

Smart Metering: E.ON faces roll-out in 8 different European countries – recent experiences from Spain

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Markus Kaune

- Vice President
- Regional Coordination – Infrastructure & Support
- E.ON SE, Düsseldorf



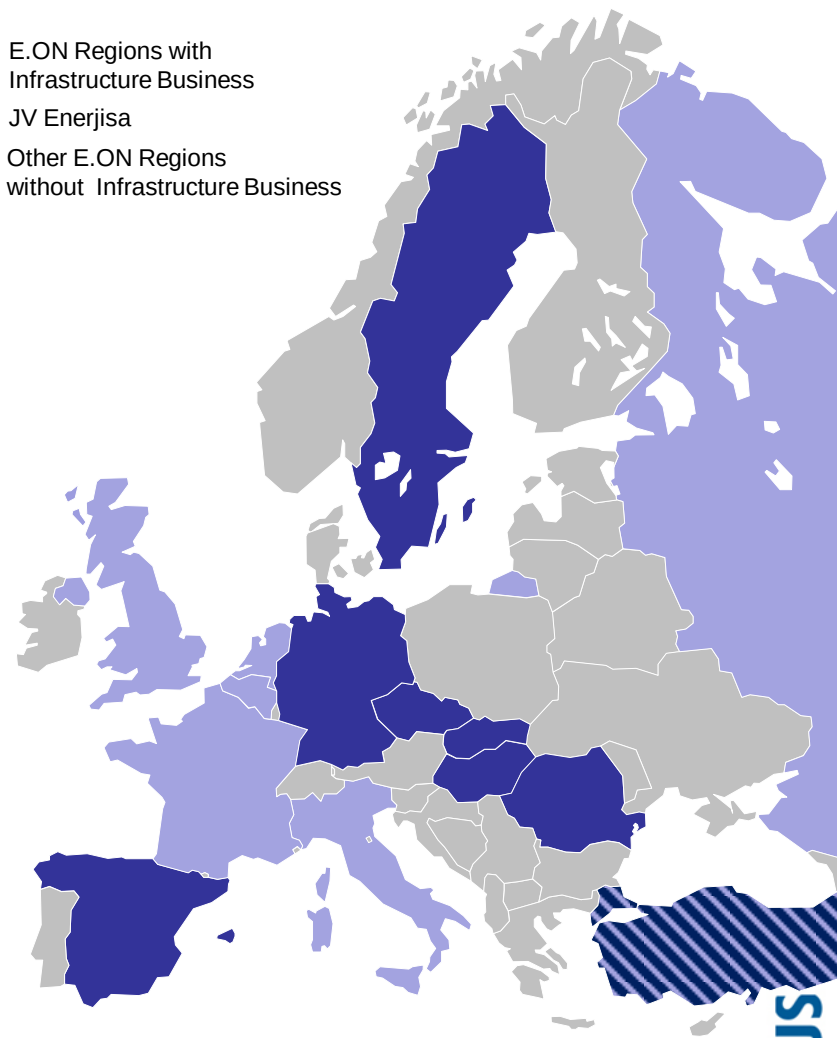
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1. Distribution Business – Overview
 2. Smart Metering within E.ON Group
 3. E.ON's Smart Meter Roll-out in Spain
 4. Final Conclusion

E.ON's Infrastructure Business

	Grid length [1,000 km]		Grid customers [millions]		Distributed volume [TWh]	
	Power	Gas	Power	Gas	Power	Gas
	349	55	6.0	0.8	164	98
	134	2	1.0	0.0	38.2	6.9
	32	--	0.7	--	6.4	--
	83	18	2.5	0.6	15.3	13.4
	63	9	1.5	0.5	12.5	13.5
	37	--	1.1	--	8.6	--
	54	20	1.4	1.6	4.6	26.5
e-on	752	104	14.2	3.5	250	158

Figures 2012

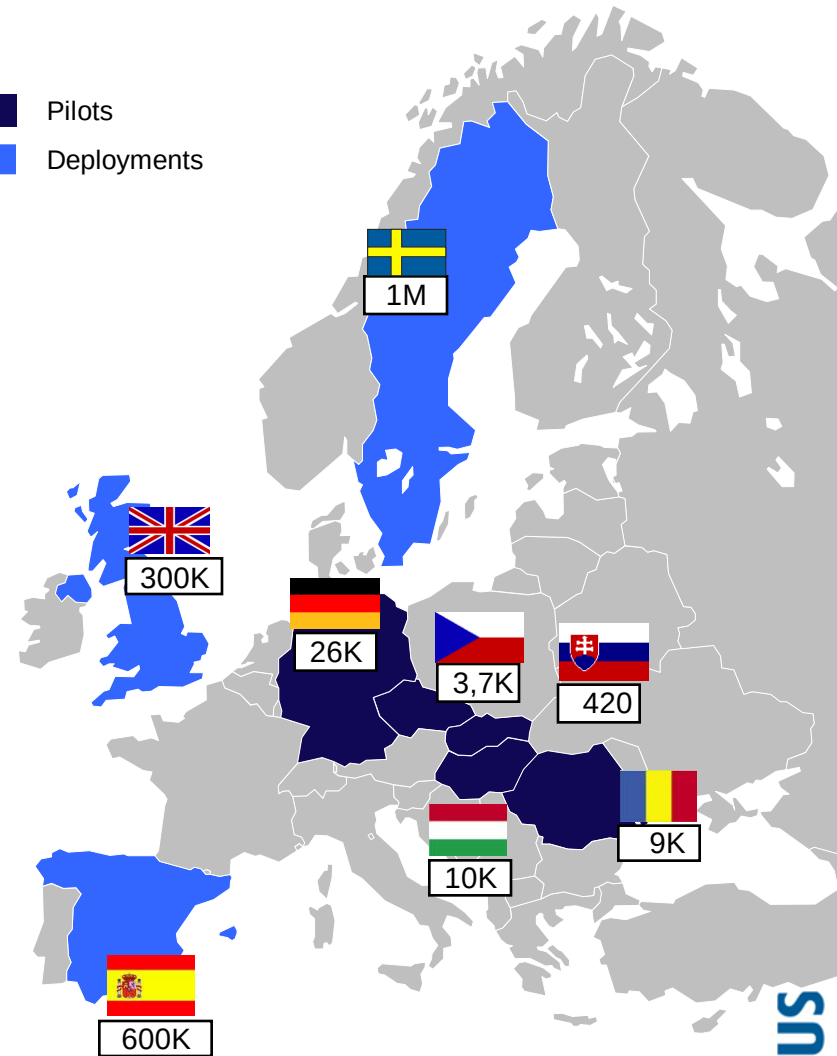
-  E.ON Regions with Infrastructure Business
-  JV Enerjisa
-  Other E.ON Regions without Infrastructure Business



E.ON Smart Meter – 8 countries across Europe

Regional Unit	Number of SMT [mill.]	Roll-out Period
	1.0	2004-09
	0.7	2010-14
	8.3	2012-21
	0.2 *	2014-24
	1.4 *	2014-22
	1.2 *	2015-24
	7.6 *	2016-21
	1.5 *	2023-29
	21.9	

 Pilots
 Deployments



Smart metering – New value opportunities for different stakeholders ...

Opportunities for ...

... suppliers and energy service providers

- Smart metering enables new propositions, e.g.
 - Tailored energy products & tariffs
 - Energy management products
 - Distributed generation



... distribution system operators

- Smart Grid - Examples:
 - Automated fault detection and restoration
 - Local grid balancing



... for customers

- Examples:
 - Usage and cost transparency through accurate billing
 - Savings through more conscious consumption decisions



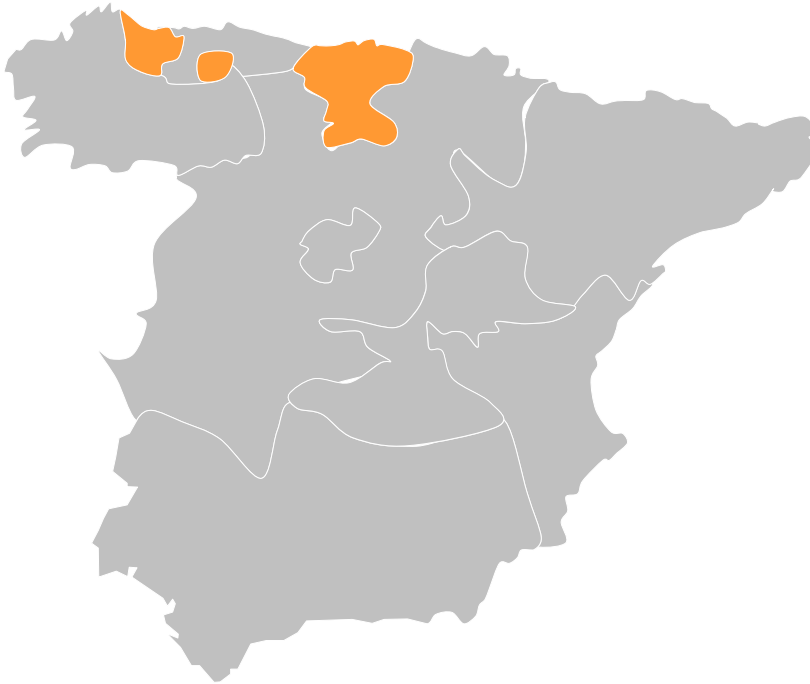
... but also huge investments & operational challenges

- **E.ON's key elements** to meet these challenges:
 - **Cost optimization** for smart meter system technology (meter devices, communication, IT) and for smart meter services.
 - Consequent **performance improvement** and enhanced **operational efficiency** through smart meter roll-out contributes to overall cost reductions.
- » Examples out of previous practical experience:
 - *Improved quality in meter readings*
 - *Optimization of customer services*
 - *Decreased energy losses*
 - *Reduced time for outage diagnostics*
 - *Reduced fault restoration costs*

» **Highest possible standardization level across Europe essential to keep costs on an acceptable level**

E.ON's Infrastructure Business in Spain

Power distribution



Key figures

	Power
Grid length [1,000 km]	32
<i>market share</i>	5%
Grid customers [millions]	0.7
<i>market share</i>	3%
Distributed volume [TWh]	6.4
<i>market share</i>	3%
Power losses	7.1%
SAIDI [minutes]	80
SAIFI	1

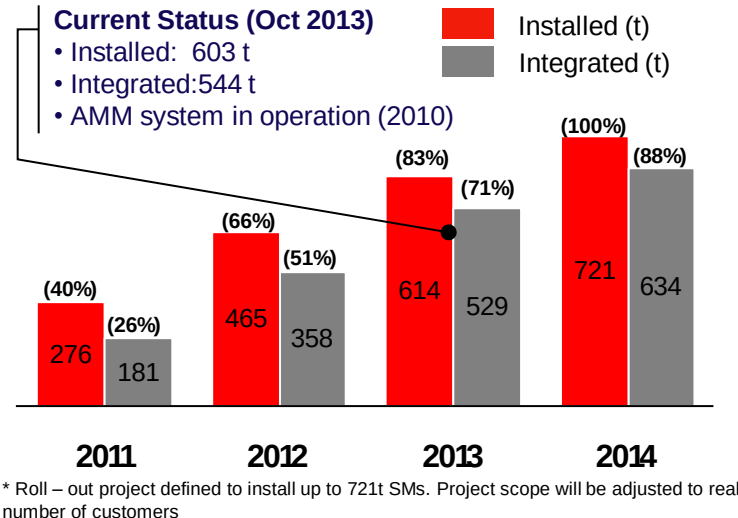
Figures 2012

Smart Metering situation in Spain Overview

Regulatory Framework

- Distribution led roll – out (compulsory)
- Functional specifications approved on national level
- National roll-out plan:
 - 35% - end of 2014
 - 100% - end of 2018
 - Meter Mgmt System: end of 2014
- E.ON roll – out plan approved by Regional Governments

E.ON España Roll-out plan*



Market position

- E.ON is the most advanced player in the Spanish Market: > 80% of smart meters already installed
- **Sector average:**
Smart Meter roll-out of about 20%-25%

Lessons learnt

- Use robust and **well-proven technology**
- Invest in **stakeholders acceptance**: customers, authorities, retailers and local press
- **Close supervision** of meter installation companies (outsourced)
 - H&S guidelines compliance
 - Correct approach to customers

 **E.ON is ahead in reducing operative costs and in improving services**

Project rationale: operational efficiency & economics

Economics

Operations

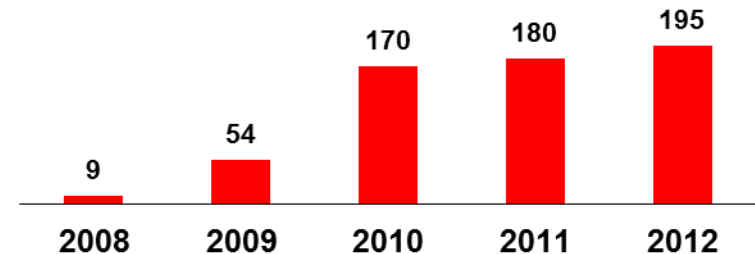
- 60% - 70% Work orders OPEX reduction
- Operational improvements: better service quality, reduce losses, better LV grid investment planning

Regulation

- Meter rental fee increased by 50%
- Avoid potential penalties due to bad service and roll-out plan not in the given timeframe

Key technology for efficient operations

Number of customer & supplier requests



Main drivers for smart meter roll-out speed up

- Market liberalization and economic situation boosted the number of customer & supplier requests
- Reduce risk of penalties from Regulator due to exceeding maximum time period for executing field order. Higher service level to retailers in future expected.
- Co-existence of old meters and smart meters reduces efficiency (metering systems and processes)

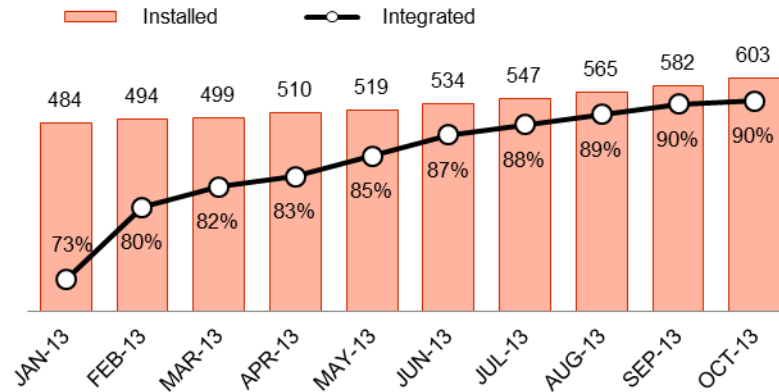
 The smart meter roll-out enables E.ON to increase efficiency in operations (e. g. customer services)

Smart Meter Roll-out Project – Operational Status

Installation & Commissioning activities



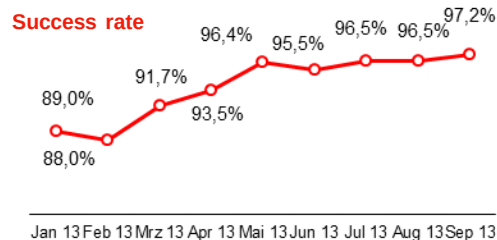
SMTs / day / 2 workers	C1	C2	C3
2012	31	34	36
2013	30	35	34



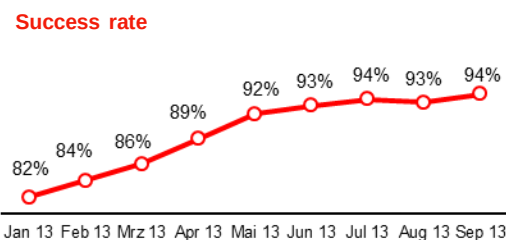
Smart Meter operations



Remote reading



Remote field orders*



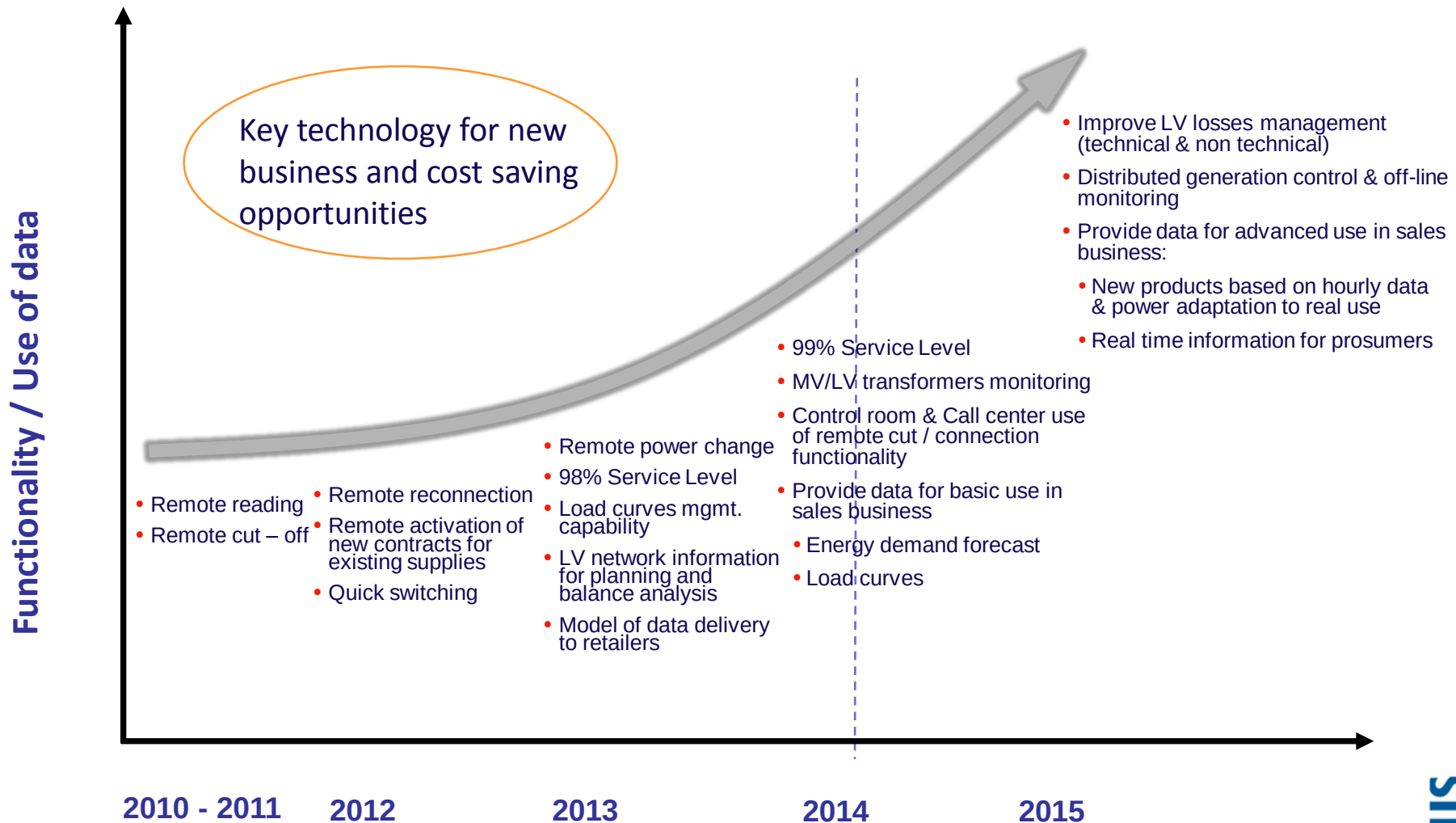
*Includes orders cancelled internally to avoid cuts after 5pm

2013 improved processes:

- Report LV network modifications and incidences
- Optimize meter reading communications
- Customer connection

A Distribution-led smart meter roll-out allows efficient “street-by-street” installation

Increasing functionality opens new business opportunities



Final Conclusion

Recommendations & Expectations



✎ **The greatest benefit of smart meter is the possibility to extend business along the whole value chain**

✎ **The biggest disadvantage are the high costs, especially in the beginning**

* If national Cost-Benefit-Analysis is positive

Thank you for your attention

