DMI
MOBILE ENTERPRISE SOLUTIONS

M2M & BIG DATA

ARE TRANSFORMING THE WORLD

AND IT DOESN'T LOOK AT ALL LIKE SKYNET

INTRODUCTION

Back in 1984—yes, 1984—James Cameron's Terminator, and Arnold Schwarzenegger's unforgettable line, "I'll be back," sent a shiver up the world's spine. The movie tapped into a deep-seated fear we humans have about losing control as we surround ourselves with increasingly intelligent and interconnected machines. There's something creepy about the idea of machines having conversations we're not privy to.

But it's 2014—30 years later. More machines are talking to each other than ever before, and it's turning out to be a good thing. A very good thing. Machine to Machine (M2M) communication, the Internet of Things (IoT), and high speed, sophisticated analysis of the associated data are turning out to be a boon to business—and to humanity.

In this paper, we'll take a look at what M2M is all about: what it is, how it's used, why it's growing, and most importantly, how M2M and Big Data Analytics can help drive cost savings and competitive advantage for many businesses—including yours.

M2M: WHAT IS IT?

M2M describes technologies and systems that enable networked devices to exchange information and perform actions on their own, without (or with minimal) human intervention.

WHY WOULD WE WANT MACHINES TO COMMUNICATE?

Gathering sensor data from devices, analyzing it, and using it to exercise more intelligent control can drive better outcomes: Environmental data from sensors in smart buildings can be analyzed to save energy and improve safety. Traffic data from networked sensors can be analyzed to predict shifts in traffic patterns. Using this information to control traffic signals can actually prevent traffic jams, not just ease them. Systems like GM's OnStar can alert emergency services when accidents occur, even when the humans involved aren't able to help themselves. Smart utility meters plus predictive analytics enable utility companies to predict demand patterns, automatically adjust to meet peak demand, and avoid over production when demand is low. In telemedicine, remote sensors can monitor patients, remind them if they've forgotten their medications and alert physicians when intervention might be needed.

We've really just begun to imagine how M2M communications and big data analytics can transform our world, improving health, safety, efficiency and convenience for millions of people.

HOW DID WE GET HERE?

M2M as we know it today has been a long time in the making.

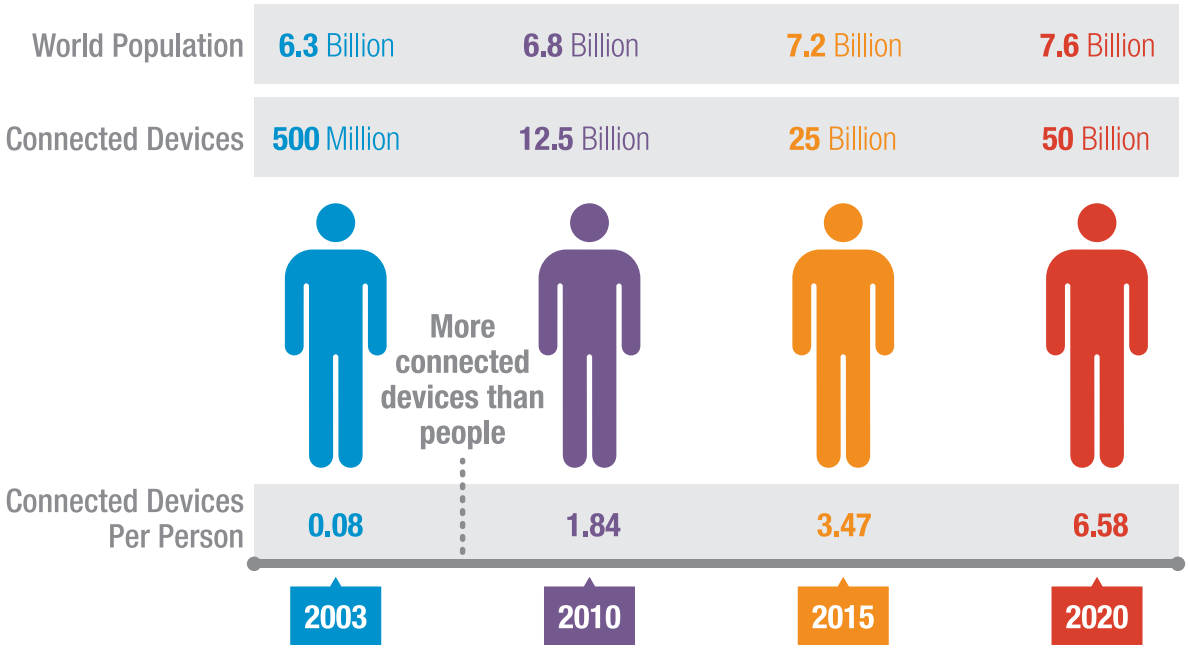
Back in the 1980s, Supervisory Control And Data Acquisition (SCADA) systems were introduced to enhance controls for electricity generation, transmission and distribution, and to improve monitoring and control for traffic and transportation systems. In the 90s, Wireless Sensor Networks were introduced to improve monitoring and control in many manufacturing and industrial systems. Wireless made it easier to monitor and control a broader range of devices, but only supported limited, short-range connections.

In the mid-1990s and early 2000s, a major leap forward took place when data modules were introduced that could communicate via cellular networks. These systems were used first to connect point of sale (POS) terminals, vehicle sensors, and other remote monitoring and tracking systems, and then were further extended to automatic meter reading, security, elevator control, fleet management, vending and telemedicine.

More recently, with the introduction of the Internet as a backbone for communication, M2M communication and applications have exploded in diversity and number. Three major factors have combined to accelerate the recent growth in M2M:

1. The near ubiquity of wireless Internet and broadband networks has given rise to the Internet of Things (IoT) and has made it easier and cheaper than ever to connect devices. Assign an IP address to a device with Internet access and you can communicate with it anywhere in the world.
2. Smaller, cheaper sensors, memory and processing power mean that more devices can be networked, and the devices themselves can be smarter.
3. Advances in tools and technologies for big data analysis and predictive analytics mean more data from more devices can be combined and analyzed more quickly, enabling machine-driven actions based on anticipated conditions—not just faster reaction times.

M2M CONNECTIONS: CURRENT SIZE & PREDICTED GROWTH



According to Cisco, there are currently more than three times as many connected devices in the world as there are people, and by 2020, there will be more than 50 billion connected devices.[1]

IDC predicts that the Internet of Things will change everything and be "a new construct in the information and communications technology world." IDC put the Internet of Things technology and services spending at $4.8 trillion in 2012 and expects the market to be $8.9 trillion in 2020 and have a compound annual growth rate of 7.9 percent.[2]

1 · Cisco ISBG, April 2011
2 · http://www.zdnet.com/internet-of-things-8-9-trillion-market-in-2020-212-billion-connected-things-7000021516/

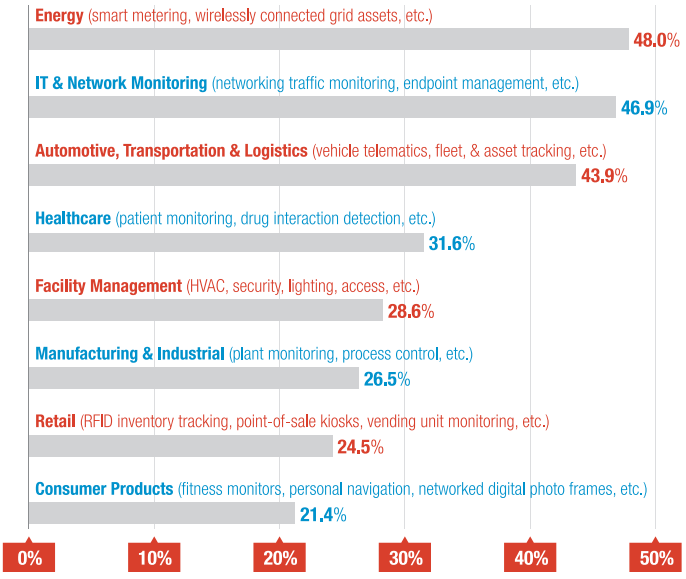
WHAT ARE THE BIG APPLICATIONS FOR M2M?

According to Machina Research, the applications for M2M technology solutions are startling in their breadth and diversity, with virtually every industry impacted and with benefits as varied as reduced energy costs, improved safety and security, and increased efficiency and faster response times for emergency services and national defense. Here are some examples:

SECTOR	EXAMPLE APPLICATIONS	MAJOR DRIVER
Smart Buildings	Automated monitoring of heating ventilation & cooling	Reduced energy costs
Smart Cities	Street lights that dim when roads are empty	Cost savings
Automotive	Emergency calling & accident alerts	
Leisure	Leisure vehicle & boat tracking	Safety & security
Consumer Electronics	Connected satellite navigation devices to monitor traffic jams	Production innovation
Health	Remote monitoring of patients & personal health monitoring	Cheaper, home-based care
Utilities	Smart meters & energy demands response	Regulatory requirement
Transportation & Logistics	Fleet optimization & supply-chain tracking & tracing	Cost savings
Retail	Wireless payments	Retail Innovation
Manufacturing	Predictive maintenance through improved system monitoring	Reduced maintenance costs
Construction	Monitoring usage of equipment to improve efficiency & cut fuel usage	Cost savings
Agriculture & Extraction	Remote monitoring of farm or mining operations & equipment	Proactive maintenance
Emergency Services & National Security	Disaster response & critical infrastructure protection	Faster response times

3

Another recent study by Techpro Research offers some insight into how far along companies in key verticals are in implementing M2M initiatives. Energy, IT and Automotive top the list in current implementations, or plans to implement in the next 12 months, followed by Healthcare, Facility Management, Manufacturing and Retail.[4]



3 · Machina Research
4 · http://www.techproresearch.com/article/71-percent-say-m2m-is-about-developing-new-business-opportunities/

SOME REAL WORLD EXAMPLES

Opportunities to use M2M to boost revenues, cut costs, and more effectively serve customers are tremendous, provided businesses do thoughtful planning around how to use M2M to achieve their goals. A few recent examples include:

Lexmark, a leading provider of printing and imaging products, software, solutions and services, deployed M2M for more effective customer servicing. Lexmark uses M2M to collect data from millions of printers. The company analyzes the data to streamline its products to serve customers better, increase revenues and reduce its operational costs.

Jones Lang LaSalle (JLL), a Chicago-based commercial real estate services firm, deployed an M2M system called IntelliCommand to collect data from building systems for security and protection against heating, cooling or fire incidents. Information collected by remote sensors is transmitted to a cloud-hosted system for in-depth analysis. When sensors collect data that strays outside of established parameters, alarms are relayed to a control center to alert managers. JLL's pilot installation with four sites enabled clients to cut costs by 15-20%. The real estate giant is now extending its deployment to 76 buildings.

France Telecom R&D, in partnership with the University Teaching Hospitals of Grenoble and Toulouse, launched a project called "Gluconet" for managing diabetic patients remotely. A special instrument is used to periodically read patient glycaemia data. This information gets transmitted automatically to the management center via mobile devices. The doctors can access the information over the Internet. Based on the analysis, doctors send medical advice to patients via SMS or voice messaging. The key advantage here is that both patients and doctors are alerted of any complications well before they become life threatening.

Nestlé Nespresso SA, a market leader in premium coffee, has equipped its coffee machines used in restaurants, hotels, offices, and luxury retail boutiques to transmit operational and performance data from each machine to a cloud platform for tracking and analysis. The system tracks descaling and other maintenance procedures and alerts technical staff if servicing is required. The applications can also be used to remotely adjust water temperature and pressure. The system helps ensure that machines are maintained in excellent condition, that they produce the highest quality coffee, cup after cup, and that customers are well supplied with their coffee of choice.

The U.S. Federal Government and Automotive Industry are warming to M2M as well. The US Department of Transportation recently conducted research that suggests that Vehicle to Vehicle (V2V) technology could prevent the majority of crashes involving two or more vehicles. Sensors can monitor speed and location of nearby vehicles, analyze risks and either warn drivers (near term) or take action on their own (longer term) to avoid accidents. The research could lead to a mandate to use V2V in the future.

OK, I WANT SOME OF THAT. WHAT DO I DO?

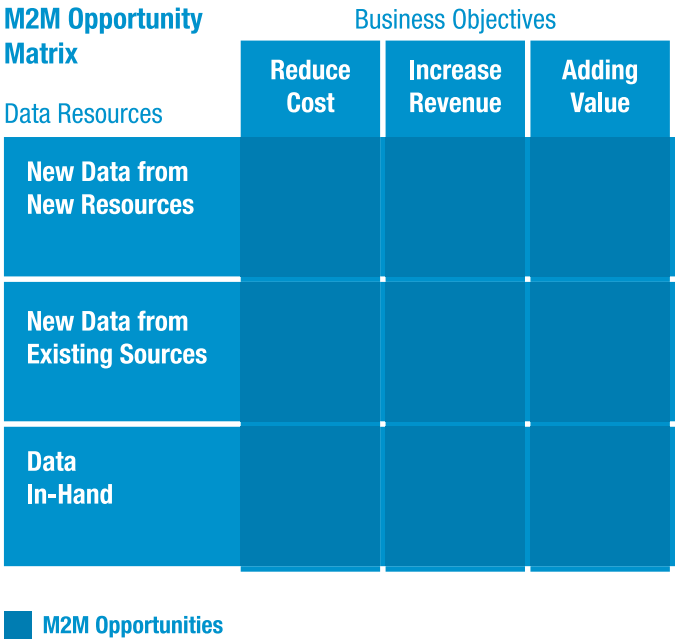
For some organizations, M2M opportunities are clear and obvious. An equipment manufacturer might see an opportunity to leverage machine data to provide better service and build loyalty. Another might see an opportunity to add value that can be monetized. Some companies might find themselves threatened by competitors who have already started using M2M to gain advantage. But it's not so cut and dried for some businesses. The "M2M Opportunity Matrix" offers some structure that can be used to think about M2M and identify opportunities that can improve business performance.

On the top of the Matrix is a range of business objectives you could pursue. This isn't an exhaustive list, but you could do a lot of good for your business by finding ways to Reduce Cost, Increase Revenue or Add Value.

On the left are a range of options related to data sources. Your organization might already have a large database of information that's coming in from POS systems, or manufacturing control systems, or some other source—Data In-Hand. But maybe you haven't figured out what to do with the information yet. There might be additional data that you could be collecting from existing "sensors"—New Data from Existing Sources. Or there might be new data that you could access with new sensors, or by sourcing from outside your company—New Data from New Sources. Probably, the data you already have in hand is going to be the easiest to tap to achieve business objectives. But some opportunities might be so valuable that it's worth deploying new sensors to gather new data.

At the intersection of each business objective and data source there's a potential M2M opportunity. So do some brainstorming. Thinking about how to leverage different data sources to achieve various business objectives is where the process starts. It can go in a lot of directions from there.

You might prefer to tap the skills of an experienced data consultant to look at your situation and help you to identify low hanging fruit or the really game changing opportunities that could deliver more transformative results. There are a lot of right answers. The best thing is to get started.



CONCLUSION

There's no question that Big Data Analytics and M2M solutions are transforming our businesses and our lives. M2M is enabling us to create systems that are smarter, more autonomous, and more quickly adaptable to changing conditions. The applications for the technology are beyond imagination—from traffic jam reduction, to better health outcomes, to happier customers, to better espresso—the sky's the limit.

The biggest mistake you can make is to sit on the sidelines. Waiting for a competitor to figure out how to use M2M to transform their business is the last thing you want to do. If you're not sure where to start, reach out to an experienced data consultant who can provide some guidance. It will almost certainly be worth the effort.

ABOUT **DMI**

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DMI IS A WORLD-LEADING PROVIDER OF SOLUTIONS AND SERVICES THAT LEVERAGE BIG DATA AND MOBILE TECHNOLOGIES TO ENHANCE BUSINESS PERFORMANCE.

Our Big Data Insights solutions deliver better insights for better decisions and better results. Our mobile solutions combine the award-winning user experience design that has made us one of the top creators of consumer apps with the deep middleware and engineering expertise that we've used to build and manage enterprise applications for the most demanding IT departments in the world. DMI mobility solutions improve business processes, tap new revenue streams, build customer loyalty, and increase employee productivity. And we offer a full range of Managed Services to securely set up, configure, and manage your mobile devices.

THE PROOF

- Our Big Data Insights solutions drive enhanced business performance and millions in incremental revenue for companies like Christ Hospitals, Luxottica, Marzetti, Lane Bryant, McKesson, Lexmark, Teradata, and Vantiv.
- We've built more than 400 mobile apps—in the past 12 months alone—for more than 150 leading organizations—like Bacardi, Toyota, Vodafone, The National Guard, Novartis, Unilever and Universal Studios.
- We offer brilliant creative and user experience: Our mobile app development group was named the Best Branded App Developer at the 2013 Mobile Entertainment Awards.
- We have 600,000 devices under management for 100+ clients, including many Fortune 500 companies—like BP, Johnson & Johnson, Sears, The Associated Press, Allergan, and more.
- We provide 24 x 7 x 365 mobile service support. DMI is the one call our customers need to make to resolve any issue—devices, apps, infrastructure, even carriers.
- We deliver secure mobile and eCommerce solutions for more than 50 leading consumer and business brands.
- We offer a full range of security options that include Federal-grade hardware-based security, two-factor authentication, secure container, and sophisticated encryption solutions.
- With our expertise and economies of scale, we can provide mobility management at a higher service level and on average 20%-40% lower cost than most companies can do on their own.
- Pervasive excellence is our commitment to quality service. DMI is one of only a handful of companies that is CMMI L3 appraised for both application development and services, as well as ISO 9001:2008, ISO 27001:2005, and ISO 20000-1:2011 certified. Our average D&B Open Ratings performance score from our clients is 95/100.