
**The National Research Infrastructure Roadmap and its connection to the
European Research Infrastructure Landscape**
- INFORMATION DAY -

**The National Research Infrastructure Roadmap
in the European context**



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NATIONAL RESEARCH, DEVELOPMENT AND INNOVATION OFFICE (NRDIO)

Budapest - 21 November 2018



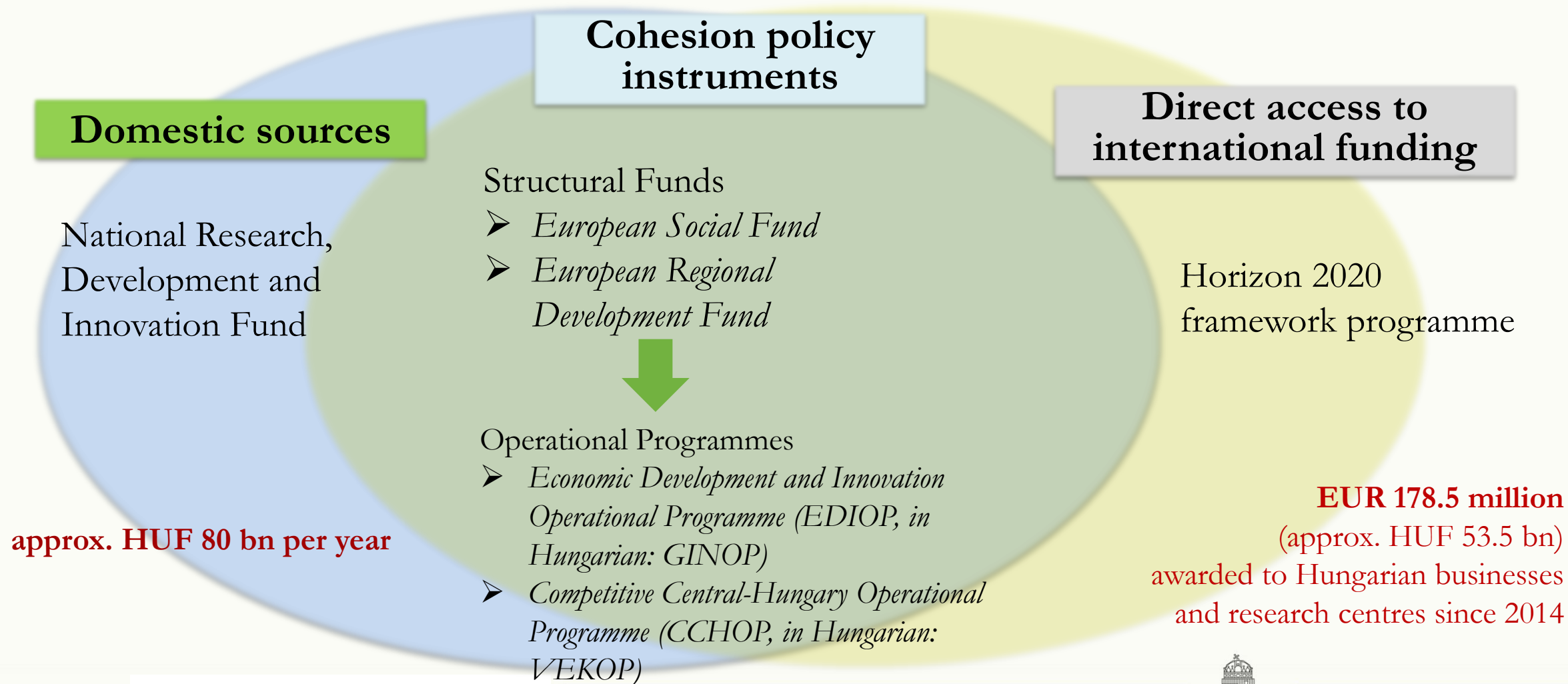
NRDI Office

Tasks:

- strategic planning of calls for proposals, coordinated management of the application procedure, programme evaluation and monitoring system;
- managing the National Research, Development and Innovation Fund and being responsible for the strategic planning of research development and innovation calls financed from EU funds;
- governmental coordination of RDI issues and representation of Hungary in international organizations (in cooperation with the Ministry of Innovation and Technology);
- establishment of innovation services and collaboration platforms, maintenance of databases, preparation of strategic analyses.



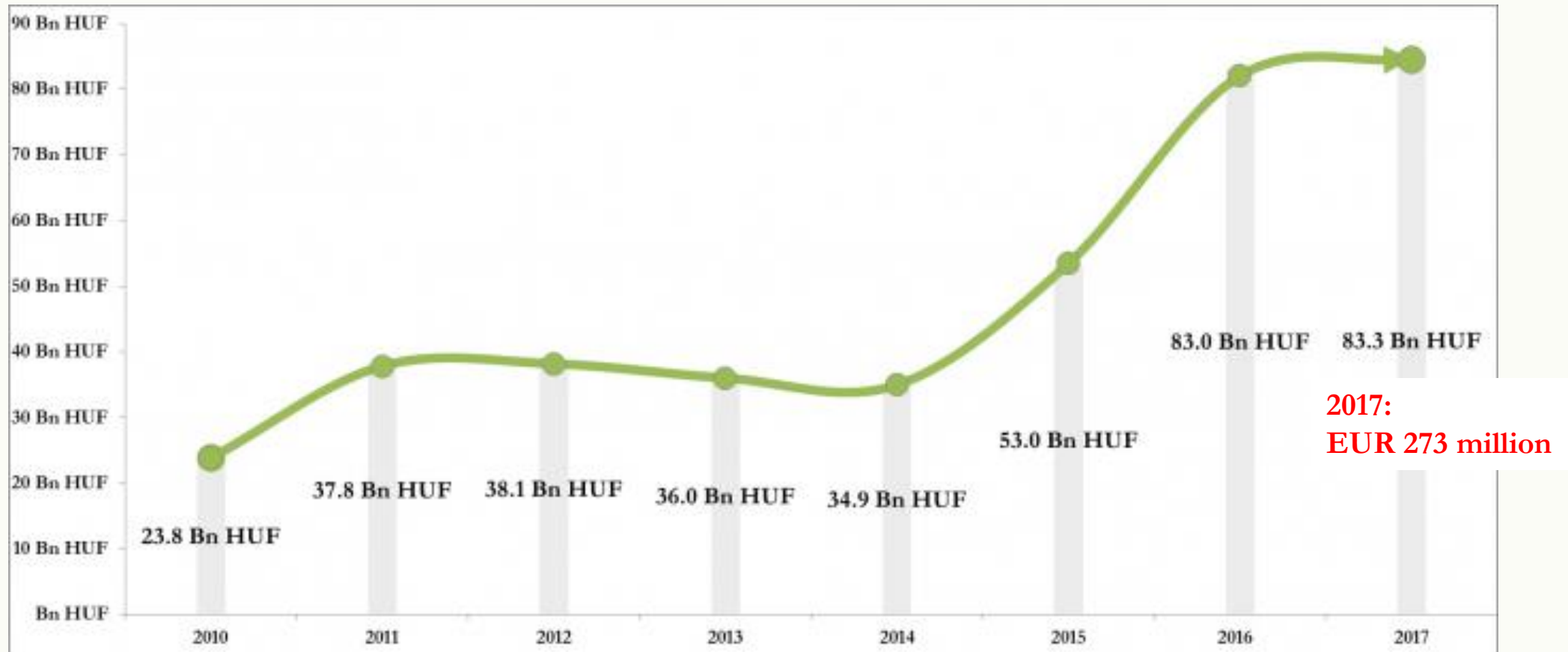
The complementary system of RDI funding



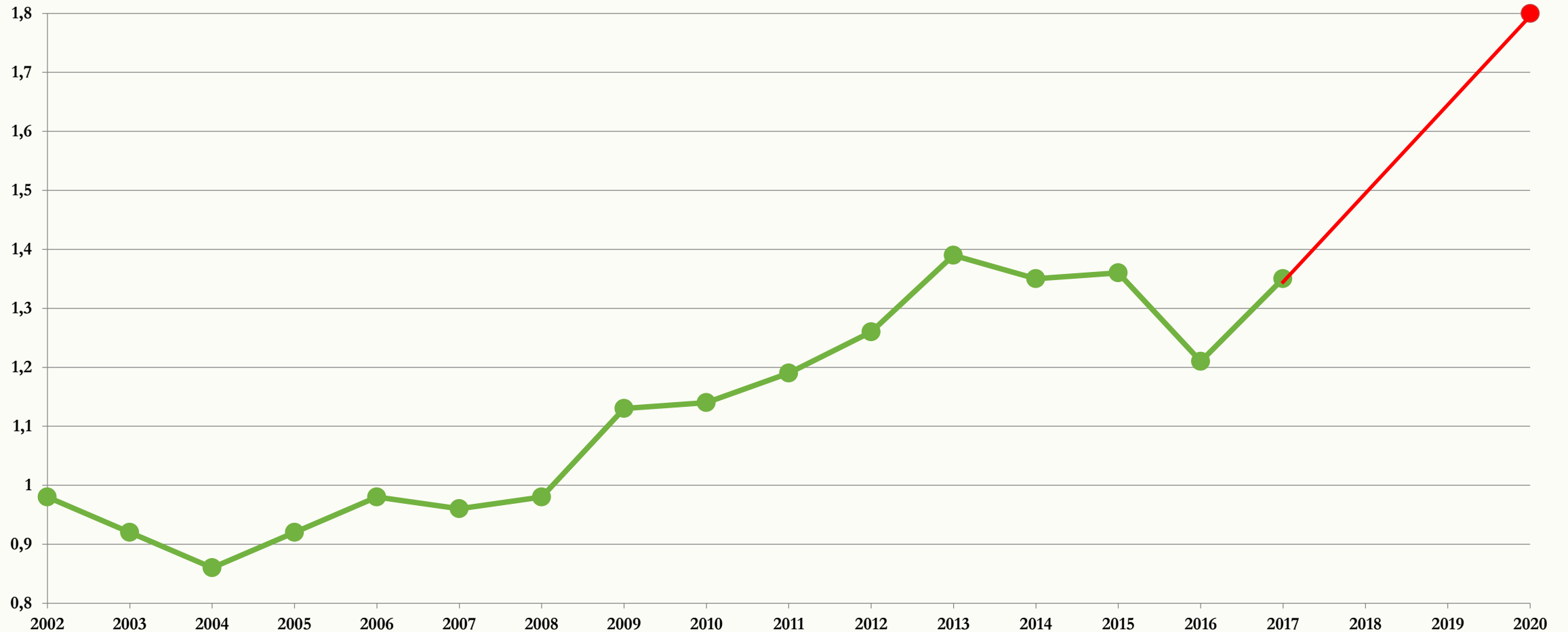
approx. HUF 750 bn between 2014 and 2020



RDI funding from the NRDI Fund



Expenditure on R&D relative to GDP (%)

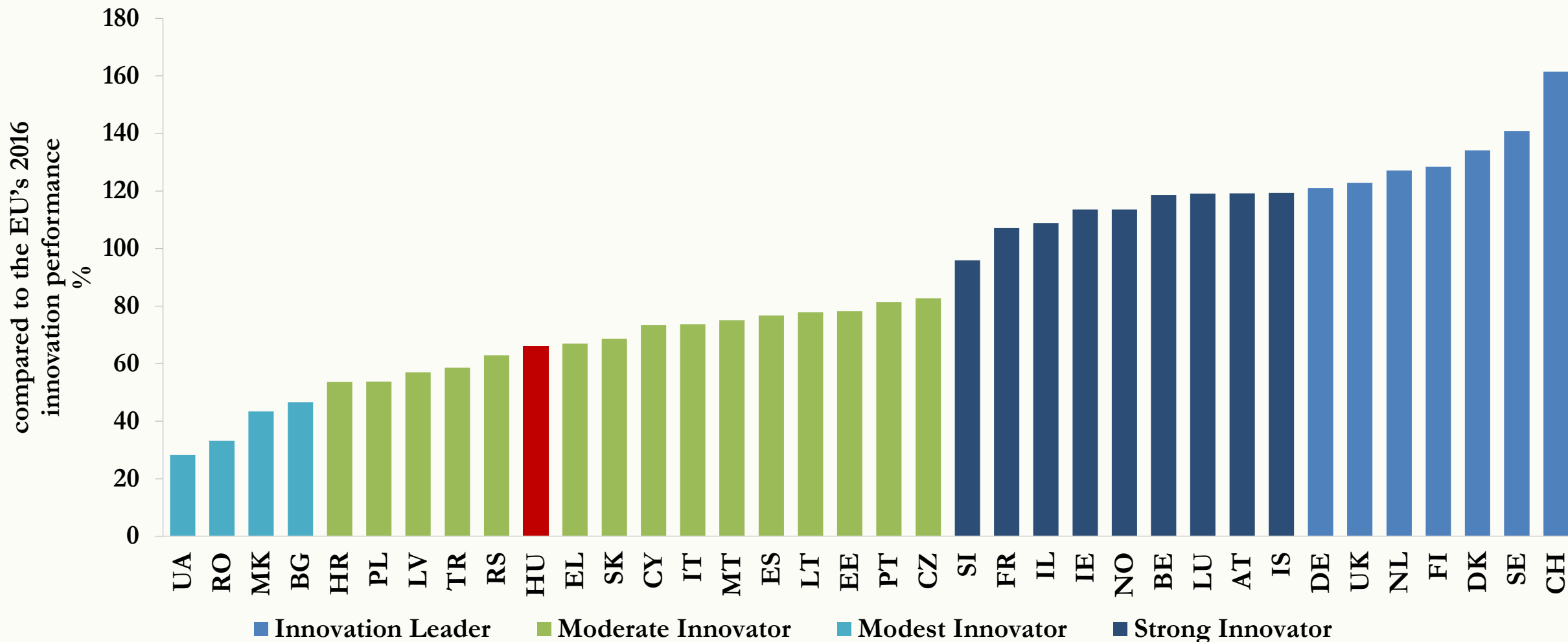


Source: CSO



NATIONAL RESEARCH, DEVELOPMENT
AND INNOVATION OFFICE
HUNGARY

European Innovation Scoreboard 2017



Main tasks of the National Research, Development and Innovation Office - in new role

**COMPETITIVE
FUNDING
(NRDI Fund)**

**STRATEGY
AND
PROGRAMME
PLANNING**

**INTER-
NATIONAL
AFFAIRS**

**H2020
PC & NCP**

SERVICES

**REPRESENTATION
IN INTER-
NATIONAL
ORGANIZATIONS**

**MONITORING
AND
EVALUATION**



Transformation of the government-funded research institute network

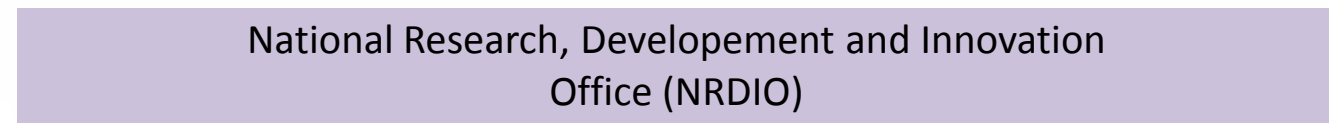
- Based on German model
- The organisational and financial background for discovery and applied research as well as economic knowledge services is to be separated
- More explicit division of tasks and responsibilities among HAS, ministerial research institute networks and universities
- Elimination of parallel structures
- Focusing on strengths
- Opportunities for specialisation
- Inspiration for cooperation



Structure of the new financial system



	Innovation Fund	Research Fund
Sources	<ul style="list-style-type: none"> • Entrepreneurial contribution • Governmental contribution 	<ul style="list-style-type: none"> • Budget allocation
RDI activity eligible for funding	<ul style="list-style-type: none"> • RDI resulting in new product and/or service 	<ul style="list-style-type: none"> • Scientific excellence • Thematic research • Institutional core funding
Categories of beneficiaries	<ul style="list-style-type: none"> • Entreprises • Universities and research institutions, in cooperation with enterprises 	<ul style="list-style-type: none"> • Research institutions (universities, state and private research institutes)



Main actors of the Hungarian research

Research Universities in Hungary



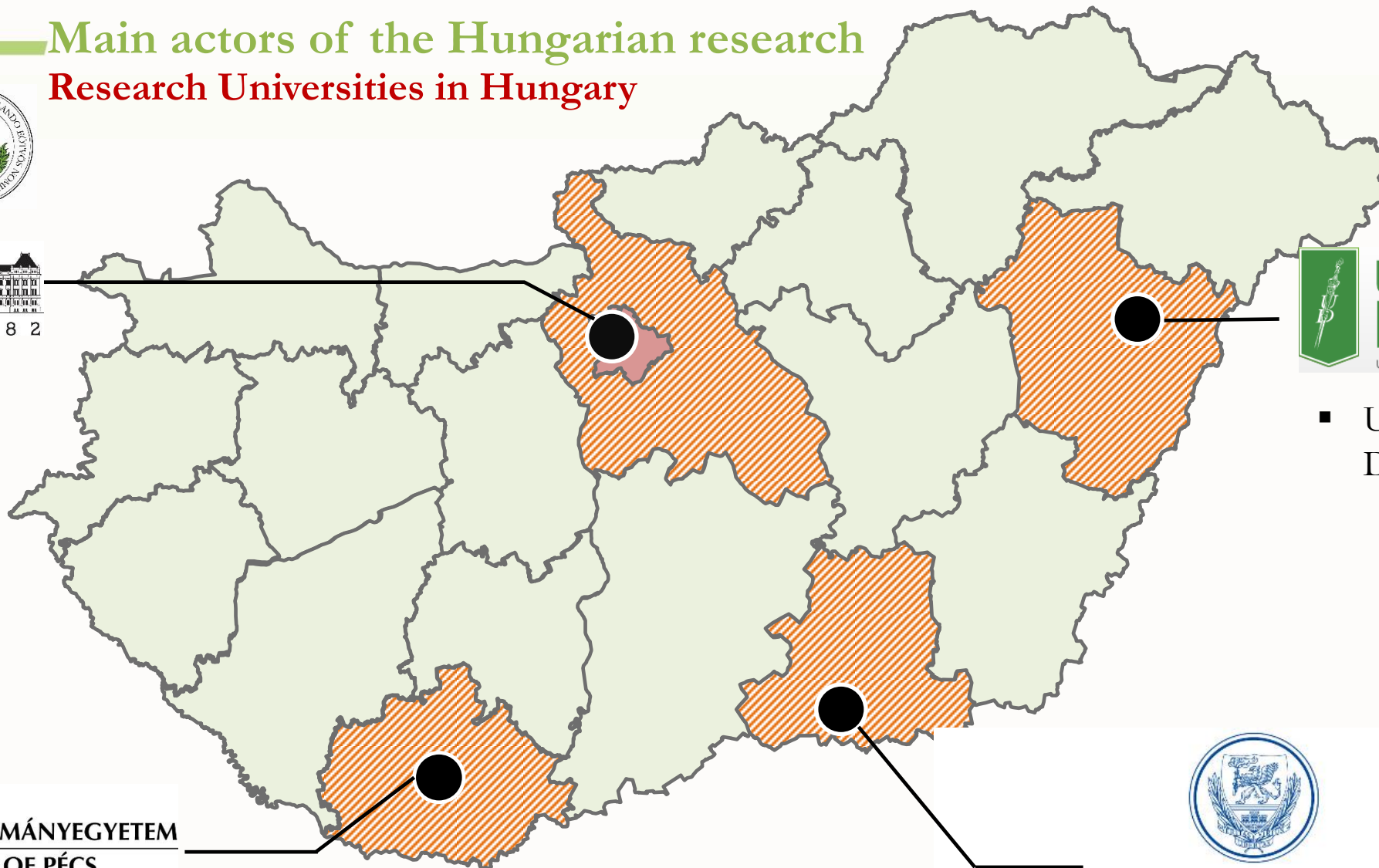
M Ű E G Y E T E M 1 7 8 2

- BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS
- EÖTVÖS LORÁND UNIVERSITY
- SEMMELWEIS UNIVERSITY



PÉCSI TUDOMÁNYEGYETEM
UNIVERSITY OF PÉCS

- UNIVERSITY OF PÉCS



- UNIVERSITY OF DEBRECEN



- UNIVERSITY OF SZEGED

BUDAPEST

- NATURAL SCIENCES
- SOCIAL SCIENCES
- HUMANITIES AND ARTS
- AGRICULTURAL SCIENCES
- ECONOMY AND REGIONAL STUDIES
- „WIGNER” PHYSICS
- ENERGY SCIENCE
- NEUROSCIENCE
- LINGUISTICS
- MATHEMATICS
- INFORMATICS

SOPRON

ASTRONOMY
AND EARTH
SCIENCE

TIHANY

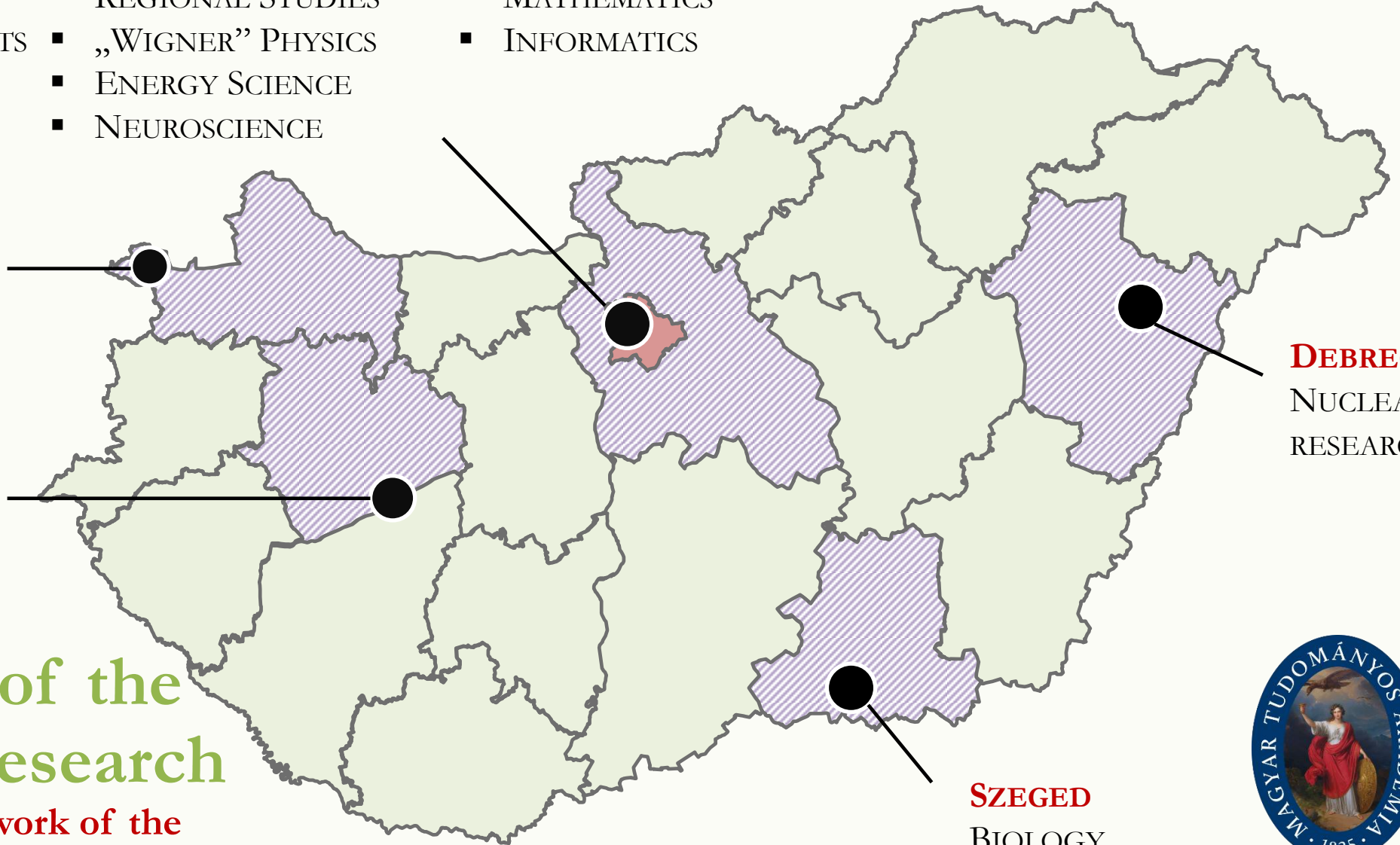
ECOLOGY

DEBRECEN

NUCLEAR
RESEARCH

SZEGED

BIOLOGY



Main actors of the Hungarian research

Research institute network of the Hungarian Academy of Sciences (HAS)

Support of research infrastructures (RI) in Hungary

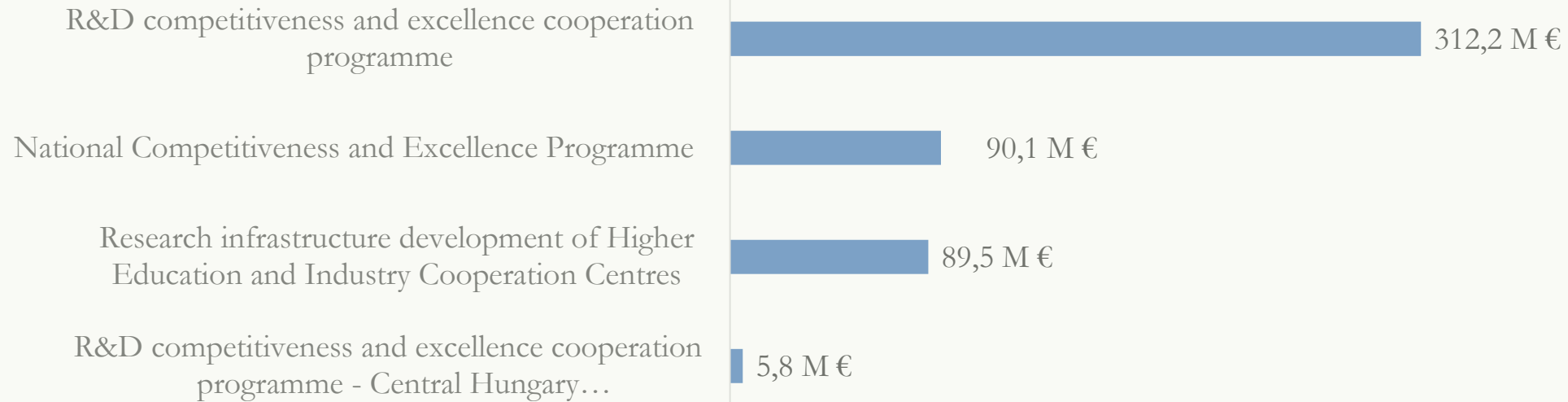
Expenditures:

- **International membership fees** spent on RIs: **~10 M€/2018**
(3,25 billion HUF/2018)
- **RI development projects** financed by
 - Cohesion Policy Instruments (SF)
 - National Research, Development and Innovation Fund (NRDI Fund)

> 615 M€/2015-2017 (> 200 billion HUF/2015-2017)



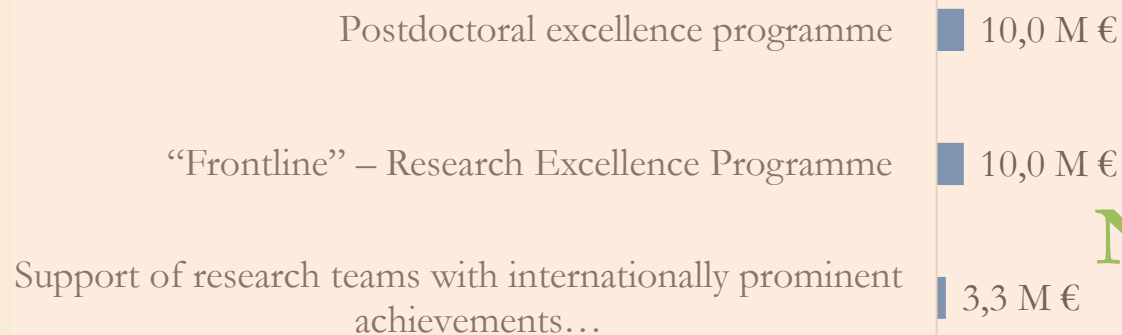
Knowledge Transfer



Research Infrastructures



Discovery research and Postdoctoral Programmes



Calls to promote excellence from the NRDI Fund (2015-2017)

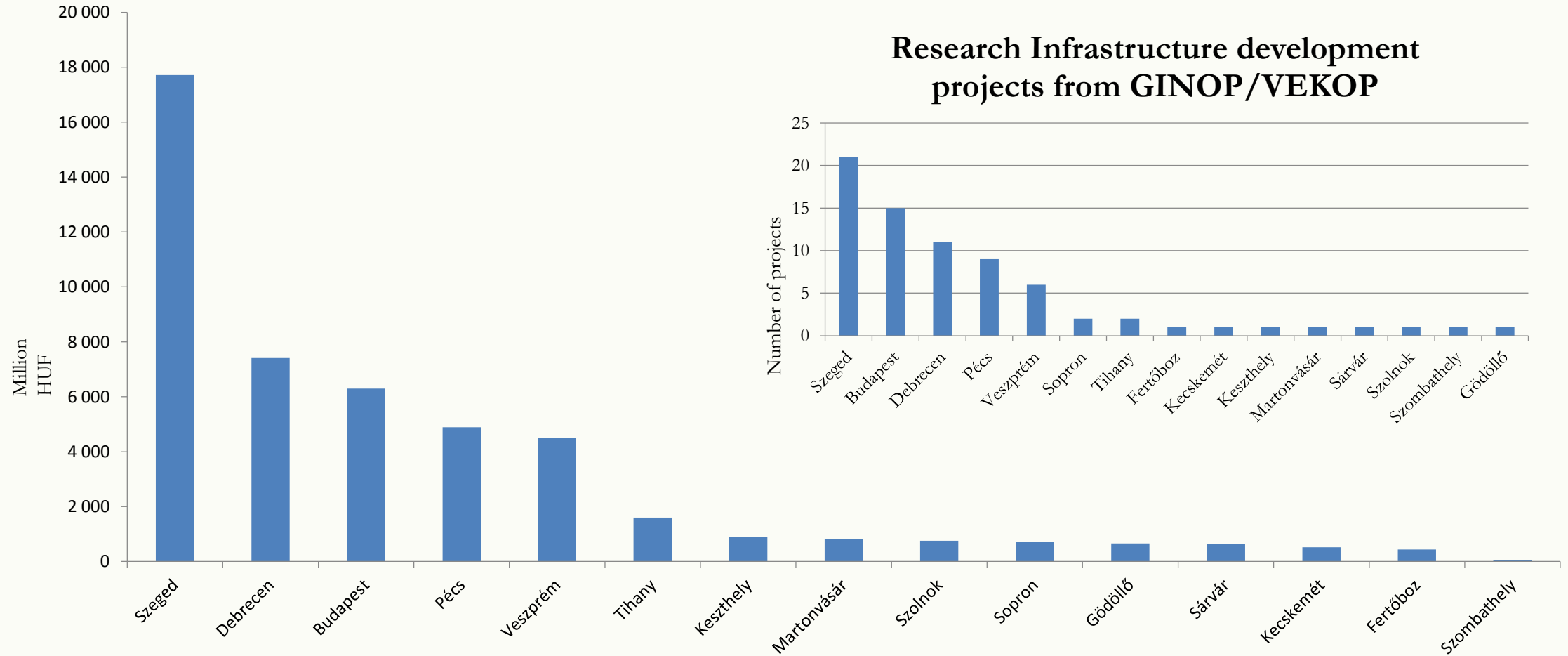
International RDI Cooperation



0,0 M € 100,0 M € 200,0 M € 300,0 M €

RI upgrades from the Structural Funds

Spent on new infrastructure projects (without ELI)



Status of National RI Roadmaps in 2017 november

- First roadmap edition 2005-2010
- Countries planning a national RI roadmap
- First RI roadmap edition 2011-2015
- No national RI roadmap

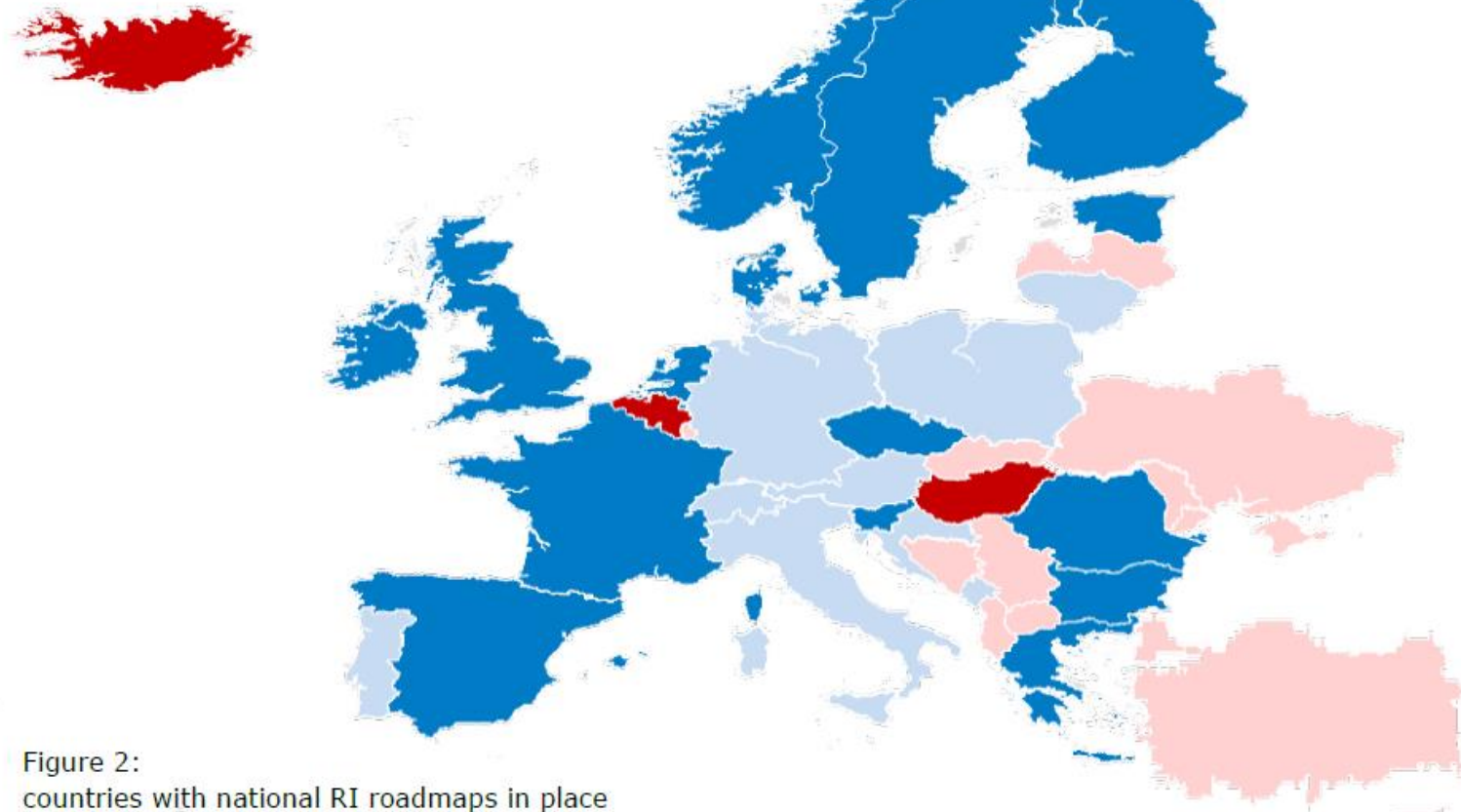



Figure 2:
countries with national RI roadmaps in place

Source: InRoad consultation, November 2017



Status of National RI Roadmaps in 2018

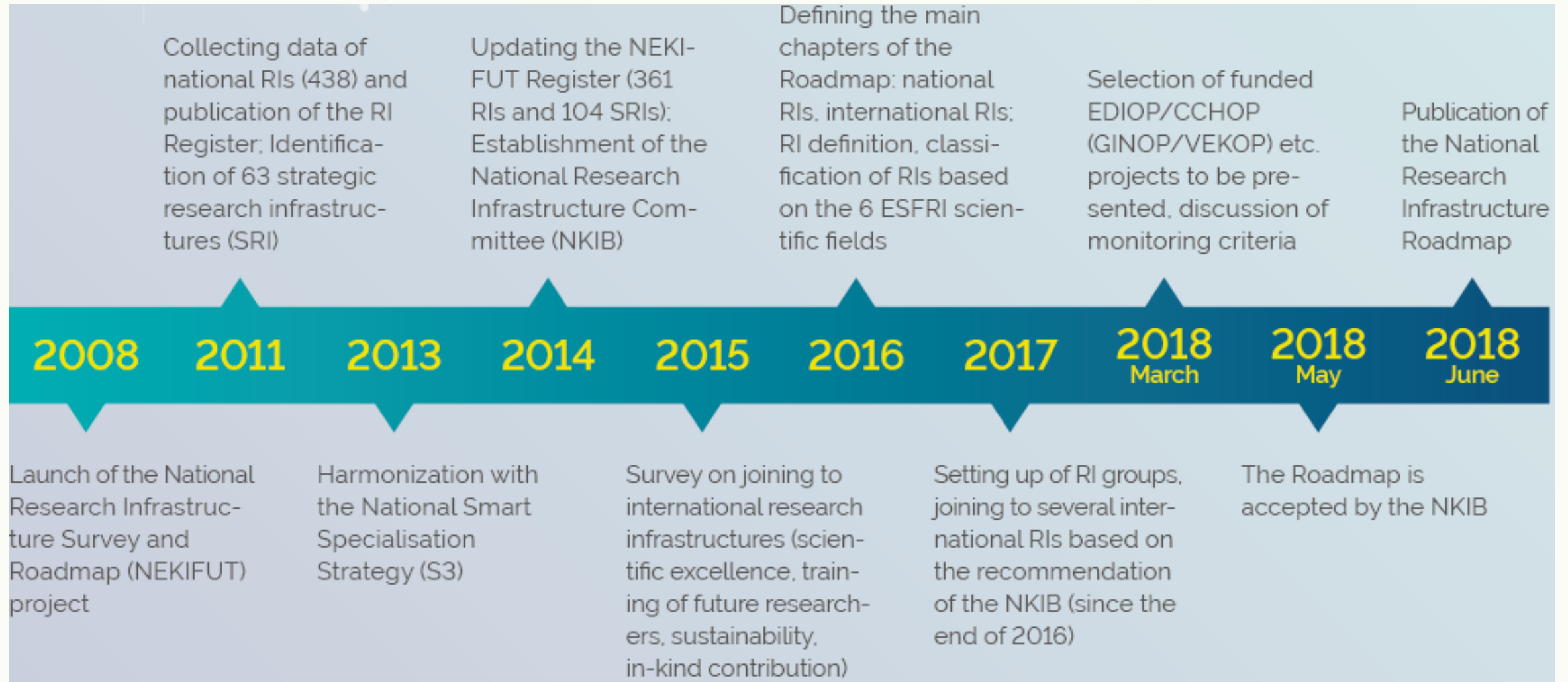
Hungary has published the national roadmap in June 2018

Status		Country
Under preparation		Belgium Cyprus Hungary
No roadmap available		Iceland Latvia Luxembourg Malta Slovak Republic Turkey

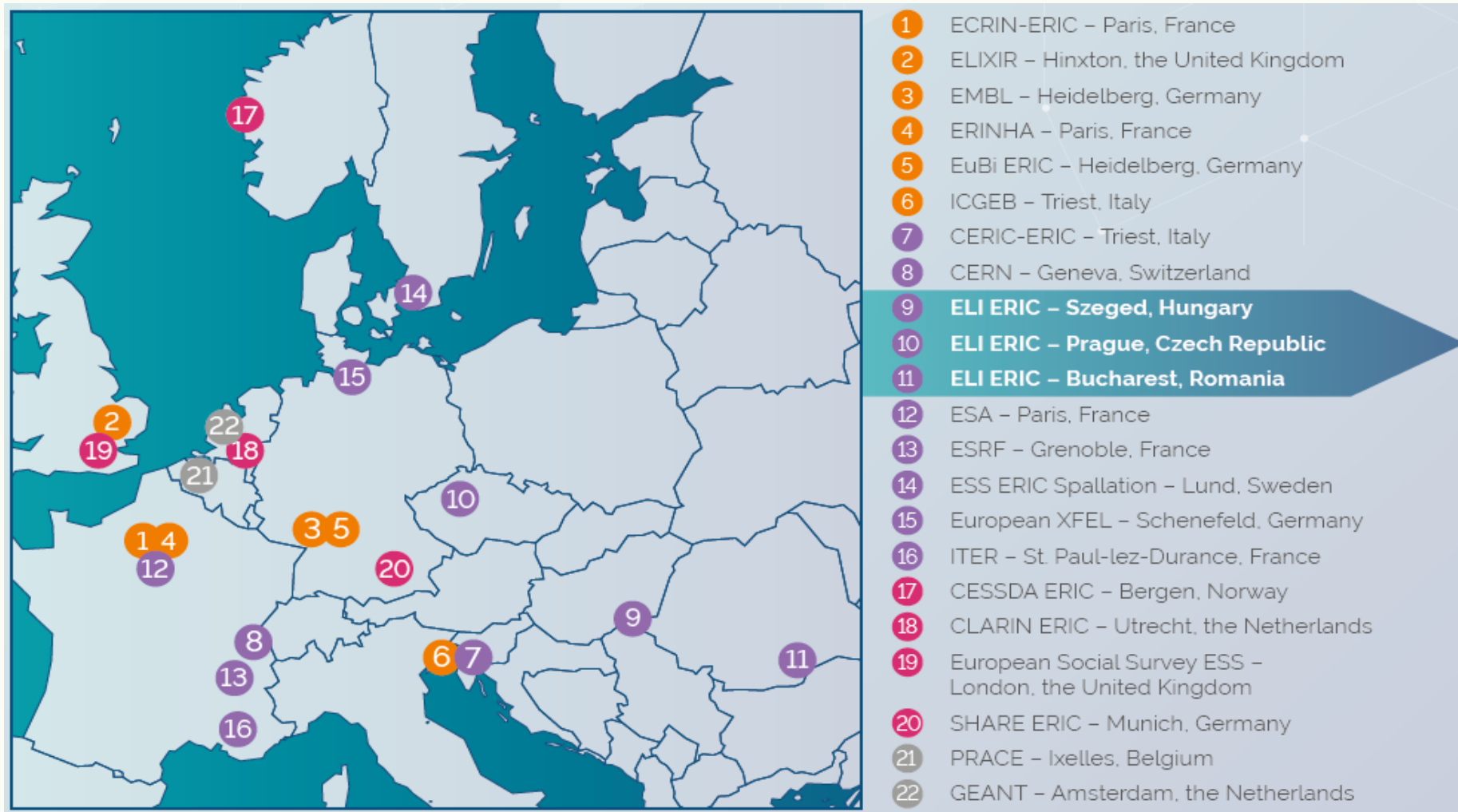
Source: <http://www.esfri.eu/national-roadmaps>, 2018 May



Preparation of the National RI Roadmap



Hungary's membership in European RIs

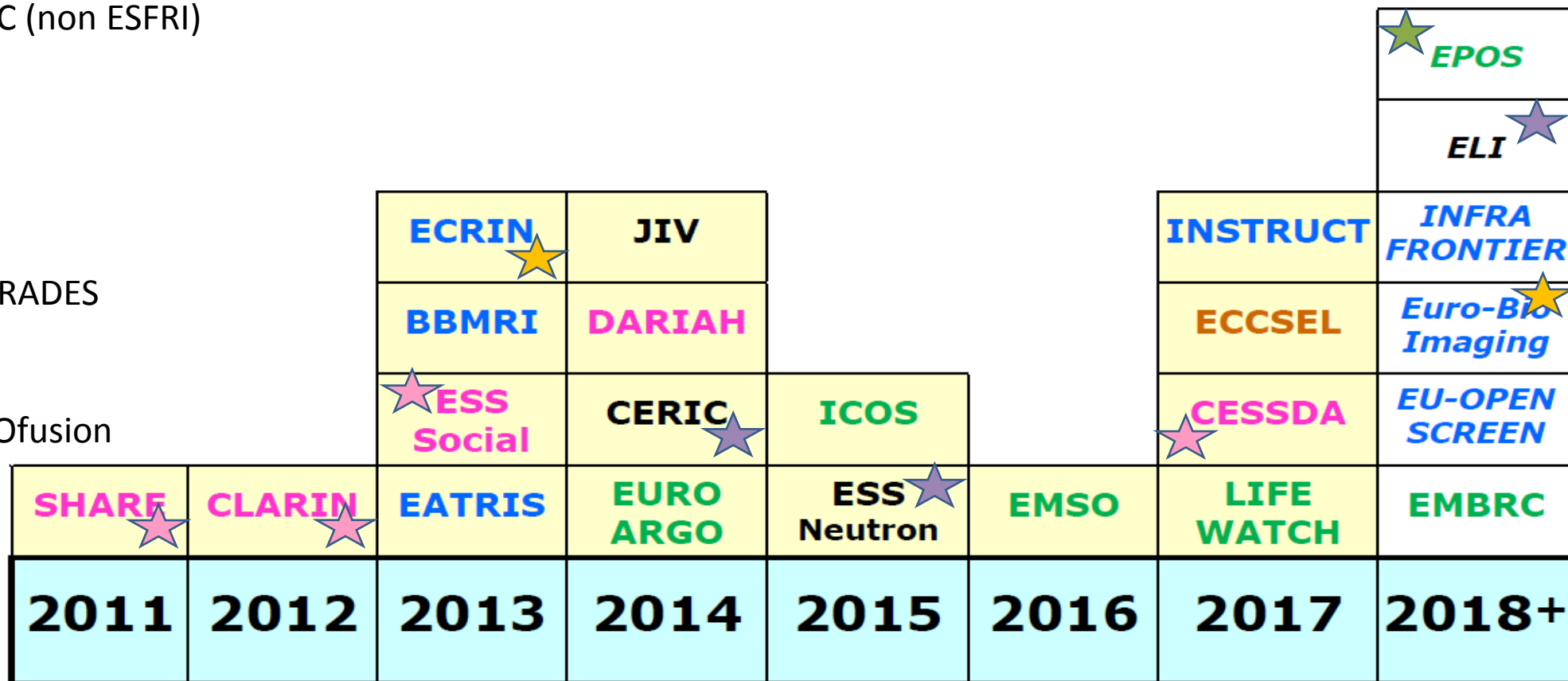


New ERICS in the EU from 2011

HU participation in ERICs (10) ☆

Other related HU memberships:

- CERIC-ERIC (non ESFRI)
- CERN
- ELIXIR
- EMBL
- ERINHA
- ESA
- ESRF UPGRADES
- GEANT
- ICGEB
- ITER/EUROfusion
- PRACE
- XFEL



Source: EC DG RTD Directorate B, B.4 – Research infrastructure, Feb 9, 2018



The Goal, Role & Function of the National Roadmap

- **map** the major domestic RIs in Hungary
- **present the excellence** of domestic research communities
- **provide guidance** for domestic research communities on professional opportunities & requirements
- **set realistic goals** and formulate recommendations for domestic R&D
- **ensure the professional background** in strategic issues & decisions connecting to RIs
- **facilitate communication** with a wider audience.

The national roadmap provides a comprehensive **insight** for different target groups into the trends of capacities & **actual situations** with regard to prominent RIs, and **create a professional background material** for devising future RI development goals.



Definition & Types of RIs in the Hungarian Roadmap

Definition

- *The set of thematically compatible **equipment, laboratories, databanks, information systems**, as well as associated **human resources** (beyond research resources incl. operation, maintenance & management capacities), expertise, complemented by **services** supporting research activities that form a single unit. These are necessary for conducting high-quality and internationally competitive research activities.*

Types of RIs in Hungary by their physical appearance:

- **large-scale RIs**
physically operating partly in Hungary (e.g. the ELI-ALPS, a distributed RI)
- **physically operating outside of Hungary with Hungarian users' access**
in a single establishment, distributed and/or virtual RI (e.g. the HL-LHC, European XFEL, ESS-ERIC, etc.)
- **physically operating in Hungary**
in a single site or as parts of a network, are not unique, and provide access to domestic and/or foreign researchers.



Forming of RI groups

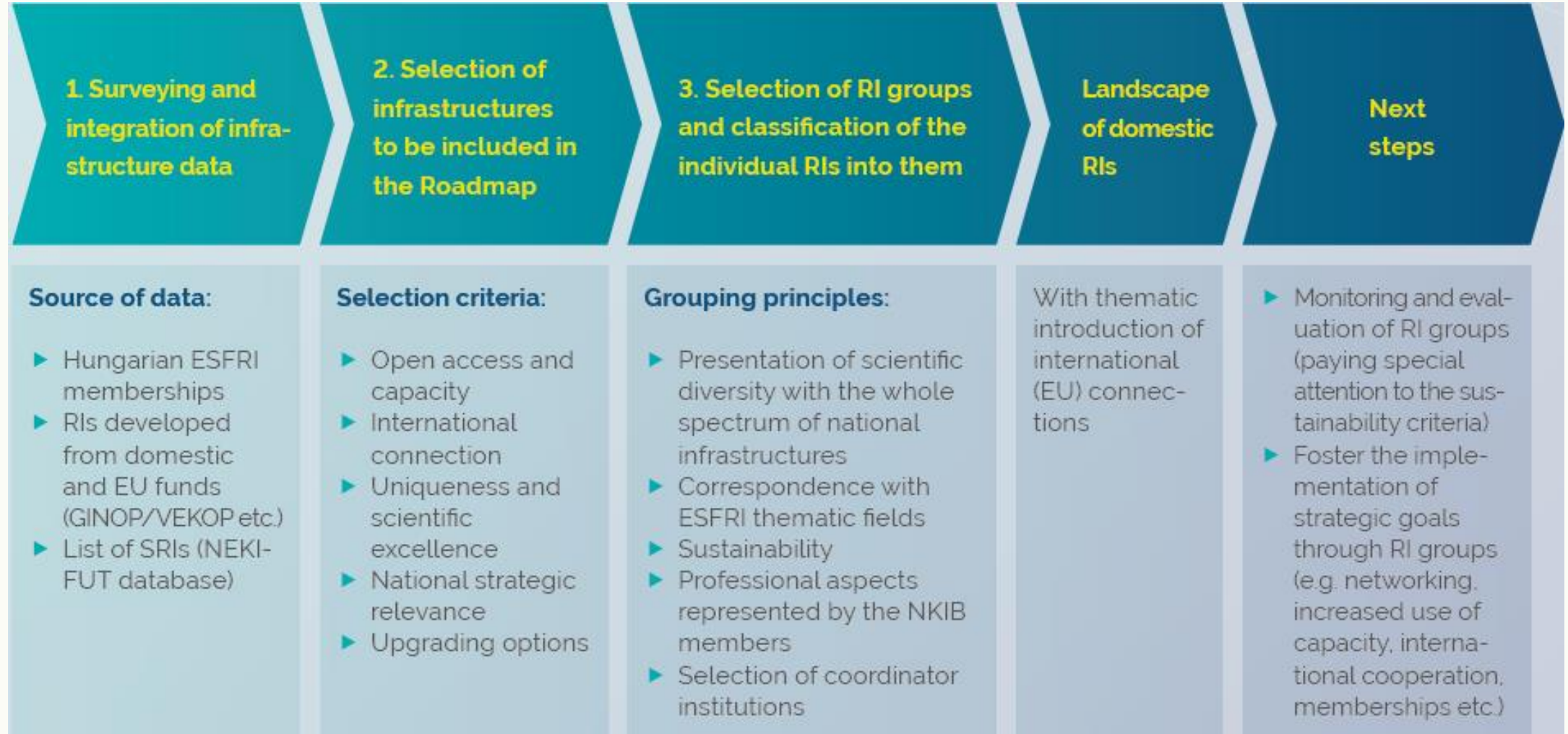
The Hungarian Roadmap presents **groups of RIs** (not single RIs) according to the ESFRI thematic areas.

Reasons:

- Hungary-based RIs are mainly **non-unique** (similar RIs can be found in Europe).
- The groups of RIs can provide an **essential professional background for Hungary** to become an integral part of the international research community, enabling them to connect to large-scale unique RIs at a European level.
- Forming groups (networks) of RIs **can foster co-operation among Hungary-based RIs**, enhancing the professional efficiency and international prestige and competitiveness of Hungarian research groups in a given area.



Methodology of creating the RI groups for the Roadmap



NATIONAL RESEARCH INFRASTRUCTURE ROADMAP

Main elements of the Roadmap (- in 10 chapters, ~85 pages),

- 23 International RI memberships (16 ESFRI, 10 ERIC)

Energy (0)
Environment (2)
Health & Food (5)
Physical Science & Engineering (9)
Social & Cultural Innovation (5)
E-RI (2)

ELI-ALPS introduced separately

- 26 infrastructure groups

- 16 recently funded RI developments (projects)

- monitoring, evaluation, directions and strategic objectives of future developments



NATIONAL RESEARCH INFRASTRUCTURE ROADMAP

Introduction of 26 RI groups

Short description each of the scientific field related to RIs

Energy (1)

Environment & Agriculture (4)

Health & Food (6)

Physical Science & Engineering (8 +ELI-ALPS)

Social & Cultural Innovation (4)

E-RI (2)

INFORMATION given on the RI groups:

- **Introduction of the RI group**
- **Background information**
- **Aim of the RI group**
- Coordinator of the RI group (name, e-mail, website)
- Partners
- ESFRI connection
- Status of the RI group



NATIONAL RESEARCH INFRASTRUCTURE ROADMAP

Introduction of 16 RI development projects

Energy (2)
Environment & Agriculture (3)
Health & Food (4)
Physical Science & Engineering (3)
Social & Cultural Innovation (2)
E-RI (2)

INFORMATION given on the projects:

- **Introduction of the project**
- **Physical and technical characteristics of the RI**
- Project funding No.
- Lead institution
- Project leader (name, e-mail, website)
- Funding grant
- Type of the RI



NATIONAL RESEARCH INFRASTRUCTURE ROADMAP

Monitoring & Evaluation

Reasoning

on-going inventory needed, follow-up of changes, running costs and financing, monitor the national needs and international trends, benefits of international RI memberships

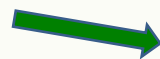
Dimensions

1. ELI
2. international memberships
3. national RIs

Policy indicators



international memberships (e.g. co-operation, knowledge building)



national RIs (e.g. sustainability, social & economic impact, innov. pot.)

No detailed set of monitoring indicators given



Participation of Hungary in ELI

ELI-DC

Brussels

The consortium that is responsible for the coordination of the three research centres during implementation

ELI-ALPS

Szeged

Hungary

ultrashort laser pulses at high repetition rate

ELI-BL

Dolny Brezany

Czech Republic

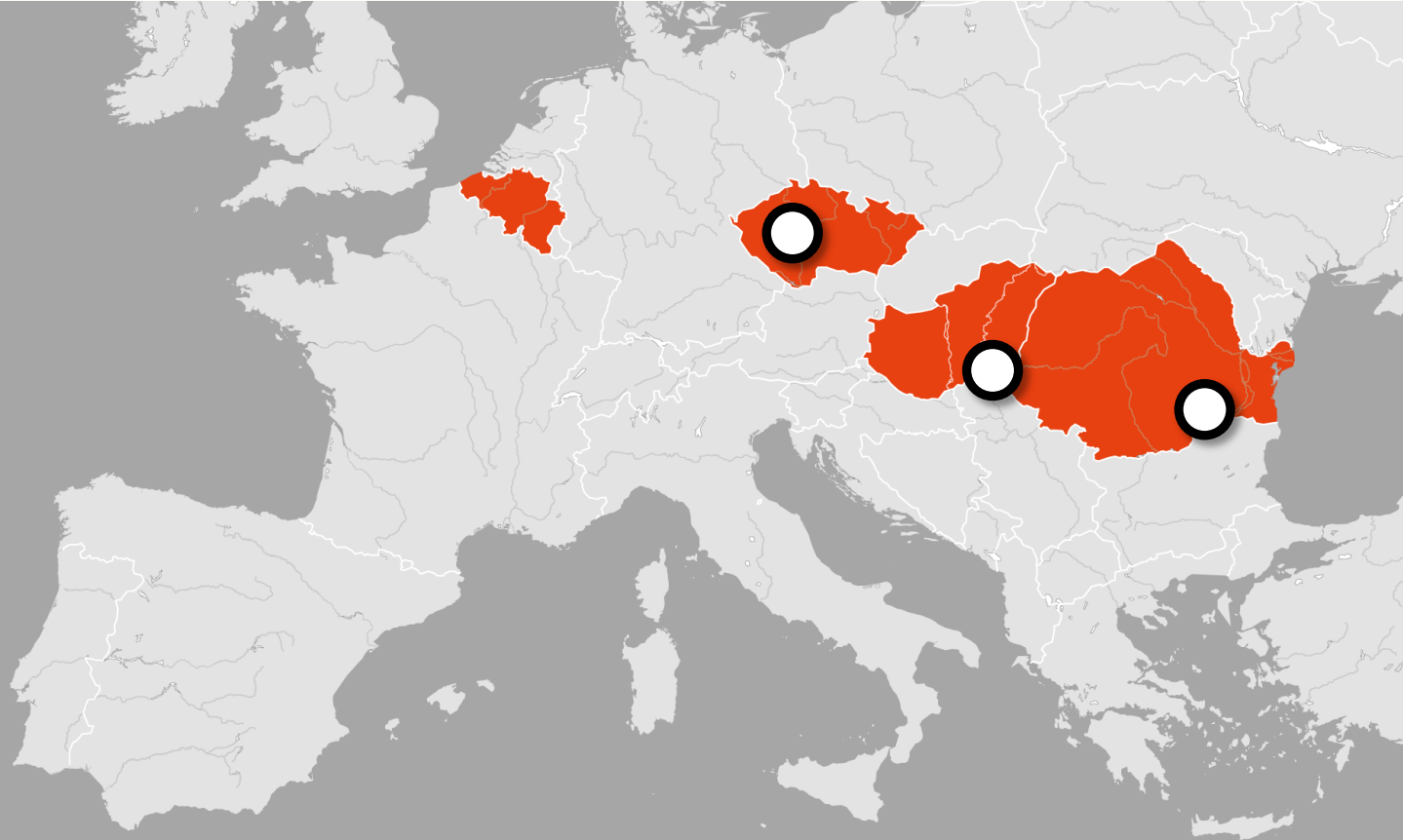
ultrashort x-ray generation, particle acceleration

ELI-NP

Magurele

Romania

ultra-intense optical and gamma ray pulses



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www.nkfi.gov.hu/english



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