Analysis

Problem Identification

Currently there is a lack of truly free CFD (Computational Fluid Dynamics) softwares. Most programs require a subscription to use, and those that advertise themselves as free provide very limited usage without paying. This is a problem for the amateur engineer – something that is becoming more and more common with the advances in 3D printing technology. A common project that many of these people undergo is the making of a remote controlled drone or airplane. These people are likely to want to be able to run CFD simulations on their parts to find out how they will perform in the real world, however, due to the lack of free solutions, this is not something they are necessarily able to do.

This problem lends itself to a computational solution because there is realistically no way to do comprehensive fluid dynamics testing in the real world without expending a prohibitively large amount of resources and money (i.e. hiring a wind tunnel, measurement equipment). The digital environment will allow for total control of the simulation and fast iteration of scenarios. Additionally, it is not possible to do the fluid dynamics calculations by hand, as they are far too complex and would require likely hundreds of hours of calculation by hand.

Stakeholders

People who would have an interest in this program would be engineering hobbyists and small companies that provide a physical product.