



Telecommunication Solutions for Smart Objects

08 July 2010

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VP Strategy & Products

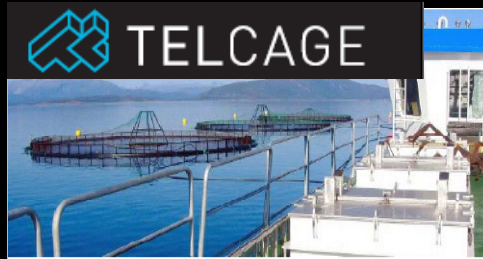
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Telenor has provided M2M services and research since the 1990s



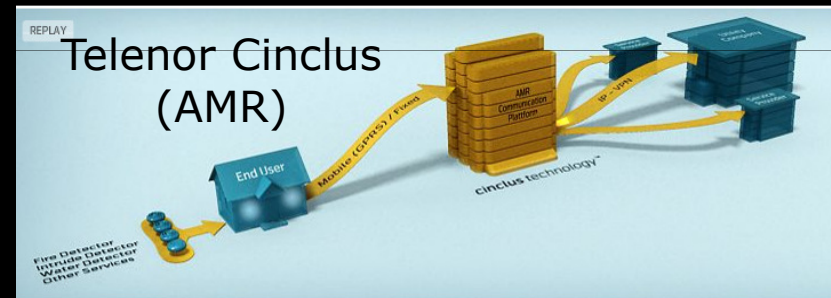
telenor | traxion



TELCAGE



Telespor



Telenor IRIS (RFID)

Nyhet - Automatisk kjørebok

Sammen med vår partner Zeekr er vi stolte av å kunne tilby en nyskapende og helautomatisk tjeneste.

Automatisk kjørebok - bedre fyll i arbeidsdagen

- ✓ Kører fyll
- ✓ Spar skatt og arbeidstid
- ✓ Korrekt kjørebok - korrekt bilpottspørsmål

Enklere blir det å kjøre

- Lengre manøvrer
- Automatisk start- og stoppskudd
- Automatisk beregning av fyll

Automatisk kjørebok gir reduserte skatter og avgifter

Planholte kjøreturene våre er for norske fyllkjøpere. De har dokumentasjon på at de ikke må betale lønne skatt, og dermed kan de spare penger. Og så slipper de å bruke kostbare oppgjørstid og å bli stoppet av skattekontroll.

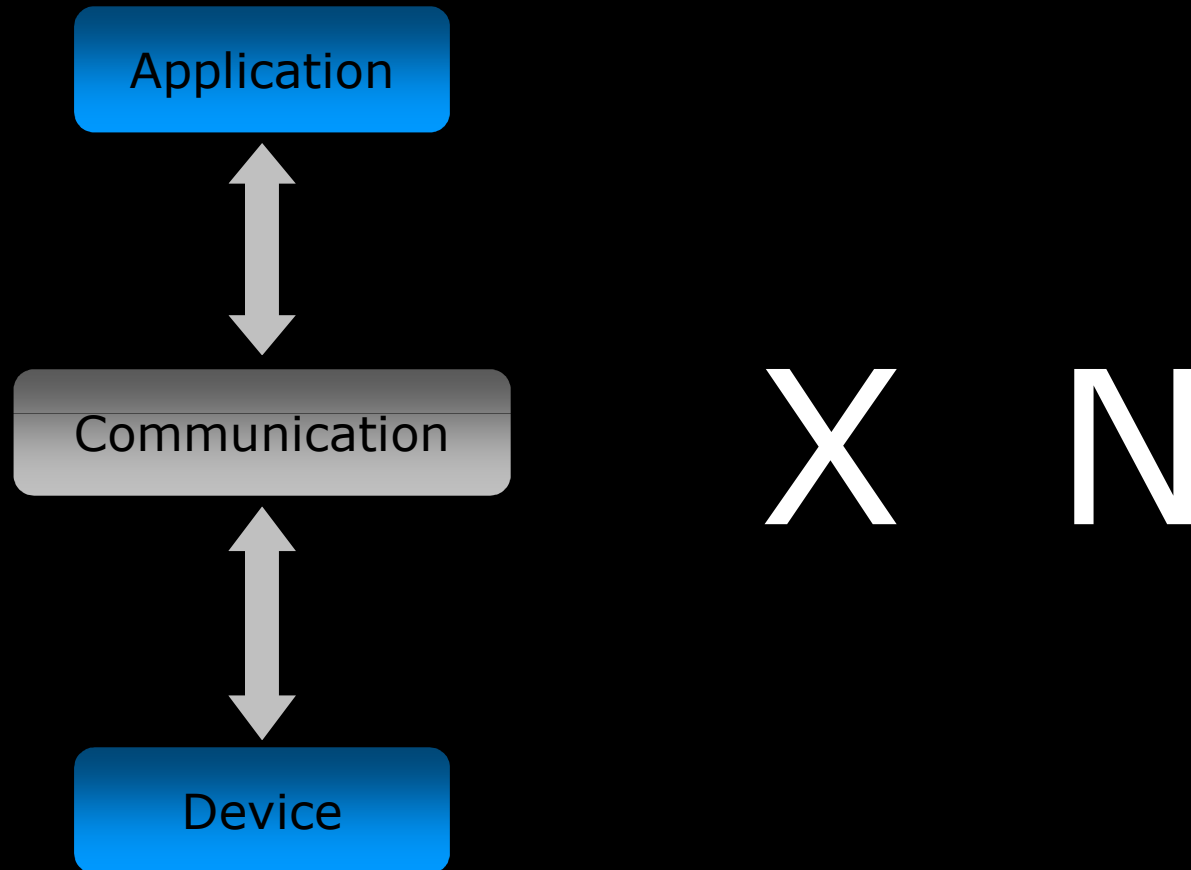
Daglig leder, Revidentpartner Øst

[Les mer om Zeekr](#)

Telenor R&I
Can do!



The classical approach to M2M



A few examples:

Intelligent public infrastructure

Web interface to control the infrastructure elements



The public reporting issues with public infrastructure



Smart objects



Infrastructure elements with local connectivity (street lighting, manhole covers, rubbish bins...)

Field engineering services



**Emergency services
The public
Contractors**

....

Assisted living

Sensors in the patient's home



Blood glucose





Oxygen




Blood pressure



Patient's view

Touch to talk and see:  

Results 

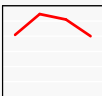
How are you today?


- Fine
- Dizzy
- In pain

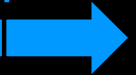
Please call nurse to get new medicines



Next of kin's view

Results and current actions 

(video) call 



Hospital system and processes

Patient information routed onwards to hospital systems as required

Actions or response based on results routed back to patient (as required)

Other interested parties:

- Local health care providers
- Social services
- ...

Common features

- Large variety of smart objects which need to deliver and receive data
- There are a number of independent participants which benefit from access to the object data
- Large number of loosely coupled participants which needs to interact
- Most likely has not all use cases been thought about when the systems were initially designed and deployed
- Building new services on-top of existing infrastructure could yield significant service innovation and benefits

The classical approach to M2M may fail to deliver the full value of the Internet of Things

- Closed and standalone solutions
- High barriers for innovation due to complexity and inefficiency
 - Inefficient - re-invents common functionality
 - Complex – no specialisation of roles
- Limited freedom of choice and reusability for the end-user
- Sharing devices and information is difficult
- **Not the Internet of Things**

M2M needs a layered approach to make it quick and easy to deploy new services



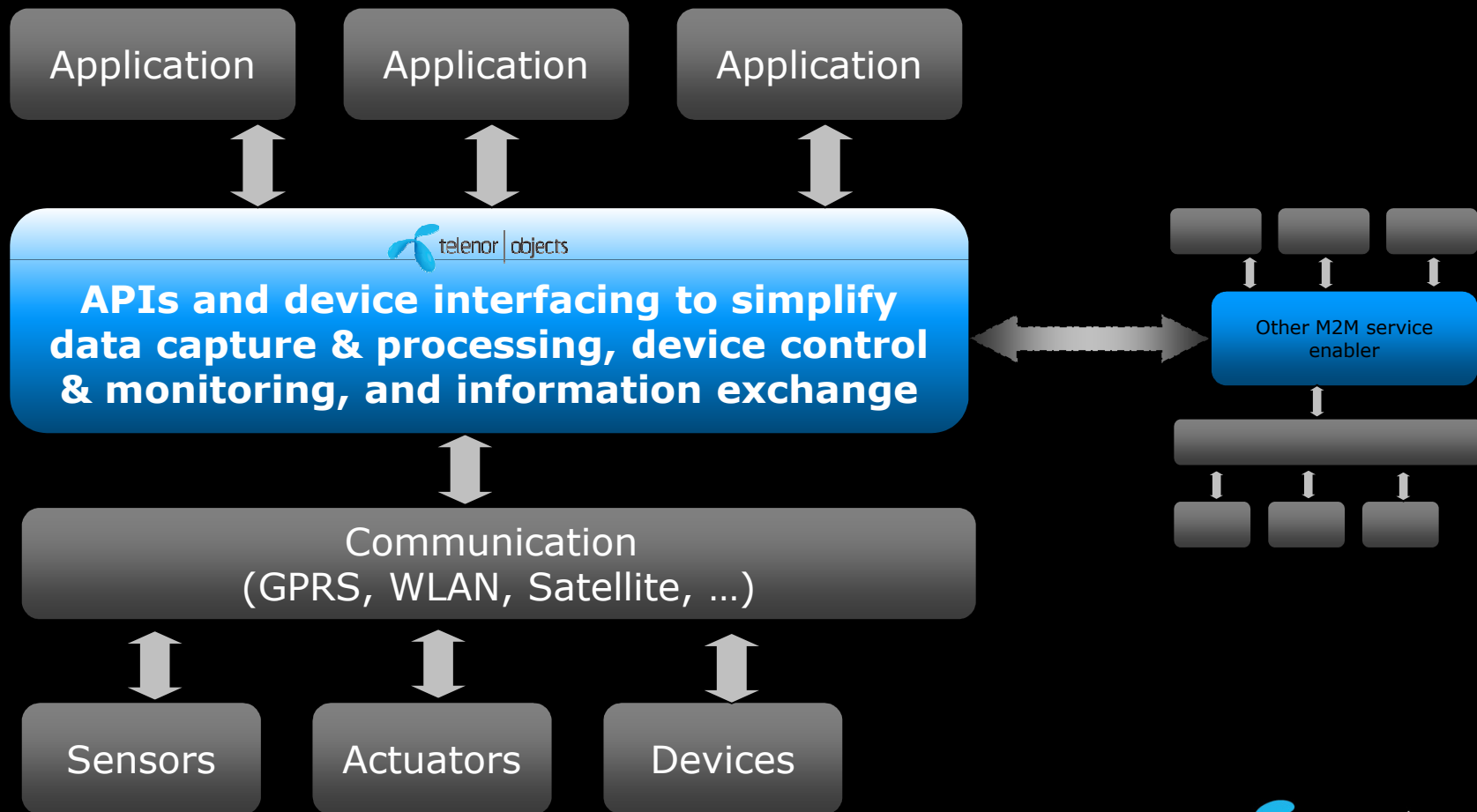
September 2009

M2M: the sleeper awakes

Curiously, this seems to be one of the rare cases where the business model has evolved more quickly than the technology. The connectivity part of M2M solutions is not particularly problematic; [...]

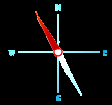
*What M2M really needs is an architecture. **This would define interfaces between different layers, protecting developers at each level from the complexity that pertains at all the other levels.***

Telenor Objects' vision is to allow any application to control and monitor any device, by providing an open horizontal architecture for smart objects



Faster from idea to implementation

Services and functionality provided by Telenor Objects:



Open APIs and device interfacing to establish separation and independence between application and device



Device library, integration tool, and certification

Data capture, data delivery, processing and storage



Infrastructure (device to application) monitoring

Generic and reusable services enablers (send / receive messages, RFID, SMS, email, IM, location, maps, EPCIS, notification etc.)



Interoperability and information exchange with other providers

Simple web interface for device configuration and status



Managed service with service level agreements, service desk and billing

Future proof with an open architecture design philosophy and open source community for key platform elements and functionality

What is unique?

- Open and future proof architecture allows customers to freely choose the most suitable combination of devices and applications
- Open APIs create independence between applications and devices
- Device interfacing tools makes it easy to adapt and connect new devices to the platform
- Distributed platform concept
- Managed service – “platform as a service” concept
- Eco-system and network of partners

What are the customer benefits?

Freedom of choice

Risk reduction

VISION

**Enable any application to
control and monitor any
device**

*Efficient
competitive
tendering*

*Specialization of
roles*

Conclusions

- Smart cities are complex systems – large number of loosely coupled participants interacting – including the public
- Existing services and infrastructure of deployed smart objects can be linked with new services
- Openness and collaboration are essential to encourage innovation and new services
- An horizontal and layered approach to smart services allows for separation between smart objects and application
 - Risk reduction and freedom to choose, Efficient competitive tendering, Innovation, Specialisation of roles
- Privacy and security will be very important issues to address and resolve, but should not be a showstopper to try
- To stay future proof: when tendering for “Smart Services”, include separation of service components as a requirement

Additional information

Telenor's main M2M service providers



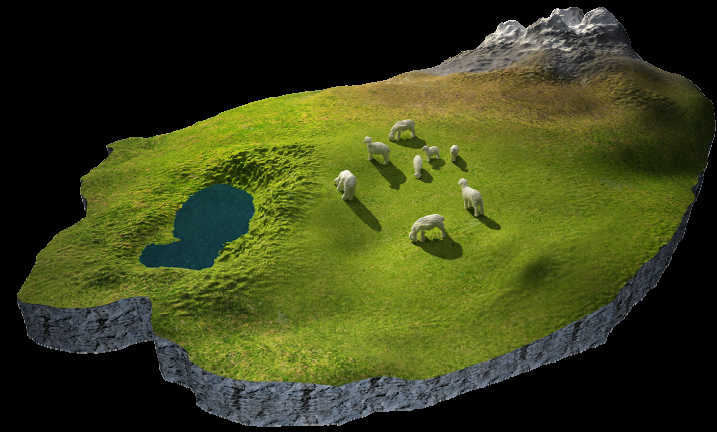
- Supports both vertical & horizontal development
- Reliable global connectivity (GSM/UMTS/LTE)
- Services for large-scale deployment and connectivity operations 24/7
- Customized SIM and fulfillment solution



- Supports horizontal development
- Data capture, processing and sharing
- Secure, reliable message handling and 24/7 solution monitoring
- Quick implementation using device library

Telenor Objects AS

www.telenorobjects.com



Established 1st of July 2009

Fully owned by Telenor ASA

Chairman: Arve Johansen

CEO: Hans Christian Haugli

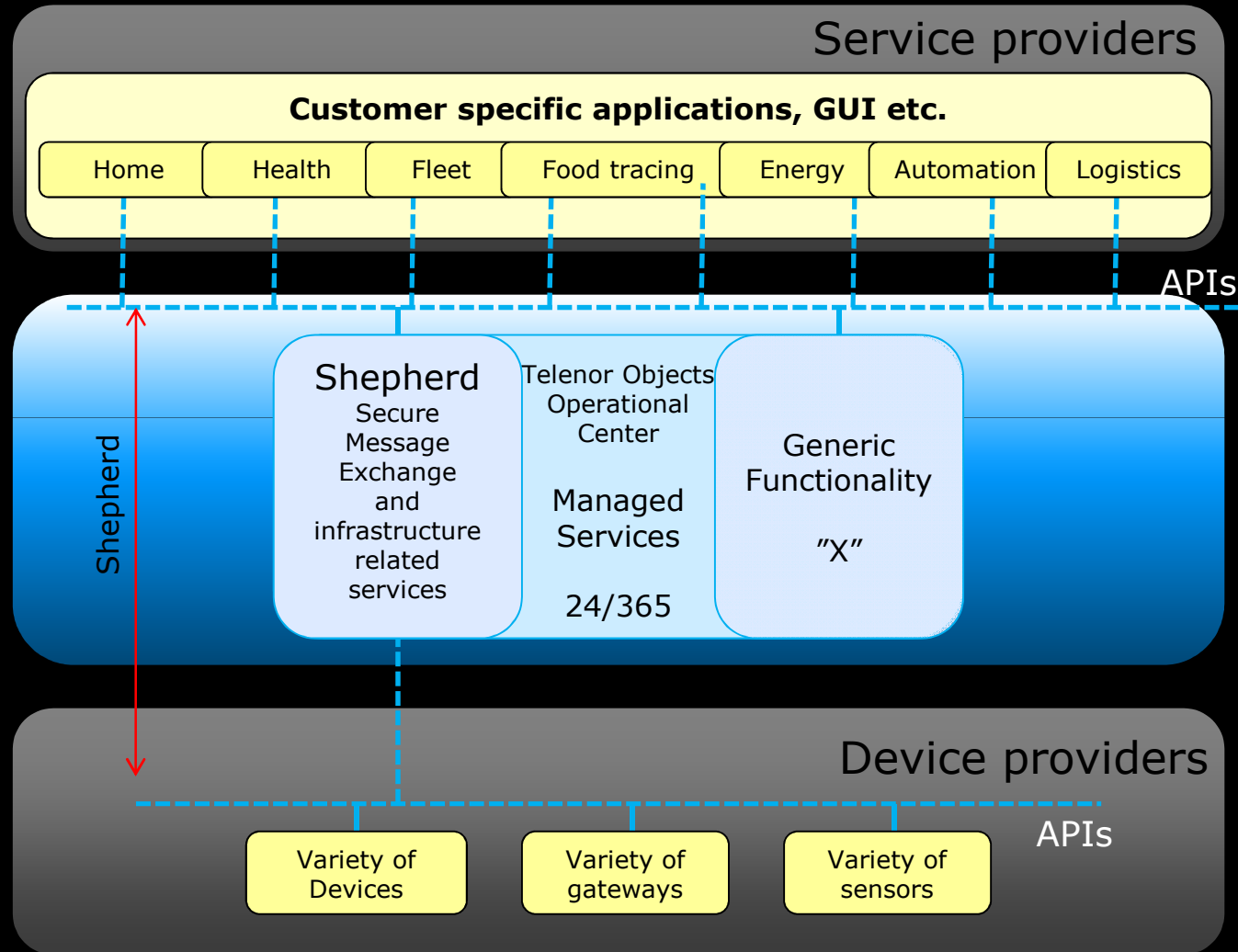
Based on resources from Telenor Research and Innovation and Telenor Iris

Provides a reliable and highly scalable M2M infrastructure

Different solutions already delivered together with partners



Business model – Telenor Objects



There are 5 core elements to Telenor Objects

