

NEC's Approach to M2M Business

With the aim of realizing a new ubiquitous networked society in which the collection of information and control of machines and devices is facilitated by a safe and secure network of all these “things” that exist in the real world (= “Network of Things”), NEC is developing CONNEXIVE M2M solutions. Combined with M2M solutions for a broad diversity of industries and businesses, NEC's CONNEXIVE approach will contribute to the creation of the next-generation smart grid power distribution network, the smart cities of the future, and the smart communities that will exist in the environment-friendly cities of tomorrow, and realize a prosperous and innovative society.

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1 Preface

In a broad range of fields ranging from the environment, wellness and transportation to logistics, agriculture and urban development, the construction of an Information Society that is safely and securely networked through the utilization of advanced telecommunications and IT technologies is steadily

progressing. In order to realize an advanced networked society in more fields and environments, the key is M2M (Machine to Machine) services that link and integrate a diversity of devices and machines through telecommunications (**Fig. 1**).

NEC is using IT and network technologies, building the “cloud ” that provides M2M services and developing CONNEXIVE solutions in a variety of fields for global markets with the aim of realizing M2M services (**Fig. 2**).

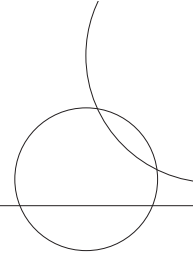


Fig. 1 NEC's M2M services.



CONNEXIVE connects all types of devices in a way that is safe and secure to create new value leading to a prosperous and innovative society.

Fig. 2 CONNEXIVE logomark.



This special issue will introduce NEC's approach to tackling the environment surround M2M and our business roadmap.

2 M2M Market Environment

Fueled by demand from developing nations, the global M2M market is growing rapidly. According to Infonetics Research, the number of connections for embedded mobile M2M applications, which reached 89 million connections in 2009, is forecast to leap to 428 million by 2014.

Against the background of this explosive growth, the market environment should be examined from three perspectives: "policy-related demand," "corporate demand" and "consumer demand."

First of all, when examined from the vantage point of "policy-related demand," the policy-related stimulation of demand with the aim of further advancing the social infrastructure through innovations such as smart grid development and traffic accident emergency notification systems (eCall) in advanced nations is quite remarkable. At the same time, there is also policy-type stimulation of demand in developing nations. For example in Brazil, equipping vehicles with GPS-based tracking systems as a car theft prevention measure is mandatory.

Next from the perspective of corporate demand for M2M solutions, demand that is driven by policies aimed at strengthening the competitiveness of their marketed products and services is striking. There are increasing cases of the utilization of M2M with the aim of increasing the sale of terminals through the creation of new services such as e-books, etc., reduction of support costs by remote maintenance in fields ranging from industrial and OA equipment to construction machinery, and reduction of operational costs through logistics management efficiencies.

Finally from the standpoint of consumer-driven demand, notable demand for safety and security is commonly shared by consumers in each country around the world. First comes the penetration of M2M applications such as anti-car theft measures and emergency notification systems followed by heightened demand for services that contribute to more comfortable living.

A look at the business environment of telecommunication carriers reveals broad and maturing deployment of broadband and mobile communication networks in developed countries as well as falling telecommunication rates or even a shift to flat-rate pricing as a result of the increasingly severe competition among carriers. In developing countries, 3G and GSM infrastructure is undergoing improvements thanks to policy-driven investment and ODA from the developed nations, paving the

way for increased utilization of connections for M2M applications and enhanced services in the future.

3 CONNEXIVE

Realizable through the convergence of IT and network technologies, M2M holds the key to building the safe and secure networked Information Society of tomorrow. In addition to addressing issues such as market deployment speed and opacity of business operations that are demanded by customers, M2M is also expected to respond to the demands of business models such as "Think Big, Start Small and Scale Fast."

Through the provision of M2M CONNEXIVE solutions that answer these demands, NEC is endeavoring to expand its M2M business.

CONNEXIVE is a comprehensive M2M solution that provides not only applications, system infrastructure as a package together with cloud computing services for the realization of M2M services, but also consulting and other support services to facilitate the introduction and deployment of M2M services (Fig. 3).

Concrete examples of envisioned M2M services are as follows:

- **Agricultural ICT Solutions**

Placement of sensors in cultivated fields and greenhouses will make it possible to "see" the status of agricultural environment including the environmental factors of temperature, humidity and degree of sunlight exposure as well as soil system conditions such as soil temperature and moisture, thereby providing a solution that supports cultivation with actions based on certain rational data instead of conventional agricultural practices in which "intuition" and a farmer's "hunch" often determines actions.

- **Environmental Sensor Solutions**

Placement of various sensors (atmospheric temperature, surface temperature, humidity, CO₂, etc.) related to measurement of outdoor conditions and the environment will enable provision of solutions that make more detailed environmental data "visible" for effective environmental monitoring and management.

- **Energy Management Solutions**

By realizing real-time management of power usage by exploiting smart meters and other devices, solutions that can detect unauthorized usage of electric power and other applications can be provided.

In addition, with the aim of activating the market and reinforcing coordination with partner companies, NEC will endeavor to expand the business of M2M services through proactive

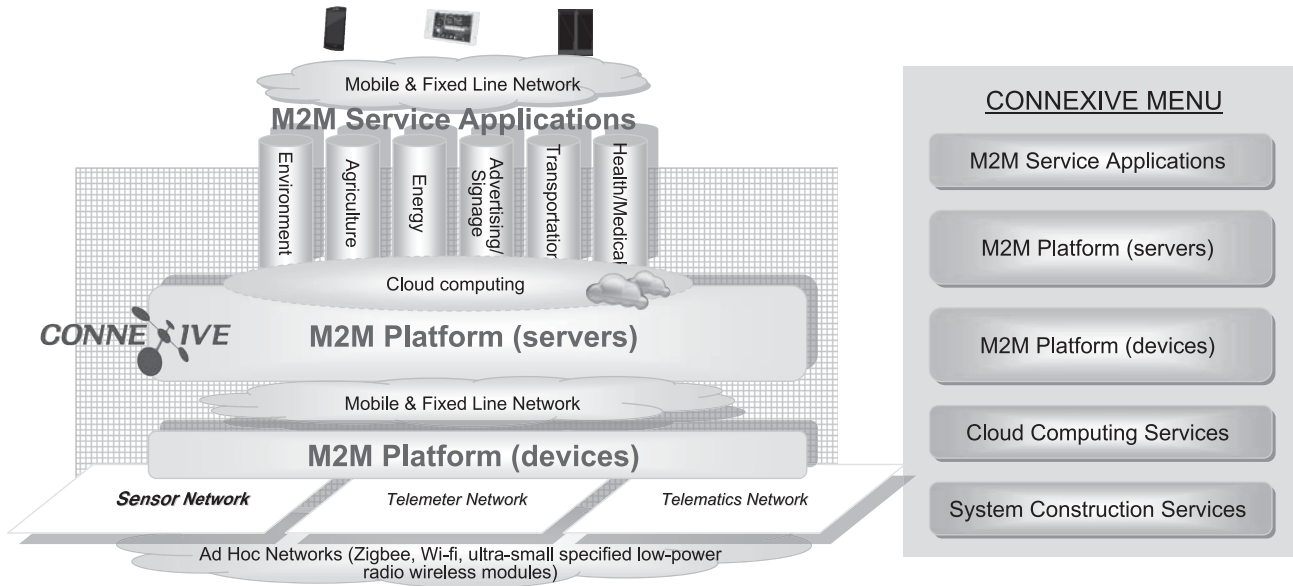


Fig. 3 Overview of CONNEXIVE.

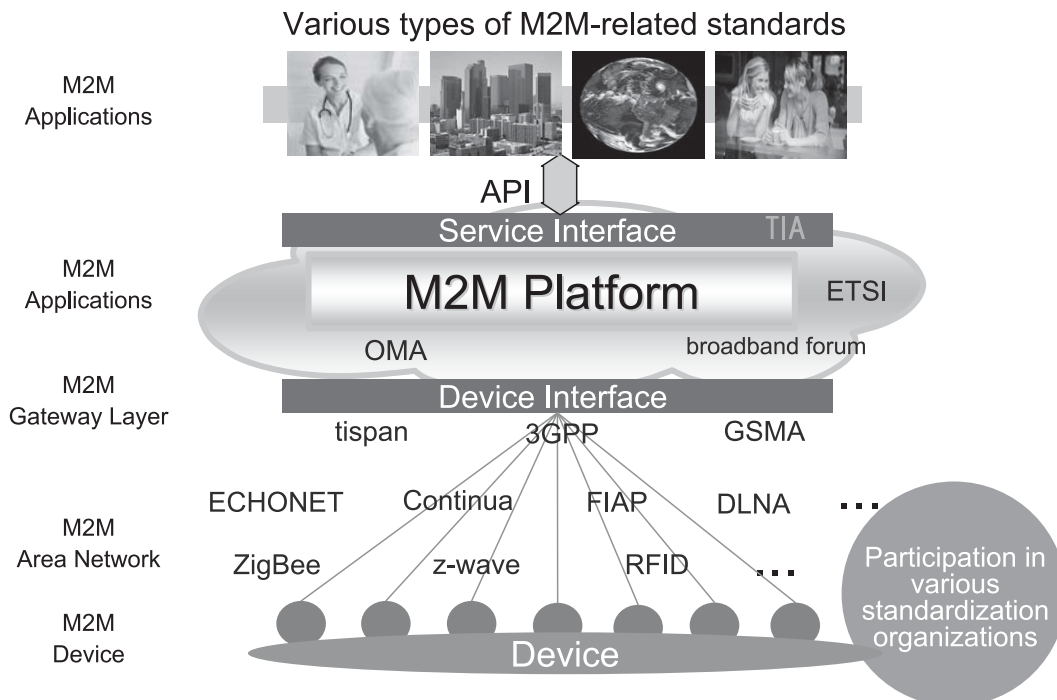
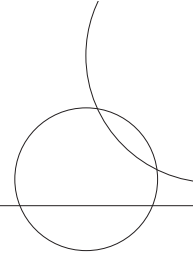


Fig. 4 Framework for standardization activities.



participation in standardization organization, the next-generation M2M consortium, and various other organizational activities; aggressive development of standardized interfaces; and “open sourcing” the interface for CONNEXIVE cloud computing-connected devices and applications (**Fig. 4**).

4 Conclusion

With the aim of building an “information society friendly to humans and the earth,” NEC is committed to the realization of an M2M-networked information society through our CONNEXIVE solutions.

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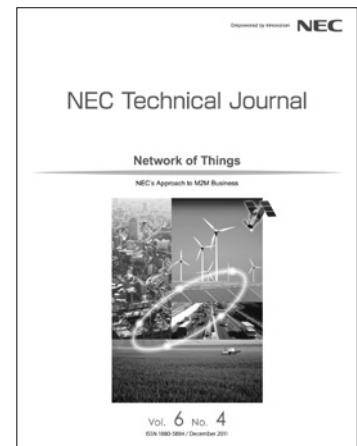
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