Streamlining document-based processes with Adobe® LiveCycle® Reader® Extensions ES

Table of contents

1: Executive summary
2: The challenges of document-based business processes
3: Long-term costs of inefficient processes
3: The burden of paper-based processes
3: Intelligent documents: The bridge to automated processes
5: Adobe LiveCycle Reader Extensions ES
5: Automating business processes using Reader Extensions
6: Benefits for a broad range of environments
8: How Reader Extensions works

Executive summary

More organizations than ever are committed to streamlining critical business processes, many of which involve communication and collaboration with customers, constituents, suppliers, partners, and employees. The challenge for them is to preserve effective processes and leverage IT investments while making it easier to share documents and forms with people outside their organization.

With the Adobe LiveCycle Reader Extensions ES module, corporations and governments can leverage their information assets across multiple business processes—and even extend them beyond the enterprise. Reader Extensions enables organizations to easily and efficiently equip any third party to participate in their business processes. Because Reader Extensions works with free and ubiquitous Adobe Reader software, no costly software is required for the third party. Moreover, Reader Extensions works with existing IT assets to create an automated environment for capturing information and feedback. As a result, organizations can cut costs, improve customer satisfaction, speed time to market, and extend the value of their investment in enterprise applications.

With Reader Extensions, organizations can make their document-based business processes faster, more efficient, and more accurate. The Adobe solution gives companies and government agencies the ability to enhance their processes with intelligent documents. Intelligent documents combine the advantages of paper documents with business logic to more effectively route information into and out of key applications, while providing the flexibility and reach of browser-based transaction systems.

Reader Extensions enables document producers to use a web-based interface to quickly and easily embed usage rights into PDF files that will "turn on" functionality hidden within Adobe Reader. These functions are automatically activated when the respondent opens the PDF document. Customers, constituents, and partners who access a rights-enabled PDF document can:

- Save the file to their local hard drive
- Fill it out onscreen
- Share it with others to review and add comments using intuitive markup tools like electronic sticky notes, highlights, and text strike-throughs
- Authenticate and sign a document
- Submit the completed document electronically

These features give Adobe LiveCycle ES a broad range of uses: from processing loan applications or gathering feedback on a blueprint, to reviewing legal documents or even completing tax forms.

For organizations struggling to maximize productivity in today's resources-constrained environment, Reader Extensions provides a cost-effective and easily administered way to capture information more quickly and accurately than ever before, while sidestepping the costly and time-consuming process of reentering data submitted in a completed paper form. Business processes are dispatched more quickly, leading to satisfied customers, productive partners, and more efficient employees.

Examples of common document-based processes

- Tax or other government forms processing
- Contract management
- Requests for quotes and proposals
- Collaborative product design
- Construction or engineering change orders
- Prepress document review
- Marketing collateral creation
- Banking forms processing
- Insurance policy management
- Expense reporting
- Benefits management

The challenges of document-based business processes

In corporate and government organizations, business processes are inherently collaborative, with a growing number of critical processes requiring the participation of parties both inside and outside the organization: customers, constituents, employees, service providers, and partners. These processes are dependent on the ability of individuals to efficiently and easily respond to queries, contribute feedback on documents, or complete and return applications and forms.

By taking a document-centric approach to automating and extending business processes to external users, companies and government agencies are exposed to a multitude of benefits, including:

- The ability to leverage information across multiple applications and platforms—throughout the enterprise and beyond
- Reduced costs and increased productivity, including lower transaction processing costs due to automation of forms-based transactions
- More efficient information capture and processing
- Faster response to customer requests and needs, leading to heightened competitiveness
- Better products and services resulting from the ability to secure input and approval from key participants in a collaborative process
- Improved data integrity via the automated return of captured data to critical applications
- Enhanced storage and retrieval of important information

Yet organizations face a mounting set of challenges for managing document-based processes, not the least of which is the vast expanse of documents that are deployed to enable these business processes, including forms, diagrams, blueprints, and contracts. These documents typically are in a broad range of formats, both electronic and paper, which inherently produce obstacles to streamlining the processes that incorporate them.

Moreover, most organizations lack the ability to extend critical business processes to external users. Often, there is no easy way for someone outside the organization to view or interact with information generated by enterprise systems. External parties often use different software platforms, and most organizations cannot influence the software purchasing decisions of individuals outside of the organization. It is often difficult to securely capture information from external parties—and even when the information is captured, different parts of the organization have difficulty accessing and processing information contained in documents and forms, because the captured information literally stops wherever the document resides.

Existing process automation solutions suffer from other limitations. Organizations lack the tools or expertise to access captured information that may span multiple applications. This can require IT to modify or reprogram critical applications so they can accommodate more streamlined document-based processes. Most automated systems also lack a document of record that external parties can archive to document transactions. In addition, companies have a hard time automating manual workarounds that crop up as a result of the inability of their existing systems to fully automate a business process. These workarounds inherently rely on paper or electronic documents as a way to manage the process.

Facing those obstacles, companies and agencies often resort to paper-based business processes. Yet relying on paper burdens both organizations and end users with unnecessary costs and inconveniences.

For many enterprises, business units, and government agencies, the challenges to streamlining document-based processes can be daunting. In the face of those obstacles, many organizations simply do their best to preserve the status quo. But inefficient processes, paper-based or otherwise, often lead to significant costs.

Long-term costs of inefficient processes

- Increased time to market for products and services
- Loss of quality due to lack of input from key stakeholders (such as service providers, customers, and suppliers) that might have otherwise been able to identify product or service flaws prior to delivery
- Overlooked opportunities to involve customers or partners in product or service design, leading to diminished customer satisfaction
- Lost revenue due to lengthy and iterative negotiation processes
- Difficulty managing collaborative processes involving parties with unidentifiable software or hardware platforms
- Inability to maximize ROI on existing IT infrastructure by relying on document-based processes that require manual data entry

For beleaguered managers and IT professionals under pressure to maximize resources in a tight economic environment, a new approach is needed to reduce the costs associated with managing paper while simultaneously creating more effective business processes.

The burden of paper-based processes

Organization

- Print costs
- Distribution expenses
- Processing costs
- Time lost to physical information delivery
- Manual data entry costs and errors
- Inability to access data across organization

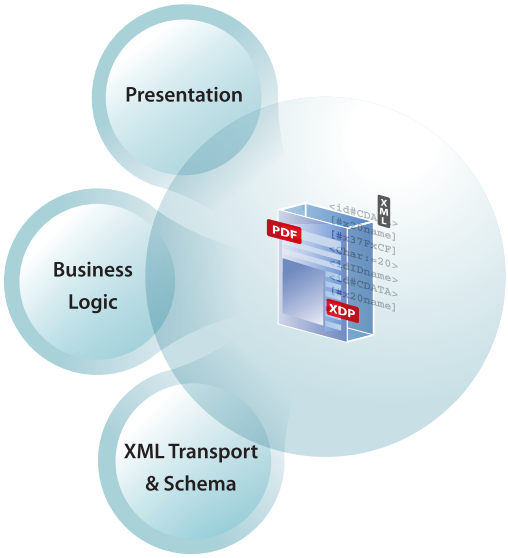
End user

- Time lost to completing forms manually
- Inconvenience associated with returning paper documents
- Postage, fax, or courier expenses

Intelligent documents: The bridge to automated processes

Many organizations are using electronic documents to automate business processes. Commercial enterprises of all kinds—from financial services firms to manufacturers—have made such a move to cut costs, streamline data capture, and more effectively collaborate with key stakeholders. These companies recognize that the costs associated with inefficient document-based processes can be reduced (or even avoided altogether) by embracing electronic documents as a way to efficiently capture information from process participants.

For government agencies, adopting electronic documents is often required by legal mandates: In the United States, federal agencies must adhere to the Government Paperwork Elimination Act (GPEA). The GPEA mandates that agencies provide options for citizens to submit information electronically and encourages the use of digital signatures for electronic document submissions.



What's an intelligent document?

Intelligent documents retain the best characteristics of static documents, such as a familiar look and feel, which enhances user adoption and compliance. On top of the visual presentation layer are powerful business logic capabilities, such as data validations and routing instructions, and XML data support, which allows for more efficient interaction with enterprise applications.

Heavily regulated industries, such as health care and banking, are subject to documentation requirements, including document submittal, archival, and layout. The appropriate electronic document format enables them to meet those requirements while still achieving their goal for a more streamlined business process.

For the vast majority of corporations, educational institutions, and government agencies, the electronic document format of choice is PDF. PDF is the worldwide de facto standard for electronic document exchange, with corporations and governments the world over standardizing on PDF. An ideal electronic format for traditionally paper-based processes, PDF retains the visual and formatting integrity of the original paper or electronic document—down to the same layouts, fonts, graphics, and logos. These advantages have made PDF accessible and intuitive for users, and well-suited for government organizations or corporations in highly regulated industries.

The ubiquity of PDF has been largely aided by the unparalleled popularity of Adobe Reader. Available at no charge, Adobe Reader is supported on every major operating system and virtually every electronic device. To date, more than 700 million copies of Adobe Reader have been distributed worldwide, making PDF a recognized standard for secure and reliable document exchange. Adobe Reader is a true universal client, enabling users inside and outside the firewall to interact with PDF documents over almost any device, from desktop and laptop computers to PDAs, mobile phones, and kiosks.

The latest versions of Adobe Reader can also enable end users to interact with intelligent documents, which combine the advantages of paper documents, delivered via PDF with the flexibility and reach of browser-based transaction systems.

Intelligent documents have the breadth and flexibility to enable a truly electronic document-based process. But Adobe Reader on its own does not automatically allow full-featured interaction with PDF documents. For instance, respondents do not automatically have the ability to save the information they have added to a form or to digitally sign a document. To enable that level of interaction and more, organizations must first activate those functions, which are locked away in every currently shipping copy of Adobe Reader.

Adobe LiveCycle Reader Extensions ES

To bridge basic PDF and Adobe Reader functionality with intelligent document features, Adobe developed a solution that allows organizations to easily extend their document-based processes to individuals within and beyond the walls of their organization.

Adobe LiveCycle Reader Extensions ES enables companies and government agencies to make their document-based business processes faster, more inclusive, more efficient, and more accurate. With Reader Extensions, organizations can enable or "turn on" hidden functionality within Adobe Reader. In doing so, they can distribute intelligent documents capable of capturing and retaining information, comments, digital signatures, or attachments from end users. For these external parties, the process is simple. All they need is Adobe Reader, available at no cost at *www.adobe.com*. Reader Extensions does the rest.

With Reader Extensions, organizations can enable end users inside or outside the firewall to access a broad range of capabilities with Adobe Reader, based on the appropriate level of usage rights for each PDF document. These capabilities include:

- Saving the document to their local hard drive, which retains both the original document and any added comments, data, or attachments
- Completing the document or form online or offline, and saving a copy locally for their records, complete with the information they added
- Sharing the file with others so they can review and add comments using intuitive markup tools like electronic sticky notes, stamps, highlights, and text strike-throughs
- Attaching files and media clips
- Authenticating and signing a document by applying digital signatures, using industry-standard public key infrastructure (PKI) technologies—either via in-house PKI solutions or using services from Entrust, VeriSign, and others
- Submitting the completed or annotated document electronically, without resorting to mail or fax

These capabilities come at no additional cost to customers, constituents, suppliers, or trading partners. Special functions are automatically activated as soon as the end user opens the PDF document. Once the respondent has finished working with the document, those functions are then deactivated until that individual receives another rights-enabled PDF file.

Administering usage rights is also intuitive. A simple Flex-based interface makes server-side assignment of usage rights fast and easy, including batch processing for rights enablement. For additional customization and flexibility, Reader Extensions provides a programmable API.

As a result, organizations can capture information more quickly and accurately than ever before. Meanwhile, they are able to sidestep the costly, time-consuming, and error-prone process of manually reentering data submitted in a completed paper form or annotated document.

Automating business processes using Reader Extensions

Reader Extensions helps organizations create better and more efficient ways to deliver documents to people and retrieve information from them. The Adobe solution combines the rich visual presentation capabilities of PDF with the advanced data transport and business logic capabilities of eXtensible Markup Language (XML). This combination is key to any organization aiming to automate the exchange of data between their enterprise applications and end users. Through its support for XML, Reader Extensions enables the data captured via the electronic document to be automatically integrated with key enterprise applications for better quality information management.

Using Adobe Reader rids organizations of the costs associated with paper production and distribution and eliminates the need for software distribution typically required to involve external participants in an automated business process. These efficiencies allow enterprises to cost-effectively and efficiently extend their collaborative, document-based business processes to external parties, thereby increasing the value of the data and deliverables produced in the process.

Unlike other existing electronic document and forms solutions, Reader Extensions remotely activates functionality within the predistributed Adobe Reader universal client. This results in an unrivaled reduction in deployment costs and the ability for end users to transparently participate in the business process—and even use the Adobe Reader universal client to effectively update enterprise applications with new data.

With Reader Extensions, organizations can:

- Avoid costly, time-consuming manual workarounds to automated business processes
- Improve data accuracy by eradicating costly errors caused by manual reentry of data
- Help ensure secure capture of data by empowering respondents to authenticate and digitally sign their documents before returning them
- Enhance responsiveness to customer needs by capturing and processing data more quickly and efficiently
- Boost return on IT investments via the ability of PDF documents to serve as a vehicle for delivering and updating data to and from core applications
- Access captured information for use across multiple applications, without modification to enterprise systems
- Establish a personal transaction record that external parties can archive

Benefits for a broad range of environments

The benefits of deploying Reader Extensions are applicable to a broad range of operational environments, from manufacturing and financial services organizations to government agencies and educational institutions. Following is a brief overview of a few such application areas.

Manufacturing

Manufacturing organizations (both product and process) are increasingly embarking on important initiatives to include their trading partners (suppliers, customers, and service providers) in critical business processes. In addition to outsourcing functions like manufacturing, customer support, and logistics to external service providers, other key initiatives have included collaborative product design and collaborative procurement.

Using Adobe technology to improve collaborative product design initiatives, manufacturers can easily turn design specifications into PDF files. The design specifications can then be easily shared with collaborators no matter what computing platform they use, or whether they have the software used to create the specifications. Collaborators with Adobe Acrobat® software can review the specifications and use Acrobat review and markup utilities to provide feedback and make corrections to the design specification.

In cases where collaborators are located outside of the organization (such as customers, suppliers, or service providers) or do not have access to Acrobat, the design specifications can be processed through Reader Extensions. By reviewing a rights-enabled PDF document with Adobe Reader, reviewers can use the review and markup utilities activated in Adobe Reader to provide feedback on the designs. And by including customers, suppliers, and service providers in the product design process, manufacturers can achieve significant gains in quality, market share, customer satisfaction, inventory control, and time-to-market reductions.

Collaborative procurement is achieved by working with preferred suppliers and service providers to gain reliable visibility into demand forecasts to aggregate demand and gain price reductions. Yet this process is not without its perils: Many organizations use multiple systems to generate purchase orders. Without a centralized process for aggregating demand and performing iterative sourcing activities, the advantages sought through collaborative procurement may go completely unrealized.

Using Adobe technology, purchasing departments can capture purchase order documents from multiple sources and aggregate the demand into a consolidated order. Procurement specialists can then create an RFQ (Request for Quotation) and convert it into a PDF file. By processing the RFQ through Reader Extensions, the procurement specialist can transmit the request out to multiple suppliers, who can in turn provide their bidding information, sign the quote digitally, and attach any necessary comments to the quote using Adobe Reader.

By deploying Reader Extensions, manufacturing organizations can streamline an array of processes, from the data capture and compilation of purchasing and procurement operations, to the collaborative review and processing of design specifications, change orders, purchasing documentation, and logistics documentation.

Financial services

Reader Extensions also can benefit several segments of the financial services industry, such as insurance, mortgage financing, investments, retail banking, and commercial banking. The benefits fall into three primary areas: account management, application processing, and marketing.

By processing account management forms through Reader Extensions, financial services institutions can provide a paperless solution for almost every account management function that requires a form. Examples include address changes, balance transfers, deposits, and purchase/ sell orders. When a customer receives a form that has been processed through Reader Extensions, they can use Adobe Reader to enter information into the form, sign it with a digital signature, save an electronic copy for their personal records, and send a copy to legal or financial advisers to obtain feedback prior to completing a transaction.

Processing applications for products like mortgages, loans, and insurance policies can be similarly improved. When applications have been processed through Reader Extensions, applicants can use Adobe Reader to enter information into the form, sign it digitally, save an electronic copy for their personal records, and send a copy to legal or financial advisers to secure feedback prior to completing the application. In the case where multiple organizations (credit bureaus, underwriters, risk managers, and banking institutions) participate in the application process, productivity and efficiency can be greatly improved as each organization can use Adobe Reader to review and comment on the application. Each party can also rely on the PDF format and digital signature technology to provide a robust mechanism for storing electronic copies of the application.

Creating marketing materials for financial products involves an iterative review process with multiple reviewers (corporate marketing, creative marketing, product marketing, finance, legal, and government agencies), within or outside of the organization. Processing marketing materials through Reader Extensions helps ensure a consistent review process for each reviewer, regardless of their computing platform. Additionally, finalized marketing materials can be processed through Reader Extensions to create a transactional document so that an informative alert about a stock can be easily converted into a purchase or sell order.

Government

In the wake of paper reduction legislation and widespread technology adoption among consumers, municipal, provincial, and federal government agencies worldwide are actively seeking new ways to use technology to connect with and serve their constituents.

One primary method for accomplishing these goals is electronic forms processing, which can involve tax forms, driver's license renewals, vehicle registrations, or passport renewals. Using the Acrobat document generation solution, a government agency creates a PDF form, processes the document through Reader Extensions, and then posts the form for access by constituents. The constituent then retrieves and completes the form, saves a copy to their home computer for their own files, signs the form using a digital signature, and returns the form to the agency that issued it.

The collaborative features of Reader Extensions are particularly useful if the form requires review or input from more than one individual, or if the submitter requires expert feedback from a financial or legal adviser.

General business

Organizations in any industry can improve their internal processes by using Reader Extensions to improve forms submittal or document reviews. Users on virtually any computing platform can share a similar user experience when completing forms (including vacation requests, expense reports, and benefit applications) and reviewing critical documentation (such as design specifications, presentations, publications, and marketing materials).

In addition to the well-known benefits of PDF and Adobe Reader, Reader Extensions allows users in these situations to save local copies of electronic documents, apply digital signatures, work with forms and other electronic documents offline, and provide commentary for necessary reviews.

How Reader Extensions works

The Adobe LiveCycle Reader Extensions ES solution consists of two components: the server software and the Adobe Reader universal client. Reader Extensions server software is one part of the Adobe LiveCycle services that enables organizations to create and integrate intelligent documents with their enterprise applications and business processes. The server software assigns usage rights to electronic documents created by PDF authoring programs such as Acrobat or the Adobe LiveCycle Designer ES module. The Adobe Reader universal client detects usage rights embedded in PDF documents and activates whatever hidden functionality is authorized by the embedded rights.

Organizations can assign usage rights to PDF documents with a Flex-based interface or through a programmable API. The web browser interface is ideal for manually assigning rights to a small number of documents or forms one at a time. The intuitive Flex interface can be accessible from anywhere in the organization, so any authorized user of Reader Extensions can assign usage rights, with no special technical expertise required.

Authorized users can also customize a message that will appear onscreen when the end user opens the rights-enabled PDF document. Authorized users with administrator authority also can manage the accounts of other users, reset the forms counter, and set the link that takes respondents to a page where they can download the latest version of Adobe Reader.

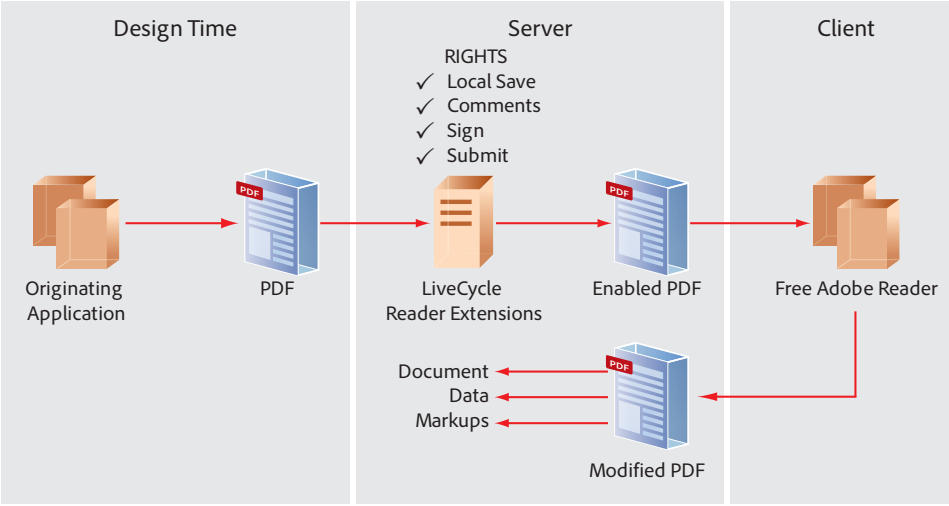


Figure 1. Processing a standard document

Figure 1 offers a simplified view of the rights enablement process for a standard document.

1. First, during the design phase, the document is converted to a PDF file using Acrobat or LiveCycle Designer.
2. Then the document creator or distributor assigns the appropriate usage rights by means of a simple menu interface, one that requires no technical expertise.
3. Finally, the PDF document is made available to respondents on the web, either by posting on a publicly available website (in the case of a tax return form, for instance) or in a secure site accessible only by authorized customers, partners, or constituents possessing an approved password.
4. Respondents can complete the document on the website. Or, they can save it locally, complete and annotate it online or offline, digitally sign it, add attachments, and return it at their leisure.
5. The form then returns to the point of origin embedded with new information that may be used to update core applications.

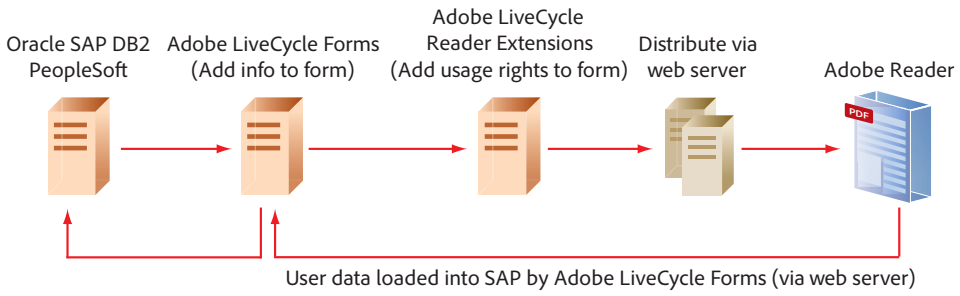


Figure 2. Processing a customized application with Adobe LiveCycle Forms

Figure 2 illustrates how a customized document, such as a loan application, would be handled using the Adobe LiveCycle Forms ES module, in addition to Reader Extensions. LiveCycle Forms bring together a number of Adobe documents and data to streamline the creation of customized intelligent documents on web-based networks.

- In this example, Adobe LiveCycle ES accesses an enterprise application such as SAP to create a custom loan application form in the eXtensible Stylesheet Language Formatting Objects (XSL-FO) web standard, which defines areas of the page and flows data into those areas. The form might include interest rates based on the geographic region in which the applicant lives and even might be prefilled with the applicant's name, address, and other personal data.
- This XML document is then converted to a PDF form, at which point an authorized user employs Reader Extensions to assign usage rights.
- The application is then distributed to a web server, where it can be accessed by the intended respondent using the Adobe Reader universal client.
- When the respondent returns the completed application, LiveCycle Forms loads the updated information from the form into the back-end application.

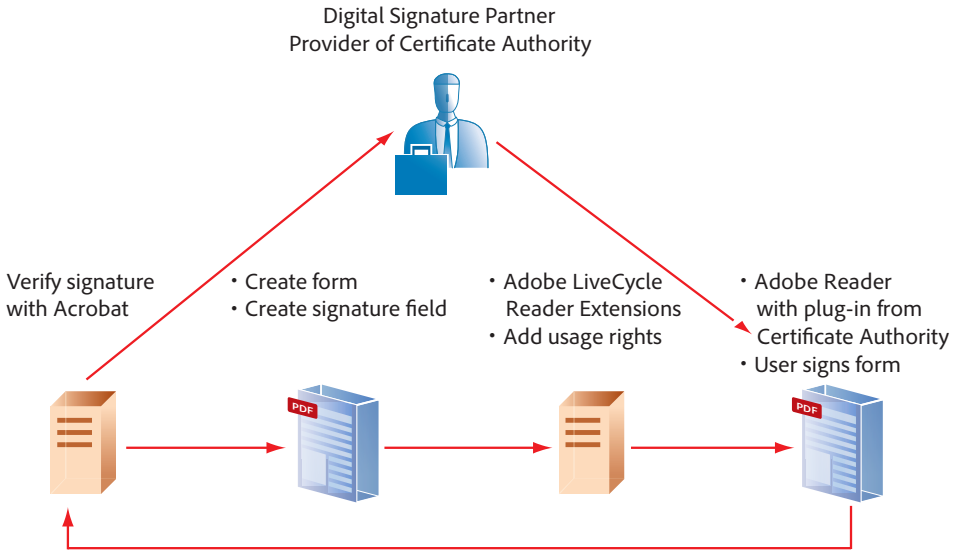


Figure 3. Adding digital signature capabilities to an Adobe PDF document

Figure 3 illustrates how an organization can employ digital signatures to maintain the authenticity, integrity, and nonrepudiation of electronically delivered documents. The digital signature is used to authenticate the identity of the author or sender and provides additional assurance that no unauthorized users have tampered with a document after it was signed.

- Using Acrobat or LiveCycle Designer, organizations can create a signature field within an Adobe PDF document or form.
- Usage rights are then added with Reader Extensions. This includes enabling the respondent to digitally sign the PDF document before it is returned.
- Adobe PDF documents can contain digital signatures in two ways: either via an in-house PKI implementation or through an outsourced digital identity service that provides certificate authority.
- Using the Adobe Reader, users can then sign the document and return it to the point of origin. The organization is then notified of the signature's authenticity as well as any illicit attempts to alter the document.

For more information

To learn more about Adobe LiveCycle Reader Extensions ES and the complete line of Adobe server products, please visit *www.adobe.com/products/livecycle*.

Adobe Systems Incorporated
345 Park Avenue
San Jose, CA 95110-2704
USA
www.adobe.com

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