

# Shepherd®

Managed Services for M2M Solutions

Shepherd from Telenor Objects is a managed service allowing quick and easy deployment and operation of new M2M solutions based on a device library and generic service enablers.

The Shepherd platform is an open and future proof architecture which allows customers to freely choose the most suitable combination of devices and applications. The platform is designed to telecom principles of scalability, reliability and security.

Shepherd services make it possible to capture, deliver and process data, control devices, and exchange information between applications and devices:

- **Managed service** (solution monitoring, device configuration, SLAs, support)
- **Enablers** accessible through open application programming interfaces (APIs)
- **Message engine** which securely captures, processes, routes and stores messages
- **Device library**, interfacing tools and services

Flexible commercial terms ensure a cost effective service for small and large systems.

## Open and Future Proof

Our architecture design philosophy is openness: we deliver an open system to connect any device(s) to any application(s). Our vision is that of a "horizontal" service architecture shielding the complexities of the devices from the applications, and the other way around.

In order to encourage experimentation, testing and further development, our service is available as a limited trial account.

## Freedom to choose

Open APIs and device interfacing tools create separation and independence between applications and devices. Such independence means that the service provider at any time may choose the best supplier of each solution element and thus achieve freedom of choice, efficient competitive tendering and risk reduction.

Shepherd® from Telenor Objects enables any device to communicate with any application. Infrastructure monitoring and an extensive library of supported devices and service enablers allow fast, cost effective and simple deployment and operation of new M2M services.

## Scalable, reliable and secure

Shepherd is designed on the core principles of carrier grade telecom services: scalability, reliability and security. Reliability is provided through redundancy and monitoring of the infrastructure.

Data generated by the devices is securely stored behind firewalls until the applications require them. Communication between application and Shepherd is secured by SLL. Communication between a device and Shepherd can also be secured by SLL if supported by the device. Encryption, authentication and authorization are used to ensure that information stored is reliable and not compromised.



## Message engine

At the core of our service is the Message Engine which handles the information flow between devices and applications including capturing, routing, security, queuing and storage. It also handles information exchange allowing authorized third parties to access data generated by devices.

## Application interfacing

In Shepherd there is a transformation of the usage data from a device specific format to a common Shepherd standardized format. This is a huge benefit for the application since every kind of usage data type is having the same meaning independent of device specific terminology. This is done by putting usage data into standardized Observation types. For example when receiving the Observation type position from a GPS the format of the position will be the same independent of the format used by a specific GPS.

All Observations received from a device is stored in Shepherd and are available via queries from the application. The queries can be narrowed by using querying parameters such as time, observation type (e.g. position, speed), conditions (e.g. speed greater than 32) or within a geographical area.

For applications that rely on real time data from a device, Observations can be received as they arrive to Shepherd via a subscription to the specific device or group of devices.



## Device interfacing

A core functionality of Shepherd is to allow applications to communicate with, and control devices. A device can both send and receive messages to/from Shepherd.

Devices can be organised by logical units defined as objects. Each object consists of one or multiple number of devices. The advantage of having such logical names is the possibility to change the devices of an object while the object remains the same (Device Independence).

In Shepherd there is a Device Library that includes a range of devices which have already been integrated such as GPS, RFID readers, industrial sensors, and gateways. This library is continuously being added to by us and our partners.

Java based devices which are not yet in the library can in many cases be integrated using the Shepherd Plug-in Framework – an easy-to-use device integration toolkit allowing anyone to develop device drivers. Using this framework ensures monitoring and configuration of the device. Furthermore, a tool to deploy business logic locally (“ActorFrame”) on the devices is also available.

## Hosting

Hosting services are available for customers’ own M2M applications. The hosting services are co-located with the Shepherd platform and tailored for M2M applications.

## GSM Connectivity

Connectivity is available through our partner Telenor Norway.

## Service monitoring

The infrastructure is monitored at all times. Errors and faults are detected and dealt with.

## Service level agreements

Service level agreements cover our managed platform from the APIs, across the infrastructure and to the interfaces with the devices. This includes service availability, alerts and notification, quality of service, incident response time, and disaster recovery.



## Customer Service

Telenor Objects offers a single point of contact to handle faults and queries for our services and services sold through us. Customer services are provided in English and Norwegian.

## Contact us

Web: [www.telenorobjects.com](http://www.telenorobjects.com)

Email: [objects@telenor.com](mailto:objects@telenor.com)

Phone: +47 810 77 000

Address: Snarøyveien 30, 1331 Fornebu, Norway

## About Telenor Objects

Telenor Group is among the largest mobile operators in the world and a pioneer in the telecommunication industry.

Telenor Objects is a part of the Telenor Group and provides a reliable and highly scalable M2M service infrastructure.