

Workpackage 2

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MAPPING INTERNATIONAL COLLABORATION NETWORKS IN THE FIELD OF EMIDA

- To assess the **bilateral level** of collaboration between any two entities
 - Countries (macrolevel)
 - Research institutions (mesolevel)
 - Individual researchers (microlevel)
- To monitor **time and geographic patterns** of collaboration in specific research sectors
- To review outcome & impact of **collaborative research funding**
- To compare the role of actors in networks: **social network analysis**

Co-publications

source of data : addresses of authors in
publications

Partnerships in research programmes or projects

ex: EC-funded projects Database

Visualize and analyze collaboration
between countries or between research institutions
based on their co-publications

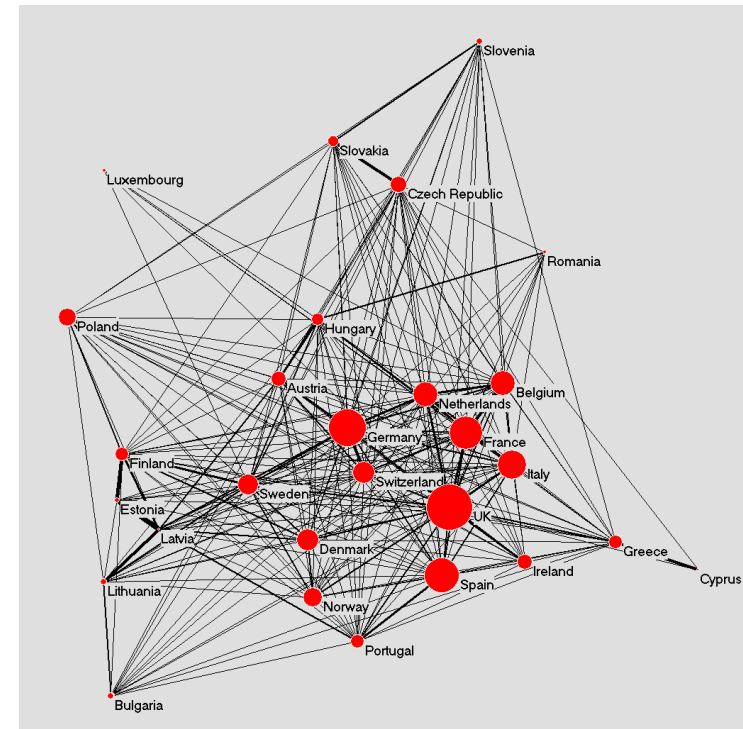
Two major modes of presentation for co-publication patterns

Matrices

	USDA (US)	Univ Iowa (US)	Swedish Univ Agr Sci (SE)	Univ Ghent (BE)	Univ Minnesota (US)	FLI (DE)	Univ Autonoma Barcelona (ES)	Univ Guelph (CA)
USDA (US)		42	0	0	13	0	3	1
Univ Iowa (US)	42		2	0	19	0	0	1
Swedish Univ Agr Sci (SE)	0	2		0	0	2	0	0
Univ Ghent (BE)	0	0	0		1	2	0	1
Univ Minnesota (US)	13	19	0	1		0	0	0
FLI (DE)	0	0	2	2	0		0	0
Univ Autonoma Barcelona (ES)	3	0	0	0	0	0		0
Univ Guelph (CA)	1	1	0	1	0	0	0	

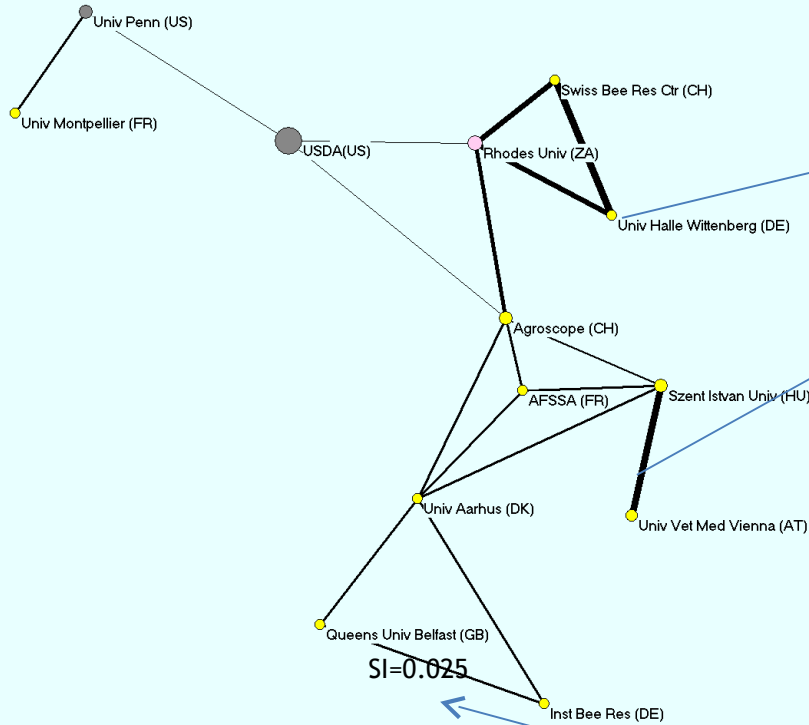
- Contain all the data
- No data exploration nor visualization
- Poor medium of communication

Networks



- Two-dimension representation of affinity
- Selected actors
- Good visualization

Graph = set of *nodes* and of *links* btw nodes



→ **Node** (vertex - actor)

→ **Link** (Tie)

↳ Oriented
= Arc

↳ Not oriented
= Edge

Components = unconnected parts of a graph

Information on actors

qualitative : ex country ↔ colour

quantitative : ex: nb public. ↔ size circle

Information on links (quantitative)

- Nb shared publications

- Normalized measures of proximity

graph + information = network

Measuring linkage strength btw two actors (= proximity)

- Not normalized measure : nb of shared publications

→ Strongly biased by the size of each actor

- Normalized measure: correction by the size of each actor

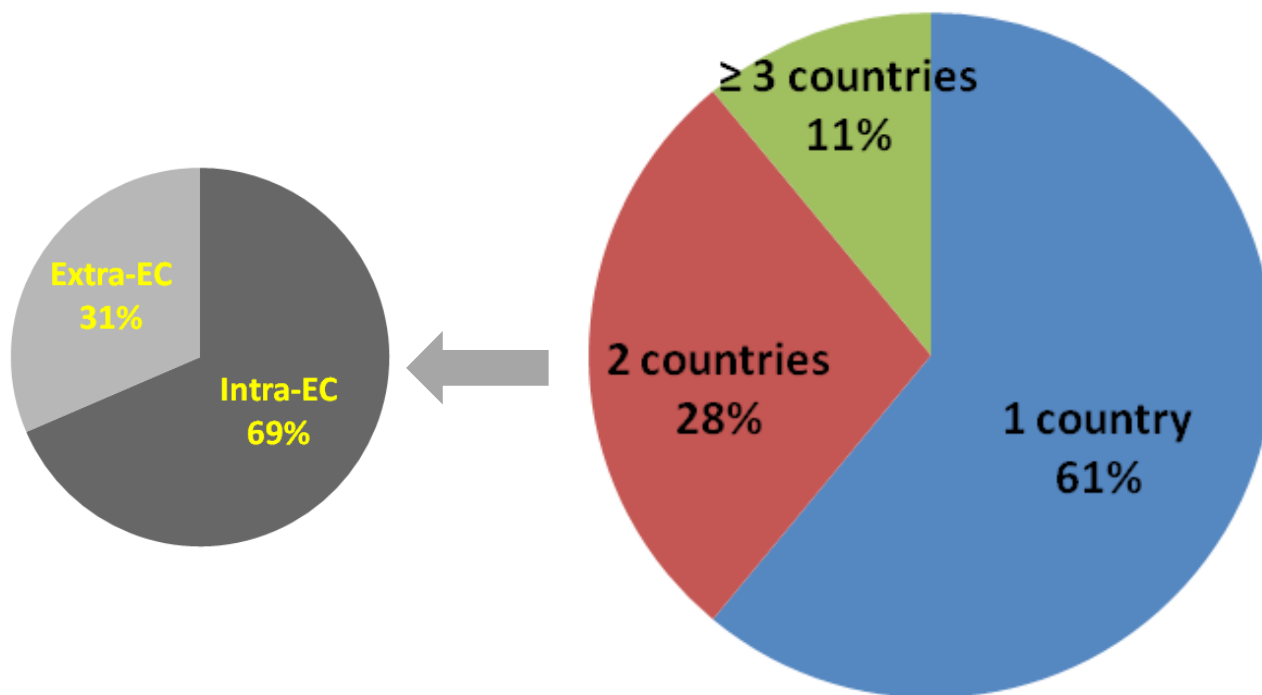
Ex: **Salton Index (SI)** = Nb public. shared by A & B / [nb (A)*nb

Significant SI (B)] ≥ 0.025

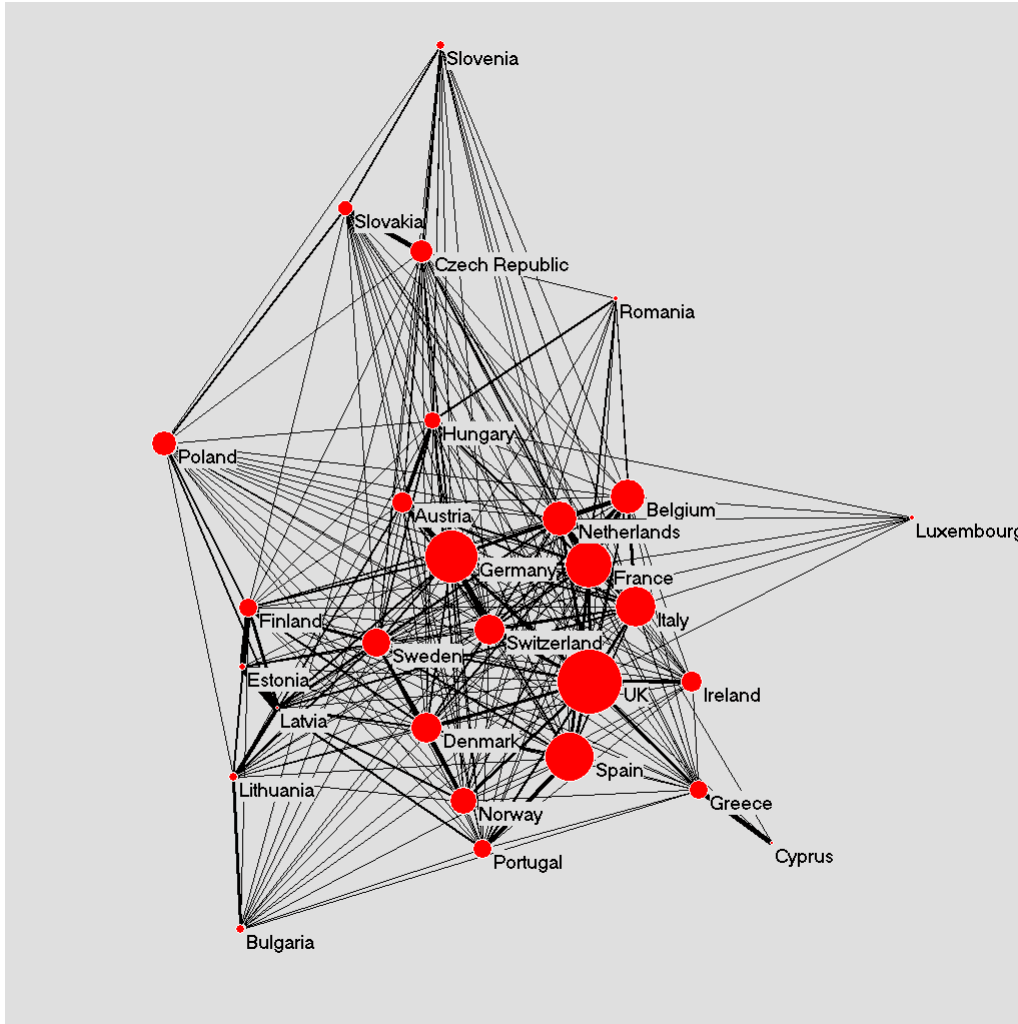
Strong SI: ≥ 0.050

SHARE OF INTERNATIONAL PUBLICATIONS

EMIDA database 2006-2010 : a total of 14,750 publications



CO-PUBLICATIONS BETWEEN EU COUNTRIES (1)

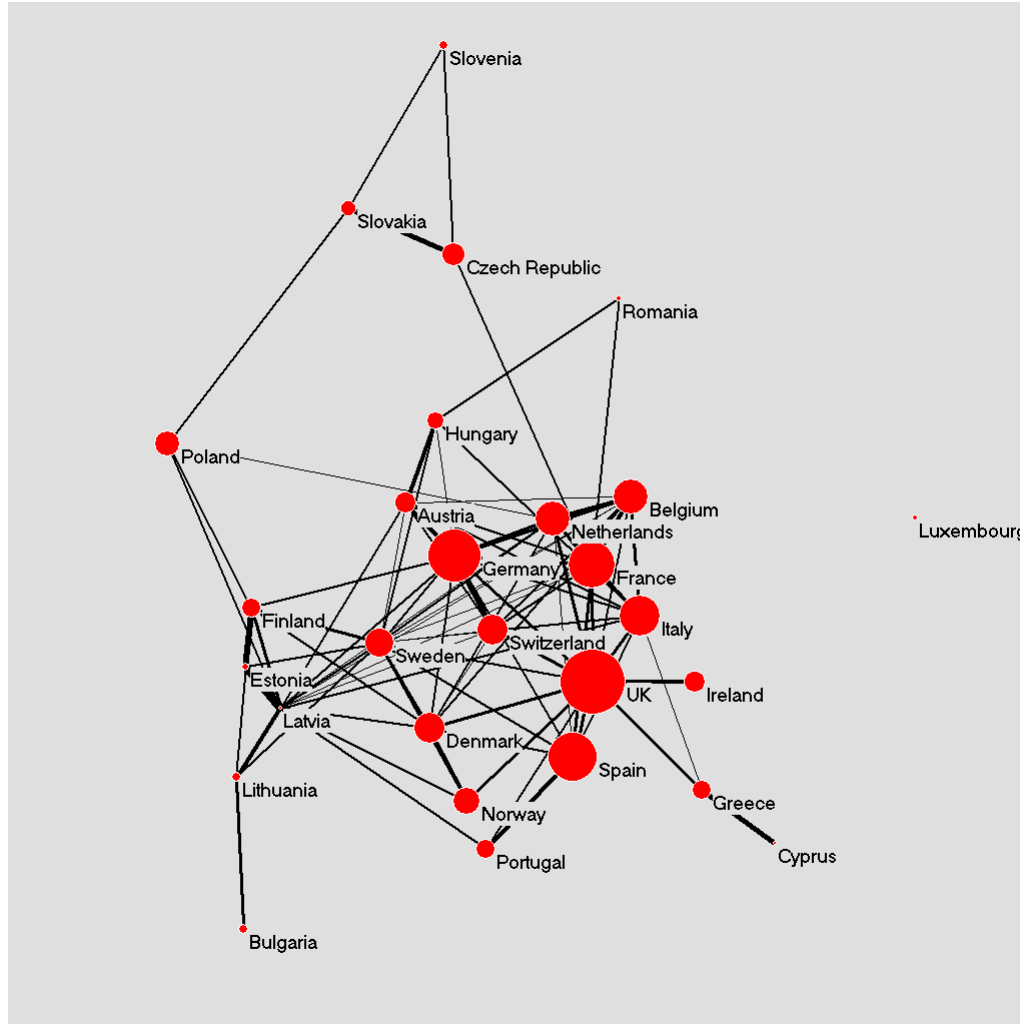


Setting no threshold for SI



1 single component

CO-PUBLICATIONS BETWEEN EU COUNTRIES (2)

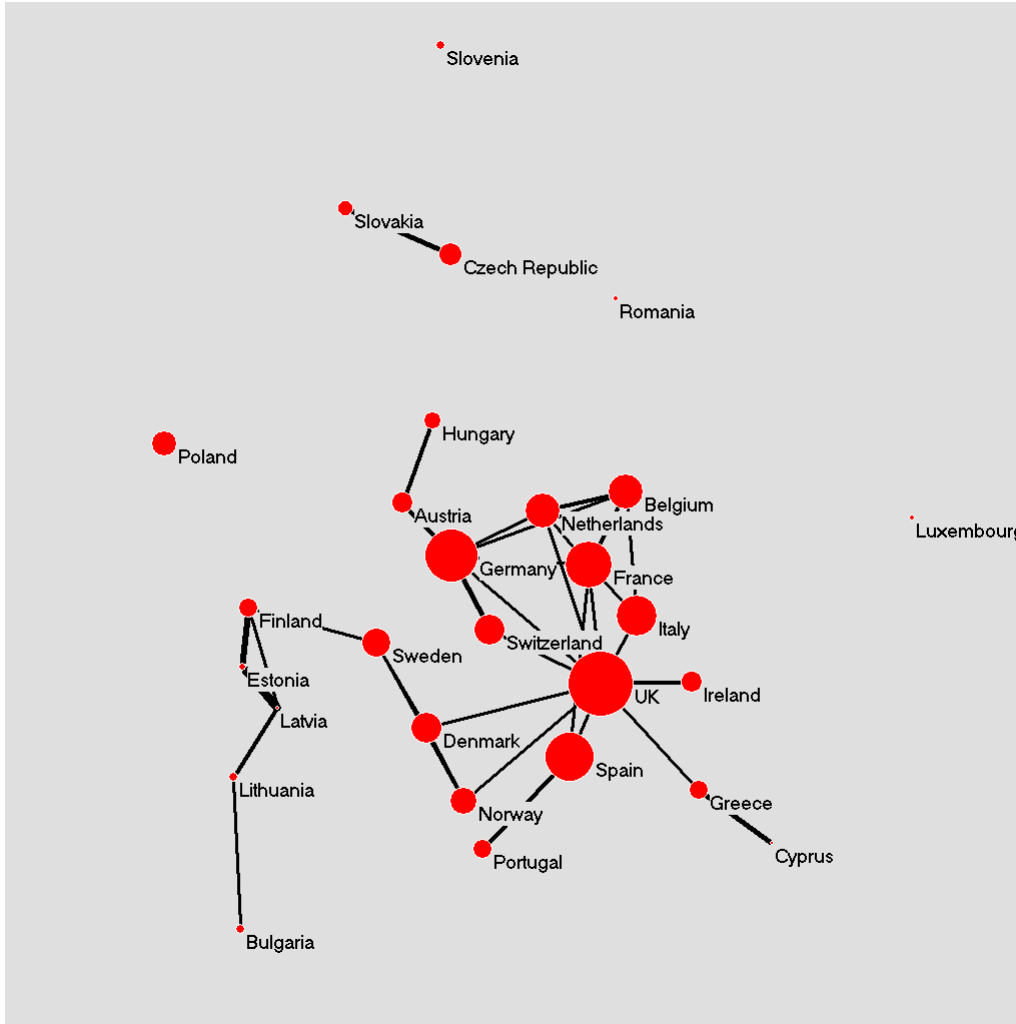


Setting $SI \geq 0.025$



2 components

CO-PUBLICATIONS BETWEEN EU COUNTRIES (3)

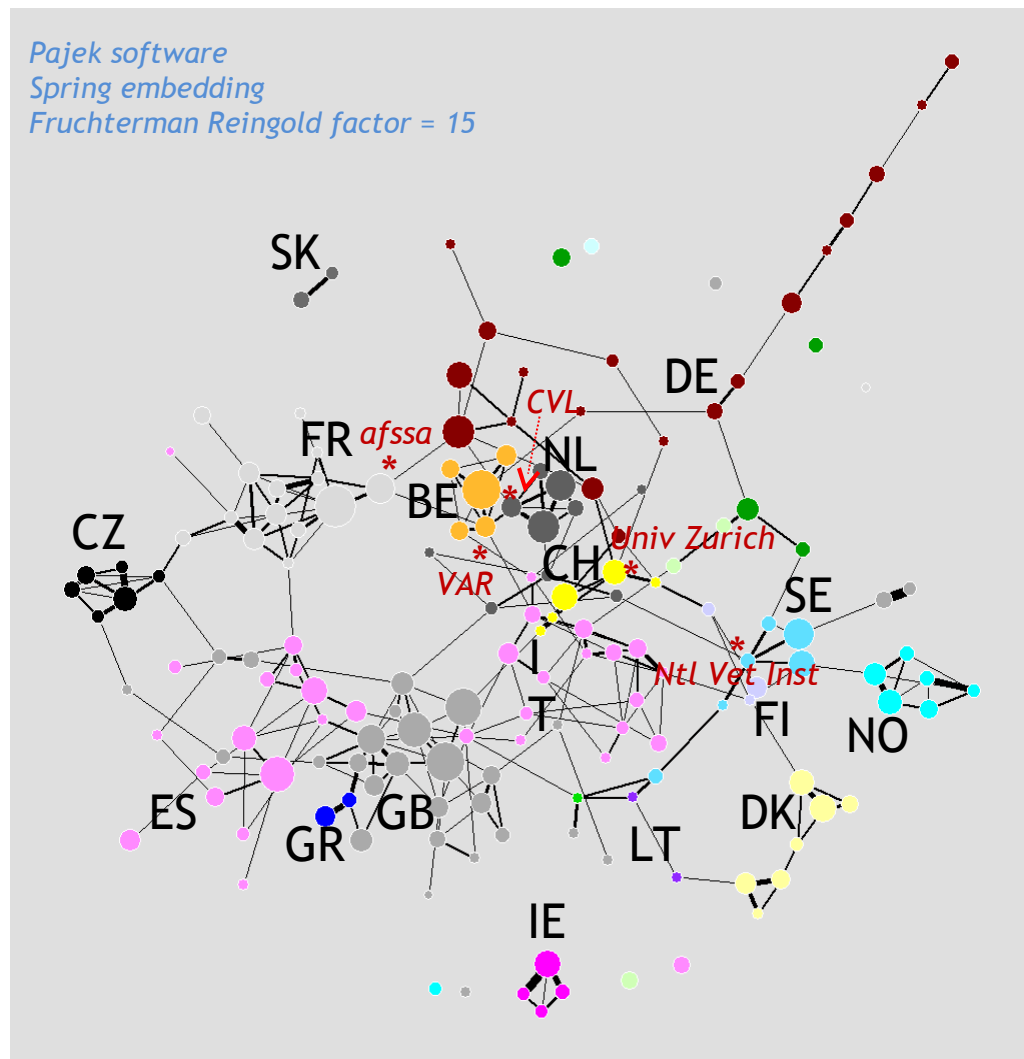


Setting $SI \geq 0.050$



6 components

(1) Global representation - all links



165 institutions with ≥ 30 pub

+
SI ≥ 50



1 major component

Country clusters

Some institutions
with more intense international
activity

(2) Focus on Viral diseases in Ruminants

58 institutions with ≥ 5 pub.

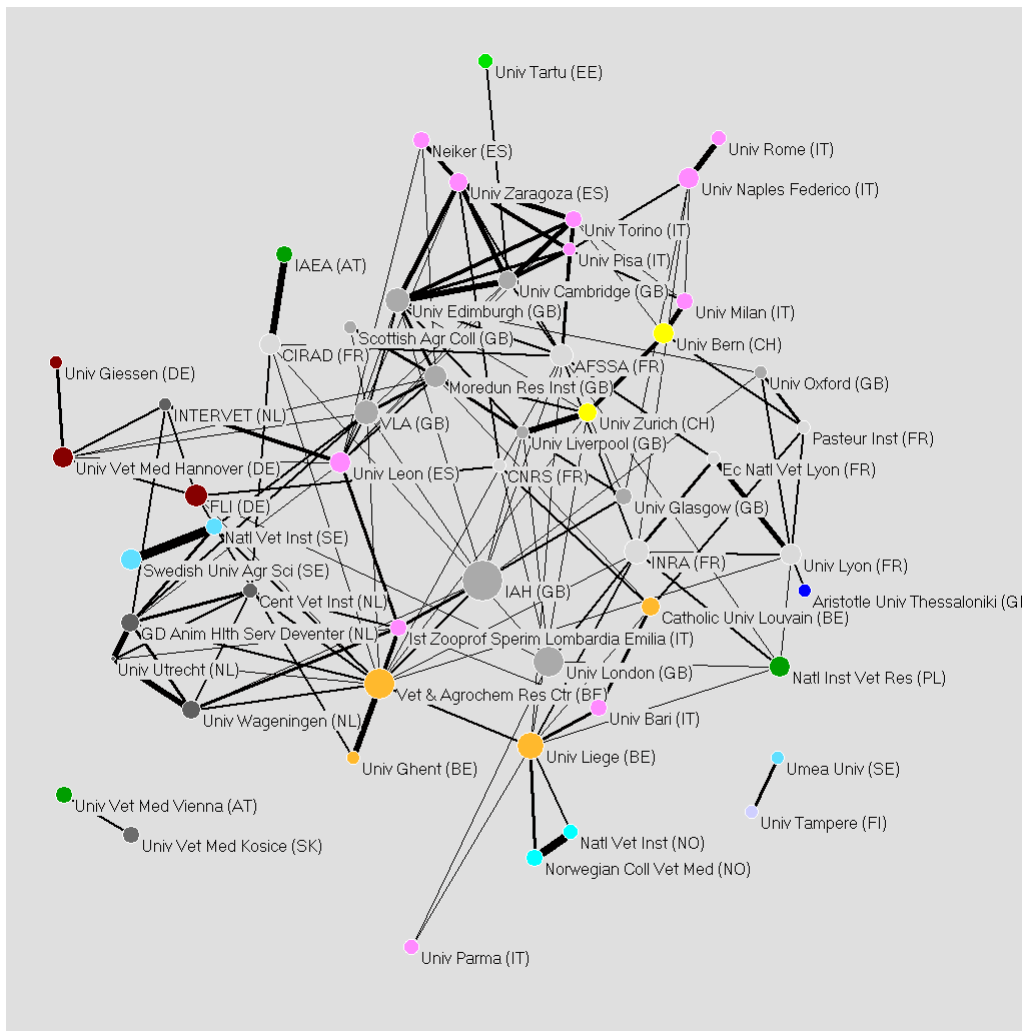
+

SI ≥ 0.050



1 major component

2 small ones



(2) Focus on Viral diseases in Ruminants (cont.)

58 institutions with ≥ 5 pub.

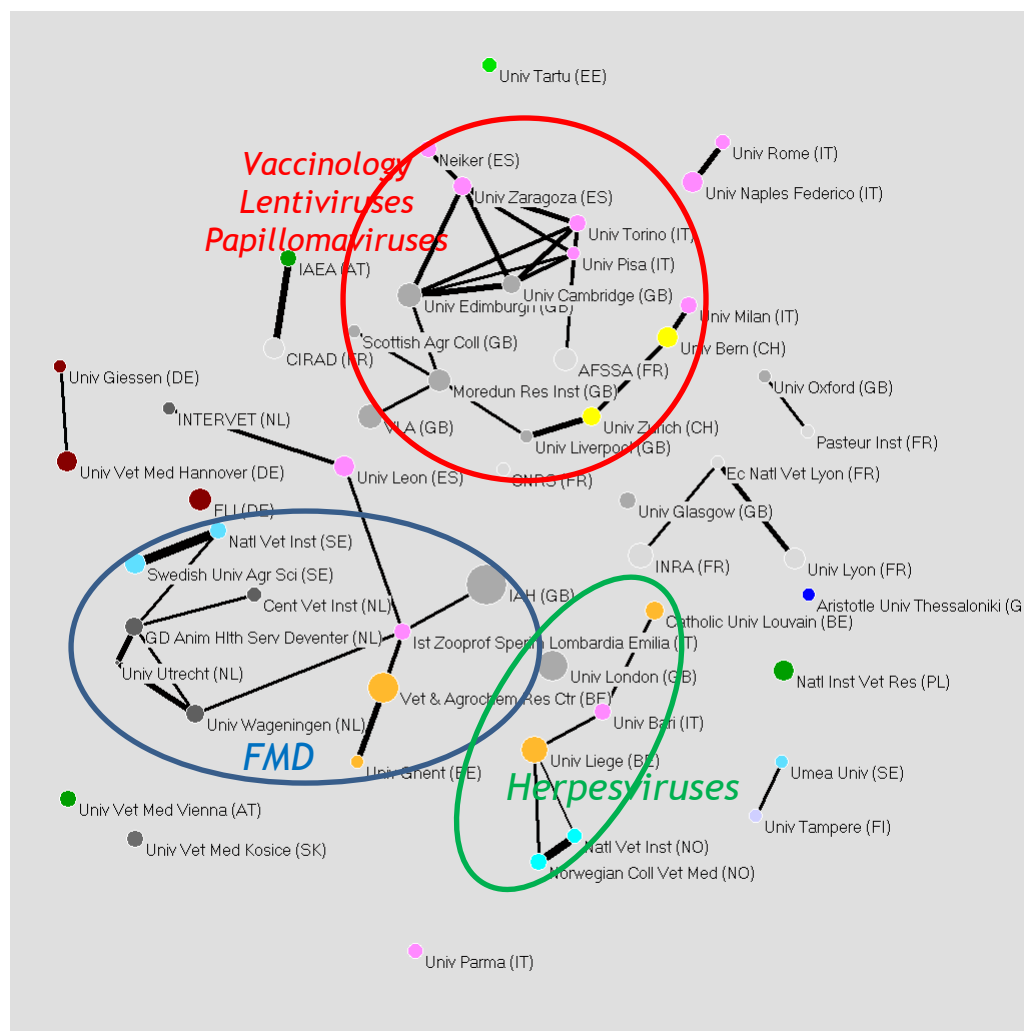
+

SI ≥ 0.150



3 European large clusters

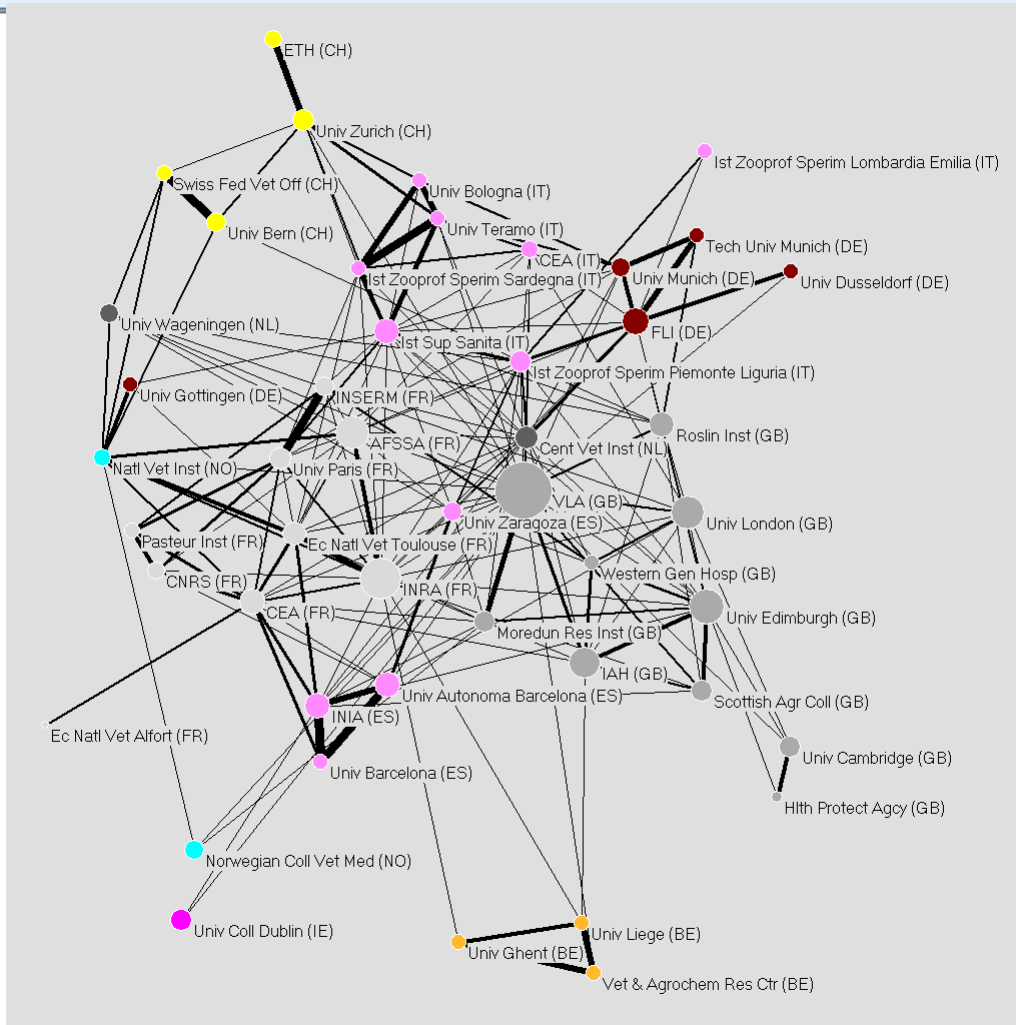
- Vaccinology, Lenti-, Papillomavir
- FMD
- Herpesviruses



CO-PUBLICATIONS BETWEEN RESEARCH INSTITUTIONS

IN EC

(3) Focus on prion diseases



47 institutions with ≥ 6 public

No SI threshold



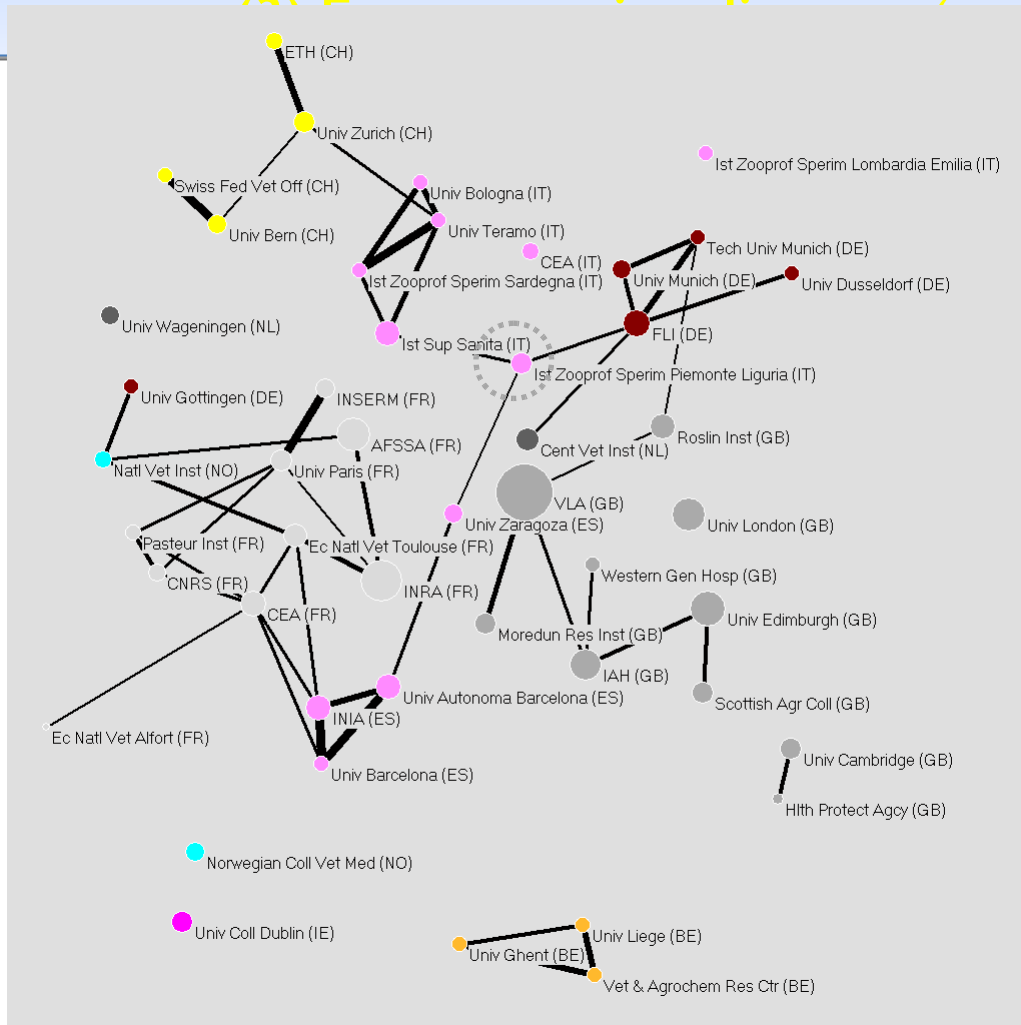
A single component

Predominant national clustering
with few exceptions:

Ex: *Univ Gottingen (DE)*

Univ Zaragoza (ES)

CO-PUBLICATIONS BETWEEN RESEARCH INSTITUTIONS IN EC



47 institutions with ≥ 6 pub.

+

SI ≥ 0.150



**A major component
(36 institutions)**

Connecting institutions

ex: Ist Zooprof Sperim Piemonte

CO-PUBLICATION NETWORKS IN EMIDA WEB INTERFACE



