

Keyword: Formula Student

Top of the Formula with Dassault Systmes Technology CATIA, DELMIA and 3DVIA Composer Combine in Student Projec

On the Grid

Students and mentors at The University of Sunderland entered an annual international event - [Formula Student](#), in which engineering and other students design, build and race a single seater racing car. As well as all the engineering and technical aspects of the project, they also handle management, marketing and project finances, giving them the business and people skills that will be of high value throughout their future careers. The University of Sunderland is equipped with an advanced Digital Factory capability that provides regional industry with training and innovation resources based around Dassault Systmes PLM technology. The Digital Factory Project Leader, Alan Stafford said, Digital Factory provides 850 industrial learning opportunities each year and has saved manufacturers millions of pounds and thousands of hours through the introduction of advanced production methodologies such as Dassault Systmes technology. This year Digital Factory team members have donated their time to support the University's [Formula Student](#) entry with support for the team through the application of Dassault Systmes technology. Pole Position

Engineering student Thomas Cepe is confident that with the use of CATIA DELMIA and SIMULIA, this years entry will be a winner. He explained why, We are building a vehicle using a 400 cc four stroke engine capable of 90mph and awesome acceleration. Since the competition is not just based dynamics but on factors of endurance and financial competence as well, we have deployed Dassault Systmes to design and test the suspension and drivetrain assemblies which includes drive shafts, wish bones, push rods, uprights and brakes; totalling more than 300 components. Having designed the parts using CATIA the simulation of their assemblies are conducted using DELMIA which is also used to simulate wheel travel, roll centre, squat, Ackerman effect and camber angle as well as ensuring that shim adjustments, to suit track and race conditions; are practical. We are looking at the potential use of 3DVIA in our bid to reduce the weight, size and cost of these complex assemblies. The redesign project on the suspension and drivetrain components and assemblies realised a total weight saving of 57% compared to last years entry. It is the combined functionality of Catia and FEA which has lead to not only this immensely significant weight saving but also an increase in vehicle performance.

Home Straight

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Dave Knapton Lead Consultant at the University described the benefits of its approach to developing relations with industry, Working on real-life projects that include a range of disciplines, and being part of a team at this level creates a virtuous circle that brings advantages to our industry partners through the innovations developed in the Formula Student project. Students benefit hugely from having experienced the most advanced technology available to them to use as part of their course. The significant advantages of Digital Factory are utilised on the race vehicle to make its entry and performance in all areas a better prospect. And, our commercial partners benefit further from Digital Factory's understanding and enhanced ability to provide consulting and services on the techniques that maximize the productivity returns that are available using Dassault Systmes technology. Formula Student is an inclusive challenge that mixes disciplines to help gain maximum points in each part of the competition. Students of finance, marketing, media, business, design and history as well as from various engineering disciplines all take part at The University of Sunderland and add their own skills and talents in an exciting way.

Shaun Clark MD of Dassault Systmes VAR, Applied PLM Solutions commented, The ability to produce 3D models that can be easily comprehended by non-engineering students allows each team member a greater insight into the mechanical aspect of the project. Highly visual animations of, for example suspension behaviour, allows drivers to understand the vehicles track characteristics and adapt their driving style accordingly. Equally, the marketing crew have access to images that allow them to convey the thrills and technical expertise in ways that appeal to the market and help encourage sponsorship. Chequered Flag

Students such as Thomas have access to advanced tools has led them to create new solutions that are truly innovative. One of these is the use of aerospace grade aluminium for the design of uprights, which, with its excellent weight to strength ratio and machining properties allowed the team to reduce structure web thicknesses to 2mm in some cases. The decisions that the students made in this respect were verified using SIMULIA, which allowed them to get a right first time solution from subjecting the structure to FE analysis. Shaun Clark added The planned incorporation and availability of 3DVIA Composer technology will enhance the teams works further allowing them to develop better engineering along with the ability to communicate it. This Dassault Systmes technology is planned to find applications in technical documentation, clash detection, assembly procedures and other areas where its powerful graphics and data capabilities will be used to improve performance, cognition and competitiveness of the team. As a project this competition is unmatched for its ability to allow disparate disciplines and students

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to meet and flourish in a competitive atmosphere and have fun while learning.
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http://www.it-analysis.com/business/change/news_release.php?rel=9514