

28 September 2010

CONSULTATION ON SMART METERING FOR ELECTRICITY AND GAS

Response from Onzo Ltd

Onzo has responded to questions listed in the Prospectus with a due date of September 28th 2010, specifically questions 3, 6, 7, 16, 17, 18 and 19. Onzo will respond to the remaining questions – including the statement of design requirements, implementation strategy and rollout strategy - in a second response with a due date of 28th October 2010.

Executive Summary

The UK Government must ensure that reductions in consumers' energy bills and CO2 emissions are the outcome of the implementation of smart metering.

Onzo observes that the proposed smart meter design and rollout process appears to be driven more by political pressure and early movers attempting to gain market advantage than by focussing on consumer benefit, energy retailer return on investment (ROI) and appropriate security engineering.

(i) Consumer benefit and energy retailer ROI:

- To provide a proper return on investment the UK smart meter system must be designed to accommodate services beyond just electricity and gas billing. Communications flexibility and interoperability along with scalability are therefore important considerations.
- Ofgem should promote competition around data provision (including in-home displays), and value-added services to maximise consumer and utility benefit from smart metering.

To create the conditions for competition and innovation Onzo proposes enhancements to the proposed architecture that (i) allows competition in the communications supply, (ii) does not require non-utility services to be dependent on utility infrastructure, (iii) does not mix data unnecessarily across service providers and (iv) supports a wide range of technology solutions:

- There should be a separation between the communications infrastructure provider and the DCC. The communications provider should provide the Wide Area Network (WAN) module to the DCC. The communications provider routes data from home to DCC. Other brokerage entities can then exist for non-energy data, supplying data to energy suppliers and other authorised parties to enable value-added services.
- DCC should be simply an energy data brokerage service for energy suppliers, distribution network operators and other authorised parties. The DCC should only handle consumption information per meter asset. Slimming back the scope of the DCC has the added benefit of reducing the time to expedite its creation. The DCC would best be formed as a consortium of energy retailers rather than put out to tender. This would best align security and privacy responsibility with the consumer brands that stand to lose most from design or operational security and privacy errors.

(ii) Appropriate security engineering:

- Good security engineering should not be compromised by pressure for an early rollout. The Privacy and Security Advisory Group should deliver an upfront specification to the Smart Meter Design Group and Data and Communications Group. The team must then strike an appropriate

balance between security and maximising the opportunity for benefit to the consumer, and a market for value-added services.

- Security and privacy failures should be the responsibility of the DCC as it will be responsible for commissioning and operating the system. The rollout of smart meters should not start before the DCC is fully operational.

Onzo believes it could offer the programme assistance in the form of expertise through input to the Smart Meter Design Group, Data and Communications Group and consumer and rollout workshops, specifically Onzo can help with consumer engagement; WAN and HAN communications hardware and data protocols; Physical and logical (software / firmware) meter design; in home display; value added services; security engineering.

Response to Consultation Questions

3. Do you have any comments on the proposed approach to ensuring customers have a positive experience of the smart meter rollout (including the required code of practice on installation and preventing unwelcome sales activity and upfront charging)?

The UK must learn important lessons from other territories. Experience in other countries shows clearly that consumer expectations are not being met and this is becoming a threat to rollout. What consumers want and expect (unrealistically in our view) are reductions in their energy bills – although there is no evidence that smart meters automatically reduce usage, and subsequently, bills. Onzo notes that general media coverage of smart meters does little to explain this. Indeed, it could be argued that expectations of smart metering among consumers are already out-of-line with the reality. Government must ensure that reductions in consumers' energy bills and CO2 emissions are the outcome of the implementation of smart metering.

Alongside providing consumer benefit from smart metering, value-added services have the potential to improve the return on investment of a smart metering rollout to create a positive business case. Providing detailed consumption information to consumers through easily accessible channels is the first step on the value-added services journey. Further examples of value-added services that could be supplied by an energy retailer include heating and hot water control; home security products; electric vehicles; photo-voltaic micro generation; telehealth; telecare; other wellness products; and many others. The smart meter communications infrastructure must be capable of supporting these known applications, and other smart grid applications not yet conceived.

Energy retailers must be given a reasonable opportunity to improve the return on investment of smart metering, which in turn will fuel innovation. Therefore a reasonable level of sales and informational activities must be permitted during the meter installation process. If the consumer benefits of the rollout of smart metering are to be realised, then the meter installer is an important part of the customer education challenge. They will need to be able to explain to the customer how their in-home display works, how time-of-use tariffing will work, and so on, as well fitting the meter. This is an area of competence that those seeking to minimise the cost of rollout would not naturally include.

As with any national upgrade programme, the importance of effective consumer engagement before, during and after the rollout should not be underestimated. It is worth noting that a geographic street-by-street approach to roll-out would enable community level engagement. Community level engagement is arguably more efficient and effective than attempting to influence all UK homes of the benefits of smart metering on a one-to-one basis as part of a national campaign.

An accessible physical port should be provided on the electricity meter. This is a back-up measure for the use case where a consumer or energy retailer encounters a home with a WAN communications solution that does not support value-added services. Such a port would allow value-added services to connect via broadband without being reliant on the WAN. A standardised and powered port, for example USB (with 2 way comms), should be provided. At absolute minimum the meter should offer a physically/electrically

connected pulse port (voltage free or dry contact switch) or plain RS232 serial with a simple comms protocol. Obviously the port would need to be opto-isolated. In terms of balancing security with consumer benefit Onzo believes that a wireless Home Area Network is a much easier point of attack than a physical port.

6. Do you have any comments on the functional requirements for the smart metering system we have set out in the Functional Requirements Catalogue?

Onzo favours the general architectural approach as indicated by Figure 2, but has some specific comments.

Although Onzo accepts the case that the priority of the programme must be to implement electricity and gas metering before moving on to other services, the system architecture must be designed from the outset to ensure this future-proofing. The consequence of leaving this until later could be a system that is incapable of supporting these additional services, as is the case in Italy for example. Onzo is concerned that the functional requirements may be paying lip-service to the needs of this future functionality and recommends that the Smart Metering Design Group (SMDG) is obliged to ensure that the specifications are fully capable of supporting a rich range of further services.

Onzo supports the concept of the WAN module. Ofgem correctly identifies that WAN technology will change quickly and that a removable WAN module will make for cost-effective technology upgrades. Ofgem also notes the need to respond to evolving security and privacy threats. Onzo considers that the removable WAN module also should be the centre of the security future-proofing functionality, and that the Design Requirements should be worded to reflect this.

Onzo strongly agrees with the emphasis placed on data privacy and security, and will present further comments later based on reusing existing technologies in use in the banking, telecoms and pay-TV industries, and the experience of these industries in protecting smart cards, SIM cards and pay-TV access. Ofgem's requirements for tamper resistance (SP.3), independent testing (SP.10) and secure development lifecycle (SP.16) are particularly important. It is well known that "security by obscurity" is a recipe for disaster, and Onzo suggests that Ofgem adds a requirement that security measures are published and subject to thorough peer review.

Onzo has reservations concerning the list of services presented in Appendix 2 of the Statement of Design Requirements. Firstly, these omit references to support for services beyond electricity and gas metering. Secondly, some of the services pre-suppose the nature of the data that needs to be exported from the home, and recommend that these are reconsidered after the Data Privacy and Security group has completed its work.

7. Do you see any issues with the proposed approach to developing technical specifications for the smart metering system?

Onzo supports the Option 2 approach to establishing technical specifications set out in the Statement of Design requirements, 5.16: "Industry drafted/Programme facilitated technical specification" but we have some comments.

It is necessary to avoid any confusion in the use of the terms "standards" and "specifications". Any group may produce a specification, but only a small number of groups are able to publish European or international standards. Standards bodies (such as CEN, CENELEC, ETSI and IEEE) typically work slowly and methodically; this approach is usually justified by the quality of their output.

In some places, such as the "high-level list of functional requirements" and the Statement of Design Requirements catalogue, there is a call for the use of "open and non proprietary standards" but elsewhere (as in the Statement of Design Requirements 5.21) Ofgem proposes establishing a Smart Metering Design Group (SMDG) to undertake the task of developing technical "specifications". Presumably Ofgem intends that the specifications developed by the SMDG will reference standards developed elsewhere.

However, Ofgem correctly observes that available HAN technologies "are at a low technology readiness level", "do not demonstrate...interoperability" and "are not currently covered under EU standards". (Statement of Design Requirements 4.11).

In practice there is a real risk that a delay in the creation of standards (by the international standards organisations) might delay the creation of specifications by the SMDG. It may be that SMDG members can contribute to the standardisation process to speed it along, but there is no guarantee that there will be standards within the timescales set by Ofgem. Could the EU Technical Standards and Regulations Directive notification process be stalled pending the availability of approved standards (as distinct from SMDG's "specifications")?

Onzo understands that there are two key programmes working on smart metering HAN technologies: the ZigBee Smart Energy and the IETF CORE group. There is crossover in membership between the two groups. The output of either group may be suitable for the UK programme, but this is not yet clear as their work is still in progress. We feel that the data privacy and security aspects of both of these HAN programmes, in particular, should be subjected to scrutiny.

The ZigBee SE 2.0 specifications are based on Internet Protocol and show the flexibility that will allow for future expandability.

It is not clear whether and how the ZigBee work will move from a "specification" developed by a trade body to the status of an "open and non proprietary standard" required by Ofgem.

Ofgem needs to take account of the fact that the HAN development work is at the "bleeding edge". Companies with commercial imperatives will inevitably be well represented on the Smart Metering Design Group, and Ofgem would be well advised to apply a conservative "optimism bias" weighting to the output of this group. Remember that product development and testing must follow after the establishment of specifications, and it is common that experience gained in such trials is fed back into the specification process so that problems discovered in the field can be corrected by subsequent iterations of the specifications. Do not assume that when the first version of a specification is published it is ready for full-scale deployment. Then an independent certification process is essential to ensure robust security. Onzo's reading of the Implementation Strategy document is that Ofgem is assuming that as soon as specifications are published by the SMDG they will be mature enough for incorporation into mass produced products. This may not be the case.

Ofgem's documents seem to have little to say about the EU smart meter mandate M/441. We would encourage Ofgem to be explicit in describing its position with respect to the M/441 process.

There is evidently political and commercial pressure for an early rollout of smart meters, but this may be incompatible with the engineering imperative to deploy well-tested products based on well-established standards. Of paramount importance is the security engineering aspect of the programme. With the worst-case scenarios involving catastrophic disruption of energy supplies, it seems important that good security engineering should not be compromised by pressure for an early rollout.

It is frustrating but true that the setting of standards is often a slow process, but this is the nature of the peer review and consensual process, and usually the result is a standard that stands the test of time.

16. Do you have any comments on the proposals for requiring suppliers to deliver the rollout of smart meters (including the use of targets and potential future obligations on local coordination)?

A DNO street-by-street rollout approach is probably the most efficient form of deployment. The industry structure should change so that metering belongs with distribution. Everyone agrees that the current structure is illogical and this is made even more obvious by smart meter rollout. It is not too late to address this. Then issues of stranded assets and interoperability disappear.

17. Do you have any comments on our implementation strategy? In particular, do you have any comments on the staged approach, with rollout starting before DCC services are available?

The proposal for a staged approach seems designed solely to meet a perceived political imperative to commence rollout earlier and deal with early movers attempting to gain market advantage.

The rollout of smart meters should not start before the DCC is fully operational.

There should be a separation between the DCC and the communications infrastructure provider. The DCC should be simply an energy data brokerage service for energy suppliers, network operators and other authorised parties. The DCC should only handle consumption information per meter asset. Slimming back the scope of the DCC has the added benefit of reducing the time required for its formation.

There is a danger that the rush for early deployment will mean that technologies are not properly implemented and tested, leading to expensive recalls and attendant PR disasters. This particularly applies to HAN technology where the Statement of Design Requirements acknowledge (in 3.16) "It is unclear how many HAN solutions will be required for GB coverage as none of the possible solutions have been tested in volume within GB".

The consequences of deploying flawed security technology are particularly severe. Good security engineering should not be compromised by pressure for an early rollout. Security architecture should be designed first and all else should follow from this.

18. Do you have any other suggestions on how the rollout could be brought forward? If so, do you have any evidence on how such measures would impact on the time, cost and risk associated with the programme?

The proposed timeline is already unrealistically short. The UK should not rush the rollout if it means going live before the technology is sound, especially the security engineering.

One suggestion to address the security engineering question and compression of timescales would be the adoption of existing security standards. It would be good practice, and timesaving, to reuse security technology that has already been developed, tested and qualified. Data security and privacy objectives will be easier to meet, in a shorter timescale, if existing standards from the smart card industry are adopted, such as the smart card, secure microcontroller, GlobalPlatform and Java Card technologies that are in use in the banking industry. These include the existing ETSI European standards TS 102 221, TS 102 223, TS 102 22 and TS 102 226.

19. The proposed timeline set out for agreement of the technical specifications is very dependent on industry expertise. Do you think that the technical specifications can be agreed more quickly than the plan currently assumes and, if so, how?

The main dependency likely to add delays is not so much the work of the SMDG in drafting "specifications", but the work of external standards bodies in developing and approving "standards", particularly for the HAN.

Onzo Ltd profile

Onzo provides utilities globally with customer intelligence solutions. Onzo uses energy data to create value both for customers and for utilities before, with, after, or instead of smart metering through analytics software packaged in mass-market consumer-friendly solutions.

Those solutions enable utilities to achieve their business objectives and meet regulatory requirements: attracting and retaining customers, shifting usage off peak, improving energy efficiency, improving customer satisfaction, reducing the cost to serve, and increasing non-core revenue.

Onzo's solutions include hardware and software that can increase the amount of data gathered, process and analyse it to maximise its value to the utility, and increase the number and enhance the effectiveness of the utility's customer touch points. Onzo's hardware and software solutions can work separately but are most effective in combination.

For further information please visit www.onzo.com.