



# PROJECT: Daedalus

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# Innovating Pilot Interaction

With current 5<sup>th</sup> Gen. fighters such as the F-35 already implementing voice commands and augmented reality, Daedalus aims to take situational awareness and intuitive controls to the next level.

It will provide improvements over current HOTAS systems in areas such as:

- Reaction time
- Flexibility and programmability
- Functionality
- Intuitiveness
- Cleaner and simpler

# Daedalus Features

- Calibrated cueing system to eye movements
  - Integrated iris trackers into the edges of the helmet visor
- The reticle will be able to interact with:
  - Onboard targeting systems such as air-to-air radar, FLIR, etc. to designate singular or multiple targets
  - The front panel of the aircraft, with the reticle acting as a “mouse cursor”
- Controls on the throttle will simplify to two buttons, equivalent to left and right mouse buttons
  - Navigation of options will be done through the sight-controlled reticle, and alternatively through voice commands
- Similarly, the control stick will only have buttons for countermeasures, trigger and weapon release, with a multi-axis hat for trimming



# Preliminary Sketches

On the right is an initial sketch of the proposed helmet for Daedalus. Features of note are the two overhanging protrusions at the top of the visor, which house the major components of the iris trackers. The equipment required to project the display onto the visor is also stored in the bulge on the forehead.

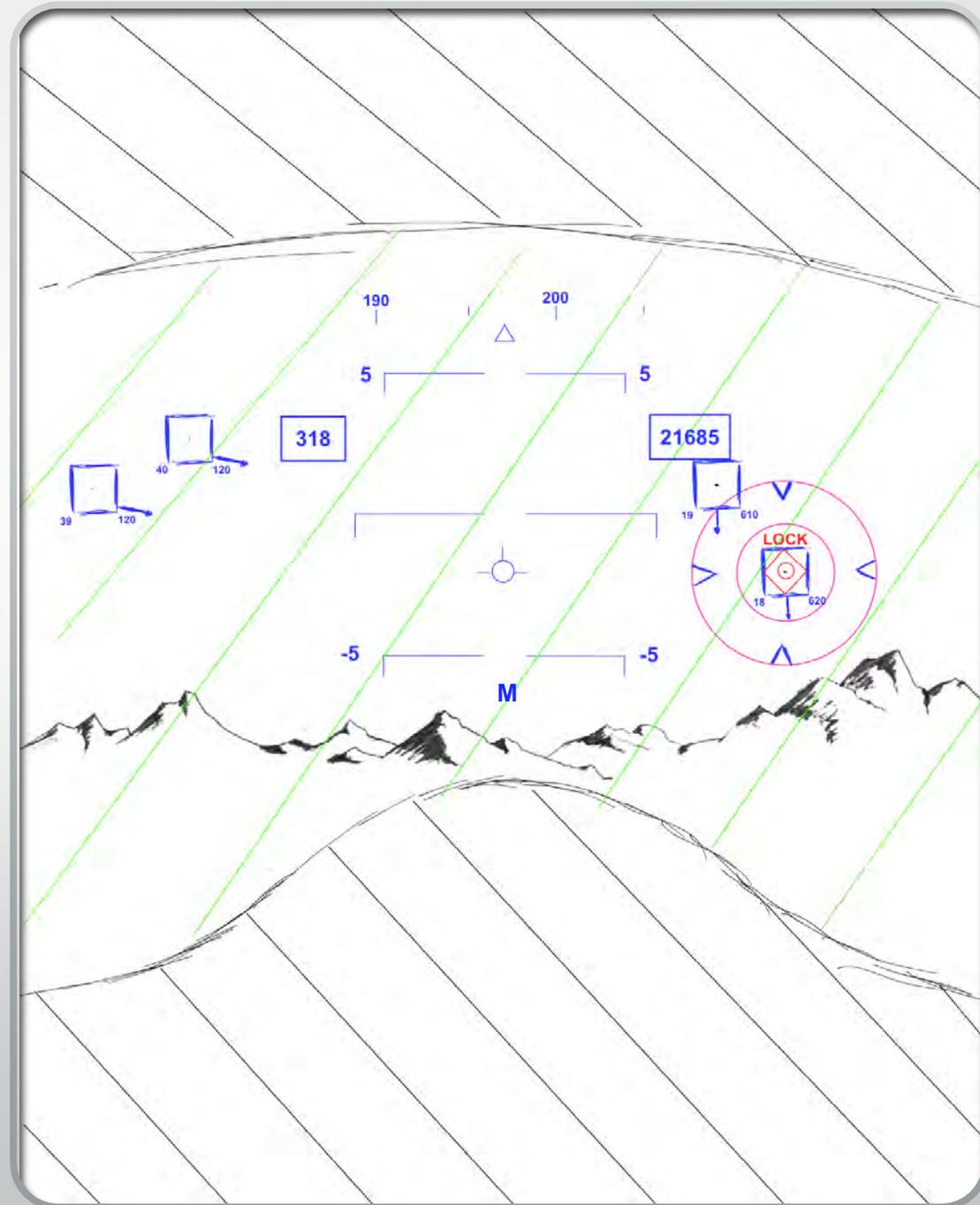




This is a conceptual image of a revamped cockpit equipped with Daedalus. The front panels would be purely digital, with curved screens capable of touch. However, their main capability would be to allow for the pilot to interact with the screens through their line of sight. This is done by calibrating the iris trackers with an inertial head-tracker in the helmet to give the reticle the ability to control a cursor on the screens, effectively making the reticle itself a cursor. Pilots are then able to achieve at least 80% of the aircraft's combat and logistical functions without ever removing their hands from the throttle or control stick.



BVR engagement scenario. Within the pilot's visor display are four targets at 39, 40, 19 and 18 miles respectively from left to right. The relative velocity vector is represented by the arrows extending from the boxes with the magnitude of the velocity in the bottom right corner. The right-most target is locked after the pilot looks, hovering the reticle over it and pressing the left button on the throttle column. The M at the center-bottom of the visor indicates the selection of a Meteor BVRAAM.





## Next Gen. Training Aid

Daedalus' eye-tracking software has the potential to act as a powerful tool in training new generations of fighter pilots

- Taking inspiration from professional eSports, tracking the sight of veteran pilots would provide valuable insight into:
  - What pilots prioritise in a given situation
  - The method with which they maintain a high level of awareness of their surroundings – how often they scan the horizon, look down at their displays, etc.
- When reviewing footage, Daedalus provides a real first person perspective, allowing easy identification of negative habits and actions to improve on
- Also allows for the potential of even higher fidelity flight simulators

Daedalus is also 100% compatible with any changes made to the functionality of digital cockpits of the future, making the package future-proof from innovations in software and giving it immense flexibility when new capabilities are required



Daedalus will  
be the solution  
to Tempest's  
virtual cockpit  
requirements

