

*Consortium meeting, Paris, October 2009*

**WP2 ACTIVITIES FOLLOW-UP**

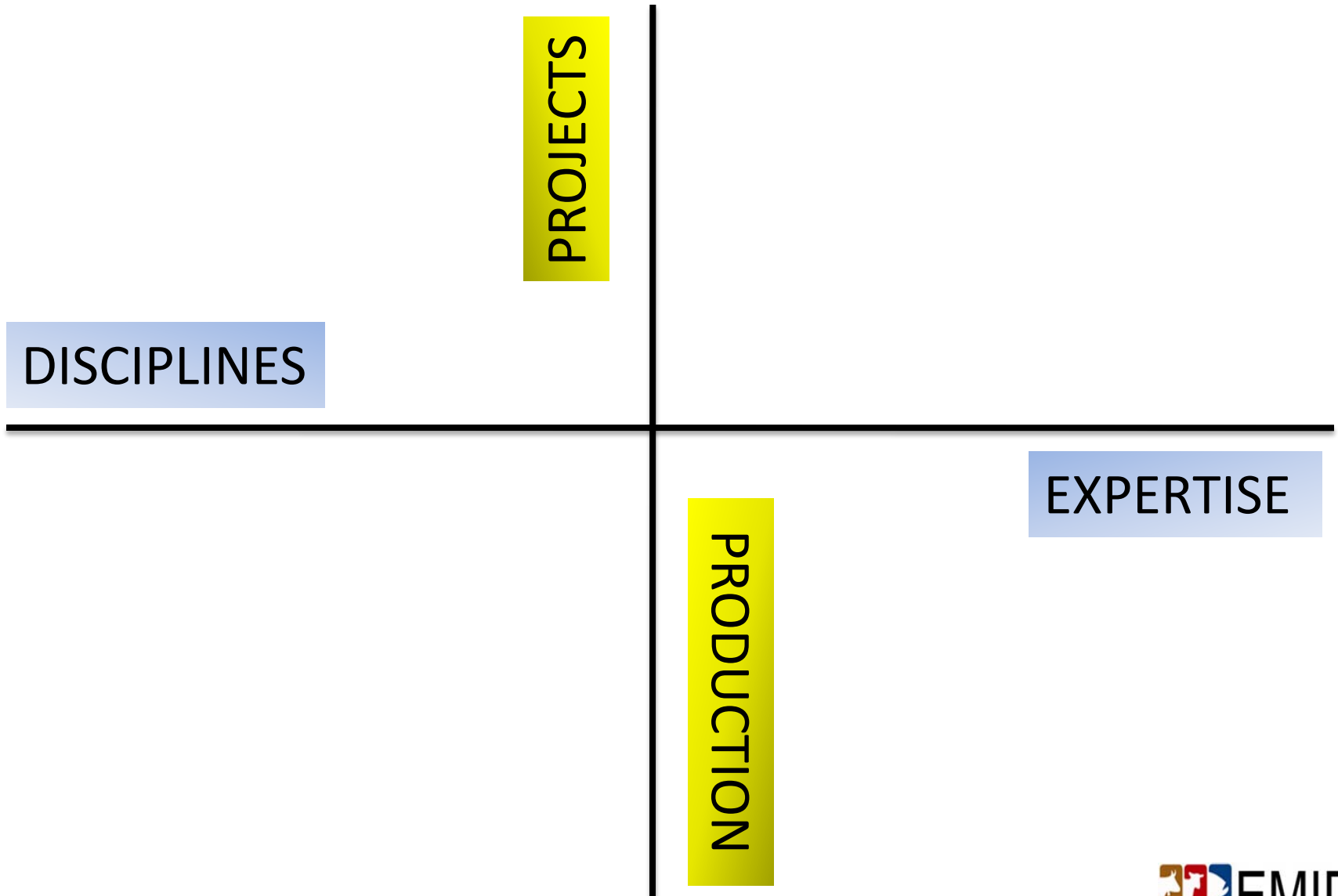
**MAPPING OF DISCIPLINES & EXPERTISE**

**DL2-6**

**Review of key areas/disciplines linked to animal health identifying expertise, existing work, opportunities and recommendations for increased inter-disciplinary research and collaboration**

**month 24 = May 2010**

# A TRANSVERSAL MAPPING EXERCISE



**Key areas/Disciplines**

**Expertise**

**Inter-disciplinary collaboration**

**MAPPING**



**Opportunities & Recommendations**

**COLLECTIVE REVIEW**

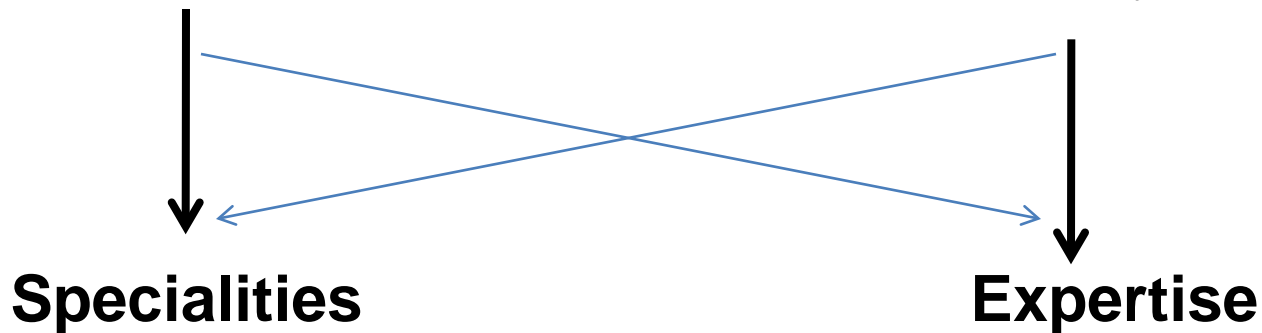
***SUBJECT***

**Academic disciplines**

- Immunology
- Bacteriology
- Epidemiology....

**Research fields**

- Vaccinology
- Antimicrobial resistance
- Food safety....



***KNOWLEDGE HANDLING***



**MULTIDISCIPLINARITY**

**INTERDISCIPLINARITY**

**TRANSDISCIPLINARITY**

**RESEARCH PUBLICATIONS**



**BIBLIOMETRICS DATA BASES**



**ISI Web of Knowledge**

**CLASSIFICATION  
OF JOURNALS  
BY SUBJECT CATEGORIES (SC)**

**CABI**

**CLASSIFICATION  
OF RESEARCH FIELDS  
(CABICODES)**

## SUBJECT CATEGORIES OF ISI WEB OF KNOWLEDGE (SC)

SC	VETERINARY SCIENCES	VET	4398	32.3%
SC	MICROBIOLOGY	MIC	2508	18.4%
SC	PARASITOLOGY	PAR	1401	10.3%
SC	BIOTECHNOLOGY & APPLIED MICROBIOLOGY	BAM	1328	9.8%
SC	IMMUNOLOGY	IMM	1303	9.6%
SC	FOOD SCIENCE & TECHNOLOGY	FST	1166	8.6%
SC	VIROLOGY	VIR	884	6.5%
SC	INFECTIOUS DISEASES	IDI	858	6.3%
SC	AGRICULTURE, DAIRY & ANIMAL SCIENCE	ADA	811	6.0%
SC	BIOCHEMISTRY & MOLECULAR BIOLOGY	BMB	670	4.9%
SC	FISHERIES	FIS	662	4.9%
SC	MARINE & FRESHWATER BIOLOGY	MFW	596	4.5%

- LL821** PRION, VIRAL, BACTERIAL AND FUNGAL PATHOGENS OF ANIMALS
- LL822** PROTOZOAN, HELMINTH, MOLLUSC AND ARTHROPOD PARASITES OF ANIMALS
- VV210** PRION, VIRAL, BACTERIAL AND FUNGAL PATHOGENS OF HUMANS
- ZZ395** GENETICS AND MOLECULAR GENETICS OF MICROORGANISMS
- LL650** ANIMAL IMMUNOLOGY
- HH600** HOST RESISTANCE AND IMMUNITY
- LL886** DIAGNOSIS OF ANIMAL DISEASES
- YY700** PATHOGENS, PARASITES AND INFECTIOUS DISEASES (WILD ANIMALS)
- LL120** MEAT-PRODUCING ANIMALS
- ZZ360** GENERAL MOLECULAR BIOLOGY
- ZZ900** TECHNIQUES AND METHODOLOGY
- LL110** DAIRY ANIMALS

# THREE LEVELS OF ANALYSIS

## Research domains

**PATHOGENS**

Bacteria  
Viruses  
Parasites

### ANIMALS

Ruminants Pigs Poultry Fish

= 12 research domains

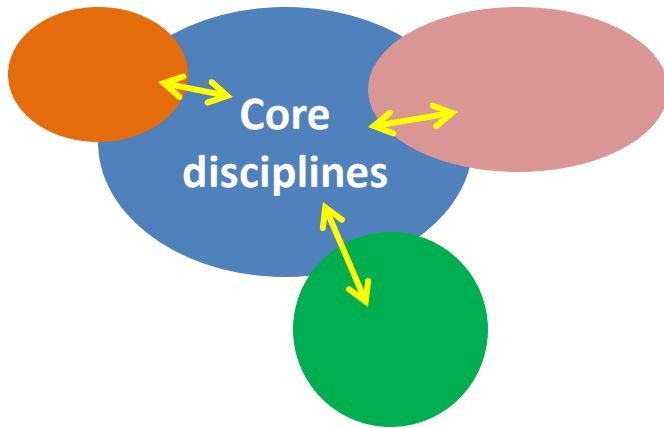
## Research organisms

Focus on ~80 main organisms in EC27

## Individual researchers

Out of scope

# LINKAGE & CONNECTIONS BETWEEN DISCIPLINES



Measure of distance  
= Chi-square  $\chi^2$

## RESEARCH DOMAINS

DISCIPLINES (SC or CC)

	I	II	III
A	$\chi_{AI}^2$	$\chi_{AII}^2$	$\chi_{AIII}^2$
B	$\chi_{BII}^2$	$\chi_{BIII}^2$	$\chi_{AIII}^2$
C	$\chi_{BIII}^2$	$\chi_{CIII}^2$	$\chi_{AIII}^2$

For each Res. Domain (or Res. Organism):

**SPECIALIZATION**

Range of SC (or CC)  
in primary publications

$$S = \frac{\sum_i (\# \text{pap. in } SC_i)^2}{\{\sum_i (\# \text{pap. in } SC_i)\}^2}$$

**INTEGRATION**

Range of SC (or CC)  
in cited publications

$$I = 1 - \frac{\sum_{ij} \{p_i p_j \times \cos(SC_i / SC_j)\}}{\sum_{ij} (p_i p_j)}$$

**PREDEFINED CATEGORIES (SC or CC)**

**NATURAL CLUSTERING OF UNITS (=citing references)  
BASED ON SHARED REFERENCES (=cited references)**



**COGNITIVE STRUCTURE IN EACH RESEARCH DOMAIN**

- ✓ **CORE DOCUMENTS**
- ✓ **NUMBER OF CLUSTERS**
- ✓ **SCIENTIFIC QUALIF. OF CORE & CLUSTERS**

~~RECOGNIZED DISCIPLINES (SC & CC)~~

~~« NATURAL » COGNITIVE STRUCTURES~~

## EMERGING DISCIPLINES OR « TRANSDISCIPLINES »

INVENTORY (litterature review)



CONSTRUCTION OF *AD HOC* THESAURUS



BIBLIOMETRIC SEARCHES



MAPPING OF EXPERTISE IN EUROPE

## A. Inventory and linkages of disciplines in EMIDA research domains

A.1 ISI subject categories (basic disciplines)

A.2 CAB categories (applied research fields)

## B. Interdisciplinarity at the level of research domains

*specialization versus integration*

## C. Interdisciplinarity at the level of research organisms

*specialization profiles*

## D. Identification of cognitive structures by bibliographic coupling

## E. Emerging disciplines and mapping of related expertise

## TENTATIVE TIMETABLE

*MARCH 2010*

**REPORT VERSION 1 SUBMITTED TO :**

**CONTRACTED REVIEWERS**



**CONSORTIUM**

*JUNE 2010*

**REPORT FINALIZED → DISSEMINATION**

*END 2010*

**DISCUSSED IN FPU FOR POSSIBLE  
OPPORTUNITIES & RECOMMENDATIONS**