DRS Data & Research Services chooses Autodesk Inventor for faster, better quality and better value designs.

You could be forgiven for thinking that these days life is nothing but paper: forms for this, forms for that and forms for the other. But forms are a very necessary way of capturing the information needed to support our highly complex society. They are used in elections, examinations, vehicle registrations, hospitals, insurance... in fact the list sometimes seems endless. But have you ever thought who captures and processes the millions of ticks that you and others put in boxes? There is one company that is pre-eminent in the field and that is DRS Data & Research Services plc (DRS) of Milton Keynes. Every day, all around the world, DRS is proving that automated methods for capturing and presenting forms-based information work and work well.

John Wilkes, Senior Research and Development Engineer, DRS Data & Research Services:

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For the greater good

Indeed, DRS supplied the complete solution including forms design, printing, equipment design and manufacture, staffing and support for the processing of the ballot papers for the Greater London Assembly and Mayoral Elections held on 4th May 2000. The Secretary of State said in Parliament "The Greater London Returning Officer has stressed that Ministers can be satisfied that the first use of electronic counting in an election of this size and complexity worked very well and fully in line with expectations. A manual count would have taken many more days to complete." DRS operates in a highly competitive market and must always seek out ways to improve the performance, quality and value-for-money of its products and solutions. That is why the company has recently installed four seats of Autodesk Inventor, Autodesk's leading generation 3D mechanical design system.

Leadership by design

DRS has been using Autodesk 2D and 3D design software for many years. The CD800 machine used so successfully in the Greater London Assembly elections was designed using AutoCAD® and Autodesk® Mechanical Desktop®. For continued success, the company knew that it has to lead the market, not just respond to it. In seeking to lower the cost of design, manufacture and operation of its equipment, DRS initiated a move from optical mark reading (OMR) technology to imaging technology through the development of the new PhotoScribe series of machines. In order to bring the machine to market at the right time, it was necessary to demand even more from the company’s designers. The innovative design of the PhotoScribe is already causing quite a stir. Utilising the very latest in contact imaging sensor technology, the new equipment has a high duty cycle and is suitable for a wide range of data capture exercises including examination registration and processing, complex elections, electoral and refugee registration, ID cards, census work, pathology lab data processing and other large scale surveys. Most machines of this type scan whole pages, creating batch files that have to be post-processed. The PhotoScribe captures and processes on the fly, which means that poorly completed forms and missing information are detected at the earliest opportunity, thus speeding up the overall process. Speed of operation is outstanding, as is its ability to attain results at a rate of up to 7500 A4 size sheets per hour, which equates to more than two sheets per second!

30-day trial proves the point

The DRS design team had been aware of Autodesk Inventor since its launch in 1999 and continued to track its progress ever since. The team could see that Inventor would be able to help them achieve their goals, but had to be sure that it would deliver on this promise when put into a business-critical situation. And since Inventor is based on a fundamentally new technology, DRS needed to be sure that it could effectively handle all the parts already created using DRS’s Mechanical Desktop system. There were additional considerations. Changing to Inventor, even if it met the design team's stringent criteria, costs. Given the rate at which new versions of Inventor are planned, DRS needed to be able to budget effectively. With the Inventor subscription programme in place, this was now possible. Everything was set for a full-scale evaluation of Inventor. DRS embarked on an intensive 30-day trial to make sure it was as good as it looked and...
that it could communicate effectively with the existing Mechanical Desktop system. According to Ben Toms, Mechanical Design Engineer at DRS, "It soon became clear that we could go all the way and implement a complete Inventor solution. We successfully transferred designs from Mechanical Desktop and produced working drawings from Inventor. We felt that Inventor did everything we wanted to do and the trial removed any reservations we had. "The 30-day trial also provided information that could be used to justify the investment. John Wilkes, Senior Research and Development Engineer comments, "From the trial we were able to estimate a 30 to 40% improvement in productivity. And that's been borne out in practice."

Making a clean break
There were three factors that influenced the decision to move to Inventor: anticipated productivity improvement, the need to progress the design of the PhotoScribe series, and the subscription programme. For DRS, this latter was a very significant factor in the timing of the move. Previously, a financial case had to be submitted for each upgrade of Mechanical Desktop. Such upgrades generally dictated hardware upgrades and making such a submission took up valuable design time. According to John Wilkes, "Subscription is ideal, it saves work, we get all the new releases, and it looks as if the initial hardware will meet our needs. We can now budget in advance." The company could make a clean break and move the design of the PhotoScribe totally to Inventor. DRS placed the order for 4 seats of Inventor, together with additional graphics cards to take advantage of Inventor’s graphics capabilities, training and an upgrade subscription. Having become familiar with Inventor during the 30-day trial, the design team deferred the training, taking it later as a tailored, 2-day training course from their reseller. It was felt that by doing this the training could focus on the more advanced capabilities of Inventor rather than on the easily-learned basics. Inventor was installed on the existing hardware used for Mechanical Desktop, with the addition of Elsa Synergy 3 graphics cards.

Benefits go beyond design
For DRS, the Inventor experience to date has been wholly positive. According to Ben Toms, "Inventor has been everything we expected and more. It has been very hardware efficient. And after only three months, it feels like we’ve been using it for far longer. We couldn’t go back to Mechanical Desktop now." He continues, "With Inventor, we’ve taken a large, complex, floor standing machine and simplified it to a desktop model that will sell for half the price of the machine it will replace. As well as making the PhotoScribe much cheaper to manufacture in terms of both parts and labour costs, we are able to pass the benefits on to the customer, making us more competitive. We’ve gone from two man-weeks of assembly time down to three man-days. "The benefits extend beyond design and manufacture into other areas of the company. In John Wilkes’ opinion, "Inventor allows our sales and marketing people to get better feedback from the design stage to help us ensure that the machines meet market needs, before they actually hit the market." The quality of Inventor’s static and dynamic design visualisation helps to get others involved in the process. Thanks to Inventor, the design team are able to communicate their designs much more easily and accurately than in the past. Now, non-technical staff and customers can see on screen the way the machine will appear once in production.

Inventor works the way you think
Why has Inventor proved so capable at DRS? In the words of Ben Toms, "Genuine ease-of-use goes without saying. It’s also great for assembly design and its kinematics capabilities are first class. We are easily able to identify component clashes.” Inventor’s sheet metal capability comes in for comment too. "We have previously used two add-on sheet metal applications, but it was always hard to make sure that their upgrades kept in step with Mechanical Desktop upgrades. Now it is built-in and therefore part of the subscription programme, the problem has gone away. With Inventor you can sketch where you want to. There is no need to master the intricacies of UCS manipulation. The design team believes that it is, “More intuitive, more like the way you think. It places constraints whilst you sketch, so you don’t have to think about it too much.”

Inventor also removes the need for separate visualisation software, reducing the number of applications that need to be supported and upgraded. Using Inventor, build manuals are more easily produced and kept up to date.

Completing the grand design.
Based on their experience of Inventor so far, does the design team have any advice to offer? Wilkes view is clear: “For anyone thinking of moving to Inventor, there is no better time. We have no regrets. The move to Inventor still allowed us to use Mechanical Desktop so we can maintain existing designs. Subscription has removed the worry of budgeting for upgrades, so we went to Inventor 5 at the beginning of October. There are many enhancements that make everything smoother”. Of course, the earlier you make the move to Inventor, the better. The DRS design team now has one immediate objective: complete the design of the PhotoScribe series. It is justifiably confident of success.

www.drs.co.uk
www.autodesk.co.uk/inventor