IASP 2016 MOSCOW OIMP DESCRIPTION

As a part of the 33rd IASP World Congress in Skolkovo (Moscow) next September 19th to 22nd will be celebrated the **IASP 2016 Moscow Open Innovation MarketPlace (OIMP).** In the OIMP the City of Moscow and other Russian companies are looking for **50 innovative start-ups** to solve ten specific challenges.

CHALLENGES DESCRIPTION

CleanTech

1. **Moscow Department for Environmental Management and Protection**

Theme: Environmental Services for Moscow Residents

eHealth

2. **Moscow Department of Healthcare**

Theme: Innovative Approaches to Preventing Chronic Non-Contagious Diseases, Fostering a Culture of Responsibility for Personal Health and Increasing Motivation to Stay Healthy

Smart Construction

3. **Moscow Department of Urban Development**

Theme: Innovations in Construction Technologies and Materials

Smart Building

4. **Moscow Department of Housing, Utilities and Amenities**

Theme: Innovations to Improve Safety and Ensure Continuous Operation of Elevators, Engineering Equipment and Operator Control Systems

Smart Mobility

5. **Moscow Department of Transport and Road Infrastructure Development**

Theme: Effective Transportation and Infrastructure Management Systems to Increase Traffic Throughput, Speed and Ease Traffic Burden

Advanced Manufacturing Technologies

6. **Rostec State Corporation**

Theme: Additive Manufacturing Technologies

Fintech

7. **Sberbank Technologies**

Theme: Innovations in Blockchain-Based Distributed Ledger Technologies

IoT Content Management

8. **PJSC Rostelecom**

Theme: Innovations in the Industrial Internet of Things

Green Solutions

9. **PJSC Rosseti**

Theme: Innovations to Optimize Consumption of Energy Resources

Smart Utilities

10. **The Morton Group of Companies**

Theme: Innovations in Large-Scale Remote Health Monitoring

SELECTED SOLUTIONS WILL WIN

- ✓ Meeting with the Smart City representatives of Moscow City Council
- ✓ Meeting with the corporate delegates
- ✓ Opportunity to participate in a Demo Day (exhibition area)
- ✓ Possibility to participate in IASP Conference networking lunch
- ✓ Up 500 € for travel expenses.

CHALLENGES DESCRIPTION, EXTENDED INFORMATION

CLEANTECH: Environmental Services for Moscow Residents

Moscow Department of Environmental Management and Protection, Moscow Agency of Innovations introduce an open challenge for innovations in environmental services in Moscow. The challenge is announced under the auspices of the 33rd IASP World Conference.
Building a comfortable, sustainable environment supports the city's long-term human capital and investment objectives.
Focus areas for innovations in environmental services in Moscow (environmental resources management):

- green space creation and maintenance;
- sustainable development / resource efficiency;
- green transportation;
- green construction;
- waste management (waste processing, recycling);
- air quality information;
- water pollution control;

- reducing environmental noise pollution and other adverse effects of the city's infrastructure;
- vegetation development;
- environmental education (including solutions to drive environmental responsibility programs);
- others.

eHEALTH: Innovative Approaches to Preventing Chronic Non-Contagious Diseases, Fostering a Culture of Responsibility for Personal Health and Increasing Motivation to Stay Healthy

Moscow Healthcare Department (Healthcare Management Research Institute), Moscow Agency of Innovations introduce an open challenge for innovative approaches to preventing chronic non-contagious diseases, fostering a culture of responsibility for personal health and increasing motivation to stay healthy. The challenge is announced under the auspices of the 33rd IASP World Conference.

Non-contagious diseases (NCDs) account for 76% of all the causes of death in the Russian Federation. Those include circulatory diseases (56.7%), neoplasms (14.4%), respiratory diseases (3.7%), diabetes (1.5%), and others (23.7%). To address the NCD challenge, it is essential to change the paradigm as NCDs are caused not only by biomedical, but also behavioral, environmental, social and economic factors. The majority of NCDs can be prevented by the elimination of the risk factors.

In this regard, reducing the premature mortality rate and creating a system to monitor and assess NCD prevention programs are viewed as the highest priorities for the challenge. Achieving these priorities is possible through the creation of favorable day-to-day conditions to encourage healthy lifestyles.

Approaches can include:

- affordable innovations in early detection and effective treatment of the aforementioned diseases ;
- humane rehabilitative treatment;
- healthy lifestyle promotion, awareness, and evidence-based NCD prevention projects;
- the dissemination of best practices gained from regional and national NCD prevention research and pilot population projects;

- the implementation of an NCD risk monitoring system in order to identify the population's needs, choose an optimal strategy, ensure targeted planning, and implement prevention programs and assess their effectiveness;

SMART CONSTRUCTION: Innovations in Construction Technologies and Materials

Moscow Department of Urban Development, Moscow Agency of Innovations introduce an open challenge for innovations in construction technologies and materials. The challenge is announced under the auspices of the 33rd IASP World Conference.

In the near future, new construction materials and technologies can accelerate the growth of the construction industry. The need to develop and implement them stems from the goals of the industry shaped by today's market demand and trends, such as increased concern for energy efficiency, safety, reliability, labor and cost savings, and a greater emphasis on the environmental friendliness of materials.

Experts with an optimistic outlook for the industry believe that it saw a surge in the development and implementation of new materials and technologies as early as in the 2000s. Many of these innovative materials and products have physical and chemical properties that can bring significant benefits to the industry.

New promising construction materials and technologies include:

- self-healing materials (self-healing concrete, metals, composites, etc.);
- glassy metals, hybrid artificial materials with metal and glass properties;
- new types of concrete with new atypical properties;
- composite heat insulation materials (polystyrene, acoustic membranes, steam-air barriers, fiberglass insulation systems, heat-shield panels, etc.)
- integrated photovoltaic modules and green roofs.

Increasing enforcement of environmental safety and energy efficiency regulations for newly constructed buildings provides an additional impetus for the construction materials sector. Another important trend is a greater adoption of integrated computer-aided design (CAD) at all stages of construction, including 3D building information modeling (BIM) and parametric design solutions.

The focus of this challenge is to identify innovations in construction technologies and materials that will contribute to improved quality of life for urban residents.

SMART BUILDING: Inovations to Improve Safety and Ensure Continuous Operation of Elevators, Engineering Equipment and Operator Control Systems

Moscow Department of Public Utilities and Amenities, JSC Moslift, Moscow Agency of Innovations introduce an open challenge for innovations to improve safety and ensure continuous operation of elevators, platform lifts for disabled access, elevator control systems, and remotely operated platform-lift management systems. The challenge is announced under the auspices of the 33rd IASP World Conference.

The existing practice of ensuring elevator and platform-lift safety rests with the owner, who, as a rule, is not a specialist in lifting-and-handling equipment. Nevertheless, the owner is responsible for the operational safety of his or her equipment. Over the last few years, the number of elevator-related accidents has significantly increased. To avoid them in the future, it is necessary to develop a new comprehensive service technology to cover the whole lifetime of elevators and platform lifts. This technology must be designed for certified elevator service organizations and cover maintenance, all kinds of repairs and replacements, and technical inspections.

Approaches to the challenge can include:

- new technologies of comprehensive service provisioning for elevators, platform lifts and relevant control systems
- best practices gained from regional and national pilot projects;

Advantages for the winners:

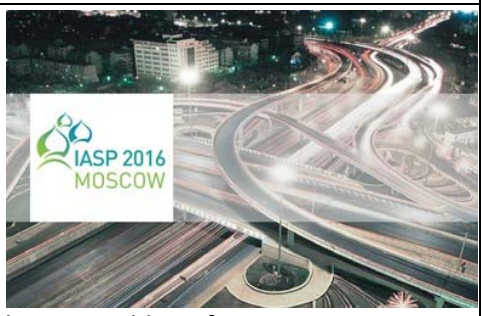
- an opportunity to pilot integrated services during the lifecycle of lifting equipment and its control systems.
- an opportunity to be funded/co-funded by Moscow-based foundations and Russian corporations;
- an opportunity to get a project hosted (for further development in Moscow) at Moscow's innovation infrastructure facilities on privileged terms;

Evaluation criteria:

- Innovativeness (non-standard, unconventional solutions).
- Comprehensiveness (addressing a range of factors ensuring the safety and continuous operation of lifting equipment).

- Maintenance and repair works (major repairs, emergency repairs, elevator upgrades, control system maintenance, associated equipment maintenance, technical inspections and electrical measurements).
- Scalability.
- Evidence (objective short- and long-term expectations).

SMART MOBILITY: Effective Transportation and Infrastructure Management Systems to Increase Traffic Throughput, Speed and Ease Traffic Burden



Moscow Department of Transport and Road Infrastructure Development and its subordinate entities Traffic Management Center and Moscow Metro, in partnership with Moscow Agency of Innovations, introduce an open challenge to identify effective transportation and infrastructure management systems to increase traffic throughput and speed, and ease traffic burden in Moscow. The challenge is announced under the auspices of the 33rd IASP World Conference.

Moscow is the largest transportation hub in Russia with the population of 11.85 million people. The city occupies an area of 2,561 square kilometers. The daily public transportation ridership in Moscow exceeds 14 million boardings, which means more than 5 billion boardings in annual terms. The city's transportation system is comprised of the following types of transportation: the Moscow metro, Moscow monorail transportation system, railway transportation, and ground public and private transportation vehicles, all together transporting approximately 6.89 billion passengers.

The current state and challenges of Moscow's transportation industry can be attributed to the following factors:

- Moscow's population density (107.3 people per hectare) is higher than that of the world's largest cities;
- the road network density (3.95 km/sq. km) is 2-4 times lower than that of the world's largest cities. For Moscow's Troitsky and Novomoskovsky administrative districts, this figure is equal to just 0.88 km/sq. km;
- downtown-bound transportation load in the morning rush hours is 1,060 thousand people, which is higher than the existing traffic-carrying capacity (870 thousand people) by an average of 22%;
- today's traffic streams exceed the motorway throughput capacity by 42%;
- on average, a Moscow resident spends 67 minutes in public transportation to get to work; about 20% of the city's residents spend more than 3 hours in daily commutes to work and back home;

- the length of Moscow's subway lines is the shortest among the world's largest cities, yet the passenger volume of the Moscow metro is 1.5-2 times higher that of its international counterparts; the average occupancy of the metro's train cars is 5.2 people/sq. m;
- the ground public transportation is insufficiently developed, and the density of its route network is low; public transportation vehicles have no advantages over other vehicles in the traffic flow;
- the system of direct links between radial motorways is weak;
- the existing radial motorways have an insufficient throughput capacity, and there are no relief roads near them;
- the technical condition of the engineering structures and carriageways of many federal and regional motorways is poor;
- missing junctions/interchanges at different levels at the road network intersections, including railway and river crossings;
- there is no effective traffic management system;
- insufficient interaction among carriers serving the city's bus routes; there is no traffic management system leveraging modern global positioning solutions;
- the transportation infrastructure of the city is poorly equipped to meet the needs of mobility-impaired people;
- the performance of public transportation operators is suboptimal.

Despite the congested road network, personal transportation remains more attractive not only because of the comfort it offers, but also because it implies less commute time. In the morning rush hours, an average commute by car takes about an hour, which is 10% less than by public transportation. In 2011, there were approximately 3.4 million cars in Moscow. With an average annual increase of 4%, the number of personal vehicles is expected to reach 4.2 million in 2016.

Average commute time is expected to grow as well. Should the current trend persist, the traffic burden will have been doubled by 2025.

Failure to undertake measures to improve the situation is expected to double the burden for all types of transportation in 2025, even with the projected annual increase of the city's population by 0.8%. Average personal transportation commute time will increase by 25% to reach 75 minutes. The share of residents spending over 3 hours a day in commute will reach 30%.

Entries submitted for this challenge should facilitate the improvement of Moscow's transportation infrastructure and address one of the following areas: railway transportation and metro development; motorway upgrade, construction and renovation; transportation hub construction and improvement; traffic management and smart transportation management systems; road safety management; ground and air transportation development; new types of public transportation (light rail transit); terminal and logistics services centers; unified parking space management.

Related program activities should be aimed at increasing the throughput capacity of the existing transportation network. They should help improve road safety and transportation security, reduce transit traffic in the metropolitan area, reduce passenger and freight

transportation delays, and improve the carriage of passengers in all types of public transportation.

ADVANCED MANUFACTURING TECHNOLOGIES: Additive Manufacturing Technologies

Rostec State Corporation, Moscow Agency of Innovations introduce an open challenge for innovations in additive manufacturing technologies. The challenge is announced under the auspices of the 33rd IASP World Conference.

Additive manufacturing technologies have a good potential: manufacturing in small batches is common in shipbuilding, power engineering, reconstructive surgery and dental medicine, and aerospace. Additive manufacturing technologies are used in the production of turbine parts and shafts, implants and endoprostheses, spare parts for cars and airplanes.

Unlike subtractive manufacturing, where a piece of material is shaped and sized by a material-removal process, in additive manufacturing, materials are added layer-upon-layer to create 3D objects. Thanks to additive technologies, it is possible to create unique complex parts while minimizing the use of high-cost machining, thus enabling lower manufacturing costs and accelerating design and production.

The additive manufacturing technologies market is growing fast. According to IDC, global spending on these technologies will grow at at a 27% compound annual growth rate from nearly $11 billion in 2015 to $26.7 billion in 2019.

In 2014, rapid prototyping accounted for the largest share (35%) of the global additive manufacturing technologies market. The share of rapid manufacturing increased to 31%. In terms of the adoption of additive manufacturing technologies by industries, the largest share belongs to consumer goods and electronics (21%), followed by car manufacturing (20%), healthcare and dentistry (15%), aerospace (12%), equipment production (11%), military equipment (8%), education (8%), and construction (3%).

The focus of this challenge is to identify additive manufacturing innovations that will enable the manufacturing of parts with specific strength properties and functional capabilities.

FINTECH: Innovations in Blockchain-Based Distributed Ledger Technologies

Sberbank Technology introduce an open challenge for innovations in blockchain-based distributed ledger technologies. The challenge is announced under the auspices of the 33rd IASP World Conference.

Blockchain is a set of technology platforms and tools, algorithms and dedicated software applications that together allow to maintain a secure list of reliable data records by using data block chains in which each block is linked to a previous one. The chains are secure, distributed and auditable. Blockchain drives new knowledge and skills, helps create prototypes, beta and commercial versions of software solutions.

Blockchain offers a new approach to contractor communication, asset management, customer loyalty management, electronic health records management, and cross-border payment management. The technology is designed to reduce infrastructure costs and payment time, thus potentially reducing risks for and having a strong impact on the financial services industry. Blockchain can be particularly relevant for loan, repo, and stock market operations, due to real-time funds-and-liabilities monitoring and analysis capabilities. Thanks to the safety of operations and an opportunity to track their history at all times, it will no longer be necessary to build relationships of trust with contractors.

The focus of this challenge is to identify solutions that enable the storage of accurate and reliable information on all committed transactions. Innovations should be relevant for the payments industry, online retail infrastructure, and P2P asset management. They can also be applied to improve efficiency in public administration, education, insurance, management, healthcare, legal proceedings, public transportation, etc.

IoT CONTENT MANAGEMENT: Innovations in the Industrial Internet of Things

Rostelecom, Moscow Agency of Innovations introduce an open challenge for innovations in the Industrial Internet of Things (IoT). The challenge is announced under the auspices of the 33rd IASP World Conference.

The term Industrial Internet of Things refers to the industrial subset of the Internet of Things (IoT). In the manufacturing industries, IoT is the network of objects embedded with electronics, software, sensors and network connectivity, and integrated with intelligent enterprise systems. IIoT can reshape economic and manufacturing processes, eliminate human participation in some of them, drive performance, energy efficiency and competitiveness, and bring economic advantages to businesses and whole countries. The Industrial Internet of Things can radically transform the mechanical engineering, energy, aerospace, logistics,

transportation, agriculture, construction, and healthcare industries. According to the estimates and plans of the world's leading service companies (including telcos), the IoT and IIoT sector will be among the fastest growing ones in the next few years.

Technical solutions submitted for this open challenge should be focused on the automation of manufacturing processes in the aforementioned industries. These solutions should improve productivity and optimize business processes by integrating IT and production systems, ensuring reliable data entry, and creating end-to-end data collection and analysis processes.

GREEN SOLUTIONS: Innovations to Optimize Consumption of Energy Resources

PJSC Rosseti and Moscow Agency of Innovations introduce an open challenge for innovations to optimize (reduce) consumption of energy resources at all stages of industrial and business operations, including innovations to reduce technological/service consumption during the transmission and distribution of electrical power. The challenge is announced under the auspices of the 33rd IASP World Conference.

The current situation in the fields of energy conservation and energy efficiency is characterized by the following facts:

- Rosseti's subsidiaries and affiliates are insufficiently equipped with electricity meters;
- Domestic and business consumption of fuel and power resources is high, while the efficiency of vehicle fuel usage is low;
- Low economic efficiency of introduced measures: more than 70% of introduced measures don't pay off during the lifespan of implementations (due to a low cost of resources);
- Poor automation of consumption data collection, planning and monitoring processes.

The key priority for this challenge is to identify power grid efficiency innovations in the following areas:

- Energy-saving equipment and modern technical solutions and technologies, including: high-efficiency equipment (wires and cables with high throughput capacity, low-loss transformers); flexible transmission lines; digital substation technologies, including optoelectronic current and voltage transformers; automated substations; systems and methods to monitor power lines and transformer substations in real time; smart electricity metering systems and better customer experience; modern automation systems and network automation solutions; information management systems (SCADA, GIS, EMS, DMS, OMS, BMS, AMS);

remote grid monitoring tools; CAD systems; 0.95 kW electric power distribution network solutions;

- Reducing domestic and business power-and-fuel consumption: increasing the thermal resistance of buildings and facilities; ventilation and air conditioning optimization; smart current collector and heating management; heat pumps for heating and hot water supply; automated lighting control systems; GPS/GLONASS car fleet monitoring systems; solutions to improve the efficiency of auxiliaries (using frequency controllers at transformer cooling motors and transformer/reactor heat-loss conversion systems to heat buildings; using “light tubes” to replace electric lighting and solar collectors);
- Transfer of energy-efficient technologies, including: energy-efficient equipment for the reconstruction and upgrade of electric grid facilities; new energy-efficient equipment and technologies, including active-adaptive networks; small-scale generation and renewable generation (based on their economic efficiency) to replace existing energy resources (solar batteries, heat pumps, ground-coupled heat exchangers, heat-utilizing systems, isolated heat-cold storage units, etc.).

SMART UTILITIES: Innovations in Large-Scale Remote Health Monitoring

Morton Group and Moscow Agency of Innovations, introduce an open challenge for innovations in large-scale remote health monitoring. The challenge is announced under the auspices of the 33rd IASP World Conference.

Urban residents are exposed to many health risks. Therefore, finding solutions to enable large-scale health monitoring is widely recognized as an important objective for the public health sector. Such solutions help prevent the spread of infections that can cause epidemics. More importantly, they help understand the state of a person diagnosed according to the traditional methods of assessment as "healthy", but after an an in-depth analysis revealing the mobilization of functional resources to maintain a balance with the environment. Mass monitoring of prenosological (pre-illness) states can greatly reduce the time and consequences of the treatment of acute conditions. It can reduce the strain on the healthcare system and open new avenues on the health insurance market.

Leveraging modern IoT and mobility solutions (e.g., telemedicine) will bring healthcare to a new level. This will drive the rate of adoption of healthy lifestyles, as continuous health monitoring enables people to see positive results of their actions and additionally motivates them.

A resident health monitoring system is a key component of Smart City, a joint program of Morton Group and the Russian Technical Society. Promising developments identified through the open challenge will be included in the development plan for Smart City at local residential

neighborhoods built by Morton Group as well as at a number of areas abroad (in cases of signed agreements on pilot implementations of innovations).

Submissions to the challenge must meet the following requirements:

- Mobility. Residents should no longer be required to physically visit medical assessment facilities.
- Connectivity. Patient data should be stored and processed to ensure continuous health monitoring.
- Collected data should be meaningful and reliable to enable actionable decision-making to improve health conditions.
- Feedback. Residents should be informed on suggested actions to improve their health conditions.
- Ergonomics and power efficiency. Submitted solutions should be convenient for a long-term/continuous use and require minimal efforts from the user.
- Submitted solutions may be applicable in various spheres of human life.
- Their implementation should not be tied exclusively to the Russian Federation.
- It is essential to ensure the verification of information: it should be reliable and validated by industry experts.
- Solutions should be based on modern technologies and methodologies.
- It is necessary to assess the commercial potential of solutions to ensure payback and financial self-sufficiency.

The goal of this open challenge is to obtain a technical solution or a model of an integrated solution, including a reference to the operating principles, existing or proposed limitations, necessary conditions and resources required for implementation.

An assessment of commercialization is required.

Register your solution:

(*International Companies should preferable register following this link*)*:
https://beta.younoodle.com/competition/oimp_2016

(*Russian Companies should preferable register following this link*)*:
http://www.mosopenchallenge.ru/

*Both platforms are valid.

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