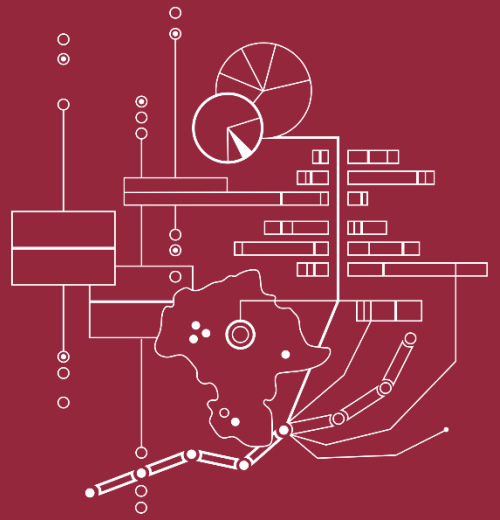
NATIONAL INFORMATION PROCESSING INSTITUTE

Beyond CRIS: A research and higher education information system in Poland

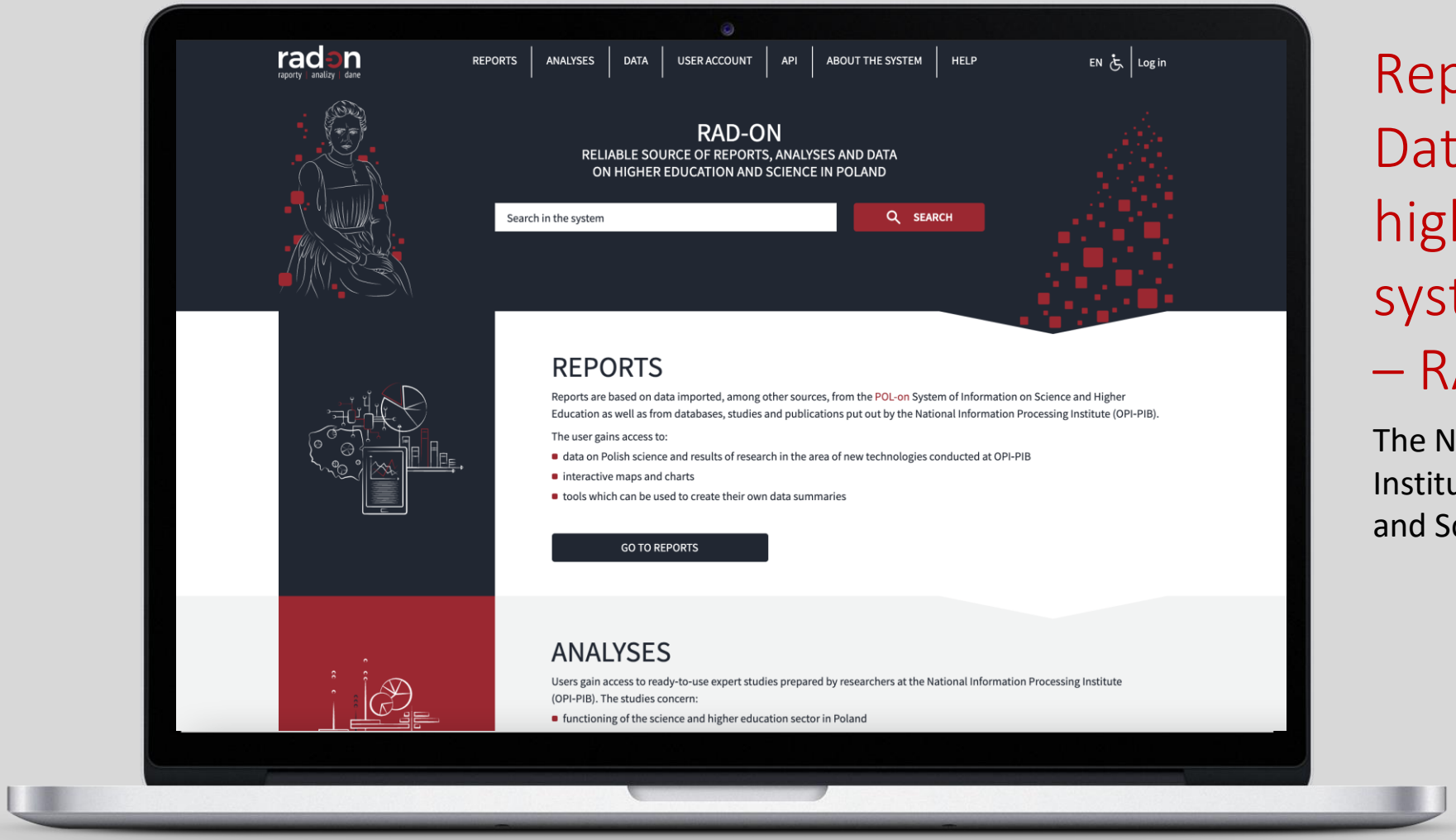


Aldona Tomczyńska, PhD

Emil Podwysocki

Sylwia Ostrowska

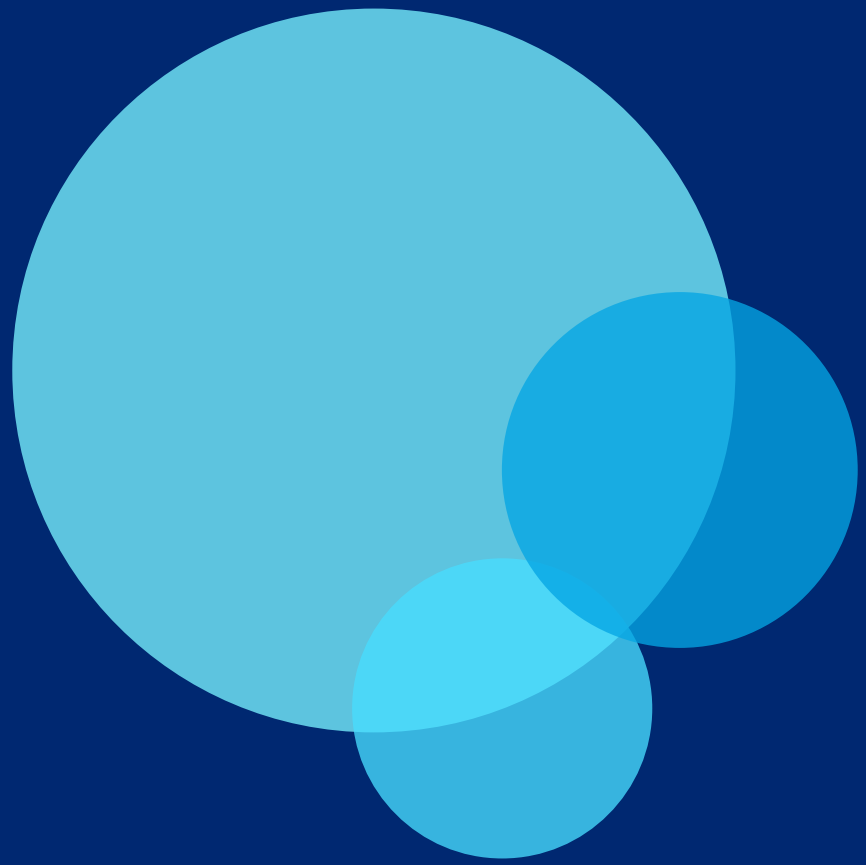
Jarosław Protasiewicz, PhD



Reports, Analyses and Data on the science and higher education system in Poland – RAD-on

The National Information Processing Institute and the Ministry of Education and Science in Poland

www.radon.nauka.gov.pl



Project goals

Goal 1. Open access to data on science and higher education

Since 2011, OPI PIB has been engaged in the development of various data collection systems, which operate according to official legal regulations.

Due to the majority of research institutions being obligated to upload data to the systems on a regular basis, the information stored by such systems is the most up-to-date and reliable.

Goal 2. To support decision-making processes by providing IT tools

Open government data

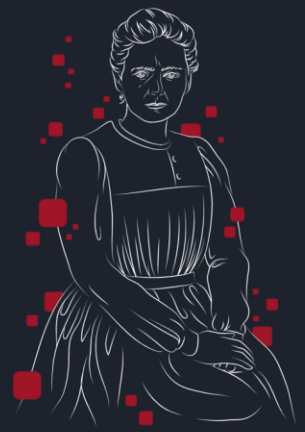
Data-driven policy making

radon

reports | analyses | data

FAIR data (findable, accessible, interoperable, reusable)

Public system



RAD-ON

RELIABLE SOURCE OF REPORTS, ANALYSES AND DATA
ON HIGHER EDUCATION AND SCIENCE IN POLAND

Search in the system

SEARCH

Survey

REPORTS

Reports are based on data imported, among other sources, from the POL-on System of Information on Science and Higher Education as well as from databases, studies and publications put out by the National Information Processing Institute (OPI-PIB).

The user gains access to:

- data on Polish science and results of research in the area of new technologies conducted at OPI-PIB
- interactive maps and charts
- tools which can be used to create their own data summaries

GO TO REPORTS

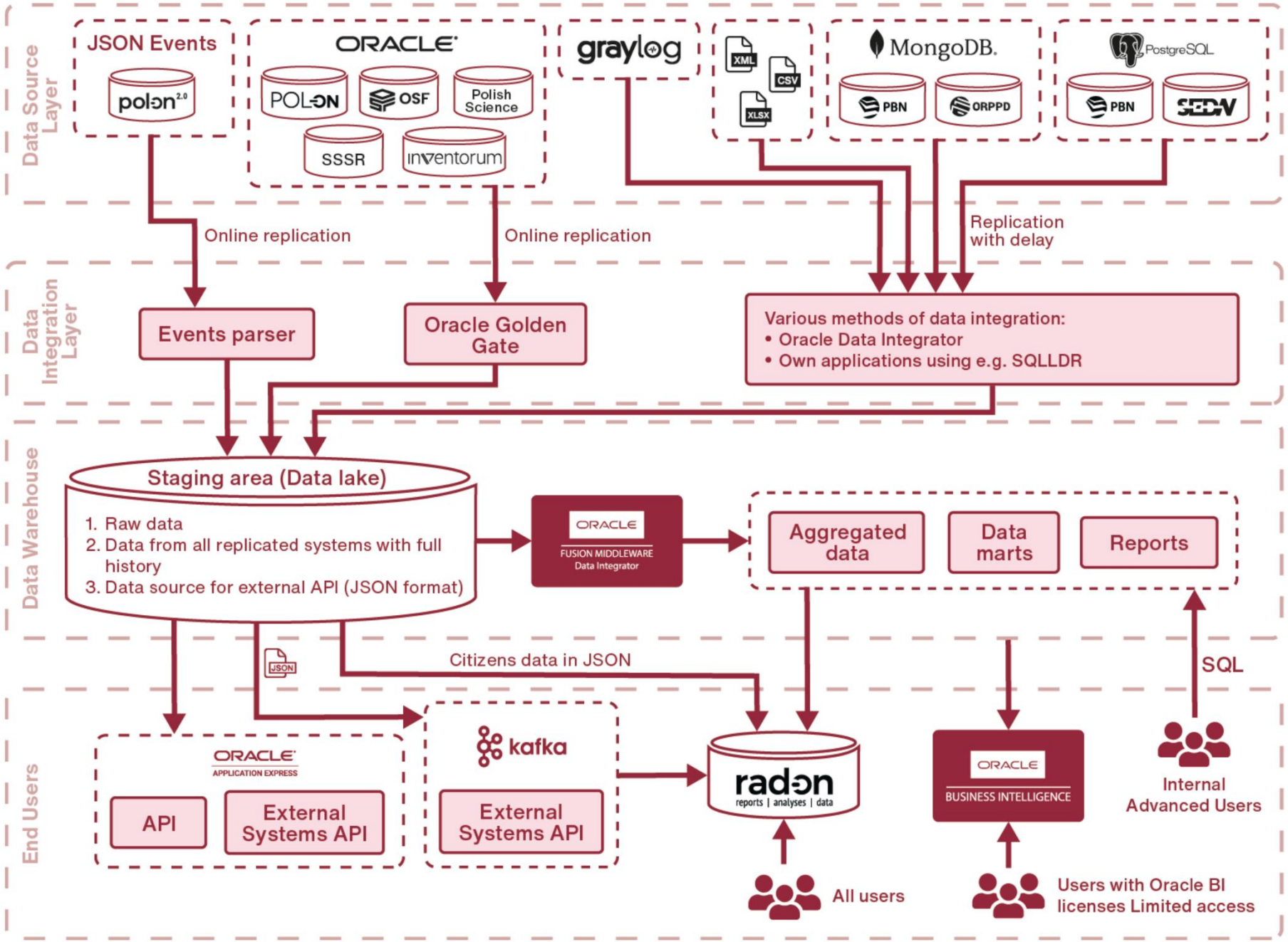
BI tools for institutions

Business Intelligence Tools for users with additional credentials

Governmental organizations (ministries, national scientific councils, research funding organizations) who can access non-public data benefit from more advanced dashboards created using the BI tool.

Technology

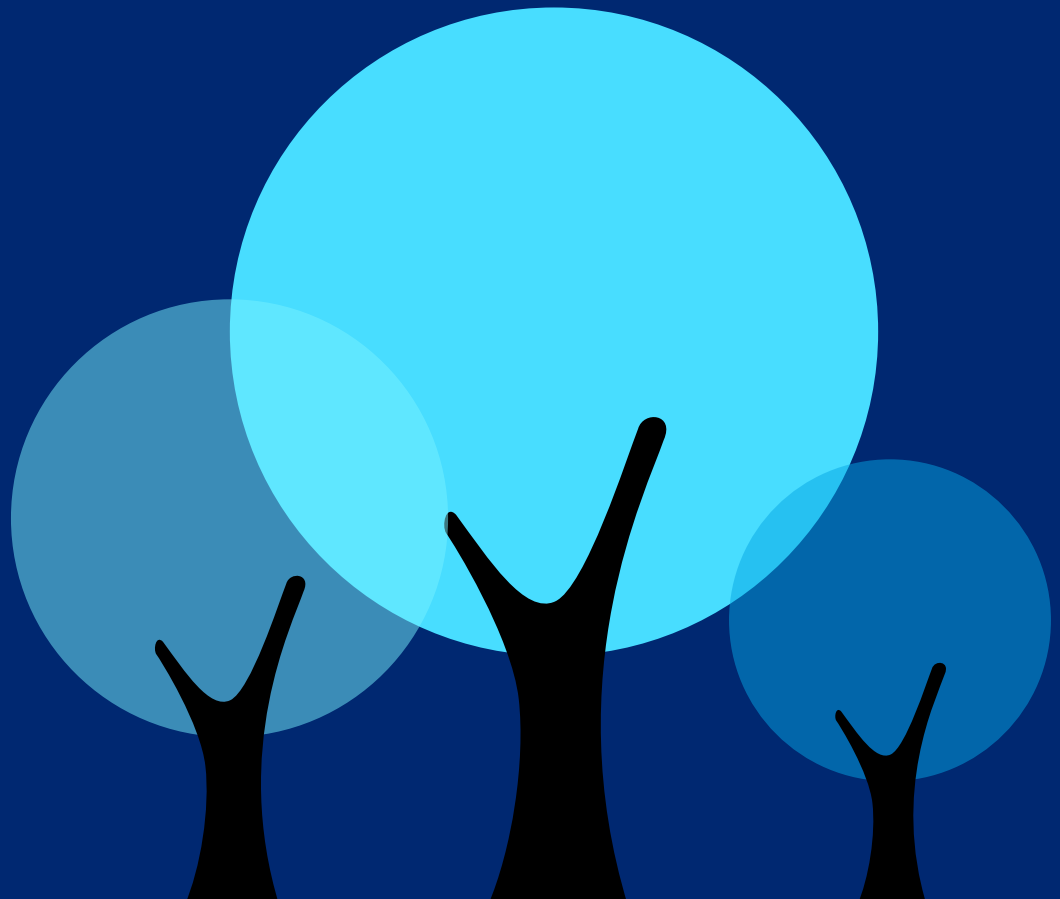
Overall schema of internal architecture RAD-on



Technologies used

Technology	Main task	Justification of the chosen technology
Java Enterprise Edition	**Programming tools**	A classic tech stack for developing enterprise-class systems
JDK8		
Spring		
Hibernate		
Oracle Enterprise Edition database	**Data gathering, aggregating, and sharing**	A reliable dataset technology in enterprise-class systems used by the key OPI PIB systems to facilitate data integration
Oracle Data Integrator	**Data integration**	ETL process management
Oracle Golden Gate		Real-mode data replication from source systems (Oracle)
Oracle Analytics Server	**BI tool**	Information desktops, self-service reporting, email report distribution
Oracle APEX	**Low-code platform**	Fast implementation of web applications and RestAPI interfaces
Apache Kafka	**Message broker**	A free, extremely efficient, and distributed platform to manage the exchange of messages between systems.
Elasticsearch	**Data indexing and searching**	Implementation of full-text search
Tomcat	**Application server**	A free application server
Graylog	**Application monitoring**	A free system that analyses application logs
Swagger	**Documentation**	Self-documenting Rest API services
Kubernetes	**Orchestration**	The most popular tool that manages, automates, and scales container applications

Project impact

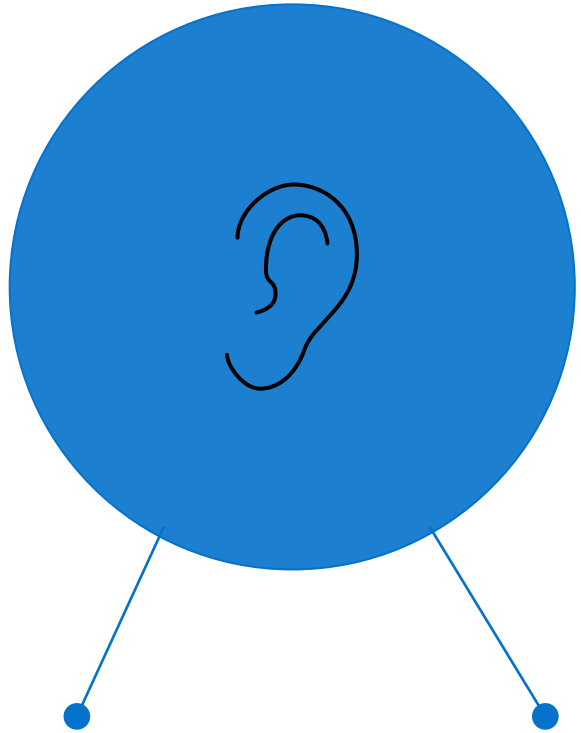


Statistics 2022–2023: public system

125 000
users

78%
new users

7.3
webpages
on avarage
by a user



250
items about or references to RAD-on or its data appeared in online media

1
item monthly in traditional press

Statistics 2022–2023: public system

11.45 TB of data from

9 systems

on science and higher education were integrated and shared

150 million

downloads of documents (five-fold increase between 2020 and 2021)

API was most commonly used to download data on:

- research institutions (105,004,023 downloads)
- scholars' publications (455,962 downloads)
- scholarly staff (193,142 downloads)
- university programmes (106,414 downloads)

Statistics 2022–2023: Internal BI tools

2.2 TB
of data stored in the data warehouse

104
users from
8
public institutions
(10 unique users every day)

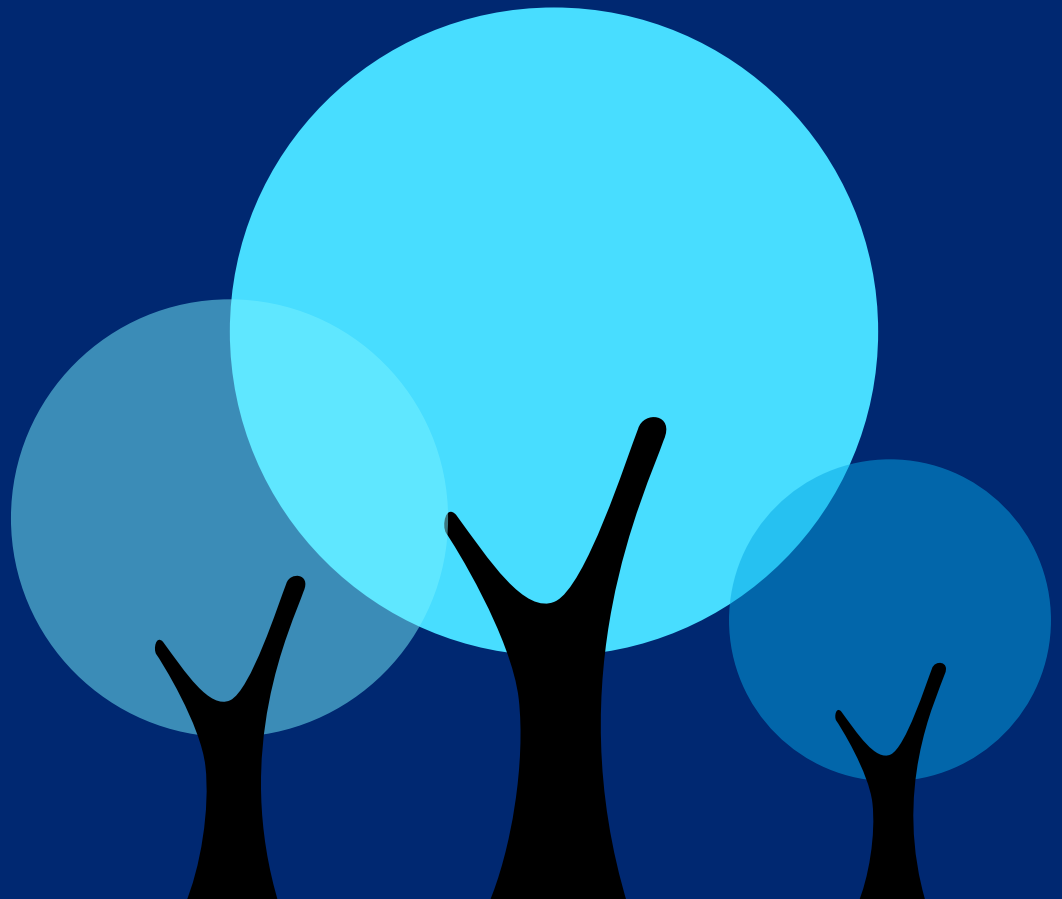
82
unique ETL processes that power the data warehouses

255 million
lines of text in reports downloaded

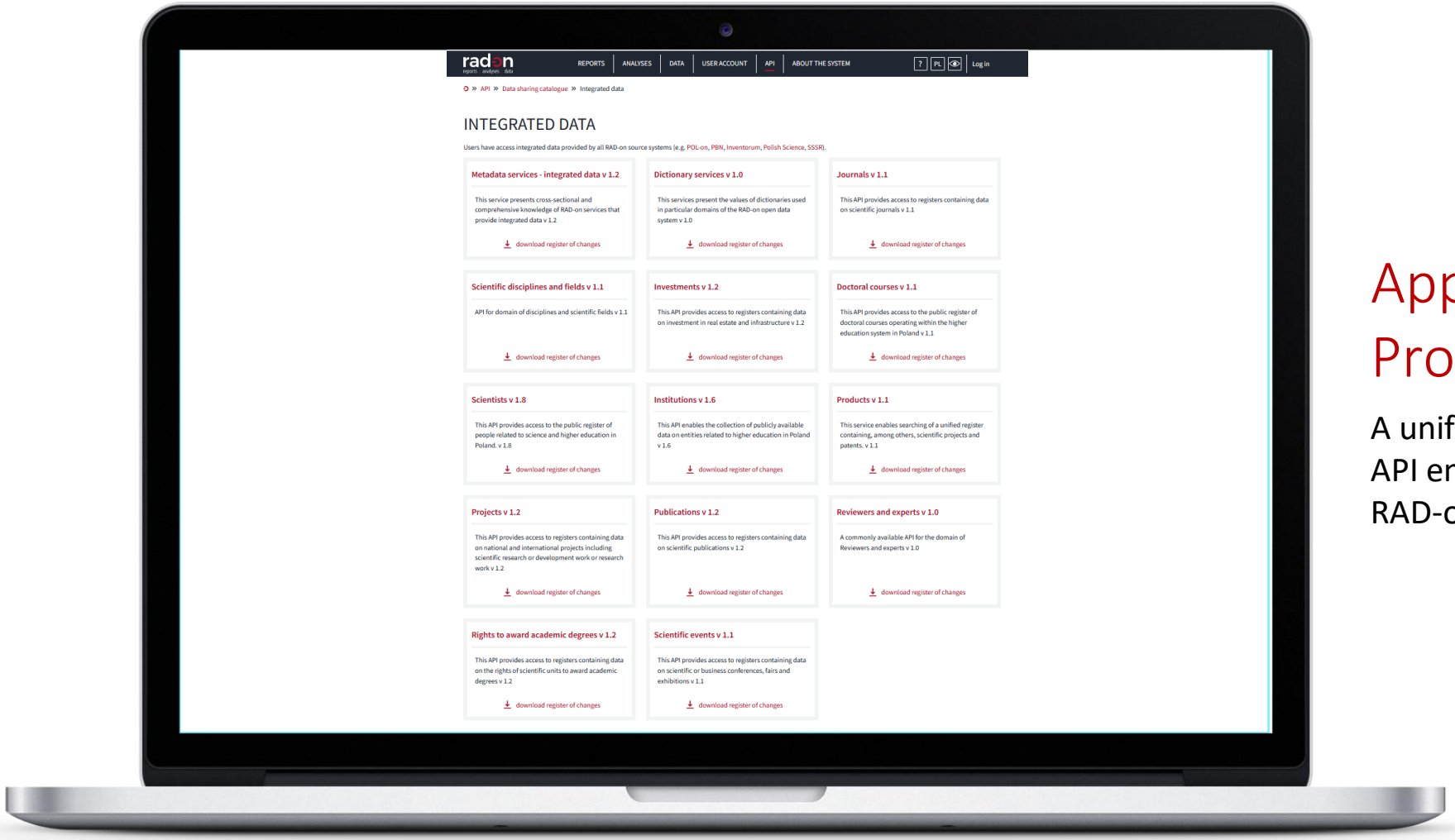
24
thematic dashboards

61 thousand
reports generated

191
REST API interfaces shared



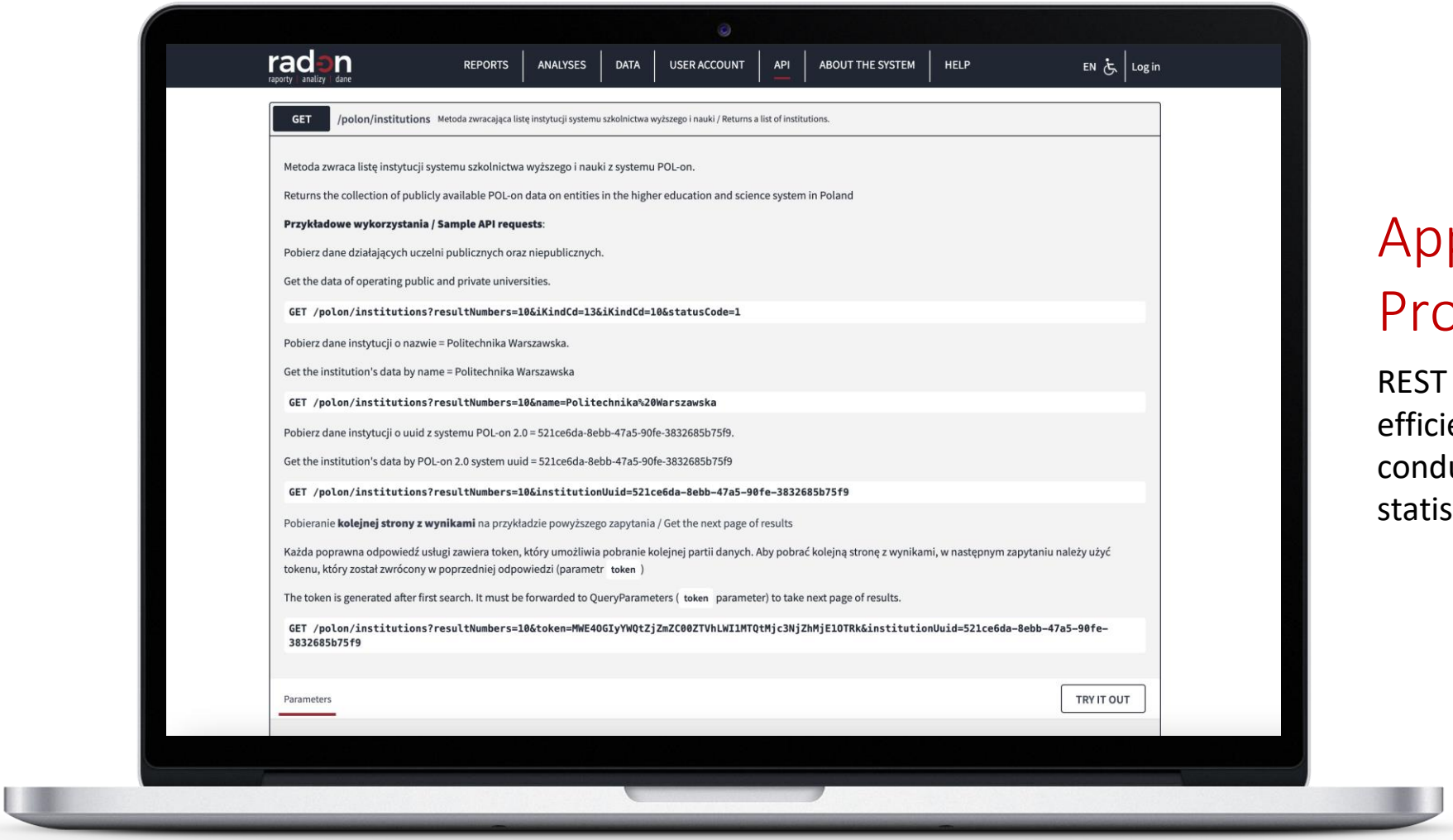
Open Data: API



Application Programming Interface

A uniform programming interface – REST API enables free and public access to the RAD-on databases.

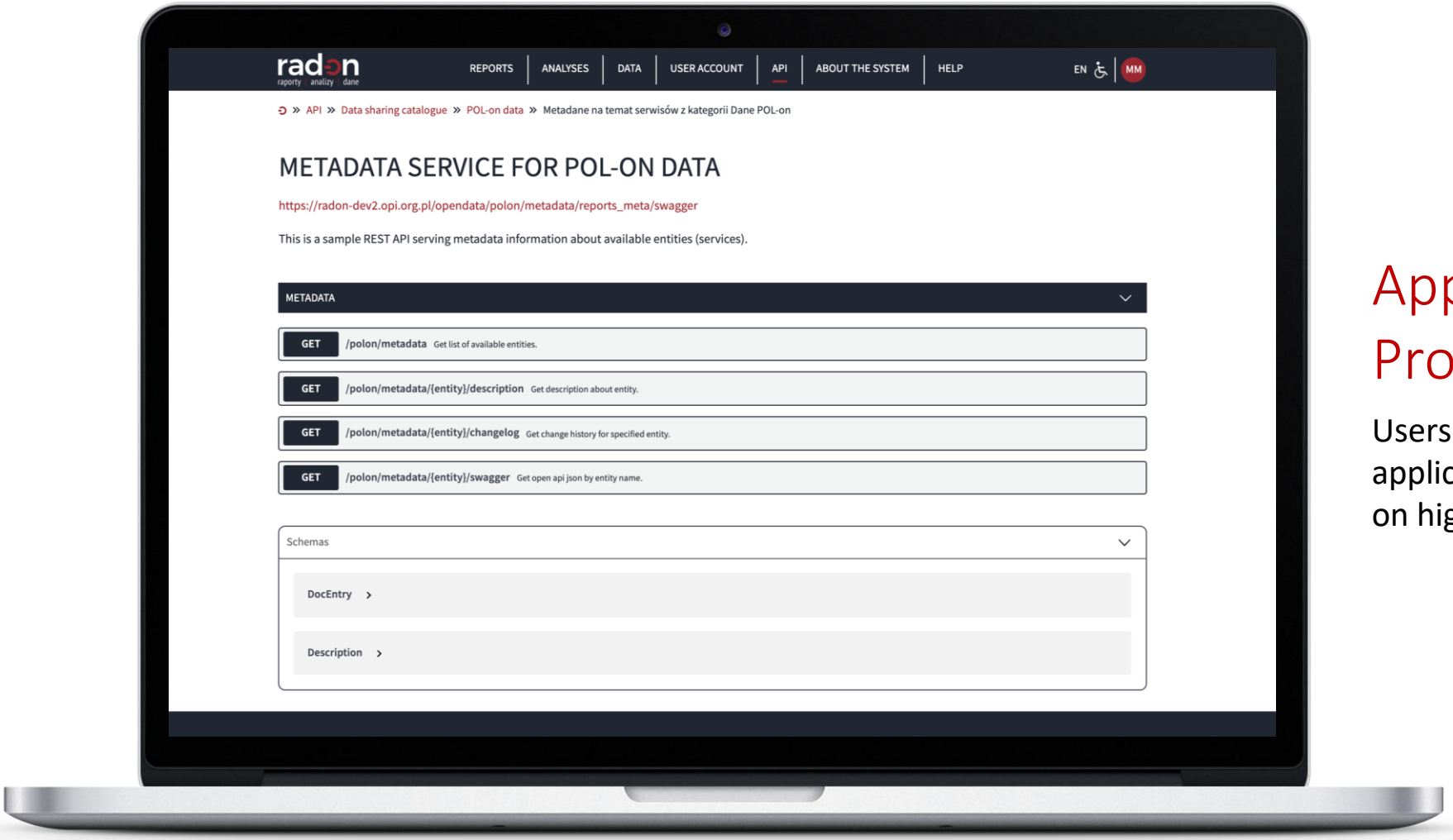
www.radon.nauka.gov.pl



Application Programming Interface

REST API allows users to quickly and efficiently download data that is useful in conducting analyses and in creating statistics, reports and summaries.

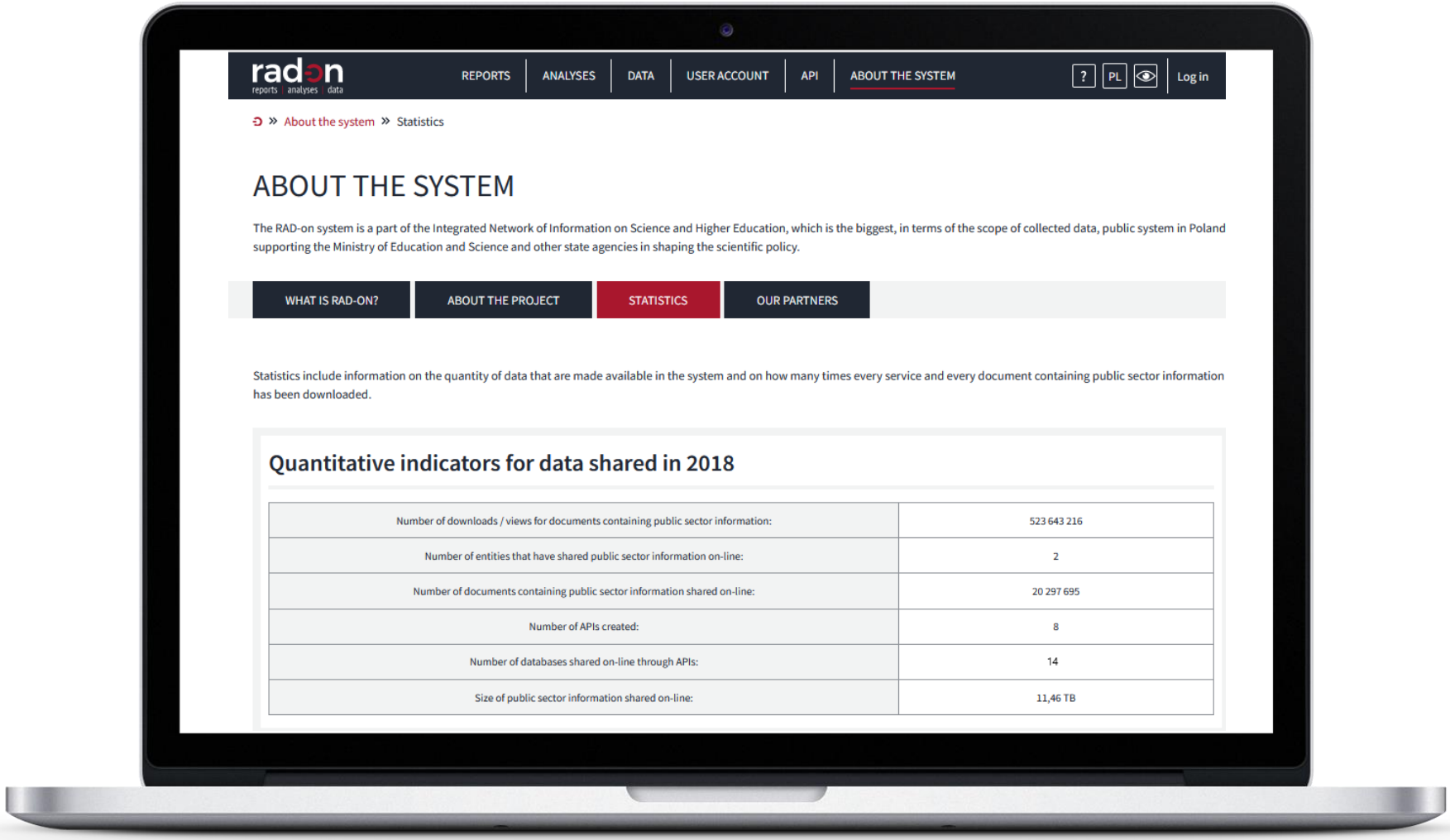
www.radon.nauka.gov.pl



Application Programming Interface

Users can develop original solutions and applications that require access to data on higher education.

www.radon.nauka.gov.pl



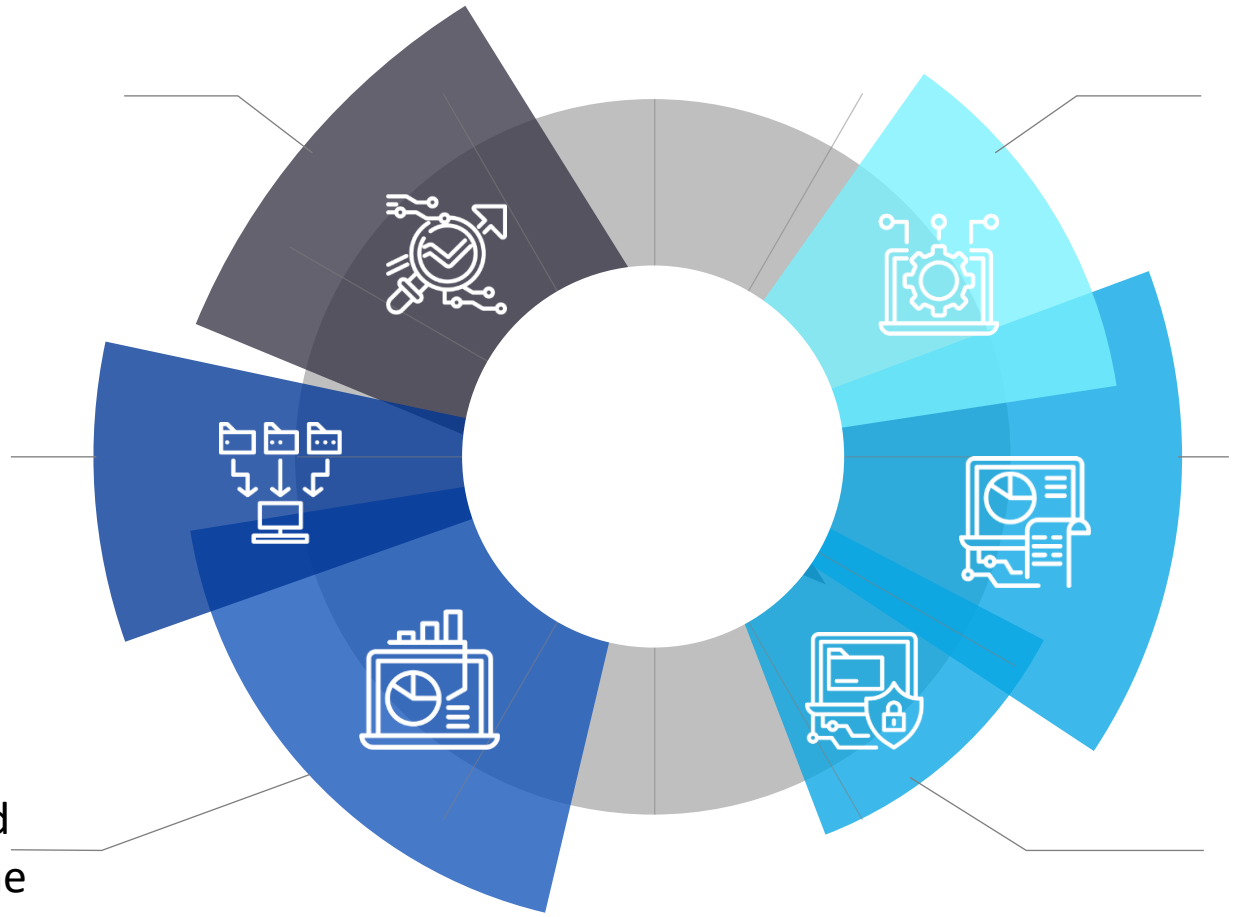
www.radon.nauka.gov.pl

Conclusions

RAD-on offers the most up-to-date and credible information, as scientists or students can correct their own data through a single point-of-entry.

Journalists and the general public can download comprehensive analyses with in-depth interpretation of data.

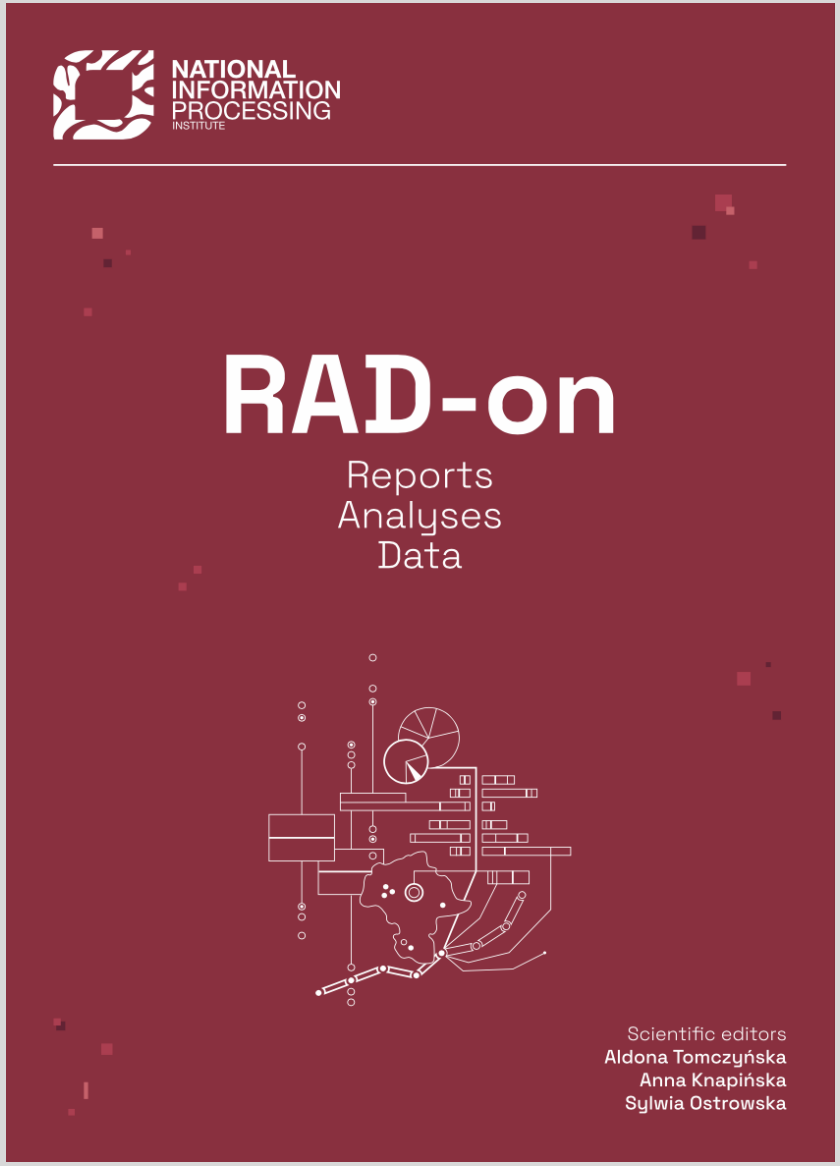
Decision-makers who can access non-public data benefit from more advanced dashboards created using the BI tool.



RAD-on is the first fully integrated system for science and higher education that enables access to governmental and other data from multiple databases.

Users can interact with data in a variety of ways, depending on their analytical skills and level of authorisation.

Programmers and data scientists benefit from an integrated API; whereas researchers prefer to download pre-defined tables and visualisations.



More about RAD-on

in a book available at:

www.opi.org.pl/wydawnictwo

NATIONAL INFORMATION PROCESSING INSTITUTE

National Information Processing Institute

al. Niepodległości 188 b
00-608 Warsaw, POLAND
https://opi.org.pl/en/

Contact us:

Aldona Tomczyńska atomczynska@opi.org.pl
Emil Podwysocki epodwysocki@opi.org.pl