Real Estate Information Technology

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This section advances the frontiers of Real Estate Information Technology. This is a forum for discussion on how technology is changing: (1) real estate and land economics research and education; (2) forecasting; (3) real estate practice; and (4) real estate itself, including issues and problems associated with the adoption of new technology. Annotations of data from public and private sources available via the Internet are also published in this section, as well as in-depth software and data reviews. We seek articles that address the above, in a timely manner. Articles must be relevant to both academics and practitioners. Manuscripts must be rigorous since they will receive anonymous peer review. Email manuscripts and data annotations should be sent to the editor.

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Creating Open Data Standards for Real Estate, Appraisal, and Mortgage Banking

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Abstract

The academic community can play a vital role in the development of open data standards within the real estate, appraisal, and mortgage banking professions as a key stakeholder group. What becomes clear from an examination of the future of data standards is the need for a strong academic/practitioner connection. It is also clear that the primary source for education and analytic tool sets must be the academic community, yet at present there is only minimal involvement by academics in the data standards effort.

The impact of open data standards in the real estate profession raises some critical questions for academic practitioners on how to meet the challenges that the continuing adoption of such standards pose for the profession.

An open data standard is one in which different software and systems work with one another independent of vendor, similar to the current functionality of web browsers and web servers.

In appealing to the academic community, several key questions must be examined and evaluated. The first question relates to the importance of standards to the real estate profession. Why should the academic community care about open data standards and what should the level of their participation be? Further, how does this open data standards effort differ from other technology-based standards efforts?

The valuation segment of real estate is the critical driver to understanding the marketplace, and how profound the changes could ultimately be. Lenders rely on collateral valuation to quantify risk and to hedge potential losses. If real estate has lagged other industries in its drive to integrate technological and data standardization, then valuation and standards within valuation space represent the final frontier.

Open data standards and technology innovation within the valuation and finance sectors of the real estate profession have reached a tipping point, and the drive towards wrenching the estimated $1 trillion in cost efficiencies will cause both chaos and create opportunities for those who can provide a meaningful solution to the industry. Industry estimates project that the overall drive towards data and process standardization will be so significant that the word “tectonic” has been suggested to describe the impact and scope.

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Change has defined the status quo for virtually all business and organizational structures in recent years, and the real estate and appraisal industry are the focal points for changes that are ongoing within the financial services and informational service sectors of the economy.

Literature Review

Thomas Friedman, in “The World is Flat” (2005) describes the change in the status quo, and discusses how the world is being flattened by the drive towards technology and standards. These two drivers—open data standardization and technological innovation—are flattening the real estate world, and by extension, the valuation terrain. Far from self-serving hyperbole, it is clear that process and data standardization efforts will not only drive significant efficiencies into the market, they will eventually change the very nature of real estate analytics. For the first time, real estate practitioners who have been fond of saying that “appraisal is an art, not a science” will be in a position of having access to data and tools that can analyze that data at a level that will truly begin to resemble real estate econometrics.

It is generally recognized that greater efficiencies are one critical benefit of the adoption of standards (Cirincione, 2007). This is certainly true, but there are likely even greater structural changes on the horizon that might change the very paradigm of current analysis and analytics. It is clear that there are both practical and theoretical ramifications that must be considered and evaluated. The time may be right for a greater introspection of how standards may change the nature of the profession, and ultimately drive ever greater amounts of aggregated data that can be used for research and analysis in dramatically more efficient ways. Similarly, there has been an ongoing recognition that data standards in real estate have many stakeholders, and multiple organizations representing disparate though related segments of the profession must work together (Ross, 2004 and 2006) and (Linné and Kellogg, 2007).

Methodology

The benefits of open data standards have long been touted by real estate industry groups as consisting primarily of cost savings and efficiencies from no longer having to re-key data within the present paper-centric sale or lending transaction. A new dynamic that must be considered by the real estate industry and more saliently by the academics who perform vital research, is what additional benefits may accrue to the industry as whole.

Preliminary research conducted for ongoing project implementation for agricultural lender Farm Credit Services of America suggest that a whole new set of metrics may be necessary to explain and expand upon historical valuation techniques in the face of expanded data availability. It appears that much more than improved efficiencies may be achieved from data and process standardization.

With the historical limitations in data, only limited market data was available to discern the nature of the greater marketplace. Accurate and meaningful data was
difficult to obtain, standardize, and analyze. With limitations in data came limitations in the nature and extent of the analytical process. Less robust data sets for real estate meant less data to feed analysis. With data sets as large as 160 million records now available to commercial vendors, it is becoming increasingly clear that our understanding of the market will change as we move from thousands of dis-aggregated slivers to millions of aggregated data points. Metrics and analytics must change in order to accommodate the crush of data that will be available to vendors, academics, and practitioners.

### Market Trends

#### General Market

Standards efforts are most effective when effective real-world use scenarios can be established. While still at an early stage, implementation efforts merging data and standards have already begun to gain a foothold in the private sector. Farm Credit Services of America (FCSA), a $12 billion agribusiness lender covering a four-state region in the Midwest, is an early example of an organization that has adopted a best practices approach to data standardization. Standardizing readily available and proprietary data, and incorporating a robust Geographic Information System (GIS) access portal, FCSA is able to seed, enhance, and mine data across a four-state region, bringing instantaneous values on agricultural land to its customers, thus enhancing the nature of the services it delivers. Intended initially as a mechanism for making the valuation component of the enterprise more efficient, the process of geospatially referencing data and standardizing disparate data elements has resulted in numerous unintended consequences.

Four separate soil productivity measures were present in the four states that serve as FCSA's market area. Soil productivity is one of the fundamental measures of value for agricultural land. The lack of a standardized soil rating across the four-state region meant that valuation experts and loan officers within the organization had to literally change their methodologies as they moved from one state to the other. It was impossible to establish patterns across state lines, even if market areas themselves crossed such boundaries. Standardization of this data across the four-state region was one of the base requirements for FCSA's agricultural valuation system, and the results were immediate. Rather than stopping at the border of one state, analysis can now be aggregated across a tableau of hundreds of thousands of parcels, permitting a macro-economic examination that was hitherto not possible. A plethora of data without restriction has permitted FCSA to see an entirely different view of the data, and through the additional benefit of spatially referenced data, see patterns where none were visible before.

As a participant in the Mortgage Industry Standards Maintenance Organization (MISMO), Commercial Appraisal Work Group, FCSA is working on defining standardized agricultural data elements that will serve to enhance a best practices focus for the organization in its critical industry sector. Open data standards are seen as the foundational core of such an effort, and the key to its success.
As FCSA brought advanced spatial analytics into the valuation process, valuation professionals within the organization saw both validation of existing processes and an understanding that many of the valuation elements of the enterprise needed to be changed in order to harmonize the reality of the market with the previous legacy perceptions that had been at the core of the organization’s appraisal processes for decades. Questions as to the adequacy of training and the need for whole new econometric skill-sets began to emerge as the benefit of new tools and systems became evident. In meeting these needs, entire new curricula were required to meet the needs of the organization. Integrating statistics, data analysis, and advanced appraisal are but three hallmarks of the new training regimen.

**Status on Open Data Standards for Commercial Appraisal**

While much of MISMO’s efforts for the last several years have focused on the residential side of real estate through the Real Estate Property Information Work Group (REPI), the effort towards commercial standards has recently begun to experience an accelerated momentum.

The main focus of MISMO’s Commercial Appraisal Work Group has been the incorporation and adoption of the Appraisal Institute’s Commercial Data Storage Standards (CDSS) effort, which has been underway for more than three years. The CDSS effort has resulted in approximately 2,000 distinct data elements for commercial properties, which are slated for adoption by both MISMO and Open Standards Consortium for Real Estate (OSCRE) as they continue with their efforts to promulgate open data standards for commercial finance and general real estate uses.

The primary going-forward goal of MISMO’s Commercial Appraisal Work Group is the development of an Appraisal Synopsis. The Appraisal Synopsis is a core third-party element of the Asset Summary Report (ASR) that is widely utilized as a reporting mechanism and format within the Commercial Mortgage-Backed Securities (CMBA) marketplace. The Commercial Appraisal Work Group will identify which elements from within the 2,000 potential data elements contained within a commercial appraisal report are significant and meaningful for the initial metrics that are relevant to a credit decision by a lender. Lenders currently have no means to effectively extract this information without costly re-keying of the essential data, and this initial deliverable will provide an appropriate and beneficial introduction to the MISMO open data standards effort.

MISMO’s effort in establishing this initial commercial standard provides an incrementalism in open data standards adoption that will permit users to experience the benefits of standards without having to change all of their internal processes simultaneously. MISMO is working on the aggregation of relevant participant examples of real-world synopses that are currently in use throughout the industry to identify the critical data elements. This serves two purposes: the first is to ensure stakeholder participation and involvement in the process (thus facilitating adoption and buy-in), and the second relates to an understanding of the breadth of current industry best practices in the usage of an appraisal synopsis.
It is clear that MISMO has achieved a momentum and broad industry participation and support that continues to accelerate. The one area of stakeholder interest that lacks meaningful participation is the academic community, which thus far has had very minor input into this process. MISMO continues to work towards assembling a broad-based group of industry practitioners that include lenders, appraisers, academics, government service agencies, and vendors.

Analysis of Unintended Consequences and Academic Involvement

For FCSA, the drive towards the implementation of the ambitious Valuation Modeling/GIS system has created a series of questions that go to the very heart of best practices, all of which were not initially a goal of the system’s implementation. Management must continue to examine issues relating to the accuracy and appropriateness of the analysis techniques being applied on a day-to-day basis. Our industry must examine if the methodologies that are being applied are properly reflective of the market.

These are questions worth examining for the profession as a whole, and most critically, for academia. If the valuation component of the industry is indeed moving from an art to a science, are existing practitioners sufficiently empowered and knowledgeable to examine information in a meaningful way to produce the metrics that a data hungry profession demands?

Observations on Academic Involvement

It is clear that good analysis is more difficult with mediocre data. The availability of standardized and even enhanced data requires an appropriate response from the academic community. There are a significant number of benefits that could result from a greater involvement from the academic community in the open data standards effort. Better quality data will enable more robust analysis and enhance research opportunities—the exact type of research efforts that are necessary to determine the analytic techniques and metrics of a data-rich real estate environment. Furthermore, mundane tasks relating to the standardization of data sets are easily taken care of. It all starts with data organized within an XML schema. XML (eXtensible Markup Language) has become recognized as the universal language for data and services and is one of the standards driving the Internet’s transition from Web 1.0 to Web 2.0. XML permits the interconnectivity between otherwise disparate data stream and has become the primary medium for business interchange. The manner in which XML describes data can be understood by someone without any programming experience, and its simplicity and power have led to its widespread usage and adoption. In a real estate world based on XML, the rote tasks relating to the interpretation of data elements or finding cognates between disparate data sets is easily handled. Once tagged with the appropriate XML schema, data can flow freely from application to application, and between research projects on a global basis. Tedious tasks are eliminated, and the research community can focus on research and analysis.

It is clear that standardization of data will lead to better quality of data. This has been seen in examples throughout the industry, and is clearly present within the FCSA
example mentioned earlier. While the questions posed in this article focus on the valuation component of the real estate profession, there are ramifications relating to open data standards for all components of real estate. Valuation itself is related to a host of issues, including government planning, zoning, risk analysis/management, underwriting, brokerage, development, construction—the list is compelling and pervasive. While MISMO focuses on the loan transaction, other organizations such as the Open Standards Consortium for Real Estate (OSCRE) focus on standards for other stakeholder groups throughout real estate space. With a continuing momentum that will reward a convergence in standards, there is strong support for the prediction that all of the major standards organizations and their respective efforts are moving closer to a collaborative and interoperable integration that will leverage literally dozens of organizations to achieve meaningful standards in all sectors of real estate.

In exploring what a standardized world looks like, the role of academia must not just touch the future, but take an active role in building it. Open data standards are developed by active volunteer participation, and academia is well positioned to contribute its time, efforts, and resources. Such resources have been available and have been channeled to other current standards efforts, most notably through organizations such as the Open Geospatial Consortium (OGC), which has developed relationships with a number of universities that have contributed time and labor to the effort of standardization in geographic information.

What is needed at present is greater academic participation in other aspects of the standards effort, including MISMO. The academic community is clearly a stakeholder in this process, and getting involved at the front-end of the process is of vital importance. The curriculum of the future must be considered and designed today, through a consideration of the academic infrastructure that will drive research, theoretical applications, practical applications, and ultimately develop graduating students that will be more employable. Open standards groups such as the Open Geospatial Consortium have developed statistics that demonstrate that participating university students in geographic information occupations involved with OGC obtain jobs after graduation that earn 50% more than students without this exposure and background. The goal would ideally be the development of skills that will prepare students to excel with skill-sets that are appropriate to the real estate world as it will be in 5–10 years—not as it exists today.

**Imagining the Future**

As has been the case in all facets of the knowledge-based economy, open data standards in real estate will be the catalyst for redefining real estate analysis. As open data standards become mainstream and their use and adoption increases, members of the profession, and most critically, members of the academic community, have three potential courses of action. They can ignore the message, with a perspective that open data standards have a way to go before their impact is truly felt; they can participate in the process and help, as stakeholders, to shape and focus the standards that are developed; or, they can, at the very least, be aware of and stay abreast of the progress...
of standards, so that they can adapt to meet the challenges that standards adoption will bring.

It is as stakeholders that their participation and influence is most critically needed. Academia and the greater profession will both benefit as the future is explored and defined from a collaborative perspective that challenges us to imagine a future made all the more relevant, interesting, and ultimately more prosperous through an understanding of how all stakeholders will benefit.

**Conclusion**

What becomes clear from an examination of the future of open data standards is the need for a strong academic/practitioner connect. It is clear that the primary source for education and analytics tool sets must be the academic community, yet at present there is only minimal involvement by academics in the open data standards effort. Practitioners will require skills sets and a knowledge base that may be beyond anything that we have yet developed, and thus continuing research that leverages the abundance of data is of the greatest criticality. As a critical stakeholder in the open data standards effort, academia must work with groups such as MISMO and OSCRE to ensure a congruency among the entirety of the real estate industry. There is clear evidence that academic involvement in other standards efforts, notably the Open Geospatial Consortium (OGC), has been instrumental in moving geographic information standards with meaningful impact.

The same type of involvement in the open data standards movement for real estate will have a profound and meaningful impact on the future of real estate, and will benefit all stakeholders. Vendors, practitioners, and academia all have a vested interest in meeting the challenges that technology and data present. Ultimately it is the public good that is served through a cooperative effort at bringing data standards to the mainstream within the real estate industry.

**References**


