

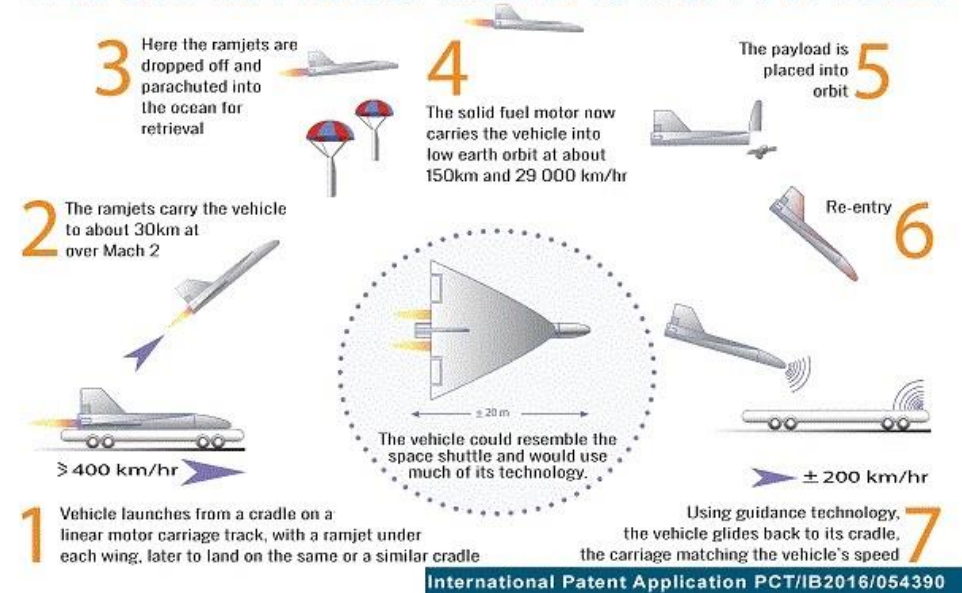


**The First Significant Advance in Space Launch for 70
Years!**

www.swalarlv.com

A New Space Launch Concept -

THE SWALA REUSABLE LAUNCH VEHICLE



Before going any further, two recurrent objections to this concept must be rebutted –

- 1) “Ramjets cannot function much below Mach 1”. There is ample technical and practical evidence that ramjet thrust at 400km/hr can approach that of a solid fuel rocket.
- 2) “Landing an unmanned vehicle on a moving carriage will not be practical”. The US Navy routinely lands large (+14 ton) drones on its carriers.

Swala's Cautious and Inexpensive Development Programme

The Development Sequence for the Swala Concept

Creating the control hardware and software



Stage 1
Using radio-controlled model aircraft powered by pulse jets to develop the launch and capture software and hardware

Balsa wood, max speed 200km/h.

\$50,000 and 3 months

Launch and recover a 1/10th version to the stratosphere



Stage 2
Employing the software and hardware developed in Stage 1 to enable a 1/10th scale Swala vehicle to fly to Mach 2 and 30km using small ramjets

Aluminium structure and frame, launched from a Tesla Model S at +/- 250km/h

\$300,000 and 8 months

Launch and recover a 1/5th scale version to orbit



Stage 3
Using the data acquired in Stage 2 to construct a 1/5th scale Swala vehicle with jettisonable ramjets and a solid fuel motor to enable it to place a 10kg payload in low earth orbit and return

Carbon fibre structure with titanium foil covering, ramjet inlets modified to control shock front effect, launched as before but at +/-300km/hr

\$2.5m and 1 year

Creation and operation of the full-scale prototype



Stage 4
Drawing on this earlier work, developing the full scale Swala prototype with linear induction motor launch and an 0.5t payload

\$130m and 2 years

Swala's Initial Development will be at West Wales Airport

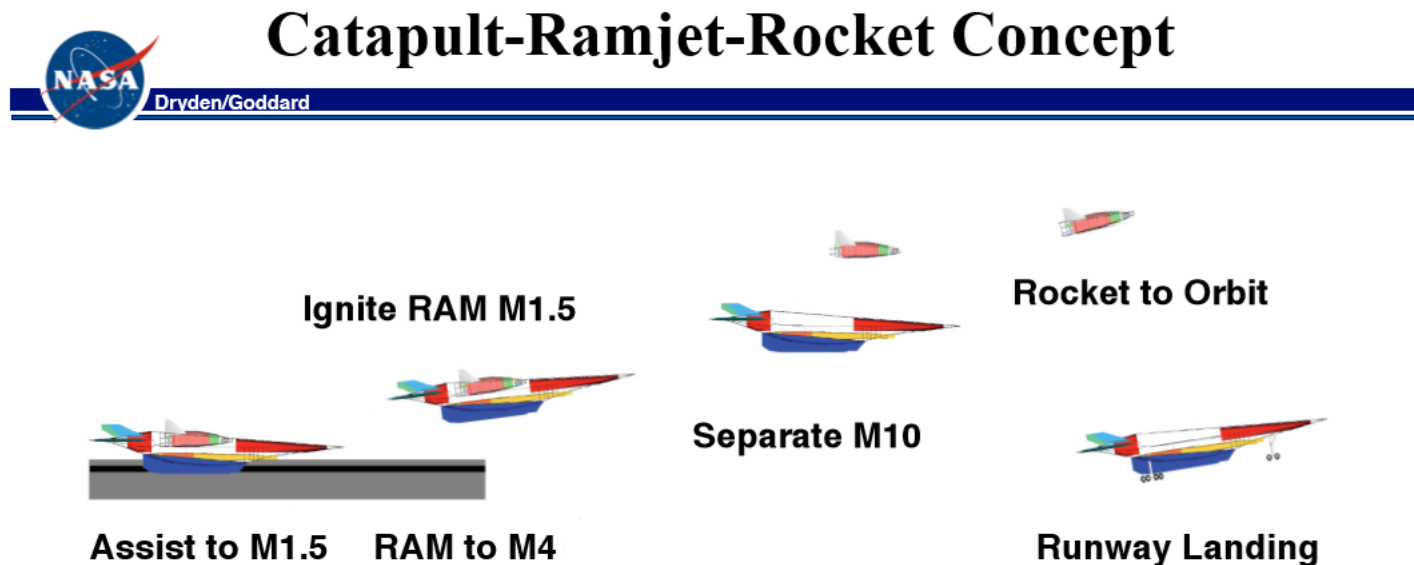
The only airfield in Europe authorised to fly unmanned vehicles beyond line of sight



The ramjets used during Swala's development will be based upon the 1950s helicopter rotor-tip design of Stanley Hiller, which had a Specific Impulse of +/- 300 seconds at lift-off.



In 2009 a team of academics investigated something rather similar to the Swala concept for NASA...



But this is not fully reusable, requires prior acceleration to M1.5 and has an undercarriage. It was not followed up.

**Here is the Swala spaceplane –
just prior to jettisoning its ramjets**



Thank you for your interest and attention
www.swalarlv.com