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Juergen Guedler, euroCRIS Board

euroCRIS
Current Research Information Systems

Introduction

- ▶ Even in its modern form, science takes place within defined subject boundaries
- ▶ And also and especially when we speak of interdisciplinary research, it is important to know which borders between which disciplines are conquered by “being interdisciplinary”
- ▶ So the areas which are subject of research are also an important topic for the discussion on CRISs that inform about research

Introduction

When working with classifications, there are three guiding principles I want to discuss:

- ▶ Principle I: Hierarchical Structure
- ▶ Principle II: Clear rules on classified objects
- ▶ Principle III: Defined revision processes

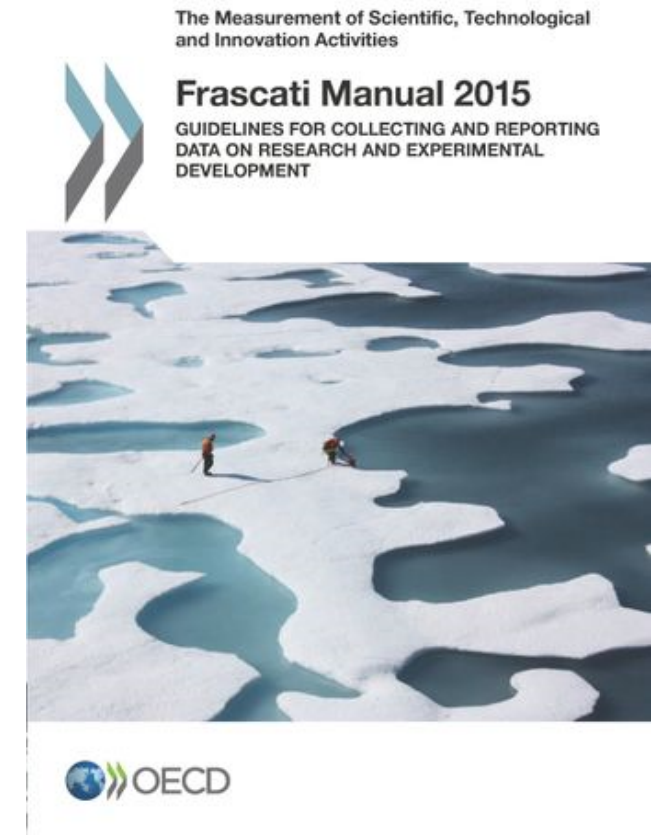
Principle I: Hierarchical Structure

As a rule, an international connectable classification system should distinguish at least three levels of structure:

- ▶ One or two **highest levels** that help to exchange data with international partners
- ▶ A **medium level** that covers the statistical and other information requirements of the organisation
- ▶ A **low (or “highly differentiated”) level** mainly for special interest purposes

Principle I: Hierarchical Structure

- ▶ At the highest level your classification system should try to follow internationally accepted standards
- ▶ The International Standard Classification of Education (ISCED/UNESCO) is mainly used for organizing information on education
- ▶ The most accepted international standard for research is the “Field of Science and Technology (FOS) classification” in the OECD-Frascati Manual



Principle I: Hierarchical Structure

Frascati Top Level Classification:

- ▶ Natural sciences
- ▶ Engineering and technology
- ▶ Medical and health sciences
- ▶ Agricultural and veterinary sciences
- ▶ Social sciences
- ▶ Humanities and the arts

Juergen Guedler, Research Classifications

Frascati Second Level:

Broad classification	Second-level classification
1. Natural sciences	1.1 Mathematics 1.2 Computer and information sciences 1.3 Physical sciences 1.4 Chemical sciences 1.5 Earth and related environmental sciences 1.6 Biological sciences 1.7 Other natural sciences
2. Engineering and technology	2.1 Civil engineering 2.2 Electrical engineering, electronic engineering, information engineering 2.3 Mechanical engineering 2.4 Chemical engineering 2.5 Materials engineering 2.6 Medical engineering 2.7 Environmental engineering 2.8 Environmental biotechnology 2.9 Industrial biotechnology 2.10 Nano-technology 2.11 Other engineering and technologies
3. Medical and health sciences	3.1 Basic medicine 3.2 Clinical medicine 3.3 Health sciences 3.4 Medical biotechnology 3.5 Other medical science
4. Agricultural and veterinary sciences	4.1 Agriculture, forestry, and fisheries 4.2 Animal and dairy science 4.3 Veterinary science 4.4 Agricultural biotechnology 4.5 Other agricultural sciences
5. Social sciences	5.1 Psychology and cognitive sciences 5.2 Economics and business 5.3 Education 5.4 Sociology 5.5 Law 5.6 Political science 5.7 Social and economic geography 5.8 Media and communications 5.9 Other social sciences
6. Humanities and the arts	6.1 History and archaeology 6.2 Languages and literature 6.3 Philosophy, ethics and religion 6.4 Arts (arts, history of arts, performing arts, music) 6.5 Other humanities

Principle I: Hierarchical Structure

- ▶ In Germany there are mainly two (hierarchical) classifications that are in use:
 - ▶ The classification of the Deutsche Forschungsgemeinschaft (DFG)
 - ▶ The classification of the Federal Statistical Office (DESTATIS)
- ▶ Both are fully compatible with Frascati's top level and largely compatible with the second level
- ▶ And both are also largely compatible with each other on the second level, which makes it possible to relate data from different origins to each other
- ▶ An estimated 95 percent of all statistical enquiries on subject areas can be answered at one of the two highest levels of the DFG or DESTATIS classification

Principle I: Hierarchical Structure

At the midst and lowest level of the classification, it is possible to map the special requirements of your institution:

- ▶ The needs of a veterinary institution here are certainly fundamentally different from those of a college of music
- ▶ The more specialized an institution is, more effort will be made to differentiate between these special areas as precisely and clear-cut as possible
- ▶ On the other hand: Very specialized areas from a category that is not covered by your institution, are of course useless for your org. So you can ignore them.

Principle I: Hierarchical Structure

The lowest level of a classification serves two main purposes:

- ▶ On the one hand, it reveals which subjects are grouped together at the respective higher level. It "defines" the higher level
- ▶ On the other hand it enables you to answer “special interest”-requests

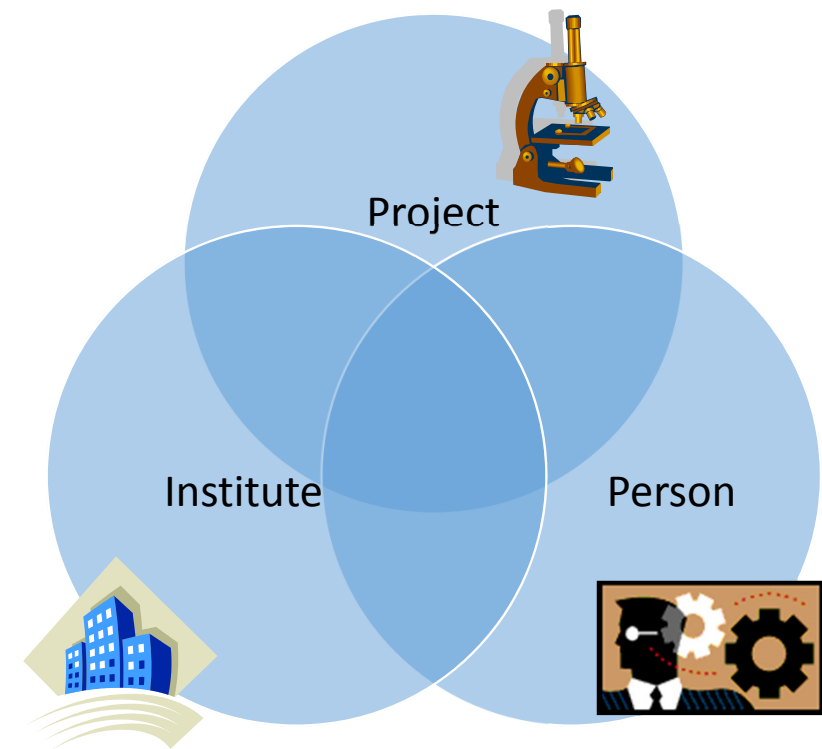
109-01	General Education and History of Education	109 Educational Research	12 Social and Behavioural Sciences
109-02	General and Domain-Specific Teaching and Learning		
109-03	Education Systems and Educational Institutions		
109-04	Educational Research on Socialization, Welfare and Organisations		
110-01	General, Biological and Mathematical Psychology	110 Psychology	
110-02	Developmental and Educational Psychology		
110-03	Social Psychology, Industrial and Organisational Psychology		
110-04	Differential Psychology, Clinical Psychology, Medical Psychology, Methodology		
111-01	Sociological Theory	111 Social Sciences	
111-02	Empirical Social Research		
111-03	Communication Sciences		
111-04	Political Science		
112-01	Economic Theory	112 Economics	
112-02	Economic Policy and Public Finance		
112-03	Business Administration		
112-04	Statistics and Econometrics		
112-05	Economic and Social History		

Extract from the DFG's classification system

Principle II: Clear rules on classified objects

Main objects of classification are

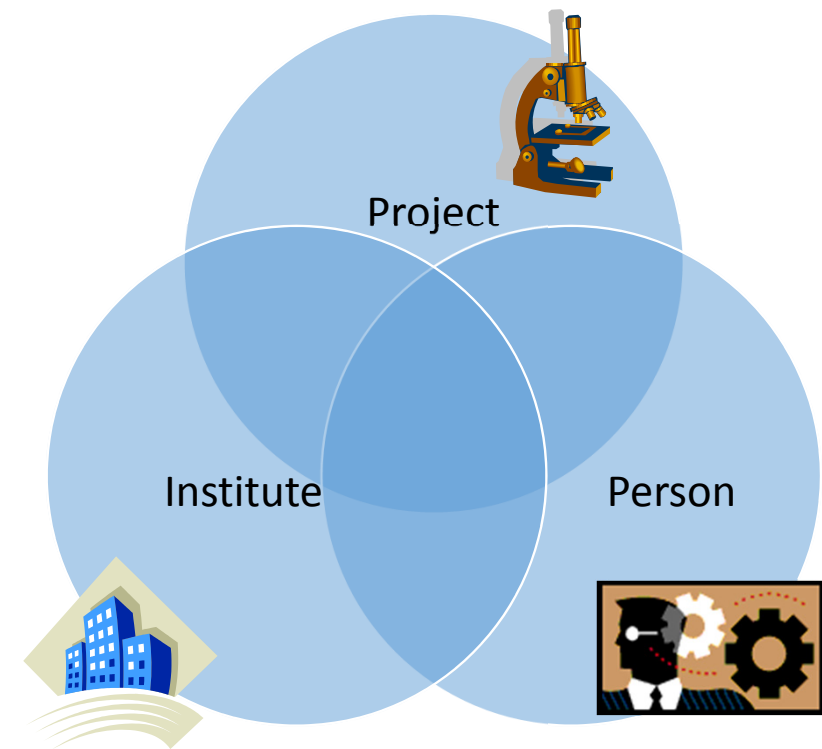
- ▶ Persons (Scientists)
- ▶ Institutes
- ▶ Projects
- ▶ [but there are many others you can think of, esp. publications]



Principle II: Clear rules on classified objects

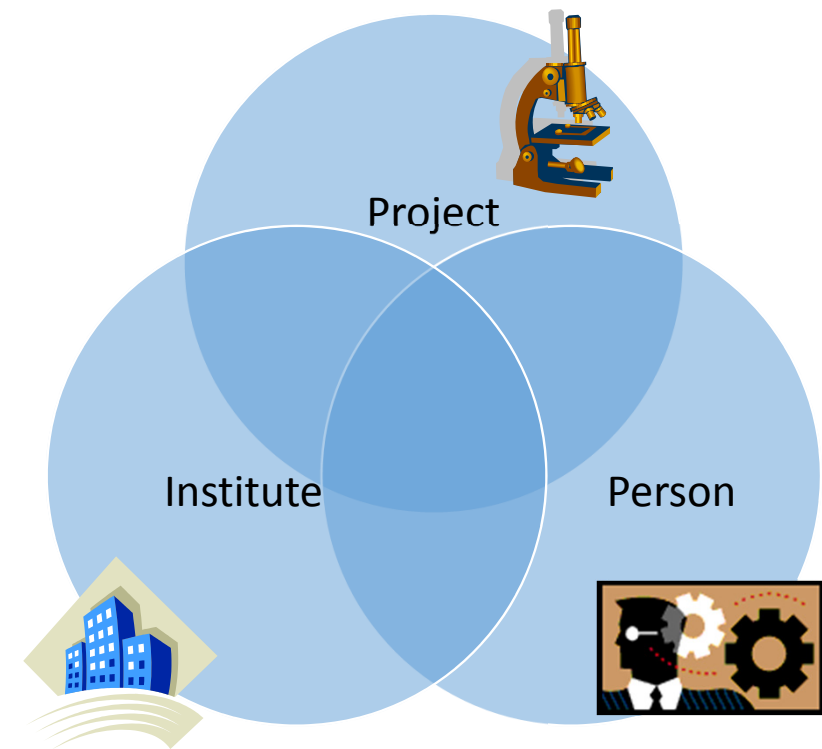
Classifying an object helps you to answer questions of “interdisciplinarity”:

- ▶ Which PERSONS (with expertise on different research areas) interact in a project?
- ▶ Which projects bring together people from INSTITUTES of different research disciplines?
- ▶ Etc.



Principle II: Clear rules on classified objects

- ▶ For the aim of enabling data exchange with other institutions, it is important that you ensure a common object reference
- ▶ In Germany the Core Data Set Research (KDSF)-Project defined “Institutes” as such a common standard



Principle III: Defined Revision Process

- ▶ The development of scientific disciplines is subject to an evolutionary process
- ▶ A system that was developed in 1980 sets different priorities than a system from 2020 (think of the subject "Computer Science")
- ▶ This mainly concerns the lowest level of a classification, but in the medium term it also affects the higher levels

Principle III: Defined Revision Process

Taking the DFGs classification as an example:

- ▶ The classification was developed in 1921. At that time it distinguished between 21 subject groups and 126 subject areas
- ▶ The subject group "Philosophy" comprised at that time the three subject areas "Philosophy", "Educational Research" and "Psychology"
- ▶ Today, the system distinguishes 48 subject groups with 213 subject areas. The three subject areas mentioned now have "evolved" into subject groups. Each of them distinguishes between 3 to 4 subject areas (see above)

Principle III: Defined Revision Process

This development was organized as a regulated process from the beginning:

- ▶ It is important to note that the DFG's subject groups are not a purely statistical category. They define the framework in which members of certain subjects interact in so called “review boards” which prepare the decision on funding/not funding of applications
- ▶ These boards are re-elected every four years. And every four years the subject areas that form a common review board are the object of discussion
- ▶ More than one hundred scientific societies are involved in this process, whose proposals are discussed and decided by the DFGs governing board

Principle III: Defined Revision Process

Within the framework of the KDSF-project, the partners involved agreed that the Federal Statistical Office should also carry out a regular revision process of its classification system. This gave the partners the possibility, to accept the classification as a common standard:

- ▶ Such revisions now take place since 2014 every five years
- ▶ This involves both the expertise of organizational stakeholders and of professional associations affected by a proposed change
- ▶ In both revisions since then there were very many proposals for changes. This shows that the reformation has found acceptance. And it is being used for active further development

Conclusion

If you think about the development of a new classification (or even just about the reformation of an existing one) be aware

- ▶ of the existence of international top level standards (OECD/Frascati)
- ▶ that you need clear rules regarding the objects to be classified
- ▶ That a broadly accepted classification in the present is an “outdated”-classification in the future

So be aware of the three leading principles on hierarchical structure, classified objects and defined revision processes!



Thank you for your attention!

See also:

- DFG-Funding Atlas (a book full of statistics on funded disciplines and funded interdisciplinarity): www.dfg.de/en/funding_atlas
- GERiT (a database on more than 29,000 research institutes at German HEI and research institutes, that are classified by subject: www.gerit.org
- DFG Classification of Scientific Disciplines, Research Areas, Review Boards and Subject Areas (2016-2019) www.dfg.de/facts-figures
- Classification of the Federal Statistical Office (DESTATIS) <https://www.destatis.de/DE/Methoden/Klassifikationen/Bildung/studenten-pruefungstatistik.html> (German language only, for English version see www.gerit.org)

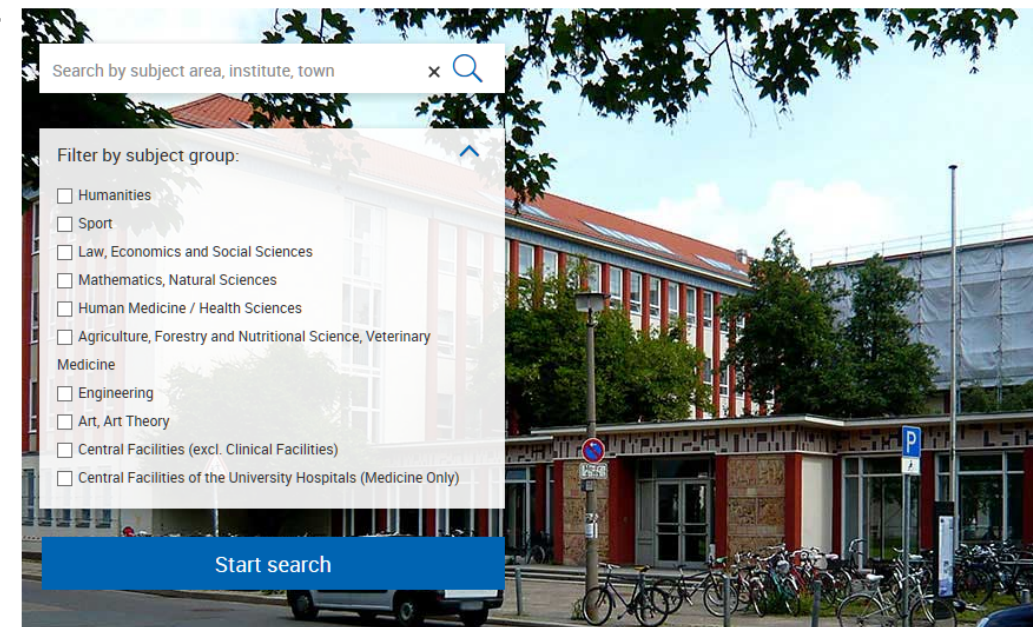
Juergen Guedler / Deutsche Forschungsgemeinschaft (DFG) and Board Member euroCRIS
Membership Meeting, euroCRIS, Muenster, November 18th to 20th, 2019.

GERiT and classified object „Institute“

- ▶ Research Organizations-Database with more than 29,000 research institutes at HEI and others (e.g. MPG)
- ▶ Links to website of the institute, to DFG-funded projects (GEPRIS), job vacancies, doctoral regulations...
- ▶ Each Institute is classified by one or more subjects
- ▶ www.gerit.org

GERiT – German Research Institutions

Are you interested in researching or studying in Germany? GERiT – German Research Institutions – provides an overview of 29,000 research institutions in Germany. Here you will find institutional profiles, job vacancies, the doctoral regulations for specific institutions and subject areas, and links to DFG-funded projects.



GERiT and classified object „Institute“

- Each Institute is classified by subjects

- Example:

University of Münster
Institute for Early Medieval Studies
[Go to website](#) ID 14278 Medieval History

 **Contact**

Institute for Early Medieval Studies
Domplatz 20-22
48143 Münster



 **Affiliated institutions**

Westfälische Wilhelms-Universität Münster >
All level expanded | collapsed

Center for Nonlinear Science (CeNoS)	Go to institution >
Centre for Bioethics	Go to institution >
Centre for Religion and Modernity (CRM)	Go to institution >
Centre for Religious Studies	Go to institution >
Cluster of Excellence Religion & Politics	Go to institution >
⊕ FB 01: Faculty of Protestant Theology	Go to institution >
⊕ FB 02: Faculty of Catholic Theology	Go to institution >