

Special edition
03 (219), June 2018

SCIENCE • TECHNOLOGY • INNOVATIONS

RADIOFRONT

10 Matthias Schepp: 'German economy invests in Russia like in no other country'

8 The Russian Satellite Communications Company

RSCC presented solutions for broadcasting companies in USA

18 New pace of innovation: CEBIT-2018

Hanover presents the many facets of all the key themes of digitization

32 Historical famous gadgets 'Made in USSR'

Soviet achievements in the field of radio electronics

12+



Russian Satellite
Communications Company



SATELLITE TECHNOLOGIES FOR NEW VICTORIES

WORLD CUP, RUSSIA, 2018

www.rsccl.ru

Russian popular scientific
magazine 'RADIOFRONT'
№ 03 (219), June 2018

Registered by the Federal Agency
for Supervision in the Sphere of
Communications, Information Technologies
and Mass Communications, a certificate
of registration of PI No. FS-77-770736 of
August 21, 2017

The magazine has been published
since 1930. From 1941 to 2017,
it did appear for reasons beyond
our control. Resumed in 2017.

Founder and publisher of
OOO 'Radiofront'

Editorial office
Russian Federation,
127521, Moscow, Staromaryinskoe
shosse 23-101
e-mail: tu@sertal.ru

Editor in Chief
Alexei Turbin

Deputy Editor-in-Chief
Alexey Lebedev

Contributors
Svetlana Seliverstova,
Elena Sokolova,
Tatyana Valeeva,
Dmitry Kozhevnikov,
Oleg Deyneko,
Natalia Mozhaeva

Pictures by
Alexei Turbin,
Nikolai Valuev,
Valery Stolnikov,
TASS,
Press service of the President of the
Russian Federation,
United Industrial Edition,
personal archives

The publication was prepared with the
participation of LLC 'United Industrial
Edition' www.promweekly.ru

General Director
Valery Stolnikov

Printed in the printing house of
OOO 'Viva-Star'
107023, Moscow, ul. Elektrozavodskaya,
house 20, building 3

At reprint of materials the reference to
the edition is obligatory

Circulation 5000 copies.

Distributed for free

CONTENT

EDITORIAL	2
NEWS SHORTLY	4
RSCC ON THE 2018 NAB SHOW IN LAS VEGAS	8
THE MAIN INTERVIEW	
Matthias Schepp: 'GERMAN ECONOMY INVESTS IN RUSSIA LIKE IN NO OTHER COUNTRY'	10
INTERNATIONAL TEAM	
RUSSIA AND URUGUAY: INNOVATIVE DIALOGUE OF FRIENDSHIP	13
KALEIDOSCOPE	14
CEBIT-2018	
NEW PACE OF INNOVATION: CEBIT-2018 Marius Felzmann: 'ONE THING THAT'S DIFFERENT ABOUT THE NEW CEBIT IS THAT IT CONSISTS OF FOUR DISTINCT YET INTERCONNECTED PARTS: D!CONOMY, D!TEC, D!TALK AND D!CAMPUS'	18
Svetlana Fedoseeva, Deutsche Messe RUS, Director General: 'WE ARE GLAD TO PROMOTE SUCCESSFUL BUSINESS TIES'	22
DATA MANAGEMENT AT CEBIT: MANAGING THE FUEL OF THE DIGITAL REVOLUTION	24
GLOBAL RULES	
DIGITAL AGENDA IN THE GLOBALISATION ERA	26
D-RUSSIA	
SOFTWARE IMPORT SUBSTITUTION IN RUSSIA: WHERE WE ARE AND WHAT'S NEXT	28
HISTORICAL DETAILS	
GADGETS 'MADE IN USSR'	32
SCIENTIFIC PUBLICATIONS	
DIGITAL ECONOMY CONCEPT IN RUSSIA AND THE EU: COMPATIBILITY ANALYSIS	36
DESIGN, CONSTRUCTION AND TESTING OF INNOVATIVE UNINTERRUPTIBLE POWER SUPPLY UNITS	42
SUMMARIES	48

Общероссийский
научно-популярный
журнал «РАДИОФРОНТ»
№ 03 (219), июнь 2018

Зарегистрирован Федеральной службой
по надзору в сфере связи, информа-
ционных технологий и массовых комму-
никаций, свидетельство о регистрации
ПИ №ФС 77 – 70736 от 21.08.2017

Журнал издается с 1930 года.
С 1941 по 2017 год не выходил
по независящим от редакции
причинам.
Возобновлен в 2017 году.

Учредитель и издатель
OOO «Радиофронт»

Адрес редакции
Российская Федерация,
127521, Москва,
Старомарьинское шоссе, 23-101
e-mail: tu@sertal.ru

Главный редактор
Алексей Турбин

Заместитель главного редактора
Алексей Лебедев

Над номером работали
Светлана Селиверстова
Елена Соколова
Татьяна Валеева
Дмитрий Кожевников
Олег Дейнеко
Наталья Можаяева

Фото в номере
Юрий Ридякин, Алексей Турбин,
Николай Валуев, Валерий
Стольников, Фотохроника ТАСС,
Пресс-служба Президента РФ,
«Объединенная промышленная
редакция», личные архивы

Издание подготовлено при участии
OOO «Объединенная
промышленная редакция»
www.promweekly.ru

Генеральный директор
Валерий Стольников

Отпечатано в типографии
OOO «Вива-Стар»
107023, г. Москва,
ул. Электrozаводская, д. 20, стр. 3

При перепечатке материалов
ссылка на издание обязательна

Тираж 5000 экз.

Распространяется бесплатно

EDITORIAL



Needless to say: all CEBIT-2018 participants are supposed to be heroes! Not only because they dared to present their achievements in digital innovations to the discerning Hanover public: *willy-nilly* they will miss the first days of the Soccer World Cup held this year in 11 cities of the Russian Federation!

On the eve of this major event in sports calendar of 2018, 'RADIOFRONT' met at the German Embassy in Moscow a unique football player and personality. A native of Sao Paulo, Claudemir Jerônimo Barreto, better known as Cacau, is the Integration Commissioner of the German Football Association (*Integrationsbeauftragter des Deutschen Fußball-Bundes*). The brilliant striker, German champion-2007 with VfB Stuttgart, who played after naturalization 23 matches for the German national team, is now responsible for the solution of various problems foreign players are facing in German soccer clubs.

In this regard, it seems to me that *integration* is one of the key words describing precisely and without aggression the clever answer to many challenges of our turbulent and technically progressive age. Without any doubt, effective integration of the digital economy achievements into everyday life is no less important than the comprehensive and effective entry of any person into the innovative living environment. And no less important than even soccer.



1983, Reykjavik. RADIOFRONT as part of the Black Sea Shipping Company soccer team before the game against the now famous Team Iceland (score – 2:6...)

Integration of their contributions into the global digital evolution is exactly the desire of these brave women and men at exhibition stands who booked their tickets not to Moscow or St. Petersburg, but to Hanover. And they certainly will not regret it: after all, CEBIT is worth such a sacrifice!

'RADIOFRONT' also refused to be present at the inevitable triumph of the Russian national team in the qualifying group of the World Cup – for the first time our almost 90 years old magazine appears in English to present the accomplishments of Russian developers to the exacting Hanoverian public. We are pleased to publish interviews of CEBIT organizers from the *Deutsche Messe* Marius Felzmann and Svetlana Fedoseeva, as well as of the head of the German-Russian Chamber of Commerce Matthias Schepp who looks into the practice of Russian startups and innovations in general as well as into prospects of bilateral trade and economic cooperation. And generally speaking this all is about integration – the subject, in which Mr.Cacau has been so successful!



By the way, Claudemir Jerônimo Barreto, dubbed by enthusiastic fans *Helmut*, is known as one of the fastest scorers in the history of world cups. Going into the substitute in the opening match of the World Cup-2010 in South Africa, he scored already in the 110th second!

Russian CEBIT participants would be rather naïve expecting a similar rapid success in Hanover. But their efforts would definitely bring closer the blessed moment when the most representative world show of electronic achievements known as CEBIT and the FIFA World Cup would be one event putting aside the almost Shakespearean question, where to go – to Moscow or to Hanover. And this *e-Mundial* would be played by patriotic and unpretentious robots – and not capricious millionaires, who need integration.

Специальный проект, октябрь 2018

Special project, October 2018

НАУКА • ТЕХНИКА • ИННОВАЦИИ

РАДИОФРОНТ

**ВЫСОКИЕ ТЕХНОЛОГИИ ИЗ ГЕРМАНИИ –
ДЛЯ РОССИЙСКОГО РЫНКА И СОВМЕСТНОГО БИЗНЕСА**

**HIGH TECHNOLOGIES FROM GERMANY –
FOR THE RUSSIAN MARKET AND JOINT BUSINESS**



Достижения индустрии 4.0: глобальные аспекты
Industry Achievements 4.0: Global Aspects



Промышленный интернет по-немецки
German Industrial Internet



Электронное сердце индустриальной революции
The electronic heart of the industrial revolution



ANSAT EVALUATION FLIGHTS



Representatives of the PRC Civil Aviation Administration (CAAC) visited a Kazan Helicopter Plant (KVZ) affiliated to the Russian Helicopters Holding. The visit took place under the procedure of Russian Ansat type certificate validation in China. Chinese specialists spent 10 days to acquaint themselves with the helicopters production facility and perform Ansat test flights during.

A plant tour, made it possible for the CAAS representatives to acquaint themselves with the entire Ansat assembly chain. In addition, Kazan Helicopter Plant specialists made presentations on the helicopter design, quality control system, service bulletins and airworthiness directives. The delegation work program also provided for joint test flights, instrumentation performance check-ups and an Ansat helicopter validation flight.

'We have completed a large amount of preparatory work for an Ansat helicopter certification in China. A corresponding application was submitted to the PRC aviation authorities early this year. The report of the inspectors who visited the KVZ is to underlie a decision on the Russian type certificate validation in this country. We received only positive comments from the Chinese counterparts, and, therefore, I hope that the decision will be positive and it will be made before long,' said Andrei Boginsky, CEO of Russian Helicopters Holding.

Russian Helicopters together with the Federal Air Transport Agency held the first round of negotiations with CAAC representatives on the validation of the Russian Ansat helicopter type certificate in China this year in February. It is planned to supply the first batch of Ansat helicopters to China this year.

CREATIVE INDUSTRIAL CLUSTER INAUGURATION

Vyacheslav Fedorishchev, Deputy Governor of the Tula Region, Sergey Chemezov, General Director of Rostec State Corporation and investor Mikhail Shelkov attended the inauguration of an innovative industrial cluster on the Oktava acoustic plant site in Tula. It was meant to attract young people from all over Russia by offering various industry-specific vocational programs, help in starting high-tech undertakings and become a modern urban leisure facility.



The project's first stage included opening a Higher Technical School, which would provide education for industrial production specialists, a Science and Technology Library, a multimedia Machine Museum and an innovative Fablab MAKER laboratory furnished with 3D printers, laser, milling and turning machines.

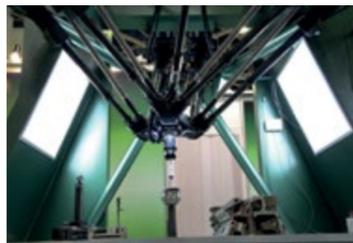
Tula-based Oktava company was chosen as the cluster basis not without reason. Since Soviet times, the plant has been producing acoustic equipment known all over the world for its high quality. Show business stars like U2, Sting, Iron Maiden, Radiohead, Vladimir Vysotsky and others used Oktava microphones.

Since the 1990s, the enterprise was in crisis. In summer of 2017, Oktava was transferred under the Rostec direct management, due to which the company output doubled and reached a break-even level in less than a year. The opening of the cluster, where vocational orientation and training of specialists would be conducted, was symbolic for the legendary plant resurrection.

The visionaries who developed the modern Gorky Park project in Moscow worked over the cultural events that the innovative industrial cluster offered to the local residents and guests of the industrial center of Russia.

CYBER-PROTECTED HIGH-PRECISION MACHINE TOOLS

Holding High Precision Systems NPO, affiliated to Rostec, introduced a line of multi-purpose high-precision turning, turning and milling and milling processing centers with Russian computer numerical control system (CNC) 'Olympus'. Rostec's developments will ensure cybersecurity and technological independence of critical Russian manufacturing industries.



Russian-made equipment is designed to replace foreign-made machine tools containing software and hardware 'bookmarks' that allow blocking them remotely as well as transferring all the stock lists and production volumes at each individual industrial site to foreign suppliers. Russian new generation machine tools guarantee a high level of information protection and the absence of hidden opportunities for unauthorized access to systems from abroad.

'Import substitution in this sphere allows to get rid of technological dependence, expensive services and risks related to sanctional restrictions. But, first of all, we are talking about information protection and the uninterrupted operation of critical industries, where it is necessary to ensure reliable operation of equipment and to exclude remote intervention into the relevant IT systems. These are the tasks that the Russian computer numerical control system 'Olympus' is solving', – Sergey Abramov, industrial director of the armament cluster of Rostec State Corporation, comments.

At the moment, the leaders in the production of CNC systems supplied to Russia are Siemens, Mitsubishi Electric, HAAS, Rexroth Bosch Group, Fagor Automation, FANUC, Fidia and others.

KORSAR DRONE AT VICTORY PARADE

Rostec State Corporation-affiliated Roselectronics Holding exhibited Korsar drone for the first time at the Victory Parade on May 9, 2018. Korsar is designed for terrain reconnaissance, patrol and observation flights as well as aerial photography of the terrain within the 120 km radius range.



The newest drone is equipped with a piston engine and can accelerate up to 150 km/h. Korsar weighs 200 kg, its wingspan is 6.5 m, and fuselage length is 4.2 m. The Korsar unmanned aircraft is part of the Korsar UAV complex comprising several airborne devices and a common ground control system.

In future, the complex can be supplemented with flying machines featuring an improved performance and enhanced functionality. In particular, it is planned to increase the operating range to 250 km, and equip aircrafts with electronic warfare systems and advanced reconnaissance capabilities.

An important feature of the complex is its multifunctionality since it can be used for a number of civil purposes like environmental monitoring, road and infrastructure control, forest fire warning, people search and rescue apart from combat missions.

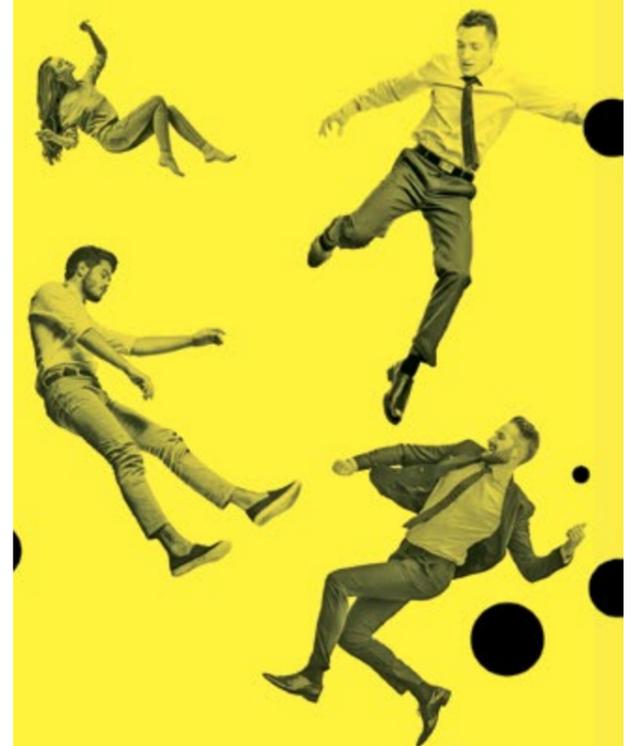
RSCC AND MORSVYAZSPUTNIK AGREED ON JOINT USE OF EXPRESS-RV SYSTEM

The FGUP RSCC and FGUP Morsvyazspudnik signed a cooperation agreement on the use of the advanced satellite communication system in high-elliptical orbits using Express-RV satellites. RSCC and Morsvyazspudnik have expressed their interest in providing new satellite communications services, including broadband Internet access on the road, rail, river, sea, and air transport throughout the Russian Federation, as well as in the entire Arctic region of the northern hemisphere of our planet. Under the terms of the signed agreement, the parties also consider the possibility of jointly working out the options for further integration of special equipment into the payload of the Express-RV satellites to support the operation of the international COSPAS-SARSAT rescue system.

'The Express-RV multifunctional satellite communication system will make it possible to successfully solve problems in the development of communication systems, provide affordable services throughout the country, and tackle the tasks of digital transformation in Russia, as set forth in the Presidential Decree of May 7, 2018,' noted RSCC General Director Yuri Prokhorov. 'Also, the Express-RV system will provide broadband services to users in the northern territories of Russia and other member countries of the Arctic Council, as well as the North Pole, including international scientific research expeditions.'

CEBIT® 2018

11–15 июня 2018
Ганновер ■ Германия



Информация
о посещении и участии
+7 495 669 46 46
info@messe-russia.ru

cebit.com

POWER PACK DEVELOPMENT

Rostec State Corporation affiliate Holding Technodinamika has developed high-speed synchronous generators GSR-90/120 prototypes for a prospective aircraft with a hire electric power consumption feature.



'The serial production of generators like GSR-90/120 will significantly contribute to the reduction of the Russian aircraft industry dependence on foreign components,' – said Igor Nasenkov, Technodinamika General Manager. 'In the long run, such power plants may be installed on a wide range of aircraft, from MC-21 and wide-body long-haul liners in civil aviation to transport aircraft.'

Currently, Technodinamika is completing the GSR-90/120 prototypes preparation for full-scale testing, including functional, mechanical and thermal tests. The technical solutions applied will make it possible to create a product line of a smaller or larger variety depending on the need and power generation capacity.

A distinctive feature of the generator is the possibility of its use on board an aircraft without a constant speed drive in a range from 10800 to 24000 rpm. The generator GSR90 / 120 nominal power over the entire range of rotation frequencies is 120 kVA, the maximum power (within 5 s) is 180 kVA.

The GSR-90/120 synchronous generator has been designed for use as the main 115 / 200V electricity source in on-board three-phase alternating current systems with a frequency, varying from 360 to 800 Hz.

The generator is being developed out under the supervision of Valery Kaliy, the design bureau director and chief designer of the Technodinamika affiliate Ufa Aggregate Production Association, in the context of implementing a more electrically-intensive aircraft concept.

INDIAN SPECIALISTS TRAINING

The Shvabe holding company, an affiliate of the Rostec State Corporation, familiarised the Indian specialists with the procedure for assembly of the electro-optical system for special-purpose equipment. The training programme lasted one and a half months.



Specialists of the assembly shop and the chief designer's department of the Vologda optical and mechanical plant (VOMZ), an affiliate of Shvabe, trained the foreign employees. The training was conducted in India as part of the intergovernmental contract for defence industry cooperation entered into in the 2000's.

'Today, an optoelectronic system for advanced special-purpose equipment is being manufactured in Dehradun based on the VOMZ technology. As part of the training programme we taught our Indian colleagues how to manage work of an assembly shop, familiarised them with peculiarities of various system assembly and adjustment stages. Implementation of this project will enable further strengthening of our mutually beneficial cooperation,' told Dmitry Zhidkov, Deputy General Director of Shvabe.

Cooperation of Shvabe and India for commercial assembly of the electro-optical system for special-purpose equipment in Dehradun has started about 15 years ago. Besides, VOMZ has been training Indian specialists for component repair of this system at a repair plant in Deli since 2016. The plant supplies non-standard equipment for adjustment and testing of such devices.

LARGEST IT COMPANY IN RUSSIA

For the third year in a row Rostec State Corporation tops the list of the 100 largest Russian IT companies according to the analytical center TAdviser.

TAdviser has prepared a new ranking of the largest companies operating in the Russian IT market. The total revenue of the top-100 participants is over 1.35 trillion rubles, which exceeds the previous ranking by more than 200 billion rubles.

Over the past year the leader has not changed. Rostec still holds the first place. The proceeds of the radioelectronic cluster of the State Corporation (Ruselectronics and Shvabe holdings, Concern Avtomatika) together with the National Center of Informatization (NCI) reached 226.965 billion rubles in 2017. For comparison, a year earlier this figure was 201 billion rubles.

The electronic cluster is the second largest cluster in Rostec. It unites State Corporation enterprises that manufacture telecom equipment, electronics, data protection systems, identity and access management systems, systems of detection and prevention of intrusions into cyberspace, OLED LEDs, business intelligence systems, automated process control systems and encryption systems based on quantum computing.

In 2016, the Rostec board adopted the electronic cluster strategy. Over the next ten years, the average annual revenue growth of the cluster is planned at 21%. Such dynamics will be possible due to concentration on the prospective segments of the electronics market: new generation telecommunications equipment, communication systems, IT infrastructure, medical equipment, optical devices. At the same time, the share of civilian output should increase up to 50% by 2025.



INFRASTRUCTURE FOR CIVIL DRONE TESTING

Rostec State Corporation affiliate Tekhnodinamika Holding kickstarted a new line of activity, namely: unmanned aircraft tests using a Parachute Building Research Institute airfield for the purpose. The move meets the interests of designers and manufacturers of unmanned civil aircrafts who have no certified testing infrastructure of their own.



The growing market of drones and collateral research has given rise to demands for a purpose-specific flight test infrastructure that would be appropriately equipped and staffed. Such a full-cycle test infrastructure for unmanned and ultralight civil aircrafts with a flight altitude up to 4,000 meters is available on the Parachute Building Research Institute airfield.

'Today our center is one of the few locations in Russia where designers can test new drones legally and avail themselves of qualified consultations from professionals with regard to the test results,' noted Natalya Ovchinnikova, Head of Aircraft Development Program at the Parachute Building Research Institute.

Tekhnodinamika Holding specialists will monitor flights, coordinate operation of all ground services and systems and provide preflight instruction and training for equipment designers as part of the project implementation.

HIGH-TECH EQUIPMENT BY SHVABE

Being a State Corporation Rostec affiliate, the holding company Shvabe has concluded a trilateral agreement on cooperation in the field of promoting national high tech in the South-east Asia market. The agreement was signed by the Shvabe holding, Singapore company Progression Pte. Ltd. and Russia-Singapore Business Council (RSBC).



The signing of the agreement took place in the framework of the annual business forum 'Russia-Singapore Business Dialogue'. The parties agreed on cooperating and interacting with the Center for Promoting Russian high-tech companies overseas and Presenting investment projects founded on the basis of Progression Pte. Ltd. State Corporation Rostec took part in the Russian-Singapore Business Dialogue forum as a general partner. The Russian delegation was headed by Nikolai Volobuev, Rostec Deputy General Manager and Alexey Gruzdev, Deputy Minister for Economic Development.

It is worth noting that Rostec-supported Russian-Singapore Business Council founded in 2017 in Singapore a Center for Promoting of Russian Technologies overseas and presenting investment projects. It was inaugurated in December 2017 during Rostec General Manager Sergei Chemezov's visit to Singapore. As of 2018, three cluster expositions with the participation of Schwabe in the Pharmaceuticals and Medicine section are to be organized on the center site. They were and will be accessible to the public in April, May and from August through October.

The holding delegation also took part in the plenary session of the Russian-Singapore Business Dialogue forum dedicated to the Russia – Singapore interaction in the field of innovation and digital technologies pertaining to healthcare, smart city management, investment cooperation of countries and other topics.

OKTAVA EQUIPMENT ON OZON.RU

For the first time Octava products became available to consumers via online megamarket. Tula-based factory signed an agreement with OZON.ru, one of the first Russian e-commerce projects in the B2C segment. Over 30 items of Oktava equipment are available on OZON.ru since May this year.



Every day about 700 thousand users visit OZON.ru. The assortment of the megamarket is divided into large sections, the goods in which are collected in constantly updated catalogs. Cooperation with OZON.ru will enable professional and aspiring musicians to purchase modern electro-acoustic equipment online. Available microphones models, including the flagship MK-012 and MKL-111, are distinguished by 'warm tube' sound and are popular among sound engineers and vocalists, as well as in television and cinema production.

'A new management team is actively implementing direct interaction with final customer and is relying on an interactive marketing system. Cooperation with OZON.ru is a serious step in this direction,' noted Alexander Veselov, General Director of JSC Oktava.

In all cases, the factory guarantees consistently high quality to the customers. Purchases will be available for legal and physical persons alike. The enterprise will contact the customers about each order to clarify their needs.

'Creating a simple and transparent pattern of interaction with final customer of our products is one of the important results of the new enterprise marketing team work,' emphasized Lyubov Stalnova, Marketing Director of JSC Oktava.

Oktava products have been certified according to international ISO standards. Warranty for the purchased audio equipment is two years.



RSCC ON THE 2018 NAB SHOW IN LAS VEGAS

The Russian Satellite Communications Company (RSCC) presented on the NAB Show 2018 in Las Vegas ready-made solutions for broadcasting companies. The largest international media technology forum was mainly focused on content processing and transmission.



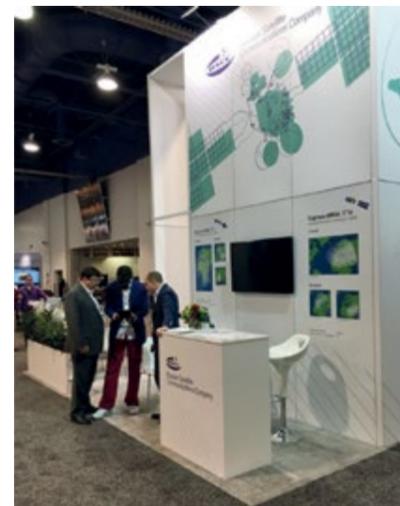
Victoria MALKINA

It was attended by global telecom operators, pay TV operators, application and production solution developers, shooting equipment producers – i.e. everyone engaged in the media and television content creation. The chaotic, at first glance, mixture of the telecom, television and information technology industries actually demonstrated a close and deep convergence to achieve a common goal.

The slogan of the 2018 show was successfully worded as a title of one of the conference sessions: 'The Mission's the Same – The Tools may Vary'. Actually, it says that goals and objectives of all market players are satisfying the principal and basic needs of the user – to obtain up-to-date information with no wait. Despite the standout performance of Google and Amazon an



artificial intelligence based solution providing a full cycle of content processing and broadcasting and announced as a new view on broadcasting, which was presented last year, most of the show was devoted to traditional encoding and content transfer technologies.



As for mobile communications, the 5G market solution gives undeniable new opportunities for mobile access to contents: low latency, much higher rate compared to 4G and, therefore, great opportunities for a high-quality content transfer. Today, the bandwidth used for video services on mobile devices has doubled and increased by 1.5 times on gadgets and tablets. But the traditional TV consumption demonstrates a fall.

At the same time, processing a large amount of data that reflect the consumer image and various recommendation engines proposing targeted contents according to specific



needs of the user are becoming increasingly important in the TV market. Slogans such as 'Make Streaming Personal' or 'Your content at their fingertips' are viewed on stands of both application developers and global telecom operators. This once again emphasizes the focus on the general idea of customizing the access to the global content. An interesting opinion was expressed by a Cisco specialist who stated that the time of pay TV operators is passing away and standard broadcast solutions are being replaced by access to ecosystems, of course, having cloud technologies in mind.

As for other trends, this year it is undoubtedly Virtual Reality (VR)/360-video. At the show, the dynamic 360-video image solution was brilliantly demonstrated by Intel. Anyone could, without getting up from a chair, ride on a platform right amidst the Brazilian carnival. This indicates that the Intel pro-

cessor has learned to cope with processing heavy videos and large amounts of data.

UHD/HDR pictures that have become familiar are perceived as an industrial reality, therefore, both operators and equipment manufacturers present solutions based on these standards. The fact that most of the show was devoted to HEVC, both in hardware and software, means that traditional pay TV operators will soon begin to stuff their packages with UHD contents.



A considerable share of 102 thousand professionals from over 160 countries who attended the 2018 NAB Show in Las Vegas visited the Russian Satellite Communications Company's exposition and expressed readiness to learn more about technical solutions proposed by RSCC.





Matthias Schepp: 'German economy invests in Russia like in no other country'

The German-Russian Chamber of Commerce with about 800 member companies represents the interests of German enterprises in Russia and supports Russian companies in connection with their cooperation with German counterparts both in Russia and Germany. The Chamber is entrusted with the task of promoting the development of bilateral economic relations between Russia and Germany. Branches of the German-Russian Chamber of Commerce operate in Moscow and St.Petersburg. In Russian regions, the Chamber is represented by regional commissioners. Since April 1, 2016 Matthias Schepp is Chairman of the Board of the German-Russian Chamber of Commerce.

– Mr.Schepp, numerous leading Russian hi-tech companies will be present at the CEBIT in Hanover, Germany. What is the general perception of the Russian IT-business, start-ups in particular, in Germany? Historically seen there seem to be many prejudices inherited...

– America, maybe Israel are most likely to be mentioned by Germans interested in digitization and Internet



most innovation-friendly ones in the world. The traditional strength of Russia in computer science and engineering with hundreds of thousands of university graduates every

utes state funds to VC funds so that they invest in start-ups in a targeted manner. And the State Innovation Center Skolkovo offers to 1,700 residents of its technology park not only tax benefits, but also financial grants for research and development. Criticized by many, such a top-down approach in practice helped many start-ups to achieve market success.

There are also large-scale accelerator programs, such as 'GenerationS' or Internet Initiatives Development Funds, where young entrepreneurs learn to make money from their ideas. The days of graduation (Demo Days) of such programs hardly differ in the meantime from corresponding events in Berlin or Helsinki. There, a new generation of Russian entrepreneurs with an international mindset is presenting itself, which not only wants to promote the modernization of the Russian economy, but also wants to attract foreign customers.

Sustainability and loyalty to the Russian market characterize the German entrepreneurship. Russian companies have for long understood German companies as a part of the Russian economy. They have built factories in Russia, created hundreds of thousands of new jobs, set up research centers, and have had a lasting influence on industrial culture. Even in times of economic crises, German companies have always made the best of the situation. According to the Bundesbank, German direct investment in Russia amounted to € 1.6 billion last year – the highest value since 2010. The German economy invests in Russia like in no other. That's the way it is, and it will stay that way.

issues among the most successful countries on the international startup scene. In connection with Russia, negatively charged terms such as overpowered state-owned companies and economic backwardness come into play. 'High-tech', 'innovation' and 'strong entrepreneurship' would certainly be at the bottom of a list of the most frequently Russia-related keywords. Wrongly! Because Russian startups are well on their way and work with ambition to establish Russia as a hidden champion of global start-up culture.

Especially in the IT sector, young Russian companies are among the

year has also been transferred to the startup area in recent years.

– But accessibility to venture capital is one of the preconditions for every successful innovative development, for startups first of all.

– The prospects for venture capital in Russia have been rather gloomy for a long time, the volume of the Russian VC market has been declining since the 2015 economic crisis. Meanwhile a healthy VC market is the fuel for every start-up ecosystem. The Russian state has recognized this lack: for example, the Russian Venture Company distrib-

– What is your Chamber doing for strengthening the traditional positive role of the cooperation with German counterparts for promising Russian start-ups?

– Germany is considered to be one of the most interesting markets for the international expansion of Russian startups, as shown by a roadshow organized by the German-Russian Chamber of Trade and Commerce in October 2017. Six Russian entrepreneurs visited Berlin, Hamburg and the Ruhr area for a week, talking to the innovation commissioners of German companies. The

interest in cooperation was great from all parties. One or two German companies have already recognized that cooperation with Russian start-ups can be a promising way to ensure that they do not fall behind in the global competition for new ideas.

– At the same time, the latest set of American sanctions is widely seen as a very negative factor for the expansion on bilateral economic ties. What could you say about the general mood of the German business in Russia under present conditions?

– In past weeks one bad news followed another: following the poisoning of Russian ex-spy in Britain and the escalation in the Syrian war, the US government has imposed new sanctions on Russia. They are a symptom of the radicalization of international politics that can be observed in every field. The fact that these extraterritorially meant restrictions threaten to take German companies hostage disappoint many member companies of our Chamber.

In fact, the most recent sanctions have been the most serious since 2014. According to calculations of the University of Kiel, the European and Russian economies lost due to sanctions already more than € 100 billion.

For the first time, the sanctions now specifically hit important companies that are not state-owned, but at the same time partners of German enterprises. German companies are threatened because of the extraterritorial effect of American sanctions. A sanctioning of investments and transactions from

old contracts would be equivalent to the expropriation of German companies.

Our Chamber called on the Federal Government and the European Commission to work towards effective protection of the European economic interests in Russia. Political

Germany is considered to be one of the most interesting markets for the international expansion of Russian startups, as shown by a roadshow organized by the German-Russian Chamber of Trade and Commerce in October 2017. Six Russian entrepreneurs visited Berlin, Hamburg and the Ruhr area for a week, talking to the innovation commissioners of German companies. The interest in cooperation was great from all parties. One or two German companies have already recognized that cooperation with Russian start-ups can be a promising way to ensure that they do not fall behind in the global competition for new ideas.

cians in Moscow, Washington and Berlin urgently need to find a way to resolve the conflicts in Syria and Ukraine and focus on de-escalation rather than escalation.

We conducted a survey on the sanctions issue among the 800 members of the German-Russian Chamber of Commerce. According to its results and extrapolated to the total economy in Russia, the short-term expected damage in 2018 amounts to more than one billion €, in the coming years – to several billion €.

According to the survey, two-thirds of Chamber members are affected 'moderately' to 'very seri-

ously' by new US sanctions, and about one-third are 'hardly' or 'not at all affected'. The companies fear costly interruptions of the supply chains and run the risk of losing Russian subsidies, because they can no longer fulfill localization requirements of the government. However,

our survey contains good news: the overwhelming majority of German companies want to stick to their commitments in Russia. Seventy percent want to maintain their activities and investments in Russia in view of the new US sanctions, and 20% – even to increase them.

– Does it mean that there is ground for moderate optimism?

– Sustainability and loyalty to the Russian market characterize the German entrepreneurship. Russian companies have for long understood German companies as a part of the Russian economy. They have built factories in Russia, created hundreds of thousands of new jobs, set up research centers, and have had a lasting influence on industrial culture. Even in times of economic crises, German companies have always made the best of the situation. According to the Bundesbank, German direct investment in Russia amounted to € 1.6 billion last year – the highest value since 2010. The German economy invests in Russia like in no other. That's the way it is, and it will stay that way.

I wish all participants of CEBIT a fruitful work in Hanover and hope, that new business ties will arise during this significant international event.

RF

Trade between Russia and Germany rose by almost a quarter last year despite sanctions.

The German-Russian Chamber of Commerce (AHK) said citing the Russian customs of an increase of 22.8% to about 41 billion euros.

'We hope and think that the positive trend will continue in 2018,' said the Chamber CEO Matthias Schepp. 'With the Football World Cup in the summer, we also have a major event that can provide momentum,' said the Chamber Chairman of the Board Matthias Schepp.

German companies in Russia were optimistic about the new year.

Demand for machinery, vehicles and chemical products from Germany developed particularly favorably thereafter. Deliveries from Germany increased by 24.5 percent to 19.7 billion euros, while imports from Russia grew by 21.1 percent.

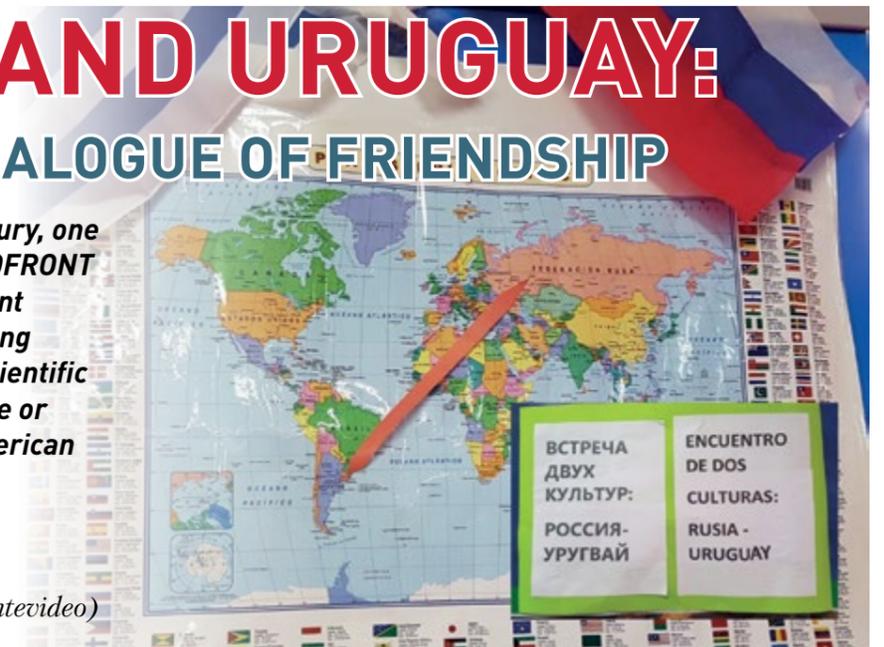
Reuters

RUSSIA AND URUGUAY: INNOVATIVE DIALOGUE OF FRIENDSHIP

In the 30^s years of the last century, one of the main issues of the RADIOFRONT magazine was the establishment of radio communication over long distances: for example, with scientific stations drifting in the Arctic ice or brave aviators flying to the American continent.



Marta SAXLUND
(RADIOFRONT, Montevideo)



Witnessing now the age of various global penetration concepts of the *Internet of things (IoT)*, on the eve of CEBIT we decided to make a practical contribution to the development of the *Internet of friendship (IoF)*. On May 30, with help of modern telecommunications equipment, a video-acquaintance of pupils and teachers of School of musical education (Mytishchi, Moscow region) and of the Debora Vitale D'Amico elementary school (Montevideo, Uruguay) was held.

Initially, it was assumed that the main topic of the 'Meeting of Two Cultures: Russia-Uruguay' will be the forthcoming FIFA World Cup-2018 in Russia. Ivan Zheltukhin, who wants to become a professional soccer player, asked his peers about the destiny of the legendary stadium *Estadio Centenario* in Montevideo, where the team of this country became the first ever world champion – just in the year of the foundation of the journal RADIOFRONT (1930).

The boys and girls from two countries found immediately 'a common language': they sang songs popular in Uruguay and Russia about friendship, talked about their studies, the weather and cuisine of the two countries – for example, about the famous mate tea. They described the flags of their countries and exchanged views about their musical



and sports hobbies. So it was only the difference in languages spoken by smiling and laughing girls and boys that reminded on the 13,360 kilometers distance separating the participants of the event!



...and Montevideo too!

'We are grateful to the organizers of our meeting for the happy idea to organize it with the use of the communication means, – says Nadezhda Chirkova, the Director

of the musical school in Mytishchi, the only one in Russia specialized in musical education of children left without parental care. – The interest in preparing and holding of such meetings is enormous, so our next communication is scheduled for the fall, when the new academic year will begin.'

Among the topics that the girls and boys will definitely discuss during the September 'television bridge', will be of course the results of the World Cup, in which football players of the two countries take part. And meanwhile Russian schoolchildren informed not without pride their new Uruguayan friends that in May their school team won the traditional 'Friendship Cup', which brought together young soccer players from various schools in the Moscow region.

RF

SHIFTING TO AN EQUIVALENT OF SWIFT



The Rostec State Corporation and the Bank of Russia shift to the national Financial Messaging System (FMS) of the Bank of Russia. Accession of the State Corporation's to the FMS will improve the security level of financial transactions and create an alternative financial messaging channel in Russia.

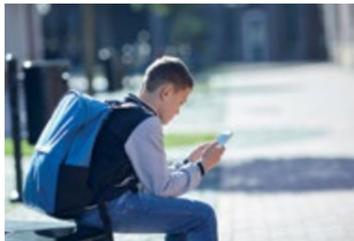
Accession to the FMS will enable the State Corporation to use it as a channel for the exchange of financial information between the system users, for example between a bank and the State Corporation, or between the subsidiaries of Rostec. The digital infrastructure is capable of communicating data in an encrypted format that allows reducing the risk of intrusion and hacker attacks on the system.

'We are certainly interested in improving security of data communication and exchange both inside the Corporation and outside when dealing with Russian financial organisations. This initiative programme allows reducing our dependence on foreign systems and enables us to exchange information with our enterprises in a protected format without using any foreign providers' capacities,' stated Igor Zavyalov, Deputy General Director of Rostec.

The use of the FMS of the Bank of Russia will allow the Rostec's affiliates to increase the level of security and reliability of financial transactions as well as increase the speed of financial e and reduce the costs. Today, the project is being discussed by representatives of the Rostec's subsidiaries – Novikombank, RT-Finance and RT-Inform, as well as 1C Company, Russian developer of computer programs and business databases.

MESSENGER FOR ELECTRONIC SCHOOL PROJECT

BARS Group, which is a subsidiary of the National IT Development Center, affiliated to Rostec State Corporation, updated the BARS-developed Education–Electronic School application having supplemented it with Feedback, Embedded Mail and Bulletin board modules. The new tools will allow parents and schoolchildren to exchange messages, requests and feedbacks quickly and get all the necessary information on the one-stop-source principle.



The BARS-developed Education – Electronic School app features a module-based architecture allowing the creation of a common regional database of all state-owned educational institutions. So far the systems based on the BARS. Education– Electronic School application have been implemented to improve quality control and transparency of the educational process in 19 regions of the country. The total number of users exceeds 5.3 million people.

The new Feedback module will enable schoolchildren parents to communicate with educational organizations and authorities in a messenger mode. A respective person in charge is appointed and the number of days during which a request should be resolved are determined depending on the issue character. The module will also track the exchange history including request and feedbacks providing the parents with an opportunity to reiterate their requests for revision if not satisfied with the result.

VIDEOGARD TECHNOLOGY PLATFORM

Avtomatika Concern affiliated to Rostec State Corporation is developing a unique Videogard technology platform, which will combine the Safe City, ERA-GLONASS and 112 systems. The development will reduce response time in emergencies and increase citizens' sense of security.



Videogard is instrumental for integrating Safe City, ERA-GLONASS and 112 emergency services on a single platform. It is possible to combine all city emergency services, video surveillance systems, and alarm buttons installed in apartments and office spaces, fire-security systems, ecomonitoring systems, traffic analysis systems and others on the Videogard platform.

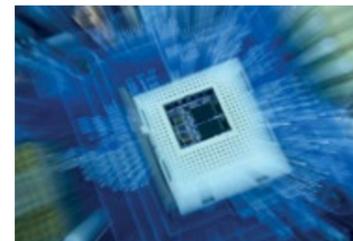
The main challenge in integrating the emergency services information systems is that task-specific complexes were developed at different times featuring different equipment and software. The Videogard platform will allow uniting all the systems without significant investments in equipment replacement and devices reprogramming. According to the Rostec radio-electronic cluster, this will provide an opportunity to create anti-crisis centers that will aggregate all information in one place.

The integrated platform development started in April 2018 and its completion is scheduled in May 2019.

The integration platform Videogard may have multiple application. In particular, it can be integrated with situation and monitoring centers in large and territorially distributed security systems ranging from individual security solutions to a full-scale PSIM (Physical Security Information Management). It can also be instrumental for meeting Safe City and Smart City class challenges as well as building an urban video surveillance system, etc.

PROMOTING RUSSIAN IT SOLUTIONS

RITE Ltd. (RITE is affiliated to Rostec's National Center of Informational Support) and UNICOM Bangladesh holding, that integrates companies operating in information and communication technologies, digital mass-media and advertising industries, partnered up in promoting Russian IT solutions in Bangladesh.



The agreement was signed on April 11 in Bangladesh capital Dhaka. Within the cooperation framework RITE plans to conclude agreements on implementing and servicing IT solutions related to the Smart City, integrated safety and security and Government On-Line. Unicom on her part will carry out market research, promote the RITE-provided services and adapt Russian IT solutions for the Bangladesh market. Companies are intended to search for attractive projects called for in various spheres of the Bangladesh economy.

'The RITE competence and portfolio in digitalizing government services, cyber security and banking-specific solutions were highly appraised by potential clients from Bangladesh. We expect that among first users of Russian IT solutions will be our Postal Service and divisions of the Ministry of Internal Affairs,' said General director of UNICOM Shahid Munir.

RITE is a global integrator of the best Russian IT solutions on the world scale. The company possesses high level competencies in advancing complex IT solutions in Latin American, Middle Eastern, Asian and African markets.

RUSSIAN FIRST MACHINE MUSEUM

A unique Multimedia Museum with a thousand square meter footprint appeared on the Oktava plant territory. Its visitors will learn a lot about Russian-made and foreign machines and industrial equipment. Museum's guests will have an opportunity to visit a media library containing materials on the history of industrialization apart from visiting the permanent exhibition.



Sergey Chemezov, Rostec General Director and Vyacheslav Fedorishchev, Tula Region Deputy Governor solemnly opened an industrial creativity cluster in Tula. On the territory of the Oktava plant, whose acoustic products are known all over the world, Rostec has initiated a project to popularize Russian industry and help young people curious about industrial production to obtain relevant skills and competencies. Vasily Brovko, Rostec Director for Special Assignments and Oktava Board of Directors Chairman is in charge of the project.

One of the important elements of the cluster is the first in Russia Machine Museum. The exposition tells about such machine tools as 'Spinning Jenny' spinning machine, the first steam machine built in Russia, 'King Hammer' steam hammer, Henry Ford conveyor line, FMT-09 copy-milling machine designed by Tula engineers in 1968, the first milling machine, blooming mill, the first numerically controlled machine and many more.

Visitors can acquaint themselves with the Machine Museum media library apart from the machine tools and equipment proper. It is a collection of materials in convenient formats devoted to the history of industry, machine building and machine tool construction. The media library keeps a large number of digitized albums of the late 19th century. For instance, the US Library of Congress has gifted galleries of Prokudin-Gorsky works and photos depicting Henry Ford factories to the Machine Museum.

SHVABE REPORTED ON THE PROGRESS

The Shvabe holding company, an affiliate of the Rostec State Corporation, took part in the meeting of the Russian-Chinese Committee on important strategic cooperation in the field of satellite navigation. The event was held within the framework of the XII International Navigation Forum NAVI-TECH in Moscow. Participants discussed the provisional results and prospects for the implementation of the project to develop navigation equipment based on the Russian GLONASS and the Chinese BeiDou (BDS) systems.



At the meeting participants of the joint international project, specialists of the enterprise producing geodetic equipment in the holding – Ural Optical and Mechanical Plant (UOMZ) – and representatives of Chinese companies made a presentation on the progress of the project.

'We note the exceptional importance of this project in terms of international cooperation development as well as sharing experiences and technologies. We were planning to present the results at the 9th China Satellite Navigation Conference in Harbin, and prepared an extended report on this topic,' said Ivan Ozhgikhin, Deputy General Director of Shvabe.

In May 2018, at a conference in Harbin, Russia and the PRC discussed the prospects for integration – GLONASS and BeiDou – and the joint use of their data. Earlier, the State Commission for the Chinese Navigation Satellite System (PRC) contacted to the Roskosmos State Corporation with a corresponding offer. As Roskosmos said, the possibility of creating a unified monitoring system for global navigation satellite systems, which would operate on the territory of the Shanghai Cooperation Organization (SCO) countries, was being considered.

ROSTEC AND ROSSETI JOINT VENTURE

Rostec State Corporation and Rosseti are to found a joint venture to digitalize Russia's power grid to make 'smart'. The work will be carried out pursuant to Vladimir Putin's request to create adequate conditions for building a 'smart' power grid in Russia.



Prime Minister Dmitry Medvedev held a government meeting on April 19 where he gave orders to relevant ministries and departments to determine an investment and cooperation procedure between Rostec and Rosseti aimed at creating a digitalized power grid complex based on made in Russia equipment and technologies before the end of 2030.

The project will heavily rely on the Rostec State Corporation experience in digital technologies and management automation gained in serving the interests of the state, industries and social spheres.

The future 'smart' power grid system based on digital technologies for data processing and transmission have imbedded self-diagnosis and self-repairing subsystems requiring minimal human intervention and allowing to more than double the power supply reliability for consumers. For example, the system of 'smart' metering and monitoring, which is an integral element of the next-generation electric grid complex, provides for an efficient management of household loads. As a result, the consumer can increase one's power consumption efficiency and reduce energy costs by up to 30%.

DIGITAL TRANSFORMATION OF BUSINESS

A business breakfast for IT industry representatives was held on 26 May, the last day of SPIEF 2018. The moderators were Valentin Makarov, President of Russoft Association, and Sergei Plugotarenko, Director of Russian Association for Electronic Communications (RAEC). The panellists included managers of such companies as Google Inc., Yandex, IBS, Microsoft Rus LLC, Facebook, Sistema, Rostelecom, RVC, Intel Corporation, Kaspersky Lab, and other leading IT companies.



According to the panellists, digital transformation embraces the entire world and is directly related to about 20% of global GDP. This should not be underestimated as it is the way to boost the efficiency and competitiveness of business. Indeed, robotic process automation is rising by 60% a year.

The panellists also pointed out that the global digitalization of our life and introduction of artificial intelligence are creating a new ecosystem. The Internet of things already requires 5G networks.

Creation of new products and introduction of cross-purpose technologies require a new strategy of cooperation with real sector companies. Competence centres must be formed as part of this strategy.

Change management is a very complicated process, so digital transformation demands new approaches and, above all, investment in professional education and regular staff training. The panellists agree that the world is changing very quickly and failure to keep up with global trends means no prospects for development. Before long, they argue, there will be no non-digital businesses left in the world. Time dictates the fullest possible switch to digital outsourcing – and western companies are already effectively using a lot of tools that remain underestimated in Russia. The digital culture in Russia is currently estimated at 17.5% – such is the percentage of company employees who make active use of digital technology in their work, reported Pavel Ershov, Chief Operating Officer at Microsoft Rus. Digital standards are needed desperately, including open standards, along with use of global practices and creation of new products together with partners. In this respect, it is becoming more important to develop and introduce next-generation antivirus products.

This raises issues of comprehensive security, confidence and technological sovereignty not only with regard to particular companies but at the level of entire countries, as none of them can develop all technologies on their own. Digital transformation is impossible in isolation because this is a global process suggesting use of open source code base and next-generation cloud computing, which in the end will enhance the resilience of Russian IT companies to trade sanctions. In this respect, the panellists cited a proverb: 'If you want to run fast, run alone. If you want to run far, run together.'

The participants admitted that, today, the government machine at all levels was unmotivated and not adapted to resolving the problems of the digital economy, and that Russian law in this area lagged far behind global trends. The so-called Yarovaya Law would cost the industry some RUB 4.5 trillion, they estimated. According to the panellists, IT industry experts should definitely be involved in developing government solutions in this sphere.

Wrapping up the business breakfast, the moderators stated that, as the digital transformation was a key issue on Russia's economic breakthrough agenda, the government should pay maximum attention to it. To this effect, the paradigm of the government's collaboration with the IT business should move on from prohibitive and defensive to stimulating. 'Instead of speaking of the digital economy from each high rostrum, we have to pass and implement specific solutions in this area. In this case, the 5% of Russia's GDP currently claimed by the digital economy will rise to 10%, and 15%, and 20%. We need and value a dialogue with the government', Valentin Makarov concluded.

RELEASING UEBA PRODUCT

At the Gulf Information Security Expo & Conference (GISEC) 2018 held in Dubai (UAE), InfoWatch Group, a Russian vendor of end-to-end enterprise cybersecurity solutions, has announced the release of InfoWatch Prediction, a User and Entity Behavior Analytics (UEBA) solution that automatically predicts cybersecurity risks associated with HR and finance policies, malicious insiders, account compromising, as well as other HR-critical processes. The first product version will become commercially available later this year, focusing on proactive detection of employees that are about to leave.

'InfoWatch Prediction is about verifiable completion of certain enterprise cybersecurity tasks,' said Andrey Arefyev, Head of Advanced Development Department, InfoWatch Group. 'Its key feature is an underlying strict mathematical model, which helps prevent specific risks and check the prediction accuracy. We provide enterprises with a tool that precisely and proactively identifies leaving employees, thus minimizing related cybersecurity risks.'



InfoWatch Prediction analyzes enterprise information flows (Big Data) and uses machine learning-based models to predict employee resignation probability by calculating individual rating (positive or negative) of each employee. Positive rating is assigned to high-risk employees (the higher the rating, the more likely an employee will leave).

During performance tests within infrastructures of several large companies with tens of thousands of events analyzed a day, InfoWatch Prediction identified employees who were about to leave with 90% accuracy. In addition, customers can quickly check the prediction accuracy using retrospective data sampling.

'Unlike most other information security products that take months to prove their effectiveness and require customer's equipment, time and money, we can demonstrate our system's output almost instantly,' said Andrey Arefyev. 'Our product analyzes data received from the company's mail server or DLP system for the last year to identify employees who left. Customers can compare the findings with data from their HR teams.'

Once a leaving employee is identified, a security officer can apply special security policy settings and extra control over their actions and communications. Moreover, the solution not only minimizes cybersecurity risks, but also contributes to personnel record keeping, as well as management and financial accounting.

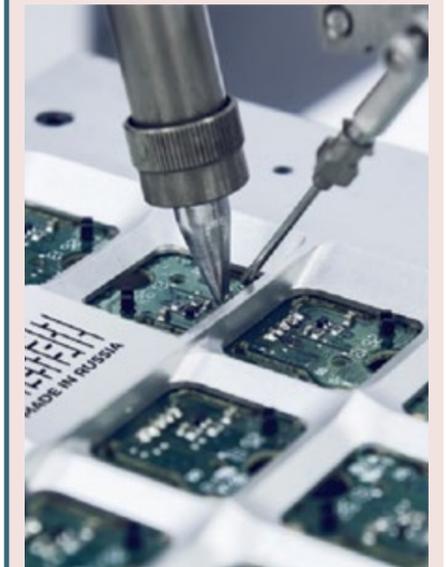


As part of GISEC 2018, InfoWatch Group also unveiled its international digital technology and cybersecurity training center in the Middle East that will provide education and advanced training in cybersecurity, IoT, Big Data, artificial intelligence, blockchain, etc.

MADE IN RUSSIA LOGO

Made in Russia national brand presented the results of a logo survey at the St. Petersburg International Economic Forum. The survey was conducted through the official mobile application of the Forum, accessible to all participants of the event. It clearly demonstrated the potential of the app as an efficient research tool.

Summarizing the survey results, the Made in Russia logo will be a combination of a barcode and a birch tree. The former is associated with business (production and sale of services), and birch is designed to embody culture and national industry. A simple shape of the logo does not require a change in design of the packaging, websites or advertising materials, has a minimal introduction cost, and can be applied to any surface by any available technology.



'A total of 5836 participants from 63 countries took the survey, 64% of respondents voted for the logo, and foreigners favoured the logo ever more than Russians: 72% of them voted Aye,' noted Mikhail Sadchenkov, Head of the National brand Made in Russia.

Made in Russia is the first communication project for the promotion of exports, business and culture, which includes international media, the logo Made in Russia and industry catalogues.

Interview by RADIOFRONT magazine Russia, with Marius Felzmann, Senior Vice President ICT & Digital Business Events, Deutsche Messe

– Mr Felzmann, CEBIT 2018 is a triple-punch event featuring exhibits, conferences and networking. What is it that sets CEBIT apart from competing events around the world? What is it about the CEBIT brand that attracts target audiences to Hannover?

– One thing that's different about the new CEBIT is that it consists of four distinct yet interconnected parts: d!conomy, d!tec, d!talk and d!campus. The innovations on display in the d!conomy section give IT professionals and decision-makers from business, trade and the public sector the tools they need to future-proof their operations by means of digitization. Among the key topics covered in the d!conomy (exhibition) part of the show are Digital Business, Digital Administration, Internet of Things, Security, Communication & Networks, Channel & Distribution, Mobile Solutions, and Data Centers. The d!tec section is all about pioneering developers, cutting-edge innovations and start-ups. The d!talk conference platform will be home to visionaries, lateral thinkers, experts and creatives from all around the world. And then of course there's the d!campus, the emotional heart of CEBIT, where everyone can intermingle and network while chilling to live music and street food.

– This year, for the first time, CEBIT is being positioned by its organizers as a business festival. Can you provide some background explaining this decision? What will the business festival concept comprise?

– We firmly believe that events targeting the digital industry need to provide a mix of business, social interaction, networking and emotional appeal. That is why we have made this radical change to the CEBIT format. Our objective in offering a mix of exhibitions, conference platforms and networking opportunities in an engaging festival-like setting is to give visiting profes-



CEBIT 2018 will present the many facets of all the key themes associated with digitization. I'd say that artificial intelligence (AI) will definitely be the most important theme at CEBIT this June. AI is the most exciting technology of our times. Over the course of the next several years, it will redefine how we live and work.

sionals a degree of added value that they simply can't get from a run-of-the-mill trade fair. Our aim is for visitors to engage with the show's business content, knowledge transfer opportunities, interactivity and dialogue forums – both professionally as representatives of their organizations, and personally as individuals.

We want to show that business can be fun, which is why we have added a number of new elements to frame the event as a business festival. The overarching objective here is to facilitate lead generation and getting down to business by providing richer opportunities for exhibitors to interact with visitors. By reinventing CEBIT as a mix of technology, business development and emotional appeal, we have also opened up a range of creative new participation options, meaning that

companies now have a lot of choice about how they take part in CEBIT.

– The CEBIT website says the show will cover the digitization of business, government and society 'from every angle.' What in fact is the geography of CEBIT 2018?

– With its winning threefold mix of innovation-rich showcases, quality conferences and informal networking opportunities, the new CEBIT will provide a 360-degree perspective on the digitization of business, government and society. As well as attracting IT experts, industry professionals and top-level decision-makers from the digital and IT user industries, our aim with the new CEBIT is increasingly to reach the next generation of business decision-makers as well as entrepreneurs, creatives and developers.

New pace of innovation: CEBIT-2018

Marius Felzmann: 'One thing that's different about the new CEBIT is that it consists of four distinct yet interconnected parts: d!conomy, d!tec, d!talk and d!campus'

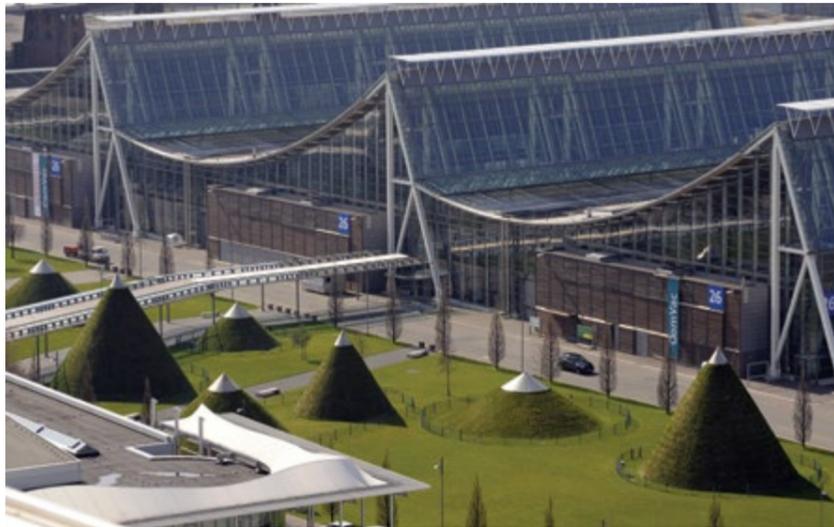
– Are you able to reveal any details of new products that are going to be unveiled at CEBIT?

– CEBIT 2018 will present the many facets of all the key themes associated with digitization. I'd say that artificial intelligence (AI) will definitely be the most important theme at CEBIT this June. AI is the most exciting technology of our times. Over the course of the next several years, it will redefine how we live and work.

In fact, AI has the potential to literally change the world. In terms of the show, it's already emphatically clear that many of the participating companies will be putting artificial intelligence 'on center stage' at their showcases. IBM and the Fraunhofer Society research institution are examples of this. There will also be a number of new, eye-catching attractions, particularly on the d!campus. SAP, for example, will making the digitization theme real and tangible on the d!campus by erecting a 60-meter-high Ferris wheel, complete with 40 gondolas. And this year we are again expecting about 400 startups, many of them with truly groundbreaking business ideas.

– The CEBIT website mentions Internet of Things, Virtual Reality, Drones and Artificial Intelligence as key topics that startups will be focusing on at the show. Another topic is Blockchain – an issue RADIOFRONT reports on very often. What specific or unique aspects

Blockchain has the potential to revolutionize entire sectors of the economy. The World Economic Forum is predicting that, by the year 2027, worldwide about 10 percent of GDP will be processed using blockchain technology. In its highly noted 'Hype Cycle for Emerging Technologies', Gartner Research agrees with this, pointing to an impending blockchain breakthrough within the next five to ten years. This up-and-coming trend is reason enough for an entire day to be devoted to the topic at CEBIT 2018.



of these major issues will feature in the showcases and discussions at CEBIT?

– Blockchain has the potential to revolutionize entire sectors of the economy. The World Economic Forum is predicting that, by the year 2027, worldwide about 10 percent of GDP will be processed using block-

chain technology. In its highly noted 'Hype Cycle for Emerging Technologies', Gartner Research agrees with this, pointing to an impending blockchain breakthrough within the next five to ten years. This up-and-coming trend is reason enough for an entire day to be devoted to the topic at CEBIT 2018. I'm referring to the CEBIT Blockchain Summit on Thursday, 14 June, on the Grand Central Stage in Hall 27.

– One of your recent press releases talks about a BITKOM survey which reveals that some 11% of German businesses involved in commerce don't even have their own websites. What's more, 77% of these businesses admitted they were lagging behind on digitization. In what ways might CEBIT help to bridge this gap?

– Whether they're small retailers or large corporations, what these businesses and others like them need is new ideas and solutions to help them along their digital trans-

formation journey. Which is why they should go to CEBIT. Held from 11 to 15 June, the show is a digital 'shot in the arm' for commerce, offering quality information on the future of commerce, insights into customer-centric sales and marketing strategies, support and advice on building multichannel systems, an overview of current best practices and, of course, opportunities for dialogue with industry peers. Highlights include the 'Multichannel & Web Presence' and 'Customer Centricity' showcases in halls 16 and 17, which form part of the d!conomy section of the show.

On CEBIT Thursday – 14 June – Hall 17 will be home to two lecture forums on the future of commerce. One of these is the 'Customer Centricity Summit', which, as its name suggests, will present sales and marketing technologies that focus



on customer needs and expectations. These technologies include data analytics, artificial intelli-

gence, CRM, virtual and augmented reality and the use of video. The highlights of this lecture program include a presentation by Max Amordeluso, Amazon's 'Lead Evangelist' for the Alexa voice service in Europe, who will provide fascinating insights into the development of voice-controlled solutions that are enjoyable and intuitive for customers to use.

The second of these forum programs is the 'Digital Trade Forum'. Held on the Expert Stage, it will explore new directions in the digitization of commerce and retail. The lecture topics here range from eCommerce and the Internet of Things to touchpoints and blockchain. The program will also present new business models and tools for retail.

The new, revamped CEBIT is sparking highly creative responses from many quarters and is generating quite a buzz. We all want the new CEBIT to be a success. For our customers – that's exhibitors and visitors – we want it to be an exciting, stimulating business festival that delivers lots of leads and facilitates high-quality, high-level networking. In other words, we want to create something that is completely new to Europe: an event that captures the dynamism and invigorating spirit of digitization and which helps drive forward the digital transformation of the economy and society.

We firmly believe that events targeting the digital industry need to provide a mix of business, social interaction, networking and emotional appeal. That is why we have made this radical change to the CEBIT format. Our objective in offering a mix of exhibitions, conference platforms and networking opportunities in an engaging festival-like setting is to give visiting professionals a degree of added value that they simply can't get from a run-of-the-mill trade fair. Our aim is for visitors to engage with the show's business content, knowledge transfer opportunities, interactivity and dialogue forums – both professionally as representatives of their organizations, and personally as individuals.





Svetlana Fedoseeva,
Deutsche Messe RUS,
Director General:

**'WE ARE GLAD
TO PROMOTE
SUCCESSFUL
BUSINESS
TIES'**

- This is the first edition of the 88 years old Russian RADIOFRONT magazine in a foreign language: we feel privileged to have the possibility to distribute our edition on the CEBIT in June 2018 in English! Would you please introduce your company to our readers?

- Deutsche Messe RUS Exhibition Company <https://messe-russia.ru/ru/> is the subsidiary Deutsche Messe AG. Deutsche Messe RUS was established in 2011 in Moscow, Russian Federation.

Our company annually organizes more than 100 events around the world, in which about 36 thousand companies participate and which attract more than 3 million specialists and visitors. Deutsche Messe AG is the organizer of the world's major industrial exhibition – The HANNOVER MESSE and the world's largest exhibition in the field of information technology and telecommunications – CEBIT. With an income of 357 million euros in 2017, the company is among the five largest exhibition organizers in Germany.

- Last year was marked by a jubilee of Deutsche Messe...

- Yes, we celebrated 70 years of our successful work and 6 years of the Deutsche Messe RUS. Being supported by a strong background of Deutsche Messe global brand and international sales expertise conducted by Hannover Fairs International, Deutsche Messe RUS Company is active in holding exhibitions and conferences in Russian cities as Moscow, Ekaterinburg and Irkutsk. The thematic scope of our activities covers materials handling, warehouse equipment and logistics; metalworking and woodworking machinery; HVAC and IT industry. Besides I want to mention, that there is another important date to remember: 5 years ago, from June 1, 2013, our company is the official representative of Deutsche Messe AG in Russia and CIS countries.

- From numerous Russian counterparts we heard flattering words about the help Deutsche Messe RUS provides for both Russian government bodies and private business facilitating their participation in several events in Germany.

- In addition to our business initiatives inside the Russian Federation we are providing the full cycle of support to the Russian companies going to our events, especially to Hannover. We consider this part of our work as an excellent opportunity to promote international business contacts, but as well to learn more about the latest innovations and trends in technologies, to practice the newest instruments of effective business development worldwide.

- What are the events in Russia our readers have to note for possible participation in the nearest future?

- We will be happy to welcome our guests at SibWoodExpo (11-14 September 2018), LESPROM-URAL Professional (18-21 September 2018) and CeMAT Russia (19-21 September 2018). Some new projects will be announced shortly.

I wish success to all CEBIT participants and assure, that Deutsche Messe RUS will be glad to contribute to successful international business networking in the future!

RF

РОССИЯ | МОСКВА | ЭКСПОЦЕНТР

ChipEXPO-2018

КОМПОНЕНТЫ | ОБОРУДОВАНИЕ | ТЕХНОЛОГИИ

16-Я
МЕЖДУНАРОДНАЯ
ВЫСТАВКА
ЭЛЕКТРОНИКИ

СОВМЕСТНО С



17.10-19.10

ТЕМАТИЧЕСКИЕ ЭКСПОЗИЦИИ

- Экспозиция предприятий радиоэлектронной промышленности России «Участники Федеральных целевых программ Минпромторга России»
- Экспозиция «Участники Конкурса «Золотой Чип»
- Экспозиция «Испытания и контроль качества ЭКБ»
- Экспозиция «Новинки производителей электронных компонентов»
- Экспозиция «Другая электроника»
- Экспозиция предприятий Зеленограда (Корпорация развития Зеленограда)
- Экспозиция предприятий АО «Росэлектроника»



МИНПРОМТОРГ
РОССИИ



DATA MANAGEMENT AT CEBIT:

MANAGING THE FUEL OF THE DIGITAL REVOLUTION



CEBIT®



Valery STOLNIKOV

CEBIT gives business decision-makers and IT professionals vital insights into how to ready their organizations for competition in the age of digitization. It does so by focusing their attention on innovations and solutions that can transform lifeless data silos into living digital processes.

Data is the fuel that is powering the digital revolution in all of its many forms and manifestations, including the Internet of Things, artificial intelligence and smart energy grids, to name but a few. What's more, it is a fuel that is available to businesses of all sizes. Even SMEs can tap into it and leverage digitally integrated processes to develop new lines of business. And yet, according to a Kantar TNS study undertaken for Commerzbank, 97 percent of German SMEs are still ignorant of the value big data can offer their business. And less than 8 percent actually put their data to work by analyzing it. Even customer journey analysis – an approach that can yield valuable insights into customer behavior and new market trends – is in many quarters little more than a vague item on an aspirational to-do list.

The reason for this less-than-wholehearted embrace of digitization is that the data in question are commonly distributed in varying formats across different IT systems. These data silos provide only a series of disconnected snapshots – a far cry from the integrated perspective that business decision-makers need in order to do proper analysis and adopt innovative technologies. Hence, for example, nearly half of the decision-makers polled in a recent survey by IT consulting firm Infosys revealed that their in-house data preparation and enrichment processes were not sufficient to enable them to benefit from AI-based solutions.

High time, it seems, for businesses to invest in scalable cloud-based Infrastructure-as-a-Service (IaaS) and Software-as-a-Service (SaaS) offerings and start turning their data into money. This is where CEBIT can

help. Europe's business festival for innovation and digitization profiles pioneering integrated solutions from big players like Hewlett Packard Enterprise, IBM, SAP and Salesforce.

There will also be solutions from Oracle NetSuite. The company has announced it will be showcasing a range of AI-based tools for process automation in areas like Customer Relationship Management (CRM) and Human Capital Management (HCM). Oracle NetSuite will also be showcasing SuiteSuccess, a cloud-based solution comprising an array of functionalities that are ready for a range of different industries right out of the box (Hall 17).

Many exhibitors this year will also be presenting enhancements and add-ons for enterprise resource planning, itself widely regarded as one of the cornerstones of digitization. Asseco Solutions, for example, has

combined classic ERP technology with Industry 4.0. The latest version of its APplus ERP software has a range of new functions, including support for integrated predictive maintenance. 'ERP solutions are closely interwoven with business processes in a way that no other system is. As such, they are the cornerstone for the digital integration of entire value chains,' explains Chief Operating Officer DACH Holger Nawratil.

The GUS Group will be at CEBIT with a lineup of applications designed to optimize business processes in readiness for digital transformation. For example, its GUS-OS Digital Hub software enables users to set up a cloud-based digital hub service and thereby make selected services and functions of their GUS-OS Suite ERP available to external customers, suppliers and machines, without losing control over sensitive master and transaction data (Hall 17).

Meanwhile, IAS Software will be using CEBIT to profile its caniasERP software. Using various real-life examples, the company will demonstrate just how easy it is for users and IT personnel to customize caniasERP using the user-friendly development environment that ships with the software as standard.

ams.Solution will be presenting the latest incarnation of its ams.erp software, which features a revamped user interface and intelligent project recognition functionality. 'Besides internal processes, ERP systems keep track of many other areas, including CRM, service management and project management. As such, they give manufacturers a very broad base for integrating third-party systems into their processes and achieving a maximum of workflow automation,' says ams.Solution CSO Uwe Kutschenreiter (Hall 17).

AixpertSoft will be in Hannover with AixBOMS Infrastructure Management Center – an integrated software suite for the sustainable operation of datacenters. The future-friendly software can handle all datacenter tasks, from dynamic data exchange to network and system management. AixpertSoft is an expert in datacenter visualization, a fast-growing area which it sees as a key future trend (Hall 12).

ibo Software will be showcasing its current offerings for project management, process management, organizational development and audit and compliance management. Its showcase will include a number of new products, including the ibo netProject Mobile solution for smartphones and tablets, and S-OHBplus, a workflow-based organizational manual system that keeps employees informed of regulatory and in-house rules, requirements and work instructions (Hall 17).

VLEXsoftware+consulting will be using its display at the Digital Enterprise Park to show manufacturers the software tools they need for custom manufacturing. The company will be presenting its VlexPlus variant management solution. It features 2D and 3D graphic configuration and modeling tools that can be integrated into the manufacturer's online shop, giving

customers total transparency before they order. 'Transparency, connectivity with customers, suppliers and specialist distributors, and improved ability to assess customer requirements are just some of the benefits of digitization,' says marketing and sales boss Thomas Feike (Hall 17).

Not that the exhibition stands are the only places at CEBIT where visitors can discover the power of digitized business processes. These themes will also feature prominently at events like the Digital Transformation Summit on Tuesday, 13 June (Hall 17, Center Stage). The speaker lineup here includes Bastian Nominacher, Co-CEO and Co-Founder of process mining startup Celonis. His presentation is titled 'Putting Digital Transformation into Practice'. Celonis's process mining technology enables analysis of complex business processes in real time.



At CEBIT 2018, everything is geared to generating business, leads and bright ideas. With its exhibitor displays, expert conferences and prime networking opportunities, CEBIT is a triple-punch event covering everything essential to the digitization of

business, government and society. The innovations on display in the d!conomy section of the show give IT professionals and decision-makers from the realms of business, trade and the public sector the tools they need to streamline and futureproof their operations by leveraging digitization to the fullest. The event's d!tec showcase puts the spotlight on developers and startups and their disruptive business models, as well as on research institutes giving us a glimpse of tomorrow's game-changing technologies. The d!talk conference program features visionaries, lateral thinkers, creatives and experts from around the globe. The d!campus is the beating heart of CEBIT – the place where everyone gets together for relaxed networking, street food and live music. CEBIT presents the digital transformation in a totally new way, while retaining its core focus on business, leads and more leads. The first day of CEBIT 2018 – Monday, 11 June – is reserved for conference attendees and journalists, with the exhibition opening on Tuesday, 12 June. The exhibition halls will be open Tuesday through Thursday from 10 a.m. to 7 p.m., with the d!campus staying open till 11 p.m. on those days. Opening hours on Friday are from 10 a.m. to 5 p.m. CEBIT Events Worldwide give Deutsche Messe's customers even more ways of reaching their international clientele, e.g. in dynamic markets such as China, Australia, Thailand and Spain.



DIGITAL AGENDA IN THE GLOBALISATION ERA



Tatyana VALEEVA

In Almaty, Kazakhstan, the forum Digital Agenda in the Globalization Era was held. The forum was designed to promote the Eurasian Economic Union (EAEU) role in global digitalisation and enhance partnerships in this area among member countries. The forum's main topic was integration of IT systems within the Eurasian Economic Union. The Russian position on this issue at the forum was explained by Dmitry Medvedev.

We should not think that all of us, even the most developed countries, will be able to push forward the digital agenda within a limited timeframe. In fact, the digital divide is too large.

All our countries are implementing programmes to bridge this gap, but the digital divide is still there. This is a key matter of concern. As long as the digital divide remains in place among the

five EAEU member countries, as well as within the CIS, Europe and Asia, and across the planet in general, the digital agenda will not become universal.

The digital agenda transcends the boundaries we are used to, creating a common digital space. The question is how fast it will advance, and to what extent we will be willing to cooperate with each other? Will we be able to adapt to the trends

that are gaining momentum across the world?

Today, the five EAEU countries will have a detailed discussion on ways to coordinate our efforts in this area. It is obvious that we will not be able to do anything acting separately. We need to unify our markets for goods, human resources, logistics and technology and develop our own infrastructure.

Russia assumes the rotating presidency of the EAEU bodies in 2018. The digital agenda will be an integral part and a cross-cutting issue in our relations. We will work on it in all possible areas. The party that will come up with a reliable, resource-light and transparent regulatory framework will be the one who wins this race. It is true that the processes unfolding in the digital world call for trans-border regulations and require a softer, rather than the traditional, approach. Excessive conservative regulation may undermine our competitiveness. We need legal mechanisms for processing, analysing anonymous big data coming from all of our five countries.

IT security and the safety of personal, corporate and government data are also high on the agenda. As digital services develop, we need to find ways to counter hacking attacks, not to mention cyber fraud or terrorism. These are essential goals.

There is a programme in Russia, The Digital Economy, implemented along the five main axes: regulation, infrastructure, technological advances, security, human resources and education. Action plans have already been approved

for four of these five areas. This programme is like a living organism in that it is poised to evolve moving forward.

Digital assets, or crypto assets, have become an intensely debated issue. I have to say that I am rather pessimistic when it comes to this phenomenon. No one knows whether these virtual currencies are here to stay. We do not know whether they are a universal payment instrument that can compete against conventional currencies. Maybe it is just a bubble that will burst at a certain moment, leaving a void behind it? What I can say for sure is that the blockchain technology is a fundamental breakthrough in terms of the principles behind it.

In any case, we must not isolate ourselves within our national models. These principles cannot be implemented within a single country. We need to align our approaches within the union. Ideally, crypto assets should be regulated by international conventions. Otherwise, the whole process could head in a different direction, becoming unintelligible, if not illegal.



Participants in the Supreme Eurasian Economic Council meeting in Sochi on 11 October 2017 approved a concept of the digital agenda and outlined its priorities. Today, we will sign an agreement on the identification labelling of goods. All these steps are headed in the direction we are talking about.

It is essential that we agree on the terms and start working on supra-national infrastructure solutions and supra-national digital technolo-

gy right away. There could be three elements in this integration effort.

We could refer to the first element as EurAsEC Data X, a single sub-system for transferring and exchanging machine-readable data. This platform would feature regulatory databases and could be used for exchanging information, enabling private companies to exchange binding protocols.

I would call the second element EurAsEC ID as an integrated space of mutual trust. It would include identification, authentication, authorisation services and a digital archive. At the end of the day, this would enable our countries to deliver digital certificates to nationals from other countries. Blockchain technology could also be used to this effect, since it is all about mutual trust.

The third element could be called EurAsEC Geo, representing a geo-information system and mapping services for streamlining controls over the transportation and traceability of goods. While this is a purely economic task, it is nevertheless extremely important.

The daily online edition D-Russia.ru is the only information resource in Russia devoted entirely to the informatization and digitalization. The publication specializes in news and analytical materials on following topics: IT in public administration, regional and municipal authorities; e-government in the Russian Federation; state policy of the Russian Federation in IT; advanced domestic and foreign experience of using IT in state structures and for the creation of an 'electronic state'; Internet governance.

SOFTWARE IMPORT SUBSTITUTION IN RUSSIA: WHERE WE ARE AND WHAT'S NEXT



Andrey ANNENKOV

In the last week of April, a forum was held in Moscow, as we call any discussion, in which at least one deputy is involved, dedicated to the Russian software and hardware, or rather, to their import substitution. IT-directors of the two largest employers in the country were present – of the railway monopoly RZD (Russian Railways) and 'Post of Russia'.

After the adoption in November 2015 of the Government Decision no. 1236 'On the establishment of a ban on the admission of software originating from foreign countries for the purpose of procurement for ensuring state and municipal needs', the experts who developed the document expected to see in the register of domestic software between two and three hundred products – but in fact there are already 4500+!

Below are listed the information provided by the participants of the event, which fix the current state and give an idea of the prospects of import substitution of IT in Russia started more than two years ago.

On the decision of the Government of Russia on imported software

The word 'prohibition: in the government decree should not be taken literally: this is the case when the strictness of Russian laws, according to the Russian classic, is mitigated by the non-mandatory nature of their execution.

According to the resolution, at the expense of the budget, you should buy only those software products that are included into the register of domestic software. But if the state customer justifies the need to purchase imported software, it will be allowed to him. State customers are willing to use this opportunity to buy the usual Microsoft or Oracle products.

Source: ANO 'Competence Center on Import Substitution in the Field of ICT'

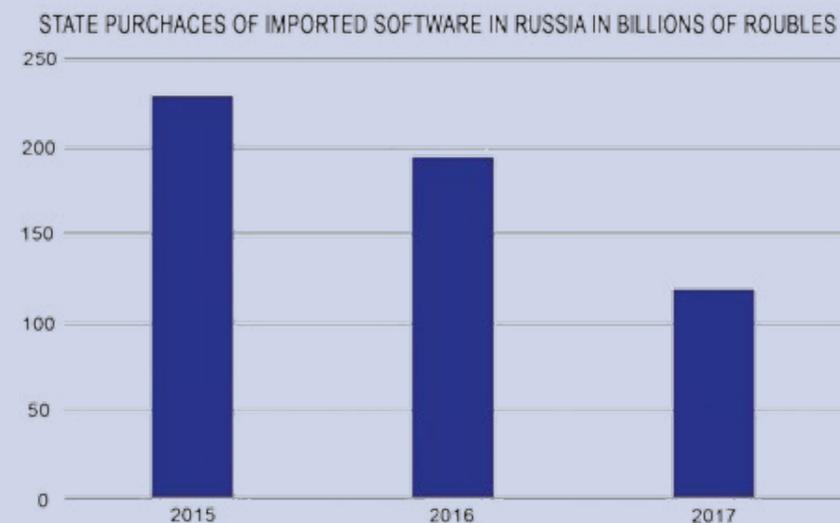
The decrease in purchases of imported software occurred against the backdrop of a decline in the total volume of public procurement, the rate of which, however, was significantly lower – for a few percent.

Now, the Russian government intends to extend the experience of

limiting the procurement of imported software to companies with state participation. No later than in May 2018, the government will receive a directive that requires state-owned companies, whose purchases constitute 70% of the Russian software market, to purchase domestic software products.

It is expected that the register of domestic software, which is now

From 2015 to 2017, imports of imported software declined by years in billions of rubles as follows:



extremely inconvenient to use, will be improved – primarily due to the correct classification of software products. Now, for example, the same product can be listed simultaneously in the registry as 'General Application Software', 'Office Applications', 'Organization Process Management Systems' and 'Information Systems for Specific Sectoral Problems'. In such circumstances, it is very difficult for the government customer to find in the register a suitable substitute for the customary imported software.

From the names of only these four classes of software, among

other things, you can see the helplessness of the classifier of domestic software, applied in the registry. This classifier is single-level, without division into subclasses, which is not enough for four-odd thousand objects.

Farewell to Windows and Microsoft Office: German experience

In Russia we are aware of failed German attempt in 2000ths years to transfer state organizations, including federal ministries, to operating systems and office software with open source.

Now the number of classes is already 24, and when the registry was created, there were only five. Obviously, every time, when the Ministry of Communications and Mass Media faced an unknown form of software life, they specifically for it have got one more class of software products.

The main problem of import substitution for software is that the current state information systems (GIS) were written under Windows, and with OS included in the registry (Linux-systems), they are incompatible. The processing of GIS is underway, it is possible to do this, according to an optimistic estimate, in two or three years.

Several years ago, the author talked about this in Berlin with the staff of the German Foreign Ministry. According to my counterparts, they were disappointed with the low level of support for Linux and Open Office, which fell on the shoulders of the ministry's IT staff. Therefore, Linux had to be rejected.

Russia, however, is in a situation different from Germany. By now,





cyberspace has become a new theater of military operations, and dependence on imported software in the current confrontation between our country and the US, as well as the European satellites of the United States, is simply dangerous.

How widely imported software is spread in Russia, can not be explained by anything other than short-sightedness. For example, the settlement center of the Ministry of Defense of the Russian Federation operates on the SAP platform. This is a German company with an impeccable reputation, producing excellent products, but it has a successful Russian competitor, far superior to SAP in terms of the number of successful implementations in Russia – 1C. Its software is installed, according to IDC, on 80% of jobs in Russian companies that use ERP-systems. To buy SAP for the Russian military, not 1C, is like equipping the Russian army with M-16 rifles instead of Kalashnikov assault rifles.

And most importantly, Russian state customers have no choice. Due to the sanctions and threats to information security, they will have to migrate from Windows to other platforms. One of the federal agencies, the State bailiff service, has already done it.

In this regard, it is appropriate to recall also that the German idea to abandon Windows in public institutions arose in the 2000th year due to the 'NSA key', a comment

An important practical question is: under what conditions an open source software product can be considered domestic? The Expert Council at the Ministry of Communications at the latest meeting decided that for this it is sufficient to require the manufacturer to compile the software from the source code and build the product into an executable code.

found in the code of Windows 3.11. Then the German Foreign Ministry claimed (according to 'The Guardian') that organizing video conferences on Windows computers was like holding conferences directly in Langley.

In reality, the situation is somewhat more complicated. Among the criteria of 'nationality' should be considered the degree of influence of developers from Russia on the open source community. Such influence among Russian programmers is, for example, in the community developing the DBMS, but it is not in the environment of developers of office software. Without influence in the open source community, one has to make a proprietary product if you want to control it.

A good illustration of this is the technology of artificial intelligence from Sberbank. By now, this largest retail bank in Russia has evolved from the idea of 'now hiring programmers and writing everything ourselves' to the idea of 'let's work in an open source environment'.

Working with the STR, according to the representative of the bank, costs two to three times cheaper.

What the bank achieved in terms of AI, you be seen on the site ipavlov.ai. Utilitarian benefits (say, a reduction in the mortgage loan rate) from AI can be earned, I would like to suppose, in the future. A Sberbank representative promised for 2019 not only to bring the AI-system into the register, but to complete and publish the 'platform'. In the meantime, the criteria for the success of the project are 'purely mathematical.'

Mr.Herman Sukonnikov, deputy head of the Informatization Department of Russian Railways, speaks of 'a successful transfer to the use of domestic software' and impresses with figures: RZD with more than a million employed has 85 thousand kilometers of lines and indicates a billion sold tickets for the year.

Historically, Russian Railways suffered not from the lack, but from the excess of domestic software – the 'zoo' of IT systems in the com-

pany, dispersed on 1/6 of the soil on earth, reached a fabulous size (reducing the range of products implemented is still a strategic task). But serious things such as 'clouds' and ERP – were imported by railwaymen. Mr.Sukonnikov stated that the import substitution of system and special software in RZD, if possible at all, would lead to a loss of productivity and, consequently, to a new increase of the need for hardware. But Sukonnikov's desire to ensure import substitution looks sincere, reaching the verge of enthusiasm.

The Deputy Director of the Russian Post on IT and development of new products Mr.Sergey Yemelchenkov promised 'to abandon Windows before the end of 2019' and proudly informed that the Russian mail for the third consecutive year 'does not pay Oracle a ruble'. According to his words, IT-independence is necessary, here is an example: the struggle of Roskomnadzor (Russian press and Internet supervising body) against the Telegram messenger lead to 'simple disconnection of IP addresses', and trivial external (Google) service of checking became unavailable in Russia, and corresponding systems of Russian Post that depend on it have stopped.

An important positive example: in Russia, 17 thousand postmen have already received smartphones based on the domestic mobile Sailfish OS.

Russian Mail would like to introduce a domestic office package 'MoiOffis', which has already been looked at and which was ranged as

good. Only the 233rd Federal law that establishes the rules of the procurement procedure for state-owned companies can interfere – if there is a competitor offering a lower price for the same functionality,

the rest are Chinese. The largest Western software producers either lost interest in the Russian market or took up the defense of the conquered bridgeheads and are waiting for new political developments.



Russian Mail will have to sign a contract with him.

Russia is still developing own processors, 'Baikal' and 'Elbrus' – but does it very slowly. They are based on original ('Elbrus') and x86-compatible architecture ('Baikal'), and the demand for such processors arose due to the US economic sanctions imposed on Russia.

The mentioned conference event was timed to the exhibition 'Svi-az-2018'. The general impression of the exhibition is that it looks like a distant CEBIT pavilions a decade ago. Among the exhibitors – not a single American company, a small pack from Europe, dozens of ours,

This, of course, is very bad. The software industry is international in nature. No country is able to sustain a natural software economy, it is impossible, and it is unreasonable not to participate in the international division of labor in this market, where Russia has much to offer.

Russia, unlike most other countries, in a number of important sectors of the software market – for example, search engines, ERP systems, DBMS, CMS, platforms for social networks, including corporate social networks, antivirus software, etc. – has its own producers who in the domestic market at least do not lose to Western products. Support of these manufacturers by state orders is expedient – economists know that every ruble earned in the software industry turns into five rubles of GDP growth.

But for the Russian economy, even more important is the ability to export software, earning not rubles, but euros and dollars. Developers in Russia hope that, as time passes, the current 'import substitution' will be limited to reasonable protectionism, and international cooperation will prevail over attempts to artificially isolate Russia from it.



GADGETS 'MADE IN USSR'

TRUTH *and a little bit more*



Admir CELOVIC, Pipeline Technology Journal (Hanover)



One of severe consequences of self-flagellation, which has been popular some decades ago on the territory of the former Soviet Union in almost all fields, was the oblivion of the undoubted successes of Soviet science and technology. Of course, one cannot but admit that the ingenious developments of Russian scientists have rarely become property of the country's inhabitants due to the lack of market mechanisms that would facilitate their mass production.

Meanwhile, as Vitaly Steinberg, Chief Designer of the Research institute 'Argon', said in an interview with our magazine, 'in the 1980s, the national program for the creation of personal computers worth several billion

rubles was adopted in the USSR. The Ministry of Radio Industry was actively engaged in the introduction of computers – there was an ambitious task to launch a huge plant for the production of personal computers.' Describing the state of Soviet

computer technology in the 1980s, the prominent Russian scientist emphasized that the backlog from the US 'was completely controllable and did not exceed 3-5 years, despite the fact that investments in the USSR and the United States were incomparable.' ('RADIOFRONT' N2, 2017).

However, the situation is changing for the better. Russian Industry and Trade Minister Denis Manturov emphasizes that in certain sectors Russian enterprises 'successfully compete with world leaders,' mentioning among these areas the security of systems and measuring equipment. 'Domestic manufacturers have considerable competencies in the creation of unique equipment for aerospace defense and strategic nuclear weapons, electronic warfare systems, radars and special communications,' the Minister says.

On CEBIT you can see a number of Russian companies that have presented their noteworthy achievements. In this regard, 'RADIOFRONT' would like to recall you on a number of domestic achievements of the past: they became landmarks in the development of technology not only in Russia, but worldwide.

In the 30ths of the last century, Soviet magazines including 'RADIOFRONT' wrote about inventions of the Russian, later American television pioneer Vladimir Zworykin – in particular, about the unprecedentedly large CRT with a 60 by 80 centimeter screen.



Vladimir Zworykin shows his very first kinescope in 1929



The 'Agat' ('Arar') was a series of 8-bit computers produced in the Soviet Union. It was based on same MOS Technology 6502 micro-processor as the Apple II and the Commodore 64. Commissioned by the USSR Ministry of Radio, for many years it was a popular microcomputer. First introduced at a Moscow trade fair in 1983, the 'Agat' was produced between 1984 and 1990, although a limited number of units may have been manufactured as late as 1993.



The 'Altai' ('Алтай') mobile telephone system is the pre-cellular radiotelephone service that was introduced in the Soviet Union in 1963 and became available in most large cities by 1965. It is a fully automated UHF/VHF network that allowed a mobile node to connect to a landline phones, and was originally conceived to serve government officials and emergency services. The work on the system of automatic duplex mobile communication started in 1958 in Voronezh Research Institute of Communications (VNIIS, now concern Sozvezdie ('Созвездие')).



Electronika MC 1504 ('Электроника MC 1504') was the first laptop computer to be manufactured in the Soviet Union. Produced by the Integral Scientific Production Association in 1991, it was a clone of the Toshiba T1100.



In 1988, the 'Electronika' ('Электроника') factory released a limited batch of microcomputers, the MK-90. It did not have a touch screens yet, so it was necessary to type on an ordinary built-in mini-keyboard. The device had a RAM of 16 KB and a memory of 32 KB.



The first prototype of the modern microwave oven appeared in the USSR back in 1941. But the outbreak of the war prevented both further development of this device into mass production. Soviet microwaves returned into production in 1978, but they found no popularity among users due to the high price (350 rubles, some \$550 acc. to the official exchange rate).



Not only Soviet developers of electronic equipment were endowed with by gift of prediction – artists were clairvoyant as well! The sculpture, erected 93 years ago in the Proletarian district of Moscow, depicts a guy sending the world's first SMS. The concrete figure with a stern face, in a pose, characteristic for our contemporaries manipulating with a mobile phone, clearly shows that almost a hundred years ago time travel was not an extraordinary practice for Soviet scientists.

Attention – fake news! The sculpture of Nikolai Andreev 'The Worker' is in fact the centerpiece of a Moscow square. But the guy is supposed to bear a metal part in his hands, which he just produced.

At first glance is was a curious combination of various electrical devices in one device: a miniature fan + vacuum cleaner + flashlight, produced in the USSR in the early 80's. However, the idea turned out to be not so pointless: analogous gadgets produced on a new technical level are now actively offered by many Chinese manufacturers!



Few know that first flying cars were successfully tested in our country in the late 30ths of the last century. It happened long before the appearance of similar wonders of technical design – many decades earlier than ideas of Ian Lancaster Fleming, Joanne Rowling and even Elon Reeve Musk captured the minds of the sensitive public! The fuel of this design masterpiece has been purely of ideological character...
Attention – Russian propaganda! These are footages from the Soviet pre-war film 'The Bright Way'.



МЕЖДУНАРОДНЫЙ ФОРУМ
МИКРОЭЛЕКТРОНИКА 2018

1-6 октября 2018 г.
г. Алушта
(Республика Крым)

Международный Форум
«Микроэлектроника - 2018»

Приглашает Вас и Ваших сотрудников принять участие в Международной научной конференции: «Микроэлектроника - ЭКБ и электронные модули»

Задачи Форума: комплексно рассмотреть актуальные вопросы разработки, производства и применения отечественной электронной компонентной базы и высокоинтегрированных модулей.

ПРИ ПОДДЕРЖКЕ



ОРГАНИЗАТОРЫ



Генеральный информационный партнёр



Оператор Форума: Компания «ПрофКонференции» • Тел.: +7 (495) 641-57-17 • Факс: +7 (495) 641-57-17 • E-mail: info@micoelectronica.pro
Подробная информация и регистрация участников на официальном сайте Форума: micoelectronica.pro

Special edition
03 (219), June 2018

SCIENCE • TECHNOLOGY • INNOVATIONS

RADIOFRONT

SCIENTIFIC PUBLICATIONS



DIGITAL ECONOMY CONCEPT IN RUSSIA AND THE EU: COMPATIBILITY ANALYSIS

КОНЦЕПЦИЯ ЦИФРОВОЙ ЭКОНОМИКИ В РОССИИ И ЕВРОПЕЙСКОМ СОЮЗЕ: АНАЛИЗ СОВМЕСТИМОСТИ



Stanislava VASYUTINSKAYA
Станислава Васютинская

ABSTRACT: The author makes a unique attempt to compare the concepts of the digital economy adopted and implemented in the Russian Federation and the European Union. At the same time, not only the semantic and organizational differences of strategies become the subject of consideration, but also the search for possible and promising areas of cooperation between Russia and European partners.

KEY WORDS: concept of digital economy, neurotechnology, artificial intelligence, systems based on distributed registry, quantum technologies, industrial Internet, robotics and sensorics, wireless technologies, e-government.

АННОТАЦИЯ: Автор предпринимает уникальную попытку сравнения концепций цифровой экономики, принятых и реализуемых в Российской Федерации и Европейском Союзе. При этом предметом рассмотрения становятся не только смысловые и организационные различия стратегий, но и изыскание возможных и перспективных областей сотрудничества между Россией и европейскими партнерами.

КЛЮЧЕВЫЕ СЛОВА: концепция цифровой экономики, нейротехнологии, искусственный интеллект, системы на основе распределенного реестра, квантовые технологии, промышленный Интернет, робототехника и сенсорика, беспроводные технологии, электронное правительство.

In the global scientific discourse, the issues of further development at national, regional and global levels are closely linked to the new role of digital technologies. As the reference points of progress are considered the blocking technology, robotization, artificial intelligence, big data, quantum computers, 3D technologies and unmanned vehicles. Often, these opportunities are seen in the framework of the concept of digital economy, although the universally accepted international interpretation of what is considered the content of digital economy is not yet achieved.

At this stage, we understand under the digital economy the digital infrastructure of the economy. This definition, on the one hand, avoids the absolute role of the digital component and emphasizes the primary nature of the real sector of the economy, the importance of which increases permanently. On the other hand, this allows us to emphasize the systemic, strategic nature of digital technologies in the new economic order.

Table 1. The timing of the digitalization of the economies of Russia and the European Union

	The beginning of practical digitalization	Timing of digitalization	Basic documents
Russia	28.07.2017	2017–2024	The program 'Digital Economy of the Russian Federation'
The European Union	06.05.2015	2015–2025	The EU Strategy 'Single Digital Market'

It is noteworthy that key Russian agency in the sphere of IT, the Ministry of Communications of the Russian Federation, sees the digital economy as a separate sphere, which requires the creation of a separate infrastructure.

The sprouts of the digital economy can be found in most countries of the world, they are influence subject of different development vectors, both economically and politically. Keeping in mind the transnational nature of most digital economy elements, we should understand what will mean the creation of a full-fledged digital infrastructure of the Russian economy

for Russia's international economic relations outside the framework of the Eurasian Economic Union.

One of the main trade and economic partners of Russia today is the European Union, in which the digitalization processes are actively taking place. In principle, the digital cooperation sphere looks promising – keeping in mind that it lays beyond the current sanction regimes. Moreover, some mechanisms of digital economy (for example, the cryptocurrencies) can play an important role in overcoming sanctions restrictions. The most relevant in this regard is the question of how compatible representations of the

digital economy in Russia and the European Union are and how they can be harmonized.

In Russia, the starting point for addressing the digital economy at the state level is the message of Russian President V.Putin to the Federal Assembly of December 1, 2016. In was emphasized: '... I propose to launch a large-scale system program for the development of the economy of a new technological generation, the so-called digital economy...' After that by the order of the Russian Government No. 1632-r. the program 'Digital Economy of the Russian Federation' was introduced. It is designed for the period until 2024 and contains a schedule for its implementation.

The contribution of high technology to the Russian economy is just 5%.

According to the study of the 'Runet Economy', the contribution of high technologies (including mobile technologies) to the economy of the country is just 5% of GDP, which is lower than that of other developed countries. And it is unlikely that in the coming years it will exceed 10%.

As for the European Union, the digitalization started on May 6, 2015, when the 'Single Digital Market' strategy was adopted, which includes different directions and determines the general outlines for regulating the digitalization of the EU economy. Initially, the deadlines for the strategy were not clearly spelled out. At the 'digital' summit of the EU, the period of its operation was defined – until 2025.

The formation of the digital economy is attributed in Russia to the main directions of national development for the period up to 2024. The already existing program of the digital economy in Russia provides for the widest possible coverage of promising technologies such as big data, neurotechnology and artificial intelligence, distributed registry systems, quantum technologies, industrial Internet, robotics and sensorics, wireless technology. Of course, different Russian agencies and institutions, although they are subordinated to the task of fulfilling the program, emphasize different

Table 2. The content of digitalization in Russia and the European Union

Terms	Russia	European Union
in Russia – digital economy in the EU – the digital market	Big data; Neurotechnology and artificial intelligence; systems based on distributed registry; quantum technologies; new production technologies; industrial Internet; components of robotics and sensorics; wireless technologies	trust, security, e-government, industry, society and the economy.

main issues according to the profile of their activities.

For example, the Russian Ministry of Communications focuses on eliminating the digital inequality, meaning the maximum coverage of the territory of Russia by fiber optical communication network, including access to the Internet; devel-

In its turn, the state atomic energy corporation Rosatom focuses on the concept of 'smart city' comprising the integration of information, intellectual and communication technologies as far as Internet of Things (ITT) for urban infrastructure management. This is first of all unmanned public transport, remote monitoring in energy and housing and communal services, information modeling in construction, the predominance of electronic services. This focus of attention of Rosatom is understandable, since its enterprises are mainly located in single-industry towns, where this part of the digital economy is most in demand and is accessible for implementation, taking into account the small scale of single-industry towns. Sarov (Nizhny Novgorod region) was chosen as one of the pilot cities. In addition, Rosatom has four core end-to-end technologies – quantum technologies, virtual augmented reality technologies, work with big data as far as new industrial production technologies.

Detailed profile programs of the digital economy are also implemented in the Agency for Strategic



be requested again, including those crossing the border within the EU.

The Commission also proposes to accelerate the transition to e-procurement and the introduction of the 'one-time' principle in public procurement.

The comparison of the practical digitalization in Russia and the European Union shows the existence of specific options for interaction. So, for example, in the EU the creation of a portal close in content to the Russian portal of public services (gosuslugi.ru) is only an idea while in Russia it is already successfully operating and transforming itself into a national platform for personal identification. In turn, the EU experience in the organization of electronic commerce could be useful for Russia, where the volume of e-commerce actions has increased many times in recent years.

Russian agencies have found it possible to focus not on prohibitive measures, but on the way of accreditation of organizations to the new reality. The regulation is de-



clarative in nature, meaning that an organization or a private entrepreneur registers its interest in digital technologies and thereby obtains the right to engage in them on a legal basis. In particular, such a measure is offered to organizations and individuals intending to start releasing tokens, which, according to the Ministry of Communications, are a digital commodity. In the un-

derstanding of the Ministry of Communications, regulation through obtaining accreditation allows market participants to legally implement their projects, which should contribute to Russia's technological development.

Within the framework of the European Union, the emphasis in the management of the single digital market of the EU is on the regulation of competition, having in mind primarily the provision of equally high quality of communications and Internet access, or 'connectivity' throughout the EU, and the optimization of digital platforms as a new way organization of business processes.

In terms of connectivity, the European Commission has put forward three strategic objectives:

- Important socio-economic facilities such as schools, universities, research centers, transportation hubs, hospitals, administrative buildings, and enterprises using digital technology must have access to high gigabit communication (which allows users to download / upload 1 gigabit data per second).
- All European households, rural or urban, must have access to a connection that assumes a download speed of at least 100 Mbps, which can be upgraded to Gbps.
- All urban areas, as well as major roads and railways should have a total coverage of 5G, the fifth generation of wireless communication systems. As an in-

terim goal, by 2020, 5G should be commercially available in at least one major city in each EU member state. In the same line is the initiative WiFi4EU, within the framework of which the goal is to provide access to free WiFi points for the whole population of the EU.

Specifically, the EU documents prescribe the issue of investing in a new infrastructure that will be necessary to build a full-fledged digital economy and a 'connected society'. Measures to stimulate investment in this area are spelled out in the European Code of Electronic Communications. The total amount of investments needed to implement the 'connectivity' program is estimated at 500 billion euro, all means are expected to be attracted from private sources. The European Commission seeks to make investment predictable and minimally risky, even for 'pioneers' who invest in network infrastructure in remote rural areas. The Code provides not only the development of competition for access to networks, but also competition for investments in these networks.

Thus, the comparison of attitudes and approaches to the formation of the digital economy in Russia and the European Union is useful in the sense that it allows us to ask whether the digital economy can become a space of partnership between Russia and the European Union. At the same time, it is first of all necessary to clarify why such concepts of the past years as the economy of knowledge, the economy of sustainable development, the economy of innovations did not become a platform for their closer partnerships. Obviously, the problem is the discrepancy between economic models and the structures of economic life. In addition, each of these concepts came to Russia with significant delay, if they reached Russia at all (for example, the construction of an economy of sustainable development did not stand in the plans formulated in Russian economic programs at all).

In the case of the digital economy, much is different. The coincidence of the chronological framework, a significant part of the agendas, the pro-

active approach of the Russian government to the implementation of this concept, the approximate equality of technological capabilities – all this means that Russia and the EU have prerequisites for becoming truly equal mutually beneficial partners in the construction of their digital infrastructures, and the only factor holding back this cooperation is rather of political character.

RF



SOURCES

1. Speech by the Minister of Communications of the Russian Federation N.Nikiforov at the parliamentary hearings in the State Duma of the Russian Federation on February 20, 2018 on 'Formation of legal conditions for financing and development of the digital economy'. URL: <http://minsvyaz.ru/en/events/37962/Access> 09.03.2018
2. The site of the World Economic Forum (WEF) in Davos (Switzerland) - <https://www.weforum.org/system-initiatives/shaping-the-future-of-digital-economy-and-society/> Access 20.03.2018
3. The site of the Eurasian Economic Commission of ECE – <http://www.eurasiancommission.org/en/act/dmi/Pages/default.aspx>
4. The Address of the Russian President Vladimir Putin to the Federal Assembly – <http://www.kremlin.ru/events/president/news/53379/Access> 10.03.2018
5. The website of the Government of the Russian Federation – <http://government.ru/docs/28653/> Access 10.03.2018
6. The European Union website on the Single Digital Market Strategy – <https://ec.europa.eu/digital-single-market/en/policies/shaping-digital-single-market/> Access 22.03.2018
7. The website of the 'Digital' EU summit in Tallinn (Estonia) 29.09.2017 – <https://www.eu2017.ee/political-meetings/tallinn-digital-summit/> Access 22.03.2018.
8. The program 'Digital Economy of the Russian Federation' – <http://government.ru/docs/28653/> Access 10.03.2018
9. The European Commission website on the strategy 'Single digital market' – <https://ec.europa.eu/digital-single-market/en/policies/shaping-digital-single-market/> Access 22.03.2018
10. The program 'Digital Economy of the Russian Federation' – <http://government.ru/docs/28653/> Access 10.03.2018
11. Speech of the Minister of Communications N.Nikiforov on the Government Hour in the Federation Council 28.02.2018 – <http://minsvyaz.ru/en/events/37986/> Access 10.03.2018.
12. The program 'Digital Economy of the Russian Federation' – <http://government.ru/docs/28653/> Access 10.03.2018
13. The website of the 'Digital' EU summit in Tallinn (Estonia) 29.09.2017 – <https://www.eu2017.ee/political-meetings/tallinn-digital-summit/> Access 22.03.2018

Drivers of technological growth both in Russia and the EU

The main growth drivers of the digital economy already influencing business are:

- IoT and automation of production
- Digital Design
- Virtualization (for example, remote offices)
- Cross-channel communications and mobile technologies.



DESIGN, CONSTRUCTION AND TESTING OF INNOVATIVE UNINTERRUPTIBLE POWER SUPPLY UNITS



Aleksandr TURANTSEV
Александр ТУРАНЦЕВ



Ruslan YEGOROV
Руслан ЕГОРОВ

РАЗРАБОТКА И ИСПЫТАНИЯ ИННОВАЦИОННЫХ ИСТОЧНИКОВ БЕСПЕРЕБОЙНОГО ПИТАНИЯ

ABSTRACT. The interruption of power supply is a source of concern to the consumer and gives rise to the need to provide emergency power source in some important areas of both domestic and industrial application. This has led to the design and construction of innovative types of the Uninterruptible Power Supply (UPS) units. The Bryansk-based plant ELECTROAPPARAT conducted R&D work for the begin of production of gel UPS which surpass analogues present now on international markets.

KEYWORDS: Power interruption, emergency supply, battery, inverter, automatic control.

АННОТАЦИЯ. Прерывание электроснабжения является источником озабоченности для потребителя и придает потребность в обеспечении чрезвычайной ситуации в некоторых важных областях как отечественного, так и промышленного применения. Это привело к разработке и созданию инновационных типов блоков бесперебойного питания (ИБП). Брянский завод ELECTROAPPARAT провел соответствующие исследования и разработки, доказавшие, что разработанные типы ИБП превосходят аналоги, представленные на международных рынках.

КЛЮЧЕВЫЕ СЛОВА: прерывание электропитания, аварийное питание, аккумулятор, инвертор, автоматическое управление.

Every electrical and electronic equipment needs to be energized by means of a power supply. In most cases the power is required to be delivered to the load circuit at steady or fixed voltage. However, stability of such main power supply is a source of concern because insufficiency and accompanying power outage have always posed major setbacks to individuals and organizations which depend on sensitive electronic equipment that require constant power supply. Such interruption of mains supply has caused serious inconveniences especially in highly sensitive devices such as computers, medical equipment and industrial research laboratories where interruption of power could spell danger.

Power outage is an unavoidable phenomenon and the need for reliable back up or emergency power supply system cannot be overemphasised, which is what has led to the design of this project. In order to protect such sensitive electronic systems from inactivity resulting from power failure, it is necessary to provide an alternative power source, which will automatically power the system in the event of mains failure. Though the likes of the unit are in the market, they have an operation period in the range of 30 minutes to 1 hour and are mostly imported, which is not exactly suitable for our present power supply environment. The objective of this article is to present a UPS that has

been designed by scientific and production units of the 'ELECTROAPPARAT' plant (city of Bryansk, Russian Federation) to overcome some of these setbacks by having an operation period or autonomy of up to 2 hours.

Based on the current market requirements and taking into account the perspective directions of the products sales, the ELECTROAPPARAT plant starts the production of Uninterruptible Power Supplies that meet Russian and European quality standards. At the first stage it is planned to start production of monoblock single-phase UPS based on GEL technology batteries with output power of 1 kW and 3 kW using on-line technology (double conversion), as well as of Additional

Battery Modules (ABM), which can significantly increase the work time connected to the UPS equipment.

This type of UPS is intended for use in the power supply of servers (for example, file servers), high-performance workstations of local computer networks, as well as any other equipment that demands increased quality of power supply.

The UPS have the following main characteristics:

Specifications	UPS-1	UPS-2
Output Power	3000 VA / 2700 W	1000 VA / 700 W
Operating time at full load	not less than 3 min	not less than 14 min
Operating time at half load	not less than 11 min	not less than 32 min
Output waveform	Sinewave	Sinewave
Max. absorbed pulse energy	480 Joule	420 Joule
Number of output power sockets	9	6
Type of output power connectors	IEC 320 C13	IEC 320 C13
Rack-mountable	Yes	Yes
Type of input voltage	1-phase	1-phase
Type of output voltage	1-phase	1-phase
Stability of output voltage	160 – 280 V	160 – 280 V
Output frequency	45 – 65 Hz	45 – 65 Hz
Stability of output voltage	± 3 %	± 3 %
Output frequency	47 – 63 Hz	47 – 63 Hz

Table 1. **ELECTROAPPARAT UPS main features**

Before the production of ELECTROAPPARAT UPS-1 and UPS-2, as well as DAB, corresponding research and development work is conducted to introduce the technology of using lithium-ion batteries instead of gel batteries.

The UPS with passive cooling are not currently presented on the Russian and international market. Conducting R & D to introduce the use of passive cooling of UPS based on on-line technology, will allow entering the market with completely new equipment, which has no analogues in the world. This technology will make it possible to implement the following solutions:

- Increase the fault tolerance of the UPS by eliminating mechanically movable elements;
- Reduce the UPS noise level to 5-10 dB;
- Reduction of the UPS's own power consumption;
- Increase the service life of the UPS without additional maintenance.

Some systems that perform similar functions to the UPS exist. One of such is the Storage Battery-Emergency DC System. This system is used primarily for emergency lighting, fire alarms and emergency communications systems. It consists of an automatic charger, a battery and an emergency BC bus. It is statutorily required that the system be capable of maintaining the total load for a period of one and half hours minimum without the load voltage falling below 87.5% of normal. Another such system is the Engine Generator System.

This system typically consists of the petrol or diesel engine or a gas or steam turbine and an ac synchronous generator control. It is always incorporated with a transfer switch – manual or automatic. This switch is normally set to transfer the load to the set 10 seconds after the engine is started. Whenever there is power outage, the engine is started either manually or automatically. As soon as the generator output reaches nominal voltage and frequency, the transfer switch operates to connect the load to the set. When the main power returns, the transfer switch is operated automatically to return the load to the utility main supply.

Materials and method

This section of the article deals with the actual design analysis, calculations and how some component values were obtained using some fundamental theories and modelling. The block diagram of the proposed complete UPS circuit is shown in Figure 1. The major sections are the battery, the battery charger, the inverter, and a change-over switch.



Figure 1: **Proposed Block Diagram of UPS**

During normal operation, in the presence of mains supply, power is delivered directly to the load through the change-over switch. At the same time the mains supply is used, with the aid of the battery charger, to maintain a float charge over the battery. Thus the bat-



tery remains fully charged. When mains supply is interrupted, the change-over switch connects the load to inverter. The battery d.c. output is converted to a.c. by the inverter and used to power the load. Thus the battery effectively takes over and supplies power to the load. During this time the battery inevitably discharges, and the autonomy of the system depends on how long the battery output remains above a certain specified level. On restoration of mains power the change-over switch returns the load to the direct line and the battery charger recharges the battery.

INVERTER: The heart of the UPS is the inverter. An inverter is an electrical device that converts direct current (DC) to alternating current (AC). The process of converting DC into AC is known as Inversion (the reverse of rectification). Thus an inverter is a device or circuit that changes dc power into ac power or in other words an inverter is an inverted converter. The inverter incorporates an astable multivibrator which generates a square wave (the AC voltage) at a required frequency, a frequency reduction circuit, a Darlington pair to match the signal to a power transistor which in turn determines the power rating of the system. There is also a voltage regulator to regulate the DC voltage supplied to the various components and also serve as a link between the battery and the components, and a transformer to step up the output voltage to required levels.

VOLTAGE REGULATOR: A change in voltage from no-load condition is known as voltage regulation. This happens in unregulated power supplies where the output voltage is never constant. It changes with supply voltage or load resistance. Hence, the purpose of voltage regulator circuit is to reduce the output voltage variations to zero or at least to minimum possible value. Percentage Regulation, % Reg, is given as:

$$\% \text{ Reg} = ((V_{\max} - V_{\min}) / V_{\max}) \times 100 \quad (1)$$

where V_{\max} = maximum d.c. output voltage and V_{\min} = minimum d.c. output voltage.

555 – TIMER ASTABLE MULTIVIBRATORS (MV): The 555-timer is an IC with dozens of different functions including astable operation. Figure 2 shows a POWER SUPPLY OF 555- timer connection for astable operation. It runs freely at a frequency determined by R_A , R_B and C.

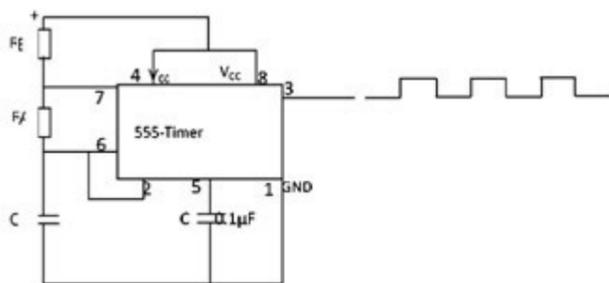


Figure 2: 555-Timer IC

The duration of the high state is $T_H = 0.693(R_A + R_B)C$, while the duration of the low state is $T_L = 0.693R_B C$. Therefore, the period, T, of the rectangular output is

$$T = 0.693(R_A + 2R_B)C \quad (2)$$

and frequency, f, is

$$f = 1/T = 1/(0.693(R_A + 2R_B)C) = 1.44 / ((R_A + 2R_B)C) \quad (3)$$

For this problem, it is desired to have a final output frequency of 50 Hz from the inverter. The astable multivibrator output frequency is therefore selected to be 200 Hz, which can easily be reduced to 50 Hz making use of frequency reduction circuitry. For convenience, R_A is selected to be 10Ω and the capacitor C to be 0.1 µF. From equation 2, R_B can be calculated thus:

$$\begin{aligned} T &= 0.693(R_A + 2R_B)C \\ &= 0.693R_A C + 2 \times 0.693R_B C \\ \text{Hence } 2 \times 0.693R_B C &= T - 0.693R_A C \\ \text{and } R_B &= (T - 0.693R_A C) / 2 \times 0.693C \quad (4) \end{aligned}$$

Now, $f = 200$ Hz, therefore $T = 1/f = 1/200 = 0.005$ sec = 5×10^{-3} sec.

$$\begin{aligned} R_A &= 10 \text{ k} \Omega = 10 \times 10^3 \Omega \text{ and } C = 0.1 \mu\text{F} = 0.1 \times 10^{-6} \text{ F} \\ \text{Therefore, } R_B &= (T - 0.693R_A C) / 2 \times 0.693C \\ &= (5 \times 10^{-3} - 0.693 \times 10 \times 10^3 \times 0.1 \times 10^{-6}) / (2 \times 0.693 \times 0.1 \times 10^{-6}) \end{aligned}$$

$$= (4.307 / 0.1386) \times 10^3 \Omega = 31 \text{ k}\Omega$$

Using these values, we find that:

$$\begin{aligned} T_L &= 0.693 \times 31 \times 10^3 \times 0.1 \times 10^{-6} = 2.1483 \times 10^{-3} \text{ sec, and} \\ T_H &= 0.693(31+10) \times 10^3 \times 0.1 \times 10^{-6} = 2.8413 \times 10^{-3} \text{ sec} \\ \text{Therefore } T &= T_H + T_L = (2.1483 + 2.4813) \times 10^{-3} = 4.9896 \times 10^{-3} = 5 \times 10^{-3} \text{ sec.} \end{aligned}$$

$$\text{and } f = 1/T = 1/(5 \times 10^{-3}) = 200 \text{ Hz}$$

INVERTER AND AUTOMATIC CONTROL CIRCUIT

The control circuit is comprised mainly of a relay or contactor, which is an electromagnetic device which can often be activated by little energy, causing a movable ferromagnetic armature to open or close one or several pairs of electrical contact points located in another control circuit or in a main circuit handling large energy. Figure 6 below shows a typical contactor incorporated in the inverter circuit. When a current is applied to the contactor coil, the iron arm is attracted to the pole face of the contactor coil, and when the current is interrupted the arm is returned to its normal position by the spring. The arm can then be used to close or open a set of contacts. In this project the control circuit is connected such that when mains supply is available the arm is positioned so as to connect the load to the mains directly, and when mains supply is interrupted the arm is positioned so that the inverter output is connected to the load, through the transformer. Only one supply at a time – mains or inverter – is connected to the load at any one time.

Battery charger / rectifier

Full wave bridge rectifier is employed in this project. It required a step down transformer 240/15 volts, four diodes IN4001, connected as shown in Figure 7, which forms the complete circuit diagram for the UPS. Rectifier circuits are often classified by the number of current pulses that flow to the DC side of the rectifier per cycle of AC input voltage. A single-phase half-wave rectifier

is a one-pulse circuit and a single-phase full-wave rectifier is a two-pulse circuit. A three-phase half-wave rectifier is a three-pulse circuit and a three-phase full-wave rectifier is a six-pulse circuit.

Battery performance and test results

In order to give information as regards the back-up time available for the system the following measurements were taken: input (battery voltage with time) and output (inverter voltage with time). The results obtained are as shown in Table 2. This uninterruptible power supply unit when compared to its model counterparts found in the market, goes for longer hours that can supplement and serve as a backup power to mains supply for a time period specified by the client. The system is of great importance for all fields of life including military, hospital, airport, telex system etc. Besides, it is also mostly needed in computer environment, where information storage is given priority.

Time in minutes	Battery DC voltage (V)	Inverter output AC voltage (V)
0	12.41	250
15	12.40	246
30	12.39	244
45	12.37	240
60	12.35	238
75	12.24	236
90	12.15	235
105	12.12	228
120	12.08	223
135	12.01	218
150	11.97	215
165	11.94	214
180	11.88	212
195	11.84	208
210	11.80	200
225	10.90	186
240	10.84	170

Table 2: Inverter input voltage and inverter output voltage with time

Conclusion

UPS is a device used for back-up power for critical and essential loads. The design of the UPS from discrete components based on the principle that any system that can generate pulsating alternating waveform of any regular shape (sawtooth, ramp, square, sinusoidal) with appropriate mark to space ratio from a DC source, can be used to generate pure or almost clean AC signals. The waveform generator was 555-timer configured in the astable mode. The square waveform produced was rounded to near sinusoidal waveform by transistor amplification and switching.

The aim of this project work, which was to design and construct a reliable UPS system for lower power domestic use was achieved. When tested, the sys-

tem functioned as anticipated according to design. It achieved very fast load transfer between mains power and battery power on mains failure, and again between back-up power and mains power or restoration of mains power.

Thus, basing on the R&D performed at ELECTROAP-PARAT, lithium-ion batteries in comparison to gel and lead-acid batteries have a number of advantages that are very important for UPS:

- Decrease in weight and dimensions. With the same physical volume, lithium-ion batteries have a higher level of energy density. They can accumulate more than three times more energy per kilogram of weight than gel or lead batteries.
- No noticeable memory effect. The battery does not require full discharge before the charge cycle, which is especially important for the UPS.
- Wide range of operating temperatures. Gel batteries lose about half the power with increasing temperature for every 10 degrees at temperatures above +25 degrees Celsius. This means that in the room where they are used you need more powerful cooling. At the same time, lithium-ion batteries are much less sensitive to temperature fluctuations, such changes practically do not affect the battery life. They can be used at temperatures up to +50 degrees Celsius with no noticeable performance changes.
- High levels of current when charging and discharging. Lithium-ion batteries can quickly receive and return large amounts of energy. This makes them a more productive solution for power-hungry equipment.
- A large number of charge/discharge cycles. Average values for gel batteries – 800 cycles, while for lithium-ion batteries – 5000.
- Long service life. Lithium-ion UPS work for more than 12 years.
- Very low self-discharge. On average, this figure does not exceed 2% of the initial charge per month.

Sources:

1. R.Yegorov. the Market Awaits UPS units from Bryansk. RADIOFRONT magazine, N.2 – 2018, pp.12-13
2. Barnett, P., 1987. Changing Trends in the Design of Uninterruptible Power Supply, IEE
3. Journal Electronics and Power 33, (7PP): 457-460. July 1987.
4. Grafham, D. R and Hey, J. C., 1972. editors, ed SCR Manual (Fifth ed.). Syracuse, N.Y. USA: General Electric. pp. 236-239.
5. Kusko, Alexander., 1989. Emergency/Standard Power Systems, New York: Mc Grew-Hill Book Company.
6. Maddock, R. J and Calcutt, D. M., 1995. Electronics, A Course for Engineers 2nd Edition, London: Longman Scientific and Technical.



Yuri Godovanets during the presentation at the Petr Chaikovsky Museum

YURI GODOVANETS, RUSSIAN POET OF THE SILVER AGE

With the participation of the 'RADIOFRONT' magazine the presentation of the poem of Yuri Godovanets 'Шелковый путь' ('The Silk Road') was held in the Concert Hall of the Museum 'Petr Tchaikovsky and Moscow'. The author performed it for the first time in the framework of the stage presentation of the musical disc 'Соплетение словес' ('Plexus of words') by Alexei Rybakov and Alexandra Biryukova (<https://www.youtube.com/watch?v=KN1jX884k0&list=PL72eEsDWKNzYVURx0UyJw1fEYdHGTaR10>).

In Russia it became almost a cliché to characterize Y. Godovanets as the last poet of the Silver Age. The truth is that like other sensual masters of the Russian poetry of the past, Yuri seeks for Truth and Aspiration in himself – and paradoxically he seems to find it!

His poems are an intricate mosaic of completely incongruous words, images and realities. And only a very deep, not the first reading reveals in these perplexing and concise phrases the abyss of meanings inaccessible for most job-obsessed modern computer addicts. For me, an IT-addict as well, these six-dimensional abysses became obvious when I tried to translate Yuri's poems into European languages.



A. Rybakov and A. Biryukova: creating a new interaction of word and music

The great Russian scientist and educator Mikhail Lomonosov wrote that Charles V. discovered in the Russian language the splendor of the 'Hispanic', the vivacity of the French, and the strength of the German languages. You will be surprised: all these priceless qualities are inconceivably laid down in the poems of Y. Godovanets, and therefore more or less accurate translation into English is an inevitable imitation of Byron, into German – it's at least the spirit of the great Goethe!

Powerful laconism is a precious feature of the writings of Yuri Godovanets, who in fact is father of two sons and a high-ranking official of the Russian Ministry of Culture. Half-jokingly he says that he saves the reader a lot of time with his verse of two, maximally three stanzas.

And this brevity is not a sister, but a full-fledged playful child of his inconceivable talent, which at the time of the Silver Age would surely have made Mr. Godovanets a hero of noisy salons and dashing poetic duels.

I want to believe that Y. Godovanets is not the last romantic of the old school, but the herald of the new Golden Age. Of a PC-saturated

century, when Russia realizes that our language and our culture are not only a panacea for our historically inherited ills, but a path to Truth and Salvation as well. When the Word, not the crypto currency, will regain high meaning and powerful wings – and not only sophisticated gadgets we see at the famous CEBIT!

....Yuri's latest book is intitled 'Немногослов' – a neologism (half-noun, half-adjective) meaning 'Not-too-many-words'. It is a very suitable characteristic of graceful verses of Y. Godovanets. Some of them we offer in translation to the international audience of RADIOFRONT.

Aleksey Turbin,
Candidate of Philology

КРАСИВАЯ ВАКАНСИЯ

В объятиях гипюровой пурги
Пируют тупики и переулки.
Мы выставили душу на торги
И тело плоти – до последней втулки.

И кормим тут не клавиши с руки,
Пока от сотрясений не померкли...
А кто-то поднимает номерки,
Как рукава распятой – на примерке.

В цепную канут перемену блюд –
Кто видел лот на блюде, зрящий мило;
Не наступил ещё последний суд,
Как душу пред молитвой защемило!

Короткое дыхание моё
Идёт насквозь, не оставляя стружки...
А небо рвёт постельное бельё
И вспарывает снежные подушки.

ОСОБЫЙ ОЗНОБ

Без тебя я не знаю, как.
Без тебя я не знаю, что.
Суть содержится не в словах.
Опыт – шаткое шапито.

Жил да был я, как юный вакх.
Повторял двести раз по сто.
Без тебя я не знаю, как.
Без тебя я не знаю, что.

НА СТАРЫЙ НОВЫЙ ГОД...

Там где-то, за высокою стеною
на ангелов охотится во сне
животное, начитанное мною,
натаскано их пестовать на мне.

Оно моя единственная паства...
И, как я от охоты ни ослаб,
Приходится мне часто просыпаться,
чтоб срочно вынуть ангела из лап.

VACANCY TO ADORE

In the embrace of blizzards from guipure
Feast puffins, gloomy lanes and wabby bridges.
We've set for bargaining your soul, so pure –
The flesh as well – to very last of hinges!

We do not dare to feed the keys from hands,
Until we fade away from inner splitting...
And someone raises high the number plates,
Like sleeves of crucifixes – during fitting.

Would parish in the chain of courses` change,
Who saw his lot on dishes, gentle stayer.
The Judgment condescends soon as revenge –
The soul feels pinched before the final prayer.

My insatiable and spasmodic sigh
Slips through not leaving any tactile shavings ...
The bedsheets torn apart soar in the sky,
Which rips the snowy pillows high in Heavens.

FAÇON DE FRISONS

Sans toi je ne sais – comment.
Sans moi tu ne sais pas – quoi.
Car les mots ne contiennent pas de sens,
L'expérience est un cirque sans toit.

Jeune Baccus, j'ai vécu parfois
Répétant deux cent fois a cent.
Sans moi tu ne sais pas – quoi
Sans toi je ne sais – comment.

FÜR DAS ALTE NEUE JAHR ...

In weiter Ferne Engel jagt ein Wesen,
Im Schlaf, geschützt von einer Wand, so hoch.
Für Engelzucht von mir hineingelesen
In diese Welt, erfüllt von Hass und Joch.

Es ist für mich die einzige Gemeinde ...
Wie von der Jagd geschwächt ich auch mag sein,
Ich wache öfters auf, um von Leiden
Die Engel aus den Klauen zu befrei`n.

HANNOVER MESSE 2018 – Once again packed with innovation

All core sectors of industry and
key technologies at one place



“HANNOVER MESSE is where
the future of industry
is discussed and presented;
we are satisfied again this year.”

Thilo Brodtmann, Chairman of the VDMA
(German Engineering Federation)

See you again at
HANNOVER MESSE 2019
from 1 to 5 April

ALFLETH ENGINEERING

ALFLETH Engineering AG

Hardstrasse 4
5600 Lenzburg
Switzerland



Тел. +41 62 888 70 00
Факс +41 62 888 70 10
E-mail: mail@alfleth.com
Internet: www.alfleth.com



АЛЬФЛЕТ Инжиниринг АГ

ул. Тимирязевская, 1
127422, Москва
Россия



Тел. +7 (495) 967 68 29
Факс +7 (495) 967 68 30
E-mail: mail@alfleth.com
Internet: www.alfleth.com

FEHLMANN

Высокопрецизионные
сверлильно-фрезерные
станки, фрезерные
обрабатывающие центры,
в том числе для
высокоскоростной обработки



PICOMAX 825 VERSA

Уникальная конструкция станка
позволяет:
прецизионную и динамичную обработку
сверхсложных деталей с 5 сторон,
максимальную автономию
благодаря автоматизации и
роботизации, оптимальную
термостабильность, увеличение
инструментального магазина
до 346 инструментов!
Для оператора станка Picomax 825
создано удобное рабочее место.

HURON

Высокопроизводительные
фрезерные станки и ФОЦ.
Вертикальные портальные
фрезерные станки высокой
жесткости и точности для
высокоскоростной обработки

PRECI TRAME

Высокопроизводительные
многопозиционные
агрегатные токарно-
фрезерные центры

star

Прецизионные токарные
автоматы
продольного точения с ЧПУ

BENZINGER PRÄZISIONSMASCHINEN

Высокопрецизионные
токарные станки и
токарно-фрезерные ОЦ

WEILER WERKZEUGMASCHINEN

Прецизионные токарные
станки и ОЦ с ЧПУ и
с ручным управлением

IMSA

Станки для глубокого
сверления

STÄHLI FEELING FOR FINISHING

Притирочные и
полировальные и станки

HEMBRUG MACHINE TOOLS

Высокопрецизионные
токарные станки с ЧПУ

KELLENBERGER VOUMARD

Высокопрецизионные
круглошлифовальные станки

HAUSER

Высокопрецизионные
Координатно-
шлифовальные станки

ROBBI

Круглошлифовальные станки
для внутреннего и наружного
шлифования

SCHNEEBERGER

Шлифовальные станки с ЧПУ
для изготовления и
затачивания инструмента

РЕГИОНАЛЬНЫЕ ПРЕДСТАВИТЕЛЬСТВА АЛЬФЛЕТ ИНЖИНИРИНГ АГ В РОССИИ

ALFLETH Engineering AG
620219 Екатеринбург,
ул. Белинского, 34,
офис 430
Тел. +7 343 380 23 31
E-mail: ekb1@alfleth.ru

ALFLETH Engineering AG
198152 С.-Петербург,
ул. Краснопутиловская, 46,
корпус 2, Литера А, офис 206
Тел. +7 812 363 43 22
E-mail: spb1@alfleth.ru

ALFLETH Engineering AG
603005 Н. Новгород,
ул. Геологов, д. 1, п. 63,
офис 13
Тел. +7 831 291 46 56
E-mail: nn1@alfleth.ru

ALFLETH Engineering AG
630003 Новосибирск,
ул. Владимировская, 2/1,
офис 213
Тел. +7 383 248 90 40
E-mail: rf@alfleth.ru

ALFLETH Engineering AG
344113 Ростов на Дону,
пр. Космонавтов, 37,
офис 45
Тел. +7 863 310 95 55
E-mail: rnd2@alfleth.ru



14TH PIPELINE TECHNOLOGY CONFERENCE

19-21 MARCH 2019, BERLIN, GERMANY

EUROPE'S LEADING PIPELINE CONFERENCE & EXHIBITION



700+ DELEGATES



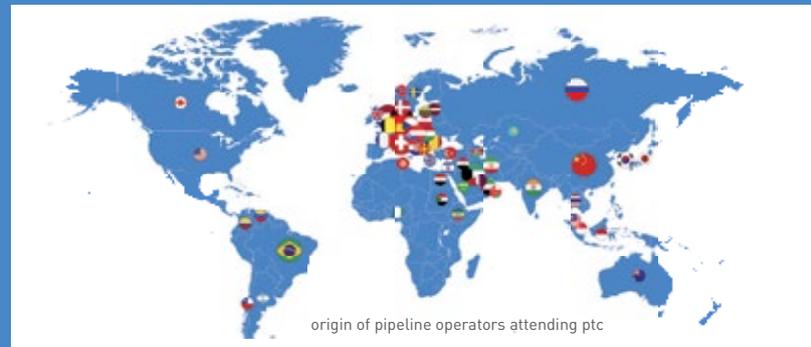
50+ DIFFERENT NATIONS



80+ EXHIBITORS



DELEGATIONS FROM 70+ DIFFERENT PIPELINE OPERATORS



origin of pipeline operators attending ptc



OFFICIAL MEDIA OUTLET

Pipeline Technology Journal

- PIPELINES ARE INTERNATIONAL - SO IS PTJ
- REACH OUT TO GLOBAL PIPELINE OPERATORS, CONSTRUCTION COMPANIES, PLANNING OFFICES
- STAY VISIBLE TO DECISION MAKERS AND POTENTIAL CLIENTS AROUND THE WORLD
- MAKE USE OF A FAST AND COST-EFFICIENT DIGITAL JOURNAL AND NEWSLETTER