APPLICATION OF SELECTED SK CRIS SYSTEM INDICATORS TO EVALUATION OF R&D AND TECHNOLOGY TRANSFER IN SLOVAK HIGHER EDUCATION AND RESEARCH INSTITUTIONS

Danica Zendulkova & Adriana Shearman
Slovak Centre of Scientific and Technical Information
SLOVAK CENTRE OF SCIENTIFIC AND TECHNICAL INFORMATION

- Scientific Library
- Support of Science
  - SK CRIS
  - CIP RDI
  - Publication and Artistic activity (CRPA)
  - Theses and dissertations (CRTD)
  - Open Access (national point of reference)
  - PATLIB
  - Technology transfer
- Popularisation of Science
- Projects (5 national – OP R&D and 6 smaller projects)
SK CRIS

Was started in January 2013

https://www.skcris.sk
9997 projects funded by public resources
Projects starting in 2011 and later in the field of chemical sciences
18 645 researchers, legal representatives and contact persons from

- universities
- SAS
- public and private institutes
## ORGANISATIONS

1308 public and private R&D organisations

<table>
<thead>
<tr>
<th><strong>Organisation detail</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identification number</strong></td>
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<tr>
<td><strong>Name</strong></td>
<td>Slovak Centre of Scientific and Technical Information</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>National Information Centre, Specialized Scientific Library, Popularization of Science, Technology Transfer</td>
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<td><strong>NACE classification</strong></td>
<td>Library and archives activities</td>
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<tr>
<td><strong>Resort</strong></td>
<td>Ministerstvo školstva, vedy, výskumu a športu SR</td>
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<tr>
<td><strong>Specialisation R&amp;D</strong></td>
<td>Massmedial communication</td>
</tr>
<tr>
<td><strong>Sector</strong></td>
<td>State (Governmental) Sector</td>
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<tr>
<td><strong>Farming form</strong></td>
<td>State-Subsidised Organisation</td>
</tr>
<tr>
<td><strong>Master activity</strong></td>
<td>Legal/Physical Entity with Primary Activity Other than Research and Development</td>
</tr>
<tr>
<td><strong>Address</strong></td>
<td>Lamačská 8/ Bratislava 84104 SK</td>
</tr>
<tr>
<td><strong>e-mail</strong></td>
<td><a href="mailto:cvsl@cvslsr.sk">cvsl@cvslsr.sk</a></td>
</tr>
<tr>
<td><strong>phone</strong></td>
<td>+421 2 69253100; +421 2 69253102</td>
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<td><strong>Linked project</strong></td>
<td>Infrastructure for research and development - Data centre for research and development, National Information system for supporting research and development in Slovakia - access to electronic information resources, National infrastructure for supporting technology transfer in Slovakia - NITT SK</td>
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</tbody>
</table>
CERTIFICATION TO PERFORM R&D

Issued by the Ministry of Education; Valid for 6 years; partially CERIF entities; Indicators:

- Publishing activity
- Citations
- Organisation of Scientific and Professional events
- Patent activity, licenses, utility models
- Research activity (R&D finance support, projects)
- R&D education and training
- ISO certification of quality management
- Use of research, Scientific and technical services
- Laboratories
- Activity in international R&D organisations
STATISTICAL SURVEY OF R&D QUALITY

Realised yearly; aggregated data are published by CIP RDI

- Innovations
- Selected economic indicators of R&D entity
- Structure of R&D activities (capacity in personnel and FTE by type of research and by R&D field)
- Laboratory equipment (level and acquisition value)
- Number of publications, patents
- Membership in international R&D organisations
- International cooperation (active and passive; mobilities by time and country)
USE OF SK CRIS DATA

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USE OF SK CRIS DATA

Contents:

1. Why we use data - briefly about the NITT SK project
2. Development of methodology – basic principles
3. What data we use (data sources )
4. Evaluation of public HE and publicly-funded R&D institutions
5. Conclusions
USE OF SK CRIS DATA

PROJECT National infrastructure for supporting technology transfer in Slovakia – NITT SK (http://nitt.cvtisr.sk)

To propose and put into effect the national infrastructure to support technology transfer, and thus contribute directly to more intensive and efficient state support to research and development.

Beneficiary: the Slovak Centre of Scientific and Technical Information in Bratislava

Operational programme: R&D

Co-financed by: European Regional Development Fund

Budget: €8,234,571.17

Duration: June 2010 – December 2014

Target group: academic community at SK universities, SAS, public research institutes
Technology transfer (TT) is the process of transferring skills, knowledge, technologies, methods of manufacturing, samples of manufacturing and facilities among governments or universities and other R&D institutions to ensure that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology into new products, processes, applications, materials or services.

The transfer of new technology from the originator to a secondary user, in an attempt to boost economy.
USE OF SK CRIS DATA

OBJECTIVE 1 of NITT SK PROJECT

Establish and operate Technology transfer centre at the SCSTI

Propose and implement a NATIONAL SYSTEM FOR SUPPORTING TECHNOLOGY TRANSFER
NATIONAL SYSTEM FOR SUPPORTING TECHNOLOGY TRANSFER

Services provided to public R&D institutions (e.g.):
1. Invention evaluation and commercial assessment
2. Invention/intellectual property protection, patent application filing
3. Contract drafting & negotiation
4. Research partnership development
5. Strategy & planning
6. Impact review
7. Consultancy & research services
8. Helping establish technology transfer centres at universities, etc.
9. Other auxiliary services (preparation of methodological materials, drafting default agreements and contracts, organising specialised training courses, seminars and conferences, etc.)
Why we use SK CRIS data

Services related to TT and IPR protection are:

- costly
- provided externally by specialists, e.g. IP attorneys, lawyers, experts in commercialisation, evaluation of IP

If there is a demand for services exceeding financial resources we anticipate a competition for these resources

A task: to prepare a methodology for evaluation of R&D institutions and research teams from the
USE OF SK CRIS DATA

Pre-conditions:

- no additional information will be requested from R&D institutions (i.e. using the existing data, no additional administrative burden on R&D institutions)
- use only of databases administered by or licensed to SCSTI
- selection of evaluation indicators with prime focus on TT
- evaluation at two levels (faculty/research institute and research team)
- methodology for evaluation is an internal document of informative character and serves SCSTI for decision-making for funding TT from the NSSTT at public R&D institutions
USE OF SK CRIS DATA

Sources of information:

SK CRIS

CREPČ/CRPA - register of publications of universities classified by categories

InCites – Th-R analytical tool for evaluation based on bibliometric data

Derwent II – Th-R patent database

other publicly accessible databases – e.g. on awards
Criteria for evaluation from the aspect of TT (on the basis of data in the above databases and some inspiration from the literature, e.g. U-Multirank report) were identified, selected and grouped.
## USE OF SK CRIS DATA

### R&D Institutional level

<table>
<thead>
<tr>
<th>Area</th>
<th>Group</th>
<th>Source / database</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Human potential</strong></td>
<td>1.A Publication activity</td>
<td>CRPA</td>
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<td></td>
<td>1.B IP protection</td>
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<tr>
<td></td>
<td>1.C Formal pre-requisites</td>
<td>SK CRIS</td>
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<tr>
<td><strong>2. Cooperation</strong></td>
<td>2.A Projects</td>
<td>SK CRIS</td>
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<tr>
<td></td>
<td>2.B Collaboration</td>
<td>SK CRIS</td>
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<tr>
<td><strong>3. Environment</strong></td>
<td>3.A Infrastructure and services</td>
<td>SK CRIS</td>
</tr>
<tr>
<td></td>
<td>3.B TT centre or equivalent</td>
<td>web site</td>
</tr>
</tbody>
</table>
# USE OF SK CRIS DATA

<table>
<thead>
<tr>
<th>R&amp;D team level</th>
<th>Area</th>
<th>Group</th>
<th>Sources / databases</th>
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<td></td>
<td>1.C Formal pre-requisites</td>
<td>SK CRIS</td>
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<td>1.D Impact</td>
<td>InCites, Derwent II</td>
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<td>2. Cooperation</td>
<td>2.A Projects</td>
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<td>2.B Collaboration</td>
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<td></td>
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<td>3.A Infrastructure</td>
<td>SK CRIS</td>
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</tbody>
</table>
USE OF SK CRIS DATA

**Formal pre-requisites:** e.g. classification of academics from aspect of research field/expertise/specialisation, research degrees / degrees in education, membership in national/international scientific organisations, awards, etc.

**Projects:** projects in various scientific fields

**Collaboration:** involvement of R&D team/institution in national or international collaboration (e.g. number of Slovak or foreign R&D institutions participating in a project, exchange of academics)

**Infrastructure and services:** e.g. investment in research facilities, equipment, specific services provided by R&D institutions
# USE OF SK CRIS DATA

<table>
<thead>
<tr>
<th>Universities</th>
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<tbody>
<tr>
<td>Comenius Univ. (BA)</td>
<td>3</td>
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<tr>
<td>Slovak Univ. of Technology (BA)</td>
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<td>Technical Sci.</td>
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<tr>
<td>Slovak Univ. of Agriculture (NR)</td>
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<td>Agri &amp; Technical Sci.</td>
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<tr>
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<tr>
<td>University of Žilina</td>
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<tr>
<td>Alexander Dubček Univ. in Trenčín</td>
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<tr>
<td>Matej Bel Univ. in Banská Bystrica</td>
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<tr>
<td>Pavol Šafárik Univ. (KE)</td>
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<td>University of Prešov</td>
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<tr>
<td>St. Cyril and Methodius Univ. (TT)</td>
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<td>Natural Sci.</td>
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<tr>
<td>Constantine the Philosopher Univ.</td>
<td>1</td>
<td>Natural Sci.</td>
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</table>
USE OF SK CRIS DATA

Human potential

Cooperation

Environment

Total

F. of chemistry & food technol STU BA
F. elec eng STU BA
F. math & phys & info CU BA
F. civil eng STU BA
F. wood sci & technol TU ZV
F. nat sci CU BA
F. material technol STU BA
F. elec eng TU KE
F. manuf technol TU KE
F. mech eng UZ ŽA
Conclusions:

Quality of any evaluation depends on quality of data available

CRPA collects a suitable and validated data set on publications and citations only for Slovak public universities (no such data for SAS, R&D institutes)

Currently, evaluation is confined to public HE and R&D institutions (target group of NITTSK project)
Current tasks and future plans:

1. to complete evaluation of 11 working teams mainly from HEs, SAS

2. to complete evaluation of selected institutes of the Slovak Academy of Sciences (29) and public research institutes (10)

3. to modify calculations and revise indicators

4. to update methodology

5. to include more databases
Acknowledgement

Work of my colleagues on the preparation of Methodology is greatly appreciated:

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