

## Public summary: 1st Year Report on NCC-Bulgaria

The NCC-Bulgaria is built by a consortium coordinated by the Institute of Information and Communication Technologies - BAS (IICT-BAS) and two members, Sofia University “St. Kliment Ohridski” (SU) and University of National and World Economy (UNWE). The three partners carry diverse technical and scientific background in the area of HPC and ICT in general, so as to ensure achievement of the project objectives and guarantee the overall success. Establishing working relationships with the other NCCs, the project office and CASTIEL has been instrumental in introducing good practices and following innovative approaches to further develop our NCCs.

The ultimate goal of the EuroCC project is to provide a coordinated and sustainable high level of expertise in HPC and related technologies across Europe. This goal requires a detailed planning of work and deep analysis of the current state of HPC/HPDA/AI usage and necessities of the various stakeholders in the country. The National Competence Centre Bulgaria started by developing the NCC Bulgaria roadmap, which contains a comprehensive work plan for the first year and a vision what has to be achieved by the end of the project. Four comprehensive online studies were conducted in Bulgaria, contacting more than 150 active HPC users, more than 100 research organizations involved in the Large Scientific Research Infrastructures, and more than 200 companies. As a result, a map of the available competencies in HPC/HPDA/AI was produced, the existing gaps in the knowledge and skills of stakeholders and the interest and needs of the industry were identified. Effective collaboration with industry associations/clusters has been started. Facilitation of the joined efforts for technology watch and dissemination of technical information via a knowledge-based platform and tools have been organized. A collaborative platform for networking and dissemination for the NCC team and their partners working in HPC, and related technologies was developed, successfully tested, and publicly presented. Teams capable of supporting the preparation or assessment of innovative HPC/HPDA/AI projects at European and national level, including industry participation, were formed.

Following the communication and dissemination strategy of NCC-Bulgaria strong internet presence has been established (web page [1], social media accounts [2,3], wiki page [4], event portal [5]). Outreach activities were adapted to COVID-19 situation, online approaches were implemented, a series of useful events were held, and material was distributed, in order to organize successfully the local marketing and dissemination in new formats. Three major dissemination events, two industrial workshops and nine targeted events were organized in the reported period. The project was presented at various national and international events. The NCC-Bulgaria gives visibility to the HPC competences and expertise at the national level, facilitates the cooperation with the other European NCCs, provides opportunities for researchers and users from the scientific, public, and industrial sectors, offering solutions tailored to the needs of a wide range of users.

The updated training programs and the national teams encompassing all NCC members already demonstrate benefits for the current and potential users of HPC/HPDA/AI in Bulgaria. Due to the complexity and speed of technological development in the domain of HPC/HPDA/AI, only the joined efforts of the partners and a comprehensive approach to filling the gaps and acquiring new competences enabled us to offer high-level of expertise in solving challenging problems, coming from industry or academia.

From the socio-economic point of view, interconnecting the HPC/HPDA/AI communities in Bulgaria to the overall European ecosystem, enables them to produce results of high scientific excellence and with societal impact.

Summary of the main achievements by tasks:

### Task 3.1 Management

The NCC-Bulgaria management structure has been established, the team members appointed, effective communication channels were organized. The NCC-Bulgaria Roadmap and Data Management Plan have been developed. The 3M technical and financial reports were prepared and submitted.

### Task 3.2 Training and Skills Development

The current advanced training capabilities and planned developments in the HPC, HPDA and AI fields were identified, together with a list of universities and organizations interested in the advanced training and skills development. To find out detailed information about the most important topics of training in HPC/HPDA/AI, two in-depth surveys were conducted, results analysed and recommendations formulated and presented.

### Task 3.3 Technology Transfer and Business Development

An industrial survey targeting the potential users of HPC/HPDA/AI as well as companies developing software solutions or services for HPC applications was conducted. More than 200 companies were contacted, 103 responses were received. Based on the rich and detailed information from the survey, the potential users were divided into user groups and round tables were organized with the purpose to further discuss opportunities and problems.

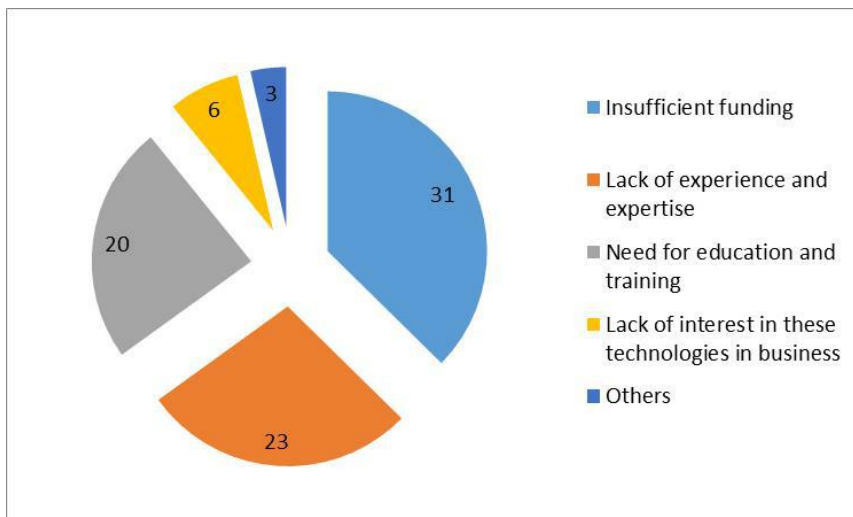


Figure 1: Industrial Survey: challenges for using HPC/HPDA/AI

### Task 3.4 Collaboration with Industry

A lists of company contacts has been prepared with more than 200 companies. Joint working group with the team members of tasks T3.3 and T3.4 has been set up, and the industrial survey results were assessed to identify potential needs for consultation on HPC/HPDA/AI. Key industry representatives were invited into working groups and joined round table discussions. Effective collaboration with industry associations/clusters has been started. A repository of good practices for transfer of knowledge, including sharing of skills and HPC/HPDA/AI technologies, is in progress.

### Task 3.5 Mapping of HPC/HPDA/AI Technical Competences

The competences of the NCC-Bulgaria in several main areas (as provided by EuroCC/CASTIEL) were assessed in detail, producing comprehensive coverage of the areas, and providing numerical measures for several competences in each of these. Achieved results include detailed mapping of the available competences at the NCC, assessment of strong areas and areas that need improvement, identification of topics for collaboration, feedback to training and collaboration with industry, presentation of the tasks' results at national and international level.

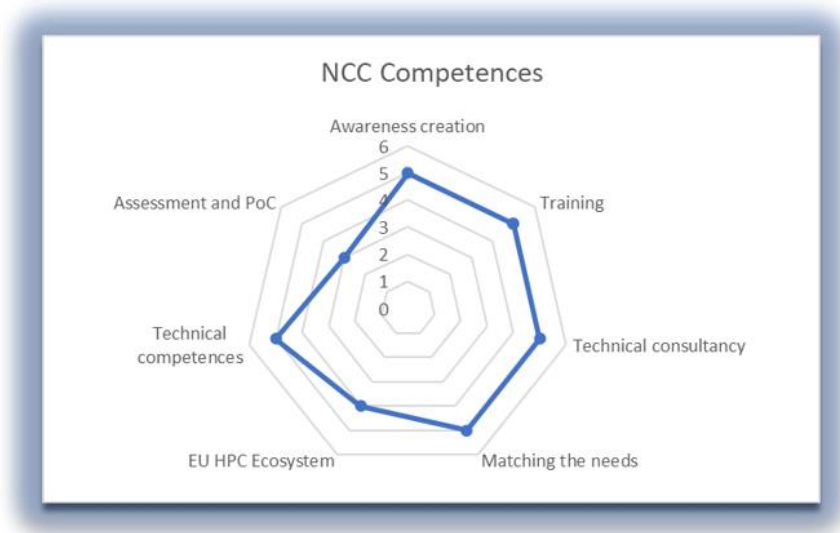


Figure 2: NCC Bulgaria Competences

### Task 3.6 Facilitation of access to scientific and technical expertise and knowledge pools

The access to available competences and expertise in HPC at the national level was improved through expanded availability of the most used applications and libraries for users, and organization of a repository of code snippets and workflows which is a collaborative platform with the goal to store, organize, analyse, edit, and share (both publicly and privately) important technical information and competence related to the implementation and utilization of the HPC technology in Bulgaria. Facilitation of the joined efforts for technology watch and dissemination of technical information via knowledge base platform and tools have been organized.

### Task 3.7 Awareness Creation and Collaboration

A communication and dissemination strategy has been developed and implemented. Project website, event agenda system, calendar, wiki, social media accounts were established and maintained. Three major dissemination events, two industrial workshops and nine targeted events were organized. The project was presented at various national and international events.



Figure 3: EuroCC Bulgaria Website Visits

Table 1: Main events organized by NCC Bulgaria

Date	Location	Event	Audience	Number of Participants
18/01/2021	online	EuroCC-Bulgaria workshop	Academics, Researchers, students	36
23/04/2021	online	1 <sup>st</sup> National Dissemination event: Open Workshop “NCC-Bulgaria in the framework of EuroHPC”	Academics, Researchers, business representatives, representatives of Research infrastructures	54
01/07/2021	Hybrid: online / premises of UNWE, Sofia	1 <sup>st</sup> industrial workshop with leading specialists on HPC/HPDA/AI	Academics, Researchers, business representatives	18
15/07/2021	Hybrid: online / Sofia, Bulgaria	2 <sup>nd</sup> National Dissemination event: Workshop “Competencies and Good Practices in HPC/HPDA/AI”	Academics, Researchers, business representatives, public sector representatives, end-users	86
16/07/2021	Bourgas, Bulgaria	2 <sup>nd</sup> industrial workshop: “ICT clusters for the use of new Technologies-HPC/HPDA.AI”	Academics, Researchers, business representatives, students	32

Table 2: Main national/international events where NCC Bulgaria has been presented

Date	Location	Event	Audience	Type
23/01/2021	online	Annual meeting of IICT	Researchers	National
12/02/2021	online	PhD workshop	Researchers, PhD students	National
22-26/03/2021	online	EUROHPC Summit Week 2021	Academics, Researchers, business representatives, representatives of Research infrastructures	International
29/03/2021	online	Annual meeting of the National Centre for HPC and DC	Academics, Researchers, end-users	National



<b>6-11/06/2021</b>	Hybrid: online / Sozopol, Bulgaria	13th Large-Scale Scientific Computations (LSSC21), Special Session “HPC & Big Data: Algorithms and applications”	Academicians, Researchers, end-users	International
<b>29/06/2021</b>	Hybrid: online / Varna, Bulgaria	International Workshop “Future Digital Transformation & Security Challenges”	Academicians, Researchers, business representatives, end-users	International
<b>22/07/2021</b>	online	General Assembly of the NCHDC (object of the Bulgarian Roadmap on RIs)	Representatives of 9 research organizations	National
<b>25/07 14/08/2021</b>	– Apriltsi, Bulgaria	21st Summer Research School in Mathematics and Informatics,	Talented high school and university students	International

[1] EuroCC-Bulgaria website [Online]. Available: <http://eurocc-bulgaria.bg/> [Accessed 15 July 2020].

[2] Bulgarian NCC LinkedIn, [Online]. Available: <https://www.linkedin.com/company/eurocc-bulgaria> [Accessed 15 July 2020].

[3] Bulgarian NCC Twitter, [Online]. Available: [https://twitter.com/EuroCC\\_Bulgaria](https://twitter.com/EuroCC_Bulgaria) [Accessed 15 July 2020].

[4] EuroCC-Bulgaria wiki [Online]. Available: <https://eurocc.uni-sofia.bg> [Accessed 15 July 2020].

[5] EuroCC-Bulgaria event portal [Online]. Available: <https://events.iict.bas.bg/category/2/> [Accessed 15 July 2020].

[6] EuroCC-Bulgaria repository of code snippets and workflows [Online]. Available: <https://eurocc-documize.uni-sofia.bg/>.

[7] EuroCC website [Online]. Available: <https://www.eurocc-access.eu/>