Societal Impact

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EC3metrics | Spin-Off

Objectives

1. Understand the motivations that lead for demands of societal impact indicators
2. Know the limitations and current problems existing to meet such demands
3. Learn about potential uses of altmetrics to showcase ‘aspects’ of societal impact

Index

Brief intro

"The last 30 years have witnessed a slow, but continuous process of reorganization of European universities"

Geuna & Muscia, 2009

https://static.pexels.com/photos/30824/pexels-photo.jpg

Brief intro

Global competition and budget cuts

CWTS Leiden Ranking
Meaningful metrics

SHANGHAI RANKING

THE WORLD UNIVERSITY RANKINGS

Accountability and transparency

Evaluation and funding

Brief intro

- Bibliometrics is seen as an answer to provide impact measures within and even *outside* the scientific sphere
  citation analysis – patent analysis – univ-industry collab
- In the recent years there has been a critical revision on the limitations of these metrics
  scientific impact ≠ societal impact

http://www.logic-canvas.com/wp-content/uploads/2013/11/Transparency-Glass.jpg

Brief intro

San Francisco DORA
Declaration on Research Assessment

DORA Declaration

Against the use of journal based indicators

Leiden Manifesto

Best practices on the use of bibliometric indicators

The Metric Tide

UK Report on the role of bibliometric indicators in research evaluation

What is societal impact?

Societal impact is usually referred as the social, environmental, cultural or economic benefits derived from academic activities

What is societal impact?

Type of impact		Output	Activities
Scientific-scholarly	Knowledge Growth	Papers, books, reports, cases, magazines	Increase and organise the stock of knowledge
	Publication outlets		
	Research networks	Workshops, collaboration, conferences, committees	Build and convene networks Supply of human capital
Societal	Cultural	Archives, museums, festivals, exhibition and performance, events	
	Social		
		Policy changes, social benefits	Problem solving
	Socioeconomic	Patents, spin-offs, start-ups, contracts, consultancy	Support entrepreneurialism
	Technological		

Source: Robinson-Garcia, van Leeuwen & Rafols, in progress

How can we measure societal impact?

Socioeconomic & Technological Impact

- Largest body of literature
- Synergies between industry and university
- Tracking of knowledge transfer

Social Impact

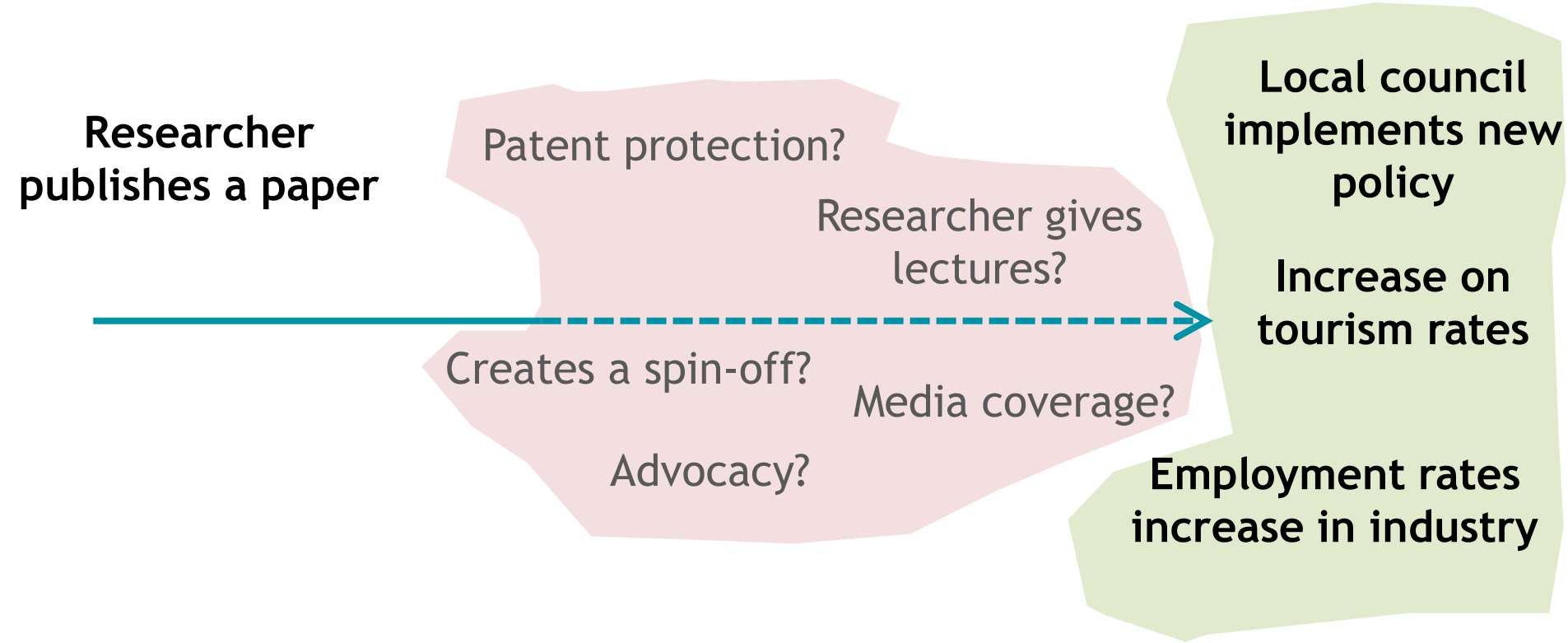
- Translational research
- Environmental research

Cultural Impact

- Field-specific
- Largely unexplored
- Affects mainly the Social Sciences & Humanities

How can we measure societal impact?

The attribution problem



How can we measure societal impact?

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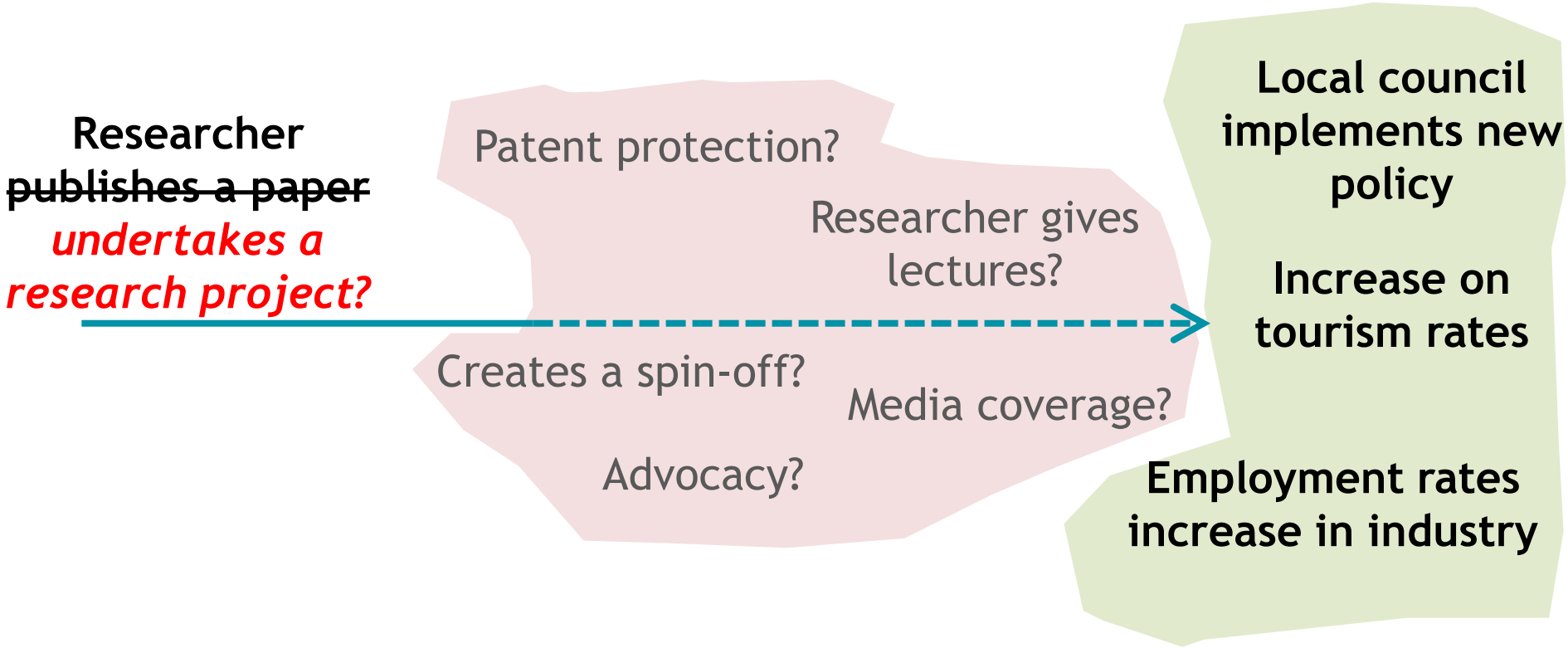


How can we measure societal impact?

An example. El Cabanyal

The attribution problem

The district

- Old village, now a district
- Architectonic value

The sting

- Access to the beach
- *Salvem el Cabanyal*

The link?

- Few papers (National journals)
- Not all researchers involved are authors

How can we measure societal impact? UK REF

GOALS

Selective allocation of research funding to Higher Education Institutions

Produce evidence of benefits of public investment in research

Provide benchmarking information and reputational yardsticks

King's College London & Digital Science, 2015

How can we measure societal impact? UK REF

First attempt to allocate funding based on non-academic impact

> "Impact is defined as 'any effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia' (REF, 2011)"

King's College London & Digital Science, 2015

How can we measure societal impact? UK REF

PANEL A

Biomedical & Health Sciences

6 UoA – 1586 case studies

PANEL B

Life & Earth Sciences, Engineering, Physics, Maths

9 UoA – 1469 case studies

PANEL C

Social Sciences

10 UoA – 1965 case studies

PANEL D

Humanities & Arts

10 UoA – 1617 case studies

How can we measure societal impact? UK REF

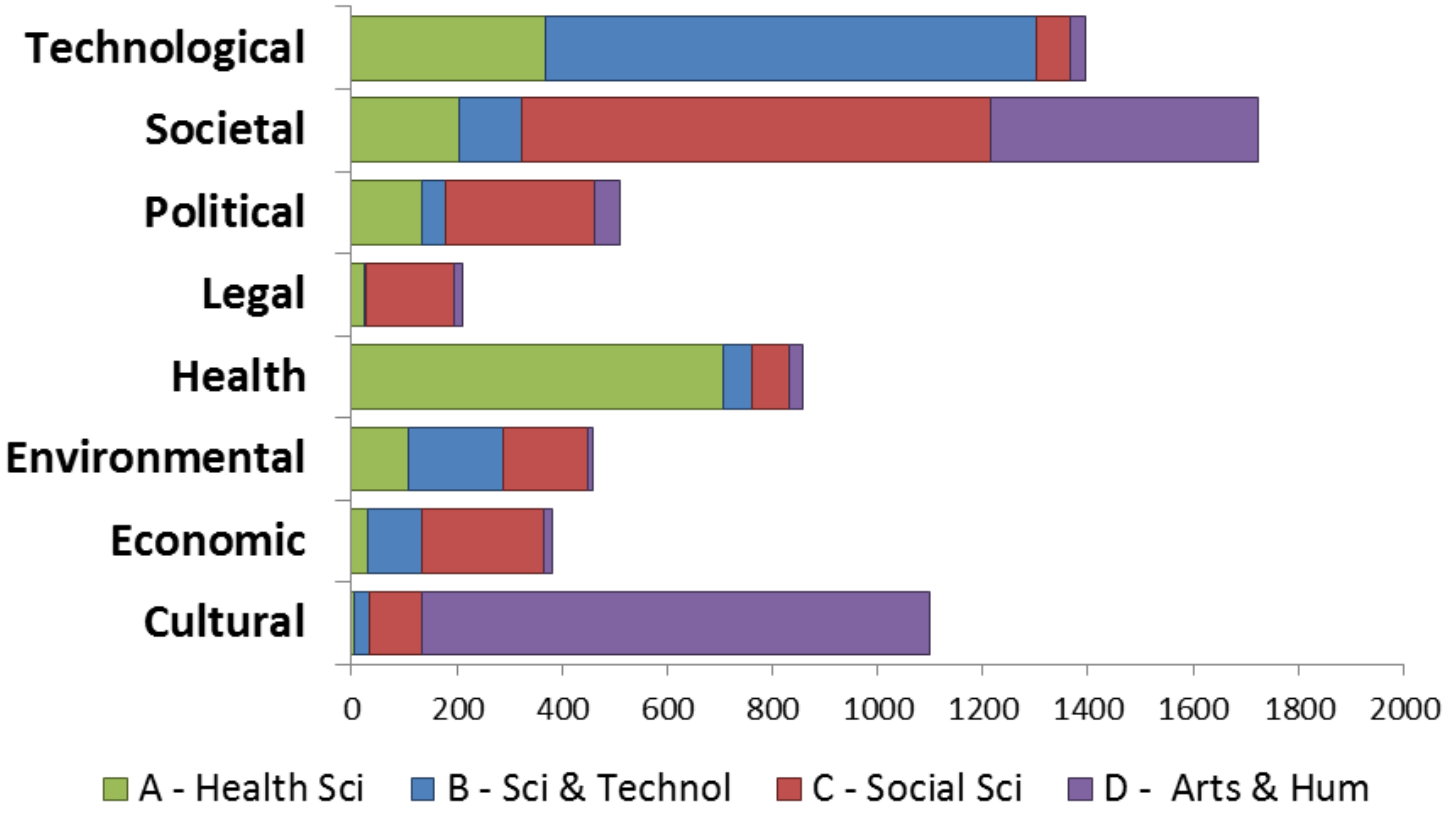
Assessing societal impact through impact case studies

IMPACT CASE STUDY TEMPLATE

1. Summary of the impact
2. Description of the underpinning research
3. References of the research
4. Details of the impact
5. Sources to corroborate the impact

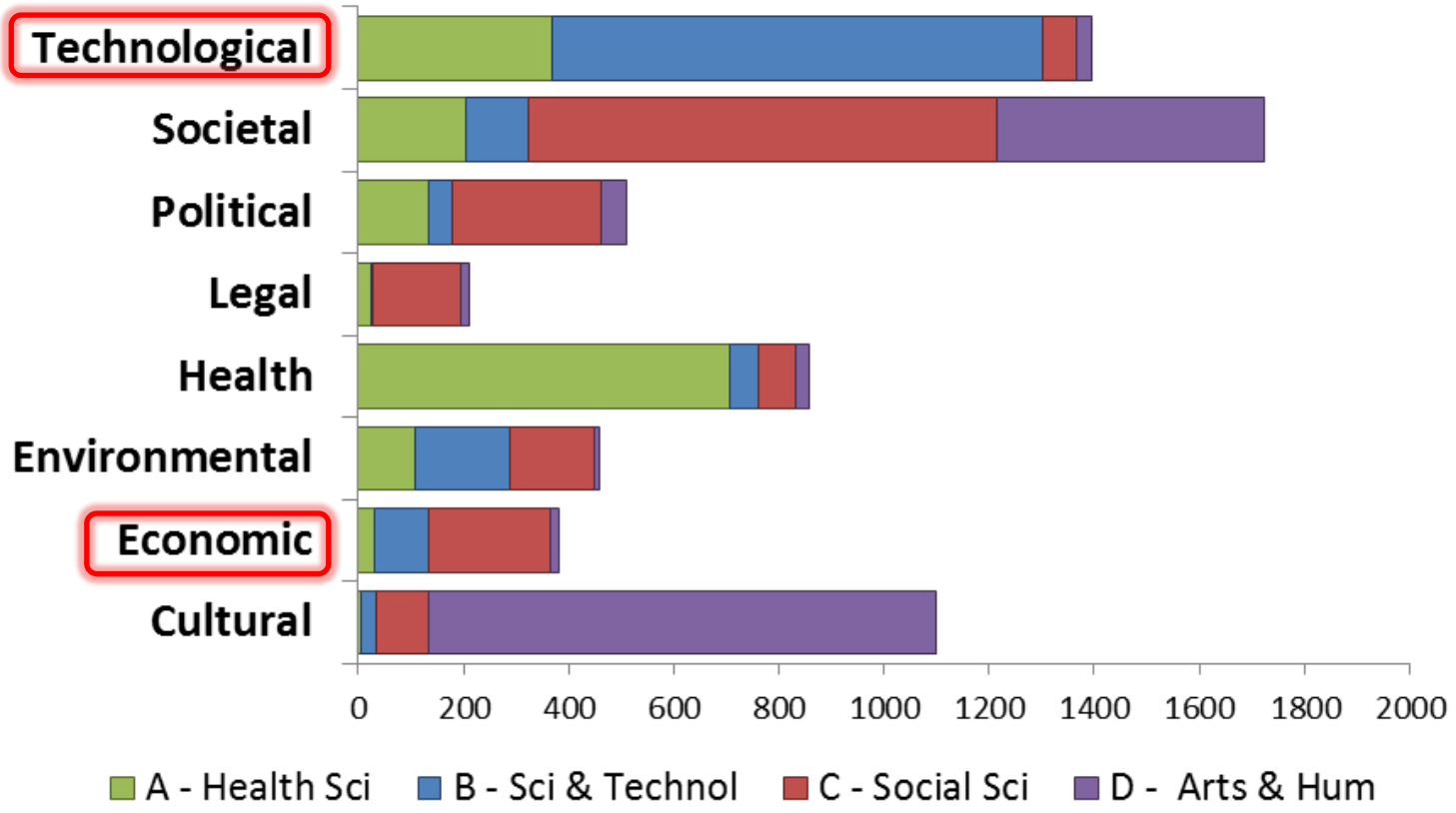
How can we measure societal impact? UK REF

Case studies by type of impact



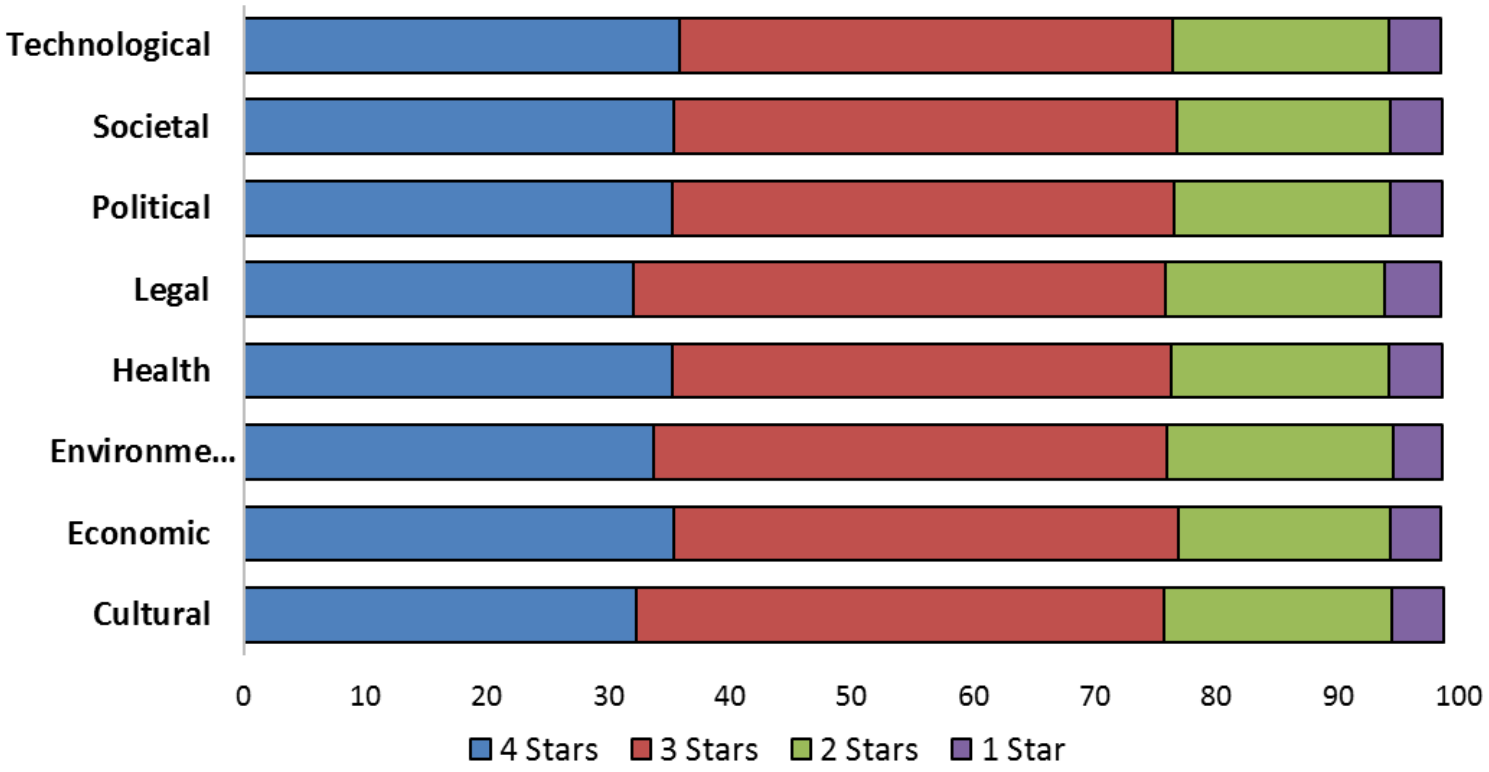
How can we measure societal impact? UK REF

Case studies by type of impact

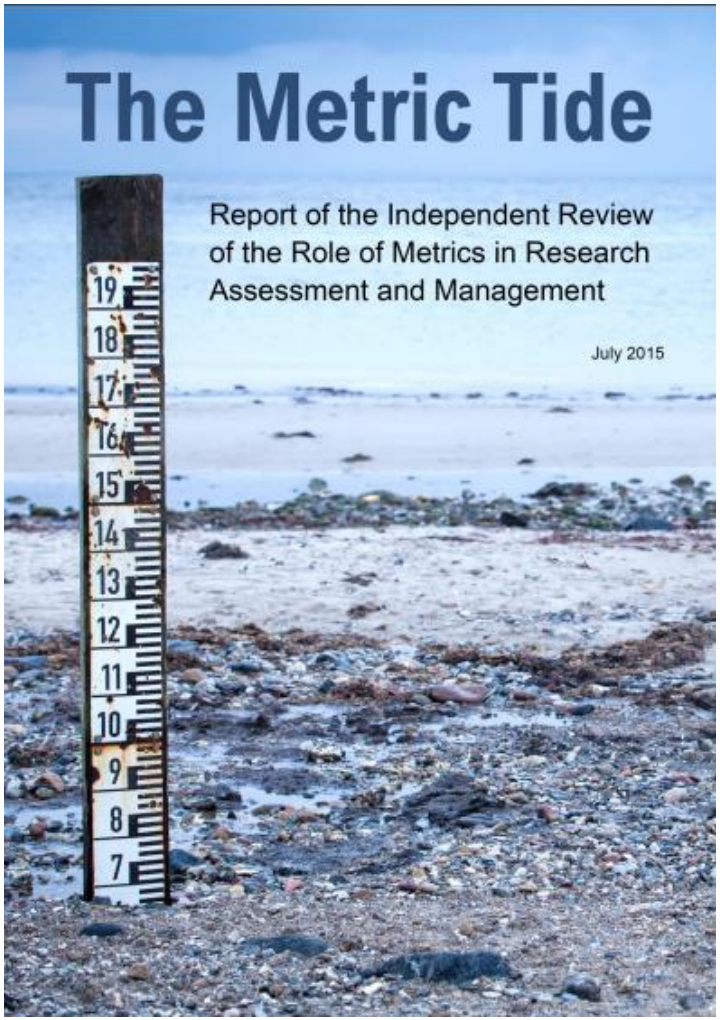


How can we measure societal impact? UK REF

Ratings by type of impact



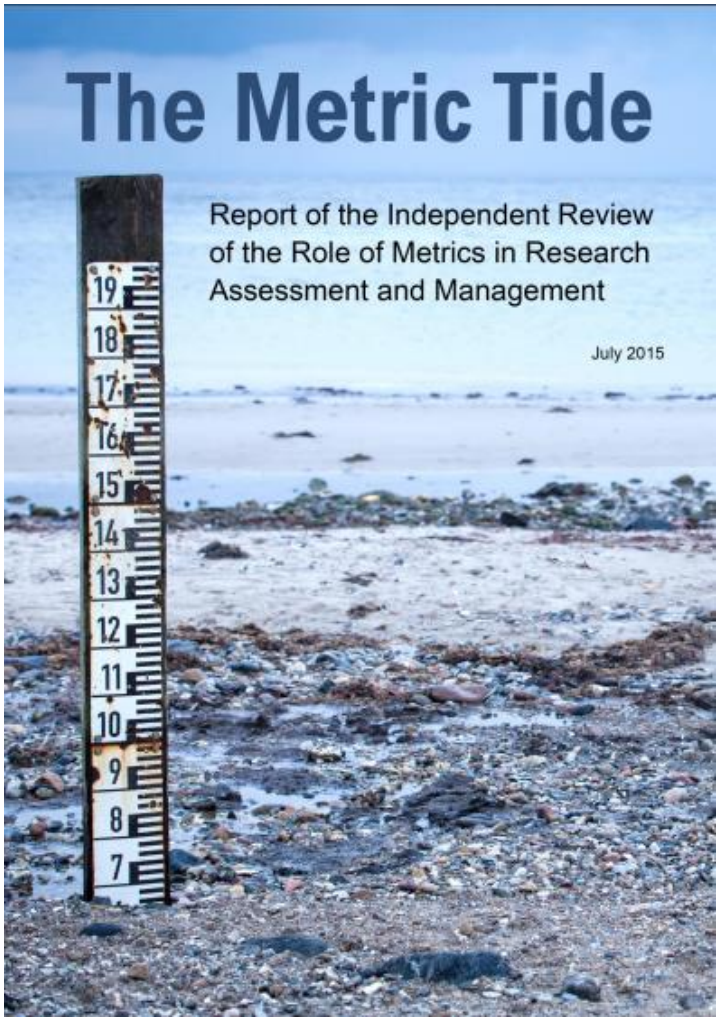
How can we measure societal impact? UK REF



"[…] for the impact component of the REF, it is not currently feasible to use quantitative indicators in place of narrative impact case studies, or the impact template"

Wilsdon et al., 2015

Altmetrics and the 'broader' impacts of science



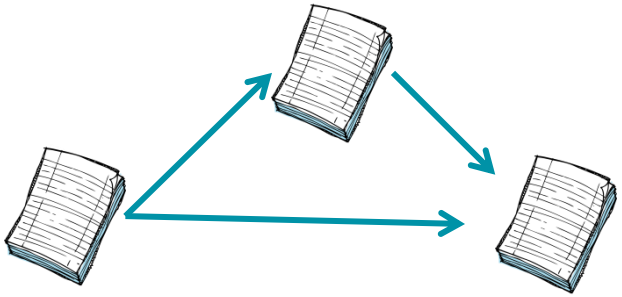
"[…] wider use of quantitative indicators, and the emergence of alternative metrics for societal impact, could support the transition to a more open, accountable and outward-facing research system"

Wilsdon et al., 2015

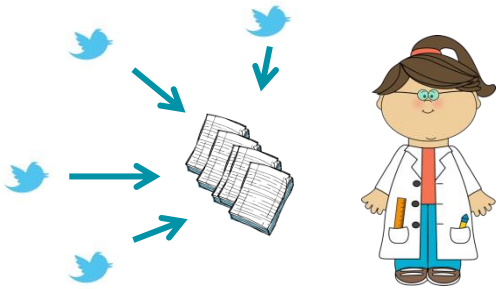
Altmetrics and the 'broader' impacts of science

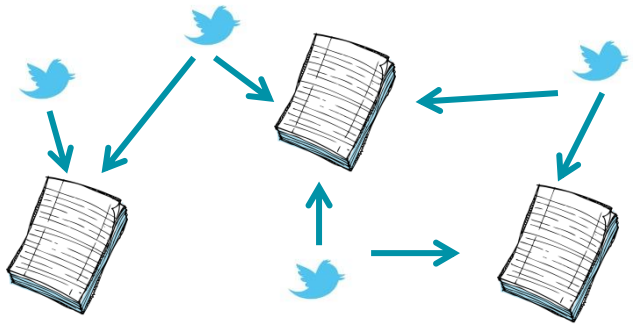
Two perspectives

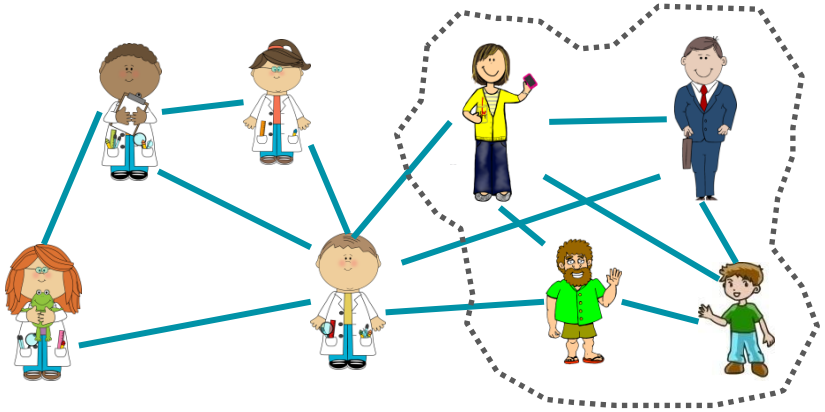
Classic perspective



Author perspective







Case: societal impact indicators at UGR

Multidimensional evaluation using biplot. Research at the University of Granada

Research questions:

- ¿What is the metric profile of research groups taking into account bibliometric and non-bibliometric indicators?

Methodology:

- **Time frame:** 2009-2013
- **Analysis unit:**
  161 research groups = 2216 res.
- **Methods:**

Correlations
biplot analysis

Source: Milanes-Guisado, Y. (2015). Multidimensional evaluation of research. Micro analysis at the university of Granada during the period 2009-2013 [doctoral thesis]. Universidad de Granada. *Supervisors: Daniel Torres-Salinas, José Navarrete, Francisco Solis*

Case: societal impact indicators at UGR

Multidimensional evaluation using biplot.
Research at the University of Granada

We calculated

46 indicators

and classified them into

9 different dimensions

We reduced and make a biplot analysis

Case: societal impact indicators at UGR

9 Dimensions of academic activity and impact

- Altmetrics
- Funding and projects
- Scientific output
- Knowledge transfer
- Media and news impact
- Scientific impact – Citations
- Teaching dissemination

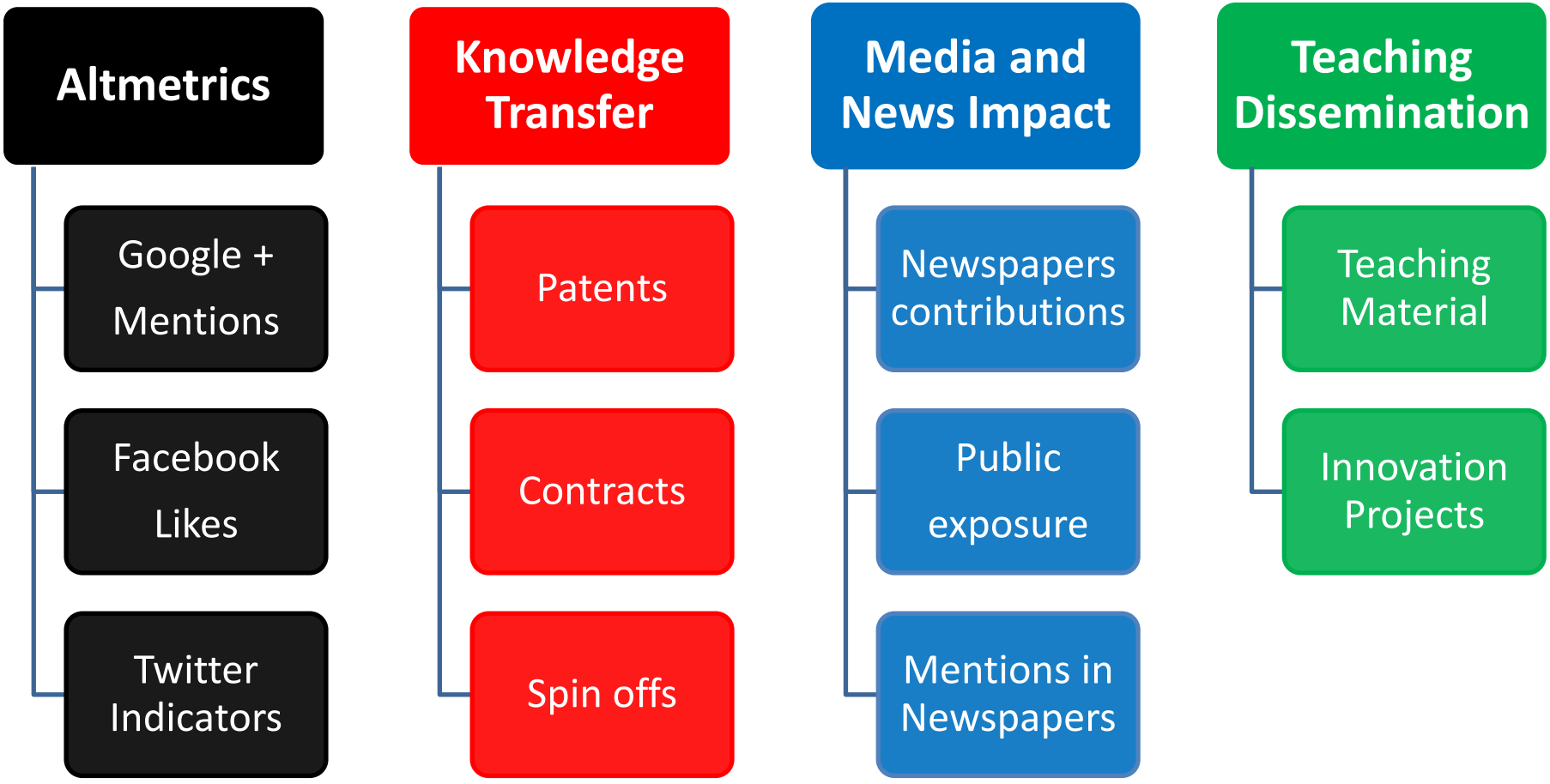
Case: societal impact indicators at UGR

Societal impact related dimensions

- Altmetrics
- Funding and projects
- Scientific output
- Knowledge transfer
- Media and news impact
- Scientific impact – Citations
- Teaching dissemination

Case: societal impact indicators at UGR

Some examples of “societal impact” indicators



Case: societal impact indicators at UGR

Some examples of the information sources

Bibliometrics	Non-bibliometrics
WEB OF SCIENCE	REGIONAL INFORMATION SYSTEM
ESSENTIAL SCIENCE INDICATORS	ALTMETRIC.COM
GOOGLE SCHOLAR CITATION	MY NEWS ON LINE
	OCLC-WorldCat
	Knowledge Transfer Office
	INTERNAL DATABASES

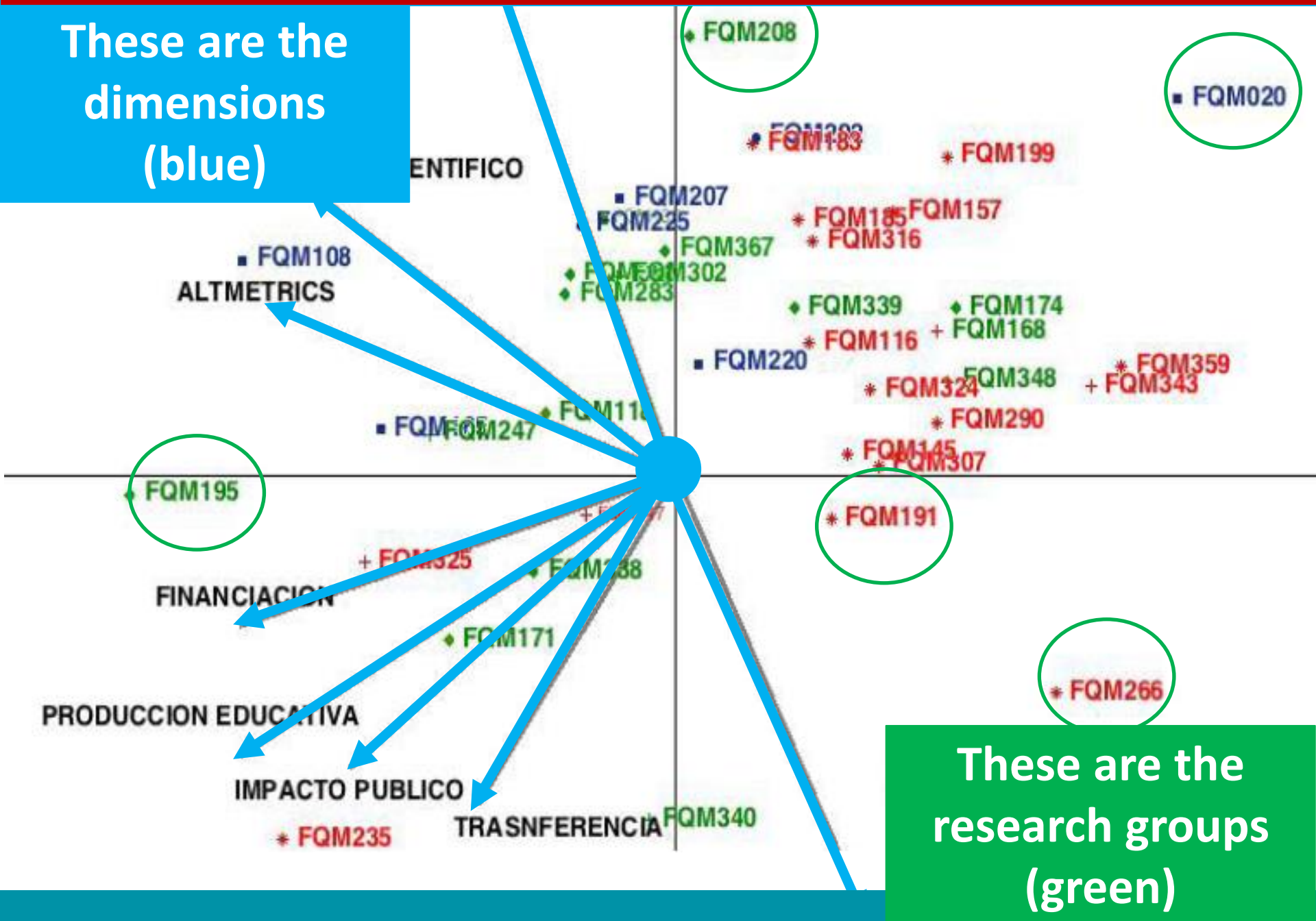
Case: societal impact indicators at UGR

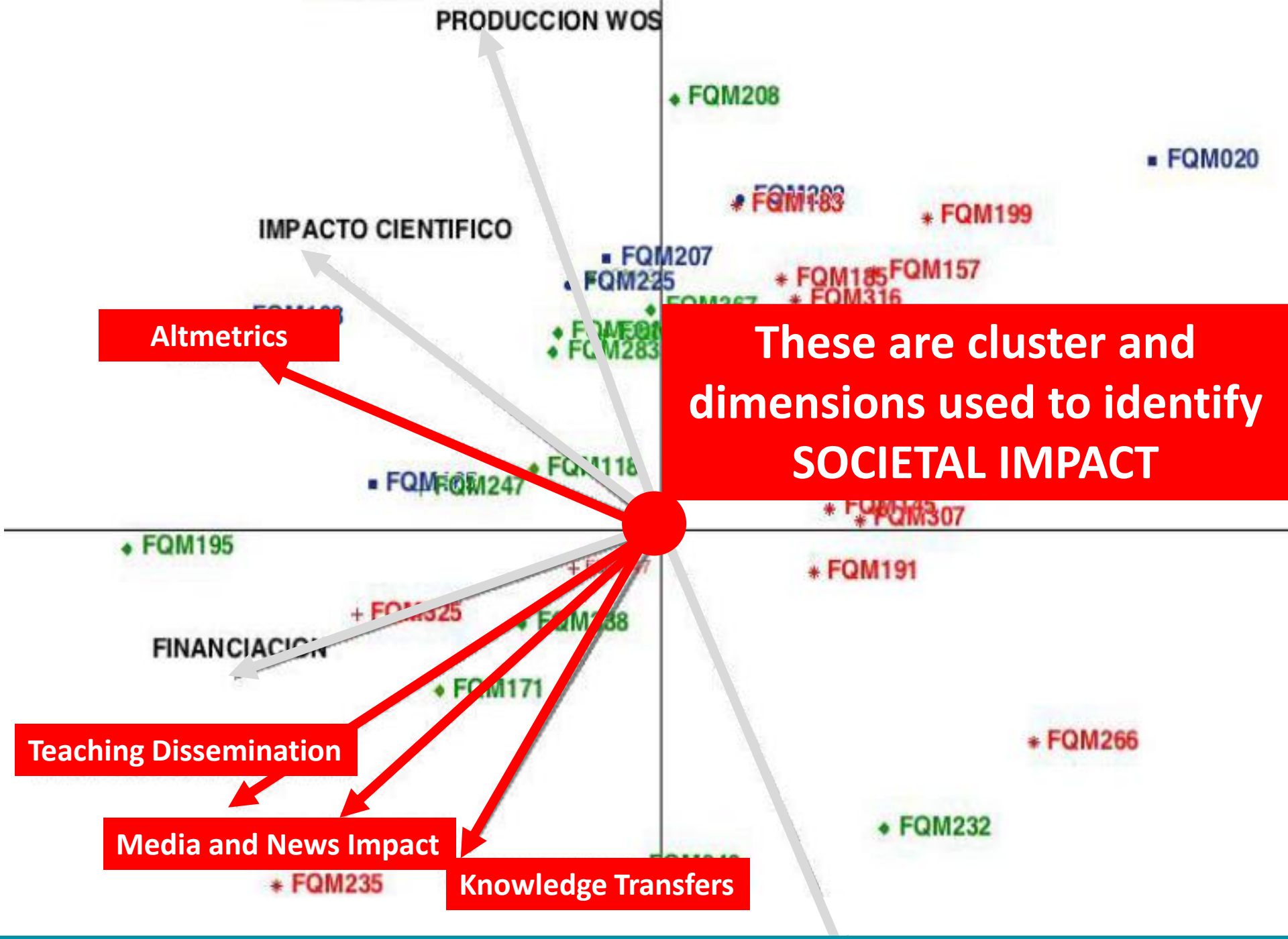
Method remarks

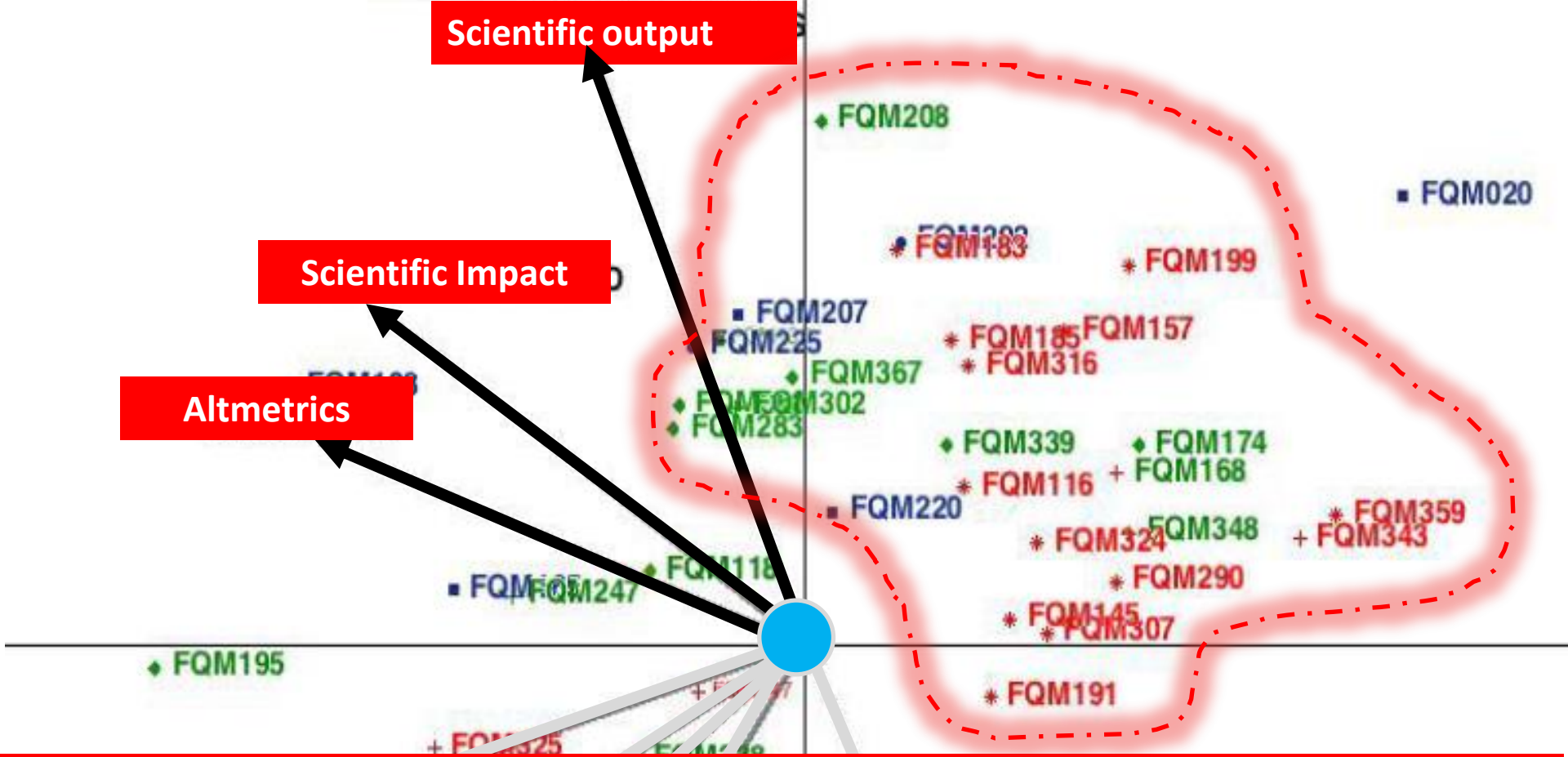
1) Calculation of 46 indicators for research groups in four areas
2) Normalization and standarization of indicators values using z-scores
3) Representation of dimensions and groups into two dimensions using biplot analysis
4) Reducing the biplot with clockwise representation

Now we are going to see an example in Exact Sciences

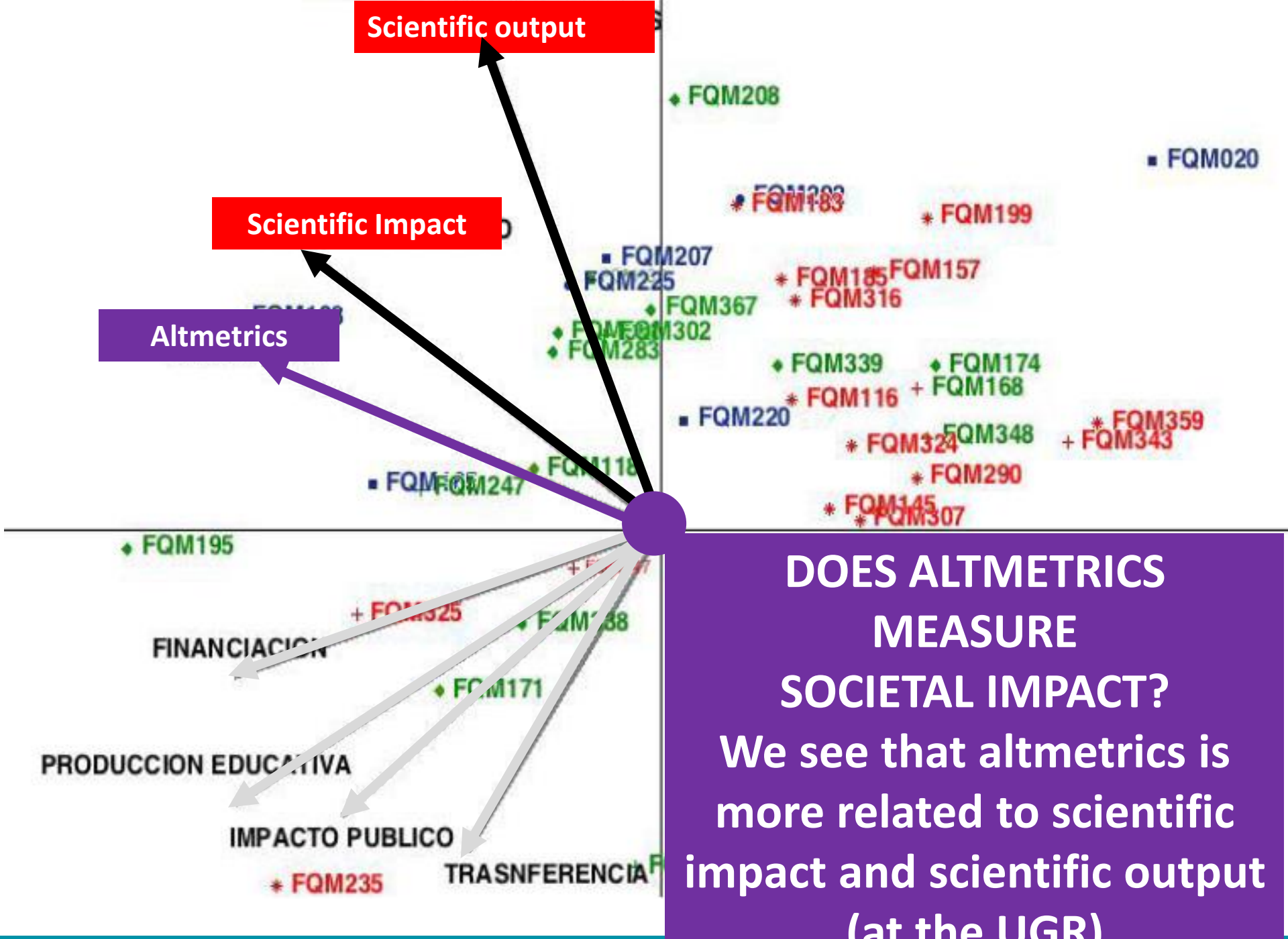
BIPLOT: “EXACT SCIENCES 52” Research groups




PRODUCCION WOS
IMPACTO CIENTIFICO
FINANCIACION
FQM208
FQM020
FQM199
FQM207
FQM225
FQM157
FQM316
FQM283
FQM247
FQM307
FQM195
FQM191
FQM171
FQM266
FQM232
FQM235
Altmetrics
Teaching Dissemination
Media and News Impact
Knowledge Transfers
These are cluster and dimensions used to identify SOCIETAL IMPACT



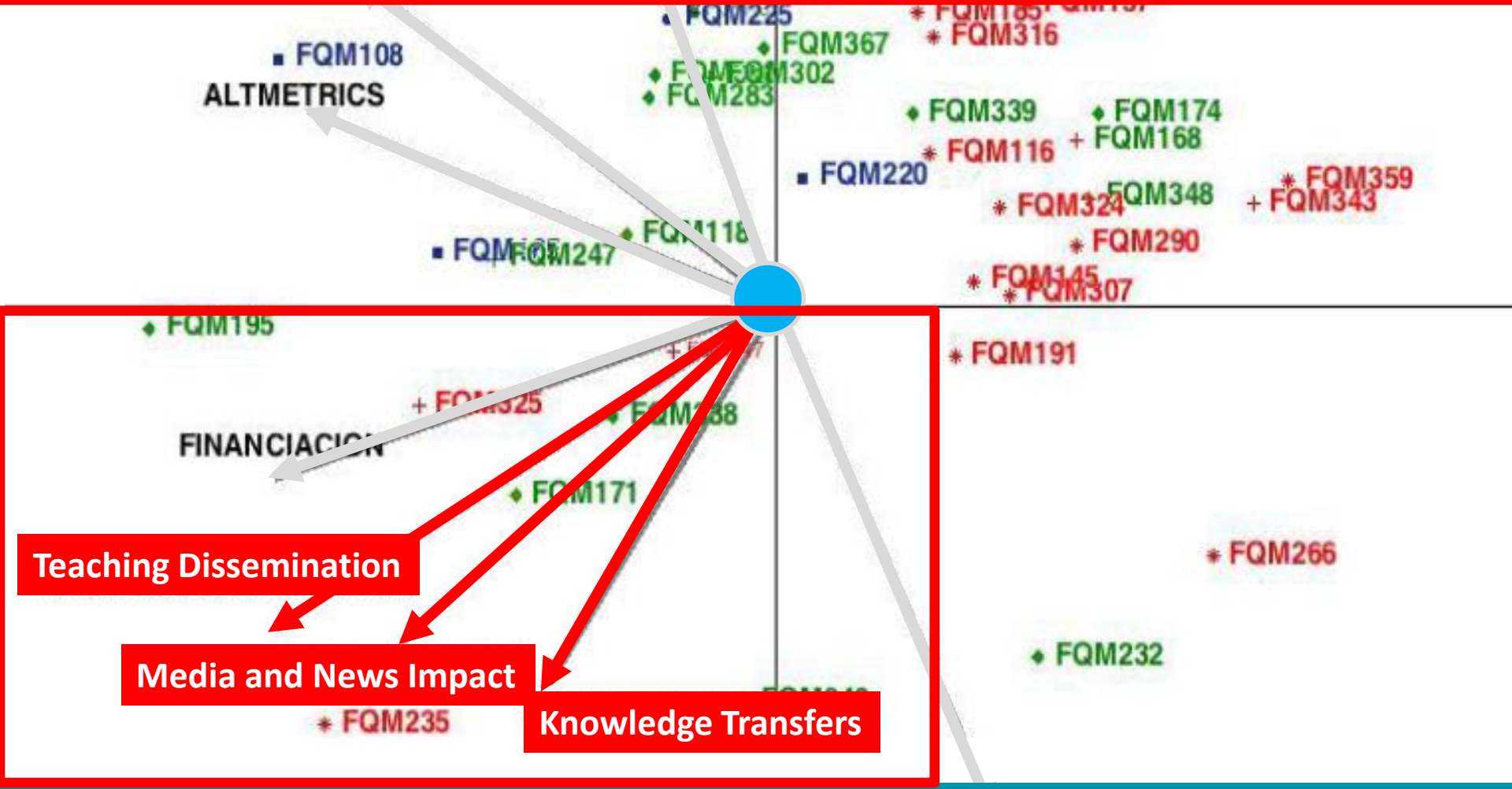
What we see is that most of the research groups are in dimensions related to traditional publications and the impact system (ie: Web of Science)



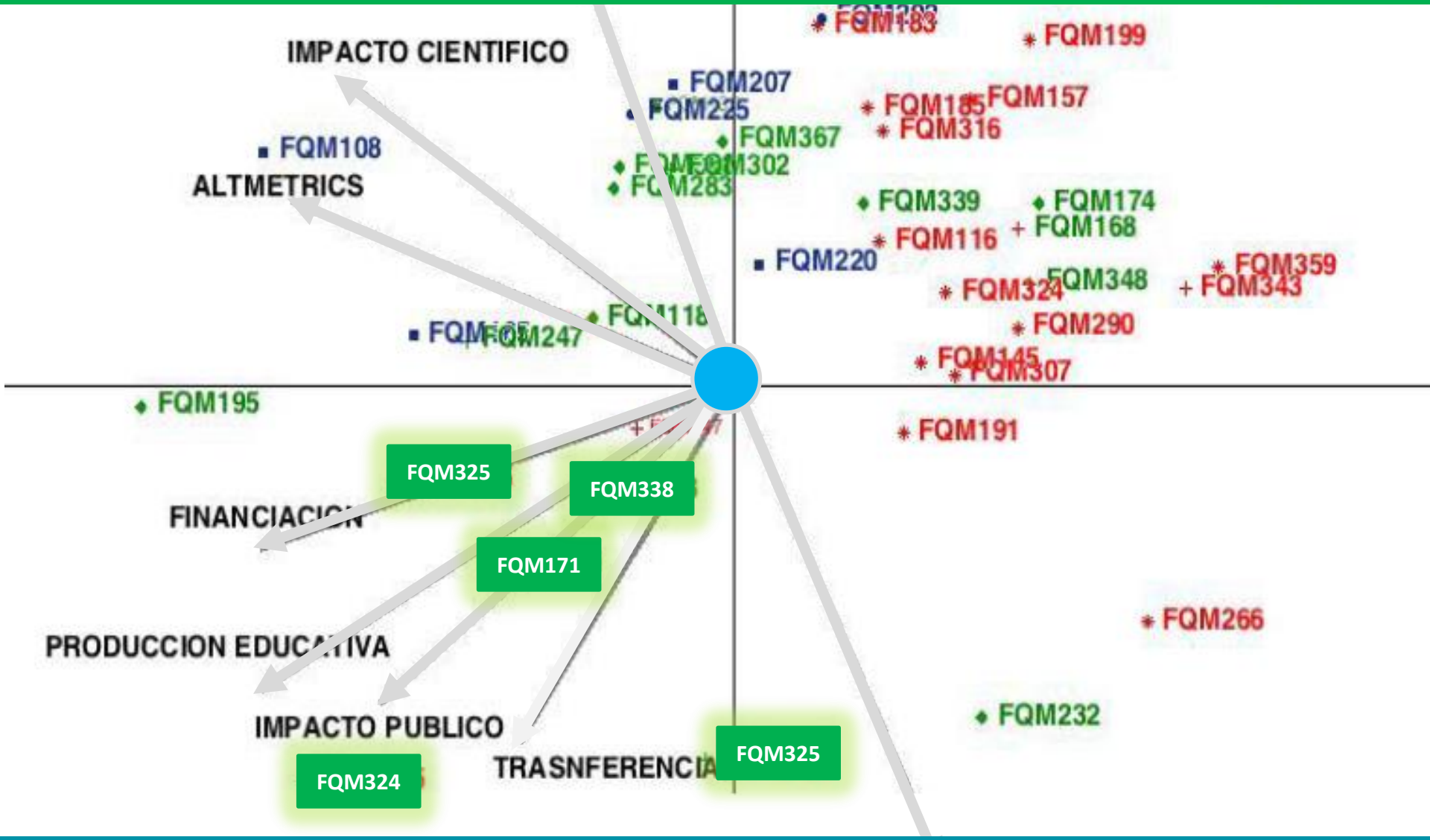
DOES ALTMETRICS MEASURE SOCIETAL IMPACT?

We see that altmetrics is more related to scientific impact and scientific output (at the UGR)

So, for Exact Sciences at the University of Granada we have a really clear quadrant related to SOCIETAL IMPACT



We have identified four groups with a clear Societal Impact orientation



Finally this is the general and multidimensional overview of the exact sciences at the UGR

International scientific output

Scientific impact - Citations

Altmetrics and webmetrics

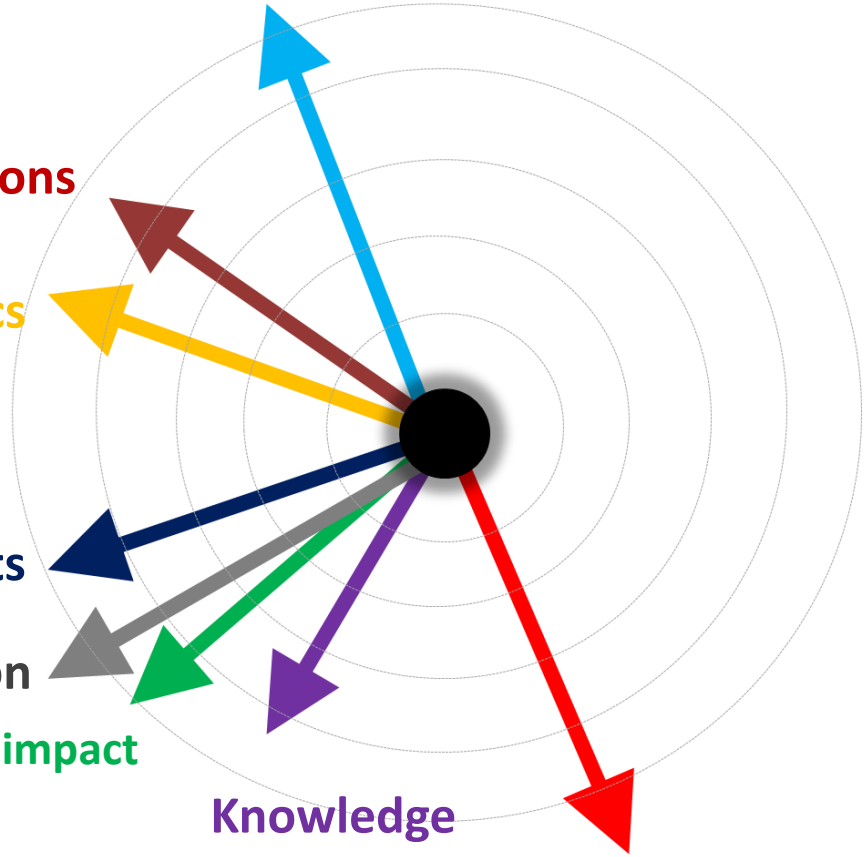
Funding and projects

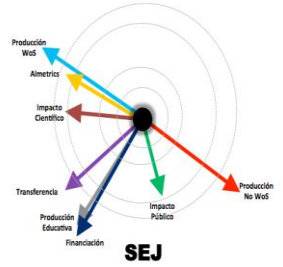
Teaching dissemination

Media and news impact

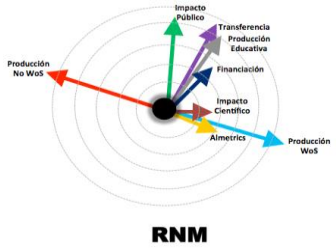
Knowledge transfer

National scientific output





SEJ



RNM

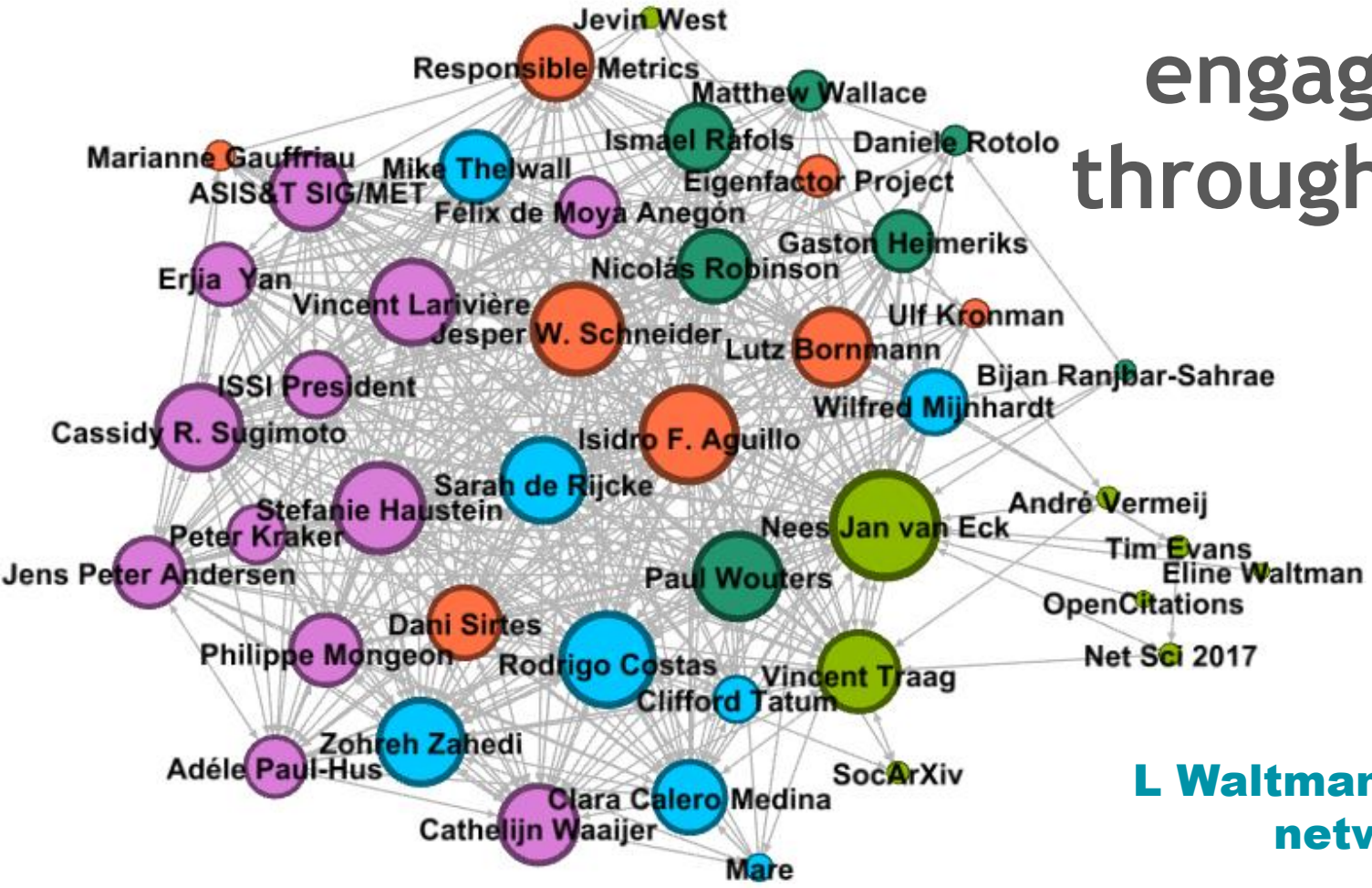
Potential applications of altmetrics

Social engagement through Twitter

1. Select a researcher
2. Identify its follower/followee network
3. Identify different communities of contacts
4. Identify geographical/cognitive/… proximities

Potential applications of altmetrics

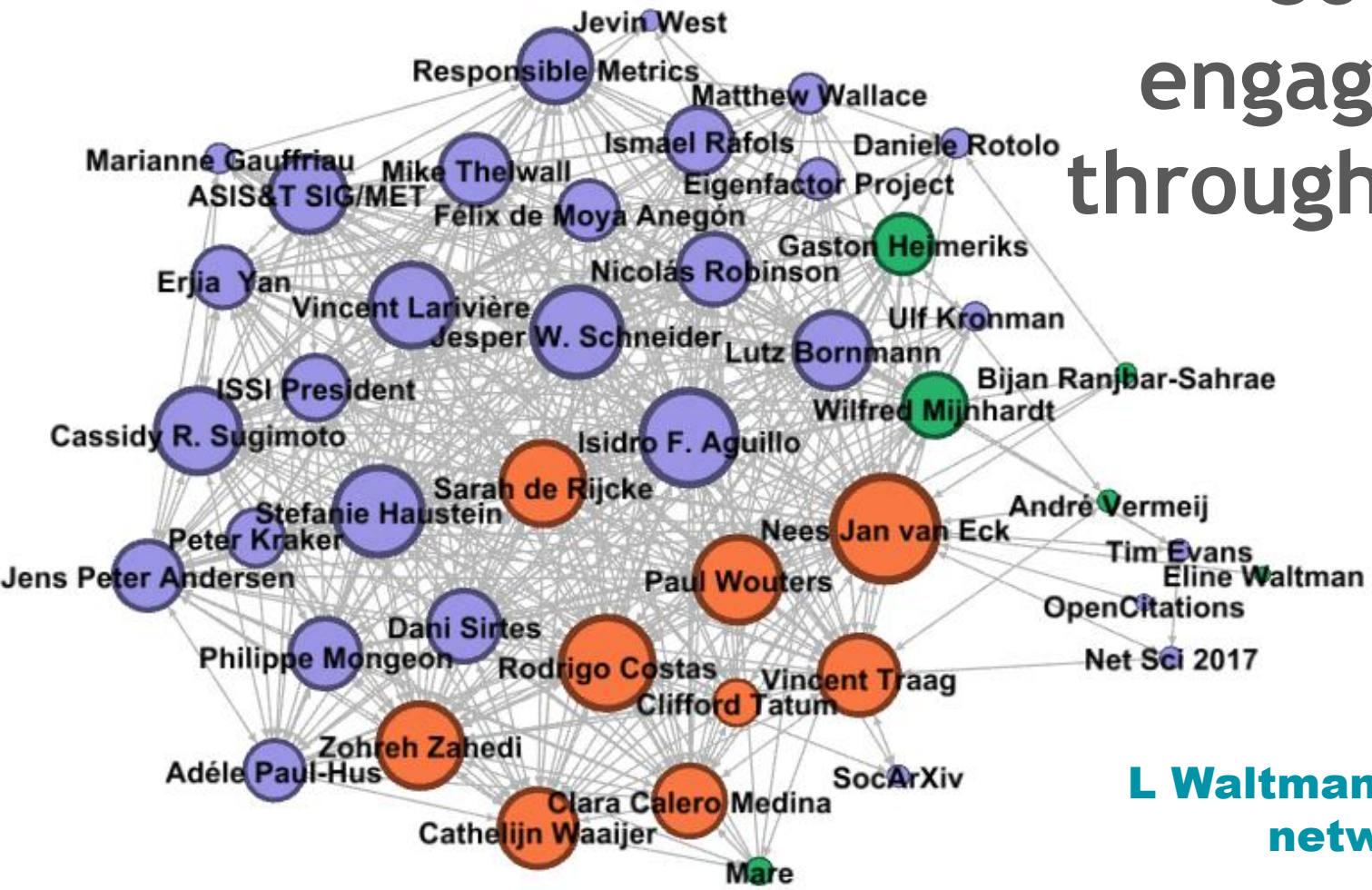
Social engagement through Twitter



L Waltman's Twitter network

Potential applications of altmetrics

Social engagement through Twitter



L Waltman's Twitter network

Food for thought

- Threats derived from a purely qualitative assessment

  Peripheries and prestige

- Threats derived from purely quantitative assessment

  Biases by type and scope of impacts

Visualizations as a balanced solution

esss european summer school for scientometrics

European Summer School | September 8, 2016

Questions?

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Especial thanks to Yusnelkis Milanés for providing data from her PhD thesis

Source: Milanes-Guisado, Y. (2015). Multidimensional evaluation of research. Micro analysis at the university of Granada during the period 2009-2013 [doctoral thesis]. Universidad de Granada. *Supervisors: Daniel Torres-Salinas, José Navarrete, Francisco Solis*