



Annex 4 - Challenge Template

1. Name of the challenge:

Lightweight chain driven limited slip differential

2. Context:

In the automotive world, there is a niche of small open cars with emphasis on lightweight and performance, also known as weekend toy cars or track day cars. Famous examples are Lotus7 derived cars and Ariel Atom. There are also a lot of similar vehicles sold as kit cars, or DIY projects. Other group that this solution will be useful to is the FSAE (Formula Student) competition cars and other projects where motorcycle engines are used.

3. Problem:

When designing cars with motorcycle engines, manufacturers often face the difficulty of mating the engine which often has a chain drive to a differential. Car differentials are heavy, large and are shaft driven which brings the difficulty of creating a shaft drive from the motorcycle engine or reworking the differential to be chain driven. There are a few solutions on the market that are either costly or with poor performance.

4. Additional info (for internal use):

The team is expected to deliver a working prototype. "TU Sofia FSAE Racing team" cars will be used as a test platform of the differential. Furthermore the prototype can be tested on local racing events.

5. Skills of the team (for internal use):

Team members should have good knowledge in machine elements and parts, mechanics, technology of materials, lightweight constructions, CAD software, FEM analysis.

5. About the Seeker:

- Department "**Combustion Engines, Automobile Engineering and Transport**" at Technical University of Sofia, Bulgaria conducts proactive research in the field of internal combustion engines, automobiles, tractors and fork-lifts and the management and organization of road transport.

All research activities regarding development of racing cars will not only increase the qualification of the academic staff but will also make



Interreg



EUROPEAN UNION

Danube Transnational Programme

DA-SPACE

the speciality more attractive for students.



Basic information, additional information
www.interreg-danube.eu/da-space