



## DCA Design International Adopts Leading UML-based Modeling Tool for Medical Electronics Systems

**Regulatory bodies involved in the market approval of medical devices require that a process is followed and that software systems are designed rather than simply evolve. It is for this reason that DCA Design International, one of Europe's leading design consultancies, compared the leading development tools to help them better design their products and meet regulatory requirements.**

*"We selected ARTiSAN Real-time Studio for use in our design process because of its user-friendly, intuitive interface and professional look it gives UML diagrams."*

*Shane Day,  
Electronics Design Manager*

As a design consultancy, DCA Design International has a strong need to understand what a customer wants and how the design will satisfy their needs. ARTiSAN was chosen as *the* UML tool for use in the design process because of its market leadership, unique system views, user-friendly and intuitive interface, and efficiency it brings to product development.

DCA Design International's starting point was to capture and document existing hardware platforms using ARTiSAN's unique System Architecture Diagram to provide a representation of the system comfortable to both electronic hardware design engineers and software engineers. This enabled them to collaborate effectively with a common understanding of the system, easing tasks such as identifying hardware changes to fully utilize microcontroller usage.

By then building a Use Case model and elaborating the use cases using Sequence Diagrams, DCA Design International was able to communicate important system functionality upstream in their process. In particular, they were able to give customers both visibility of progress and the ability to better understand the product functionality and how it is achieved in greater depth. This resulted in a closely shared understanding of the system, highlighting possible holes in their requirements, and avoiding the unnecessary costs associated with fixing problems downstream.

More detailed work was undertaken on the sequence diagrams to identify the software packages and the classes and key operations required for the product. Detailed state diagrams were then created to specify the protocol of lower-level operations. At this stage they were able to perform a design review, before any code was created, to identify key areas of the software that were safety-critical and any further optimization

necessary to either the software or hardware. Further solution development work was then undertaken to correct problematic areas before coding was done, fixing potential software bugs before they were implemented.

The information in the model fed the design and implementation phases and also enabled DCA to create test specifications. Test specifications were generated both at the high-level, using use cases and their various scenarios, and at the low-level, using detailed information from the state diagrams and class specifications.

The process of supplying customers with diagrammatical information contained in the model was simplified by ARTiSAN's document generation tool and the ability to paste diagrams directly from ARTiSAN into Microsoft Word® documents. The next iteration of the software development will take the results of testing and any requirements change from the customer and go through a similar process of design, code, and test.

In summary, Real-time Studio® has been very easy to adopt and has helped DCA design products more efficiently while providing a framework and process that lends itself to designing devices that require regulatory approval.

### About DCA Design International

DCA is one of Europe's leading multidisciplinary product design consultancies, offering a comprehensive product design and development resource to the medical industry.

The company's medical design team incorporates specialist expertise and skills, including research, industrial design,



*The cell analysis instrument project for Microbial Systems made good use of DCA's multidisciplinary design team that has extensive experience in the development of diagnostic, analysis and measurement instruments.*

*“Real-time Studio has been very easy to adopt and has helped us design our products more efficiently - we're very pleased with our selection.”*

*Shane Day,  
Electronics Design  
Manager*

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mechanical engineering, electronics hardware, software and firmware engineering, together with experienced project management and an in-house prototyping team.

DCA develop products from early research and the formulation of product direction, through project planning, intellectual property strategy, concept creation, risk analysis and full design development, including verification, validation, manufacturer selection and comprehensive industrialization support.

DCA's tools, processes and experience have been developed in order to support clients in achieving a high probability of success for getting new products to market as planned.

As a key part of this, DCA have the capabilities and industry-wide links to assist clients, throughout the development process, in creating the evidence to support all aspects of specification and decision-making necessary to help maximize that success.

The company's work encompasses reusable and disposable medical products including: drug delivery, respiratory, anaesthesia, surgical, diagnostic, orthopaedic, rehabilitation, hospital equipment, and advanced laboratory instruments.

Clients include pharmaceutical companies, medical device manufacturers, research groups and instrument manufacturers around the world.



*A sizeable volume of DCA's consultancy work is in the development of 'state of the art' drug delivery devices as pictured above.*



## 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.

[www.artisansw.com](http://www.artisansw.com)

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