Single Engine Spin Resistant Aircraft
Typical role of single engine airplane and required qualities:

- **trainer** - flight characteristics (non-experienced pilots)
- **aerobatic** - controllability (experienced pilots)
- **transport** - performances
- **recreation & hobby** - safety, flight characteristics (pilots of different skills)
Stall problems

- abrupt stall, unsymmetrical stall
- dirty leading edge degradation
- spin entry
- spin recovery
Anti-spin aerodynamic modifications

Modifications applicable during early design:
- wing twist
- wing geometry (taper and aspect ratio, sweep angle, ...)
- tail unit geometry and conception

Modifications applicable during design and flight test:
- dropped leading edge
- fin

Modifications applicable during flight tests (cure):
- vortex generators
- turbulators
- ribbons
- stall strips
Ways to achieve the goals

* analysis of suitable aerodynamic modifications

* creation the methodology, how to design spin-resistant airplane

* manufacturing selected specimens for flight tests

* preparation of flight tests:
  - test program
  - instrumentation of the test plane
  - adaptation of the airplane for carrying specimens

* performing the flight tests

* evaluation of individual modifications impact on stall and spin behavior
Supposed benefits of the project

- **Significant increasing the safety of operation**
  Spin resistant airplane is much safer than that one of poor stall behaviour.

- **Creation of methodology of designing the airplane as spin resistant straight from the beginning of the design process**
  Time and costs reduction during early design phase is much more efficient, than curing problems afterwards.

- **Creation of proved methodology to cure possible problems**
  Known ways how to cure problems can save lot of effort than testing dead end variants.

**Supposed members of consortium:**

* **EVEKTOR, Spol.s r.o. - proposal coordinator**
* More partners are welcomed:
  * University (CFD)
  * Small Airplane producer
  * Research center
  * Aircraft composite parts manufacturer
Thank you

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