



Mapping the Knowledge Sector at the Regional Level:
**A Case Study on how we did it for
the Region of Crete, Greece**

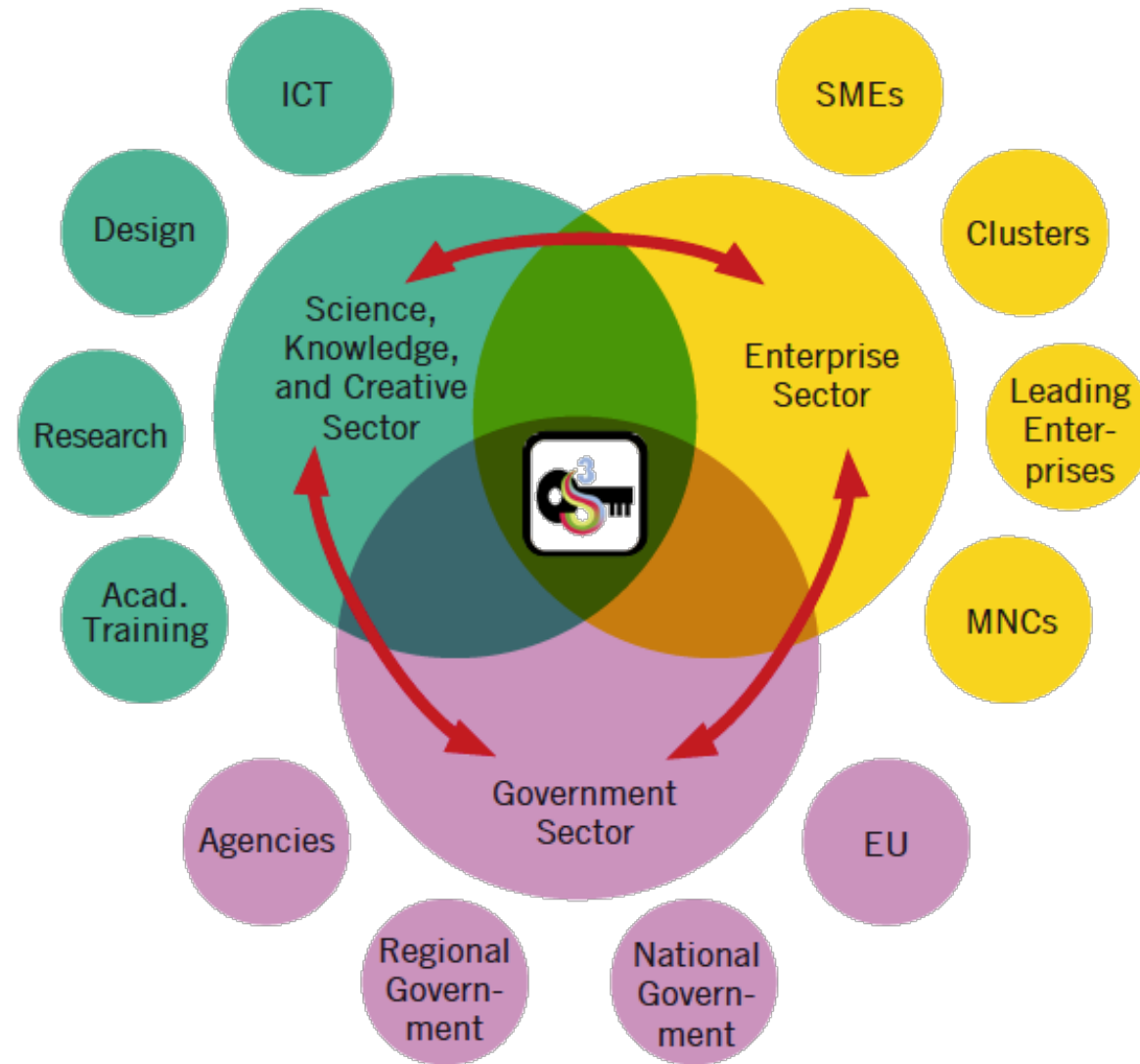
Dr-Ing Yannis Tolias

Managing Partner, innovatia systems

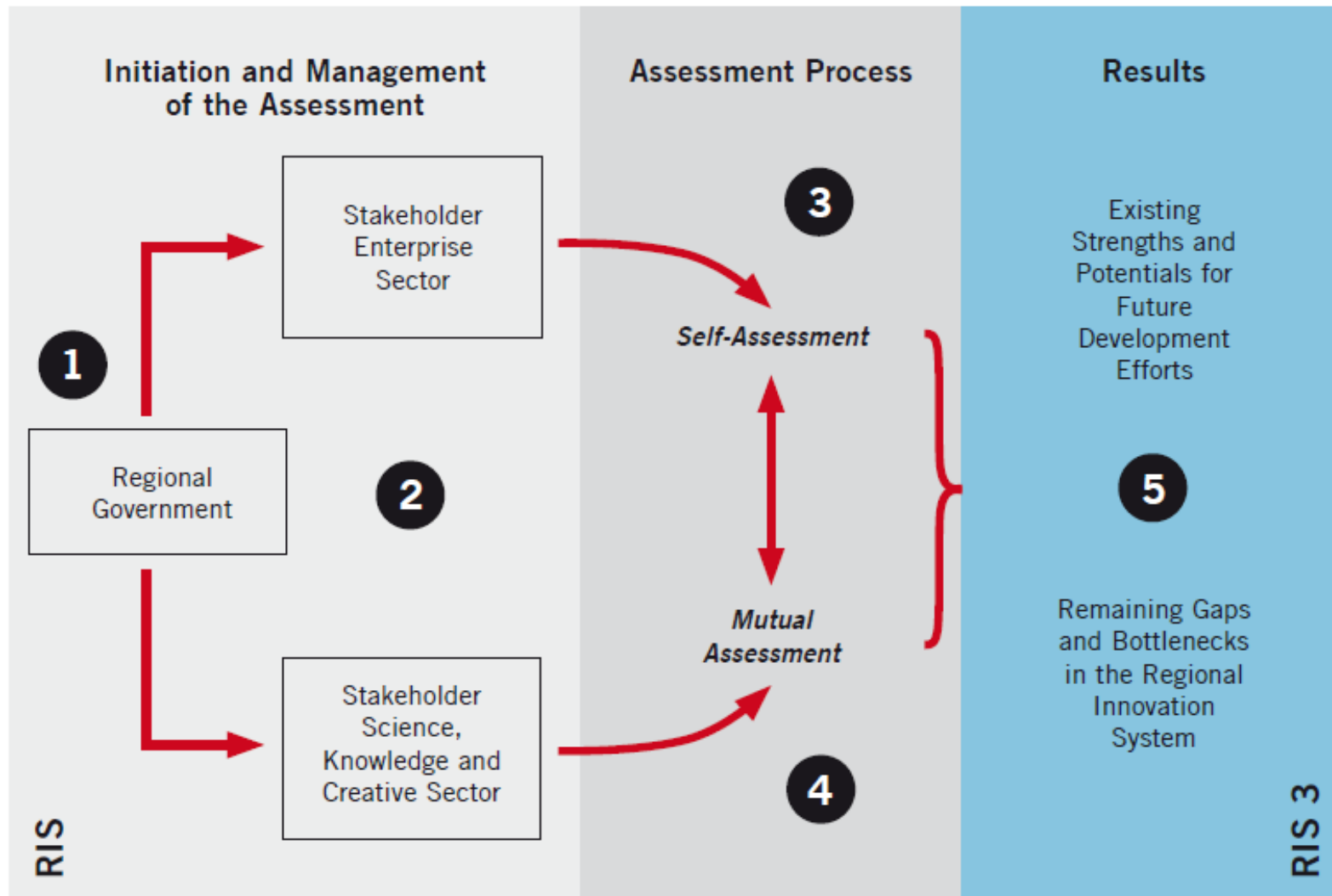
tolias@innovatiasystems.eu



What we want is a cross-evaluation of the triple helix!



Starting the process for smart specialisation



RIS3 Key Topics to be addressed

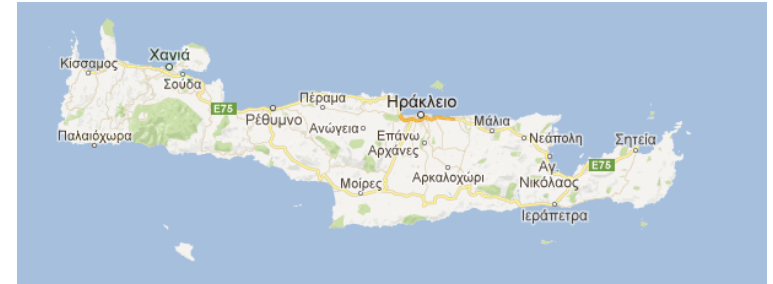


1. Where does your region already excel or has the potential to put itself on the map as a recognized world-class place of competence?
2. Which are the specific scientific strengths and research specializations in your region?
3. Which emerging new scientific competences can be spotted in your region?
4. Who are the key actors? How are they linked with the regional economy?
5. How fit is your regional knowledge base to address conjointly the grand challenges of society? How do regional lead institutions position themselves in global chains of knowledge and value)?
6. How favorable are working conditions for researchers in your region? How much mobility between the public science and the private sector does exist in your region? Do universities train scholars and graduates to become entrepreneurs?
7. Does current academic education fit to the needs of the regional economy – do regional employers absorb graduates or are graduates forced to look elsewhere?
8. What about the internationalization of researchers and research collaborations?

Part I

MAPPING THE KNOWLEDGE SECTOR: DESCRIPTIVE STATISTICS

Key Statistics (2004-2011)



Number of Scientific Publications (Web of Science): **10.501**

CAGR: **6,29%** vs **4,63%** for Greece

Crete contributes **9,3%** of the Greek output in scientific publications

These papers were written by **14.224** researchers affiliated to **1.834** organizations in **101** countries/territories of which:

- 2.852 (27,16%) from Crete only

- 3.916 (37,3%) from Crete and the rest of Greece

- 15 (0,14%) with contributions of companies established in Greece

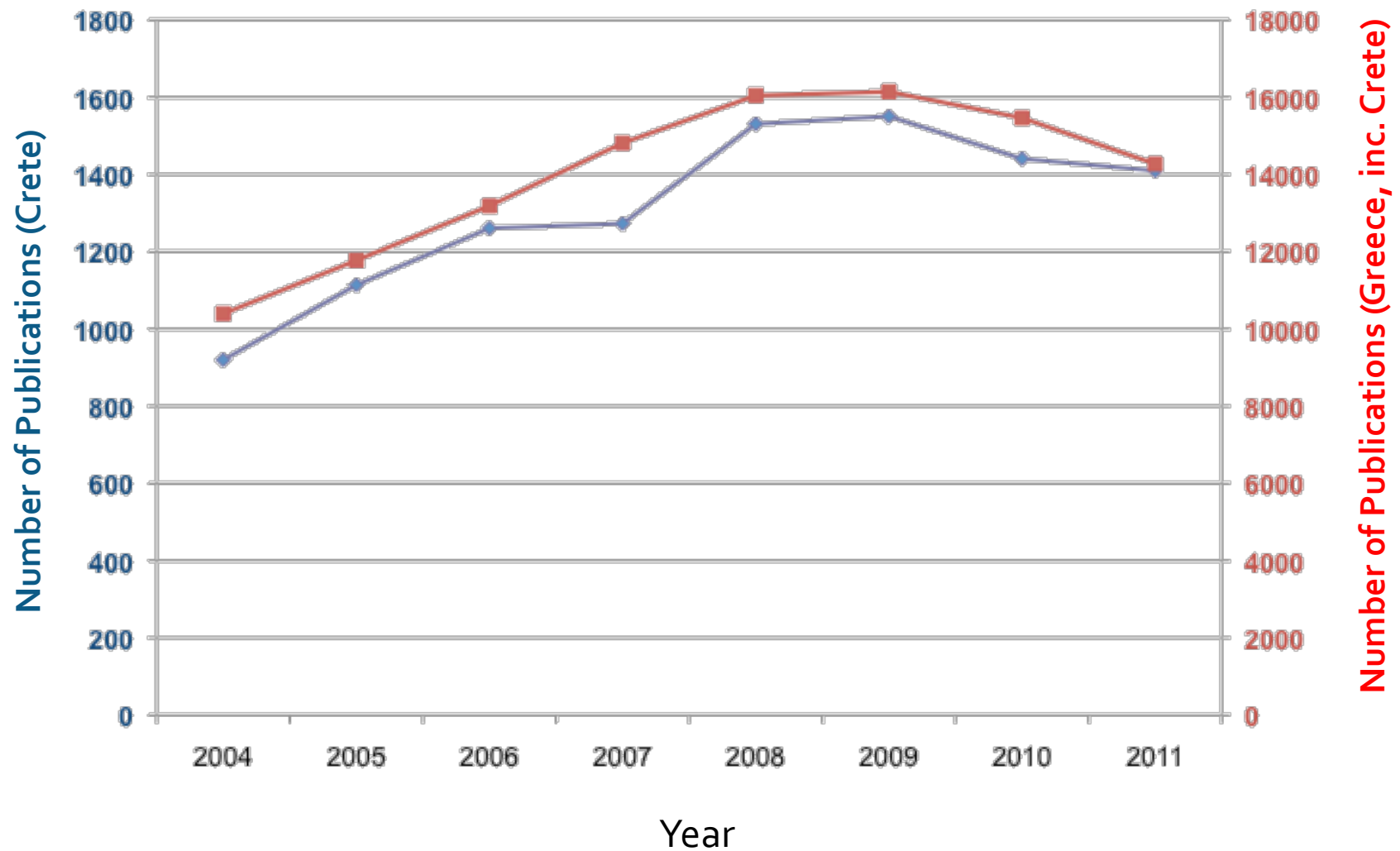
Number of academic patents granted worldwide: **19**

Foundation for Research and Technology Hellas (FORTH): **16** (32 applications)

University of Crete (UoC): **2** (8 applications)

Technical University of Crete (TUC): **1** (3 applications)

Scientific output (papers, books, ...) in numbers

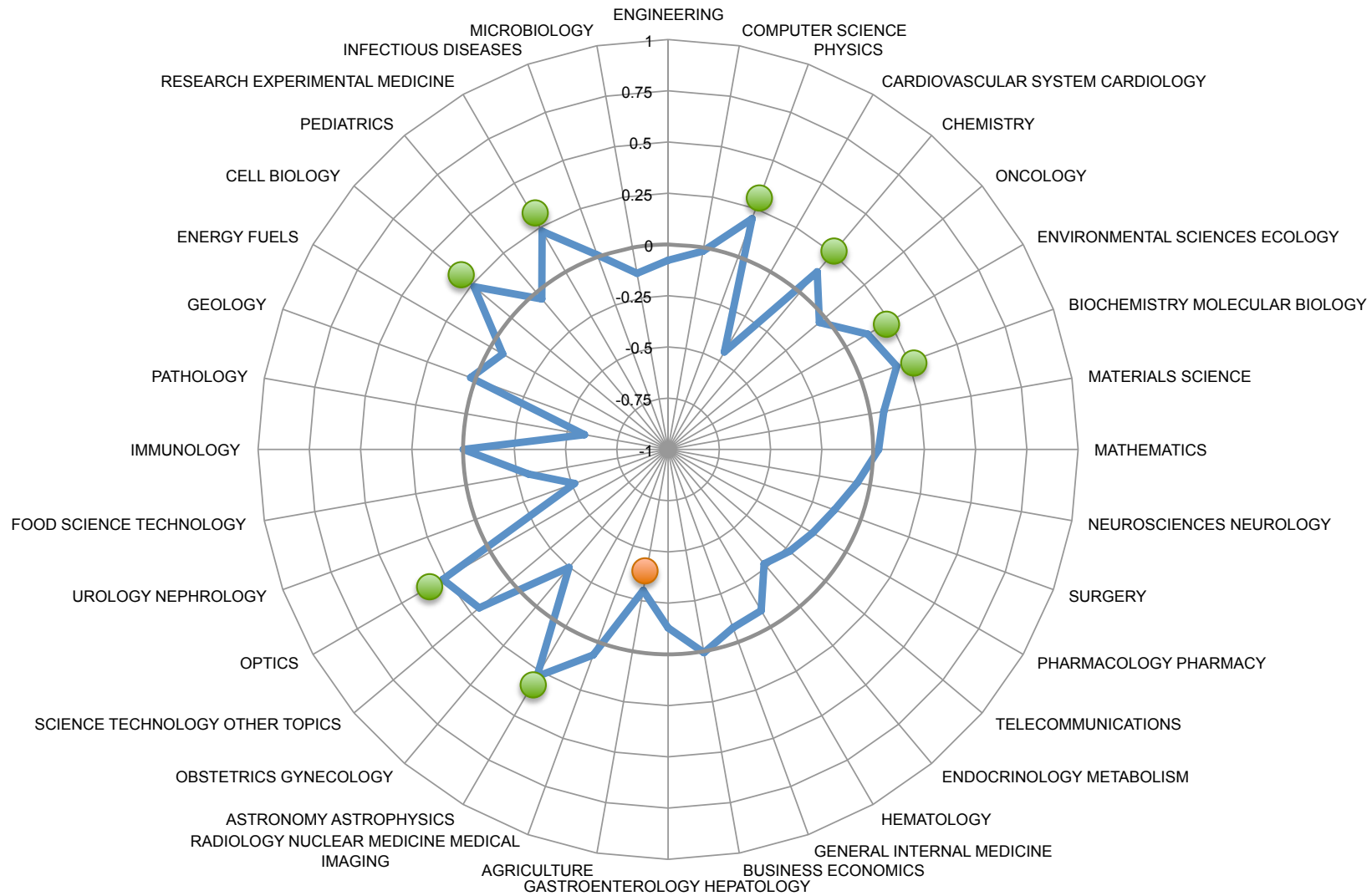


Overall co-authorship map (countries)

Created by the free version of tableau+public



Regional Specialisation: Crete vs Greece



Strong areas of regional specialisation

RESEARCH AREA	#GR04-11	%GR04-11	#CR04-11	%CR04-11	RSI	RTAN
OPHTHALMOLOGY	678	0.614	177	1.721	2.803	0.474
DEVELOPMENTAL BIOLOGY	111	0.1	27	0.263	2.630	0.449
TROPICAL MEDICINE	53	0.048	13	0.126	2.625	0.448
EVOLUTIONARY BIOLOGY	226	0.205	54	0.525	2.561	0.438
ACOUSTICS	407	0.368	95	0.924	2.511	0.430
FISHERIES	465	0.421	102	0.992	2.356	0.404
PARASITOLOGY	120	0.109	26	0.253	2.321	0.398
SOCIAL WORK	14	0.013	3	0.029	2.231	0.381
MARINE FRESHWATER BIOLOGY	977	0.884	199	1.935	2.189	0.373
LEGAL MEDICINE	70	0.063	14	0.136	2.159	0.367
BEHAVIORAL SCIENCES	156	0.141	31	0.301	2.135	0.362
ZOOLOGY	410	0.371	79	0.768	2.070	0.349
OTORHINOLARYNGOLOGY	466	0.422	89	0.865	2.050	0.344
MICROSCOPY	65	0.059	12	0.117	1.983	0.330
OCEANOGRAPHY	474	0.429	83	0.807	1.881	0.306
MINERALOGY	160	0.145	27	0.263	1.814	0.289
ASTRONOMY ASTROPHYSICS	1918	1.736	317	3.082	1.775	0.279
METEOROLOGY ATMOSPHERIC SCIENCES	1122	1.015	182	1.77	1.744	0.271
OPTICS	1747	1.581	282	2.742	1.734	0.269
MINING MINERAL PROCESSING	123	0.111	19	0.185	1.667	0.250
CELL BIOLOGY	1544	1.397	232	2.256	1.615	0.235
RESEARCH EXPERIMENTAL MEDICINE	1436	1.299	213	2.071	1.594	0.229
BIOPHYSICS	685	0.62	99	0.963	1.553	0.217
AUDIOLOGY SPEECH LANGUAGE PATHOLOGY	85	0.077	12	0.117	1.519	0.206
HISTORY	121	0.109	17	0.165	1.514	0.204
SCIENCE TECHNOLOGY OTHER TOPICS	1823	1.65	256	2.489	1.508	0.203
PUBLIC ENVIRONMENTAL OCCUPATIONAL HEALTH	1266	1.146	177	1.721	1.502	0.201
PHYSICS	8883	8.038	1235	12.009	1.494	0.198

Getting the key statistics from WoS - Search

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Search

in
Example: oil spill mediterranean*

in
Example: Unilever SAME India

in
Example: 2001 or 1997-1999

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Searches must be in English

Getting the key statistics from WoS – Analyze (1)

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- ▶ Research Areas
- ▶ Authors
- ▶ Group Authors
- ▶ Editors
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- ▶ Book Series Titles

1. Title: **Crystallinity and Chain Conformation in PEO/Layered Silicate Nanocomposites**
Author(s): Chrissopoulou, K.; Andrikopoulos, K. S.; Fotiadou, S.; et al.
Source: MACROMOLECULES Volume: **44** Issue: **24** Pages: **9710-9722** DOI: **10.1021/ma201711r**
Published: **DEC 27 2011**
Times Cited: **3** (from Web of Science)
[Link to Full Text](#) [[View abstract](#)]
2. Title: **Cdc6 expression represses E-cadherin transcription and activates adjacent replication origins**
Author(s): Sideridou, Maria; Zakopoulou, Roubini; Evangelou, Konstantinos; et al.
Source: JOURNAL OF CELL BIOLOGY Volume: **195** Issue: **7** Pages: **1123-1140** DOI: **10.1083/jcb.201108121** Published: **DEC 26 2011**
Times Cited: **2** (from Web of Science)

Getting the key statistics from WoS – Records / year

Results Analysis

[<<Back to previous page](#)

10,311 records Address=(Crete) AND Year Published=(2004-2011)

Rank the records by this field:	Set display options:	Sort by:
<div>Languages Organizations Organizations-Enhanced Publication Years</div>	Show the top <input type="text" value="500"/> Results. Minimum record count (threshold): <input type="text" value="1"/>	<input checked="" type="radio"/> Record count <input type="radio"/> Selected field

Analyze

Use the checkboxes below to view the records. You can choose to view those selected records, or you can exclude them (and view the others).

View Records Exclude Records	Field: Publication Years	Record Count	% of 10311	Bar Chart	Save Analysis Data to File <input checked="" type="radio"/> Data rows displayed in table <input type="radio"/> All data rows
<input type="checkbox"/>	2009	1502	14.567 %	<div></div>	
<input type="checkbox"/>	2008	1495	14.499 %	<div></div>	
<input type="checkbox"/>	2010	1403	13.607 %	<div></div>	
<input type="checkbox"/>	2011	1402	13.597 %	<div></div>	
<input type="checkbox"/>	2007	1266	12.278 %	<div></div>	
<input type="checkbox"/>	2006	1224	11.871 %	<div></div>	
<input type="checkbox"/>	2005	1100	10.668 %	<div></div>	
<input type="checkbox"/>	2004	919	8.913 %	<div></div>	

Getting the key statistics from WoS – Key Actors

Results Analysis

[<<Back to previous page](#)

10,311 records Address=(Crete) AND Year Published=(2004-2011)

Rank the records by this field:	Set display options:	Sort by:
<div> <div>Group Authors</div> <div>Languages</div> <div>Organizations</div> <div>Organizations-Enhanced</div> </div>	Show the top <input type="text" value="500"/> Results. Minimum record count (threshold): <input type="text" value="1"/>	<input checked="" type="radio"/> Record count <input type="radio"/> Selected field

Analyze

Use the checkboxes below to view the records. You can choose to view those selected records, or you can exclude them (and view

View Records Exclude Records	Field: Organizations-Enhanced	Record Count	% of 10311	Bar Chart
<input type="checkbox"/>	UNIVERSITY OF CRETE	6602	64.029 %	<div></div>
<input type="checkbox"/>	FOUNDATION FOR RESEARCH TECHNOLOGY HELLAS FORTH	1700	16.487 %	<div></div>
<input type="checkbox"/>	TECHNICAL UNIVERSITY OF CRETE	1658	16.080 %	<div></div>
<input type="checkbox"/>	UNIVERSITY OF ATHENS	545	5.286 %	<div></div>
<input type="checkbox"/>	UNIVERSITY OF PATRAS	444	4.306 %	<div></div>
<input type="checkbox"/>	UNIV HOSP HERAKLION	415	4.025 %	<div></div>
<input type="checkbox"/>	TECHNOL EDUC INST CRETE	383	3.714 %	<div></div>
<input type="checkbox"/>	ARISTOTLE UNIVERSITY OF THESSALONIKI	295	2.861 %	<div></div>
<input type="checkbox"/>	UNIVERSITY OF IOANNINA	230	2.231 %	<div></div>
<input type="checkbox"/>	MAX PLANCK SOCIETY	229	2.221 %	<div></div>

Getting the key statistics from WoS – Key Actors

10,311 records Address=(Crete) AND Year Published=(2004-2011)

Rank the records by this field:	Set display options:	Sort by:
<div>Organizations</div> <div>Organizations-Enhanced</div> <div>Publication Years</div> <div>Research Areas</div>	Show the top <input type="text" value="500"/> Results. Minimum record count (threshold): <input type="text" value="1"/>	<input checked="" type="radio"/> Record count <input type="radio"/> Selected field

Analyze

Use the checkboxes below to view the records. You can choose to view those selected records, or you can exclude them (and

View Records Exclude Records	Field: Organizations	Record Count	% of 10311	Bar Chart
<input type="checkbox"/>	UNIV CRETE	6482	62.865 %	<div></div>
<input type="checkbox"/>	TECH UNIV CRETE	1678	16.274 %	<div></div>
<input type="checkbox"/>	FDN RES TECHNOL HELLAS	926	8.981 %	<div></div>
<input type="checkbox"/>	FORTH	657	6.372 %	<div></div>
<input type="checkbox"/>	UNIV ATHENS	488	4.733 %	<div></div>
<input type="checkbox"/>	UNIV HOSP HERAKLION	444	4.306 %	<div></div>
<input type="checkbox"/>	TECHNOL EDUC INST CRETE	383	3.714 %	<div></div>
<input type="checkbox"/>	UNIV PATRAS	270	2.619 %	<div></div>
<input type="checkbox"/>	ARISTOTLE UNIV THESSALONIKI	265	2.570 %	<div></div>
<input type="checkbox"/>	UNIV IOANNINA	230	2.231 %	<div></div>
<input type="checkbox"/>	HELLENCTR MARINE RES	218	2.114 %	<div></div>

Getting the key statistics from WoS – Collaborations

10,311 records Address=(Crete) AND Year Published=(2004-2011)

Rank the records by this field:	Set display options:	Sort by:
<div> <div>Authors</div> <div>Book Series Titles</div> <div>Conference Titles</div> <div>Countries/Territories</div> </div>	Show the top <input type="text" value="500"/> Results. Minimum record count (threshold): <input type="text" value="1"/>	<input checked="" type="radio"/> Record count <input type="radio"/> Selected field

Analyze

Use the checkboxes below to view the records. You can choose to view those selected records, or you can

View Records Exclude Records	Field: Countries/Territories	Record Count	% of 10311	Bar Chart
<input type="checkbox"/>	GREECE	10208	99.001 %	<div></div>
<input type="checkbox"/>	USA	1601	15.527 %	<div></div>
<input type="checkbox"/>	ENGLAND	842	8.166 %	<div></div>
<input type="checkbox"/>	GERMANY	789	7.652 %	<div></div>
<input type="checkbox"/>	FRANCE	630	6.110 %	<div></div>
<input type="checkbox"/>	ITALY	524	5.082 %	<div></div>
<input type="checkbox"/>	SPAIN	496	4.810 %	<div></div>
<input type="checkbox"/>	NETHERLANDS	315	3.055 %	<div></div>
<input type="checkbox"/>	SWEDEN	201	1.949 %	<div></div>
<input type="checkbox"/>	BELGIUM	191	1.852 %	<div></div>
<input type="checkbox"/>	CANADA	176	1.707 %	<div></div>
<input type="checkbox"/>	SWITZERLAND	157	1.523 %	<div></div>

Getting the key statistics from WoS - Specialization

10,311 records Address=(Crete) AND Year Published=(2004-2011)

Rank the records by this field:	Set display options:	Sort by:
<div> <div>Organizations</div> <div>Organizations-Enhanced</div> <div>Publication Years</div> <div>Research Areas</div> </div>	Show the top <input type="text" value="500"/> Results. Minimum record count (threshold): <input type="text" value="1"/>	<input checked="" type="radio"/> Record count <input type="radio"/> Selected field

Analyze

Use the checkboxes below to view the records. You can choose to view those selected records, or you can exclude them (ar

View Records Exclude Records	Field: Research Areas	Record Count	% of 10311	Bar Chart
<input type="checkbox"/>	PHYSICS	1236	11.987 %	<div></div>
<input type="checkbox"/>	ENGINEERING	1220	11.832 %	<div></div>
<input type="checkbox"/>	COMPUTER SCIENCE	955	9.262 %	<div></div>
<input type="checkbox"/>	CHEMISTRY	838	8.127 %	<div></div>
<input type="checkbox"/>	BIOCHEMISTRY MOLECULAR BIOLOGY	580	5.625 %	<div></div>
<input type="checkbox"/>	ENVIRONMENTAL SCIENCES ECOLOGY	511	4.956 %	<div></div>
<input type="checkbox"/>	ONCOLOGY	458	4.442 %	<div></div>
<input type="checkbox"/>	MATERIALS SCIENCE	450	4.364 %	<div></div>
<input type="checkbox"/>	MATHEMATICS	405	3.928 %	<div></div>
<input type="checkbox"/>	NEUROSCIENCES NEUROLOGY	320	3.103 %	<div></div>



Plotting the Regional Specialisation Index (RSI)

(See ECOOM KU Leuven & EVI presentation of 24 Jan 2013 here:

http://s3platform.jrc.ec.europa.eu/documents/10157/63241/Andries_130124)

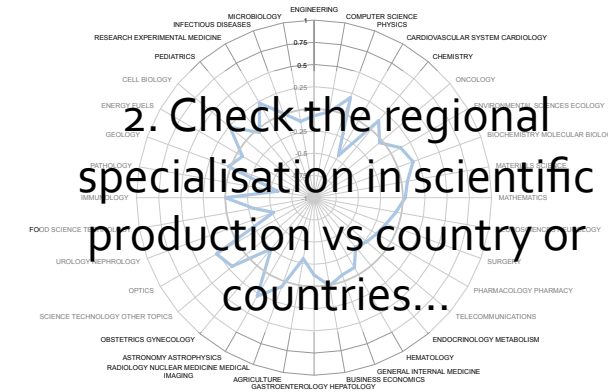
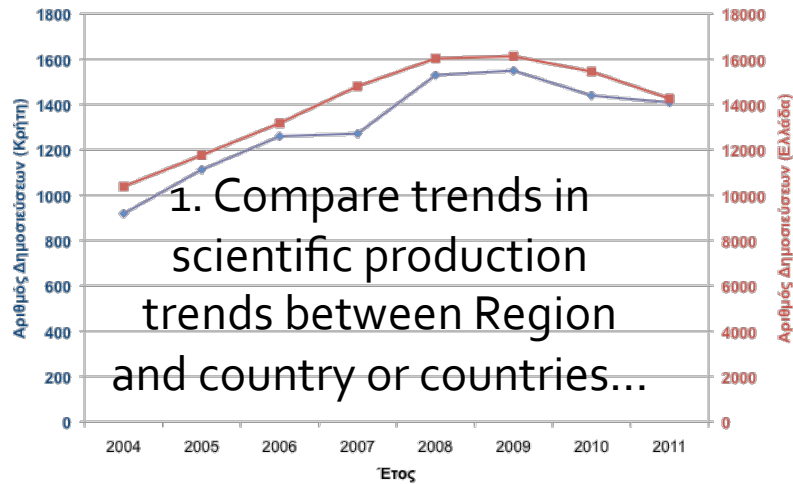
$$RSI_{i,j} = \frac{P_{i,j}}{\sum_i P_{i,j}} \bigg/ \frac{\sum_j P_{i,j}}{\sum_{i,j} P_{i,j}} \qquad RSI_{i,j}^{norm} = \frac{RSI_{i,j} - 1}{RSI_{i,j} + 1}$$

$P_{i,j}$ is the number of publications from Region i in the scientific discipline j

Normally you compare the regional specialisation to a country or group of countries with descending $\sum_{i,j} P_{i,j}$ order.

You can also use this approach to calculate the specialisation of the regional research / academic institutions vs the region.



So far, you can do the following:





Part II

MAPPING THE KNOWLEDGE SECTOR: COLLABORATION & RESEARCH NETWORKS

Doing it the hard way

Published: DEC 15 2011
Times Cited: 14 (from Web of Science)
 Link to Full Text [→ Full Text](#) [ [View abstract](#)]

10. Title: **Surface modification of monocrystalline zinc oxide induced by high-density electronic excitation**
Author(s): Museur, Luc; Manousaki, Alexandra; Anglos, Demetrios; et al.
Source: JOURNAL OF APPLIED PHYSICS Volume: 110 Issue: 12 Article Number: 124310 DOI: 10.1063/1.3671006 Published: DEC 15 2011
Times Cited: 0 (from Web of Science)
 Link to Full Text [ [View abstract](#)]

Results: 10,311 [Show 10 per page](#)

Page 1 of 1,032 [Go](#)

Sort by: [Publication Date -- newest to oldest](#)

Output Records



Step 1:

- ☐ Selected Records on page
☐ All records on page
☒ Records 1 to 500

Step 2:

- ☐ Authors, Title, Source
☐ plus Abstract
☒ Full Record
☐ plus Cited References

Step 3: [\[How do I export to bibliographic management software?\]](#)

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Product: Web of Science

Selected action: Save to File

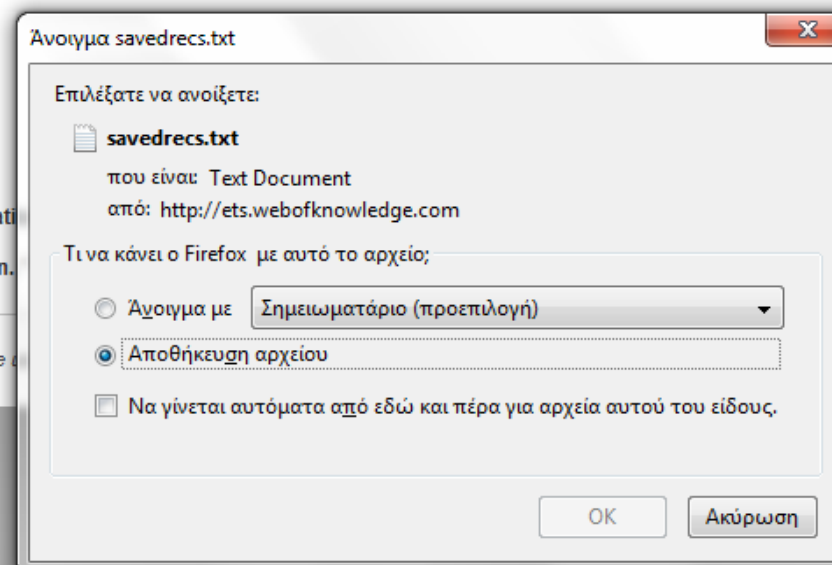
Processing 500 records:

10... 20... 30... 40... 50... 60... 70... 80... 90... 100...
110... 120... 130... 140... 150... 160... 170... 180... 190... 200...
210... 220... 230... 240... 250... 260... 270... 280... 290... 300...
310... 320... 330... 340... 350... 360... 370... 380... 390... 400...
410... 420... 430... 440... 450... 460... 470... 480... 490... 500...
500...Done.

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Unique Reference to record: WANG_2011_ASTROPHYS J_736_72_10

PT J

AU Wang, JF

Fabbiano, G

Elvis, M

Risaliti, G

Mundell, CG

Karovska, M

Zezas, A

AF Wang, Junfeng

Fabbiano, Giuseppina

Elvis, Martin

Risaliti, Guido

Mundell, Carole G.

Karovska, Margarita

Zezas, Andreas

TI A DEEP CHANDRA ACIS STUDY OF NGC 4151. II. THE I

REGION AND STRONG EVIDENCE FOR RADIO JET-NLR CL

SO ASTROPHYSICAL JOURNAL

LA English

DT Article

DE galaxies: individual (NGC 4151); galaxies: jets

X-rays: galaxies

ID ACTIVE GALACTIC NUCLEI; SEYFERT-GALAXY NGC-4151;

HUBBLE-SPACE-TELESCOPE; H-I; CIRCUMNUCLEAR REGIO

EXTENDED EMISSION; VLA OBSERVATIONS; GEMINI NIFS

AB We have studied the X-ray emission within the ir PA TEMPLE CIRCUS, TEMPLE WAY, BRISTOL BS1 6BE, ENGLAND

These maps show extended structures that are spatia SN 0004-637X

morphological correspondences with regions of X-ray J9 ASTROPHYS J

VII ratios; the X-ray emission of these regions als J1 Astrophys. J.

thermal energy of the hot gas suggests that greater DD JUL 30

jet and the dense medium of the circumnuclear regio PY 2011

obtain constraints on the extended iron and silicon VL 736

alpha emission is less than or similar to 5% of the IS 1

C1 [Wang, Junfeng; Fabbiano, Giuseppina; Elvis, Ma AR 62

[Risaliti, Guido] INAF Arcetri Observ, I-50125 DI 10.1088/0004-637X/736/1/62

[Mundell, Carole G.] Liverpool John Moores Univ, PG 10

C1 [Wang, Junfeng; Fabbiano, Giuseppina; Elvis, Martin; Risaliti, Guido; Kar

[Risaliti, Guido] INAF Arcetri Observ, I-50125 Florence, Italy.

[Mundell, Carole G.] Liverpool John Moores Univ, Astrophys Res Inst, Birk

[Zezas, Andreas] Univ Crete, Dept Phys, GR-71003 Iraklion, Crete, Greece.

RP wang, JF (reprint author), Harvard Smithsonian Ctr Astrophys, 60 Garden S

EM juwang@cfa.harvard.edu

FU NASA [G08-9101X, G01-12009X, NAS8-03060]; CXG; Royal Society; Research

Councils, UK

FX We thank the anonymous referee for helpful suggestions. This work is

supported by NASA grant G08-9101X (PI: Fabbiano) and grant G01-12009X

(PI: Wang). We acknowledge support from the CXG, which is operated by

the Smithsonian Astrophysical Observatory (SAO) for and on behalf of

NASA under Contract NAS8-03060. C.G.M. acknowledges financial support

from the Royal Society and Research Councils, UK. J.W. thanks G.

Ferland, T. Kallman, S. Bianchi, A. Marinucci, and S. Chakravorty for

extensive advices on photoionization modeling, P. Nulsen for jet power

discussion, and T. Storchi-Bergmann and R. Riffel for providing the

Gemini NIFS maps. This research has made use of data obtained from the

Chandra Data Archive, and software provided by the CXG in the

application packages CIAO and Sherpa.

NR 72

TC 8

Z9 8

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SN 0004-637X

J9 ASTROPHYS J

J1 Astrophys. J.

DD JUL 30

PY 2011

VL 736

IS 1

AR 62

DI 10.1088/0004-637X/736/1/62

PG 10

Preparation of flat files for visualisation and analysis

WOS:000242935400095	2006	J	MACROMOLECULES	In-plane elastic excitations in 1D polymeric photonic
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WOS:000242935400095	1	CHENG, W
WOS:000242935400095	2	GORISHNYY, T
WOS:000242935400095	3	KRIKORIAN, V
WOS:000242935400095	4	FYTAS, G
WOS:000242935400095	5	THOMAS, EL

Papers x Authors (& rank of authorship):
Who has written what; Average rank;
Co-authorship networks (persons)

WOS:000242935400095	MAX PLANCK INST POLYMER RES	GERMANY MAX PLANCK INST POLYMER RES, D-55128 MAINZ, GERMANY.
WOS:000242935400095	UNIV CRETE	GREECE UNIV CRETE, DEPT MAT SCI & TECHNOL, IRAKLION 71110, GREECE.
WOS:000242935400095	FORTH	GREECE FORTH, IRAKLION 71110, GREECE.
WOS:000242935400095	MIT	MA 02139 USA MIT, CTR MAT SCI & ENGN, CAMBRIDGE, MA 02139 USA.
WOS:000242935400095	MIT	MA 02139 USA MIT, INST SOLDIER NANOTECHNOL, CAMBRIDGE, MA 02139 USA.

Papers x Affiliations (Organisation, Dept., City, Country):
Co-authorship networks between Countries, Organisations, Departments.

WOS:000242935400095	Polymer Science
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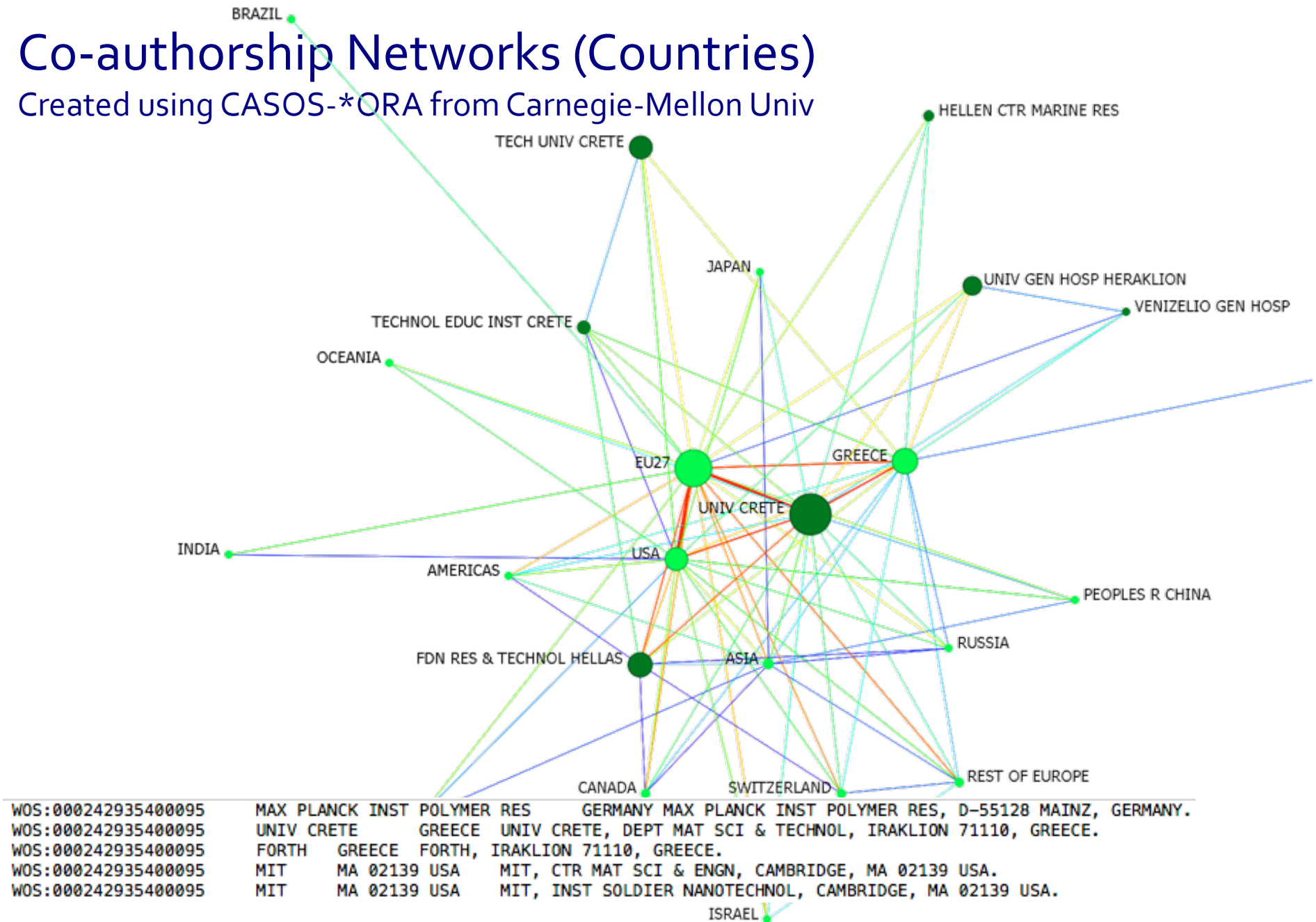
Papers x Subject Codes:
Filtering results, drill-down per subject codes

WOS:000242935400095	thin-films; bri	quin
	poly(ethylene-terephthalate); polypropy	ne; r

Papers x Author Keywords:
Actual content of the papers

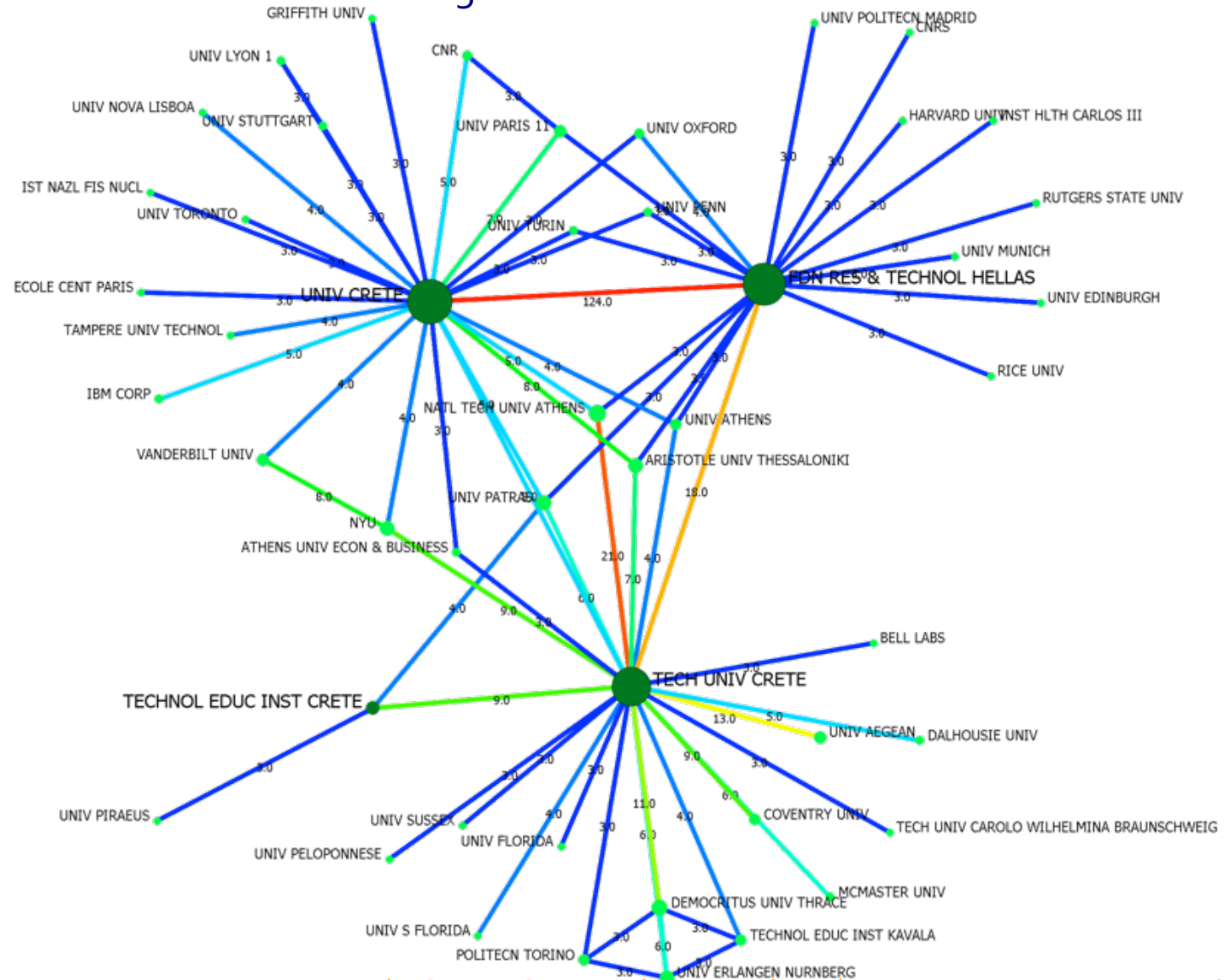
Co-authorship Networks (Countries)

Created using CASOS-*ORA from Carnegie-Mellon Univ



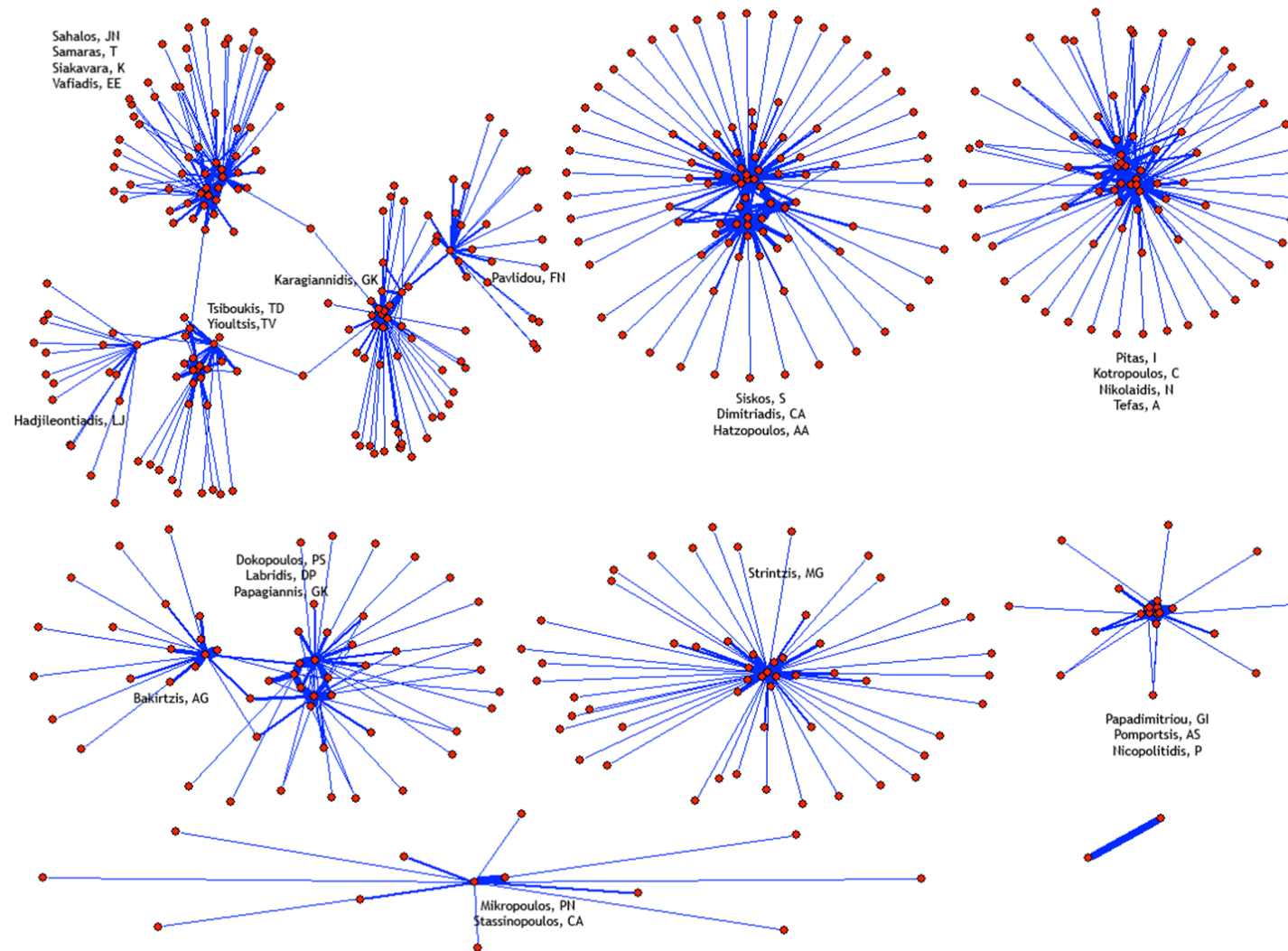
Co-authorship Networks (Institutions)

Created using CASOS-*ORA from Carnegie-Mellon Univ



Co-authorship Networks (Individual Researchers)

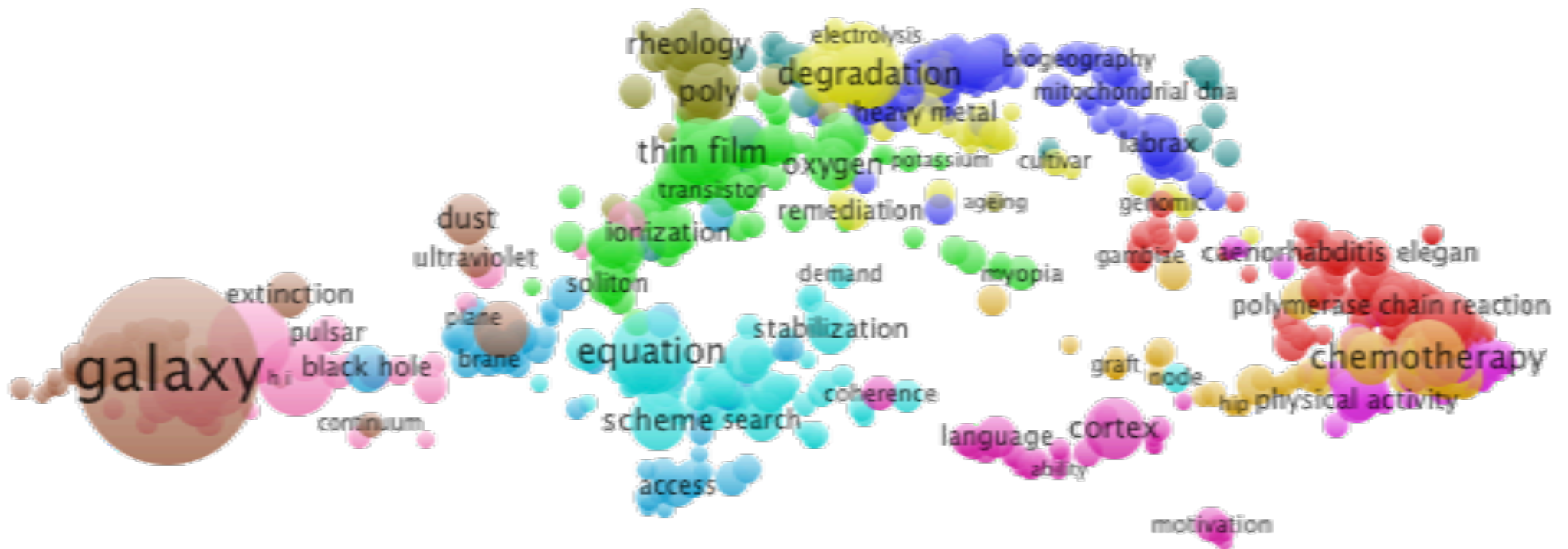
Created using Pajek (Univ. of Ljubljana)



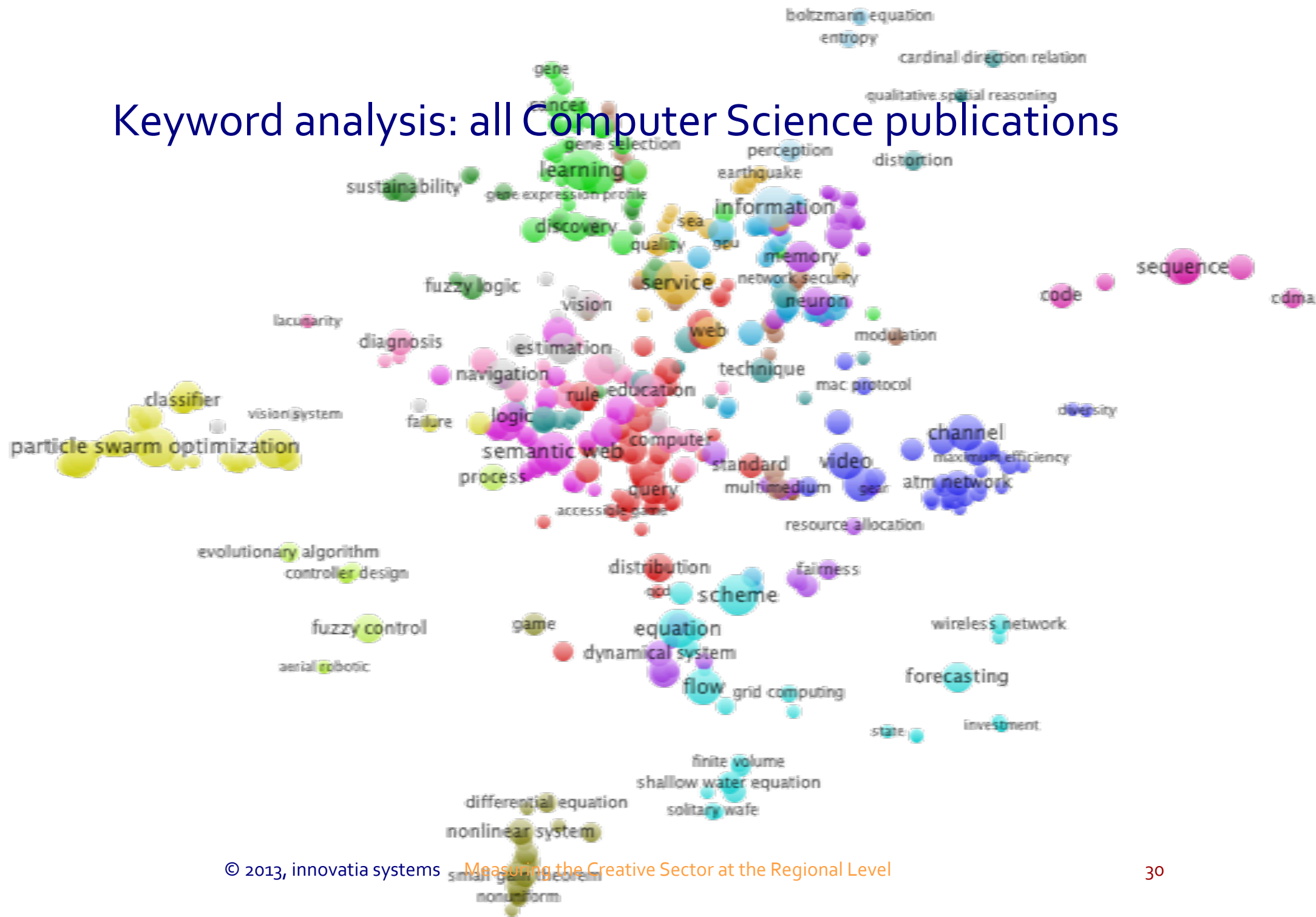
Specialisation within Region

Επιστημονική Περιοχή	Σύνολο Κρήτης	FORTH	HCMR	MAIC	TEIC	TUC	UGHH	UoC	VGHH
Φυσική	1247	631	2		117	77		911	
Τεχνολογία	1197	166	2	2	104	747	7	227	
Επιστήμη Υπολογιστών	940	218	2	1	74	447	3	281	
Χημεία	843	199	2	12	31	138		577	
Βιοχημεία-Μοριακή Βιολογία	582	178	15	2		11	21	493	1
Περιβαλλοντικές Επιστήμες-Οικολογία	515	9	43	8	47	244	2	198	
Ογκολογία	457	12			3	2	209	319	1
Επιστήμη Υλικών	449	231			44	60		294	
Μαθηματικά	422	90	1		24	127		264	
Νευροεπιστήμες & Νευροχειρουργική	322	39			6	7	27	285	4
Αστρονομία & Αστροφυσική	308	105	1		8			289	
Οπτική	275	166			28	28		148	
Καρδιολογία	260	15			2		134	141	2
Χειρουργική	258	5					68	185	5
Οικονομικά των Επιχειρήσεων	255	17		1	18	79	1	146	
Επιστήμη-Τεχνολογία μη αλλού κατατασσόμενη	235	105	2	1	13	14	1	173	
Κυτταρική Βιολογία	230	70	3		1	2	27	182	1
Φαρμακολογία	229	9		2	6		38	177	6
Ραδιολογία, Πυρηνική Ιατρική και Ιατρικές Απεικονίσεις	214	12			11	4	79	131	14
Αιματολογία	209	6			1		76	146	7

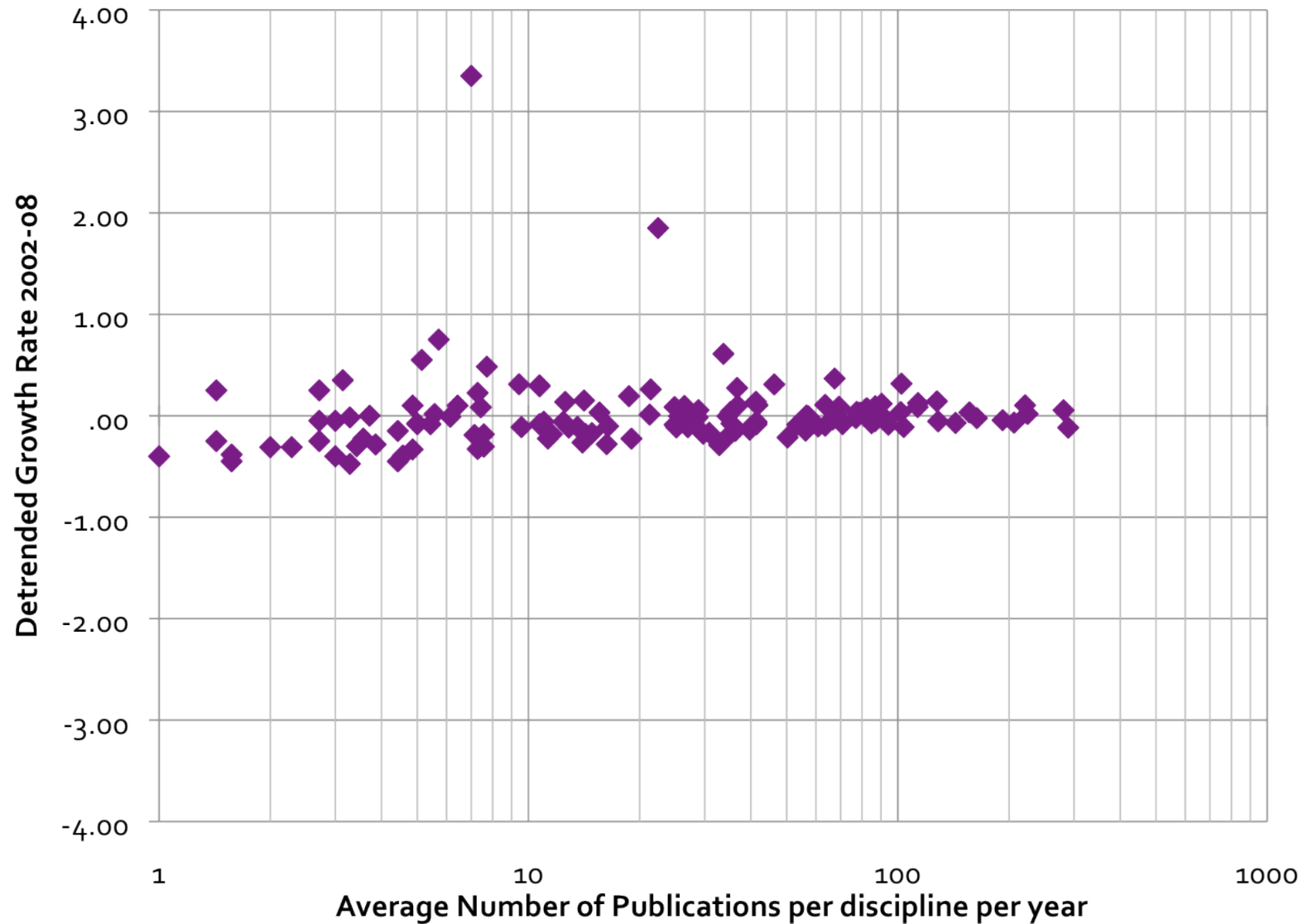
Keyword analysis of all papers published in 2004-11



Keyword analysis: all Computer Science publications



Emerging Research Fields



Part III

ASSESSING EXCELLENCE IN RESEARCH

Unfortunately, only secondary data are available...

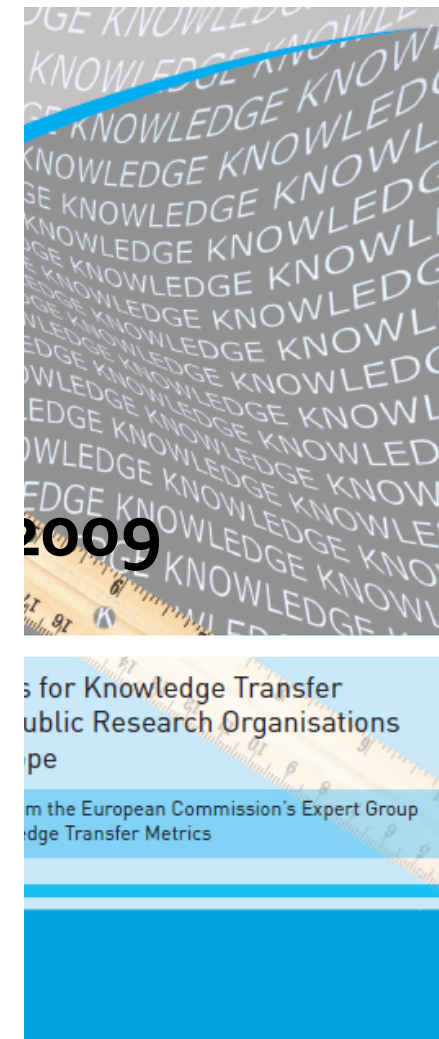
NATURAL SCIENCES				
Υποκατηγορία επιστημονικού πεδίου (Frascati manual)	Εξειδικευμένη θεματική περιοχή (NSI & Incites)	Ερευνητικό Κέντρο	Σχετικός δείκτης απήχησης	Αριθμός δημοσιεύσεων
biological sciences	genetics & heredity	ITE	3,94	38
physical sciences	optics	ITE	2,34	131
chemical sciences	chemistry, multidisciplinary	EIE	2,29	40
chemical sciences	chemistry, multidisciplinary	ΔΗΜΟΚΡΙΤΟΣ	2,16	80
earth and related environmental sciences	meteorology & atmospheric sciences	ITE	2,16	40
chemical sciences	polymer science	ITE	1,80	122
earth and related environmental sciences	water resources	EAA	1,76	41
biological sciences	cell biology	ITE	1,75	72
chemical sciences	polymer science	EKETA	1,75	24
biological sciences	cell biology	EIE	1,72	22
physical sciences	physics, multidisciplinary	ITE	1,67	76
biological sciences	biochemistry & molecular biology	ΦΛΕΜΙΝΓΚ	1,67	45
biological sciences	microbiology	ΠΑΣΤΕΡ	1,64	37
physical sciences	astronomy & astrophysics	ΔΗΜΟΚΡΙΤΟΣ	1,62	9
physical sciences	physics, particles & fields	ΔΗΜΟΚΡΙΤΟΣ	1,59	117
physical sciences	physics, fluids & plasmas	ITE	1,59	22
mathematics	mathematics	ITE	1,55	22
computer and information sciences	computer science, interdisciplinary applications	ΔΗΜΟΚΡΙΤΟΣ	1,54	20

Data based on Thomson/Reuters Incites 1996-2010


Part IV

TECHNOLOGY TRANSFER FROM THE REGIONAL PUBLIC RESEARCH ORGANISATIONS

Framework of analysis



Using espace@net to compile patent statistics (1)



Europäisches Patentamt
 European Patent Office
 Office européen des brevets

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 Patent search

Deutsch English Français
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Refine search → Results

Smart search
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 Classification search

Quick help

- Can I subscribe to an RSS feed of the result list?
- What does the RSS reader do with the result list?
- Can I export my result list?
- What happens if I click on "Download covers"?
- Why is the number of results sometimes only approximate?
- Why is the list limited to 500 results?
- Can I deactivate the highlighting?
- Why is it that certain documents are sometimes not displayed in the result list?
- Can I sort the result list?
- What happens if I click on the star icon?
- What are XP documents?
- Can I save my query?

Related links

Result list

☐ Select all
 ☐ Compact
 Export (CSV | XLS)
 Download covers (0)
 Print

6 results found in the Worldwide database for:
UNIVERSITY OF CRETE as the applicant

Sort by Upload date Sort order Descending Sort

☐ 1. **Vacuum assisted headspace microextraction sampling devices and methods**

★ Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
PSILLAKIS ELEFTERIA [GR] KALOGERAKIS NICOLAS [GR]	TECHNICAL UNIVERSITY OF CRETE [GR] PSILLAKIS ELEFTERIA [GR] (+1)	G01N1/2214 G01N1/2226 G01N1/405 (+2)	G01N1/14 G01N1/22 G01N1/40 (+1)	EP2485035 (A2) 2012-08-08	2011-02-03

☐ 2. **ESTROGEN RECEPTOR ALPHA POLYPEPTIDE SEQUENCE, DIAGNOSTIC AND THERAPEUTIC APPLICATIONS THEREOF**

★ Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
GALLO DOMINIQUE [BE] LECLERCQ GUY [BE] (+6)	UNIV BRUXELLES [BE] UNIV CRETE SCHOOL OF MEDICINE [GR] (+10)	A61K38/1796 C07K14/721 C07K16/28 (+6)	C07K14/72 C07K16/28 C12N5/00 (+1)	WO2012049229 (A1) 2012-04-19	2010-10-15

☐ 3. **METHOD AND SYSTEM FOR MANIPULATING ORGANIC NANOSTRUCTURES**

★ Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:

Using espace@net to compile patent statistics (2)

« About Espacenet Other EPO online services ▾

Search Result list ★ My patents list (0) Query history Settings Help

Refine search → Results → WO2009153607 (A1) → Family

WO2009153607 (A1)

Bibliographic data

Description

Claims

Mosaics

Original document

Cited documents

Citing documents

INPADOC legal status

INPADOC patent family

Quick help —

- Can I export this list?
- What happens if I click on "Download covers"?
- Can I sort the list?
- What happens if I click on the star icon?
- What is a patent family?
- What happens if I tick the "show citations" box?
- What is an INPADOC patent family?
- Are all the documents in an INPADOC family equivalents?
- Why is the same document published several times in the same country?

Family list: WO2009153607 (A1) — 2009-12-23

☐ Select all ☐ Compact ☐ Export (CSV | XLS) ☐ Download covers (0) ☐ CCD

3 application(s) for: WO2009153607 (A1)

Sort by Sort order ☐ show citations

☐ 1. USE OF COSTIC ACID OR EXTRACTS OF DITTRICHIA VISCOSA AGAINST VARROA DESTRUCTOR

★ Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
KATERINOPOULOS E	KATERINOPOULOS E	<u>A01N37/10</u>	A01N37/10	EP2346328 (A1)	2008-06-20
HARALAMBOS [GR]	HARALAMBOS [GR]	<u>A01N65/00</u>	A01N65/00	2011-07-27	
ISAAKIDIS DEMOSTHENIS [GR] (+2)	UNIV CRETE [GR] (+3)		A01P7/02		

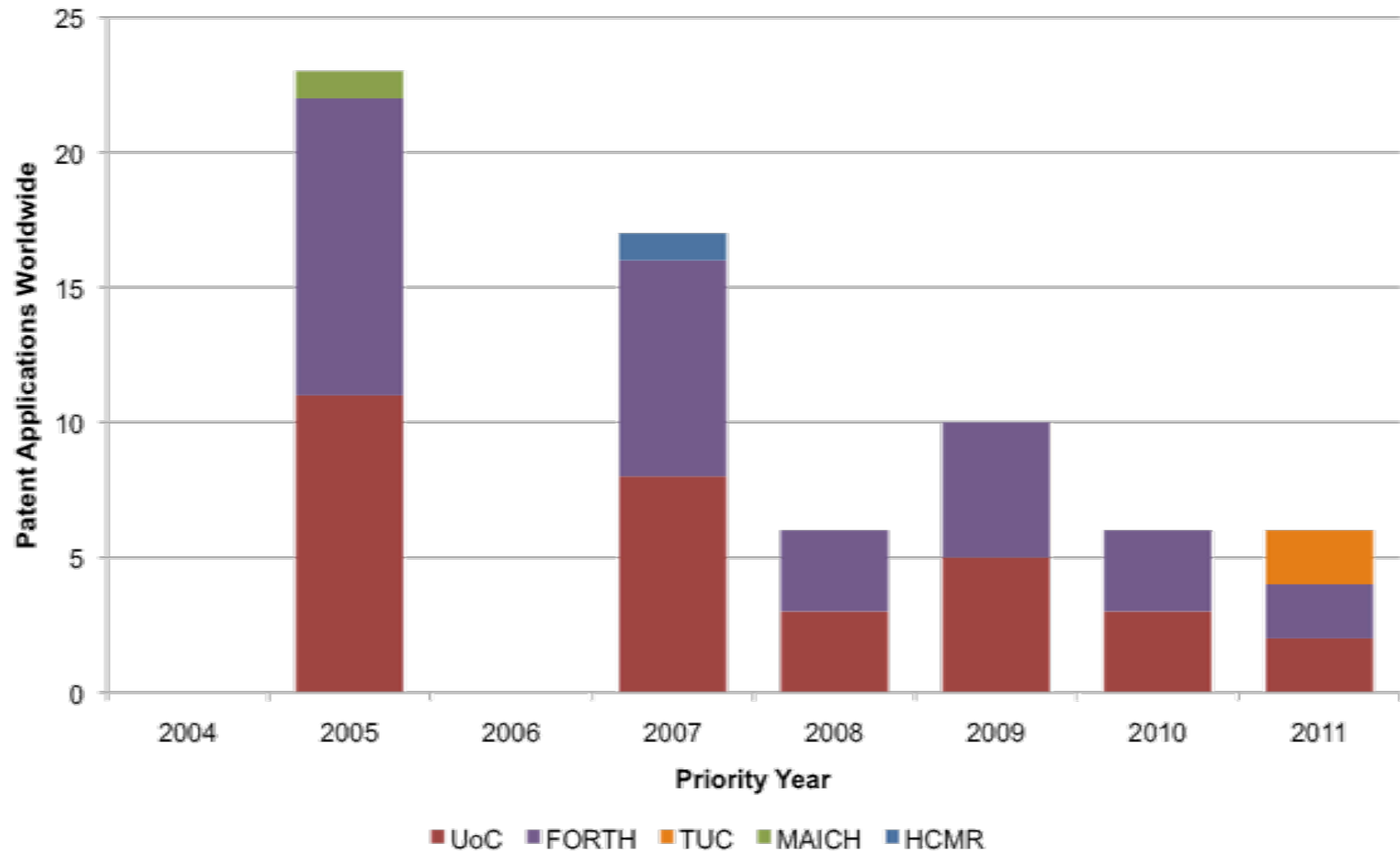
☐ 2. USE OF COSTIC ACID AND OTHER COMPONENTS DERIVED FROM DITTRICHIA VISCOSA PLANT AND RELATED SUB-SPECIES THEREOF FOR FIGHTING THE VARROA DESTRUCTOR'S ACTIVITY

★ Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
KATERINOPOULOS	KATERINOPOULOS	<u>A01N37/10</u>	A01N65/12	GR1006569 (B1)	2008-06-20
CHARALABOS	CHARALABOS	<u>A01N65/00</u>		2009-10-13	
ISAAKIDIS DIMOSTHENIS (+2)	ISAAKIDIS DIMOSTHENIS (+3)				

☐ 3. USE OF COSTIC ACID OR EXTRACTS OF DITTRICHIA VISCOSA AGAINST VARROA DESTRUCTOR

★ Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
KATERINOPOULOS E	UNIV CRETE [GR]	<u>A01N37/10</u>	A01N37/10	WO2009153607 (A1)	2008-06-20
HARALAMBOS [GR]	KATERINOPOULOS E	<u>A01N65/00</u>	A01N65/00	2009-12-23	
ISAAKIDIS DEMOSTHENIS [GR] (+2)	HARALAMBOS [GR] (+3)		A01P7/02		

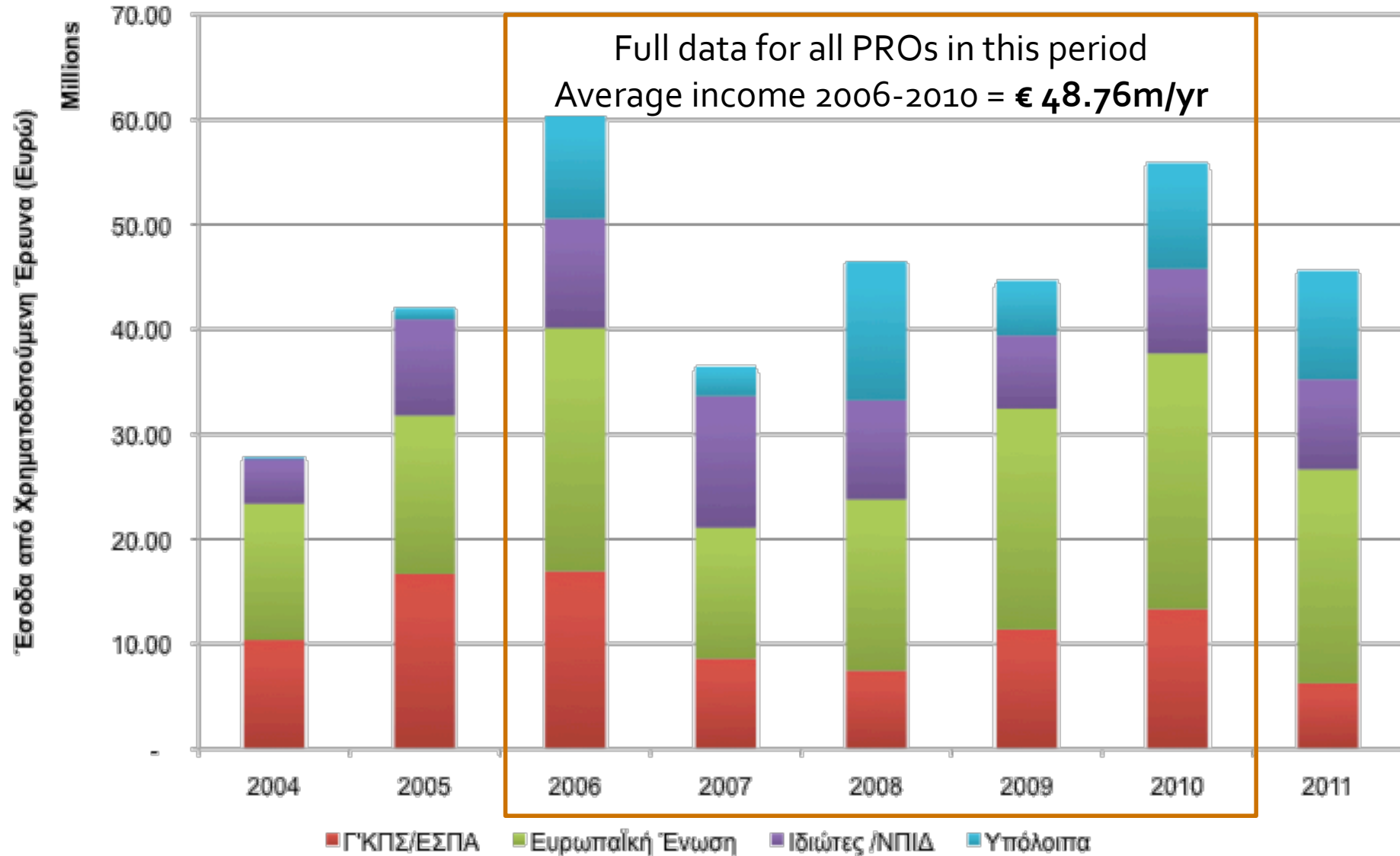
Trends in patenting activity



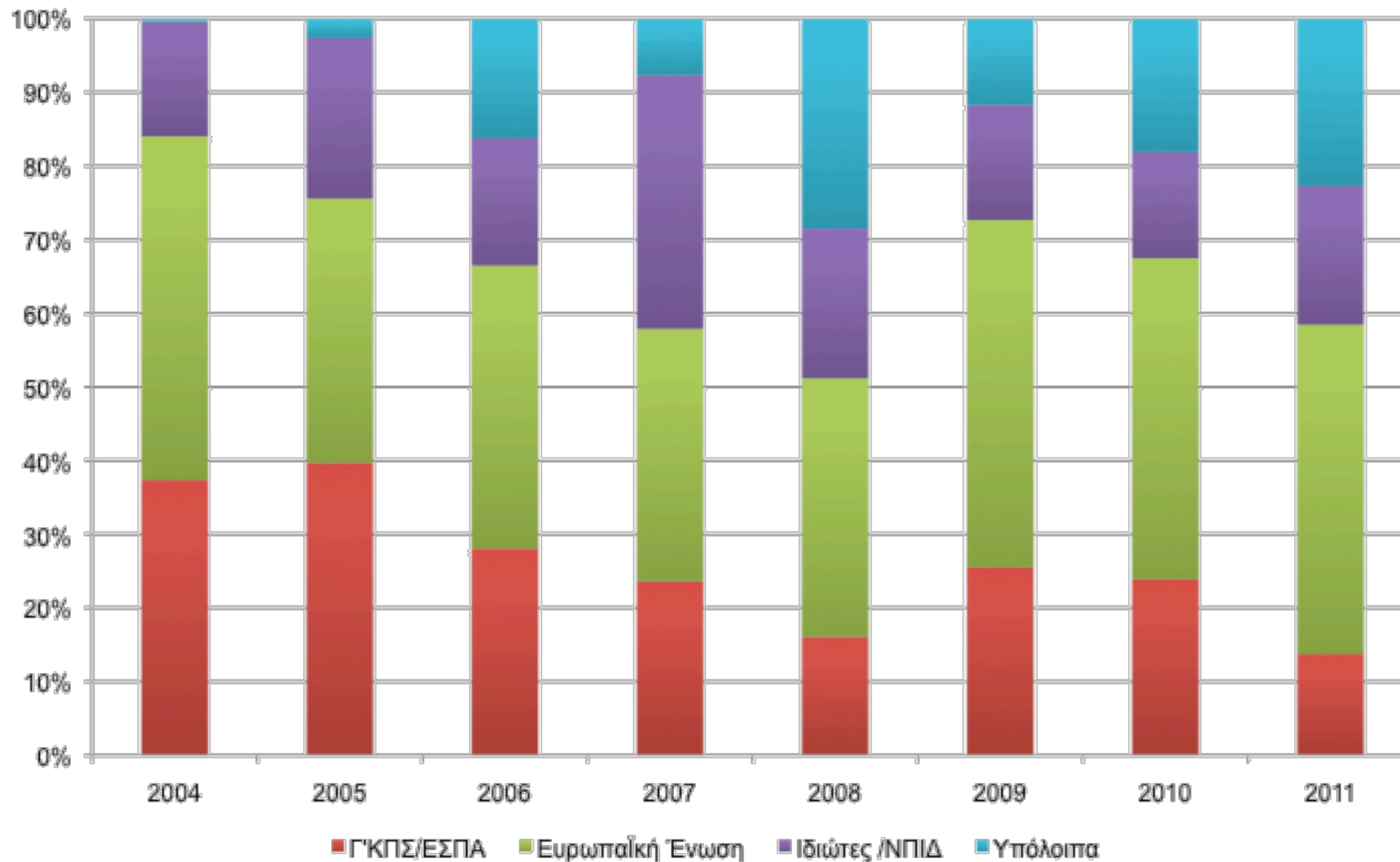
Topics of Patenting Activity

Διεθνής Κατάταξη	Αριθμός	Περιγραφή
A01N37	1	Biocides, pest repellants or attractants, or plant growth regulators containing organic compounds containing a carbon atom having three bonds to hetero atoms with at the most two bonds to halogen, e.g. carboxylic acids
A01N63	2	Biocides, pest repellants or attractants, or plant growth regulators containing micro-organisms, viruses, microbial fungi, animals, e.g. nematodes, or substances produced by, or obtained from micro-organisms, viruses, microbial fungi or animals, e.g. enzymes or fermentales
A01N65	1	Biocides, pest repellants or attractants, or plant growth regulators containing material from algae, lichens, bryophyta, multi-cellular fungi or plants, or extracts thereof
A01P7	1	Arthropodicides
A23L1	1	Foods or foodstuffs; Their preparation or treatment
A61B1	6	Instruments for performing medical examinations of the interior of cavities or tubes of the body by visual or photographic inspection, e.g. endoscopes
A61B10	1	Other methods or instruments for diagnosis, e.g. for vaccination diagnosis; Sex determination; Ovulation-period determination; Throat striking implements
A61B5	1	Measuring for diagnostic purposes; Identification of persons
A61K127	1	Preparations for Medical, Dental or Toilet Purposes coming from leaves
A61K31	1	Medicinal preparations containing organic active ingredients
A61K36	2	Medicinal preparations of undetermined constitution containing material from algae, lichens, fungi or plants, or derivatives thereof, e.g. traditional herbal medicine
B01D11	1	Solvent extraction
B01J23	1	Catalysts comprising metals or metal oxides or hydroxides
C07H17	1	(Organic Chemistry) Compounds containing heterocyclic radicals directly attached to hetero atoms of saccharide radicals

(Co-)Funded Research Revenues (values in M€)



(Co-)Funded Research Revenues (% by source)



PRO impact on the regional/national economy

Foundation for Research & Technology Hellas (1989-2011):

Total Funding from Greek sources: **€287m**

Direct national funding: €177.55m

EU funds managed by national/regional authorities: €99.61m

Total financial impact to the Greek Economy: **€461m**

FORTH assets: €51.48m


Revenues from competitive research programmes/frameworks: €201.67m

Contributions to Social Security Funds: €72.22m

Other revenues: €135.62m

Indirect impacts (spin-off companies):

FORTHnet, FORTHphotonics, Minos, ...

A satellite map of Europe with several yellow pins indicating the locations of various companies. The pins are located in the United Kingdom, Greece, and Cyprus. The text 'But where are Crete's spin-off companies?' is overlaid in the center of the map in a yellow font.

But where are Crete's spin-off companies?

Open Issues

No data to estimate knowledge spillovers between regional PROs and industry

Non-published but exploitable knowledge assets (e.g. copyrighted material, software) could not be taken into account

Academia-industry research networks

Actual impact on the regional economy:

- Number / Value of collaborative research contracts between PROs and regional businesses

- Number / Value of research contracts sponsored by local enterprises

- Number / Value of consultancy contracts paid by local enterprises

Overall Assessment

Strong PROs that act as knowledge production poles at the global level

High-quality researchers

FORTH is a best practice of IPR management and technology transfer

Limited networking among PROs in terms of research

Research does not address the needs of the regional economy

Limited evidence of systematic IPR management in all PROs but FORTH

Inability to create a regional ecosystem of knowledge-intensive firms

Thank you for
your attention!

Dr Yannis Toliás
Managing Partner & CTO



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Εφορία
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Dodekanisou 22

Regional Specialization Index explained (1)

$$RSI_{i,j} = \frac{P_{i,j}}{\sum_i P_{i,j}} \cdot \frac{\sum_j P_{i,j}}{\sum_{i,j} P_{i,j}}$$

$P_{i,j}$ is the number of publications from Region i in the scientific discipline j

Publications in **Discipline j** from all Regions

Publications in all Disciplines from **Region i**

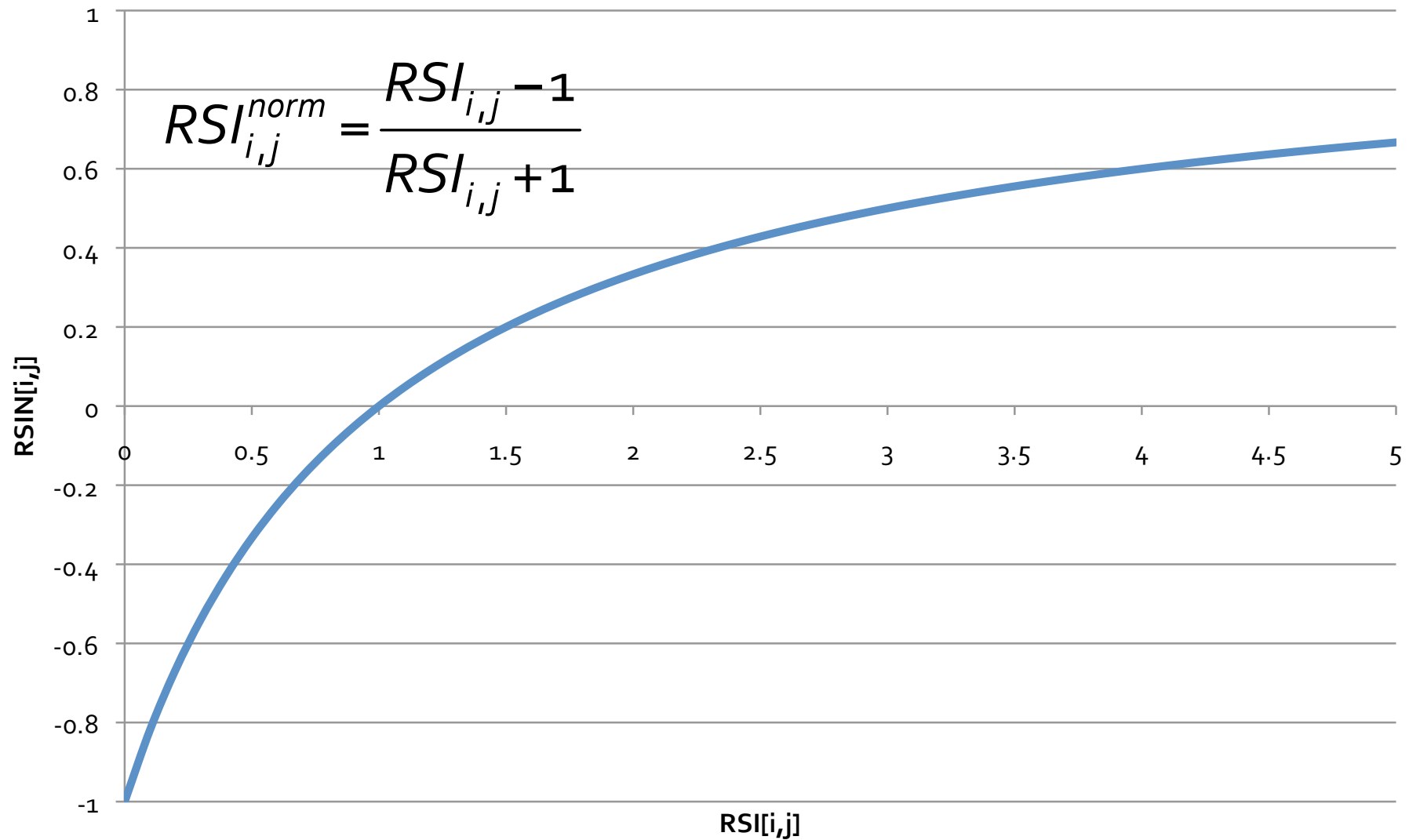
All publications from all Regions

Regional Specialization Index explained (2)

	Region 1	Region 2	Region 3	Country
Discipline 1	0	0	84	84
Discipline 2	48	59	40	147
Discipline 3	99	74	27	200
Discipline 4	69	78	20	167
Discipline 5	78	69	97	244
Discipline 6	20	20	20	60
Discipline 7	53	17	10	80
Discipline 8	34	59	23	116
Discipline 9	61	64	64	189
Discipline 10	36	44	85	165
	498	484	470	1452

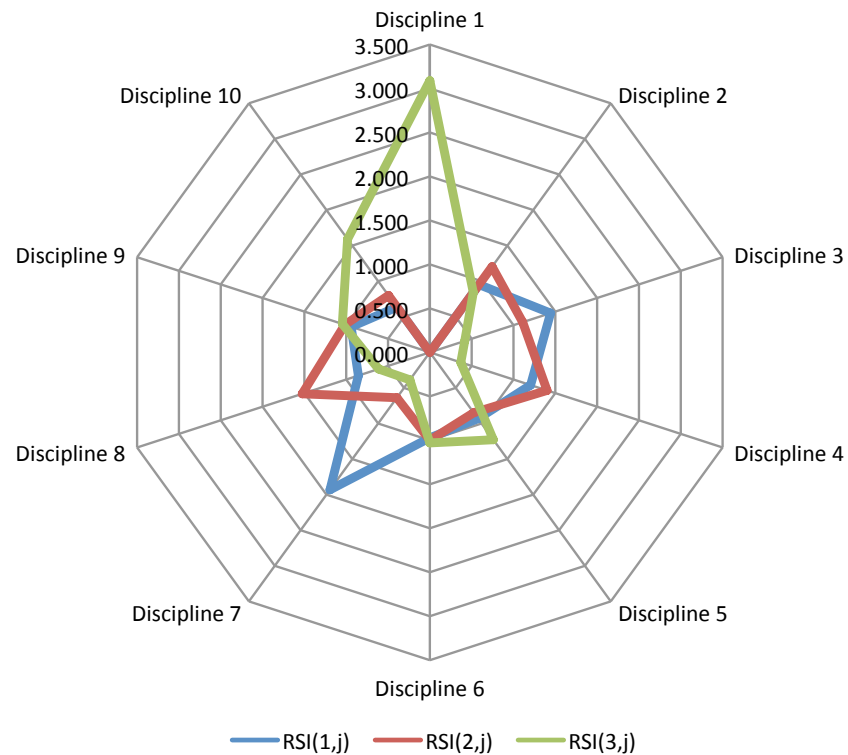
RSI(1,j)	RSI(2,j)	RSI(3,j)
0.000	0.000	3.089
0.952	1.204	0.841
1.443	1.110	0.417
1.205	1.401	0.370
0.932	0.848	1.228
0.972	1.000	1.030
1.932	0.638	0.386
0.855	1.526	0.613
0.941	1.016	1.046
0.636	0.800	1.591

Regional Specialization Index explained (3)

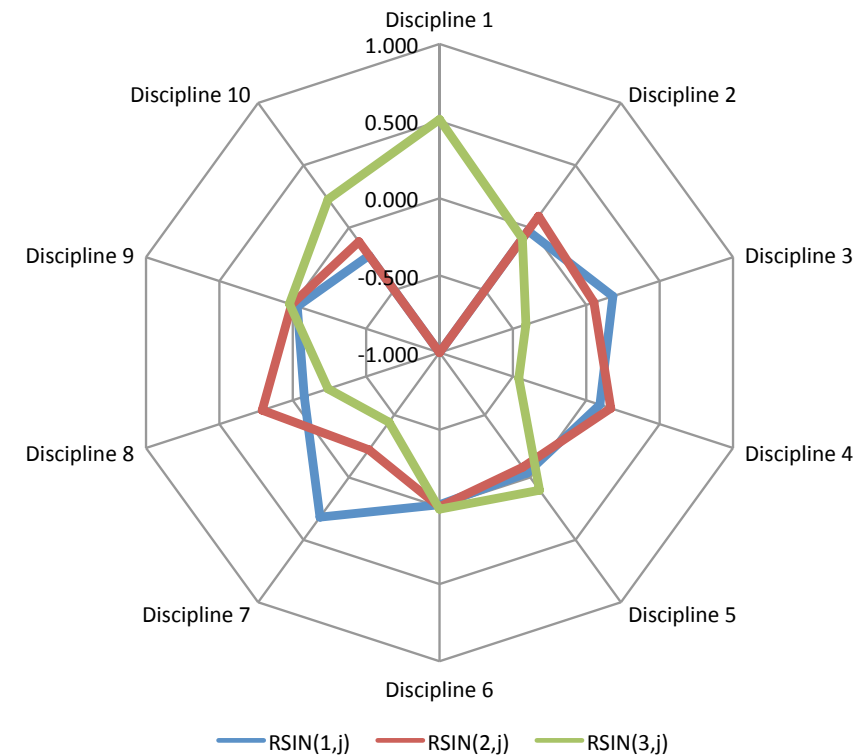




Regional Specialization Index explained (4)



$RSI[i,j]$



$RSI^{norm}[i,j]$