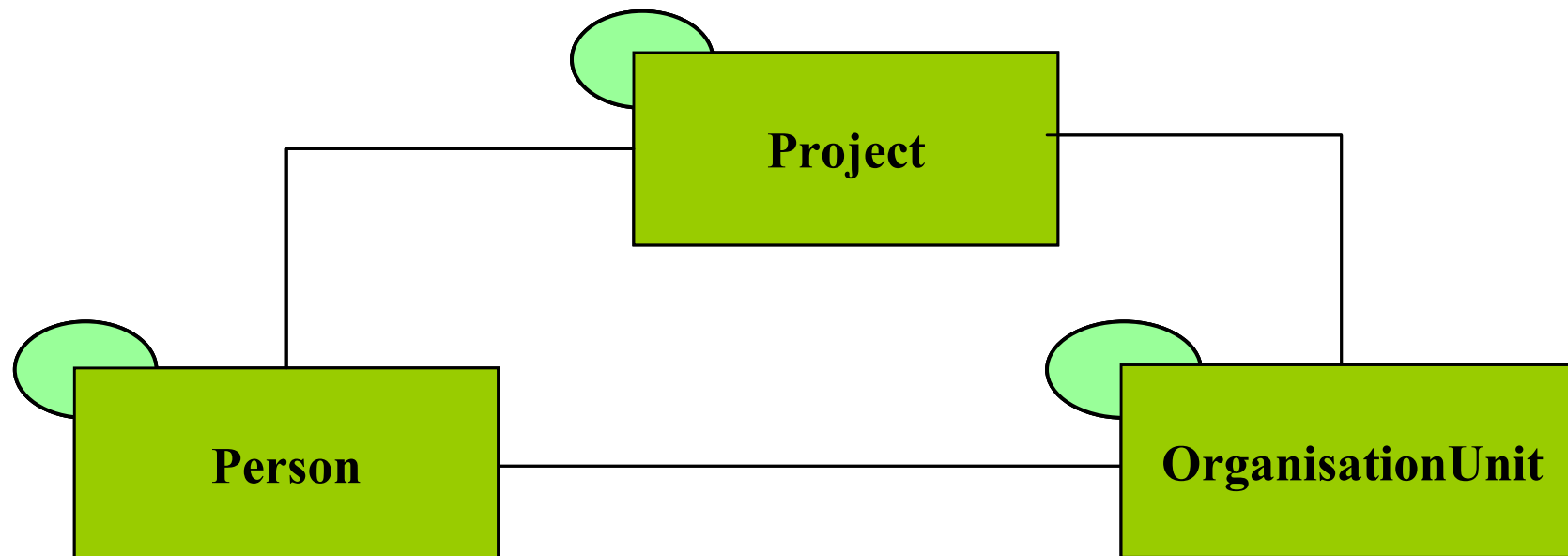
- Base Entities
- Result Entities
- Infrastructure Entities
- 2nd Level Entities
- Link Entities

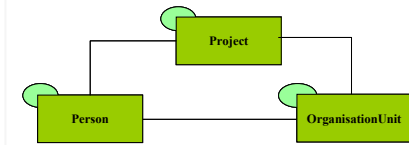
## CERIF Features

- Multiple Language
- Semantics
- Measure & Indicator
- Geographic Bounding Box

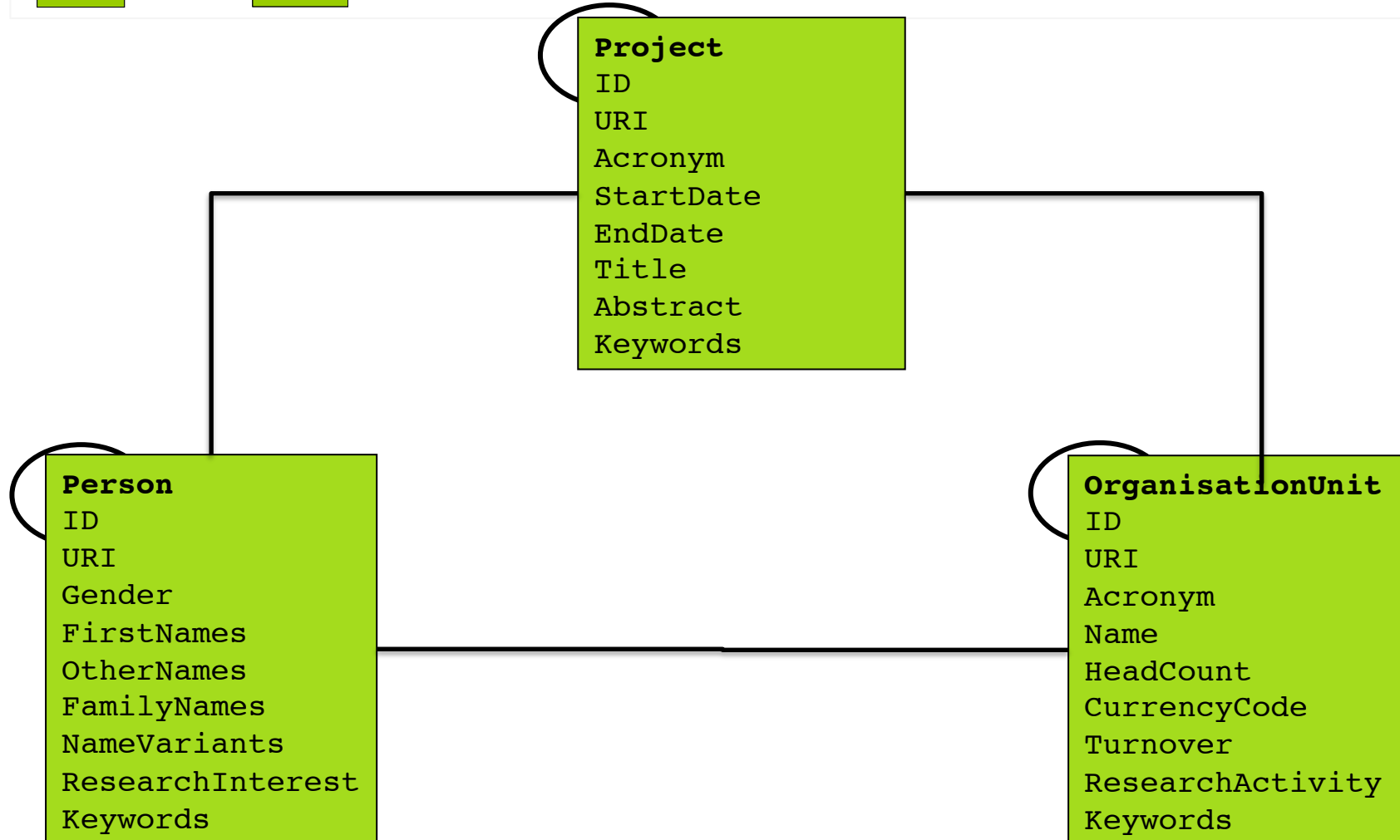


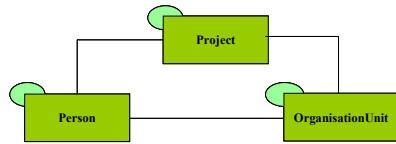
## CERIF Base Entities



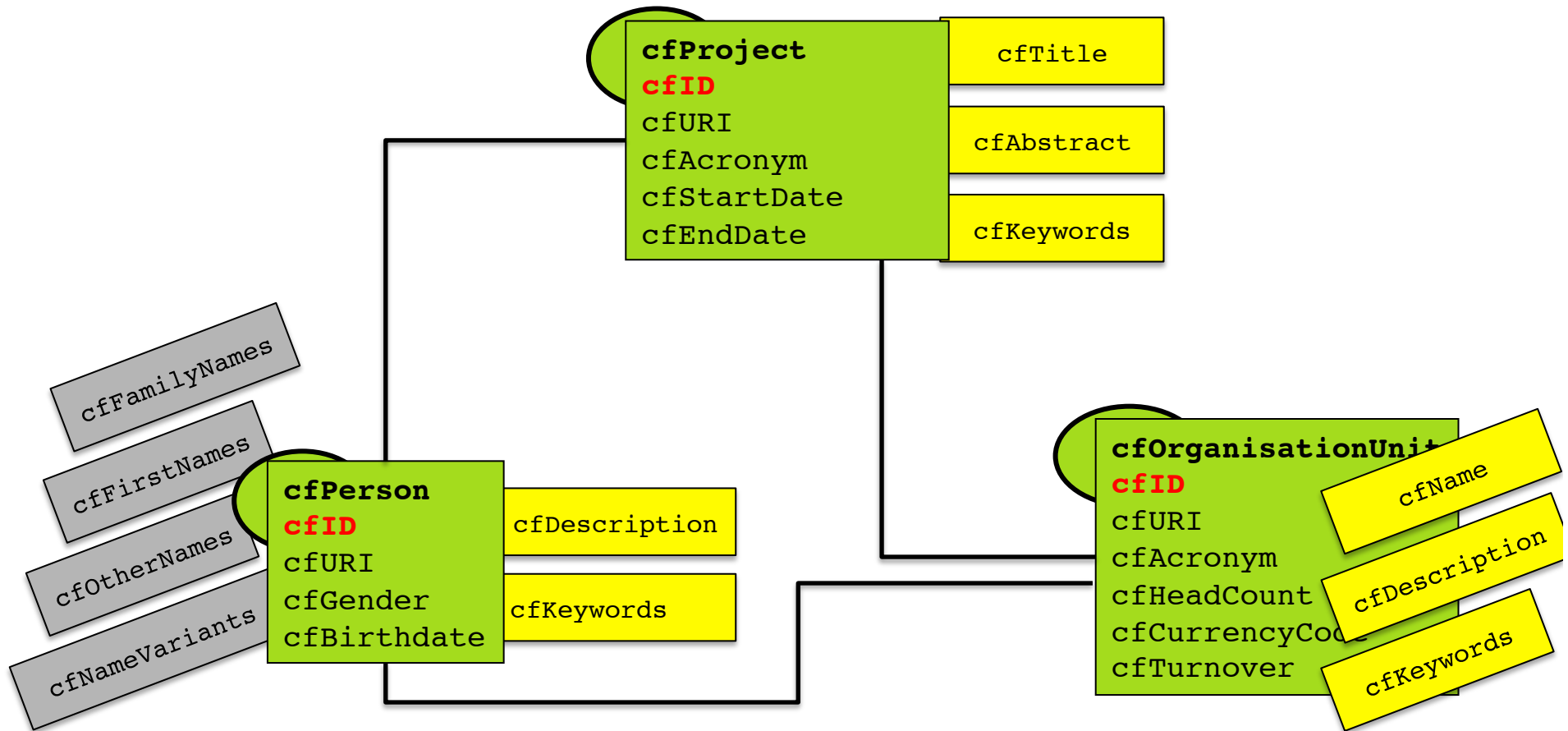


## CERIF Base Entities

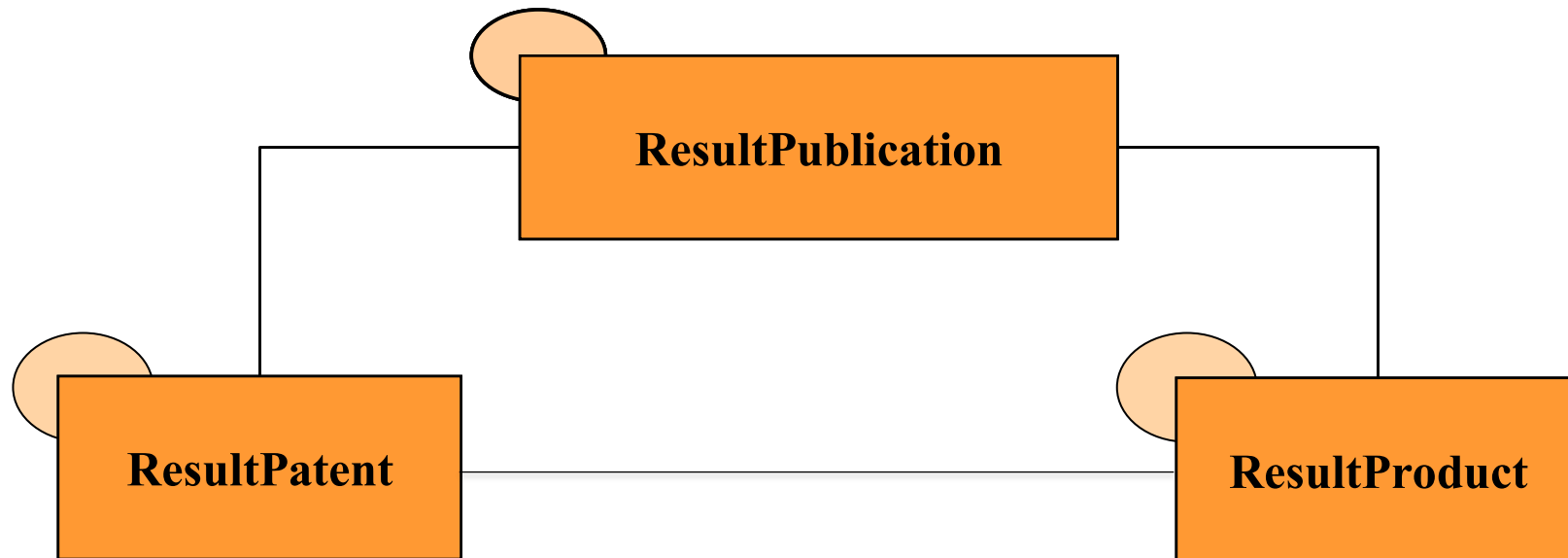


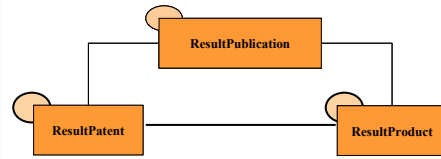


# CERIF Base Entities

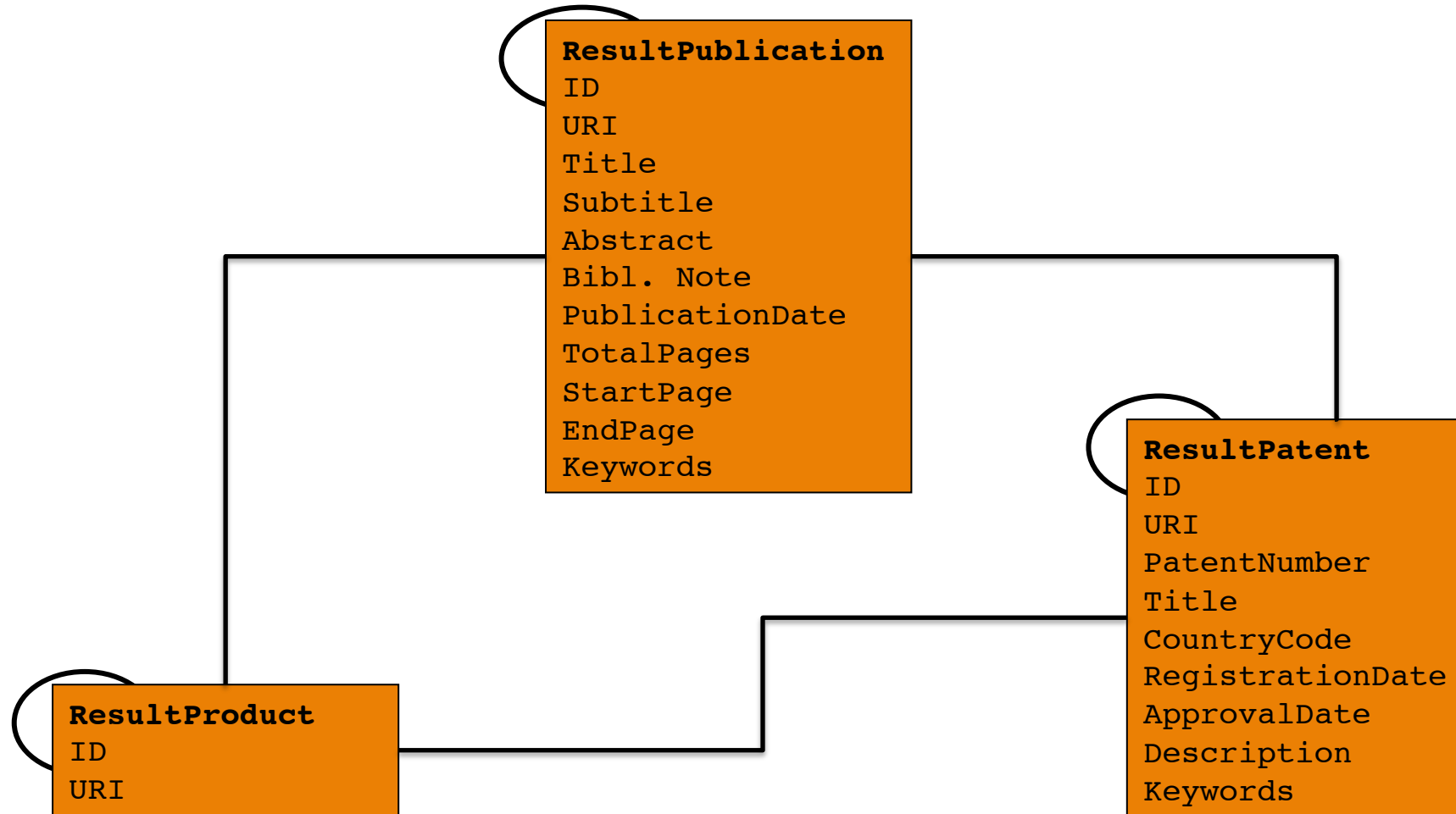


## CERIF Result Entities

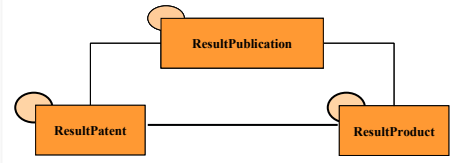




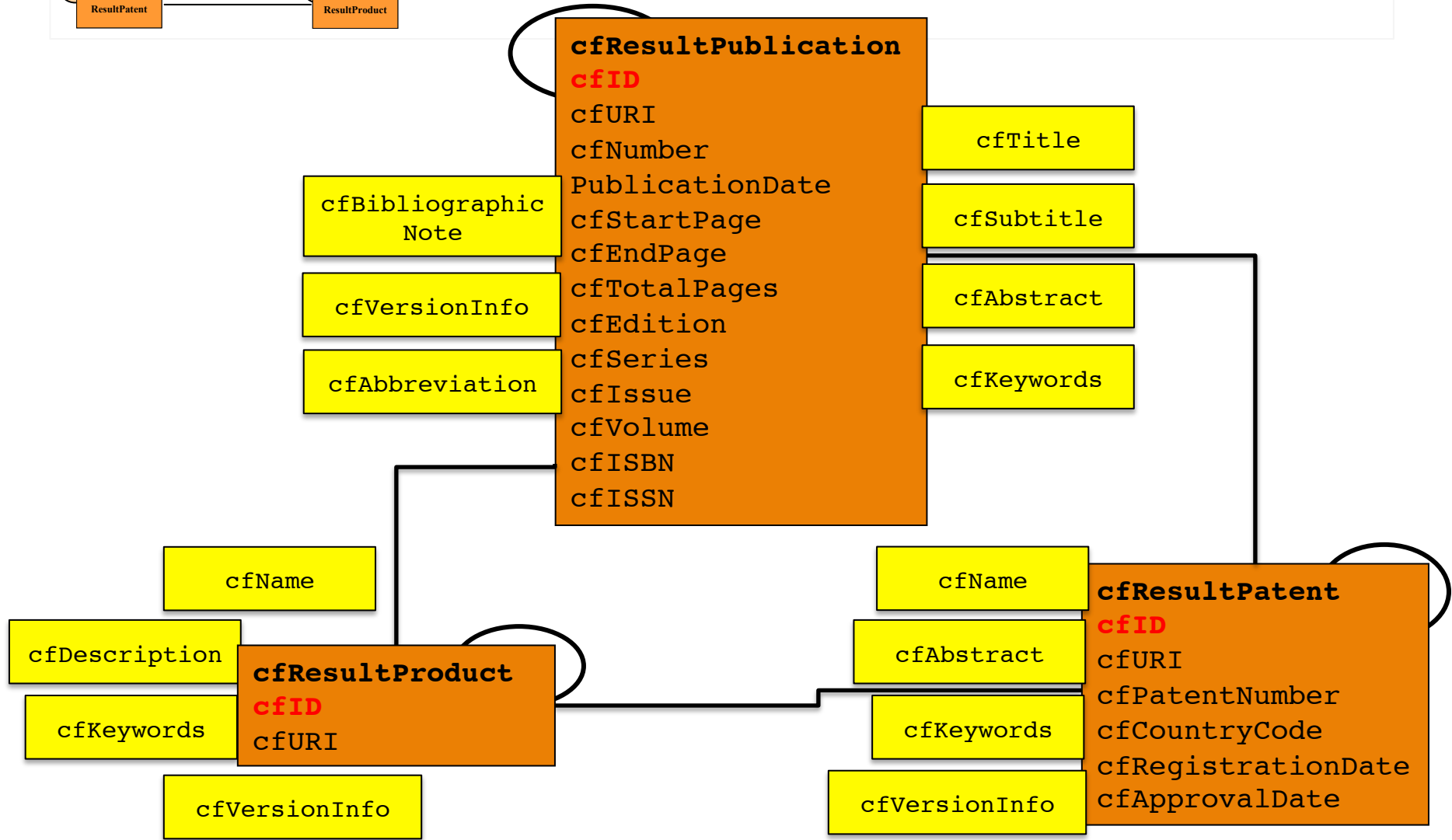
# CERIF Result Entities



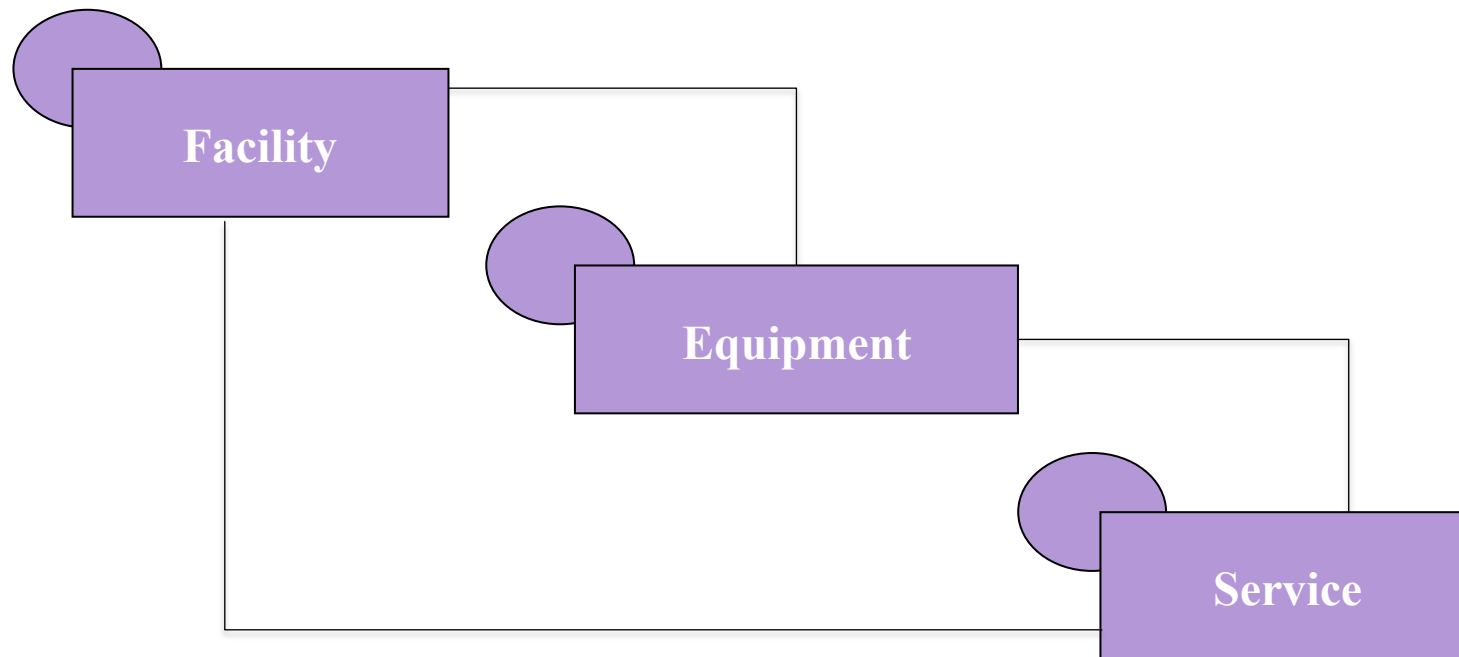


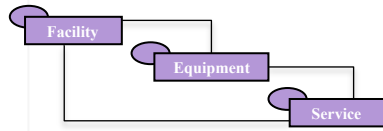


# CERIF Result Entities

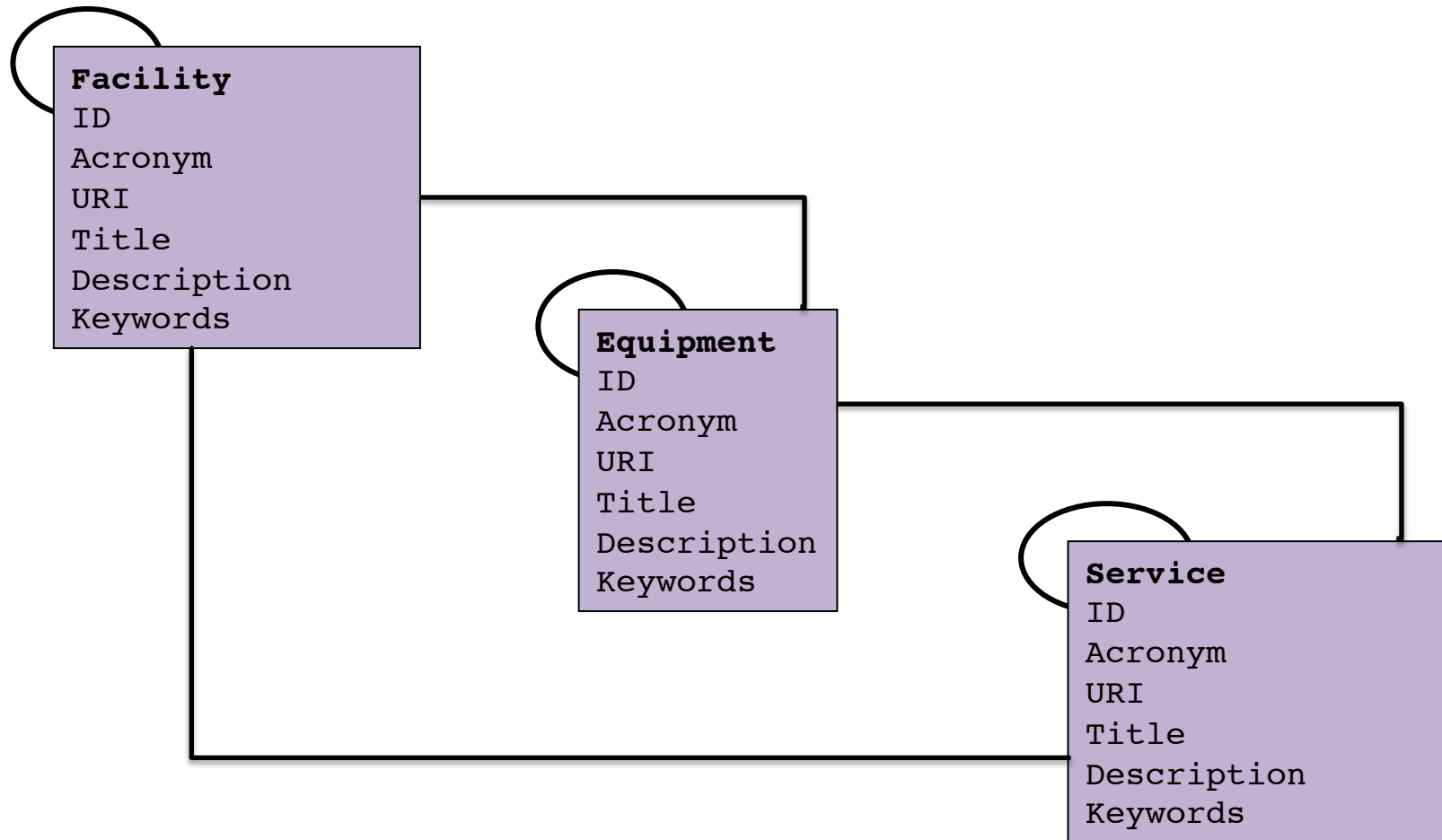


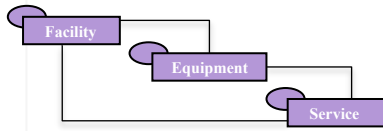
# CERIF Infrastructure Entities



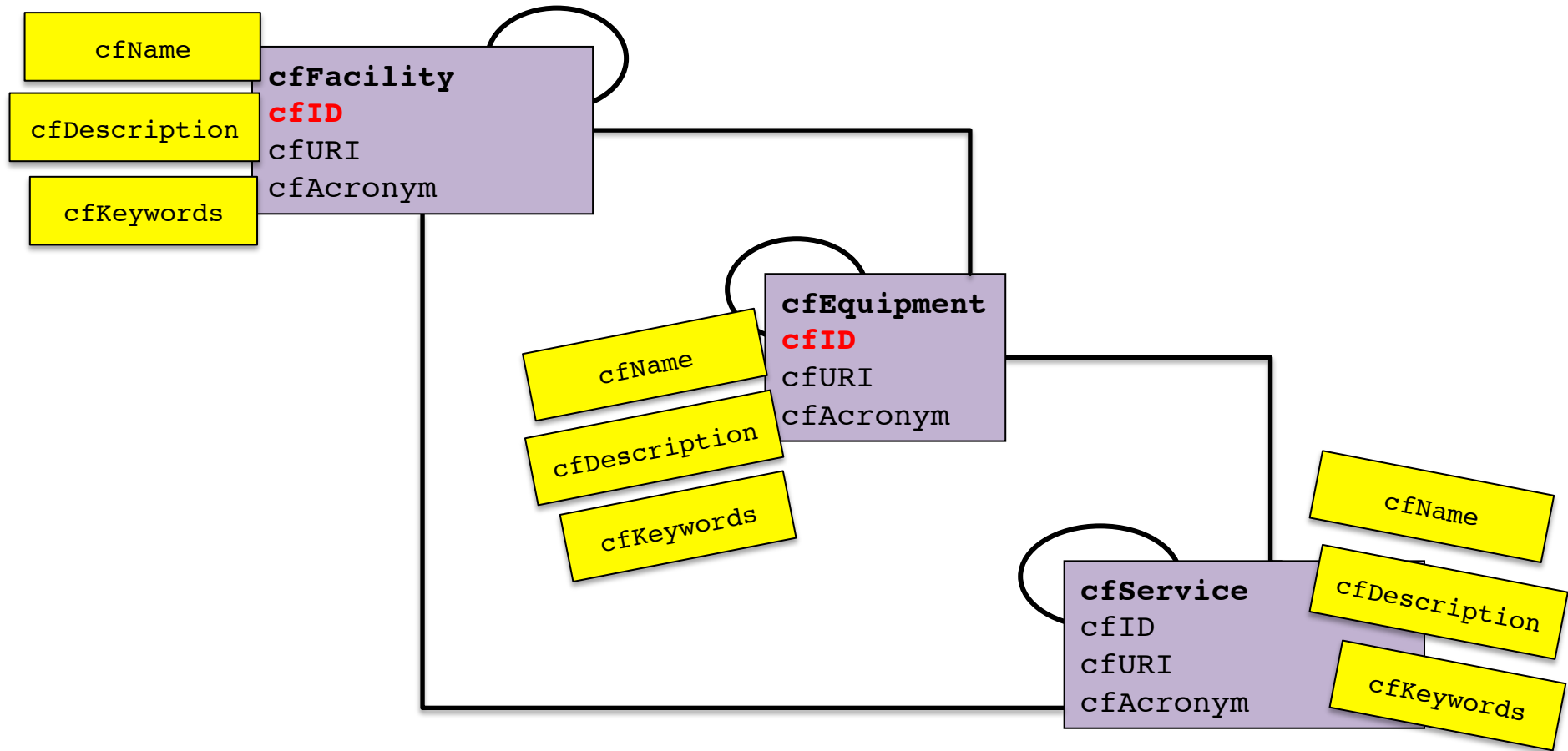


# CERIF Infrastructure Entities

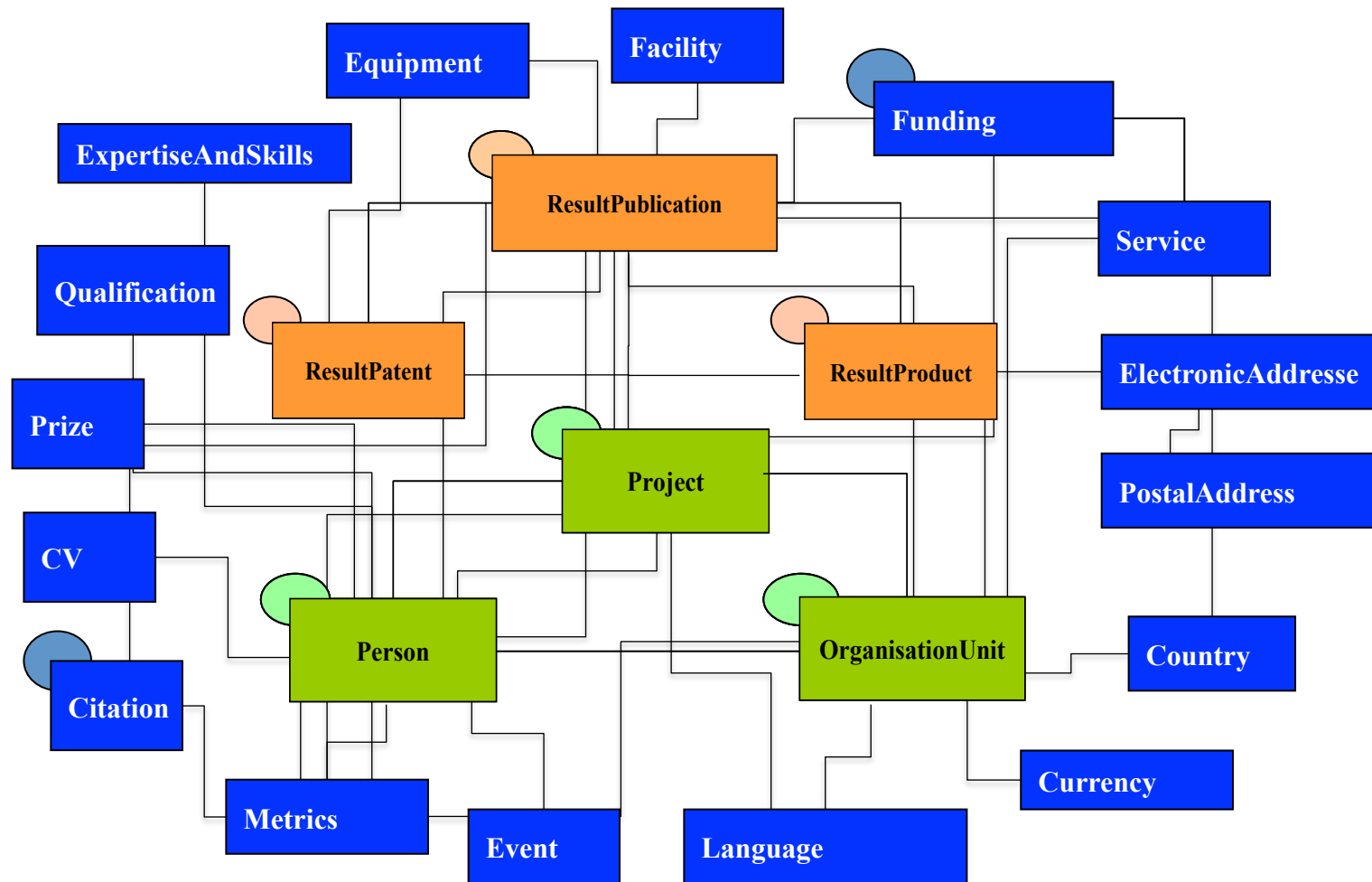




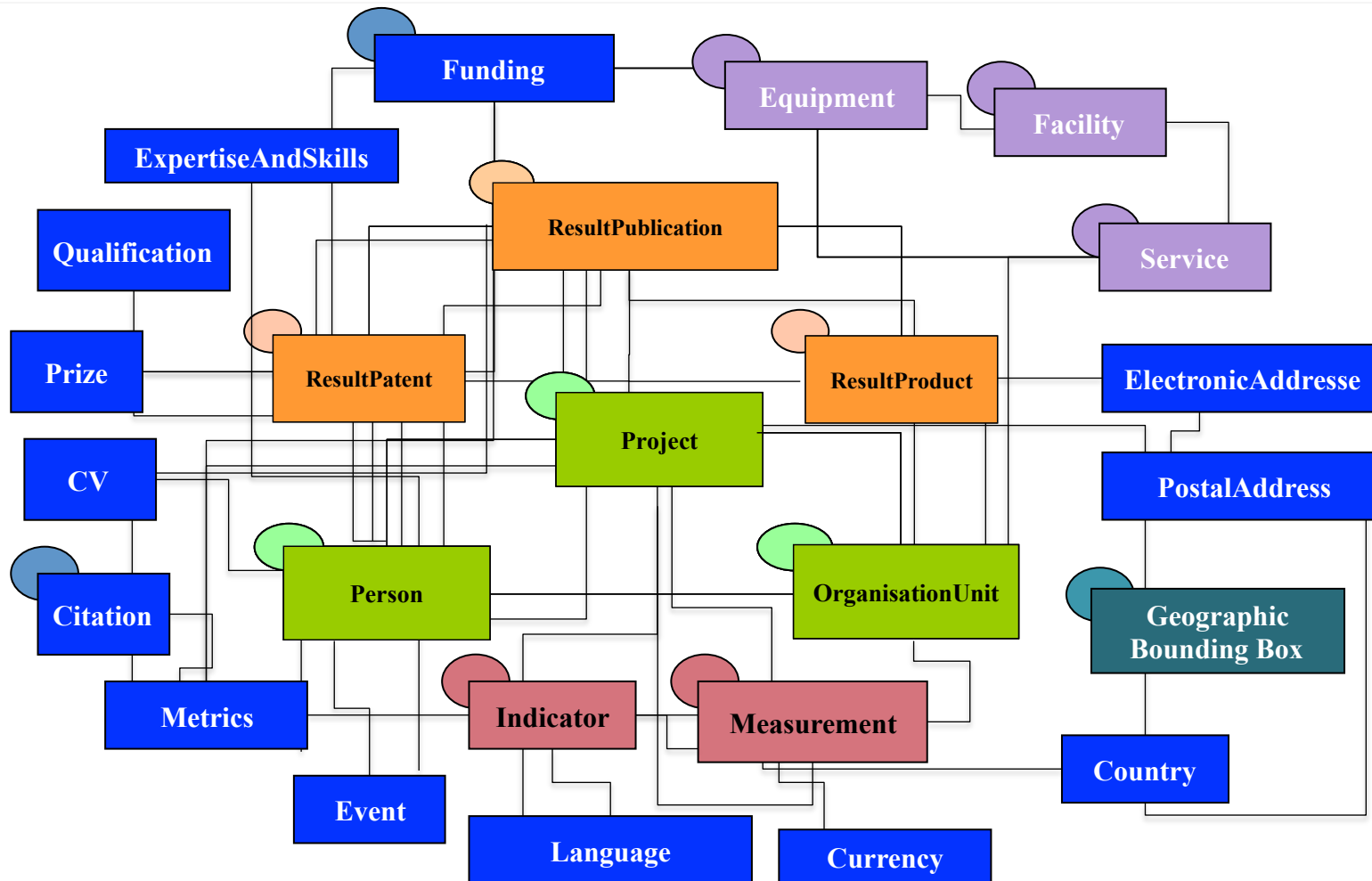
# CERIF Infrastructure Entities



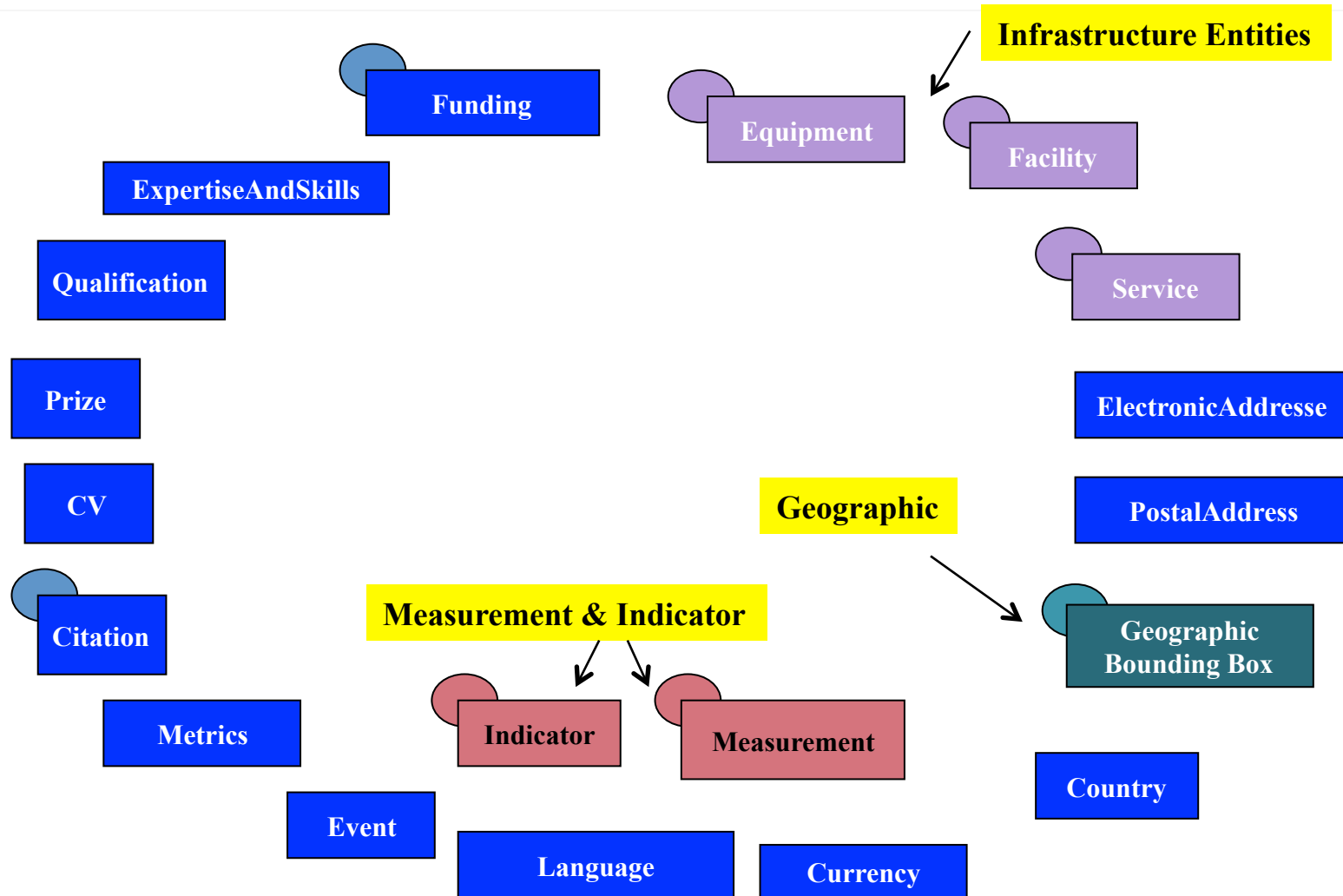
# CERIF 2008 - 1.2 Entities (Types in Colors)



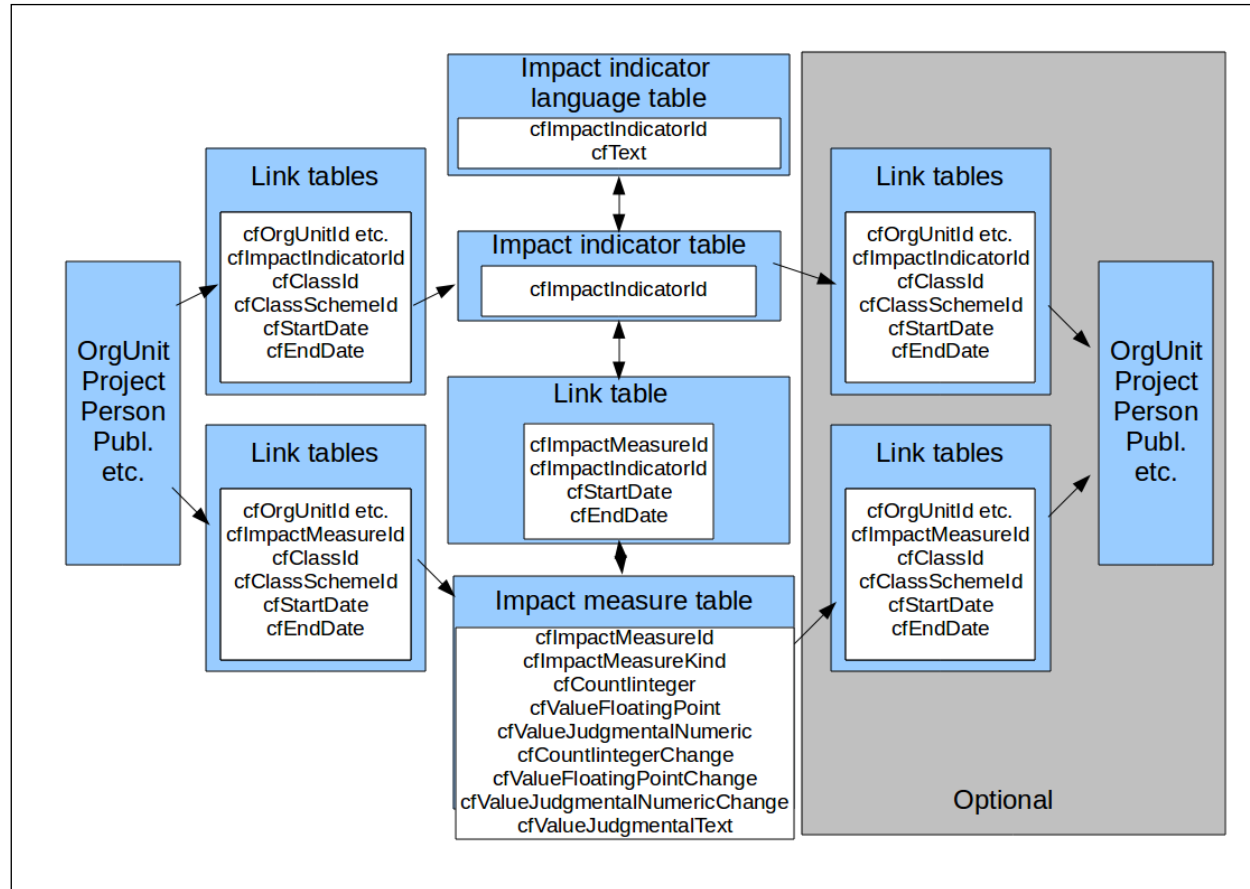
# CERIF 1.3 Entities (Types in Colors)



# Changes CERIF 2008-1.2 → CERIF 1.3



# Measuring Impact in CERIF (MICE)

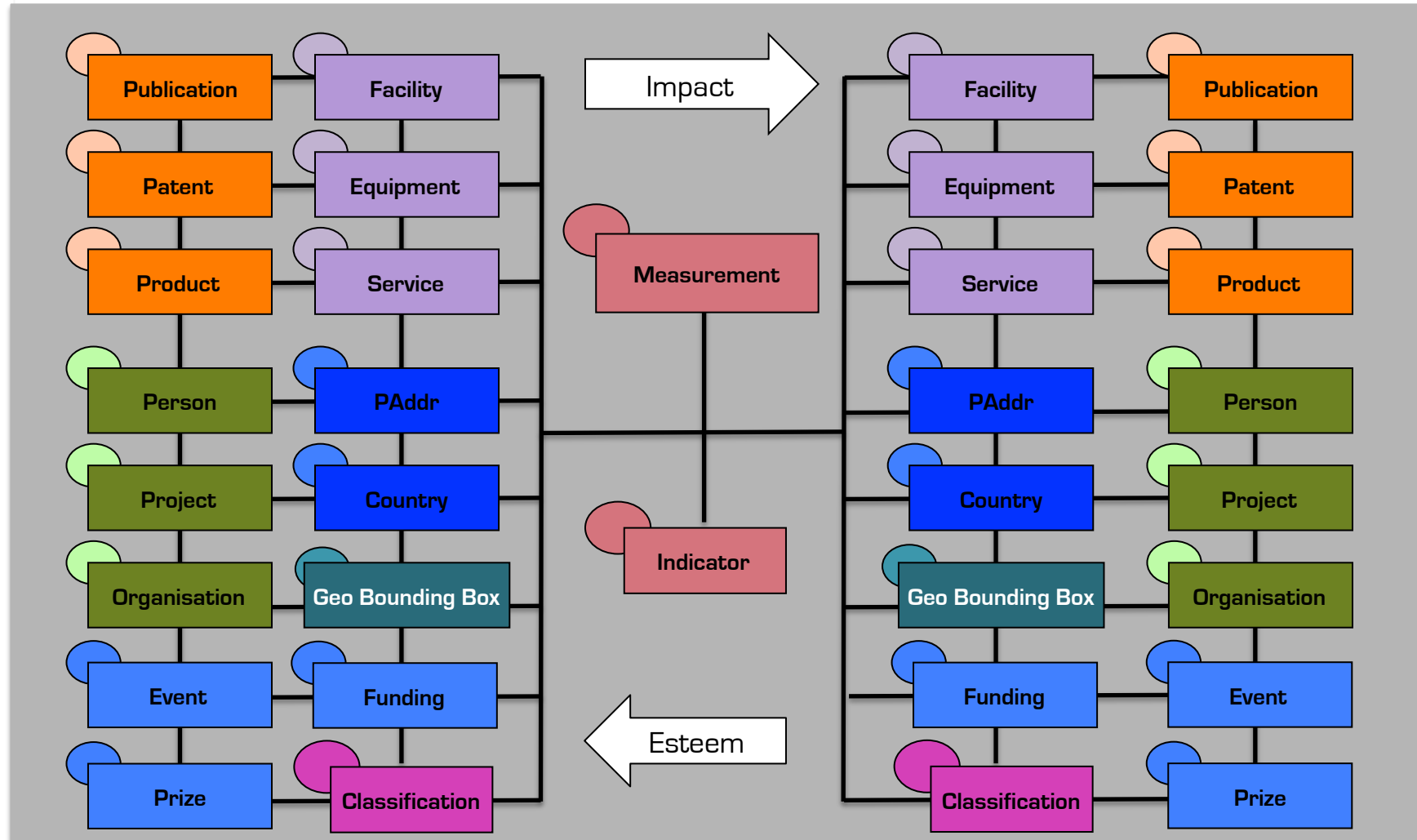


MICE, a JISC-funded Project coordinated by Richard Gartner, Kings College, London, UK



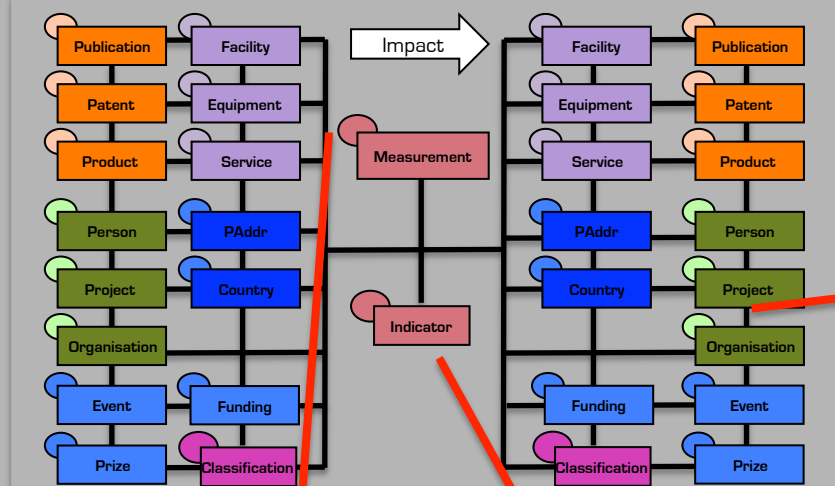
# CERIF Measurement & Indicator

inspired by MICE; further developed within CERIFy



CERIFy, a JISC-funded Project managed by Mahendra Mahey, University of Bath, UKOLN, UK

# CERIF Measurement & Indicator

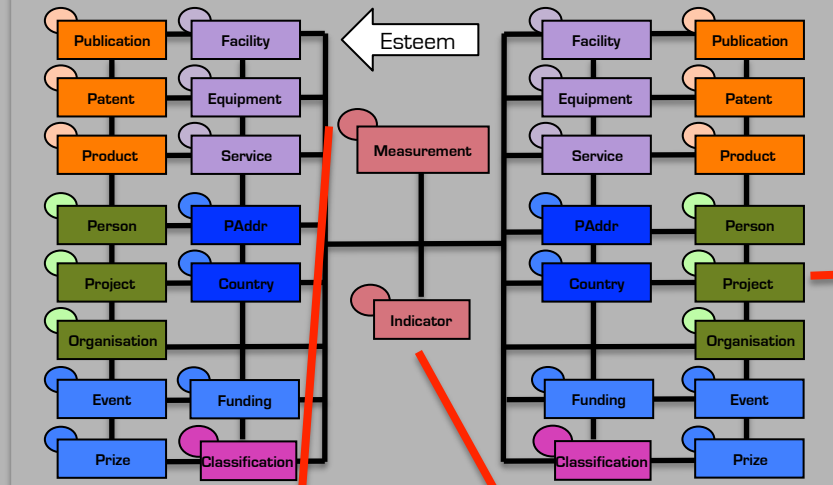


Element/column	Data type	Definition
cfImpactMeasureId	alphanumeric	A unique ID for the impact measure
CfImpactMeasureKind	Text	The type of measure presented - eg 'website hits'
cfCountInteger	Integer	A countable value for the impact measure - eg 5,200,000 (audience numbers)
cfValueFloatingPoint	Floating point numeric	A numerically-expressed value, monetary or otherwise, eg. £5,000,000.00
cfValueJudgmentalNumeric	percentage/factor numeric	A numerically-expressed measure of satisfaction or assessment of value or worth in the form of a percentage or factor - eg 75.2% (satisfaction rating in a survey)
cfCountIntegerChange	Integer	A change in the value of cfCountInteger - eg. +250,000 or -100,000
cfValueFloatingPointChange	Floating point numeric	A change in the value of cfValueFloatingPoint - eg. +£252,000.00 or -£1,000
cfValueJudgmentalNumericChange	percentage/factor numeric	A change in the value of cfValueJudgmentalNumeric - eg. +2.5% or -1.2%
cfValueJudgmentalText	text	A textually-expressed measure of impact eg. 'recognised as a world-class institution'

Number of Patents 2007-2008;  
 Number of Staff employed 2010;  
 Number of cancer patients 2008-2010;  
 Theater performances 2005-2010;

Impact indicators are categories that include concepts such as **'improving performance of existing businesses'**, **'improved health outcomes'** and **'cultural enrichment'**.

# CERIF Measurement & Indicator



Element/column	Data type	Definition
cfImpactMeasureId	alphanumeric	A unique ID for the impact measure
CfImpactMeasureKind	Text	The type of measure presented - eg 'website hits'
cfCountInteger	Integer	A countable value for the impact measure - eg 5,200,000 (audience numbers)
cfValueFloatingPoint	Floating point numeric	A numerically-expressed value, monetary or otherwise, eg. £5,000,000.00
cfValueJudgmentalNumeric	percentage/factor numeric	A numerically-expressed measure of satisfaction or assessment of value or worth in the form of a percentage or factor - eg 75.2% (satisfaction rating in a survey)
cfCountIntegerChange	Integer	A change in the value of cfCountInteger - eg. +250,000 or -100,000
cfValueFloatingPointChange	Floating point numeric	A change in the value of cfValueFloatingPoint - eg. +£252,000.00 or -£1,000
cfValueJudgmentalNumericChange	percentage/factor numeric	A change in the value of cfValueJudgmentalNumeric - eg. +2.5% or -1.2%
cfValueJudgmentalText	text	A textually-expressed measure of impact eg. 'recognised as a world-class institution'

Number of Invitations 2007-2008;  
Number of Best Paper Awards;  
Number of Keynote Speeches 2008-2010;  
Number of Memberships;

Esteem indicators are categories that include such concepts as '**increased international recognition**', '**increased authority**'.

# CERIF Measurement & Indicator



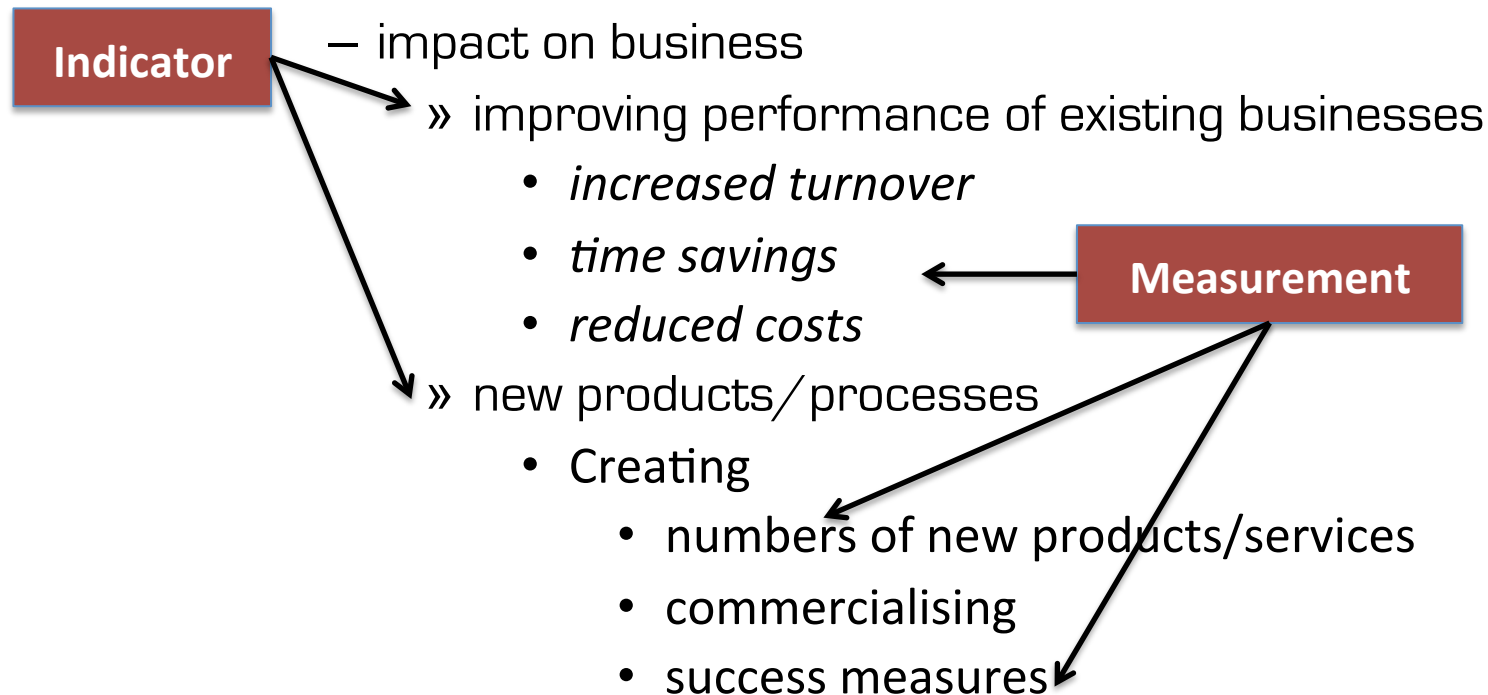
## Is an Aggregation Entity

cfMeasureIdentifier  
cfCountInteger  
cfCountIntegerChange  
cfValueFloatingPoint  
cfCountFloatingPointChange  
cfValueJudgementalNumeric  
cfValueJudgementalNumericChange  
cfValueJudgementalText  
cfValueJudgementalTextChange  
cfURI

# Measurement & Indicator (some examples)

## – economic and commercial

- economic



Extract from the MICE List of Indicators

# Measurement & Indicator (some examples)

## – economic and commercial

- economic

- impact on business

- » improving performance of existing businesses

- *increased turnover*
- *time savings*
- *reduced costs*

- » new products/processes

- Creating
  - numbers of new products
  - commercialising
  - success measures

**Indicator**  
 indicID=00123

**Measurement**  
 measID=012345  
 cfValueFloat=X

**Organisation\_Measurement**  
 orgUnitID=01234  
 measID=012345  
 classID=turnover-2010  
 classSchemeID=ImpactOnBusiness  
 startDate=2010-01-01  
 endDate=2010-12-31

**Measurement**  
 measID=012345678  
 cfCount=Z

**Product\_Measurement**  
 resultProductID=0123456  
 measID=01234567  
 classID=new-2010  
 classSchemeID=ImpactOnBusiness  
 startDate=2010-01-01  
 endDate=2010-12-31

# Measurement & Indicator (some examples)

– economic and commercial

- economic

- impact on business

- » improving performance of existing businesses

- *increased turnover*

- *X-Y*

- *time savings*

- *reduced costs*

- » new products/processes

- *Creating*

- numbers of new products

- commercialising

- success measures

**Indicator**  
indicID=00123

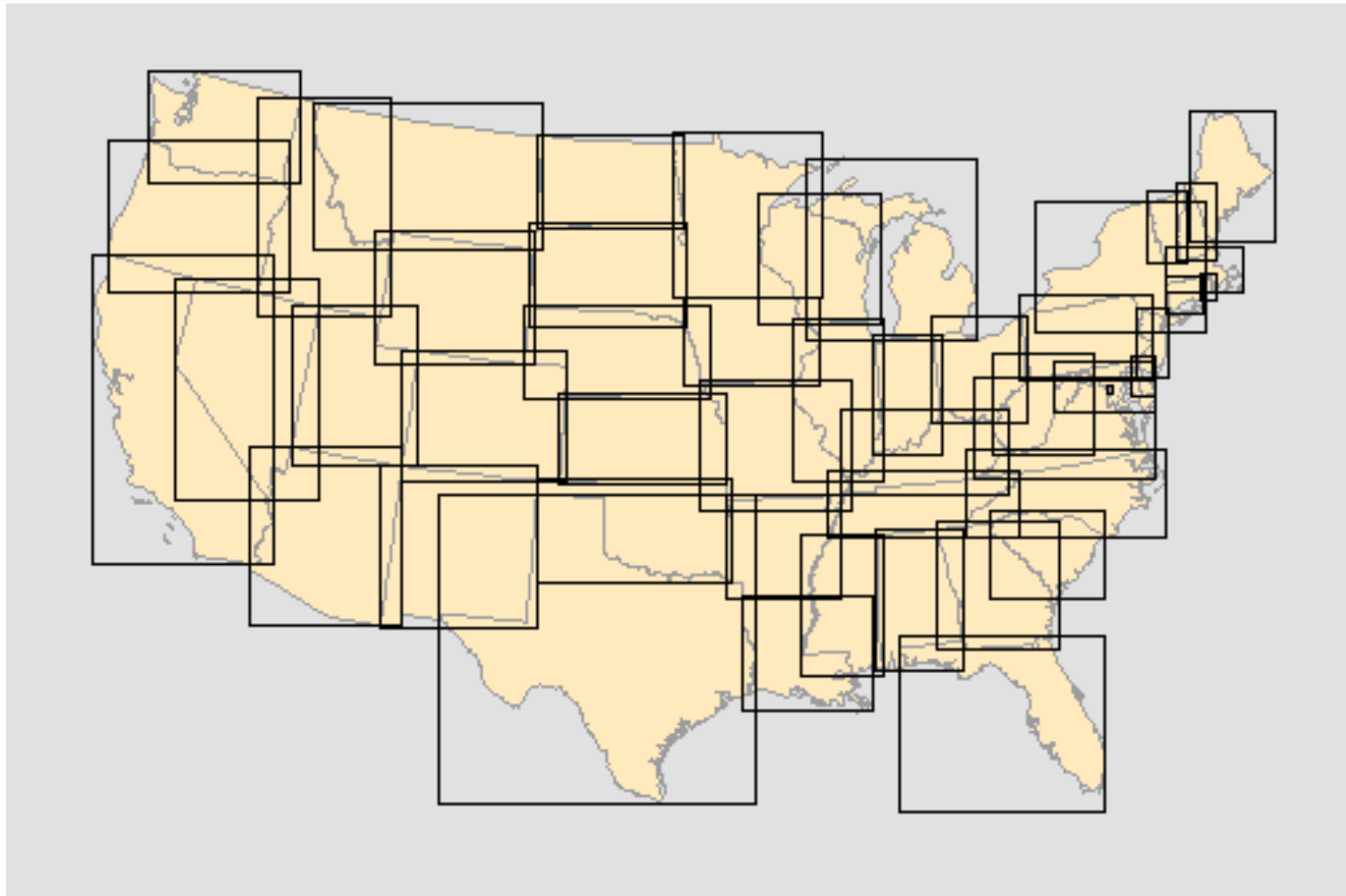
**Measurement**  
measID=012345  
cfValueFloat=X

**Measurement**  
measID=012345678  
cfValueFloat=Y

**Organisation\_Measurement**  
orgUnitID=01234  
measID=012345; 012345678  
classID=turnover-2010  
classSchemeID=ImpactOnBusiness  
startDate=2010-01-01  
endDate=2010-12-31

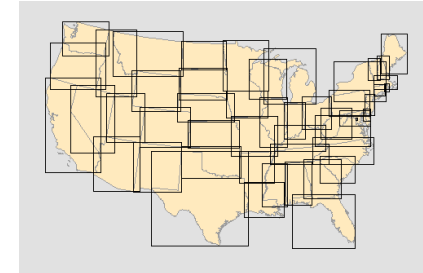
**Measurement\_Measurement**  
measID1=012345  
measID2=012345678  
classID=increasedTurnover  
classSchemeID=ImpactOnBusiness  
startDate=2010-01-01  
endDate=2010-12-31

# Geographic Bounding Box

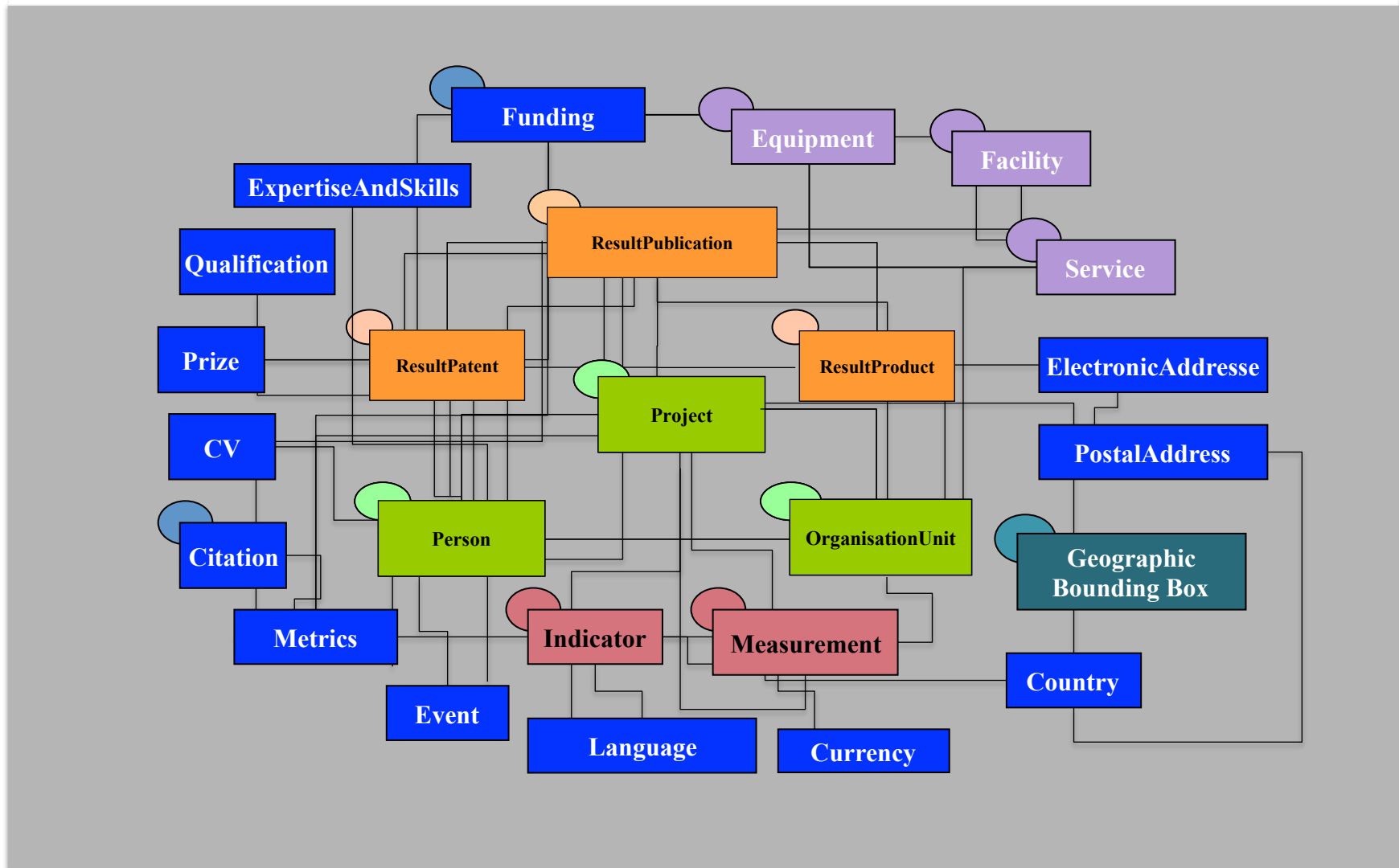




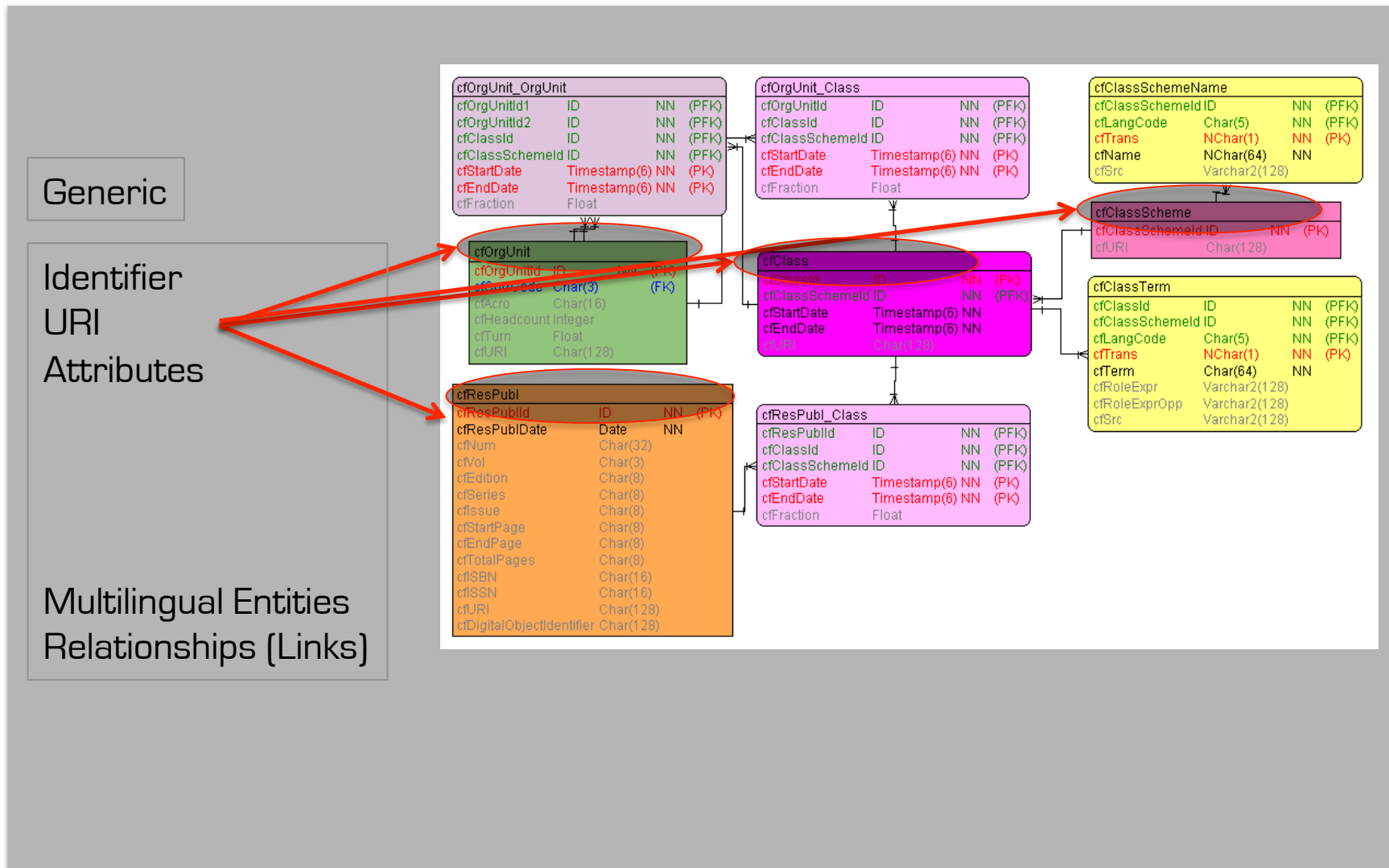
# Geographic Bounding Box



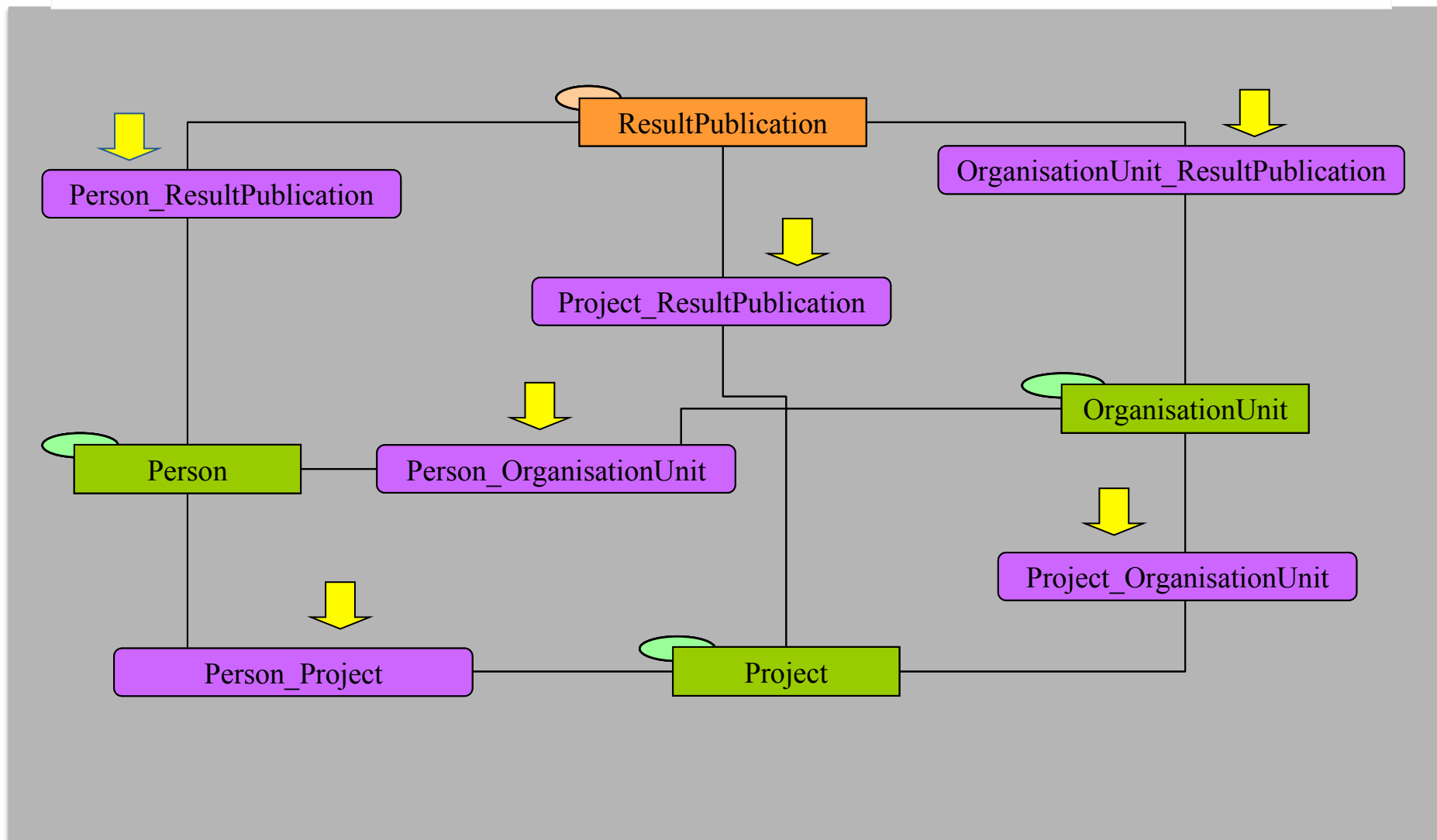
# CERIF 1.3 Entities



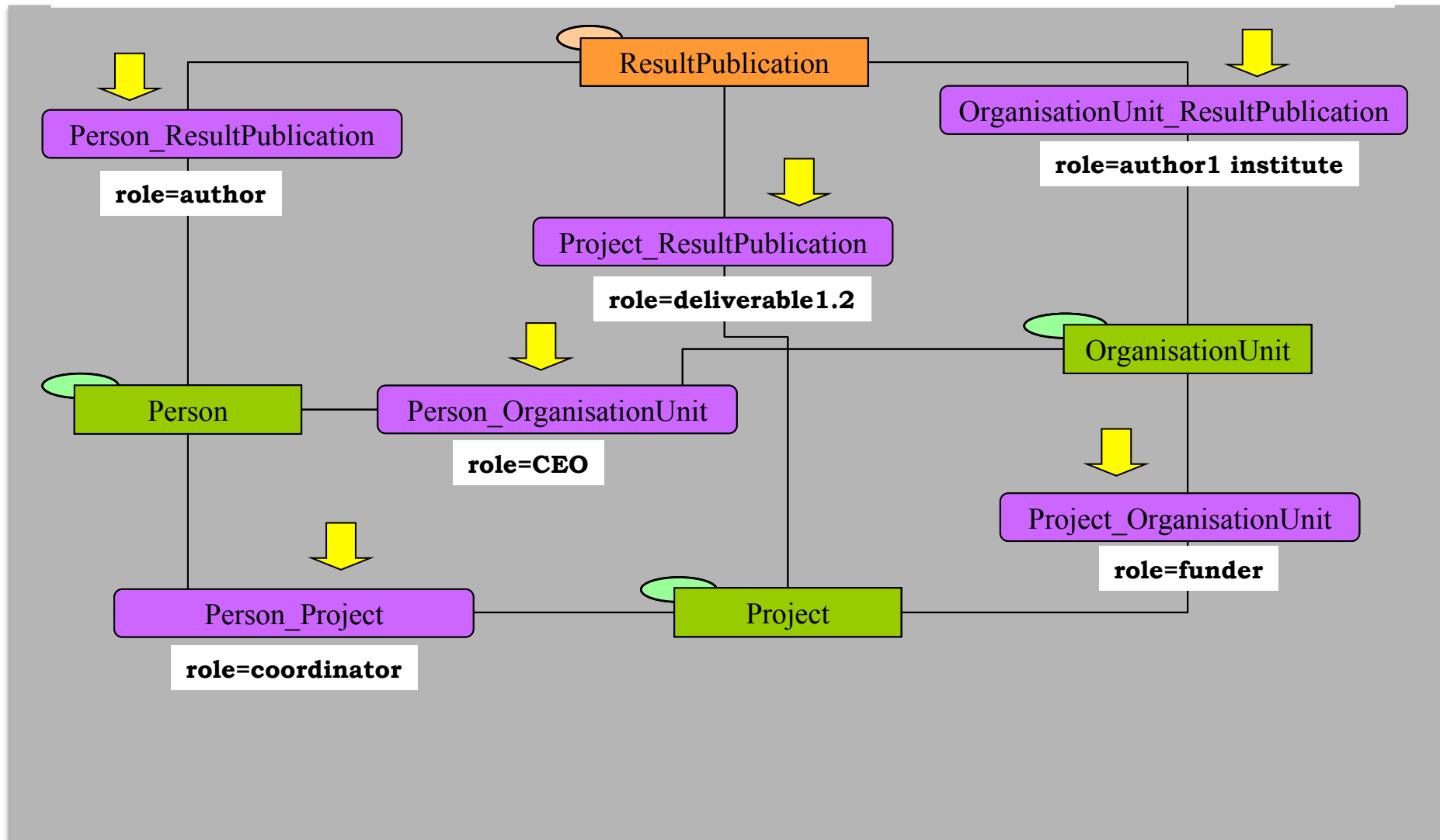
# CERIF – Generic Entity Structure

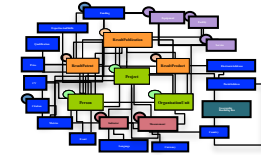


## Some CERIF Link Entities

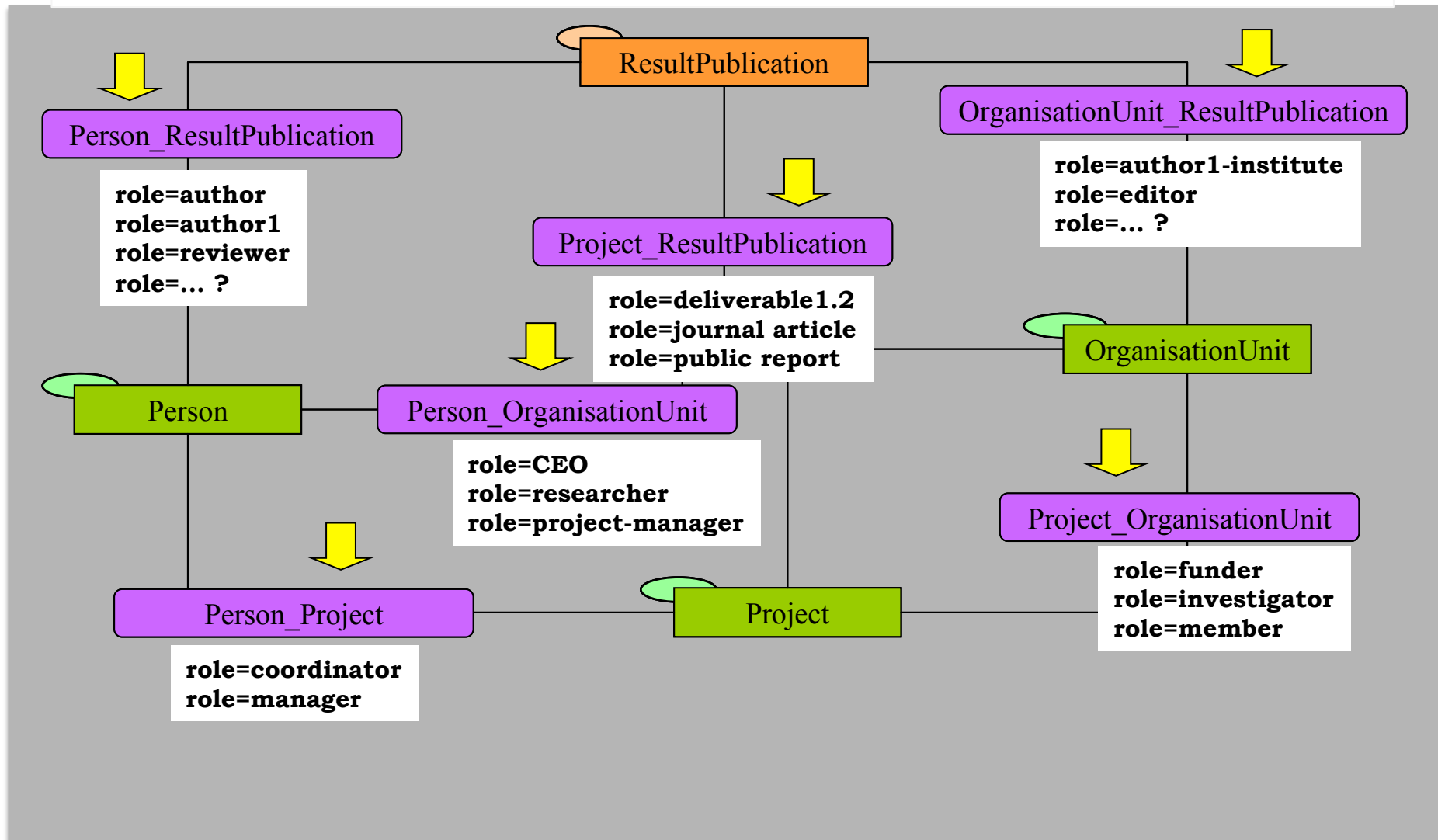


## Some CERIF Link Entities





# Some CERIF Link Entities



## Some CERIF Link Entities

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)

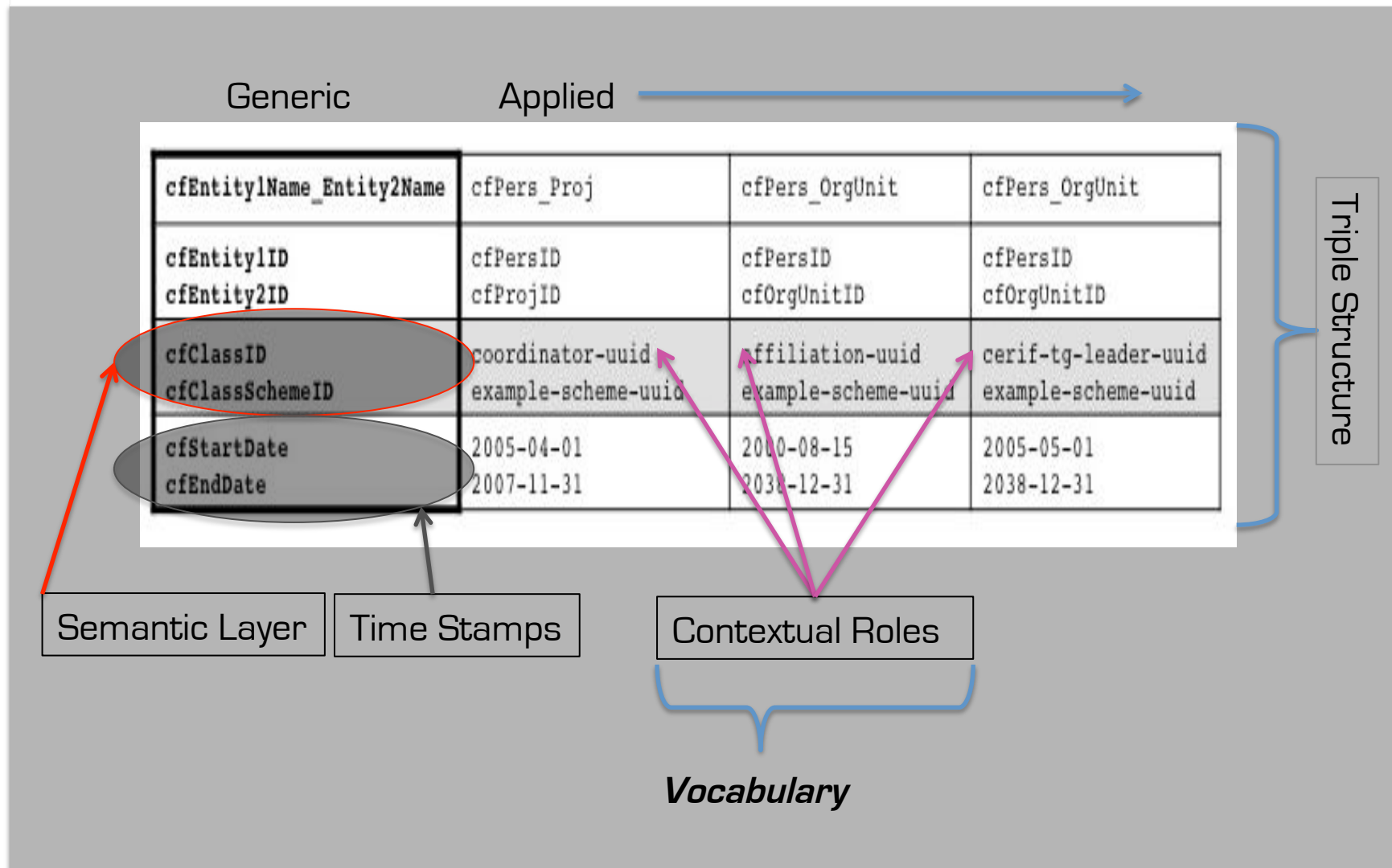
cfOrgUnit_Equip			
cfOrgUnitId	ID	NN	(PFK)
cfEquipId	ID	NN	(PFK)
cfClassId	ID	NN	(PFK)
cfClassSchemeld	ID	NN	(PFK)
cfFraction	Float		
cfStartDate	Timestamp(6)	NN	(PK)
cfEndDate	Timestamp(6)	NN	(PK)
cfCurrCode	Char(3)		(FK)
cfAvailability	Char(64)		
cfConditions	Char(255)		
cfPrice	Float		

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)

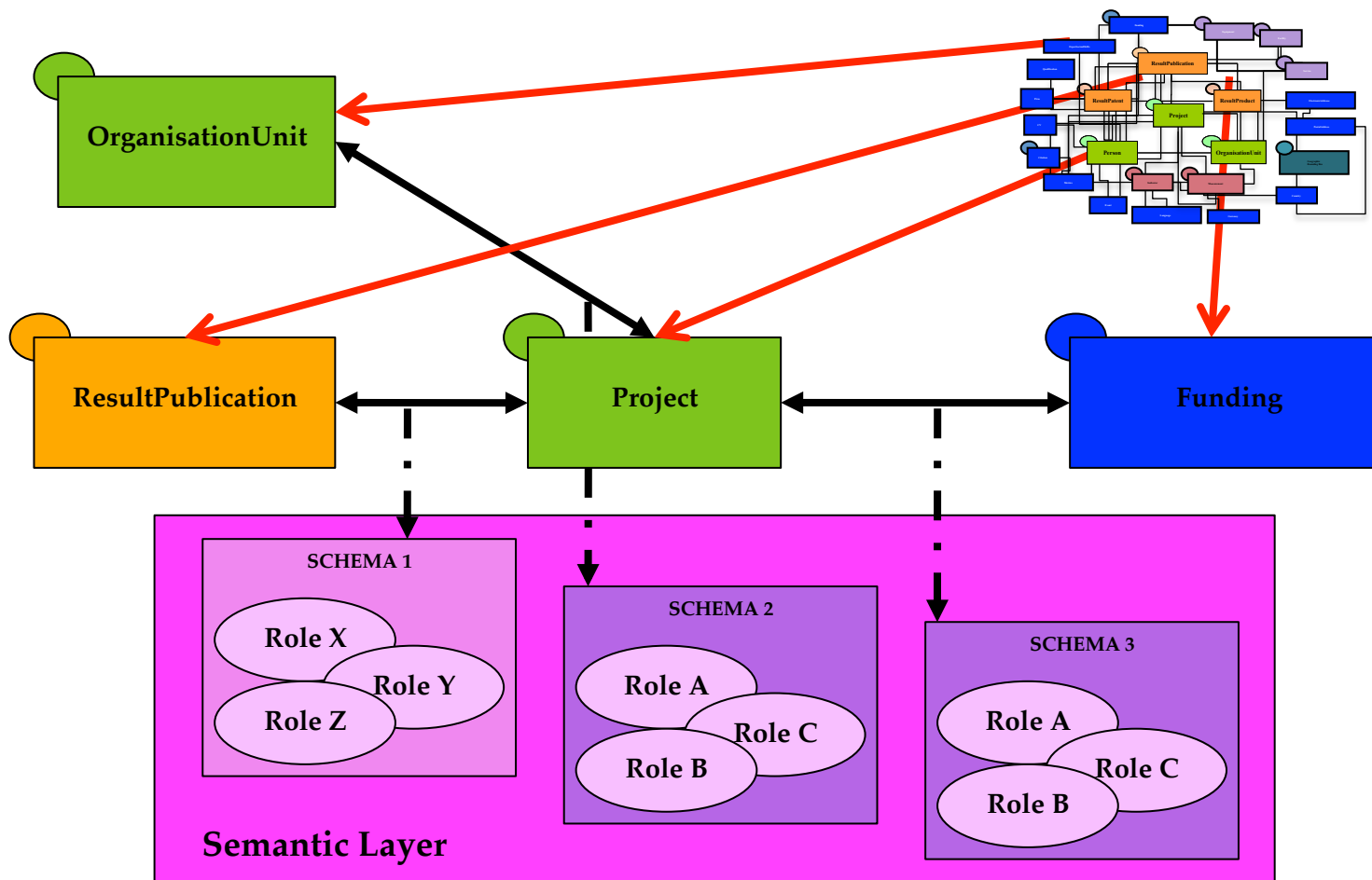
cfProj_Pers			
cfProjId	ID	NN	(PFK)
cfPersId	ID	NN	(PFK)
cfClassId	ID	NN	(PFK)
cfClassSchemeld	ID	NN	(PFK)
cfFraction	Float		
cfStartDate	Timestamp(6)	NN	(PK)
cfEndDate	Timestamp(6)	NN	(PK)

# CERIF – Generic Link Entity Structure

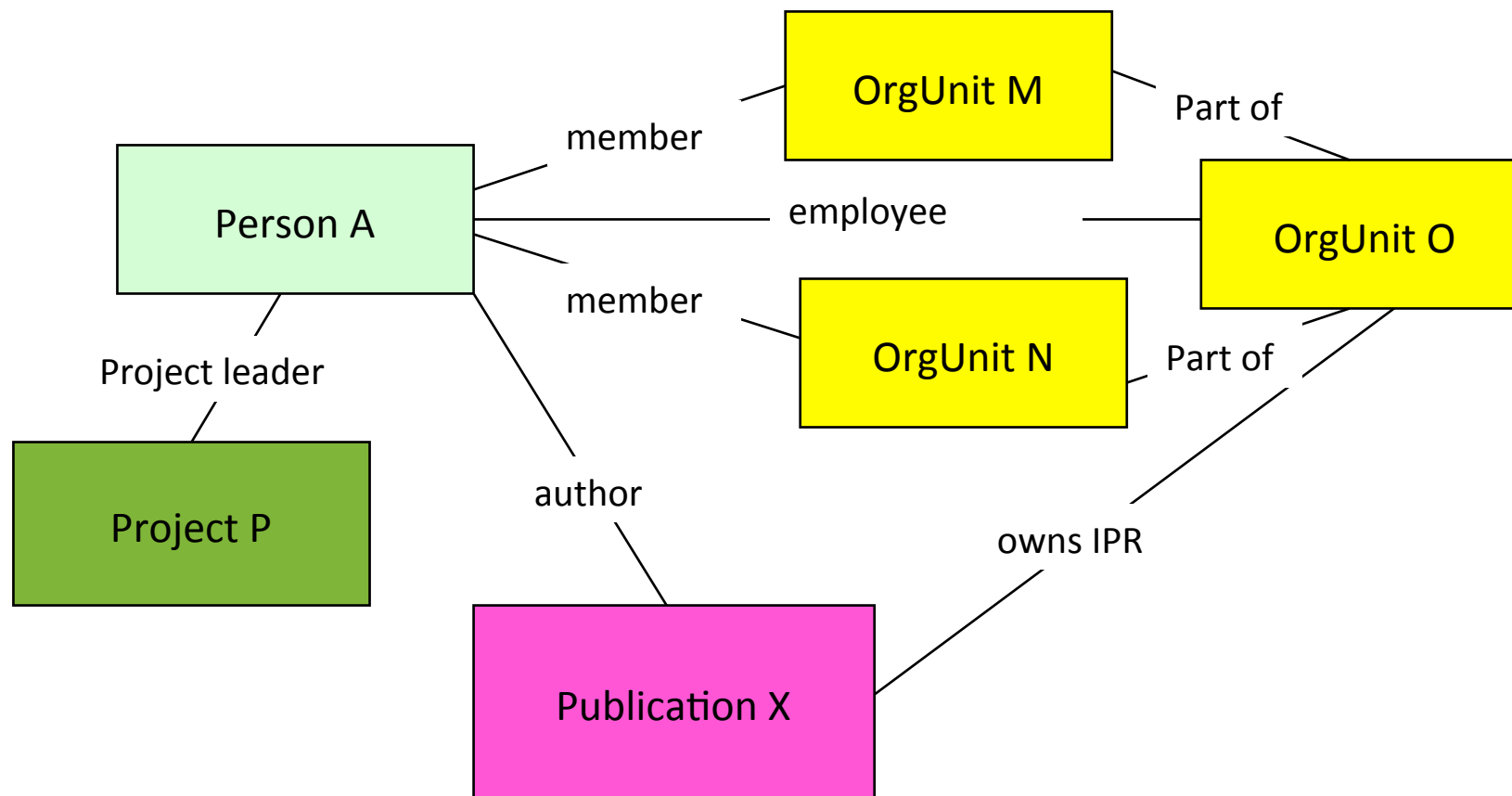




# CERIF Modularisation



# Result\_Publication Instance Diagram (slide by Keith Jeffery)



## CERIF Example (Aggregated Person 2008-1.2)

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 Example (Aggregated Person 1.3)

CERIF Person example database entry				Semantic Layer (CERIF Semantics)	
Data	Attribute	Table	Type	Classifications (cfClassIds)	Classification Schemes (cfClassSchemeIds)
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	af6468a0-3acf-11e1-b86c-0800200c9a66 (SpellingVariant)*	db2952c0-4d26-11e1-b86c-0800200c9a66 (CERIF1.3-PersonName-Person)*
classification-MA*	cfClassId	cfPers_Class	link	M.A.-uuid*	ACADEMIC-TITLES*
publ-analyzing-european-rtd*	cfResPubId	cfPers_ResPubl	link	49815870-1cfe-11e1-8bc2-0800200c9a66 (Author)*	b7135ad0-1d00-11e1-8bc2-0800200c9a66 (CERIF1.3-Person-Publication)*
publ-analytic-services-for-era*	cfResPubId	cfPers_ResPubl	link	49815870-1cfe-11e1-8bc2-0800200c9a66 (Author)*	b7135ad0-1d00-11e1-8bc2-0800200c9a66 (CERIF1.3-Person-Publication)*
orgunit-dfki*	cfOrgUnitId	cfPers_OrgUnit	link	980965b0-1cd5-11e1-8bc2-0800200c9a66 (Affiliation)*	994069a0-1cd6-11e1-8bc2-0800200c9a66 (CERIF1.3-Person-Organisation)*

# CERIF Example (Aggregated Organisatio 2008-1.2)

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-adameczak	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 (Aggregated Project 2008-1.2)

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-rt-d	cfResPubId	cfProj_ResPubl	link	Originator*	cfPROJ-PUBL*
publ-cris-research-activity	cfResPubId	cfProj_ResPubl	link	Originator*	cfPROJ-PUBL*
publ-analytic-services-for-the-era	cfResPubId	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 Example (Aggregated Project1.3)

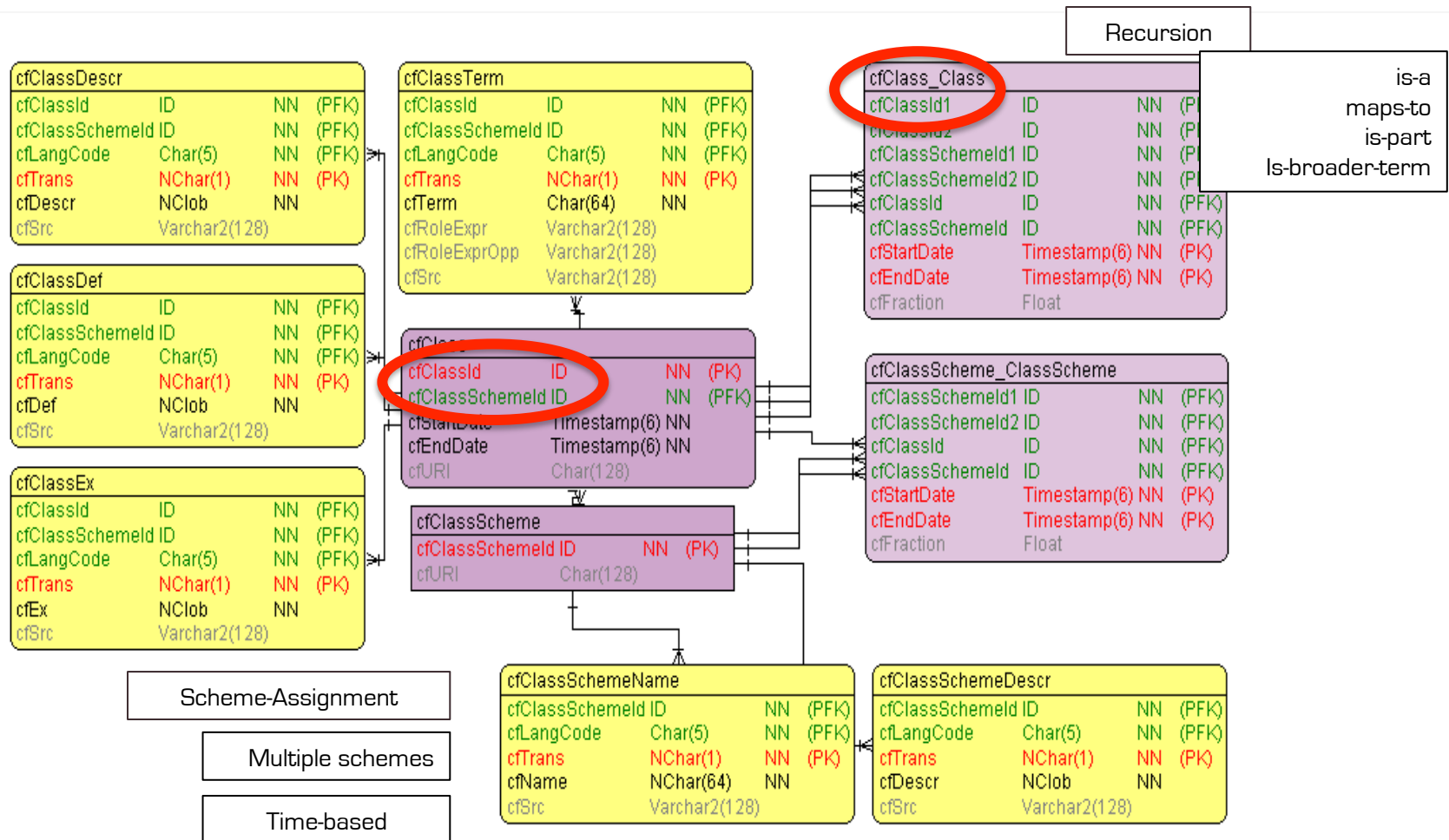
CERIF Project example database record				Semantic Layer (CERIF Semantics)	
Data	Attribute	Table	Type	Classifications (cfClassIds)	Classification Schemes (cfClassSchemeIds)
project-ist-world*	cfProjId	cfProj	base		
IST World	cfAcro	cfProj	base		
http://www.ist-world.org/	cfURI	cfProj	base		
2005-04-01	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-uuid*	FP6-IST-uuid*
publ-analyzing-eu-rtd*	cfResPublId	cfProj_ResPubl	link	eda2b2d9-34c5-11e1-b86c- 0800200c9a66 (Originator-uuid)*	759af931-34ae-11e1-b86c- 0800200c9a66 (CERIF1.3-Project- Publication-uuid)*
publ-cris-research-activity*	cfResPublId	cfProj_ResPubl	link	eda2b2d9-34c5-11e1-b86c- 0800200c9a66 (Originator-uuid)*	759af931-34ae-11e1-b86c- 0800200c9a66 (CERIF1.3-Project- Publication-uuid)*
publ-analytic-services-for-the- era*	cfResPublId	cfProj_ResPubl	link	eda2b2d9-34c5-11e1-b86c- 0800200c9a66 (Originator-uuid)*	759af931-34ae-11e1-b86c- 0800200c9a66 (CERIF1.3-Project- Publication-uuid)*

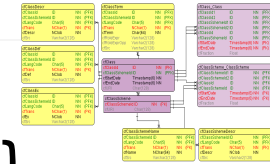
## CERIF Example (Aggregated Publication 2008-1.2)

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		
<a href="http://www.eurocris.org/fileadmin/Upload/Events/Conferences/CRIS2008/Papers/cris2008_Joerg.pdf">http://www.eurocris.org/fileadmin/Upload/Events/Conferences/CRIS2008/Papers/cris2008_Joerg.pdf</a>	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*



# CERIF Semantic Layer (Declared Semantics)





# CERIF Semantic Layer (Declared Semantics)

## CERIF / SKOS

-----  
Class / Concept  
ClassScheme / ConceptScheme

class-class / broadMatch  
class-class / broader  
class-class / broaderTransitive  
class-class / hasTopConcept  
class-class / mappingRelation

generic / explicit  
(open set) / (defined sets)

SKOS Types	SKOS Entity	SKOS-CERIF-Mapping (CIM view)	CERIF Entity
Class	Collection	is type of	cfClassScheme
Class	Concept	is a	cfClass
Class	ConceptScheme	is a	cfClassScheme
Class	OrderedCollection	is type of	cfClassScheme
lexical	altLabel	is term of class in lexical scheme	cfTerm
mapping	broadMatch	is term of class in mapping scheme	cfTerm
semantic rel.	broader	is term of class in semantic rel. scheme	cfTerm
semantic rel.	broaderTransitive	is term of class in semantic rel. scheme	cfTerm
docu	changeNote	is time-stamped descr. in new/old class	cfClassDescr
mapping	closeMatch	is term of class in mapping scheme	cfTerm
docu	definition	is a	cfDef
map prop	editorialNote	is time-stamped descr. in new/old class	cfClassDescr
		is descr. in mapping scheme	cfCISchDescr
		is cerif publication record reference	cfResPubl
docu	example	is a	cfEx
conc schemes	hasTopConcept	is term of class in concept scheme	cfTerm
lex label	hiddenLabel	is term of class in lexical scheme	cfTerm
docu	historyNote	is time-stamped descr. in new/old class	cfClassDescr
		is descr. in docu scheme	cfCISchDescr
		is cerif publication record reference	cfResPubl
conc schemes	inScheme	inherent cerif linkage (mandatory)	cfCISchID
map prop	mappingRelation	is term of class in mapping scheme	cfTerm
conc coll.	member	is term of class in conc coll. scheme	cfTerm
conc coll.	memberList	is term of class in conc coll. scheme	cfTerm
map prop	narrowMatch	is term of class in mapping scheme	cfTerm
semantic rel	narrower	is term of class in semantic rel. scheme	cfTerm
semantic rel	narrowerTransitive	is term of class in semantic rel. scheme	cfTerm
notations	notation	is	cfClassScheme
docu	note	is time-stamped descr. in new/old class	cfClassDescr
		is descr. in docu scheme	cfCISchDescr
		is cerif publication record reference	cfResPubl
lex label	prefLabel	is term of class in lexical scheme	cfTerm
semantic rel	related	is term of class in semantic rel. scheme	cfTerm
map prop	relatedMatch	is term of class in mapping scheme	cfTerm
docu	scopeNote	is time-stamped descr. in new/old class	cfClassDescr
		is descr. in docu scheme	cfCISchDescr
		is cerif publication record reference	cfResPubl
semantic rel	semanticRelation	is term of class in semantic rel. scheme	cfTerm
conc schemes	topConceptOf	is term of class in concept schemes	cfTerm

Joerg, B.; Jeffery, K.G.; Van Grootel, G. (2011): Towards a Sharable Research Vocabulary – A Model-driven Approach; MTSR 2011, Izmir, Turkey.

# CERIF Semantic Layer

## Allows to capture any Schema or Structure

- Flat Lists
- Classification Systems (i.e. SKOS, FOAF, ...)
- Taxonomies
- Ontologies

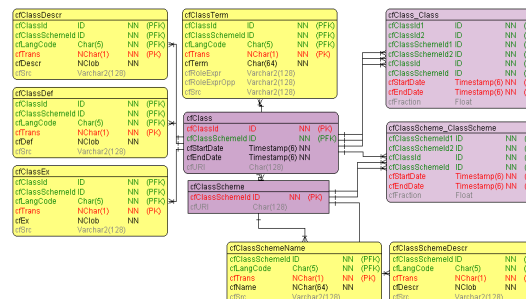
## Open / Extensible in all directions

- New Schemas
- New Concepts / Terms
- New Relationships

## Enables to manage

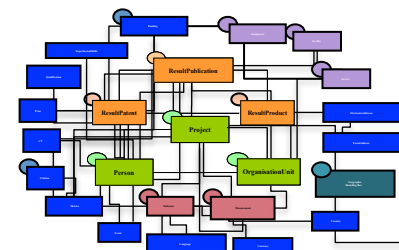
- Roles / Types Semantics
- Subject Headings
- Archiving (Time component)

## Allows for simple Mappings between Schemes



# CERIF XML Interchange Format

- Based on W3C Standards
- Refers to XML Schema for Validation
- XML files corresponding to CERIF Structure  
-> Entities / Separation of Relationships
- CERIF XML Specification Document



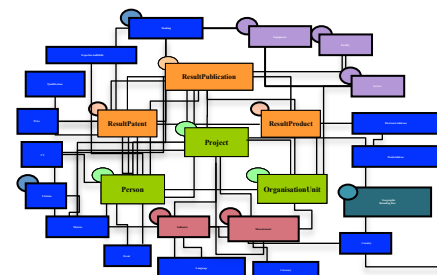
<http://www.euroCris.org/cerif/cerif-releases/>

Will be substantially upgraded with CERIF 2.0  
is available for testing

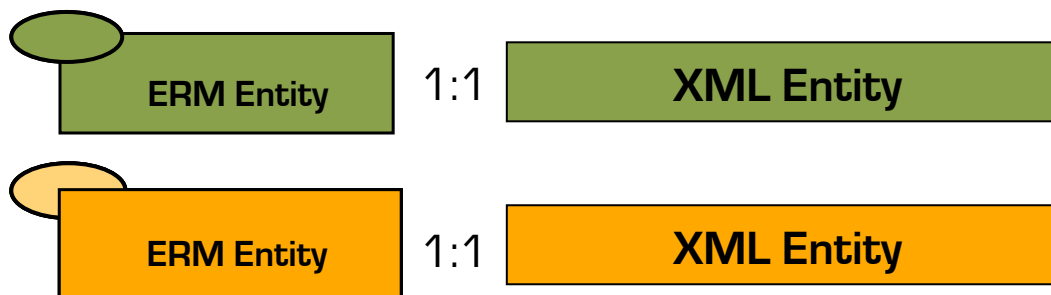
# CERIF 1.3 XML Interchange Format

## According to the CERIF Model Structure

- Base Entities
- Result Entities
- Infrastructure Entities
- 2nd Level Entities
- Link Entities
- Multilingual Features
- Semantic Features
- Measurement Features
- Geographic Features



*Will be substantially upgraded with CERIF 2.0  
is available for testing*



# CERIF 1.3 XML Interchange Format (1:1)

```

<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>2099-12-31</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>

```

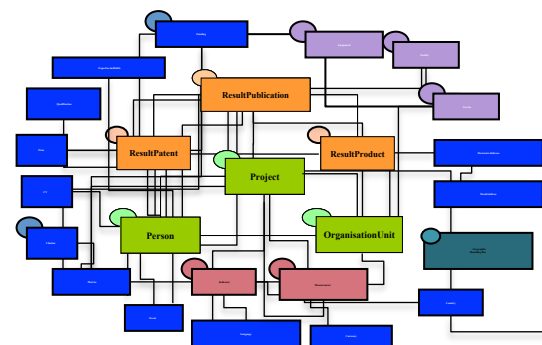
## CERIF 2.0 XML Interchange Format (embedded)

```
<cfProj>
  <cfProjId>internal-project-identifier</cfProjId>
  <cfAcro>ACRO</cfAcro>
  <cfURI>http://www.project-url.ac.uk/acro.html</cfURI>
  <cfTitle cfLangCode="en-GB" cfTrans="o">The Title of the Project</cfTitle>
  <cfAbstr cfLangCode="o" cfTrans="o">This is the activity description of the project</cfAbstr>
  <cfProj_Class>
    <cfClassId>casrai-activity-type-uuid</cfClassId>
    <cfClassSchemeld>casrai-activity-types-scheme-uuid</cfClassSchemeld>
    <cfStartDate>2004-03-27T00:00:00</cfStartDate>
    <cfEndDate>2007-03-27T00:00:00</cfEndDate>
  </cfProj_Class>
  <cfProj_Class>
    <cfClassId>casrai-activity-temporal-classification-type-uuid</cfClassId>
    <cfClassSchemeld>casrai-temporal-classification-type-scheme-uuid</cfClassSchemeld>
    <cfStartDate>2004-03-27T00:00:00</cfStartDate>
    <cfEndDate>2007-03-27T00:00:00</cfEndDate>
  </cfProj_Class>
</cfProj>
```

# CERIF 1.3 Release

## CERIF - 1.3

- CERIF Model Introduction and Specification ✓
- CERIF XML Data Exchange Format Specification -> **2.0**
- CERIF Formal Semantics (Vocabulary) ✓
- CERIF SQL Scripts ✓
- CERIF XML Schemas ✓
- CERIF XML Examples ✓
- CERIF Semantics (Excel) ✓

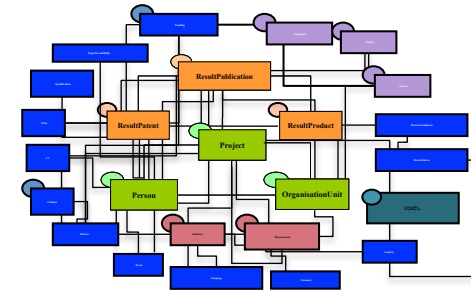


*For internal usage, we implemented a script to transform CERIF XML into SQL commands (to add semantics); furthermore, we have a new XML Schema (one namespace only) which can be tested. **Please be in contact!***



## Ongoing Activities towards CERIF 2.0

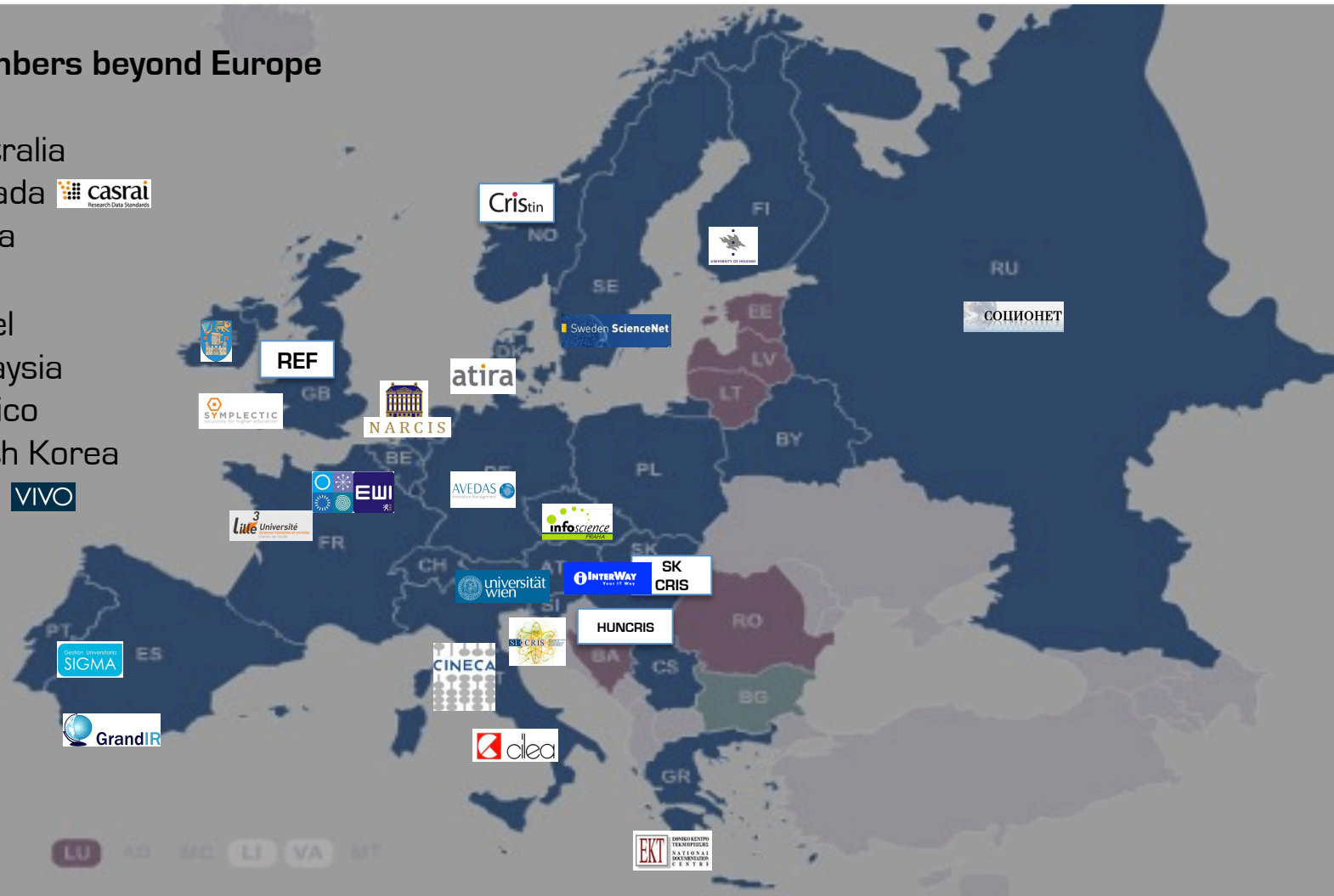
- Multiple / External Identifiers
- CERIF XML (Embedded)
- Person Names & Person Titles
- Education, Geolocation Entity
- Cross-TG Activities
- **SEMANTICS**



# Ongoing Activities

## Members beyond Europe

- Australia
- Canada 
- China
- Iran
- Israel
- Malaysia
- Mexico
- South Korea
- U.S. 



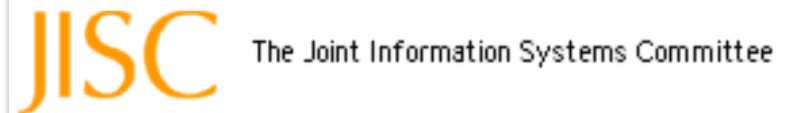
# Strategic Partnerships



*International Council for Science;  
Commission on Data Access*



*European Association of Research  
Managers and Administrators*



← Alliance for Permanent Access →

ALLEA

*All European Academies*



## Active Taskgroup Members (CERIF 1.3)

- Brigitte Jörg, DFKI GmbH, Berlin, Germany (**Leitung**)
- Keith Jeffery, Science and Technology Facilities Council, Didcot, UK
- Geert van Grootel, Flemish Government, Brussels, Belgium
- Jan Dvorák, InfoScience, Praha, Czech Republic
- Anne Asserson, University of Bergen, Bergen, Norway
- Henrik Rasmussen, atira, Aalborg, Denmark
- Thomas Vestdam, atira, Aalborg, Denmark
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- Nikos Houssos National Documentation Center, Athens, Greece
- Miguel-Angel Sicilia, UAH, Alcalá, Spain
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- David Baker, CASRAI, Ottawa, Canada
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- Ken Evans, ORM Foundation, United Kingdom

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**CRIS2012** June 6-9, 2012 @ Prague  
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Current Research Information Systems



**CRIS 2012 – June 6-9<sup>th</sup>, 2012 in Prague**  
**e-Infrastructures for Research and Innovation:**  
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2. Advances in technology
3. Future trends in research information management

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## Further Information



[www.euroCRIS.org](http://www.euroCRIS.org)