

Raising the bar for CAE products

Exhaustive design verification and validation programmes have long been an integral part of taking any quality product to market, the development of CAE software is no different.

Users of CAE rely on the product's code to accurately predict performance to achieve a 'right first time' design solution. However, with the almost infinite manner in which CAE software can be applied and no practical way to test its use in every conceivable scenario, the CAE developer must focus on the most common user scenarios, or employ statistical methodologies to contain development programmes to manageable proportions. While perfectly valid, historically this approach has been constrained by both the scope of the testing programme and the availability of measured data for experimental validation.

Recognising the limitations of this conventional approach Flowmaster now implements a three-part solution to further improve product quality and reduce development lead times.

● **Step One:** Start from a different place – By making the transition from sequential or 'Waterfall' model for software development to the more flexible 'Agile' model, development tasks have been broken down into prioritised stand-alone work-packages. This has allowed Flowmaster to plan and focus development around a robust testing process, leading to significant improvements in production code quality.

● **Step Two:** Include the customer – The inclusion of customers in the 'Beta' testing process for developing new functionality is mutually beneficial to both customer and Flowmaster. The customer has an early opportunity to evaluate proposed enhancements with a chance to influence development, while Flowmaster strengthens its testing process through 'real world' scenarios.

● **Step Three:** Ongoing validation – With closer cooperation between customer and software developer, validation can be seen as an ongoing activity extending beyond product launch and throughout the life of the product. This approach has enabled the refinement of the software's Advanced Heat Exchangers capability through a collaborative research programme with Cummins Engine Company Limited; following the original validation carried out by P&Z Engineering GmbH using experimental data supplied by BMW Group.

With growing product complexity, and ever increasing customer expectations, the need to ensure that CAE products are fit for purpose will remain a key challenge for software developers. Consequently the need to innovate new product delivery processes and methodologies looks set to become an increasingly important aspect of the CAE developer's activities. ●

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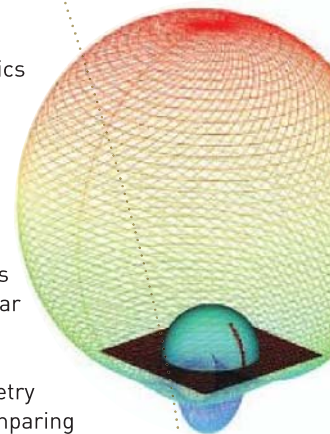
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