

**RESUME**  
**OF A BUSINESS-PLAN:**  
**"ECONOMIC JUSTIFICATION OF CONSTRUCTION OF A STRING**  
**TRANSPORTATION SYSTEM IN MALAYSIA"**  
*(feasibility study)*

The aim of the given project is to investigate the possibilities for the construction of string communications of Unitsky (STS) under conditions of Malaysia and to assess the efficiency of capital investments.

As a site for the project implementation it was decided to propose Malaysia which at the present time is experiencing transportation problems and has to make a choice among various transportation systems in favor of the most efficient one. One of the alternatives implies construction of a STS route with the total length of 850 km to come from the northern part of the country from the city of Kangar to the southern continental point of Johor-Bahru. The route will run through the densely-populated areas of the western part of Malacca peninsula to link 18 cities located in seven states. Layout scheme of the proposed STS route is given in Fig. 1. The route will pass mostly along the flat country of the peninsula. It was taken into account that the route will be operating in conditions of tropical climate with the average annual air temperature of about 25 °C and relative 70% humidity.

Malaysia refers to the category of countries with well-developed industries and agriculture. An important place in the national economy belongs to the international tourism. The national government devotes much attention to the problems of environment management and development of a network of natural parks and reserves.



Fig. 1. STS layout alternative.

Capital of Malaysia - Kuala Lumpur, area 329,750 sq. km, population density - 61.1 pers./sq.km, population - 21,000,000.

Gross National Product (GNP) - US \$ 60.06 billion, inflation rate - about 3% per year, GNP growth rates - up to 9% per year.

Exchange rate of the national monetary unit - 3.8 ringhita/USD (as of August, 2000).

The total volume of capital investments in the project implementation is approximately estimated at US \$ 2,124 million and includes scientific research, design works and manufacturing of transportation modules and a STS track with all necessary infrastructure. The route will be put into operation in 2006. An important share in the whole range of works is assigned to research activities (US \$ 24,000,000 as specified by item 3 of the implementation schedule for a STS construction in Malaysia), including construction of a pilot section of a STS route in Malaysia. Construction of a pilot track is necessitated by the need to adapt its building technologies and operation to the climatic conditions of Malaysia.

As soon as the major tasks of "Unitsky Scientific & Production company" imply sale of rights to intellectual property created during the 1980-2000 period, carrying out of scientific research and project and design works during the 2000-2002 period and patenting of their results, "Unitsky Scientific & Production company" is interested in the promotion of a STS to the world market through the establishment of joint ventures with interested investors (private and/or public sector) to promote construction of STS routes first of all in the countries of South-East Asia.

"Unitsky Scientific & Production company" has the assets of US \$ 1,000,000,000 including financial resources for the provision of a research and project-design base, construction of a testing ground for experimental and industrial testing of a STS.

It is proposed to set up a joint venture "Unitran - Malaysia" taking into consideration the legislative and political climate of Malaysia with the aim to initiate scientific research and experimental design works under the geographic conditions of Malaysia and optimise all nodes and components of the transportation line and the rolling stock to cope with the production base of Malaysia.

Great attention in this work will be given to the formation of positive public opinion and provision of support by business and governmental circles of Malaysia.

Inputs of the parties will be as follows:

- "Unitsky Scientific & Production company" (51% of chartered capital) - rights to the use of patents, know-how and technological developments created by the author (A.E.Unitsky) during the 1980-2000 period and the outcomes obtained at the testing ground during the 2000-2002 years.
- Malaysian investor (49% of chartered capital) - provision of financial support to a range of activities aimed at the development of scientific and technical base for a STS in Malaysia and partial financing of construction of a STS route in Malaysia.

As a result of the joint activity the following outcomes will be produced: STS building technology proved to be adaptable to the geological and climatic conditions of Malaysia and South-East Asia; professional team including highly-qualified scientific and engineering national personnel; new job opportunities in industry and construction sector.

As soon as the relevant results have been obtained necessary and sufficient for the transition to the construction of a STS in Malaysia it is envisaged to establish a company in order to attract investments and facilitate construction works for a concrete route of about 850 km length (Kangar - Kuala Lumpur - Johor-Bahru).

The project participants are: "Unitsky Scientific & Production company" (RF), Government of Malaysia, external investors (stockholders), joint venture "STS-Malaysia", banks of Malaysia.

The following sources of financing are proposed:

- 33.3% - internal resources of the joint venture "STS-Malaysia";
- 16.7% - external investors (stockholders) on the terms of getting annual dividends;

- 16.7% - national resources of Malaysia - low interest credit - 5% per year with the main debt and interests to be paid back after receiving the first profit;
- 33.3% - bank credits at the annual interest rate of 8% with the main debt and interests to be paid back after receiving the first profit.

№	Stages of project implementation	Total cost, US \$ million	2001		2002		2003		2004		2005		
			I	II	I	II	I	II	I	II	I	II	
1	Non-material assets (rights to know-how)	354,0	354										
2	Feasibility study	0,3		0,3									
3	Scientific research and experimental design works	24,0	3,9	7,2	6	4,6	1,2	1,1					
4	Preparation of provisional feasibility study for a STS construction	0,5				0,5							
5	Design and survey works for a track and infrastructure	70,0					10,2	17,8	20	22			
6	Manufacturing of transportation modules in the amount of 4,000 units	75,0					10	20	30	10	5		
7	Preparation of the general feasibility study to support construction and operation of a STS	0,2						0,2					
8	Construction of a route	1 060,0							30	360	470	200	
9	Construction of infrastructure	350,0								105	150	95	
10	Other costs	190,0			2	2	25	35	42	42	40		
11	<b>Total:</b>	<b>2 124,0</b>	<b>357,9</b>	<b>9,2</b>	<b>8,3</b>	<b>7,1</b>	<b>46,4</b>	<b>74,1</b>	<b>122,0</b>	<b>539,0</b>	<b>665,0</b>	<b>295,0</b>	
12	including costs covered by: investor	708,0	357,9	9,2	8,3	7,1	46,4	74,1	122,0	83,0			
13	stockholders	354,0										354	
14	Government of Malaysia	354,0										102	252

Fig.2. Construction schedule for a STS route of 850 km length to be implemented in Malaysia.

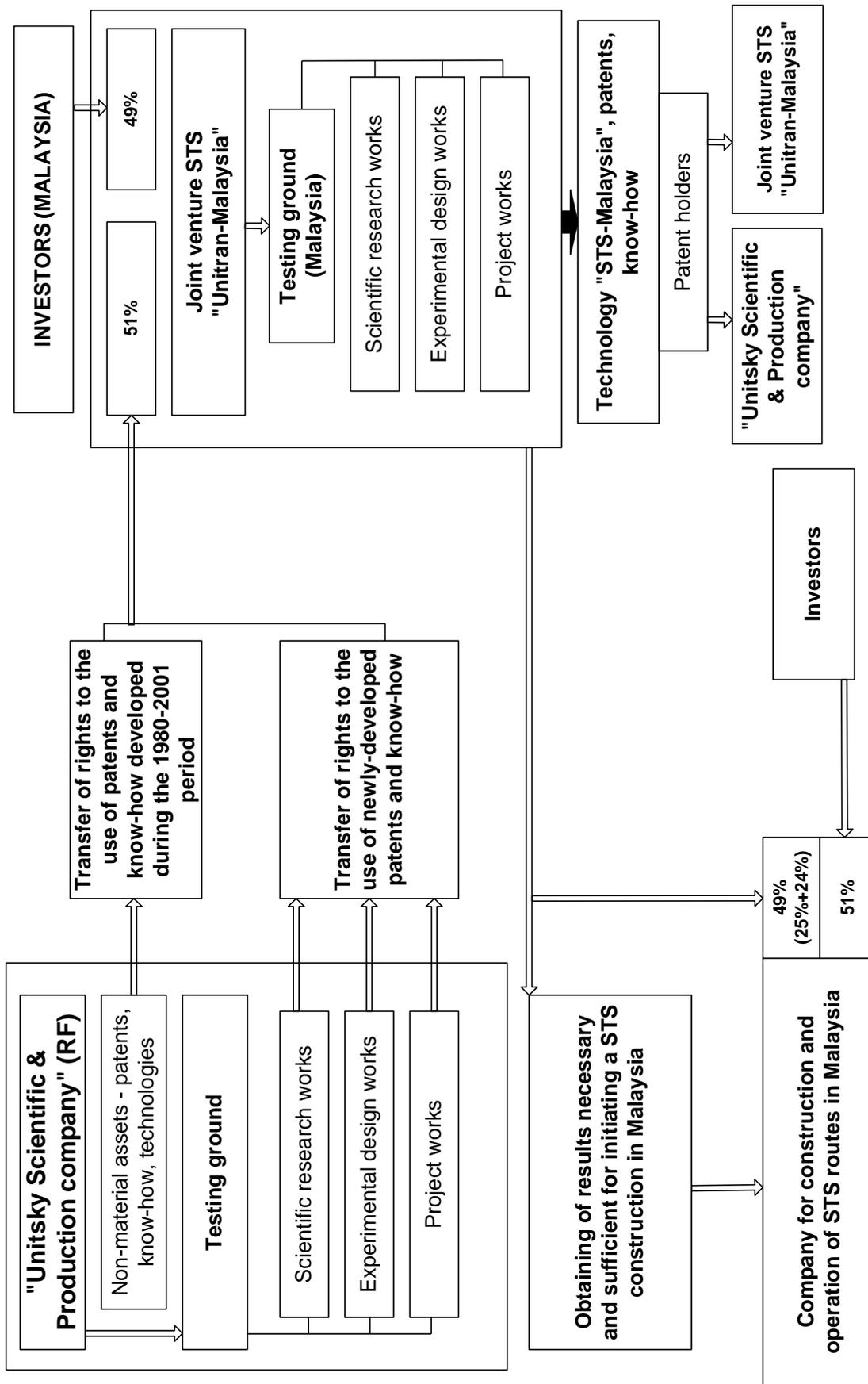


Fig.3. Organisational structure of the joint venture STS "Unitran-Malaysia"

All calculations were made with regard to the following two main operation alternatives: optimistic and pessimistic one.

Passenger and freight traffic flows per 24 hours:

- optimistic alternative - 40,000 pass./24 hours and 50,000 tonnes/24 hours;
- pessimistic alternative - 25,000 pass./24 hours and 30,000 tonnes/24 hours.

The cost of a passenger ticket and transportation of 1 ton of freight per 100 km of travel by a STS shows its considerable advantages in competition with other existing transportation modes. The cost of a passenger ticket is US \$ 5 per 100 km of travel, the cost of transportation of 1 ton of freight is US \$ 10 per 100 km including VAT and insurance costs for passengers and freights.

Net cost of travel and investment indices entailed in a STS route operation are given in tables 1 and 2.

Table 1.

#### Net cost of travel

Alternative	Passenger transportation, US \$, pass./100km	Freight transportation, US \$, ton/100km
Pessimistic	1.1	2.2
Optimistic	0.81	1.7

Table 2.

#### Investment indices for various STS operation alternatives

Indices	Pessimistic alternative	Optimistic alternative
Net Present Value (NPV)	US \$ 2,841.7 million	US \$ 4,967.4 million
Internal Rate of Return (IRR)	26.1%	29.4%
Normal payback period of a route (from the beginning of construction)	5 years	4.6 years
Discounted payback period of a route (from the beginning of construction)	5.7 years	5.2 years
Profitability index	2.8	3.2
Break-even point, including interest rate of credits	20%	13%

Investment project will be stable to the changed volumes of sales, investments, cost of service. The project recoups itself, it is highly profitable with a minimal risk of losses. During all years of the project performance the net annual profit considerably exceeded the total sum of annual payments for the credit reimbursement and servicing.

At the same time the given research which has a nature of "a feasibility study" is in need of further elaboration including a detailed study of the national legal and taxation system of Malaysia and client's requirements.

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