over in our daily lives – and often without us even noticing.

Machine-to-machine communication is increasingly taking

M2M in Daily Life

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**Cover –** exect Secure Solutions AG

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Dear readers,

The M2M Summit 2014 significantly exceeded expectations with more than 800 participants and more than 60 exhibitors present from 35 countries. In addition, approximately 25 speakers were actively involved in the conference agenda.

The Summit has thus once again established itself as the leading platform for market and technology providers, users, managers and the academic world. Together, participants discussed and analyzed the latest issues in order to better understand current trends and to assess the impact on the market.

The conference at the Summit began with a refreshingly pragmatic discussion about M2M and IoT (Internet of Things) abbreviations. There was agreement on the ongoing development of terms, M2M and IoT together shaping the picture of a future world which benefits from the advantages of an extensive network of things. The simplified acquisition of distributed data, the performance of complex data analysis, and the extraction of valuable information control will shape the future of communication. On this basis, many processes for consumers and businesses alike can be facilitated and simplified.

The focus was on the paradigm shift from technology to business. In the past, we often talked about SIM cards, transmission technologies and ICT architectures etc. These times have changed. The benefits of these solutions in terms of process optimization, cost savings, competitive advantages and quality of service are clearly in the foreground as of this year. It turns out that benefits are now more recognized and performance measurements of M2M solutions are more in demand.

Despite all the hype about the benefits of M2M solutions, we noticed that applications often need a long time to sustainably establish themselves in the market. Obviously, there is still more homework to do for the solution provider such as, communicating the technological benefits, standardization, as well as creating attractive pricing models. To address the question of a greater acceptance of M2M solutions in the market, the M2M alliance e. V. has, together with the Bonn-Rhein-Sieg University of Applied Sciences, started a research project in the winter semester of 2014/2015. The aim being to identify concrete measures to improve the acceptance of M2M solutions in the market. We will be reporting the results in the first quarter of 2015.

The Executive Board of M2M Alliance e. V. would like to thank you for the excellent cooperation we had with you this year. We wish you and your families a very happy Holiday season, combined with a good pinch of health, happiness and success.

Yours sincerely

Jens Böcker
M2M technology operates on factory floors and delivers tangible results in corporate boardrooms. At one level its primary role is the collection and management of machine data that is subsequently processed into actionable, real-time information, for example, to highlight a problem and issue an automatic alert. At another, higher level, it connects production machines and processes with mainstream enterprise systems such as enterprise resource planning (ERP) and customer relationship management (CRM), thereby providing management with an end-to-end, real-time view of what is going on in the organization. In between M2M encompasses remote monitoring and control, asset tracking, telematics as well as supply chain, energy and environmental management.

Shop-floor communications has traditionally used wireline Ethernet, but when wireless technology is employed it allows M2M to play a much bigger role. Remote maintenance is a good example. It illustrates the kind of tangible benefits that M2M’s unique mix of information and communications technology delivers 24/7 around the world. Remote maintenance optimizes uptime and minimizes on-site visits. It enables predictive/preventive maintenance. Information can also be shared within the organization as well as third parties such as OEMs of manufacturing equipment. The bottom line benefits are optimal productivity and an increase in customer satisfaction.

END-TO-END SOLUTIONS
For example, our application enablement platform, deviceWISE, enables direct links to be established between intelligent devices in factories and enterprise networks. In a nutshell, it functions as a software bridge between the two environments and enables the creation and deployment of end-to-end solutions.

On the production floor level the platform employs a comprehensive library of intelligent drivers that interface with widely used manufacturing equipment, e.g. all popular PLCs from Siemens, Mitsubishi, Rockwell, and Omron as well as RFID readers, inspection cameras, and everything else that is used in industrial automation. This side of the bridge captures machine data. The other side has an equally comprehensive set of transports that enable quick and easy connectivity to ERP and CRM systems. In addition, the platform is compatible with virtually all mainstream databases, message queuing and application server systems, including, IBM, SAP, ORACLE and Microsoft.

An illustrative example is Honda’s automotive facilities in North America. Plant floor IT managers across the facilities were challenged with integrating disparate PLCs from Omron, Rockwell, Mitsubishi and others with proprietary manufacturing execution systems. They were tasked with improving IT resource utilization using simple common tools across different plants and increasing product quality. After evaluating custom solutions and OPC drivers, deviceWISE was deployed since it runs on multiple platforms (Windows, Linux, AIX, etc.), uses simple configuration logic, and is fully featured and has advanced automation features. Honda has improved ease and speed of upgrades and equipment data; reduced PLC configuration complexity, improved data quality while supporting business growth.

But this is only one example. Leading companies around the world rely on deviceWISE for real-time data analytics on preventive and efficient business practices by automating and analyzing business processes. In this way, they can improve their operational efficiencies and create business innovation based on collaboration and predictive maintenance models.
TO DELIVER ON THE PROMISE OF TOTAL M2M INTEGRATION SIMPLIFICATION

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THE INTERNET of THINGS made Plug&Play
Can you feel the connection?

How M2M affects everyday life

In 2020 we will take it for granted that everything around us collects, shares, and analyzes data and automates processes.

M2M is a barely visible technology but its repercussions are becoming increasingly noticeable in daily life. The recent rise of M2M products for the consumer market is not the only reason. Industry and the B2B sector also play a part. The more areas are digitized, the greater the potential for cross-connections.

Industry shapes everyday life, sometimes subtly and sometimes very markedly. In the Industrial Revolution the smoke from factory chimneys was visible far and wide. In the revolution brought about by the Internet of Things sensors and data connections go largely unnoticed. Yet we all benefit enormously from connected products and services. The fire department, alerted automatically by the smoke alarm, is able to reach the scene of the fire faster. Connected vending machines can order their own replacement supplies to ensure the relevant choice of food or drink is always available.

In 2020 we will take it for granted that everything around us collects, shares, and analyzes data and automates processes. The products on offer for end consumers are already using technologies similar to those that are used in industry. Smart thermostats utilize machine learning algorithms and automatically adjust themselves to our heating preferences. Track and trace solutions used in cargo shipping or forest logging are now applied to consumer products such as finding your keys or pets. A central challenge will be to integrate individual solutions into ecosystems, and that is where the borderline between the world of factories and workshops and that of the consumer becomes blurred.

MAXIMIZE VALUE-ADD OF CONNECTIVITY THROUGH COOPERATION

At present, many companies use M2M applications in-house, for example to monitor facilities and production conditions. In the years ahead, companies will increasingly rely on M2M also in external areas. This trend will have repercussions on everyday life, as hardly a product or service will get by without some form of data exchange. The reason for this is that connected devices simply provide more functions than their predecessors, be it remote monitoring, position finding or incorporation in services.
The use of M2M represents a deep intervention into structures and processes. Technology alone is not enough to take the market forward. New business models must be developed and implemented. That is precisely where Deutsche Telekom comes into the picture by developing solutions together with its partners. In a connected world new rules apply. There are cross-connections between different kinds of products and services. The automobile talks with the heating, household sensors influence insurance tariffs. In many cases these cross-connections deliver decisive added value that can only be opened up by means of cooperation.

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Monitoring the condensate conductivity on a boiler can indicate the presence of a cooling water leak long before hydrogen embrittlement of the boiler’s furnace tubes causes it to fail. Measuring power consumption at a discrete level can reveal the precise energy cost of a specific process and predict mechanical failure if a particular machine suddenly begins to draw more electricity. Observing the temperature of a pump can alert an operator to shut it down before it overheats, and automatically shutting off the lights in a parking garage when no humans are present produces immediate savings in energy costs. Monitoring and measuring even very simple parameters improves processes, reduces downtime and saves money.

Unfortunately, many sensors need to do their jobs in locations that make wired data communications and AC power installations impractical. Even if the installation would be feasible and the costs would be reasonable, it’s not always possible to negotiate a right of way for the cabling. Fortunately, new technologies are coming online that provide low-power wireless solutions that extend the network edge to include difficult locations while simultaneously providing “five nines” (99.999%) uptime.

**SMARTMESH IP TECHNOLOGY – EXTENDING THE NETWORK EDGE AND IMPROVING UPTIME**

Based on the wireless IEEE 802.15.4e standard, SmartMesh IP mesh networks provide excellent connectivity for remote devices, even in harsh, dynamically changing RF environments. (Fig. 1) In a SmartMesh IP network, every node on the network serves as a router. The nodes can all communicate with one another, and also with the network gateway if the gateway is within range. Each node can receive data from any other network node that is within range, and transmit data to any other network node that is within range. If one path to the network gateway fails, the network nodes will reroute through another, for a frequency and path diverse self-managing mesh network. New nodes can be added or subtracted at any time, as the network is self-forming and self-healing. (Fig. 2) The end result is “five nines” uptime for the network as a whole, even if communications through one of the individual nodes are temporarily blocked.

This also makes SmartMesh IP networks highly scalable. Devices can transmit data over long distances by passing data through intermediate devices to reach more distant ones. Thus, the network gateway doesn’t need to be within range of every device on the network. Full-featured network gateways can connect via wired...
connections or the cellular data networks, meaning that you can put them anywhere that you can get a cell phone signal. In situations where wired power connections are impractical, a cellular network gateway can use alternatives like solar.

**LOW POWER WIRELESS NETWORKING**

When the network edge expands to include a location that is difficult to wire, power consumption inevitably becomes an important consideration. So remote network nodes will often need to be self-powered, and frequent battery changes would be undesirable. One way to conserve power is to place some intelligence in the edge nodes themselves so that they will know precisely when to talk, listen, or sleep. This can involve networking tools like Time Synchronized Mesh Protocol (TSMP), a networking stack that includes a Time Slotted Channel Hopping (TSCH) media access layer. TSCH divides time into “slots”, and maps timeslots to channels with a pre-assigned hopping sequence. Packet exchanges are synchronized, they don’t collide on the network, and every packet is scheduled and synchronized for energy efficiency with no extra preamble (Tx side) or guard interval time (Rx side).

Nodes don’t have to waste time or power re-sending the same data again and again, and path rediscovery is not required.

Low power mesh networks can also use techniques like Message Queue Telemetry Transport (MQTT), an open source, lightweight publish/subscribe messaging protocol. Unlike traditional request-reponse protocols like HTTP or Modbus, MQTT minimizes bandwidth and power needs by enabling a publish/subscribe messaging model. This reduces network traffic.

**PUTTING A LOW POWER MESH NETWORK TO WORK**

There are countless applications for low power sensor networks, and they can be used virtually anywhere there is a need for remote sensor deployment. Consider parking systems as just one example. No single technology is yet the best for every purpose, so parking systems tend to combine a wide array of equipment, multiple data networking protocols and multiple generations of technology. They can also run up a lot of unnecessary expenses. Is it really necessary to keep the lights on when no humans are actually present? Should power hungry ventilation fans keep running when vehicle emissions have fallen well below safe levels? A network that can monitor relevant environmental parameters and make useful decisions while simultaneously communicating with everything from card readers to security cameras can make the entire system more efficient.

Network nodes like gas detectors only need to report to the network when specified parameters are exceeded. Their bandwidth and power needs are quite small. If they’re smart enough to know when to report and when to sleep, there’s no reason they can’t be battery-powered and wireless. They would be good candidates for low power wireless mesh networking. A security camera transmitting bandwidth-hungry live video, on the other hand, will call for an alternate networking technology. Modern cellular network gateways will be able to accommodate both technologies at the same time.

Note that legacy sensors needn’t be left out. Manufacturers are producing battery-powered network nodes, such as the Wzzard Intelligent Edge Nodes from B&B Electronics, that can connect to existing devices and provide them with wireless mesh networking capabilities as well as a communications path to the network gateway.

**SMART NETWORK GATEWAYS AND YOUR REMOTE APPLICATION**

The most useful network gateways can connect to everything from Modbus and serial devices to Wi-Fi and/or SmartMeshIP and keep the data moving via either wired or cellular data connections. Where wired connections are available they’re usually going to be the preferred choice, as they require no cellular data plans. So parking system network gateways are often placed at locations like entrances and exits. There they can connect to wired devices like security cameras, card readers and digital signage, as well as local wireless networks and the Internet. But the ability to use the cellular networks remains important.

The network gateway can be configured for automatic cellular failover if the wired connection should fail. This gives the entire network enhanced resilience and reliability.

**THE FUTURE INDUSTRIAL INTERNET OF THINGS MUST EMBRACE THE PAST**

In the consumer world, new technologies quickly drive their predecessors out of the picture. But that’s not a luxury that the industrial Internet of Things will be able to afford. The data networking infrastructure that is already in place is far too valuable and far too complex to be casually cast aside. So as the industrial Internet of Things unfolds we will add new layers of sophistication to our existing M2M data networks, and we will enhance them with new tools like low power wireless mesh networking and sophisticated cellular network gateways that aggregate, convert and transmit multiple data networking protocols. We will move data across fiber, copper, cellular and wireless connections. We will add smaller, smarter, more capable nodes to our networks, but we will let older equipment remain connected as well. Newer technologies like low power wireless mesh networking won’t eliminate the data networking technologies of the past. They will partner with them and help them retain their value.

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The topics M2M (machine-to-machine), the Internet of Things and Industry 4.0 are getting ever more important, prompting many business owners to think about M2M solutions for their own companies. When planning the introduction of these solutions, attention often focuses primarily on the technical aspects of implementation — hardware, connectivity and software. But for decision-makers, the most significant factor is the tangible added value that can be gained by their enterprise.

As an integrator of complex M2M projects, exceet Secure Solutions observed the market very precisely. Christian Methe (CEO) is therefore aware of how important it is for companies to identify their own added value of M2M solutions. He explains: “Many enterprises face the challenge of transforming the potentials inherent in the growth of digitalization into new business models. When planning M2M solutions, priority should thus always be accorded to securing actual benefits for the enterprise”.

The analysis “Benefits of M2M Solutions for Medium-Scale Industry” closes the gap between the technology-centered view of M2M solutions and the added value they offer on the ground. Applying a consistent, systematic approach, the initiators, exceet Secure Solutions and M2M Concepts, examined 60 M2M projects from the DACH region (Germany, Austria, Switzerland).

M2M IS WORTHWHILE
The study found that in 87 percent of projects evaluated, M2M is utilized for operative purposes such as remote maintenance, event alarming and automated transmission of invoicing data. But in 18 percent, the machine-generated data is already being used as an independent product. For providers, this opens up and entirely new market and target group.

BENEFITS RADAR TO EVALUATE CURRENT AND FUTURE M2M PROJECTS
The analysis also shows that the diverse benefits of M2M solutions are transferable to other M2M projects, even across industry segments. These benefits, which can be divided into the groups “machine”, “process” and “business”, are clearly illustrated by the “M2M Benefits Radar”. This radar offers users and providers an instrument for identifying their own M2M potential, and for evaluating implemented projects in terms of target fulfillment.

M2M – DRIVING NEW BUSINESS MODELS AND SERVICES
In 75 percent of projects reviewed, sustainable new business models and/or new paid services were generated. The product business is currently undergoing a fundamental change, a process during which service-oriented business models can help to secure enterprise competitiveness. Additional services were created in 63 percent of analyzed projects, of those, pay-per-use or
contracting services were generated in 13 percent of cases. The new possibilities inherent in M2M permit enterprises to offer comprehensive service packages; attract new customers by way of new business models, or use interpreted data for consulting purposes.

M2M AS “INFORMER” FOR FUTURE PRODUCT GENERATIONS

Although M2M can automatically deliver extensive information on machine utilization and performance, only 8 percent of projects currently exploit this capability to define requirement management aspects for future product generations. Yet such information, for example on usage rates, configurations or machine downtimes can provide product managers and developers with a reliable decision-making basis for future product generations.

The M2M Benefit Analysis, including the list of the most common benefits as well as specific recommendations for the start of an M2M project can be ordered free of charge:
http://www.m2m-nutzen.de

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Before making the move to smart city infrastructure, urban planners need to take a long, hard look at what they are hoping to achieve, where they can expect quick wins, and what it takes to get smart systems up and running.

Half the world’s population already lives in urban areas. And there is no end in sight to the toward city migration: by 2050, around 70% of people are expected to live in a non urban environment. With urban planners already under pressure to ease traffic congestion and parking, improve public services and make cities more sustainable; the prospect of an even greater metropolitan mega-sprawl is daunting. However, by intelligently connecting services and infrastructure, machine-to-machine (M2M) technology is already resolving many of these challenges and helping to transform traditional urban areas into smart cities where people want to live.

THE FUTURISTIC VISION
We’re all familiar with the futurist vision of cities: gleaming sidewalks, people-friendly buildings, clean and punctual public transport, and traffic congestion consigned to the history books. Smart city technology brings the urban area close to this vision by letting devices communicate with each other. M2M-connected sensors installed throughout the city or town – and public transportation, waste bins, billboards and streets – capture data from their environment and send it to central systems, which transmits back instructions and information.

The inhabitants of an M2M-connected smart city can look forward to less congested roads, because traffic flows are routed intelligently around congested areas. They can expect lighter, cleaner streets; sensor-equipped street lamps will automatically report a failure and schedule its own repairs city refuse bins will report its need for emptying and thus avoiding the health hazard of waste overspill that is currently all too common in densely populated areas.

SMART CITIES ARE AROUND THE CORNER
Is this another whim of idealists who are out of step with urban planning realities? Not according to the member companies of Germany’s Association for Electrical, Electronic & Information Technologies (VDE), a group not normally associated with creating pipedreams. A recent survey of VDE members suggests it is only a matter of time before smart city technology is part of everyday life in Germany, with two-thirds (67%) of respondents expecting the new connected metropolis to be a reality within the next 15 years. Pilot projects such as the InnovationCity Ruhr in Bottrop or Smart City Cologne, with their focus on fresh approaches to homes, working, mobility, energy and public services, are already showing what can happen when intelligent technologies are hardwired into the systems that keep the city ticking.

Urban planners and municipalities of course need more than pilot projects and visions as they deal with the pressing and current challenges of how to keep cities liveable and appealing in the face of budget constraints. M2M technology is already in cities – and it works. But before councils everywhere rush to install M2M tech-

Bringing the smart city to life
The smart city is in most cases based on M2M communications, with devices and machines connected through intelligent networks, enabling them to exchange data with each other and with municipal IT infrastructure or a central application portal.

WHAT IS THE OBJECTIVE OF THE SMART CITY?
Is the city primarily looking to cut costs, for instance easing pressure on budgets by reducing energy bills? Does the city aspire to be an innovator, introducing smart technology to enhance quality of life for residents? Or is there a real hands-on challenge to resolve urgently – like easing congestion at certain congestion areas on busy roads, or encouraging people to use public transportation by introducing real-time information at bus stops? These objectives are by no means mutually exclusive to help planners define expectations and identify the best way forward.

WHAT ARE THE QUICK WINS?
Making an entire city smart is a major, long-term challenge. Yet there are many scenarios where smart technology can be deployed on a more limited scale to deliver valuable quick wins. From street lights to networked traffic signals, smart parking and waste collection points that report when they are full, M2M-enabled devices and systems can make a huge difference to how the city operates.

Keep traffic moving

Take traffic congestion, for example. According to a study by Roland Berger, congestion cost in the world’s biggest non urban areas more than $266 billion every year. A smart city can reduce these costs. Digital billboards, for instance, can provide real-time updates on which city areas are particularly busy, giving drivers the opportunity to pick an alternate route. Moreover, the timing of traffic signals can be adjusted to optimise the flow of vehicles at busy periods and keep people moving.

Not that it’s always a question of keeping moving. 40% of urban traffic in Germany, for example, is caused by people looking for a place to park. Smart city technology can be an excellent solution, with M2M-enabled parking spaces transmitting data to a cloud-based system which keeps a record of which spaces are currently available. Drivers can use a special smartphone app such as the one by Vodafone to find a spot close to their destination, and can even pay for parking using their smartphone. With this new system, people spend less time circling the block, looking in vain for a few metres of kerb space, and don’t have to rifle through their pockets looking for spare change for the meter.

With traffic already a major cause of poor air quality in cities, more e-mobility is widely regarded as an imperative both to reduce air pollution and cut carbon emissions. The German government wants to get one million e-cars, on the roads by 2020, and a key prerequisite to achieve this ambitious target will be to make it as easy and as worry-free as possible for people to recharge their vehicles. Working with Vodafone, Germany energy providers RWE and Allgäu Überlandwerk have introduced a smart e-mobility solution that fits in with the lifestyles of the smartphone generation. Drivers use a smartphone app to locate the next charge station, and can unlock the station via text message from their phone. They can even pay for their battery recharge via their mobile phone bill.

Smartening the municipal services

Municipal services are another area where smart city technology can deliver quick wins, particularly in waste collection and street lighting. 25 municipal councils in the Netherlands now use “smart bins” to optimise waste collection across 6,000 collection points. Within just one year, this solution, provided by Dutch technology company Mic-O-Data in cooperation with Vodafone, has saved the councils €92,000 in capital expenditure and operational costs, and has also reduced CO₂ emissions by 30 tonnes or 18%. Essentially, the bins report when they are full, meaning collections can be scheduled for only the bins which actually need emptying. Fewer trips means less fuel, and fewer trucks out on the road.
A smart city also knows how to control its street lighting. In fact, it is estimated that up to 80% of electricity consumed by street lighting can be saved using a combination of efficient lighting (such as LED) and better controls. Rijkswaterstaat (RWS) in the Netherlands now manages the country’s main highways and the national water system the smart way. With street lighting and traffic signals accounting for around 36% of its total electricity spent, RWS turned to a smart city solution to reduce both cost and environmental impact. Using the M2M system by global IT service provider CGI and Vodafone, Rijkswaterstaat can now remotely manage its street lighting via computer, tablet or smartphone, ensuring lighting is only on when it needs to be. RWS can also adjust lighting for better safety – for example switching off power in roadworks or providing additional lighting for emergency services at the scene of traffic accidents. As a result of the new system, RWS has a clearer view of the energy cost of public lighting, and estimates its savings at €91 per lamp post per year, with CO₂ emissions reduced by 438 kg per lamp post per year.

WHAT ARE THE TECHNICAL REQUIREMENTS FOR THE PROPOSED SMART CITY PROJECT?
The smart city is in most cases based on M2M communications, with devices and machines connected through intelligent networks, enabling them to exchange data with each other and with municipal IT infrastructure or through a central application portal. It is relatively easy to start small, and install a solution that integrates well into existing structures. That said, building an M2M solution in an urban area can be complex. It usually involves multiple devices, networks and applications, often from multiple suppliers. Councils are therefore well advised not to go it alone, and should get expert advice on board to make the smart city project a success.

GETTING THE SMART CITY RIGHT: GOOD ADVICE AND A COMPETENT PROVIDER
An end-to-end solution from a single provider can be the best approach for municipal personnel who simply do not have the time or expertise to ensure smart city services are designed and operated in the best way to serve their aims – be it to provide better public services, reduce costs or carbon emissions, or make the city a better place to live. A solution that includes M2M terminals, fully managed connectivity, M2M platform management as well as full support to make M2M simple may be the best way forward to the smart city.
Who controls the Internet of Things?

A look at the automotive industry illustrates this: Modern motor vehicles collect lots of data. From these data valuable information can be generated. We have become accustomed that the car tells us when we need to visit the service station. We appreciate it if the car automatically brakes from a sudden obstacle. And with the further development of the car to car communication the number of accidents can decrease and vehicles can be driven more energy-saving and foresight, better than the driver can.

PROTECTION OF DATA AND IT IS ESSENTIAL

But even simple applications produce a lot of data. The problem is that the driver does not know what data is transmitted accurately and who has access to this data. The latest example of this, is the planned introduction of a toll in Germany. The check of vehicles should be done automatically by reading the license plate and matching it with a database. Then the data will be deleted. Due to the current wiretapping scandals people do not trust this information. It could be that state authorities come and want to access this data. Also, the manipulation of the art as well as malfunctions are not excluded. The consequences would be fatal. Road transport is a good example of that you have to rely on the security-related techniques. There are similar examples in production or in medical technology.

There must be therefore no unauthorized access to the data generated in the Internet of Things. There must be no unauthorized manipulation. So there must always be an unambiguous identification of all stakeholders and a clear traceability of all actions. Suitable measures of IT security must exclude functional impairments. And by appropriate provisions of data, protection must be ensured. It must always be clear who and by what right someone accesses the data and what happens to it. The Policy is prompted for this to set the right framework schemes exempted without preventing technical progress!

In addition to legal regulations, appropriate technical measures must be taken to increase IT security. These include a secured encrypted communication, an efficient key management, low latency, and the protection of integrity. Then there is the human factor, also referred to as Human in the Loop. The security measures must be accepted by users. It also includes a simple usability, which is accepted by the people.

MORE BANDWIDTH AND LESS LATENCY – HIGHER DEMANDS ON THE NETWORK

In addition to these safety aspects a further aspect is determined in view of the increasing volume of data. The communication network, whether based on radio or cable must be able to keep up with bandwidth and speed. When making decisions that are in the millisecond range, it requires secure transmissions and very low latency. This can be made clear by the example of autonomous driving again. Driving several vehicles at a short distance behind the other, it must be ensured that the last car can still stop in time when the front appears an obstacle. In this sense, the expectation of the technology and the security is very high, because human life depends on it. The future will bring many exciting applications on the market that benefit people. It is just as important, however, to think about the security and privacy!

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Harness the power of Big Data

Roger Woodward, Tridium Europe Ltd.; discusses how the flood of information produced by today’s building management systems can be the power behind usable and actionable information that saves energy and money.

The magnitude of intelligent devices and internet technologies now installed in our buildings has created a proliferation of data. Such is the increase in the volume, velocity, and variety of data produced that Big Data is becoming the new frontier in building energy management.

Buildings and their components such as lighting, chillers and air handling units now have the capability, through sophisticated building energy management systems (BEMS), to produce information on energy consumption, performance and maintenance. Today’s building manager is presented with a host of facts and figures about the performance of every facet of the space he or she oversees.

By its very definition, Big Data is too large and complex to manipulate or interrogate with standard methods or tools. A recent study in the US by Forrester Research concluded that most companies are analyzing just 12 percent of the data at their disposal.

But there is a growing recognition by building owners that data on energy use should be treated as business-critical information. Large amounts of information now flowing into the energy management field are set to give building owners and operators in-depth knowledge about building performance and the power to optimise it.

One hurdle to overcome is the challenge of linking together disparate systems from different manufacturers. Different sectors of the building services industry use different protocols, or even proprietary communications protocols, so there can be difficulty in pulling these strands together to achieve fruitful analysis of Big Data. The challenge is equally true of new-building projects or with existing properties.

Solutions such as Tridium’s Niagara Framework offer an IT solution for the BEMS industry that makes the task of gathering data from pulse or smart meters and across numerous protocols much more straightforward. Reaching across all common platforms, open and proprietary, Niagara forms a bridge between energy data and the end-user. This is truly where BEMS and IT are crossing paths successfully to bring data that was once lodged firmly in the plant room to web-based tools with simple user interfaces.

The benefits to the business of this ability to collate and use data become clear. Each lighting fixture in a building may have within it at least 40 data and command points. This presents a host of opportunities for data analysis that previously may not have existed, and affords the building manager a level of control that can mean faster energy monitoring and reduced response times to changes that need to be made.

Similarly, in a project whereby environmental control is a critical issue, such as with data centres, a monitoring framework that can oversee the performance of chillers, air handling units, and identify where server racks are beginning to rise or fall outside the optimal conditions; and then send that information directly to the BEMS to act on it, is a tool that not only provides a safeguard against downtime issues, but also shows the route to a higher level of energy efficiency.

Such advantages are helping the industry to acknowledge Big Data not as a reservoir of unfathomable information but more as an asset to the bottom line. All it takes is the right tool to harness it.

Organisations which view this data as a business tool, in the same way that they might view market research feedback, will find that it provides a great deal of value in the long-term. Not only can Big Data identify energy savings, it can also help to introduce efficiencies across the business as a whole.

Contact:
Roger Woodward • VP and Managing Director EMEA at Tridium Europe Ltd. • www.tridium.com
The era of the Internet of Things (IoT) has arrived – a time when openness and connectivity are vital to realizing operational efficiencies in commercial buildings.

The Niagara Forum 2015 will be the place to learn what truly open systems can achieve and how to make the most of the opportunities offered by the IoT.

The Niagara Framework has the power to connect diverse devices and systems in ways that have never been imagined before.

Whether you are designing for an office, hospital or data centre this truly open platform empowers users to achieve more than they thought possible.

Join us in April 2015 to see the very latest smart, inventive and disruptive building automation technologies that are built on the Niagara Framework. The Forum is about the power of connections and community.

Now is the time to get ready for a new kind of open system that can harness the power of the Internet to create an efficient, productive and usable built environment. Register now at www.niagaraforum.eu.
Cloud-Based Service Platforms for Embedded Boards and Systems

Secure, cloud-based management agents are coming of age for the spectrum of embedded applications, enabling remote, centralized access to system data. Maintenance and management costs reduce dramatically with these always-on, user-friendly tools that detect, predict and prevent potential failures before they become realized.

Using remote management, operators can assure that repair personnel are dispatched to a system in distress before a failure occurs. Systems can be reconfigured remotely to assure they stay functional in the meantime. Operators can also capitalize more fully on remote management with ongoing analysis of system data. Long-term performance trends are revealed; system failure can be predicted and prevented in advance of any alarm signs, and system lifetime can be increased by monitoring and controlling various hardware parameters.

INTEGRATING REMOTE MANAGEMENT INTO EMBEDDED SOLUTIONS
Connecting to remote devices can be done in different ways, but all require hardware, firmware and software components as figure 1 demonstrates. ADLINK uses a dedicated board management controller (BMC). The BMC first collects all relevant information from the chipset and other sources. Utilizing the System Management Bus, the application layer fetches the data and presents it to the user, displayed either in the BIOS menu or a user-friendly dashboard suitable for supervision and troubleshooting.

System operators can view and consider graphs illustrating various vital stats of the system, such as the power consumption or temperature of both the CPU and the board, queried every second. Users also have access to general board information, secure user access and storage areas, and fan, GPIO and I²C bus controls, as shown in figure 2. The BMC uses smart fan controller technology, and automatically relates measured CPU temperature to fan speed.

ADDING VALUE WITH DEVICE-TO-CLOUD STRATEGIES
Extending remote management technologies to include secure cloud access makes good business sense for system administrators. Cloud connectivity takes today’s intelligent middleware a step further than previous generations of remote management technology. By employing a cloud server architecture and an M2M (machine-to-machine) stack on top of the intelligent middleware, embedded devices can connect to the cloud without additional design requirements. Pushing data to the cloud enables operators to verify, monitor and manage system performance from a single, central location – improving reliability and reducing management costs.

For example, the M2M stack in ADLINK’s Smart Embedded Management Agent (SEMA) Cloud pushes system data to the user’s cloud server via any kind of TCP/IP connection, such as 3G, LAN or wireless LAN. System managers have easy access to data and analytics through any device such as desktop PC, tablet or smartphone.

INTELLIGENT SYSTEM MANAGEMENT
Using cloud connectivity, three primary management scenarios cover the principal needs of system operators. These scenarios can be classified as information function, analytics and event creation, and multiple device management.
INFORMATION FUNCTION
When systems are available, operators can observe their performance. Cloud-based remote management furthers that process by enabling observation anytime, anywhere. In this scenario, the embedded management agent continuously uploads data through an encrypted Transport Layer Security (TLS, the successor protocol of Secure Sockets Layer or SSL) connection, shown in the user’s information dashboard. Since data can be accessed at any time, operators can determine if performance is acceptable even if certain values fluctuate from normal settings.

ANALYTICS AND EVENT CREATION
Analytics and Event Processing includes the analysis of the transferred device and sensor data. Rules can be defined for each device and data type. When preset threshold values are reached, the appropriate actions are triggered. If a threshold is exceeded due to an unforeseen event (e.g. a defective or dirty fan), a SEMA call will be issued (see figure 3). This could be a notification (e.g. SMS or email) to the system administrator, a command to initiate a system shutdown to protect hardware, or triggering a GPIO signal to start a system backup. Operators can proactively interact – rather than simply react – with the system for better reliability, dealing with potential issues in advance as well as responding quickly to downed systems.

MULTIPLE DEVICE MANAGEMENT
Cloud-enabled embedded agents offer the additional advantage of being able to remotely control system parameters; specific user configurations will trigger certain actions to execute automatically. This is possible for a large number of devices, enabling a form of fleet or multiple device management. Implemented through the M2M Stack, users easily set up a cloud application to control different devices, and the cloud application observes the current health status of the connected embedded systems.

The transaction and access of sensitive data using cloud-based M2M applications requires security considerations at each level of the solution: at the device, during data transmission, and in the cloud environment. On the device level, software-based control tools such as whitelisting can be used to protect locally derived and stored data. Encrypted protocols like TSL cover the connection between distributed devices and their cloud-based data access points. In the cloud software tools and encryption methodologies are used to protect data residing on virtualized servers.

Certain “classic” embedded applications have an intrinsic investment in remote management services. However, cloud-based management services have a much broader application, opening doors in the spectrum of embedded arenas. Cloud access is available in solutions that start at quantity one, enabling all manner of commercial goods manufacturing to benefit from tapping into powerful, real-time system data. Medical devices, industrial automation, office equipment, or devices that are fixed installed or moving in the field – any application that incorporates an embedded board – is a candidate for cloud-based remote monitoring services.

Contact: Dirk Finstel, executive vice president • Global Module Computer Product Segment • ADLINK Technology Inc • Phone: +1-800-966-5200 • www.adlinktech.com
Robust DIN-Rail Fanless Embedded System with RISC-based Processor

The MC-RC6000 is a cost-effective din-rail fanless LINUX embedded system utilizes the low power RISC-based module (iMX-287) processor and is designed to withstand temperatures ranging from -40°C to +70°C for using in extreme operating environment and industrial automation applications.

MC-RC6000 features 4 RS-232/422/485 serial ports, dual LANs, 4 digital input channels, 4 digital output channels, 2 CAN busses and 1 eMMC onboard of 4 GB and 1 x SDHC socket for storage expansion easy to access from outside in a compact, IP40 protected, industrial-strength robust case. Two power paths inputs minimize the risk of data loss in the event of a single power failure. Its vertical din-rail form factor makes it easy to install the system in a small cabinet. Due to the RISC-based architecture, MC-RC6000 will not generate a lot of heat while being operated. The ready-to-run device is specially designed for remote control/monitoring management applications like unmanned control room, industrial machine, automatic parking lot, traffic cabinet and more.

The MC-RC6000 system comes in four variants: MC-RC6000, MC-RC6010 with WiFi, MC-RC6030 with HSPA+ and Antenna Diversity and MC-RC6040 with LTE and MIMO Antenna SMA connectors.

FEATURES:
- Fanless design
- RISC-based module (iMX-287) processor
- 128MB DDR2 SDRAM onboard
- 4 GB eMMC onboard
- Completed Industrial AP development software (Serial server, Modbus gateway, SNMP, Remote manager)
- Wide range DC power input (12 – 48V) with terminal block
- Ready-to-run embedded Linux operating system
- Wide temperature operation of -40°C ~ +70°C

Contact:
MC Technologies GmbH • Kabelkamp 2 • 30179 Hannover • www.mc-technologies.net • www.mct-shop.net
Swiss engineering company Oberon microsystems has announced the design of a gateway that can detect mobile beacons entering or leaving an area, or can manage fixed beacons.

Beacons are Bluetooth Smart (aka Bluetooth Low Energy, Bluetooth 4.0) transmitters that broadcast an ID. This ID can be used in a variety of cases that use the proximity between the beacon and a smartphone or a gateway such as Limmat. One example is the tracking of assets or personnel. There exist a number of special-purpose beacon products on the market, but smartphones can also be turned into beacons by using appropriate apps. A Limmat board detects beacons with their IDs and signal strengths, and makes this information available over the mobile network to the Internet.

Oberon microsystems licenses the gateway design, and offers customization of its hardware and firmware as a service. Various options are possible on the hardware side: board format, power supply, antennas, 3G/2G modem, SIM card holder, microcontroller. Various protocol options over the mobile network are possible on the software side: from push-based notification of events to a cloud service, to pull-based embedded web services – with support for secure gateway access across firewalls.

www.limmat.co

Contact:
Oberon microsystems, Inc • Technoparkstrasse 1 • 8005 Zürich • Switzerland • www.oberon.ch

“Charta of the digital Society” signed

The “Charta of digital Society” was signed on 21 October 2014 in Hamburg, Germany and handed over in person to the German Chancellor Angela Merkel. The 14 initiators of the Charta are Alstom, BITKOM, BMW, Bosch, Cisco, Cumulocity, Deutsche Bahn, Deutsche Telekom, Hasso Plattner Institut, Intel, Oracle, RWE, VATM and Vodafone.

The objective of the Charta is to stimulate and broaden the dialogue of digital transformation and its impact on our society. This digitalization of society is already happening and it’s changing the way we live, learn and work. Data privacy and security will become even more important with the emergence of the “Internet of Things”.

Internet of Things, or IoT, is about rapidly growing number of devices, products and machines connected to the Internet and enabling them to exchange information with each other and communicate with people, no matter where they are.

Please find more information about the “Charta of the digital society” at the following web page: http://charta-digitale-vernetzung.de (in German language).
My-M2M portal

New possibilities for remote monitoring and remote maintenance of programmable logic controllers

Machine-to-machine (M2M) communication enables the continuous monitoring of system states and supports a proactive maintenance approach, thereby increasing the operational reliability and reducing system downtime. Thus, the operator or service personnel can immediately react before an error or downtime occurs. Pending maintenance is also shown.

The my-M2M complete solution consists of the internet-based my-M2M-Portal, which can be used without complex installation and without high investment expenditure, the robust my-M2M portal connector as IEC 61131 functional module as well as the Welotec LTE-Router TK802L. Following a one-time initialization and the definition of alarm conditions, the PLC can be comfortably connected to the connector on the portal. The data is stored there in a revision-proof manner, visualized graphically as diagrams or process images and analyzed for events such as alarms or pending maintenance. Access to all data can be made at any time using computer or Internet-enabled tablet PCs and smartphones.

A RELIABLE VPN SECURES THE DATA TRANSMISSION
The hardware of the system takes over an essential function with data transmission between the PLC and the my-M2M portal. This relates to the LTE-Router TK802L by Welotec, which functions as a gateway between the GRPS-, UMTS- or LTE network as well as the system. The router has two Ethernet ports and a dual-SIM for a high availability and establishes a secure and encrypted connection to the my-M2M portal by means of the OpenVPN.

REMOTE MAINTENANCE WITH MINIMAL EFFORT
By using the router and my-M2M connector, a hassle-free connection, working in real-time, to the marketable PLCs is realized – the system controller by Siemens (S7 series) and by Wago is currently supportive (others are in preparation). My-M2M is suitable for all companies wishing to remotely monitor and control their PLCs in machines or systems, as well as for machinery manufacturers who want to offer their customers additional services in the field of remote maintenance. The my-M2M can be installed on the machine side without much outlay, the application program of the PLC remains unchanged.

Contact:
Alexander Böcker • Welotec GmbH • Zum Hagenbach 7 • 48366 Laer • Tel: +49 2554 9130-00 • Fax: +49 2554 9130-10 • info@welotec.com • www.welotec.com
Service Study sheds light on the potential and challenges of Smart Services

FIR and KVD publish results of KVD-Service Study 2014

Our increasingly digitized economy has enormous potential for the international service business, and this year’s “Facts and Trends in Service” study, performed annually by FIR at RWTH Aachen in conjunction with the Customer Service Association, Germany (KVD), endorsed these results. The study focused on this year’s theme, “Smart Services – New Opportunities for Services, Made in Europe”, showing the current trends and challenges to the industry. Two hundred companies participated in this study which included an online survey. “The findings from the study indicated which measures and technologies proved beneficial for some emerging companies and gives others, that have been less successful, the opportunity to catch up in the field of data-based services”, said FIR scientist, Marco Husmann. The study can be purchased via the website www.service-studie.de.

The following trends from this study emerged in part from a company analysis in which 80 percent of the companies surveyed expected a strong growth for 2015 within the service sector. Again, this move makes services for their own business increasingly the focus of the company. Thus, around half of those surveyed, offer services and products exclusively for their own company. The growing importance of the service sector is also reflected in the organizational structure of the participating companies. Thus, the service sector is increasingly important to top level management.

Furthermore, those companies that had success evaluated the relevance of smart services higher than those that had been less successful. The provision of such services is carried out independent of the participant’s location and increasingly data-driven needs. Nearly two-thirds of the companies surveyed said that they could reduce costs through data-based services. Nevertheless, the study shows that the potential for improved customer loyalty or the ability to tap into new markets are yet to be fully exploited. One reason for this is the lack of confidence that customers have in data security. Accordingly, the development of data protection and IT security is still considered to be one of the most proven steps to successfully positioning to the forefront the European market in light of the emerging global competition.

To summarize, one can have a clear picture of the potential of data-based value added services being increasingly recognized in industry. Particularly innovative businesses are characterized by a high degree of maturity of Smart Services.

For more information on the study, the KVD and the FIR please refer on the Internet to the following pages at:

www.service-studie.de,
www.kvd.de,
www.fir.rwth-aachen.de

Contact:
FIR e. V. RWTH Aachen • Campus-Boulevard 55 • 52074 Aachen
Machine to Machine (M2M) technology is getting more column inches than ever thanks to an explosion of news about the Apple Watch, and more generally, the way that wearable technology and home automation technology is making the internet of things a reality.

Most of us know about the huge potential health and fitness apps have to play in helping us use data analytics to improve our health and well-being. However, how much do you know about how similar M2M technology is currently transforming a range of diverse industries and helping them refine their operations to the point of optimum performance and omniscient knowledge?

What if we told you that city councils use M2M technology to “communicate” with waste bins so they know when to empty them, car manufacturers use it to design cars that can remember the dimensions of individual drivers and alter the seat and driving profile to their preferences before they sit down, and NFL football teams use it to track “live” player data from smart helmets to assess head injuries from tough tackles. Would you believe us?

Machines “talking to each other” open up a world of connected possibilities. Last year we explored the concept of truly “smart cities” and designed an infographic that gave you a glimpse of the near future. Much of this innovation is made possible through secure M2M technology, so now, a year later, we’re asking the question, can you spot the M2M fact from the M2M fiction?

Answer the questions below and prove you’re more of a future-gazing visionary than your colleagues. Interested to learn more? Keep reading the blog as we will explore each quiz question in more depth over the next few weeks.

Take the quiz: http://blog.gemalto.com/m2mfof/

See more at: http://blog.gemalto.com/blog/2014/09/23/gemalto-m2m-fact-or-fiction-quiz-can-you-spot-tech-reality-from-science-fiction/#sthash.8BI2zsDZz.dpuf
M2M Alliance News

M2M Alliance and Swedish M2M Service Enablers (SMSE) join forces

“Our partnership will immediately pay off since both organizations are involved in establishing open service platforms for different parts of the real estate market”, says Magnus Melander, founder of SMSE.

After the most recent expansion the SMSE alliance has 34 members and 12 sponsors. M2M Alliance was founded 2007 and has around 80 members. Their annual M2M Summit in Düsseldorf in October 20 – 21 had around 800 participants and 60 exhibitors including SMSE-members Maingate, WSI, Clayster, Evothings and Wbird in a joint stand. “Germany and Sweden are close trade partners since decades and both countries are advanced users of IoT solutions in society and business”, says Magnus Melander. “Our partnership provides great opportunities for IoT entrepreneurs and customers to collaborate across boarders and we will together arrange activities to make this happen”, continues Melander. “This is a big chance for the IoT industry and their end customers. Joining the forces of the two biggest associations will raise the drive of this innovative business. Only with smart solutions and with the approach develop once deploy many times we are able to reduce costs and raise efficiency” stated Eric Schneider, 1st chairman of the M2M Alliance.

M2M Alliance exhibits at Mobilize.nu in Stockholm November 6 alongside some 15 SMSE members in a joint stand.

The message promoted by SMSE is that Data is the gold of IoT, Service Enablement is the key to a prospering Internet of Things industry and that Service Enablers need to be specialized in the increasingly competitive and international IoT market.

M2M Summit 2014:

M2M Alliance deems Europe’s biggest event of the networking industry a success

As in previous years, the 8th edition of the M2M Summit has been a success once again. This year, the event focused on the needs of the users, who attended the M2M Summit from over 35 countries. Former events had been mainly about the exchange between the providers, the M2M Summit 2014 with its 60 exhibitors and around 800 participants was most of all an informative event for businesses that want to use M2M. The theme of this year’s event was “From Technology to Business” – and did its name justice.
The attendants of Europe’s largest event of its kind did not talk about future technology with great potential anymore, but about omnipresent technology that brings users many advantages. “Our goal was to promote the exchange between suppliers and users this year,” said Eric Schneider, chairman of the M2M Alliance. “And we succeeded. Now that the users see a benefit for themselves and accept new technologies, M2M applications have become an important part of our everyday lives. As we were told by the 60 exhibitors, the demand of the actual users was bigger than ever.”

In addition to the new focus of the industry on the needs of the customers, Schneider sees the changing approaches within the companies as one of the reasons for the increased interest of the user: “Today, the M2M projects no longer start in the IT department, but on management level. The companies are focusing much more on the actual benefits for the business,” said Schneider. “M2M solutions are also being increasingly used in the field of recreational sports and wellness.”

On the first day of the event which was held at the Congress Center Dusseldorf, the “Customer Experience” was at the centre of the panel discussion. In addition, guided tours were offered in which the participants were able to see and learn what can already be realised with today’s solutions. The guided tours also included aspects of the Internet of Things (IoT) and its future as well as the benefits of M2M in the Industry 4.0.

The M2M Summit has also become a perfect place for new partnerships and business. The event, which includes a conference as well as an exhibition, is bringing all kind of companies together – which enables them to offer comprehensive solutions. Sometimes, contracts are even being signed on site.

At the two-day event, internationally renowned experts such as Vasanth Philomin (Philips CityTouch), Dr. Alexander Lautz (T-Systems International), Prof. Uwe Kubach (SAP), Matt Hatton (Machina Research), and Helmut Schnierle (Telefónica) presented the latest solutions, trends and research around topics such as smart cities, intelligent energy management, automated farming, wearables and connected cars.

This year’s M2M Summit was supported, among others, by Hannelore Kraft, Prime Minister of North Rhine-Westphalia. With around 800 participants, the number of participants was slightly below the record attendance of 2013. As the registration for the M2M Summit had been subject to a charge for all participants for the first time, Eric Schneider is optimistic that new records will be set in the coming years: “With 60 exhibitors, the interest was bigger than ever. 800 paying visitors are a clear indicator that our event has a lot to offer for the participants. We expect yet another increase for next year.”

More information can be found at www.m2m-summit.com.
2nd M2M Alliance academic event on 22nd January 2015

Dear M2M Alliance members,
after a successful first academic event in July 2014 at Hochschule Bonn-Rhein-Sieg,
we kindly invite you to the second event on 22nd January 2015 from 1 pm to 5 pm at
Technische Universität, Berlin.

The M2M Alliance warmly invites all members to this academic event to learn
more about future research projects. You will benefit from the close information
exchange between the professors and companies.

We are pleased to welcome you to this event.

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<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>1:00 pm</td>
<td>Welcome by Prof. Dr. Jens Böcker, Management board member M2M Alliance</td>
</tr>
<tr>
<td>1:15 pm</td>
<td>Introduction of “M2M/IOT Support within Emerging 5G Platforms”, Prof. Dr. Thomas Magedanz, Fraunhofer Fokus/TU Berlin</td>
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<tr>
<td>2:00 pm</td>
<td>Introduction of research results about “Acceptance of technology of M2M solutions”, Prof. Dr. Jens Böcker</td>
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<tr>
<td>3:00 pm</td>
<td>Introduction of Show Cases, Dr. Matthias Deindl, FIR Aachen</td>
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<tr>
<td>3:30 pm</td>
<td>FOKUS M2M/FUSECO Playground Exkursion - &quot;OpenMTC in Action&quot;</td>
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<tr>
<td>4:15 pm</td>
<td>Discussion with member companies</td>
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<td>5:15 pm</td>
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Location: Fraunhofer Institut FOKUS
Kaiserin-Augusta-Allee 31
D-10589 Berlin Germany

Please send your registration by Friday, 16th January, 2015 to info@m2m-alliance.de.

For further information please contact:

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Kind regards

Prof. Dr. Jens Böcker
Management board member M2M Alliance
Editorial Notes

M2M Journal
The M2M Journal is a magazine that focuses on M2M (Machine-to-Machine communication) worldwide. Our readers are businesses in the M2M community, such as wholesalers and users of M2M solutions.

The content includes: theoretical foundations, new products and processes, reference projects and services, information from the M2M Alliance and the M2M community, corporate presentations, trade show reports, news, book reviews, etc. and opinions from M2M experts.

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As of January 2nd 2015, the M2M Alliance Office will be moving into a new building. We look forward to welcome you there soon.

**Our new office address:**

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www.m2m-alliance.com
As part of the Desigo™ building automation system, Desigo Total Room Automation (TRA) ensures a comfortable room climate, optimal lighting conditions and energy-efficient building operation without sacrificing comfort.

The basis for this is the eu.bac-certified Desigo room automation station PXC3, which can be used to control and monitor heating, ventilation, air conditioning as well as lighting and shading in a single or multiple rooms.

The eu.bac certification according to European standards confirms the high quality, control accuracy and energy efficiency of the Desigo TRA devices.

The room automation station PXC3 is freely programmable and thus offers maximum flexibility in room usage. A comprehensive library with tested applications is also available.

Desigo TRA – for energy-efficient buildings and a high level of satisfaction among building users.

www.siemens.com/desigo-tra
The M2M Alliance is the largest association for the Machine-to-Machine sector. It is an open organisation with members representing the entire M2M value chain. The M2M Alliance currently has more than 70 members for whom it offers a forum for ideas exchange amongst industry experts and on behalf of whom it acts as the public spokesperson. Proactive communication and networking is the heart of the M2M Alliance, both between members and with external organisations. The non-profit organisation publishes the M2M Journal, as well as its own e-mail newsletter and websites in English and German. www.m2m-alliance.com