

THE EVOLUTION OF SES PLATFORMS

In An IoT Environment

Rethinking Service Enablement Service (SES) in the Era of the Internet of Things

Beecham Research has been studying the area of M2M Service Enablement since 2009. We have conducted two major multi-client studies on Service Enablement Services (SES) and related platforms (SES1 in 2009/10 and SES2 in 2011) and many individual client engagements.

Those two studies explored the market opportunity for cloud-based M2M SE services that enable fast and cost efficient introduction of new user services and applications to the market. Since our last study, the market has developed very rapidly and the future market needs of SES platforms have evolved and continue to do so. Some of these changes are as follows:

1. Application requirements have developed quickly and are now becoming considerably more sophisticated than they were 3 or 4 years ago, increasingly requiring data from multiple sources.
2. This is partially reflected in what is increasingly being referred to as IoT, as distinct from M2M, applications. These are tending towards multi-service environments that are typically more lifestyle or consumer oriented than purely enterprise process focused. Examples of this are Smart City and Smart Home requirements.
3. There is a growing need to cater for the management of edge devices, typically connected using a variety of short range wireless and fixed line techniques.

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4. Security needs have become paramount. They are no longer just “nice to have”.
5. For users, their M2M and IoT solutions are increasingly becoming mission critical.
6. As a result, such users are now recognising that in-house development of SES will not keep pace with their own market needs. We believe a rapid increase in outsourcing is now inevitable.
7. A variety of new business models have developed, introducing new ways of charging for SE services for different requirements.
8. Enterprises are increasingly relying on mobile data devices, such as smart-phones and tablets, and the management of these will need to be considered within overall IoT solutions.

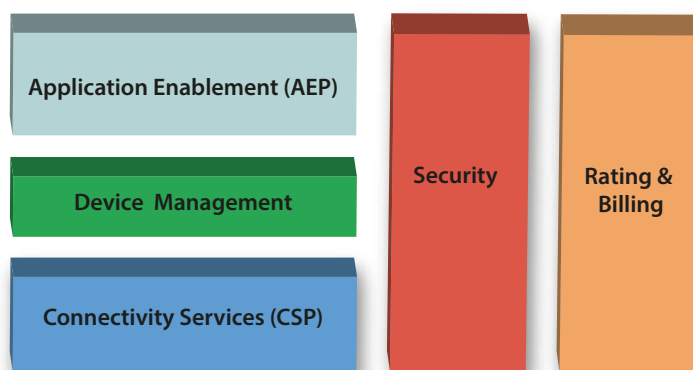
As a result of these and other changes, the revenue opportunities for offering SE services have also changed. We believe this provides new opportunities for those who adapt to new market needs, as well as challenges for those who do not.

In order to examine these changes and assess future revenue opportunities, we have planned the third edition of the SES study (SES3). This will be developed in several parts during 2015, with each part looking at key challenges as above. Part 1, discussed in this executive summary and now available for purchase online, focuses on extending the managed environment out to the edge as identified in item 3 above. This brings SE services closer to what is required for IoT solutions. The technical issues of the best way to achieve this are briefly explored, but only to validate that it is technically feasible and at reasonable cost to do so. The particular focus in this report is to explore the revenue opportunities of extending enabling services to the edge and the business models now being offered to implement them.

The Structure of Service Enablement Services and GSMA involvement.

Beecham Research structures SE services into three horizontal layers – Application Enablement Platform (AEP), Device Management and Connectivity Service Platform (CSP) – plus further cross-layer services such as security and billing, as shown in Figure 1.

Figure 1: Structure of Beecham's Service Enablement Services for M2M/IoT



Source: Beecham Research.

Connectivity Services are then focused on managing the connectivity for transporting the data, whereas Application Enablement focuses on how that

data is processed. Device management focuses on managing the connected device or asset itself.

Within the scope of Beecham Research's SES3 study, the GSMA has been analysing the common service enablers required for future IoT services as part of their Future IoT Networks Project. This goes beyond cellular devices, for example covering the local area in Home Area Networks. The purpose has been to establish where and how Mobile Operators could participate in providing such services in an IoT future.

An example of this is authentication / authorisation. At present authentication is typically provided as part of managed connectivity, or device management, or security solutions. In some markets it is completely non-existent, for example authentication of HAN devices at home in plug and play scenarios is typically done by consumers themselves, frequently rather badly, creating security holes. What the GSMA wanted was a consistent and logical set of quantitative measures for evaluating the market potential and strategic opportunity of these enablers.

This work for GSMA is derived from Part 1 of our SES3 study.

Towards an IoT Environment

The M2M market has mainly evolved using wide area network connectivity technologies such as cellular, fixed line and satellite. The applications have also evolved from being largely about connecting assets for remote monitoring purposes, to an ever-wider range of applications. An increasing number of these incorporate intelligent devices at the network edge able to act locally based on data and applications. Many others use larger numbers of semi-intelligent or unintelligent sensors of many different types to send back ever larger amounts of data, to be processed either locally, or remotely in the cloud, or in multiple locations. As a result, it is becoming more attractive to define connected spaces that incorporate larger numbers of intelligent devices and/or sensors that can work together locally.

These trends are moving the M2M market towards an IoT vision, where for example we move from the concept of M2M applications for solving specific business process issues to smart

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spaces such as smart home, smart buildings, smart hospitals and smart factory that have potentially wider benefits. Almost by definition, these are all spaces where use of wide area connectivity is both cumbersome and not cost effective, in particular

cellular connectivity. Instead, alternative forms of connectivity – most often local wireless – are used within those spaces. As a result, such spaces are essentially unmanaged environments, meaning that they are open to security breaches, do not provide for device upgrades and do not provide any guarantees that co-located devices can actually work together. It is believed that these issues and more can be addressed by extending the managed environment of M2M/IoT platforms out to these edge devices. Without this, it is anticipated that the market for such connected spaces is unlikely to develop to its full potential.

Managing Edge Devices with an SES Platform

In previous SES studies, Beecham Research has identified over 100 SE services being offered in the market, which we categorised into 22 service groups. This report then considers the potential market for extending these enablement services to an IoT environment and non-GSM devices. It was considered that the most appropriate way to do this was to identify key services among those listed to be offered at the edge and assess the prospects for those as indicators. Based on that, the following enablement services were chosen as the most indicative and potentially wide-ranging:

- Authentication
- Billing & charging
- Data management
- Device management
- Security

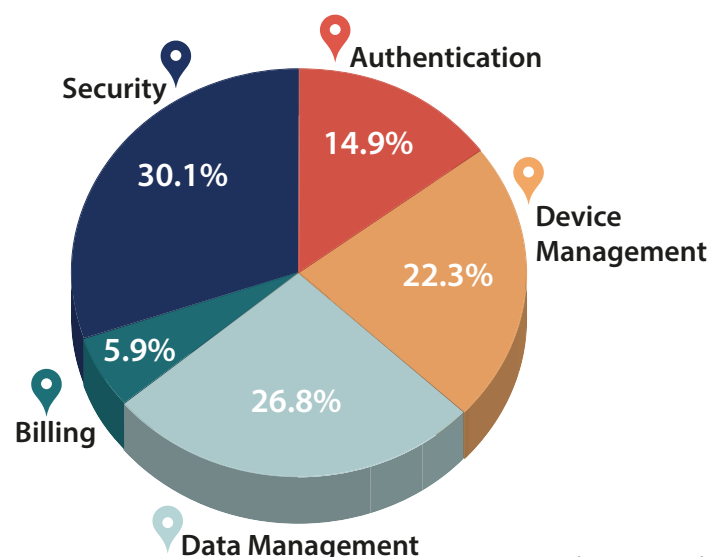
The research assessed the technology feasibility of bringing those enablement services to the edge through a variety of approaches. It also assessed the modes of deployment that are strongly dependent on the distribution of intelligence between edge devices, gateways and SE platforms. There is not one exclusive mode of deployment, as these can change based on application opportunities and their specific needs in terms of data collection and analysis. These different approaches to deployment also reflect the variety of business models currently being offered in the market place. The research covered these business models, highlighting key characteristics and pros and cons for each of them. It is clear from this that different business models will coexist in the market for different outcomes and application opportunities and this will impact on the competitive landscape.

The Revenue Opportunities for SES Platforms

The research shows that data management and security present the strongest revenue opportunities among the enablement services analysed, as showed in Figure 2. The total revenue from these enabling services out to the edge is expected to reach \$3.17bn globally by 2020.

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Figure 2: Breakdown of Outsourced SE Service Revenues in 2020



Source: Beecham Research

Next Steps for Beecham Research's SES3 Study

The research discussed in this executive summary is the first part of a multi-part study and is available for purchase online at www.beechamresearch.com.

Subsequent parts are currently in progress and more details about these can be obtained by contacting us at: ses@beechamresearch.com.

About Beecham Research



Beecham Research is a leading market analyst and consulting firm that has specialized in the development of the rapidly-growing M2M/Internet of Things market worldwide for well over a decade, since 2001. Based in London UK, Cambridge UK, and in Boston US, we actively participate in initiatives aimed at achieving M2M market development and growth. We are internationally recognised as thought leaders in this market and have deep knowledge of the market dynamics at every level in the value chain. As a result, our clients come from all parts of the value chain including components and hardware, network operations, system integration, application development, distribution and enterprise adopters. We are experts in M2M/IoT services and platforms and also in IoT solution security, where we have extensive technical knowledge. We are also the leading analysts in satellite M2M, where we have worked with all the network operators and also with the European Space Agency (ESA). In addition, we see Wearable Technology as a key part of bringing the individual closer to the Internet of Things and this is also a primary area of activity for us.

Visit www.beechamresearch.com or contact info@beechamresearch.com for more information.

