

10,000 New Computers per Day under New Control

The high-volume production line assembles lot sizes above 50 PCs per order

Fujitsu Technology Solutions migrated, without interruptions and in cooperation with the porting specialist firm fecher, its centralized production control system to .NET at its Augsburg plant in Germany. **IT-BUSINESS** / Dr. Andreas Bergler

The following problem might sound familiar: The new workstations are not quite compatible with the existing ones of the same model. The Bios is a newer version -- the hard disk comes from a different manufacturer, and the WLAN-card provides different wireless standards. To avoid such nightmares for administrators, Fujitsu Technology Solutions (FTS) produces individual PCs, notebooks, and servers at its Augsburg plant in strict compliance with its clients' standards. Fujitsu's production control system provides smooth order fulfillment for small customized computer orders up to large-scale batches. Understandably, Fujitsu's application software has grown over the years. When it was migrated to .NET, fecher's porting specialists had first and foremost one key constraint in mind: Avoiding production downtimes.

FLEXIBILITY IS THE NORM

„On a quiet day, we produce around 3,000 units,“ reports Rafael Lehmann, Director Production Logistics Project at FTS. At peak periods, his production team works in three shifts around the clock producing 17,000 units or more. The large fluctuation in production range is the norm in Augsburg: Since all systems are produced according to customer specifications, there is basically no product inventory. „We operate like a bakery: We only deliver fresh rolls,“ smiles Lehmann.

FTS's production of customer-specific computers is a unique feature for the European market, which also has an extremely positive effect on the business: With 3.5 mil-

lion units produced and sales of Euros 6.6 billion, the plant already clearly exceeded expectations in 2007.

Since no standard production planning and control system exists to support this method of production, the SAP interface with customers and suppliers was supplemented by an internal development based on Gupta Team-Developer. The software was named PKAM, which stands for „process support for customer order - specific installation.“ It provides the basic data for each system to be produced, including assembly instructions, and takes care of production flow control throughout the assembly chain. „For many customers, we also upload application software or configure user settings. All this is controlled by PKAM,“ explains Lehmann. „This software forms the core of our production. Without it, all would come to a standstill.“

FUTURE: QUESTIONABLE

PKAM quickly developed into a blueprint for success: By 2007, the software operated 350 terminals in production, administration, and controlling. Workstations can be configured individually for various projects in the production lines, resulting in countless configuration options. Moreover, as software maintenance partner, Siemens IT Solutions and Services (SIS) has been matching new requirements from client projects and process optimization on a monthly basis, the software scope of functionality grew considerably over the past few years.

However, one issue caused management

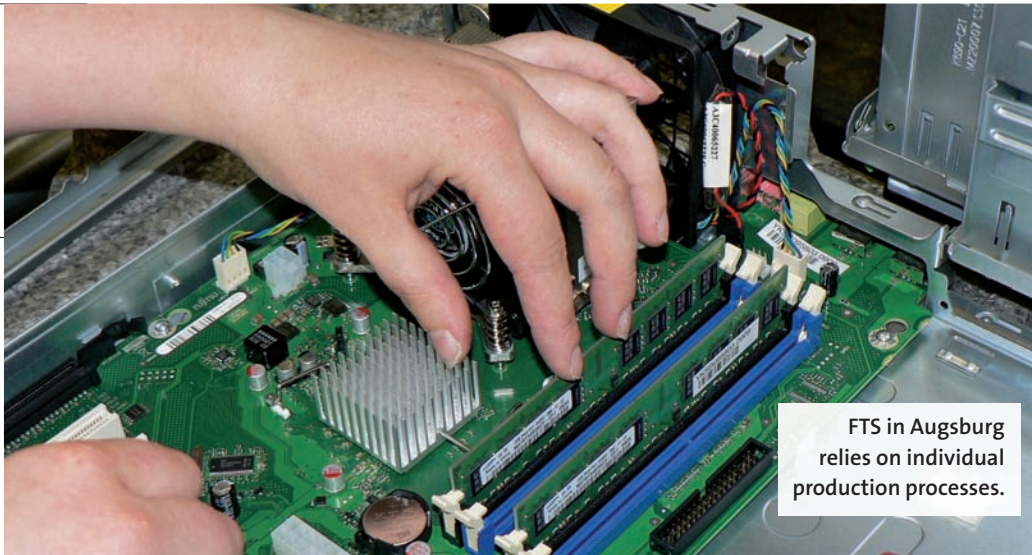
headaches: „Gupta was about to be phased out; it was impossible to find new programmers,“ said Werner Kutschker, SIS Project Manager, explaining the increasing problems. From Fujitsu's point of view, a platform change was to be the preferred solution as well. „In the meantime, .NET had become the company standard for shop-floor-systems. All other systems were already operating on this platform,“ recalls Lehmann. Therefore, in the summer of 2007, Lehmann asked SIS to develop a suitable migration path for PKAM.

AN AFFORDABLE SOLUTION...

At first, SIS carefully assessed available standard software. In order to use one of these products, Fujitsu would have needed to sacrifice a great deal of its software individuality. In-house development of .NET-based software would have been too costly. „Above all, the big question remained how to replace a system so deeply involved in production without downtime,“ said Kutschker, looking back.

The FTS Team ultimately found a solution to this dilemma in „The Porting Project.“





FTS in Augsburg relies on individual production processes.

Project

- Customer: Fujitsu Technology Solutions, Augsburg
- Problem: The software developed on the basis of Gupta Team Developer PKAM (process support for customer order-related assembly) ought to be ported to .NET.
- Solution: „The Porting Project“ service
- Service provider: Fecher
- Implementation period: Five months
- Project costs: No data
- Service and maintenance: Siemens IT Solutions and Services (SIS)

The software and consulting firm fecher promised to change the Team-Developer-Application into a .NET-Application using a specialized tool-supported service. „Migration to the fixed price method enabled us to calculate the costs,“ explains Lehmann. At the same time, the „Big Bang“ effect of replacing existing software with new software could thus be avoided. The decision was made quickly. However, the budget for its implementation was not available before April 2008.

In addition to Lehmann, the newly formed project team consisted of two FTS IT employees, as well as two employees from SIS and Fecher. fecher received the program code from PKAM and was able to start the porting process. SIS set up the new sequence environment and FTS's process specialists defined the necessary test cases. In the following weeks, each of the migrated modules had to be tested based on the test cases defined by FTS. Only then it was approved for the second test phase with real data in the production line.

...FOR A DIFFICULT PROBLEM

Under those real-life conditions, the true



The low-volume line for batch quantities above 50 PCs per order.

complexity of the application tests became apparent: In spite of a manageable scope of 120,000 SAL-Items, the multitude of possible combinations of basic data and parameters resulted in millions of possibilities for different production lines and workstations for any client order. All these possibilities had to be tested. Furthermore, Lehmann is convinced that: „the decision to migrate and not to re-write the application helped us a lot“. „Since the interface to the database remained unchanged, we simply were able to work in parallel with old and new applications at selected production workstations.“ Wherever irregularities occurred, SIS and Fecher specialists had to make appropriate adjustments.

FINAL TROUBLESHOOTING

However, at the end, the project came under considerable time pressure. The Informix-Database used simply could not be used reliably from .NET. The performance suffered so greatly that the project team decided to revise the most severely affected applications manually, even though a new driver version was able to solve the stability problems. „This was the only way to keep the starting date for the ported application,“ explains Kutschker. And this starting date was set in stone – it would have been out of the question to schedule the migration at the beginning of the business year.

On September 1, the members of the project team were happy when all workstations ran smoothly with the new PKAM.NET. At that point, all testers from Production

were able to resume their regular tasks. „Everyone worked well together as a team, even when things were very hectic.“

Shortly after, the development stop imposed upon the porting process could be lifted. The main focus of developers was now on optimizing procedures at the workstations. Lehmann concludes that: „during the test phase, we became much more aware of the processes, and we gained an insight on where further simplifications are feasible. The many new options of the .NET environment now allow us to go full steam ahead.“ □

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