

ARRK Research & Development

Developing advanced driverless transport systems with DS PLM



Overview

■ Challenge

To develop low-cost, driverless transportation solutions incorporating advanced controls and guidance systems, running on dedicated tracks at a variety of locations

■ Solution

ARRK R&D chose CATIA and SIMULIA to develop the futuristic ULTra Personal Rapid Transportation (PRT) program

■ Benefits

Using DS PLM, ARRK R&D has developed and built the first ULTra vehicles on time, to specification and within budget, setting the standard for future production.



“CATIA is the key to delivering this futuristic transportation system.”

Jason Roberts
Director
ARRK



Journey to the future

The dream of driverless vehicles that effortlessly deliver passengers in futuristic automatically guided luxury pods has become a reality at London's Heathrow Airport.

The company responsible for design engineering and production of the ultramodern vehicles that run on a dedicated, lightweight guide is ARRK R&D Limited, based in Basildon, Essex, UK.

ARRK R&D is part of the 120 company ARRK Group which employs 15,000 people involved with product development, analysis and prototyping in composites, metal, and plastic for a range of industries covering aerospace, automotive, construction, medical equipment and transportation.

Single PLM platform

ARRK R&D covers product development from R&D, through body-in-white, exterior and interior trim, to production tooling design and assembly. The company uses

Dassault Systèmes CATIA for designing the virtual product and SIMULIA for virtual testing to offer a prototype-to-launch service.

The company works extensively on the ULTra Personal Rapid Transportation (PRT) program. The project includes development of 21 initial vehicles that run on a dedicated track much of which is elevated. This was fitted on site at Heathrow at up to 80 metres per night and will carry passengers to their destination at up to 40kph.

“Our work was carried out using the Dassault Systèmes PLM suite,” said Jason Roberts, Director, ARRK “This delivered the advantages that we experience in our other work, which include the benefit of operating on a single software platform for prototyping, tooling, testing and surfacing. Suspension durability testing of was carried out using ABAQUS FEA from SIMULIA and the software helped to provide the vehicles with their highly accurate tracking characteristics.”



Phil Griffiths, General Manager, Engineering Group added: "Dassault Systèmes solutions provide all of our product development needs and this is an excellent example of how the software can be scaled to suit variable demand over time. Our technological position means that we are the data holder for the ULTra project and since we have more than 300 seats of PLM within Europe alone, we will be able to deal with any level of demand. We cut tooling direct from 3D CATIA models and can easily accept third-party software input from stylists and others in the supply chain, incorporating it to develop 3D data for our purposes."

Worldwide routes

The cost of operating ULTra is low since there are no drivers, and the environmental benefits are significant with zero emissions at the point of use and no empty busses needlessly circulating. ARRK sees a strong future for ULTra with interest coming from around the world including Middle Eastern cities, leisure resort hotels, and other mixed usage environments that would replace bus services or conventional transport with this modern alternative system.

Jason Roberts said: "By developing the engineering and production of the project with Dassault Systèmes PLM, we are in a position to provide maximum productivity, design automation and a means of retaining 3D data that will serve this and other ULTra projects in the future. Since CATIA has become the transport industry's standard software, our work can integrate, in native formats, with supply chains and stakeholders."

Redefining transportation

ULTra is poised to redefine transport and offers planners and developers a range of opportunities that have never before been available. Dassault Systèmes PLM has been key to ARRK's development of ULTra.

Roberts concluded. "The total cost of developing, building and operating the Heathrow ULTra project is a fraction of the budget required for a conventional transport system. The use of Dassault Systèmes PLM has greatly aided this project by providing a flexible, technically and economically viable tool to deliver advanced transport solutions."

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