



“Hypersonic flight for access to Space: basic concepts, historical evolution and hypothesis for an efficient development roadmap”

S. Chiesa¹, G. Russo², S. Corpino¹, M. Fioriti¹, R. Fusaro¹, N. Viola¹

1 Politecnico di Torino, Department of Mechanical and Aerospace Engineering

2 Space Renaissance Italia, President, Trans-Tech srl, Napoli

--- ABSTRACT ---

In the first part of the paper it is recalled how the realization of efficient reusable launchers (RL), in particular HOTOL systems, is key factor both for the realization of important orbital infrastructures and to constitute the basis for future shipments of systematic Space Exploration. It is pointed out how great part of the technological effort required for the development of such launchers would be synergistic for the development of “high speed (Mach 4-5)” aircraft to connect in a few hours any point of the earth surface (today, antipodal distances can be reached in not less than one day).

Turning to the prospects of today, in our opinion it is to be confirmed the opportunity of reconsidering the alternative of RL, together with the possibility of developing high speed aircraft. To this aim, projects today hypothesized and achievements in terms of Orbiting/Reentry Vehicles are considered. In examining actual projects under study / development we consider the promising field of sub-orbital aircraft for Space Tourism as natural way of access to the topic under discussion. So the development of a new aircraft for Space Tourism could be an opportunity for affordable access to hypersonic flight; the idea inserted into a logic roadmap could lead to subsequent embodiments of an airplane for space tourism, and then of an airplane “executive” at great speed. The Figure 1 schematically shows main technical aspects of such a process and gives elements (more detailed in the paper) about the opportunity of obtaining two interesting products; both of them could be commercially valid and become a useful starting point for future development both for hypersonic flight and for a RL.

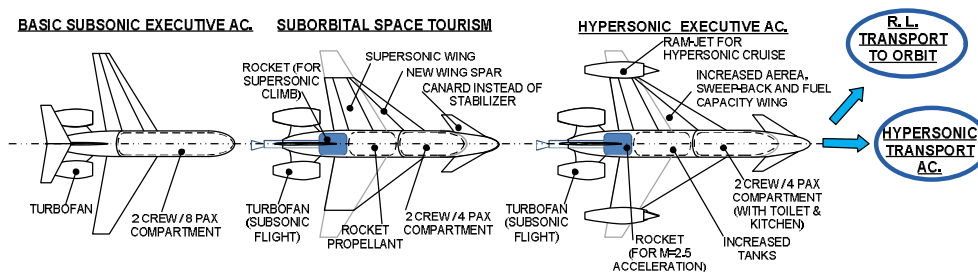


Figure 1. Logical path to develop, from a Conventional Executive, a Space Tourism Plane and then an Hypersonic Executive ac.

References

- 1 S. CHIESA “[Le prospettive del trasporto strategico alla luce dello sviluppo delle tecnologie di volo Ipersonico e Suborbitale. Punto di situazione, criticita', potenzialita nel prossimo futuro](#)”.



--- SUNTO BIOGRAFICO DELL'AUTORE ---

tbd