**INFORMATION FOR THOUGHT**

1. **In the near future, transport companies will have to find new solutions to the following tasks:**
* Movement of people within the areas of the settlements (within the settlements and between closely spaced settlements);
* The movement of people in medium and long distances;
* New means and environment of people’s self-transferring;
* Cargo movement and long-distance shipment;
* Movement of goods within the settlements (documents, online retail, incl. food);

Priorities:

* Integral speed (minimizing time, spent on moving);
* Complex safety:
* Physical safety of the object of movement (passenger, cargo);
* Safety for others;
* The probability of failure (accident) and the scale of its consequences-the total specific damage from failure (in relation to the number of elementary operations);
* Cyber security - vulnerability to intentional unauthorized acts;
* Economic efficiency:
* Efficiency of the resources used (elimination of the “blank” operations);
* Integral unit cost of operation (costs throughout the system);
* Ecological efficiency:
* Saving non-renewable resources (incl. reducing harm to the environment).
1. **The transport industry faces three main tasks:**
	1. Creation of vehicles / transport systems that meet the maximum requirements of safety, environmental friendliness, efficiency (according to integrated criteria – operation, disposal), as well as to create an infrastructure, the purpose of which is –
* To simplify the access of people to the means of transport;
* To increase the efficiency of transport resource utilization;
* To make independent and automate the transport system operation.

References:

* Electronic documents (information traceability of the goods);
* Alternative solutions (travolators, portals, hyperloop);
* Robotic systems (for example, passenger and cargo drones);
* Smart roads and road infrastructure, communication "car-to-car", " car-to-road»;
* Dynamic system optimization - routing.
	1. **To create passengers delivery system - flexible, adaptive and effective, which realizes the needs of people to move in space, i.e. replace personal transport as a " means of transportation”**

References:

* MaaS (mobility as a service);
* Uber and sharing solutions;
* Shuttles and travolator systems (airports, cities);
* Public transport on demand (using big data in motion control).
	1. **To create effective delivery system (distribution) of goods, comprehensively solving the problem of goods distribution in the system, from raw materials to finished products to the consumers,**
* Pooling;
* Traceability;
* Robotic closed (warehouse) and linear transport systems (railway shuttles).

**Therefore, the key topic proposed for the solution within the framework of the PUSHKA forum competition task in the nomination “Transport design”:**

1. Vehicle / transport system that meets the maximum requirements of safety, environmental friendliness, efficiency (according to integrated criteria – operation, disposal).
2. Forecast for the development of transport infrastructure / environment.

The concept of unmanned vehicle as part of the "unmanned" transport environment, including-vehicle, road and road infrastructure, hubs (points of redistribution of goods).

**CONTEST ASSIGNMENT**

**International Industrial Design Innovations Forum PUSHKA**

**Profile: Transport Design**



**Nomination 1.**

Sovavto Plus 50

Sponsor of the nomination: PJSC "Sovavto - St. Petersburg".

**Topic: "Autonomous passenger vehicle Sovavto".**

PJSC "Sovavto - S.Peterburg" is one of the oldest carriers of goods and passengers in Northern Europe, with many years of experience in the field of passenger transportation and cargo carriage.

The main service of "Sovavto - St. Petersburg" is regular cargo carriage for corporate consumers by road transport and the transportation of passengers by international buses.

This forms priorities for the company. At the forefront there are such indicators as safety, speed, accuracy and reliability. Because from the punctuality and regularity of goods delivery depends operational consistency of industrial enterprises, trading companies that are customers of "Sovavto - St. Petersburg".

Within PUSHKA contest, the company "Sovavto - St. Petersburg" offers the students the "Sovavto Plus 50" project**.**

**What is necessary?**

1. To study and analyze the development and change of technologies of industrial production and transport services for the next 50 years.

2. To forecast the company's activity in the passenger transportation service in a given period.

3. To offer a vision of an autonomous (unmanned) vehicle for mainline, cross-border passenger transportation on public transport networks, taking into account the forecast for the development of transport infrastructure and changes in industrial production technologies.

4. To form a visual language of vehicle design, expressing the principles of the brand "Sovavto - St. Petersburg": reliability, accuracy, precision, punctuality, professionalism.

5. Create a graphic presentation of the project.

**CONTEST ASSIGNMENT**

**International Industrial Design Innovations Forum PUSHKA**

**Profile: Transport Design**



**Nomination 2.**

**«**Sovtransavto Cargo Systems»

Sponsor of the nomination: ZAO Sovtransavto.

**Topic: "Concept of an unmanned cargo vehicle / Sovtransavto transport system".**

The SOVTRANSAVTO Group of companies has been working in the field of transport and logistics since 1968, uniting the countries of the continent into a single cargo transportation network. For 50 years SOVTRANSAVTO brand vehicles traveled the continent along and across.

In addition to the regular flow of general and consolidated cargo from Germany, Italy, France, Poland, Finland, Turkey and other European countries, we deliver goods from the countries of Southeast Asia, the Middle East and America via ports in the west and east of Russia, Finland and the Baltic States, by sea, by road, by air and by rail.

Within PUSHKA competition, the Sovtransavto group of companies offers the students the Sovtransavto Cargo Systems project.

**What is necessary?**

1. To study and analyze the development and change of technologies of industrial production and transport services for the next 50 years.

2. To forecast the development of key processes of the company's activity in the service of cargo transportation in a given period.

3. To offer a vision of an autonomous (unmanned) vehicle / transport system that provides regular cargo transportation services, taking into account the forecast of development of transport infrastructure and changes in industrial production technologies.

Unmanned vehicles solutions in road transportation open new opportunities for improving various technologies for the delivery and handling of goods. In particular, the systems of consolidation and distribution of small consignments

The organization of this process implies:

- collection of small consignments and delivery to the consolidation terminal (from door to hub)

- formation of groupage shipments, consisting of several small consignments, at the terminal for various directions, taking into account the geographical location of recipients

- delivery of consolidated shipments to the terminal located in the zone (region) of the location of the recipients (line haul)

- shipments deconsolidation at the terminal and delivery of small consignments to the recipient's door (from hub to door)

Today, according to this scheme, it is necessary to use several carriers, using at least (in the case of door-to-door delivery of 2 small consignments) 5 vehicles, often with excessive carrying capacity, and, accordingly, 5 drivers. If there are more such lots, the number of vehicles is increased by 2 units for each additional lot.

Also, for the operation of the system, at least 2 terminals are needed, equipped with storage facilities, means of handling and loading, and freight movers.

In particular, think of the ideas for the "mobile hubs" implementation, which does not require the involvement of such a large amount of material and human resources. The essence of the technology is that the delivery and consolidation of small consignments of different goods is done by a modular unmanned vehicle. Such a vehicle may consist of several autonomous cargo modules capable of independent dock/undock and moving on public roads, both individually and in combination with other similar modules.

The modules are equipped with all standard equipment, in the program of which the following data is entered: points (coordinates) of loading/unloading, docking/undocking, as well as the time of performing certain operations with the adjustment ability according to the circumstances.

This concept will also substitute the existing milk run distribution system, when a heavy-duty truck delivers small cargo shipments within with the certain route with intermediate unloadings at the recipients. At the same time: vehicle capacity is used inefficiently, delays in unloading at one recipient lead to failure of the delivery schedule for others. In this case an additional advantage of the “mobile hubs” will be the fact that the design of the module can be adapted for the carriage of goods that require special transportation conditions: temperature, high hazard class, food, customs, etc.

Thus, it is possible to deliver different categories of goods within one trip, which are usually not compatible or prohibited for transportation in one standard vehicle.

Taking into account current standards for the dimensions of vehicles, the modules can be connected in a chain of up to 20 meters. Module dimensions and load capacity may vary. For one of the standards, for example, you can take the dimensions of an LCV body: length 3 m, volume 10 m3, carrying capacity 1.5 t.

4. To form a perspective visual language for the design of the vehicle / transport system that expresses the values ​​of the Sovtransavto brand for the next 50 years.

5. Create a graphic presentation of the project

**CONTEST CONDITIONS**

Terms for brief publishing:

**13/09/2018**

Deadline for receiving projects:

**01/11/2018**

**Participants:**

Students of specialized higher education institutions who study under the programs "Transport Design" and " Industrial Design".

**Presentation format:**

- Predesign study - Paper document in PDF format no more than 5 A4 pages horizontally.

- Final presentation of the project - Graphical sheet 1400x1000mm (horizontally). Format JPG, 300dpi;

**Projects should be sent** **via e-mail to**: projects@pushkaforum.com

- In the subject line of the letter you have to specify: Sovavto50 or Sovtransavto50, depending on the nomination you have chosen.

-I n the text of the letter: name, university, phone for feedback.

- Projects submitted later than **12:00, 01.11.2018** are not considered.

**Components of the project:**

- The general main configurations of the vehicle;

- Sketches and diagrams explaining the concept of the project;

- Graphics explaining the transformation and interaction of the vehicle with the user (operator);

- Inspiration Graphic, clarifying the visual design language of the vehicle (if necessary).

**Design requirements**:

The project should be entitled with the slogan:

Sovavto Plus 50 or Sovtransavto Cargo Systems - according to the Nomination.

The graphic part of the project presentation should include:

- Full name of the author of the project, the project curator from the university (if any);

- The name of the university, faculty, department, the logo of the university, city, year 2018.

- Logo of the sponsoring company in the Latin nomination

**Criteria for projects’ evaluation:**

- Compliance with the terms for the projects submission. Projects submitted later than 12:00 on 01/11/2018 arenot accepted for consideration;

- Compliance with the task;

- Compliance with the requirements for the scope of the project, presentation format and requirements for the design of the project;

- Reliability and persuasiveness of forecasting the development of technologies and transport infrastructure;

- Compliance of the project proposal with the forecast;

- Compliance of the proposed visual language of the vehicle to the brand values ​​of the company - the sponsor of the nomination.

- Originality of the idea;

- Clarity of the project’s information.

**According to the results of the project, the jury will determine one winner for each of the two nominations.**

**The winner in the Nomination 1**. Sponsor company PJSC "Sovavto - St. Petersburg" grants money prize in the amount of 50'000 Russian rubles.

**The winner in the nomination 2.** Sponsor company «Group of companies ZAO Sovtransavto» grants money prize in the amount of 50'000 Russian rubles.

Nomination sponsoring companies are eligible to publish and use the projects submitted for the competition at their discretion in advertising, presentation purposes, indicating the Name and Surname of the project’s author (authors) and university, in which student (author) was studying at the time of submission of the project for the competition.

Presentation of the projects of the first three places in each nominations and awarding of the winners will be held on 21.11.2018 in Moscow, within the framework of the International Industrial Design Innovations Forum PUSHKA 2018.

Venue of the award ceremony: Moscow, Moscow City, Mercury Space Tower

All the questions can be asked by e-mail projects@pushkaforum.com or by phone +7 (499) 380-68-08

Complete information about the International Industrial Design Innovations Forum PUSHKA 2018 at [www.pushkaforum.com](http://www.pushkaforum.com)