

Real Estate Appraisals: A PDF Proof of Concept for Electronic Valuation Reports

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Industry Overview

The real estate, construction and mortgage services industries make up about 25% of the US economy. Each has a role in the building, sale and resale, and financing of nearly 8 million new and existing homes each year (excluding refinancing or secondary financing). The impact is felt from the local hardware store to nationwide builders; from the local real estate agent to the nationwide lender a continent away. It also affects others, including local, state and federal government.

All three industries rely on a network of vendors to help complete a transaction by applying their specialized knowledge and methodologies to parts of the transaction. Over time, as funding has become removed from the location of the property, more information is required to make decisions, which in turn has given rise to new sub-industries supplying lenders and borrowers with information, technology, and services.

Real estate related industries have been undergoing fundamental changes for more than a decade. Once local or regional, this group of businesses has consolidated into a few national powerhouses in a relatively short period. In addition to consolidating the number of providers within each vertical industry segment, they have expanded horizontally, providing more services under their corporate umbrellas.

More recently, these businesses have begun cooperating in the development of industry standards to improve the processes of ordering, producing and delivering the services among themselves. The uniform goals are to make the combined industries faster, better and cheaper. Reusable data reduces process time and error rates, improves product and service quality, and increases productivity.

In many ways the appraiser is a microcosm of the entire real estate industry, facing the same issues and challenges as the other service providers who have historically added value by reducing or taking on certain risks of a buyer seller or lender. The Appraisal Institute (AI), representing the interests of 100,000 appraisers in the U.S. and more than 1 million real estate professionals who provide valuation information, is actively involved in assisting the appraisal industry and its members to provide their services faster, better, and cheaper. Today they are in the forefront of the effort to create reusable data standards for the eMortgage process for the respective industry participants, from mortgage lenders to services vendors, including appraisers as well as title, document preparation, insurance, credit, county recorders, loan servicers and the secondary loan market.

Adobe Systems has collaborated with the Institute to develop a proof of concept. Appraisers are already using the PDF file format as the most common method of delivering electronic valuation reports, frequently referred to as appraisals. This collaborative effort shows how the appraisal piece of the eMortgage process can be integrated into an electronic mortgage transaction quickly and seamlessly. In the process it addressed a number of issues the Appraisal Institute and its members are struggling with during the industry's transformation.

MEETING THE NEEDS OF A DYNAMIC INDUSTRY

"This proof of concept is a demonstration of the range of tools and applications that appraisers have when using PDF documents. As new data and business process standards are developed, appraisers must adapt to those standards, and this proof of concept demonstrates how every appraiser can meet the needs of a dynamically changing market - both domestically and globally - in real time."

- John Ross

CEO of the Appraisal Institute

The Players

The Primary Participants

The primary participants in the appraisal process are lenders and appraisers, although a number of others are involved in the production and delivery of the final report. One set, Vendor Management Companies (VMCs) and Appraisal Management Companies (AMCs), provide on-line delivery and status reporting services to the lender or appraiser. The others provide information. Some of these provide on-line information resources such as MLS systems, public records and map products. Some provide information resources to be used in-house by the appraiser, such as desktop street maps or construction cost data. Still others are real estate agents who have first hand knowledge pertinent to the subject property's valuation, such as currently pending contracts, canceled sales contracts, or economic conditions.

The Issues

The Appraisal Institute members face a number of issues in the current environment of industry aggregation and roll-up among customers and potential competitors. All the issues can be seen as a result of both recent and emerging changes.

Adding Value - How can the appraiser continue to add value to the real estate transaction in the industry's drive to "faster, better, cheaper?" Small firms cannot effectively market to the few large, national lenders who now account for more 80% of loan originations in the U.S.

Competition - Appraisers are facing more intense competition, with lenders often looking first to lower priced, less accurate valuations obtained through Automated Valuation Model (AVM) systems.

Standards - Standards are being created and promoted by industry bodies such as PRIA and MISMO. Appraisal Institute members need to implement them to maintain their business relationships with lenders and information resource and technology vendors. Uneven adoption and implementation creates a burden for small businesses.

Fraud and Forgery Prevention - Fraud and forgery are a growing problem, with (according to a recent study) up to 3% of all appraisals being signed by someone other than the appraiser to whom they are attributed. AI members need a way for lenders to authenticate both the valuation report and the appraiser to prevent fraud and increase trust.

Technology Investment - Among the technology pieces appraisers need to assimilate in a way that maximizes the return on investment are digital photography, digital mapping (including GIS), and digital architectural and engineering drawings (site and floor plans, as well as other graphics such as elevations).

Process Improvement - Process improvement is a key to survival for the independent appraiser. Integration with current and future resources, such as off- and on-line applications will lower costs and enable higher productivity. Improvements need to be flexible to accommodate individual preferences.

Liability and Intellectual Property - Limitations on appraiser liability and protection of intellectual property are important to an appraiser's long-term viability. The ability to secure certain data within a report in a way that makes unauthorized use more difficult is important to AI members and directly help to reduce fraud.

Dynamic Content - Appraisers need the ability to create variable reports in order to accommodate differing requirements and circumstances that arise during the process.

Flexible Status Tracking - Flexible status tracking functionality needs to be incorporated into technology solutions to reduce reliance on time consuming physical means, as well as to comply with customer, AVC, and VMC specifications.

INDUSTRY ISSUES

- Adding Value
- Competition
- Standards
- Fraud and Forgery Prevention
- Technology Investment
- Process Improvement
- Liability and Intellectual Property
- Dynamic Content
- Flexible Status Tracking

The Process

The appraisal process consists of a number of common tasks in a variable workflow. The tasks include complex logic and subprocesses, but the primary tasks for a residential mortgage report contain nine primary steps and more than a dozen types of data sources.

The process and the report can each vary from appraiser to appraiser. The report itself is subject to the customs of the individual appraiser and the specific requirements of different customers. In addition, there are a number of different types of appraisal reports. The purpose of an appraisal dictates some of the contents and complexity of the report itself. Different customers have their own requirements for supporting content, e.g., internal business logic may require a low cost valuation product.

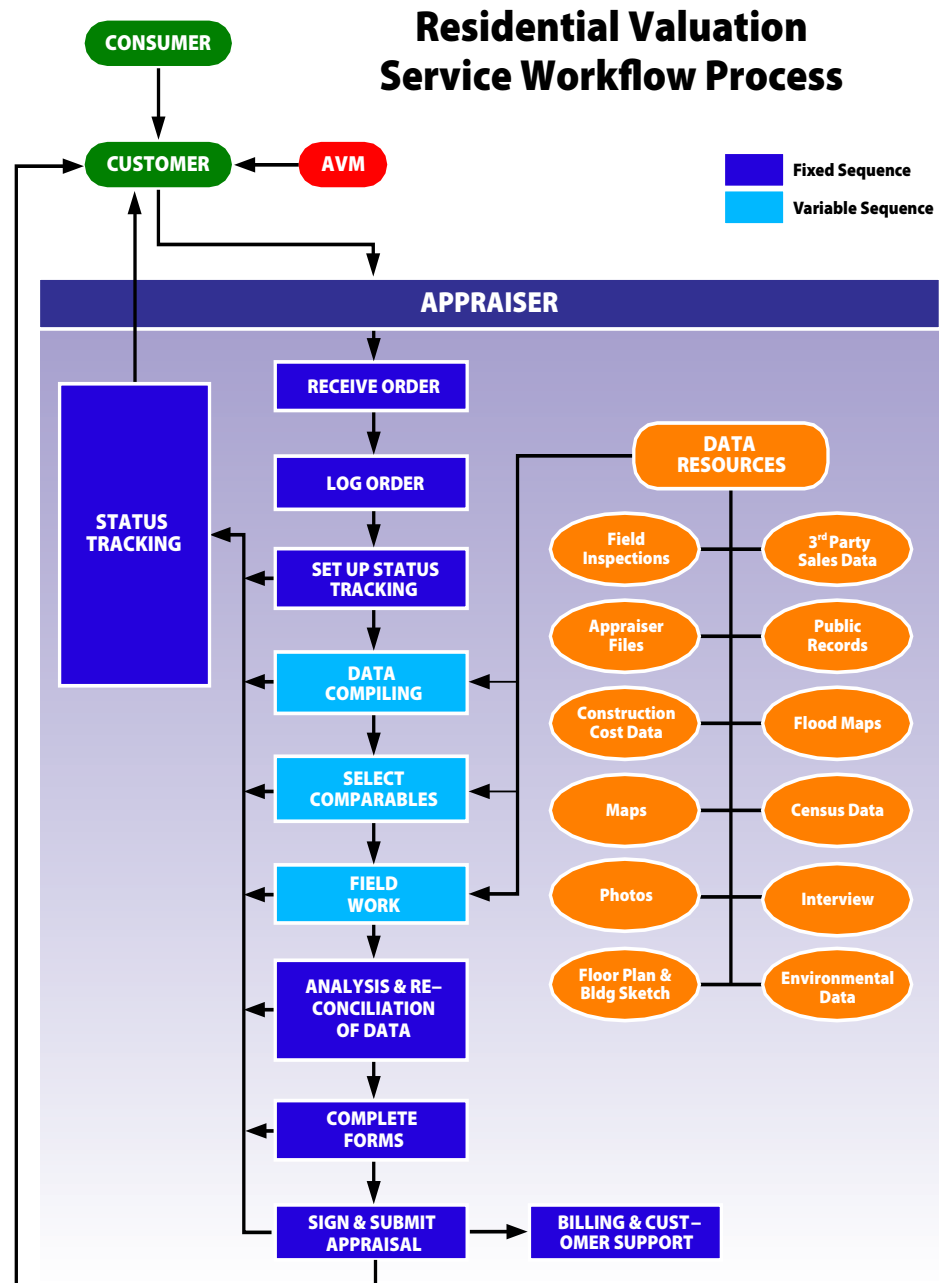
Appraisers use similar processes and resources to prepare reports, but do not follow the same sequence in all cases. More than one source for the same primary sources of information, e.g., comparable sales data or maps, may be used for a single report, depending on the accuracy, completeness, and timeliness of information. Sources are both public and private.

Proof of Concept

This proof of concept has been developed using the Adobe Intelligent Document Platform. A set of three XML-based PDF form documents were used to gather information and produce valuation reports addressing the issues defined by the Appraisal Institute. The forms include:

1. An *Order Request Form* that allows both data entry and import of the order information in a standard XML format.
2. A dynamic *Work File Form* used to collect, validate, distribute, and archive all file and project status information. The Work File uses XML data based on the MISMO Real Estate Property Information Work Group XML specification. It acts as a project template for other work products and information, and includes dynamic sub-sections for embedded information and rich content - photos, architectural and engineering drawings, MLS and other comparable sales data, audio interviews. It acts as a container for attached documents (the final report, invoice, scanned paper items, etc).
3. A final *Valuation Report Form* generated from the Work File to produce a final Intelligent Document (PDF + XML) based on the proposed REPI XML specifications.

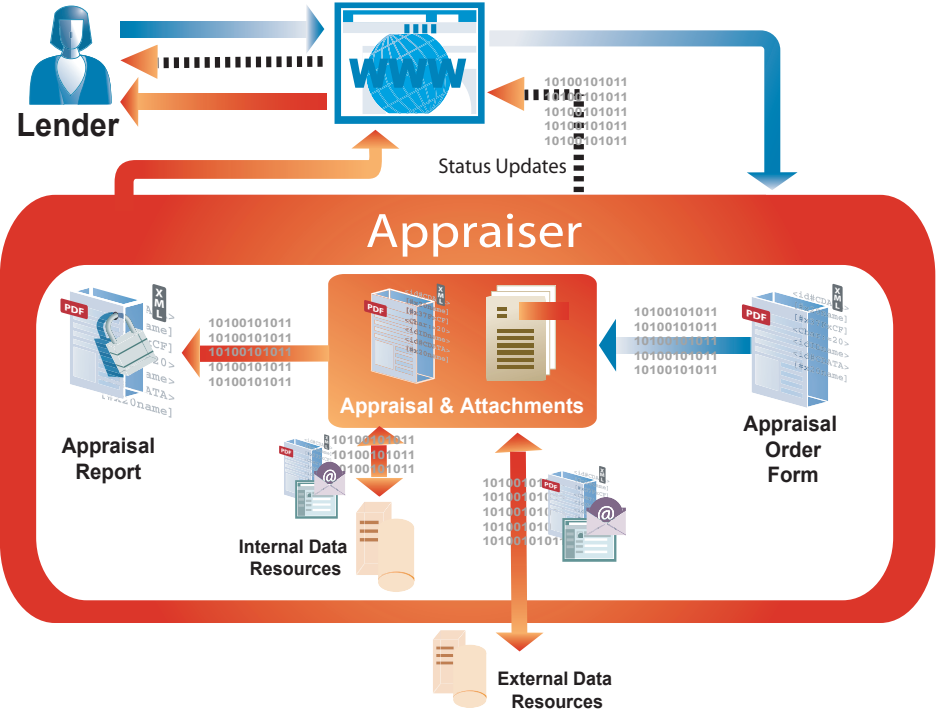
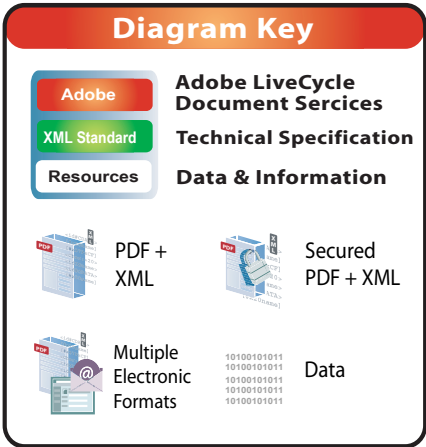
As a prototype, these forms collectively help provide the process flow, automate various



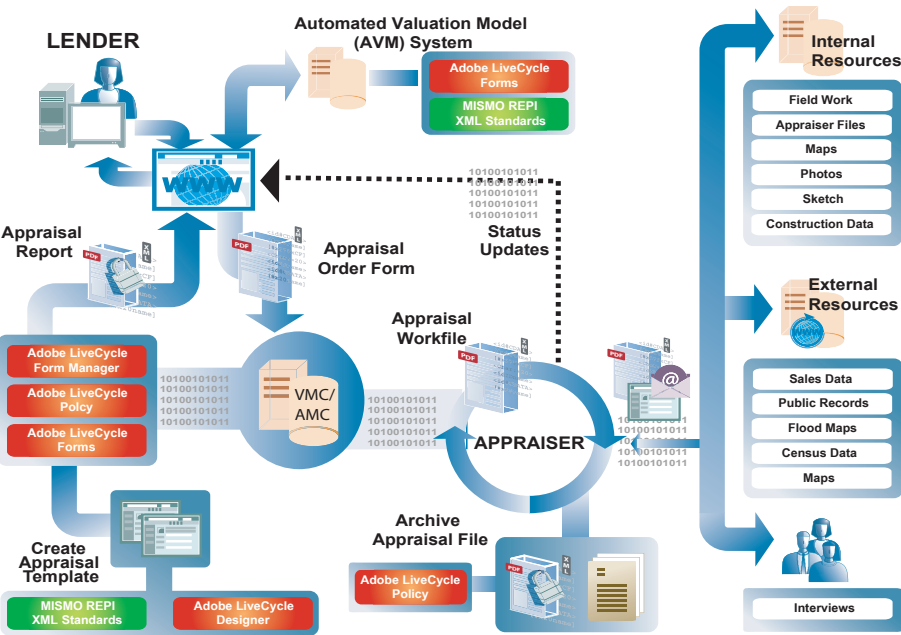
Workflow Process

The diagram above shows the basic process for a residential appraisal.

tasks, and incorporate solutions to those issues outlined by the Appraisal Institute above. While much of this proof-of-concept is based on the requirements and workflows of individual appraisers, specific production implementations might take even greater advantage of Adobe PDF and Intelligent Document functionality with the Adobe LiveCycle enterprise components. Adobe LiveCycle products offer additional enterprise capabilities and include server-based solutions for dynamic document generation and XML extraction, encryption and document rights management, digital signatures, collaboration, and workflow automation.



Proof of Concept Workflow (left)
The diagram shows the how the three forms are used to assist an appraiser in completing the final report.



Workflow using Adobe LiveCycle™ solutions (left)
The diagram illustrates a possible Adobe LiveCycle™ solution, adding more robust functionality than an Adobe Acrobat™ set of forms.

Features and Benefits

The result of the proof of concept was a functional prototype of a PDF-based solution to demonstrate how features available in PDF and the Adobe Intelligent Document address the needs of the Appraisal Institute and its members.

Standards Based

PDF is a published, widely available file format, and is the de facto standard for secure and reliable document exchange. PDF is already used by many appraisers. A number of existing and proposed ISO open-standards specifications are based on PDF: PDF for archiving (PDF/A), PDF Universal Access (PDF/UA), and PDF for Engineering (PDF/E). PDF also supports W3C XML standards, industry XML standards (like MISMO's XML data standards), and Public Key Infrastructure (PKI) standards for security and authenticity.

Authenticity

Document certification and digital signatures provide additional layers of security and authenticity to documents, protecting intellectual property, and authenticating both the document and appraiser's identity. This has the potential to reduce both appraisal fraud and an appraiser's liability for altered data.

Security & Digital Rights Management (DRM)

DRM can protect the appraiser's intellectual property, helping to reduce the risk of fraud and forgery while still enabling customers to extract data for loan files. Work files can be encrypted to prevent access except by authorized parties. Work files can even be set to expire when the record retention period expires. PDF rights management and security can also be used to set user-variable access levels to an appraisal report. Adobe LiveCycle Policy Server can even be used in conjunction with Adobe Acrobat to remotely and dynamically control document permissions.

AEC Document Support

Adobe Acrobat and PDF now include sophisticated support for architecture and engineering documentation. These features improve the functionality of site and floor plans and allow for more reliable and accurate capture of technical drawings. Features include advanced zoom and document navigation, support for layers, as well as the ability to measure distances, perimeters and areas according to a drawing's scale.

Dynamic Forms

Dynamic PDF documents allow variable valuation reports to be generated from a single, dynamic form template. Sections can expand to accommodate different numbers of photos, MLS listings, and maps. All case information and worksheets can be retained in a single work file, as an eFolder, or by using dynamic sub-forms for the different tasks needed for different kinds of appraisals.

Business Logic

The prototype validates user input against rules in the underlying XML Schema, increasing the quality of captured information. JavaScript can be used to provide even further validation, or advanced user interfaces.

The prototype Adobe PDF Work File form also provides integrated status tracking to automatically send notice of task completion to the lender. This business logic adds improved customer support in a way that simultaneously: reduces costs, creates greater customer satisfaction, and frees the appraiser from manual status reporting tasks.

Workflow

One of the most powerful process enhancements provided by the prototype comes from the variety of features Adobe PDF has to facilitate workflow management. Web services and email capabilities allow a PDF to communicate with others people and systems. These integration points can be used to place and respond to order requests and to obtain data from outside services. The prototype uses an Adobe PDF order request form that incorporates XML based on the MISMO envelope specification. The user exports the order data to his database from where it is imported to the Work File.

APPRAISAL INSTITUTE ISSUES ARE ADDRESSED BY ADOBE PDF FEATURES :

- Standards Based
- Document Authenticity
- Security & Digital Rights Management
- Layer support for technical drawings (engineering and construction)
- Dynamic Forms
- Business Logic
- Work Flow

Features and Benefits

The Work File, using scripting and Acrobat database connectivity features, initiates the appraiser's electronic file and emails an acknowledgment to the lender. Ongoing status tracking is enabled by a list of tasks that, when each is checked as complete, is capable of sending email or web service messages to update the lender, the lender's VMC or the appraiser's AMC.

The proof of concept offers other process improvements as well. PDF forms can be used to enter field work information into forms for merging with the Work File later. Comparable sales data can be retrieved from the MLS or other third party data providers via web services, or from a desktop file, depending on the structure of the source data. Adobe® LiveCycle™ Intelligent Document Platform server components such as Adobe LiveCycle Forms can be used to populate forms with data from these sources automatically. At the end of the appraisal workflow, Adobe LiveCycle components can consolidate all the case information into the work file, either internally or as attachments, including audio interviews, print files of on-line inquiries, and scanned images of paper-based documents.

Finally, the valuation report form can build itself from the resources gathered by the Work File. Digital signatures and document control features can be applied through either Acrobat or with server components like Adobe LiveCycle Document Security and LiveCycle Policy Server. On signing, the valuation report can apply the desired security and send itself to the lender.

The following benefits combine to reduce appraisers' costs:

- Speeding tasks involved in generating an appraisal;
- Organizing and retaining data in a single location; and,
- Improving accuracy by reusing data rather than re-entering it.

This helps appraisers remain competitive and protects their intellectual property so they may continue to add value even where competitive valuation products are used.

Conclusion

The prototype valuation report forms exceeded the Appraisal Institute's expectations. The use of Adobe PDF features addressed the needs outlined and demonstrate their value to appraisers. According to John Ross, CEO of the Appraisal Institute:

"This proof of concept is a demonstration of the range of tools and applications that appraisers have when using PDF documents. As new data and business process standards are developed, appraisers must adapt to those standards, and this proof of concept demonstrates how every appraiser can meet the needs of a dynamically changing market - both domestically and globally - in real time.

Our objective at the Appraisal Institute is to work with appraisers, clients for appraisal services, the broader real estate and mortgage communities and the firms that support business processes for the real estate market, to provide ever more accurate, high quality and timely appraisal and related valuation services. Use of technology based upon the widely accepted PDF document standard, as demonstrated in this proof of concept, is critical to meeting that objective."

FOR MORE INFORMATION

For a comprehensive overview of the Adobe Acrobat 7.0 family of products, please visit www.adobe.com/products/acrobat/main.html

For a comprehensive overview of the Adobe Document Services, please visit www.adobe.com/products/server/main.html

OPPORTUNITY FOR PROCESS IMPROVEMENT

The success of the Proof of Concept presents the real estate, construction, mortgage, and legal markets with an opportunity to securely and reliably extend their own processes across the industries they work with, ensuring greater accuracy and reducing transaction time.

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