

LAFMOT

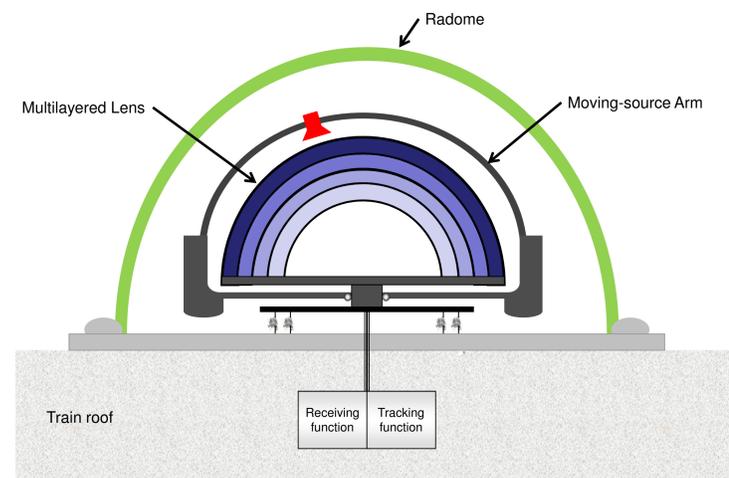
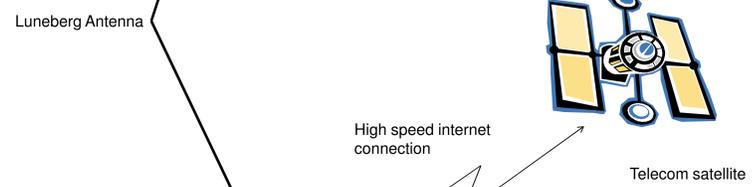
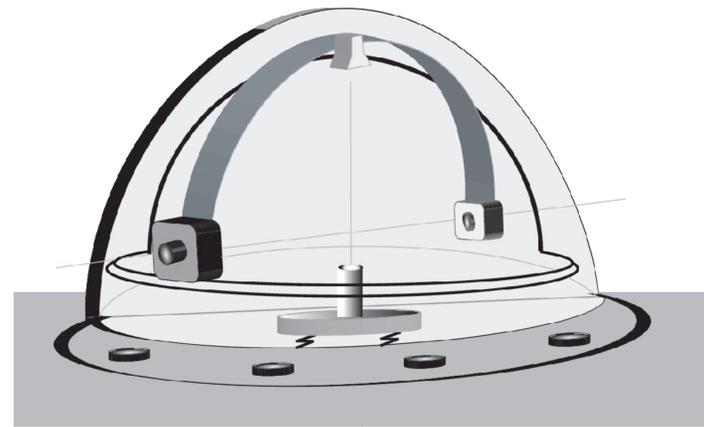
Luneberg Antenna For Multimedia On Train

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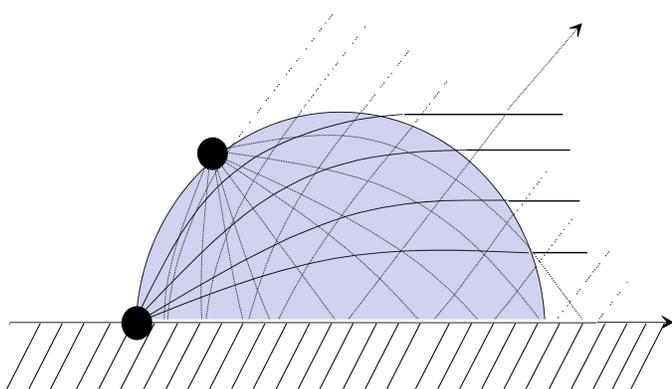
Acronym (up to 20 characters)	LAFMOT
Title of the EoI (up to 10 word)	Luneberg Antenna For Multimedia On Train

Project vision & innovation (max. 10 lines)

LAFMOT objective is to offer permanent high speed internet connection for "high speed train" travellers and crew. Antennas will have to maintain a radio communication between a GEO satellite and the train. The main innovation proposed in LAFMOT is the foam half spherical Luneberg Lens with source, where any point on the surface is a focal point. The antenna and its source will be realized with conformable foam plus metallization. The antenna will be able to point to the satellite permanently, taking into account the own movement of the train. It will ensure a sufficient assessment of connection ground/satellite to preserve a connection Internet without cut. The antenna will endure mechanical, environmental and operational conditions of the high speeds of the train. Moreover, the high compacity of the antenna will fully suit the aerodynamic train shape.



The Multilayered Luneberg Lens based on association of several layers of different density foams combined with a conformable RF source movable along the outer surface offers very good performances in term of gain and beam scanning.



Any point on the surface of the Lens is a focal point

Abstract (max. 10 lines)

Mobility and communication are probably the new combined challenges of the next ten years. Mobility either by car, plane or high speed trains, calls for specific equipments able to offer permanent high speed internet connection for travellers. The "ears" of the system are the antennas, they play a key role in the link quality and they have to be able to suit the various mobile configurations.

This project aims at the development and realization of a new technology for compact directive antenna with an automatic tracking of the satellite over a large angular sector without any performance degradation. The lens will be combined with a feed antenna which provided optimum performance of the antenna system. Lens and RF source will be realized with foam with a specific metallization for source radiation and via holes for feeding. The antenna needs some conformability and has to exhibit multilayered structure either to increase bandwidth, multifrequency property or to focus EM energy. This means development of new materials such as conformable foams with controlled electric permeabilities, development of new mecatronics devices including light and strong mechanical foam structures and development of the electronic control of tracking.

Fields of application (max. 3 lines)

Railways transports for "Mobile office" applications
 Road transport: buses and trucks
 Telecom and TV

Existing or expected Partnership / Complementarities / R&D chain (max. 10 lines)

The project already involves:

- A French innovative SME (ADVANTEN) for the tracking function
- The French Railways (SNCF) for the end-user and the exploitation on operating trains
- A Croatian partner (University of Zagreb) to develop numerical analysis for the Luneberg Lens

We are actively looking for partners in the fields of electromagnetic and new materials for the radome aspect.

