ICC INTERNATIONAL CODE COUNCIL®

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DO's and DON'Ts of Software Implementation

Prepared by: Major Jurisdiction Committee International Code Council

For Building and Code Officials

PRESENTED BY THE ICC FAMILY OF SOLUTIONS

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DO's and DON'Ts of Software Implementation (For Building and Code Officials)

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INTRODUCTION

The traditional building department way of performing plan check, permitting, and inspection functions for land development projects is being pushed to the brink of inefficiency. This inefficiency is generally due to the aging of its internal land development software, the increasing volume of development since the last recession, and overall changes in the staff's level of experience. Since the last economic recession, many departments are:

- Hesitant to spend tight capital monies to upgrade their older software and/or hardware systems and instead patch their systems.
- Trying to handle the increasing volume of development in response to the growing economy with less staff.
- Hesitant to increase staffing back to pre-recession levels, while also trying to deal with increasing staff retirements/departures and the inability to find qualified candidates.

While we all can empathize with above concerns, these issues do not occur in a vacuum. When combined, they lead to inefficiency and lack of transparency. Ultimately, this results in longer permit issuance and completion times, as well as an increase in the overall cost of development.

In an effort to remedy these issues, many building departments have started implementing upgraded software/digital platforms that not only combat the inefficiencies at hand but pave the way toward more advanced and integrated systems. The drive to adopt new software and automation help streamline the development process, increase transparency, reduce manpower needs, increase customer self-service, and reduce costs. However, the upgrade process comes with many questions regarding what the best implementation strategies are, as millions of dollars and thousands of man hours have been spent developing multiple software/digital platforms. This paper shares insight and guidance for departments on how to navigate the myriad of "Do's and Don'ts" when it comes to software implementation. We also hope that it helps departments appreciate how the right technology can streamline operations, reduce costs, and increase efficiency, resulting in less stress on the departments, and constituents they serve.

THE CASE FOR SOFTWARE IMPLEMENTATION (BENEFITS AND SOLUTIONS)

Overview: Holistically, our industry and the broader market has been moving to a more electronic/digital processes in both design and construction methodologies. It has taken jurisdictions a little bit longer to catch up to this trend in terms of plan review, permitting and inspections. Many larger jurisdictions have already implemented or have begun the process of shifting to the digital arena. There are many advantages and some disadvantages which are far outweighed overall and mostly temporary in nature. The purpose of this document is to highlight those benefits and assist jurisdictions about to enter into this realm with some helpful lessons learned and components to think about along the journey.

Tangible Benefits:

1. **Sustainability:**
   This solution will tremendous reduce a jurisdictions carbon footprint by allowing customers to log in remotely and submit drawings for permit issuance without ever having to enter a municipal building. No gas emissions from the drive there, no parking hassles, no trips need to have blueprints made and delivered back to their offices. The amount of paper saved on one large project can save a significant cost and reduce waste immensely. Additionally, the area now needed for plan storage (log room) is no longer needed or minimal. This reduces the area of your department and reduces overall heating and cooling required for your department by occupying a smaller footprint.

2. **Efficiency and Time Savings:**
   a. Every project that is logged in comes in from a remote submittal and immediately filed digitally. No more lost plans and if that does occur simply retrieve an old email or search the system database depending on the system being implemented. No longer will login teams be required to enter data, retrieved from hand written application forms submitted by customers. This can be completed online by the customer. Login teams can now spend more time on quality control and other tasks. There are far fewer folks who enter the building department, therefore requiring less staff time and attention. Work is focused on electronic review of submittals.

b. Plan reviewers can easily review and pull up plans quickly for each and every project. No longer needing to walk to the log room and search for lost, misplaced, or already checked out plans by another discipline. There is instant access by all teams and disciplines simultaneously. This is an incredible amount of time that is recaptured for plan review.

c. By using different software programs plan reviewers can easily markup drawings for complex items to clearly identify the required changes and code references. This has a win-win opportunity. If customers can make fewer submittals due to clarity in the comments, then they receive permits sooner and plan reviewers have fewer touches/resubmittals on the project which saves them time and energy.

3. **Staffing & Budget Request:**
There are incredible benefits when it comes to the practical aspects of staffing requests in a budget cycle. Most systems create a database whereby every review can be captured and tracked. When was it logged in, how many cycles did it take to log in? How many days did it take? How many projects can a login team member complete in a day? How many projects on an annual basis does the architectural team complete? Structural team? And so on? How many inspections can be expected by a single inspector? How many are each of the teams completing in a given week/ Once the base appropriate analysis and benchmark targets are established (excluding, PTO, training time, meetings, etc.) then a calculation can be made on annual expectations. This can show empirically how many additional staff are needed based on trending economies.

4. **Supervision:**
The metrics mentioned above can be used by management and staff to monitor intake and make adjustments when intake is trending upward. Supervisors can view vacation schedules, planned training events, code amendment cycles, and other time intensive aspects of our world and determine ahead of time if overtime is required or additional third part consulting will be required. There are also metrics that drill down to the individual level where supervisors can see if a team member is struggling or needs help. They can also see very easily those that are outperforming and deserve recognition and another acknowledgement.

5. **Customer Service:**

a. It is a tremendous benefit for customers to no longer have to wait in long lines to check in plans, resubmit drawings, pick up permits, or come down to just review information. The functions all happen without the need to ever enter into a municipal building again. They save a tremendous amount of staff time and resources, while the jurisdiction staff savings goes towards quality control and other much needed and under resourced aspects of the process.

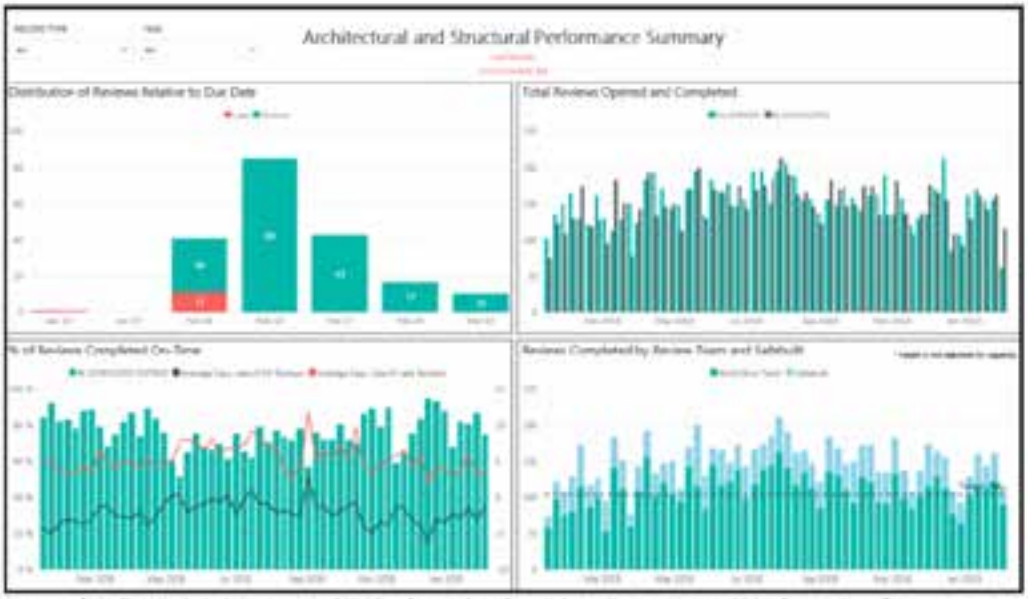
b. The process for resubmittals and modifications is also made much easier and is able to be organized in a much more efficient manner. These can all be done remotely as well, and login teams can relate these records to earlier submissions. This necessary document management helps different workgroups keep more organized and see all aspects of a project as each record that is linked to a project or a building are all related in the system. This is automatically seen and coordinated with the inspection team to allow for continuity of changes and simplifies change management.

6. **Inspection Team benefits:**

a. Inspectors have access to all plans and permits that are linked a specific address. They have hand held devices that can access and view plans instantly, review permits, and reconcile inspections on the site. Customers can have access to these inspection results real time and make adjustments in a much more efficient manner.

b. Inspections are scheduled by contractors using their mobile phones or on the computer. No longer are contractors required to call in to schedule an inspection. Significant savings in inspection administrative time in answering phone calls. The inspectors can create route sheets that are now time specific and not just indicating am or pm. Again, this saves significant calls from customers inquiring about inspection times.

7. **Metrics/Performance Measures**
The following charts outline some of the views that can be presented to management, supervisors, and team members. These metrics are an invaluable tool for everyone. There many other documents that can assist with annual trending, peaks, valleys, and other important nuances that occur annually.



Upper Left: Indicates 12 projects are past their due date and are late reviews. Easy access to address late projects first.

Upper Right: This graphic captures several amazing key indicators, first it shows January 2019 has significantly more projects logged in than January 2018. Secondly, for the most part, the team is keeping up with the volume.

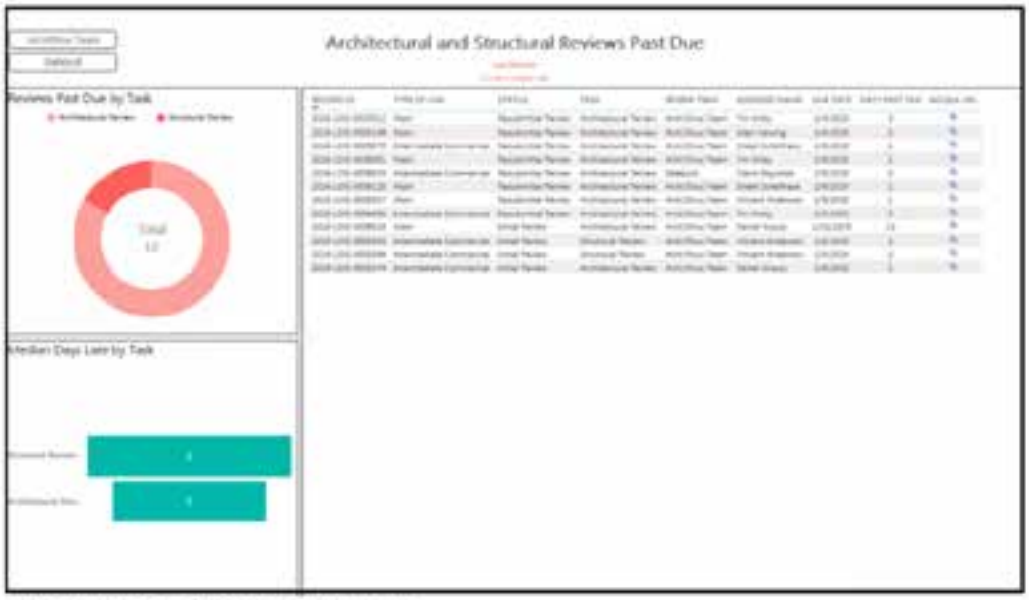
Lower Left: The goal is to have as many on time as possible but this also helps track how bad the late reviews are.

Lower Right: Tracks the inhouse reviews vs consultants and also measures if team is meeting their weekly target goals

Left: Indicates 12 projects are past their due date and are late reviews. Easy access to address late projects first.

Upper Right: Indicates whether backlog is from initial reviews or resubmittals.

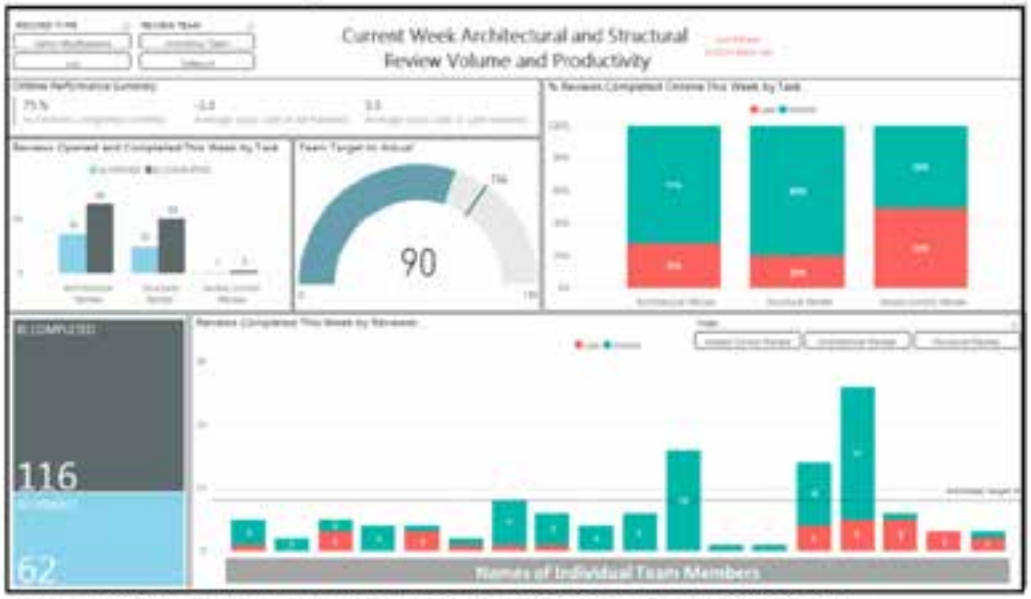
Lower Right: This is a great view to see when they will be caught up and reassign required tasks for those that are overloaded.



Upper Left: Indicates past due projects by work group.

Upper Right: Details on past due projects.

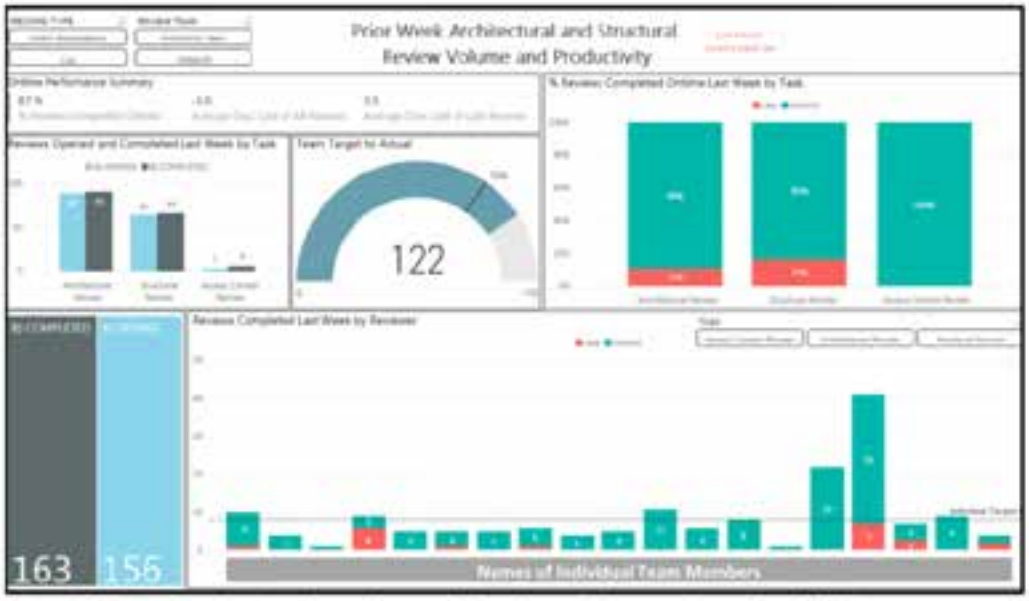
Lower Left: Indicates the number of days late.



Upper Left: Indicates past due projects by work group and shows the team did not meet its weekly goal of 104.

Upper Right: Details on past due projects.

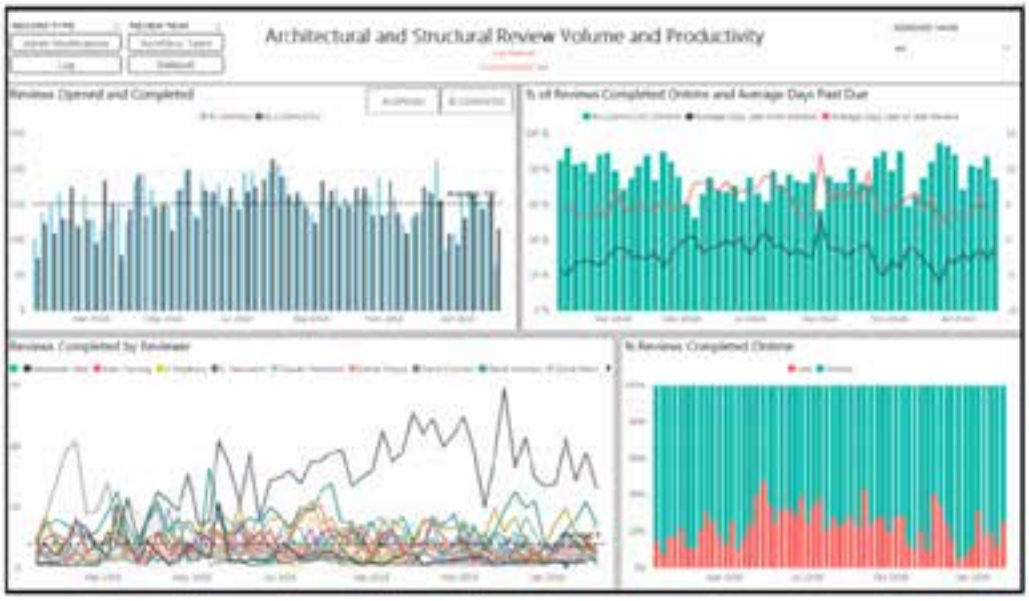
Lower Left: Indicates the number of days late.



Upper Left: Indicates past due projects by work group and shows the team did not meet its weekly goal of 104.

Upper Right: Details on past due projects.

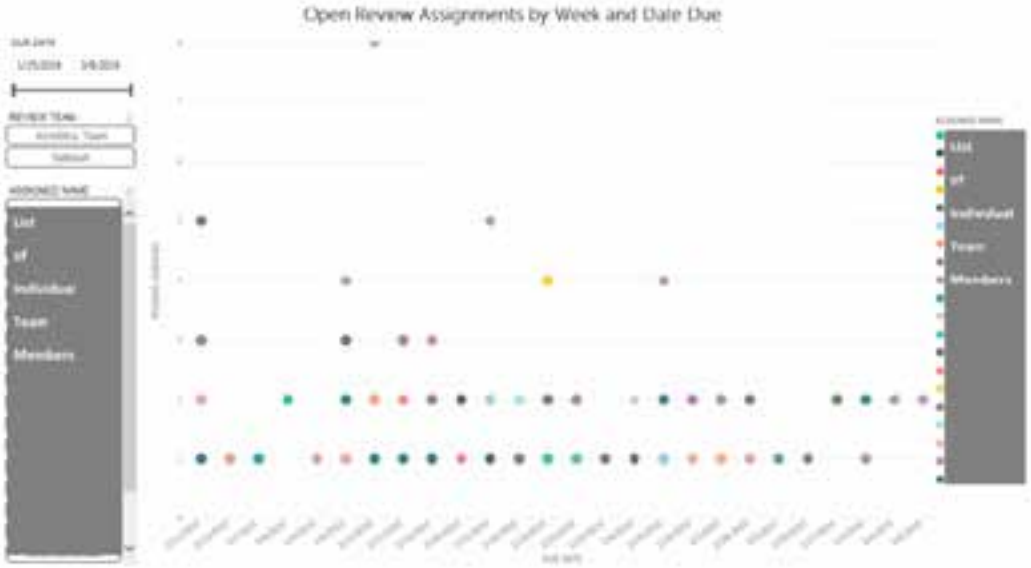
Lower Left: Indicates the number of days late.



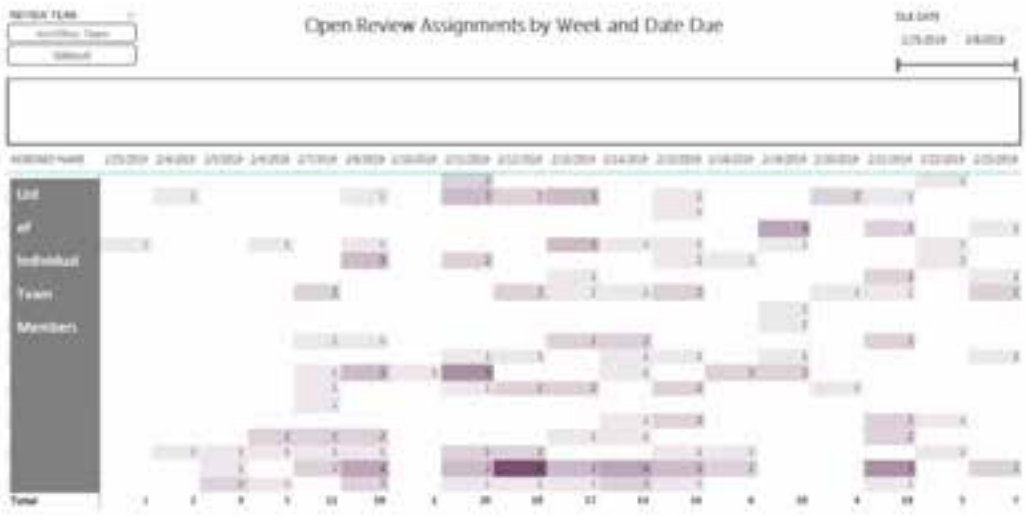
Upper Left: Indicates past due projects by work group and shows the team did not meet its weekly goal of 104.

Upper Right: Details on past due projects.

Lower Left: Indicates the number of days late.



These two charts outline a great view for supervisors. They can see at a quick glance if a team member is overloaded and tey need to redistribute any work.



DO'S & DON'TS

1. **Does the software have specific features your department needs?**
   The first task to be completed by the department staff is to clearly define if the new software should mimic the existing processes embedded in the system or if it could be modified to match the solutions recommended by the software vendor. Some companies offer a ton of features which on the surface seem important, but as you dig a little deeper, only add more work. Other software systems don't offer special features that may be needed to properly run the department. If the features are implemented in a way that is too confusing, staff will get frustrated. The best approach is to make a list of the essential features and ask the vendor if their product can be adapted to fit your unique needs. Buy-in from key department staff on the minimum necessary features is essential to ensure success.

2. **Is there a contract of *any* kind?**
   The 'contract' reflects the most critical financial decision your department would make while digitizing the system. The more thorough the RFP, the better the contract could be. Before buying software make sure to ask about software *AND* support contracts.

3. **What are the fees for tech and hardware support?**
   Each software vendor has their own support policies. Make sure you understand their policies clearly. One company may charge a monthly or yearly fee, while another may offer you 30 days free before the support charges start accruing. Some may not even offer support. Ask about hardware support too. Many companies will support their software but won't support hardware. You have to go to a third party (often charging an avg. of $75 – $125 per hour). Some companies have special prices for specific devices. Getting help with receipt printers, label printers, barcode scanners, computers, etc. is essential for a smooth operation. Make sure you understand what to expect from your software provider beforehand. In many cases, the vendor team that installed the software and trained the first group of department staff may move on to other projects and the vendor may then deploy new personnel that your staff may not be able to relate to. So, once the launch group is well entrenched get a commitment from the vendor that they would keep their team intact at least until the department staff is fully conversant with all operations.

4. **Does it cost to get upgrades?**
   If you are not buying a web-based system, be prepared for a sticker shock when you try to upgrade your system to the current version. Several of the software vendors will charge you to upgrade to the newest version. Also remember if you are past two or more versions of the software, the vendor may not support you and thus you will have to go back to square one. This is one big difference between software that is downloaded/installed on your computer vs. software that is available via the web. Web-based software updates everyone immediately to the most recent version when it is available. Installed software may require anywhere from 6 months to a year to upgrade with new features or bug fixes.

5. **How does your data get backed up? Do they offer a Disaster Recovery Option?**
   If your computer gets a virus, lightning strikes, or it just crashes for some unexplained reason, make sure you have backups of your data that do NOT reside on your computer. Whether you purchase web based or installed software, make sure you understand how your data is backed up, how often it is backed up and what it will cost you. Also, be prepared to perform a periodic audit of the backup system to make sure that you do indeed have the correct files backed up.

   Disaster Recovery is a function to for IT team of your organization and usually part of a strategic planning function led by a CIO or CTO type of function as subset of broader BCDR (Business Continuity and Disaster Recovery). As the name indicates, this is planning for continuous operation of the business that encompasses hardware, software, technology and business process. It is impacted by type of technology platform, connectivity, and other factors that are specific to your organizational needs, mandates and regulations.

6. **Does the software offer integrated credit card processing and if so, what are their rates?**
   If the software integrates credit card processing this makes the point of sale easier and less time consuming. If you don't use an integrated credit card processor, you will need a separate process to run credit cards. Either way, make sure you compare rates of different credit card processors to make sure you are getting the best rates possible. Also, be very careful of the level of security needed since this may directly affect performance of the payment intake software.

7. **Do they offer 24/7 support?**
   It is not unusual that inspection staff assembles at 6:00 AM to plan the day's work and get deployed. So, if a software glitch prevents access to data at that hour, a large number of staffs may be waiting for work till the glitch gets fixed. A manual back-up system must therefore be available at least for the first year until the system stabilizes. Unfortunately, not every problem you experience will happen between 9 am and 5 pm. Find out if the vendor offers 24/7 technical support and if there are any extra fees to access support during off hours or weekends and holidays. Also ensure the vendor offers both email and phone support because email support alone may not get you the quick turnaround you need. Another question to ask… what is the average response time to a customer support request?

8. **Why have customers left them and chosen other software providers?**
   Most people ask for referrals, but did you ever think to ask why customers have chosen to leave a provider? Remember, every company is going to have customers that leave so don't let their answer scare you, but a software vendor's answer to this question will tell you how involved they are with their customers and how they view themselves as a provider. Speak with other businesses who are using their software, join social media sites that have consignment/resale groups and ask questions through LinkedIn groups. Just because a business has been around for a long time doesn't mean they are the best at what they do. Also, multiple people from different functions of the department should be interviewed to obtain a fair feedback.

9. **What type of training is provided for you and your employees?**
   This is one area you need to be blunt and open, so they know who all are to be trained and what level of redundancy is needed for each task. In doing this, the level of training must be related to the user level. For instance, an inspector, an IT person, a financial person or the permit staff all require customized training utilizing a curriculum that matches their tIf this is your first software system, or you are considering a change, there is always a learning curve. Make sure you know what type of training is provided for you. Will the training be provided for everyone in your business? Is there a fee to participate? Is the training live so you can ask questions?

10. **Does the software provider offer a cloud-based solution?**
    More and more companies are offering this solution which can have tremendous benefits worth considering. There is less possibility of viruses or other malicious software impacting your day to day operations. We have recently seen in a large jurisdiction were there computer network was impacted for several months due to a malware. Many software solutions require the transfer of large format files and this can require a significant amount of storage. By using a cloud-based system these two concerns are addressed.

11. **Efficiencies gained.**
    Determine what the real goals and expectations are. Software companies demonstrate all that technology has to offer yet the full capabilities greatly depend on the customer wishing to employ them. For example, Internet bandwidth, wireless connectivity and specific devices all must be reviewed for their limits, prior to creating user and customer expectation.

12. **Groundwork**
    In order to implement a new program or software the groundwork must be done first. Every organizational process must be mapped out in detail. This will identify steps within processes that are vital or required and steps that may eliminated.

CONCLUSION

The Major Jurisdiction Committee recognizes that modern technology and new software solutions can transform the way we work in local government and serve our customers. The expectation is to save time that otherwise is spend on manual and very tedious tasks, but it is important to approach any new implementation with a lot of scrutiny. It is our intent that the information provided in this paper will serve as a guide for this process.

FOR MORE INFORMATION