

**Nineteenth International Conference on Grey Literature. Public Awareness and  
Access to Grey Literature  
October, 23-24 2017. Rome, CNR, Italy**



**Grey Literature and Research Assessment  
exercises:  
from the current criteria to the Open Science  
models**

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# Scenario and Objectives

- In the recent years the application of strategies, procedures and tools to evaluate the work of researchers have become subject of interest and their application is currently matter of discussion: complicate business, strong political implications, social and economic impacts.
- Importance of the Research Assessment - Vs. - purposes and procedures:
  - quantitative measurements
  - inappropriate use of commercial bibliometric indicators
- The conceptual challenges taken on by the Open Science (OS) movement may be crucial for the evolution of these matters.

The work analyzes the VQRs objects and methods with the aim of verifying:

- *if and how* Grey Literature is involved in the research evaluation processes;
- *what will be the future* of the scholarly scientific communication according to the instances of the Open Science movement.

# The VQRs framework

- ❖ The Research Assessment Exercises are regulated at national level and carried out in different European countries, e.g. France, United Kingdom and the Netherlands.
- ❖ The Italian Research Assessment Exercises moved its first steps at the beginning of the '90s - In 2003 the first exercise has been legislated.
- ❖ Actually the National Agency for the Evaluation of Universities and Research Institutes - ANVUR is responsible of the processes.
- ❖ At the present time, two evaluation exercises of the quality of the research named *Evaluation of Research Quality* (VQR) were realized in Italy. The first one spans the years 2004 - 2010 (VQR1); the second from 2011 to 2014 (VQR2).

# The VQRs framework: organization and methods

Taxonomy based on macro disciplinary areas and Scientific  
Disciplinary Sectors (SSD)

*Macro-Areas VQR1*

Area	Description
1	Computer science and Mathematics
2	Physics
3	Chemistry
4	Earth sciences
5	Biology
6	Medicine
7	Agricultural and veterinary sciences
8	Civil engineering and Architecture
9	Industrial and computer engineering
10	Antiquity, philological-literary and historical-artistic sciences
11	Historical, philosophical, psychological and pedagogical sciences
12	Legal sciences
13	Economics and Statistics sciences
14	Social and political sciences

*Macro-Areas VQR2*

Area	Description
1	Computer science and Mathematics
2	Physics
3	Chemistry
4	Earth sciences
5	Biology
6	Medicine
7	Agricultural and veterinary sciences
8a	Architecture
8b	Civil engineering
9	Industrial and computer engineering
10	Antiquity, philological-literary and historical-artistic sciences
11a	Historical, philosophical and pedagogical sciences
11b	Psychology
12	Legal science
13	Economics and Statistics sciences
14	Social and political sciences

It's clear the substantial overlapping between macro-areas in VQR1 and VQR2.

## Scientific Disciplinary Sectors

### Area 1

*Computer science*

*Logic*

*Algebra*

*Geometry*

*Complementary maths*

*Mathematical analysis*

### Area 2

*Experimental physics*

*Theoric physics, mathematical models and methods)*

*Physics of matter*

*Nuclear and subnuclear physics*

*Astronomy and*

# The VQRs Framework: Organization and methods

## What is evaluated?

The research conducted in both state and private universities, public research bodies and other public and private subjects funded by the government

- ✓ Researchers, assistant professors, associate professors, full professors...

## Who are the evaluators?

National Agency for the Evaluation of Universities and Research Institutes (ANVUR)



Groups of experts for the evaluation – GEV

## The methodology

- Qualitative assessment – *peer review*
- Quantitative assessment – *impact*
- Informed peer review

VQR 2004-2010		VQR 2011-2014	
Class of merit	Score	Class of merit	Score
A. Excellent	1	A. Excellent	1
B. Good	0.8	B. High-level	0.7
C. Acceptable	0.5	C. Fair	0.4
D. Limited	0	D. Acceptable	0.1
E. Not evaluable	-1	E. Limited	0
F. Plagiarism/Fraud	-2	ANVUR- Quality steps F. Not evaluable	0

# The VQRs “objects”

## Documentary categories in VQR1 (2004 - 2010)

- *Papers in journals*
- *Books, chapters of books, and conference proceedings provided with ISBN*
- *Critical editions, translations, and scientific comments*
- *Patents*
- *Compositions, drawings, design, performances, exhibitions and organized expositions, handwork, prototypes, artworks and related designs, databases and software, thematic maps*

## Not admissible products in VQR1

- *Editorial and curatorial activities*
- *Conference abstracts (even if published in journals)*
- *Texts or software used for educational and dissemination purpose only*
- *Routine or laboratory tests*
- *Internal technical reports*



# The VQRs “objects”

## Documentary categories in VQR2 (2011 - 2014)

### Scientific monographs

Research monograph, Concordance, Scientific comment, Annotated bibliography, Critical editions of texts, Critical editions of excavations, Publication of unedited sources, Critical manuals (not for educational purpose only), Grammars and science dictionaries, Translations of books (upon GEV's decision).

### Articles in journals

Scientific paper, Review essays, Letters, Contribution to a Forum upon invitation of the editorial staff, Case notes, Translations in journal.

### Contributions to books

Scientific articles in peer-reviewed conference proceedings, Foreword and afterword in the form of essay, Curatorship of books with introductory essay, Catalogues with introductory essay, Critical entries in dictionaries or encyclopedias, Translations in book (upon GEV's decision), Catalographic records, bibliography or corpora.

### Other types of scientific products

Compositions, Drawings, Architectonic projects, Performances, Exhibitions, Prototypes of art and related projects/designs, Database and software, Thematic maps, Psychological evaluations, Audiovisual material.

### Patents

The category Patents is always considered as evaluable, but it may be attributed to class A or B only if internationally renowned or licensed.

## Not admissible products in VQR2

- *Manuals and texts for educational purpose only*
- *Review of a single article not showing any critical analysis of the literature on the topic*
- *Short, non-original encyclopedia or dictionary entries*
- *Short, non-original case notes*
- *Short catalographic records*

# Tracking the Grey Literature

The process of identification of the Grey Literature inside the various documentary typologies was based on the following considerations:

- the evaluation exercises mainly founded their bibliometric analysis on the contents of the two commercial databases Web of Science and Scopus;
- the majority of the literature indexed by the two databases is published by commercial publishing companies;
- the use of the databases restricts the contents only to the references indexed (based on ownership criteria);
- the algorithm for the assessment of *papers in journals* takes into account the number of citations of a paper and the corresponding bibliometric indicator of the journal;
- the GEVs' criteria specify that products listed in *Other types of scientific products* are evaluated making reference to their characteristics, not to their formal publication.

With specific reference to what listed above we agreed on ascribing some groups of products to the *non-conventional literature*



# Analysis of data and results

VQR 2004-2010															
Categories	Area 01	Area 02	Area 03	Area 04	Area 05	Area 06	Area 07	Area 08	Area 09	Area 10	Area 11- bib	Area 11- bib	Area 12	Area 13	Area 14
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Abstract (in journals or in proceedings)	0.06		0.09		0.21	0.07							0.56		
Case notes															
Composition								0.04							
Critical edition	0.03				0.01			0.07		0.92	0.56				
Curatorship	0.07		0.04		0.02		0.26	2.69		1.76	1.84	0.52	0.73		2.80
Database	0.01			0.20	0.01			0.01							
Design	0.02							0.13							
Entry (in dictionary o encyclopedia)					0.01			0.03					0.29		
Exhibition	0.01							0.02							
Foreword/Afterword								0.02							
Handwork	0.02	0.70	0.01					0.08							
Maps				0.20											
Monograph or scientific treaty	1.27	0.20	0.21	1.03	0.38	0.52	1.22	14.56	0.75	22.69	33.06	9.26	25.88	12.75	33.63
Other	0.13	0.30	0.01	2.28	0.04	0.07	0.82	1.09	0.44	0.80	0.61	0.22	0.64	1.01	0.46
Paper in books	3.27	0.60	0.39	5.06	1.26	1.53	4.65	23.60	2.46	32.80	32.86	11.57	36.00	19.88	32.59
Paper in journals	86.11	93.40	98.45	85.96	96.92	96.94	87.54	43.69	81.68	26.50	23.99	77.22	32.76	62.45	28.63
Paper in proceedings	8.84	4.70	0.40	4.80	0.89	0.74	5.51	13.82	14.16	14.19	7.09	1.21	3.13	3.91	1.90
Patent	0.10	0.20	0.39	0.18	0.26	0.13		0.14	0.51						
Prototype of art and related project								0.01							
Software	0.07		0.02	0.28	0.01										
Translation										0.33					
<b>Total</b>	<b>10685</b>	<b>19773</b>	<b>11608</b>	<b>8433</b>	<b>16407</b>	<b>26713</b>	<b>10004</b>	<b>9533</b>	<b>16347</b>	<b>14073</b>	<b>9513</b>	<b>3639</b>	<b>11882</b>	<b>11941</b>	<b>4327</b>

In some disciplinary Areas the percentages of *papers in journals* reach almost the 100%. In both exercises the Areas 2, 3, 5 and 6 show the higher percentages.

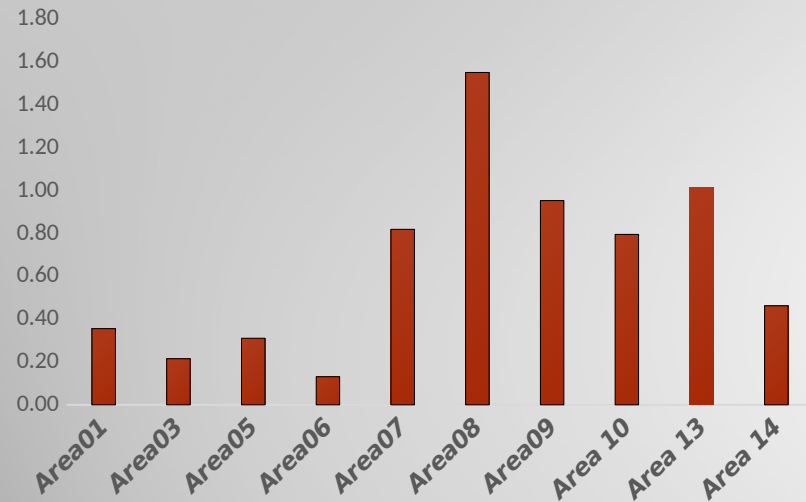
Only the *monographs* and the *papers in books* show significant percentages. The *papers in proceedings* represent the largest number in

In both exercises and for each disciplinary area, the most significant numbers are referred to the categories *papers in journals*, *papers in books* e *papers in proceedings*. The *papers in journals* still represents the more widely evaluated category.

VQR 2011-2014																
Categories	Area 01	Area 02	Area 03	Area 04	Area 05	Area 06	Area 07	Area 08a	Area 08b	Area 09	Area 10	Area 11a	Area 11b	Area 12	Area 13	Area 14
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Abstract (in journals or in proceedings)								1.45						0.02		
Architectonic project																
Bibliographic/Catalographic record, corpus		0.09			0.06	0.03	0.03				0.09					
Bibliography							0.01				0.03	0.05				
Case notes						0.01		0.03					0.04	1.52		
Composition		0.75	0.01					0.03		0.05					0.01	
Concordance											0.05	0.80				
Critical edition		0.02						0.09			2.68			0.09	0.05	0.27
Curatorship	0.15			0.11	0.02	0.02	0.03	5.01		0.02	0.11	1.45	0.35	0.47	0.38	1.88
Database		0.04		0.18	0.03		0.08	0.03		0.04	0.05	0.02		0.02		
Design								0.12								
Entry (in dictionary or encyclopedia)								0.20		0.03	0.23	0.23	0.13	1.37	0.10	0.03
Exhibition		0.11	0.00	0.07	0.06	0.01	0.03	0.14	0.04	0.03	0.05					
Handwork																
Maps				0.23			0.04									
Monograph or scientific treaty	1.35	0.22	0.26	0.88	0.20	0.36	0.89	23.29	0.60	0.63	19.64	27.24	3.82	26.17	8.67	24.13
Other	0.21			0.18	0.01	0.01		0.52	0.04		0.17	0.07	0.09		0.55	
Paper in books	2.95	0.73	0.58	3.18	0.79	1.01	3.69	28.91	2.82	1.66	35.91	30.48	6.50	30.57	14.68	32.01
Paper in journals	87.92	96.85	98.12	91.78	97.23	97.92	91.31	26.42	88.63	88.71	32.12	34.79	88.09	38.04	72.71	40.83
Paper in proceedings	7.32	0.70	0.41	3.23	0.62	0.52	3.39	12.96	7.66	8.28	6.78	3.94	0.75	1.61	2.68	0.27
Patent	0.02	0.18	0.33	0.07	0.13	0.04	0.19	0.29	0.18	0.38					0.02	
Performance					0.03			0.03			0.07					0.07
Preface/Postface			0.01					0.20		0.01	0.37	0.38	0.04	0.05	0.04	0.30
Prototype of art and related project								0.12		0.03						
Publication of unedited sources											0.15	0.24		0.01	0.01	0.07
Review (in book or in journal)		0.12	0.25		0.76	0.07	0.32		0.04	0.10	0.10	0.15	0.09		0.06	0.03
Scientific comment											0.56	0.10			0.02	0.07
Software	0.07	0.21		0.09				0.09		0.04	0.01		0.09			
Translation					0.01	0.02					0.83	0.08		0.05	0.01	0.03
<b>Total</b>	<b>6062</b>	<b>10588</b>	<b>6897</b>	<b>4430</b>	<b>10986</b>	<b>16693</b>	<b>7541</b>	<b>3456</b>	<b>2832</b>	<b>11564</b>	<b>8744</b>	<b>6123</b>	<b>2276</b>	<b>8488</b>	<b>8385</b>	<b>2971</b>

# Analysis of data and results

**Frequency of GL 2004-2010 by Area**

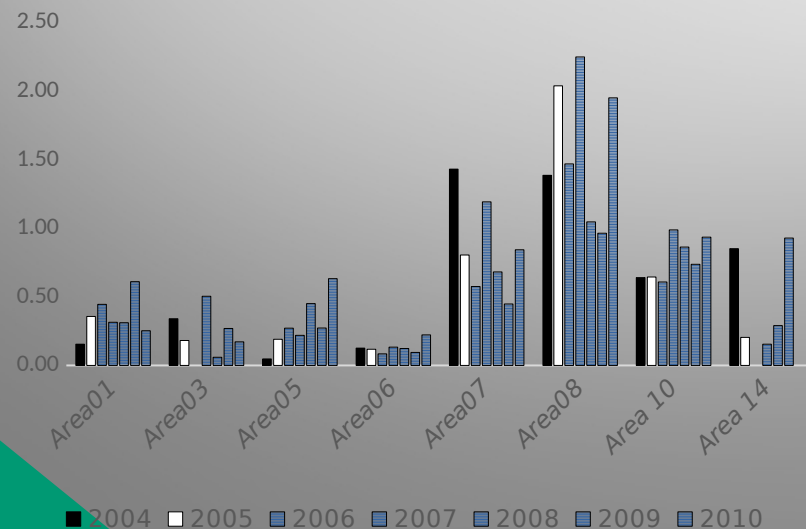


The frequency of the Grey Literature is 0.61% in VQR1 and 0.74% in VQR2.

✓ In VQR1 the most relevant percentages are those referred to the Areas 7 - Agricultural and veterinary science, 8 - Civil engineering and architecture, 10 - Antiquity, philological-literary and historical and artistic sciences and 13 - Economics and statistics sciences.

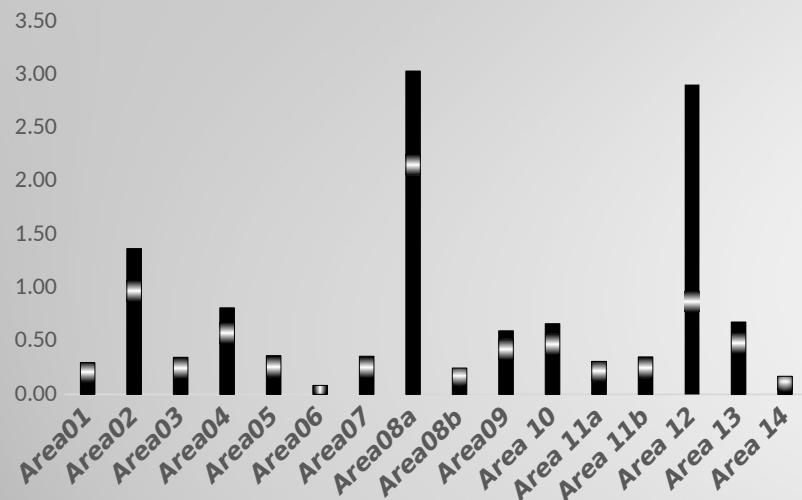
✓ The annual trend is not steady: almost all the Areas increase and decrease over the years.

**GL 2004-2010 by Area and year**



# Analysis of data and results

**Frequency of GL 2011-2014**



The annual trend is steady for the following disciplinary Areas:

Area04 – Earth sciences

Area05 - Biology

Area09 – Industrial and computer engineering

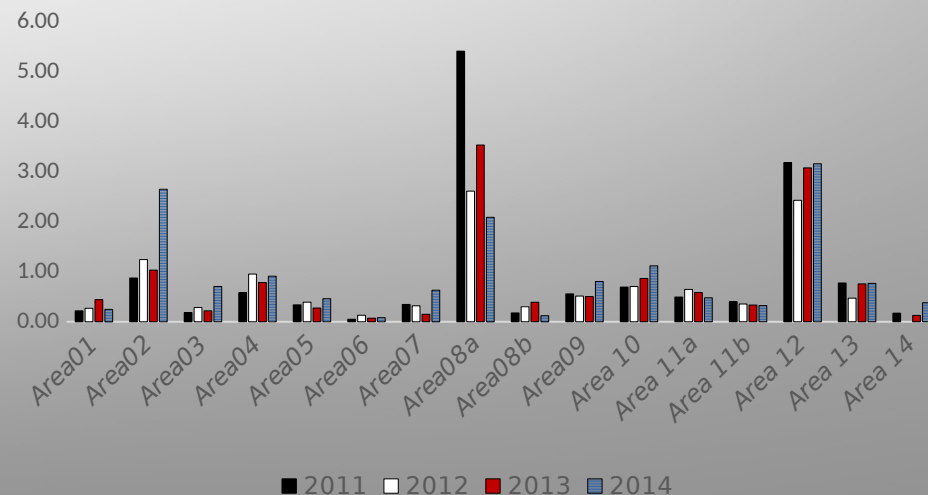
Area10 – Antiquity, philological ...

Area11 – Historical, philosophical...psychology

Area12 – Legal sciences

In VQR2 the Areas 8a - Architecture (mainly in 2011) and 12 - Legal science (especially in 2011 and 2014) gather the majority of grey products.

**GL 2011-2014 by Area and year**



# Analysis of data and results

Grey categories	VQR 2004-2010							VQR 2011-2014			
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Architectonic project								38.00	24.00	20.00	18.00
Bibliographic/Catalographic record, corpus								25.81	32.26	19.35	22.58
Case notes								17.65	25.74	23.53	33.09
Composition	25.00	25.00		25.00	25.00			18.18	15.91	25.00	40.91
Concordance									50.00	25.00	25.00
Database			33.33					23.53	20.59	20.59	35.29
Design	14.29	14.29	7.14	28.57		21.43	14.29	25.00	25.00	25.00	25.00
Entry (in dictionary or encyclopedia)		25.00			75.00			23.12	26.01	26.59	24.28
Exhibition		33.33					66.67	28.95	28.95	18.42	23.68
Handwork	9.09		9.09			27.27	27.27				
Map								7.69	38.46	30.77	23.08
Other	11.80	10.91	10.62	20.94	15.04	14.16	22.12	20.18	20.18	29.36	30.28
Patent	5.74	7.38	7.38	12.30	14.75	12.30	24.59	17.02	21.99	22.70	38.30
Performance									66.67	33.33	50.00
Prototype of art and related project							100.00	14.29	42.86		28.57
Publication of unedited sources								22.86	25.71	22.86	28.57
Software		10.00	20.00	20.00		40.00	10.00	9.76	39.02	21.95	29.27

No mention made of items such as *preliminary studies, progress reports, accounts, search results, dossier, market researches, normative documents, feasibility studies, etc.*

- ✓ In VQR1 only Patents and Other are present every year.
- ✓ Higher percentages only for *entries (in dictionary or encyclopedia)* in 2008, *exhibition* in 2010 and *handwork*.
- ✓ The extension of the documentary categories influenced the incidence of Grey Literature in VQR2, where we find products that did not appear in the previous evaluation.
- ✓ In VQR2 some categories are more stable, while others are more fluctuating through time.

# Analysis of data: main outcomes

The Italian Research Assessment Processes do not completely exclude Grey Literature. However, they are almost exclusively based on the analysis of commercially distributed products.

This is due to:

- The non-eligibility of some research products (e.g. *educational material, technical reports, commentary, obituary, erratum...*).
- The lack of interest in items such as *preliminary studies, progress reports, accounts, search results, dossier, market researches, normative documents, feasibility studies, etc..*
- The disadvantage in submitting scientific products other than articles in journals.
- The impact of the evaluation criteria on researchers leads to the philosophy of *Public or Perish*: the researchers publish only scientific articles in prestigious journals.

The risk is to produce *fashionable* research rather than *quality* research.



# Open Science and Grey Literature...a *perfect marriage..*

## ***The GL19 Topics***

- ❖ Exposing Grey Literature to wider audience.
- ❖ Overcoming obstacles in accessing Grey Literature.
- ❖ Innovations in Grey Literature powered by research data.
- ❖ Impact of emerging technologies & social media on Grey Literature.

## ***The Open Science tools***

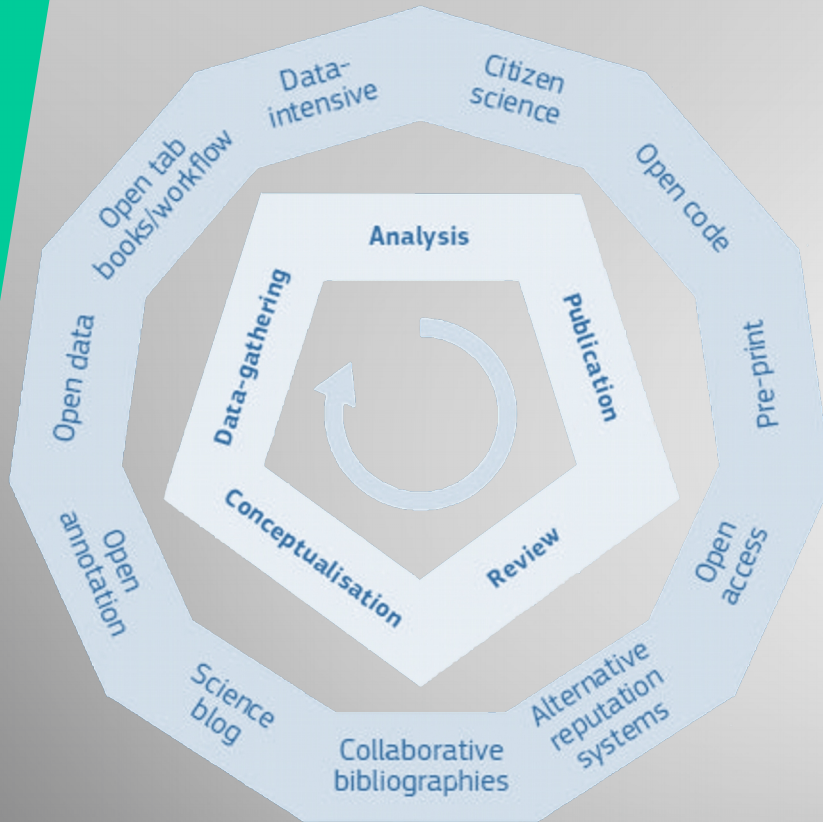
- ❖ Next generation repositories.
- ❖ Next generation metrics.
- ❖ Infrastructures.
- ❖ Controlled vocabulary.

## ***The Open Science facets***

- ❖ Open access: to access freely the search results.
- ❖ Open data: to share raw data and “computational products”.
- ❖ Open notebook: to make visible and share “hidden” products.
- ❖ Open research: to obtain and co-generate new knowledge through interaction with local citizens and communities.
- ❖ Open education: to introduce innovative teaching and learning practices, promoting advanced interactive and collaborative forms.
- ❖ Open metrics: *usage metrics* and *altmetrics* to measure aspects such as usability, speed, rigor, collaboration and consistency of methods.



# Conclusions



\*Open Science opens up the entire research enterprise (inner circle) by using a variety of means and digital tools (outer circle)

The concept of Open Science includes the necessary human skills, resources, standards, best practices and technical infrastructures necessary to realize an innovative *entire research enterprise*.

In the new ecosystem of the scientific communication Grey Literature might find its ideal collocation.

*But ...All that glitters is not gold...*

It is necessary that scientific institutions and politics exchange experiences, build networks across national borders, allowing the growth of a new dialogue between science and society.

Cultural, political and economic changes are necessary in order to realize the Open Science and to support greater openness in redefining research processes.

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**Thank you to All  
and...  
Enjoy the Conference!**

