The objective of this project is to design, manufacture and test selectively compliant structures based on multi-stable structures. This addresses a design trade-off inherent in morphing structures that prevents a structure from being simultaneously compliant and load bearing.

Compliant morphing wings have the potential to increase aircraft efficiency and allow aircraft to more effectively operate in multi-role capacities.

A bi-stable member can be designed in such a way as to demonstrate different axial stiffness in its two configuration states.

This member, with an appropriate geometry, can be embedded in a truss-like structure.

When actuated, the member alters the global stiffness properties of the structure, changing the way in which the structure deforms under load.

A bi-stable member can be embedded in a structure to provide a change in local stiffness that affects the global stiffness of the structure.