Mobile by Design: The Mobilized Solution Guide

Solution Summary

Project	Design, develop and deliver a vendor self-managed, low-touch solutions marketing tool to enable Enterprise mobile software application developers identify and compare mobilized software vendors.
Challenge	• Providing users (business and technical) the ability to identify and compare software solutions based on their unique corporate requirements • Developing a vendor managed, low-touch application to minimize centralized content management around keeping information updated • Building a tool that can be used regardless of network conditions and showcases the value of new "mobilized" usage models
Solution	• Building a Smart client application that: ◦ Incorporates low-touch vendor managed content management processes by utilizing two new "Active Document" usage models a. Adobe* PDF based electronic forms for active collection and update of vendor data b. WinForms for an application-like user experience with local XML data storage ◦ Provides a rich user experience by allowing users to choose from many criteria for vendor selection and then compare and contact them all from a single user interface ◦ Makes the search and comparison process efficient by utilizing a single tool that has relevant, detailed and current content that users can manipulate regardless of network availability – not available via other methods today ◦ Achieves rapid time to value via outsourcing of the process
Results	Intel met the challenges of delivering a mobilized solutions guide by leveraging third party technology and development efforts. This resulted in the development of a smart mobilized application that is essentially self-managed and can be used regardless of network conditions.

The success of this project sets in motion a whole new model for developing and administering low-touch multi-party programs." Said Chris S. Thomas, Chief Strategist for Intel Corporation. "Experiencing the Mobilized Solutions Guide will reset expectations for simplicity, speed, efficiency, value, usability, and time to deployment showcasing new Mobilized usage models in action."

Overview

To satisfy the needs of mobile users, developers must ensure applications continue to work regardless of network conditions and provide users a simple, yet powerful mechanism to complete their tasks in an efficient manner. Although it is possible to hand-craft solutions that support both online and offline processing, a wiser strategy is to leverage third party solutions that are designed specifically for mobile tasks at hand.

Selecting the right technology product has never been easy. Fortunately, Intel has made the job of choosing mobility solutions and software simpler by launching the Mobilized Solutions Guide. The guide contains a comprehensive list of companies that participate in the mobility space and lets developers conduct detailed comparisons of the capabilities of their products.

The goal of this case study is to show how the guide evolved from its beginning as a simple Microsoft* Word document into a full-fledged mobilized application. We will discuss the business drivers that led to this transformation and delve into technical details of the guide's implementation so developers can see which solutions worked and which did not.

Business Challenge

The need to help developers find appropriate mobility-enhancing solutions became apparent as the universe of products kept expanding. "It became difficult to keep track of all the new product introductions, let alone changes to existing products," said Uzair Dada, General Partner, Iron Horse Ventures a mobility strategy firm that works with Mobilized Software Initiative[1]. "Developers found it challenging to sift through products without thoroughly investigating each one—an unpalatable prospect for the time-starved."

Developers wanted a research tool to help them find the right solution to their evolving mobility focused problems. Intel wanted to build a solution that was vendor self-managed so the content would stay current and that the application would not become an internal content management burden. To become the definitive reference for these solutions the guide was scoped to deliver the following features:

- Offers detailed, up-to-date product information appropriate for both technical and business users in a easy to use efficient manner
- Helps developers generate a short list of products that match their project's requirements by giving them flexibility to choose their relevant criteria
- Allows users to easily contact those companies whose products are a suitable match
- Minimizes centralized content management tasks by allowing vendors to self-manage their information

History

This was not the first implementation of a mobilized solution guide. The guide was originally designed as an intranet portal solution for Intel business development team to use and advise their customers about mobile solutions. "The data collection and publishing process was cumbersome. Information was harvested from email interchanges with vendors and copied into a Word document. This was then manually keyed into the portal content management system and finally published," noted Dada.

While this minimalist implementation was at first convenient, its drawbacks soon became apparent. Every time a company changed its product's name or capabilities, the document and the portal content required updating. Additionally, Intel customers were requesting the ability to use and share this information. User feedback also revealed that many developers do not have the time during their regular workday to conduct research.

Justin Huntsman, Intel's Sr. Technical Marketing Engineer associated with the project, observed that "developers often have more time to reflect upon product selection and other forward-thinking issues when they are away from the office—such as on an airplane or when taking the train home. Of course, you cannot use a Web application without an Internet connection, so product research ends up taking a back seat to more pressing issues."

With the realization that the existing Web-based guide did not meet the needs of either the end users or Intel's editorial team, a decision was made to reinvent the guide. "We decided to build a guide that would be equally usable for both offline and online users. This was also the perfect opportunity to resolve our editorial workflow issues. We needed to provide a way for vendors to easily submit content for publication. And at the same time we wanted to receive content that was consistently formatted and contained all the required fields without the major overhead of central administrative and QA resources."

Solution

To determine the features of the new guide Huntsman and Dada pulled together a cross functional team to discuss technical and business issues. "After much discussion we authored a set of requirements that we distributed to vendors as a RFP (request for proposal). We had detailed conversations with each vendor that responded and after careful deliberation picked Sand Hill Systems of Sunnyvale, California for the project".

"Sand Hill Systems offered a solution that met the needs of both our end users and our editorial team. Their plan was to collect and manage company and product profiles using their active documents platform, ACTIVEdox*. Interactive, intelligent Adobe PDF forms enabled with Adobe® LiveCycle* Reader Extensions would be emailed to vendors, who would complete the form using Adobe Reader and return it for editorial approval. A significant benefit of this approach is that users can submit information to the guide without logging onto a Web site. This saves us from having to manage user ids and passwords."

"The user simply completes the interactive Adobe PDF form (which includes attaching documents) using Adobe Reader* and hits the Submit button to route the form back to the

[1]Through the Mobilized Software Initiative, Intel Corporation and other leading technology companies are working with software vendors and industry leaders to provide a comprehensive set of software tools, services, architecture specifications and training programs to help design software for mobility.

server. Adobe Reader detects if the user is connected and if not queues the form as an email until a network connection is available. The user need not worry about whether they are online or offline," said Ryan Hunter, Sr. Product Marketing Manager for Adobe LifeCycle Reader Extensions.

This eliminated a significant hurdle in getting vendors to contribute information. When a profile is ready for publication it is saved to a production database for later retrieval by a Smart client application. The Smart client application supports occasionally connected users by accessing the master database only when its local datastore needs updating.

Backend Automation

"ACTIVEdox was a natural fit for the new Mobilized Solution Guide," said Yogen Patel, Vice President of Marketing and Product Management, Sand Hill Systems. "It was built specifically to help organizations increase the response rate and more efficiently manage submitted data by allowing them to create and deploy action-embedded forms, easily extract data from the forms, and act on that data." By using ACTIVEdox the manual process of sending emails and updating databases is replaced with an automated system that offers the following benefits:

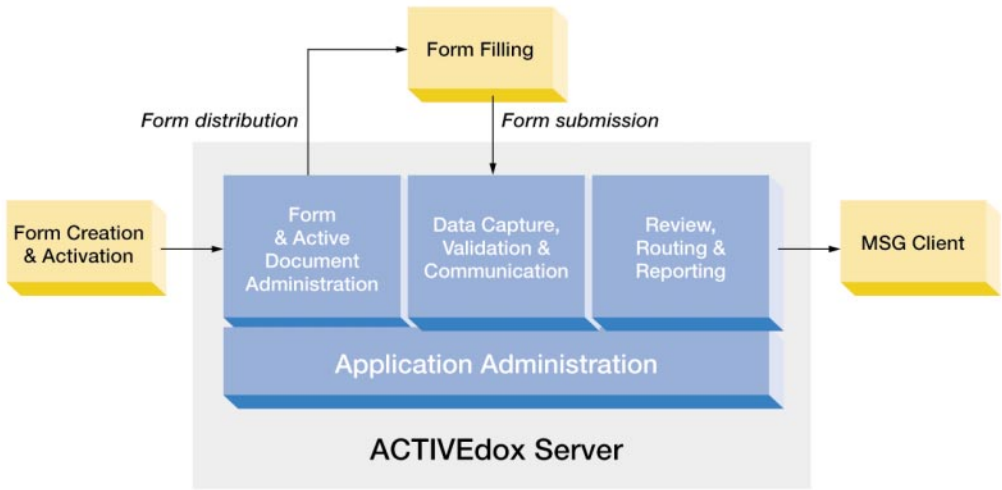
- Mobility vendors submit product information to the guide using interactive, intelligent Adobe PDF forms.
- The Adobe PDF forms can be completed while the user is working on or off-line.
- Users are presented with an intuitive cross-platform user interface.
- Submissions are consistently formatted and arrive as structured data.
- Content is automatically routed by ACTIVEdox through the review, approval and publication phases.

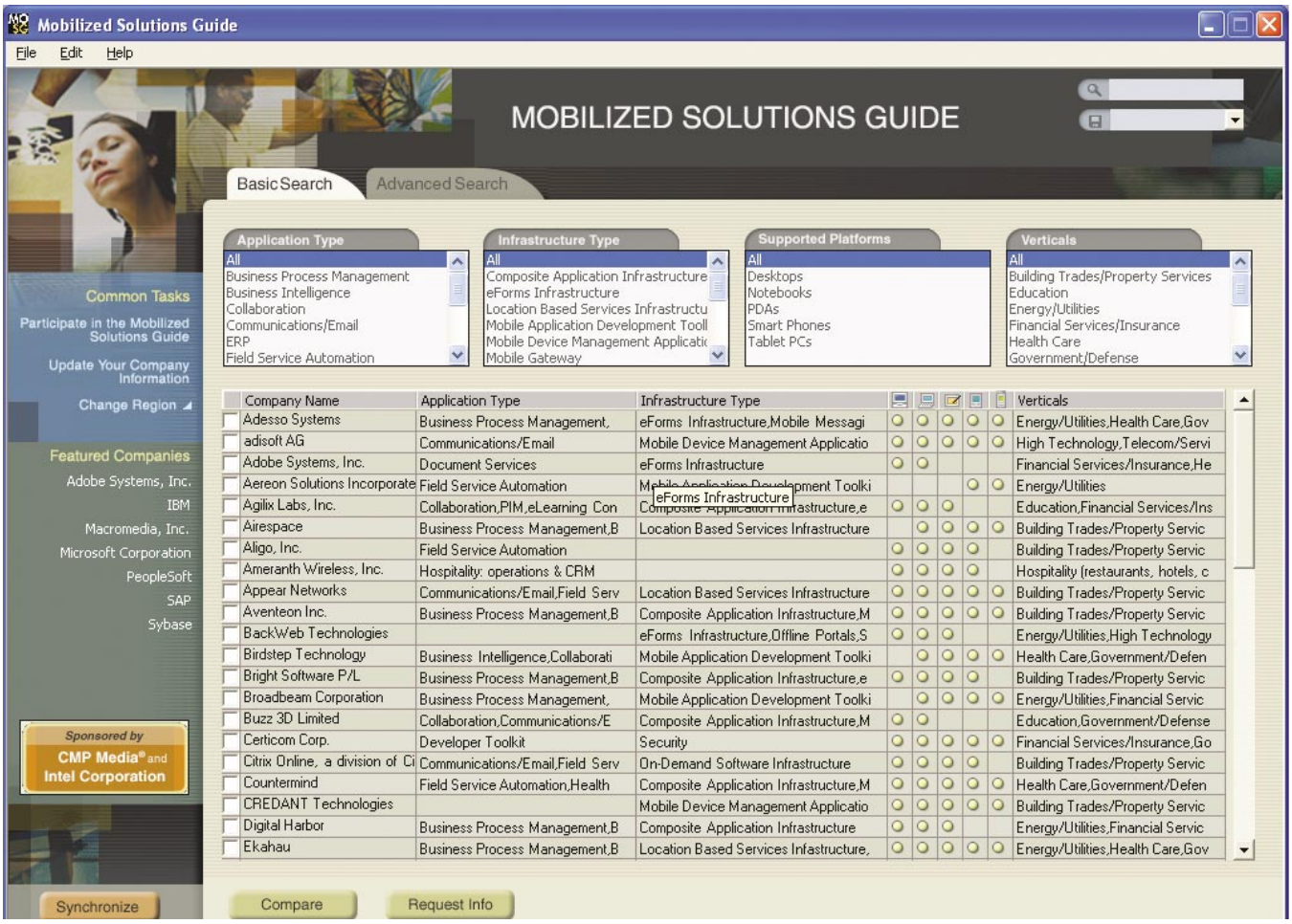
ACTIVEdox does away with the need to update a JSP, ASP, or PHP page every time a form changes. Instead of hardcoded Web pages that can only be changed by a developer, ACTIVEdox uses industry-standard Adobe PDF technology to present and capture form data. With this solution, interactive electronic forms can be easily created by non-technical users using tools such as Adobe Acrobat.

This technology allowed Sand Hill Systems to quickly create a new system to replace the guide's existing content management system. "The new system is much easier to keep up-to-date. Lengthy email exchanges to collect and process product profiles are replaced by Adobe PDF forms and the ACTIVEdox portal. The portal lets editors review submissions and pass them on to the next individual in the workflow. This ensures the state of a submission is known at all times and that editorial tasks are completed in the required order."

Client Smarts

While the ACTIVEdox backend is transparent to end users the Smart client interface certainly is not. "Mobility requires a new paradigm in application design," stated Dada. "As our experience shows, Web applications do not meet the needs of occasionally connected users. Only a Smart client-based architecture can adequately support online and offline usage." To provide the functionality of a rich client without the implementation and installation headaches of traditional Windows applications it was decided the guide would be built using Microsoft .NET technologies.

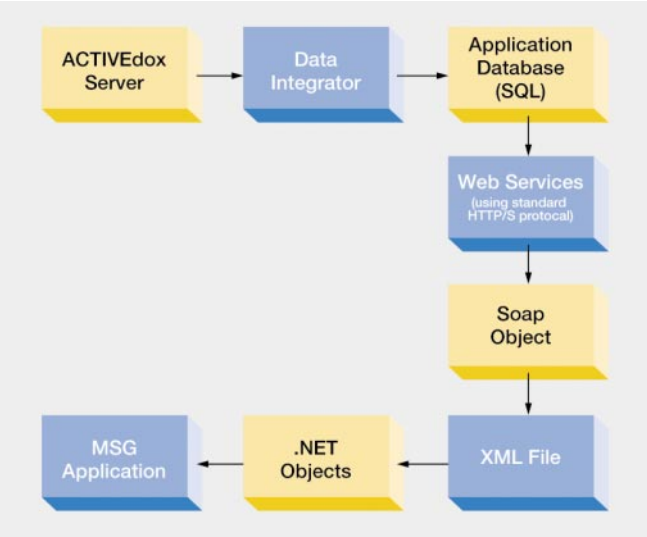




"Applications created with .NET are easier to build and install than Win32/MFC applications," noted Patel. "In fact, the entire Sand Hill Systems product line is built using .NET. Using this technology we were able to create a richly functional Smart client application that users of the guide interact with. To begin using the guide all a user needs to do is install the Smart client and after a short synchronization process he can peruse the guide at his leisure." The client contains a local datastore so it continues to work regardless of network conditions. The datastore is updated at the user's request with the latest information from the master database. This process is conducted over HTTP port 80 so it works in any environment.

"Originally we thought of using Microsoft SQL Server 2000 Desktop Edition (MSDE) to keep the client in sync with the master database. The plan was to have SQL Server replicate its data to the individual client databases. It seemed simple at first but things quickly became complicated. Upon investigation it turned out that MSDE adds 80MB to the client download. This was significantly larger than the dataset itself. Another problem was that the MSDE communicates with the main database using a non-standard port."

After pondering these issues the team arrived at the solution of keeping the guide up-to-date using Web services. "We built a Web service that would return a copy of the database as a SOAP object. The Smart client calls this service and receives back a SOAP object which it then serializes into an XML file. This XML file serves as the guide's local datastore. During application startup the XML file is read and de-serialized into .NET objects. The Smart client then uses these objects to drive the search and display of data."



Lessons Learned

"This project was a microcosm of a modern-day large scale development project. It involved multiple vendors, stakeholders and geographies," Dada observed. "We were doing something leading edge. Mobilized architectures are just now coming into vogue, but they are the future for many types of applications. In addition to pushing the technological envelope we also had to deal with the complexities of managing an outsourced project."

"Even though Sand Hill Systems exceeded any reasonable expectations we still encountered pitfalls. When working with a third party, it is extremely important that all communications be clear. The same mishaps that barely slow in-house projects have a larger impact when documents are the primary tool used to drive implementation. For example, early on in the process we were working on the functional requirements of the application and not the user interface design in detail. This caused some challenges as certain changes we wanted to incorporate in the user interface towards the end would cause design and testing delays we had not anticipated.

Dada also noted the importance of being able to internally QA the product. "Just because the vendor has a QA team does not free you from the responsibility of quality assurance. Although Sand Hill Systems delivered what we asked for, some problems did not show up until we put the product through acceptance testing. We encountered some tricky data quality issues. For instance, we allocated a spot in the interface for each vendor to display their product logo. Unfortunately gb it was nearly impossible to get vendors to deliver a logo in the right size and format. We pulled that feature."

Conclusions

"Overall, our project to build the new mobilized solution guide was a success," Dada concluded. "We set out to build a solution to serve the needs of mobility focused developers and have done so. Furthermore, we learned how to better build a mobility-enabled application and also resolved our editorial workflow issues using the power of Adobe LifeCycle Reader Extensions with intelligent, interactive Adobe PDF forms and ACTIVEdox. Accomplishing all of this through outsourcing was perhaps the best learning experience of all. We hope our story guides others to similar success."

About Intel Corporation

Intel, the world's largest chip maker, is also a leading manufacturer of computer, networking and communications products. Additional information about Intel is available at www.intel.com.

About Sand Hill Systems

Sand Hill Systems' software technology easily and cost-effectively converts static documents into active documents. Active documents contain embedded actions that enable the recipient of the document to provide feedback and ratings, request additional information, and even make purchases directly from within the document itself. For more information about Sand Hill Systems, visit www.sandhillsystems.com.

About Adobe Systems Incorporated

Adobe helps people and businesses communicate better through its world-leading digital imaging, design and document technology platforms for consumers, creative professionals and enterprises. Adobe's revenue in its last fiscal year exceeded $1.2 billion. For more information about Adobe, visit www.adobe.com.

About Iron Horse Ventures

Iron Horse Ventures, LLC (IHV) provides business strategy, marketing, and business development consulting services for large global enterprises and service providers. Our experience and expertise is well suited to businesses focused on Mobility, Digital Home, Digital Office, and Networking Applications and Infrastructure. For more information about Iron Horse Ventures, visit www.ironhorseventures.com.

You can download the Mobilized Solutions Guide free of charge from www.mobilizedsoftware.com/msg.

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