



Xerox selects ARTiSAN Modeling Tools for Next Generation Product User Interfaces

Xerox Corporation, the world's leading document management company, is recognized globally for pioneering document-centric devices, solutions and services. Xerox has a long-standing reputation for setting benchmark standards in the development of digital multifunction products and software designed to provide a bridge between the paper and digital worlds and enhance business productivity through the sharing of knowledge.

The Office Systems Group (OSG) at Xerox Engineering Centre in Welwyn Garden City, United Kingdom, incorporates a team of over 50 software developers and engineers. OSG is at the forefront of creating digital multifunction products that combine traditional office functions, such as copying and printing, with scanning, and facsimile and email transmission – operating simultaneously if required.

The Challenge

Steve Basford, an OSG Team Leader, and his team were challenged to develop a new multifunction product, based on an existing Xerox product developed in the United States and some additional 'clean sheet' platforms. The inherited platform ran to approximately one million lines of C++ code split across several subsystems – the Print Engine, the Scanner Image Processor (SIP) and graphical user interface GUI – each with a separate processor. Responsibility for the Print Engine and SIP and the supporting software fell to the Welwyn team. Basford required effective tools to streamline systems modeling for the next generation of product user interfaces.

The Solution

Xerox has been using ARTiSAN Software Tools for a number of years, and Basford is impressed with the quality of support, documentation and level of communication he has encountered with the company. He asked ARTiSAN to extend the features of its *Real-time Studio Professional (RtS)* to provide an external classes button. In a matter of a few weeks, the enhancement was available.

"Pre-sales support was excellent, and this continues, which bodes well for the lifetime support of the project," says Basford. "The turn-around time is a good example of how

using ARTiSAN has enhanced our productivity, enabling us to reduce time to market by increasing our ability to design the right solution first time around."

He adds "ARTiSAN has a large number of features and the ARTiSAN document generator and user interface have increased efficiencies by producing documents in the desired format automatically. The new access control features have eliminated the difficulties previously experienced with synchronizing and sharing data."

Xerox also required a different type of state-machine code generation to the 'built-in' capabilities of RtS. The Xerox Welwyn team wrote an add-on tool to the state-machine generator and incorporated the text file written by ARTiSAN to integrate with an existing tool from Object Mentor to produce C++ code from the text code file. RtS has also replaced Microsoft's Word and Visio for the drawing of sequence diagrams. According to Basford, "RtS gave us the potential for a true 'end-to-end' process, using the same language throughout."

Enhancing the Process

Part of the development has been based on Wind River's VxWorks, but this has been replaced by product from ATI. ARTiSAN's *Real-time Studio* includes VxWorks 'libraries' and now integrates with ATI's Nucleus RTOS. The SIP contains approximately 120 libraries of up to 20 classes each, with some libraries packaged together as subsystems, and others just existing as libraries.

The software developers use *RtS* models for low level design description of software inside boxes and they have made substantial re-use of legacy project source code. High-level design encompasses the inter-system communications interface, and is



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accomplished at a ‘feature’ level that crosses package boundaries. *Real-time Studio* will help the Xerox team to organize models by feature as well as by library and subsystem structure.

Reaping Rewards

Different projects are at different stages in their reliance on *Real-time Studio* as the ‘official’ representation of design information. However, with the original project still some way from completion, the decision to adopt *RtS* as a design document is paying Xerox big dividends. Basford points to the intuitive nature of the product and the way it represents the model.

“*Real-time Studio*,” he says, “is the best model management tool we’ve found. It gives us the ability to manage highly complex projects and partition data and thousands of views into convenient packages easily and faster. We also benefited from a good relationship with ARTiSAN and the quality of the training enabled our new engineers to get up to speed fast, reducing the risk of product defects.”

Plug and Play

The new multifunctional product family, in common with many Xerox products, will use several different ‘finishing’ devices – the modules that collate and staple complex documents. *RtS* provides the capability to support eight different finishers through management of the interface to, and reuse of software across, the finishers. The result is a ‘plug-and-play’ approach. Previous projects only supported two finishers and required custom software in separate modules to handle the differences.

A similar situation arises with the alternative print engines used. In this case, a Xerox-wide standard interface to print engines allows the same software in other subsystems to cope with variations, such as different numbers of paper trays, whether the print engine supports color, etc. The design improvements, and good use of design patterns, means that the remaining systems will work without changes to the software when different print engines are employed.



About ARTiSAN Software Tools

ARTiSAN Software Tools is a leading supplier of innovative software modeling solutions that accelerate the development of real-time systems, giving development teams the “fastest path to the right product”. ARTiSAN is a practical partner offering easy-to-adopt, down-to-earth solutions that enable teams responsible for designing real-time systems to complete them on schedule and within budget. ARTiSAN is the only company today offering flexible, practical tools that facilitate communication throughout an entire development team, helping them visualize, design and validate systems before implementation, and then simplify implementation with code generation and component re-use. ARTiSAN Software Tools Inc., founded in March 1997, is privately held with headquarters in Portland, Oregon and Cheltenham, UK. The company has regional offices and distributors throughout the world.

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