TMC'S ADVISOR

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Unintended Consequences Issue

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Brexit: New Uncertainty and Risk

By Guy Robertson

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Business Continuity Assessment

If you answer YES to any of the following questions, you need to revisit your disaster plan/business continuity plan:

- Does your plan include how to respond to a pandemic?
- Does your plan address succession planning for key staff?
- Does your plan include strategic alliances?
- Does your plan include flags for when it needs to be updated?
- Does your plan include emergency communications with key clients?
- Is your plan completely reliant on technology?

More Information

Contact Ellen to request a copy of our Disaster Planning / Business Recovery Checklist for a more comprehensive list of questions.

ellen@tmcconsulting.ca or 604-506-2905

Courtesy of Mark Buckawicki

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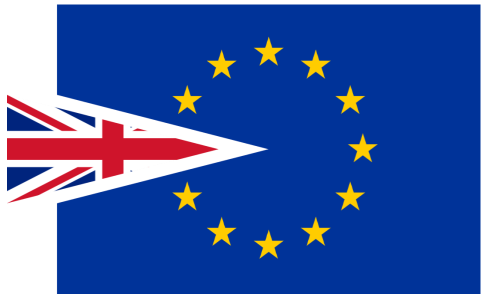

Photo by Rlevente

Unless the UK can find a way out of their binding referendum, global economic and political uncertainty will hurt us here. Enterprise risk management (ERM) teams need to decide on immediate implications, then continue to follow developments closely.

Managers who are responsible for disaster and business continuity plans can provide important contributions to ERM committees. These include discussions of mitigating non-physical risks such as sudden layoffs, currency fluctuations, loss of customers and stakeholders, and the loss of expertise.

Essential Questions

- What do we know about the current economic situation in Europe and the UK? Are our information sources up-to-date and reliable?
- Are the economic circumstances—and the data that describe them—evolving, or 'firm and finished'?
- Has the Government of Canada issued any announcement, report, position paper, or comment on the current economic situation? Have there been any warnings from Federal sources?
- Similarly, for the Provincial Government.
- Have regional industry leaders, professional associations, trade unions, or other important organizations announced measures to deal with effects of Brexit?
- What do our customers think?
- Do we have contingency plans to deal with specific enterprise risks to our organization—currency fluctuations, loss of customers, delays caused by changes in import/export regulations, etc.?
- Do our plans address short-, medium-, and long-term contingencies?
- Are there people outside our organization who can advise us? Examples include, experts in finance, security, human resources, and people who have an in-depth knowledge of the history of our industry or services.
- How should the committee inform the organization's stakeholders of its findings?
- What kinds of plans, reports, procedures and position statements should the committee release, and how often? Who will accept responsibility for the compilation of these documents?

Confidentiality

In many cases, ERM plans and related documents are confidential so control of such items should be the responsibility of a senior executive. Even ERM discussions should not be shared.

This article is reproduced from the June 2016 edition of ***TMC's Advisor***

Guy Robertson is a Senior Management Consultant at TMC who specializes in emergency management and disaster planning. He has written extensively on emergency planning and IT security—hundreds of articles as well as two books with worldwide sales.

Green Buildings Drain Cell Phone Batteries

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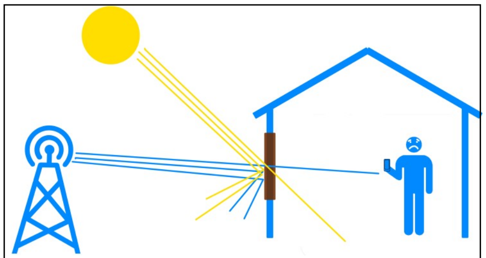
The obvious aim of a 'green building' is to reduce environmental impact by saving energy. Green building design works very well for reducing heating and cooling requirements but they can play havoc with cell phones and other types of radios. Did you wonder why your cell phone battery drains faster than you expect? Pay attention and you may find that battery levels drain too fast in your modern, new office building and behave normally when you leave work. Here's why.

What is 'Green'?

Any building consumes energy to maintain an acceptable internal environment—heating in cold weather or cooling in warm. In the heating season, energy is saved by reducing the heat loss from the building and conversely, in the cooling season, by reducing heat gain from outside of the building. This is done by insulating the building—the walls, windows etc. For walls it is easy to use standard wall insulation but the large areas of glass present a bigger challenge. The technique often used is double pane windows with an air gap and a coating that reflects infra-red energy.

The Effect on Radio

The problem is that heat, in the form of infra-red energy, is similar to radio energy. Both are part of the electro-magnetic spectrum and, as a result, what is good to block one will usually block the other. In a modern, green building, it is not unusual to be able to see a nearby cell tower through a window, yet get a very low signal strength from it because of the way the glass blocks the radio energy. In a similar way, Fire, Police and Ambulance radios experience low or no signal levels.



Solar reflective glass is designed to block infra-red rays from the sun to stop buildings overheating. A side-effect is that it also blocks RF energy—causing degraded reception for cellular phones and other radio systems.

Cellphone Reaction

Modern cell phones reduce power output when close to a base station because the higher power is not needed. Doing this saves battery power and is the main reason why modern cellphones can last so long on one charge. However, the signal attenuation of the green building makes the phone think the base station is a long way away—so it increases power levels to compensate.

This has two undesirable side effects. Firstly, the higher power burns up battery capacity at an alarming rate and secondly, the RF field intensity is much higher than it otherwise needs to be.

The Solution

It would be ideal if a glass coating could be devised that would block infra-red but be transparent to RF in the same way it is transparent to visible light. Developing such a coating would help not just cellular but also Emergency Service staff, who need to use their radios within buildings.

Until such time, there are two options. The first is a micro-base station inside the building. This is used by carriers in some shopping centres or sports venues to support high traffic. The second option is used by building owners as a 'self-help' option. It is an active 'repeater' system (also known as a distributed antenna system) that can be designed into buildings. These systems receive the external RF signal and repeat (retransmit) it to the inside of the building.

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Bill Tracey is a radio systems Design Engineer and consultant with over 25 years of experience with all types of radio systems. He is a trusted advisor to post-secondary, municipal, emergency services clients.

Simply Adding WiFi APs Often Gives Worse Service

By Peter Aggus

Basic logic might seem to suggest that improving WiFi service is just a case of adding more Access Points. It is surprising then that the reverse is often the case and coverage is degraded. Understanding this counter-intuitive logic is fundamental to a sound design upgrade and can save considerable wasted investment in hardware that actually makes things worse. Intelligent design is far more important than simply adding capacity.

How It Works

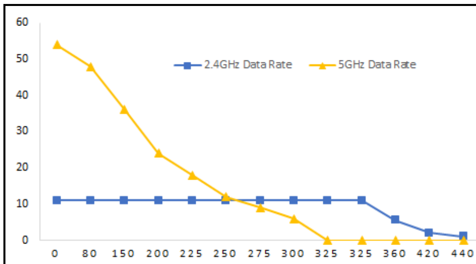
WiFi Access Points (APs), particularly in the crowded 2.4GHz band, have limited numbers of available channels (only 3 satisfy the needs of WiFi at 2.4GHz). They sense other units operating on the same frequency and either change channel or reduce power to avoid conflict. The idea is a self-balancing system of automated configuration. This works remarkably well most of the time.

Range

A typical lone WiFi AP might produce a sphere of coverage in the order of 80ft at 54Mbps on the 5GHz band. Outside that sphere, coverage is still offered but at increasingly reduced speed—as shown on the chart. Above about 325ft range, only the 2.4GHz signal is effective.

For good coverage at maximum data rate, the next AP on the same channel must be 80ft away such that their coverage spheres do not overlap. An intermediate AP 40ft away on a different channel will ensure good coverage.

With only 3 channels in the 2.4GHz band, this needs very careful planning,



Free field maximum data rates reduce with increasing distance.

Below about 250ft, 5GHz offers increased bandwidth.

or an automated WiFi management system.

Capacity

Each AP has a finite capacity—limited by its data rate. This capacity is shared between all users and falls if some users are a distance away. Adding APs to reduce the user load per AP is the only way to increase capacity. However the added APs must follow the same overlap rules—so the coverage per AP is reduced in order to increase its capacity.

Doubling the capacity may halve the coverage area—needing 4 times the number of APs for the same area.

A further effect is that putting more APs on a high ceiling might result in the coverage sphere for maximum data rate no longer reaching the ground.

Speed

If a WiFi user is outside the primary coverage sphere, the data rate achieved will fall, reducing capacity. A classic example of this conundrum is at an airport—where improving the terminal WiFi to the point where users on docking aircraft can use the APs will actually reduce service levels because of the data rate drop.

Coherent Design

The solution in all cases is to use a designer who can appreciate the user need and the implications of all the options. That way a design can be produced that matches range, speed and capacity needs.

And, as if that was not enough of a challenge, the bands are shared with other technologies and users—so nobody has a guaranteed exclusive right to the scarce channels.

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Peter, as a certified project manager & technology management consultant, has developed innovative & cost-effective solutions for clients in many industries.

NIMBY Surprise

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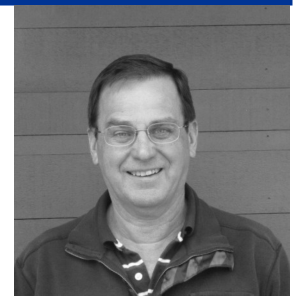

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How It Works

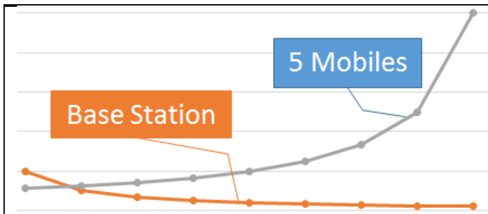
Cellular base stations emit RF energy to transmit voice and data to cellular phones. Part of that energy includes constant control channel transmission to manage the various customer devices and different technologies (3G and LTE).

Base stations produce many times the energy of a cellphone but at a location far above ground, and the energy levels drop as a function of the square of the distance. Thus at 10 times the distance, the power level received by the cell phone is only 1/100th the power at the transmitter.

Tower heights and antenna directivity are designed such that signal strength at ground level is similar to that produced by a single cellphone.

Cellphones also produce RF energy—something often ignored by those who object to new cellphone towers.

Phones emit RF energy to transmit voice and data to the cellular base station. They also emit energy, even when not in use, communicating with the base station on the control channel to provide the system with information about their location and subscription status as well as user information such as signal strength and time.



The field strength measured at ground level for a base station is similar to that produced by a mobile. As separation increases, the mobile power level increases to compensate, with the result that the field strength produced by a group of mobiles at a distance from the base station is much greater than that experienced close to the base station.

The Power Paradox

To conserve battery power, modern cellphones scale back their transmit power when close to a base station.

As total energy levels multiply as the number of phones in an area increase, a collection of cellphones close to a base station will produce less RF energy than the same set of phones that are several km away from the base station.

Solution

Cell tower objectors usually have the aim of reducing the RF energy levels at a particular location and their objections can block construction. Counter-intuitively for them, their goals would be met by the installation of a base station nearby. These new base stations would operate at reduced power since they would not need to cover great distances and in turn the cell phones would also operate at reduced power because of the proximity of the base station. The net result is much lower RF power density and the ability of the system to handle more subscribers.

The Future

Of course, the future might see a mandate for specific zones with no cell service and radio engineers will make that happen. Should that happen, the rules will need to be enforced in a similar way to bylaws used for controlling exposure to cigarette smoke.

This article is reproduced from the June 2016 edition of ***TMC's Advisor***

Tony van Wouw is an electrical engineer and wireless communications expert with global experience with microwave, cellular, broadcast and other systems. His experience includes Canadian regulatory environment, wired transmission and switching techniques.