

A white flag with the Vattenfall logo and name is flying on a pole against a blue sky with light clouds.

# Vattenfall Eldistribution, Sweden Project AMR – A part of Vattenfall's Number One Project

VDN-Fachkongress "ZMP 2005"

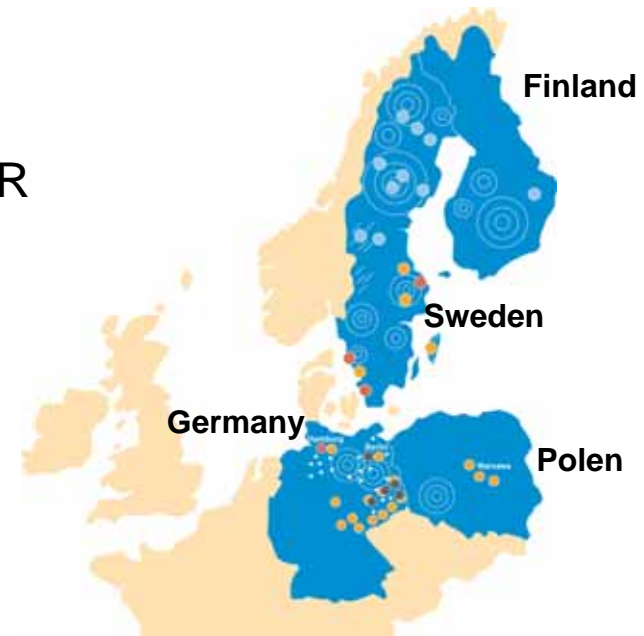
23.-24.05.2005 Nürnberg

Christer Johansson, Programme Manager Deployment  
Vattenfall Eldistribution



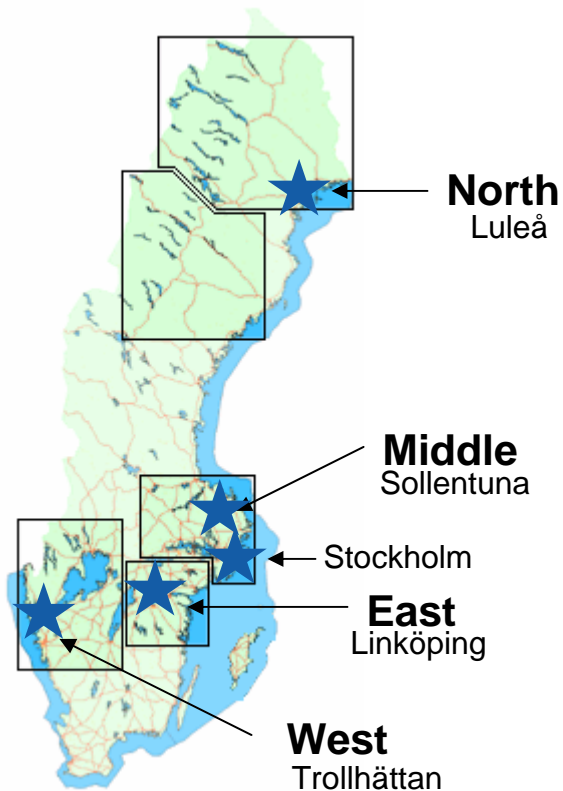
# Vattenfall summary

Net Sales 2004	12 586 MEUR
Electricity generation	167,1 TWh
Electricity sales	186,4 TWh
Heat sales	34,5 TWh
Employees	33 000
No of electricity customers	~ 4,9 million
No of network customers	~ 5,7 million



- Hydro power
- Nuclear power
- Thermal power/other
- Thermal power/lignite
- Network operations
- Transmission operations
- Partly-owned networks

# Eldistribution Sweden – Areas of activity



Net sales	6 785 MSEK
Investments	1 617 MSEK
Number of customers	
- local networks	915 000 customers
- regional networks	260 customers
Transmission, outputs	
- local networks	16 982 GWh
- regional networks	72 561 GWh
Total line length	
- local networks	111 000 km
- regional networks	15 000 km
Employees	900 employees

**Strategy!**

**A** Motivating factors behind the investment in the AMR System

**Procurement!**

**B** An overview of the AMR installation programme

**Roll-out!**

**Project realization!**

**C** Experiences and lessons learned up-to-date

# Section A



**Strategy!**

**Motivating factors behind the investment in the AMR System**

**Procurement!**

**Roll-out!**

**An overview of the AMR installation programme**

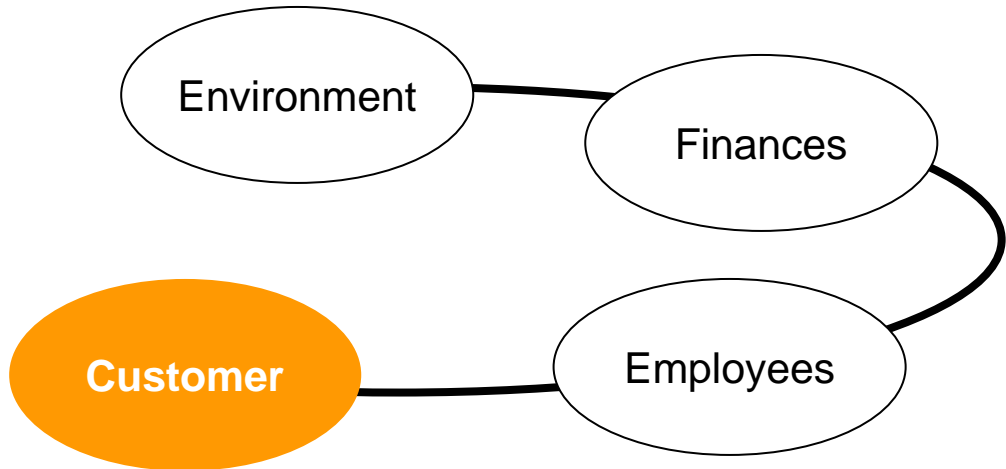
**Project realization!**

**Experiences and lessons learned up-to-date**

# Being No 1!



Being Number **ONE** for:



## Vision



***Vattenfall is number one when the customer considers us as the obvious first hand choice.***

Lars G. Josefsson, President & CEO

## Goal

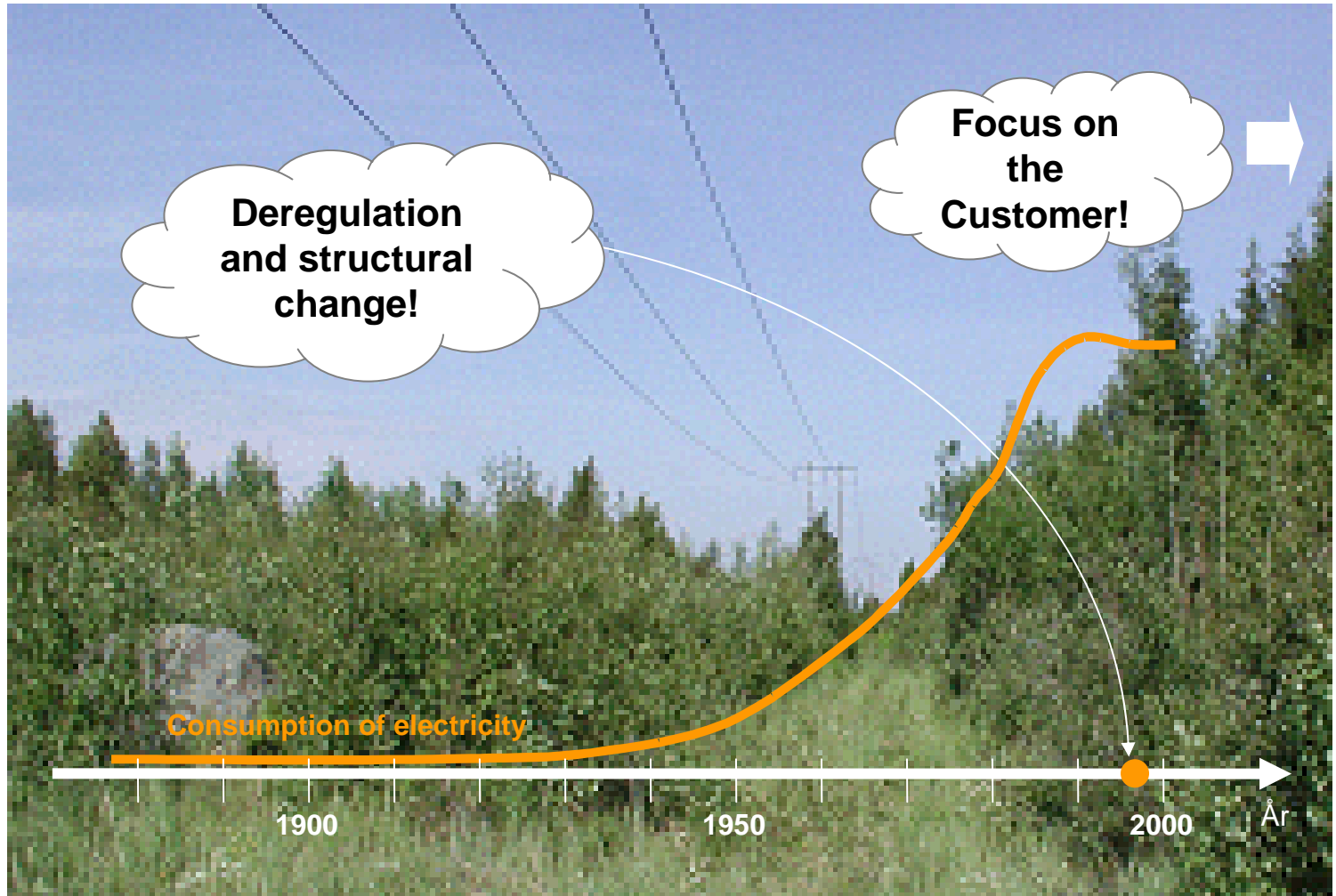


***Highest customer reliance!***

Göran Lundgren, Head of BU Distribution Sweden

<b>1</b> Strategy!	Motivating factors behind the investment in the AMR System
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# A natural development...



1 Strategy	Motivating factors behind the investment in the AMR System
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# ...with increased demands from authorities...



Ministry of Industry,  
Employment and  
Communication



## Government proposition

2002/03:85

## Vissa elmarknadsfrågor

("Some questions regarding the market for electricity")

- **Monthly readings** for all customers at the latest 1. July 2009
- **Hourly readings** for all customers having a subscription of electricity with a power limit 80-200 Amperes at the latest by 1. July 2006

...and towards the focus on the customers –  
we listen to the customer!

**”I would like to be able  
to pay for my real  
electricity consumption  
only.”**

**”I would like to  
understand the  
information in order  
to know what I am  
paying for.”**

**”I would like to  
understand my  
invoice for  
electricity.”**



# Customer benefits and value

**Control**



**Simplicity**



**Possibilities  
of own choice  
and influence**



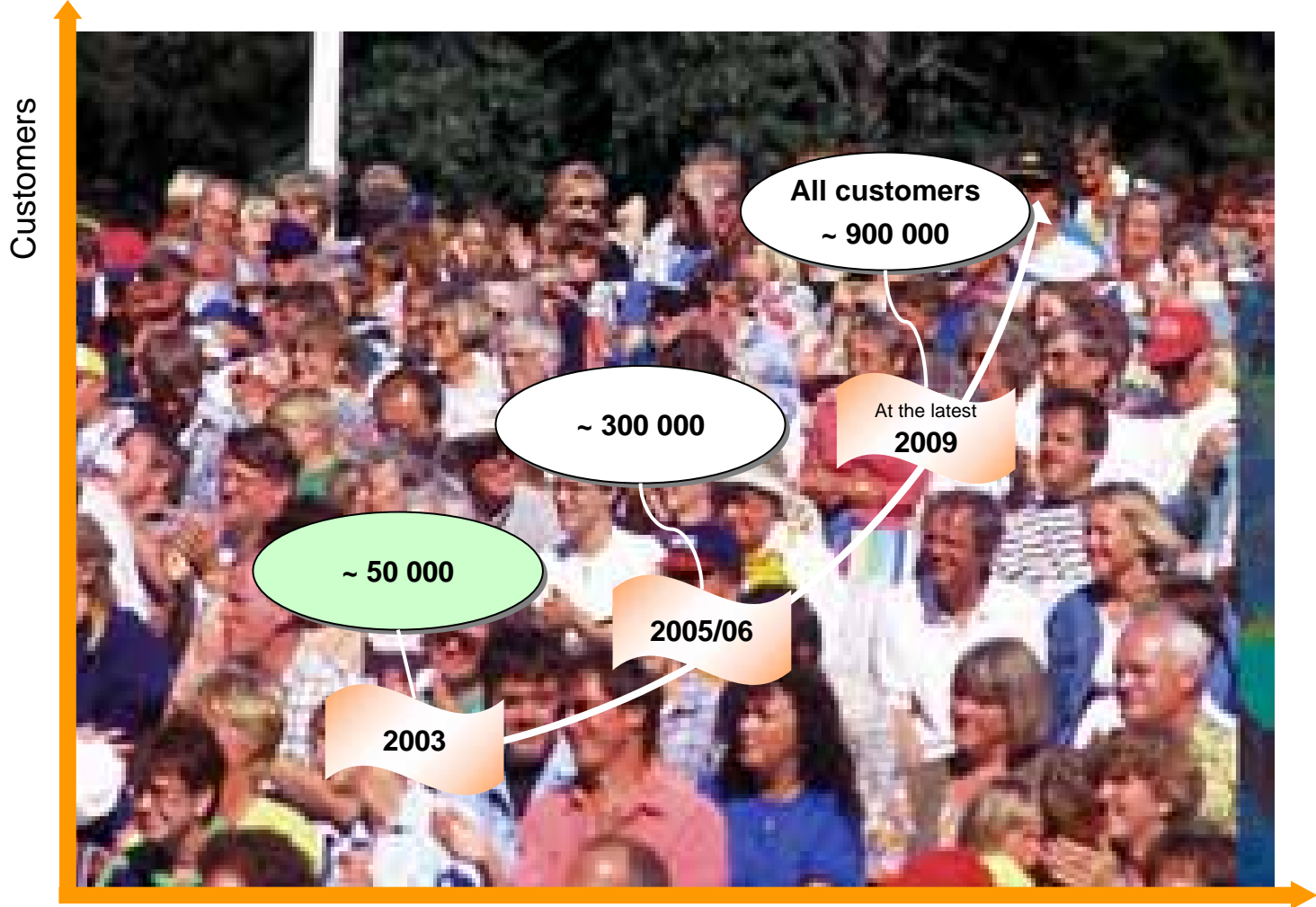
**Better readings in all  
it's forms**



**Clearer dialogue  
with the customer**



# The summarized picture for the project's intentions



# Access to Meter Reads gives strategic opportunities

## Meter Reads – a central component in the value chain



Meter

*Distribution assets and infrastructure*

*Meter read collection*

*Data managing*

*Business processes and benefits*



Being business critical?

# Section B

Strategy!	Motivating factors behind the investment in the AMR System
Procurement! Roll-out!	An overview of the AMR installation programme
Project realization!	Experiences and lessons learned up-to-date

Strategy!

Motivating factors behind the investment in the AMR System



Procurement!  
Roll-out!

An overview of the AMR installation programme

Project realization!

Experiences and lessons learned up-to-date

# AMR Procurement within Vattenfall

## Procurement

### Create a target and a complete picture!

- Contents of the Contract
- Engagement  
(The supplier and the orderer)
- Delivery plan
- Price model
- Suborder, Payments
- Delivery repercussions
- Guarantees
- Service & Maintenance



### Contract Agreement

VATTENFALL 

Vattenfall has signed contracts with two suppliers:



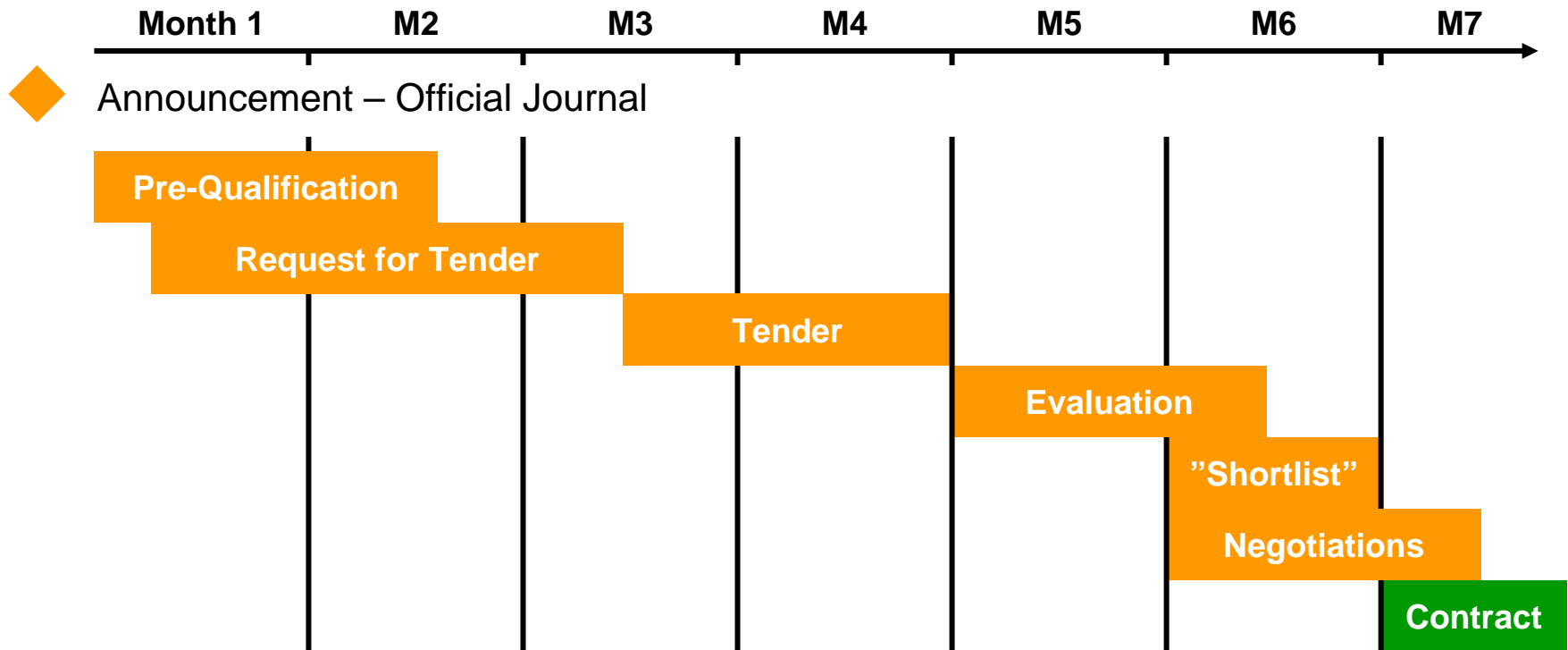
# AMR Procurement Time plan

## Important preparations:

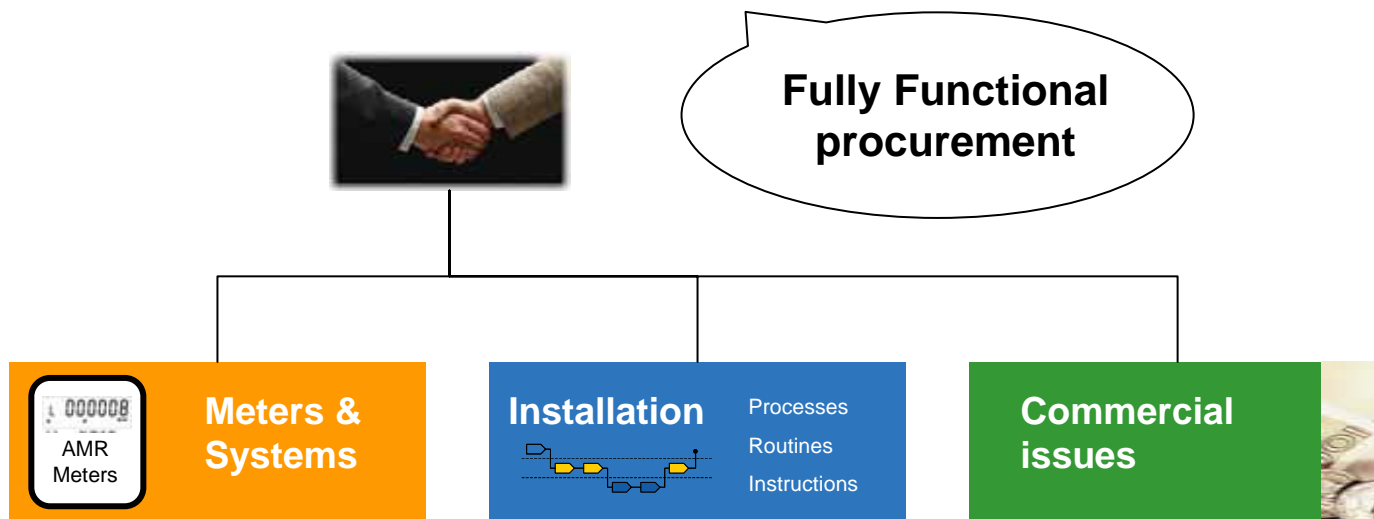
- Set targets and demands (completeness).

## Important activities:

- Announcement and formal opening of replies of Tenders and deals.

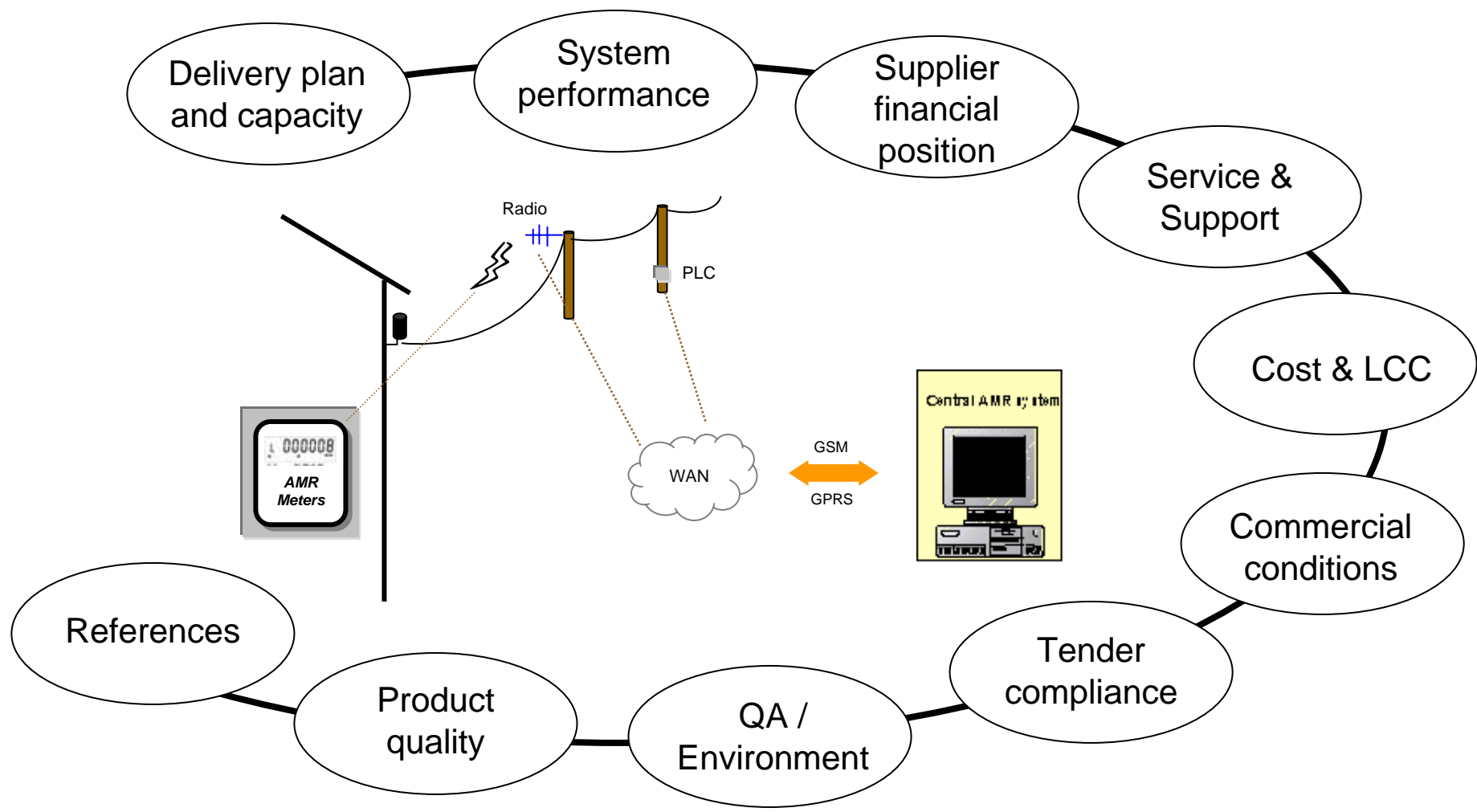


# AMR Procurement organisation

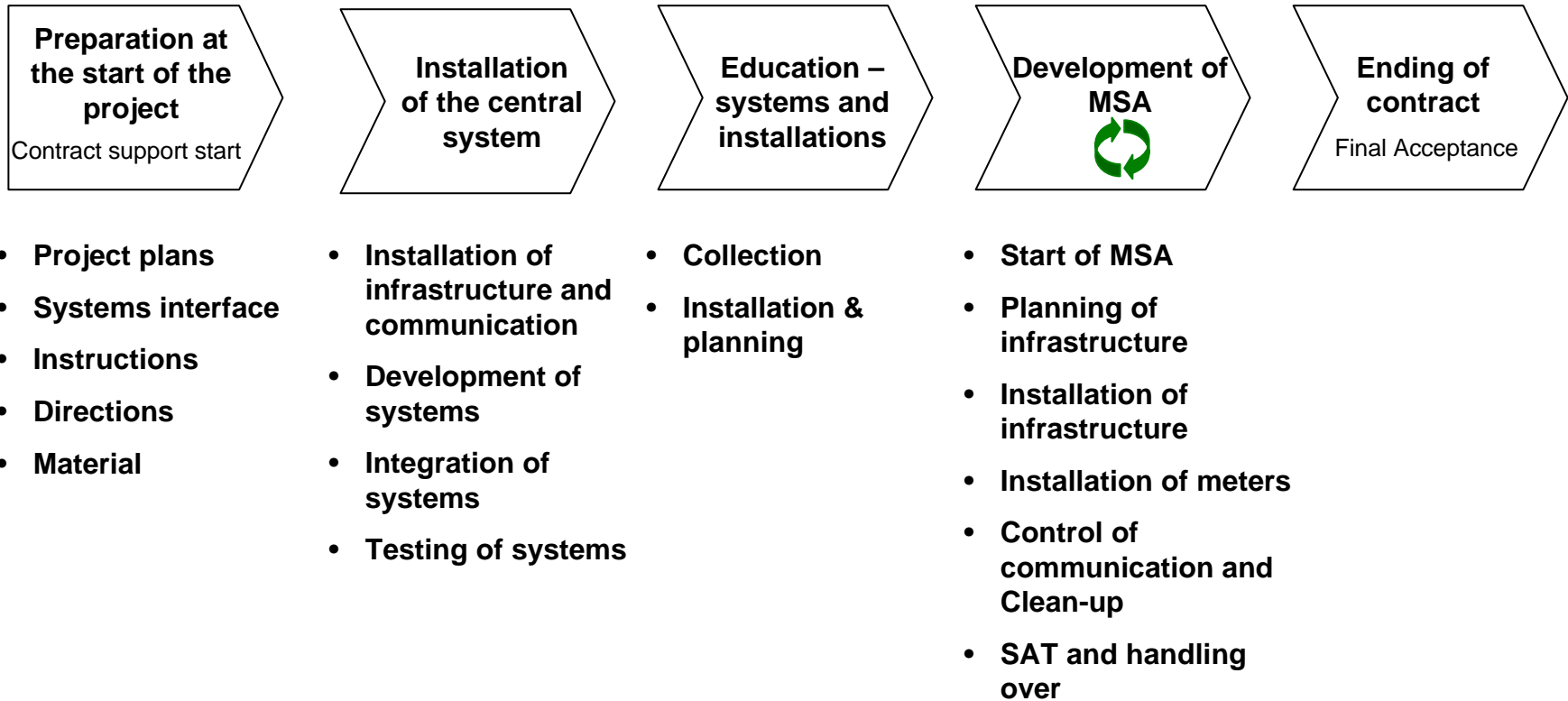


**Vattenfall has to follow the Public Procurement Act (LOU):  
The Act (SFS 1992:1528) on Public Procurement**

# Evaluation criteria of Tenders – both product and services



# AMR Installation process



# Section C

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Project realization!	Experiences and lessons learned up-to-date

Strategy!

Motivating factors behind the investment in the AMR System

Procurement!  
Roll-out!

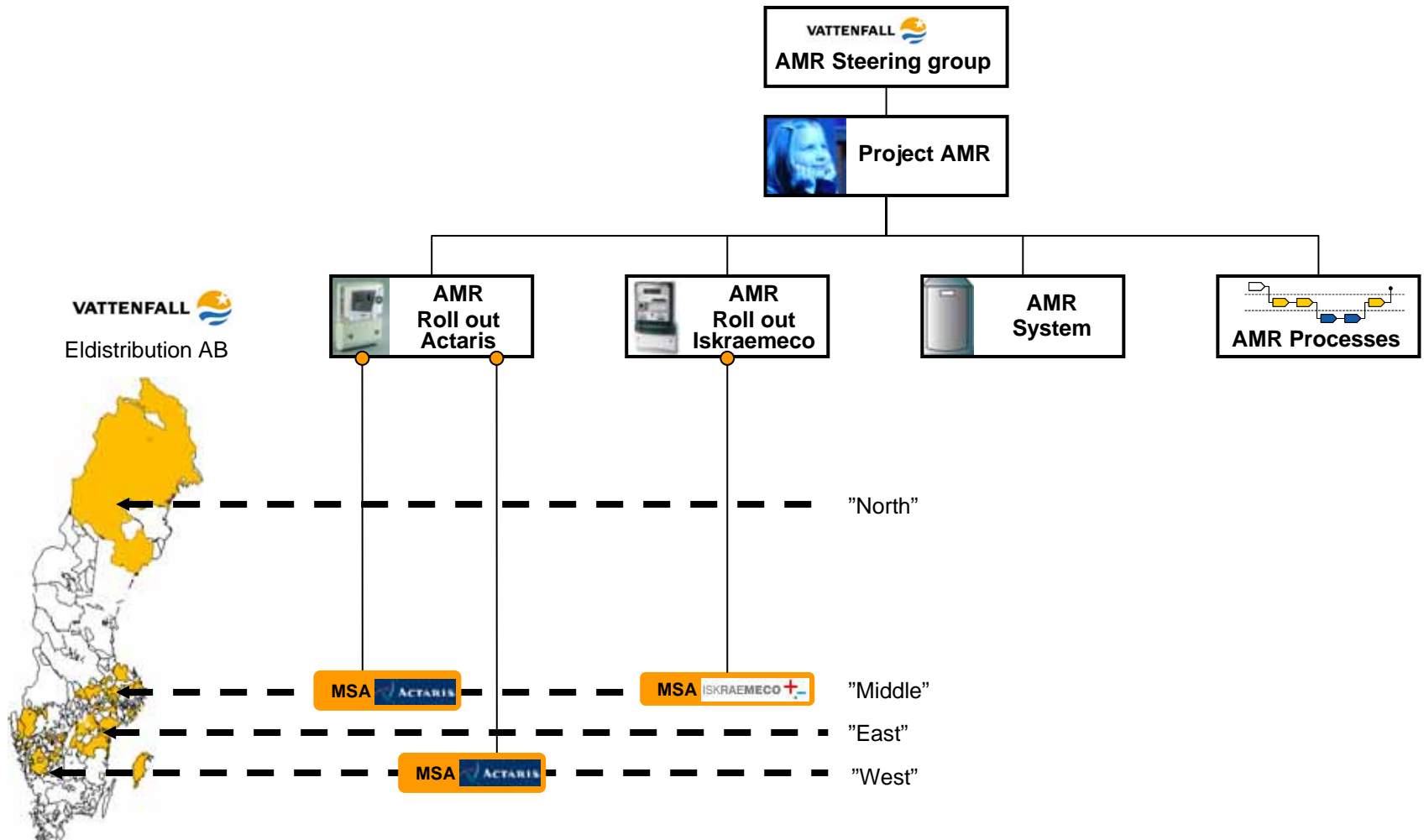
An overview of the AMR installation programme

Project realization!

Experiences and lessons learned up-to-date

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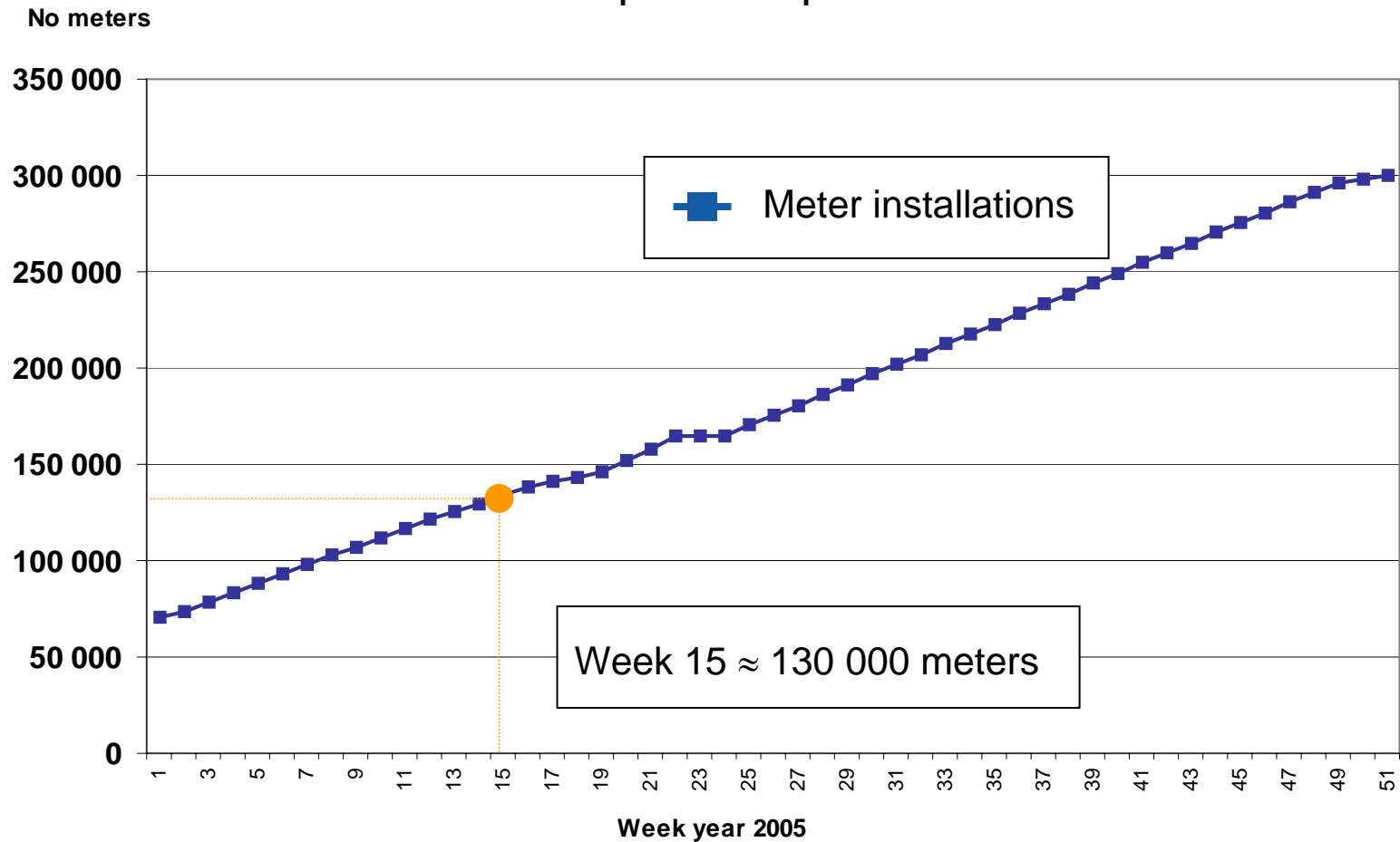
# AMR project organisation



# AMR production speed – Customers $\leq 63$ Amp

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## Forecast production speed



# Experiences and lessons learned – Procurement

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- The purchase of functions decreases the risks
- Vet "soft factors"
  - The suppliers project- and service organisation
  - The suppliers capacity to deliver
- Be precise with:
  - Distinct contract towards the supplier
  - Structured change management, establishment of e.g. a "Change control board"
- Two suppliers to secure deliveries

# Experiences and lessons learned – Roll-out

- Delivery handling with handling of logistics
  - Established logistical routines for supplies
  - Established routines for installations
- Project planning and control of "Roll-Out"
- Established customer contacts
- Education of installers
- Inspections and follow-ups
- Quality control of the implementation scheme – "there are many interfaces and take-overs"

# Experiences and lessons learned – Planning

- Distinct project methodology / Project handbook
- Distinct target and mastertimeplan with defined limitations
- Project organisation
  - Responsibility and roles
  - Structure
  - Staffing
- Project members are involved in the planning
- Structure for change management
  - Changed conditions and new demands

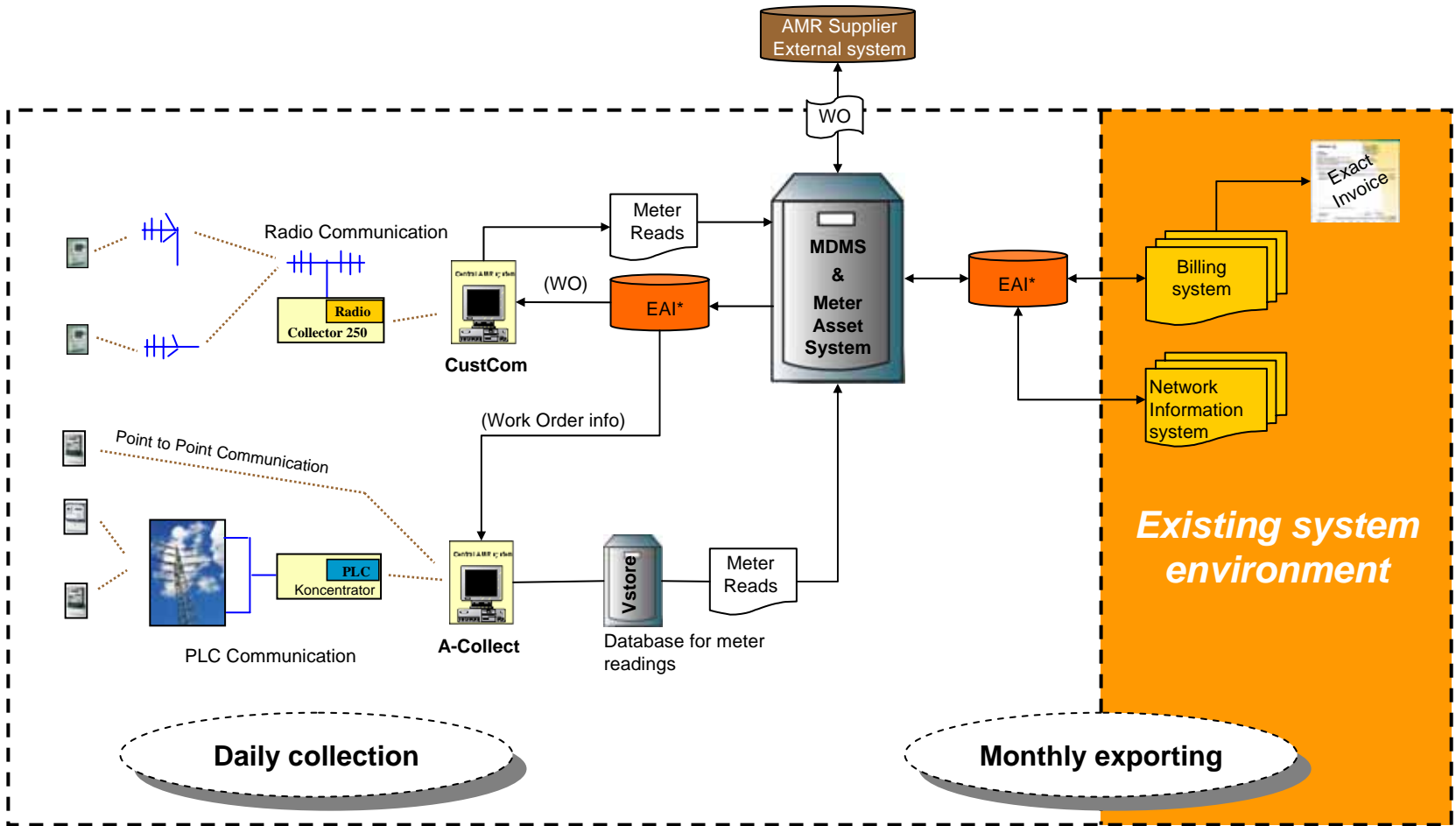
# Experiences and lessons learned – Processes

- Establish an early co-operation by the “line” in the project
- Common planning
- Clarify responsibility and action
- Documentation
- Communication and establishment of a change management plan, signed off by all parties
- Process implementation and follow ups
- With several parallel project there is a risk for lack of resources with key-persons

# Experiences and lessons learned – Systems

- Proven solutions, complete verified tests and analysis
- Defined project and action plans in system solutions
- Limited number of suppliers
- Test of the complete “line”
- Good organisation
  - Structured change management
- Deficiencies in base data require extra efforts
- Implementation of a follow up system for quality control

# AMR system integration with existing system environment

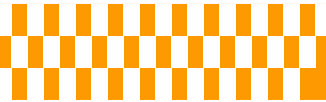


\* EAI – Enterprise Application Integration

# Comparison

## Operational comparison between Radio and PLC

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### Radio Communication



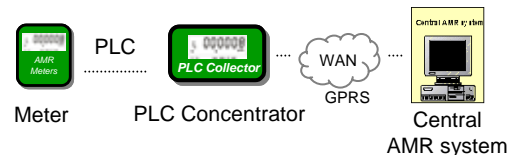
### Installation and O & M

### Communication

- Placement of equipment up high to secure radio connection
- May require installation of a external antenna
- Requires 2 people to undertake service

- Radio based communication on the free band, frequency 433MHz
- After installation, the meters are logging on to the Collector by themselves and reports to the Central AMR system
- The Central AMR system initiate the meter read collection by dialling up the Collector
- GSM communication between collector and the central system
- The system collects all meter reads stored in the meter
- Weather sensitive – better radio communication when cloudy

### PLC Communication



- Placement of equipment low
- No need for an installation of an extra antenna
- Requires only 1 person to undertake service actions

- PLC based communication on the dedicated A-band for power line communication
- After installation, the set-up between the Concentrator database and the Central AMR system, is initiated by the AMR system. The delivery point must have been created in the Central AMR system
- The Central AMR system initiate the meter read collection by using the network IP-addresses
- GPRS communication between collector and the central system
- The system only collects meter reads stored in the meter for the previous day. Missing data needs separate handling.
- System influence from power line interference, eg. engines and pumps