

Mitsubishi Electric and Raima create secure data handling process

Ratingen, Germany 24th of April 2013

Controlling and managing a complex system is difficult at any time. However, users in the process (ex. water, petro-chemical) and infrastructure industries such as surface rail, airports or underground metro systems have the added complexities of having to do the same over extreme distances with the possibility of 1000's of I/O points.

Furthermore, in these application environments there is often the added challenge of safety and security; if there is a failure then very often there are direct implications on both humans and the natural world. Therefore it is no wonder that users in these application environments take only the very highest levels of care and exercise the strongest risk management processes, which means new concepts need extensive testing. So when e-F@ctory Alliance partners, Raima and Mitsubishi Electric, both long term suppliers to these industry bases, put their heads together to solve one common customer's problem it was inevitable that a strong solution would result.

The problem in focus was the monitoring and tracking of many 1000's of assets on a sub-terrain metro line; how to do this in a cost effective, reliable and secure way.

The industrial control, process automation and transportation industries have struggled for years with the problem of integrating efficient data management within its applications. This is mainly due to the strict safety and security requirements which are normally extremely costly to meet. Developers of these systems incur large expenses in analysing and testing as well as automation software to prevent any possibility of system catastrophic failure.

Raima and Mitsubishi Electric decided one approach would be to use existing, approved solutions, designed for purpose and combined in to a single system. This

would be easier than trying to force traditional approaches to solve issues they were never designed for.

Raima was already strongly positioned in the field of secure data management with combinations of server, PC and embedded solutions which could transfer and manage data in a predictable and repeatable way. Features such as ACID based data replication and data encryption, as used in Bank ATMs to ensure data is seamlessly and reliably transmitted, as well as the use of a networked database concept, which has a predictable speed impact, were critical to this solution. Another key part of the solution was to design the system architecture as a distributed database, i.e. it was planned that small local databases (based on RDMe) were to be embedded in the local PLC; this is where Mitsubishi Electric picked up their part of the solution.

As a long term, proven supplier, to both surface and sub-terrain rail transit, Mitsubishi Electric's PLC systems have proven themselves reliable and safe over many applications. When the discussions with Raima turned to issues regarding distributed data management, Mitsubishi Electric already had the perfect platform; the iQ Platform. This combination of PLC and PAC control was ideal to solve the problem of how to embed a fully operating database in a non-PC environment, yet retain the reliability and security of industrial PLC control. The use of the iQ platform's C Controller was a perfect solution to host the Raima RDM embedded database as it seamlessly integrated with the PLC control function through the iQ Platform. The C Controller also provided industrial reliability, with no moving parts, high environmental resilience and a fully C environment meaning it was not susceptible to the normal issues around PC security.

The combination of these two core technologies provided the rail operator with a secure and reliable system; however, that was not the end of the discussions. Working closely with another e-F@ctory Alliance partner, Green Hills Software, Raima and Mitsubishi Electric enhanced the system security and operability further by changing the operating system of the main central database server to the Green Hills INTEGRITY RTOS. This real time operating system (RTOS) has a Separation Kernel architecture that allows the server to be built using technology that effectively enables isolated user environments, or partitions, to be created. These

multiple secure partitions can host real time applications and/or guest operating systems on a single server. By using this, and hosting the central Raima database in one of these secure partitions, it was possible to create a certifiable system solution. The result was a high reliability server with distributed high reliability field controllers that were linked by a high reliability database, all with security and industrial performance; ideal for the mass transit systems which need maximum up time, a demand also seen in process industries.

This deceptively simple solution proved to be a great example of how the e-F@ctory Alliance brings together market leading technologies to create revolutionary solutions; and how motivated companies can come together to provide customers with the competitive advantages needed.



Picture 1: As a long term, proven supplier, to both surface and sub-terrain rail transit, Mitsubishi Electric's PLC systems have proven themselves reliable and safe over many applications.

Note to Editor: if you would like the text in another language please contact Stephanie Jones at DMA Europa – Stephanie@dmaeuropa.com.

About Raima

Raima's core focus is to develop database management system solutions for everything from small embedded devices up to enterprise level hardware systems. The Raima Database Manager (RDM) products are today used worldwide in a wide range of data management solutions in industries such as industrial automation systems, military flight control systems, telecom routers & switches, financial trading systems, medical equipment, data backup solutions, consumer electronic devices and more.

Raima Database Manager (RDM) products are made to Collect, Store, Manage and Move data. They provide options to meet a variety of data management architectural designs by providing a choice of data models and access methods to solve the most stringent performance requirements. All products offer a solid and reliable ACID compliant database technology and employs a number of advanced solutions to meet today's more complex data management challenges such as building highly-available database systems, moving data from small low-powered embedded devices up into larger enterprise systems, using an in memory database, database partitioning support to facilitate data distribution and scalability, and interfaces allowing access to the data from external sources.

Further Information:

www.raima.com

About Green Hills Software

Founded in 1982, Green Hills Software is the largest independent vendor of embedded development solutions. In 2008, the Green Hills INTEGRITY-178B RTOS was the first and only operating system to be certified by NIAP (National Information Assurance Partnership comprised of NSA & NIST) to EAL 6+, High Robustness, the highest level of security ever achieved for any software product. Our open architecture integrated development solutions address deeply embedded, absolute security and high-reliability applications for the military/avionics, medical, industrial, automotive, networking, consumer and other markets that demand industry-certified solutions. Green Hills Software is headquartered in Santa Barbara, CA, with European headquarters in the United Kingdom.

Further information: www.ghs.com.

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About Mitsubishi Electric:

With 90 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, as well as in products for the energy sector, water and waste water, transportation and building equipment.

With around 117,000 employees the company recorded consolidated group sales of 36.3 billion Euro* in the fiscal year ended March 31, 2012.

Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

Mitsubishi Electric Europe B.V., Factory Automation European Business Group (FA-EBG) has its European Headquarters in Ratingen near Dusseldorf, Germany. It is a part of Mitsubishi Electric Europe B.V., a wholly owned subsidiary of Mitsubishi Electric Corporation, Japan. The role of FA-EBG is to manage sales, service and support across its network of local branches and distributors throughout the EMEA region.

**Exchange rate 109,56 Yen = 1 Euro, Stand 31.3.2012 (Source: Deutsche Bundesbank)*

Further Information:

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