

Part 8

No. 1



C.O.S.T ENGINEERING™

„Design and Marketing of Rockets“

Lecture Series given by Dr.-Ing. Robert Alexander Goehlich



- Part 8: Case Study for a typical Suborbital Rocket for Space Tourists -

Content

No. 2



- **General**
- **Case Study for Suborbital Rocket**
 - Design
 - Mass Characteristics
 - Flight Profile
 - Economic Performance
- **Definition**
 - Cost Engineering (Practice VIII)
- **Requests from Audience for Lectures**

General Contact

No. 3



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General Goal of Today's Lecture

No. 4



„You will learn about details, pros and cons of a typical suborbital rocket for space tourists.“

Hopper Concept

Suborbital Flight for Satellite Delivery

No. 5

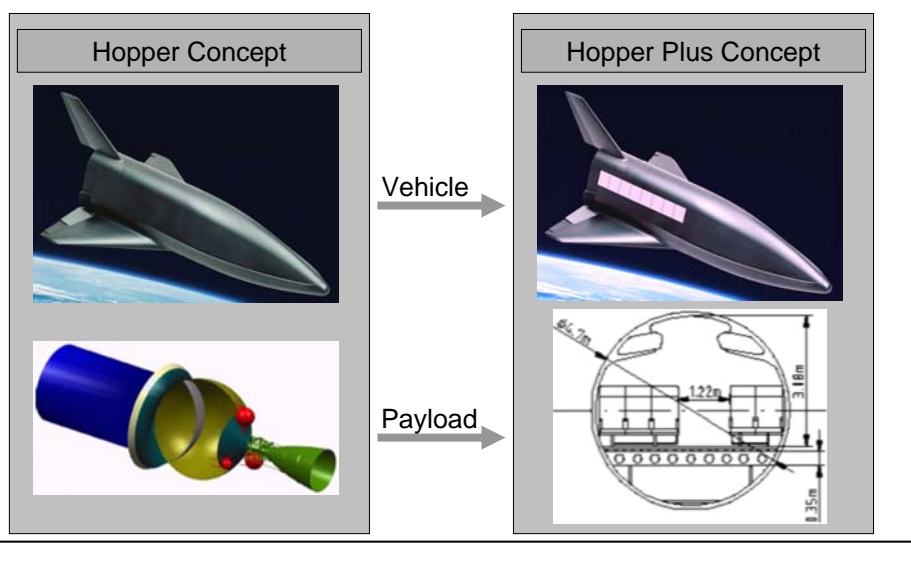


(movie)

Hopper Concept's Suitability for Tourists

Modifications

No. 6



Vehicle Design (Hopper Plus)

Outside View

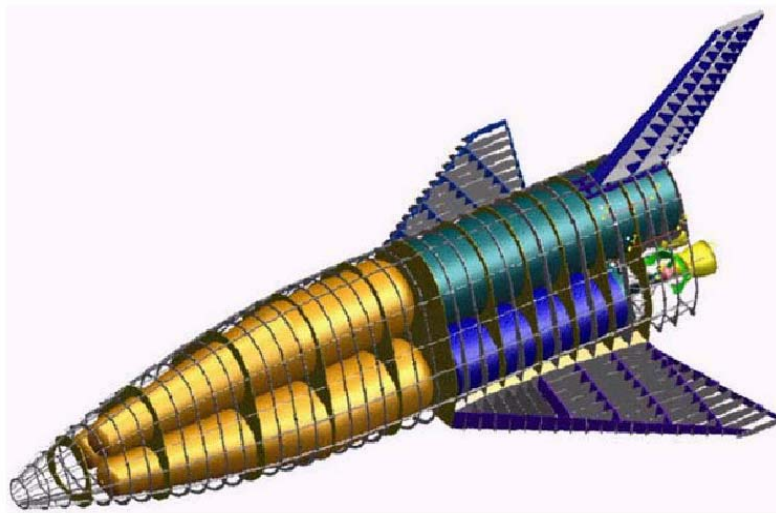
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Vehicle Design (Hopper Plus)

Interior View

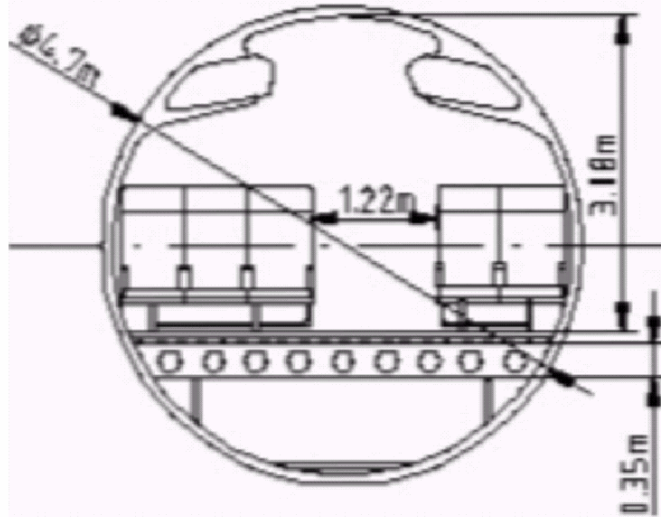
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Vehicle Design (Hopper Plus)

Passenger Compartment (Interior View)

No. 9



Mass Characteristics (Hopper Plus)

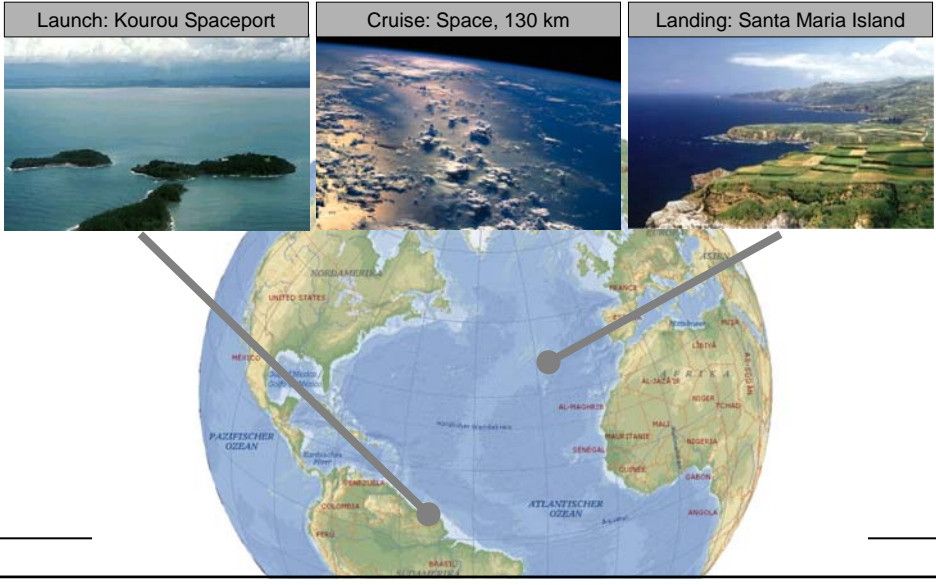
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Subsystem	Vehicle	Pax Module	Total	Unit
Cold Structure	16,8	2,1	18,9	Mg
Hot Structure	12,6	0	12,6	Mg
LH2 Tanks	6,2	0	6,2	Mg
LO2 Tanks	3,9	0	3,9	Mg
Equipment	9,3	1,7	11,0	Mg
Engines	8,4	0	8,4	Mg
Recovery	2,0	0	2,0	Mg
DRY MASS	59,2	3,8	63,0	Mg
Payload	0	3,0	3,0	Mg
Propellants	394	0	394	Mg
TAKE-OFF MASS	453,2	6,8	460,0	Mg

Flight Profile (Hopper Plus)

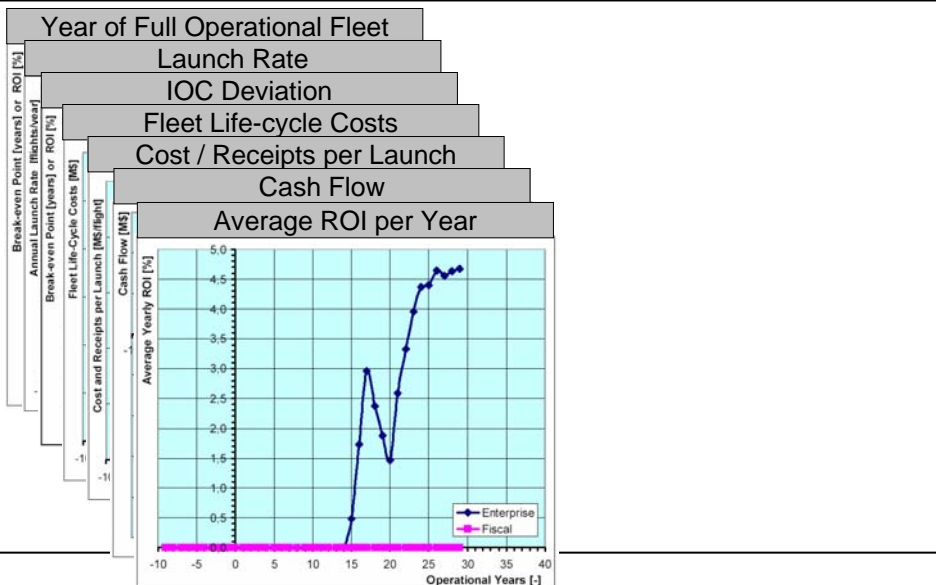
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Economic Performance (Hopper Plus)

Simulation with TRASIM

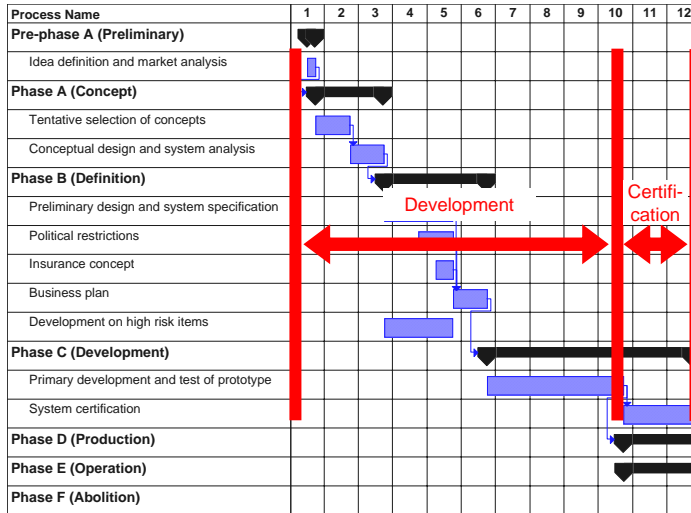
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Economic Performance (Hopper Plus)

Example: Master Schedule

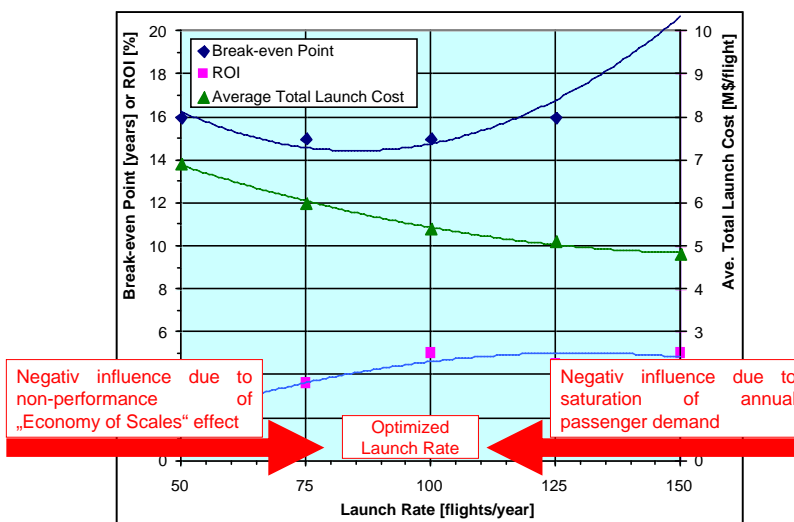
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Economic Performance (Hopper Plus)

Example: Optimized Launch Rate

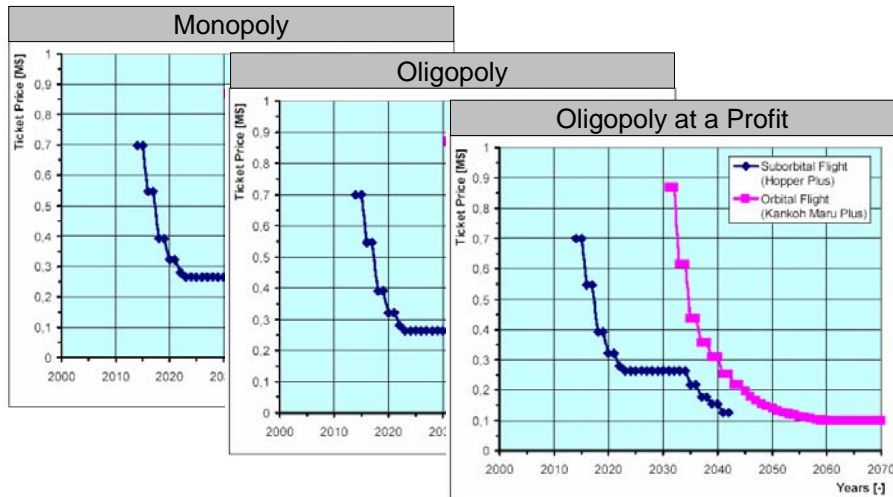
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Economic Performance (Hopper Plus)

Example: Price Strategy

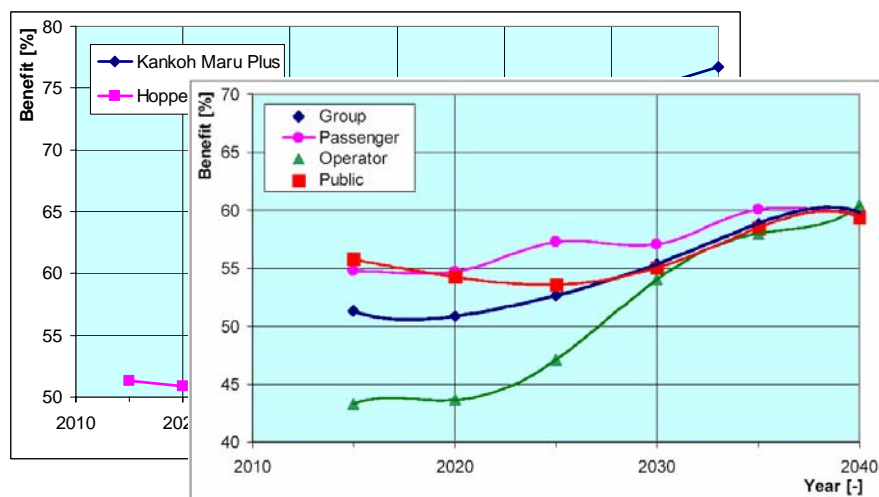
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Benefit Performance (Hopper Plus)

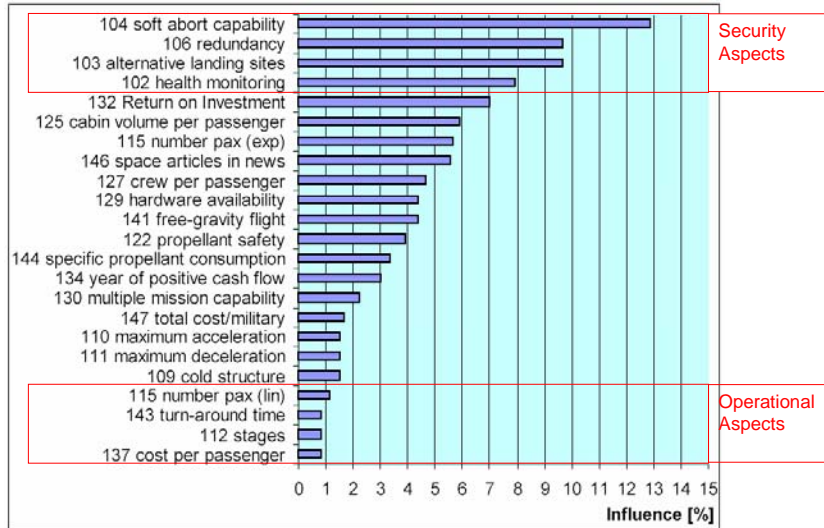
Benefit of all Sub Objectives

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Benefit Performance (Hopper Plus)

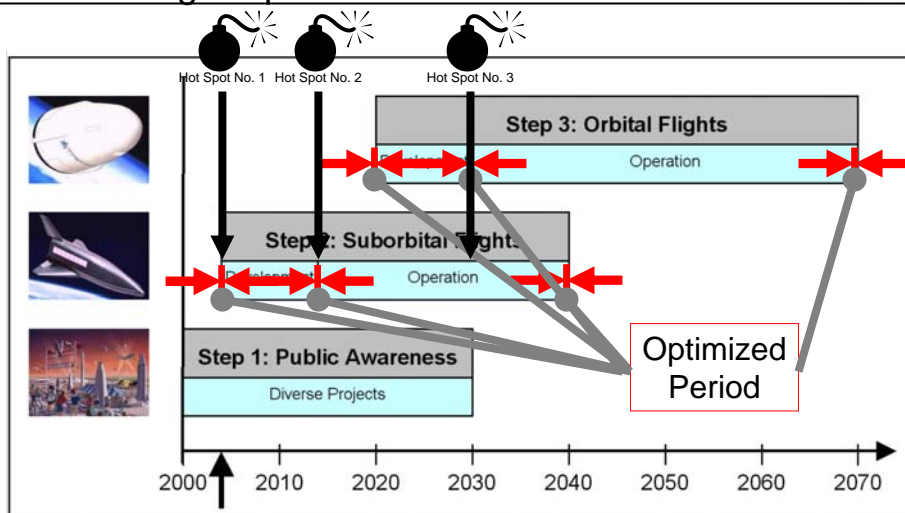
Contribution of Benefit Indicators to Total Benefit



Results from Case Study

Promising Steps...

No. 18



Definition

Definition of Cost Engineering (Practice VIII) 19



Case C

- *Step 8: Prepare a layout for seat arrangement of an suborbital tourist rocket.*

