Trampled by Technology: Are you
Managing Technology,
or is it Managing you?

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Abstract
Wireless technology is revolutionizing how people communicate. Over the past 5 to 6 years, my business phone log has changed. I was entering 50 to 75 calls a day as recently as 2006. Now it may take over 2 months to get that many log entries. On the other hand, e-mail has expanded exponentially. Also, in the course of a couple years, the use of social media, such as Twitter and Facebook, has exploded. We have seen neighborhood-based chat groups go viral over traffic concerns and neighborhood noise, in a matter of hours. Communication is changing and your department must get on-board quickly.

In addition to communication, the tremendous expansion of wireless technology is changing how we complete much of our work. The need for paper work orders, maps, or paper ‘anything’ is disappearing from the work place. The advent of GPS-tracking smart phones also presents opportunities. Public Works Departments must form strategic partnerships with the public that will significantly improve efficiency. Our department is using smart phone applications to turn citizens into inspectors. Are you doing similar things in your department?

Key Words Wireless, Social Media, Paperless, Neighborhoods, GPS, Smart Phone, YourGov

Introduction
The City of Golden Public Works Department began using wireless technology six years ago and has continued to expand its uses. We also have carefully tracked costs to completed work as we incorporated additional wireless operations.

Golden has also launched a communication campaign that relies on subscriber-based social media to provide proactive notification of work and actions that will affect citizens. We have joined with neighborhood internet chat groups to keep neighbors informed, and to keep our department on top of emerging issues.

Finally, Golden launched a web-based service request program in May of 2010 called YourGov. The Public Works Department expanded that program’s capabilities in October of 2010 by launching a smart phone mobile application for the i-phone, and we followed up with Droid and Black Berry applications early in 2011. With these new tools, we have not only driven down the cost of providing services, we have expanded our scope and reach by inviting citizens to help us complete work using their smart phones.

We are now entering a new phase that includes integrating these three areas: wireless work management technology, emerging social media and web based communication, and GIS capable smart phone technology, to create a mobile personalized dashboard that has better, faster, and smarter information. This allows better decision making, provides better answers to
citizen questions or requests, and finally, allows us to work with elected officials to effectively advance community goals.

**GPS-based inspection and wireless work flow, our first step into the void**

In the early 2000’s, the City began using GPS-enabled hand held devices called “Juno Devices” manufactured by Trimble (http://www.trimble.com/junost.shtml). Golden began collecting information on all City assets.

When we began, we were using paper work orders and inspection forms. These inspection reports would then be transferred to our asset and work management software called Cartegraph (http://www.cartegraph.com/index.php/solutions). This required a data entry person, who would spend about 32 hours a week entering the work orders and inspections into the Cartegraph data base. We then converted to the hand-held Juno units, where we would preload the inspection form and they would provide a GPS location for the asset. When the crews completed their work each day, the data was downloaded to the Cartegraph data base.

We are now moving away from using the inspection form in the Juno. The device will now locate the asset in our data base from the GPS coordinates, and then a series of question are asked and answered by the field personnel. This dramatically reduces errors in the field, and the unit instantly updates our data through wireless connection.

The time required to complete inspections has been reduced significantly and we no longer have need for the data entry position. Cities in the U.S. are required to inspect all street traffic signs, annually. When we first did the inspections, we were using the paper inspection and work order system. Our cost per sign was over $5.00. Now, using the Juno GPS locations and the pre-loaded inspection questions, the cost has been reduced to 93 cents per sign. With over 6,000 signs, that is a significant savings, and that is just for one work area.

New for this year, our annual concrete and asphalt replacement programs will be administered through wireless mobile devices. Inspection reports will include pre-loaded forms and daily quantities that will be derived through GPS-tracking data, measured on the ground. Everything is wireless and paperless. Our quantities and reports are transmitted to the contractor daily. This leaves little room for dispute at the end of the contract or even for a monthly pay estimate. We are just scratching the surface of possibilities for project management through remote GPS-based devices.

**Twitter emergencies and i-neighbors**

It has always been troubling to have incidents such as an emergency water break or an unplanned street closure, and no time to provide citizen notification. This is often the nature of Public Works, when things are going well, we are not noticed, but when there is a problem, people see us. In the past, when we needed to turn off the water to repair a break, and there was no notification, we would always get calls asking why the water was off and why we did not notify the residents. The explanation that this was an emergency and not something planned, and that
quick action was essential in shutting the water off to prevent damage, was never completely satisfying for either the customer or the department.

Enter the social media tool Twitter. We began over a year ago sending tweets any time we needed to take an action that would affect our citizens, but we did not have time to provide notice. The tweet is sent immediately and usually provides minimum notice, 15 to 30 minutes, before the citizen is affected. This now provides a proactive positive answer, when we get a call about not being notified. We explain that it is an emergency situation and though we could not provide notice, if they follow the Public Works department on Twitter, they will receive minimal notice in the future.

We have also been using tweets to provide status, updated during snow storms, to give the citizens information about the status of street clearing.

In the first year of use, we have sent 73 tweets, and have gained over 100 followers. We will continue to advertise the service, and recommend it to citizens who call. It is a great way to provide instant updates, and with 140 character limits, it is quick and easy. One of the more interesting things that we have seen is the number of pizza restaurants that have signed on. We were curious until one of the restaurants told us that they follow it because it is important for their delivery employees to know if there is a closure when heading out on a delivery. You can follow Golden Public Works at www.twitter.com and follow GoldenPW. When you sign up, be sure to provide your mobile smart phone information and the tweets will be instantly delivered to your phone.

We also have joined local neighborhood internet chat groups. I was very reluctant about this at first. Our City Council began working to get residents in a neighborhood to all join i-neighbors (http://www.i-neighbors.org/). Initially, following the chat between neighbors on this site seemed like a bother, until an issue concerning one intersection and a citizen who felt that it was not safe. Within 2 hours, that posting had generated 43 additional responses, a neighborhood version of ‘going viral’. Unfortunately, there was little fact and lots of emotion in the discussion. Things were quickly moving to a neighborhood-designed traffic solution that would not meet any engineering requirements. Because we had been a part of the i-neighbors group, we were able to join the discussion with facts, such as, accident history, injury information, traffic volumes, and standards that would need to be a part of any modification. This lead to a very constructive neighborhood meeting that could have been highly confrontational if we had not been a-part of the discussion.

So my opinion has changed. Despite the fact that there is so much social media out there, and it is not possible to monitor all of it, by organizing our neighborhoods around this one chat group, it has greatly reduced the number of sites we have to monitor. I recommend that you get your neighborhoods organized around one chat location. It will make your organization much more effective.
Taking the next step and mobilizing citizens to help

I have noticed over the last year, a shift in how the public communicates with government. This is particularly true of younger generations. If I want to talk to my kids, calling is a complete waste of time, they don’t answer. E-mail used to work, but that is now way too hard, you have to actually log into an e-mail account. If it is not a text message, forget it, they don’t respond. Considering this change, it seemed prudent to look at aligning communication opportunities around emerging communication modes, not around old and dying modes. We began by working with our work management software vendor, Cartegraph, to craft an internet-based system to request services and track status of projects and request. In the spring of 2010 we launched YourGov (http://www.cityofgolden.net/Page.asp?NavID=980). This is a web-based service request portal that citizens can use to report problems, request services, and track request status. Golden’s public works employees were highly concerned when we first launched YourGov, fearing that they would be overwhelmed with service requests. The reality has been the opposite. Prior to YourGov, a request would be made to many possible places, the Mayor, a Councillor, the City Manager, our department, or many other possibilities. The result was that the request had to be handled multiple times, being passed from the Mayor to me or the City Manager. I would then pass it along to the correct supervisor, who would then assign a crew to handle the problem.

With YourGov, the request is routed directly through our work management program to the crew who will do the work. Currently, the crew receives a work order for the request along with the other work orders that are generated each day. No one had to take the call and intervene to get the work scheduled. This is a huge savings. The system also generates a status that is seen if the citizen logs into the city YourGov web page, to learn what has happened to the request. The status might say something like work assigned and completion pending. When the work order is completed and closed in the system, the completed action is then displayed. All this happens with no additional work from any employee.

In the fall of 2010, we took the next step and moved YourGov from just a web-based program that citizens had to log into, to a smart phone mobile application. The free application download allows reporting and requests from the field. The great thing is the GPS capability of smartphones allows the location of the request to automatically be attached to the request. So, now citizens are helping with many tasks, by reporting missing signs or down limbs, from the field. This saves significant time, and with the GPS location, it eliminates location errors. Again, this is all completed with no employee having to retrieve information and process and redistribute it. The remarkable thing that we have learned from using this technology, is that any supervisor or employee can generate a paperless work order, instantly from the field, for anything they observe. This has made all of our supervisors more productive in the field.

How will we be using this wireless technology in the near future? The most exciting piece on the horizon, is that soon we will be giving all crews, smart wireless devices to use in the field. At that point they will have access to all pending work requests and their status, instantly, in real time, anywhere in the city. These requests are viewable geographically, so a crew who finishes a job can quickly see if there is additional work needed nearby. Imagine the efficiency gains from not crisscrossing the city, completing work.
We are also just starting to use this technology to enlist citizens to help complete projects. We have had a program where we want to locate all the trees in the community and keep information, such as, age, type, etc. A group of volunteer citizens, armed with smart phones, is making quick work of the project, as they take walks through the community. This is just the beginning of what is possible.

Coming very soon is a personalized smart device mobile dashboard. I can select the things that are most important to me and have them on a customized screen on my smart phone, through a wireless internet connection. Imagine your engineers in the field, having instant access to budget, schedule, or other data. If there is a need for a small change in the quantity of concrete, the decision is made, in the field, to approve the change. The change is entered remotely. And instantly the quantities, cost and schedule are updated and the project budget is reset. Think about how powerful that information is to the decision makers in the field, if there is a change needed, or more importantly, an opportunity that should be considered.

**Conclusion**

I can’t tell you where the future lies. Things are changing and moving fast. I like to recall a story about a 2-hour debate at a city council meeting in the early 1990’s. The debate was about buying a fax machine for the City. There was much concern by council about wasting money on a toy. That debate is less than 20 years old, and look where we are now.

As I write this, I am working on an aid project in Afghanistan. We had training today and by my count, there were 24 computers in the room. Every participant had a phone and most were smart phones. Technology and how we use it, is the driving force in the future of our public works departments. You can’t escape it. So, you best do two things.

First, commit to technology. Know that it will change and evolve at an incredible speed. You can’t be afraid to invest and get on board because things might change. They will. You have to jump in with the knowledge that you must continue to grow with technology. Think about what a great time it is to be alive. No other period in human history has required you to continue to grow, like today’s world.

Secondly, embrace the smart, dedicated and forward-thinking folks in your department. In almost every organization, there are those racing to the future, and those holding onto the past. You must find the balance between these two, to be successful. In my experience, it will be the slightly tempered folks pushing for the future, that will provide long-term success.

So, are you going to be trampled by technology, or, as I recommend, are you going to get on board and provide a better future for your citizens and staff?