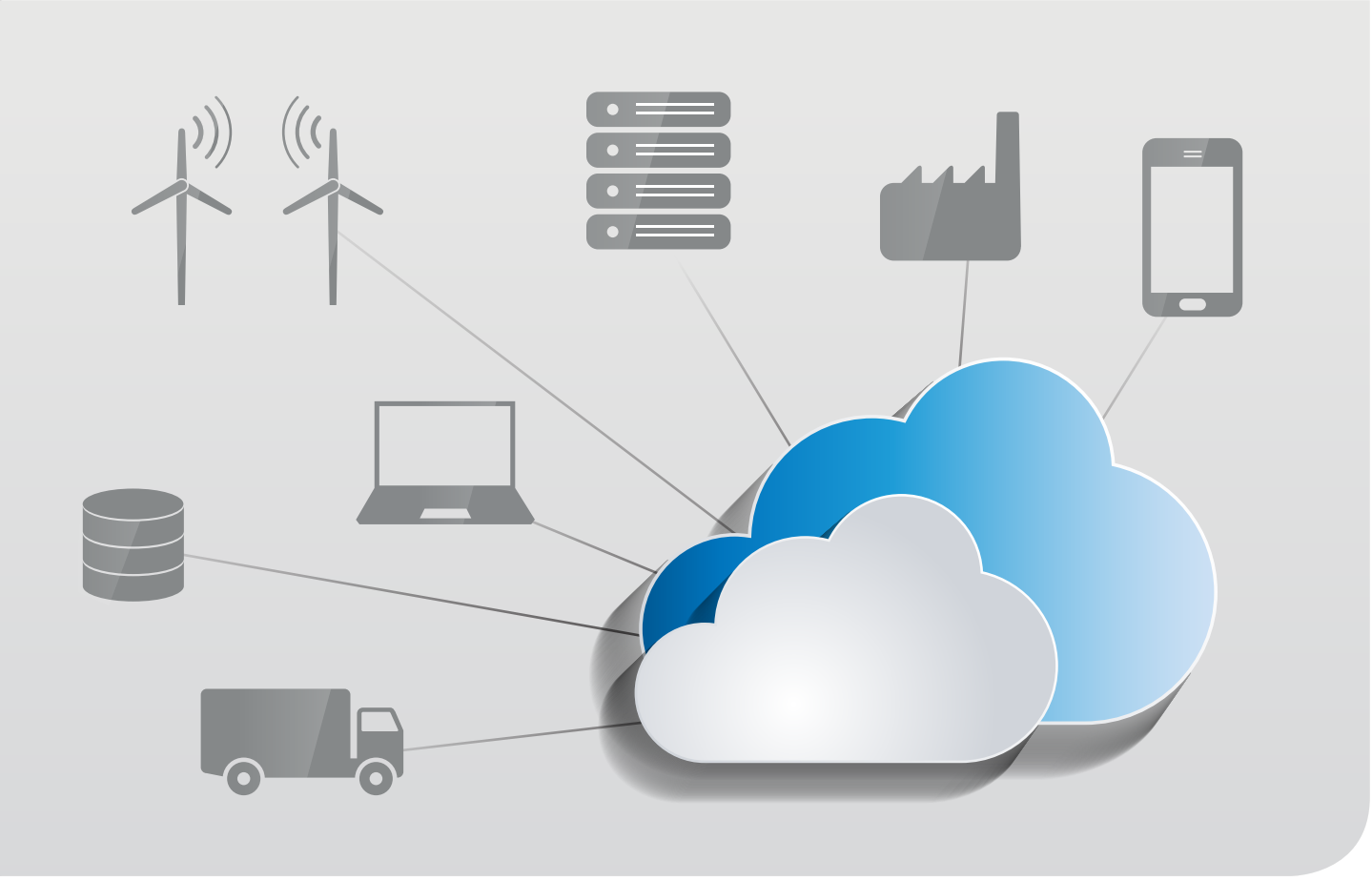


Cinterion® **SensorLogic Agent**

Cinterion® SensorLogic Agent

As machine-to-machine technology makes its way into the mainstream and helps to expand the Internet of Things, the need for speedy, high level data processing using business intelligence rules has increased significantly. At the same time, sources of data and types of sensors have become more dispersed and divergent adding a new level of complexity to software development requiring more time and integration effort.

Quick application integration and short development lifecycles are key drivers for realizing ROI and gaining competitive advantage. Gemalto's Cinterion SensorLogic™ Application Enablement Platform and SensorLogic Agent, part of the end-to-end Cinterion M2M portfolio of solutions and services, provide a simple, flexible solution to meet these growing challenges while speeding time to market for innovative applications.

The process of building custom applications capable of integrating divergent information and then quickly processing data into easy to understand business intelligence is challenging. At the same time, the number of M2M connections is growing along with solution sophistication putting a greater strain on wireless network bandwidth and storage servers. Local processing at the edge where data is generated has become a key consideration in application design.

To simplify and speed-up the process of creating game-changing M2M solutions, Gemalto offers the SensorLogic Agent, a Java™ software component tightly coupled to the cellular module that provides data, communication and module management capabilities.

Gemalto's Cinterion ES Embedded System approach simplifies and improves application services by adding processing power to the cellular module itself. By combining localized Java processing and communication capabilities in one component, OEMs are able to streamline solution design while reducing the bill of materials.

By adding Java on top of the ES Embedded System architecture, the SensorLogic Agent accelerates integration providing off-the-shelf integration with the SensorLogic Application Enablement Platform.

The SensorLogic Agent easily interacts with other Java applications on the module through an M2M abstraction layer. It ensures versatility and native integration with SensorLogic Application Enablement Platform.

Solution Benefits

> Lowers device bill of material
> Shortest time-to-market
> Optimal network resource utilization
> Reduced application complexity
> Based on Java
> Compatible with Cinterion Java modules
> Future-proofs investment

An Overview

The SensorLogic Agent is designed to help integrators get the most out of smart communication modules, regardless of the use case or vertical market application. By offering libraries for application and module services, the SL Agent provides development teams with "off-the-shelf" network and wireless communication module monitoring. In addition, native integration with the SensorLogic Application Enablement Platform delivers an advanced and reliable foundation upon which to build an M2M vertical application.

A Case In Point: SensorLogic System Optimizes Smart Recycling

The SensorLogic Agent (SL Agent) and cloud-based Application Enablement Platform are essential tools to effectively manage smart recycling systems controlling elements such as on/off cycles and battery autonomy. For instance, the SL Agent can choose to activate GPS sensors only once a day or when measured values indicate that trash pick up is imminent. Unnecessary GPS pings throughout the day deplete battery power requiring field servicing more often, which negatively impacts ROI. Similarly, it's not cost effective or energy efficient to send fill level monitoring data continuously throughout the day. The SL Agent puts the processing power in the module itself so that data is sent only when the fill level hits a critical point. The SL Agent enables device decision-making and important data assessments that improve performance and ROI.

SensorLogic Agent Speeds Development

Abstraction of communication protocols
By leveraging the SensorLogic Agent APIs, customers no longer need to worry about heavy protocol handlers or cellular connection management. Instead, they can immediately focus their efforts on developing vertical-specific business logic. The complexity of the underlying layer is completely abstracted.

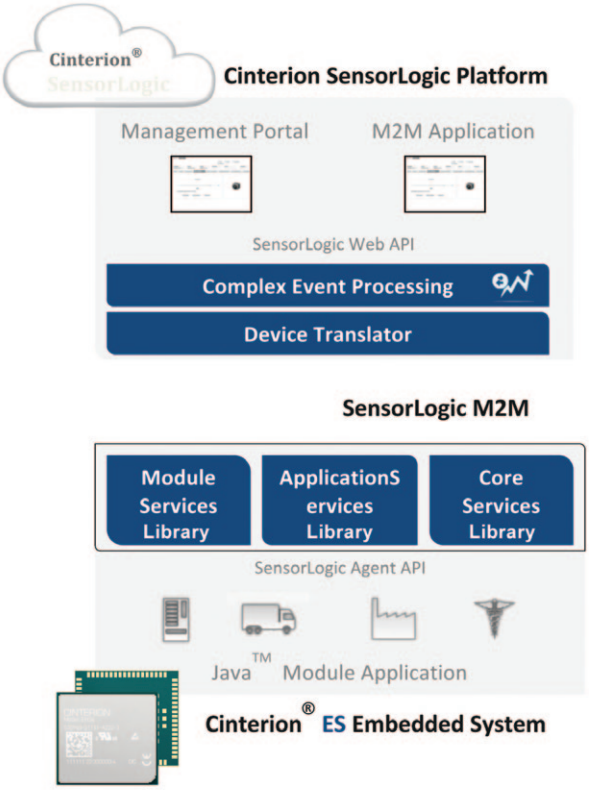
In addition, Gemalto has designed an M2M-grade protocol which reduces payload size to help minimize data consumption.

Native integration with the SensorLogic Application Enablement Platform
Any Cinterion module using the SensorLogic Agent is natively integrated with the SensorLogic Application Enablement Platform, ensuring time and cost-effectiveness. User and solution management data are easily accessible by means of the SensorLogic RESTful Web API or the Management Portal.

The Platform offers services hosted in the cloud. It supports a multi-tenant architecture allowing secure, simultaneous hosting of multiple applications and customer areas.

Multiple device types supported
The SensorLogic Agent is not restricted to a particular type of M2M device type or vertical. Each data source can be mapped to the best-suited abstraction.

The SL Agent API supports analog and boolean (true/false) sensors, generic actuators (like motors, valves, etc.), location data sources (like GPS receivers), and a generic data exchange service.



Application Services Library

Data exchange
The SensorLogic Agent facilitates gathering and normalizing data from virtually any type of sensor including analog sensors and boolean sensors. Analog sensors measure complex conditions such as environment, movement, voltage and other flexible events. Boolean sensors return only two values (true or false) to evaluate simple events.

For instance, in a vending machine application, an analog sensor could measure temperature and fill level and a boolean sensor could indicate if a door is open or closed or if the machine has money left for exchange.

Remote control
The Actuator API streamlines remote control of a number of device elements, such as motors, LEDs, switches, solenoid valves, loudspeakers and more.

Location report
If a GNSS receiver is available, the Location Report API allows the device to conveniently report its position to the SensorLogic Platform. Geofences and routes can then be applied to build a track-and-trace application in no time.

Modules Services Library

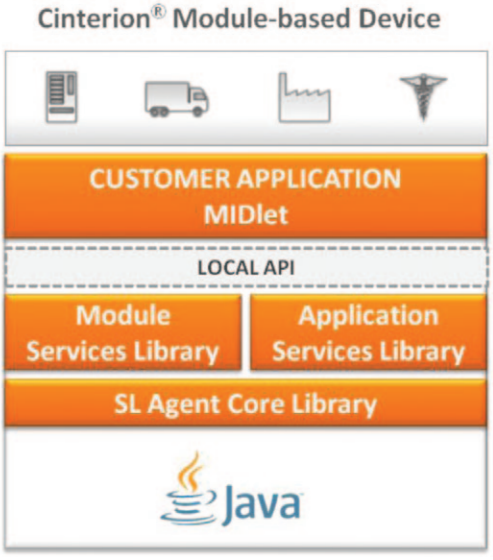
Module information
Monitoring of the module itself is of utmost importance when it comes to ensuring quality and reliability of communication and optimizing latency. The SL Agent is capable of analyzing features including:

Specific scalability features of the platform include:
> Basic module information (i.e. IMEI)
> SIM card
> Temperature
> Voltage
> System time
> RAM / FFS usage

Network information
To ensure optimal Service Level Agreements, The SL Agent handles remote configuration of variables including:
> Basic network information (operator, Cell ID, etc.)
> Link quality indicator (2G/3G)
> Jamming detection report (2G/3G)
> Network related statistics (e.g. Re-attach rate)

Alarms can be easily configured to fetch important information and monitor actions such as:
> MNO change
> Cell ID, LAC, MNC or MCC change
> Link quality above/below threshold
> Re-attach rate too high
> Keep-alive: module not responding

Security is paramount in M2M applications and the SL Agent can also detect and report jamming after connectivity is restored, providing essential information including timestamp, duration of event and frequency.



Gemalto M2M Support includes:
> Personal design consulting for applications
> Extensive certification and conformance testing capabilities
> Global support
> Regular training workshops

Local engineers, a competent helpdesk, a dedicated team of R&D specialists and an advanced development center are the hallmarks of our industry leading support offer.

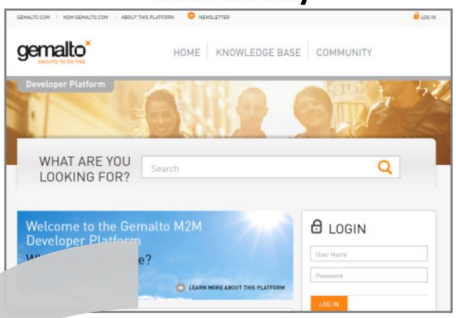
The Cinterion Concept Board

Simplifying M2M project prototyping

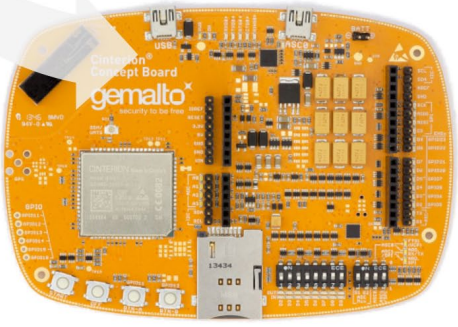
The Gemalto M2M Concept Board is the perfect tool to jump start your next M2M project and experience the advantages of Java, the SensorLogic Agent and Application Enablement Services. For fast prototyping, the Concept Board can be connected to Arduino-style sensor boards and it includes an EHS6 Java module for global 2G and 3G cellular connectivity.

The Concept Board provides a simple environment with everything a developer needs to quickly transform ideas into cutting edge, market ready M2M applications.

Gemalto M2M Developer Community



SensorLogic Agent Package
> Java™ Libraries
> Documentation
> Examples



Cinterion Concept Board

The Gemalto Developer Community

To support successful M2M development projects and utilize best practices, the Gemalto Developer Community is the ideal place to begin. Available at http://m2m-experts.com, the website provides a wealth of information and resources for adding wireless connectivity to objects and building innovative M2M applications.

It offers everything you need to get started including:

> A solid knowledge base for beginners -- M2M terms, definitions, FAQs, tutorials and step-by-step "how-to" instructions for common tasks

> An interactive forum where you can discuss challenges and solutions with peers and Gemalto experts, as well as a venue to share your knowledge and expertise with others

> A library of current M2M applications and use cases along with anecdotes of hurdles crossed while bringing applications to market

> A source for downloading sample code and re-usable drivers to expedite your project timeline

> A place to order your personal Gemalto development tools such as the Cinterion Concept Board.

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SUSTAINABLE CERTIFICATION
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