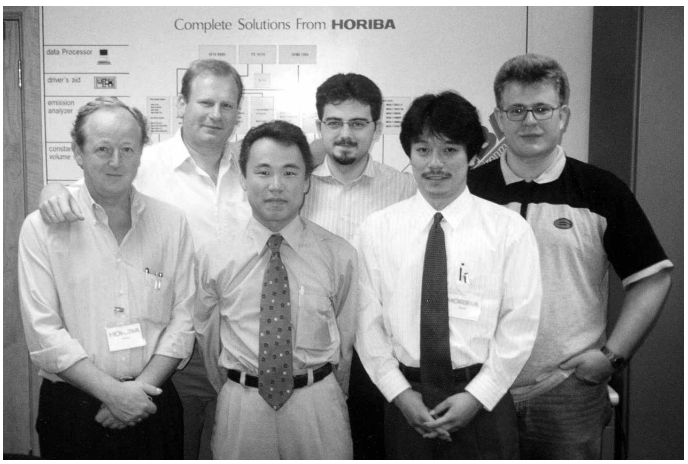
OPEN DISCUSSION

Global Teamwork and Product Development for Excellent Measurement



Place

Horiba Instruments Limited, Northampton, England

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In early July, Horiba Instruments Ltd. in Northampton, U.K. hosted a four-day meeting of system engineers from Horiba's Engine Measurement Division. This meeting brought together a talented and experienced technical support team from Horiba's facilities throughout the world. Participants were briefed on the latest developments at Horiba and in the marketplace. They shared their recent experiences and worked together to sustain and improve the quality of Horiba's Engine Measurement products.

On the final day of the meeting, Readout's correspondent conducted a lively roundtable discussion with this energetic and articulate team. Many topics related to teamwork, product development strategy, satisfying customers' needs, and anticipating future requirements were covered. This article presents highlights from the discussion and comments made by Horiba's team members following the meeting. The roundtable discussion included these participants:

Supplying a Truly Global Product

— What kind of products will be required to satisfy the needs of Horiba's customers?

Mörkl The VETS-7000NT (vehicle emissions testing system) is such a product. It is a quite open product which usually fits nearly all of the customer's needs– whatever they are.
Mainly, what the system engineer must do is adapt the system to the existing structure of the customer. This depends on the kind of network the customer has in place. You have a lot of possibilities. So, in my opinion, the products that you can build around a VETS system are the ones that will satisfy the customer's needs.
Another approach would be to build a customized VETS that is optimized for the way it will be used. It can be used not only for chassis dynamometer testing, but also developed in the direction of serving as a universal data acquisition system.

— Can you explain what you mean by "universal"?

Mörkl In the field of automotive testing, you have engine test cells and chassis dynamometer test cells. As it looks today, the simulation method is being used more in this field, too. That means that the cases when engine test cells are being used more often at the research development level. This does not mean that chassis test cells will be replaced, but the growth, in percentage, will be higher for the engine test cells. So this is a potential market.
Horiba's VETS-7000NT product can cover this field without requiring much adaptation. Of course there must be a marketing strategy and some development work. There will probably be other applications that result from the common architecture that we are developing. This is a market that is very rich in possibilities.

— In terms of making a global product – one that is easily adaptable to the requirements of local countries and markets – does Horiba's current technology make this easier?

Mörkl Yes. We are using software sources and operating platforms for the VETS-7000NT that are widely available and well understood by all of our customers, so this makes it quite a bit easier.
As the regulations are usually divided by continent and not by country, there are a group of regulations that we all know. They apply to all of our customers in Europe. There may be some individual things that the customer wants for himself, but these are usually individual requirements.
We have a quite "open" product which allows us to quickly do these customer modifications. The open design gives us the capability of setting it up exactly as the customer wants to have it. . . .The customers like this because they can handle Windows® and Microsoft® application programs without special deep training, etc.
So, the ideal global product would be one that is very flexible and can be configured for the needs of each customer without creating conflicts with the basic functionality of the product.

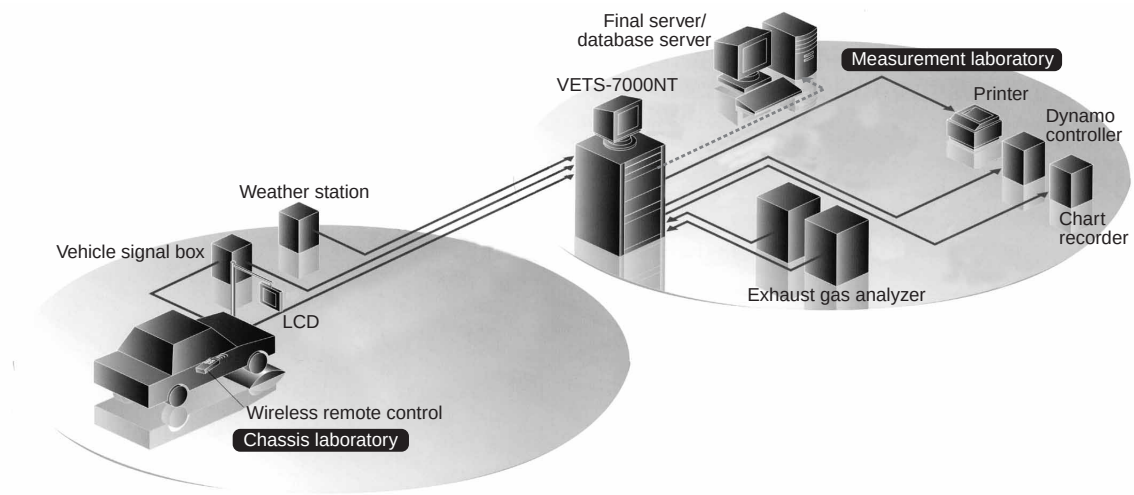
Seghers Yes. We are using exactly the same software for Japan, the U.S., and Europe. We configure it locally for every location. We use local Microsoft Windows, in English, Japanese, German, etc. The software can be configured for different languages, just by changing settings. So in two minutes, you can go from Japanese to English, or French, or German. The products can be used for a very simple laboratory and for a very complicated application. It is fully open for the customer to do whatever he wants.

— Are the emissions testing regulations for VETS systems quite similar from one country to the next, or are there substantial national differences?

Mörkl Basically you have CE and ECC regulations and they are almost the same.

Seghers Exactly the same standards. The only exception is Switzerland, and they follow the American rules.
Globally, there are three kinds of regulations: Japanese, European, and American. The other countries, such as Australia or those in South America will always adopt the standards of either Europe, or the U.S., or Japan. And the VETS-7000NT covers these three types of regulations completely.

Uratani The Japanese specifications include basic elements that originate from the U.S. and the EC. A few years ago in Japan, for example, new regulations were passed for motorcycles and diesel engines. The diesel regulations came from the U.S. and the motorcycle regulations came from the E.C. So right now the Japanese regulations are based on a mixture of U.S. and E.C. regulations. In our global marketplace, the Asian regulations are well understood by Horiba in Japan, U.S. regulations are well known by our U.S. branch, and European regulations are known by the European branch. So at this kind of global meeting, we discuss the regulations, including things like how to do the calculations. If we have a wrong formula, we discuss how to correct it. This is the kind of information that is shared.



I should emphasize that VETS-7000NT has a calculation “core” in common. This data will be used for all of our systems, so this core must be unified. And because this core affects all the functions of the measurement systems, we are constantly making efforts to improve the quality of this core capability.

Seghers Whenever there is something new, not just a regulation, maybe just a customer’s request, you need to find a way to deal with it. The system is very flexible and configurable and there are many possible ways. Sometimes it’s easy, sometimes difficult, but in the end, the VETS-7000NT system’s main feature is that it is easy to add on other things to it.
Some customers ask for special one-time specifications, so we do our best to add them. We then use the results of this for the future. This is a software product that is never really ever finished. There are newer and newer versions. There is perhaps no other system that can match VETS features like this.

Mörkl It is not uncommon to find customers who want an open product, despite knowing that if they do something wrong they can break it. But for them, the advantage of flexibility is more important.

Seghers One of the special features of VETS-7000NT is that the customers themselves can change the configurations. For example they can do all of the calculations themselves using Microsoft’s Excel® (spreadsheet program). So they can do whatever they want and we don’t need to know what calculations they are doing. Really, the VETS-7000NT is a tool. There are customers who want something totally configured to run a fixed set of tests and there are other customers who want to have a very open system and do everything themselves.

A Trend Toward More Diesel Engines

— What do we at Horiba need to do to prepare for the increasing use of diesel vehicles?

Mörkl Diesel passenger cars are more or less only in Europe at the moment. This is one more reason for the need for a flexible system–one that can be configured for gasoline only, or for diesel only, or for gasoline and diesel…. whatever comes up, the product has to cover it!

Uratani Perhaps there will be more diesel engines in future U.S. passenger cars because automakers are engaged in their own globalization efforts. For example, Daimler bought Chrysler and Daimler is trying to produce engines at one plant for use in all of their automobiles for export.

Seghers This brings up an important thing about the VETS-7000NT. It has been developed quite recently, but at the same time, we were aware of what was coming next in the in the market when we were designing it. For example, gasoline direct-injection engines emit particulates. At the moment, there is nothing in the

regulations concerning this: just regulations for gasoline engines and diesel engines. But it looks like, in the future, gasoline direct injection engines will need some kind of testing between the diesel and the gasoline engines. So the VETS-7000NT system has already been designed to accommodate some of these possible futures–so you can measure particulates without using a dilution tunnel. Perhaps it looks like direct-injection engines will not use the dilution tunnel. So there are features that are built-in now that prepare us for the future.
One other important movement in the market is that the required specifications depend less on the particular countries and more on groups. Take the Volkswagen group, for example. They have factories all over the world; and Ford is the same. Each of these groups has its own testing requirements, special requirements, calculations, etc. So there are not so many differences from one country to another, the differences are between one group and another.

Horiba Instruments Limited in Northampton, England

One Current Topic is the Globalization of Marketing Functions

— What is the role of the system engineer in creating excellent products?

Uratani I think, in the near future, maybe as soon as September or October, Toyota in Canada and in Ohio will have the same VETS-7000NT system that they use in Japan. Toyota in Japan already has three or four systems. Each of these systems had its own unique specification, but Horiba was able to meet all the requirements. The software was produced by Horiba Japan's software department with the thorough knowledge of the customer's standards. Now we have already completed and tested their software and we are ready to install it today in the U.S. Until recently, if we received an order to localize a product, an engineer from Japan had to go to the customer's facility and install the code and make changes. Sometimes it took two or three weeks. This has been a problem until now. Today, when we sell a VETS-7000NT, a global product, in an overseas location, a local Horiba engineer can install and configure the product without relying on a representative sent from Japan. This solves the problems we have had up to now concerning our after-care service.
The customer trusts the Horiba group; our knowledge and its currency, so we have to keep our technology and our knowledge current.

— Since the VETS-7000NT product was introduced, what has been the result?

Uratani Up to now, we have had to send engineers and service people to overseas locations because of the wide variety of special specifications. However, because the VETS-7000NT is a global product, the core system is delivered to us anywhere in the world, and the items which have to be adjusted to local needs can be accomplished by a local systems engineer. We still have "local" prior-generation VETS systems installed at customers and these still sometimes require support from Japan. But now, if we sell and deliver the latest generation of our VETS system, there is no problem for a local system engineer to do everything necessary.

Seghers This will take time, because customers are used to their existing system. They are happy with these products and I feel might be reluctant to change.

Mörkl One of the disadvantages of having an installed base made of different generations of local VETS is that support is difficult and expensive. Customers are slowly recognizing that there is an easier way–an even cheaper product that provides the same kind of results that they need.

Seghers I think that when a customer sees that the new product is performing better and better and sees how flexible it is, they will take an interest. And the salesmen are influenced by this good performance, too.

Uratani As the salesmen develop confidence in the reliability of the product, such as the fact that the product is trouble-free, and know that the price is very competitive, they will be more likely to push the product.

Mörkl This is a product that, until recently, has been sold by the engineers and the technicians. It is not really in the hands of the salesmen, except in a few areas. From a sales point of view, the product is not yet global. But, technology-wise it certainly is!

Collection of Customer Information and Feedback

— How do salespeople get information on the technology and products?

Mörkl There are regional sales meetings and every year there is the international MEXA meeting in Japan in October. The information is presented and discussed there.

Seghers At every sales meeting the VETS-7000NT is an important point that is discussed. So everyone is kept up to date on the current situation.

Mörkl Meetings like this are helpful, too. At engineering meetings the local engineers come together and share their opinions and information from customers.

Uratani Also, the communication within this group is very good because of the use of e-mail, videoconferencing, etc. We always keep in contact in order to exchange ideas and present our opinions.

— Other than these periodic meetings, is there a formal method of collecting information from customers?

Uratani One method we've established is (our internal network) "Hornet." This allows the whole Horiba group to have access to a common forum. We can add our suggestions to this forum–it is a good tool to inform and collect suggestions.
It's important that the systems engineers keep their eyes and ears open when they are with the customers–to note these kinds of requests or ideas.

I think in the case of an analyzer where the specifications are set, it's possible to sell through sales people. The VETS system is a more "technical" sale. Sometimes the salesman is a window into the customer. Then the technical people will pick up more details, suggestions, ideas, etc.

Seghers With this system, there are so many possibilities for the customer. During installation we spend time with the customer, explaining all of the things that can be done and also asking, "How are your reports?" and "What do you think of the report's organization?" So we end up with a close relationship with the customer–it results in a very good link between the engineer and the customer.

Uratani The right person, here in Europe, is Uratani-san. The mechanism we chiefly use is e-mail. Because we are a small group, this is easy.

— What is the mechanism that you use to feed this information back to Horiba's headquarters?

Uratani So being a small group works to the advantage of Horiba, because information is distributed quickly to the people who must have it. There are no bureaucratic delays or filtering of information.
We have another resource – GATS (Global Automation Technology Service). The GATS technical center will evaluate and organize new features. It is the most advanced system in Horiba Group's computer technology field in the engine measurement division. We will be presenting a new strategy based on this in the near future. Feedback from customers will be sent to GATS, and GATS will work on the next platform or the next feature. This will be the direction of Horiba's computer-related business.

Quick and Effective Distribution of Customer Feedback

— This question calls for speculation, but what kind of functionality or advanced capability do you believe may be needed in the future?

Mörkl The rate of automation is increasing. But that was anticipated from the very beginning–some of it is addressed by simply using off-the-shelf software which is in common use throughout the world. So there's almost nothing that cannot be included or implemented. Even now, adding functionality is no problem. For example, if you need to connect a barcode scanner, you can connect it at any time. So, basically, there are few limits.

Seghers Customers are asking us to connect to more and more devices, not just gas analyzers–controlling the chassis dynamometers and other things. We can do that. We can now control the robot driver, too. Maybe in the future they will want us to control something like the air conditioning (in the vehicle) or other vehicle features. It's very easy for us.

Also, there is the capability of the data subsystem. I think the next step may be to gain the capability of getting data directly from the control unit. Another very important issue, which is being covered now, is the data treatment. With some systems you can get a lot of information and you must have a good tool to analyze this data. We already have one tool called “DIVA” that was developed by HEAD (Horiba Europe Automation Division). I think there will be a lot of requests in the future regarding the data treatment.

— We also hear about “on-board measurement,” where there will be sensors in the vehicle and program code to support them so that emissions are measured “on the road.” As these features are added to vehicles, do you think Horiba’s customers will demand that the Horiba equipment interface to them?

Uratani This is one possibility. We have been talking about this kind of new technology and new product in Japan, also. This will make the database portion of our products very important. Right now our product has a database that makes it easy to collect data and perform queries, and make summaries, etc. Today this is only device-level data and customer-input data. In the future we may want to expand this portion. At HEAD we have a specialist in this area. Developing additional capabilities here would be our target. Combining data from the vehicle, and separate information that the customer supplies, all together in one database makes the product more useful. This effort is very important because, for example, Ford, Mercedes, and Toyota–the big companies–collect information from everywhere!

— Lastly, could you give us your comments or thoughts you have on these four days of meetings?

Mörkl This meeting has been a very valuable experience. The exchange of information, and the flow of information is very good. We learn from each other; each contributes something. I think, in the end, we already have very good products. The improvements we make will be very significant when we use the feedback that we get from three continents.