Onzo Ltd. response to the DECC Consultation on the Smart Metering Programme:

Draft Licence Conditions and Technical Specifications for the Rollout of Gas and Electricity Smart Metering Equipment (August 2011)

Reference Number URN 11 D/836.

Introduction

Onzo is a leading UK manufacturer and developer of In Home Displays and Energy Analytics. We are members of the ZigBee Alliance and work closely with meter manufacturers and UK industry groups to help set standard for smart metering. We have currently supplied 100,000 internet connected displays in the UK market and collected and analysed over 500 billion data points. These have been used to help educate customers about energy usage and provide the basis for engaging them in continuing improvement in their behaviour over an extended period. It has also enabled us to construct a unique database of appliance use and consumer behaviour, using both our Smart Energy Kits and ZigBee displays.

Based on that experience, which spans both consumer usage and utility insight, Onzo offers the following responses.

Response to Consultation

Q1 – Q3. No response.

Q4: Do you agree that Smart Metering Equipment should be compliant with the SMETS extant at the time of installation and that it should continue to be compliant with that version of the SMETS through the operational life of the equipment? Please explain your reasoning.

Yes. Consumers will not expect that devices that they are supplied with (the IHD), or any equipment that they purchase separately should stop working during its expected lifetime. So compliance with the SMETS should also include backwards compatibility with any previous version of SMETS.

It is particularly important that once a consumer is engaged with any form of feedback device would risk destroying any behavioural changes that had been achieved regarding energy usage. Nothing within the SMETS should change which could require them to move to another device.

Q5: Do you agree that in some exceptional circumstances suppliers should be required to retrofit Smart Metering Equipment that has already been installed? Please explain your reasoning.

Yes. If we are to expect users to engage with IHDs and the concepts of energy savings then they need products which are interoperable and which work. If that requires a product to be updated, then that should happen.

Q6 – Q7. No response.

Q8: What contribution do you think the interoperability licence condition as drafted could play in ensuring that suppliers work together to ensure Smart Metering Equipment is interoperable? Please explain your reasoning.

It must mandate interoperability and understand what needs to be done to ensure that. That requires that the specification be robust, i.e. not open to multiple interpretations; that there must be a comprehensive test schedule and also that there is an independent certification scheme with test tools that validate compliance with the standard, not just to golden units.

Q9: Do you think the licence conditions as drafted effectively underpin the policy intention to ensure Smart Metering Equipment is interoperable? Please explain your reasoning?

No – it does not go far enough. As explained above, a standard by itself does not imply interoperability. It is vital that the conditions include all of the components that are required to test and validate interoperability.

Q10: What role could a dispute resolution mechanism have a role in ensuring interoperability? What key features should such a mechanism have?

Dispute resolution should not play a part – it's just closing the stable door after the horse has bolted. Interoperability means putting in the effort up front, which means test cases, test harnesses and independent certification processes.

Q11 - Q12. No response.

Q13: Do you think under the new and replacement obligation gas suppliers should be given the option to wait for the installation of electricity Smart Metering Equipment before installing the gas Smart Metering Equipment? Please explain your reasoning.

From a consumer viewpoint it is preferable that there is only one visit to the home to fit both meters and to train the user on the IHD.

Q14 – Q16. No response.

Q17: What period of notice do you think would be appropriate before the obligation to provide an IHD comes into effect? Please explain your reasoning.

None. The best time to engage a consumer is at the point that their new meter is being installed. Any delay or decoupling loses this opportunity to engage the consumer.

Q18: Would the consumer changing their supplier raise any particular issues with regard to the approach set out for the provision of IHDs? Please explain your reasoning.

No. As long as a regime is in force to ensure interoperability, then changing the supplier should be largely transparent.

Q19: Do you think the licence conditions as drafted effectively underpin the policy intentions set out for the provision of IHDs to domestic consumers? Please explain your reasoning.

Yes, we think they are adequate.

Q20 – Q23. No response.

Q24. Do you think that there are other requirements that the Government should adopt in the SMETS? Please explain your reasoning.

The UK deployment offers an excellent opportunity to deploy an infrastructure that can be used for other applications, including assisted living and home energy management. To support these it is important to ensure that the comms hub has the ability to be upgraded to support future applications. It would be sensible to investigate these applications to ensure that the communications hub provides sufficient flexibility.

Q25: Do you agree that all the requirements recommended in the IDTS should be adopted by the Government in the SMETS? Please explain your reasoning.

Onzo is concerned that the current requirement for a single protocol over the WAN may limit innovation. Multiple protocols give more flexibility and also reduce the chance of errors arising from translation.

Q26 – Q28. No response.

Q29: What unit manufacturing cost reduction do you think can be achieved for Smart Metering Equipment over the next 20 years? Please explain your reasoning. Please also provide any other comments (accompanied by evidence) on the estimated costs of the Smart Metering Equipment as set out in the Impact Assessment.

The suggested fall in pricing of 1% per year may be low. However, there is a risk of losing economy of scale if other countries choose different underlying wireless standards. If there is a move from ZigBee 1.x over the next few years, then there may also be a risk of a limited supply of chips. The market life for wireless silicon is typically only five years. If the UK selects a standard which become a legacy one, with only one or two suppliers, then there may be an increase in price.

The other risk, which may affect price, is interference in the wireless spectrum. If other household devices start to increase the level of spectral congestion to a point that affects the performance of the smart metering equipment, it may be necessary to retrofit the installed base of products.

Q30: Do you agree that the Government should include a requirement for a Communications Hub in the SMETS? Please explain your reasoning.

Yes – we agree. It is far from clear that other appliances within the home will use the same wireless standard. Within Europe there appears to be a growing divergence in which standard to use for smart meters. Unless that changes, then appliance and home automation suppliers are likely to choose a single standard, rather than making country specific versions, hence a bridge to other HAN standards will become a necessity.

Q31 - Q32. No response.

Q33: Do you think that the Communications Hub should also have the functionality to send a communication to the DCC when power is restored? Please explain your reasoning.

It seems that this is asking the question the wrong way around. Why should it not? When power is returned we would assume that the comms hub automatically restores the connection, so there is no reason why it should not provide an update of the outage.

There is a related question as to whether the electricity meter should be logging details of the outage whilst it is occurring as part of the data that it stores. That would require the existence of a battery on the electricity meter.

Q34: Do you agree with the Government's proposal that fully integrated electricity meters and Communications Hubs will not comply with the SMETS? Please explain your reasoning.

Yes. We agree with the fundamental principle that the comms hub should support multiple different HANs and the ability to support different WANs. If more trials are carried out to understand how many installations would be supported by a single WAN and HAN choice then it may provide evidence to suggest that this could be integrated within a meter. But until that has been performed, the conclusion must be that there will not be a universally deployable solution, in which case the separate comms hub is a sensible approach.

Q35: Do you think the Smart Metering Implementation Programme objectives would be better met by:
a. Using the SMETS to mandate a separate Communications Hub with a fixed WAN transceiver? Or
b. Giving suppliers flexibility over options for configuration of the Communications Hub? Please explain your reasoning.

We would prefer a mandate of a separate communications hub for the reasons given above.

Q36: Do you agree there should be no restrictions on the HAN standards adopted by suppliers, provided they are available as a European (CEN, CENELEC or ETSI) or International (IEC or ISO) standard? Please provide evidence to support your position.

We agree that there should be no restrictions, but do not agree with the proviso that the HAN should be available as a European or international specification. This requirement would exclude the two most widely deployed HAN standards – Bluetooth and Wi-Fi. Although the PHY and MAC layers of both of these exist as IEEE specifications, the higher layers, including security, exist only within their own SDO documents.

Surely the UK should be making the decision of standard on the basis of what is best for the UK deployment, not on political considerations of where that standard has been developed.

Q37: The IDTS has recommended that all standards should be recognised or be in the process of being recognised by 31 December 2014; do you agree with this recommendation? Please explain your reasoning.

We disagree with this for the reason stated in response to Q36. This recommendation would favour little used European wireless standards, but exclude the two most widely deployed and successful short range wireless specifications in the world, neither of which meet this requirement. We do not understand why this is being suggested – it appears to move against the evidence of choosing what is best and denies consumer choice.

Q38: Do you think that regulatory obligations are needed to underpin a systematic approach to testing of HAN standards during the Foundation phase? Please explain your reasoning.

They are necessary unless the underlying standards have already implemented a systematic approach to interoperability testing. Our view is that to date none of the candidate technologies have reached this level of maturity, so there needs to be regulatory obligations to develop these during the foundation phase.

Q39: Do you agree with industry's recommendation that DLMS should be adopted as the application layer for communications with the DCC? Do you believe there are any consumer, economic or technical issues with this solution which could be circumvented by an alternative approach? Do you have any economic, technical or consumer evidence to assist Government in evaluating industry's proposal?

Onzo is concerned that DLMS should be the only application layer protocol as it locks the smart metering system into the straight-jacket of what is essentially a legacy metering protocol. There are many other potential applications which can be used to help the UK meet its commitments to energy efficiency which it is difficult to imagine running over DLMS. We should learn from examples in Italy and Scandinavia where a lack of foresight

has resulted in the need for multiple smart metering deployments over a relatively short time-scale.

We recommend that the comms hub should be specified to support alternative protocols and that effort should be allocated to specifying how this can best be supported.

Q40: Do you agree with industry's recommendation that DLMS and Zigbee SEP 1.x should be adopted as the application layer for communications within the consumer premises, provided they install the necessary translation equipment? Do you believe there are any consumer, economic or technical issues with this solution which could be resolved by an alternative approach? Do you have any economic, technical or consumer evidence to assist Government in evaluating industry's proposal? This would be subject to standard specifications being agreed where components are exchangeable between different manufacturers products and excluding the option of a fully integrated electricity meter and Communications Hub.

ZigBee SEP 1.x is currently the most advanced and stable standard for a smart metering HAN, but it is still relatively immature. In an ideal world, more time would be available to allow the standard to become more mature. There is also the question of whether 2.4GHz is the correct frequency to choose for in-home applications and we would welcome more comprehensive, independent trials that compared other frequencies and coding schemes. However, if time is of the essence in starting the deployment, then it is almost certainly the best choice.

DLMS is an established metering standard, but it is not evolving at the same speed as consumer HAN and PAN standards. Therefore it may be sensible to consider extending the scope of ZigBee through the WAN to ensure that the comms hub can support future applications and does not result in the UK deployment becoming outdated within a few years.

Q41: Do you think the Smart Metering Implementation Programme objectives would be best met by the proposed approach above? Or should a single, network-layer technology standard such as IPv6 be mandated? Please explain your reasoning.

We strongly disagree with the suggestion that IPv6 should be mandated to individual devices. The protocol overhead of IPv6 is not conducive to low power wireless devices, which impinges directly on battery life, meaning that many devices could not be supported.

All devices need to be addressable, but we believe that the best architecture is to allow non-IP based protocols within the HAN, with IP addressability via the comms hub.

Q42: Is the provision of a single network-layer address for each Communications Hub a reasonable and sufficient functional requirement for the Smart Meter WAN? Will this requirement limit potential future capability or present challenges, for example, in multi- occupancy buildings?

It should be adequate. There may be some multi-occupancy situations which it does not address, but these are likely to be sufficiently limited that there is not the need to complicate the comms hub to support them.

Q43: – Q45: No response.

Q46: Do you agree with the proposed approach for consumers to access data and transfer it from the HAN via a separate "bridging" device? Please explain your reasoning.

Onzo fully support this. Onzo would also like to highlight an alternative, complementary approach, which is that the IHD can act as a storage device for user data, which allows them to access stored data without accessing the metering network.

Q47. No response.

Q48: Do you agree with industry's proposals for an overall architecture of an application layer standard with translation through a Communications Hub to a HAN? Do you believe there are any consumer, economic or technical issues.

Onzo does not support the concept of a single application layer standard with translation within the comms hub. Consumer application layers will evolve during the lifetime of the system and it is far more effective to attempt to support these as multiple protocols.

Q49: Where do you believe that translation is best managed:
a) At the Communications Hub; Or
b) At the DCC?
Do you have any economic, technical or consumer evidence to assist Government in evaluating the options?

Onzo would prefer to see any translation minimised, but if it is necessary, then there is a good argument that it should be performed at the DCC, so that processing requirements can be minimised for the hubs.

We believe that this question also needs to give consideration to what happens when higher resolution data is generated and whether it is ever transmitted to the DCC and stored there. This may be necessary to enable other applications, but would probably not be possible if translation occurs within the hub.

Q50: Do you agree that the IHD should only be required to display ambient feedback based on energy usage? Please explain your answer.

Onzo agrees with this approach. It is important that consumers see the IHD as a source of information, not as a coercive device which is making statements about their energy usage. Currently users have very limited understanding of the component parts of their energy usage, hence education must be the primary effect of an IHD.

Attempting to be more prescriptive, for example with red / green lights, raises concerns as to whether this may give negative signals in relation to other positive behaviour choices, such as dissuading people from cooking from fresh ingredients as opposed to reheating processed meals, or worrying vulnerable members of society from adequately heating their homes.

Q51: Do you agree that Smart Metering Equipment should be designed to support the calculation and/or display of account balances as described above, even though suppliers may not initially be mandated to invoke such functionality for credit customers?

Yes, but it is important that this information should match the value that users see on their bills, or on an online site. This implies that the value should be calculated at the head end and then disseminated to the meter and IHD.

Q52: What do you think the costs and benefits are of mandating suppliers to display an account balance (over-and-above those arising from display of information on cumulative cost of consumption) for credit customers on their IHD?

The costs should be negligible. The current UK specification is mandating support for highly complex tariff calendars. In comparison with the complexity involved in implementing this, (which may never be utilised), the costs of providing account balance should be trivial.

Given that many UK customers pay a fixed monthly amount, there is a parallel question about how relevant this information would be?

Q53: Do you agree with or have any comments on the Government's proposals for the outstanding issues from the Response? Please explain your reasoning.

Onzo would like to encourage support for higher resolution data, of at least five second and preferably one second granularity. We believe that this allows more useful analyses of the energy usage, which can provide feedback to help engage customers in efforts at energy reduction.

Q54: Do you think that an assurance framework, underpinned by regulatory obligations, is needed to support the delivery of the required functionality, interconnectivity, interoperability, and security of Smart Metering Equipment? Please explain your reasoning.

Onzo believes that there must be regulatory force to ensure interoperability, as an insufficient framework has been put in place byt the standards organisations.

Q55: Do you agree that as part of any assurance framework adopted, there should be a testing regime in place to support the delivery of the required functionality, interoperability and security? Please explain your reasoning.

We believe that a comprehensive test specification and interoperability test regime needs to be put in place. The experience of other wireless HAN standards, notably Bluetooth and Wi-Fi, has demonstrated that without the existence of these, the industry will just play lip service to interoperability. There is currently no robust testing regime in place for the proposed wireless HANs.

Q56: What are your views on the options outlined for a testing regime? Are there other options that should be considered?

There should be a comprehensive text specification and approved test houses which test to that schedule. As soon as possible this should be against a compliant test harness, rather than device to device or golden unit testing.

Q57: Do you think that a different approach to assurance is necessary for the Foundation and enduring phases? Please explain your answer.

No. The sooner a test regime is in place, the better.

Q58 – Q62. No response.