

SmartWater Technology Ltd



- *Fast, robust, and secure*
- *Highly scalable*
- *Easy to use*

InterSystems Caché® ensures SmartWater-based forensic evidence is *watertight*

Will the evidence stand up in court? When SmartWater Technology Ltd wanted to introduce a new production management database for the manufacture and user registration of its DNA-style SmartWater® system, the evidential trail had to remain watertight. But thanks to InterSystems and Xebec Information Systems Ltd, SmartWater has a new solution that's reliable, fast, cost-effective, and scalable.

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SmartWater Technology Ltd was founded in 1996. As one of the most powerful crime deterrents in the world, its SmartWater property-marking

and anti-criminal spray contains a unique chemical marker. With a billion possible forensic combinations and detectors installed in police stations across the UK, SmartWater has a 100% conviction rate when presented as evidence in court. Criminals know that, when SmartWater is deployed, they will be physically and undeniably linked to the crime. As a result, they try very hard to avoid it which adds to SmartWater's success.

Before implementing the new computing solution using InterSystems Caché® database technology, SmartWater relied on paperwork, a database, spreadsheets, and filing cabinets. Continuity of evidence was of critical importance with production steps signed off, control samples retained, and end user registrations recorded. By 2007, SmartWater was feeling the pressure.



“The ramp-up in volume was our biggest headache. We knew that, as the insurance industry started to come on board, the volumes would go through the roof,” said Chief Executive Officer Phil Cleary. “We simply could not continue to rely on the existing semi-manual systems.”

Demanding requirements

A replacement production management system was needed to provide security, robustness, and scalability yet remain flexible for future innovations. The technical requirements seemed impossibly high thanks to the need for item traceability.

“We wanted a database capable of storing all the SmartWater combinations that we could possibly make – that’s a billion. It needed to take a large amount of data in and deal with the many steps throughout the process,” said Cleary.

If that wasn't enough, SmartWater also required an “incredibly user friendly” and fast

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graphical front-end that makes it easy for production staff to record data consistently, sign-off key production steps, and track each batch in detail.

Following a personal recommendation, SmartWater contacted Xebec Information

Systems Ltd which proposed a solution based on InterSystems Caché, the world’s fastest object database, to develop new production systems. But what made this proposal suitable?

“It was the way that Xebec Information Systems was going to design the database using Caché to deal with the large number of individual SmartWater combinations and track them through all their processes in a secure fashion,” said Cleary.

Xebec Information Systems then undertook bespoke consultancy services including project management, business analysis, software and architecture design through to implementation and ongoing technical knowledge transfer.

“Xebec worked very closely with us and spent a lot of time trying to understand what we were doing,” said Cleary. “We’ve been delighted with the work they have done.”

Powerful database technology

The new system makes use of features in the Caché Advanced Security system to provide a fully-customisable and comprehensively secure environment with a tamper-resistant audit trail.

Thanks to Caché’s object storage, SmartWater could create a customised data structure to meet its complex requirements, yet use standard SQL reporting. In fact, Caché’s high-performance object database runs SQL five times faster than relational databases. A key Caché component, InterSystems Zen (an AJAX framework that automatically joins the user interface to the database), enabled the rapid development of application screens rich in functionality within an easy to deploy web-browser environment.

Installed on-time in November 2007, the new solution was implemented in modules.

The Caché database on a shared server is linked to the production department. Production staff no longer needed to complete paperwork: instead they use the new solution’s intuitive screens with barcode readers for the whole production process. This enables them to easily handle the 20,000 unique batches-per-month production cycle.

The highly-reliable Caché database maintains integrity of the evidential trail,

recording all activities. Thanks to the speed of development and deployment coupled with the ease of use of InterSystems' software, the new applications have proved "very cost-effective". The total cost of ownership is further reduced by minimal requirements for database administration and superior application performance with modest hardware demands.

The Caché-based system comes into its own when SmartWater receives samples for analysis. Minute SmartWater traces can irrefutably link property to its rightful owner or tie criminals to a crime scene. This makes it a superb tool for police forces wanting to solve crime or return stolen items. As a result, it is actively avoided by criminals, making SmartWater a formidable crime deterrent.

"As soon as we have analysed the sample, we come up with its unique reference number. The system turns out a hardcopy report," said Cleary. "What impresses me is the ability to show the court everybody who has been involved in the process even down to the minute they worked on any given SmartWater solution."

Monthly production is now set to rise ten-fold over the next few years as SmartWater is taken up by the insurance industry to protect premises and property. The solution developed by Xebec Information

Systems will help staff continue to cross the t's and dot the i's with unprecedented attention to detail. And Caché's rapid application development environment will ensure that future enhancements will be quickly delivered as business needs change.

"Scalability in terms of the future growth of the business is important to our work," said Cleary.

"Using InterSystems products gave us a solution that allowed us to work in a smarter way.

What we're now looking to do is move this on from production, through to fulfilment, customer relationships, invoicing, and accounts. It's eventually going to be a complete end-to-end solution based on InterSystems technology."

Graham Frost, managing director, InterSystems UK concluded, "We are delighted that InterSystems Caché plays an important role in SmartWater's manufacturing and distribution process ensuring the solution was built and delivered rapidly and is secure, reliable, and scalable. SmartWater is a game-changing initiative for the security of assets and court evidence. Most importantly, criminals are discovering the effectiveness of SmartWater and they view it as a deterrent."

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