Developing Effective Mobile Systems
— an opinion piece, by Terry Allen, Chairman, CoreRFID

Learning From The Past.

When working for another company in 1995, I was asked by a customer to create a mobile system, collecting data on the condition of social housing. A Department of the Environment (DoE), as it then was, initiative required local authorities to survey their housing stock. A DoE project had developed data input software which ran on a PC.

If the DoE software was installed on a laptop computer, it seemed, there would be no need to develop specific software for mobile data collection. “Great idea!” said the customer. The laptop was prepared and given to a housing inspector to trial.

It was a complete disaster.

Looking back, expecting anything else seems like wishful thinking. The DoE software collected data about each elevation of the property in turn, front, sides, rear.... The data for each elevation had to be entered before the user went on to the next. The user had to enter the condition of the exterior upper wall followed by the details of the inner. To use that software in the field the inspector had to run up and down stairs several times for just one part of the survey, and so on. The software was driving the work, not the other way around. It didn’t make things more efficient. It made them harder. (Although it might have made the inspectors a bit fitter!)

The lesson was evident. You cannot simply take a desktop software application and use it in the field. That may be obvious now (or is it?) but, 20 years ago, it was a ground breaking idea.

So, starting again, we found a company that specialised in mobile applications development. Their Managing Director said something that I believe is still true today, “The only way to develop a mobile application is for the designer to accompany the person doing the work and then design the application with them.”

New software, reworked in conjunction with these experts, was a total success.

Is This Still True Today?

Nineteen years later, I found myself in a similar situation. A large organisation that CoreRFID was working with asked to trial one of our mobile applications as part of a project evaluation. Looking back, perhaps we were too keen to help but we were happy to agree.

The system (used widely by many similar organisations) was duly delivered, installed, and training provided.

The review meeting following the trial was not a pleasant experience. The system was heavily criticised for failing to do what the mobile users wanted. An hour and a half’s barrage was directed at us. I wanted the ground to swallow me up. Sadly, the ground failed to oblige.
At the end, I could only agree with them and said that, even though it was used by many others successfully, it was clear that the system would never work in their environment. I also said that I felt they could go on forever trialling other systems and the results would be the same.

The reason was simple. Their way of working, developed over a number of years, was effective, efficient, and – a problem with using a pre-existing solution - unique. A system that forced them to adapt to the way it worked was no use. Just as desk-top systems don’t make mobile systems, there is no one solution with mobile systems.

Fortunately, the customer agreed with the diagnosis and allowed us the opportunity to produce a solution that fitted their working practices.

A Better Approach

Our approach was to develop a number of prototype screens that let users see how their system would look. This gave them the chance to comment, giving valuable input to the design process. We focused on the people that actually did the work in the field. The customer’s IT department focused on the loading of data from a previous system, providing feeders to back end systems and overseeing issues like security and resilience.

When the system was delivered for acceptance testing and training it matched the user’s needs. The system went live on time. The customer was delighted with their system. Although we usually get a good reaction to our solutions, this was exceptional. I have rarely received such enthusiastic praise for a new software implementation.

Since the system went live there have been further reviews where improvements and refinements have been identified. These have proved to be mainly cosmetic and could be incorporated fairly easily, because the original system matched user needs so closely.

This successful development of a mobile system resulted from putting the people who would be using the system together with the person who is creating the system.

Results clearly show that this collaborative effort is the most effective way to develop mobile systems. The designer/developer gains a real understanding of the issues facing the person doing the work and collecting the data. And the user’s involvement in the development increases user acceptance of the system, avoiding the risks of failure.

The more discussion and interaction there is between the end-user and the developer, the more likely that there will be a successful outcome.

How Do You Do It?

The approach we adopt (find out more on our web site) includes looking at screen layouts, proto-typing the application so that the user can see the how the screens appear and then allowing time for fine tuning once the system is implemented.

Most mobile applications tend to be relatively simple. They neither require nor benefit from overly complex methods. The old adage of keeping it simple applies when developing mobile solutions as much as elsewhere.

Of course, the system cannot be developed only with field workers in mind. Clearly there has to be input from those that will be using the data received from the field and from IT staff that have to consider the integrity of the other systems that the mobile application will work with.

The same principal applies. There needs to be buy in, at each stage of design and development, from all those impacted by a mobile systems project.
And If You Don’t?

Contrast this with another development project that we were involved in.

The customer’s IT department produced a detailed specification as part of the contract. We developed software to their specification. It passed all their acceptance tests with flying colours. The system went live. It appeared that all was well.

Later, though, it became apparent that end users were not using the mobile devices. They were filling in bits of paper and then giving them to the admin department who were keying the data directly into the host system from their desk top.

A site visit revealed that the end users felt that the system was virtually unusable. Although it had seemed to meet business needs, major benefits expected from the mobile system – timely access to data, reduced errors, reduced data collection effort - were being lost. Not only that, administration staff were involved in additional, unplanned effort. If people have systems that don’t work as they want, they get around them! To solve the problem, the entire user interface had to be re-developed at significant cost and with time lost.

A Plea For Collaboration

The message that user involvement in mobile systems development is essential seems to be taking a long time to get through.

We still see invitations to tender accompanied by detailed specifications for mobile systems that have clearly been designed without thought for the eventual user and, as a result, will never work.

Experience clearly shows that historic methods of systems design and development cannot be applied to the development of mobile systems. More than any other type of application, they need a collaborative approach with the end user involved at each stage of the process.

About CoreRFID

CoreRFID is a specialist in mobile applications development and has delivered mobile solutions for organisations such as London Underground, Weir Minerals, Ainscough Crane Hire, Survitec, Costain and many others. CoreRFID solutions combine mobile data collection and asset inspection applications and integrate innovative identification technologies to deliver easy to use, effective field-based systems.