

Participants of the International Forum “Advanced Digital and Production Technologies” discussed the issues of technological sovereignty and development of the ABC industry



October 13, on the second day of the [International Forum «Advanced Digital and Production Technologies»](#), a number of major business events took place, the central one being the plenary session «Advanced Digital and Production Technologies — the Basis for Technological Sovereignty». It was attended by representatives of government agencies, development institutions, universities and leading enterprises of the high-tech industry.

Experts and listeners were welcomed by Denis Kravchenko, First Deputy Chairman of the State Duma Committee on Economic Policy. He noted the high relevance of the topic, which this year became the main one at the forum: the development and application of advanced digital and production technologies as a basis for achieving Russia’s technological sovereignty. Denis Borisovich emphasized that over the past year and a half the country has significantly restructured its approaches towards cooperation to solve global tasks.

«This year the concept of technological development of the Russian Federation

was approved. In the summer we passed a law on technology companies and support in the State Duma. Now we are waiting for the introduction of a bill on technology policy in our country. The next step in achieving technological sovereignty should be a comprehensive training program. Negotiations on this topic are underway, but it is obvious that cardinal steps must be taken. There is a personnel program for IT-specialists, we believe that there should be something similar and even more serious for engineers and potential developers,» concluded the speaker.



Vladimir Dozhdyov, Director of the Digital Technologies Department of the Russian Ministry of Industry and Trade, also emphasized the high priority of introducing advanced production tools and digital technologies into the real economy as a necessary tool for achieving technological sovereignty. The application of these technologies makes it possible to reduce the time to bring new developments to the market and improve quality, reaching a new level at all stages of the product creation life cycle.

«This year we will update our strategic direction in the field of digital transformation of manufacturing industries — a document that was written in co-authorship with the SPbPU team. We expect it to be approved soon,» said Vladimir Dozhdyov. «It should set priorities, raising the technologies of virtual testing and creation of digital twins to the level of prioritization it deserves. I mean the application of the totality of engineering practices related to digital engineering in all high-tech industries».

Vladimir Dozhdev emphasized that the innovation ecosystem built at St. Petersburg Polytechnic University demonstrates effective results. As for the university's developments, the transition from approbation to large-scale use within the framework of the project for the development of unmanned aircraft systems (UAS) is scheduled for next year.



On behalf of Peter the Great St. Petersburg Polytechnic University, the guests and participants of the forum were welcomed by Rector of SPbPU, Academician of the Russian Academy of Sciences Andrei Rudskoi. He emphasized that the International Forum «Advanced Digital and Production Technologies» is always a special event for Polytechnic University and structural divisions of the innovation ecosystem, bringing together experts from all over the country and abroad.

«The program of this year's forum is unusually rich. The topics chosen for discussion are archrelevant and archly useful. For Russia today, digital design, modeling, creation of digital twins is crucial, because it is the optimal way to come to a logical, correct engineering solution, relying on technological capabilities. I sincerely hope that our forum will present tools for productive work, and expert dialog will bear real fruit to create and strengthen teams that can solve complex engineering problems-calls for world-class solutions. Let the fifth forum be high-five,» said Andrei Rudskoi.

From the welcoming part, the speakers and listeners of the forum moved on to the agenda of the plenary session moderated by Vladimir Knyagin, Vice-Governor

of St. Petersburg. Setting the range of issues to be discussed, he emphasized that the global task in the matter of technological sovereignty is to define the contours of the space within which a large number of engineers across the country will have to work.

«The problem we are dealing with now is ultra-complex manufacturing technology systems. You can't solve any task piecemeal. We have to solve all the tasks at once, covering the whole set of connections and relations with other elements, and solve in such a way that the overall production complexes must retain their functionality and must achieve a certain level of efficiency,» explained Vladimir Knyagin. *«For St. Petersburg, the work of an engineer, designer is the basis of our competitiveness in the economy. We are ready to support advanced engineering schools. We have three of them in the city today, and St. Petersburg will be among the applicants for the NSP status at the new stage of the competition».*



Within the framework of the plenary session there were three main reports. The opening speech was delivered by Alexey Borovkov, Vice-Rector for Digital Transformation of SPbPU, Head of SPbPU Digital Engineering NSP, dedicated to the digital transformation of industry. Alexey Borovkov formulated the concept of digital engineering as a high-tech multidisciplinary scientific approach to product creation, and presented the ontology of this process.

«Computer engineering occupies a traditional place in the life cycle of products,

but still this approach has existed for 10 years, now it is necessary to talk about a new direction — digital engineering. Which in many respects forms the ten technologies that include Industry 4.0. And it is important to capitalize all this knowledge. The SPbPU NSP uses the CML-Bench® digital platform, which is dynamically developing and accumulating so-called Digital Brainware. Now the platform hosts 317 thousand digital design solutions,» emphasized the head of the SPbPU NSP.

Alexey Borovkov spoke about the use of the digital platform for the development and application of digital twins CML-Bench® in projects for high-tech industries, noted the flagship project for the development of digital twin technology of a marine gas turbine engine in the interests of the United Engine Corporation, the preliminary results of which were presented as part of the demo day of the CIC «Engine Building» in Moscow. The report touched upon the high-tech direction «New Industrial Software», namely the planned activities of SPbPU on scientific and technical support of the NIPO roadmap for 2023.



The plenary session was also addressed by Georgy Tikhomirov, Deputy Director of the Institute of Nuclear Physics and Technology of MEPhI, Director of the expert-methodological and methodological operator of the federal project «Advanced Engineering Schools», who outlined the current progress of the program implementation and current tasks. Andrey Ageyev, Head of the Center for Digitalization of Defense Industrial Complex Organizations at All-Russian Research

Institute «Center», made a report on the industry's transition to domestic software. The session ended with a discussion, which was attended by representatives of large enterprises — industrial partners of SPbPU NSP.

An important event of the second day of the forum was the discussion «Application of advanced digital and manufacturing technologies in the industry of unmanned aircraft systems: current challenges and technological stack». The event was chaired by Dmitry Peskov, Special Representative of the President of the Russian Federation for Digital and Technological Development and Director General of the Autonomous Nonprofit Organization «NTI Platform». Leading experts discussed the application of advanced digital and manufacturing technologies in the unmanned aircraft systems industry, key challenges and barriers in this area, the components of sovereignty in unmanned aviation, as well as the problems and prospects of new materials in the UAS industry and other issues.



On the same day, the presentation of the new release of the CML-Bench[®] Digital Twin Design and Application Platform — a unique development focused on ensuring the design and production in the shortest possible time of globally competitive high-tech products in various industries and new markets, including the BAS industry — took place. The development team presented updates in architecture, enhanced integration capabilities with domestic software, and examples of solving multidisciplinary front-end engineering problems.



Special sections were devoted to the discussion of current trends in the development of domestic engineering analysis software. The panel session «Domestic engineering analysis software: development trends and solutions to import substitution challenges» was held within the framework of the forum. The participants discussed functional capabilities of domestic engineering software, prospects of its development and application in the conditions of new industrial challenges. There was also a discussion «Solving complex science-intensive industrial tasks with the help of engineering software available on the Russian market».

In addition to round tables, pitch sessions, presentations and discussions, business meetings were held on the margins of the forum. The ceremony of signing an [agreement](#) on cooperation in the field of educational and scientific activities of the Advanced Engineering Schools of SPbPU «Digital Engineering» and I.M. Sechenov First Moscow State Medical University was held. The document was signed by Andrey Svistunov, Vice-Rector of the Sechenov First Moscow State Medical University, and Alexey Borovkov, Vice-Rector for Digital Transformation of SPbPU.

The main areas of cooperation between the partner universities include providing internships and traineeships for the best NSP students, development and implementation of new educational programs of higher and additional professional education, creation of laboratories and pilot production facilities at the universities, where they will conduct research and develop innovative medical products in the field of biomechanics, bioengineering and prosthetics. A cooperation agreement

was also signed with Belgorod State National Research University.



The eventful second day of the forum was a bright addition to the program of the [first day](#). In total, more than 600 people representing dozens of Russian regions and foreign countries took part in the events.

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