Executive summary

Today, it is difficult for public and private sector organizations to identify and purchase an Internet of Things (IoT) solution – a solution for connecting end-point devices that generates data used primarily for tracking, monitoring or controlling assets. The market is filled with vendors offering parts of the IoT solution, but finding an end-to-end IoT solution provider is difficult. Public and private sector organizations often must engage four to seven suppliers to implement an IoT solution making this complex, costly and risky.

Communications service providers (CSPs) and systems integrators (SIs) have the unique assets and market credibility to assemble an end-to-end IoT solution. But in order to complete their solutions, CSPs and SIs need to find an Application Enablement Platform (AEP) partner that has the proper technology, business model and strategic approach to meet end-user IoT challenges and opportunities. An AEP – one of the most critical components of an IoT solution -- should be reliable, robust, future-proof, cloud-based and scalable. The platform solution should be horizontal: It should be built independently from the requirements of any specific device/modem vendor, application vendor, system integrator or services company. The platform should be open and provide a well-documented set of APIs to allow simple and cost-effective integrations to aid organizations on their transformational IoT journeys. AEP vendors should be mobile experts, agile and innovative as the IoT market continues to undergo dynamic change.

Some AEP vendors, like Cumulocity (www.cumulocity.com), offer the unique combination of technology, business model and strategic approach to provide CSPs and SIs this critical link in the IoT value-chain. See Figure 1.

Figure 1: Application Enablement Platform in the IoT value chain [Source: MachNation, 2014]
Key recommendations

- **Choose an AEP partner like Cumulocity that provides technology built for the needs of public and private sector organizations’ requirements.** In a quickly changing IoT world, it is important to know that your technology partner’s solutions are built to carrier-grade specifications to serve the needs of public and private sector customers. Solutions should provide heightened quality of service and enterprise service level agreements, if required. User interface (UI) and user experience (UX) should be intuitive and easily configurable. Pricing models should support small and large IoT customer deployments.

- **Pick an AEP partner that embraces openness and fairness in its strategic approach.** AEP vendors should be able to prove the openness and fairness of their approaches to market. For example, AEP vendors should have extensive and publicly-available software architecture documentation; multi-year product availability guarantees; and solid strategic and management investors. This is one way they can build strong hardware, software and service ecosystems around their platforms to create long-term value.

- **Engage with a platform vendor that can differentiate the solution provider through its extensive mobile technology experience, development support and agility with customer projects.** Vendors like Cumulocity have extensive technology and business knowledge in mobility. Having experience in mobile devices and hardware will greatly simplify AEP implementations and management. In addition, the best AEP vendors are able to offer go-to-market and business development support to their partners to enable them to win new business and quickly turn customer requirements into a customer-ready solution within two to three weeks. AEP vendors with this ability demonstrate a heightened level of customer focus and agility in their business models and technology platforms.

Key aspects of an Application Enablement Platform

Today we are seeing a proliferation of connected devices in the market. These solutions – dubbed the Internet of Things – introduce new opportunities for private and public sector organizations to monitor assets and people. The data obtained from these solutions drive operational savings and sometimes create new revenue streams through product and service innovation. Some examples of IoT solutions include fleet management, healthcare-related monitoring devices, oil pipeline monitoring, industrial remote monitoring, video surveillance solutions and many others.

One of the key inhibitors of IoT adoption by public and private sector organizations is the lack of credible service providers that can provide end-to-end solutions. In general, public and private sector organizations have to engage with four to seven IoT vendors in order to design, test, build and launch one IoT solution. This creates projects with bloated project costs and heightened risks of project failure. Many times organizations elect not to do potential IoT projects due to the inability to meet return on investment metrics or minimize the implementation risks enough to begin the projects.

Many CSPs and SIs are in a strong position to be end-to-end solution providers for IoT solutions. Both types of companies have a heritage in supplying enterprise-grade solutions. While CSPs’ generally approach these sales opportunities from a connectivity point of view while SIs approach these sales from an IT, applications and consultancy services point of view, their customers have come to expect high emphasis on quality of service, security, reliability and accountability. As such, CSPs and SIs are in a strong position to provide a more complete IoT solution.
Both CSPs and SIs need an AEP -- one of the most critical components of an IoT solution -- to provide a framework for deploying IoT applications, managing the proliferation of devices and analyzing device data. The AEP provides a way to efficiently build and manage applications; to aggregate and analyze device data; and to integrate third-party applications and infrastructure. MachNation analysts believe that without an AEP, the costs of deploying an IoT solution; the complexities of managing and integrating applications; and the costs of managing myriad device types would make at least 95% of IoT deployments financially prohibitive.

AEP vendors, like Cumulocity (www.cumulocity.com), must address five key technology and business differentiators. Meeting these points of differentiation increases the probability that public and private sector organizations deploying an AEP solution would find greatest value from and usability of the solution. In addition, technology partners like CSPs and SIs that engage with AEP vendors would better differentiate their core solutions, more easily integrate technologies and drive successful business strategies.

Below we discuss the five differentiators that CSPs and SIs should seek when engaging with potential AEP vendor partners. See Figure 2.

**Data scalability / multi-tenancy** – According to MachNation research, the IoT ecosystem is set to grow at a compound annual growth rate of 20-40% over the next 10 years. In order to support high levels of device growth, AEPs must facilitate data scalability. The database structures must support rapid increases and decreases of data volumes as enterprises deploy, decommission and re-deploy devices. It is vitally important that an AEP vendor’s solution cost-effectively support very small and very large deployments in a cloud-based model. AEP vendors must build their solutions to be multi-tenancy and it must be simple and economical to create additional instances of the AEP in a multi-tenant environment. This characteristic of AEPs allows the profitable deployment of new customer solutions and ease of integration with partner solutions.

![Figure 2: Five key technology and business differentiators of an Applications Enablement Platform](Source: MachNation, 2014)
**Device and application flexibility** – AEPs must provide open and flexible ways for platforms to integrate with devices and applications while providing a highly intuitive UI/UX. The growth in IoT comes from myriad device types. As such a single enterprise customer will deploy more than one type of device from more than one device/module vendor. AEPs should not be tied to a single vendor’s device/module product line: they should be built as horizontal solutions supplying functionalities across all IoT industries and solution categories. The AEP must support device self-registration and a multiplicity of client libraries covering all relevant systems. AEPs excelling in this characteristic speed time-to-market and an overall reduction in deployment risks for IoT technology partners.

AEPs must be built future-proof and with open integration capabilities. The platform should be built with a plug-and-play architecture, thereby allowing the rapid integration and configuration of third-party applications. It is important that the platform support such integration tools as RESTful APIs. AEPs should not be reliant on a particular application vendor’s choice of application operating system, programming code or application requirements. Finally, the AEP should have the ability to orchestrate the various steps in an IoT data flow. In essence, the AEPs should effectively coordinate and direct data between devices, platforms, analytics tools and applications. This characteristic helps partners quickly deploy solutions using well-documented IT architectures. It allows partners to provide innovative service offerings for customers in the quickest time-to-market possible.

A quality AEP will have a UI/UX designed for the end customer. The cloud-based platform should have configurable dashboard controls to allow multiple levels of device and data monitoring. The UI/UX should be configurable so each deployment can be easily themed with proper branding and dashboard layout. This characteristic allows partners flexibility in creating a uniquely tailored experience for each public or private sector customer.

**Publicly available documentation** – An AEP vendor should have publicly available documentation about its solution. This documentation should provide detailed reference architecture, technical diagrams, implementation information, integration requirements and API references. The AEP vendor should regularly update its documentation to ensure partners have access to the latest technical schema. CSP and SI partners should seek out AEP vendors that provide extensive, publicly available technical documentation. This characteristic is an indication of an AEP vendor’s willingness to engage fairly and honestly with partners and customers.

**Mobile experience, business development support and agility** – The best AEP vendors have extensive technical and business knowledge of the mobile environment. Technical characteristics of importance include the platform’s ability to handle mobile device data pushing and queuing; life cycle management for configuration changes; and optimized data transfer using specially designed protocols. In addition, the best AEP vendors have programs that provide on-going business development support, marketing support and training to their partners. Selling the value of and differentiation inherent in an AEP requires knowledgeable staff. This characteristic is an indication that an AEP vendor’s desire a long-term relationship with its partners. Working with a partners’ sales and technology staff to support all phases of the IoT sales process will benefit both partners. Agility means being able to react to new customer requests very quickly by turning business requirements into customer-ready solutions. As a result customers feel engaged and know that their requirements are taken seriously. Being able to meet changing customer needs by guiding customers through an IoT journey will differentiate solution providers. AEP vendors that provide this characteristic have a
combination of technology, processes and overall business strategy that supports extremely fast and customer-driven development.

**Financial solidity and independence** – The best partners are those that guarantee the availability of their products and services. Partners should seek out AEP vendors that can offer multi-year guarantees of product availability irrespective of financial ownership of the AEP. Business relationships in the IoT ecosystem are changing rapidly. It is important that your partners’ solutions have solid financial resources behind their development efforts. AEP vendors that have long-term, strategic management investors are more likely to share the growth commitment inherent in an IoT partnership. This characteristic is an indication of the health and longevity of an AEP vendor.

**Definition of IoT**

According to MachNation the Internet of Things (IoT) is the connecting of end-point devices – from sensors to IoT computers – that generates data used primarily for tracking, monitoring or controlling assets. IoT solutions are deployed in sectors including automotive, transportation, smart homes, energy, utility, security, surveillance, public safety, financial services, retail, healthcare, industrial, warehousing and distribution. IoT solutions are deployed in developed and emerging world regions.

**Conclusions**

The IoT sector is undergoing tremendous growth. Companies that want to capitalize on this growth must seek out viable partners. Of particular importance is the AEP. CSPs and SIs, being in a unique position to provide an end-to-end IoT solution, should choose an AEP vendor like Cumulocity that is committed to fairness, openness, simplicity, innovation and agility as shown by its technology, business model and strategic approach.
About MachNation

MachNation (www.machnation.com) is the only dedicated application development and insight services firm covering the future of the Internet of things (IoT), Internet of everything (IoE), connected device and machine-to-machine (M2M) ecosystems. MachNation specializes in understanding and predicting these technology sectors including developments in hardware, platforms, communication services and applications. MachNation specialists have provided guidance, consulting services and support to the majority of the world’s leading IT and communications firms.

MachNation provides strategic, tactical, sales and marketing support for firms that care about differentiating themselves in the connected future.

About the author

Steve Hilton is a co-founder and Managing Director at MachNation. His primary areas of expertise include IoT, IoE, M2M, competitive positioning, marketing media development, cloud services, small and medium businesses and sales channels. Steve has 20 years’ experience in technology and communications marketing. Prior to founding MachNation, he built and ran the IoT/M2M and Enterprise practice areas at Analysys Mason. He has also held senior positions at Yankee Group, Lucent Technologies, TDS (Telephone and Data Systems) and Cambridge Strategic Management Group. Steve is a frequent speaker at industry and client events, and publishes articles and blogs in several respected trade journals. He holds a degree in economics from the University of Chicago and a Master’s degree in marketing from Northwestern University’s Kellogg School of Management.