



THE AIRSHIP AS A MULTIFUNCTIONAL AERIAL PLATFORM

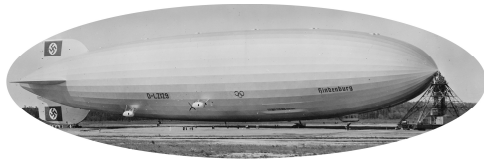
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Summary:

- 1 Motivation
- 2 Road Map
- 3 Features
- 4 Options

Motivation

Road Map

Features

Options

- **Increasing demand for better supply of transport services:**
 - **Reliability** (delivery time of goods);
 - **Speed** (compression of travel time);
 - **Increased connectivity** (seamless transport).
- **Sustainable development is a pillar of EU strategy;**
- **Increasing congestion of land-based transport networks;**

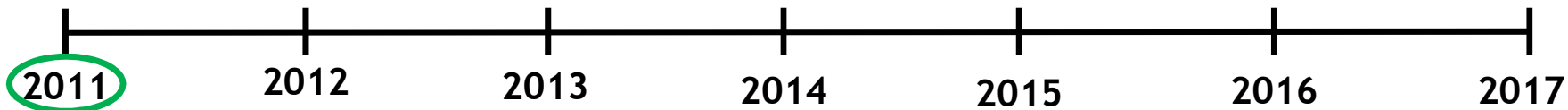
Motivation

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- **Scarcity of resources** (land, budget, etc.) for **significant expansion** of transportation networks;
- **Increased urbanisation of EU and other regions:**
 - **Increase demand for transport services from/to and within urban areas.**



Airships Economic Viability in the Tourism Sector in Portugal

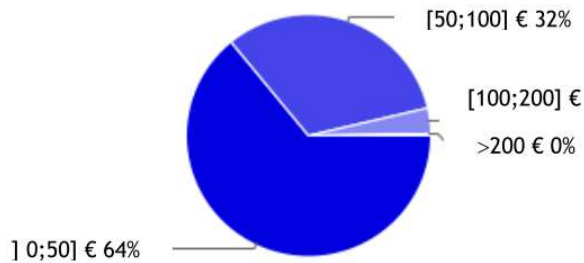


Figure 1: Ticket price for a 30-minute journey



Figure 2: Preference for tourist routes in Azores and Madeira Islands

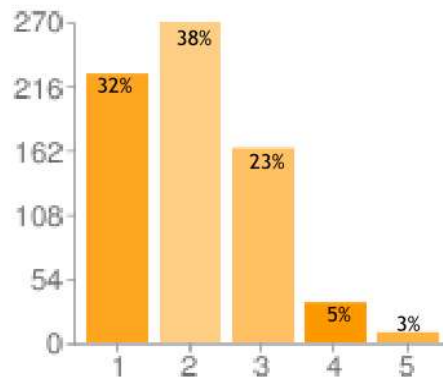


Figure 3: Satisfaction in the current access to information about airships

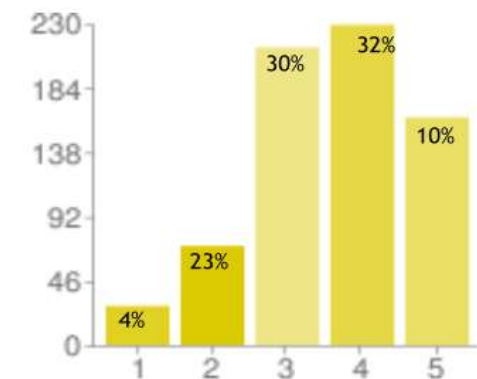


Figure 4: Importance about information to change trust in airship transportation

Motivation

Road Map

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Options



Motivation

Road Map

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Options



Figure 5: Anchoring system for an airship

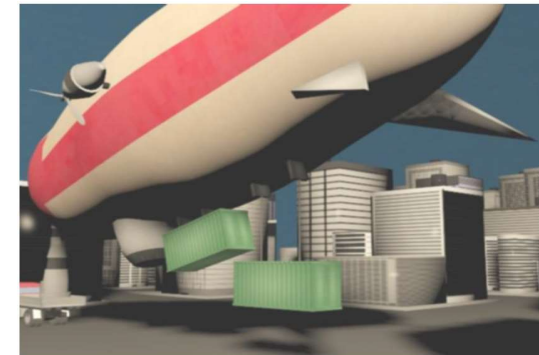


Figure 6: Unloading of goods

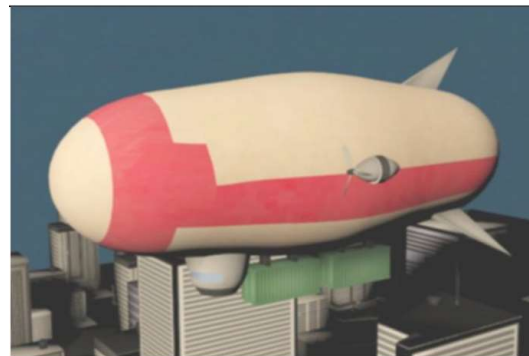


Figure 7: Cruise flight



Figure 8: Loading of goods



Operations of a Hybrid Airship
over Congested Areas

Motivation

Road Map

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Figure 9: Route Up View, APSF “Airship Port Surface-level”,
APUD1 “Airship Port Upper Deck 1”, APUD2
“Airship Port Upper Deck 2”



Figure 10: Airship surface-level and obstacle limitations surfaces



Conceptual Design of a Hybrid Airship

Motivation

Road Map

Features

Options

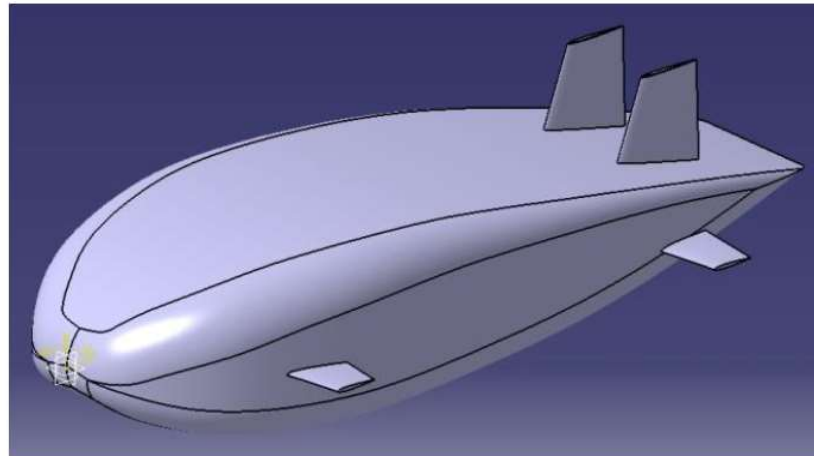
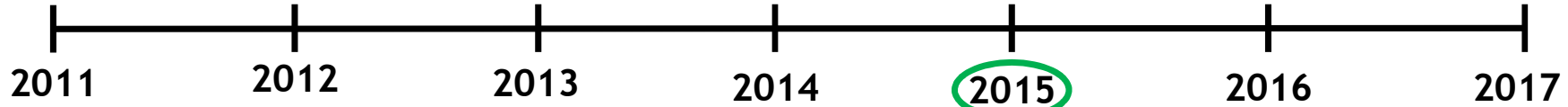


Figure 11: Urblog (Hybrid Airship)



Stability and Control of Hybrid Airships: a new concept

Motivation

Road Map

Features

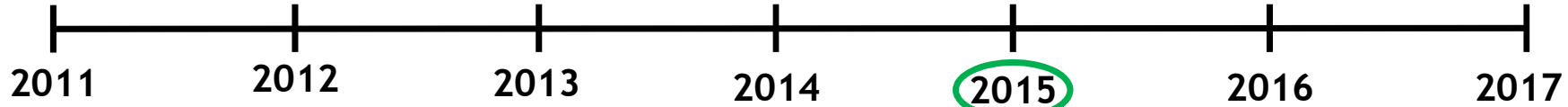
Options



Figure 12: Prototype 1.5 in flight



Figure 13: Prototype 2.5 in ground testing



Manufacturing Techniques of a Hybrid Airship Prototype

Motivation

Road Map

Features

Options

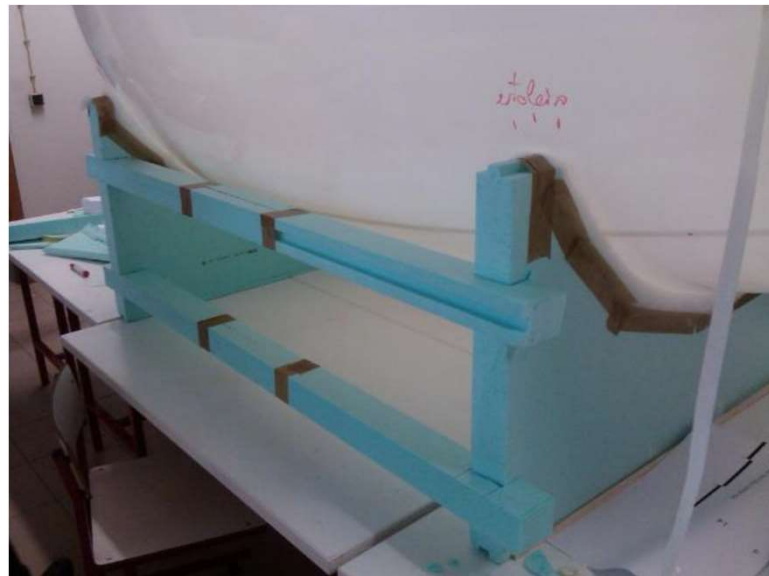
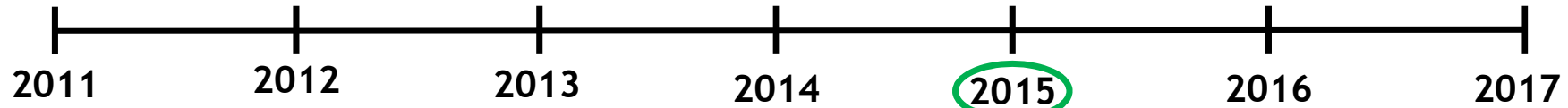


Figure 14: Support jig



Figure 15: Manufactured gasbag



Manufacturing Techniques of a Hybrid Airship Prototype

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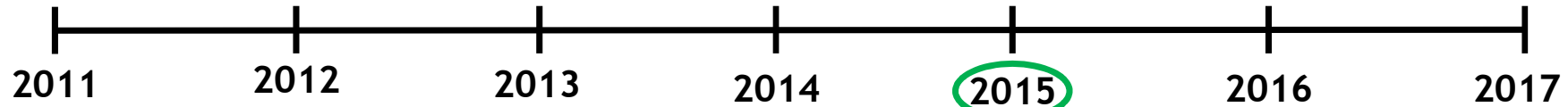
Options



Figure 16: Internal structure



Figure 17: Internal structure assembled with gasbag



Conceptual Design of the Gondola of a Hybrid Airship including Loading and Unloading Mechanisms

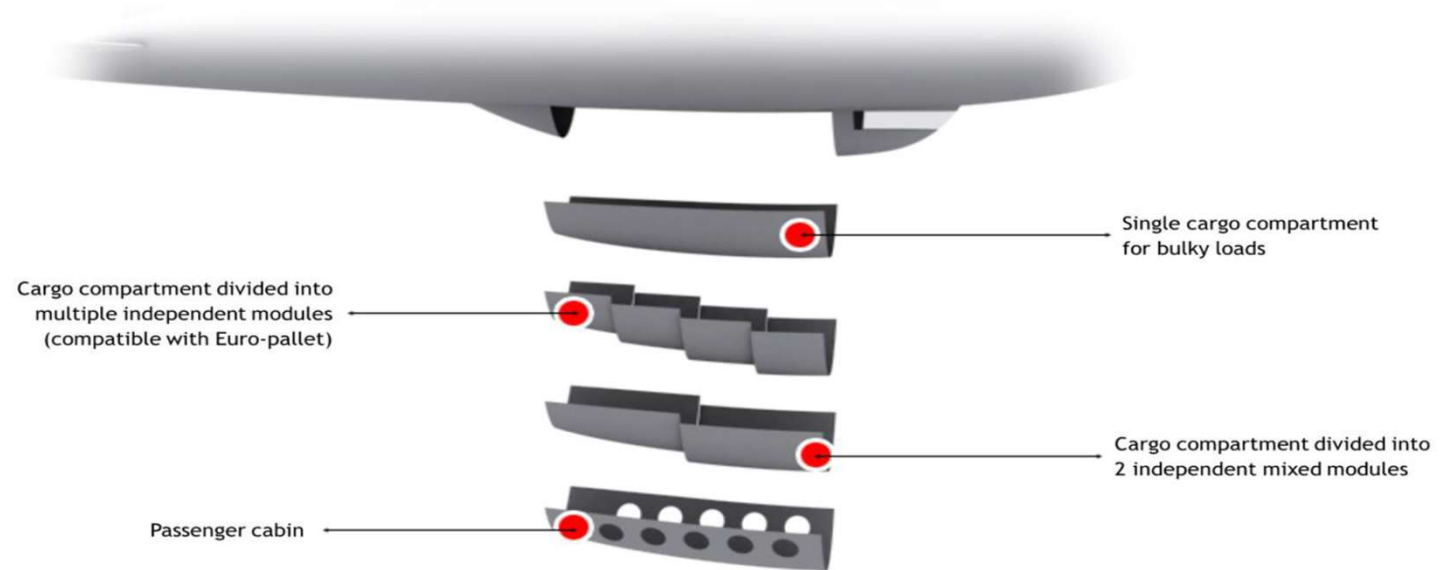


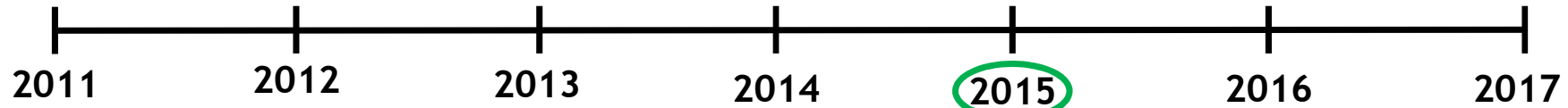
Figure 18: Gondola concept

Motivation

Road Map

Features

Options



Conceptual Design of the Gondola of a Hybrid Airship including Loading and Unloading Mechanisms

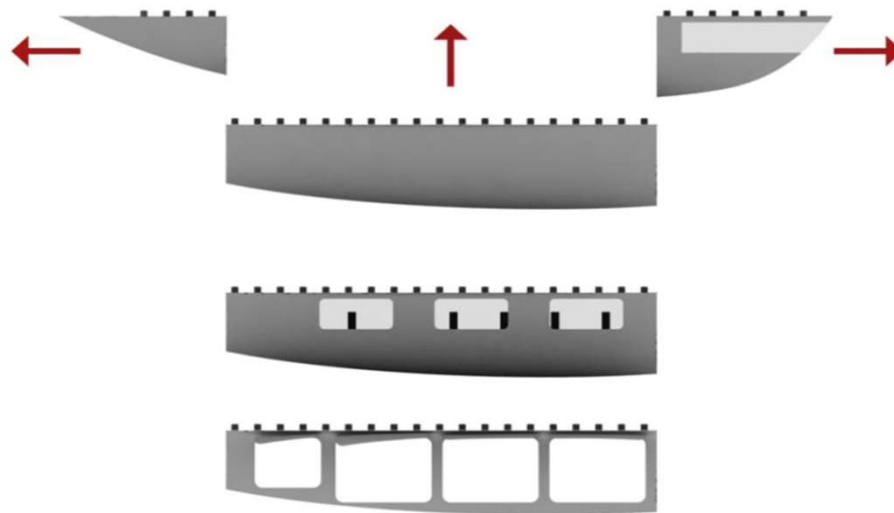


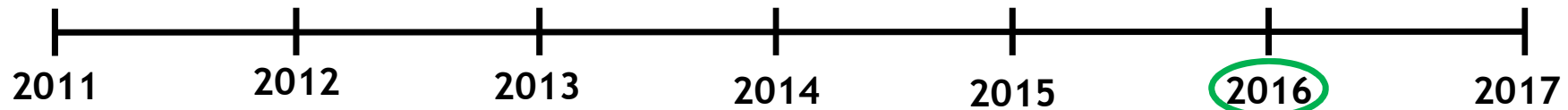
Figure 19: Gondola modular multiplicity feature

Motivation

Road Map

Features

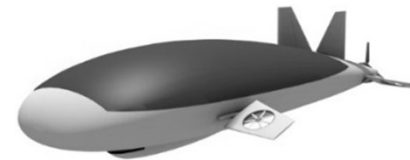
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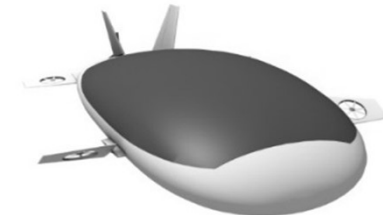
Patents Publication (PT 108532 A and WO2016195520 A)



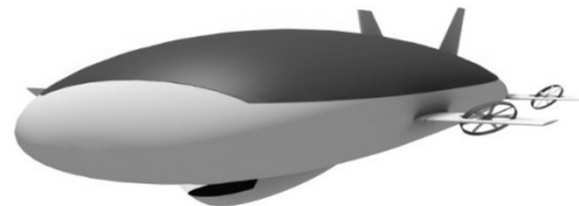
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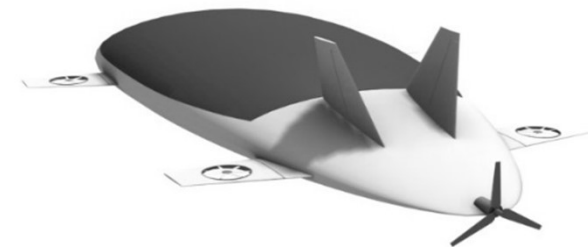
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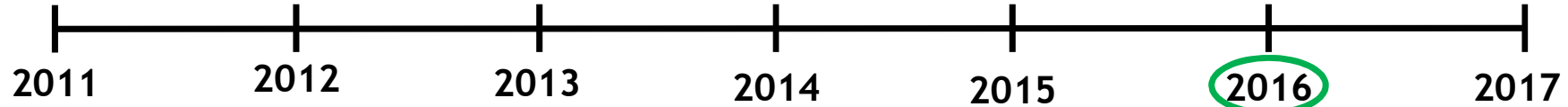
Motivation

Road Map

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Figure 20: UrbLog hybrid airship patent concept



Patents Publication (PT 108532 A and WO2016195520 A)

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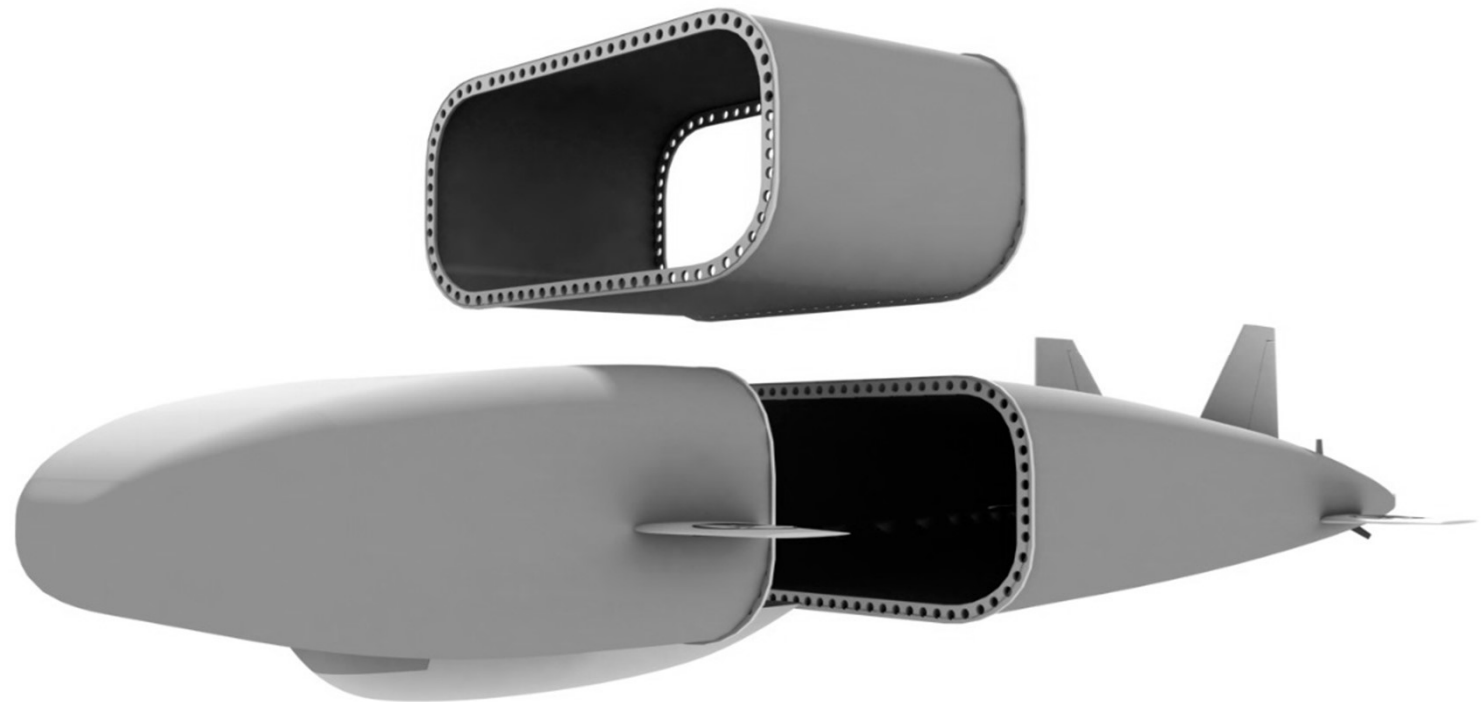
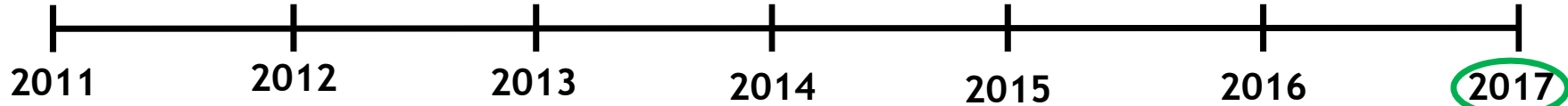


Figure 21: UrbLog hybrid airship morphing concept



UrbLog - Prototype 3: Joint System Concept Proposal

Motivation

Road Map

Features

Options

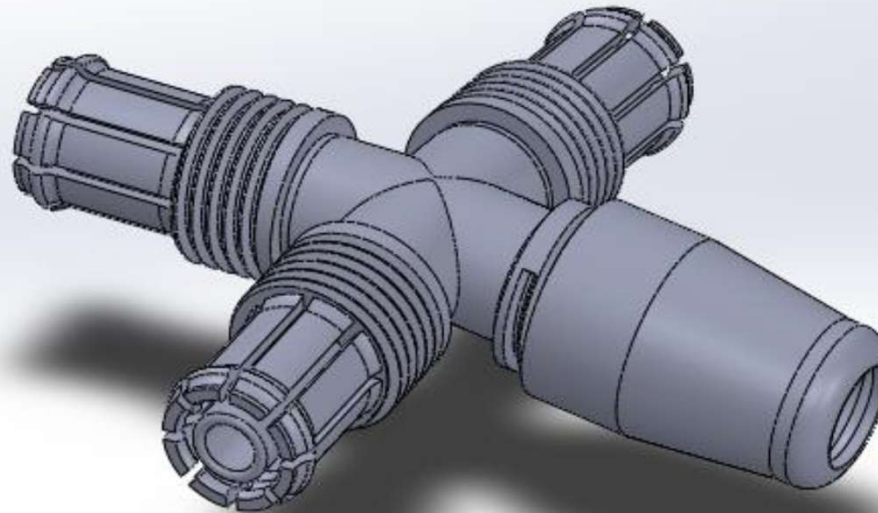
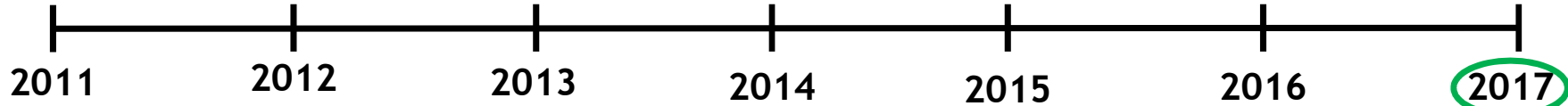


Figure 22: Joints system

Figure 23: Manufactured joint



Numerical Simulation of an Air Vehicle

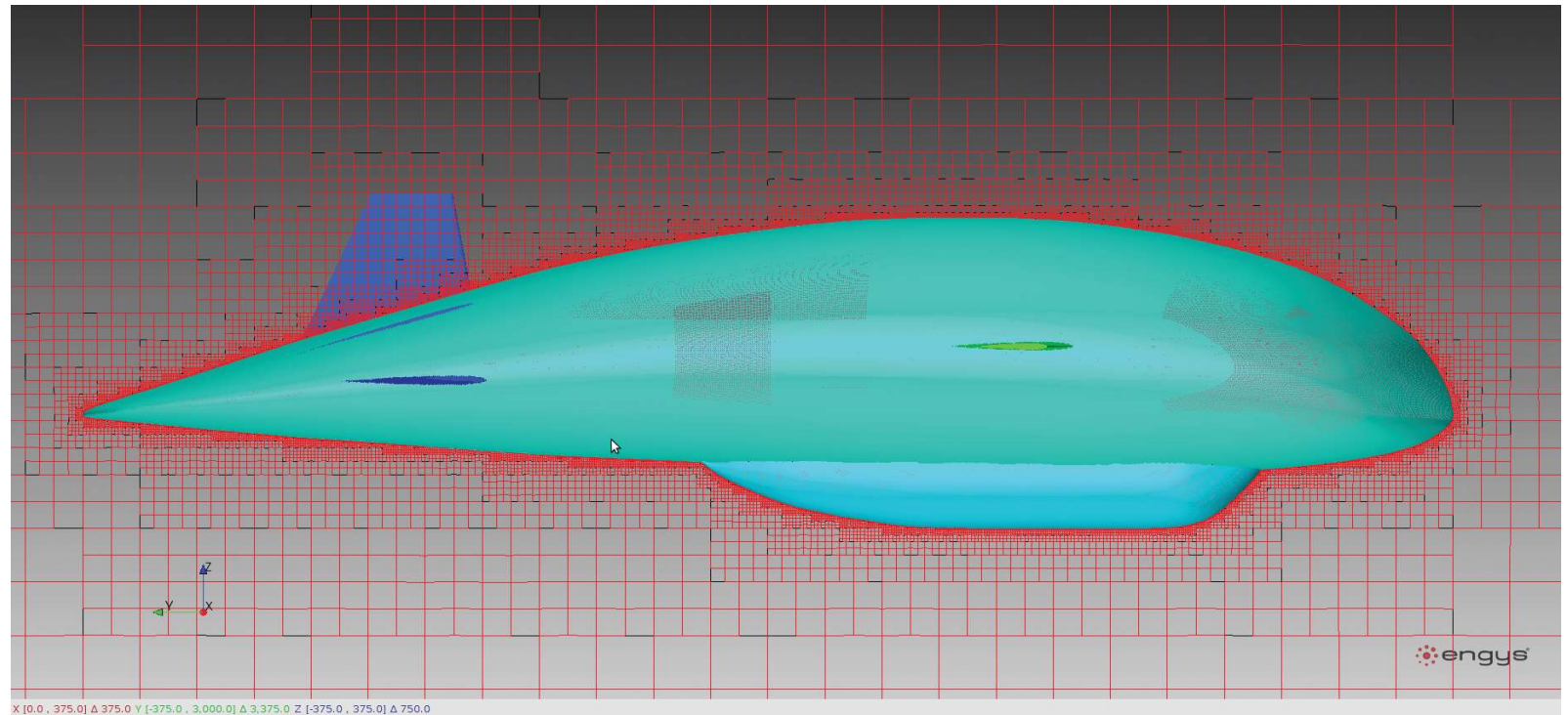


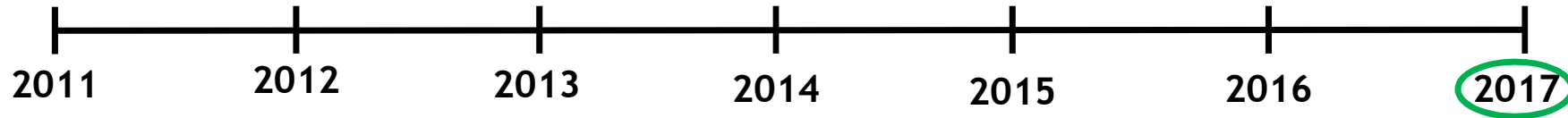
Figure 24: Mesh view created on the surface of the vehicle

Motivation

Road Map

Features

Options



One Concept, Two Vehicles

Features		Option 1 (estimated)	Option 2 (Prototype 3)
Length	[m]	75	8,5
Width	[m]	31	3,4
Height	[m]	15	1,7
Volume	[m3]	14.250	17,8
Weight	[m]	14.000	18
Altitude	[m]	3.000	1.200
Max. Speed	[km/h]	100	35
Autonomy		12 - 120 hours	7 days
Payload	[kg]	1.000	8,8

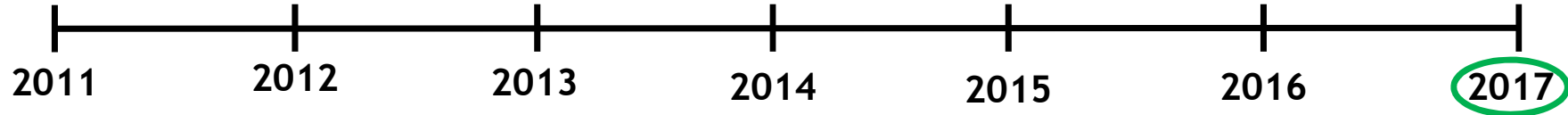
Table 1: UrbLog features

Motivation

Road Map

Features

Options



One Concept, Two Vehicles:

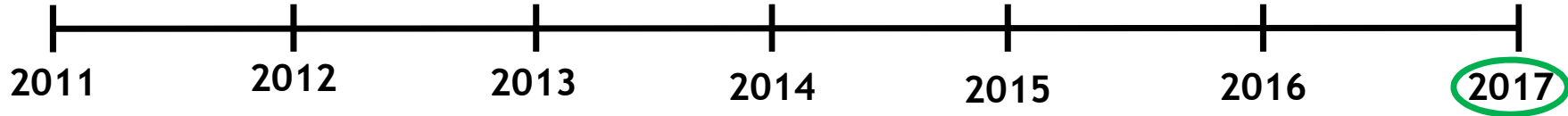
- **Option 1 (75 m length, 1.000 kg payload):**
 - Key Features: **Manned or Unmanned, Transport Capacity, Manoeuvrability and Speed;**
 - Key Applications: **Transport of People and Cargo, and Surveillance.**
- **Option 2 (8,5 m length, 8,8 kg payload):**
 - Key Features: **Unmanned, Wide Autonomy, Easy Assemblage and Transportable;**
 - Key Applications: **Monitoring and Detection, Image and Video Capture, Remote Surveillance, etc.**

Motivation

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Motivation

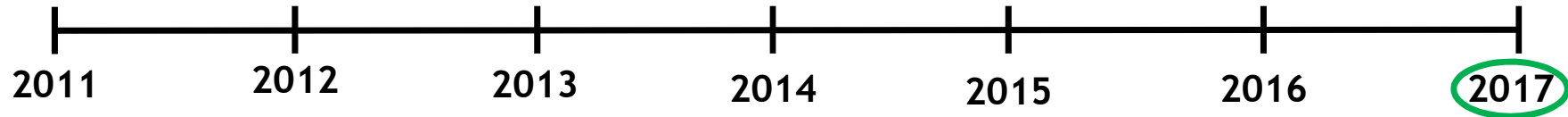
Road Map

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Figure 25: UrbLog (Option 1) in Lisbon (virtual)



- Motivation
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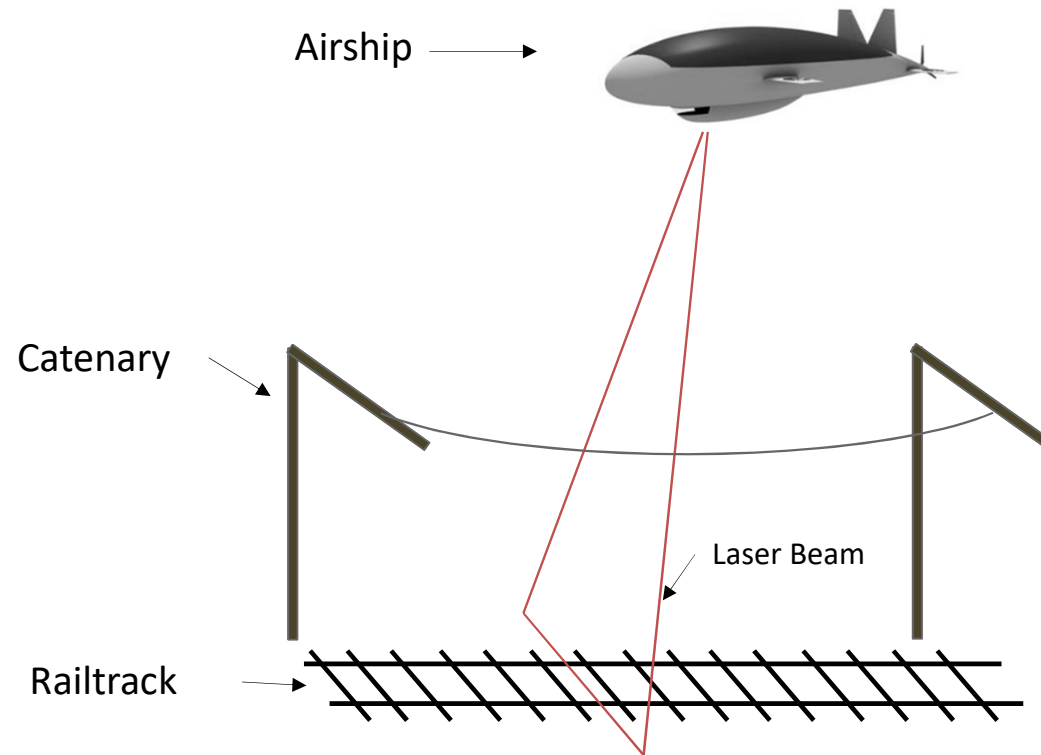
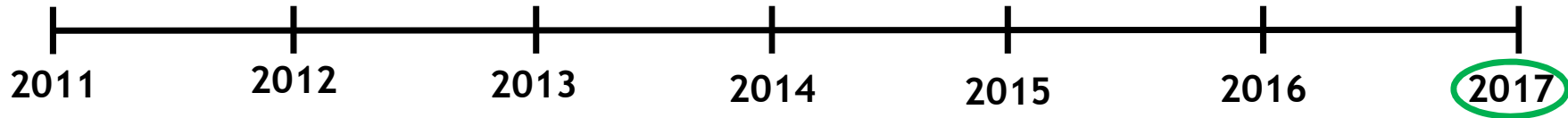


Figure 26: UrbLog (Option 2) application example: railway monitoring



- Motivation
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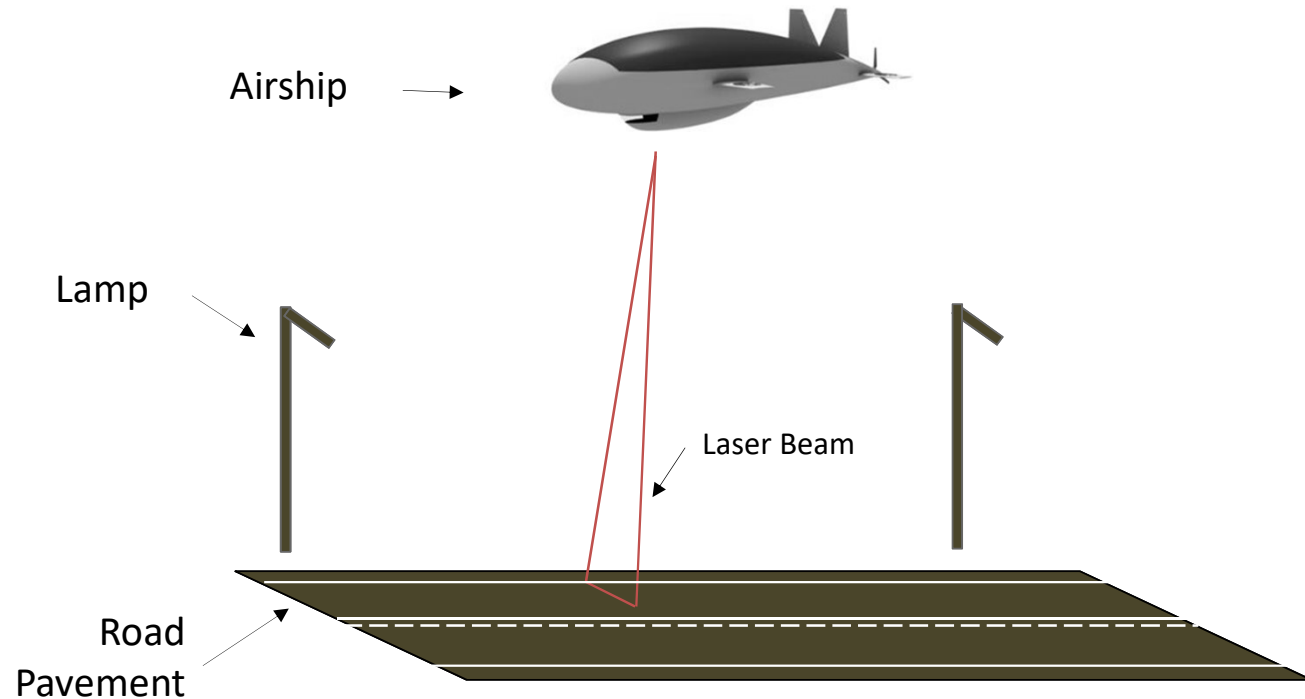
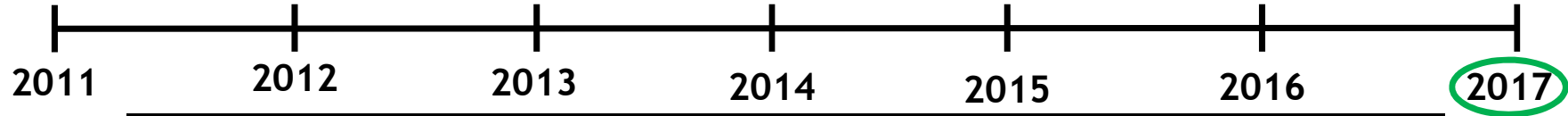


Figure 27: UrbLog (Option 2) application example: roadway monitoring

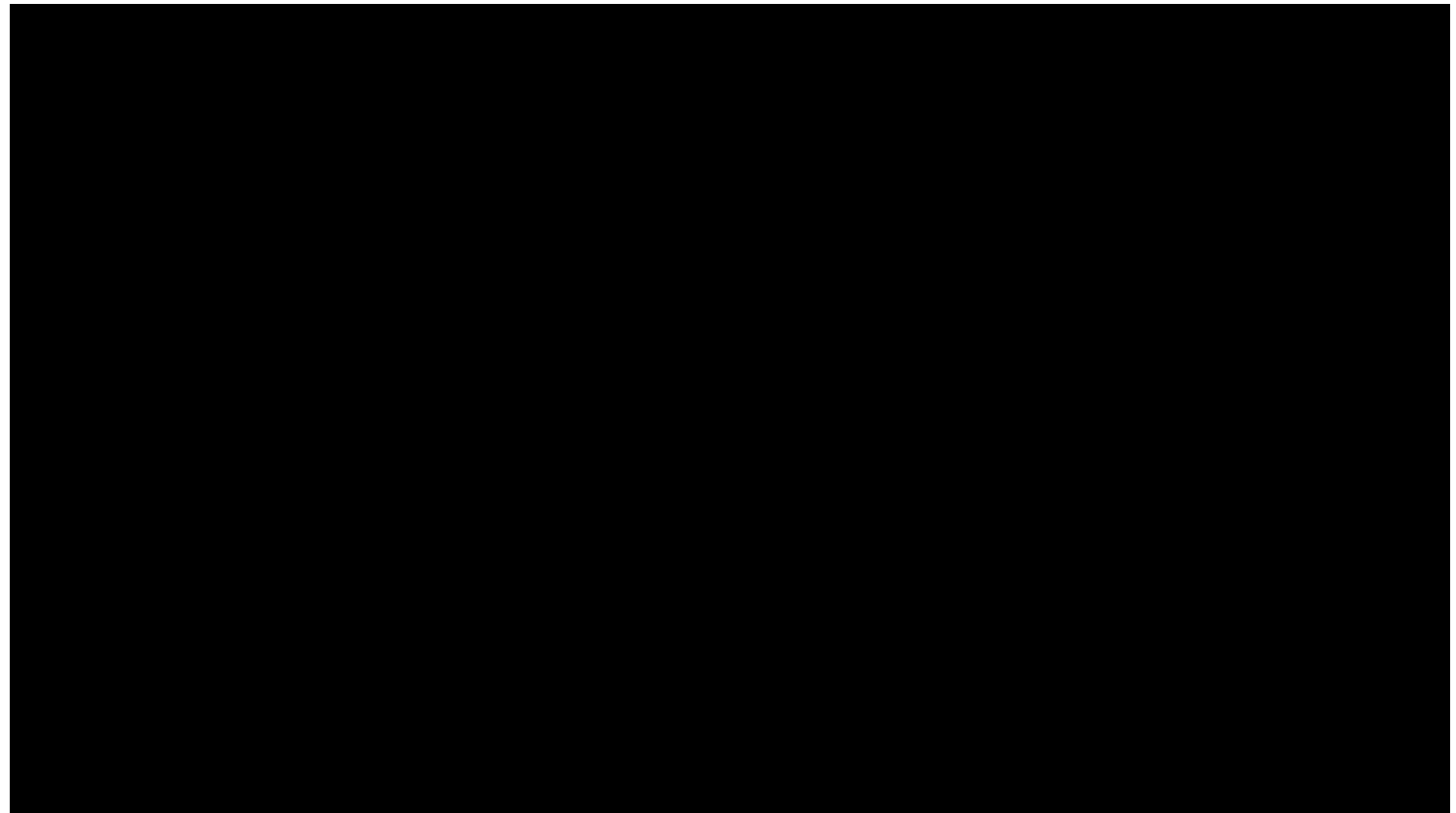


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Video 1: UrbLog



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