EDUCATION INNOVATION

AWESIM

FSAE APP HELPS STUDENT RACING TEAMS GAIN 'WIND TUNNEL' ACCESS

During his 20-plus years in the high-stakes world of auto racing, Ray Leto rarely had time to offer much help to students interested in the engineering side of race teams.

When he became the president of TotalSim USA, Leto had a bit more time to mentor and advise students. One of the ways he's done that is by helping students help themselves with the FSAE app.

In late 2015, TotalSim USA – an engineering services provider in Dublin, Ohio and AweSim partner – developed a computational fluid dynamics (CFD) app that allows college students on Formula SAE (Society of Automotive Engineers) teams to perform aerodynamics simulations on the Ohio Supercomputer Center and get wind tunnel-like data for development of their race cars.

"The idea with this whole AweSim app eco-structure is to get modeling and simulation in the hands of people who normally couldn't afford it, or didn't have the time to become an expert. There's another avenue you can go down to get information and this app is a great example of that."

— *Ray Leto, president of TotalSim USA*

VIRTUAL DESIGNS. REAL BENEFITS.

Formula SAE is a competition amongst student-run college teams in which a fictional manufacturing company has contracted a design team to develop a small Formula-style race car. The teams design, build and test a prototype based on a series of rules aimed at promoting safety and problem solving.

AUTOMOTIVE

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THE CHALLENGE

Formula SAE teams are student-run, volunteer groups and have little to no access to wind tunnels or computational fluid dynamics software. And the access students do have essentially forces them to become CFD experts in a short time period. This lack of easily available access makes it very difficult for students to fine-tune and improve their race cars, along with learning how professionals make these critical engineering decisions.

THE APPROACH

The FSAE app meshes geometry, configures solver settings, generates output visualizations and organizes results so students can focus on designing and improving their Formula SAE cars without being forced to become CFD experts.

Six Formula SAE teams, including The Ohio State University, the University of Akron, Indiana University–Purdue University Indianapolis, UNC Charlotte and the University of Southern California, use the app.

THE SOLUTION

The FSAE app is easy to use and allows young engineers to experiment with designs and learn how to be an aerodynamicist without getting bogged down in code. This virtual wind tunnel allows each student to get anywhere between 10 and 30 runs per semester and gain critical information in a quick turnaround, sometimes as quick as 24 hours. That information not only is valuable to fine tune the car immediately, but gives future team members valuable information.

For TotalSim, it's also a great way to get the app in the hands of real users who can beta test it and provide instant feedback on how well the platform works.