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Maintenance

# Machine talk

By Siete Hamminga

**A**ccording to Gartner, machine-to-machine communications (M2M) will grow to around 914 million euros by 2008, particularly in the fields of transport and logistics, remote control systems, healthcare and security technology. Consequently, most wireless communication will not only be between mobile phone users, but between machines and devices.

Also known as 'telematics' or 'remote monitoring', M2M is already being discretely, and successfully, applied within the maintenance industry. And while this abbreviation has wonderful idealistic uses mapped out for it; it needs to work practically in order for engineers to put their faith into it.

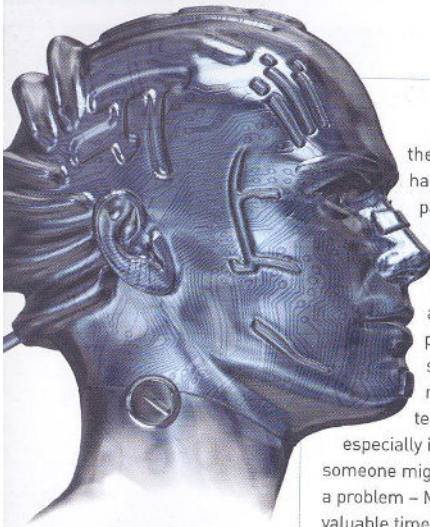
## Reduced overall costs

The big confidence booster for M2M in remote maintenance is undoubtedly cost-reduction. For example, take machine maintenance - knowing a piece of equipment's actual service status, and being able to act on necessary repairs in real-time, instead of planning maintenance on a set of predictions increases business performance while using less resources.

This model is being effectively applied in the refuse industry. Underground rubbish containers in some cities send an SMS to their headquarters when they are ready to be emptied, instead of emptying all of them when most of them are predicted to be 'full' - the same goal is achieved with less work, and without the inconvenience of overfull containers. Similar efficiencies can be applied to coffee machines and printers.

Moreover, when communication between machines is bi-directional it allows businesses to further save costs by streamlining the time necessary to maintain equipment. For example, new software can be uploaded to appliances remotely; while some can even be controlled from a distance without actually having to visit





them in the field. This is already happening around us, ranging from parking meters to complex chemical plants.

In addition to knowing a piece of equipment's actual status, M2M can allow technicians to diagnose a fault and prepare for the repair before arriving on site, and in some cases even service it remotely without having to send a technician to a repair site. This is especially important in the scenario where someone might have to fly somewhere remote to fix a problem – M2M can enable a company to save valuable time and resources.

#### **New service and business models**

Less obvious, but certainly beneficial, is the ability to increase revenues by offering better service options. Let's look at the following example: a small manufacturer produces mobile generators that are used for high pressure wall cleaning. Its machines are meant to be serviced after 300 hours of use. Before telematics, none of its clients bothered to do so; instead, they would keep using the machines until they suddenly broke down. The company would then typically receive a call from an irritated and furious client demanding an immediate repair.

Today, however, the same generators contain a small module enabling a very basic form of remote monitoring. It counts the amount of operating hours and sends a message to the manufacturer when it exceeds 300 hours of usage. The result is that the supplier takes the initiative by proactively contacting his clients in advance to plan a service: this puts the vendor back in control of his planned operations and leaves his customer with a sense of security because possible unexpected downtime has been reduced. What's more the high-pressure wall cleaner's perception of the machine has become remarkably better.

Another benefit of this kind of use of M2M is that it allows the manufacturer to enhance its business model. It is now able to generate additional revenue by leasing out machines based on operational hours, which opens up a whole new market. Again, the machines count their hours, send the information to the manufacturer, and it in turn forwards an invoice to the wall cleaning company – in a sense the machines work for you.

#### **Enhanced business intelligence**

Telematics in maintenance lets suppliers build valuable, detailed pictures of how their machines are being used. This is done by interpreting

statistical information gathered by equipment, which can be used by any number of departments including: research and development, and marketing (ironically, most firms don't perceive this as a direct benefit because it's perceived as a long-term benefit).

In addition to this, M2M can contribute to the positioning of the company as a whole – it can be used as a differentiator in marketing and PR initiatives and presents a great opportunity to underline its innovative nature. However, while M2M is bursting with potential it is not without its stumbling blocks.

#### **No need, no market**

The biggest hurdle for M2M vendors is the lack of an 'M2M market' and awareness of the capability that such technology offers. When companies are confronted with a problem they don't immediately look for an M2M solution to solve it. Usually they want to increase the gap between their costs and their revenues, and in the end remote maintenance becomes part of that solution.

Part of this lack of awareness is a result of the industry talking mostly to itself and not potential clients. This is easily noticeable at M2M tradeshow, which are usually quiet. You see a lot of competitors, mostly without client representation, staring vacantly at each other – this illustrates just how little people know about the technology. Alternatively, it shows M2M companies are excited at – and want to promote – their own potential. But the problem that exists is that businesses are not even aware of the possible benefits that M2M technology can bring to their bottom line. In fact, they hardly know the market exists.

However, if companies could find out about a technology that enables them to reduce cost, create new business models, or win clients, they wouldn't care about what it's called, they'd welcome the news. In contrast, this is often not the case, and companies that provide M2M – and which form part of the value chain – still have some learning to do about stimulating the market.

#### **The nature of the value chain**

Necessary hardware ingredients for remote monitoring include: sensors, communication modules and SIM cards. Established telecom providers typically have quite a passive attitude when it comes to using their SIM propositions in telematics. And although their uses are of a totally different nature, their offerings utilise and resemble the traditional structure as they are in mobile telephony.

So why then do telecom providers show little



flexibility and support for M2M pilot projects? This is because they are not optimally suited to creating new business in this arena: their sales teams are trained to sell their gear (enablers, not solutions) as fast and as in great a volume as they can.

Therefore, encouraging industries to capture the benefits from telematics, is mainly up to M2M solution providers. However, in this scenario, the partnership between them and potential clients is often not a very satisfying one: during the initial 'dating process' M2M vendors typically do not communicate that well with customers; moreover, the lack of empathy of the precise needs of these market-driven decision makers can create some obstacles. Which is why it's important to partner with an experienced and proven M2M solution provider.

#### The art of limitation

What counts for innovation in general, counts for embedding M2M applications in your organisation: the need for simplicity. Since the technical possibilities are endless, proposed solutions tend to expand up to a point where it becomes a prestige project far beyond capturing low hanging fruit. And that's how innovation projects also become doomed to fail.

'The Art of Limitation' becomes imperative when creating solutions. The main trick is to limit the amount of requirements of a solution, and balance it with a future proof infrastructure (one of the advantages of M2M is the ability to remotely update software later on).

This means avoiding certain appealing ideas by first defining what a solution should NOT do. But knowing the typical nature of technicians, this could be a challenge. To solve this, companies should involve their users when designing new solutions. They tend to have a practical approach, but more importantly, not involving them will almost certainly lead to failure after launching it.

In addition, limiting the complexity of a solution will shorten the road to its success, making it more effective and easier to implement. A problem remote monitoring providers are often confronted with is the postponement of a pilot project when results are not produced first time around. And what usually happens is that the client then changes suppliers (and possibly even solutions) and is left with a bad experience of M2M technology. This can be remedied through perseverance and the art of limitation, which can also save any possible future feelings of regret of not proceeding with strategic implementations of remote monitoring. Plus, it will also reduce operational setbacks when bringing the solution to market.

#### Technology behind M2M

The essence of M2M is that the intelligence of machines, or devices, becomes accessible and sometimes controllable from a distance. However, based on that explanation, M2M is not that new because companies have built this form of machine maintenance into their strategies for the past ten years.

So then why the hype? Aside from the impressive amount of valuable information that is stored within machines, the biggest technology driver behind telematics is the tremendous availability of standardised wireless connectivity methods and the advent of internet-driven M2M technology.

This does not just refer to the widespread GSM-networks or broader-band follow-ups. This includes its combination with short-range wireless protocols, which again opens the window of opportunities for such technology. Furthermore, it means devices can be made much smaller and energy efficient, such as in RFID and MESH. The latter of which is the reason why M2M is so hyped.

MESH technology allows devices to use each other to form dynamic networks, like the internet but on a smaller scale. Waleli believes web-based M2M is the future of remote monitoring: sensors are connected to short range devices (Bluetooth, Zigbee, Z-wave, Wifi, or RFID) that jointly form a dynamic network (MESH), which are linked to the internet via a long range protocol (now GSM, GPRS or UMTS). And what this means for businesses is that they can effectively monitor, control and automate their machines from different places in the world via secure internet websites.

So, while M2M is another in a realm of catchy and over used abbreviations, if strategically and effectively applied, it can have a tremendous positive impact on your business. The key, of course, is to build it into your remote maintenance strategy early on, and to persevere with a recognised vendor capable of creating a solution that works for your business, and which has the longevity to stand the test of time. **MT**

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Siete Hamminga is CEO of Waleli. Waleli is one of the new breed of independent high-tech companies that look for ways to apply the latest technologies in innovative products or services, rather than being driven by (or tied to) specific technologies. Waleli develops and markets products under its own brand; and also works in partnership with larger organisations like Philips and Siemens to help them identify new product concepts and 'fast-track' their development. For further information visit: