THE SKYLON SPACEPLANE - A MOTIVATION FOR AGENTS IN SPACE

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Beginning in the early 1980's, a UK funded research programme was instigated to develop a completely re-usable launch vehicle. However, due to lack of government funding, this programme was discontinued in 1988. HOTOL (*Horizontal Take-off and Land*) may have ceased, but the central figures carrying out the research formed Reaction Engines Limited with the aim of continuing the development. Designs evolved into the Skylon vehicle, the subject of this presentation.

Skylon was created with the aim of reaching orbit in a single vehicle without the use of additional rocket boosters which is referred to as *single stage to orbit* (SSTO). The aim is to create a vehicle which is fully re-usable with minimal maintenance required between flights.

Central to the Skylon project are two important components: the Skylon spaceplane itself, and the novel Sabre engines which provide dual-mode airbreathing and rocket propulsion through the vehicle flight envelope.

Skylon is a highly complex and fallible engineering system, comprising a wide variety of disparate, interacting, dynamic elements. Its autonomous operation presents a real challenge.

This presentation will give an outline of the Skylon spaceplane, indicating *where* and, potentially, *how* a multi-agent control system could be used to provide airframe and propulsion system stabilisation throughout the variety of flight regimes encountered during atmospheric ascent, plus trajectory planning, systems co-ordination, fault tolerance, failure accommodation and mission management.

There will be some discussion of the work of the author's research group which has a long-term aim of seeing true autonomy, effected through intelligent agency, in space vehicles.