TOPIC A

Auto-Motor Industry is active in the production of cars, both racing and passenger cars. It is presented with a very good opportunity to import 20 million tons of aluminum for 23 € per ton, a price which is considered by the company to be extremely advantageous. This is why other companies are interested in this order.

If Auto-Motor Industry introduces the product it is certain that it will eventually earn € 600 million from car sales at the end of the year. However, the US government may reject the request for the import of aluminum, because its diplomatic relations with the country of origin are not in a good position. In this case the agreement will be canceled but Auto-Motor Industry will be forced to pay a fine of 2.5 € per ton in the country of origin.

The CEO of Auto-Motor Industry estimates that about half of the applications are rejected. Auto-Motor has at its disposal 4 different moves that it can make.

The first is to buy the ore and hope for a subsequent approval of the application by the relevant US public body.

The second is to submit the application, to wait for the decision of the competent body and if the application is approved, to proceed with the purchase. In this case, the CEO of Auto-Motor estimates, from his previous experience, that there is about a 70% chance that another competitor will close the deal.

The third move is to hire a large Chicago-based consulting firm, and ask for its assessment of whether the application will be approved or not. The consulting company requests a fee of € 0.6 million for the provision of its services. The CEO of Auto-Motor again estimates that the company's report will be positive with a 90% probability. However, in case the application is rejected, the information of the consulting company is not enough and the probability of its report being negative is 60%.

Finally, Auto-Motor can enter into an agreement with General Motors, which claims that it can issue the license almost certainly (90%). In return, Auto-Motor wants to give it 1000 passenger cars (at a cost of € 5500 Auto-Motor) within the next year and a 5% profit on car sales at the end of the year. In the event that it fails to issue the license, General Motors will pay € 10 million in compensation to Auto-Motor. In this case Auto-Motor will be able to sell the aluminum for 4 € per ton to a European company with a probability of 45%, otherwise it will remain in stock.

TOPIC B

Auto-Motor is even active in the field of distribution of cars that it produces, but at the same time it also distributes cars of other producers due to its large network.

He recently struck a deal with a small car company in Russia. This company has only 3 factories in Russia and hired Auto-Motor to distribute the cars it produces every year. This small company has at its disposal 4 warehouses, where every year it must supply them with at least a certain amount of cars based on agreements it has made. In order to maximize its profits, Auto-Motor wants to reduce transportation costs to a minimum.

Auto-Motor has at its disposal the costs of transporting the products and the expenses together with the salaries of the employees in normal numbers from each warehouse in each city. All the above are listed in the table below. The amounts represent thousands of €.

	Shipping Data for GOC				
	Store 1	**Store 2**	**Store 3**	**Store 4**	**Output**
Factory 1	1,5	1,8	1,9	1,3	500 500
Factory 2	2,1	1,4	1,5	1,7	750
Factory 3	2,5	1, 2	1.7	2.2	700
Demand	300	600	200	450	

Auto-Motor will have revenues from this cooperation € 2 million. In case not all the cars of the small company are sold, Auto-Motor can buy them if it wants them for 5000 € each.

As part of your duties within the company, you are invited to work out the optimal car transportation program that will have the lowest possible cost for the company.