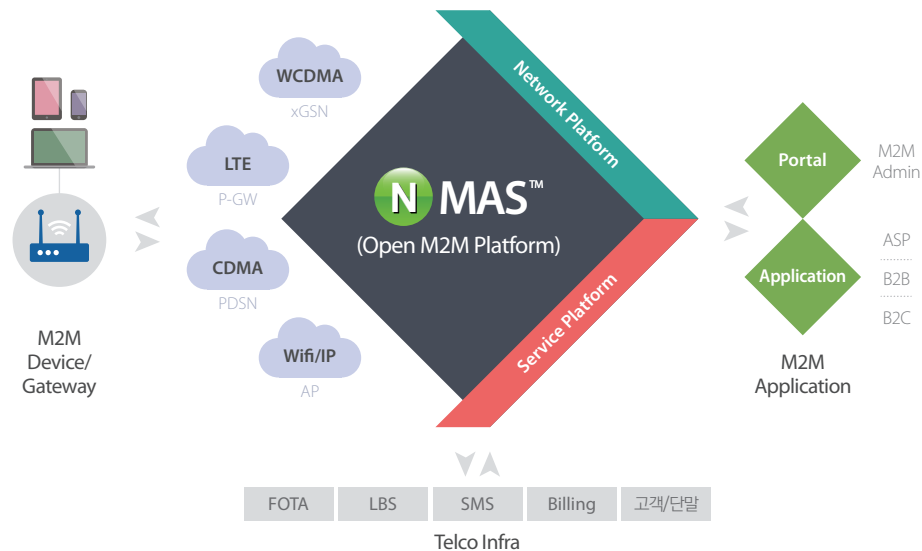# N MAS™

M2M Application Server

NTELS M2M Application Server (MAS) is an open M2M/IoT platform that helps communications service providers (CSPs) offer M2M services fast and efficiently by supporting a wide range of client devices and providing a centralized administration portal.

An open API-based platform, N-MAS has network capabilities to interface with devices and process data and service capabilities to manage services and connect applications.

The platform supports communication via different protocols on different networks and interfaces with a network operator's systems (e.g., SMS and LBS), which helps CSPs significantly reduce the cost and time required for M2M service deployment.

Features

Support for Multiple Interfaces

- Optimized resource modeling for M2M service
- JSON-based schema definition
- Open RESTful HTTP APIs for M2M REST resources
- Lightweight MQTT protocol for M2M devices
- AMQP protocol for real-time data push

Note 1. Ao : Open RESTful API between MAS and service application
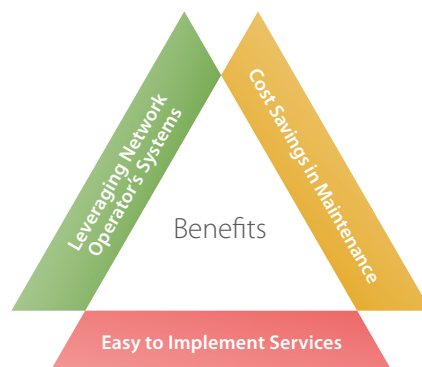　　　　Do : Open RESTful API between device and MAS
Note 2. Dm : MQTT interface between device and MAS
Note 3. Aa : AMQP interface between MAS and service application

Interfacing with Network Operator's Systems, Including

- SMSC (SMS Center) to send control command to devices
- LBS (Location Based Service) system to locate devices
- Billing system to send CDRs created for SMS/LBS, which helps to support various tariff plans
- SIM (Subscriber Identity Module) management system

Benefits

Easy to Implement Services

- Open RESTful APIs provided by the platform and real-time data transmission using server push are part of the features that help cut development and implementation costs.

Leveraging Network Operator's Systems

- The ability to interface with the network operator's systems (e.g., SMS and LBS) enables service providers to create add-on services and test their services before launch.

Cost Savings in Maintenance

- Firmware Over The Air (FOTA) allows operators remotely upgrade software installed on M2M devices, which helps them reduce maintenance costs.

Creative Convergence
ntels

Open M2M Platform
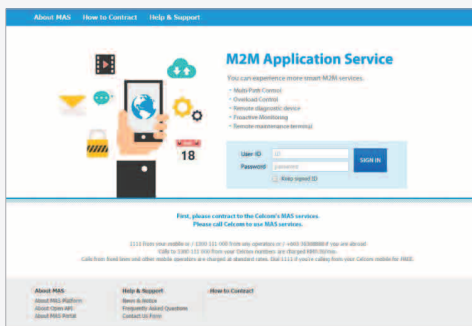Marchine to Marchine Application Server

Key Functions

- Support for multiple access networks and multiple protocols
- Multiple control paths for stable device control
- QoS management through overload control
- Stable data transmission using store & forward
- Firmware Over The Air (FOTA) for remote maintenance of devices
- Proactive monitoring to detect errors in data collection
- Web-based open API tests
- Web-based centralized operations portal

Web Portal

N-MAS provides a Web-based operations portal to support system management and service operations.

The portal allows the user (admin or user) to:

- Add, edit, and delete device information
- Diagnose and trace devices
- Add, edit, upgrade, and delete device firmware
- Manage device apps and client applications
- Conduct open API tests
- Monitor M2M services in real-time
- View various statistics and history

Applications

- Smart City, Smart Grid
- Advanced Metering Infrastructure, Fleet Management, Telematics
- Public Works using USN/RFID
- Environment Monitoring, Logistics, Security & Surveillance, Healthcare, Building Management

Use Cases

Location Tracking System for People on Probation

For the Ministry of Justice, we implemented a location tracking system that collects location data for sex offenders on probation in real time. The service allows the parole officer to keep track of the location of parolees who wear an electronic anklet.

Benefits

- **Improved community safety**

  Prevention of sex crimes and secondary convictions through the stigmatizing effect of being labeled a sex offender

- **Increased effectiveness of probation**

  Accurate locating of parolees to detect any violation; seamless 24/7 monitoring to maximize the effectiveness of probation

- **Practical and cost-efficient**

  Applicable to other social protection activities by the Rehabilitation Bureau of the Ministry of Justice; cost savings in running probation/rehabilitation programs

U-Care System for Seniors Living Alone

For the Ministry of Health and Welfare, we implemented a 24/7 monitoring and reporting system for seniors living alone. The system provides social service departments and health & welfare agencies with ability to monitor seniors at home on a daily basis.

Benefits

- **Improved quality of life of seniors living alone and their family**

  Detection of emergency and risk symptoms to take proactive action and prevent solitary death

- **Efficiency of social workers for better senior care systems**

  Boosting the efficiency of social workers; a single social worker can take care of 25 seniors or more—reduction in operating costs

- **Cooperation with other agencies involved in the welfare of seniors living alone**

  Active and efficient cooperation by sharing information for seniors living alone with related agencies (e.g., 911 services)