



GAIA

AEROSPACE

Student Research Project / Master Thesis

Business Model Analysis of a Corporation for the Production of Air Launch Systems

The launch of orbital launch vehicles with the aid of a carrier aircraft, also called air launch, represents a promising concept for flexible and independent access to space for the Federal Republic of Germany. As a result of this interest, studies have already been carried out on the feasibility of a German spaceport, in the course of which Rostock Airport was suggested for expansion into a Spaceport Germany. The launch itself is to take place over the North Sea, with the rocket carrying small satellites into a sun-synchronous orbit.

A key issue in realizing such a concept is the economics of the production operation for manufacturing the air launch systems. In this context, the corporation has to deal with a large number of factors and their uncertainties, which can pose a risk to the economic success of the corporation. These include the demand and success of launch providers, the selection of infrastructure for manufacturing and testing the launcher, as well as the required development and maintenance effort for the launcher system.

Therefore, this thesis will conduct a business model analysis for an appropriate and economically successful manufacturing operation.

The work is divided into the following steps:

1. Literature research on the demand from air launch providers, machinery and infrastructure for manufacturing and testing of launchers, supply chain management as well as factory and logistics planning
2. Definition of a production and test facility by means of a morphological box according to the requirements of the considered air launch system
3. Definition of an appropriate revenue and cost model including uncertainties
4. Execution of business simulations in a Matlab environment
5. Optimization of the operation with respect to probability of success and profitability
6. Critical analysis of the results and presentation of further potential for optimization

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Execution only after consultation of supervising university institute

