What to integrate within Research Information System

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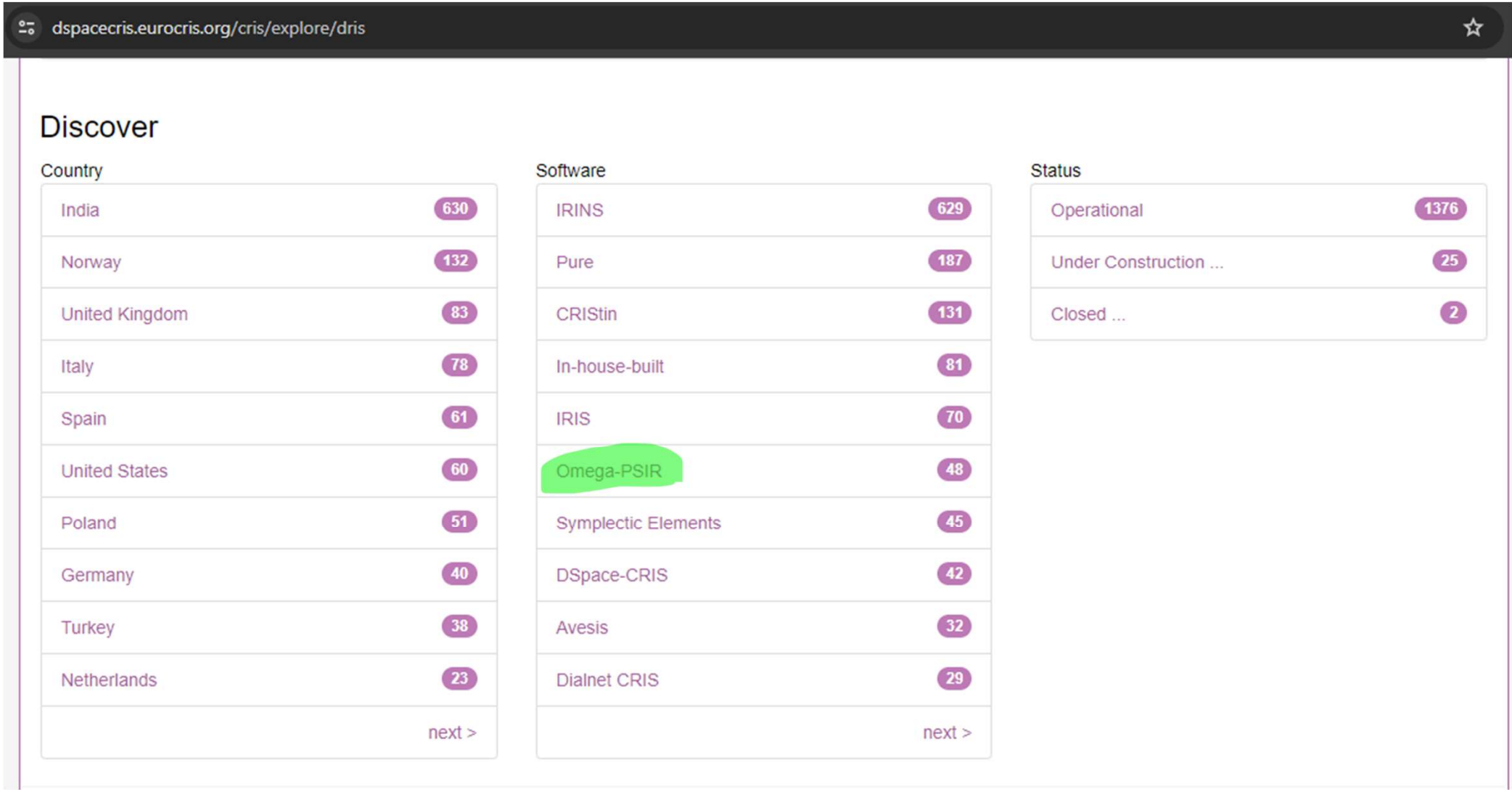
Our experience

- OMEGA-PSIR has been developed in 2013 at the Institute of Computer Science, Warsaw University of Technology

- Up to now it has been successfuly deployed in over 40 Polish universities, and one Bulgarian.

OMEGA-PSIR

Omega-PSIR in the Directory of RIS



OMEGA-PSIR

Open Access IR + RPS + CRIS

Institutional Research Knowledge System

Institutional Repository
Researcher Profiling System
Current Reseach Information System

Open Access Repositories – the discussion has started some 20 years ago

Innkeeper at the Roach Motel, 2008 by Dorothea Salo:

„*The institutional repository is like a roach motel. Data goes in, but it doesn't come out*"

… and is still being continued:

Open Access Repositories – the discussion has started some 20 years ago

Conclusions from the literature

1. Low acceptace among researchers – many researchers view IR as useless and not important – RPS to the rescue
2. For the University the role of IR is of a very high importance, though the main motivation seems to be more prestige, than real advantages
3. … of very high importance, but still IR is not **business-critical system** – it is **mission critical** one – CRIS to the rescue
4. **IR does not help in reducing disintegration of the University researchers** – RPS to the rescue

Researcher Profiling Systems for Knowledge Sharing

RPS are more like a social network – they help researchers to find partners.

Opposite to IR systems, RPS are the systems that have much higher acceptance among the researchers, as they provide means to get a better knowledge on **who is who** at the University.

A good example of **institutional** RPS is Vivo (2010)

Still RPS alone is not a **business-critical system** at the university

Current Research Information System for Research Management

Opposite to Open Access IR and RPS, **CRIS are the systems that become indispensable from the point of view of the research management at the University.**

But all those systems

Open Access IR, RPS and CRIS are based on bibliographies [+ sources],

which is the most expensive part of the cost for running the systems

… why not to integrate them into one?

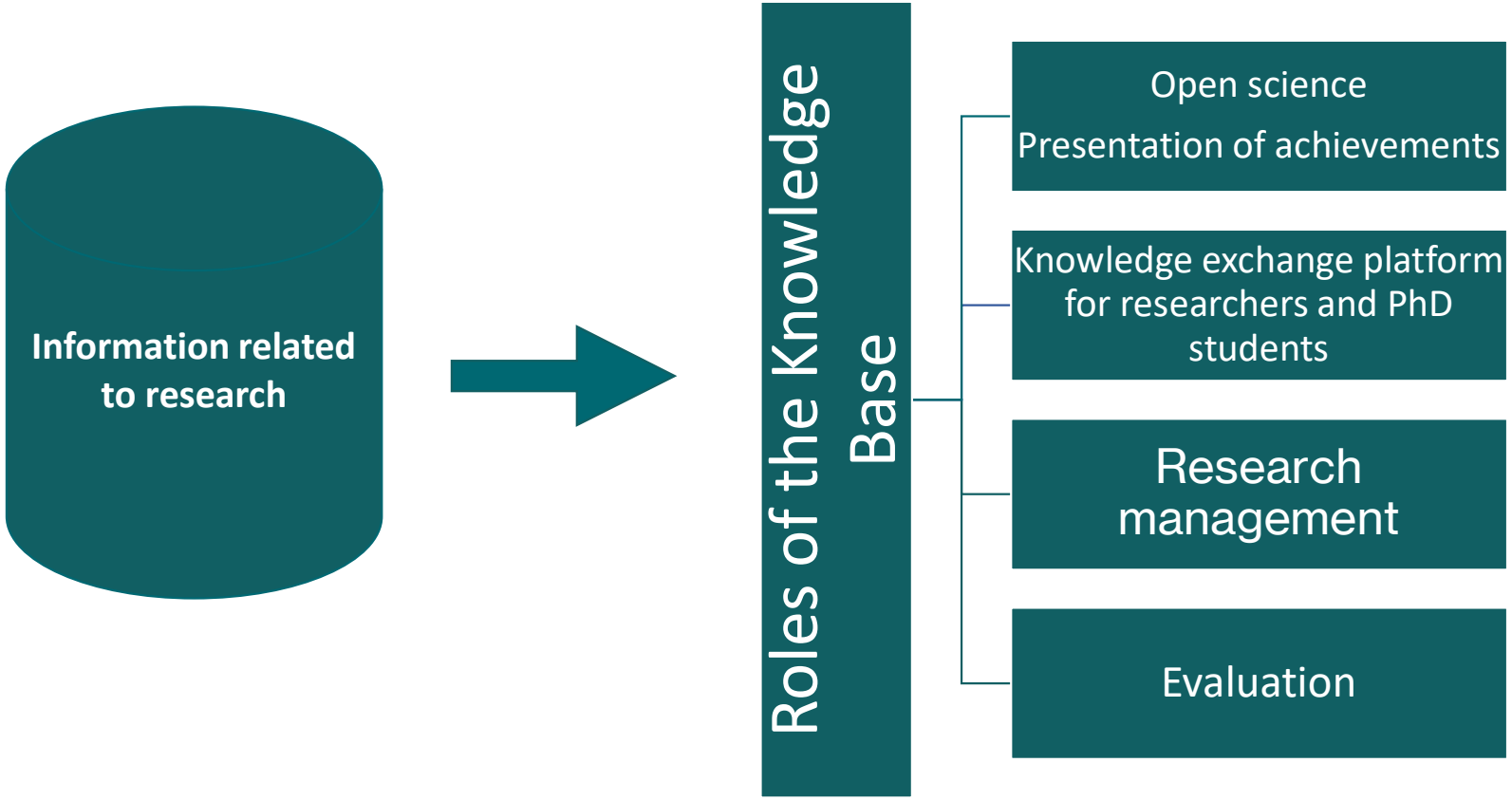
The OMEGA-PSIR system covers data referring to the entire research process

- Ideas, Research Plans
- Project Applications
- Research infrastructure & equipment
- Research data
- Projects
- Publications, patents, technologies, doctorates
- Prototypes, technologies, products

Information related to research

- Scientists, Units, Teams
- Project Applications
- Projects
- Publications, PhDs
- Research data
- Patents
- Activities, achievements
- Infrastructure, equipment
- Products, technologies
- Research plans
- Journals, Conferences
- Media, Press, Events
- Didactic materials

Roles of the Knowledge Base



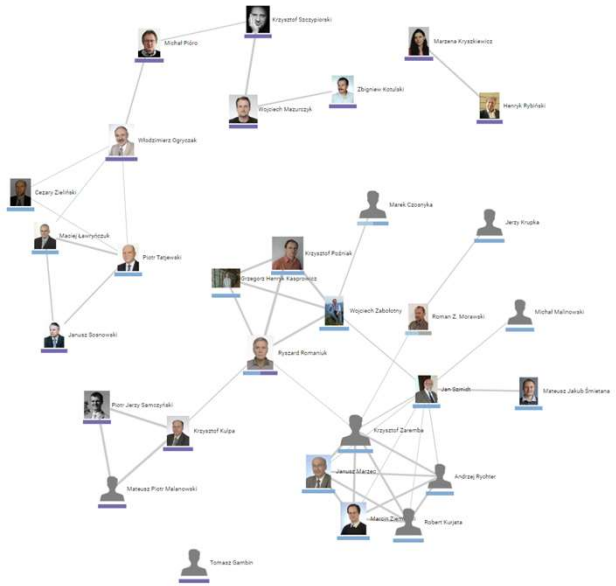
unlike IR roach motel

Satisfies needs of many actors

1. Researchers (internal and external)
2. Management
3. Marketing department
4. Intellectual property specialists (patents, technologies)
5. Support office for research projects
6. PhD office
7. Research evaluation bodies
8. Awards committees
9. International cooperation office
10. Librarians

What we have in the Knowledge Base

1. High-quality data related to research connected to external systems (scopus, wos, ror, orcid)
2. Presentation and visualization tools with auto-generated profiles
3. Tools for analytics and reporting

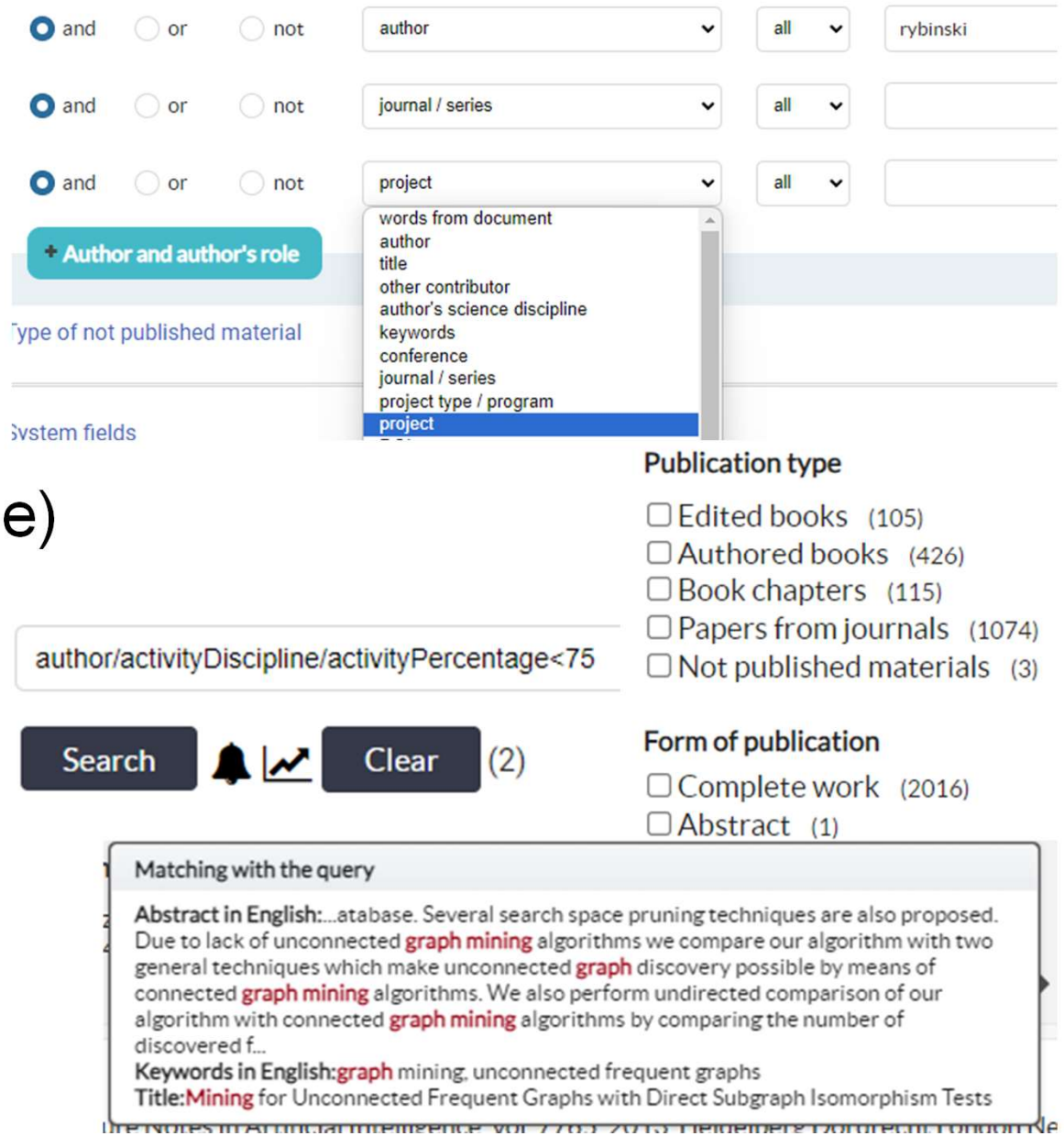


Interconnected information related to research

searching

- Full-text search
- Faceted
- Semantic filtering
- User defined queries (with gui and query langauge)
- Alerts
- Explainable results
- Persitent Identifiers

Like in IR



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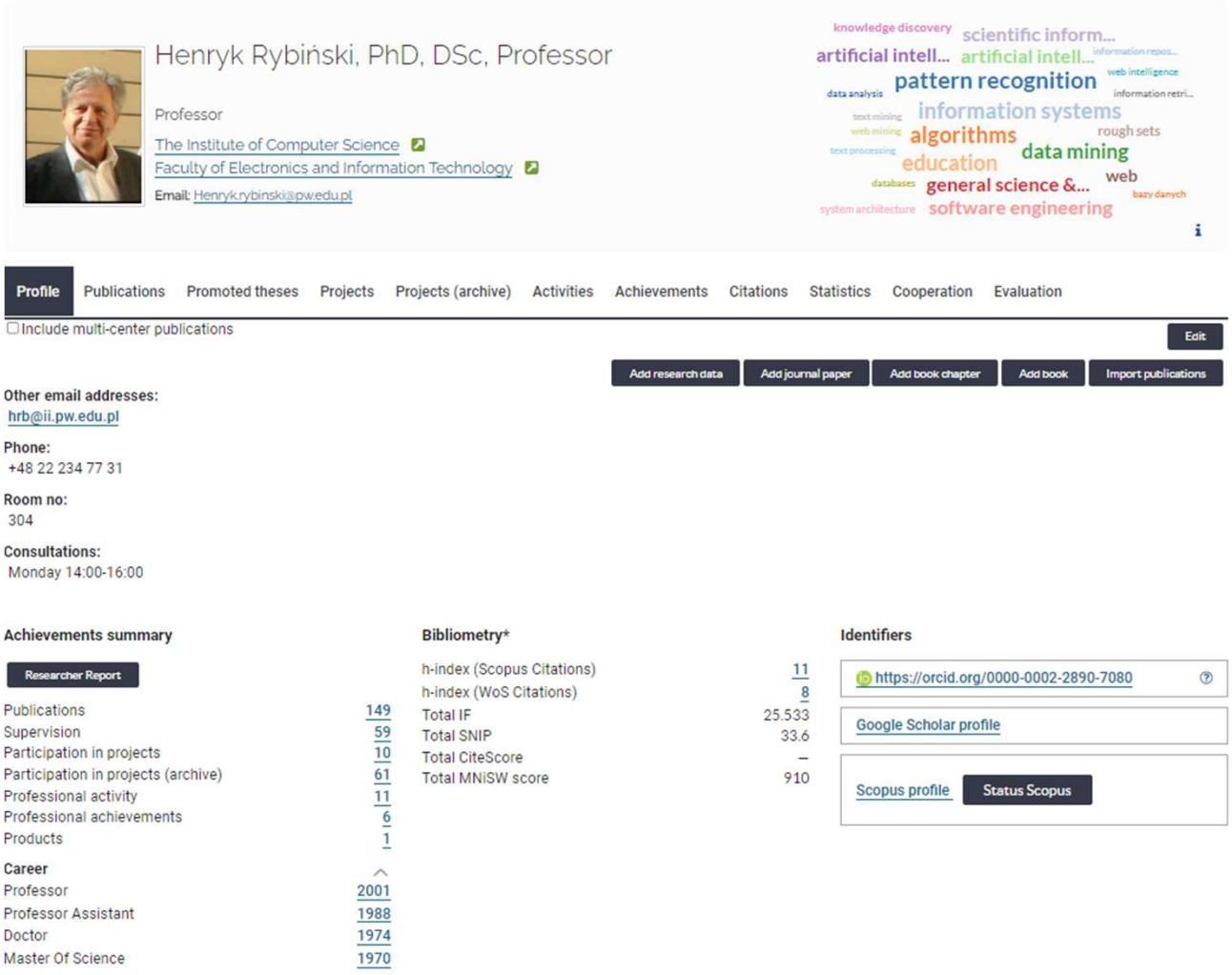
Like in RPS



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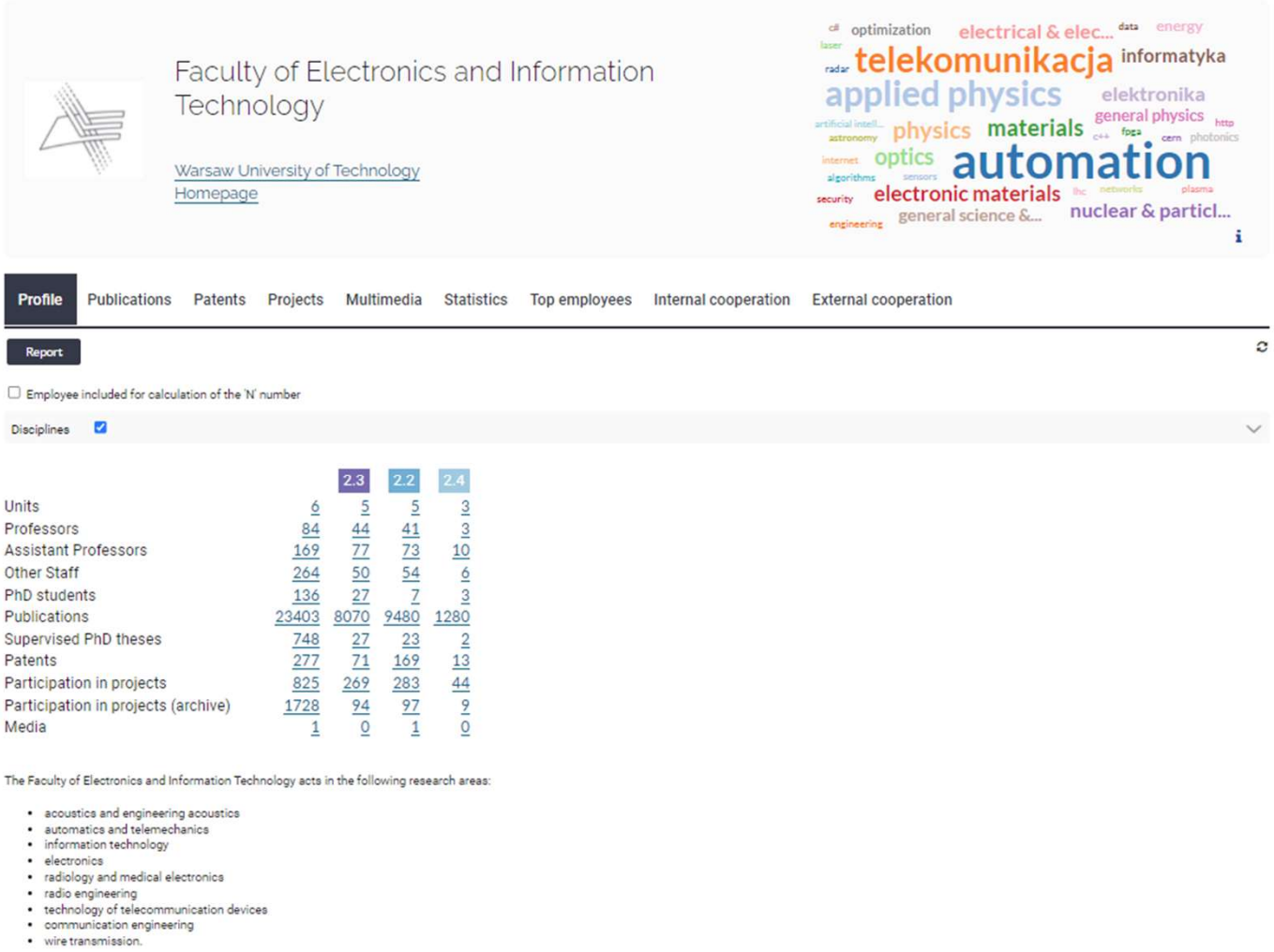

Faculty of Electronics and Information Technology

Warsaw University of Technology
Homepage

optimization electrical & elec... data energy laser radar telekomunikacja informatyka applied physics elektronika general physics http astronomy physics materials c++ fpga cern photonics internet optics automation algorithms sensors security electronic materials lhc networks plasma engineering general science &... nuclear & particl...

Profile | Publications | Patents | Projects | Multimedia | Statistics | Top employees | Internal cooperation | External cooperation

Report

Employee included for calculation of the 'N' number

Disciplines

	2.3	2.2	2.4
Units	6	5	5	3
Professors	84	44	41	3
Assistant Professors	169	77	73	10
Other Staff	264	50	54	6
PhD students	136	27	7	3
Publications	23403	8070	9480	1280
Supervised PhD theses	748	27	23	2
Patents	277	71	169	13
Participation in projects	825	269	283	44
Participation in projects (archive)	1728	94	97	9
Media	1	0	1	0

The Faculty of Electronics and Information Technology acts in the following research areas:

- acoustics and engineering acoustics
- automatics and telemechanics
- information technology
- electronics
- radiology and medical electronics
- radio engineering
- technology of telecommunication devices
- communication engineering
- wire transmission.

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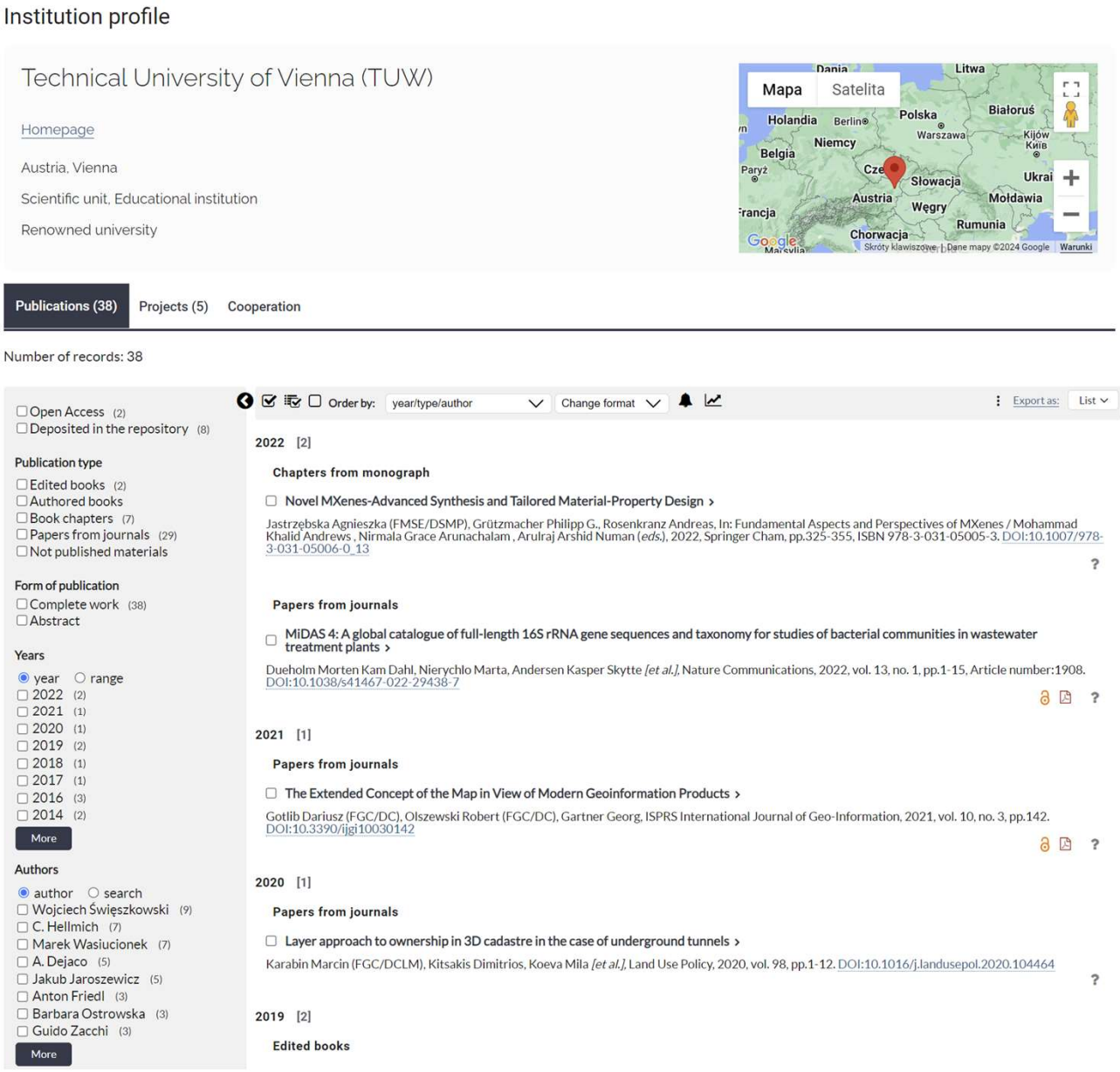

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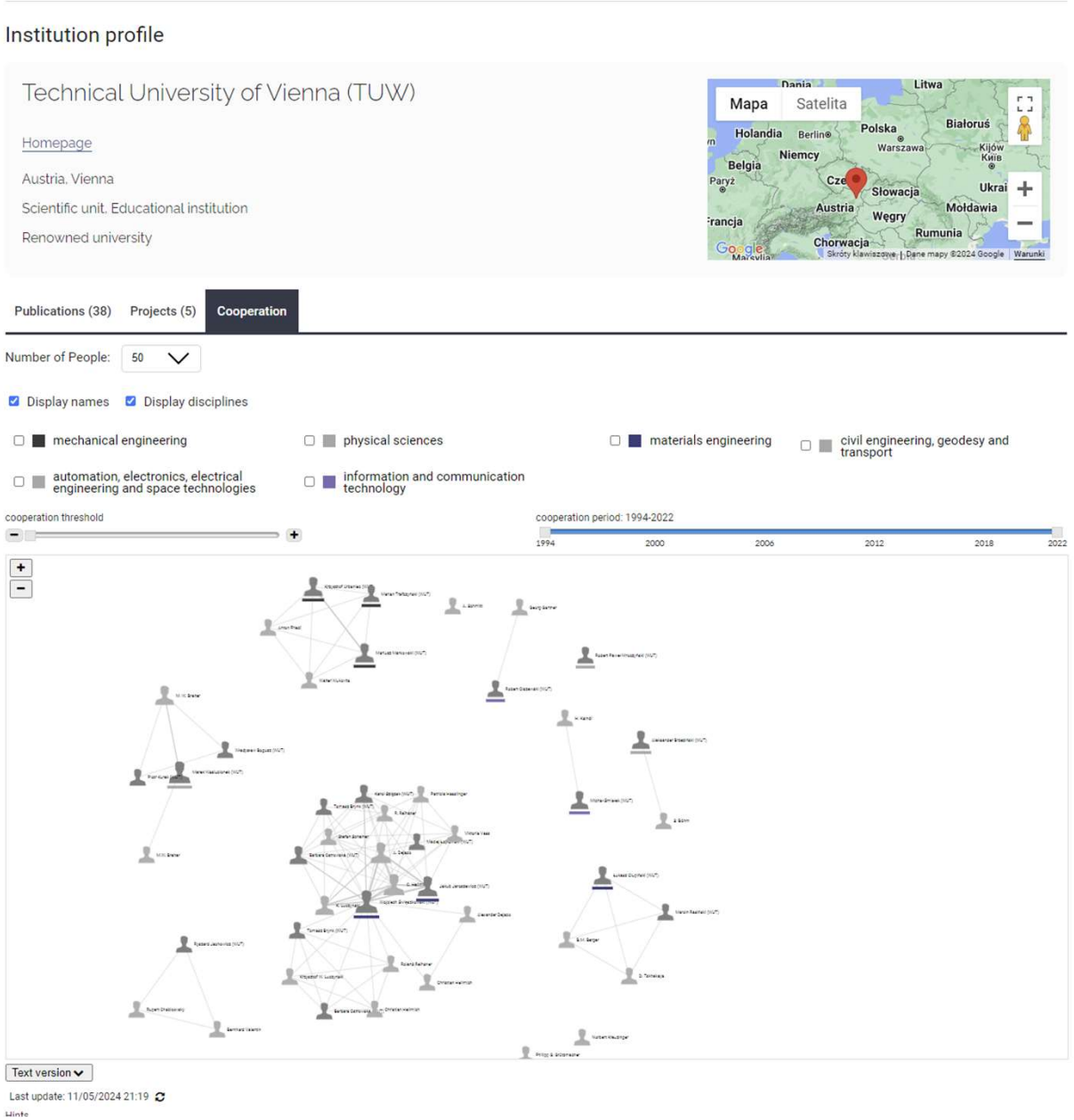

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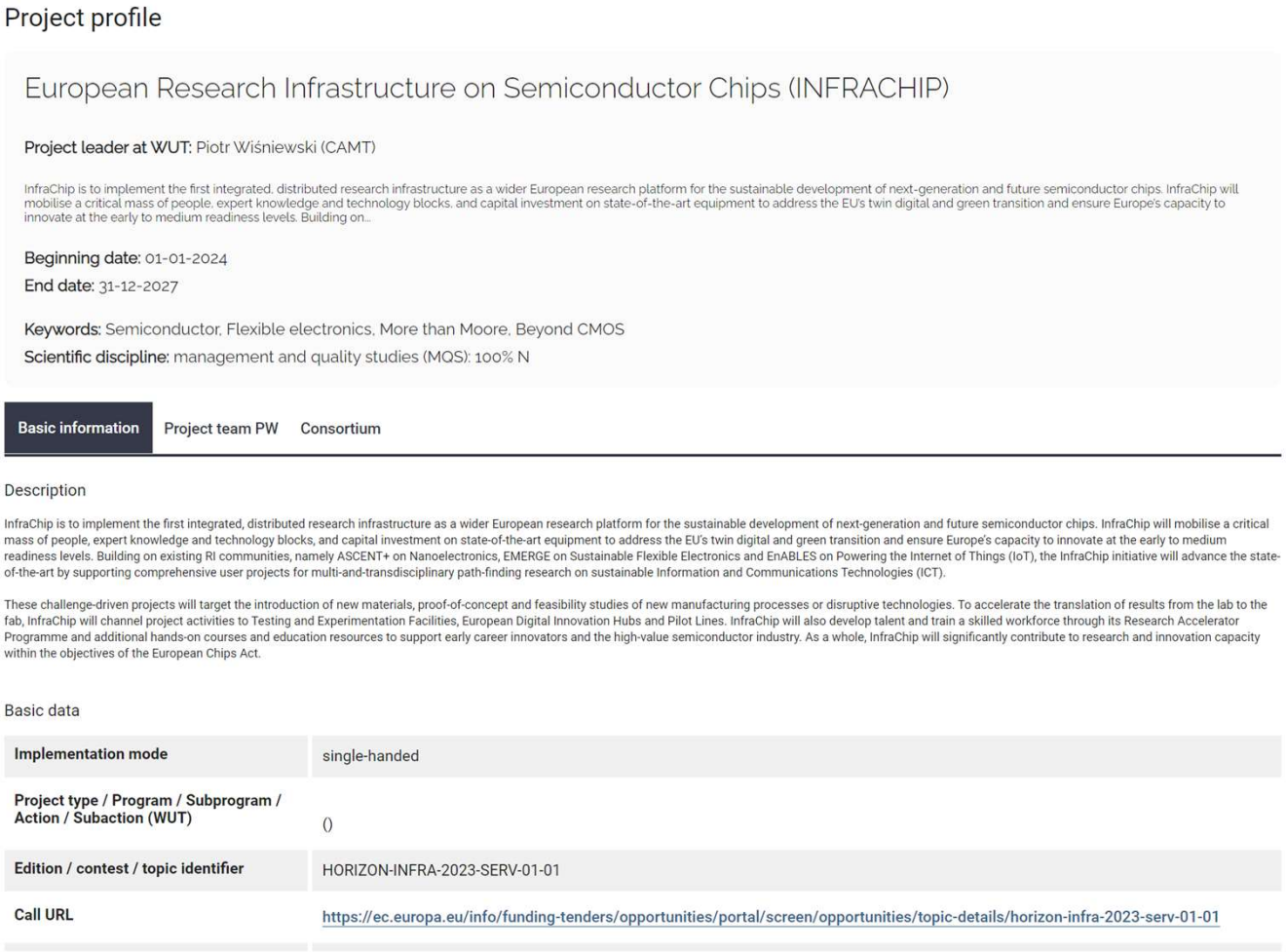

Project profile

European Research Infrastructure on Semiconductor Chips (INFRACHIP)

Project leader at WUT: Piotr Wiśniewski (CAMT)

InfraChip is to implement the first integrated, distributed research infrastructure as a wider European research platform for the sustainable development of next-generation and future semiconductor chips. InfraChip will mobilise a critical mass of people, expert knowledge and technology blocks, and capital investment on state-of-the-art equipment to address the EU's twin digital and green transition and ensure Europe's capacity to innovate at the early to medium readiness levels. Building on...

Beginning date: 01-01-2024
End date: 31-12-2027

Keywords: Semiconductor, Flexible electronics, More than Moore, Beyond CMOS
Scientific discipline: management and quality studies (MQS): 100% N

Basic information | Project team PW | Consortium

Description

InfraChip is to implement the first integrated, distributed research infrastructure as a wider European research platform for the sustainable development of next-generation and future semiconductor chips. InfraChip will mobilise a critical mass of people, expert knowledge and technology blocks, and capital investment on state-of-the-art equipment to address the EU's twin digital and green transition and ensure Europe's capacity to innovate at the early to medium readiness levels. Building on existing RI communities, namely ASCENT+ on Nanoelectronics, EMERGE on Sustainable Flexible Electronics and EnABLES on Powering the Internet of Things (IoT), the InfraChip initiative will advance the state-of-the-art by supporting comprehensive user projects for multi-and-transdisciplinary path-finding research on sustainable Information and Communications Technologies (ICT).

These challenge-driven projects will target the introduction of new materials, proof-of-concept and feasibility studies of new manufacturing processes or disruptive technologies. To accelerate the translation of results from the lab to the fab, InfraChip will channel project activities to Testing and Experimentation Facilities, European Digital Innovation Hubs and Pilot Lines. InfraChip will also develop talent and train a skilled workforce through its Research Accelerator Programme and additional hands-on courses and education resources to support early career innovators and the high-value semiconductor industry. As a whole, InfraChip will significantly contribute to research and innovation capacity within the objectives of the European Chips Act.

Basic data

Implementation mode	single-handed
Project type / Program / Subprogram / Action / Subaction (WUT)	()
Edition / contest / topic identifier	HORIZON-INFRA-2023-SERV-01-01
Call URL	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-infra-2023-serv-01-01

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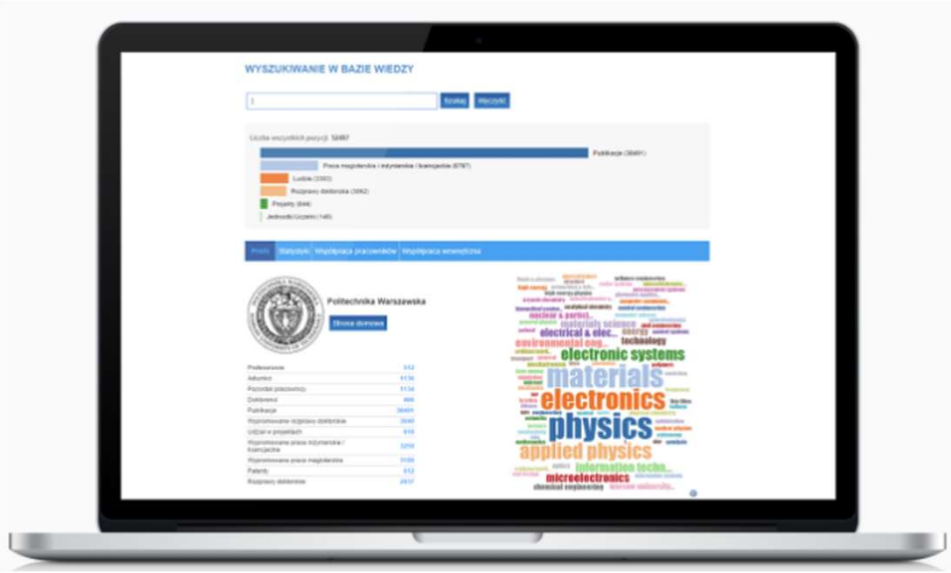
Projects

SUNGLIDER Smart Uberground Metros

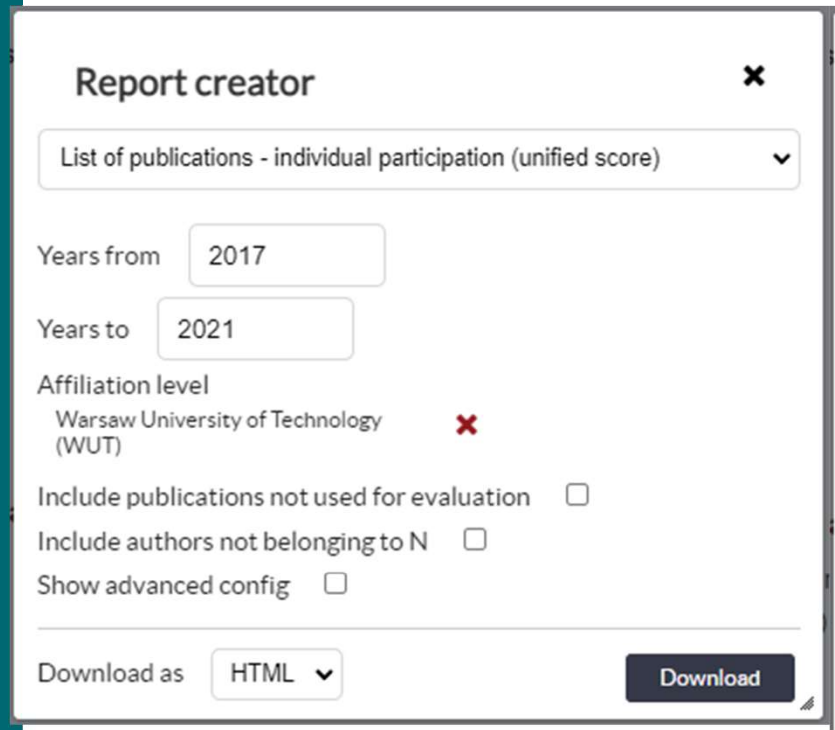
Media categories	press
Catalog / channel	Peter Kuczia
Language (if adequate)	eng (en) English
Related persons	leader: Ewelina Gawell (FA/DAUD) participant: Mariusz Wrona (FA/CSDCETI)
Affiliation unit	Warsaw University of Technology (WUT)
Main URL	https://youtu.be/doHK5cj0FP0
Year	2022
Description in English	The Sunglider Smart Uberground Metro is about re-inventing public transport in the age of decarbonisation and climate resilience. Some experienced volunteer enthu-siasts from universities in Osnabrück (D) and Warsaw (PL) want to make cars obso-lete in their community by conquering the +1 level with identical autonomous peo-ple movers, express goods movers and small autonomous buses to serve the

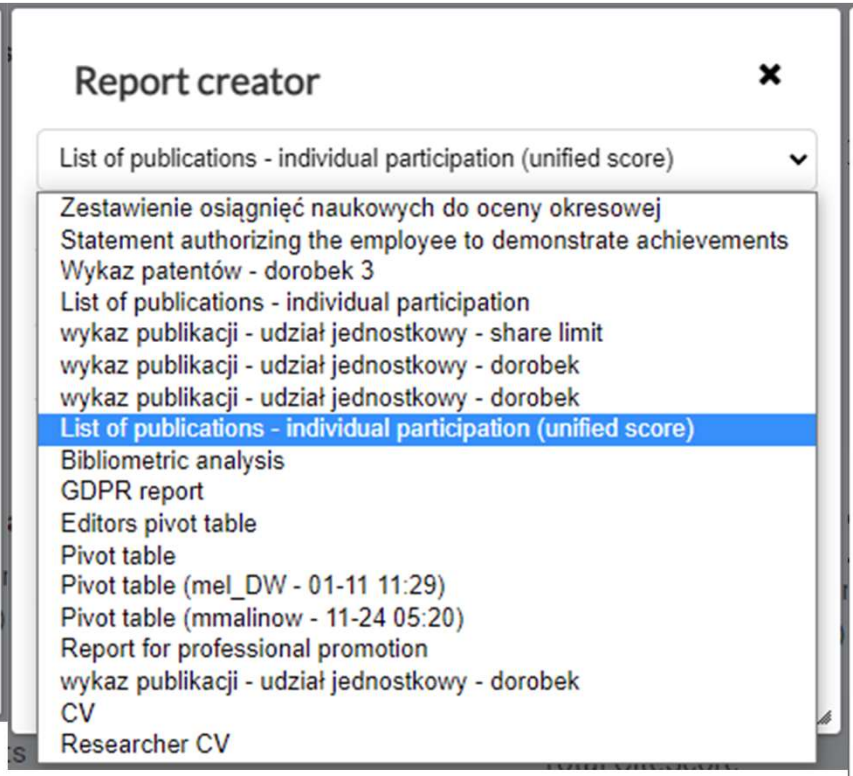
analytical tools

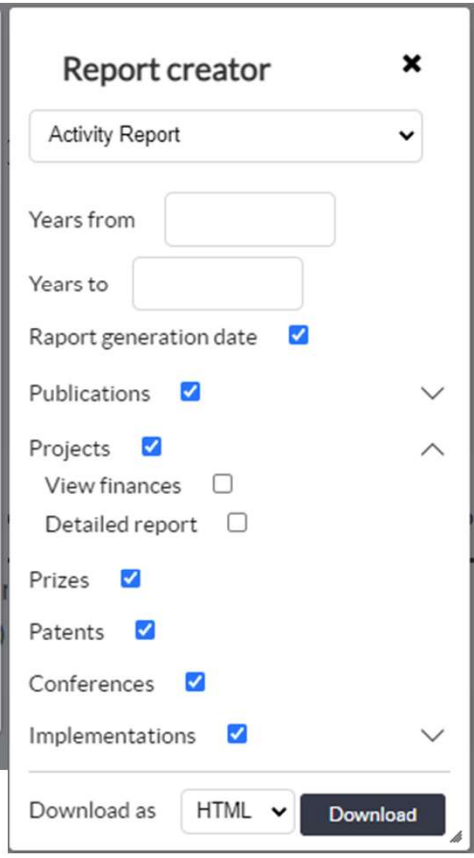
- lots of interesting, rich, interconnected data
- and tools to get the insight from the data and to answers business questions



reporting engine

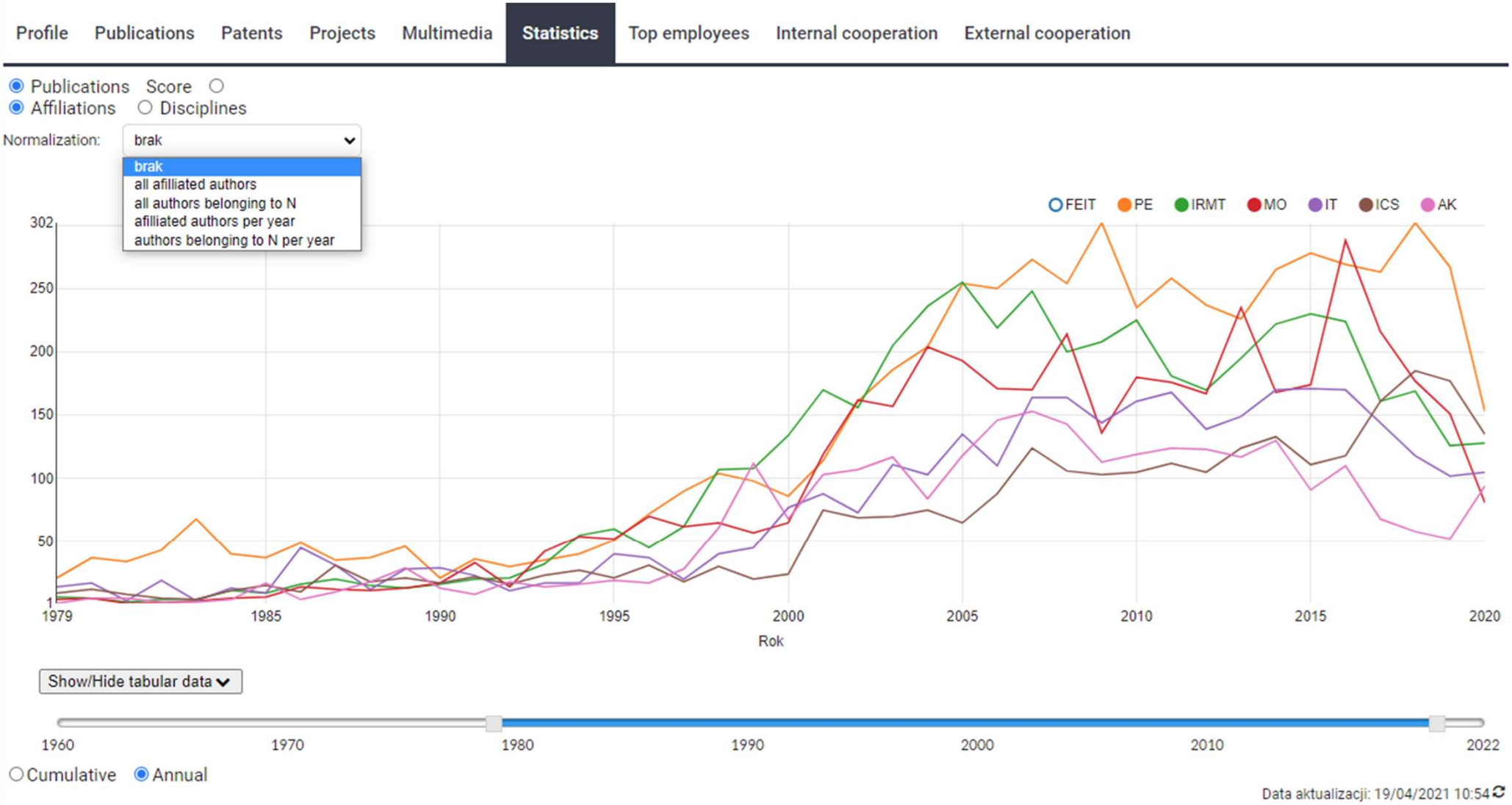




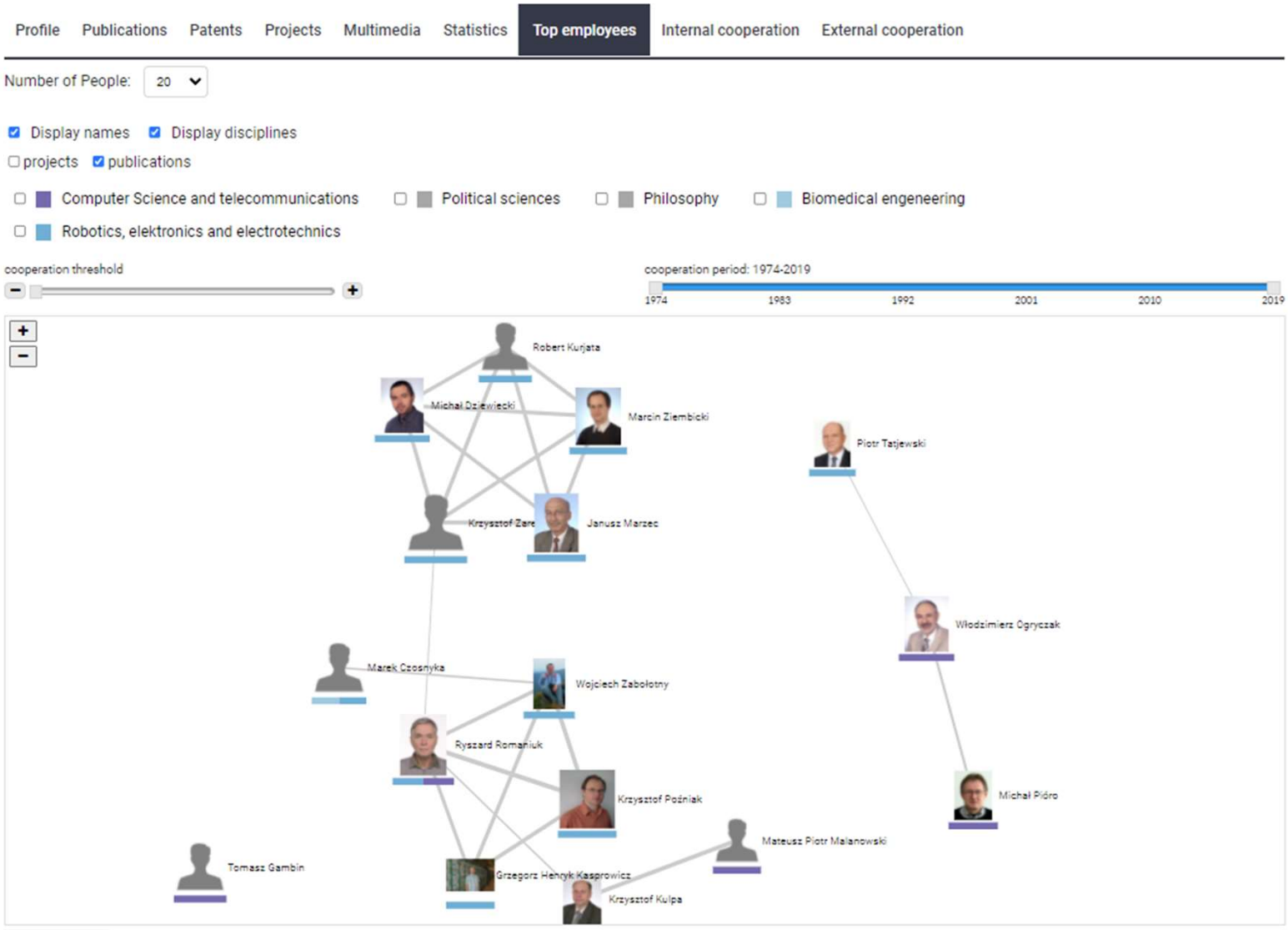


Like in CRIS

visualizations



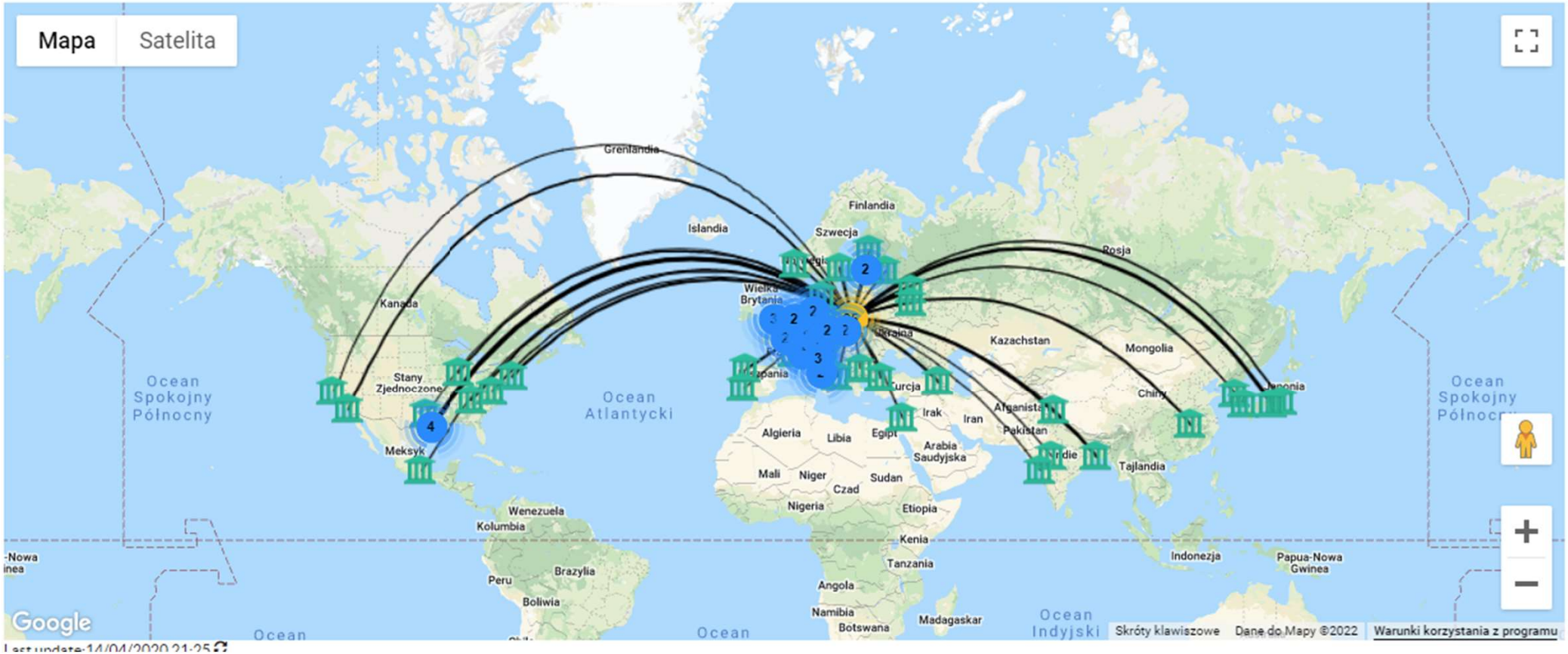
cooperation graphs



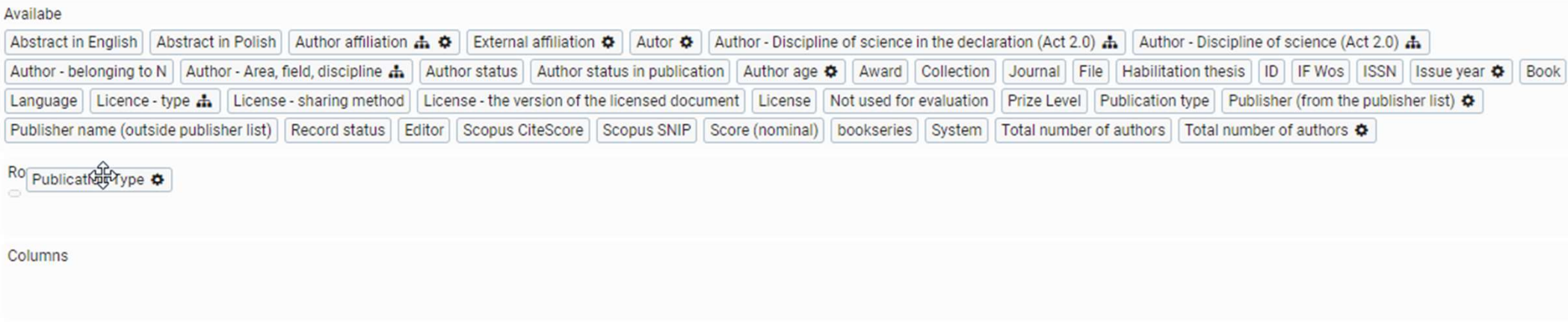
cooperation graphs

Profile | Publications | Patents | Projects | Multimedia | Statistics | Top employees | Internal cooperation | **External cooperation**

Graph | Map



pivot tables



Publication type \ Score (nominal)	0	5	20	40	50	70	80	100	120	140	200	Totals
book	4	6	18				16		1			45
chapter from monograph	7	8	61	29								105
conference material	92	19	230	16		47				24	2	430
journal paper	51	15	34	38	1	120		222		205	53	739
report	12											12
Totals	166	48	343	83	1	167	16	222	1	229	55	1 331

bibliometry

Bibliometry*

h-index (Scopus Citations)	11
h-index (WoS Citations)	8
Total IF	25.608
Total SNIP	34.897
Total CiteScore	52.36
Cumulative ministry score	995

Profile | Publications | Promoted theses | Projects | Activities | Achievements | **Citations** | Statistics

(●) Scholar ( ) Scopus ( ) WoS

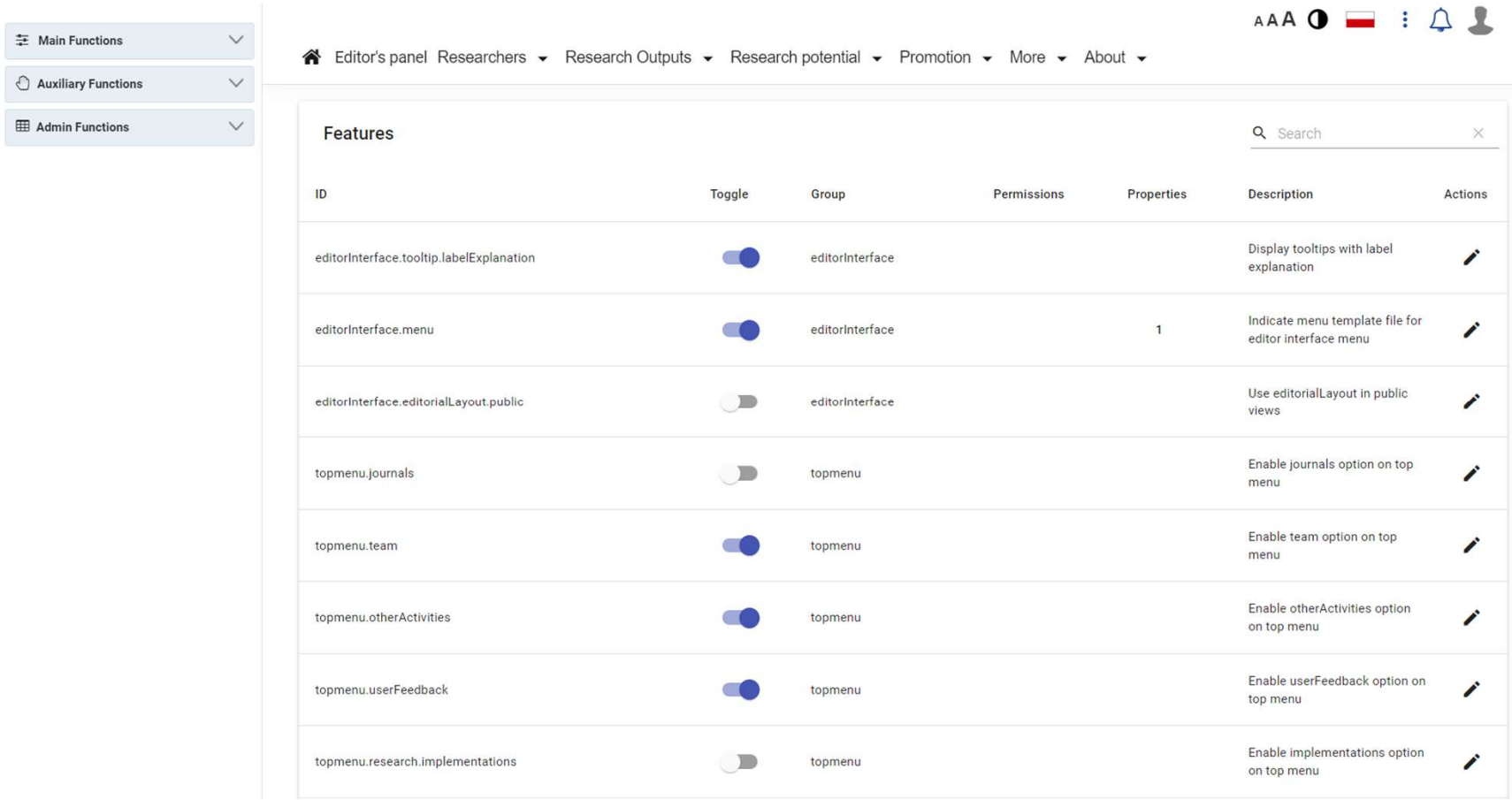
native hindex 18 (01/06/2023)
hindex = 18, cited by total = 1007

no	pub	title	cited	date
1		Kryszkiewicz Marzena, Rybiński Henryk : Finding Reducts in Composed Information Systems, In: Proceedings of the International Workshop on Rough Sets and Knowledge Discovery: Rough Sets, Fuzzy Sets and Knowledge Discovery / Ziarko Wojciech (*eds.*), 1993, Londyn, Springer-Verlag, pp.261-273, ISBN 3-540-19885-7	89	13/02/2023
2		Rybiński Henryk : On First-Order-Logic Databases, ACM Transactions on Database Systems, 1987, vol. 12, pp.325-349. DOI:10.1145/27629.27630	47	20/10/2022
3		Podsiadlo Mariusz, Rybiński Henryk : Financial time series forecasting using rough sets with time-weighted rule voting, Expert Systems with Applications, 2016, vol. 66, pp.1339-1351. DOI:10.1016/j.eswa.2016.08.066	38	01/06/2023
4		Kryszkiewicz Marzena, Rybiński Henryk : Reducing information systems with uncertain attributes, In: Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), Lecture Notes in Computational Vision and Biomechanics, 1996, pp.285-294, ISBN 9783540612865	37	13/02/2023
5		Kryszkiewicz Marzena, Rybiński Henryk : Data Mining in Incomplete Information Systems from Rough Set Perspective, In: Rough Set Methods and Applications, New Developments in Knowledge Discovery and Information Systems / Polkowski Lech, Tsumoto Shusaku, Lin Tsan Y. (*eds.*), Studies in Fuzziness and Soft Computing, 2000, Springer-Verlag, pp.567-580, ISBN 3-7908-1328-1	33	19/07/2023
6		Bembenik Robert, Rybiński Henryk : FARICS: A method of mining spatial association rules and collocations using clustering and Delaunay diagrams, Journal of Intelligent Information Systems, 2009, vol. 33, pp.41-64. DOI:10.1007/s10844-008-0076-1	32	01/06/2023
7		Bembenik Robert, Skonieczny Łukasz, Rybiński Henryk *[et al.]*(*eds.*): Intelligent Tools for Building a Scientific Information Platform, Studies in Computational Intelligence, vol. 390, 2012, Springer, 277 p., ISBN 978-3-642-24808-5. DOI:10.1007/978-3-642-24809-2	31	19/07/2022
8		Kryszkiewicz Marzena, Rybiński Henryk, Gajek Marcin : Dataless Transitions between Concise Representations of Frequent Patterns, Journal of Intelligent Information Systems, 2004, vol. 22, pp.41-70. DOI:10.1023/A:1025828729955	30	13/02/2023
9		Rybiński Henryk, Kryszkiewicz Marzena, Protaziuk Grzegorz M. *[et al.]*: Discovering synonyms based on frequent termsets, In: Rough Sets and Intelligent Systems Paradigms / Kryszkiewicz Marzena *[et al.]*(*eds.*), Lecture Notes in Artificial Intelligence, 2007, vol. 4585, Germany, Springer Verlag, pp.516-525, ISBN 10-3-540-73450-3	22	19/07/2023
10		Kryszkiewicz Marzena, Rybiński Henryk : Computation of reducts of composed information systems, Fundamenta Informaticae, 1996, vol. 27, pp.183-195	22	19/07/2023
11		Muraszkiewicz Mieczysław, Rybiński Henryk : Towards a parallel rough sets computer, Rough Sets, Fuzzy Sets and Knowledge Discovery, 1994, pp.434--443	22	16/08/2023
12		Koperwas Jakub Janusz, Skonieczny Łukasz, Kozłowski Marek *[et al.]*: Intelligent information processing for building university knowledge base, Journal of Intelligent Information Systems, 2017, vol. 48, pp.141-163. DOI:10.1007/s10844-015-0393-0	21	01/06/2023
13		Rybiński Henryk, Skonieczny Łukasz, Koperwas Jakub Janusz *[et al.]*: Integrating IR with CRIS – a novel researcher-centric approach, Program-Electronic Library and Information Systems, 2017, vol. 51, no. 3, pp.298-321. DOI:10.1108/PROG-04-2017-0026	21	01/06/2023

customization

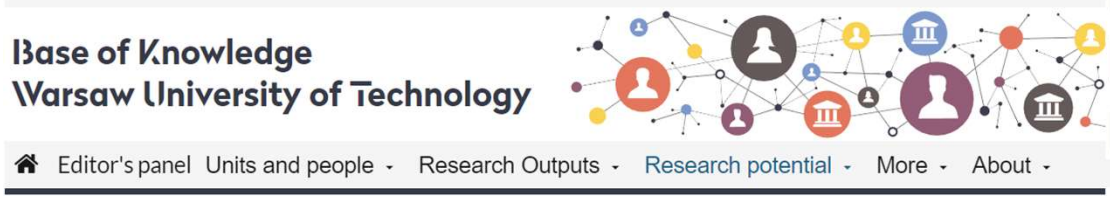
- Feature toggles

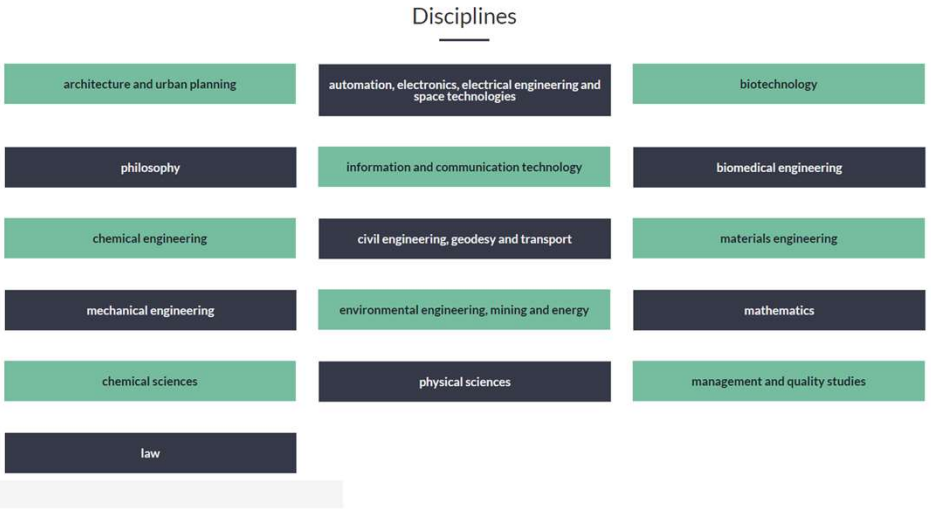
Turn on/off and configure particular modules and functionalities

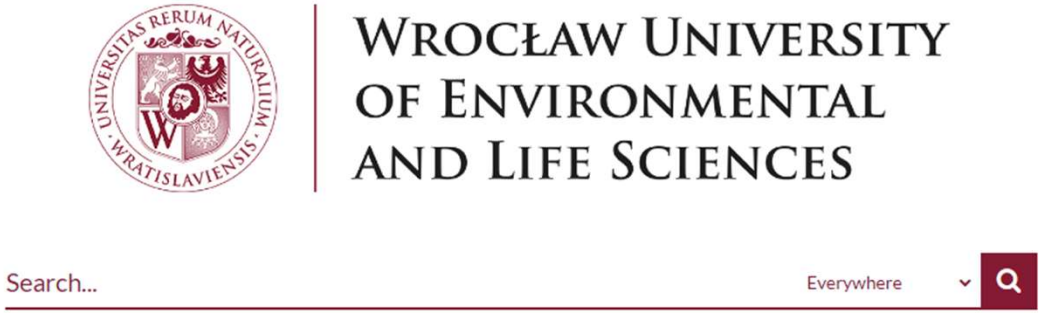


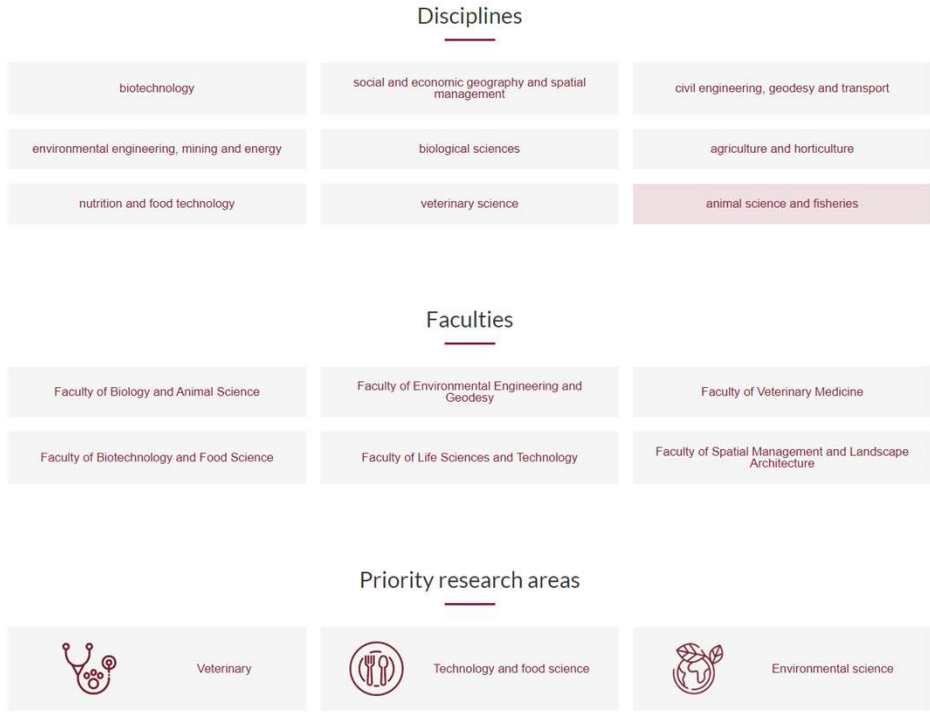
customization

- Look & Feel







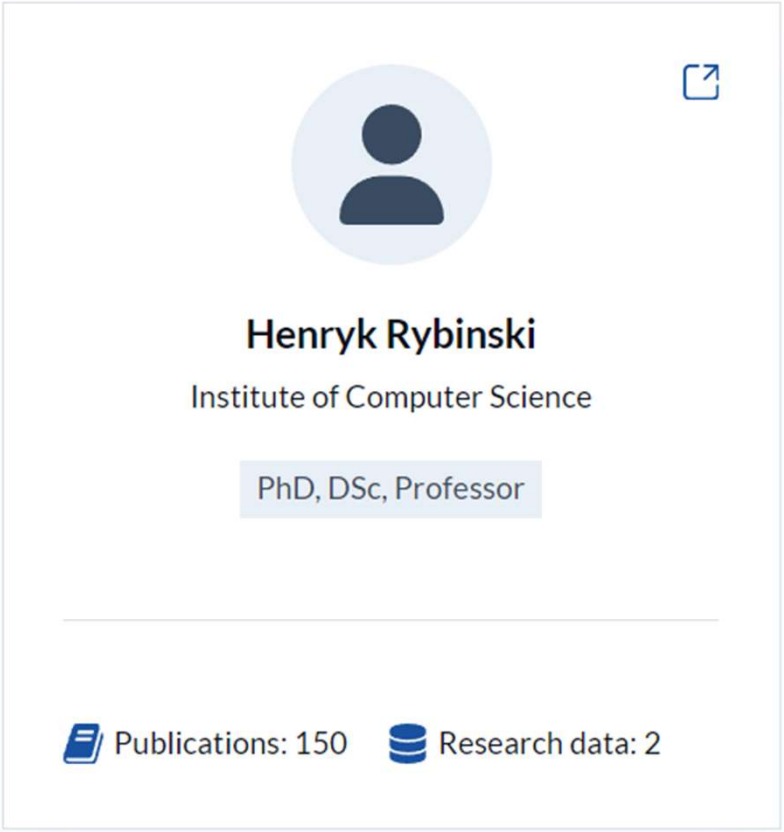


integration with external systems

- Get additional data from external systems
  - Scopus
  - Web of Science
  - Google Scholar
  - Sherpa Romeo
  - ROR
  - CrossRef
  - DataCite
  - PBN
  - POL-on
  - Altmetrics
  - PlumX

integration with external systems

- Export data to external systems
  - ORCID
  - POL-on
  - PBN
- Expose data to external systems
  - REST API
  - GraphQL API
  - Widgets
  - 5 ★ Open Data



Conclusion

- Open Science is not just a repository
- Staff are the core of the university, they do research, therefore the researchers profiles should be in the center of the system
- Complete research lifecycle (run by researchers) should be covered by the system
- A complete, interlinked data in the form of semantic network, covering all the research activities and outputs, should be stored around profiles
- … bringing a view of on-going research to the society (also business value to various stakeholders)

- Integrating CRIS with IR and RPS makes the maintenance cheaper and gives extra added value to the system functionality

To see more

The WUT Knowledge Base - https://repo.pw.edu.pl/index.seam?lang=en

The system page - https://www.omegapsir.io/

OMEGA-PSIR

Thank you for your attention