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Data Analytics:

TRUCKS USE DATA To Figure Out How TO APPLY BRAKES

Engineering data has become essential to business-critical systems and applications. Richard Rovner, vice president - marketing, MathWorks, speaks with Dilin Anand from EFY, about how engineering data is re-shaping the industry

Q. Tell us about something exciting happening in data analytics?

A. We are most excited by engineering-driven analytics. Examples of these can be found in smartcars, modern aeroplanes, autonomous vehicles and even in robotics. The technology is being driven by real-time availability of massive amounts of engineering data, new machine-learning algorithms, Big Data support and performance enhancements to analytics and design tools.

Q. How is engineering-driven analytics different from traditional ones?

A. Business intelligence is primarily about gathering information from traditional sources of data. These include business and transactional data generated by humans, which then gets analysed by business intelligence systems. Growth in smartsensors is delivering a large increase in machine-produced data, outpacing human-produced data. Now we have the ability to combine engineering data and traditional transactional data together to gather insights from a much richer data set. That is the difference.

Q. What are the challenges faced in implementing engineering-driven analytics on a full scale?

A. Challenges are in understanding how to process the massive scale of data generated here. You would need to get all computing and data sources, graphics processing unit computation and all the various methods to compute a large amount of data quickly using statistical methods.

Q. Could you give an example of an exciting application where analytics has been implemented?

A. Analytics are becoming an important part of the embedded systems workflow. One example of this being put into use can be seen in Scania trucks. They have an emergency braking system for their heavy trucks, designed using model based design with Simulink. Engineering data comes in from an on-vehicle radar and camera, and is then analysed by the system to identify if the vehicle needs to slow down or stop. The analytics uses a mix of sensor fusion and situational analysis to figure out how to apply the brakes.

Q. What enabled this evolution in systems design?

A. More engineers and product designers now have the ability to store and process the massive volumes of data available today, and to apply powerful machine-learning algorithms to it.

Q. Who is responsible for reviewing and approving the implementation of such solutions?

A. It varies. Some organisations are centralising their approach to data analytics, while others have data analytics groups embedded in their business or engineering teams. In our experience, discussions start with the architects and the business teams, but we include information technology groups, too, since it is the IT infrastructure that is leveraged to implement these solutions.

Q. What is preventing the rapid growth of IoT solutions?

A. In the consumer market, one bottleneck is ease of use. IoT devices for the broad consumer market must be simple to operate and deliver real value to the user. This element enables the adoption of consumer electronics.

In the business-to-business segment, the hold-up would be the skills available. This is especially because there is a shortage of data scientists.

Q. How can firms solve the challenge of the skills bottleneck?

A. We believe tools like MATLAB can enable engineers and scientists to become data scientists and develop engineering-driven analytics systems.

Additionally, regarding formation of teams, we have also seen more interest in this concept of the T-shaped engineer, who has deep expertise in one domain like controls but also general knowledge of other domains. This concept helps teams of engineers to be collaborative and solve inherently multi-domain problems. EFY