**MOSCOW
AGENCY
OF INNOVATIONS**

Moscow Innovation Pilot Program
Analytical Report

Abstract. This report provides an overview of some of the solutions developed by Moscow start-up companies and tested in the framework of the Moscow Innovation Pilot Program, with the focus on the innovativeness of the solutions, their social impact and the impact of the Program on these companies, as well as some additional information on the Program.

Conducted Pilot Tests: Selected Cases

1. "VOICE VISION"

The sound vision solution "VoiCe vision" includes glasses with built-in video camera and bone conduction headphones. The device is designed with use of the Peter Meyer's sensory substitution algorithm.

The unique technology allows you *to "see" the surrounding space using your hearing*. The device converts the image captured by the external camera into an audio track according to the specified algorithm.

The users of "VoiCe Vision" turn from blind to visually impaired – with prolonged use of the device, the brain zones responsible for visual sensations are activated. The person senses the picture.

Social impact:
The only device in the world that solves the problem of spatial orientation for blind people by providing them with the opportunity to see the world through sounds.

Moscow Innovation Pilot Program impact on product development:
In 2019, with the support of the Moscow Innovation Pilot Program the pilot testing of the solution was carried out at the site of the "Boarding House for Visually Impaired persons" (Moscow City Government, Department of Labor and Social Protection). As a result, the institution purchased several devices for its own needs, and a decision was made on the further larger-scale implementation of the device in the urban infrastructure.

After first successful implementation, Moscow Innovation Pilot Program helped to scale up the project. Preparation for mass use of the product was conducted in cooperation with the Russian State Library for the Blind, the largest specialized library in the Russian Federation.

2. "UNAWHEEL"

It is the world's lightest electric drive that turns any mechanical wheelchair into a lightweight, maneuverable and electric wheelchair. The attachment is suitable for all mechanical strollers. UNAwheel is:

- ultra-lightweight (weighs only 5.3 kg);
- powerful (accelerates up to 16 km/h);
- cost-effective (drives up to 15 km on a single charge);
- suitable for travel – the built-in Li-ion battery meets all the standards for air transportation and can be easily removed in the travel case (included).


Social impact:
A perfect urban gadget for people with disabilities, that improves the quality of life and gives freedom of movement.

Moscow Innovation Pilot Program impact on product development:
The pilot testing allowed to receive feedback from the product users and to *improve ergonomics and installation process* which takes now only 10 seconds.

3. ONLINE PROCTORING SYSTEM «EXAMUS»
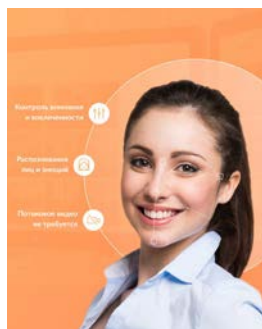
EXAMUS is a system for remote monitoring of students and verification of online exams. Using AI algorithms, it analyzes user behavior and fixes violations in the process of passing an online exam or test.

This is a tool that helps to confirm the quality of exams control, and also allows adaptation of the course content according to the characteristics of student groups or even of an individual student.

Social impact:
Thanks to the solution, universities have the opportunity to take entrance exams from applicants from all over the world and hold massive academic competitions with trusted results.

Moscow Innovation Pilot Program impact on product development:
As a result of pilot testing within the Program the project received feedback from both professors and students on usability and functionality of the system, which will be considered in the development of updates to the product.

4. INTEGRATED TELEMEDICINE PLATFORM "MMT PRO-2"

The platform is designed for telemedicine consultations, as well as remote monitoring of patients' health status.

The platform is integrated with a number of the most popular digital solutions available on the market.

Social impact:
MMT Pro-2 is an integral element of the general digitalization of health. Integration of the product into clinical information systems will improve the quality of medical and diagnostic procedures for patients by providing consultations of highly qualified specialists.

Moscow Innovation Pilot Program impact on product development:
During the pilot testing of the platform, doctors and nurses of the Scientific and Practical Center for Mental Health for Children and Adolescents were trained, and about 20 remote consultations were successfully provided. As a result of pilot testing, the institution decided to scale up application of the platform in case of aggravation of the epidemiological situation.
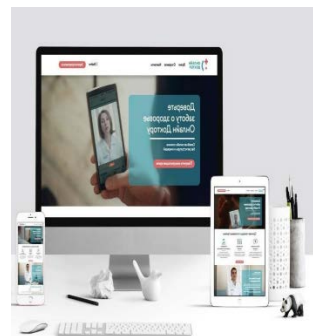
5. "ELBRAILLE COMPUTER"

A portable device designed for visually impaired, blind and deaf-blind people that can be used at school, college, at work, at home or on the road. This is a laptop with braille and speech synthesizer. Customers can use Braille or speech to input/output information.

Instead of monitor, ElBraille has a *built-in Braille font*. The computer reads the text and converts it into braille, which is transmitted to the tactile panel. Thus, users can read text in web sites, as well as make their own notes using the physical font and additional buttons.

Social impact:
A computer is a necessary means of communication with the outside world, which is especially important for people with disabilities. The use of tiflotechnics is a real chance to improve the quality of their life, *to find a job, to acquire new knowledge and professional skills*.

Moscow Innovation Pilot Program impact on product development:
The pilot testing in "Center for Rehabilitation and Education No. 7" school provided positive recommendations from the users on ergonomics and usability of the device. Its wider application is now being considered by several institutions.

6. "EGENGLISH.RU" – PLATFORM FOR PREPARING FOR ENGLISH LANGUAGE EXAMS

EGEnglish.ru is a platform that enables pupils to prepare themselves for passing exams independently 24/7 in the most difficult language aspects: speaking and writing. By means of speech recognition technology, oral speech is visualized in the form of text and processed by AI algorithms, making it possible to acquire the necessary skills and abilities to pass the Unified State Exam in English faster and better.

At the same time the teachers can monitor the pupils' progress with use of communication through the system of personal accounts.

Social impact:
The technology allows to run non-stop educational process even in the case of full lockdown during a pandemic.

Moscow Innovation Pilot Program impact on product development:
The platform was tested in several schools in Moscow, received positive feedback and was recommended to be used widely throughout the country, especially, during the pandemic.

7. "ALGORITMIKA" – INTERNATIONAL SAAS PLATFORM FOR TEACHING DIGITAL SKILLS AND IT

Algoritmika is an international school of programming for children that provides lessons on computer literacy and the basics of programming in schools. Every week the school teachers record and publish video lessons. It is possible to carry out group assignments and receive feedback on lessons.

The platform helps to improve soft skills, i.e. self-organization skills, communication and cooperation. It develops the ability to apply mathematical tools, argumentation, modeling in everyday life, including in the digital environment.

Social impact:
The massive transition of school children to distant learning became a serious challenge both for teachers and students and their parents. In this situation, such online resources become extremely useful. In addition, a motivating educational environment is created for pupils.

Moscow Innovation Pilot Program impact on product development:
The pilots testing in School №1306 in Moscow showed good results in involvement of school children in studying programming and made the process smooth for all sides. Based on the results of pilot testing, it was recommended that the developers finalize the methodological manual for teachers on working with the platform. The solution is recommended for large-scale implementation in educational institutions of the Moscow city as an educational resource.

8. THE "TALKING CITY" SYSTEM

The "Talking City" system is a set of wearable devices and equipment installed on public vehicles, public transport stops, pedestrian crossings, buildings, fences, etc. A driver's console is additionally installed on vehicles.

A wearable device receives and reproduces for the passenger a message about the type of arriving transport, its route and direction. Internet access is not required. The corresponding equipment is installed in the vehicle, and the driver will receive information about the passenger's desire to board. A source of sound signal is installed above the vehicle door to help the disabled person determine the exact location of the door.

The "Talking City" system can be used with a smartphone via free app.

Social impact:
The system *ensures maximum accessibility of transport and urban infrastructure for blind people.*

Moscow Innovation Pilot Program impact on product development:
The pilot testing of the solution was carried out at the "Boarding house for visually impaired people" in Moscow. As a result, the institution purchased a number of devices for its needs. The feedback included advice:
- to organize year-round trainings of the target group in the Boarding House;
- to organize the training points in Moscow;
- to scale up the project in the urban infrastructure.

9. "OPEKA" BRACELET

"Opeka" is a social and medical radiocommunication bracelet that is a set of wearable positioning and warning devices, hardware, data transmission channels, switching modules and specialized software.

«Opeka» allows *to solve the problems of orientation and movement of people, as well as provide real-time information about their location*. The «Opeka» wearable device is a wrist bracelet, which has a built-in GSM/GPRS modem, speaker, microphone, vibration module and fall sensor (accelerometer).

Social impact:
The Opeka device has an alarm button and a two-way speakerphone that provides for immediate data transfer with the help center.

Moscow Innovation Pilot Program impact on product development:
The device was tested In the "Boarding house for visually impaired people" in Moscow and received highly positive feedback from the users. Application of the device is being considered by a number of other institutions.

10. PORTABLE SMART BEE WITH BUILT-IN COMPASS

"Smart Bee" is a portable player for «reading talking book». It allows you to listen to any necessary information. The device records information about the institution, its structure and location of buildings, as well as the direction of movement. Other useful information can also be downloaded, such as event schedules, daily routine, etc. In addition to navigational and informative data, you can record music.

The device has extended functionality, supports the use of the Online Library – the most popular means of obtaining books in a special crypto-protected format adopted by the All-Russian Society of the Blind and the Russian State Library for the Blind.

Social impact
The visually impaired person receives *greater mobility* and is not tied to the residential building. All the necessary information about the territory, institution and its buildings can be placed in the device's memory in the format of an audio guide. The presence of the "Compass" function allows the user to navigate in the city and determine the direction of movement.

Moscow Innovation Pilot Program impact on product development:
The Opeka was tested in the "Boarding house for visually impaired people" and received very good feedback and several recommendations, such as additional data formats to be added.

11. "RAY" ELECTRONIC CANE

The ultrasound cane is a small, portable and lightweight device (50 g) powered by 2 rechargeable batteries and fits in any pocket. The obstacles can be recognized at distance of up to 2.85 meters, and the device will notify its owner about this by means of a sound signal or vibration (the user can choose between these two modes).

Ray also includes light probe function with acoustic or tactile alerts. Thus, Ray detects things that are beyond the reach of conventional canes.

Social impact:
Electronic cane is more informative and safer to move around a big city as it alerts the owner about all obstacles on his way at distance of even nearly 3 meters.

Moscow Innovation Pilot Program impact on product development:
The pilot testing was carried out in the Russian State Library for blind people. The data collected allowed to prove the concept and launch its mass production.

12. "VELOVOD"

"Velovod" is an intelligent navigation system, consisting of mobile applications and a web interface with a personal account, which allows to optimize cycling routes, create and take bike tours and quests, and analyze the surrounding infrastructure. It is also an analytical tool for design and creation of cycling infrastructure. The free mobile app is suitable for all platforms.

Geolocation-based interface provides information about tourist attractions and interesting places, informs about dangers, and can also be used as a social platform to find company for cycling.
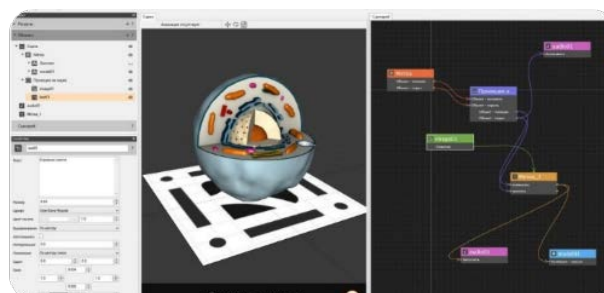

Social Impact:
The app unites cyclers for mutual activities and helps them to create safe routes around the city. Also, it helps to promote healthy lifestyle among young people.

Moscow Innovation Pilot Program impact on product development:
Moscow Innovation Pilot Program assisted with Moscow detailed maps and cycling routes.

13. "EV TOOLBOX"

EV Toolbox – a AR/VR project constructor – is a cross-platform software for creating educational augmented reality and virtual reality projects of various complexity levels for PCs, as well as for mobile and wearable devices.

The EV Toolbox constructor is intended for users who do not have specific knowledge in the field of programming (schoolchildren, students, teachers, trainers, employees of cultural institutions, etc.).

Social impact:
The idea of the project is to promote AR and VR technologies for educational purposes to make it more interactive, engaging and fun.

Moscow Innovation Pilot Program impact on product development:
The pilot testing in "Center for Rehabilitation and Education No. 7" school provided feedback from schoolchildren and teachers, which will be used to develop more user-friendly interfaces and to plan next steps in product development.