

European Seminar on “Technologies from Space Exploration”

ALTEC - Corso Marche 79, Torino (I)

2011 October 18th-19th

Political Session

Welcome address

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Distinguished representatives of the institutions,

Ladies and Gentlemen,

Let me begin by thanking the organisers for this kind invitation, which I warmly accepted – I have to say – with some emotion, since it is from here from this plant in Corso Marche in Turin that I moved my first steps in the space sector in ‘83. And I am as well extremely pleased to have the opportunity to address a crucial strategic topic, as the issue of exploration, which is at the same time also a difficult one, and for many reasons.

It embodies in essence a core purpose: the desire for all of humankind to discover new horizons and landing on other planets, since exploration is not only about knowledge; it is above all about direct human presence, supported and preceded as appropriate by robotic exploration.

Second, because exploration is a political challenge like no other. It can bring us all together, sure, as a global endeavour, but this is also where the difficulty lies. And this is evident while approaching the Third

Exploration Conference, that as you know will take place in Lucca next November.

And third because exploration may entail technology developments that we may perhaps not even fathom today.

I would like to begin with a brief scene setter, to make some considerations on the current strategic context of exploration and its challenges.

Strategic Context

- We are not starting from scratch: the International Space Station is our building block for exploration, and it has been successfully built and maintained through an international partnership, and it is now agreed to be operational at least until 2020.
- US: The Space Shuttle has been retired, shrinking possibilities for manned space flight or cargo trips. NASA has recently unveiled its plans for a new generation launcher, the Space Launch System, quite a remarkable ambition totalling 35 to 60 billion dollars of development budgets, including 18 billion in the next 5 years, taking some 130 tons into space. This is a formidable announcement and may be key in our future collective exploration ambitions, but the first flight is not targeted before end of 2017.
- China: Last September China successfully launched of the Tiangong-1 space module, China's first space laboratory. This is the first step to accomplish China's objective of building its own space station by the end of the decade. Two manned missions (Shenzhou 9 and 10) should follow in 2012.
- Russia: Soyuz is currently the only manned vehicle to reach the ISS. Dependence on foreign capabilities is always a constraint, but

when there is only one supplier it is even more critical. Soyuz with its impressively high number of successful launches is by definition a reliable launcher, but even Soyuz has recently experienced some technical problems.

- Europe:
 - We're currently contributing to efforts with programmes such as Mars Express, Exomars (this expected to be secured in the next months), or ATV. The first ATV module was successfully launched in March 2008, the second in February 2011, and the third is expected to take flight in early 2012, bringing indispensable cargo to the ISS.
 - The 2007 the European Space Policy has set the marker for the involvement of the European Union in space; in 2008, ESA leveraged close to 10 billion euros for space programmes.
 - Today, this positive evolution needs to be confirmed, not only through today's negotiations around the next EU Multiannual Financial Framework, aiming there at a coverage of space interests larger than so far proposed by the Commission, but also during ESA's 2012 Ministerial Council.
 - Alternately, the financial crisis has shed new light on Europe governance structures, reshuffling political challenges, which we will need to take into account when dealing with challenging and above all long-term space projects.

In my view there are three enablers for Europe: international cooperation, political vision and long-term commitment, technology.

Enabler One: International Cooperation

- Because it will be impossible without it, considering the breadth of investments, and the technical complexity or the need for redundancies.
- ISS partnership is surely the nucleus to start from, but likely the cards may be reshuffled, and each partner's ambitions and participation may evolve in the coming decade, opening the club to other memberships. One issue remains as to whether China would be willing to join an international endeavour and according to which leadership degree, and whether the US would be willing to cooperate with China on this issue; another will be how the US will want to proceed, as exploration today without the US especially - but also without Russia and reasonably China too - cannot be effective globally.

Enabler Two: Political Vision and sustainable Long-Term Commitment

- The EU has engaged in exploration at political level, and has had a key role in co-organising the 1st and the 2nd International Conferences on Space Exploration, in 2009 and 2010. We are now approaching "Third International Space Exploration Conference which should also be the First High Level International Space Exploration Platform", on 10 November in Lucca. The preparation of this event is taking place in close cooperation with the Commission and Italy, and I'd like to thank them warmly for their efforts.

- Government representatives in Lucca are expected to kick-off an open structured high-level policy dialogue on space exploration for the benefit of humankind.
- The baseline is simple: Non-binding engagement on voluntary basis, sharing objectives, investments and results worldwide, based on a common political vision and in a way commensurate to individual capacities, technical and financial. This will be in particular a political challenge for the EU in its capacity to federate a global political, scientific and technology initiative.
- But there is still some work to do for a full acceptance of this concept of non-binding structured dialogue to be reflected in the final declaration, as well as for the definition of the objectives of the next step, that could reasonably be to have a common strategy being developed by the next two years.

Enabler Three: Technologies

- As an example of the breath of exploration challenges, going to Mars and back, would take almost 3 years i.e. a time two orders of magnitude longer than the time to go to the Moon and back. And the total duration of a mission is crucial due to the impact of radiation and absence of gravity on a human organism.
- Sustainable exploration beyond LEO will thus require more performing technologies. Already, Europe has produced in September 2010 the “Report of the Technical Steering Group for the preparation of the Second International Conference on Space Exploration”, which has invited to focus European efforts on 4 technology pillars:

1. Life support systems;

2. Energy sources;
3. Novel propulsion systems;
4. Robotics and automation;

With further possible added value generated in areas such as the protection of the environment. We are currently working in this direction and you will hear about our roadmaps in the next session, also looking for synergies with non-space sectors (such as energy or environment), that could lead to spin-in or technology transfer opportunities with mutual benefit.

- Launchers and transportation systems, including propulsion will be a great challenge. NASA's Space Launch System may be a great contribution but a global common space transportation policy should be addressed to mutualise costs and share responsibilities, and already in this decade ISS exploitation could benefit of it.
- Core of the issue technological challenge remains innovation, which we intend to present as a key issue to our Member State ministers already next year at the upcoming ministerial Council in view of exploration as well as other space fields.

I do not know if I will personally ever see the day when mankind will land on Mars. No one could make a sure bet on this. However, never, since the space age has begun, has a politician or scientist ever doubted that one day, we would indeed, land on other planets. It is indeed not an issue of *if*, but only of *when and/or how*. Being convinced of this, we have better take advantage of this current phase, objectively looking more as a pause than an acceleration, because it is during pauses that it is possible to establish an organised approach to the future, e.g. arranging in a structured dialogue the three exploration enablers which are addressed:

--- Check Against Delivery ---

international cooperation, common political vision backed by long-term sustainable commitment and technology.

Thank you.