DIGITAL MINDSET: TRANSFORMING THE WAY RUSSIA IS GOVERNED

University 2035
Application for the EFMD Excellence in Practice Award 2020

THE MINISTRY
OF ECONOMIC DEVELOPMENT
OF THE RUSSIAN FEDERATION

20.35
UNIVERSITY

AGENCY
FOR STRATEGIC
INITIATIVES

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Year 2019 in Russia witnessed a launch of a nationwide “Digital Economy” program, one of the most ambitious endeavors of the government’s push to modernize the state. Estimated to cost more than $24 billion over the course of 5 years, the program implies a digital transformation of public services, internet infrastructure development and the implementation of future-proof information security measures. The program is relying on cooperation of three federal ministries, Russian Presidential Executive Office, several government-owned corporations, non-commercial organizations, SMEs and other stakeholders.

The success or failure of the “Digital Economy” program (hereinafter DEP) ultimately depends on competencies of federal and regional public servants, many of which are not ready to carry out such advanced projects. That is why the Agency for Strategic Initiatives and the University 2035 were tasked with transferring the knowledge on data-driven decision making to 30 000 leaders of government entities, subordinate organizations and government-owned companies. This project was called “Data-driven management: Chief Data Officers in Civil Service” (hereinafter CDO project, L&D Initiative).

This L&D Initiative was broken down into 5 parts following the general 5-year DEM timeline. In late 2019, the University 2035 received a government subsidy to launch a leadership training program in data-driven management for the first 5000 public servants. In spite of a large project scale and very tight deadlines, the L&D Initiative proved to be a great success, helping students to overcome initial incertitude and – what’s even more important – to assemble teams and come up with 396 practice-oriented projects, many of which are being implemented already.

A modern economy is digital. The government is one of the main consumers and owners of big data. Chief data officers are responsible for the implementation of data-based decision-making principles defining how data is being collected, stored and analyzed on different levels of national administration. And it is vital for us to train such leaders.

Ilya Torosov, Deputy Minister of Economic Development

MINISTRY OF ECONOMIC DEVELOPMENT

The Ministry of Economic Development is a federal executive body responsible for drafting and implementing government policy and legal regulation in a wide array of socio-economic fields. In the CDO project, the Ministry acted as a commissioner of the L&D Initiative, providing government funding, controlling the partnering process and evaluating the project's outcomes.

UNIVERSITY 2035

The first educational organization in Russia to create individual educational trajectories based on digital skill profiles in order to offer new opportunities for professional development.

The University is aimed at training business leaders, participants of the National Technology Initiative and professionals entering new global markets.

Customized content is provided by our partners: universities, online educational platforms and other organizations make use of our digital framework to offer both offline and online courses.

AGENCY FOR STRATEGIC INITIATIVES

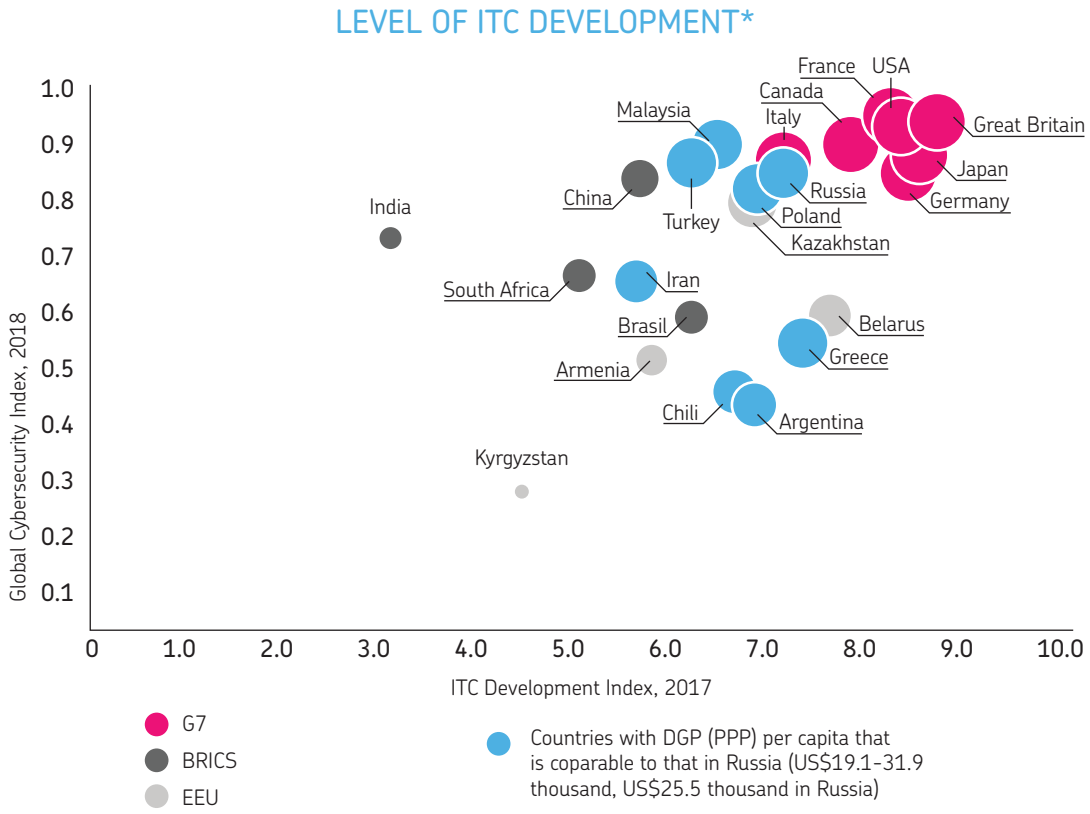
The mission of the Agency for Strategic Initiatives (ASI) is to create opportunities for the personal fulfilment of ambitious leaders who are able to propel Russia to an advanced global position and build a country where one wants to reside and work.

The ASI is a change agent that works together with leaders on large-scale initiatives and joins the forces of the society, businesses, and the state. The Agency, as the founder of University 2035, provided an administrative backing for the project.

1. THE CHALLENGE

DEP was conceived as a way to provide the nation with abilities to easily acquire digital skills, a top-notch internet infrastructure, time-saving superservices and a streamlined e-government. As ambitious as it sounds, the program is far from being unrealistic.

According to international indexes, Russia fares well in terms of information and communication technologies (ICT) development and cybersecurity measures in place[1].



** The size of the circle on the graph is proportional to the country's GDP (PPP) per capita, thousans US dollars, 2017. Sources: International Telecommunication Union (iTU), the World Bank*

As usual, though, covering that last 20% of the journey to the top will require 80% of efforts. The challenges facing the Ministry of economic development are significant: the world economy is slowing down, oil prices are decreasing, talented students, scientists and researchers find jobs overseas, and most of the regional governments are often unprepared to carry out a digital transformation. So the decision was made to address the lack of needed competencies with a nation-wide leadership training program spanning 5 years and expected to cover 30 000 high-ranking civil servants.

1. Digital Economy Indicators, Report by the Ministry of Digital Development, Communication and Mass Media of the Russian Federation, Federal State Statistics Service and The Higher School of Economics, p. 16, 2019.

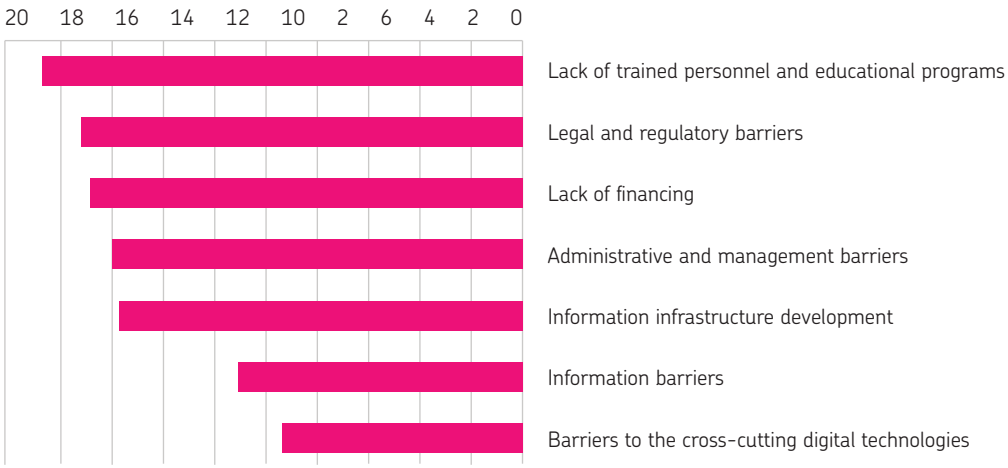
Prior to the launch of the CDO Project, the Analytical center for the Russian government estimated that out of 79 Russian regions surveyed only 34 had launched a local digitalization program, or at least started working on one[2].

At the same time, 80% of respondents representing the regional governments listed the development of Big Data associated technologies as one of their top priorities.

When asked to name specific barriers to the DEP implementation, the civil officers put the lack of trained personnel on top of the list[3].

KEY BARRIERS TO THE DEVELOPMENT OF DIGITAL ECONOMY IN RUSSIAN'S REGIONS

(% of the total number of responses provided by regional government)



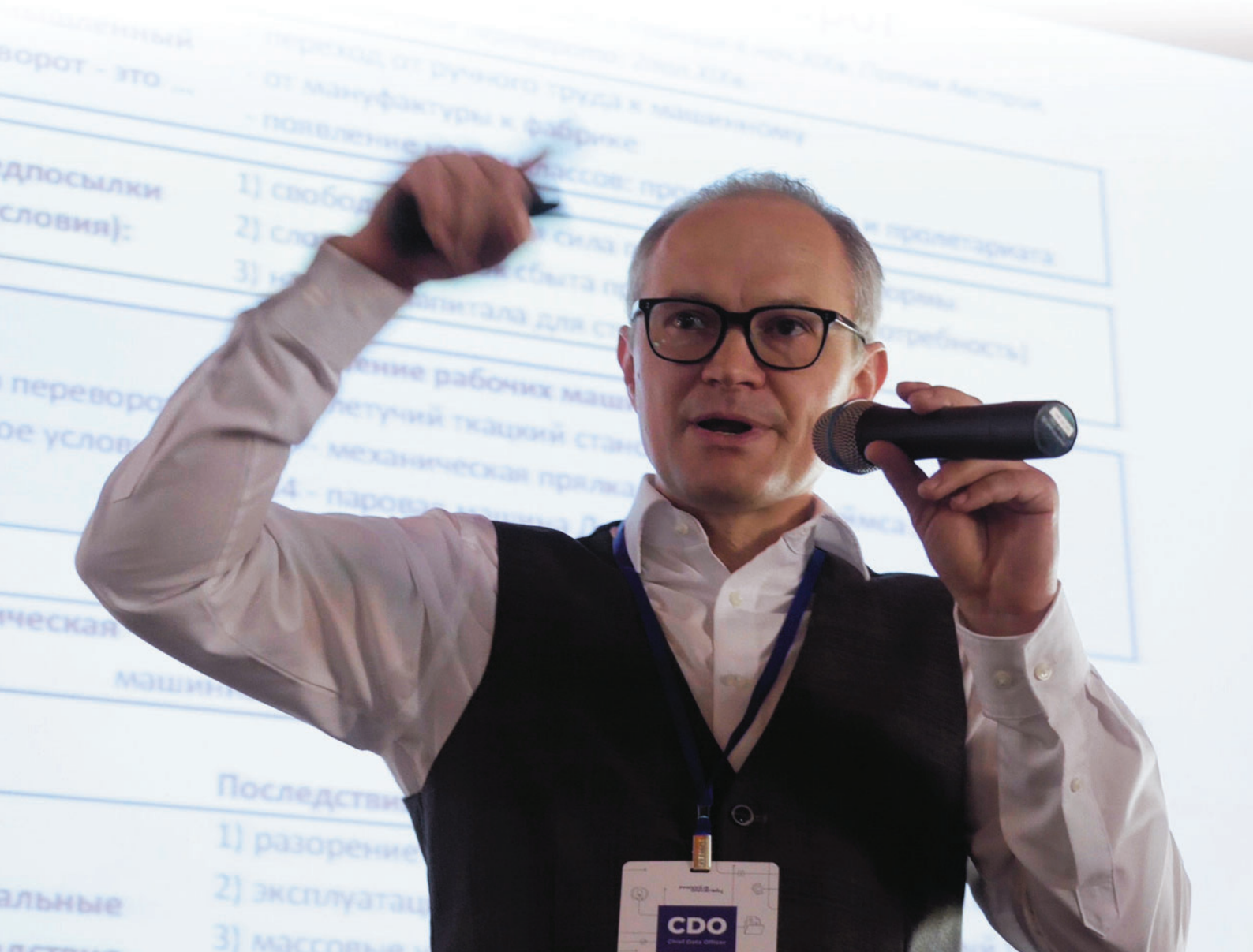
The Ministry of economic development addressed this issue by fi nancing a large scale educational program for civil and public servants and by providing the general population with certificates for digital skills training.

University 2035 and the Agency for Strategic Initiatives played a vital role in the leadership training, educating more than 5000 high-ranking civil servants in 2019 and preparing the basis for the following training of 25 000 executive officials.

Starting from its onset, the DEM envisioned fostering the cooperation between universities, the business and the state, — University 2035 took on this additional challenge and launched its L&D Initiative in a form of a network project.

2. Officials will be taught to love numbers. Kommersant. URL: https://www.kommersant.ru/doc/4047075 (accessed 13.03.2020).
3. Barriers to the development of the digital economy in Russia's regions. Report by the Analytical center for the Russian government, p. 4, 2019.

2. THE COMMITMENT



Due to budgeting procedures, University 2035 had a very tight time schedule in 2019 – only 4 months to formalize and carry out its L&D Initiative. In these conditions, it was crucial to leverage University's online platform and digital profiling tools in order to come up with tailor-made programs for everyone enrolled in the education. Our team also had to utilize the project's networked and distributed nature to its full potential.

University 2035 had used its $6 million 2019 subsidy to run a public procurement procedure and carefully select regional educational organizations that served as a basis for newly created CDO Centers – holders of key competencies in the field of data handling and data processing practices. Each CDO Center has its own team, staff and territorial coverage. Centers were established with the administrative support of regional executive authorities, that later had their high-ranking officials enrolled in the program.

In order to deliver an up to par quality of education, University 2035 created a Standard for CDO Centers (hereinafter – the Standard), that determined all the requirements needed to be met by an educational organization to receive a CDO Center license: an expected structure of the Center, its tasks and goals, technical and organizational provisions needed to be put in place. The Standard also documented how University 2035 controls the Centers, and the grounds for license withdrawal.

Our task is not only to educate people. We want CDO Centers to compete with each other and at the same time enrich each other with practices. It is important for local teams to have a strategic vision of the project, a good pool of partners and a clear comprehension of how they will develop this educational program in the coming years. As for the project participants, they should come out with an understanding of the data infrastructure and have access to data libraries and algorithm libraries on the sites of their universities.

Vera Adaeva, Head of the ASI Digital Development Center

All in all, 18 academic institutions from all over the country submitted applications during procurement procedures. Apart from their price quotes, merits and current achievements, the bidders described their approach to CDO training and CDO Center development, the methodology of evaluating its efficiency and key performance indicators, partner organizations, a list of their own educators and external experts. Every bidder was also required to provide a check-roll of future students and CDO Center employees.

University 2035 together with the Ministry of economic development evaluated the content and quality of all applications, checking them for compliance to the Standard.

As a result, 11 academic institutions were chosen to implement the L&D Initiative. University 2035 designated them as CDO Centers and provided them with all the financing necessary to carry out their programs. The procedure took three weeks to complete, as it was imperative for the Ministry to achieve a perfect balance of the partnership, an excellence in educational activities and a due consideration of students' requirements.

The educational organizations that took part in the project committed themselves to the accumulation and transfer of knowledge on management based on data to public authorities. Each CDO Center provided intramural educational activities at organizations selected by University 2035 and the Ministry of economic development . As a result, Russian regions have their own growth points with competencies in working with data in various social and economic sectors, including public administration.

3. THE LEARNING & DEVELOPMENT INITIATIVE

Triggering the emergence of a new decision-making culture

Even with its tight schedule put aside, the CDO Project remained University's most challenging project so far. Together with partnering academic institutions, we had to come up with educational programs that targeted audiences with a wide variety of interests and different levels of digital prowess.

The goal of the educational program was to provide equal learning opportunities to all the civil servants and business leaders enrolled in the project. And, at the same time, to ensure a steep increase in the quantity and quality of datasets that are appropriately collected and processed, and subsequently used to make data-based decisions.

To achieve the latter, University 2035 and its partners developed a program that concentrated on teamwork and strategic consultations with renowned experts in AI-powered technologies, coming from industry-leading companies and think-tanks. In two cases we've experimented with adding international modules to the program – one in Barcelona, carried out with the Institute for Advanced Architecture of Catalonia, and another one in Singapore, supported by the National University of Singapore and its Lee Kuan Yew School of Public Policy. That was the easy part, but suiting the program to a diverse audience proved to be quite a different story.

Personalized approach, consistent quality

The educational program put in place, although fully compliant with the Standard and all the government regulations, differed heavily in each of 11 CDO Centers. One of our priorities from the onset was to provide students an opportunity to receive knowledge and practice-oriented skills tailored according to their personal goals and needs.

University 2035 sets a new format of education, where artificial intelligence encourages students, while maintaining a humane approach, to study endlessly, constantly try themselves in different disciplines and, despite the mistakes, continue their studies. There is no risk for a person to be expelled from our University. We work with a very different motivation – if a person is constantly cultivating his abilities, and this is confirmed by the digital footprint, he can be offered to become part of different projects, even the highest level. The digital footprint is his essentially his business card, his CV.

Vasily Tretyakov, Director General of University 2035

In order to achieve this, University 2035 is using digital competency profiles, data tracking technologies and AI-powered algorithms to create personal learning paths. This set of online tools is an integral part of our L&D Initiative.

Every student that enrolled in the CDO Project was required to pass an initial set of tests and gamified tasks on Univetsity 2035's online platform – we call them "diagnostics" – that include the Zimbardo Time Perspective Inventory, the Minnesota Multiphasic Personality Inventory, a psychometric test, a test of knowledge of cross-cutting technologies, and others.

With 6285 CDO Project candidates having completed the diagnostics, we are able to weigh their results against the data collected over a span of preceding months, during which the same tests were passed by more than 70 thousand people.
These were the main assumptions that we've been able to make:
The dominant behavioral style is that of an analyst, with 35% of students demonstrating analytical skills in their work.
The second most popular behavioral style is a worker, 29% of those who have passed the diagnostics can be attributed to him.
Also, a significant number of people — 26% of the total — are clearly visionaries.
The CDO project participants are united by a strong motivation to overcome difficulties. 50% of people who were diagnosed received 6 or more points on this scale out of 8. They are not afraid of difficulties and enjoy overcoming obstacles at work.
Another unifying trait is the lack of desire to accumulate and covetousness. 50% of respondents received 1 or less points on this scale out of 8 possible.

Analysts
Aimed at finding and organizing scattered information, they are pedantic in their handling of the data, seeking to be competent and focused in their work.

Workers
Aimed at high-quality execution of their tasks and enjoy a job well done.

Visioners
They are able to build an image of the future or predict the consequences, can describe it in detail, are able to articulate their thoughts clearly and convey them to the interlocutor.

CDO Centers were able to access the online diagnostics platform and evaluate the results of each student to offer him or her a personalized learning path. Some civil servants that underwent the CDO training were already profficient in data science and programming languages, but some didn't even use computers that often. That is why the partners of the University 2035 regarded the online services as a crucial educational tool, that enabled them to manage teams and offer the most practice-oriented disciplines.

If we analyze the diagnostic data and understand how students think, how they keep their focus, what their motivation is, we can, at the stage of pedagogical design, arrange the educational process in such a way as to involve them as much as possible. Learning will be more effective, take less time, and bring the person into real action. Diagnostics is the main, basic element of educational data-engineering.
Andrew Komissarov, Director of Diagnostic and Selection Service of the University 2035.

Andrew Komissarov, Director of Diagnostic and Selection Service of the University 2035.

University 2035 provided support to CDO Centers in selecting teaching and mentoring staff, but the Centers not only managed to independently attract high-level experts from leading companies in the information and data-oriented technologies, but also to select qualified teachers from their staff, as is evidenced, among other things, by the high marks given by students.

Selection criteria

Every CDO Center was given an opportunity to make its own selection of trainees, but in accordance with the criteria put forth by University 2035 – students were required to occupy leading positions in executive and their subordinate authorities, state-funded corporations, and other key regional organizations with significant levels of economic and social influence.

Another significant target of the enrollment was gender balance of participants – according to the diagnostics stats, more than 55% of leaders who received training were women, although according to the official statistics, female employees in executive authorities account for only 30% of staff.

Digital trace: a modern measure of learning progress

During the course, every student and teacher constantly interacted with an online-platform put in place by University 2035, an interface for creating events and schedules, submitting reviews and uploading media. The platform became an indispensable tool to closely follow the implementation of the L&D Initiative and give timely feedback to the Centers as well as the students. University 2035 used digital traces to compile a ranking of CDO Centers.

As part of the L&D Initiative, the CDO Centers have formed competent teams including not only representatives of the academic community, but also technical specialists, such as EDEs (Educational Data Engineers). This has opened new ways to automate the accumulation and analysis of digital traces, to create digital competency profiles of students, and to implement other data-driven educational management practices.

Moscow Polytechnic University set an ambitious task to create a comprehensive professional retraining program, in which students from government agencies form teams with our undergraduates studying Data Science, artificial intelligence and machine learning. This allowed us to strengthen the teams and give them an opportunity to create real prototypes of future IT solutions and services.

Andrey Filippovich, Head of the CDO Center at Moscow Polytech Institute, Dean of IT Faculty

The program was brilliant, with full disclosure of all aspects of data management, from mathematical statistics and applied computer science to existing systems and solutions. The teachers managed to maintain a good balance between practice and theory. Among academic disciplines, lectures by Sberbank and Rostelecom CDOs fit in very well.

Alexey Vislov, Project manager, Moscow IT Department

CDO TRAINING COURSE STRUCTURE

Phase I. Intoduction

- general technological trends
- solving state management tasks using data
- ontology
- teaming
- trends and tendencies in process management
- CDO functions in the state authorities
- strategic thinking
- international practices

Phase I. Legal

- regulations and standards for working with data in the public sector
- regulatory outlook in data management

Phase II. Technology

- data preparation and architecture - technical component
- AI and big data
- data analysis and machine learning methods
- data visualization
- data and systems expertise
- conducting data management projects
- data preparation
- introduction to programming languages

Phase III. Organizational issues

- regional organizational model of working with data
- setting goals for projects
- preparation and architecture of data in the public sector - organizational component
- culture of work with data
- data risk management

Phase III. Industry specific knowledge

- data management in organization, GIS, public finance
- data oriented companies
- scaling of NTI projects and their application for solving problems of authorities
- data in health care, cadaster, education, public services, agriculture and social services
- foreign industry practices of problem solving based on data

In addition to raising general awareness, our goal was to turn our trainees into change agents. We wanted them to become meaningful agents of digital transformation. Motivated, erudite, understanding how to apply what he or she has learned in the workplace. I think we did it.

Maria Obraztsova, Head of Educational Programs Development Unit, Innopolis University

It was necessary to immerse participants in the problems of a changing world and the new requirements that society places on public administration, "pull" employees out of the usual paradigm, create the value of training and a new look at the surrounding reality.

Anton Tyukov, teacher at Omsk State Technical University

4. THE IMPACT

In every CDO Center, the training culminated with a presentation of projects, developed by the teams of participants. In most cases the evaluation commission included representatives of regional governments, that were willing to implement the best and most detailed projects.

Overall, 395 teams were created, that developed 396 projects, many of which are based on ready-to-use datasets, and therefore are one step closer to being implemented.

The representatives of the state authorities, who participated in the certification commission, including the vice-governor, has already identified 7 projects planned to be developed and implemented in the region in the nearest future.

Natalya Lobanova, Director of the Economics and Management School, FEFU

Project examples:

Moscow Polytechnic University:

- a service of analysis and forecasting of the personnel market needs in the sphere of information technologies;
- a heat map of the city with visualization of crime centers;
- an online cancer register to identify oncology patients requiring increased attention;
- a unified federal system for monitoring and control of inter-regional passenger traffic.

Far Eastern Federal University:

- a project to reduce queues at multifunctional public service centers during peak hours;
- services to facilitate the employment of physically challenged individuals.

Tomsk State University:

- a model predicting medical personnel sufficiency based on morbidity rate;
- machine learning algorithms to identify financial pyramids and their potential participants;
- an interactive “City for people” platform based on cartographic and semantic data with overlapping data from cellular operators and social networks.

The L&D Initiative also enabled the participating universities to widen their partner network and find new opportunities to cooperate with regional and federal authorities and companies.

The project certainly made it possible to build new partnerships. Moscow Polytechnic rarely cooperated with Moscow's Information Technology Department, but after training the Department's interest in the projects of our students has increased significantly. Bright and tangible results of training in the form of MVPs drew attention to our program from large companies and government agencies. For example, the IT Director of the United Shipbuilding Corporation took part in defending of the graduation works, and the hackathon preceding it was attended by the leaders of the IT Department of the Russian Ministry of Education and Science. And for the head of the Ministry of Communications, we made a repeated presentation of the best projects and discussion on the development of this training program.

Andrey Filippovich, Head of the CDO Center at Moscow Polytech Institute, Dean of IT Faculty.

Among companies that joined the CDO Project are market leaders in communication, IT and edu-tech industries, that shared their experience in data-based projects:

SBERBANK Corporate University

1С

BIGDATA TEAM

SKILLFACTORY

Beeline

Rostelecom

MEGAFON

skyeng

POSITIVE TECHNOLOGIES

GlobalInnovationLabs

Innopolis University now has new partners who are interested in implementing projects developed during the training. The University has also become an authority among authorities as a provider of digital education for a wide audience. Authorities and businesses have seen that the training can be really practice-oriented and effective, that real-world cases can be obtained during the training.

Maria Obraztsova, Head of Educational Programs Development Unit, Innopolis University

Personal success stories

In the end, though, the most important and inspirational outcome of the L&D Initiative for us was seeing how students readily overcome all the novel obstacles and challenges that the CDO Project put before them.

We have used digital traces and diagnostics results to put together a list of the most distinguished leaders, whose data-based projects were highly appreciated. It has since become an invaluable resource for federal and regional government entities and corporations looking for chief data officers. Many of our students have already received job offers and promoted themselves to positions where they can deliver on their potential and use their knowledge to address social issues with all their talent.

5020 retrained students, nearly 400 data-based socially oriented projects and a vast partner network are the ultimate results that University 2035 and the Ministry of economic development envisioned at the start of the program. But the main goal that we are proud to declare accomplished is fostering a new culture of decision making: precise, coherent and sustainable, epitomizing a modern approach to addressing the ever-changing needs of Russian society.

An irreversible change in the mindset of listeners has become our priority. We have focused on case studies throughout the training, which demonstrate that the use of data-driven management principles increases the validity and efficiency of decisions many times over. Once back in their daily activities, our students couldn't help but change their attitude towards work.

Natalya Lobanova, Director of the Economics and Management School, FEFU

In the coming years, University 2035 is planning to train another 25 000 civil servants in assembling and leading CDO teams and devising and implementing projects based on data. In order to strengthen the curriculum, we are creating a series of online courses on current trends in the field of data-based management together with leading experts in the fields of machine learning, data analysis and information security.