



EXECUTIVE SUMMARY

SMART METERING SOLUTION FOR ENERGY MARKET

Introduction & Background

The National Smart Metering Plan is a commitment in the Irish Government's Energy Policy Framework and in the 2007 Programme for Government. The Commission for Energy Regulation (CER) established the Smart Metering Project in late 2007 with the objective of setting up and running Smart Metering customer behaviour and technology (CBT) trials. ESB, the primary energy utility in Ireland, has been driving the Smart Metering Trials. On completion of the CBT Trial in Q4 2010, ESB will make a recommendation based on their learning's and business requirements to the CER, as input into a Cost Benefit Analysis which will determine how Smart Metering will be rolled out across all utilities in Ireland. CER will make a go/no-go decision for smart metering in early 2011 with rollout expected to commence in 2012.

The Ericsson Proposition

Ericsson welcomes the opportunity to engage with the ESB and other stake holders in analysing from a strategic and technical perspective the various communications infrastructure solutions available to meet the ESB's and indeed Ireland's SmartMetering needs. We believe that Ericsson's proposition outlined in this document will address all ESB key requirements while providing ESB and their chosen partners with a significant incremental opportunity.

Ericsson's main proposition to the ESB is based around the establishment and operation of an MVNO (Mobile Virtual Network Operator) platform connected to multiple operators to cater for data communications & processing between the in-home smart meters (each equipped with a multi-standard GPRS/HSPA/LTE radio module & SIM card), and the ESB's backend infrastructure for energy metering & charging.

While we believe that on balance this proposition provides the best over all solution for the ESB from cost, security, robustness, future proof and business control perspective, we are open to helping ESB evaluate alternative scenarios such as an option whereby the ESB may rollout their own infrastructure/network.

In our proposition the ESB would have their own SIM (IMSI) numbers, thus all smart meters will have the ability to receive & transmit over multiple existing mobile networks using the concept of national roaming. This provides the ESB with a solution that has full independence and control, excellent security, and optimum redundancy. It will also be possible for the ESB to remotely upgrade and configure software in the smart meters (over the air), as well as remotely instruct meters to roam onto different mobile networks.

In addition to fulfilling the basic smart meter functionality required by the ESB and CER, there is a second value-add to the proposed Ericsson MVNO solution. Our proposal is that the in-home meter will have an RJ45 data port, which would facilitate the offering of high speed broadband services by an operator over their own



network and utilising the ESB’s metering infrastructure. This RJ45 data port on the smart meter could be activated by the ESB to supply broadband to the home, from any one of the connected mobile networks. This function thus facilitates operator monetisation of the “in-home presence” provided by the data connection to the meter, while at the same time fulfilling the basic smart metering requirement.

The Key Benefits

It is uncommon in any country that potentially every home will be visited to replace the existing electricity meter with a new smart meter. Therefore, one could see this as a great opportunity not only to enable every home with smart metering technology as planned, but also a once-in-a-lifetime opportunity to additionally enable every home with high speed broadband access, while lowering total costs significantly for the ESB, the mobile operators, and ultimately the consumer. A list of the high level benefits to each stakeholder is shown below:

ESB	Mobile Operators	Government
Mature & future-proof solution using GPRS, HSPA & LTE communications modules	Expansion of mobile networks use as a communications solution from ~5% to >95%	Most cost effective solution for smart metering/smart grid communications
Robust, secure & reliable solution using multiple operator networks	Enablement of every home for next generation mobile broadband & related services	Potential to enable every home in Ireland for next generation broadband access
Lowest OPEX and CAPEX solution possible plus additional revenue streams possible to further reduce OPEX if broadband open access is considered	New revenues from M2M based on smart metering technology	Encourages continued investment in telecoms infrastructure
Potential for wide support if broadband open access is part of the solution	Low cost entry point into each home	Strategic/political win – acting as a catalyst in the Smart Economy
Based on proven technology – i.e. MVNO platforms common today, mobile broadband a mature technology today	Lowering the subscriber acquisition cost	Expand local competence centre in smart metering, smart grids and hosting
Outsourced solution, thus offering ESB a controlled OPEX spend over time	Lower cost solution for M2M without risking cannibalization of existing revenue streams	Position Ireland as an NGA/Smart City innovator

From an Ericsson perspective there is also potential value for us in this proposition

- Revenues – consulting, infrastructure, professional services
- Potential engagement in related solutions – e.g. revenue management for utilities/ prepaid charging for ESB, etc.
- Establish/grow mobile broadband as the basis for utilities smart metering infrastructure
- Strategic/political – acting as a catalyst in the Smart Economy
- Expand competence centre in smart metering, smart grids, M2M

In summary this is a rare win/win/win/win opportunity for all stake holders and we are delighted to continue to work with ESB and other stake holders to further validate our proposed model.



Next Steps

The Ericsson TAM Account and CTO Office will continue to interface with the ESB's Smart Metering Team and other stake holders in order to refine the proposal further.

Recommendations to date include a suggestion to the ESB team that they issue an RFI to the Mobile Operators as a means of understanding their perspective on their commercial and technical role in the Smart Metering roll out. We have suggested that we can provide consultancy to assist in the preparation and evaluation of such an RFI. Additionally we believe a trial or pilot of our proposal would be useful in reducing any concerns the ESB or other stakeholders might have.



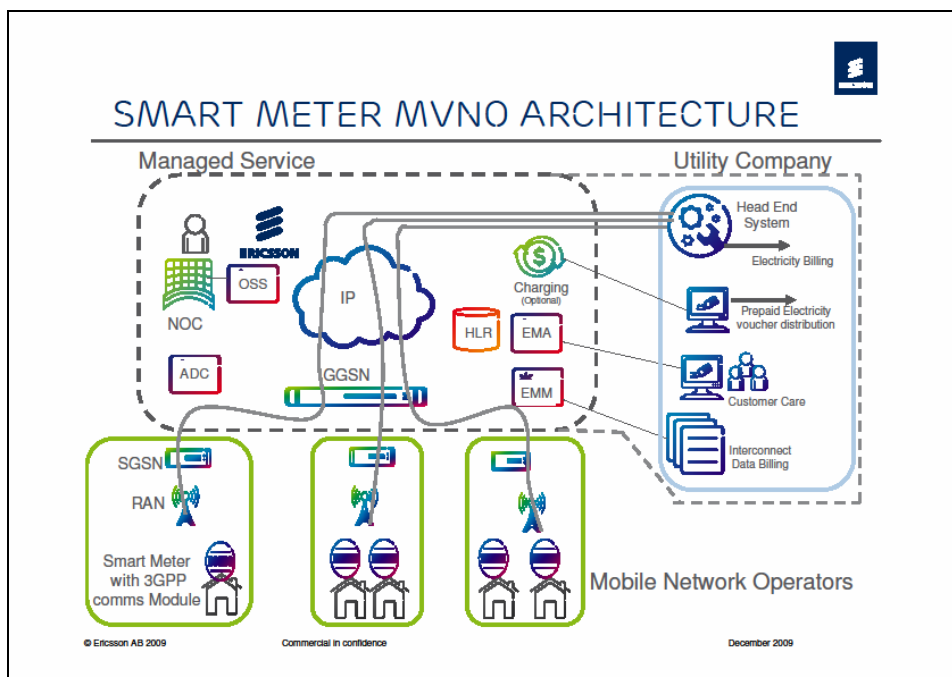
Ericsson Proposition for Ireland's Smart Metering Rollout

We believe that based on our dialogue to date with the ESB and the CER, underpinned by our specialist knowledge and operator relationships, we have developed a proposition that is highly innovative and brings tremendous benefits to the ESB, the mobile operators and the state.

- Communications from the meter to the ESB systems would be based on and a 3GPP communications module in the meter and an ESB owned/controlled MVNO connected to more than one mobile network. Thus maximising security, coverage and reliability.
- To provide independence from mobile operators - Ericsson will supply and manage an MVNO solution to ESB
- ESB will have their own IMSI range (SIM numbers).
i.e. All meter SIMs will belong to this MVNO – with the ability to roam onto any configured mobile network providing ESB with full independence, security and control.
- It will be possible for the ESB to change meter software and change meters between operator networks over the air
- The 3GPP communications module will have a multi standard mobile module supporting GPRS, HSPA and LTE @ 900MHz. This enables future proof high speed next generation access speeds to the smart meters
- The in home meter will have an RJ45 connection which can facilitate the offering of broadband services by an operator over the meter connection. This facilitates **operator** monetisation of the in-home presence provided by the data connection to the meter, while providing ESB with a uniform smart meter comms channel.



Ericsson Solution

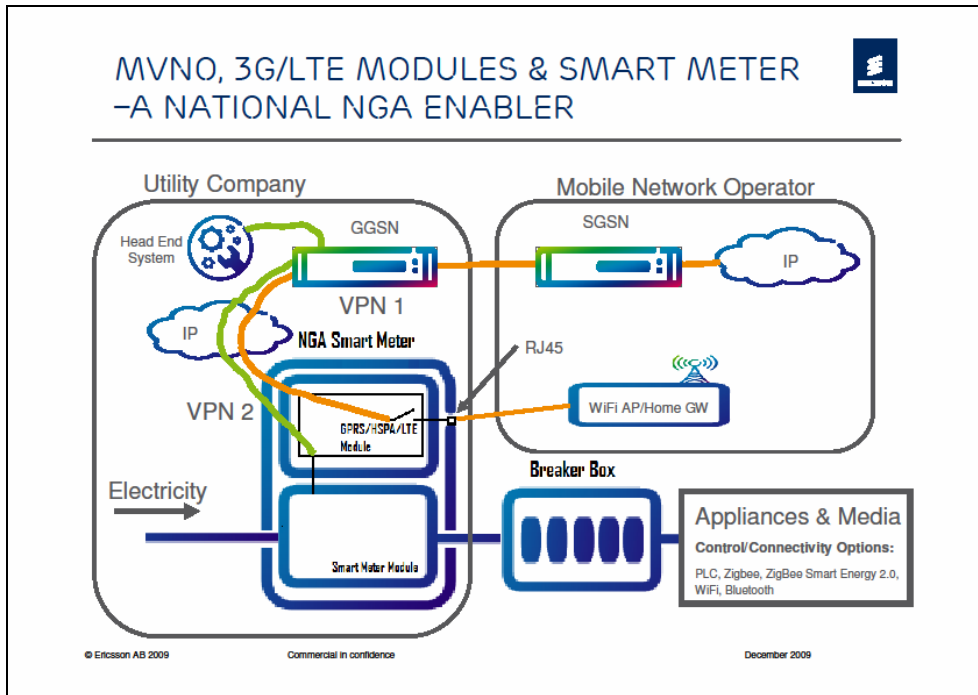


High Level Description

- Every house in the state (approx 2 million) has a smart meter fitted with a multi-standard mobile comms module
- The comms module appears as a roamer onto a configured mobile network
- Communications is via the host operators RAN and SGSN and the ESB MVNO GGSN on to the Head End System
- The RJ45 port on the smart meter can be activated by the ESB to supply broadband to the home from any one of the connected networks.
- The Head End System collects usage data and can send customer information including tariff information to the meter for display
- The MVNO will be designed, implemented and managed by Ericsson
- The smart meters appears as national roamers on the operator networks
- Real time charging, bundling and communication could be facilitated via Charging System



Low Level Description



- The in home meter will have a multi standard mobile module supporting GPRS, HSPA and LTE
- The smart meter uses a VPN between it and the head end system for data collection and tariffing and usage information transmission.
- A second VPN for provision of in home broadband services **by any of the participating operators** can also be configured over the air



Appendix A – Technology Comparison

Access Technologies – Rural and Urban

Location	Customers	Distribution transformers
Rural	800,000	190,000
Villages	250,000	18,000
Urban	1,300,000	20,000

Access Technology Analysis -Urban

	Importance	PLC	DLC	Mesh	WiMax	GSM/3G/LTE	WiFi	Fibre
Longevity	9	9	7	6	6	9	6	9
CAPEX Cost	10	8	7	6	5	3	5	1
OPEX Cost	8	7	6	5	5	5	6	8
Bandwidth	5	3	5	7	7	8	8	10
Maturity	8	7	6	5	5	8	6	3
Technology risk	9	8	6	6	6	9	6	2
Robustness	10	8	6	6	7	7	6	9
Openness	4	3	3	6	6	8	7	8
Usability	6	7	6	5	5	8	6	8
Industry Support	8	9	6	7	7	8	3	2
Standards support for Utils	6	9	7	7	7	8	6	1
Total (Unweighted)		78	65	66	66	81	65	61
Total (Weighted)		56.4	46	45	45	54.4	43.5	35.5

Key: 1 is poor, 10 is good.



Access Technologies Analysis – Rural

	Importance	PLC	DLC	Mesh	WiMax	GSM/3G/LTE	WiFi	Fibre
Longevity	9	3	3	6	6	9	6	9
CAPEX Cost	10	4	4	5	6	8	6	1
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Maturity	8	3	4	5	5	8	6	3
Technology risk	9	5	6	6	6	7	6	2
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Openness	4	3	3	6	6	8	7	8
Usability	6	3	3	5	5	8	6	8
Industry Support	8	6	6	7	7	5	3	2
Standards support for Utils	6	9	7	7	7	8	6	1
Total (Unweighted)		46	47	65	67	84	66	61
Total (Weighted)		31.4	32.7	44.1	45.9	57.3	44.6	35.5

Key: 1 is poor, 10 is good.