New MacroScript SDK bridges healthcare system boundaries

What started out as a pipe dream in the IT department of a Copenhagen hospital is now generating big buzz across the Danish Public Health Sector.

"We never imagined it was possible," says Steen Jakobsen, CTO and Founder of DM Software, based in Horsholm, Denmark. "Doctors having a complete patient history at their fingertips sounded too good to be true."

At the beginning of 2010, a science project at the state hospital in Copenhagen was using DM Software's tool, Dialog Manager, to calculate information collected in their studies. They had been working desperately to extend their collection efforts to include clinical data from 5 major and disparate systems with no database access – that house lab results, diagnostic information and x-rays, for example – and then present the combined information in such a way that doctors had a more complete picture of their patients. To this point, bridging those systems, that seemed surrounded by a fortress of commercial and political barriers, had eluded anyone else who tried.

By doing so , not only was there the potential for improved patient care, the data would become more alive, more usable, making it possible to search, compare and derive statistics from data in multiple systems.

Little did they know, their dream would soon become reality.

Integrating data from disparate databases
Steen's company had already found great success within the Danish Financial Sector, in a parallel capacity. Since 1997, Dialog Manager has been used for Enterprise-level CRM by large public and private financial companies to integrate data from many different sources, update it in structured ways and make important financial decisions based upon it.

Because of the company's deep experience in the finance sector, where the demands for quality, functionality and security of the data are very high to ensure accurate decision making, Jakobsen knew his company had what it took to support the hospital's goals once the data was captured. But the problem was getting access to the data.

"The healthcare systems are living their own lives and there is very little or no integration," Jakobsen says. "Most of the systems are Java-based, and accessing databases is almost impossible due to ownership of the systems and various security issues, which are mainly political, to protect various interests."

Jakobsen knew they'd have to find a creative way to obtain the data.

Macro Scheduler bridges the gap
As luck would have it, Jakobsen recalled a software automation tool he'd used several years before that had image recognition and screen capture capabilities.

"I remembered using Macro Scheduler in 2001, and thought its Windows Automation capabilities would be part of the solution to our problem. And I knew Macro Scheduler would work well with Dialog Manager, so I reached out to Marcus Tettmar and was happy to find the company was still going strong."

Since Macro Scheduler's macros are run via an executable file (.exe), Jakobsen knew they'd have to find a workaround to IT departments in order to leverage its power. "There was no way the IT department would allow us to distribute 1,000 .exe files across the organization," he explains.

Embedding Macro Scheduler into Dialog Manager
Jakobsen's team decided to integrate Macro Scheduler's language into Dialog Manager using the MacroScript SDK (Software Development Kit). By doing so, they would have the ability to write macros from within Dialog Manager and avoid ruffling feathers.

"Macro Scheduler made it very easy to integrate the SDK." says Jakobsen. "The input parameters for the scripts are completely integrated and direct, and secure and reliable data transfer is being accomplished – all thanks to the brilliant architecture of the MacroScript SDK."

 "Marcus was very responsive. Any problems we reported are resolved within a couple of days. It is the parameter infrastructure modifications to Dialog Manager that have proven to be the most time-consuming," he admits. "We've made the variables flow seamlessly from Dialog Manager to Macro Scheduler and back again."

Steen's team also had the task of extending their existing monitoring tool to include screen capturing, so that reporting issues to the people responsible for problem resolution was smooth.

"How do you forward a screenshot of a problem from a PC on the 7th floor to someone in a different location? As an administrator, how do you put it into production and account for the stability and feel confident that it's doing what it should do? It's those issues that have been the most difficult."

6 nationwide applications accessed by remote control
They used the MacroScript SDK to execute the scripts that automate the different systems and collect the data. The data is then directly inserted into the database and the components of Dialog Manager come into action.

"What we are doing is simply remote controlling 6 nationwide applications, by screen scraping combined with OCR on highly valuable sets of patient information, providing a tremendous value for the doctor," says Jakobsen.

"Once Dialog Manger is rolled out, Macro Scheduler's code can be executed seamlessly through the integration. Because of the built-in API in Dialog Manager, the customer never has to see .exe files. The way the MacroScript SDK is implemented made it very easy for us," Jakobsen adds.

Since a local hospital department typically only has 20-45 patients at any one time, it is possible to "walk" the systems and collect the information. With Dialog Manager's built-in capabilities, they can then present a condensed overview of patient information, structured individually, and based on the patient's condition and illness.

Alerts help doctors react to critical conditions
The system has also been adapted to various medical and evidence-based procedures that enable the doctor to be alarmed when critical conditions emerge.

"The reason that we can do this is that the doctors themselves can adapt and modify the way the information is used and displayed, and they can trust the information they have," Jakobsen says.

Sophisticated monitoring and logging is enabled so that whenever something goes wrong – an application is unavailable, for example – the system is able to act and inform the responsible people.

It is also able to automate basic tasks like ordering new prescriptions or blood tests.

Collecting data from screens solves database access issues
"Getting information out of separate healthcare systems managed by individual companies is next to impossible," Jakobsen admits. "Instead of hooking up to databases with SQL, we're collecting information from applications."

"We have made a complete interface for the SDK where the source code and bitmaps for image matching is stored in the database and is automatically rolled out. Whenever the software needs it, it loads it from the database, compiles and executes at run-time."

"So far, the results are indescribable," says Jakobsen. "They've never seen anything like it."

"We've saved the doctors and nurses enormous amounts of time, and at the same time, added very valuable and sophisticated calculation and decision support across five systems that otherwise have no link to one another. This can only be done with the unique Windows automation capabilities of Macro Scheduler combined with the tight integration with Dialog Manager."

Huge impact on public healthcare
"We think it will have a huge impact on public healthcare in Denmark," he concludes. "The buzz is also fueling success in our existing customer base."

"By integrating Macro Scheduler into Dialog Manager, we've made it possible for large companies with legacy systems that aren't going away to access its power."

More information on Macro Scheduler and MacroScript SDK can be found at http://www.mjtnet.com/

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