



Global Timer Module

CASE STUDY
Global Timer Module
DELIVERED TO
John Deere



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Aurelius



Global Timer Module Delivered to Client **John Deere**

Client: **John Deere**

Industry: **Manufacturing**

John Deere is an American Corporation which manufactures a wide variety of agricultural, constructions, forestry machinery, diesel engines, drive-trains and more. As of 2018, John Deere has a workforce of over 67,000 people employed worldwide. Majority of their workforce is employed in United States and Canada and is the second largest agricultural machinery company in the world. The company has its primary administrative center in Moline, Illinois. They have their manufacturing factories located all over the central and southeastern United States. The company has also been working to develop and experiment on electric farm tractors. Apart from construction and agricultural machinery, John Deere also provides other products such as lawn mowers, snow throwers, diesel engines, power trains, ATVs, Star fires and more. John Deere also owns a number of subsidiaries operating in a number of domains ranging from intelligent mobile equipments to electronic solutions and more.



Technology: Global Timer Module

Domain: Engine Management

GTM or global timer module developed by Bosch is an accurate multi-input data acquisition application which provides multi-output signal generation for automotive power-trains and active safety applications useful for industrial closed-loop applications. The tool provides immense advantages by enabling real-time control loops. Determining the multi-thread architecture and programmability also help in providing the tool its necessary capabilities. The tool comes with a scalable and configurable architecture and is very easy to integrate using generic interfaces and hierarchical architecture. The tool provides model-based development support through SystemC model support for in-system verification and early software development.

A unique feature of GTM is that it captures the digital input signal changes in real-time. Coupling this with digitized analog signals for computation and powerful programmability, an output signal shape can be generated through complex pulse-width modulation.

Several versions of the tool comes ranging from GTM V1 version to V3 version and assessment of possibly all potential application domains can be performed in the automotive industry.



Challenges Faced By the client:

John Deere works in the domain of manufacturing of farm equipments and construction equipments, but a large part of their operations also deals with the development of power-train systems. The company had acquired a new set of controllers for engine management systems which had multiple application modules one of which was GTM. GTM is essentially a module which handles the timing related operations and procedures. The client's workforce was so far not knowledgeable and had an understanding of this particular module and how it can be integrated with the engine management system.

In order to effectively use the controllers and employ them in their engines and power train systems, John Deere required knowledge and information resources in the particular module along with hands on practical knowledge to deliver the required skills and work proficiencies. The major challenge was the sourcing of a proficient subject matter expert who can deliver not just the theoretical knowledge but also the hands-on practical expertise through finer details. Integrating the engine management system with the GTM module was a major task that was needed to be performed with efficiency so that the workforce would get enabled to develop engine systems which are better performing and highly efficient.

Another major challenge was the delivery of hands on training as required by the client which would make the workforce of the client adept in troubleshooting the application and the engine management system as and when needed. The system setup for hands on practical experience was very expensive and difficult to acquire and setup. The requirement for hands-on exercises was an imperative requirement by the client. Thus a way around was to found which was found in the form of simulation setups as suggested by the subject matter expert and made possible by Aurelius.



The challenges faced by the client all culminated into a single aim and need of developing the abilities in the workforce such that they would not have to outsource their work to third party vendors and thus generate high revenue throughout.

Why Aurelius

In the need for getting in sourced capabilities to the client's workforce, the client approached Aurelius Corporate Solutions to develop a insourcing solution that can provide their workforce with the requisite capabilities which can help their organization grow and use the latest engine management technologies. Aurelius was able to quickly identify the exact needs and requirements of the client and conduct a global search for the correct subject matter expert who can deliver the needed knowledge resources in the amalgamated formation of theory and practice. A dedicated task force was setup whose work was to support the solution end to end beginning from the analysis of the clients requirements to the culmination of the solution.

Aurelius was able to even source a simulation setup which was used for providing the hands-on practical understanding of the tool which was very difficult to arrange. This helped the client's workforce in attaining the finer detailed knowledge of the tool and the ways to use it. A demo was shown to the client before the training began and on gaining the confidence the entire insourcing solution was structured.

In the insourcing solution, a number of beneficial components were integrated which included real world use case scenarios to make the workforce familiar with the working practices and extensive coding sessions for the tool which made the workforce comfortable with the hands on practices.



Aurelius provided complete on shore and offshore support to the client through dedicated teams and made sure that the entire solution was delivered smoothly and without any hassles. John Deere gained the advantage of the immense knowledge base inculcated by Aurelius over the years.

Solution and Post Solutions Benefits

The client now has a workforce which is well adept in handling GTM to the best of its potential and provides immense growth to the power train development segment of the company. The client is now able to perform and devise engine management systems in a much more effective and efficient manner and delivers better products in this range.

They are experiencing an increased revenue of over 35 percent with an ROI attained within a few weeks of solution completion. This has been made possible owing to an integrated internal rate of return with the insourcing solution which is always high since the solution is not a generic training system but an empowerment system which inculcated the capabilities to build products and provide services in the workforce of the client.