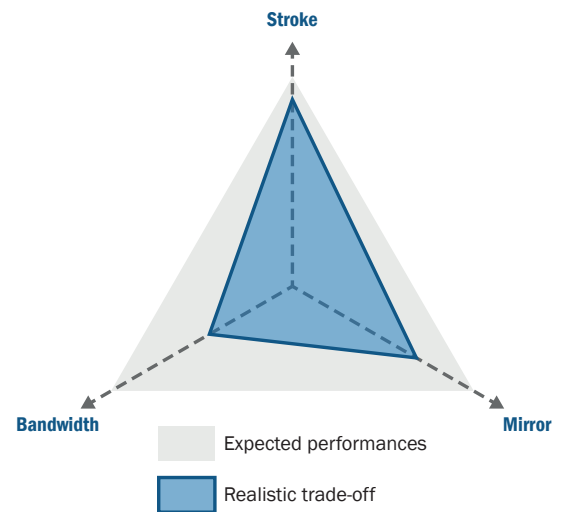


Our Fast-Steering Mirrors (FSM) offer custom performances widely used for different applications in Air, Space & Defence (ASD). Regardless of the technology used, these mechanisms are composed of 2 perpendicular rotation axis and actuators in order to tilt the mirror. It includes a steering platform, a mirror and a controller.

According to the type of application, a specific angular stroke and bandwidth are required. Besides, a range of mirror can also be integrated to our FSM, whether it is a custom material, coating, shape or size.

These 3 components and specifications of FSM are the base of the FSM mechanical design and they all have an influence on each other. Indeed due to geometric and mechanical limitation, these 3 parameters can't be maximized all at once and priorities must be set sometimes :

- Setting priority on **stroke** has an impact on the resonance frequency of the mechanism by reducing its stiffness. It also has an impact on the mirror due to large displacements that may affect its flatness. Large amplitude requires more electric power from the controller.
- Setting priority on **bandwidth** has an opposite impact than the stroke. An increase of stiffness and resonance frequency will reduce the stroke. Large bandwidth also has an impact on the power consumption of the mechanism.
- Setting priority on the **mirror** properties has an impact on the bandwidth due to its inertia. Critical specification on flatness also affects the design of the mirror bracket.



Due to these limitations we developed various FSM on demand, with diverse technologies in order to answer our client's specification and environment. Depending on your request CTEC offers :

- **Piezoelectric actuators** based FSM for small angular stroke and high dynamic.
- **Magnetic actuators** based FSM for large angular stroke and low dynamic.
- **Piezoelectric motors** based FSM for very large angular stroke and static applications.

In addition of the mechanism technology, a specific mirror is integrated.

