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THE AUDIT REPORT

Third Quarter

Update of Events From the CEO of Tax Management Associates, Inc. | *by Chip Cooke*

As summer draws to a close, I wanted to update everyone on some of the exciting events occurring here at TMA. Some like to say that TMA is actually short for "Time to Move Again", and that was certainly true for this summer. As some of you might know, TMA's call center, IT staff, and homestead teams were in a 9,000 square foot leased space next to the Charlotte, North Carolina headquarters building. For the past several years that building had been for sale and in June, was finally purchased for the Social Security Administration by the Federal Government. We were given one month to find a new facility and move out – and let me tell you – that is not a lot of time to find new space, have it upfit, install phone and cabling, move furniture…etc. Corporate was in panic mode.

True to TMA fashion, however, all hands turned out and completed the impossible. Within one month we secured 10,000 square feet about a mile down the street, completely upfit with new carpeting, partitions, paint, and furniture. Everybody was in their new

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space without missing a beat. I have to tell you, watching TMA come together is a sight to behold. This family moves with purpose in everything we do, and I could not have been more proud of what turned out to be a seamless transition. If you are in the area, come by headquarters and I'll personally give you a tour of the new TMA Operations Center.

Even in a down economy where shrinking budgets are still an issue, we continue to see growth within TMA's Audit Division. Believe it or not, this October 1st marks the 27th year for Audit and demand for the service continues to increase year after year. Personally, I think this speaks to the professionalism of the staff and the quality of the service that is provided. For as long as business personal property remains a self-assessed tax and a substantial part of the property tax puzzle, TMA will take calls from jurisdictions needing assistance. So far, audit volume has seen a growth of 7% from 2012 and 31% from 2011. This growth has primarily come from

If you have any questions or comments about this article, please contact Chip Cooke at 1-800-951-5350

new states and localities, but we also see additional growth within our core clients. At the end of the day I couldn't be more pleased with the accomplishments that Tom Tucker, PPS (Personal Property Specialist) and Dale Baker have achieved throughout this year.

We are continuing to hear positive news from our Homestead Exemption Audit Programs with the successful completion of the largest county in South Carolina, Greenville County. As noted in an article in the Wall Street Journal, Greenville has rejected thousands of improperly filed homestead exemptions and brought approximately $3 million in new tax dollars into the jurisdiction. I am happy to link you to the full article if you would like the full story. With programs now active in Georgia, Louisiana, Indiana, Michigan and South Carolina, the homestead offering has been, and continues to be, a resounding success.

As a small side note, be on the lookout this year and in the near future for TMA's own series of informative webinars. We have decided to highlight important parts of our industry and services in a virtual group environment to promote conversations around important topics. We will strive to highlight assessment administration, audit and discovery topics, technology and overall management issues. As always, we are happy to take suggestions for these seminars. Sign up now at www.tma1.com for the next webinar on October 21st, 2013.

I don't want to spoil the big surprise, but TMA also has a great new relationship with a European company that has essentially mastered data aggregation and management reporting. The following article will tell you all about it! We are going to be giving many talks to both state and local government about this partnership and offering in the coming months, but early feedback from key clients has been "mind blowing"; their words. Imagine an open data world – a world where any disparate database from any system within the jurisdiction can be brought into one place, standardized and queried in any form – without aid from the system hosts. You can find out anything you want – employee and department productivity, property tax information, even information across county departments, all speaking the same language. It's called the Open Data Initiative, TMA has it, and we are ready to share it with you. You will be hearing much more in the months to come.

As a last note, we are honored to join the Hero2Hired program sponsored by the Department of Defense to encourage those who have served to join our ranks. TMA believes whole heartedly that our veterans deserve a place to start a new career after

everything they have sacrificed for this country. We encourage all who have served to take advantage of that special status to join the TMA team now and in the future.

Please continue to follow all of TMA's exciting new opportunities at www. tma1.com, @TMAServices, @RichardCookeJr, and @AuditReport on Twitter or find us on Facebook. We look forward to serving you in the next quarter and in the coming years.

Endless Capabilities

What You Can Accomplish with Data Analytics through Knime | *by Mark Cooke*

I am a geek. Self-admittedly, and unashamed, I would prefer to talk data, technology, and what it can accomplish next to about anything. The only close runner-ups are anthropology, philosophy, political theory, and religion (but the last two never at social events…okay, the first two rarely ever come up either). You see: geek through and through. It's one reason I love my job.

TMA works with a lot of data. As an example, for the State of Michigan's Department of Treasury we compile more than 1,600 real estate databases annually to run our Principal Residence Homestead Exemption (Homestead) audit. That equates to more than 3.5 million real estate records from numerous systems that need to be cleaned, standardized, and merged into a single resource. Therefore, we are always on the lookout for better ways to manage data. With projects spanning more than 500 clients across 18 states, it has become paramount that we approach our work intelligently and efficiently.

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Roughly two years ago we began identifying resources to help in this process. There are several tools, ranging from programming languages to out of the box software, and we tested all of them for our needs. Ideally, we needed to identify a single resource that could handle data ingestion (reading data into a working environment from various sources), manipulation (getting the data into the right shape), and analysis that would push our programs forward at a faster pace and with a more intelligent process. This has ultimately led us to the Knime product family (www.knime.org).

Knime is an opensource product with the capability to do all that we required and more. Based on a GUI (graphical user interface, or "click and drag") platform, Knime supports reading in data in various formats, manipulating it, and then running some of the most cutting edge analytics tools available. Knime can handle intelligent analysis, but it can also handle complex statistical analyses including machine learning algorithms and predictive analytics.

The opensource desktop application also means that overhead for individual users is minimized and it can easily be brought into the working environment. We have now used it for client projects, as well as developing our internal analytics and reporting functions around its scalable web reporting tool.

Knime can read any data. What does that mean, exactly? Glad you asked. Knime handles live database connections as easily as it renders flat files (.csv, .txt, etc.), image files, excel documents and text files. A single project can read in data across all of these sources (structured and unstructured data) and manipulate and merge the data into a single analysis. It is possible, then, to group data by commonalities, to perform mathematical operations, split, merge, and transform data. Statistical analyses, machine learning and predictive analytics can be run, and Knime supports a large array of graphical outputs to help others understand what all that data really means.

Knime also handles very large datasets. With the laptop I am using to write this article, I have been able to read in and analyze data that amounts to more than 1.25 million rows across more than fifty columns in a single table. A dataset that large (and not at near the limits of Knime) can be manipulated in just a few seconds. That's fast (and my laptop is not particularly extraordinary). With a desktop or server environment, functional analyses can be performed on streaming data in the millions of rows and with hundreds of characteristics. I am sure it is possible to bog the program down, although I haven't

reached that point yet. However, the stability of the system will allow for it to keep chewing through that data in a reliable way without crashing.

Extensibility was also a concern, as we have legacy algorithms and code we did not want to lose in the process. Knime has the ability to integrate Perl, Java, Ruby, and Python directly into the working environment. And, if this paragraph is making sense to you, then you will also be interested in the fact that the latest release has substantial support for the R Project for Statistical Computing. The R language allows end users to take advantage of thousands of packages geared toward advanced data analysis and visualizations.

The visualizations might peak your interest. Knime supports all of the standard data reporting elements. You can visualize data in charts and graphics, on plots, and in tables. These are all highly customizable, and the web-portal will allow for real time reporting to end-users. With R as an extension, the end-user also has access to an enormous range of geo-spatial mapping visualizations which can be built directly into the Knime environment.

What you can accomplish with data and Knime is limited to the imagination. I have personally been able to create reports for internal TMA management consumers, create heatmaps, perform

text analysis, and clean very large datasets. However, it also supports social network analysis, decision trees, cluster analysis, time series, and so on. It is an amazing can opener into a world of data that has heretofore been sealed in individual systems and data stores. We are on the edge of a revolution in data analysis with tools like this. One can easily conceive of analyses that draw on data from all over government resources. How is business development in a jurisdiction related to home values (real and personal property data sets); how have values changed over time; are our "neighborhoods" really how the market perceives neighborhoods; 100% samples allows for no sampling error; value trends with socio-economic data; maps of activity; and so on. With the data just inside the assessment office I am sure you can imagine how powerful a tool like this can be. If you add in data from permits, roads, police, and revenue, it only gets better.

We have bought into the Knime paradigm. So much so, in fact, that we worked to become a consulting partner (http://www.knime.org/consulting-partners). We now have the ability to leverage the best of Knime for our clients, to keep up with new developments in data related technology advancements, and to keep sharpening our skills. Knime will bring a lot of value to TMA and to our clients. And, the ever present geek in me is looking forward to all of those new challenges.

Care to Join us?

Where Advances in Technology and Web-based Communication Meets | *by Taylor Ennis*

Tax Management Associates is very committed to keeping our clients and their taxpayers informed about current laws, trends, and of course the services we provide. Since everyone doesn't have the time and resources to visit TMA in person, we are coming to you! Well, sort of.

What if you could watch a TMA professional create an estimation in our CAVS system and explain how it's created? Want to walk through our audit procedure from start to finish? We can show you the tools TMA utilizes, and provide the opportunity for you to ask questions while we walk you through the process. Since I'm in the office a lot and you can't find the time to conduct an audit with one of our auditors, why don't we schedule an online meeting instead?

With advances in technology and TMA's continued success of utilizing web-based communication, we are excited to extend an invitation for our webinars.

We offer free webinars, web-based meetings, to provide a firsthand look at our services and how they can benefit you. One of the advantages of attending a webinar is the ability to ask questions.

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By granting current and potential clients access to our products and procedures, we are opening our doors to you. We know how beneficial our services are and you should really think about joining the next webinar set for October 21st, 2013.

Currently we offer webinars exploring our Cost Analysis Valuation System (CAVS). CAVS is TMA's product created in response to non-filing businesses. It takes the guesswork out of the estimation process by providing assessing officials with customized, ready-made valuations for hundreds of businesses. We actually provide more than 450 varieties of businesses to estimate on our CAVS software.

But what does CAVS look like and how does it work? Renee Abernathy, Application Support Manager, conducts our CAVS webinars. To participate in our webinars, interested parties can select from offered time and dates on our website. Once the preferred time is selected, you will receive a confirmation email with an access code. When the selected time arrives, you will log onto the webinar site. This site will grant access to view Renee's

computer screen. Once all parties are logged on and have called in, she will explain the various components of CAVS including its benefits, and how to create an actual estimate from beginning to end.

We also provide a TAXscribe webinar exploring TMA's online listing system. It's a way for North Carolina taxpayers to file Business Personal Property Tax Listings online rather than submitting a physical form. Not only does this reduce paperwork and the need for storage space in tax offices but it also eliminates incomplete listings. This system will not allow users to proceed until all sections have been accurately completed. Say goodbye to illegible handwritten numbers and incorrect math because TAXscribe eliminates those challenges of physical listings. Currently, we have offered this service specifically to North Carolina Tax Offices; but if you are interested in learning more about this service for your state, contact TMA and let's create a solution that will make your job easier.

Typically our webinars last less than 30 minutes. We incorporate time for questions and answers at the end of the presentation. Can't find a time that works with your schedule? We are here to work with you: give us a call and let us know a time that is convenient and we are happy to set up a webinar just for you and your office.

Webinars are not only a great introduction to our products, but they can also be used as a training tool or even a refresher course. Perhaps you haven't utilized CAVS in some time and need assistance to understand the upgrades. No problem, we can set up a webinar for your staff to review updated aspects and how to use them.

In the coming weeks, we will debut our Business Personal Property Audit webinar for your convenience. This webinar will walk you through TMA's standard audit process. Since conducting more than 163,000 audits, we have our methodology down to a science and its worked wonders for us and our clients. The conductor of this webinar will be an IAAO personal property course developer and specialty instructor, Kirk Boone, PPS. Joining Kirk during the webinar will be an experienced TMA auditor, able to answer any specific questions you may have about our process. For those who may be familiar with our standard audit procedures, we will also explore larger and more complicated audits in an alternate webinar. Be sure to check out our website www.tma1.com and our Facebook page for upcoming dates for these webinars.

Don't see a webinar that interests you? Let us know what service or issues you would like to learn about. We are happy to create a webinar just for you regarding issues we can cover in further detail.

So pull up a chair, login to our webinar, and prepare to learn how we can make your job easier.

The next webinar is scheduled for October 21, 2013.

Sign up today at www.tma1.com