SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Vehicles in Service or in Development (1)

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BEST PRODUCT FOR BEST PRICE – HOW TO RESPOND TO THE CHALLENGES OF ARIANE 6

Abstract

ARIANE 6, the next generation European launch system, must serve the needs of European member states but also be competitive on the commercial market. European guaranteed access to space should be provided with a robust yet high-performance system without support in exploitation – the best product for the best price. The European Space Agency has requested proposals for the development and exploitation production of ARIANE 6 from European industry, where Economic Operators were given flexibility in terms of industrial organisation, geographical return and technical solutions in return for meeting a stringent set of requirements on cost, schedule and performance. The targets of 70M EUR launch cost and a maiden flight in 2021 are optimistic, however combining a rigorous design to cost approach with the implementation of key cost-reduction solutions, the cost and schedule targets for the next generation European launch system can be met. This paper will present the areas that MT Aerospace has worked on over the past three years to establish robust solutions in three relevant domains: technical designs compliant with specifications, organisational principles, as well as reliable and accurate cost estimations.

- **Technical design**: Robust designs, combining longstanding expertise with the latest developments in technologies, design to manufacture approach and optimising the choice between metallic and composite materials
- **Manufacturing**: Automated manufacturing processes, planning of dedicated and optimised green-field sites in conjunction with leading experts in production technologies and facility planning
- **Technology maturation**: Implementation of development programmes to ensure the achievement of TRL 6 or higher for key technologies, and therefore a seamless start to ARIANE 6 development
- **Industrial organisation**: Concentration of launcher development production into a smaller number of highly experienced suppliers, including an industrial core team
- **Technology clusters**: Clustering the development and production of structures and tanks in the role of Structural Architect, significantly reducing costs and lowering risks, elimination of redundant technical interfaces, utilisation of common processes and facilities
- **Governance**: Public-private risk sharing, provision of design warranties in return for design authority allocated with autonomy on technical design and decisions
- **Cost Estimations**: Extensive bottom-up calculations based on precise designs and detailed manufacturing processes, where all accompanying programme costs are included for complete cost transparency