



Whitepaper

Electronic Forms – the nugget of hope!

Paper ... the legacy

Why do we like paper so much? Is there some genocode in our make up that inextricably binds us to paper? While we wait for some clever scientist to discover the link and maybe an enterprising pharmacist to develop anti-paper tablets we can take every morning, what do we do in the meantime?

Back in the eighties when personal computers came into being, pundits predicted the demise of paper – computers and electronic storage systems were going to wean humans off paper. Computers did not solve the paper problem; in fact they made it worse through widespread access to low cost technology to print more – the growth of ink cartridge shops in our high street could not have been predicted!

eForms ... the nugget of hope!

Amongst predictions about the impact of amazing developments in hardware and software technologies rested a less publicized nugget about the imminent and rapid growth of electronic forms, or eForms. With the growing rise in on-line business and e-commerce, organisations need a simple, cost effective way to capture and track transactions through the various processes, to successful conclusion. Studies carried out by Gartner and Microsoft clearly show very significant and tangible savings where eForms are deployed. Why aren't more organisations using eForms? To answer this question, its worth looking closely at this technology and why this nugget may still hold the secret to eliminating, or at least minimizing, our dependency on paper.

The marketing message goes as follows: “eForms provide the ability to capture and workflow business forms and is completely compatible with any application and any industry. Best of all, the form is very easy to setup and use - the user simply fills out drop down lists, check-boxes, radio buttons, and text fields that can be validated in real time. The form-filling process is intelligent - depending on one answer, different choices are given for the next question(s). As the users fill the forms, data is collected behind the scenes and on completion, is used to generate an actual form in a read-only format, together with the full data set which can be used to automate back-end business processes.”

This sounds good, but is it a viable business proposition and can it really deliver what it says on the tin? As a technology, electronic forms certainly deliver the required functionality. But technology on its own will not deliver a cost-effective solution – it is a key component in a framework which includes procedures and policies to deliver strategic objectives. So, let us start at the beginning – what is an electronic form?

Which eForm?

We are all familiar with pForms, or paper forms – these have been around and in use since paper was invented. They are still in widespread use – primarily because of

paper's portability, free of batteries - and benefit from improvements in recognition technologies for automated data capture. Electronic forms have been in existence in various guises since the late seventies. There are several types of electronic forms, ranging from basic (standalone) forms that can be downloaded from web sites, filled in electronically (or by hand) and printed, to interactive and complex (integrated) electronic forms that provide functionality to capture data keyed in by users in an online environment complete with data validation and integration with business processes. There was a rapid rise in use of standalone forms when PCs started becoming available – desktop applications like PageMaker, Word, and Excel allowed users to create forms for data collection and for initiating transactions. However, the design, deployment, and form-filling tasks remained un-connected with the business process and soon these forms served little purpose beyond filling and printing! Worse, lack of processes and management behind these forms led to rising costs due to lost productivity, errors, poor customer service, etc. Soon, these pre-printed or standalone forms lost confidence and favour.

Integrated electronic forms – eForms - provide end-to-end functionality from design, through submission and output management, to fulfill specific business requirements. eForms are essentially structured data entry screens used for collecting data which can be used to feed any number of front and back-end systems used in business processes, for example, HR and ERP applications, reporting tools, letter generation, etc. But these forms must not be seen as simply tools for data collection – there is more. The essential functionality must include:

- Ability to use a form that interactively changes according to the needs of each individual user's session. The user simply fills out drop down lists, and depending on one answer, different choices are given for the next questions – intelligent navigation.
- Users are lead through the process of filling a form from beginning to end with a point and click interface. As a user answers questions, a form is built electronically.
- These electronic forms link to supporting documents of all types
- The system administrators have the ability to change the way the form presents itself.
- The form design must not involve programming although it is understood that more complex forms will require some IT input – users who understands the business process are ideally placed to design forms.
- The eForms system is independent of any back-end business system, although it can be integrated; consequently, it can be used to collect data for any back-end system, including centralized information repository systems.
- Upon completion, the form is automatically saved and integrated into a back-end repository, which allows users to access and search for the form based on data populated in the form, directly from the information repository. Receipt of the completed forms may trigger back end workflow applications.
- eForms must be detached from any front-end application, to avoid counting eForm users as concurrent users, eliminating any licensing implications. The system must support un-limited access by internal and external users.

eForms ... Framework & Strategy

This functionality – identified by users – paints a picture of an eForms Framework which helps to define a business strategy - simply deploying an eForm will not deliver

the business strategy. This stems from expensive lessons learnt elsewhere – simply implementing technologies will not solve the problem or generate benefits; the trick is to understand careful application of available (and new) technologies.

A practical and effective eForms strategy, with eForms as a key component, can be readily identified. Such a strategy must include the following key components:

1. Requirements Analyses

This is surely the starting point – there is a business requirement, and the need for an eForm may be obvious, but what about the processes on either side, and how can technology and processes be orchestrated to deliver measurable business benefits?

Simply converting an existing paper or standalone form to an eForm will not be sufficient without consideration for the role played by the form within a business process – the form may play a key role in a process, it is not the solution for the process. For example, does it make sense to design a time sheet form to capture the weekly hours worked by employees without looking at how employees will access and fill forms and how the data can be used to automate back-end processes? Understanding the process is key to developing effective eForms which must connect the development, form filling, and output tasks to the business to maximize automation and auditing, keeping in mind that mantra: *data should be keyed in once!*

2. Development

The output from requirements analyses will most likely point to development of one or more eForms. eForms must be developed using software designed to build electronic forms rather than general purpose software. An eForms designer – an application which allows designated users to build and maintain electronic forms and publish these for use within web browser environments – will provide the necessary tools for creating, revising, publishing, and managing forms. The key functionality must include:

- Integration with back-end databases to validate information, and help reduce errors and key strokes. It will be interactive and therefore will ask only appropriate and relevant questions. Selected questions can be tagged as mandatory. Intelligent navigation is a mandatory requirement and will require some IT input – this is easily justified if the end user experience can be enhanced, ie. clarity and simplicity for the user at the expense of some IT input. It is worth noting that integration also serves another valuable purpose: instant feedback to the user during the form filling process – this cannot be achieved with paper forms.
- Where possible controlled options will be provided, such as pick lists, radio buttons and check boxes. This will streamline the completion of questions to a one key entry.
- Facilities for designing and maintaining electronic data entry screens, complete with data validation rules and page navigation within multi-page forms. Once published, this will provide a number of “application forms” that users can fill in. The forms should be created and managed by users without specialist knowledge.
- Facilities for users filling in forms to see the results, eg. summary display, PDF output, etc. which can be e-mailed out and/or printed.

Users must be able to see the results of the form filling process otherwise they will not use eForms!

3. Deployment

The eForms designer will allow designated users to publish forms. A form when published can be accessed via one or more web sites – business intranets or customer facing sites on the Internet (or both). This will typically take the form of web pages or portals containing links to required forms – organized via the existing classification system, eg., clicking on “Time Sheets” may display one or more forms relating to weekly/monthly time sheets. Sub-categories can also be supported. Clicking on a sub-category may display other options below that, etc. Thus eForms can be accessed and completed on-line by anyone who wishes to engage with the business/department.

4. End User Experience

End user experience ie. the form filling process, is key to success or failure. Users must be lead through the process of filling a form from beginning to end with a point and click interface. As the user answers questions, a form will be built electronically and all the data will be saved in a SQL database. The form must be clear and simple to use and navigate through – the business process drives the inherent workflow within forms and this must be clear to avoid confusion and interruption. Above all, users must be able to see the result of what they key in at every stage of the process – instant feedback scores huge productivity advantages over paper and standalone forms. The ability to e-mail out, print, preview, etc. will be vital to the success or failure. As a minimum, users expect the following:

- Access and form-fill via the Web;
- The form must be smart, be interactive, and guide the user;
- Allow users to fill in a form over time – return to un-completed forms;
- Preview, print, and e-mail facilities to “see how the form will look” including the ability to save and retrieve;
- Support online calculations and population of form fields;
- The system will have clear indicators on unanswered questions and navigation around the screens will be very simple;
- On line help notes;
- A clear end point where a form is completed and submitted as an online transaction;
- Route/Workflow forms for approval/verification purposes, with options for resubmitting a form without having to go back to square one.

5. Output Management

Once the form is completed/submitted, the results provide output required to drive the remainder of the business process. This output must be made available as data (eg. in SQL tables) and as a locked transaction – a document – which binds the data to the form. The later represents an image of the completed form – generally a web-friendly PDF file which represents a vital record of the online transaction and must be saved or archived in compliance with business guidelines. An eForm system must include:

- Collection of the required information at source, ie. at the time of filling in form, using standard, off-the-shelf SQL databases;
- Facilities for setting up standard templated output documents – these are auto-populated using data collected via application forms, complete with organisational logos, contact information, and any standard text within business documents;
- Integrate completed forms with back-end document repositories and workflow systems, preferably via support for Web APIs;
- All the data gathered on the form to be used by any number of third-party systems – options must be available for packaging this using XML, WebAPI, CSV, etc.

6. Reporting

Reporting serves two key requirements:

- provide statistics to establish how the forms are being used, and who uses the forms;
- provide information on output from the forms and how the output is used to drive the business processes

7. Support

Training for forms designers is a key part of the strategy – to build good quality forms that enhance the end user experience. This has a direct impact on costs and training requirements for end users, ie, there should be no need to train the end users if forms are well designed. Consequently, the focus shifts to a well thought-out and purpose built forms designer which is accompanied by instructions, help guides, training and a help desk, along with other visual aides such as videos.

Envisaged Benefits

A well thought-out eForms strategy will deliver measurable business benefits, including:

- Significantly reduce the time taken to design online forms;
- Improved service to users by automating feedback
- Reduction in data duplication and errors by controlled data collection and validation at source
- Reduction in the high printing and management costs currently incurred when a revision of the form is required
- Standardization of procedures and templates, and a reduction in the use of paper generally
- Forms may be completed by staff that do not need to be specialist, thereby freeing trained and experienced staff to concentrate on processing applications
- Improved use and access will help promote integrity of business data and its use within business processes.
- Integration with back-end EDM & Workflow solutions and databases.

It is satisfying to know that the paper problem will be solved in the future ... after all there is no evidence of paper on board the Starship Enterprise!

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