SAP Thought Leadership Paper
Technology

Machine-to-Machine Communication

Significant Opportunity for Communications Service Providers

The Best-Run Businesses Run SAP™

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Machine-to-machine (M2M) communication, like automatic doors at stores, has long been in use. However, rapid development is taking M2M communication to new levels. Today, we see connected cars using M2M technology to make driving safer and more comfortable. Tomorrow, we might see interconnected homes, offices, and cars that allow us to control everything from everywhere. Communication service providers need to seize the extended M2M revenue opportunity in the connected world by offering services beyond connectivity.

Executive Summary

Due to the transformational change the telecommunications market is going through, communication service providers (CSPs) are venturing into new services and market opportunities to boost revenues. These new ventures have led them into the Telco 2.0[1] ecosystem, which is characterized by multisided business models involving several upstream and downstream partners. Machine-to-machine (M2M) communication – the interaction between devices and centralized data sources through automated service platforms – is a leading Telco 2.0 service opportunity.

The M2M market is still evolving, and communication service providers need to act now to capitalize on the revenue opportunity that it presents. Though there are a lot of niche players providing M2M services, communication service providers are at an advantage in enabling M2M services due to their network accessibility and expertise with the network; service delivery; partnerships with third-party, value-added service providers; and their customer intimacy.

M2M solutions are distinctly different for different industry verticals. As a communication service provider preparing to embark on the M2M journey, you need to have a clear road map of the industries you want to target to get returns on investments you make in the M2M market. Utilities, automotive, and healthcare are industries that have immediate revenue-generating potential.

Though industry-specific M2M solutions are different, communication service providers need to enable the basic framework on which the industry-specific solutions can be deployed. This framework consists of billing for M2M services, analytics capabilities to process the data gathered through M2M services, device management to manage devices connected through M2M, and application support to develop and enable applications that run on the connected devices. Many communication service providers that have already taken steps into the M2M market are now moving toward this framework.

SAP can help you build this framework by leveraging its proficiency in cross-industry billing, business analytics, device management, and application support as well as its expertise in 24 industry verticals.

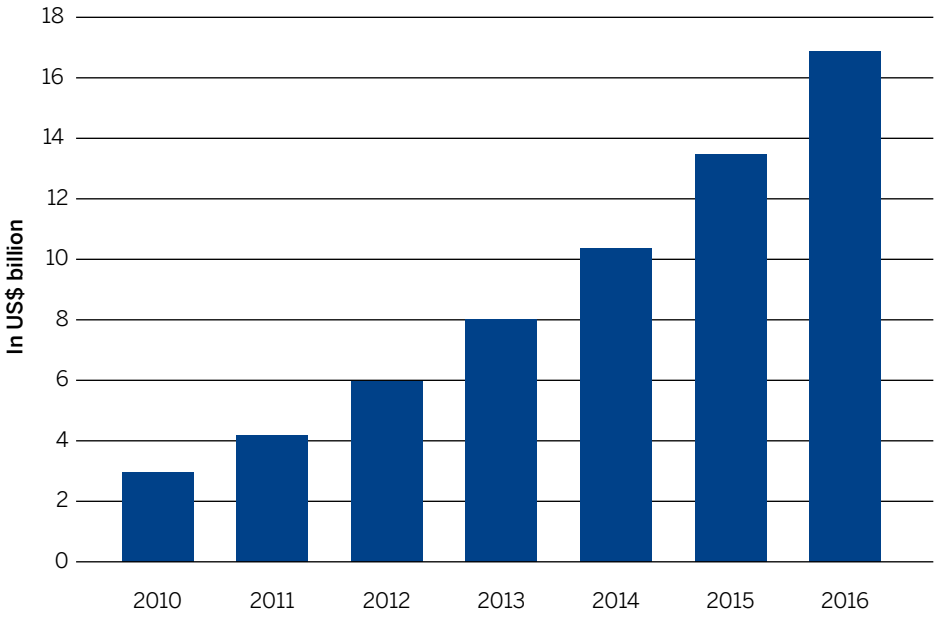
M2M Communication and the Telecommunications Industry

The feasibility of M2M communication can be attributed to the ubiquity of telecommunications networks and easy access to connection-capable devices at affordable prices. In addition, businesses are exploring methods to improve customer service, productivity, margins, and asset management effectiveness, all of which are driving enterprise adoption of M2M communication. This will cause connection-capable devices to be housed in various industry verticals, streamlining their business processes. According to forecasts, there will be 50 billion connected devices by 2020, making the world truly hyperconnected (Ericsson, 2011).[2] The colossal number of devices connected over communication networks speaks volumes about the revenue opportunity that exists for communication service providers by virtue of connectivity alone. Forrester Research forecasts M2M service revenue through connectivity alone at US$17 billion globally by 2016 at an approximate compound annual growth rate of 34%, as shown in Figure 1.[3]

Some communication service providers have already taken a plunge into the M2M market by investing heavily in it, while others are still sitting on the fence to see how the opportunity shapes up. But the longer they take to enter the market, the greater their chances of missing the boat. Communication service providers have to enter the M2M market, and they have to do it now. They can be passive spectators and stay satisfied with the revenue they get from connectivity while other players provide M2M services on their infrastructure. Alternatively, they can grab the opportunity with both hands and extend their revenues far beyond connectivity by providing the M2M services that utilize the network.

In fact, connectivity is only one link in the M2M communication value chain. All use cases of M2M communication are built around harnessing the data generated by connected devices and actions based on that data. Services beyond connectivity are the lifeblood for numerous niche players in the M2M market. It is safe to assume that the ratio of revenue from connectivity to services beyond connectivity is 1:1 – if not leaning more toward services beyond connectivity. This means that communication service providers could at least double their M2M revenue by going beyond providing just connectivity. Although providing

Figure 1: Machine-to-Machine Service Revenue (in US$ Billion)



Source: Adapted from Forrester Research

these services means direct competition with over-the-top M2M players, communication service providers are at the forefront in enabling M2M services.

This advantage can be attributed to the following factors:

- **Network:** Communication service providers own the communication networks, the means of connecting M2M-capable devices.
- **Service delivery:** Communication service providers have a successful track record in large-scale service delivery. Most potential M2M service beneficiaries believe communication service providers can deliver service better than over-the-top players.
- **Billing:** Communication service providers have established infrastructure and expertise to bill diverse telecommunications services and can handle complex billing scenarios.
- **Customer access:** Communication service providers have an established enterprise customer base and relationships with enterprise customers. These customers would be happy to get services from communication service providers rather than third parties.
- **Analytics capability:** Communication service providers have easy access to M2M data flowing through their network, making them capable of performing analytics on the data and deriving intelligent insight from it.
- **Trust:** Communication service providers have expertise in providing communication services, and enterprise customers would trust them to effectively manage data security, data integrity, and billing of M2M services.
- **Third-party services:** Communication service providers have a better ability to partner with third parties to provide value-added services as third parties are keen to build long-term relationships with CSPs.

Although the M2M opportunity is very lucrative and communication service providers have a head start over competitive initiatives in monetizing it, they need to approach it strategically with a clear action plan in mind. The 50 billion devices housed in different industry verticals will have different requirements because the solutions leveraging them will be diverse by virtue of their industry-specific flavor. Each industry will have its own requirements for M2M solutions designed for it and will require the solutions to comply with industry-specific standards.

Over-the-top players and niche M2M enablers are competing with communication service providers for leadership in the M2M market, but service providers have a definite advantage based on their expertise with the network, service delivery, billing, and analytics.

The Money Makers

As we know, M2M communication can streamline business processes and improve business operations across a wide range of vertical industries. However, the revenue opportunity varies from industry to industry. Therefore, communication service providers need to have a clear road map for the industries they want to target so that they can earn ROI on investments they make in the M2M market. Current front-runners in the revenue opportunity race are automotive, healthcare, and utilities.

AUTOMOTIVE

Vehicle manufacturers are using M2M communication as a means of differentiation. M2M technology is leveraged to connect vehicles to cellular networks, thereby enabling a number of experience-enhancing features. These features include navigation and traffic information, accident notifications, automatic emergency calls, breakdown assistance, and entertainment, information, and content services such as news feeds, video streaming, and online gaming through cellular data connectivity. In addition, automobile manufacturers are providing vehicle diagnostic functions that can provide alerts if the vehicle is not operating correctly. Furthermore, data connectivity can be used in electric vehicles to provide information about nearest charging stations when battery strength approaches zero. Automobile manufacturers are providing connection functionality as a standard feature through collaboration with communication service providers. Connection-capable devices can also be fitted separately after purchase.

As a result, communication service providers can have a two-prong approach to this market opportunity. They can form collaborative relationships with automobile manufacturers, and they can market in-car connection-capable devices to their consumer market base, providing installation services through authorized service centers.

HEALTHCARE

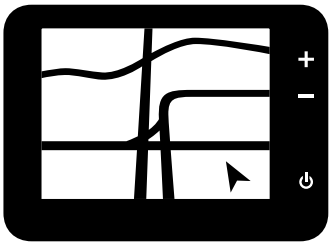
The healthcare industry is in need of innovation to address rising healthcare costs and the decreasing ratio of doctors to patients resulting from growth in the number of patients due to increasing life expectancy. Telemedicine, through the use of M2M communication, can address various healthcare challenges.

Telemedicine can enhance care of chronic diseases by monitoring and reporting patients' vital signs, such as heart rate, blood pressure, and blood sugar levels, which need to be tracked and maintained within certain limits. Medical practitioners can remotely monitor their patients and prescribe treatment where required. Remote patient monitoring can increase the rate of bed turnover in hospitals, as doctors can evaluate and discharge patients from a remote location.

Personal fitness applications in smart devices can track an individual's fitness regime and facilitate remote personal training.

Communication service providers have an obvious role in connectivity, but they can also provide analytics to track, report, and record the patients' health information. They can offer add-on services like ambulance deployment at the push of a button and alerting emergency rooms about incoming patients.

Communication service providers need to have a clear road map for the industries they want to target to get return on investments made in the M2M market. Front runners in the revenue opportunity race currently are automotive, healthcare, and utilities.



UTILITIES

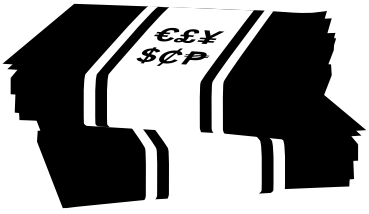
Most initiatives in utilities today are aimed at energy conservation and use of renewable sources of energy by leveraging data provided by smart grids. Smart meters, which form an integral part of smart grids, will require wide deployment for realization of the advantages of smart grids. This wide deployment will generate large volumes of data, which will require transportation to the data warehouses of utilities for processing. The best method of doing this would be transmitting the data wirelessly through SIM card installation in each smart meter. The meter will be able to transmit data to the data center without human interaction – an excellent example of M2M communication. Smart grids can also give consumers a real-time view of their energy usage and help them better plan their consumption. This could not only help them save money but could also improve the usage of energy resources.

Communication service providers have a major role to play, not only because of the data transmission requirement upstream from smart meters to utility companies but also due to the downstream transmission of processed data from utility companies to consumers.

GOVERNMENTS ENCOURAGING INDUSTRY ADOPTION

Political announcements and regulations are also catalyzing the adoption of M2M solutions in the automotive, healthcare, and utility sectors. On December 13, 2011, the Prime Minister of the United Kingdom made an announcement about plans to roll out telehealth and telecare systems to 3 million people over the next five years. On September 8, 2011, the European Commission adopted the eCall initiative in all cars, which enables a car to contact the nearest emergency center automatically in case of accident. U.S. President Obama announced his clean energy standard during his State of the Union address on January 25, 2011. Under this standard, 80% of electricity in the United States is to come from clean energy sources by 2035. All these initiatives require a communication network and devices that can communicate with each other.

The real value for communication service providers is in going beyond connectivity and differentiating themselves by enabling end-to-end M2M solutions.



An M2M Enablement Framework

Despite the diverse nature of M2M solutions, some common requirements need to be addressed. This would be the first step for communication service providers to consider, as addressing these requirements will set up the basic framework enabling the M2M platform (Figure 2).

This framework forms the launch pad for communication service providers to win in the M2M communication space, as the enabling components can be reused each time a communication service provider approaches a new customer or develops a solution for a new industry.

NEXT-GENERATION BILLING

Any great innovation needs to be monetized to generate value and return on the time, effort, and investment expended to realize it. M2M communication is no stranger to this fact. However, as a Telco 2.0 service, M2M introduces new business models that challenge traditional telecommunications billing systems.

The M2M market is fragmented due to the involvement of multiple partners and stakeholders, creating a convoluted value chain. This makes the market multidimensional, with communication service providers at the epicenter (Figure 3). The billing system needs to accommodate the interests of all these parties, distributing and collecting appropriate revenues in real time, as back-end settlement would create large backlogs, considering the volume of M2M transactions. In addition, the context of the transaction is lost in a back-end settlement, which could make conflict resolution a long and cumbersome process.

Figure 2: A Machine-to-Machine Enablement Framework

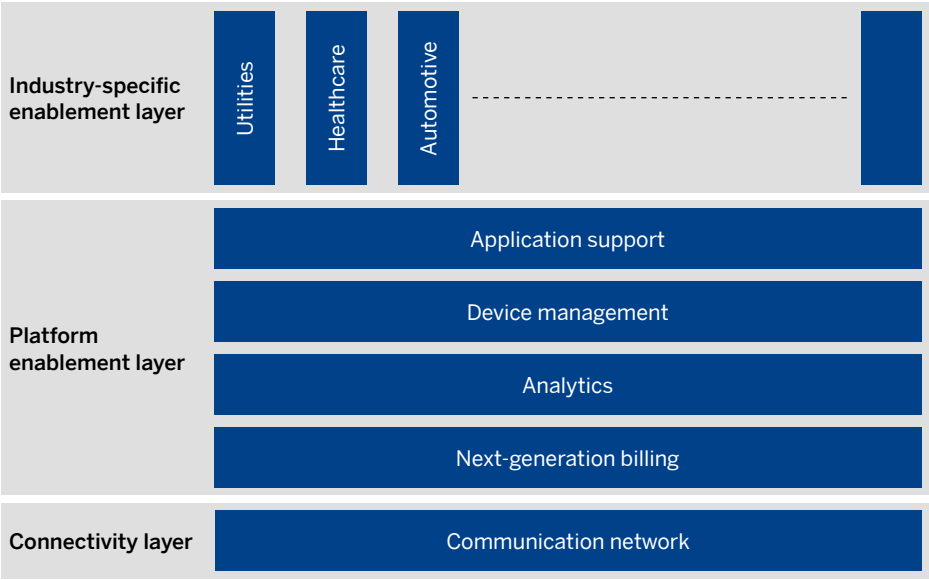
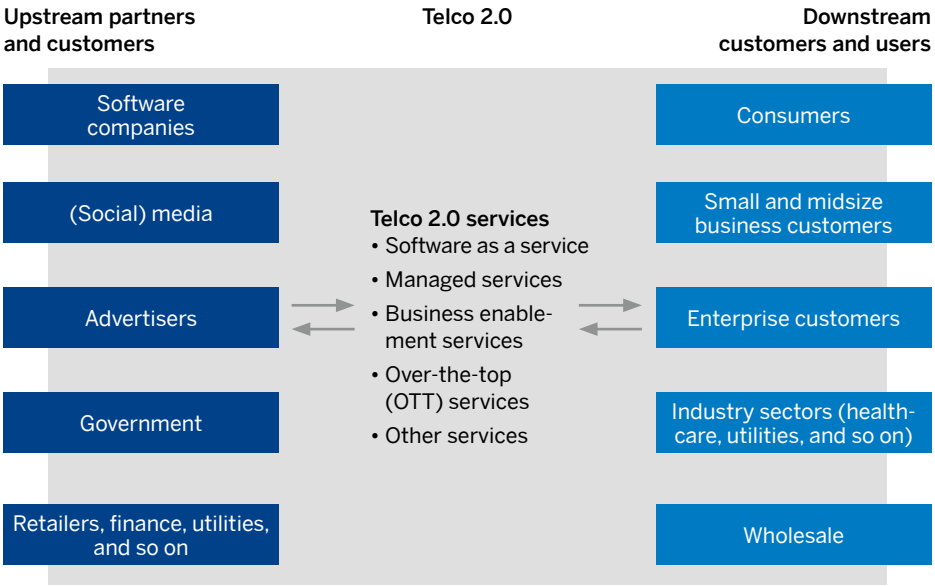


Figure 3: The Telco 2.0 Scenario



The M2M environment is characterized by low revenue per transaction, which is offset by a colossal volume. Hence, the billing system must have low total cost of ownership (TCO) while being highly scalable to meet volume requirements.

M2M solutions are still in their infancy and are continuously evolving to meet market demands. This evolving nature of the technology implies frequent changes in M2M products and service offerings. Billing systems must be flexible to accommodate and adapt to these changes and easily configured to ensure that they do not impede the time to market of new service offerings. Further, M2M solutions span many vertical industries, requiring a billing system that can accommodate billing for multiple industries.

M2M communication needs a truly innovative billing solution that can address all its challenges.

ANALYTICS

The adoption of M2M communication at the enterprise level is motivated by the ability of the technology to provide enterprise-wide data irrespective of the geographical location of the data-generating entity. M2M solutions will make available, in real time, large volumes of data traditionally not accessible. For example, in fleet management systems, this information from vehicles might include location and payload information for the purpose of managing real-time logistics, routing, and compliance. Sensor information from vehicles could be used for operations and maintenance purposes.

However, data itself is useless unless it is processed and intelligence can be derived from it. The communication service provider can step in here and take up the data processing piece to provide additional value to the fleet management customer. The communication service provider is equipped to derive intelligence from M2M data as it has visibility into network and device data, which, when processed in real time, provides crucial location-specific information.

Further, M2M communication may report events that seem to be irrelevant individually but produce a telling impact when aggregated and correlated. For example, in a supply chain management system, a container might report a high temperature; a truck might be delayed, causing late delivery of goods and revenue loss; and a warehouse may report a power outage. These events might seem unrelated, but they could occur at the same location, where the power outage knocked out air conditioning, resulting in a temperature increase and an equipment failure that delayed the loading of the truck. These events, when correlated, yield the actionable insight to address the power outage immediately.

In addition, analytics capabilities can be leveraged to analyze customer behavior, segment customers to provide personalized and focused offerings, and improve the overall customer experience. Communication service providers can use analytics – one of the pillars on which M2M is based – to differentiate against competition, improve customer experience and retention, and, at the same time, tap into a new revenue stream.

DEVICE MANAGEMENT

M2M solutions involve a large number of connected devices. The range of mobile operating systems and the wide choice of devices add complexity to device management requirements. Enterprises require a highly automated device management solution that encompasses the entire device lifecycle, including service delivery and provisioning; data and content backup; alerts with usage thresholds; remote upgrade, installation, and removal of applications; device monitoring; data security; and device retirement, decommissioning, and cleansing to protect sensitive data on lost or stolen devices. In short, device management makes connected devices enterprise ready.

APPLICATION SUPPORT

The true value of M2M communication is realized through mobile applications that utilize the M2M infrastructure and connect mobile devices to back-end systems. These applications will complement enterprise M2M solutions and will be diverse in nature, owing to the industry-specific flavor of M2M solutions. The applications may be developed by enterprise customers themselves, enterprise software providers, or third-party developers. CSPs need to provide an application support platform that facilitates creation and management of mobile applications and provides secure connectivity between applications and back-end systems. This will allow M2M solutions to flourish and bring more power to mobile devices.

How CSPs Are Embracing the M2M Enablement Framework

SAP sponsored an M2M market research initiative led by Informa Telecoms and Media, which surveyed 250 M2M stakeholders globally and also conducted field interviews.[4] Among the stakeholders were communication service providers, which form an integral part of the M2M value chain. The findings about communication service providers were very interesting.

Communication service providers that have ventured into the M2M market are moving closer to the M2M enablement framework. They are doing this by either forming partnerships with best-in-class providers and weaving together the framework, or by developing the framework themselves. Mentioned in the next column are a few adopters of M2M and their approach toward the opportunity.

AT&T has partnered with Jasper Wireless, which supports device provisioning and platform activity for AT&T M2M solutions. It has also partnered with KORE telematics for accelerating device certification. In addition, AT&T has also made investments in its certification lab, Data Developer Program, and application programming interface development for M2M applications.

Vodafone has developed technology to support its M2M initiative in-house and can perform device and SIM provisioning, end-to-end service monitoring, and device control. It is also working to integrate its platform with those of hardware manufacturers to enhance device configuration and management.

Verizon acquired outstanding shares of nPhase, an M2M specialist, and also made acquisitions of Cybertrust, a security specialist, and Terremark Worldwide, a cloud service provider. It has integrated the acquired back-office capabilities to enable cloud-based M2M service management.

The M2M enablement framework includes analytics functionality for insight, device management to secure devices and data, application support for creating applications that run on devices, and a flexible billing system for new business models.

M2M Enablement Framework Offered by SAP

We have seen that to leverage the full potential of the M2M market opportunity, communication service providers need to provide the basic framework of billing, analytics, device management, and application support. SAP can help you build this structure by leveraging its proficiency in cross-industry billing, business analytics, device management, and application support (Figure 4). SAP is a strong partner to work with, not only because it can enable the basic M2M framework but also because of its expertise across 24 industry verticals. Working with SAP can benefit you in the short term with deployments in the three industries we have seen above, as well as in the long term as you spread your span across more industries.

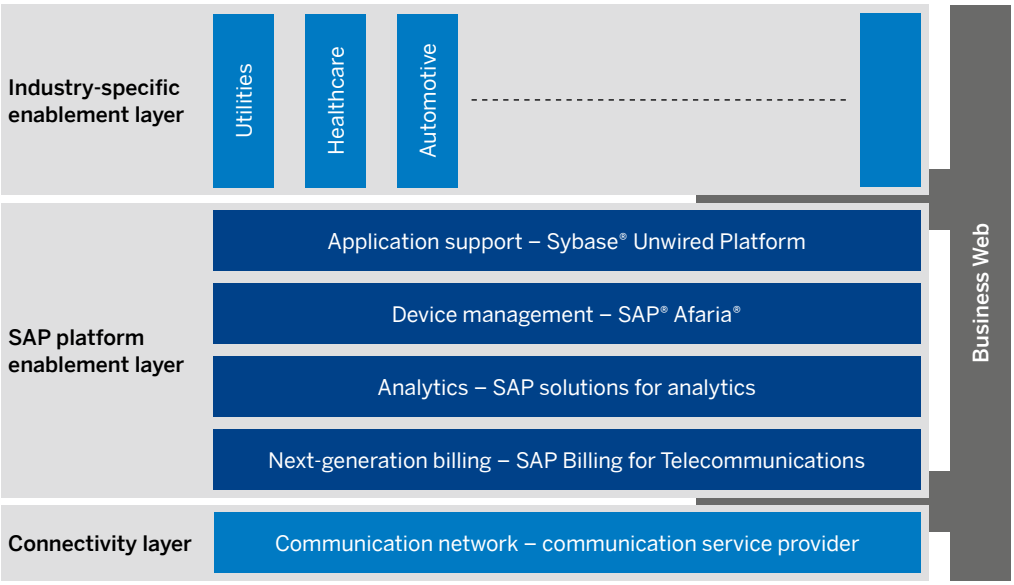
NEXT-GENERATION BILLING APPLICATIONS FROM SAP

SAP supports end-to-end, next-generation billing processes with modular software applications that offer low TCO. The SAP Convergent Charging application is a highly scalable, service-agnostic, charging engine with a processing capacity of up to 750,000 transactions per second. Its blade architecture allows it to scale without service disruption in a low-cost manner. SAP Convergent Charging has a built-in partner settlement function that distributes revenues to the appropriate stakeholders in real time as the transactions are being rated, thus off-loading the back-end systems. In addition, SAP Convergent Charging has a graphical user interface that makes configuration of new pricing models quick and easy, accelerating the time to market of new products. It has been adopted not only by communication service providers but by a number of industry verticals including high tech, financial services, and postal services. SAP Convergent Charging addresses the billing challenges of M2M communication that we have seen earlier, namely, volume of transactions, flexibility, multisided markets, and the ability to bill services of multiple industries.

SAP provides further support of next-generation billing with the SAP Convergent Invoicing package, which accommodates a range of heterogeneous billing systems to produce common invoices for customers that are using multiple services.

A third solution, the SAP Customer Financial Management package, is back-end software that ties into the general ledger. It also provides transparency into the customer's account, enabling

Figure 4: M2M Enablement Framework from SAP



customer service representatives to resolve bill-related queries. It also has credit and collections management functionality and supports electronic bill payment.

With its next-generation billing applications, SAP provides the complete single-billing solution that communication service providers need to monetize M2M services.

SAP BUSINESSOBJECTS™ BUSINESS INTELLIGENCE SOLUTIONS

As we already know, M2M communication can streamline business processes by providing access to large volumes of data that were traditionally not available. To derive intelligence from it, this data needs to be processed. The broad range of analytics solutions from SAP, which leverage SAP's cross-industry expertise, comprise the appropriate solution set.

The sheer volume of data requires the analytics engine to have the functionality to handle big data. The SAP HANA® platform, based on in-memory computing technology, is the answer to the data processing challenge posed by M2M communication.

SAP Event Insight software federates events occurring across all business units of an organization, correlates them, and provides actionable insight. This solution would address the supply chain management example we presented earlier where the power outage was the root cause of the problem. In addition, SAP BusinessObjects business intelligence (BI) solutions include interactive dashboards that facilitate quicker analysis and action.

As a communication service provider, you can either offer analytics as a hosted offering or resell them to customers as value-added services for M2M communication, thereby differentiating yourself as a provider not only of M2M services but also analytics solutions. You can also use SAP BusinessObjects BI solutions for customer segmentation to personalize offerings and enhance the customer experience.

SAP AFARIA®

The SAP Afaria® mobile device management solution helps ensure that the data stored and transmitted by connected devices is secure. The solution backs up data and content on devices, and to protect sensitive business data, it can delete data if a device is lost or stolen. SAP Afaria allows central control of connected devices through a single console so that IT can remotely install, update, or remove applications and content on the devices and make sure that the devices are up-to-date. In addition, all this device management activity is performed in the background by SAP Afaria so that there is no service disruption.

You can either sell SAP Afaria to your customers or use it to provide managed mobility services.

SYBASE® UNWIRED PLATFORM

We have seen that applications running on the connected devices form an indispensable functional part of M2M services. Sybase® Unwired Platform connects back-end systems, applications, and databases to mobile devices. It supports developers in creating enterprise-grade applications, enables your mobile workforce to consume the applications, and provides secure data transportation through encryption.

CSPs can offer Sybase Unwired Platform as a platform for developers to create applications that run on the M2M infrastructure.

The Business Web Initiative

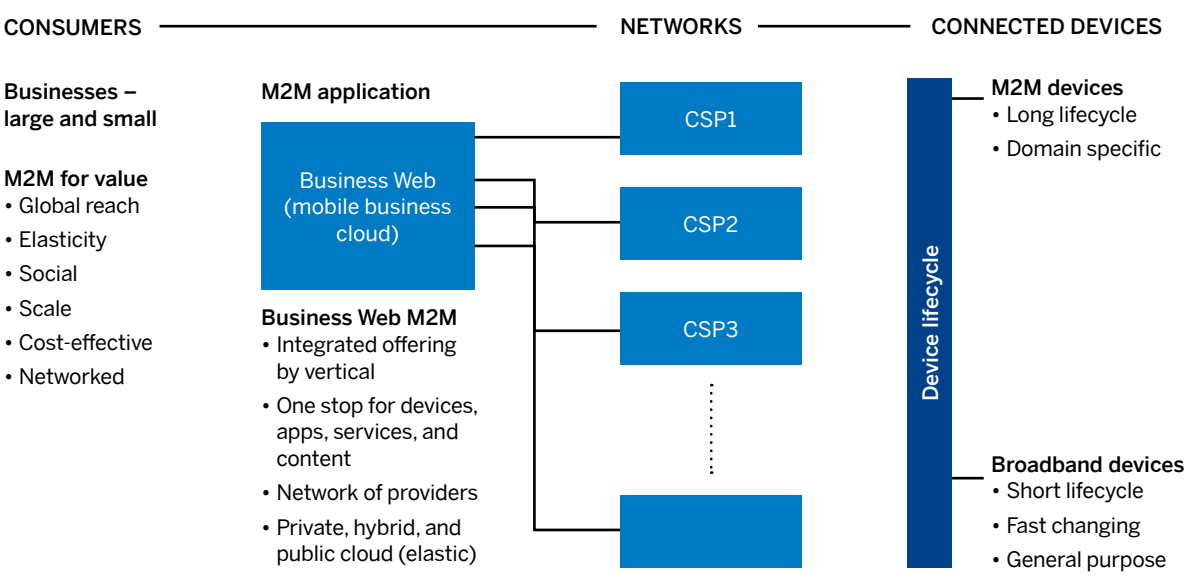
Business Web, an SAP-led research initiative, provides a cloud-based business environment that enables access to the necessary infrastructure, applications, content, and connectivity to deliver integrated business services optimized for mobility (see Figure 5).

The aim of the Business Web initiative is to place SAP in a leading position in the M2M space. However, as we already know, the M2M market today is highly fragmented with multiple players capable of providing various indispensable functionalities. These include:

- **Communication service providers:** These are providers of connectivity and deliver network access, routing, and mobile consumption. However, they cannot provide end-to-end M2M applications as of today.
- **Public cloud service providers:** Currently, offerings from cloud service providers mainly include data storage, with limited development infrastructure and enterprise-ready applications.
- **Consumer mobile application providers:** Mobile application providers today aim their applications mainly at consumers. These applications lack the standardization, orchestration, and efficient access to back-end systems that are a necessity for most business applications.
- **Enterprise software vendors:** Most enterprise software vendors today are focused on on-premise applications, though a few have enjoyed success in the on-demand space. However, vendors have kept away from the on-device application space.

The Business Web initiative seeks to bridge the cloud and mobile worlds with a mobile business cloud that offers new M2M apps and services, enabling the rapid development and deployment of these apps and services through service providers as well as the ease of consumption of these applications by enterprises big and small. The goal is to integrate services from different players, including communication service providers, cloud service providers, application providers, and content providers, to form a standardized platform for mobile business and orchestrate end-to-end business processes, completing the M2M value chain.

Figure 5: The Business Web M2M Approach



M2M = machine to machine; CSP = communication service provider

The Business Web initiative covers the following business aspects:

- **One-stop shop:** Communication service providers can use the Business Web to develop, deploy, and operate M2M applications and services. Solution offerings could include M2M apps by verticals, cloud infrastructures, mobile network as a service (MNaaS), real-time M2M intelligence, high-performance billing via the cloud, and secure connectivity. In addition, communication service providers can take advantage of services from SAP and a wide spectrum of partnerships with developers, system integrators, cloud services partners, hardware partners, content providers, and so on. This comprehensive strategy will cover the M2M value chain and make SAP a one-stop M2M shop.
- **Trusted network:** The Business Web is envisioned as a large network of trusted device, machine, and communication service providers, creating the world's largest M2M business network and a trusted platform for development of M2M applications for a large developer ecosystem.
- **Secure connectivity:** The Business Web aims at ensuring native and secure connectivity to enterprise systems to support end-to-end processes through various M2M connectors (machine integration, manufacturing integration, back-end integration, metering, and so on).

The Business Web makes use of the platform-as-a-service layer in addition to other SAP and partner services. With the Business Web initiative, SAP is a perfect ally for communication service providers as they plunge into the M2M market, enabling them to modulate the degree of solution depth they want to provide to their enterprise customers.

SAP's investment in the Business Web initiative helps communication service providers stay ahead of the curve with an integrated platform for solutions with which they can go to market. SAP and the Business Web initiative are the right recipe for success.

Use Cases

CONNECTED VEHICLES – ACCIDENT AID MANAGEMENT

Let's take a look at how the enablement framework offered by SAP can assist communication service providers in deploying a connected-vehicles solution based on M2M.

Consider a car, equipped with an accident-detection notification device, has an accident and the airbags are deployed. Deployment of the airbags triggers the connected device on the car, which calls emergency services and sends a notification with the GPS location of the car. The analytics engine at the emergency services office is one of the SAP BusinessObjects BI solutions. It displays the GPS information on a map view on the screen in the office. If no one in the car responds on the phone, or if there is a conscious person who asks for medical help, the staff at the office initiates a notification to an ambulance and the police.

The analytics software has information about the ambulances and their location and status, the police cars in the vicinity of the accident, and the tow company nearest to the accident location. It immediately processes this information, analyzes the distances of the closest ambulances and police cars, and sends the notification to their tablet computers with directions to the accident location. At the same time, it also alerts the tow company.

When the ambulance reaches the accident location and registers a pickup of the driver and any passengers on the tablet, the device shows the nearest hospital in terms of time and provides directions. This information has already been calculated in the background while the ambulance was on its way, and the emergency room in the hospital has been alerted about the arrival of accident victims with the approximate time of arrival. This has been done by the analytics software, and alerts, notifications, and other information have been sent to the applications running on the handheld devices or computers of various parties involved.

Victims arriving at the hospital receive immediate attention in the shortest possible time, which could mean the difference between life and death in some cases.

The enablement framework is involved at every stage in this case: the applications developed through the Sybase Unwired Platform, the handheld devices managed by SAP Afaria, the analytics solutions from SAP, and the emergency call and data flows billed through SAP Convergent Charging.

ICE CREAM CABINET – TRACKING SMART ASSETS

M2M communication can turn machines into smart assets that can help to optimize business processes. In one classic scenario, part of the Business Web initiative, ice cream cabinets become smart machines when various sensors and the ability to communicate are built into them (see Figure 6). These smart machines then provide the IT department of the owning company visibility into detailed information about its properties and locations.

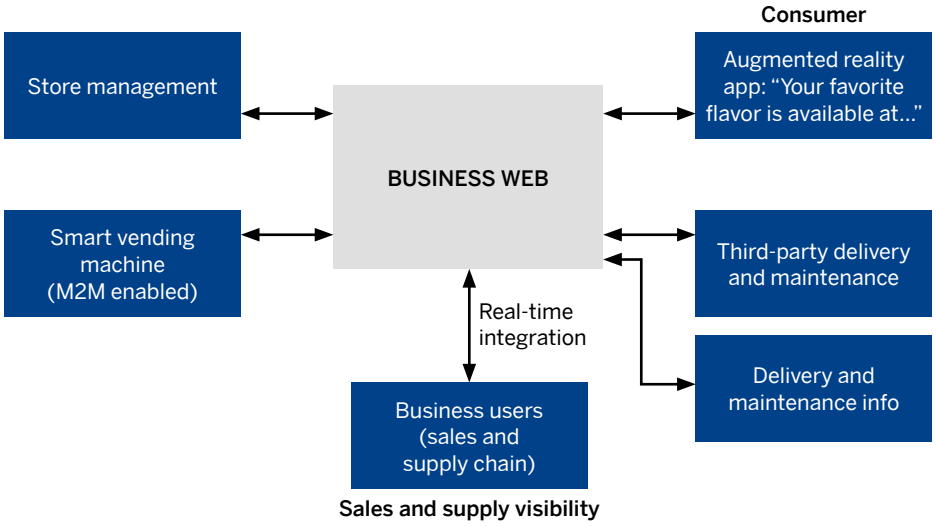
The information provided by the cabinets can be utilized to monitor the temperature and stock of the ice cream products. Visibility of this information allows the company to manage restocking of the cabinets more effectively to reduce supply chain costs and, at the same time, maximize sales revenue by preventing stock-outs. In addition, the information can also be used to replace the ice cream products that may have melted due to a faulty cabinet.

The information made available by the smart ice cream cabinets can also be shared with the supply chain department, so that it knows how much stock to load into which ice cream cabinet. This information can be made available on the handheld devices of delivery personnel, giving them a map location of the cabinets and the quantity to be loaded in each cabinet.

Extending the functionality a bit further, a mobile app can let customers know when a flavor of their choice is available at a store in close proximity.

Smart ice cream cabinets help consumer products companies maximize revenue and minimize costs. The enablement framework from SAP has a big role to play in this scenario: consumer apps and apps on handheld devices of delivery personnel developed on the Sybase Unwired Platform, the devices managed by SAP Afaria, analysis of the cabinet information performed by SAP BusinessObjects BI solutions, and the data transfer billed by SAP Convergent Charging.

Figure 6: Tracking Smart Assets



ADDITIONAL BUSINESS WEB SCENARIOS

Scenarios that are currently part of the Business Web initiative are:

- **Smart logistics at a large port facility:** Discover how connected trucks, trailers, and containers can be managed more efficiently as they traverse a port ecosystem. Smart logistics can optimize traffic, relieve congestion, and redirect waiting trucks to businesses connected to the port ecosystem.
- **Enablement of "last-mile" retail in emerging economies:** Last-mile retail stores (such as neighborhood grocery stores) in emerging economies typically have highly inefficient, manual supply chains and very little access to institutional credit. The other players in this ecosystem – consumer product companies, distributors, banks, and so on – face a number of challenges in this supply chain, which has typically been driven with very minimal technology. However, low-cost devices on the mobile Web, simple applications that provide connectivity to distributors and banks, and ensuring compliance with policies of financial inclusion enable a radical shift in the paradigm. This enablement transforms the value chain and, in the long term, allows millions of small retailers of the last-mile network to become part of the business ecosystem.

Conclusion

The emergence of Telco 2.0 is giving rise to a number of new and promising multi-sided market opportunities, with M2M communication seeming to be in the lead. Communication service providers have a great opportunity to generate new revenue streams from M2M communication as they strive to boost revenues in a challenging market for telecommunications services. In itself, providing connectivity for M2M services is a promising revenue stream. However, the real value for communication service providers is in going beyond connectivity and differentiating themselves by enabling end-to-end M2M solutions.

Over-the-top players and niche M2M enablers are competing with communication service providers for leadership in the M2M market, but communication service providers have a definite advantage based on their expertise with the network, service delivery, billing, and analytics. Existing relationships with target customers and communication service providers' ability to partner with third parties to offer comprehensive solutions to the targeted markets add to their advantage. M2M solutions tend to be highly industry specific. Therefore, communication service providers need to have a clear strategy specifying their target verticals. In the near future, automotive, healthcare, and utility industries have the highest revenue-generating potential, making them the best targets.

Although M2M solutions tend to be industry specific, communication service providers can be more efficient by reusing functions that are common across all industry verticals. Communication service providers can leverage the M2M enablement framework from SAP to fulfill this requirement. As described earlier, this framework includes analytics functionality to provide the necessary insight, device management to secure devices and the data on them and to keep them up-to-date with the latest applications and upgrades, application support for creating and enabling applications that run on connected devices, and a flexible billing system for new and evolving business models. SAP's investment in the Business Web initiative helps communication service providers stay ahead of the curve with an integrated platform for solutions with which they can go to market. SAP and the Business Web initiative are the right recipe for success. As a communication service provider, you cannot afford to wait any longer. The time to leverage the M2M enablement framework from SAP is **now.**

LEARN MORE

To find out more, contact your SAP representative or visit us on the Web at www.sap.com/telecommunications.

FOOTNOTES

1. Telco 2.0 is an initiative supported by a boutique of analysts and consulting partners under the direction of STL Partners (www.stlpartners.com/telco2_index.php).
2. *More Than 50 Billion Connected Devices*, Ericsson White Paper, February 2011 (available at www.ericsson.com/news/110214_more_than_50_billion_244188811_c).
3. *M2M Connectivity Helps Telcos Offset Declining Traditional Services*, Forrester Research Inc., November 22, 2011.
4. *M2M Communications: Turn Potential into Profit*, Informa Telecoms & Media, 2012.

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