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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

PA 1 of SESG OP

Centers of Excellence and

Centers of Competence

Challenges

TAIEX SHARING EU EXPERTISE SINCE 1996

November 12-13, 2020

CHALLENGES IN PRIORITY AXIS 1 OF SESG OP 2014-2020

TABLE OF CONTENT

1. GENERAL INFORMATION - PRIORITY AXIS 1 OF SESG OP 2014-2020

1. **100% grant funding** for procedures / contracts

2. Funding: **European Regional Development Fund and National co-financing**

3. The grant funding to be awarded under the procedure **does not constitute State aid** within the meaning of Article 107 of the Treaty on the Functioning of the European Union as it will be awarded in accordance with item 20 of the Framework for State aid for research and development and innovation (the Framework).

4. Where, in the course of the implementation and/or after the completion of the projects, **net revenue has been generated** within the meaning of Article 61 (1) of Regulation (EU) No 1303/2013 of the European Parliament and of the Council, the eligible expenditure of the project to be financed under the procedure **will be reduced in advance** taking into account the potential of the project to generate net revenue over a specific reference period that covers both the implementation of the project and the period after its completion, which for the Research and Innovation sector has been set at 15-25 years. The discounted net revenue of a project will be calculated in accordance with the method set out in Articles 15–19 of Commission Delegated Regulation (EU) No 480/2014.

5. The **financial analysis** must be prepared in accordance with Annex III of Commission Implementing Regulation (EU) 2015/2074 (section "Financial analysis") and the Guide to Cost-Benefit Analysis of investment projects of the European Commission (section "Financial analysis" and section "Research, development and innovation").

6. Only **economic activities** within the meaning of point 21 of the Framework which are purely ancillary and limited in scope and in regard to which the capacity allocated each year to such activities **does not exceed 20% of the relevant overall annual infrastructure capacity** will be eligible under the procedure.

7. Beneficiaries must ensure that costs, funding and revenue of the two kinds activities will be clearly separated, as well as must **ensure separate reporting for the economic and the non-economic activities of the infrastructure.** They must further ensure the **reinvestment of the profits from knowledge transfer activities in the non-economic activities of the infrastructure.** In view of the above, beneficiaries must maintain separate accounting enabling a clear traceability of the project funding and a differentiation between the economic and the non-economic activities of the research infrastructure.

1. GENERAL INFORMATION - PRIORITY AXIS 1 OF SESG OP 2014-2020 – BUDGET IN BGN

Total budget of PA 1 following changes in the SESGOP	Performance reserve under PA 1 of SESGOP	Budget reduced by the amount of the performance reserve	Specific objectives under PA 1 of SESGOP	Initial allocated amount under PA 1 of SESG OP	№ and name of the procedures	Initial allocated amounts per procedures	Actual budgets per procedures	Contracted amounts	Number of contracts
460 014 274,92	29 756 498,31*	430 257 776,61	Specific objective 1 (SO 1)	350 000 000,00 (+21 520 643,56)	BG05M2OP001-1.001 Creation and Development of Centers of Excellence	200 000 000,00	158 572 670,05	158 107 822,84	4
					BG05M2OP001-1.002 Creation and Development of Centers of Competence	150 000 000,00	191 427 329,95 (+21 520 643,56)	212 947 973,51	10
			Specific objective 2 (SO 2)	60 000 000,00	BG05M2OP001-1.003 Support for Bulgarian scientific organizations with approved projects under Horizon 2020 - Widespread-Teaming, Phase 2	60 000 000,00	60 000 000,00	59 201 980,00	2
* Performance reserve that is lost from the budget of PA 1 and transferred to PA2 of SESGOP 2014-2020						410 000 000,00	431 520 643,56	430 257 776,35	16

1. GENERAL INFORMATION - PRIORITY AXIS 1 OF SESG OP 2014-2020

SO1 under PA1 of SESG OP:

- **Creation and development of Centers of Excellence**
- **Creation and development of Centers of Competence**

Purpose of the two procedures - to support the enhancement of the level and the **market orientation of the research activities** of leading research organizations in Bulgaria and to **improve the capacity for generation of research excellence** and innovation capacity. The latter will be achieved through support provision for creation, development and/or modernization of centres of excellence and centres of competence, which will help to overcome the shortage of competitive and internationally recognized research complexes meeting advanced infrastructure and top level research standards in areas of interest to the Bulgarian economy, namely the priority areas of the Innovation Strategy for Smart Specialization (ISSS).

The purpose is based on the following identified **needs**:

1. Increase the investment in R&D and innovation
2. Market-oriented research for increased innovation capacity
3. Investment in advanced research infrastructures and equipment

Expected results:

1. Connectivity and interaction between R&D centres, schools of higher education and businesses;
2. Business investment in R&D;
3. Creation of networks and clusters.

SO2 under PA1 of SESG OP:

- **Support for Bulgarian scientific organizations with approved projects under Horizon 2020 - Widespread-Teaming, Phase 2**

2. CURRENT STATE OF PLAY - PRIORITY AXIS 1 OF SESG OP 2014-2020

SO1 under PA1 of SESG OP:

As a result of the assessment process under the procedures for **CoE&CoC 14 contracts with total budget 371 055 796,35 BGN** have been signed as follow:

✓CoE – 4 contracts - total amount of **158 107 822,84 BGN**

✓CoC – 10 contracts - total amount of **212 947 973,51 BGN**

Expected results:

❖4 CoE to be established and operational by the end of year 2023 in sphere of Mechatronics & Clean Technology, Informatics & Information and Communication Technologies, New Technologies in Creative and Recreational Industries;

❖10 CoC to be established and operatonal by the end of year 2023 in sphere of Mechatronics & Clean Technology, Informatics & Information and Communication Technologies, Industry for Healthy Life and Bio-technology;

SO2 under PA1 of SESG OP:

✓CoE – 2 contracts - total amount of **59 201 980,00 BGN**

Expected results:

❖2 CoE to be established and operational by the end of year 2023 in sphere of Industry for Healthy Life and Bio-technology, Informatics & Information and Communication Technologies;

2. CURRENT STATE OF PLAY - PRIORITY AXIS 1 OF SESG OP 2014-2020

- **Established broad partnership at project level** (number of the project partners varies between 3 and 17 in different projects) creates additional difficulties during implementation – existing problems within the administrative and management structures of some project partners, lack of administrative experience in implementation of projects of such size and complexity, no clear vision about future capitalization of project results, etc.;
- **Low degree of readiness of projects** - no public procurement contracts for the execution of the large construction works are signed before mid-2019;
- **Need for clear vision about future legal framework of the established CoE/CoC** (non-profit making legal bodies, bodies governed by the public law, state companies, etc.) as well as future management bodies/body (steering committees, management boards, etc.) of the newly created structures;
- **Proper addressing of state aid issues** in the future functioning of the created CoE/CoC;
- **Future upgrade of CoE/CoC in the next programming period 2021-2027** - synergies with other funds and financial instruments and establishment of sustainable management model;

3. REVIEW OF THE EVALUATION AND CONTRACTING PROCESS UNDER CoE/CoC

№	Activities	August 2017		October 2017		Nov. 2017		Dec. 2017		Jan. 2018	Feb. 2018		March 2018			April 2018		June	July	August 2018	2019	2020	2021	2022	2023
		w3	w4	w3	w4	w2	w3	w3	w4	w4	w1	w4	w1	w2	w4	w1	w4								
1	Technical and Financial Assessment of CoE and CoC		23.08.	23.10.																					
2	Ex-ante control for CoE and CoC and return of reports				31.10.		17.11.																		
3	Re-evaluation for CoE at the TFA stage							15.01.		22.01.															
4	Signing of contracts for CoE										01.02.	28.02.			30.03			01.06.	26.07	03-10.08	21.03 и 30.09				
5	Execution of contracts for CoE											28.02.													28.12.
6	Introductory trainings for CoE														26-30.03.										
7	Re-evaluation for CoC at the TFA stage										06.02.		02.03.												
8	Signing of contracts for CoC													13.03.	30.03.										
9	Execution of contracts for CoC														30.03.										31.12.
10	Introductory trainings for CoC																23-27.04.								

4. List of contracts signed under BG05M2OP001-1.001 "Creation and development of Centers of Excellence"

№	Identification number	Leading organization	Title of project	Total budget in BGN
Component 1. "MECHATRONICS AND CLEAN TECHNOLOGY"				
1.	BG05M2OP001-1.001-0008	Institute of General and inorganic chemistry-Bulgarian Academy of Sciences	National Center for clean technology and Mechatronics	69 184 529.81
Component 2. "INFORMATICS AND INFORMATION AND COMMUNICATION TECHNOLOGIES"				
1.	BG05M2OP001-1.001-0004	Sofia University "St. Kliment Ohridski"	Universities for science, Informatics and technology in society (UNITe)	29 781 882.42
2.	BG05M2OP001-1.001-0003	Institute of information and communication technologies - Bulgarian Academy of Sciences	Center of Excellence in Informatics and Information and Communication Technologies	29 355 861.12
Component 3. "INDUSTRY FOR A HEALTHY LIFE AND BIO-TECHNOLOGIES"				
1.	There is no funded PP	There is no funded PP	There is no funded PP	N/A
Component 4. "NEW TECHNOLOGIES IN CREATIVE AND RECREATIONAL INDUSTRIES"				
1.	BG05M2OP001-1.001-0001	Sofia University "St. Kliment Ohridski"	Construction and development of the Centre of excellence for Heritage BG	29 785 549.49
			TOTAL AMOUNT OF SIGNED CONTRACTS UNDER CoE	**158 107 822.84**

5. List of contracts signed under BG05M2OP001-1.002 "Creation and development of Centers of Competence"

№	Identification number	Leading organization	Title of project	Total budget in BGN
		Component 1. "MECHATRONICS AND CLEAN TECHNOLOGY"		
1.	BG05M2OP001-1.002-0019	Sofia University "St. Kliment Ohridski"	Clean technologies for sustainable environment – water, waste, energy for circular economy	23 667 925.86
2.	BG05M2OP001-1.002-0023	Technical University -Gabrovo	CoC "Smart Mechatronic, Eco- and Energy Saving Systems and Technologies"	23 569 719.17
3.	BG05M2OP001-1.002-0014	Institute of Electrochemistry and Energy Systems	Centre of competence HITMOBIL–Technologies and Systems for Generation, Storage and Utilization of Clean Energy	21 709 196.10
4.	BG05M2OP001-1.002-0011	Institute of Mechanics	CoC in Mechatronics and clean technologies MIRACle (Mechatronics, Innovation, Robotics, Automation, Clean technologies)	22 570 752.32
		Component 2. "INFORMATICS AND INFORMATION AND COMMUNICATION TECHNOLOGIES"		
1.	BG05M2OP001-1.002-0002	University of National and World Economy	Digitization of the economy in an environment of Big data (DEBD)	13 333 868.86
2.	BG05M2OP001-1.002-0006	Institute for Robotics (BAS)	Creation and Development of CoC Quasar	13 500 000.00
		Component 3. "INDUSTRY FOR A HEALTHY LIFE AND BIO-TECHNOLOGIES"		
1.	BG05M2OP001-1.002-0012	Institute of Organic Chemistry with Centre of Phytochemistry	Sustainable utilization of bio-resources and waste of medicinal and aromatic plants for innovative bioactive products	23 791 055.20
2.	BG05M2OP001-1.002-0005	Medical University - Plovdiv	Personalized Innovative Medicine Competence Centre (PERIMED)	23 472 018.71
3.	BG05M2OP001-1.002-0001	National Centre of Infections and Parasitic Diseases	Fundamental Translational and Clinical Investigations on Infections and Immunity	23 638 258.00
4.	BG05M2OP001-1.002-0010	Medical University - Pleven	Centre of competence in the field of personalized medicine, 3d and telemedicine, robotic-assisted and minimally invasive surgery	23 695 179.29
		Component 4. "NEW TECHNOLOGIES IN CREATIVE AND RECREATIONAL INDUSTRIES"		
1.	BG05M2OP001-1.002-0008	Higher School of Management	CoC and Intelligent Solutions for the Creative and Recreational Industries	terminated
			TOTAL AMOUNT OF SIGNED CONTRACTS UNDER CoC	212 947 973.51

6. COVERED INDICATORS UNDER PRIORITY AXIS 1 (SO1), AS A RESULT OF THE SIGNED 4+10 CONTRACTS UNDER THE OP SESG

№ Project proposal	Number of new researchers working in improved research infrastructure facilities	Number of researchers working in improved research infrastructure facilities	Number of newly built infrastructure facilities in the CoE and CoC	Number of joint research projects between centres and businesses
BG05M2OP001-1.001 "Creation and development of Centres of Excellence"				
BG05M2OP001-1.001-0001	23	40	1	10
BG05M2OP001-1.001-0003	23	100	1	10
BG05M2OP001-1.001-0004	23	35	1	10
BG05M2OP001-1.001-0008	24	35	1	0
Total	**93**	**210**	**4**	**30**
BG05M2OP001-1.002 "Creation and development of Centres of Competence"				
BG05M2OP001-1.002-0001	23	32	1	3
BG05M2OP001-1.002-0002	32	32	1	5
BG05M2OP001-1.002-0005	23	32	1	15
BG05M2OP001-1.002-0006	24	35	1	15
BG05M2OP001-1.002-0010	23	36	1	40
BG05M2OP001-1.002-0011	26	65	1	24
BG05M2OP001-1.002-0012	25	40	1	29
BG05M2OP001-1.002-0014	23	33	1	14
BG05M2OP001-1.002-0019	26	77	1	65
BG05M2OP001-1.002-0023	25	42	1	14
Total	**250**	**424**	**10**	**224**

7. IMPLEMENTATION OF CONTRACTS FOR CREATION AND DEVELOPMENT OF COE/COC

- Detailed **Gant charts for implementation of each individual project** was prepared by partners (e.g. main activities, operational steps and public procurement procedures to be launched together with a realistic timeframe and financial forecasts);

- **Targeted trainings** about reporting in UMIS, Information & publicity and public procurement were conducted;

- **Monthly meetings** of the Project management and MA management started in September 14, 2018 - ongoing;

- **Individual meetings** between dedicated MA teams and individual projects teams, including lead partner and all partners - ongoing;

7.1. CONTRACTS SIGNED UNDER BG05M2OP001-1.001 "CREATION AND DEVELOPMENT OF CENTERS OF EXCELLENCE" – SHORT DESCRIPTION

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Construction and development of the Centre of excellence for Heritage BG
Contract: BG05M2OP001-1.001-0001 – C0001, **Budget:** 29 785 549,49 BGN
Start date/end date: 28.02.2018 – 31.12.2023

Leading organization	**Sofia University "St. Kliment Ohridski"**
Partners	1. Technical University of Sofia (TU) 2. University of Architecture, Civil Engineering and Geodesy (UACEG) 3. National Sports Academy "Vasil Levski" (NSA) 4. National Institute of Geophysics, Geodesy and Geography – BAS (NIGGG) 5. Institute of Ethnology and Folklore Studies with Ethnographic Museum – BAS (IEFSEM) 6. Institute of Art Studies – BAS (IAS) 7. Institute for Literature – BAS (IL) 8. Cyril and Methodius Research Centre – BAS 9. Institute of Balkan Studies and Centre of Tracology "Prof. Alexander Fol" – BAS (IBSCT 10. National Library "St. St. Cyril and Methodius" (NLCM) 11. Regional Museum of History in Sofia (RMH)
Main objective Specific objectives	Improvement of the research environment of leading science organizations in Bulgaria as well as improving the capacity to achieve the excellence in new technologies in creative and recreational industries, enhancing the innovation capacity through market orientation of research. 1. **Construction, equipment and development of a new distributed research infrastructure** within the creative and recreational industries. 2. Development of a CoE to perform **independent fundamental research, industrial research, experimental development and a large-scale dissemination** of the results of these activities through the development of **new products and services, teaching, publications and knowledge transfer**. 3. Inclusion of the CoE in the European area of science and **innovation in the field of cultural heritage, culture and creative industries, cultural tourism** through mutual exchange and collaboration between partners of different backgrounds.

MAIN ACTIVITIES

Phase 1. Construction and equipment of research infrastructure.

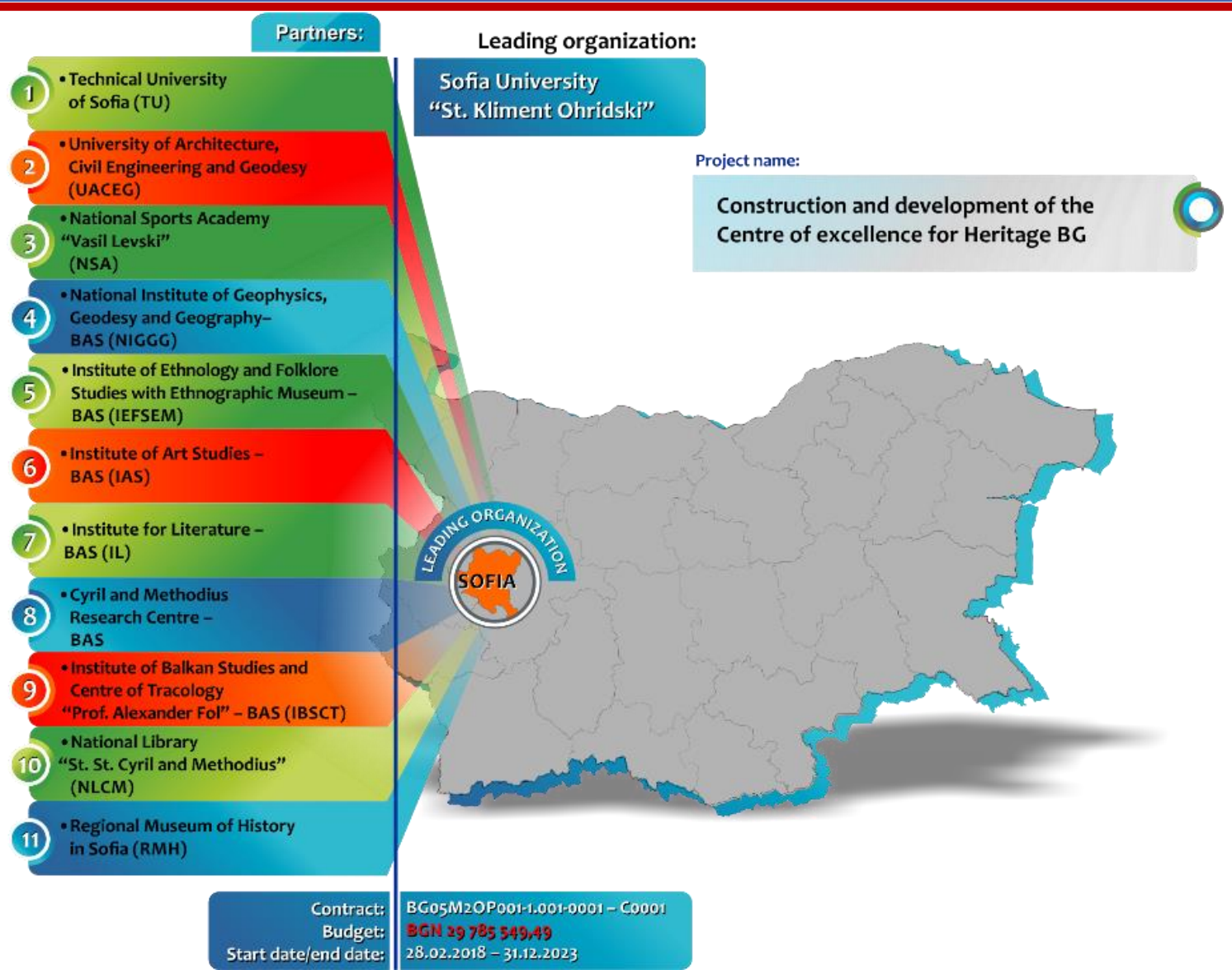
A. Construction and equipment of research infrastructure of the CoE.

A 1. Construction of new research infrastructure, including preparatory activities for the main building and a representative hall of CoE
A2. Construction of a new integrated (distributed and networked) research infrastructure through substantial upgrading of existing specialized research infrastructures, including preparatory activities
A3. Purchase of new equipment and software
A 4. Purchasing new equipment and software needed to significantly upgrade the available technical and technological facilities of individual partners to implement "Heritage BG" CoE research program
A5. Building Institutional Capacity

Phase 2. Using the research infrastructure

B. Implementation of R&D activities	B1. Conducting research. B2. Implementation of new research, training and teaching methods in CoE activities. B3. Attracting top researchers and top specialists to conduct research at a high level. B4. Providing specializations in leading scientific centers abroad to highly qualified researchers. B5. Building strategic partnerships and joint research programs with leading European research centers. B6. Participation in international and transnational research networks and programs/partnerships that guarantee a high level of international visibility and scientific connectivity. B7. Specializations for participating researchers, including high-level exchanges and mobility. B8. Development of sustainable funding sources and working conditions, including the development of sustainable partnerships with businesses and carrying out joint projects with private investors.
C. Dissemination and knowledge transfer	C1. Building and maintaining a Knowledge Hub to coordinate different sources of knowledge and promote knowledge in all relevant communities. C2. Building and maintaining a Knowledge Web for sharing the experiences of each CoE partner with others. C3. Construction and maintenance of Community of Practice (CoP) as an informal network providing conditions for interaction between different groups of users with shared values and beliefs. C4. Scientific cooperation at a national and international level. C5. Consultation on the use of standards, rules and methods of organization, incl. ones related to the establishment, acquisition, protection, safeguarding and use of intangible assets and knowledge management. C6. Implementation of new or significantly improved methods of production or supply (including significant changes in techniques, equipment or software). C7. Providing free access to publications. C8. Mobility of researchers and other employees.
D. Business activities of a limited scope	D1. Rental of facilities and laboratories outside organizations (businesses, NGOs, schools, museums, libraries, archives, etc.). D2. Providing services to external organizations (businesses, NGOs, schools, museums, libraries, archives, etc.). D3. Research assigned by virtue of contract.
E. Specific activities of the project management	E1. Activities for project organization and management E2. Activities for information and publicity as per the Guidance for beneficiaries for implementing rules for information and communication 2014-2020 E3. Activities related to independent external audit

Partnership and territorial coverage



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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Center of Excellence in Informatics and Information and Communication Technologies
Contract: BG05M2OP001-1.001-0003-C01, **Budget:** 29 355 861,12 BGN
Start date/end date: 03.08.2018 – 31.12.2023

Leading organization	**Institute of Information and Communication Technologies - BAS**	
Partners	1. Institute of Mathematics and Informatics – BAS 2. Institute of Mechanics – BAS 3. National Institute of Geophysics, Geodesy and Geography – BAS 4. Medical University – Sofia 5. Plovdiv University "Paisii Hilendarski" 6. University of Library Studies and Information Technologies	
Main objective	CoE in Informatics and ICT aims at developing a research center where research in Informatics and ICT will be carried out in compliance with the best world standards and practices by a sufficient number of top level scientists, within a well defined organizational structure, following the center's own research program related to the priorities of ISSS.	
Specific objectives	1. Developing an advanced electronic infrastructure – computer systems, data storage resources and services, as well as granting access for Bulgarian researchers. 2. Integrating the different layers of an e-infrastructure with common/standardized services as well as services specific to the different scientific communities, in order to create a virtual research environment. 3. Stimulating the development of a big scientific capacity in Bulgaria and promoting interdisciplinary approaches. 4. Providing features that allow data management for scientific communities. 5. Providing adequate training and support programs to the users in Bulgaria. 6. Creating favorable conditions for conducting scientific research in accordance with the best international standards and practices.	**Indicator:** high performance computing system with a performance of 1 PetaFlop at least. **Indicator:** 10 specific and 15 generic services **Indicator:** a minimum of 12 different scientific teams and 45 research groups using the virtual environment **Indicator:** al least 30 different data sets **Indicator:** 12 information events organized by the project with a total of 600 participants, 12 training events with 300 trainees **Indicator:** 300 publications, with at least 4% published in journals falling within the top 10% scientific journals in the respective scientific area. 50 presentations at selected events

MAIN ACTIVITIES

Activity I Construction and equipment of the CoE

Stage 1

Establishment of a **data center with the ability to store and process Petabytes of data with laboratory for 3D digitization and microstructural analysis** and entry points at the project partners.

Expected results: In the first 18 months of the project all the construction works should be completed, the delivery and installation of equipment and software for this stage should also be finalized. The result is a working data center as per specification, a working laboratory for 3D digitization as well as functioning entry points located at the project partners.

Stage 2

Deployment of a supercomputer complex comprising of heterogeneous nodes, some of them using Intel MIC technology (or equivalent) and some type of blade-based computing technology of the latest generation with an emphasis on energy efficiency and the ability to solving a wide class of scientific problems.

Significant **expansion of the laboratory for 3D digitization and microstructural analysis towards 4D tomography**.

Activity II Carrying out independent RDA within the CoE

The research activities of the CoE are structured in **11 Research Projects.** The work is planned for a period of 10 years. All of these projects will use substantially the planned infrastructure. The activities in each of the research projects are directly related to one or more of the priority directions of thematic area Informatics and ICT of ISSS, contributing in particular to the topics of: fabless and new ICT approaches for design and assembling; ICT approaches in machine-building, medicine and cultural industries; 3D digitalization and visualization; Big Data, Grid and Cloud technologies; wireless sensor networks and wireless communications; linguistic technologies; exploiting new possibilities in relation to ICT-based services and systems.

Expected results: Number of new researchers: 23 by the end of 2023; Number of researchers: 100 users; High quality scientific teams: 12 different scientific teams и 45 research groups; Scientific researches in compliance with the highest world standards and practices: 300 publications, 50 presentations; Integration of the infrastructure layers: 10 services specific for the scientific community, 15 general services; Young scientist up to 34 years of age: 20 young users

Activity III Disseminating the research results

Develop and maintain the project communication platform
Dissemination and Marketing

Training for efficient use of the research infrastructure
Innovation management
Open calls for joint pilot applications with SMEs

Activity IV Project management and organization, visualization and audit

Partnership and territorial coverage

Project name:

Center of Excellence in Informatics and Information and Communication Technologies

Leading organization:

Institute of Information and Communication Technologies - BAS

Partners:

1. Institute of Mathematics and Informatics – BAS
2. Institute of Mechanics – BAS
3. National Institute of Geophysics, Geodesy and Geography – BAS
4. Medical University – Sofia
5. Plovdiv University - "Paisii Hilendarski"
6. University of Library Studies and Information Technologies

Contract:	BG05M2OP001-1.001-0003-C01
Budget:	29 355 861,12 BGN
Start date/end date:	03.08.2018 – 31.12.2023

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Universities for ScieNce, Informatics and Technologies in e-Society (UNITe)
Contract: BG05M2OP001-1.001-0004-C01, **Budget:** 29 781 882,42 BGN
Start date: 28.02.2018 – 31.12.2023

Leading organization	**Sofia University "St. Kliment Ohridski"**
Partners	1. Technical University – Sofia 2. Ruse University "Angel Kanchev" 3. University "Prof. Dr. Asen Zlatarov" Burgas 4. Shumen University „Konstantin Preslavsky"
Specific objectives	1. To build a **Center of Excellence of the type Distributed Research Infrastructure (DRI)** - CoE DRI UNITe as a highly compatible, internationally recognized scientific research complex, that satisfies the requirements of the modern infrastructures and the excellent scientific level of the ISSS research priority - Informatics and ICT; 2. To improve the possibilities of researchers and academics in geographically distributed regions in Bulgaria (Burgas, Ruse, Sofia, Shumen) to collaborate between each other and with partners all over the world via accessing to and working in the CoE UNITe; 3. Significant improvement of the scientific support of business in the regions of the country by providing access to high-quality distributed scientific infrastructure UNITe and specialized consulting for businesses, especially for small and medium enterprises 4. To facilitate and improve communication and information flow between dispersed organizations using computer aided communication systems as a way to introduce a new model of organizing shared work that will prevail in the decade 2020-2030.

MAIN ACTIVITIES

1. Organization and Project Management / Information and Publicity / An independent external audit

2. Construction of new and significant upgrading of existing specialized research facilities incl. preparatory activities

Construction of one new specialized research infrastructure and the modernization of four excising ones.
1. One new building will be built for the new Center of Excellence (UNITe DRI) situated in Campus Lozenets of Sofia University with the purpose to conduct cutting-edge research, seminars, trainings, workshops and more. In the building will be located research laboratory complexes, integral Innovation Forum, video conference rooms, innovative discussion spaces, spaces for demonstrations.
2. Halle 12 of Block 7 of the Technical University Sofia will be significantly modernized. The laboratory complex is located on two floors of laboratories and conference rooms and is designed to meet the required standards for ventilation, Internet, wiring and heating and shall be subject of the intervention under the Project, which they intend to substantially modernize.
3. Building № 10 for research and design activities, belonging to the Burgas University, with two floors, will be modernized and substantially reorganized and modernized shall be subject of the intervention under the Project.
4. At Ruse University one building will be substantially reorganized and modernized, at one floor with purpose: building for education.
5. University of Shumen "Konstantin Preslavsky" has the right to use the property with total built up area of 300 square meters, as well as the obligation to maintain it. In the building it will be situated the new data center with access terminals, three modules - „Mathematical Foundations of Information Security", „Sreganology protection of information in networks", „Cryptology protection of communications", and one laboratory for modelling and processes simulations.

MAIN ACTIVITIES	
3. Purchase and modernization of equipment necessary for the implementation of research programs	
4. Activities related to widely disseminate the results of research among academia and business at international and national level	
1. Scientific publications 2. Organizing of seminars and conferences 3. Protection and maintenance of the intellectual property which is result from the R&D activities and the CoE 4. Structure for knowledge transfer	1. Publications in journals with high impact factor, in journals in the top 10% of category as the categories are not only Computer science or Mathematics, but also in other scientific fields. Publications in specialized conferences with high acceptance rate.
5. Execution of scientific research on a highest international level, implementation of new research, education and training methods and involving of leading researchers within the priority area of Informatics and ICT	
9 Work Packages: WP1 Big Data Infrastructure as a Service - Coordinator: Shumen University WP2: Big Data Software as a Service - Coordinator: Sofia University WP3: Innovative mathematical methods and models in the digital world - Coordinator: Sofia University WP4: Real time big data analysis and system virtualization - Coordinator: Burgas University	WP5: Visual search, image recognition and 3D printing - Coordinator: Ruse University WP6: Smart Cyber Physical Systems - Coordinator: Technical University-Sofia WP7: Smart and Sustainable Cities - Coordinator: Technical University-Sofia WP8: Factories of the Future - Coordinator: Technical University Sofia WP9: Big data in natural sciences - Coordinator: Sofia University
6. Development of sustainable working conditions, financial resources and partnerships, including execution of joint projects with the business and the private investors.	
Improvement of the policy and rules for distribution of the Intellectual Property rights among partners Elaboration of policy and structure for exploitation and commercialization of the research results Institutional adoption of the European Charter for Researchers and the Code of Conduct for Recruitment of Researchers	
7. Developing strategic partnerships and joint scientific research programs with leading European research centers as well as participation in international and transnational research networks, programs and partnerships guaranteeing high level of international visibility and scientific integration	
Plan for development of cooperation with businesses and with other users of the research results Plan for development of sustainable partnerships, criteria for selection, collaboration forms and mechanism for attraction A. Criteria for identification of potential partners B. Goals and collaboration forms with potential partners	C. Motivating and attracting new partners and establishment of a sustainable collaboration network Plan for joint projects with the industry and other users of the UNITe research results
8. Execution of specializations, exchange and mobility visits for the researchers at leading research centers abroad	

Partnership and territorial coverage

Project name:

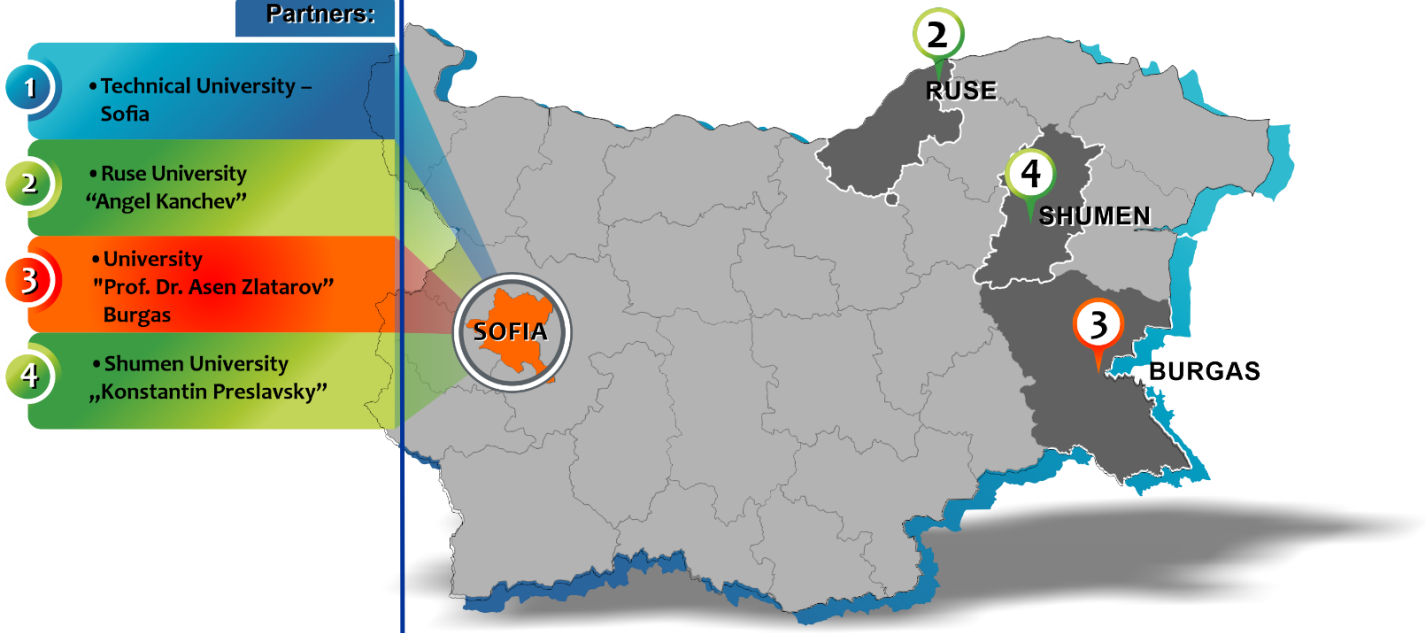
Universities for ScieNce, Informatics and Technologies in e-Society (UNITe)

Leading organization:

Sofia University "St. Kliment Ohridski"

Partners:

1. Technical University – Sofia
2. Ruse University "Angel Kanchev"
3. University "Prof. Dr. Asen Zlatarov" Burgas
4. Shumen University „Konstantin Preslavsky"



Contract:	BG05M2OP001-1.001-0004-C01,
Budget:	29 781 882,42 BGN
Start date/end date:	28.02.2018 – 31.12.2023

Project name: National center of mechatronics and clean technologies
Contract: BG05M2OP001-1.001-0008-C01, **Budget:** 69 184 529,81 BGN
Start/end date: 28.02.2018 - 31.12.2023

Leading organization	**Institute of General and Inorganic Chemistry-BAS**	
Partners	1. Institute of Electrochemistry and Energy Systems „Acad. E. Budevski - BAS 2. Institute of Catalysis – BAS 3. Institute of Metal Sciences, Equipment and Technologies „Acad. A. Balevski" with Hydro aerodynamics Center - BAS 4. Institute of Mechanics - BAS 5. Institute of Mineralogy and Crystallography „Acad. Iv. Kostov - BAS 6. Institute of Optical Materials and Technologies „Acad. J. Malinovski - BAS 7. Institute of Organic Chemistry with Phytochemical Center - BAS	8. Institute of Polymers - BAS 9. Institute of Solid State Physics - BAS 10. Institute of Physical Chemistry „Acad. R. Kaischew – BAS 11. Sofia University „St. Kliment Ohridski" 12. Technical University - Sofia 13. Technical University – Varna 14. Technical University - Gabrovo 15. University of Chemical Technology and Metallurgy 16. Central Laboratory of Applied Physics to BAS - Plovdiv
Main objectives	The main objective of the project proposal is to construct a modern National Centre of Excellence mechatronics and clean technologies, which will have a added value to the Programme for sustainable and intelligent economic growth of Bulgaria. The Centre will have leading functions for the country in the scientific area of „Mechatronics and clean technologies".	
Specific objectives	- To differentiate three scientific research campuses, equipped with modern scientific facilities, which will ensure the execution of high level of scientific research in the area of „Mechatronics and clean technologies". - Implementation of modern long term scientific plan in the area of „Mechatronics and clean technologies", based on the competence of the partner organizations which will be in compliance with the needs of the Bulgarian industry. - Maintaining of a highly qualified scientific team - To establish the conditions for effective technological transfer	

MAIN ACTIVITIES

1. CONSTRUCTION OF A NEW INFRASTRUCTURE/MODERNIZATION OF THE EXISTING RESEARCH INFRASTRUCTURE

1.1. Construction of a new infrastructure: In order to realize the scientific program of the CoE "Mechatronics and clean technologies", building of laboratories situated in three campuses: of BAS (G. Milev), SU (Lozenetz) and TU (Student town) is envisaged. In all three campuses massive buildings are marked out which will be subjected to major renovation and reconstruction in order to answer the requirements (technical and functional) of the scientific infrastructure according to the project (documents and pictures attached). The reconstruction of the buildings will take place in the first 24 months after project's start (Campus "G. Milev"; Campus "Lozenetz"; Campus "Student Town"; Other)	1.2. Modernization of the existing research infrastructure - Upgrade of the existing modern equipment of the partners is also foreseen. The existing infrastructure is situated in the main buildings of the partners in the CoE. Part of these laboratories will be subjected to major reconstruction or technical modernization in order to satisfy the requirements of the scientific instrumentation situated in them. The reconstruction of the buildings and laboratories will take place in the first 24 months of the project.

2. IMPLEMENTATION OF SCIENTIFIC RESEARCH ACTIVITIES

The project envisages division of scientific tasks in 4 work packages:
WP1. Computer modeling and development of technologies and new materials for engineering and reengineering
WP2. Electronic, optical, sensor and bio-mehatronic systems and technologies
WP3. Mechatronic systems and technologies
WP4. Clean energy and green technologies

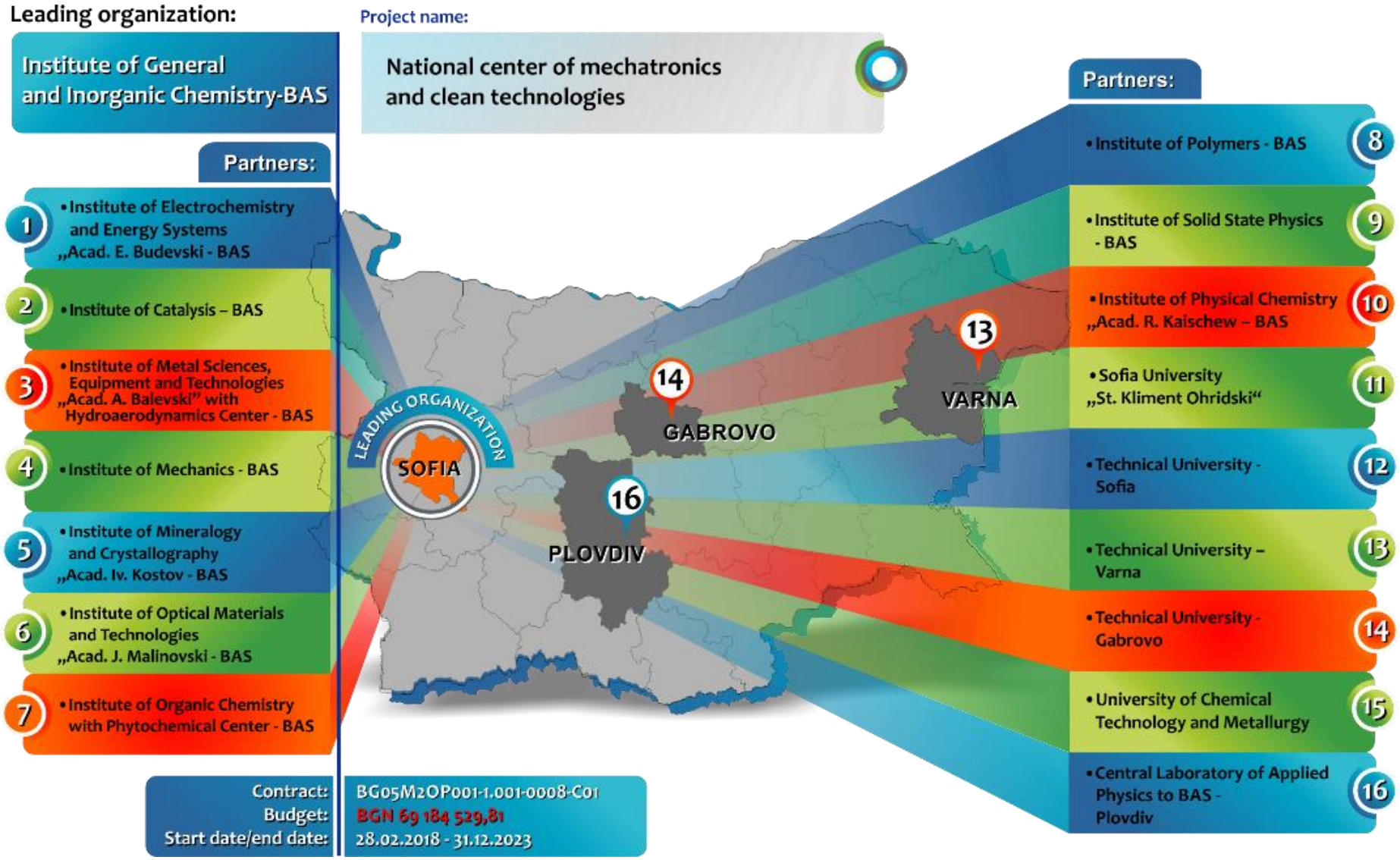
3. DISTRIBUTION AND TRANSFER OF SCIENTIFIC RESULTS, PROTECTION OF INTELLECTUAL PROPERTY

PROGRAM FOR TRAINING AND INCREASE OF QUALIFICATION
TECHNOLOGY AND INNOVATION TRANSFER
ATTRACTION OF DISTINGUISHED BULGARIAN SCIENTISTS
DISTRIBUTION OF RESULTS, COMMUNICATION WITH SOCIETY, MINISTRY OF EDUCATION AND SCIENCE, AND EUROPEAN UNION

4. INFORMATION AND PUBLICITY

5. INDEPENDENT AUDITE – EXTERNAL CONTRACTOR

Partnership and territorial coverage



7.2. CONTRACTS SIGNED UNDER BG05M2OP001-1.002 "CREATION AND DEVELOPMENT OF CENTERS OF COMPETENCE" – SHORT DESCRIPTION

EUROPEAN UNION
EUROPEAN SOCIAL FUND
EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Fundamental Translational and Clinical Investigations on Infections and Immunity
Contract: BG05M2OP001-1.002-0001-C01, **Budget:** 23 638 258,00 BGN
Start/end date: 10.08.2018 - 10.12.2023

Leading organization	**National Centre of Infectious and Parasitic Diseases**
Partners	1. Institute of Microbiology "Stephan Angeloff" – Bulgarian Academy of Sciences (IMic-BAS) 2. National Diagnostic Science-and-Research Veterinary Medical Institute (NDSRVM) 3. Medical Institute of Ministry of the Interior (MI-MinInt)
Main objectives	The main objective of the **Centre of Competence is to provide fast and efficient transfer to clinical practice** of data obtained in basic research in the field of infection and immunity in order the needs of individual and public health to be fulfilled to the greatest extent. The ambition is, **a unique research complex in Bulgaria to be created**, which would be in accordance with the best European and world standards and good practices. It would possess a well-defined organizational structure and the essential number of both experienced and young researchers and technical staff. The **objectives will be achieved through a significant modernization of existing infrastructure and implementation of a package of research programs** in the following areas: **Accurate and comprehensive detection of the etiological agents in the host and the environment; Molecular epidemiological analysis of infections with great social and economic impact; Characterization of drug resistance in the infectious agents; Study of the role of the genetic and immunological "background" of the host for the development of infectious and post-infectious pathologies.** The immediate results which will be sought after, are the provision of theoretical and methodological equipment will insure the specific objectives of the project.
Specific objectives	- Timely and accurate diagnosis which in turn will guarantee an adequate and **efficient treatment of infectious diseases**; preventing outbreaks of **infections with emerging, reemerging or unknown pathogens**; - Epidemiological prognosis and targeted prevention of socially significant infectious diseases; - Personalized medicine - **personalized methods for diagnosis, monitoring and treatment of acute and chronic infections and their complications**. - Alongside further opportunities will be provided for: - **Training and collaboration carried out in an improved, dynamic and interactive research environment;** **- Collaboration and specialization in terms of effective national and international networks;** **- Active exchange and dissemination of knowledge among the scientific community;** **- Establishment of strategic partnerships with leading technological companies and research institutions in Europe;** **- Development and commercialization of an own portfolio for the intellectual property rights.**

MAIN ACTIVITIES

1. MODERNIZATION OF THE RESEARCH INFRASTRUCTURE IN THE CENTRE OF COMPETENCE

Building of the Centre of Competence will include purchase and installation of specialized equipment organized in several functional and territorially units that will be combined with the requisite renovations and installation activities. Along with that, the Centre of Competence will be equipped with additional equipment and information systems.

1. Construction of Biosafety Level 3 (BSL-3) Virology Lab.
2. Expert Lab with a core for molecular-genetic analysis with whole-genome sequencing, Virology Deprtment.
3. Construction of Biosafety Level 3 (BSL-3) Lab for Extremely Dangerous Bacterial Infections.
4. Expert Labs in the central building of NCIPD.

4.1. Expert Lab for Electron Microscopy and Morphological Analyses;
4.2. The Expert Lab for molecular-genetic, spectrometric and proteomic analysis;
4.3. Expert Lab for Complex Immunological Analyses;
4.4. Establishment of Biological Bank;
4.5.Construction of a training center

2. WP1 Identification of microorganisms and analysis of circulating pathogens in the country (molecular epidemiology)

3. WP2 Drug resistance of (pathogenic) microorganisms

4. WP3 Pathology of the immune response against microorganisms

5. WP4 Construction of a biobank of (pathogenic) micro-organisms and clinical specimens

6. Dissemination of the results form the scientific research/7. Knowledge transfer supply of research services

Development and implementation of policies and regulations for intellectual property rights
Introduction of intellectual property related training courses in the post graduated training program of the Center
Development and implementation of a policy, and structure for exploitation and commercialization of the obtained results
Development and commercialization of portfolio with intellectual property rights.
In the long term, proceeding to commercialization of the results obtained, depending on the legislation in vigour: obtaining of patents for methodologies and model products, development of public/private partnerships for commercialization of the patented products/technologies; providing the mobility of young researchers between science and business; creation of prototyping workshop or spin-off
The results from the studies will be published and fully accessible to all partners, professionals and the scientific community.

The main objective of the proposed project is translation of fundamental knowledge into clinical practice in the form of: diagnostic algorithms, methodologies, conceptual prototypes for diagnostics, therapeutic and prophylaxis, expertise. The practical implementation of research results will be achieved in two principal ways: dissemination of knowledge and commercialization of the results

8. OTHER ACTIVITIES – ORGANIZATION AND MANAGEMENT OF THE PROJECT

Partnership and territorial coverage

Project name:

Fundamental Translational and Clinical Investigations on Infections and Immunity

Leading organization:

National Centre of Infectious and Parasitic Diseases

Contract:	BG05M2OP001-1.002-0001-C01
Budget:	23 638 258,00 BGN
Start date/end date:	10.08.2018 - 10.12.2023

EUROPEAN UNION
EUROPEAN SOCIAL FUND
EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Digitization of the economy in an environment of Big data (DEBD)
Contract: BG05M2OP001-1.002-0002-C02, **Budget:** 13 333 868,86 BGN
Start/end date: 30.03.2018 - 30.11.2023

Leading organization	**University of National and World Economy**
Partners	1. University of Economics – Varna 2. Technical University of Gabrovo 3. Plovdiv University "Paisii Hilendarski" 4. "Angel Kanchev" University of Ruse 5. Institute of Information and Communication Technologies (IICT) at the Bulgarian Academy of Sciences
Main objectives	The main objective of this project proposal is the establishment and providing the activities of scientific complex of highest level with concentration of the competences in the **area of information and communication technology infrastructure and optimum research potentials.** In particular, the purpose is to establish **Centre of competence in the area of Informatics and Information and Communication Technologies for Digitalization of the economy in environment of big data** where the scientific research, technological development and innovations will be completely integrated according to the highest world standards and practices which will be ensured by the exclusively innovative solution provided in this project proposal combined with the most reliable scientific team in this area involved in the project. **The purpose of the Centre of Competence is full integration of the scientific research with the development of the new and newly established technologies with implementation of the research results in practice and economy and development of innovative activities. Thus, the project proposal and built partnership meet goals and results.**
Specific objectives	**The project proposal is to provide completely the required capacity to increase the level and market orientation of the scientific research activities of the Bulgarian scientific organizations (5 higher education institutions and 2 institutes of Bulgarian Academy of Sciences) through development of the scientific research capacity and innovations which itself will create new possibilities for new partnerships with the business and establishment of new enterprises. Thus, the partnership and provided project activities directly correspond with the goal of this application procedure and provides real achievement of the provided effects.**

MAIN ACTIVITIES

1. ACTIVITIES RELATED TO THE ESTABLISHMENT AND EQUIPMENT FOR COC (CONSTRUCTION AND ERECTION WORKS; DELIVERY, ASSEMBLY AND INSTALLATION OF HARDWARE AND SOFTWARE SYSTEMS AND NETWORK SYSTEMS, PERIPHERAL DEVICES AND HARDWARE COMPONENTS FOR DEVELOPMENT AND SUPPORT AND DEVELOPMENT ACTIVITIES);

5 STAGES

1. Construction works (project month 1 (M1) – M9) for significant modernization of the existing research base with significant impact on the quality and quantity for the research activities. Intervention subject under the project is the lecturer's reading room in the UNWE library which should be transformed into Data Centre.
2. Delivery, assembly and installation of the hardware systems (M3 – M30).
3. Delivery and installation of software systems (M7 o M72).
4. Network systems, peripheral devices and hardware components for development (M18 – M48): the connectivity between the partners is built and peripheral devices and components are provided for expansion of the computer systems as well as partner control networks.
5: Maintenance and development (M18 – M72):
5.1. Analysis and assessment of the functional features and productivity;
5.2. Expansion of Hadoop with freely connected servers
5.3. Hardware and software development to improve the functional features and productivity.

RESULTS

1: Completed construction and erection works
2: Computer systems for digitalization of business processes
3: Hadoop centralized system for big data processing
4: Integrated hardware / software infrastructure for digitalization of processes and use of big data
5: Integrated network of partner scientific research and big data from IoT devices
6: Trained researches and built capacity for subsequent trainings for operation with the built system

2. ACTIVITIES WITHIN COC RELATED TO THE PERFORMANCE OF INDEPENDENT RESEARCH ACTIVITIES (MARKET ORIENTED RESEARCH AND DEVELOPMENT OF NEW TECHNOLOGIES AT HIGH INTERNATIONAL LEVELS; INVOLVEMENT OF LEADING RESEARCHERS AND TOP SPECIALISTS; IMPLEMENTATION OF NEW EDUCATION METHODS; SPECIALIZATION / TRAINING RESEARCHERS AND INNOVATORS; DEVELOPMENT AS LEADERS IN COMPETITIVE INTERNATIONAL AND NATIONAL INNOVATIVE SYSTEMS; DEVELOPMENT OF STRATEGIC PARTNERSHIPS WITH LEADING TECHNOLOGICAL RESEARCH ORGANIZATIONS AND COMPANIES IN EUROPE AND BULGARIA;

Carrying out market oriented scientific research and development of new technologies at high international levels – in fact, these will be scientific research activities of CoC related with the development and providing scientific services in the area of digitalization of the economy in big data environments and development and providing 52 services for scientific research and training summarized in 2 categories – scientific research services (30) and system applicable research services (22) (described in detail in Annex 1).
On the base of these, the working packages of SRAs are developed: WP1: Design of base research services, WP2: Design of ICT prototype products, WP3: Practical implementation of research services; WP4: Personalized application of the system scientific research services.
Involving leading research and top specialists for scientific research at high level in the ISIS priority areas: famous scientists including international will be involved in the CoC activities and contacts will be established with particular persons in order to build sustainable partnership.
Implementation of new training methods in the centre practices.

3. WIDE DISSEMINATION OF RESEARCH RESULTS ON A NONEXCLUSIVE AND NON-DISCRIMINATORY BASIS (SCIENTIFIC ARTICLES AND REPORTS ON INTERNATIONAL WORKSHOPS; WORKSHOPS WITH THE BUSINESS; SCIENTIFIC WORKSHOPS; CONFERENCE FOR REPRESENTATION OF THE SCIENTIFIC RESULTS)

1. Preparation and publishing scientific publications presented at international conferences and specialized scientific journals in order to represent the results of the performed research activities under the project. 10 scientific publications as well as 12 scientific reports at international conferences will be provided
2. Regular performance of meetings and discussions with business chambers and associations where they should be informed about the achieved results of the research activities and appropriate business objects for implementation of these results should be discussed and identified.
3. Organization of work seminars with company representatives of various functional areas
4. Organization of final conference at the end of the project for presentation and discussing the obtained results

4. KNOWLEDGE TRANSFER ACTIVITIES (PROTECTION OF INTELLECTUAL PROPERTY AND ESTABLISHMENT OF INNOVATIVE COMPANIES)

As a result of the performance of the activities, the following will be made: 5 patent or useful model requests 6 starting companies These activities will ensure stability of the obtained results through transformation into other similar economy areas which are not subject of the establishment of the Centre. These crossbusiness areas will result in new types of results which could be deemed as upgrades of the results obtained during the 6 years of project implementation.

5. PROJECT ORGANIZATION AND MANAGEMENT ACTIVITIES / 6. INFORMATION AND PUBLICITY ACTIVITIES / 7. INDEPENDENT THIRD-PARTY AUDIT ACTIVITIES

Partnership and territorial coverage

Project name:

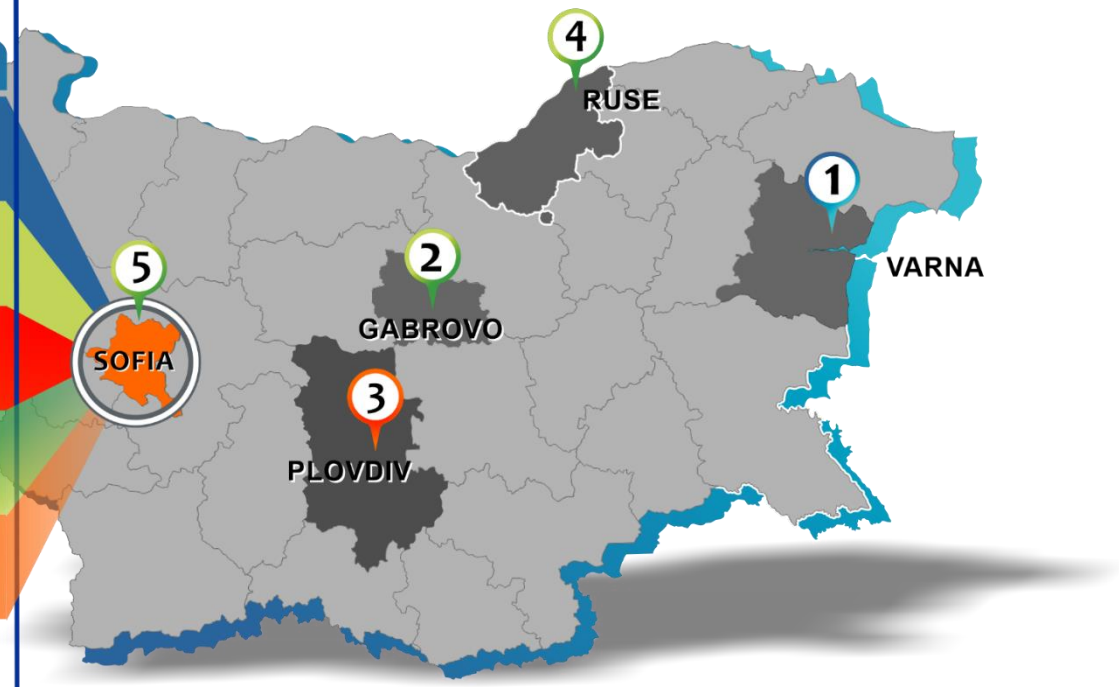
Digitization of the economy in an environment of Big data (DEBD)

Leading organization:

University of National and World Economy

Partners:

1. University of Economics – Varna
2. Technical University of Gabrovo
3. Plovdiv University "Paisii Hilendarski"
4. "Angel Kanchev" University of Ruse
5. Institute of Information and Communication Technologies (IICT) at the Bulgarian Academy of Sciences



Contract:	BG05M2OP001-1.002-0002-C02
Budget:	13 333 868,86 BGN
Start date/end date:	30.03.2018 - 30.11.2023

EUROPEAN UNION
EUROPEAN SOCIAL FUND
EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Personalized Innovative Medicine Competence Center (PERIMED)
Contract: BG05M2OP001-1.002-0005-C02, **Budget:** 23 472 018,71 BGN
Start/end date: 30.03.2018 - 30.11.2023

Leading organization	**Medical University - Plovdiv**
Partners	1. The University of Plovdiv "Paisii Hilendarsky" 2. Central Laboratory of Mineralogy and Crystallography (CLMC)
Main objectives	The PERSONALISED INNOVATIVE MEDICINE Project (PERIMED) has been designed in joint collaboration among MU- Plovdiv, Plovdiv University and IMC-BAS. The project is aimed at constructing a new innovative scientific research infrastructure, focused on the integration of scientific research and development of new and newly occurring technologies. Scientific research and innovation activities have been planned for execution in the field of personalized medicine, with the accent placed on oncology, oncohaematology and intensive care medicine, innovative drug carriers for target therapy, bioengineering technologies and biosensors. Scientific research activities are of applied nature and they will contribute to the improvement of competitiveness of interdisciplinary studies to the benefit of economy and society. The project is part of the long-term strategy of the partners for development of inter-institutional collaboration with the purpose of providing support to science in Bulgaria and its turning into a factor for the development economy which is based on knowledge and innovation activities
Specific objectives	The project envisages setting up and construction of a Competence Centre by carrying out construction and repair works and procurement of modern apparatus and special purpose equipment. 12 large-scale scientific research will be implemented under the project activities, which will include leading national and international researchers; researchers with high qualification and experience in scientific research in the country and in EU; young scientist. The project is directly related to the implementation of scientific research and development activities in technologies related to healthcare. In this context, the activities that are scheduled for execution will contribute to the construction and establishment of an infrastructural scientific complex of national importance which will be integrated successfully in the pan-European infrastructural networks in the field of personalized medicine.

MAIN ACTIVITIES

1. PROJECT ORGANIZATION AND MANAGEMENT ACTIVITIES / 2. INFORMATION AND PUBLICITY ACTIVITIES / 3. INDEPENDENT THIRD-PARTY AUDIT ACTIVITIES

4. SIGNIFICANT RECONSTRUCTION AND MODERNIZATION OF EXCISING SCIENTIFIC RESEARCH INFRASTRUCTURES, INCLUDING PREPARATORY WORKS

A. Construction and repair works

Modernization of the research infrastructure of the partners is necessary for the implementation of the planned 12 scientific programs.
In order to establish a Centre of excellence, PERIMED, the University of Plovdiv "Paisii Hilendarski" plans to carry out the reconstruction of the building existing at 21, Kostaki Peev st.
Laboratory "Drug delivery systems for targeted effect of drugs and personalized medicine" will be created at the Faculty of Pharmacy in the MU – Plovdiv, where the research activities under Work Package 8 will be conducted.
A reconstruction of a part of the building of IMC-BAS is envisaged in order to establish a Laboratory sector for physicochemical control of pharmaceutical formulations

5. Purchasing and modernization of equipment necessary for the implementation of the scientific research programmes in MU-Plovdiv / 6. Purchasing and modernization of equipment necessary for the implementation of the scientific research programmes in PU-Paisii Hilendarski / 7. Purchasing and modernization of equipment necessary for the implementation of the scientific research programmes in CLMC.

B. Purchase of the necesary equipment, supples and intangible assets

The list of equipment that is necessary for conducting the planned researches has been prepared by 12 scientific team, which justified the necessity of purchasing of any device under each Work package. Therefore, the planned building repairs and purchase of equipment needed for the implementation of 12 specific research and innovation programs of the Centre

8. WP 1. Creation and validation of a panel of genes for monitoring of tumour heterogeneity, molecular resistance, tumour load and minimum residual disease in patients with verified breast cancer – Prof.Dr. Grudeva, MU-Plovdiv
9. WP 2: Creation and validation of a panel of genes for precise molecular-genetic diagnosis in patients with chronic myeloid leukemia (CML) and monitoring of minimal residual disease – Associate Prof. Goranova, MU-Plovdiv
10. WP 3. Molecular biomarkers for medical application – Associate Prof.V. Stoyanova, MU-Plovdiv
11. WP 4. Application and development of the method of flow cytometric monitoring of the minimal residual disease in children with acute lymphoblastic leukemia and provision of populations of high purity for conducting specialised molecular-genetic and pharmaco-therapeutic in vitro by means of cell sorting - Associate Prof. Spasova, MU-Plovdiv
12. WP 5. Creation and introduction of comprehensive personalised approach in critically ill patients, on the basis of analysis of the clinical and prognostic value of variable indicators, determining the basic organic and systemic disorders in intensive care medicine – Prof.Dr. Stefanov, MU-Plovdiv
13. WP 6. Molecular biomarkers of the microbiota of the gastrointestinal tract – Prof.Dr. Iliev, Plovdiv University
14. WP 7. Immunobiomarkers for tumor and autoimmune diseases - Prof. Dzhambazov, Plovdiv University
15. WP 8. Drug-delivery systems for targeted effect of medications and personalized medicine – Prof. Kassarova, MU-Plovdiv
16. WP 9: physicochemical characterization of innovative medical forms – Prof.Dr. Shivachev, IMC-BAS
17. WP10. Biocatalysts and natural bioactive substances – Prof.Dr. Gochev, Plovdiv University
18. WP 11. Biopolymers and new materials – Prof.Dr. Yovcheva, Plovdiv University
19. WP 12 Biosensors - Associate Prof. Dimcheva, Plovdiv University

20. DEVELOPMENT AS LEADERS WITHIN THE CONCURRENT INTERNATIONAL AND NATIONAL INNOVATIVE SYSTEMS

12 research teams will be formed in order to implement the scientific programme of the center. 8 young scientists up to 34 years old and 25 PhD students will be involved
15 leading researchers will be involved as well as 10 leading researchers from the EU
Established more than 10 partnerships with leading technological research organizations from EU.
25 trainings and specializations of the researchers will be performed in the EU.
Participation in 39 scientific conferences.
50 publications in scientific magazines, 21 of these will be published in magazines which are among the leading 10% in the relevant area.

21. EXPLOITATION, COMMERCIALIZATION AND POPULARIZATION OF THE RESEARCH PRODUCTS AND RESULTS

To develop a portfolio for the Center with intellectual property rights, which includes the registration of 10 patents, 4 utility models and 1 international patent, a minimum of 3 products registered. To accredit the Laboratory "Drug-delivery systems for targeted effect of drugs and personalized medicine" (Work Package 8) with the purpose to improve the opportunities for the provision of services to pharmaceutical companies and other users, not only at national, but also at international level. Accreditation of a laboratory for biocatalysis and biologically active substances for the preparation of experimental batches of bioactive components that could be registered as food supplements, as well as the certification of a laboratory for molecular enzymology and biotechnology for creation and work with recombinant (genetically engineered) microorganisms for technological purposes. To create at least 3 spin-off companies in order to facilitate the commercialization of the results from the research.

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EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Partnership and territorial coverage

Project name:

Personalized Innovative Medicine Competence Center (PERIMED)

Leading organization:

Medical University - Plovdiv

Partners:

1. The University of Plovdiv "Paisii Hilendarsky"
2. Central Laboratory of Mineralogy and Crystallography (CLMC)

Contract:	BG05M2OP001-1.002-0005-C02
Budget:	23 472 018,71 BGN
Start date/end date:	30.03.2018 - 30.11.2023

EUROPEAN UNION
EUROPEAN SOCIAL FUND
EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Establishment and Development of a Center of Competence "Quantum Communication, Intelligent Security Systems and Risk Management" (Quasar)
Contract: BG05M2OP001-1.002-0006-C02, **Budget:** 13 500 000,00 BGN
Start/end date: 01.06.2018 - 01.06.2023

Leading organization	**Institute of Robotics "Saint Apostle and Gospeller Matthew" - Bulgarian Academy of Sciences**
Partners	1. The Institute of Metal Science, Equipment and Technologies 2. "Nikola Vaptsarov" Naval Academy (Varna) 3. "Vasil Levski" National Military University (Veliko Tarnovo) 4. Technical University of Gabrovo 5. The Institute for Nuclear Researches and Nuclear Energy with BAS 6. The Faculty of Geology and Geography - Sofia University "St. Kliment Ohridski" (SU) 7. Association "Advanced Flight Technologies"
Main objectives / Specific objectives	1. To create a CoC in the area of Informatics and information and communication technologies and to apply these for the support of the critical infrastructure. 2. Creation of best conditions for implementation of high level of research activities within one of the priority areas of ISSS. 3. Higher level of market orientation of the research activities through implementation of the activities envisaged within the working packages.

MAIN ACTIVITIES

1. PROJECT ORGANIZATION AND MANAGEMENT ACTIVITIES

2. CONSTRUCTION OF A RESEARCH INFRASTRUCTURE OF THE CENTRE OF COMPETENCE

Within this project for establishment of a CoC, internal reconstruction and construction and repair works will be implemented to parts of existing buildings of the partners, which will serve for the implementation of the Centre's activities. This will create a new physical infrastructure that will meet all technical requirements related to the equipment planned for purchase within the project and for the carrying out of effective research and development activity.
No purchase of real estate is planned. The construction and installation works will be carried out on properties owned by the project partners.

3. RESEARCH AND DEVELOPMENT ACTIVITIES OF THE CENTRE OF COMPETENCE

Work Package 1. **Quantum Communication** will carry out activities within research area 3. Natural Sciences, Mathematics and Informatics (Physical Sciences, Chemical Sciences, Mathematics, Informatics and Computer Science) and 4. Technical Sciences (Mechanical Engineering, Electrical Engineering, Electronics and Automation, Communications and Computer Technics, General Engineering).
Work Package 2 **Intelligent Security Systems** will carry out activities within research area 3. Natural Sciences, Mathematics and Informatics (Physical Sciences, Mathematics, Informatics and Computer Science) and 4. Technical Sciences (Mechanical Engineering, Electrical Engineering, Electronics and Automation, Communications and Computer Technics, Materials and Materials Science).
Work Package 3 **Risk Management** will carry out activities within research area 3. Natural Sciences, Mathematics and Informatics (Informatics and Computer Science) and 4. Technical Sciences (Communications and Computer Technics, Transport, shipping and aviation).
Work Package 4 **Innovative sensor technologies with multi-purpose application** will carry out activities within research area 3. Natural Sciences, Mathematics and Informatics (Physical Sciences, Earth Science, Informatics and Computer Science) and 4. Technical Sciences (Electrical Engineering, Electronics and Automation, Communications and Computer Technics, Materials and Materials Science).

4. TRAININGS, SEMINARS AND CONFERENCES

Trained laboratory workers, engineers and young researchers to achieve a higher qualification and expertise in order to be able to implement the working packages.
Specializations will be organized for researchers and innovators in order to be aware of the most updated tendencies in the areas within the project.
Organized seminars and conferences for scientific information exchange as well as for the application of the research results.

5. RESEARCH RESULTS EXPLOITATION

For the purposes of exploitation and commercialization of research results, offices for technology transfer of project partners will be included, while the Center of Competence itself will perform similar functions on the basis of a new structure that will combine the capacity, resources and expertise of the partners on the project.
Exchange of experience, best practices, creating synergy at European level in the field of intellectual property and the transfer of knowledge and technology Synergy of innovative efforts of research organizations
Providing expertise on European policies, uniting individual and accumulation of collective experience, reduction of fragmentation of research in Europe
As a result of the activities within the four work packages a number of discoveries are expected to be generated, which based on their technology assessment, then protection of their intellectual property right (in the Bulgarian Patent Office, WIPO, European and/or US patent organizations) will be licensed to the business.

6. INFORMATION AND PUBLICITY ACTIVITIES / 7. INDEPENDENT THIRD-PARTY AUDITH

Partnership and territorial coverage

Leading organization:

Institute of Robotics "Saint Apostle and Gospeller Matthew" - Bulgarian Academy of Sciences

Partners:

1. The Institute of Metal Science, Equipment and Technologies
2. "Nikola Vaptsarov" Naval Academy (Varna)
3. "Vasil Levski" National Military University (Veliko Tarnovo)
4. Technical University of Gabrovo
5. The Institute for Nuclear Researches and Nuclear Energy with BAS
6. The Faculty of Geology and Geography - Sofia University "St. Kliment Ohridski" (SU)
7. Association "Advanced Flight Technologies"

Project name:

Establishment and Development of a Center of Competence "Quantum Communication, Intelligent Security Systems and Risk Management" (Quasar)

Contract:	BG05M2OP001-1.002-0006-C02
Budget:	BGN 13 500 000,00
Start date/end date:	01.06.2018 - 01.06.2023

EUROPEAN UNION
EUROPEAN SOCIAL FUND
EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Center of competence in the field of personalized medicine, 3d and telemedicine, robotic-assisted and minimally invasive surgery
Contract: BG05M2OP001-1.002-0010-C01, **Budget:** 23 695 179,29 BGN
Start/end date: 26.07.2018 – 31.12.2023

Leading organization	**Medical university - Pleven**
Partners	1. Medical University – Varna; 2. The Institute of Robotics - BAS
Main objectives / Specific objectives	**A research complex will be constructed at the highest level, where research in accordance with the best international standards and practices shall be carried out.** The research environment modernization will greatly improve the potential for fundamental and applied research, experimental development and will increase the competitiveness of the Bulgarian economy. **The constructed CoC will be at European level and it will successfully become a part of international and transnational research partnerships, networks and programmes that ensure a high level of international visibility and scientific coherence.** Specialization trainings will be held there both for the participating researchers and students, PhD students and post-doctoral studies. The aim of the staff at the CoC will be focused on attracting Bulgarian and international scientists to work in the newly built infrastructure, opening new jobs for researchers, stimulation of young scientists and the quality, quantity and impact of the expected scientific production to be published in editions within the top 10% of scientific publications in the scientific area. Over the next 10 years the center will operate on the basis of high-tech and specialized pro-innovative infrastructure including equipment and specialized software to enable research and development works to be carried out, new knowledge and technologies transfer, training of students, post-graduate and PhD students and other clinical professionals in the **targeted areas: General Surgery, Gynaecology, Urology, ENT, Orthopaedics, Pathology, Medical Genetics, etc.** The Centre should continue the partners' mission by offering innovative, attractive and modern education, as well as to broaden the opportunities, quality and form of training and researches. **Services supporting the access to new knowledge and technologies in the field of personalized medicine, 3D and telemedicine, minimally invasive and robotic-assisted surgery.** They are based on the gained experience of the specialists working for the main partners under the project: Medical University – Pleven; Medical University – Varna and the Institute of Robotics at the Bulgarian Academy of Sciences. For the implementation of part of the actions under the project it shall be used gratuitously the human resources and infrastructure of the associated partners. The center shall initiate cooperation with leading European and global technology partners that would increase the efficiency of its achievements and therefore the financial sustainability after the project completion. It would contribute to increasing the number of developed and successfully implemented in the science of innovative products, processes and services from the center. On the one hand, the Center would develop innovative methods, solutions and technologies in the field of health, but due to their transfer to high-tech enterprises and higher education institutions in these areas it would create the conditions for their implementation and improvement.

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

MAIN ACTIVITIES

1. PROJECT ORGANIZATION AND MANAGEMENT ACTIVITIES / 5. PUBLICITY AND VISUALIZATION / 6. INDEPENDENT THIRD-PARTY AUDITH

2. CONSTRUCTION OF NEW AND MODERNIZATION OF EXCISTING INFRASTRUCTURE

WP1 - Department of Personalized Medicine – construction of modern research structure for carrying out studies in pathomorphology and molecular pathology of social significance for our country and Europe malignant tumours (cancer of breast, colon, lung, etc.), study of genetic changes (breast and ovarian cancer) , providing prenatal / preimplantation genetic diagnosis in couples with proven pre-reproductive genetic carriers, as well as construction of a network providing the opportunities for intraoperative telemedicine, telepathology and virtual microscopy.
1.1. Construction of a research laboratory in precision oncology and genomic medicine 1.2. Construction of laboratory in precise pathology with application the methods of telepathology, morphometry and telemedicine
WP – 2 – Department of 3D Medicine – construction of modern research structure providing the opportunities for modelling, in silico analysis and creating through 3D printing of individual orthotic devices, 3D models of organs and tissue transplants.
2.1 Laboratory for 3D printing, modelling and analysis
2.2. Laboratory for research and training of surgeons in virtual reality (VR) environment
WP – 3 – Department of Minimally Invasive Surgery (MIS) – Construction of an integrated operating unit where modern, innovative and high-tech scientific clinical research in minimally invasive surgery to be implemented in the areas ear-nasal-throat diseases, oncological surgery and surgical gynaecology.
3.1. Construction of integrated interdisciplinary operational unit with navigation systems and telesurgery
3.2. Construction of laboratory for stereotactic vacuum aspiration biopsies in patients with breast diseases
3.3. Construction of laboratory for experimental development for the needs of MIS at ISER to BAS
WP – 4 – Department of Robotic-Assisted Surgery – to be upgraded and developed the basis of the partners for robotic surgery for the implementation of clinical and experimental research projects of applied nature concerning robotic-assisted surgery in gynaecology, surgery and urology
4.1. Laboratory for clinical robotics at MU-Pleven
4.2. Laboratory for clinical robotics at MU-Varna
4.3. Laboratory for experimental surgery robotics at BAS

3. RESEARCH and DEVELOPMENT

I. WP – 1 Department of Personalized Medicine Construction of a modern research structure for the implementation of studies in pathomorphology and molecular pathology of malignant tumours (breast cancer, colon cancer, lung cancer, etc.), studies of their genetical alteration (breast cancer and ovarian cancer) as well as a network providing the opportunities for intraoperative telemedicine, telepathology and virtual microscopy.
A. Construction of a research laboratory for precision oncology and genomic medicine
B. Construction of a laboratory for precision pathology with application of telepathology and telemedicine methods
II. WP – 2 – Department of 3D Medicine
A. Laboratory for three-dimensional printing, modeling and analysis
B. Laboratory for research and training of surgeons in virtual reality (VT) environment
III. WP - 3 - Minimally Invasive Surgery Departament (MIS)
IV. WP - 4 Robotic Surgery
A. Robotic Surgery at Medical University Pleven
B. Creating a Center for Robotic Surgery at MU-Varna
C. Creating an Experimental Laboratory for Robotic Surgery at BAS

4. DISSEMINATION OF RESULTS, PROTECTION OF INTELECTUAL PR5OPERTY, KNOWLEDGE AND TECHNOLOGIES TRANSFER, DEVELOPMENT OF HUMAN RESOURCES - Unit for certification, intellectual property rights protection and knowledge and technology transfer

The dissemination plan includes the involvement of private hospitals and centres. The end-users of the project's results are:
• Other scientists working in the field of oncology, genetics, molecular pathology, three-dimensional printing, MIS and RS
• Companies and laboratories providing genetic services.
• Service providers for the health sector, clinics, etc.
• Patient organizations
The dissemination objectives are:
• Widely promoting the project among relevant academics, end users and beneficiaries.
• Direct knowledge transfer to other research programs and potential end-users.
• Open and transparent involvement of academia and user groups
• All means of disseminating the obtained results will be used at national and international level (media, publications in prestigious journals, web sites).

The results obtained within the project CoC will be protected in terms of Intellectual Rights Property - IPR, to ensure that the operation is certainly beneficial to the parties involved. It is envisaged to be drawn up and signed an association agreement immediately after the project's evaluation and approval. It will cover the following aspects related to intellectual property management: knowledge management; confidentiality obligations; ownership and transfer of ownership of the results; protection and exploitation of the results; distribution; access rights and dispute settlement. Additionally, it is envisaged a more detailed development of the exploitation plan after the project's start

For ensuring a sustainable process of intellectual property protection and technology and knowledge transfer for the Centre's employees and management it will be held trainings and seminars on the intellectual property and technology and knowledge transfer and it will be encouraged the employees participation in such events organized by external institutions, such as workshops and trainings of the Patent Department. In the development and creation of an intellectual product it shall be observed the RULES OF CREATION, REGISTRATION, PROTECTION AND MANAGEMENT OF INTELLECTUAL PROPERTY RIGHTS at MU - Pleven

Selecting of outstanding students to work in the CoC.
The administrators of the partners will monitor the career development of students and PhD students and will try to attract the most prominent of them to work at the center.
Arguments such as good working conditions, prospects for carrear in research and innovation in the country and relatively good pay will be used for motivation. In addition to this measure, the CoC will seek to appoint eminent scientists at European level both from home and abroad as a key criterion for these appointments will be objective scientometric data and/or data for efficient innovation activities.

Partnership and territorial coverage

Leading organization:

Medical university - Pleven

Partners:

1. Medical University – Varna
2. The Institute of Robotics - BAS

Project name:

Center of competence in the field of personalized medicine, 3d and telemedicine, robotic-assisted and minimally invasive surgery

Contract:	BG05M2OP001-1.002-0010-C01
Budget:	BGN 23 695 179,29
Start date/end date:	26.07.2018 – 31.12.2023

EUROPEAN UNION
EUROPEAN SOCIAL FUND
EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Creation and development of Center of Competence in Mechatronics and clean technologies MIRACle (Mechatronics, Innovation, Robotics, Automation, Clean technologies)
Contract: BG05M2OP001-1.002-0011-C01, **Budget:** 22 570 572,32 BGN
Start/end date: 30.09.2019 – 30.12.2023

Leading organization	Institute of Mechanics
Partners	1. Institute of information and communication technologies - Bulgarian Academy of Sciences; 2. Central Laboratory of Solar Energy and New Energy Sources 3. Sofia University „St. Kliment Ohridski" 4. Technical University – Sofia 5. University "Prof. Asen Zlatarov" – Burgas 6. VUZF University - Sofia 7. GIS - TRANSFER CENTER FOUNDATION
Main objectives / Specific objectives	The aim of the MIRACle project is to create a Center of Competence in the thematic area of ISSS "Mechatronics and Clean Technologies", consisting of a critical mass of leading scientists and talented, successful researchers and inventors in all scientific and applied fields in this thematic area, with the most modern research infrastructure, with a properly defined organizational structure and its own research and innovation programs, so as to provide opportunities for competitive development of the scientific field "Mechatronics" and the full scientific service of the economic sectors related to this thematic area. Specific objectives of the project are: -Ensuring the reproduction of scientific and research staff in the specified thematic area, including by attracting leading scientists and researchers (from the country and abroad) to conduct research and to ensure the specialization of researchers and innovators at a high level; -Creation and introduction of new teaching and educational methods and programs in the field of mechatronics and clean technologies, including for researchers and business representatives; -Creation of sufficiently favorable and attractive conditions for the development of highly qualified young researchers, specialization of researchers and innovators at a high level in the field of mechatronics and clean technologies, as well as for continuity of knowledge and experience of different generations of researchers; -Establishing strategic partnerships with leading technology research organizations and companies in Europe to initiate research projects funded by the EU Framework Programs; -Creation of strategic partnerships with leading Bulgarian innovation clusters and high-tech companies for initiating innovative projects, for sponsored and contracted research for the needs of business; -Development and commercialization of a portfolio of the MIRACle Competence Center with the rights to the created intellectual property and the obtained scientific results within its research activity, including creation of new start-up, spin-off and spin-out companies and other related with them activities for providing scientific expertise and the created research infrastructure, in order to ensure sustainable public and private funding, necessary for the full functioning of the Center "MIRACle". With its infrastructural capacity and the services it offers, to become a platform for the development of start-up companies and innovative ideas, as well as to catalyze the process of commercialization of research; -Wide dissemination of the opportunities of the built research infrastructure and the obtained research results, both among the academic circles and in the industrial circles, local authorities and the society as a whole, for increasing the sustainability of MIRACle and the efficiency of the invested resources.

MAIN ACTIVITIES

5. PROJECT ORGANIZATION AND MANAGEMENT ACTIVITIES / 4. PUBLICITY AND VISUALIZATION

1. Construction of a research infrastructure of the MIRACle Competence Center in the thematic area "Mechatronics and clean technologies".

The overall research infrastructure of the MIRACle Competence Center, in implementation of Activity 1, will consist of these 4 bases. Base 1 will be built on the territory of BAS (from the laboratories of IMech, IICT, Central Laboratory of Solar Energy and New Energy Sources), base 2 - on the territory of TU-Sofia, base 3 will be developed on the territory of Sofia University "St. Cl. Ohridski ", and base 4 will be moved to the territory of the University“ Prof. Ace. Zlatarov ”, Burgas.
As a result will be constructed research infrastructure, consisting of significantly modernized premises and purchased specialized equipment necessary for conducting scientific and applied research at a high level. Within the newly built infrastructure in BAS, Sofia University "St. Kl. Ohridski", TU-Sofia, University "Prof. Assen Zlatarov", Burgas, 15 laboratories will be established, corresponding to the priorities in the thematic area "Mechatronics and clean technologies". : Mechatronic systems for discrete production processes;
Automation of innovative technological processes. Intelligent systems; Mechatronic micro-positioning and micro-fluid systems for biological cells and micro-objects; Mechanics and control of robotic systems; Biomechatronic systems for rehabilitation and support of human movements. Research of human-machine systems; Mechatronic systems applicable to medicine; Intelligent urban environment;
Development of functional coatings and their integration into mechatronic and biomechatronic systems; Specialized laboratory for biochemical treatment of water and sludge; Intelligent mechatronic solutions in the field of textiles and clothing; Micro and nanomechanics of mechatronic systems; Monitoring, non-destructive testing, testing and characterization of mechatronic systems; Metrological assurance, intelligent sensors, instruments and systems for measuring and controlling quality; Mathematical provision and modeling of complex processes and systems;
3D modeling, prototyping and reengineering of elements, details and systems in mechatronics.

3. RESEARCH and TRAINING

The description of the research of the MIRACle Competence Center is a set of the description of the research and training programs in the separate work packages: WORK PACKAGE
WP 1 "INNOVATIVE SOLUTIONS IN ROBOTICS" of the newly created scientific infrastructure consists of 4 laboratories, distributed on the territory of the partners, but interconnected and complementary. The laboratories built and equipped with modern scientific equipment will develop research activities related to the creation of mechatronic systems and products to perform a wide range of tasks arising from the industry; research and optimization of innovative technological processes and intelligent systems; 3D modeling and reengineering of industrial sites; research, analysis, design, modeling, simulation, prototyping and control of intelligent robotic mechatronic devices and systems using positioning and microfluidic technologies.
WP 2. BIOMECHATRONIC SYSTEMS. Two laboratories will be built. The goals and objectives of R&D are experimental research and development of biomechatronic systems for rehabilitation and support of human movements, and in particular the design and development of active orthoses to support the movements of people with mobility problems. The main tasks of the study of human-machine systems are the mechanical design, modeling and control of new mechatronic components (drives and sensing) for the construction of robots with new physical characteristics and human-oriented components. Emphasis is also on the development of mechatronic systems for drilling and cutting bones in orthopedic surgery.
WP 3. INTELLIGENT ENVIRONMENTS, PROCESSES AND TECHNOLOGIES IN MECHATRONICS combines R&D of 5 unique laboratories.
WP4 "NEW METHODS AND MEANS OF CONTROL AND TESTING OF MECHATRONIC ELEMENTS AND SYSTEMS". The R&D activities and results in this work package are applicable in all other laboratories of the Competence Center. The developed new methods and means for control and testing of mechatronic elements and systems will be applicable in all priorities of the thematic area "Mechatronics and clean technologies" of ISIS.
RP5. MATHEMATICAL PROVISION AND MODELING OF COMPLEX SYSTEMS AND PROCESSES. RISK ANALYSIS. The aim of the research in the work package is to develop methodologies for studying behavior and modeling of complex systems with priority application in the field of mechatronics and clean technologies.
WP6. 3D MODELING, PROTOTYPING AND REENGINEERING OF ELEMENTS, DETAILS AND SYSTEMS FOR MECHATRONICS. The laboratory will develop high-tech innovative technologies for materialization of virtual (computer) 3D models with complex shapes in a very short time (Rapid Prototyping).

4. PROTECTION OF INTELECTUAL PROPERTY, TECHNOLOGIES TRANSFER, EXPLOITATION AND COMMERCIALIZATION OF RESULTS

The technology transfer center to be built at MIRACLe will play a key role in the technological transfer of competitive research products and know-how, consultations and expertise with a focus on small and medium-sized enterprises and vice versa, the protection of intellectual property, technology transfer, the creation of spin-offs, spin-out companies for the development and commercialization of intellectual property created as a result of the Centre's activities, the development and implementation of innovative and technological projects for a wide range of companies working in the field of mechatronics and clean technology. The approach developed by GIS-Transfer Center will be used to support technology-oriented start-ups - InterGetUP within a project funded by the InterregIIIc program in the period 2004-2007 and applied to more than 20 such start-ups for the period 2005-2015. The InterGetUP approach has been designed as a guide and textbook for training entrepreneurs and has undergone two editions so far.

Partnership and territorial coverage

Project name:

Center of Competence MIRACle – Mechatronics, Innovation, Robotics, Automation, Clean Technologies

Leading organization:

Institute of Mechanics -BAS

Partners:

1. Institute of Information and Communication Technologies - BAS
2. Central Laboratory of Solar Energy and New Energy Sources - BAS
3. Sofia University „St. Kliment Ohridski"
4. The Technical University of Sofia
5. University "prof. d-r Asen Zlatarov" - Burgas
6. VUZF University - Sofia
7. GIS - Transfer Center Foundation

Contract: BG05M2OP001-1.002-0011
Budget: 22 570 752.32 BGN
Start date/end date: 30.09.2018 - 30.12.2023

EUROPEAN UNION
EUROPEAN SOCIAL FUND
EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Sustainable utilization of bio-resources and waste of medicinal and aromatic plants for innovative bioactive products
Contract: BG05M2OP001-1.002-0012-C02, **Budget:** 23 791 055.20 BGN
Start/end date: 30.03.2018 - 30.11.2023

Leading organization	**Institute of Organic Chemistry with Centre of Phytochemistry**
Partners	1. AgroBioInstitute / ABI-AA /, part of the Agricultural Academy /AA/ 2. Faculty of Chemistry and Pharmacy, Sofia University "St. Kliment Ohridski" 3. Faculty of Biology, Sofia University "St. Kliment Ohridski" 4. Institute of Polymers, Bulgarian Academy of Sciences
Main objectives / Specific objectives	The main objective of the COC is to join scientific expertise, competences and scientific infrastructure for the implementation of market oriented research focused on effective and sustainable utilization of the **national bio resources form medicinal and aromatic plants** and to use the **agro-bio waste for creation of innovative products** with added value and possibilities for commercialization of the results in cooperation with companies, thus creating **conditions for sustainable growth of the bio economy of the country**. Such activities could be qualified as "Intelligent utilization of the Bulgarian biodiversity for economic development and sustainable growth" in ISSS thematic area "Industry for a healthy life and bio-technologies"

MAIN ACTIVITIES

1. PROJECT ORGANIZATION AND MANAGEMENT ACTIVITIES / 6. INDEPENDENT THIRD-PARTY AUDITH

2. CONSTRUCTION, MODERNIZATION AND EQUIPMENT OF THE CENTRE

The research infrastructure planned to be modernized and developed within the project proposal, represents scientific instrumentation and equipment for establishing of a research center in the field of "Sustainable utilization of bio-resources and waste of medicinal and aromatic plants for innovative bioactive products". The planned infrastructure is based on existing scientific laboratories within the partner organizations which are internationally recognized scientific and educational institutions:
In order to ensure the functional integration and effective joint R&D activities of the project partners are envisioned the establishment of a total five Departments with research laboratories in line with the main R&D areas.
Within the current project are envisioned construction works related to the increase and upgrade of the existing capacity of the laboratory complexes in order to be insured the required laboratory environment for the installation and efficient use of the purchased high-tech equipment, as well as improvement of the conditions and capacity of the facilities for efficient joint use of the research infrastructure.

1. Department "Agrobiotechnology"
2. Department „Bioactive natural and synthetical compounds"
3. Department „Bioactivity of products"
4. Department „Polymeric nutraceutical and cosmetic formulations"
5. Department "Formulation, characterization and safety assessment of plant based products"

3. RESEARCH and DEVELOPMENT

SP-1 – Agrobiotechnology of medicinal and aromatic plants and functional characterization of agrobio-waste
SP-2 – Chemical profiling of MAP and MAP-processing waste in order to identify and isolate bioactive components and products
SP-3 – Biological activity of extracts, fractions and individual components, derived by MAP and agrobio-waste
SP-4 – Technologies for processing of MAP and agro-bio waste – production of bioactive compounds and synthetic analogues
SP-5 – Polymeric and composite (nano) materials for nutraceuticals and cosmetic formulations
SP-6 – Innovative technologies and processes for production of health care products of plant origin

4. DISSEMINATION OF RESULTS, PUBLICITY AND COMMUNICATION

Distribution of R & D results, mainly through their publication in leading international journals and providing access ("open-access", the option of free access) to the publications in leading international journals, including in some of the "top 10%" journals in the field of the CC; their presentation at international scientific conferences and simultaneous publication at least on the site of the Center of Competence; publication of databases and materials related to teaching on the website of the Center of Competence ;

(1) Analysis of expected results and the interested users of the results
(2) Defining the dissemination channels of the results and their financial support
(3) Motivation of the researchers to participate in scientific conferences and other events to present the results of their research
(4) Protection as intellectual property
(5) Development of new training modules and methods
(6) Training of post-graduates
(7) Applying the principles of the European Charter for Researchers and ethical principles

5. KNOWLEDGE TRANSFER AND COOPERATION WITH BUSINESS

Training of a large number of specialists in the subject area for better qualification.

- Activities for Know-how transfer from CoC to the Business.
- Activities targeting sustainable collaborations and joint projects between the CoC and the Business

Partnership and territorial coverage

Leading organization:

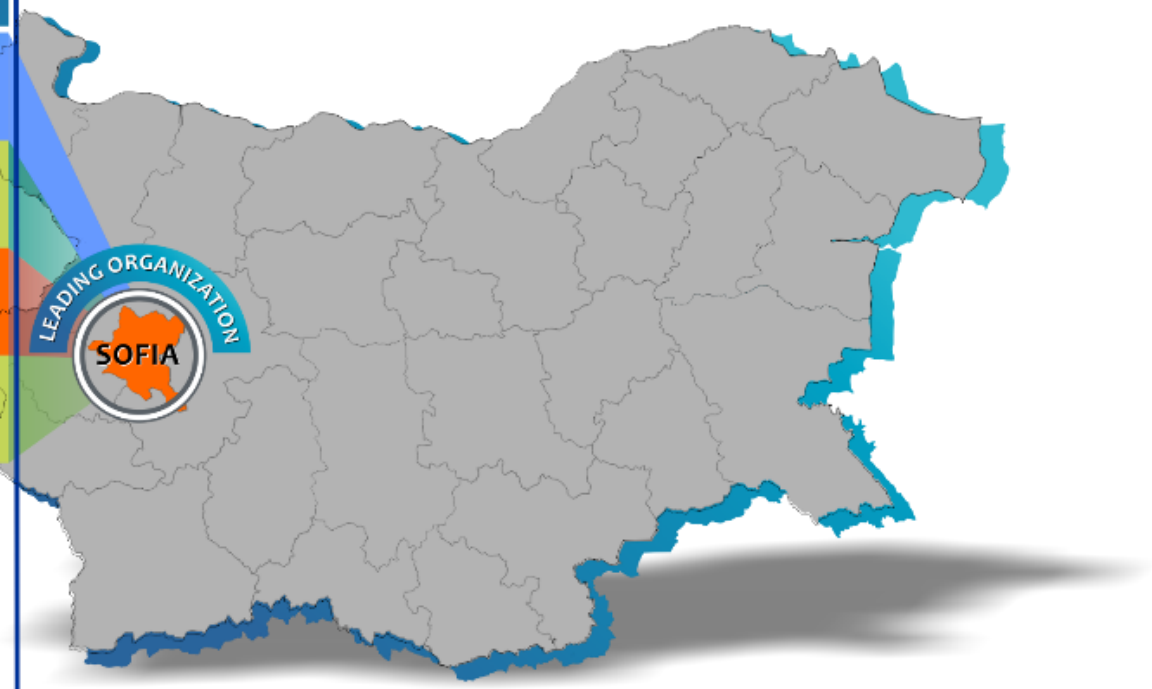
Institute of Organic Chemistry with Centre of Phytochemistry

Project name:

Sustainable utilization of bio-resources and waste of medicinal and aromatic plants for innovative bioactive products

Partners:

1. AgroBioInstitute / ABI-AA /, part of the Agricultural Academy /AA/
2. Faculty of Chemistry and Pharmacy, Sofia University "St. Kliment Ohridski"
3. Faculty of Biology, Sofia University "St. Kliment Ohridski"
4. Institute of Polymers, Bulgarian Academy of Sciences



Contract:	BG05M2OP001-1.002-0012-C02
Budget:	BGN 23 791 055.20
Start date/end date:	30.03.2018 - 30.11.2023

EUROPEAN UNION
EUROPEAN SOCIAL FUND
EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Centre of competence HITMOBIL–Technologies and Systems for Generation, Storage and Utilization of Clean Energy
Contract: BG05M2OP001-1.002-0014-C01, **Budget:** 21 709 196.10 BGN
Start/end date: 21.03.2019 - 21.12.2023

Leading organization	**Institute of Electrochemistry and Energy Systems "Acad. Evgeni Budevski" – Bulgarian Academy of Sciences**
Partners	1. Joint Innovation Center - BAS 2. Institute of Catalysis - BAS 3. Institute of Chemical Engineering – BAS 4. Institute of General and Inorganic Chemistry - BAS 5. Institute of Polymers – BAS 6. Central Laboratory of Solar Energy and Novel Energy Sources – BAS 7. Scientific Institute of Clean Technologies NGO 8. Institute of Hydrogen Technologies (IHT), by the Bulgarian Hydrogen Society 9. Southwest University "Neofit Rilski"
Main objectives / Specific objectives	The main purpose of the CC HITMOBIL project is the building of **unique infrastructure for development, testing, optimization and introduction of modern systems for mobility and energy storage at regional and national level**. This infrastructure will provide the possibility to carry out applied studies in both of their modifications - breakthrough research and underpinning research, for which expertise, but no facilities are presently available. The following specific purposes will also be attained by means of CC HITMOBIL: **Experimental basis for applied studies, innovation, development and deployment activities due to the possibility of high technology level combined with the expertise and vision of the existing personnel**, who will actively take part in the design and following exploitation of the equipment; Expert personnel will be enhanced – as a number as well as with new expertise; **New jobs will be created for researches within CC HITMOBIL**; Capacity and infrastructure will be created for the activity of more researchers; **More young scientists up to 34 years old will be involved**; Leading national and foreign scientists will be engaged in the investigations, applied and deployed activity of the Center; New possibilities will be created for teaching of doctor and post-doctor fellows, and other forms of qualification, inclusive industrial staff, having in mind the development of new branches requiring specialized knowledge and competence; **International mobility and cooperation will be improved by creation of new partnerships with foreign research and business structures**; Partnership and interaction will be created between the centers of research and deployment, universities and enterprises, the connection "science – education – business" will be strengthened; Conditions will be created for the participation of Bulgarian firms in European demonstrative and precommercial projects; **Private investors will be involved with a special accent on scientific research as a basis of technological development**.

MAIN ACTIVITIES

1. BUILDING-UP OF NEW DISTRIBUTED SPECIALIZED INVESTIGATION INFRASTRUCTURE, INCLUDING PREPARATION ACTIVITIES

2. PURCHASE AND PUTTING IN OPERATION OF EQUIPMENT (TANGIBLE ASSETS) AND INTANGIBLE ASSETS, NECESSARY TO REALIZE THE INVESTIGATION AND INNOVATION PROGRAM OF CC

3. CARRYING OUT MARKET ORIENTED SCIENTIFIC STUDIES AND DEVELOPMENT OF CUTTING NEW TECHNOLOGIES IN PRIORITY AREA OF THE INNOVATIVE STRATEGY FOR INTELLIGENT SPESIALIZATION (ISIS) "MECHATRONICS AND CLEAN TECHNOLOGIES"

A3.1: Development of new types of batteries and supercapacitors for energy storage and electrical vehicles
A3.2: Innovations in the field of photovoltaic energy systems
A3.3: Innovations in the field of hydrogen technologies
A3.4: Investigations and research in the field bioenergy – catalytic reforming and biofuels
A3.5: Industrial study and experimental development of chemical power sources for energy storage and electrical vehicles
A3.6: Industrial study and experimental development of integral energy systems

4. ASSOCIATION OF LEADING RESEARCHERS AND TOP SPECIALISTS FOR CARRYING OUT CUTTING LEVEL RESEARCH IN PRIORITY AREA OF THE INNOVATIVE STRATEGY FOR INTELLIGENT SPESIALIZATION (ISIS) "MECHATRONICS AND CLEAN TECHNOLOGIES", ESPECIALLY IN HYDROGEN-BASED TECHNOLOGIES, ELECTRICAL VEHICLES AND STORAGE OF ENERGY FROM RES

5. ENSURING EXTRA QUALIFICATION OF INVESTIGATORS AND INNOVATORS IN THE PRIORITY AREAS OF THE INNOVATIVE STRATEGY FOR INTELLIGENT SPESIALIZATION (ISIS). INCREASING THE QUALIFICATION AND COMPETENCE OF THE EXISTING AND NEW STAFF IF THE CENTRE

6. ACHIEVEMENT AND CONFIRMATION OF LEADING POSITIONS ON REGIONAL AND EUROPEAN LEVEL, PARTICIPATION IN PRESTIGIOUS INTERNATIONAL CONFERENCES.

7. FORMATION OF STRATEGIC PARTNERSHIPS WITH LEADING TECHNOLOGICAL AND SCIENTIFIC ORGANIZATIONS AND FIRMS IN 8 EUROPE AND BULGARIA

8. BROAD DISSEMINATION OF THE RESULTS BY INCREASED PUBLICATION ACTIVITY, ORGANIZATION OF CONFERENCES, SEMINARS, SUMMER SCHOOLS/WORKSHOPS; CREATION OF A DIGITAL LIBRARY; ASSISTING LEGISLATIVE AND ADMINISTRATIVE INITIATIVES ON INTRODUCTION OF HYDROGEN TECHNOLOGIES ON NATIONAL AND REGIONAL LEVEL

9.TRANSFER OF KNOWLEDGE. ALL PARTNERS PARTICIPATE. CREATION AND MERCHANDIZING OF A PORTFOLIO OF INTELLECTUAL PROPERTY RIGHTS AND PROVIDING OF SUSTAINABLE PUBLIC FINANCE. ESTABLISHING A "SPIN" ENTERPRISE

10. PROVIDING OF SPECIALIZED RESEARCH AND APPLIED SERVICES BY CREATION OF AN INFORMATION MAP OF THE EXISTING INVESTIGATION STRUCTURE AND THE RANGE OF ITS ACTIVITY AND OF A TRACING SYSTEM ABOUT THE UTILIZATION OF THE INFRASTRUCTURE

11. ORGANIZATION AND MANAGEMENT OF THE PROJECT

12. INFORMATION AND PUBLICITY

13. INDEPENDENT EXTERNAL AUDIT.

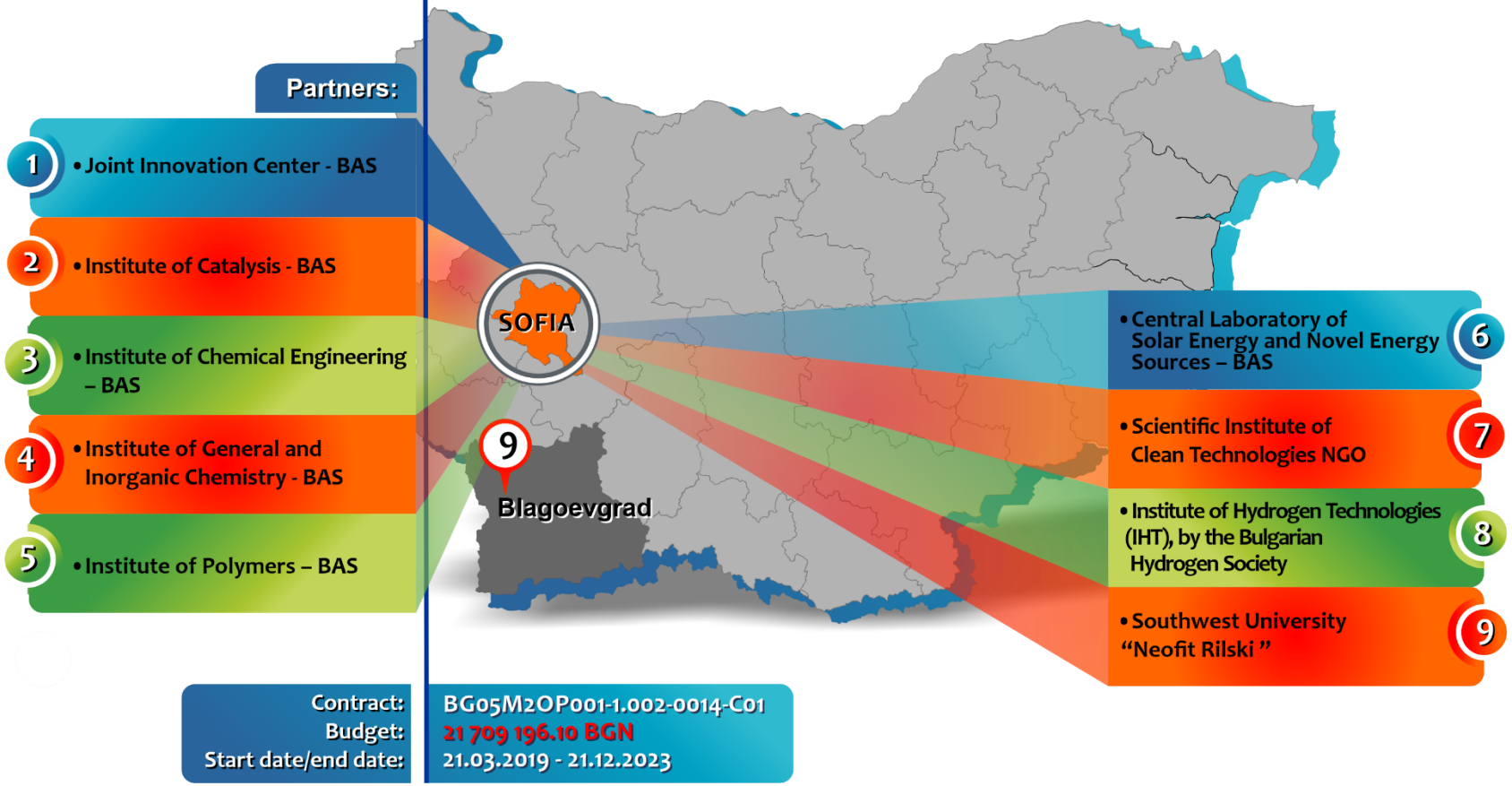
Partnership and territorial coverage

Leading organization:

Institute of Electrochemistry and Energy Systems "Acad. Evgeni Budevski" – Bulgarian Academy of Sciences

Project name:

Centre of competence HITMOBIL– Technologies and Systems for Generation, Storage and Utilization of Clean Energy



Contract:	BG05M2OP001-1.002-0014-C01
Budget:	21 709 196.10 BGN
Start date/end date:	21.03.2019 - 21.12.2023

EUROPEAN UNION
EUROPEAN SOCIAL FUND
EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Project name: Clean technologies for sustainable environment – water, waste, energy for circular economy
Contract: BG05M2OP001-1.002-0019-C02, **Budget:** 23 667 925,86 BGN
Start/end date: 30.03.2018 - 30.11.2023

Leading organization	**Sofia University 'St. Kliment Ohridski'**
Partners	1. University of architecture, civil engineering and geodesy /UACEG/ through its Faculty of Hydraulic engineering /UACEG – FHE/ and Faculty of Structural engineering /UACEG-FSE/ 2. University of forestry – Sofia /UF/; 3. University "Prof. Asen Zlatarov" – Burgas /BU/; 4. The Rostislaw Kaishew Institute of Physical Chemistry at BAS /IPC-BAS/; 5. Institute of organic chemistry with a centre of phytochemistry of BAS /IOCCP-BAS/; 6. The Stephan Angeloff Institute of Microbiology /IM-BAS/; 7. Foundation "Cleantech Bulgaria" /CB/
Main objectives / Specific objectives	The project of the Centre of Competence focuses on building effective functioning infrastructure on modular principles in: 1. Control, purification, water management 2. Processing, recycling, recovery and disposal of solid waste 3. Implementation of resource and energy efficient economy by obtaining renewable and alternative sources of energy, materials and resources 4. Encouraging innovation in technologies for sustainable environment and circular economy 5. Development and realization of the entrepreneurship of young specialists in the above areas

MAIN ACTIVITIES

1. PROJECT ORGANIZATION AND MANAGEMENT ACTIVITIES FOR THE CoC CLEAN AND CIRCLE / 28. PUBLICITY AND VISUALIZATION / 29. INDEPENDENT THIRD-PARTY AUDITH

2. CONSTRUCTION OF NEW/SIGNIFICANT MODERNIZATION OF EXCISING INFRASTRUCTURE OF THE CoC CLEAN AND CIRCLE

Stage I: The construction of a new building for the needs of the Center of Competence (CoC) in direction "waters" with an accelerator for technology entrepreneurship, commissioning and substantial modernization (CMP) of existing laboratories;
Stage II. Equipment and commissioning of the laboratory complexes and the accelerator for technological entrepreneurship of the CoC.
Stage III. Creation of a common information system of the CoC for integrating large amounts of data, implementing data analysis and forecasting methods and communication with interested parties of applications, data and services for competitive advantage

MAIN ACTIVITIES

3. SWOT ANALYSIS OF THE POTENTIAL OF THE WATER TECHNOLOGICAL SYSTEMS (WATER SUPPLY AND SEWERAGE SYSTEMS) ON NATIONAL BASIS
4. DETERMINATION OF THE ECOLOGICAL CONDITION OF THE WATER INTAKES AS NOVELTIES ARE INCLUDED THE ANALYSIS OF THE WATERS AND SEDIMENTS THROUGH MICROBIOLOGICAL, ENZYMOLOGICAL AND MOLECULAR METHODS
5. DEVELOPMENT OF NEW METHODS FOR CONTROL OF THE INORGANIC, ORGANIC, TOXIC, MICROBIOLOGICAL POLLUTION AND DIAGNOSTIC OF THE TREATMENT PROCESSES
6. DEVELOPMENT OF INNOVATIVE SENSORS AND BIOSENSORS FOR EXPRESS DETECTION
7. DEVELOPMENT OF INNOVATIVE BIOTECHNOLOGIES FOR TREATMENT OF WATERS CONTAINING PRIORITY POLLUTANTS ON THE BASE OF SPECIALIZED ADAPTIVE ALGORITHMS
8. DEVELOPMENT OF TECHNOLOGIES FOR TREATMENT AND FURTHER TREATMENT OF WATERS BASED ON NEW PRODUCTS, MATERIALS (ZEOLITES, OTHER ADSORBENTS, NANOMATERIALS, MEMBRANE FILTERS AND OTHERS) AND FLOTATION.
9. DEVELOPMENT OF INNOVATIVE PILOT TECHNOLOGIES AND MODELS FOR WATER TREATMENT THROUGH PLASMA METHODS. ECONOMIC ASSESSMENT OF THE TECHNOLOGIES.
10. DEVELOPMENT OF INNOVATIVE PILOT TECHNOLOGIES AND MODELS FOR TREATMENT AND FURTHER TREATMENT OF WATERS WITH ALGAE. ECONOMIC ASSESSMENT OF THE TECHNOLOGIES.
11. RESEARCH ON INDUSTRIAL WASTE BY SOURCES (LOCALIZATION), TYPES AND AMOUNT. IDENTIFICATION AND CLASSIFICATION OF HAZARDOUS AND POTENTIALLY HAZARDOUS CONSTRUCTION WASTE IN ORDER TO ASSESS THEIR RECOVERY POTENTIAL.
12. NATURAL HAZARD RISK ASSESSMENTS AND DESIGN OF STRATEGIES FOR RISK MANAGEMENT
13. CHEMICAL AND PHYSICOCHEMICAL CHARACTERISTICS OF VARIOUS TYPES OF SOLID WASTE (ASH FROM THERMAL POWER PLANTS (TPP), INDUSTRIAL WASTE, CONSTRUCTION WASTE, BIODEGRADABLE WASTE)
14. DEVELOPMENT OF INNOVATIVE METHODS FOR DETERMINING THE HAZARDOUS PROPERTIES OF WASTE, METHODS OF SELECTIVE DEMOLITION IN ORDER TO INCREASE THE POTENTIAL FOR UTILIZATION OF CONSTRUCTION WASTE AND METHODS FOR MANAGING THEIR RISK COMPONENTS.
15. DEVELOPMENT OF INNOVATIVE TECHNOLOGIES FOR EFFICIENT RECOVERY OF SPECIFIC SOLID WASTE. FEASIBILITY STUDY OF LABORATORY SPECIMENS ABOUT APPLICABILITY OF NEW PRODUCTS
16. DETERMINATION OF THE MAIN TECHNOLOGICAL PARAMETERS TO OBTAIN A PILOT PROTOTYPING (SIFTINGS).
17. RECOVERY OF NATURAL RESOURCES – CHEMICAL ELEMENTS (PHOSPHORUS), PLASTER, BIO RAW MATERIALS AND MICROBIOLOGICAL PRODUCTS FROM WATERS, SLUDGE AND SOLID WASTE.
18. DEVELOPMENT AND OBTAINING OF NEW CONSTRUCTION MATERIALS.
19. PRODUCTION OF COMPOST AND BIO-FERTILIZERS ENRICHED WITH MICRO- AND MACRO-ELEMENTS.
20. INNOVATIONS FOR EFFECTIVE UTILIZATION OF THE ENERGY. OPTIMIZATION OF THE ENERGY YIELD FROM SLUDGE FROM WWTP AND BIODEGRADABLE WASTE /FOOD AND PLANT/.
21. STUDY OF COMPOSITE WASTE AND UTILIZATION OF THE NON-RECYCLABLE AND CONSTRUCTION WASTE IN ORDER TO PRODUCE RDF FUEL
22. DEVELOPMENT OF FUEL AND ELECTROLYTIC CELL FOR PRODUCTION OF HYDROGEN FROM WASTEWATERS
23. HUMAN RESOURCES DEVELOPMENT
24. DISSEMINATION AND PROMOTION OF THE OBTAINED SCIENTIFIC RESEARCH RESULTS
25. DEVELOPMENT AND IMPLEMENTATION OF NEW EDUCATIONAL AND TRAINING PROGRAMS
26. ACCELERATOR FOR TECHNOLOGICAL ENTREPRENEURSHIP
27. TECHNOLOGY TRANSFER AND COMMERCIALIZATION

Partnership and territorial coverage

Leading organization:

Sofia University "St. Kliment Ohridski"

Partners:

1. University of architecture, civil engineering and geodesy /UACEG/ through its Faculty of Hydraulic engineering /UACEG – FHE/ and Faculty of Structural engineering /UACEG-FSE/
2. University of forestry – Sofia /UF/
3. University "Prof. Asen Zlatarov" – Burgas /BU/;
4. The Rostislaw Kaishew Institute of Physical Chemistry at BAS /IPC-BAS/
5. Institute of organic chemistry with a centre of phytochemistry of BAS /IOCCP-BAS/;
6. The Stephan Angeloff Institute of Microbiology /IM-BAS/;
7. Foundation "Cleantech Bulgaria" /CB/

Project name:

Clean technologies for sustainable environment – water, waste, energy for circular economy

Contract:	BG05M2OP001-1.002-0019-C02
Budget:	BGN 23 667 925,86
Start date/end date:	30.03.2018 - 30.11.2023

Project name: Centre of Competence "Smart Mechatronic, Eco- and Energy Saving Systems and Technologies"
Contract: BG05M2OP001-1.002-0023-C02, **Budget:** 23 569 719,17 BGN
Start/end date: 30.03.2018 - 30.11.2023

Leading organization	**Technical University - Gabrovo**
Partners	1. Technical University of Sofia 2. Technical University of Varna 3. Sofia University "St. Kliment Ohridski" 4. Bulgarian Academy of Sciences - Institute of System Engineering and Robotics 5. Bulgarian Academy of Sciences - Institute of Electronics 6. Bulgarian Academy of Sciences - Central Laboratory of Applied Physics - Plovdiv
Main objectives / Specific objectives	The main objective of the project is to build sustainable functioning National Center of Competence "Intelligent Mechatronics, Eco-and Energy-saving Systems and Technologies" (SMEEST), in which three sides of the "knowledge triangle" - education, research and business are in effective and dynamic interaction based on shared strategies, strong and concrete commitments and joint research projects and partnership.

MAIN ACTIVITIES

1. SIGNIFICANT MODERNIZATION OF EXCISING SCIENTIFIC RESEARCH INFRASTRUCTURES INCLUDING PREPARATORY WORKS

Reconstruction and essential modernization of old buildings and premises in TU-Gabrovo; TU-Sofia, branch Plovdiv; SU-Sofia, FCP, and ISER-BAS in conformity with the requirements of the specific equipment to be installed needed for conducting top-tier research:

1. In TU-Gabrovo there will be built 14 laboratories in which there will be installed high-tech equipment, including lab equipment, for provision of adequate material base for research.
2. In TU, branch P-Sofia there will be built 13 labs in which will be installed high-tech equipment, including lab equipment, for provision of adequate material base for research.
3. On the territory of SU-Sofia, FCP there will be reconstructed one premise of 46 м2 and furnished with new functional compartments which will house new equipment belonging to lab complex "Nanostructured materials and disperse systems.
4. In ISER- BAS there will be repaired and renovated 3 premises of 160 м2 belonging to the laboratory in "Robotics and Mechatronics" in Sofia, as well as 3 premises belonging to the lab in "Collective robotics" in Plovdiv, which will be furnished with unique equipment to provide adequate material base for research.

2. PURCHASING OF EQUIPMENT AND SOFTWARE FOR SCIENTIFIC RESEARCH AND INNOVATIVE PROGRAMMES

3. IMPLEMENTATION OF SCIENTIFIC RESEARCH WITH MARKET ORIENTATION / DEVELOPMENT AND MODIFYING OF NEW TECHNOLOGIES ON HIGH INTERNATIONAL LEVEL

The research programme of the Centre entirely focuses on applied research so as to create and develop new technologies and innovative products protecting intellectual property and opening up opportunities for commercialization of the results and for setting up start-up companies.

1. Research package: Energy-saving systems and technologies for designing and manufacturing high-tech products
2. Research package: Nano structured materials and disperse systems in the clean technologies
3. Research package: Intelligent energy-efficient systems and technologies
4. Research package: «Smart mechatronic systems for measurement and control»
5. Research package: «Electronics and sensorics»
6. Research package: Distributed systems and intelligent sensor networks
7. Research package: Intelligent mechatronic systems in transport and industry
8. Research package: Robotics and intelligent automation systems

4. DISSEMINATION OF THE SCIENTIFIC RESEARCH RESULTS AND IMPLEMENTATION OF INNOVATIVE AND NEW TRAINING AND EDUCATIONAL METHODS WITHIN THE PRACTICE OF THE COC

The results from the research achievements generated at the Centre will be disseminated by using various channels:
Participation in national and international conferences
Organization of innovation forums where leading internationally recognized scientists, Centre members, leading high-tech companies and business will take part
Regular meetings with business society representatives
Publications in media, on Internet, in conference proceedings and journals
Organization of Open Days so as to get the interested parties aware of the Centre achievements
Patenting of research results
Regular provision of information and materials to the associated partners – clusters, industry organizations, business associations such as Mechatronics and Automation Cluster, Green Energy Cluster, Tracia Economic Zone Cluster, Bulgarian Branch Chamber - Machine Building, etc.

5. KNOWLEDGE AND TECHNOLOGIES TRANSFER AND SUPPLY OF RESEARCH SERVICES FOR THE BUSINESS

A Committee on knowledge and technology transfer will be created at the Centre;
Plan for commersialization of the scientific research results
Implementation of expert ices, studies and independent evaluation.
Accreditation of new methods for testing and analysis.
Protection of intellectual property rights

6. INFORMATION AND PUBLICITY / 8. INDEPENDENT THIRD-PARTY AUDITH / 7. PROJECT ORGANIZATION AND MANAGEMENT ACTIVITIES /

Partnership and territorial coverage

Leading organization:

Technical University - Gabrovo

Project name:

Centre of Competence "Smart Mechatronic, Eco- and Energy Saving Systems and Technologies"

Partners:

1. Technical University of Sofia
2. Technical University of Varna
3. Sofia University "St. Kliment Ohridski"
4. Bulgarian Academy of Sciences - Institute of System Engineering and Robotics
5. Bulgarian Academy of Sciences - Institute of Electronics
6. Bulgarian Academy of Sciences - Institute of Electronics

Contract:	BG05M2OP001-1.002-0023-C02
Budget:	BGN 23 569 719,17
Start date/end date:	30.03.2018 - 30.11.2023

9. GENERAL INFORMATION - PRIORITY AXIS 1 OF SESG OP 2014-2020 – SO2

SO2 under PA1 of SESG OP:

- **Support for Bulgarian scientific organizations with approved projects under the Horizon 2020 framework, Widespread-Teaming, Phase 2**

Invitations to submit project proposals under direct award procedure to specific beneficiaries:

Purpose of the procedure – The purpose of the procedure is to provide additional support to scientific organizations and universities for projects approved for funding under the Horizon 2020 Framework Program, competition WIDESPREAD-Teaming, phase 2.

The purpose of developing complementarity procedures is to lay down joint and coordinated efforts to achieve greater impact and effectiveness of the combination of the ESIF and Horizon 2020 Framework Programs. Within this operation, the complementary approach is applied through financing projects, through a separate contracts for granting under OP SESG.

Expected results:

The SO2 measures will support the development of the capacity to carry out scientific research and innovation in Bulgaria in several aspects:

- Ensuring access of Bulgarian researchers and scientific organizations to the latest scientific discoveries and technologies under development in the EU, through support for their participation in the EU Framework Programs for Research and Innovation (Horizon 2020);
- Adopt good European practices for the organization and approaches to funding of research in line with funding under the EU Framework Programs (Horizon 2020);
- Capacity building of research institutions and researchers to become fully integrated into the European Research Area.

8. List of contracts signed under procedure - Support for Bulgarian research organizations with approved projects by HORIZON 2020, call WIDESPREAD-TEAMING, Phase 2

№	Identification number	Beneficiary	Title of project	Total budget in BGN
Component 2. "INFORMATICS AND INFORMATION AND COMMUNICATION TECHNOLOGIES"				
1.	BG05M2OP001-1.003-0002	Sofia University "St. Kliment Ohridski"	**GATE** - Establishment of a "Big Data for Smart Society" Centre of Excellence	**29 203 118,38**
Component 3. "INDUSTRY FOR A HEALTHY LIFE AND BIO-TECHNOLOGIES"				
2.	BG05M2OP001-1.003-0001	Center of Plant Systems Biology and Biotechnology (CPSBB)	**PlantaSYST** - Establishment of a Center of Plant Systems Biology and Biotechnology for the translation of fundamental research into sustainable bio-based technologies in Bulgaria	**29 998 861,62**
TOTAL AMOUNT OF SIGNED CONTRACTS UNDER CoE				**59 201 980,00**

INDICATORS UNDER PRIORITY AXIS 1, SO2

BG05M2OP001-1.003 – Support for Bulgarian scientific organizations with approved projects under Horizon 2020 - 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**
Project PlantaSYST: Center of Plant Systems Biology and Biotechnology for the translation of fundamental research into sustainable bio-based technologies	1	150	16	6
Big Data for Smart Society – GATE Project	1	100	80	3
Total	**2**	**250**	**96**	**9**

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EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

PlantaSYST Project

Project name:

Project PlantaSYST:
Establishment of a Center of Plant Systems Biology and Biotechnology for the translation of fundamental research into sustainable bio-based technologies in Bulgaria

Leading organization:

Center of Plant Systems Biology and Biotechnology

Contract:	BG05M2OP001-1.003-0001
Budget:	29 998 861,62 BGN
Start date/end date:	20.12.2019 - 31.07.2023

❖The CPSBB registered as an **autonomous legal research entity during TEAMING Phase 1 and is firmly supported by the Bulgarian and German PlantaSYST partners**, the Governments of Bulgaria and Germany, and the Plovdiv Municipality.

❖CPSBB´s **mission** is to position itself at the forefront of plant sciences in Bulgaria and South- East Europe. This will be achieved by building on the research and technological excellence of two strong partners from Potsdam, Germany: the **University of Potsdam** and the **Max Planck Institute of Molecular Plant Physiology**.

❖**Cutting-edge functional genomics, metabolomics and bioinformatics will be adopted to unravel the regulatory codes and metabolic pathways that govern plant development, stress physiology, and the production of valuable metabolites with potential market applications.**

❖Fundamental science, conducted in the CPSBB departments Plant Development, Molecular Stress Physiology, Metabolomics, and Bioinformatics, will feed into applied research of the departments Plant Cell Biotechnology and Vegetable Breeding.

❖**CPSBB provides the missing links between academia and industry in the region and will take a leading role in training next-generation researchers in crop systems biology and biotechnology.** Thus, the CPSBB will fill the scientific and technological gaps identified in Bulgaria's Innovation Strategy for Smart Specialization (Biotechnology).

❖**A Technology Transfer Office will facilitate the flow of knowledge and technologies to partners and end-users.** Overall, the newly established CPSBB will significantly increase Bulgaria's research and innovation potential, enhance the capacity in crop genomics, and stimulate the local scientific, economic, and social development in Plovdiv. The funds from the current procedure are for construction of new CPSBB campus with building and modern equipment.

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EUROPEAN REGIONAL DEVELOPMENT FUND

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

GATE Project

Project name:

Big Data for Smart Society

Leading organization:

Sofia University "St. Kliment Ohridski"

Contract:	BG05M2OP001-1.003-0002
Budget:	29 203 118,38 BGN
Start date/end date:	20.12.2019 - 20.06.2023

❖**GATE aims to establish a "BiG DAta for SmarT SociEty" Center of Excellence** in Bulgaria, in order to provide focus for increased scientific excellence and sustained Big Data growth, through attractive and stimulating research environment, advanced infrastructure supporting open innovation and vibrant ecosystem to enable responsive research and innovation.

❖**GATE Center of Excellence will be fully autonomous and purpose-built institute**, established as a joint initiative between Sofia University - the most prestigious educational and scientific hub in Bulgaria, **Chalmers University of Technology, Sweden** - outstanding European institution with extensive experience in research, education and innovation in Big Data area and Foundation Chalmers Industrial Technology, Sweden – a leader in innovation management, university-industry collaboration and technology transfer.

❖**GATE is a timely initiative that is fully exploiting the opportunities created by the innovation ecosystem boost and the Big Data market pull in Bulgaria, the Artificial Intelligence technological push in Sweden and the EU and global research and development urge for Big Data**. The CoE will deliver economic and societal benefits through training data professionals and fostering closer collaboration between academia, government and industry, thus helping Bulgarian organizations and industry in various sectors to become, and remain, competitive.

❖**Being the only Big Data CoE to be established in Eastern Europe, GATE will link Eastern Europe with the 55 centers in Western Europe** and will play a strategic role for disseminating the best practices and innovative models to the widening countries. GATE's activities are in line with ISIS, in which Big Data and systems based on it are fundamental for innovation and a priority of the IT and ICT thematic areas. ISIS also prioritizes Smart Cities. According to ISIS, the fastest growing technology is data-based services.

9. CAPACITY OF THE BENEFICIARIES FOR EXECUTION, MANAGEMENT AND EVALUATION OF EFFECTIVENESS AND EFFICIENCY

Project management teams (PIUs) & Scientific teams

- As a whole PIUs have the necessary administrative and management capacity in terms of both positions and qualification: there are people with experience in project management and experts with specific expertise – engineers, architects, lawyers, financial experts, public procurement experts – more than **240 experts**;
- the scientific teams are constituted with appropriate mix of experts in the relevant fields of expertise; there are people such as habilitated persons, with awarded PhD degree, researchers and specialists and technical and engineering staff to work with the equipment – more than **1200 scientists/experts**.

9.1. SUPPORT TO THE BENEFICIARIES BY THE MANAGING AUTHORITY

1) **Capacity building trainings** – regular tailor-made trainings on specific topics relevant to project implementation cycle:

a) establishment of Projects Implementation Units;

b) initial organization and planning aspects and possibly extending support further, subject to the findings and recommendations;

c) contract implementation procedures;

d) public procurement – procurement procedures, drafting tender documentation, etc.;

e) state aid – economic/non-economic activities within research and innovation area.

2) **Targeted trainings** conducted – reporting in UMIS, information & publicity, public procurement, examples of best practices/projects

9.1. SUPPORT TO THE BENEFICIARIES BY THE MANAGING AUTHORITY

3) Constant **monitoring and consultations**:

- **Regular meetings** of all CoEs and CoCs and MA management started in September 14, 2018 - ongoing;

- **Individual meetings** between dedicated MA teams and individual projects teams, including lead partner and all partners - ongoing;

- Detailed **Gant charts for implementation of each individual project** prepared by partners (e.g. main activities, operational steps and public procurement procedures to be launched together with a realistic timeframe and financial forecasts);

4) **Reduction** of administrative and financial burden:

- Increase of the advance payment and possibility for pre-financing from the national budget upon exhaustion of funds;

- Simplification of the procedures for amendment of the contracts.

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

OPERATIONAL PROGRAMME SCIENCE AND EDUCATION FOR SMART GROWTH

Support to the beneficiaries for improvement of capacity for execution, management and evaluation of effectiveness and efficiency

9.2. JRC&TAIEX&Interreg Europe collaboration with SESG OP MA

European Commission
Joint Research Centre
Research & Innovation

TAIEX SHARING EU EXPERTISE SINCE 1996

Interreg Europe Policy Learning Platform

9.2. JOINT RESEARCH CENTRE COLLABORATION WITH SESG OP MA

Strategic evaluation of the CoCs and CoEs and practical and customized **recommendations** containing dedicated sections for each center focused on:

- Legal and organizational Framework;

- State aid, research infrastructures, contract research, sustainability;

- Technology transfer and commercialization, collaboration with industry and the private sector, synergies with complementary initiatives.

9.2. TAIEX-REGIO COLLABORATION WITH SESG OP MA

1.· Expert Mission focused on the **future legal framework, management model, optimization of the individual plans for utilization of the scientific infrastructure and improvement of the individual financial plans of the CoEs and CoCs:**

- Shared experience by experts from Lithuania;

- Held on 17 April 2019 with 28 participants.

2. Workshop on the commercialization and internationalization of Centers of Excellences' and Centres of Competences' projects results:

- Experts from the Czech Republic;

- 12-13 November 2020 with 58 participants.

9.2. INTERREG EUROPE COLLABORATION WITH SESG OP MA

1. Peer review on structuring CoEs and CoCs:

- Performed by experts from Belgium, Lithuania, Finland, France and Czech Republic;
- Held on 18-19 June 2019 with representatives of one CoE and one CoC;
- Recommendations on governance model, private sector involvement, financial models, extra-regional knowledge and interregional cooperation.

2. Peer review on policies and activities for knowledge and technology transfer and use of research infrastructure by CoEs and CoCs:

- Planned for January 2021;
- Expected recommendations on increase of the capacity for identifying technologies of interest to the business and industry, management of innovations, ownership of the research results and intellectual property rights, contemporary forms and models of technology transfer for the needs of the Bulgarian CoEs and CoCs.

THANK YOU FOR YOUR ATTENTION!

Contact details:

Bulgaria, 1113, Sofia,
125, Tsarigradsko Shose Blvd., Block 5, Floor 1
Phone: +359 2 46 76 101
http://opnoir.bg/