



# Beyond the Boundaries:

## Leveraging the Intelligent Document to Managing Business Processes at the Edge-Points of the Extended Enterprise

October 2005

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*Recent developments in digital document management and presentation present new options for managing customer interactions.*

*Transcending what has been previously available through formats such as Java Server Pages (JSP) and HTML alone, intelligent documents allow users to participate in processes both online and offline, without compromising process control or data integrity.*

*Extending processes to incorporate a new spectrum of multi-modal, multi-platform users both online/offline, and inside/outside of the firewall, illustrates how document-centric processes can be transformed through integrated, intelligent forms.*

### The New Customer Imperative

Much of the first half of this decade was defined by year-after-year of relentless cost-cutting. Finally, the new charter for business has shifted toward enhancing capacity to address the return of customer demand. Yet the reality for every business today, as well as the mandate for many if not most municipal agencies, is to be at once the low-cost and high-value leader of its sector.

In any industry, the immutable business requirement is delivering greater service at lower cost -- measured from both the provider's and consumer's perspective. This necessitates continuously rethinking markets and the role of customer interaction. For the customer-centric firm (any organization dealing directly with consumers, from banks to governments) it requires a shift from the parochial focus of simply reducing customer transaction costs to delivering value through simplified processes and optimal user experiences. This also requires rethinking the relationship of business and IT. Productivity-targeted investments made in isolation at the back office and call centers have largely run out of steam. Productivity needs to be carried across these traditional islands of automation and brought out to edge-points of customer interaction. Managed business processes must be both secure and dynamic, and enable organizations to extend interaction management beyond firewalls and brick walls.

## Leveraging the Interplay of Forms and Processes

In the pursuit of optimizing and streamlining customer transactions, much attention has been paid to the integration of interaction channels. Specifically, seeking to ensure consistency among interactions across multiple contact points, such as by phone, over the Web, or in person. This is necessary for the ability to assess and respond to individual customer interactions, enabling the opportunity to interject the right offer, at the right time, to the right individual. Achieving this means moving to a model where processes, business rules and other policies (the elements guiding and defining how work is performed and how decisions are made) drive each step in an interaction cycle. It also means the ability to adjust process flows and system behavior based on the outcome of process steps.

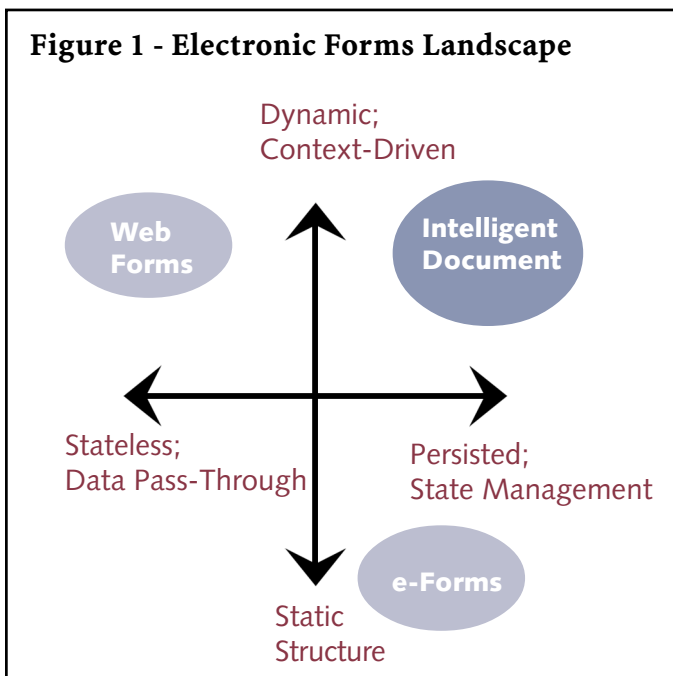
Laying this responsibility at the feet of a CRM system, however, introduces significant point of failure. Taking a moment to examine the value chain involved with any significant customer interaction quickly illustrates how channels such as the Web, phone or kiosk may play only a small role in the process. For example, consider a mortgage application and underwriting process. Converting a banking customer into a mortgage applicant may lean heavily on a CRM solution (in connection or as front-end to a Core Banking System). Yet once the application is taken and the underwriting process begins, these systems are merely inputs to a more complex process involving a combination of regulated forms and customer data.

Existing enterprise applications such as ERP, CRM and CBS provide the “systems of record” for discrete transactions, but are insufficient for managing the entire lifecycle of a customer interaction. It would be torturous for the applicant to complete a mortgage application entirely over the phone or through the Web. Rather, at given stages in the process, a structured form will inevitably be introduced, either one that is

electronic or paper-based, allowing the capture and entry of information to be completed incrementally and offline. This traditionally introduces a break-point in flow of information. Information is typically captured offline and either digitized or exported into a separate system.

### The Intelligent Document

Whether completing a mortgage application, admitting a patient for medical treatment, or enrolling in a new service, the interface between human and system(s) is inevitably wrapped around a form-based document. Static forms offer portability, yet lack the ability to facilitate meaningful user interactions, such as managing ‘screenflow’ to guide information capture or allowing an outbound banking statement to transform into an inbound credit application by leveraging data and rules stored within systems of record. This dynamic ability is generally associated with Web-based



formats such as JSP/ASP or DHTML. What these lack, however, is the format consistency and persistence of structure forms. For this reason Web forms have been limited to stateless data entry, serving a transparent front-end to other systems, but lacking any capture of state or context within the form itself. In this way, they are aptly described as 'dumb' documents or otherwise serving as stateless conduits to other applications.

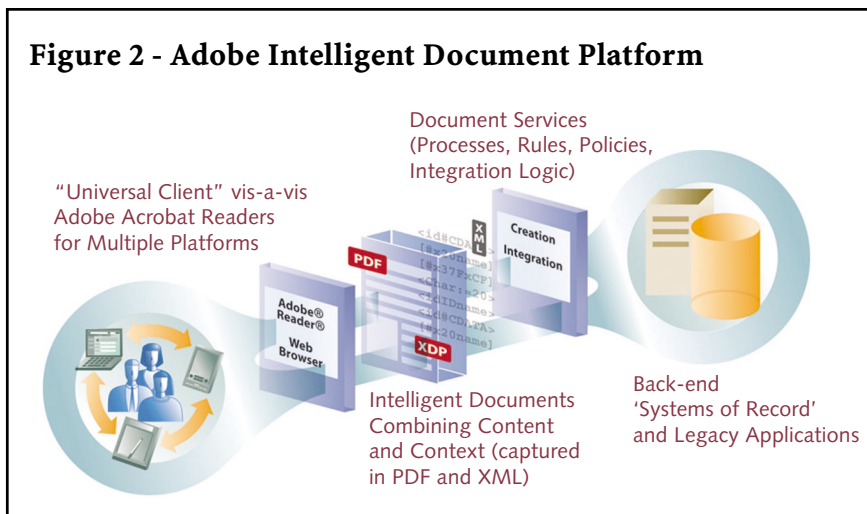
At the intersection of these two form factors is the intelligent document, delivering a dynamic user environment tied to process rules and context, within a portable electronic format also able to support offline, asynchronous interaction and information capture. In this way, intelligent documents extend the value of existing applications and systems of record, by providing a portable user environment able to extend process participation to enterprise edge-points. The use of intelligent documents allows processes such as the earlier example of a mortgage application to be initiated online but completed offline, disconnected or even at different stages on a mobile device. This also requires an assessment of the level of control and security required to safely handle both transient and in situ data transactions. Between the form interface and systems of record, an intelligent document can be composed of business and integration logic able to manage access rights and other security requirements.

### The Adobe Intelligent Document Platform

Adobe PDF (Portable Document Format) has become widely accepted as a global standard for secure document-based information exchange. The Adobe Intelligent Document Platform extends the capabilities of PDF as an interaction environment through the set of server-side software components forming the Adobe LiveCycle suite and a suite of Web services components comprising Adobe Document Services. Combined, these provide a service-oriented platform for development and management of intelligent documents.

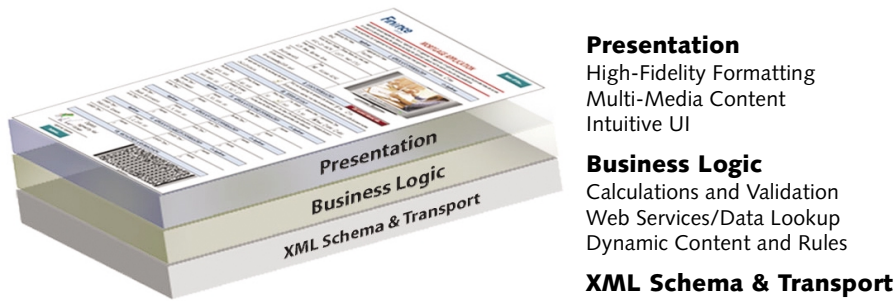
The use of PDF as an interaction environment offers an ability that is typically only associated with browser-based computing: *a platform-independent universal client*. The roll-out of a new application in the

client/server world often meant that the majority of time and cost was involved in the client-side of the equation – desktop installations, user change management, distribution of software and documentation. The most successful salve for this headache to date came with the arrival of Web applications and browser-based access, offering centralized application deployment and management. Yet Web applications and browser-based access generally involve a loss of the structure, control, and portability of the user environment. In contrast, Intelligent Documents built on the



Source: Adobe Systems

**Figure 3 - Anatomy of an Adobe Intelligent Document**



*Because they are based on the Adobe Portable Document Format (PDF) Adobe Intelligent Document support for security, access control, output management, audit trails, and other native PDF capabilities.*

**Presentation**

High-Fidelity Formatting  
Multi-Media Content  
Intuitive UI

**Business Logic**

Calculations and Validation  
Web Services/Data Lookup  
Dynamic Content and Rules

**XML Schema & Transport**

Capture Data in an  
Open-Standards Format

Source: Adobe Systems

Adobe platform provide a universal client for distributing access to new applications and services, combining the control and manageability of client/server environments with the speed and ease of distribution offered by Web forms and browser-based access. Rather than distributing a client application, PDF-based intelligent documents execute within the ubiquitous Acrobat Reader client.

The Intelligent Document itself provides an information container combining both PDF and XML in core structure,

allowing it to interact with process and applications through server-side services and integration points. These capabilities (which comprise the Adobe Document Services) include an entire process management framework, policy-based document control and security, as well as document generation and output management. As a result, these services can be delivered to virtually any desktop or device via either the Adobe Reader client or a Web browser, or alternatively by outputting to hard copy.

### The Myth of the Paperless Office

Despite two decades of talk about the “paperless office,” paper remains the highest level of authenticity for many transactions. Paper is of course well-entrenched within every organization and offers arguably the only true “standard platform” to support business processes. Paper offers a familiar, trusted metaphor for information capture and exchange. The pages of business history are littered with famously unsuccessful attempts to eradicate paper from business processes in the pursuit of operational efficiency. Of course, there are many successful examples of automation vis-à-vis paper elimination for various back-end processes such as transaction processing and the secure transfer of information from one application to another. Yet expanding these examples to accommodate true end-to-end processes requires a bridge to users and document-centric interactions. In light of this, rather than viewing paper as something necessary to eliminate, a better approach is to leverage familiarity of documents as a means to provide an easier on-ramp or “human gateway” to automated processes using digital intelligent documents. Leveraging interactive, dynamic, digital documents which also mirror the look-and-feel of paper counterparts offers an effective means for reducing cultural residence and lowering the end users learning curve.

Adobe PDF documents and forms look exactly like their original paper counterparts, locking in all the original fonts, graphical elements, and layout formatting. This is necessary for many environments, such as government regulated forms, and otherwise offers the advantage of ensuring consistency across user interactions.

## What Does it Cost NOT to Implement BPM?

Consistently, organizations polled by Delphi Group with regard to why investments in BPM have not been made cite the inability to demonstrate a credible business case or positive Return On Investment (ROI). Rather than focusing on factors such as reduced or redeployed headcount through automation, organizations should examine the opportunity cost inherent in disparate practices of information capture and data processing. Organizations need to ask themselves, “What is the cost of not adopting BPM as a core management discipline?”

For many organizations, a real cost is incurred through lost opportunity and errors resulting from missing forms, illegible information on documents completed by hand, or otherwise improper keying of data on forms into enterprise systems. The Adobe Intelligent Document embeds business logic to allow a standard presentation layer while encapsulating functionality otherwise invisible to the users, such as pre-populating with data from backend systems, performing required calculations, or triggering thresholds such as an approval process.

Forms with complex, combinatorial information configurations (“if this and this then that, but this is or that” etc) such as those in many government, healthcare and financial transactions to be greatly simplified using embedded business rules, while also securely and automatically transferring data to appropriate backend systems. This offers an valuable tool for positively shaping the user experience and adding value through streamlined interaction at the edge-point. What it also offers, however, is means for reducing the cost to the firm for supporting the interaction lifecycle.

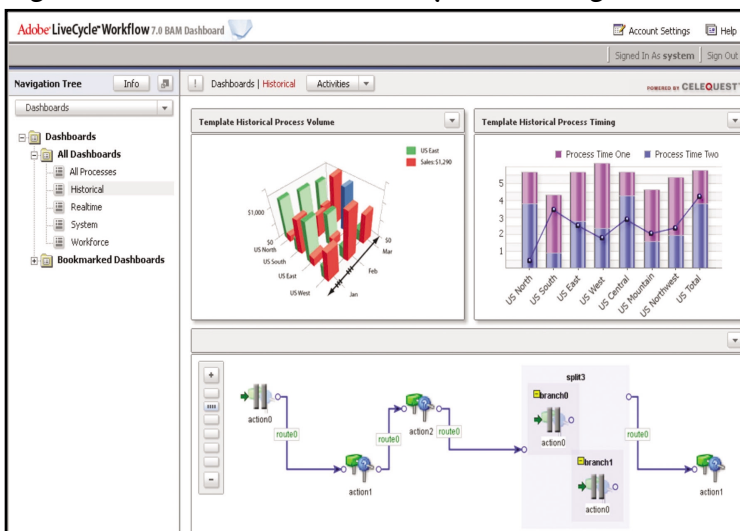
## Capturing Business Performance

Much of the business value of BPM is rooted in better management of the “white space” of business processes. One example is the ability to streamline information capture (cited above), guiding the user experience through a form the way one would work person-to-person. In a similar manner, process managers require visibility into the performance of processes being executed at the edge-points of the organization.

As the BPM market has evolved over the past few years, one of the greatest benefits seen by BPM adopters has been significantly greater support for business performance. This area of capabilities represent key value-drivers for BPM, such as the ability to gather a snapshot of process state at any moment, or to assess a string of ‘upstream’ and ‘downstream’ activities over the lifecycle of a process.

Adobe LiveCycle includes a Business Activity Monitoring (BAM) dashboard with browser-based access to drill-downs and explosions. This includes a number of preconfigured dashboards on cycle-time, process status/activity, real-time workloads and workforce productivity.

**Figure 4 - Adobe Business Activity Monitoring**



Source: Adobe Systems

## Adobe Intelligent Document Platform

*The Adobe Intelligent Document Platform provides a framework designed to enable organizations to facilitate the flow of information between employees and enterprise systems as well as customers and partners at the furthest edge-points of the extended enterprise.*

*The platform is built around a complete business process management framework with server-side components built on a J2EE stack and designed around a service-oriented architecture.*

For more information contact:  
[www.adobe.com/enterprise/main.html](http://www.adobe.com/enterprise/main.html)

In addition users can customize chart types and views, define alerts and notifications, as well as establish access control parameters. Dashboards can be designed to provide real-time status on specific management objectives or performance metrics, such as maintaining regulatory compliance or adhering specific standards around the quality and responsiveness of customer service.

### Summary

The application of intelligent documents provides an advantage over previous generations of Web- and form-based interaction, allowing users to participate in processes both online and offline, without compromising process control or data integrity. This ability is delivered largely through the combination of two sets of capabilities:

- 1) delivering a portable user environment with untethered/offline management of process control and presentation/format predictability; and
- 2) separating how a process is managed from the underlying information involved and the access medium (Web, form, PDA).

This model raises new requirements and expectations for dealing with security and compliance when processes cross the firewall. Intelligent documents provide a means for streamlining otherwise disparate interaction points across multiple channels, such as the Web, over the phone, or through paper-based forms, without introducing massive breaches in information security. Firms leveraging intelligent documents are presented with the opportunity to redefine user interactions, replacing the traditional duality of “online vs offline” with a contiguous interaction lifecycle for managing content, context and the user experience.

Within the context of BPM software, this is enabled by abstracting the composition of a form or document into a compound object comprised of three separately manageable layers: a **presentation layer** capable of presenting the same information and capabilities across multiple modes and channels; a **logic layer** containing the rules and policies which govern the performance of work and flow of activities; and a **data layer** which delivers the ability to capture, transform, extract and persist data based on business rules and policies.

For users and process participants, intelligent documents provide a familiar, document-based metaphor for accessing legacy systems, participating in processes and interactions, as well as completing complex forms that maybe impossible or otherwise torturous through the traditional media of Web, paper, or e-forms. ■

### About the Author:



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