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EXECUTIVE AGENCY "OPERATIONAL PROGRAMME  
SCIENCE AND EDUCATION FOR SMART GROWTH"



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# National context for creation and functioning of the CoEs and CoCs



21 November 2019  
Arena di Serdica Hotel, Sofia



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## GENERAL INFORMATION

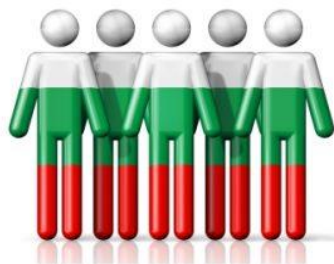


- In 681 Bulgaria was founded
- In 865 Bulgaria accepted Christianity
- In 863 the Cyrillic alphabet was created by the brothers Cyril and Metodii
- In 1393 Occupied by the Ottomans and under Turkish rule for the next 500 years
- In 1878 Bulgaria got its liberation
- In 1944 the Soviet union Red Army entered Bulgaria
- In 1989 A transition from a single-party republic to a parliamentary democracy
- Area: 110,879 sq. km



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## DEMOGRAPHIC CRISIS

- Demographic crisis is capable of destroying any potential for a better future
- Bulgaria's population is decreasing with one of the fastest and most threatening rates in Europe
- Population in 1989: 8,897,543 vs. 7,000,119 people (in 2019) 2,000, 000 in Sofia
- 2050 is expected 5.5 million and in 2100 – about 3.8 million

## ... AND A BRIAN DRAIN

- 2.5-3 million people left since 1989: 26% of the immigrants are with high education
- 150 university professors in physics work now in American Universities
- Between 2006 - 2018 BAS researchers declined by 30.15% (3675 now are 2567)
- Young researchers (BAS) were 1789 vs. 1216 (shrinking by 32%)
- In 2006 PhD students (BAS) were 681 vs. 438 (down 35.7%)







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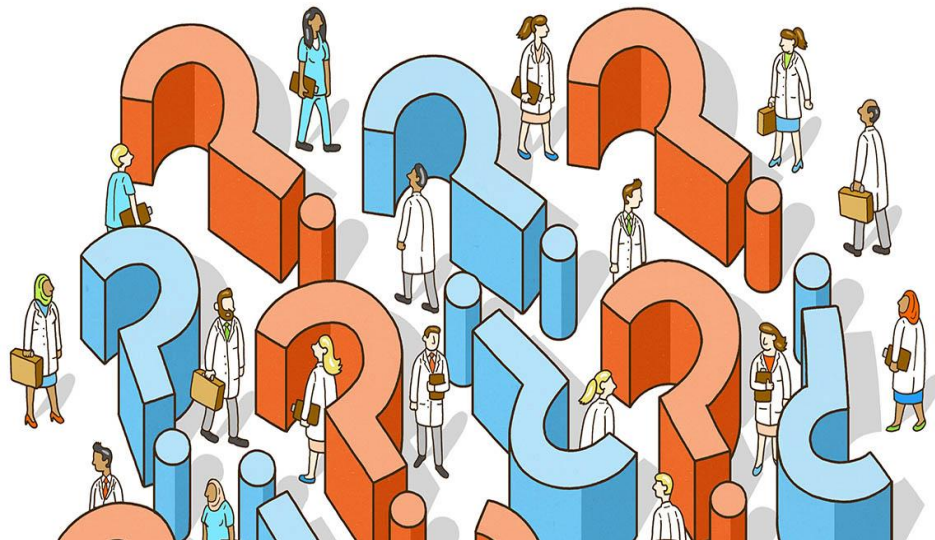
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## WHERE IS BULGARIA?

- # 28 in EU (2019) by average salary (€586 vs. €470 professor in BAS)
- Average salary in EU is €1,644 (2019)
- # 57 investments in R&D (0.65% of GDP)
- # 55 in the SCimago Journal & Country Rank (Scopus® database)
- 66 % of the state subsidy of BAS (€47 millions) goes for wages
- 1300 researchers will get retired in the next 3 years
- Number of universities in Bulgaria is 50 (2019) vs. 20 (1944-1989)
- Only 1 BG university is among the World Top 1000 University Ranking
- Lack of interest in fundamental research
- Limited interest in applied sciences
- Low labor productivity
- Low share of high-tech production

➡ **LOW COMPETITIVE ADVANTAGE**





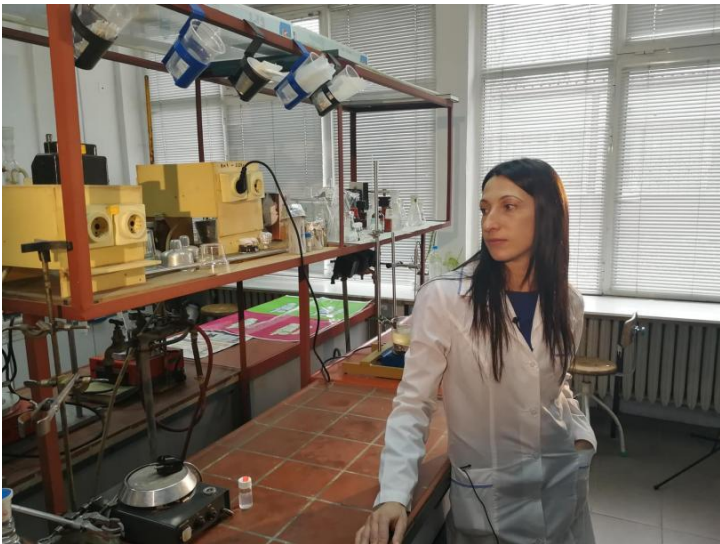


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# WHERE IS THE PROBLEM?





## POLICY MAKING BODIES

National Assembly

Council of Ministers

Ministry of Economy

Ministry of Education and Science

National Innovation Fund

OPIC

National Science  
Fund

OP SESG





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## NATIONAL LEGISLATION

- 1) Higher Education Act**
- 2) Scientific Research Promotion Act**
- 3) Development of Academic Staff in the Republic of Bulgaria Act**
- 4) Bulgarian Academy of Sciences Act**
- 5) Agricultural Academy Act**

Research, higher education and doctoral training are also eligible for organizations created by other types of law:

**6) Medical-Treatment Facilities Act, Cultural Heritage Act, Protection and Promotion of Culture Act, Public Libraries Act, Bulgarian Food Safety Agency Act, Administration Act.**

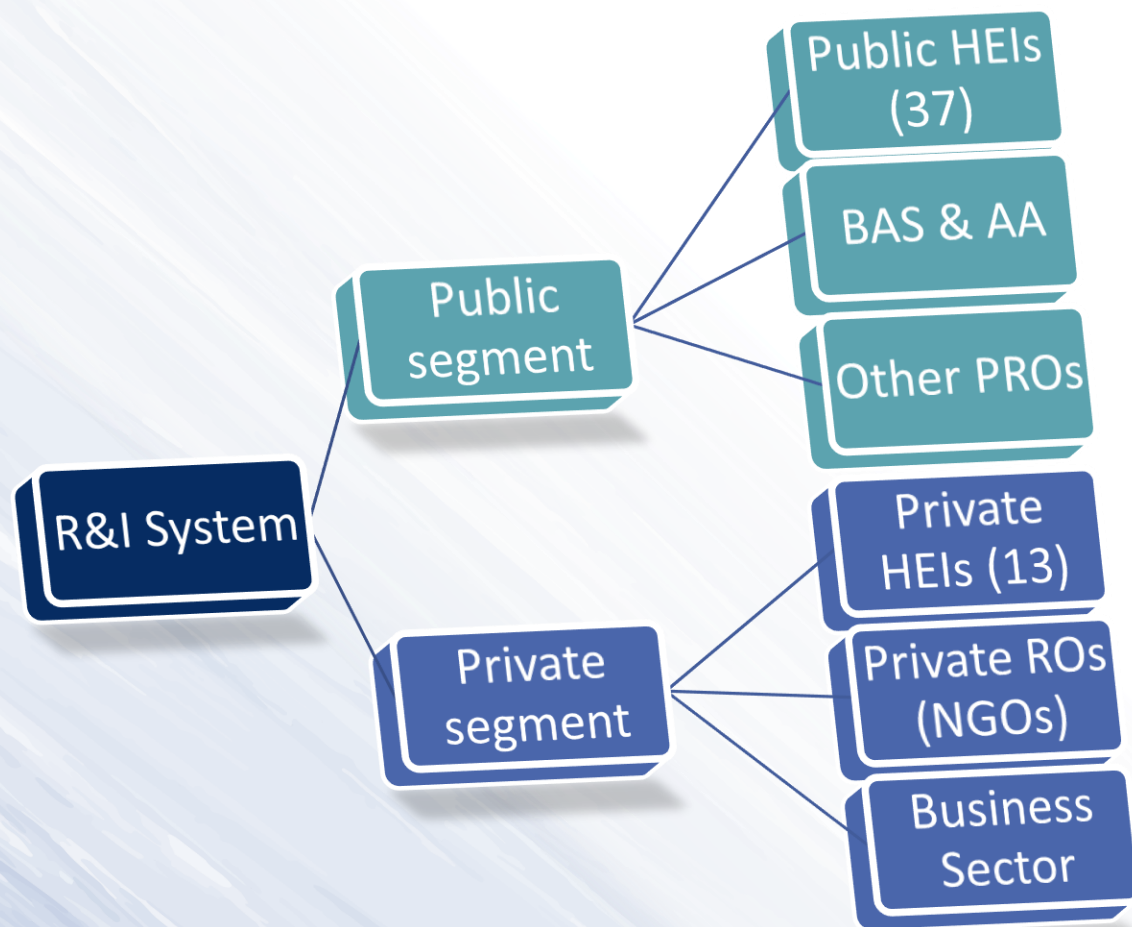
**7) Research activities may also be carried out by legal persons registered under the Commercial Act or under the Non-Profit Legal Entities Act**







## R&D&I system segments in Bulgaria



- not very well integrated public and private segments
- highly centralized system (regulation and control)
- MES – oriented towards public sector
- ME – oriented towards private sector
- policies are devised and implemented separately
- funding and support – depend on the type of beneficiary not the R&D field or opportunities for joint projects



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# FUNDING - ‘DUAL-SUPPORT’ SYSTEM FOR RESEARCH

## COMPETITIVE (PROJECT) FUNDING

The National  
Science Fund  
providing national  
funding (governed  
and functioning  
under the *Scientific  
Research  
Promotion Act*)

OP SESG  
OP IC

The EU  
research  
funding  
programmes

Block funding -  
infrastructure,  
equipment,  
salaries

BAS -institutional  
funding defined  
annually by the  
parliament in the  
Budget Law, and  
the MES acting as  
an intermediary  
without  
supervisory power

The Agricultural  
Academy is  
funded from the  
state budget  
through the  
Ministry of  
Agriculture,  
Food and  
Forestry



## **COUNCIL RECOMMENDATION of 13/07/2018 on the 2018 National Reform Programme of Bulgaria and delivering a Council opinion on the 2018 Convergence Programme of Bulgaria (2018/C 320/02)**

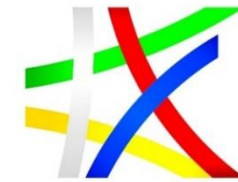
- structural shortcomings and high fragmentation in the research
  - the level of public and business spending on R & D is particularly low
  - the sluggish reforms hinder the move towards an innovation-oriented system
  - many universities and research institutes, but only a few are producing high-quality scientific output
  - commercialisation of research remains a major weakness
  - public-private cooperation in research and development is weak.
- !!! structural transformation, combined with effective governance and a stable level of public research and innovation resources, can maximize the impact on productivity and growth and can support the transition of the economy to higher value added activities in line with the smart specialisation strategy.**





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# Making the Research and Innovations a National Priority

Bulgaria a country with  
a high standard of living  
and a competitive economy by 2030?(!)

**MISSION:**  
**IMPOSSIBLE**





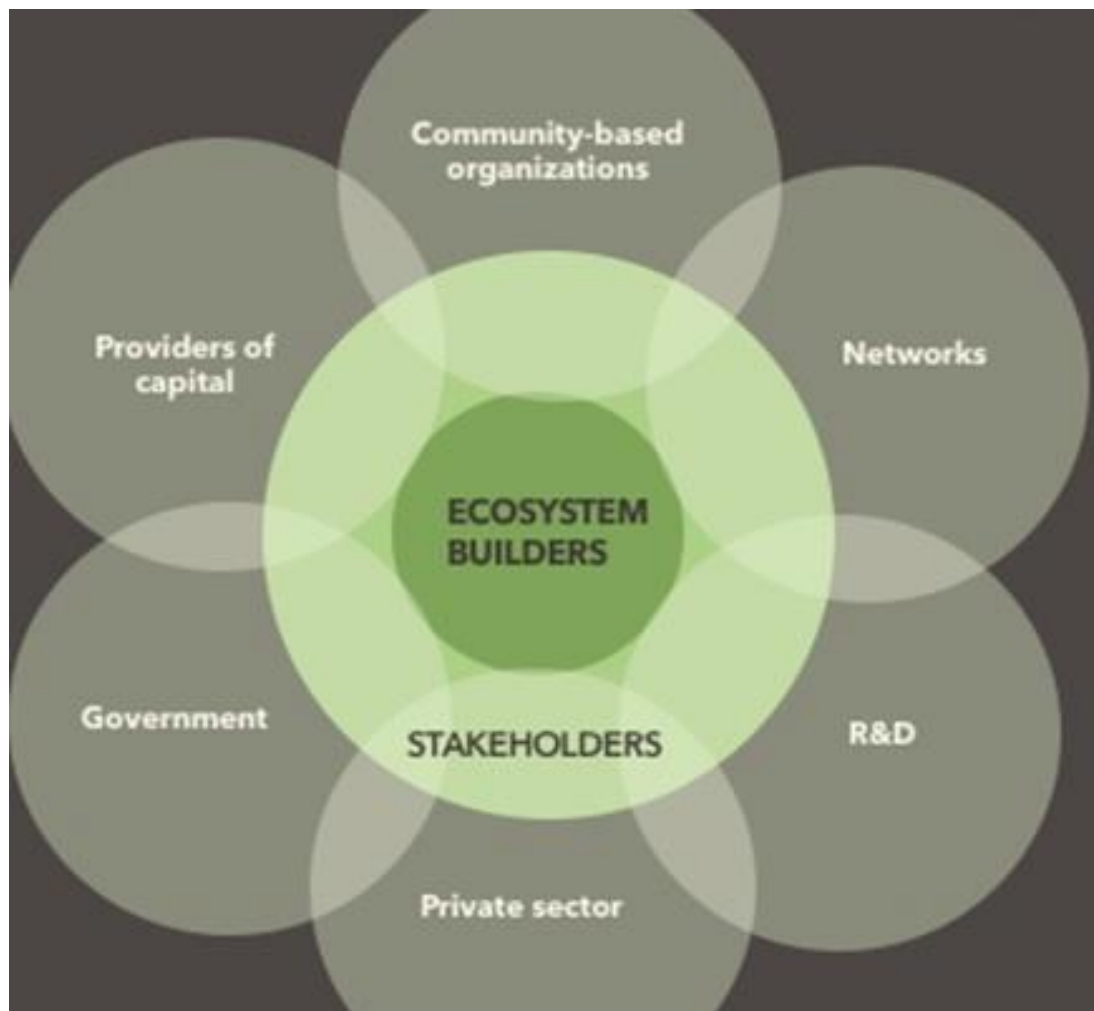
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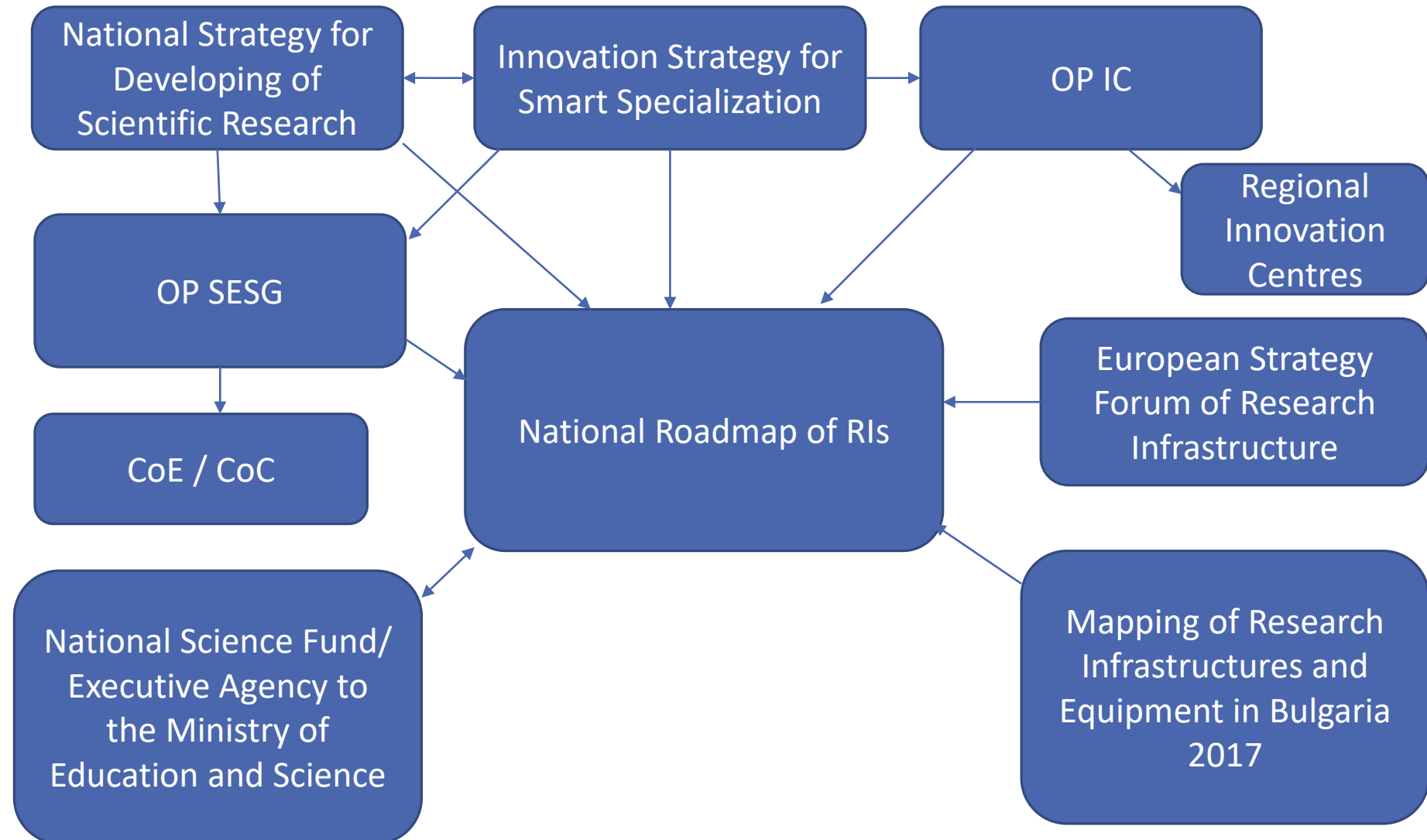
# THE CHALLENGE OF BUILDING AND MAINTAINING OF INNOVATION ECOSYSTEM





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## National Roadmap of RIs 2017 -2023

Scientific research in the country requires building and effective use of modern and sustainably maintained research infrastructure.

The following principles are laid down:

- ✓ Avoid duplication of unique and expensive research equipment
- ✓ Ensure high workload of the research infrastructure and access of interested users
- ✓ Maintain the available infrastructure in a good working condition
- ✓ Provide balanced allocation of RI by institutions and regions
- ✓ Ensure Pan-European RI integration

Improving the infrastructure would significantly increase the opportunities for Bulgarian scientists to conduct high quality research and would directly support the development of high-tech industry in the Republic of Bulgaria.





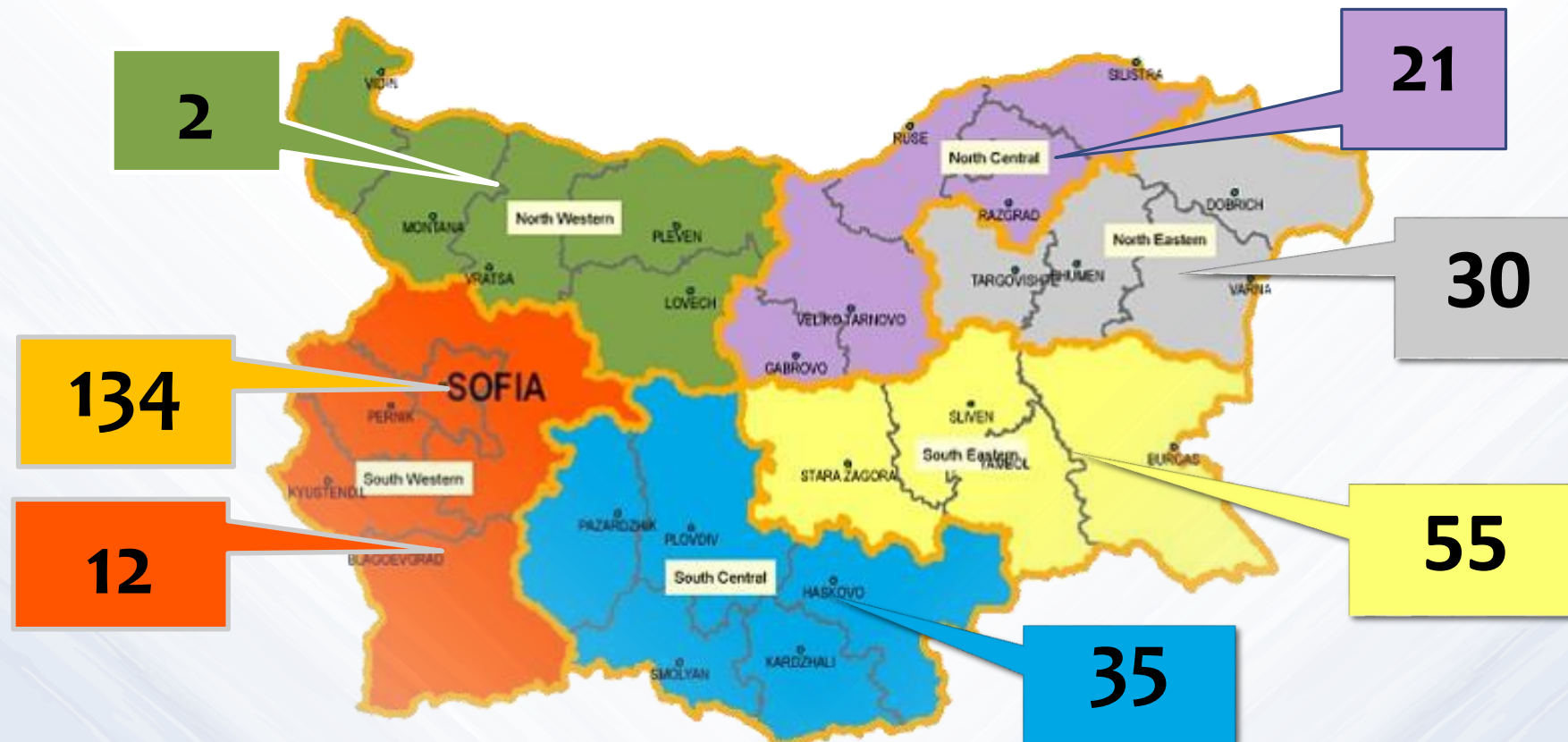
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## MAPPING OF RESEARCH INFRASTRUCTURES



TOTAL OF 289 RESEARCH INFRASTRUCTURES, 2017



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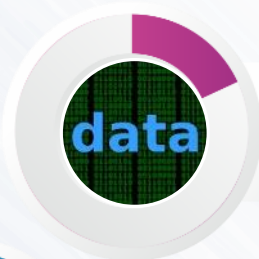
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### THE BULGARIAN INNOVATION STRATEGY FOR SMART SPECIALISATION (ISSS)

#### 4 THEMATIC AREAS



**Mechatronics and clean technologies**



**Informatics and ICT**



**Healthy life industry and biotechnologies**



**New technologies in creative and recreational industries**





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# National Strategy for Developing of Scientific Research 2017 - 2030

## Main instruments:

- ➡ OP Science and Education for Smart Growth
- ➡ OP Innovation and Competitiveness

## Key principles:

- ➡ Develop a critical mass of research infrastructure investment
- ➡ Provide a ground for competitive calls
- ➡ Introduce international peer evaluation
- ➡ Long-term sustainability including through the capacity to cooperate with businesses and to attract private investments



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# SCIENCE AND EDUCATION FOR SMART GROWTH OPERATIONAL PROGRAMME

### PRIORITY AXIS

**No. 1 Research and  
Technological Development**



**Centres of Competence  
Centres of Excellence**

### PRIORITY AXIS

**No. 2 Education and Lifelong  
Learning**



**School education  
Higher education  
Vocational education**

### PRIORITY AXIS

**No. 3 Educational environment  
for active social inclusion**



**Active Inclusion  
Socio-economic integration**

### PRIORITY AXIS

**No. 4 Technical Assistance**



**Technical  
Assistance**



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### PRIORITY AXIS 1 OF SESG OP 2014-2020

TOTAL BUDGET  
1 271 383 550  
BGN

- **INCREASE THE INVESTMENT IN R&D AND INNOVATION TO 1.5% OF GDP**

BUDGET OF PA 1  
460 014 274 BGN  
ERDF & NB

- **MARKET-ORIENTED RESEARCH FOR INCREASED INNOVATION CAPACITY**
- **INVESTMENT IN ADVANCED RESEARCH INFRASTRUCTURES AND EQUIPMENT**

BUDGET OF  
350 000 000 BGN  
FOR CoE/ CoC

- **CONNECTIVITY AND INTERACTION BETWEEN R&D CENTRES, SCHOOLS OF HIGHER EDUCATION AND BUSINESSES**
- **BUSINESS INVESTMENT IN R&D**
- **CREATION OF NETWORKS AND CLUSTERS**





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## CREATION AND DEVELOPMENT OF CENTERS OF EXCELLENCE (CoE) AND CENTERS OF COMPETENCE (CoC)

- to improve the capacity for research excellence
- to improve significantly the potential for applied research, experimental development and innovations

- to increase the scientific impact of the Bulgarian research organizations
- to produce internationally recognized publications and applied research results in the priority areas of ISSS

to increase the market-orientation of their research and innovation agendas and ability to attract private investments

to conduct top level research at European scale in the priority areas of the ISSS



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### ACTIVITIES ELIGIBLE FOR FUNDING

- Modernization of existing scientific infrastructure and/or building of new infrastructure;
- Purchase and upgrade of equipment, needed for implementation of research programmes;
- Implementation of research and development activities;
- Conducting market-oriented research at highest international level in the priority areas of ISSS
- Attracting researchers and top experts for conducting high level research in the priority areas of ISSS;
- Establishment of strategic partnerships and joint research programs with leading European research centres;
- Establishment of sustainable partnerships with business and conducting joint projects with private investors;
- Dissemination of the research results; knowledge and technologies transfer and research services for the business.





Project proposals for CoE and CoC

**FUNDING**

- European Regional Development Fund and National co-financing

100% grant funding for procedures / contracts

**STATE AID**

- The funding does not constitute State aid as it is awarded in accordance with item 20 of the Framework for State aid for research and development and innovation

does not constitute State aid

**IMPLEMENTATION**

- Where, after the completion of a project, revenue has been generated, **which was not previously determined** in the financial analysis, the net revenue generated will be deducted from the project expenditure declared to the Commission and will be recovered by the beneficiary

net revenue that will be generated which was not previously determined will be reduced

**FINANCIAL ANALYSIS**

- The financial analysis are prepared in accordance with Annex III Regulation (EU) 2015/2074 and the Guide to Cost-Benefit Analysis of investment projects of the EC

Financial analysis according to the Guide to Cost-Benefit Analysis

**ECONOMIC ACTIVITIES**

- Economic activities which are purely ancillary and limited in scope do not exceed 20% of the relevant overall annual infrastructure capacity are eligible under the procedure

economic activities do not exceed 20%





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# MAIN CHALLENGES OF STRUCTURING CENTRES OF EXCELLENCE AND CENTRES OF COMPETENCE

**CoE / CoC are the largest Research Network in Bulgaria:  
60 research institutions and HEI and 1 200 researchers**



**GOVERNANCE  
MODELS AND  
MANAGEMENT  
MODELS**



**PRIVATE SECTOR  
INVOLVEMENT**



**FINANCIAL MODELS -  
INSURING FINANCIAL  
SUSTAINABILITY**



**TECHNOLOGY  
TRANSFER AND  
KNOWLEDGE  
TRANSFER -  
GENERATING INCOME**



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МИНИСТЕРСТВО  
НА ОБРАЗОВАНИЕТО  
И НАУКАТА



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European  
Commission

# Research Infrastructures of the Future – synergies, sustainability, smart specialization and social impact

## 10 and 11 December 2019, National Palace of Culture Sofia, Bulgaria





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## TERRITORIAL BALANCE AND SHARE OF FUNDS UNDER CoE/CoC



14 projects with a total budget of 371 055 796,35 BGN





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"CENTER OF COMPETENCE IN THE  
FIELD OF PERSONALIZED MEDICINE, 3D  
AND TELEMEDICINE, ROBOTIC-  
ASSISTED AND MINIMALLY INVASIVE  
SURGERY"

Medical university – Pleven

Medical university - Varna

Institute of Robotics – BAS

Budget: €12 millions

## Robotic surgical system Da Vinci Xi





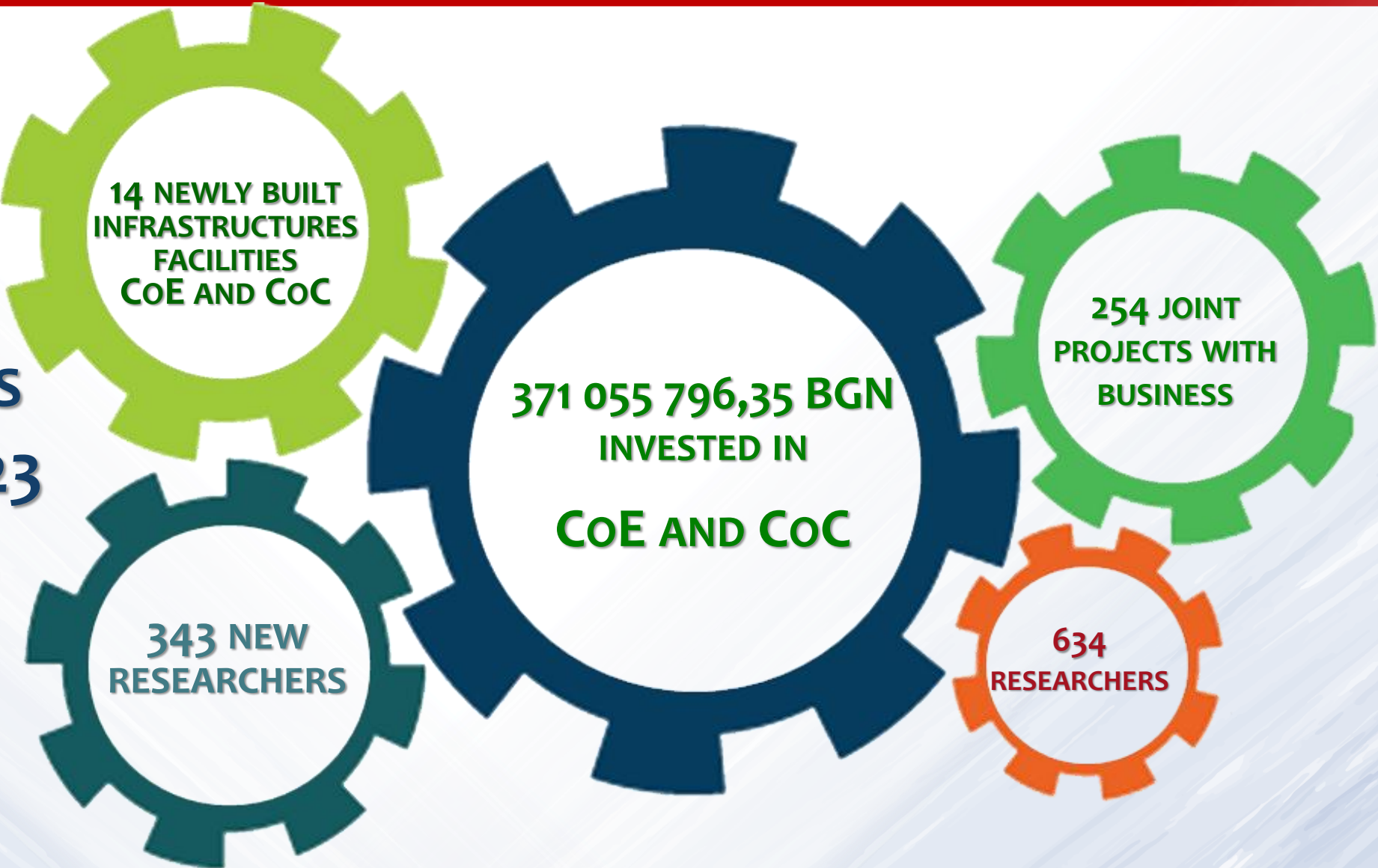
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**EXPECTED RESULTS  
BY THE END OF 2023  
4 CoE & 10 CoC**





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## INDICATORS UNDER PRIORITY AXIS 1 – TO BE CONTRACTED BY THE END OF 2019

**BG05M2OP001-1.003** – Supplementary support for research organizations with approved projects by HORIZON 2020, call WIDESPREAD-TEAMING, Phase 2"

| Name of the project   | Projects involving international cooperation | International scientific co-publications per million population | Researchers, trained through international cooperation | Research organizations and universities, participating in international technological initiatives |
|---|--|---|--|---|
| PlantaSYST: translation of fundamental research into sustainable bio-based technologies | 1  | 150   | 16   | 6   |
| Big Data for Smart Society - GATE   | 1  | 100   | 80   | 3   |
| <b>Total</b>  | <b>2</b>                                     | <b>250</b>  | <b>96</b>  | <b>9</b>  |





# BULGARIAN DIASPORA

| Country        | Bulgarian Citizens | Ethnic Bulgarians |
|----------------|--------------------|-------------------|
| Turkey         | 500 000            |                   |
| Greece         | 100 000            |                   |
| United States  | 300 000            | 95 588            |
| Spain          | 250 000            | 150 878           |
| Germany        | 226 926            |                   |
| United Kingdom | 100 000            | 35 000            |
| Italy          | 100 000            |                   |
| Canada         | 70 000             | 30 485            |

# FROM MIGRATION WITH NO RETURN TO MIGRATION WITH RETURN

| Year | Emigration | Bulgarians who returned |
|------|------------|-------------------------|
| 2012 | 13 640     | 4 964                   |
| 2013 | 16 036     | 4 682                   |
| 2014 | 23 846     | 9 502                   |
| 2015 | 24 487     | 10 722                  |
| 2016 | 25 795     | 9 000                   |
| 2017 | 25 597     | 13 060                  |
| 2018 | 29 559     | 16 000                  |



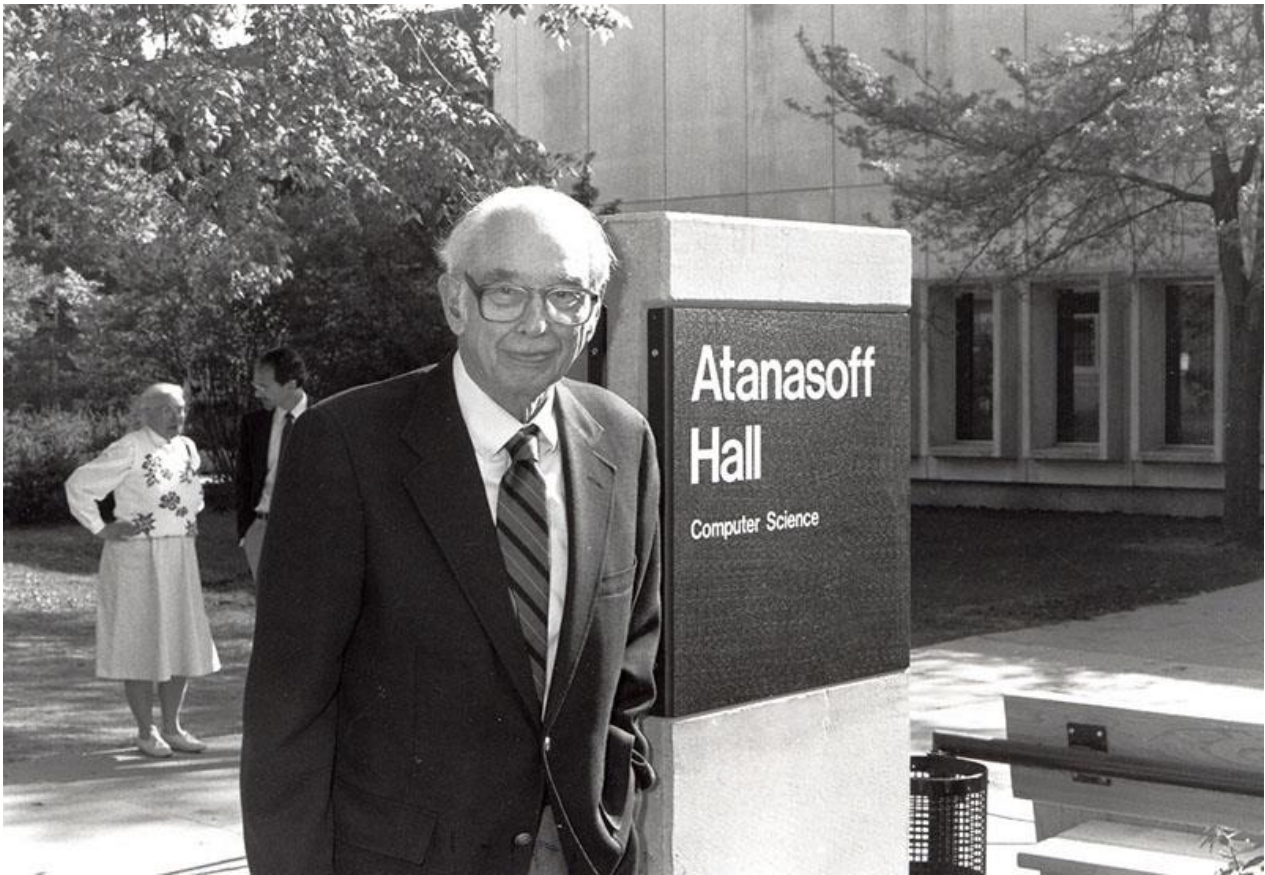
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# THE ABC CHALLENGE





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# THANK YOU FOR YOUR ATTENTION!

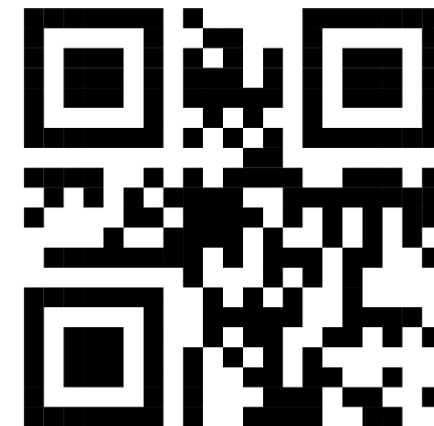
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<http://opnoir.bg/>