

**JOINT STOCK COMPANY  
“UNITSKY SCIENTIFIC & PRODUCTION COMPANY”**

**PROPOSAL**

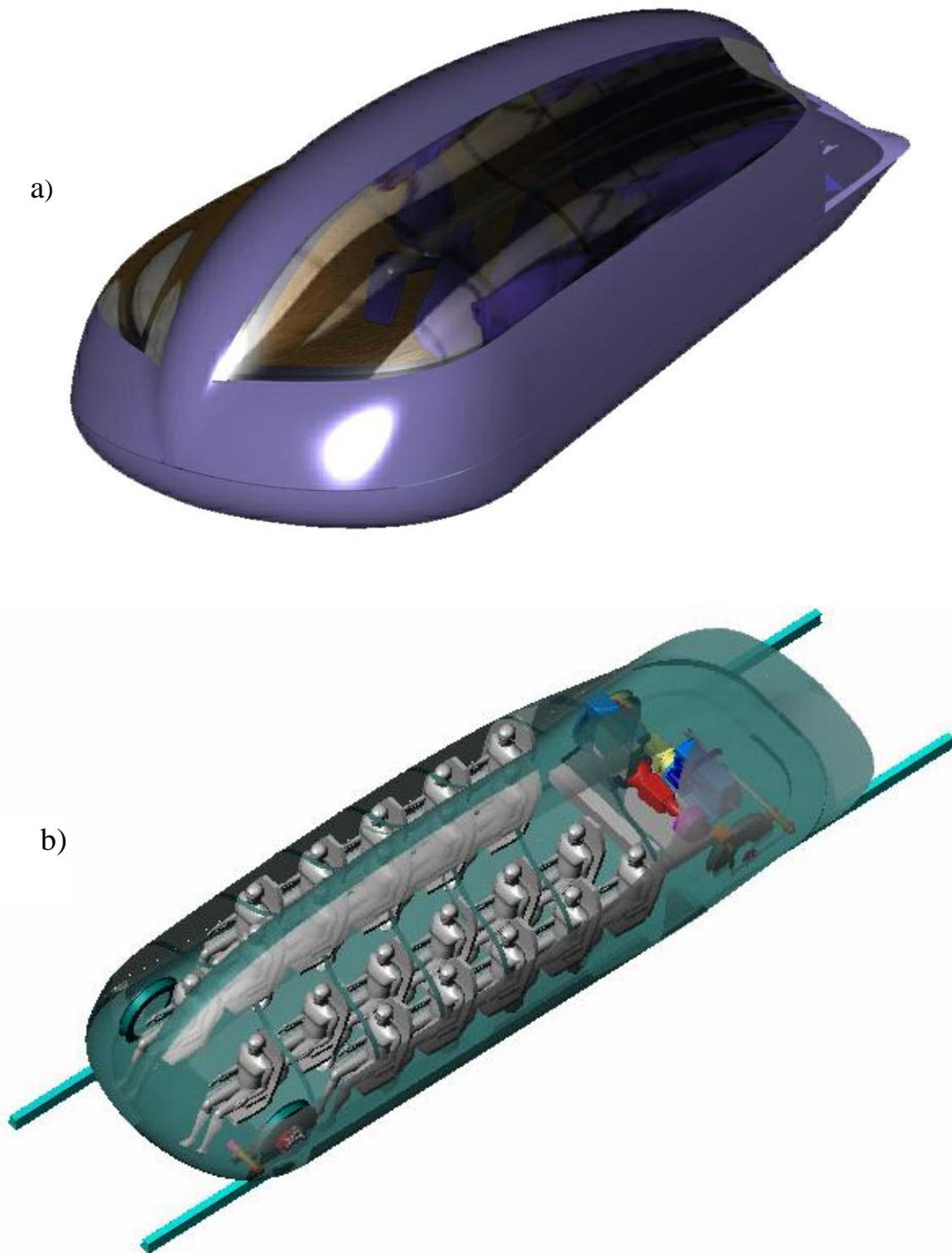
**HIGH-SPEED TWO-WAY CARGO AND PASSENGER  
STRING TRANSPORT ROUTE**

**“ABU DHABI – DUBAI – SHARJAH”**



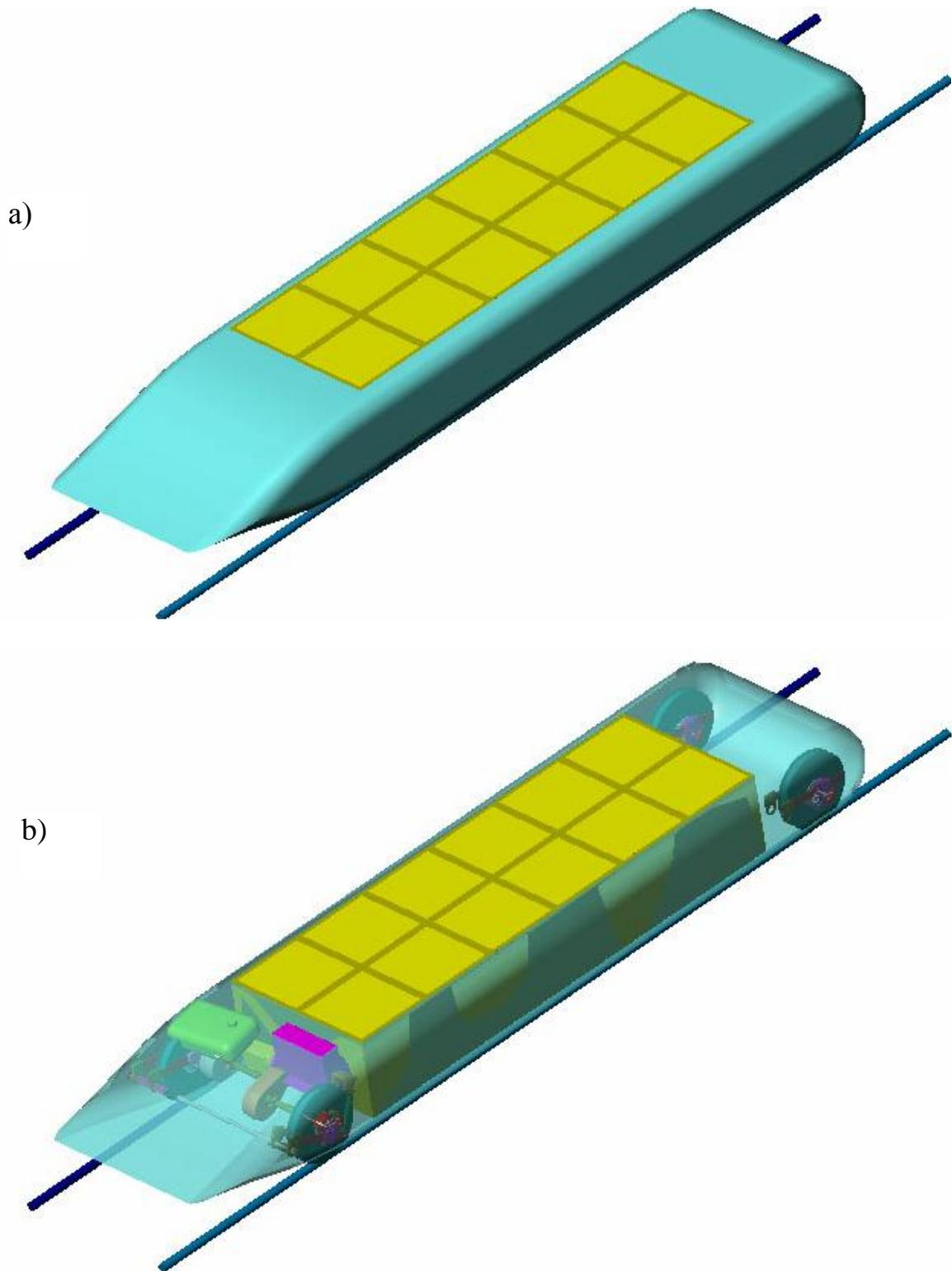
Moscow 2001





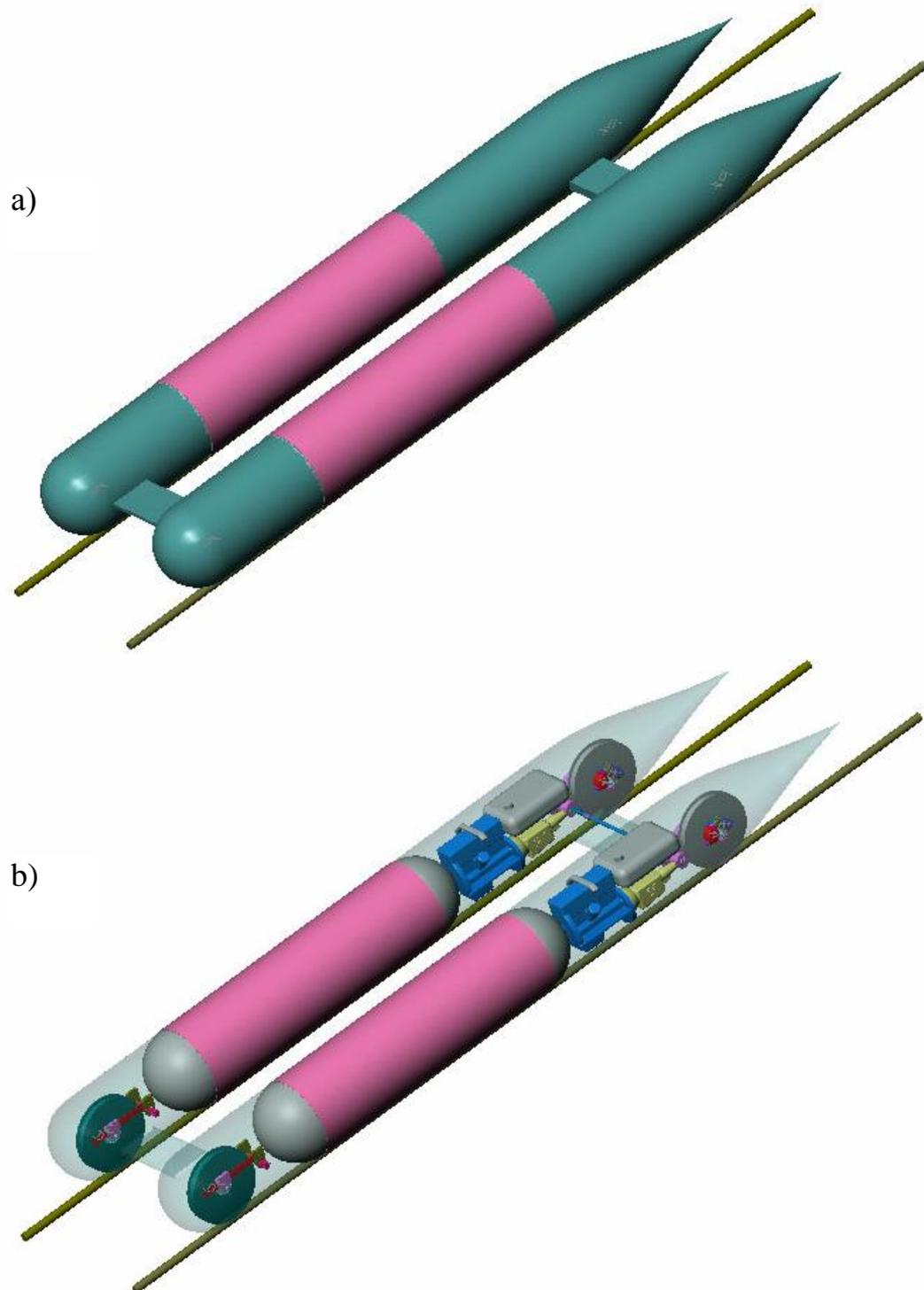
Picture 2. Passenger module: a) external design; b) interior.

- Capacity – 25 passengers.
- Calculated cruise speed – 250 km/h.
- Design (ultimate) speed – 350 km/h.
- Engine drive: internal combustion engine (diesel) – 120 KWt powerful.
- Fuel consumption (diesel fuel) at the cruise speed 200 km/h – 12 litre/per 100.



Picture 3. Cargo module for container deliveries:  
a) exterior design; b) arrangements of cargo and parts.

- Cargo capacity – 6000 kg.
- Calculated cruise speed – 250 km/h.
- Design (ultimate) speed – 350 km/h.
- Drive: internal combustion engine (diesel) – 75 KWt powerful.
- Fuel consumption (diesel fuel) at the cruise speed of 250 km/h – 7.5 litre/100 km.



Picture 4. Cargo module for transporting liquids (oil and oil products, potable water, etc.):  
 a) exterior design; b) arrangement of tanks and parts.

- Cargo capacity – 6000 kg.
- Calculated cruise speed – 250 km/h.
- Design (ultimate) speed – 350 km/h.
- Drive: internal combustion engine (diesel) – 75 KWt powerful.
- Fuel consumption (diesel fuel) at the cruise speed of 250 km/h – 7.5 litre/100 km.

**Technical and Economic Characteristics  
of a two-way UST High-Speed Route  
“ABU DHABI – DUBAI – SHARJAH”**

Type of string road route – cargo and passenger route.

Distance range – 138 km.

Cost – USD 280 mln (See Table 1).

Calculated optimal speed of transport modules – 250 km per hour.

Time en route – 42 min.

Average height of supporters – 25 m.

Average flyover between the supporters – 50 m (at sea – 100 m).

Maximal passenger turnover:

- Passenger – 50 mln passengers per year.
- Cargo – 100 mln tons per year.

Self-cost of transportation (distance 138 km):

- One passenger – USD 1,5.
- One ton of cargo – USD 1,5.

Expected passenger turnover (distance 138 km) – 12 mln passengers per year.

Expected cargo turnover (distance 138 km) – 6 mln tons per year.

Table 1

**Approximate cost of the UST route “Abu Dhabi – Dubai – Sharjah”**

UST Route Composition Parts	Volume of the work	Cost of one unit of work, in thousands of USD	Total cost, in thousands of USD
1. Transport route, total, including:	138 km	-	142,800
1.1. Route structure	138 km	450	62,100
1.2. Basements and supporters	138 km	550	75,900
1.3. Technical control system over the state and condition of route structure	138 km	11,6	1,600
1.4. Radio rely system of control of transport traffic	138 km	23,2	3,200
2. Cost of infrastructure, total, including:	-	-	60,000
2.1. Stations	3	5000	15,000
2.2. Cargo terminals	3	10000	30,000
2.3. Depot and repair shops	1	15000	15,000

UST Route Composition Parts	Volume of the work	Cost of one unit of work, in thousands of USD	Total cost, in thousands of USD
3. Modules, total, including:	-	-	16,400
3.1. Passenger modules	90	100	9,000
3.2. Cargo modules	220	20	4,400
3.3. Technical support reserve modules	30	50	1,500
3.4. Technical control over the state of the route and emergency support	10	150	1,500
4. Cost increase on more complicated route crossings (going through mountain, costal sea, trespassing the communications)	30 km	500	15,000
5. Engineering prospecting works	150 km	20	3,000
6. Design works for route structure, modules, infrastructure and control systems	-	-	20,000
7. Other costs and unforeseen costs	-	-	21,300
Total:	-	-	280,000

### Expected passenger turnover

1 two-way trip for each country resident and tourist: 12 mln passengers per year (2 trips x (3 mln people + 3 mln people)).

### Expected cargo turnover

2 tons of cargo per each country resident: 6 mln tons per year.

### Amount of transport modules needed

#### 1. Passenger module (25 seats).

One module will make 24 trips per 24 hours. At the average occupancy coefficient of 0.8 and average module use coefficient of 0.8, each module will transport 384 passenger per 24 hours, and 140,000 per year. That is in order to transport 12 mln of passengers per year 86 modules are needed.

#### 2. Cargo module (capacity 6 tons).

One cargo module will make 20 trips per 24 hours. At the loading coefficient of 0.8 of and module use coefficient of 0.8, each module will

transport 76 tons of cargo per 24 hours and 27,700 tons per year. In order to transport 6 mln tons of cargo per year 220 cargo modules are needed.

### Time en route

Time spent by passenger on trip from the Abu-Dhabi Center to the Center of Sharjah will be 42 min (See Table 2).

Table 2

№	Type of transportation process	Time, in min
1	Waiting for boarding	1
2	Passenger boarding	1.5
3	Waiting for trip	0.5
4	Merging the transport module into the traffic flow	0.5
5	Boosting the speed up to 250 km/h	1.5
6	Moving en route	32
7	Breaking the transport module	1.5
8	Entering the station	1
9	Unboarding passengers	1.5
10	Unforeseen losses of time	1
Total:		42

### Economic efficiency and profit return

At the cost of the trip “Abu Dhabi – Dubai – Sharjah” at USD 5 (self-cost of the trip is USD 1.5 per passenger) and the cargo tariff of USD 5 per ton (self-cost is USD 1.5 per ton), the yearly return from the string route exploitation will be:

$$D = 12.000.000 \text{ pass.} \times (5 - 1,5) \text{ USD/passenger} + 6.000.000 \text{ t} \times (5 - 1,5) \text{ USD/t} = 63.000.000 \text{ USD.}$$

The route will return the investments in 4.5-5 years.

Profit efficiency of the route will be 100-200%, depending on the level of taxation.

© Anatoly E. Unitsky, 2001  
 General Designer of UST,  
 Director of UN Habitat Project No. FS-RUS-98-S01  
 “Sustainable Development of Human Settlements and  
 Improvement of their Communication Infrastructure  
 through the Use of a String Transport System” (1999-2000)

2, Sadovniki st.,  
 Moscow, 115487, Russia  
 Tel. (7-095) 118-52-55/54-65  
 Tel./fax: (7-095) 118-02-38  
<http://www.mtu-net.ru/yunitran>  
 E-mail: [yunitran@mtu-net.ru](mailto:yunitran@mtu-net.ru)