

# A summarised ESA view on Access to Space

Markus Bertschi, Launchers Programmes Department Head  
World Space-Biz, Bangalore  
25/08/2010

- ❑ Access to space is a strategic asset and a pre-condition for the unrestricted exploration and exploitation of space. Whether developed within a civilian or defence framework, all space-faring nations/entities ensure their primary access to space through launch systems they have developed and they control. Full independence from foreign sources is sought/ensured for primary access to space.
- ❑ Europe's primary access to space is ensured today by the heavy lift Ariane 5 launch system, optimised for the GTO market. As from next year, Ariane 5 will be complemented by the Vega launch system aimed at serving mainly institutional users.
- ❑ The portfolio of launch services offered by the operator of Ariane 5 and Vega will soon be extended to Soyuz launch services from the Guiana Spaceport (CSG). Once fully operational, the current family of launch systems (Ariane, Soyuz and Vega) will cover the full range of European institutional needs.

# Preparing the Next Generation (1/2)



- ❑ Since 2004, all European states interested in launchers are preparing together the **new European family of launchers** within the ESA Future Launchers Preparatory Programme (FLPP). This programme includes system studies, system-driven technology developments and technology demonstrators.
- ❑ This new family should be operational around 2025 and is subject to stringent and technically credible cost targets. Indeed, the NGL development effort will only be worth if the cost to the public-sector of the operational maintenance and use of this new family is significantly lower than the corresponding costs of the current family.
- ❑ The NGL mission requirements are expected to be finalised by 2012. The undisputed minimum range of NGL performance is 3 to 5 tons in GTO.

- ❑ Some ESA Member States advocate an extension of the NGL performance range :
  - downwards so as to be able to cost-effectively replace in orbit single Galileo navigation satellites (MEO),
  - upwards to cover potential future exploration needs.
  
- ❑ NGL Reusable Launch Vehicle concepts studied within FLPP in the 2004-2005 period have been compared to NGL Expendable Launch Vehicle (ELV) concepts studied in the 2006-2007 period. Considering the target date for NGL operational capability, the readiness level of the concerned technologies and the European institutional needs expected after 2025, consensus on a first down-selection of NGL ELV concepts was found in 2008 as part of the endorsed ESA launcher strategic plan.
  
- ❑ A further down-selection to 2 or 3 NGL ELV concepts is expected at the time of the NGL mission requirements finalisation (2012).

# Main issues under discussion (1/2)



- ❑ What are the European needs for exploration missions within a coordinated international space transportation scenario ? Would such needs call for a continuation of the Ariane 5 exploitation beyond 2030 ?
- ❑ How many launch systems within the new family ? A small launcher and NGL ? A small launcher, NGL and Ariane 5 ?
- ❑ Will all current propulsion systems be maintained (heavy and light solid propulsion systems, heavy and light LOX/LH2 propulsion systems, upper stage storable propulsion systems) in view of the challenging cost targets ? If not, how to maintain the necessary industrial engineering capabilities needed to accompany the exploitation phase of the current family of launchers ?

## Main issues under discussion (2/2)



- ❑ When should the development of new NGL propulsion systems be started ? At the time of the NGL mission requirements finalisation ? After final selection of the NGL system concept ?
- ❑ How should roles, responsibilities and risks be distributed between the public and industrial sector for the NGL development and exploitation phases ?
- ❑ Under which conditions and on which type of activities could international cooperation on NGL be a sustainable way to meet the cost targets ?

Thank you for your attention