CHIEF'S FILE CABINET
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Bridging the Gap of Technology

The Chinese have a saying; "you cannot leap a giant chasm in two bounds". If you leave one side of a precipice, you must have a very high level of confidence you are going to land on the other side, or the jump can turn into catastrophe.

Using the vocabulary of found in contemporary management world jumping giant chasms is often called "*gap analysis*". Gap analysis begins as an assessment of where you are now, in comparison to where you would like to be at some point in the future. The corollary to the ancient advice provided by the Chinese proverb is recognizing that making small incremental improvements over time often results in significant change. W. Edward Demmings, the guru of quality improvement stated that it is preferable to make small improvements rather than engage in the paralysis of analysis.

These concepts weigh heavily when organizations are making technological transitions. When an organization is anticipating what technology it will be using in the future, it has to base that on what technology it is using today. Sometimes the gap is significant between the technology of today and the emerging technology of the future. Budgeting for technological change is often a very convoluted and incremental task. Therefore, gap analysis is a complex process.

To make this concept operational, there are two terms that have been introduced into government that are an essential part to understanding gap analysis. These terms are: base-lining and benchmarking.

Base-lining is knowing exactly where you are at any given point in time. If an organization is being truthful with itself the baseline for some areas is not really as good as we would like it to be. But, it is what it is. An organizations baseline is not what it thinks of itself but what it can prove about itself. Probably one of the best examples of base-lining is the true assessment of what level of service is being provided by a fire organization at any given point in time. Baselines are almost always subject to making improvements.

Benchmarking, on the other hand, is an idealistic view of the future. Creating benchmarks identifies where the organization would like to be at some point in the future. Therefore, setting benchmarks is based upon making incremental improvements to continually raise the baseline to a new level of future performance. A benchmark might well be compared to the statistics often used in sporting events. For example, all baseball players have a batting average. Moreover, if you are batting over .300 you are considered to be a person who can get on base one out of every three times you come to bat. The baseline is the batting average; the benchmark is comparing the better performance all against all others. It is an expectation of a high level of performance.

This provides us with the opportunity to understand a third concept. It is called best management practices. It is a term that has been offered up as a potential solution to setting benchmarks, i.e. everybody embracing the best way of doing a specific thing. The problem with that contention is that there is no such thing as a "best" management practice that works everywhere. Some management practices are simply more costly. Some are not as sustainable as others. Therefore the concept of best management practices is subject to a great deal of interpretation.

These three terms become very critical when it comes to dealing with coping with technological change. The baseline of most fire departments is past technology. The benchmark for many fire departments is emerging technology. And, best management practices consist of getting rid of obsolete technology and replacing it with new tools of the trade as quickly as possible.

The fire service is challenged with keeping up with technology. There is a gap in many organizations between the best available technology and its availability to individual organizations.

For purposes of this discussion, we could characterize best management practices as being those polices, practices and procedures that have been adopted by an organization that allows it to operate at both an effective and efficient manner consistent with the expectations of the authority having jurisdiction. This definition means that what is best for your organization is what you may be able to justify that will your organization to be more effective and efficient.

The author William Bridges authored a concept a few years ago called "Managing Transition." In that theory he proposed that whenever there is an ending of something, there is a beginning of something else. Somewhere in between these two conditions is called a neutral zone. This is where there are gaps that are created in an organization.

Getting all of these concepts to work at the same time gets a little difficult to visualize. Let us focus on the idea that in the present time, your organization has a baseline of functionality and technology. As a leader and manager you are going to have to make a decision on whether both are operating at a satisfactory level. In other words, if the baseline gets the job done, then why bother to change. But remember, the entire idea on having a mission that is supported by goals and objectives is to make incremental improvements over time. The organization should become more and more effective over time. That is a relatively simple concept. However, trying to adapt to a changing world sometimes gets lost in the static of an organization merely trying to justify what it is doing in the first place.

So along comes another concept. It is called "*impact assessment*". Impact analysis asks the basic question of whether or not improvement is really an improvement. In some cases, improvement is surrounded by an exterior coating of being the latest dance craze or a trend and pattern that everyone is jumping on the band wagon.

For purposes of identifying incremental improvements in the fire service, all these concepts end up going in the decision process not unlike making a stew. One makes up a stew of multiple components in attempts to bind it together so that it provides a satisfactory meal. The bridge gapping process in the fire service means that one cannot rely on any one singular concept to be able to justify what needs to be done in the future.

Nowhere is this more important as a consideration as when it comes to accepting the consequences of technology. Let's go back and examine each of these concepts as it relates to technology. Baseline - where is your organization technologically today? If one were to put a birth date on every technology being used in your fire department would the technology be in its infant stage or relatively mature. How you are doing things and the tools you use to do the job literally forms the framework of your organizations ultimate level of competency. The following example may seem ridiculous, but it does provide an opportunity to see what is meant by this concept. Let's imagine that your organization was still operating steam fire apparatus. If you went out onto the apparatus floor and had a steamer being pulled by horses, chances are you would think of yourself as being technologically challenged.

On the other hand, if you took the time to walk around to the pump panel and looked at the performance that would have been etched onto the chart you might be surprised. The earliest steamers were able to pump 1,250 gallons per minute at 150 psi at a ten foot draft. In other words, the performance of the technology of pumping water hasn't changed all that much. What has changed is the mechanism of delivery. Therefore, when we look at technology in the context of the fire service, its performance is often linked with tradition rather than maturity in its technology.

Benchmarking technology has to do with identifying the latest and greatest version of what is considered to be mainstream technology. In other articles I have alluded to the idea of the wave of change. That wave, to a very large degree, is generated by inventions and innovations that are almost stand alone concepts for a specific period of time. Yet, eventually they will begin to migrate into the fire profession because of the early adopters and moreover because they receive widespread acceptance and eventually become mainstream.

Most fire officers do not realize that the transition period for most innovations in the fire service is approximately twenty years in length. Proof of this can be found by examining the dates in which an innovation was brought into the fire service and the date that it would be considered part of the mainstream. Again using the example of the steam apparatus, steamers were in service for over fifty years. When the horses were changed out for automotive apparatus in the early 1900s it took almost thirty years to get rid of all of the horses. If you reflect on this for just a moment it is conceivable that a person could spend their entire career with one set of rules as to what works and what doesn't work.

In our professional literature we often called that the *paradigm*. The paradigm for any given set of circumstances is what is known to be the truth for the majority of the people who share a belief. For example, at one point in time society believed that man could not fly. Then once that was refuted the next paradigm was that man would never leave the bounds of earth. Society was disabused of that eventually. Now the paradigm may be that it is going to be difficult to get out of our solar system but there are people today who believe that we will be on mars within the next twenty years.

As we continue to consider these concepts and the process of change in the fire service there is one other limitation that is absolutely critical to the thought process. It is called the budget cycle. If you went back and looked at the budget of your fire organization in 1980 and compared it to the year 2000 you are likely to see significant changes in the dollar signs but you may not see significant changes in the ways and means of accomplishing the past. That is at the core of one of the issues of dealing with technological changes in the fire service. Our budget cycles on an annual basis are an inadequate environment to consider technological advances.

As these explanations have gone on, it is easy to see that the fire service is faced with a mutually contradictory phenomenon. It has a very strong need to adopt the technological advances of society and simultaneously has a need to be a stable consistent service and have a minimum amount of failure associated with its technological tools. This defines the gap that many chief officers are confronted with today. So what is the solution? If one agrees that incremental improvement is to be preferred over the paralysis of analysis, as was so aptly stated by the guru of quality improvement William S. Demming, then continue making incremental improvements.

However, if you believe in the Chinese proverb that says that we are going to have to make huge leaps in technological advances to carry the fire service to new levels in the future then another mindset must also be adopted. That mindset is to explore the implications of technology to shorten the length of time between the innovation of technology and its utilization by the American Fire Service.

This is not going to be an easy task. To the contrary it is probably going to be carried out by a very small percentage of the leaders in the American Fire Service. Margaret Mead once said that one should never under estimate the power of a small group of people to actually change the world. In fact, Mead stated that she felt that was the only thing that ever has. The same thing might also be said for technological change in the fire service. It is not a result of everyone engaging in a consensus but rather individual influence leaders taking action to move a particular thought process to the forefront.

And, make no mistake. Mistakes will be made. In researching technological advances in the fire service this author has observed multiple ideas that were offered up as being "the solution" that no longer have a place in the tool box. Among these might be such things as the nozzle pump operator, the flying platform, the super pumper, and my all time favorite – firefighting robots.

But don't be too quick to snicker about the demise of previous failed technologies. They have a way of coming back in a new improved fashion and finding a spot in which they ultimately become part of the fire service.

I would point out that 25 years ago infrared technology was being used primarily to shoot airplanes down with "Sidewinder" missiles. Today they are being used by firefighters to operate in a safer environment inside of burning buildings.

So what is a fire chief to do? Do you stand back and marvel at technology and do nothing about it or do you jump in and purchase it when it is liable to not work and cause you some subsequent embarrassment? Neither of these seems like logical tactics to use in order to maintain your professional credibility. Therefore, one might want to assume the middle ground. That middle ground consists of understanding technology and examining it without prejudice as part of your future consideration. Study technology as if it were a research and development project. Evaluate technology on the basis that each technology solution is an experiment rather than a conclusion. Purchase technology as quickly as you can when it begins to address a specific on the ground problem that you are experiencing.

While this does not provide you with that one giant leap (sort of makes you sound like Neil Armstrong doesn't it?) for the fire service. If you go all the way back to the beginning of this article and reflect on one thing, where are you today? You might find some interesting answers if you take the time to compare where you are with what is available. In examining the adaptation of technology in the fire service it is not uncommon for much of the technology to have an extremely expensive price tag. This has a chilling effect on most small organizations at the very outset. Yet, there is even a way around that. That is to take into consideration whether or not a technology has an application to an entire region rather than to just your own fire organization. Collaborative efforts to adopt technology on a regionalized basis make a lot of common sense. They are often avoided by the simple but realistic, reason that fire chiefs cannot get together on the same wave length.

In this case, wave length can be translated to mean level of collaboration. Technology as it continues to advance in society in general is not paying much attention to our problems. The American Fire Service is probably twenty years behind society with technological solutions. In some cases it is our fault. In other cases it might be our lack of exposure to the bandwidth of technology.

The International Association of Fire Chiefs created a Technology Advisory Council to attempt to stick together some of these components so that you may not have to expend your energy on overcoming inertia. What is not understood by many in the technology development world is that the fire services lives on a diet of annual budgets. By the time we have the ability to actually determine that we need a technology, write the specifications for it, obtain budget approval to put in the budget, and then

ultimately see an appropriation to achieve a technological solution could be as long as five to six years. Simply stated, in a world of rapid change, that means that the fire service is almost always behind the curve.

As an advocate of technological adaptation, I personally know that this very process can make you unpopular. Suggesting that there is more than one way to achieve a fire service objective often raises questions by those who created the previous solutions. I remember putting mobile data terminals in my radios in San Clemente in the 1970s and being criticized by the neighboring fire chiefs. Their contention was that my department was too small to justify that level of technology. Yet we were able to use that information to begin to do the beginning research on response time analysis that later emerged in the discussions on standards of cover.

In the final analysis dealing with technological change is somewhat like I have eluded in my article on the Wave of Change. Staying ahead of the curve means riding the crust of the wave and not being on the back side of it. As a chief officer you will be confronted with opportunities to evaluate technology. As a manager you will be requested to give consideration to incorporate into your budgeting processes.

Emblazoned on the outside of the city hall of Stratford – On – Avon is a phrase. Adopt, adapt, and innovate. When I visited their city hall I asked one of their local town officials how long that phrase had been on the front of the building. He informed me that it was there during Shakespeare's lifetime. Emblazoned on an early Roman fire service facility was the phrase Semper Vigilans; always vigilant. Being able to close the gap in fire protection is a combination of those two concept frameworks. We should always remain vigilant to adopt what is working, adapt it for our own use and then make our own contributions to it to advance to state of the art.

Some individual once said that any technology that does not appear to be magic is not sufficiently advanced. Yet, we in the fire service don't want to be mystified, we want to be assured that we are doing the very best to protect the lives and property in the communities for which we serve. Closing the gap between the way things are today and the way things are going to be sometime in the future is a monumental task. It cannot be underestimated. It can only be addressed on a day to day basis by individuals who have sufficient professional curiosity to overcome our fixation with stability and replace it with a desire for new and better ways of accomplishing our job.