

## **Abstract**

The development of innovative solutions for leading edge high-lift devices is carried out throughout two main parts in which different design approach will be investigated.

Firstly, a classical approach will be performed through the design of different innovative concepts using a traditional iterative design cycle. As a result, a mechanism able to agree the imposed requirements will be provided. An initial sizing will be done in order to study the feasibility of the concept and its main performances through a preliminary trade-off. From the initial evaluation of the different concepts modelled, risks and opportunities will be remarked for future works.

Secondly, a numerical approach applied to the conceptual design at kinematics level will be used. A numerical tool able to provide mechanism linkage topologies through the synthesis of mechanisms is applied to the leading edge high-lift device case in order to analyze the utility and capabilities of the method in which Sonaca could be interested, as well as generate new kinematic concepts.

As a conclusion, the fulfillment of the objectives will be evaluated and the interconnection of the two approaches will be shown. In addition, based on the results/concepts obtained, some conclusions will be remarked and commented.