

# Making smart meters even smarter with embedded java

jFokus 2013-02-06



SEAMLESS INTEGRATION WITH LEADING METERING TECHNOLOGY.

# Agenda

- Elvaco AB
- What is Metering?
- Go for J2ME
- The J2ME metering platform
- Smart grids
- Round up

# What we do

Elvaco is a manufacturer and independent supplier of communication solutions for collection, processing and presentation of metering data.



# History

1983

- Established

1999

- 100% AMR

2008

- J2ME

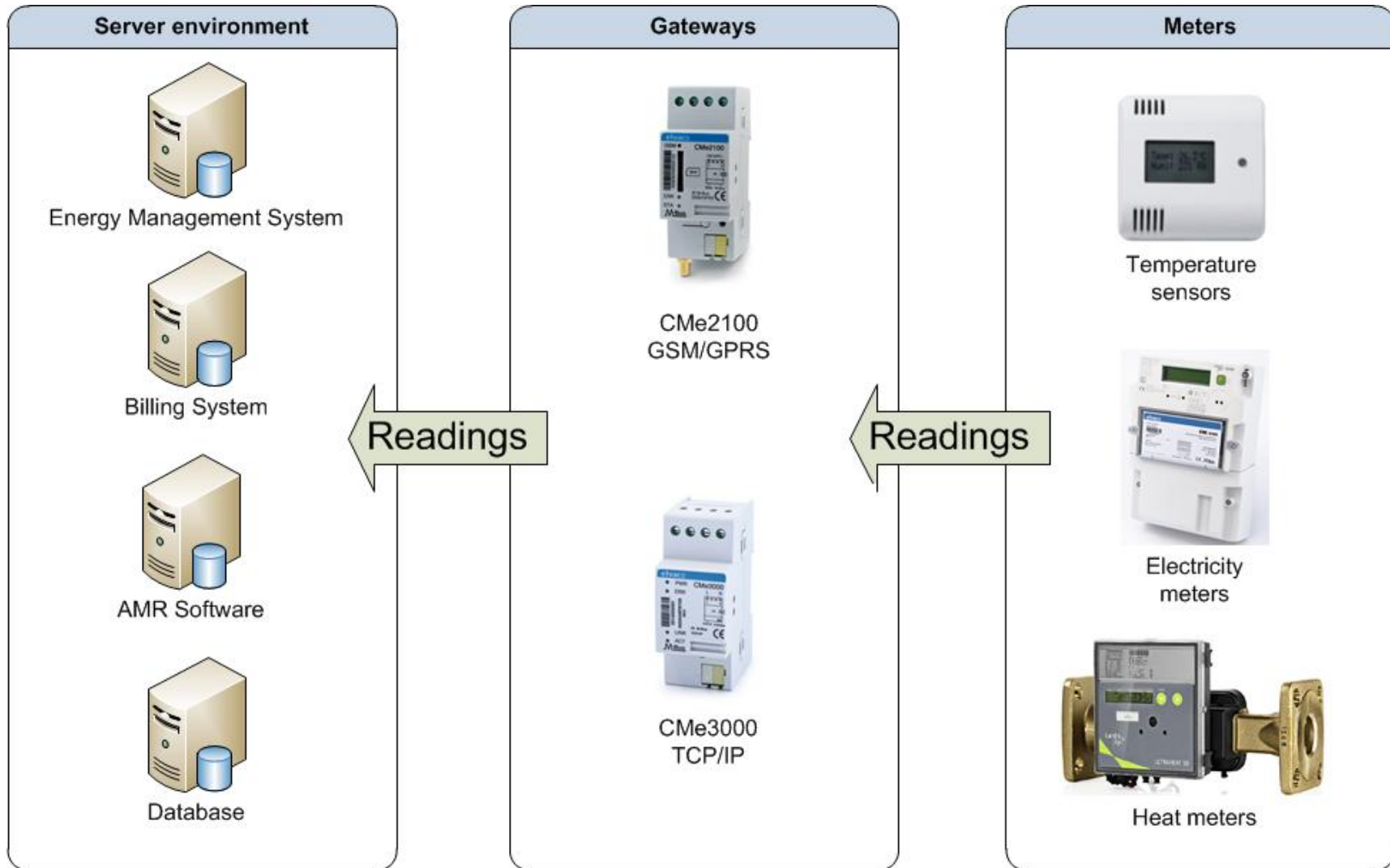
2012

- 50 000  
units / year

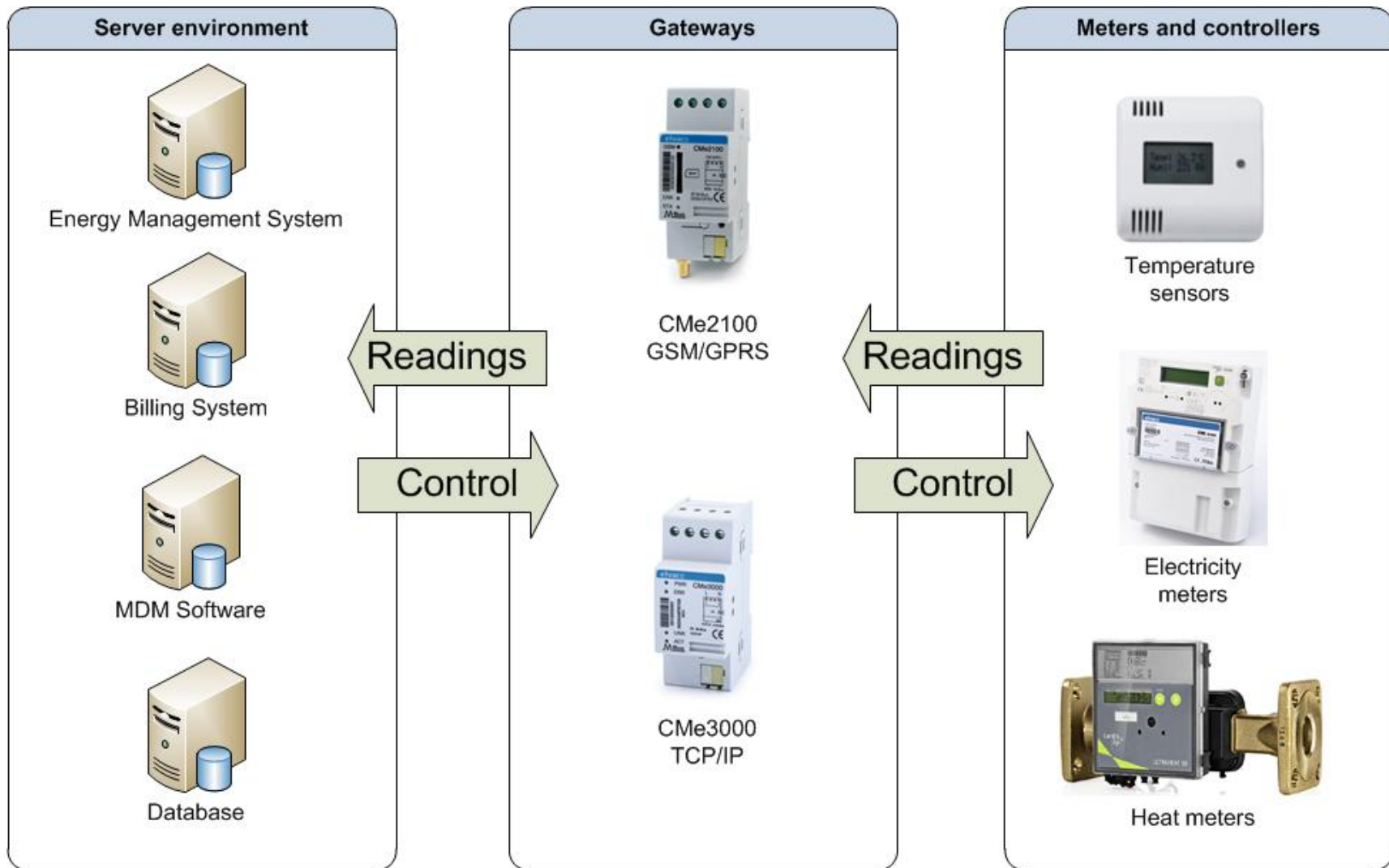


# What is metering?

# AMR (Automatic Meter Reading)



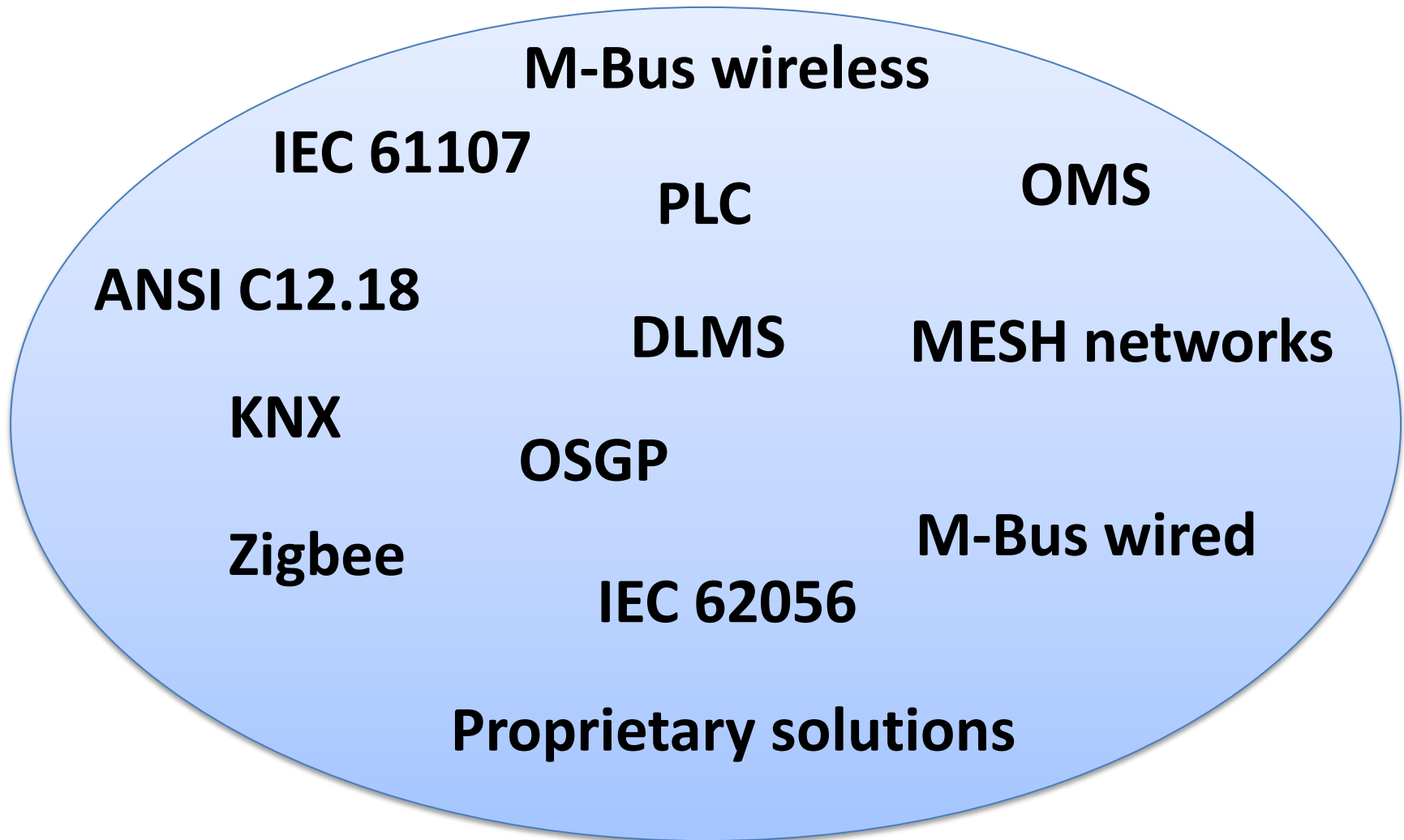
# AMI (Advanced Metering Infrastructure)



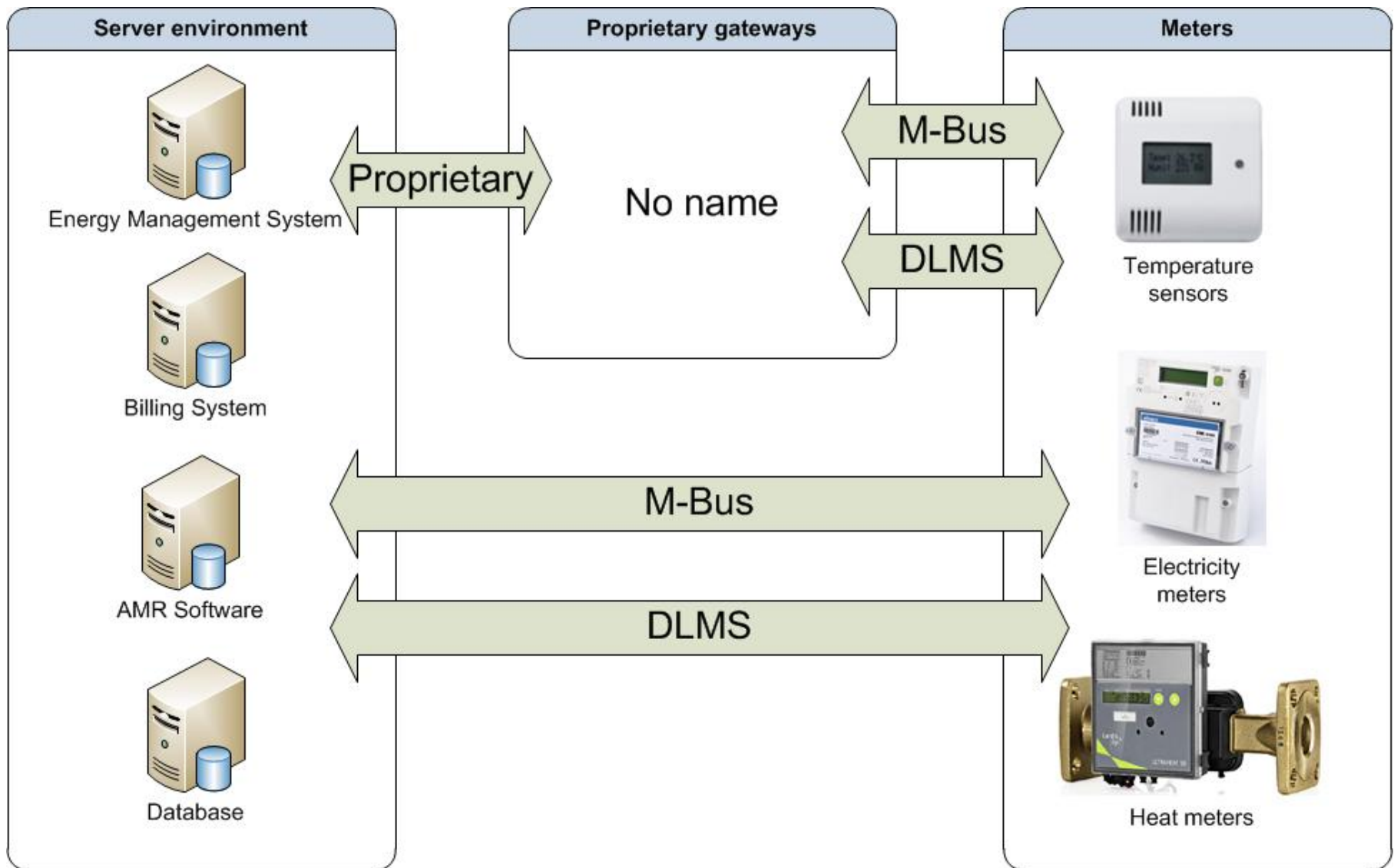
**Sounds good,  
so what's the problem?**



**It's so great with standards,  
everybody should have their own!**



# Existing solutions - Europe



# Existing solutions and issues

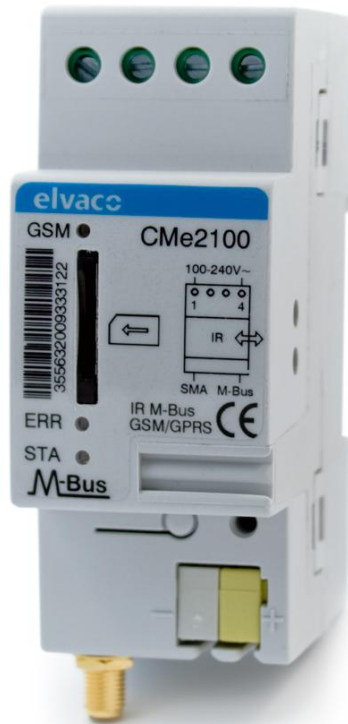
- Proprietary protocols
- Proprietary software
- Not expandable
- Time consuming integration
- Time consuming field work
- Bad logistics

# Goals of the new platform

- ✓ Cost effective
- ✓ Long term stable operation
- ✓ Easy to install
- ✓ Easy to maintain
- ✓ Easy to extend
- ✓ Easy to integrate



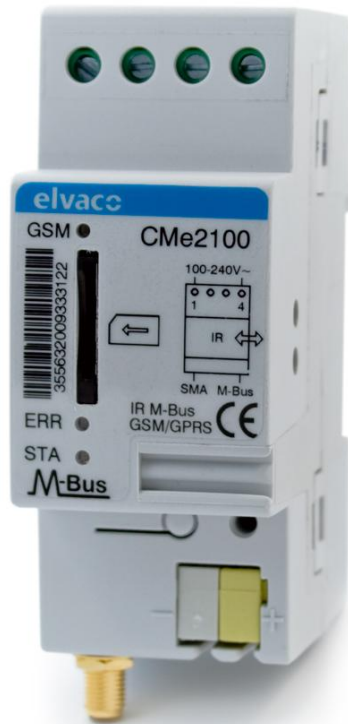
# Platform design 2008 – Generation 1



- Gemalto TC65i/EGS5 GSM/GPRS Module
- 1.7 MByte flash / 400KByte RAM
- Java 2 Micro Edition (J2ME)
- All in one module

CMe2100  
GSM/GPRS

# Platform design 2012 – Generation 2



- Gemalto TC65i-X/EGS5-X GSM/GPRS Module
- 8 MByte flash / 1.7MByte RAM
- Java 2 Micro Edition (J2ME)
- All in one module

CMe2100  
GSM/GPRS

# Key features



- Script engine for dynamic reports
- Scheduling of reports
- Storing of meter data down to 1 minute interval
- Alarm and triggers
- Expandable

# CM Series – J2ME Metering Platform

## CM Series application

### Monitor

### Scheduler

### API

SMS  
CLI  
HTTP/S  
SNMP  
Etc

### Commands

Reports  
Meter readout  
Time sync  
Maintenance  
Etc...

### Meter protocols

DLMS  
M-Bus

### Report Engine

HTTP  
SMS  
SMTP  
FTP  
SNMP Traps

### Database

RMS  
Proprietary

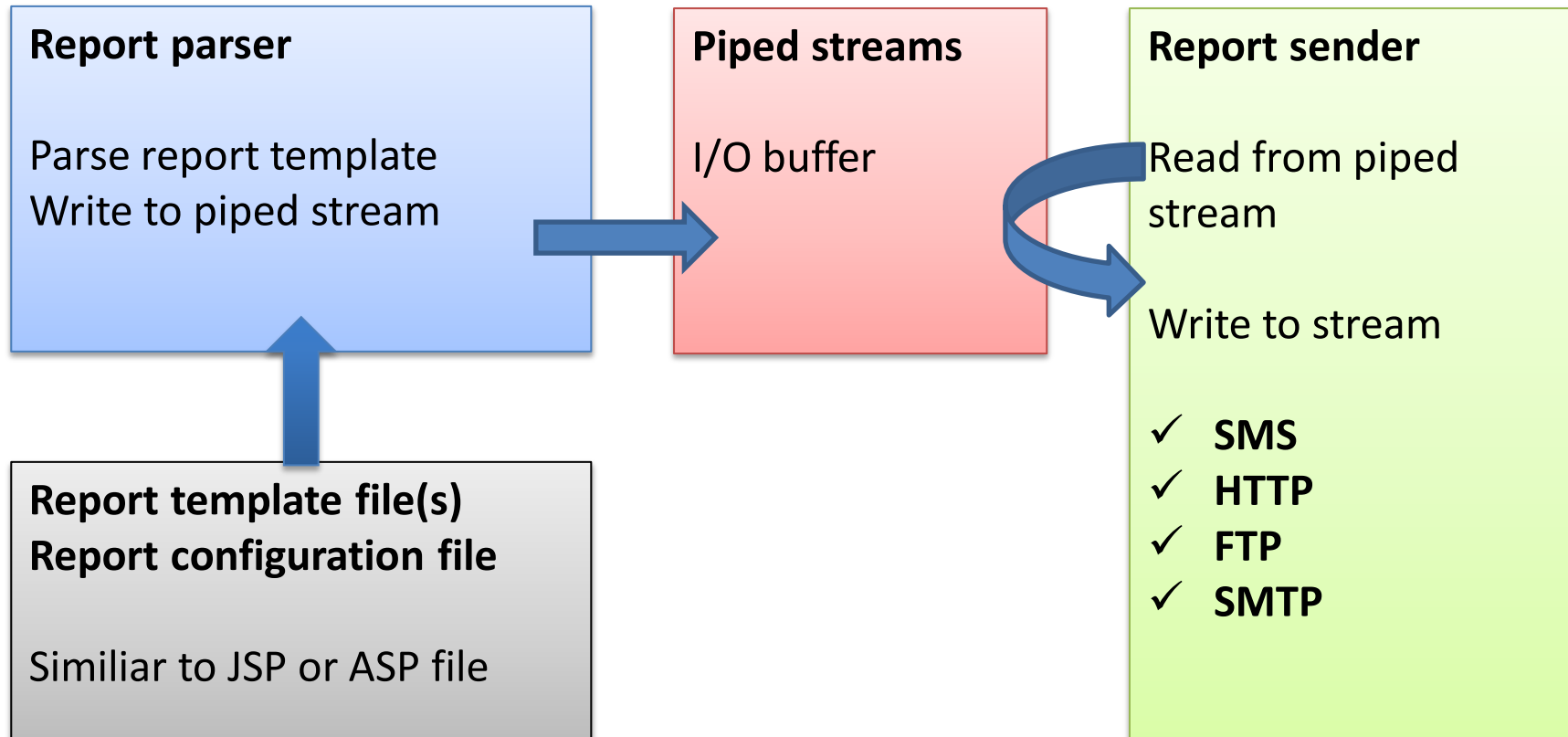
## GSM/GPRS Module with Java

KVM (JRE), TCP/IP stack, File system, Input/Output, RF etc

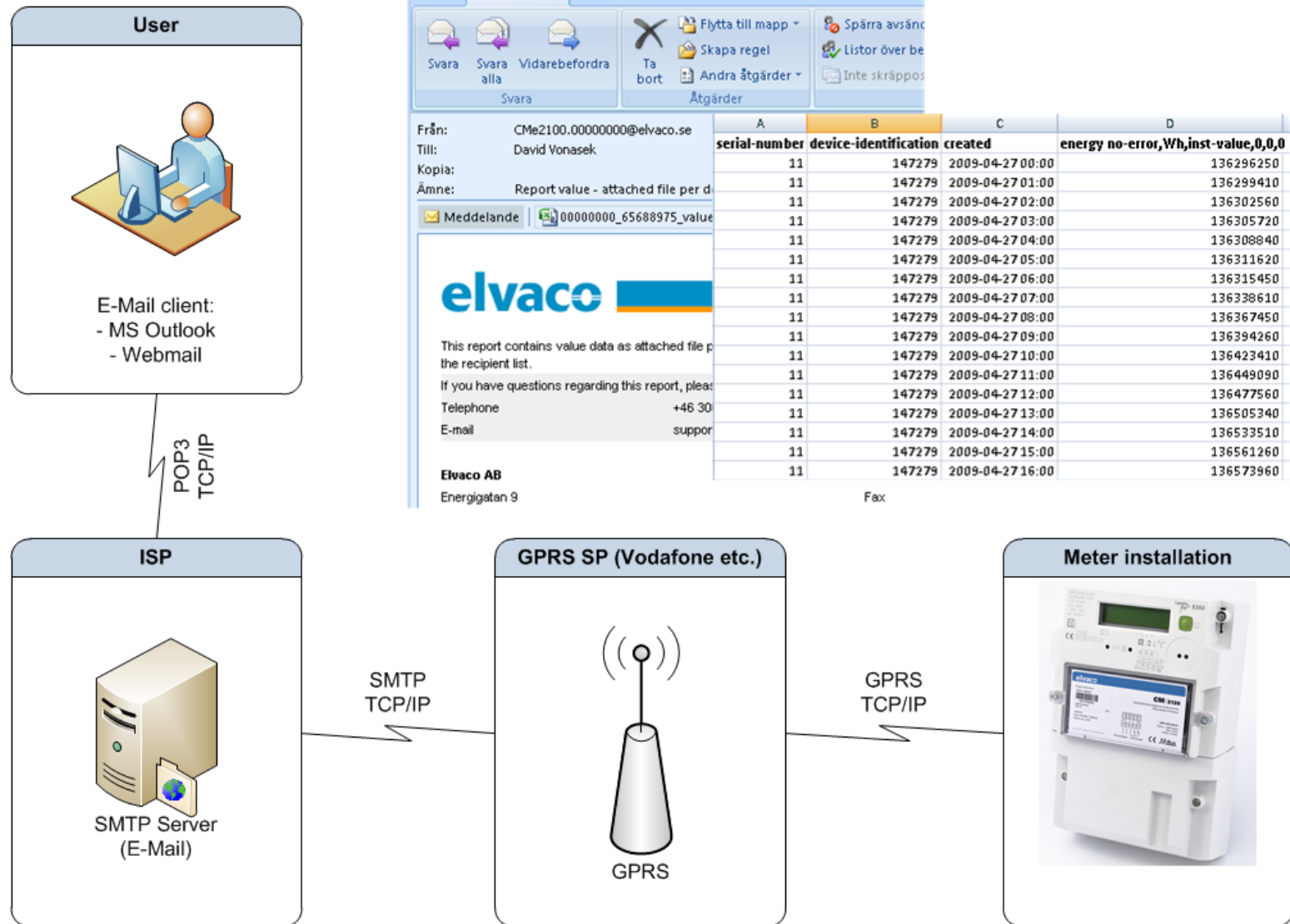


# Dynamic reports

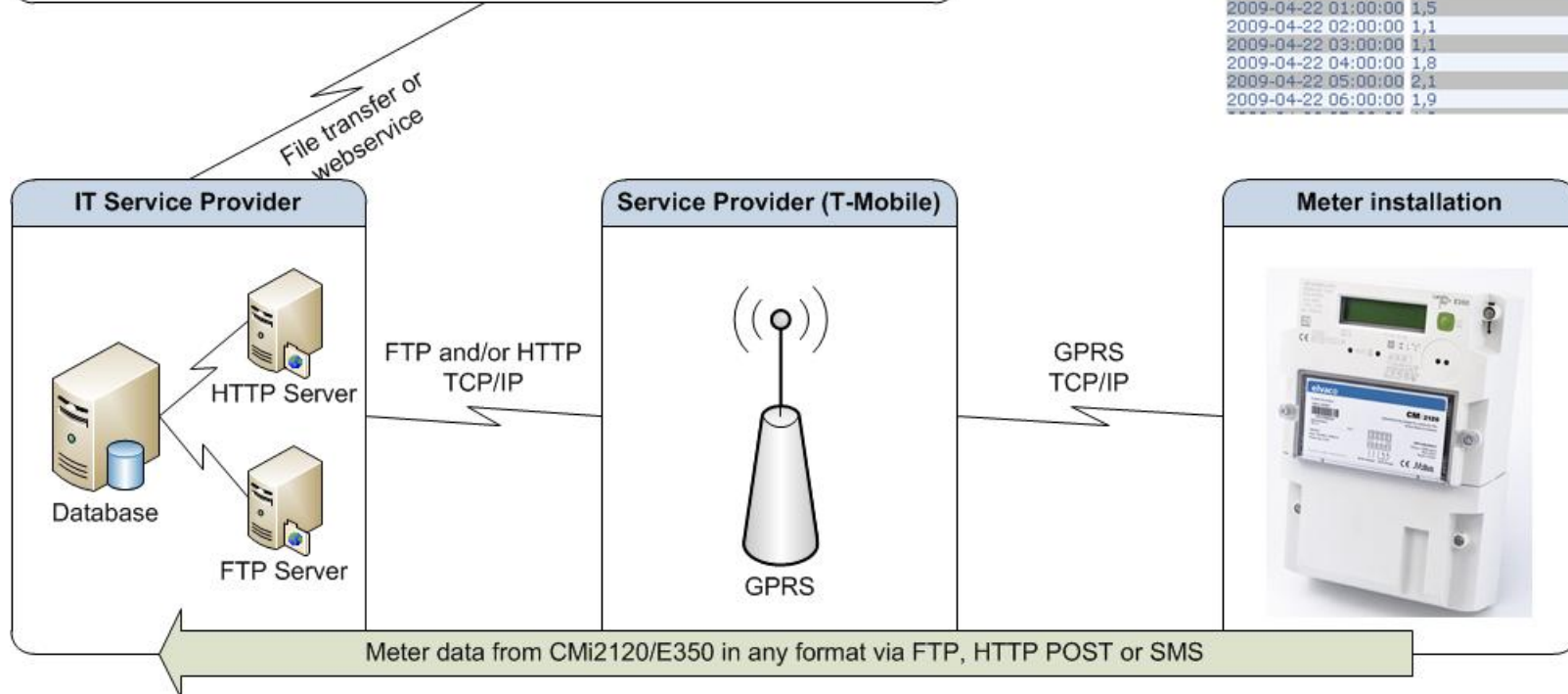
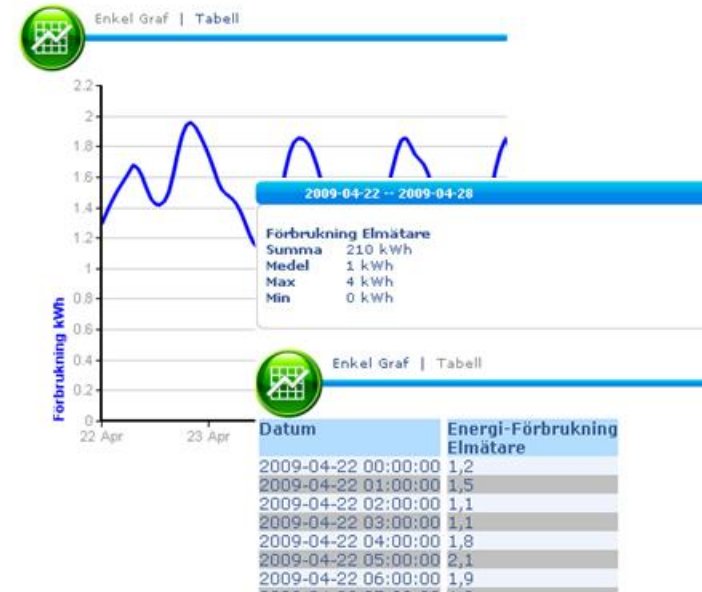
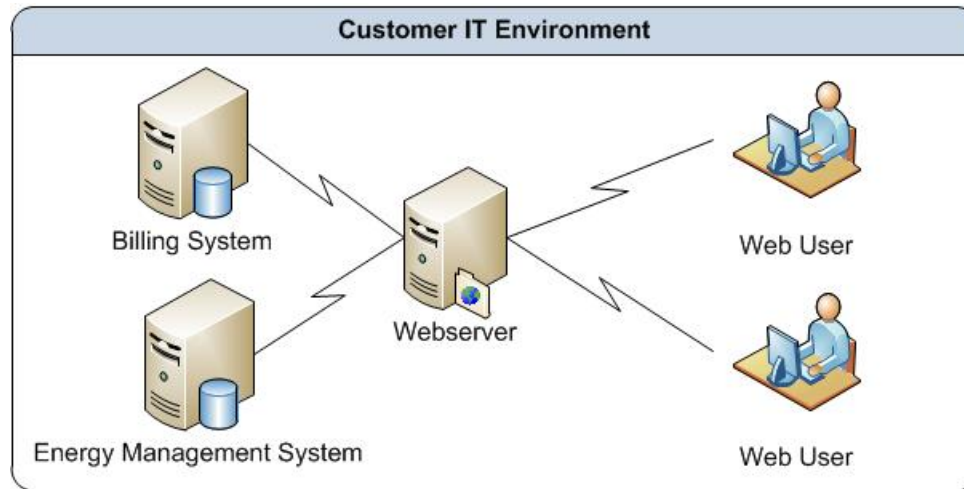
## Report engine



# E-Mail report



# HTTP/FTP report

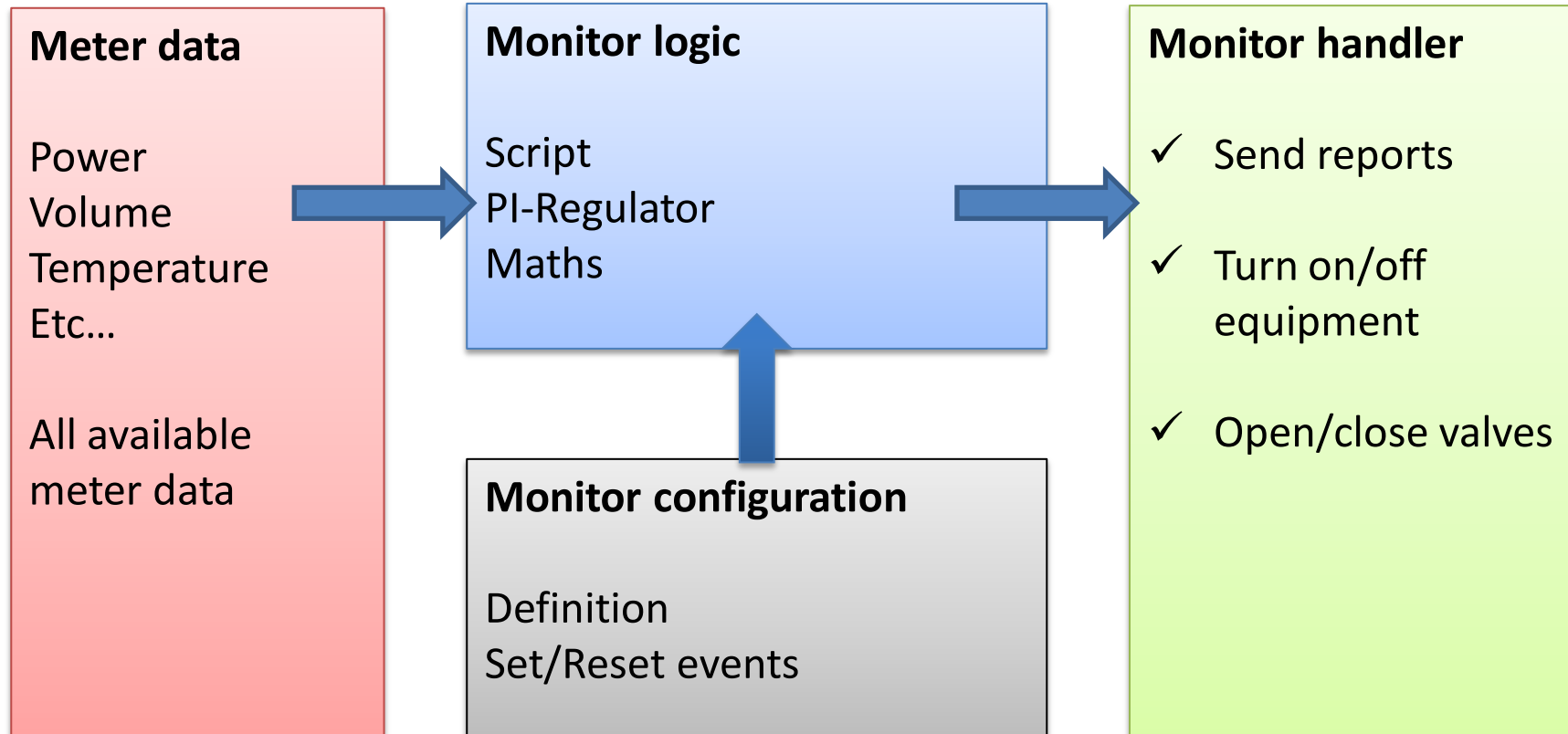


# Report templates

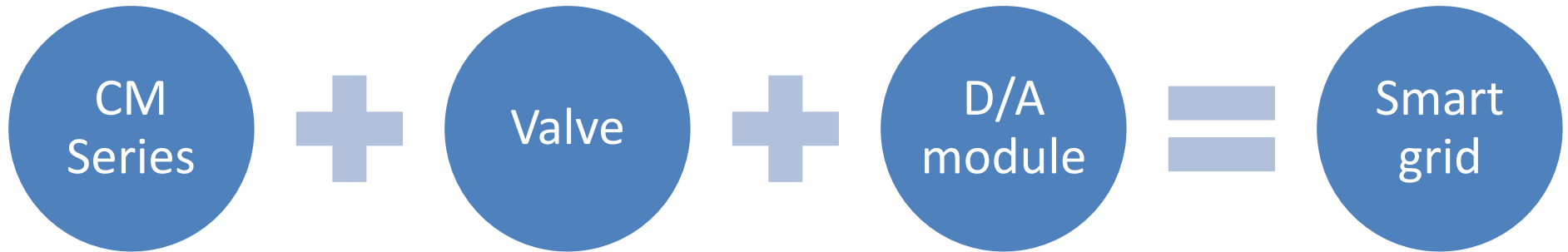
Range	Name
0001-0999	Standard SMS reports
1000-1099	Standard E-Mail system reports
1100-1199	Standard E-Mail value reports
1500-1599	Add-on E-Mail reports
2000-2099	Standard FTP system reports
2100-2199	Standard FTP value reports
2500-2599	Add-on FTP reports
3000-3099	Standard HTTP system reports
3100-3199	Standard HTTP value reports
3500-3599	Add-on HTTP reports
xx0001-xx0999	Customer specific SMS reports
xx1000-xx1099	Customer specific E-Mail system reports
xx1100-xx1199	Customer specific E-Mail value reports
xx2000-xx2099	Customer specific FTP system reports
xx2100-xx2199	Customer specific FTP value reports
xx3000-xx3099	Customer specific HTTP system reports
xx3100-xx3199	Customer specific HTTP value reports

# Monitoring

## Monitor engine



# Smart Grids - Heat



- ✓ Leakage control
- ✓ Set maximum demands
- ✓ Meter maintenance
- ✓ New business models



# Smart Grids - Electricity



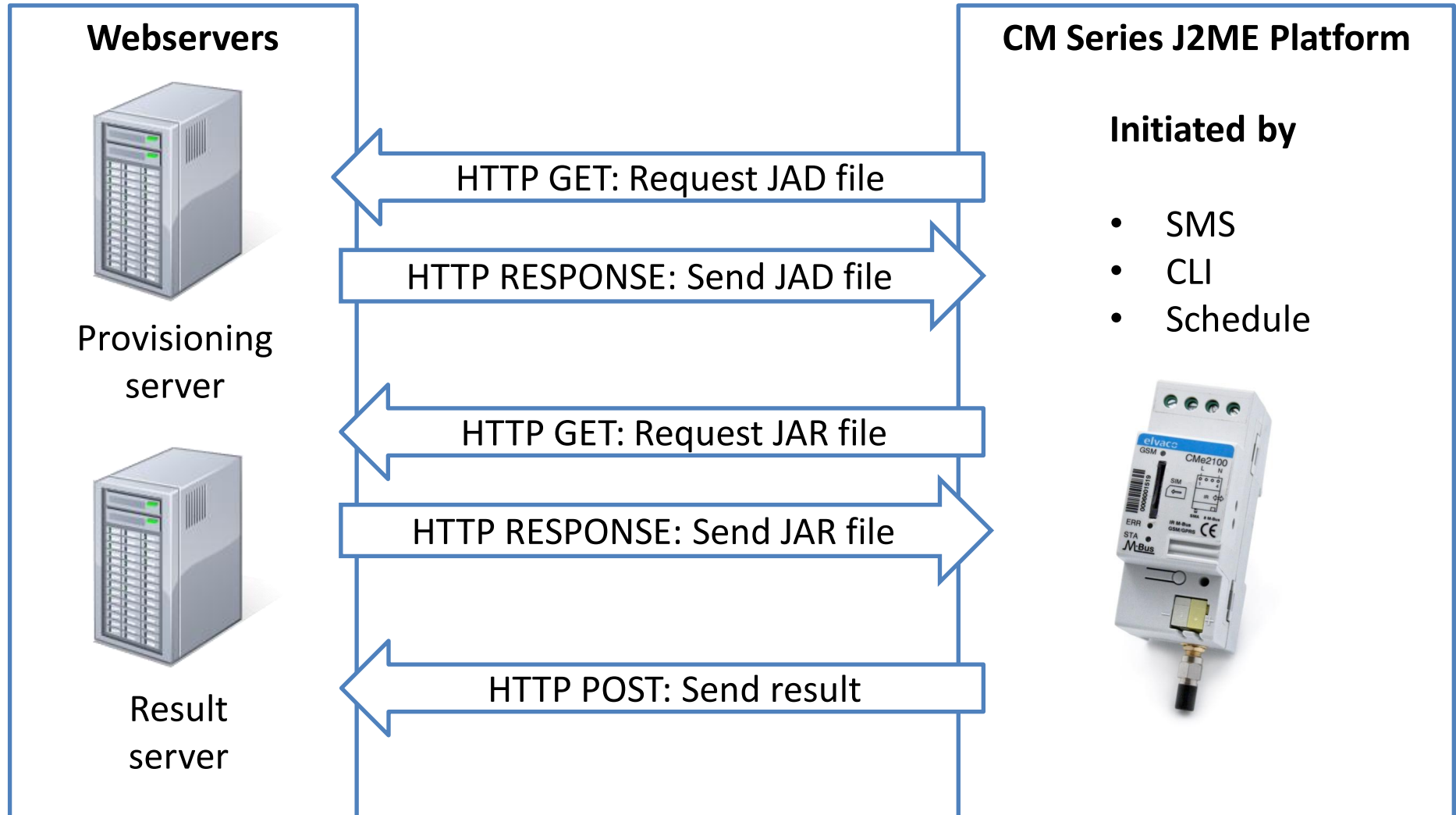
- ✓ Power outages
- ✓ Disconnecter
- ✓ Power tariff
- ✓ Network analyzing



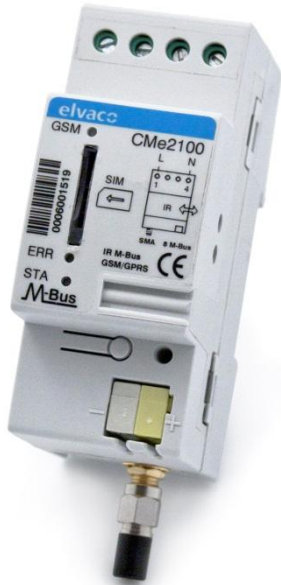
# What about new demands?



# New demands require software updates



# Fast implementation of new hardware



**DIN-rail mounted  
Any M-Bus meter**



**L+G heat meter**



**Itron heat/cold meter**

# Moving to new platform



- ✓ GCF – Generic Connection Framework
- ✓ Isolate hardware dependent code
- ✓ Isolate database and file handling



# Round up

- ✓ Java reduces time to market
- ✓ Java enables platform independency
- ✓ Java community and available resources are invaluable

There is no limitations of development

SEAMLESS INTEGRATION WITH LEADING METERING TECHNOLOGY.

**Thank you!**

**elvaco**