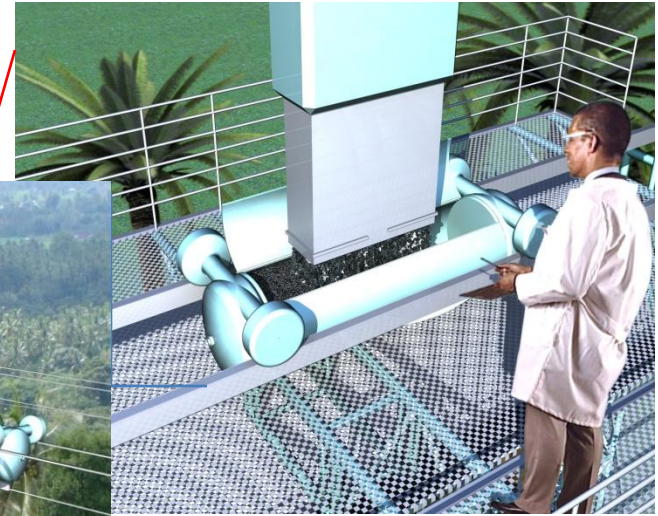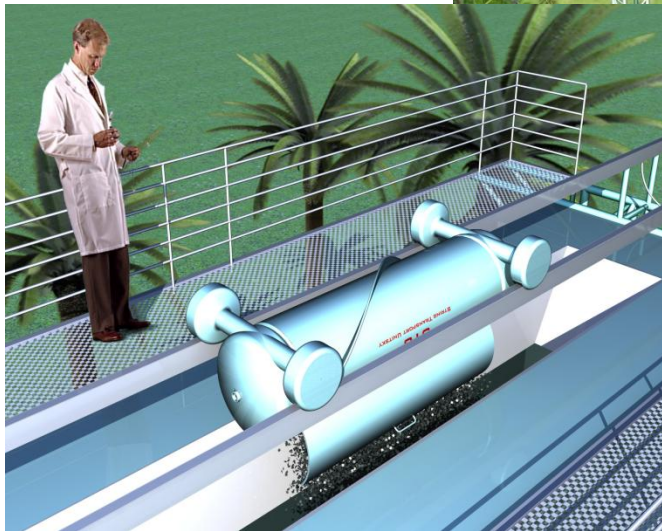# STU technology

Loading terminal is used to load the coal into dump-cars the process is facilitated mechanically and is therefore absolutely reliable

Rolling stock is highly aerodynamic dump-cars. These dump cars are inexpensive non self propelled vehicles, much like railway cars.
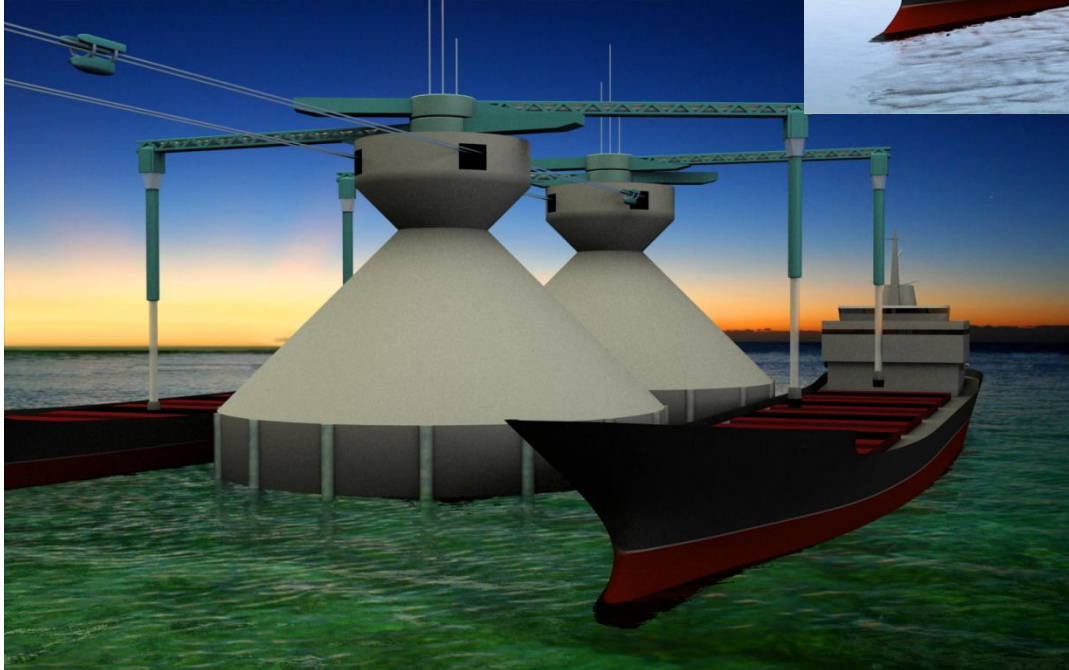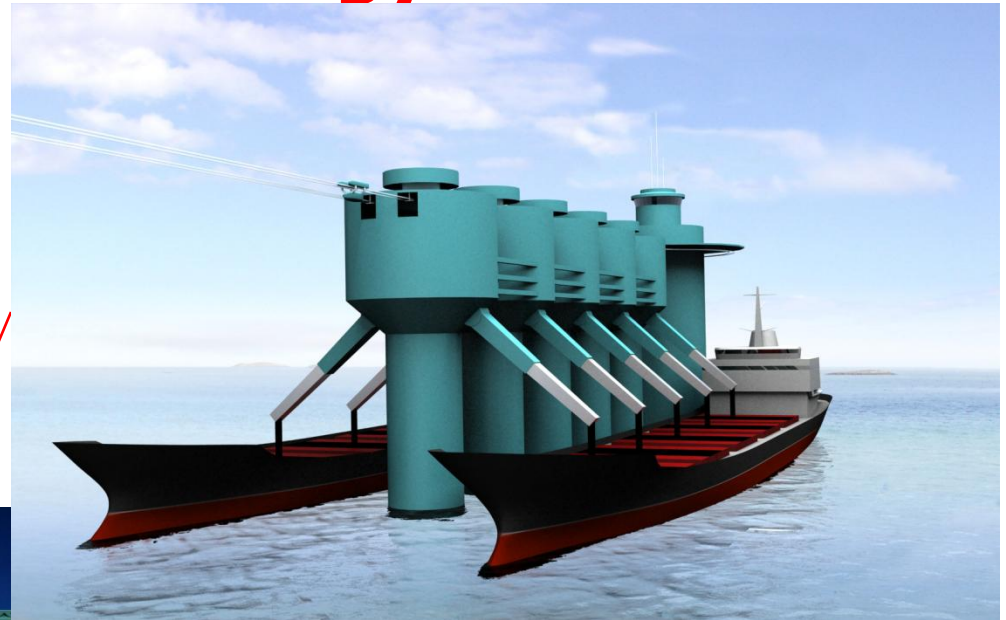
Unloading terminal is used to unload coal into designated dump area. Just like with loading it is mechanical. Unloading and loading are facilitated via single hatch. The dump-car's body is rotating to achieve this.

STU technology

STU advantage is that is enables to load directly into ships, both river barges and seagoing ships

River terminal:
Load 6 x 8 000 ton barges per 24 hours.

Sea terminal:
Load 100 000 tons per 24 hours and more

STU technology advantages

1. Lowest capital cost

- 3 times less than railroad

2. Lowest running cost

- 5 times less than railroad
- 20 times less than barge

3. Seizing worldwide market with 10's of billions of dollars potential

- China 300 MTA this year alone
- Australia $5.4 billion for coal transport in Queensland alone
- Russia just one project worth over $3 billion
- Indonesia South Sumatra coal 3 billion ton transportation cost $ 5.6 billion
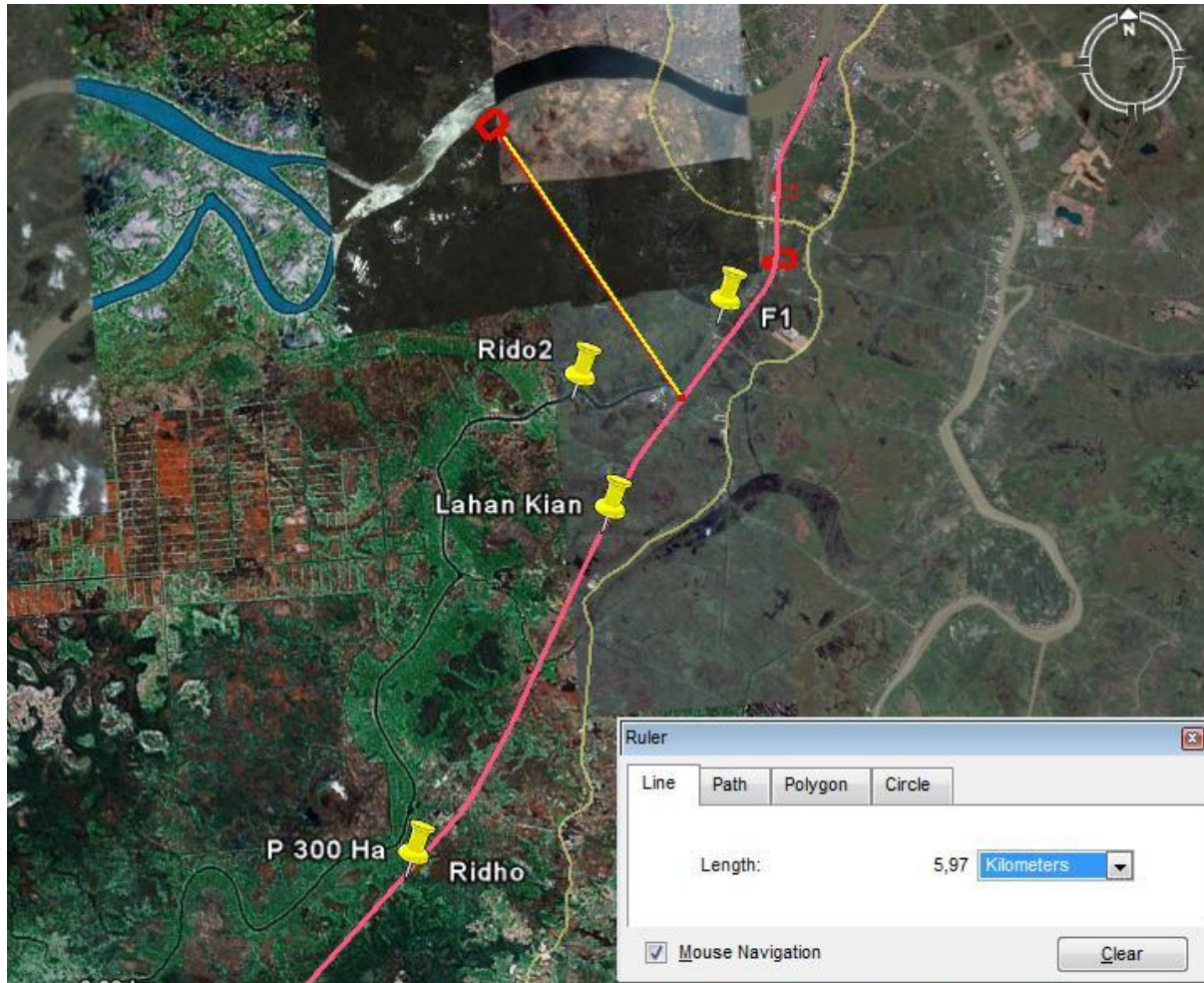
4. Fully scalable and adoptable

- Any capacity (1 MTA to 50 MTA +)
- Any terrain (swamps, jungle, desert, hills etc)
- Any climate (-50° C to + 50° C)

STU demonstration-commercial mining transportation line

System's length:
6 km

Operating capacity:
5 MTA
Max capacity:
 20 MTA

Running cost (O&M):
$ 0.0031 per ton/km

Implementation 260 km line 20 MTA saving of
$ 1.4 billion
over 10 years

STU demonstration-commercial mining transportation line implementation schedule and costing break down

Calendar implementation plan for developmente of STU Palembang Port commercial-demonstration mining line 6 km and maximum capacity of 20 MTA

thous. USD

№	Stage	2009										2010								Total
		3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
A	Site study and preparation works	30	30	30	30	30														150
B	Design works	543	569	649	600	650	628	368	340	144										4491
C	Development of line's testing programm							20	20	20	20	20								100
D	Preparation for, construction and assembly	50	50	50	94	526	653	675	690	712	712	812	812	804	816	618	623	216	176	9089*
E	Contingency	10	10	10	20	20	20	20	20	20	20	20	20	30	30	40	40	40	40	430
F	General business expenses: payroll, travel, accoounting, auditing, insurance, IP protection, legal expences, marketing	350	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	2730
	Total	983	799	879	884	1366	1441	1223	1210	1036	892	992	972	974	986	798	803	396	356	**16990**

* Construction costs given for international standarts and can be less in Indonesia

Cost of the line in serial production	10328
Business and technology development cost	6662

- Line is more expensive because it is designed to demonstrate max capacity of 20 MTA instead of required 5 MTA
- This is needed to show to banks and prospective purchasers
- Line is more complicated than has to be for the same reason (3 drive stations vs 2 required)

**The only alternative to STU is the conveyor.
Cost of this capacity conveyor $21 million (without loading terminals)**

STU maximizing ROI on Priamanaya's coal assets

Putting into operation of demonstration line will enable to obtain bank financing for the construction of 260 km line to transport coal from Priamanaya's Lahat coal mine to sea vessels

*Transportation costs of 20 MTA over 260 km - STU vs Railroad*
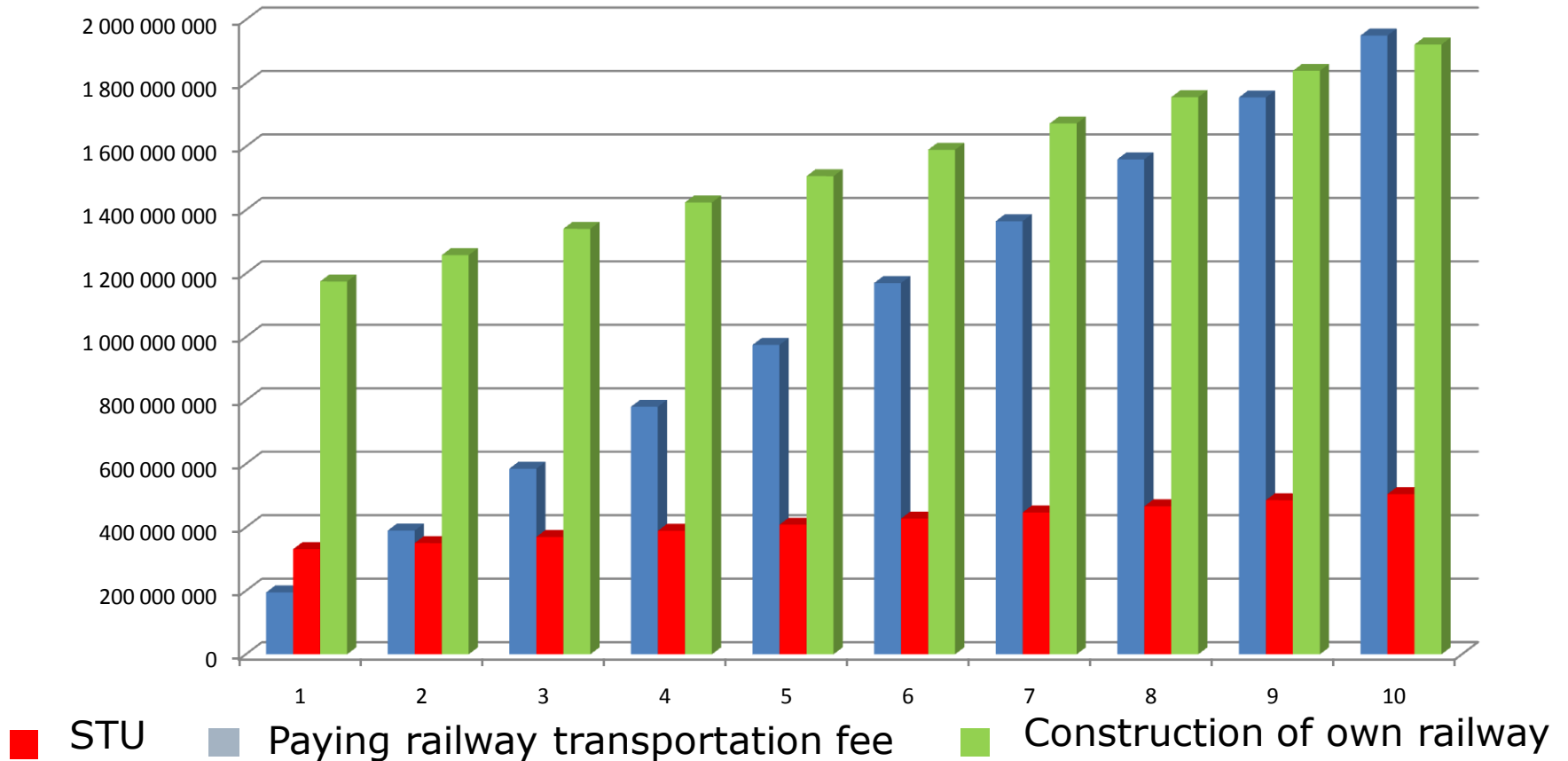
Legend:
- STU (red)
- Paying railway transportation fee (blue)
- Construction of own railway (green)

Difference between investing in STU line vs paying railway for transportation or constructing own railway over 10 years
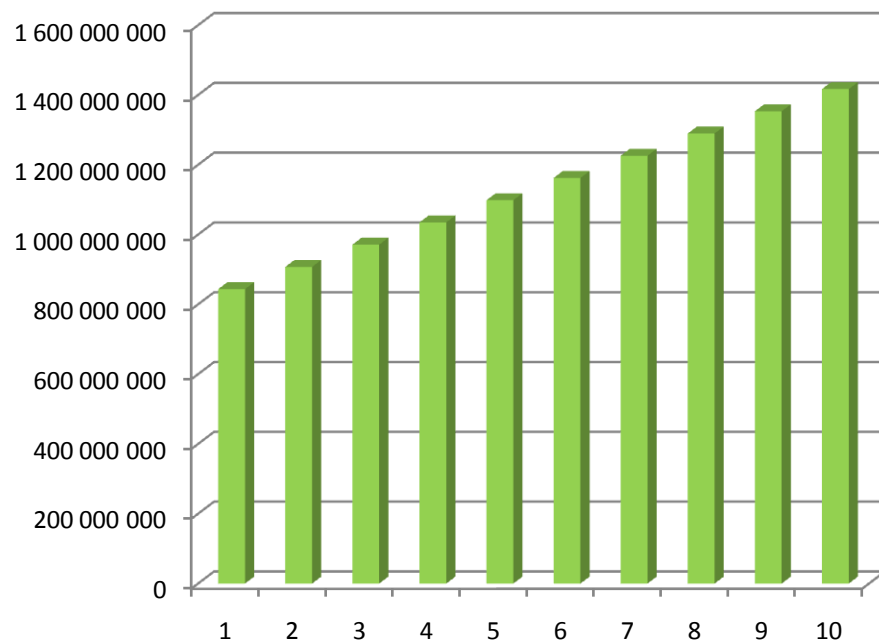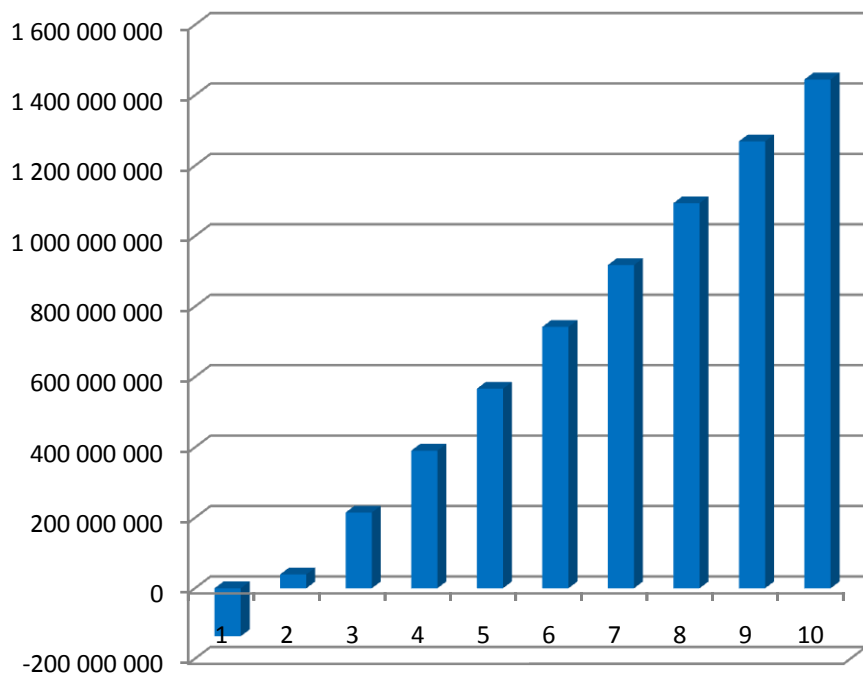
Paying railway transportation fee

Construction of own railway

Difference between investing in STU line vs paying railway for transportation or constructing own railway over 25 years
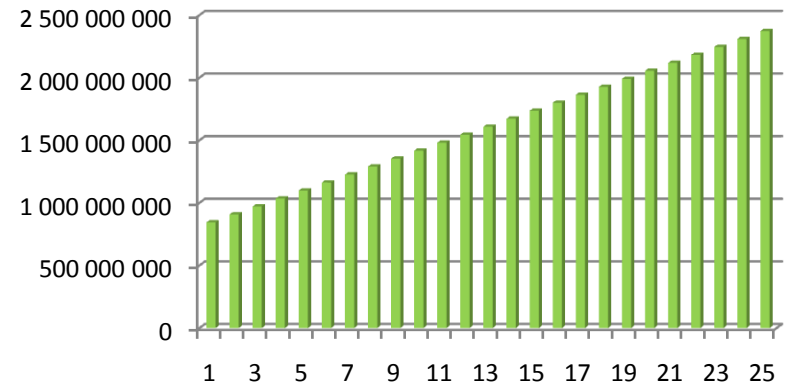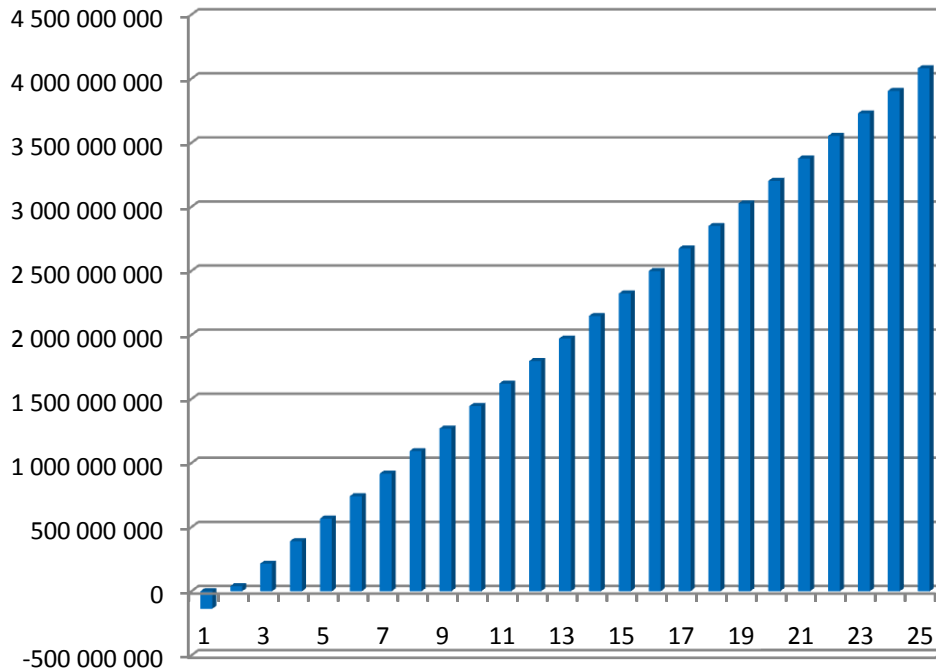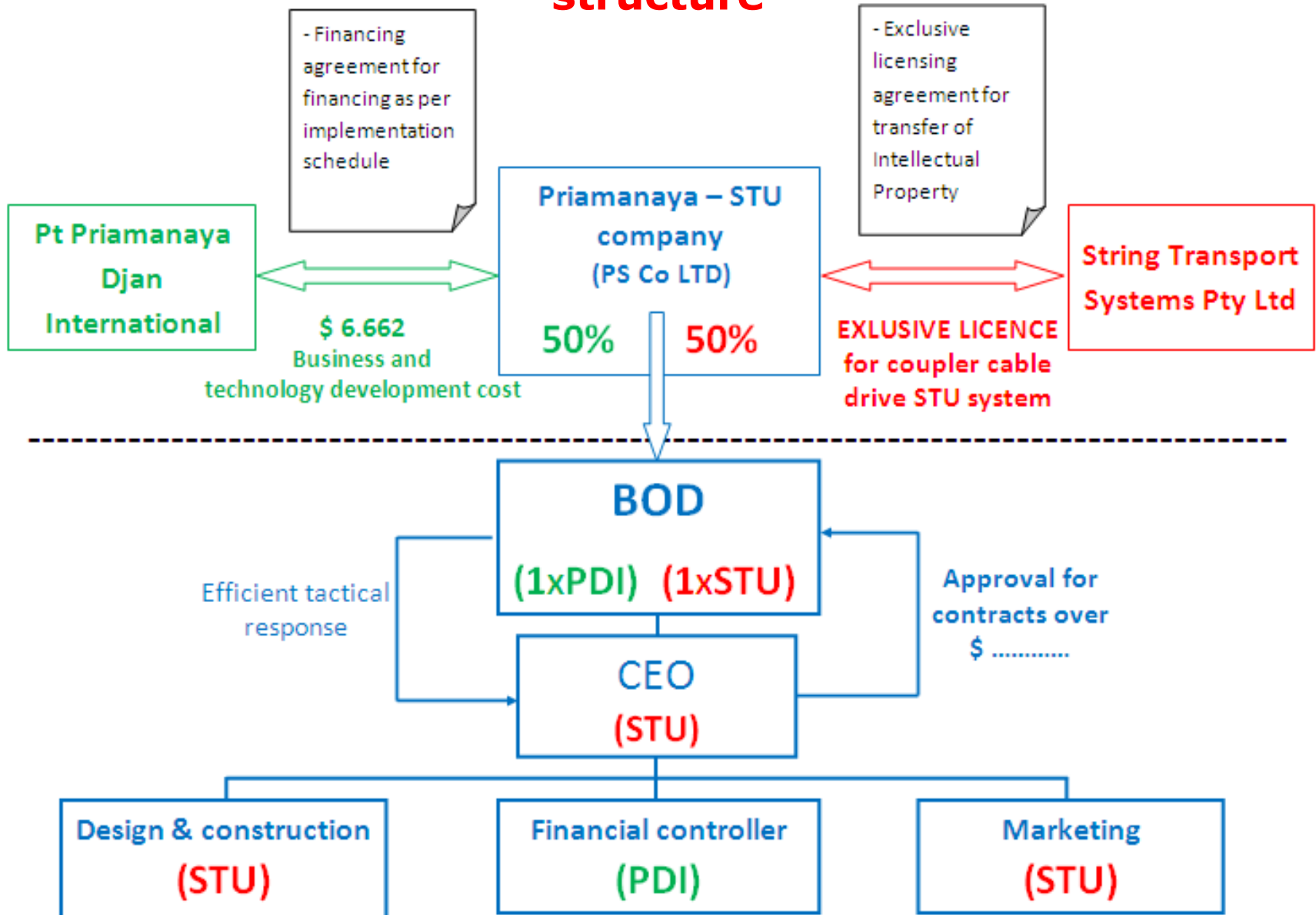

Paying railway transportation fee   Construction of own railway

Scheme of the JV company control and management structure
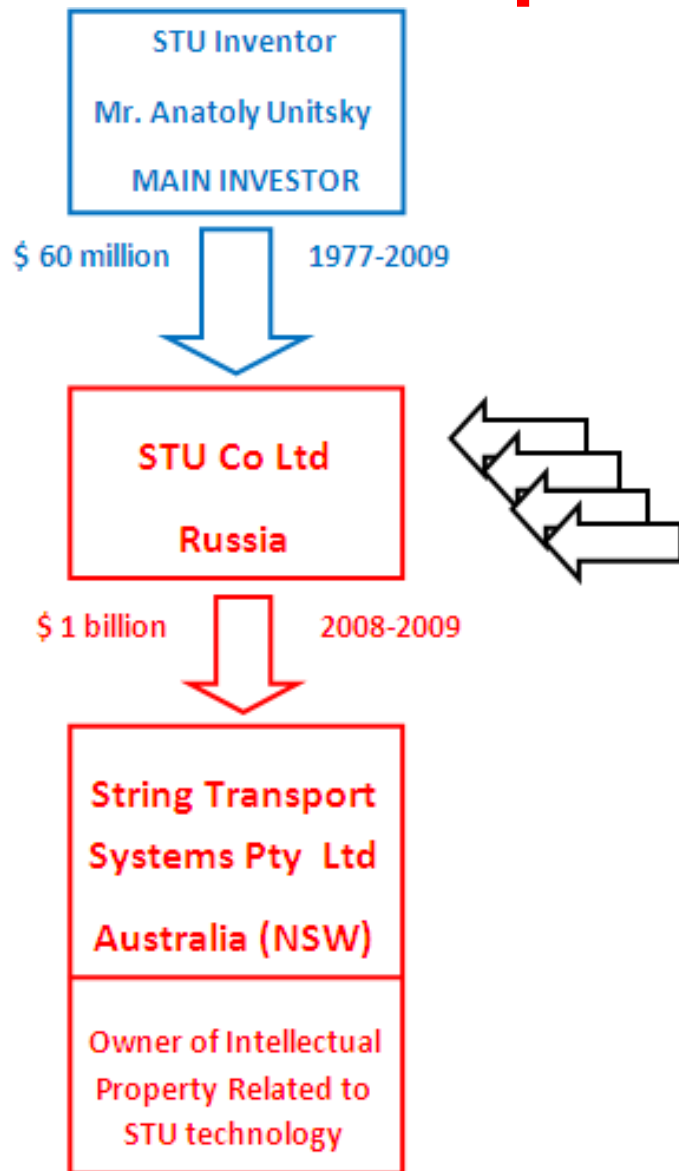
Appraisal of the intellectual property

Market value of the STU technology

USD $700,000,000 to USD $1,200,000,000.

Appraised by independent consultants with international license

STU Development Monetary Contributions and previous Investors

STU Inventor

Mr. Anatoly Unitsky

MAIN INVESTOR

$ 60 million   1977-2009

STU Co Ltd

Russia

$ 1 billion   2008-2009

String Transport Systems Pty Ltd

Australia (NSW)

Owner of Intellectual Property Related to STU technology

GRANTS			
YEAR	AMOUNT	INVESTOR- GRANTOR	OUTCOME
1988	$ 200,000	USSR Peace Foundation USSR Federation of Cosmonautics	Conversion of scientific theory into commercially applicable technology commenced
1998	$ 200,000	UN HABITAT	Development of STU application for inner city transportation worldwide
2001	$ 300,000	GOVERNOR Alexander Lebed	World's first full scale STU demonstration line was constructed
2002	$ 150,000	UN HABITAT	Development of STU application for inner city transportation worldwide
INVESTOR			
2000	$100,000	Mr. Dmitriy Tereokhin	Failed to comply with the terms of agreement at the amount of $ 4.9 million
2008	$ 0,000	Mr. Segey Polonskiy	Failed to comply with the terms of agreement at the amount of $ 10 million
2008 - 2009	$ 1,000,000	Mr. Victor Uzlov	Day to day technology development