



EDMI Limited is a manufacturer of electricity and gas meters and smart metering systems.

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Preface: EDM Ltd agrees for the most part with DECC's program and the requirements of the IDTS. We are an active member of BEAMA and SSWG and share the same views, and therefore have only responded to those questions where we felt we can provide additional feedback.

25.	Do you agree that all the requirements recommended in the IDTS should be adopted by the Government in the SMETS? Please explain your reasoning.	<p>EDMI agrees with the requirements in the IDTS, with the following exceptions relating to Firmware Upgrades:</p> <p>Requirements OP.7.1, OP.7.2, OP.7.3, OP.7.4 conflict with WELMEC 7.2, Issue 5, Section 9.2, D1, note 5: "During download and the subsequent installation of downloaded software, measurement by the instrument shall be inhibited or correct measurement shall be guaranteed."</p> <p>Thus WELMEC allows the choice to inhibit measurement during a firmware update. To continue correct measurement during the entire update process requires the ability have a 'zero time' switch over, and to continue all metrology functions including data collection adds significant cost due to either requiring double the program memory and memory remapping hardware, or multiple processors. Even with such resources a perfect switchover without stopping measurement is difficult to ensure, especially in combination with the other security requirements. Restrictions would need to be put in place as to the maximum time allowed for inhibiting measurement while the firmware is being decrypted and updated, to minimise the amount of 'lost' energy.</p> <p>(Note: Maximum energy 'lost' due to firmware upgrade, assuming a 1 minute upgrade twice per year while the premises is consuming a maximum possible load, is only $230V \times 100A / 60min \times 2 = 766Wh$ per year.)</p>
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30.	Do you agree that the Government should include a requirement for a Communications Hub in the SMETS?	While there are some practical benefits of standalone communications hubs: notably diversification of equipment suppliers and gas first installations, EDM I feels that a better solution for the GB market is with

	<p>Please explain your reasoning.</p>	<p>more intimate, modular communications hubs.</p> <p>The same benefits of gas meter battery life preservation and decoupling of WAN and HAN application layers can be achieved in modular arrangements such as that proposed as Variant 1 of the IDTS. Furthermore this solution has a lower cost:</p> <ul style="list-style-type: none"> in material cost as acknowledged in Table 4 in logistics and shipping cost by consolidating shipments in installation costs with a shorter time on site in maintenance cost with a simpler, more reliable connection between hub and meter <p>It is our opinion that the current Variant 1 of the IDTS (reflecting Communications Option 3b – Intimate Comms Hub with fixed WAN) should be the primary solution of the SMETS and the current primary solution of the IDTS (Separate Comms Hub) should be variant 1 of the SMETS, as the current primary solution will only be an advantage in a much lower proportion of sites.</p> <p>The only disadvantage of an intimate, modular comms unit attached to the electricity meter is the perceived obligation to return to the same manufacturer if a new module is wanted at a later date. This risk can be mitigated in a number of possible ways:</p> <ul style="list-style-type: none"> by obliging the electricity meter manufacturer to publish and make available their interface designs by the Government mandating a physical interface standard for an intimate communications module by obliging electricity meter manufacturers to include a standardised auxiliary (interoperable) communications port to enable a third party standalone communications hub to be used in the future. <p>Of these options, the first is commercially plausible, depending on the manufacturer. For the second,</p>
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31.	Do you agree with the estimated costs and benefits for outage detection and the Government proposal to require the Communications Hub to include the equipment necessary to provide electricity outage detection? Please explain your reasoning.	<p>The cost of last gasp depends mainly on the size of the accumulator (battery or super-capacitor) which is required to store enough energy to transmit; which depends in turn on the type and nature of the communications medium on which it will transmit. For some technologies which support broadcast modes, such as Arqiva's long range radio solution, this can be quite cost effective. Some technologies, though, such as cellular packet communications are good in all other respects, but they do require a radio handshaking with the cell tower, a process which takes more time and energy than a low cost accumulator can store.</p> <p>The cost, then, depends on the communications technology, and the complexity of the messages to be sent.</p> <p>As the WAN comms is likely to be cellular communications during foundation stage, suppliers should not be obligated to roll out last gasp on every installation, but only a proportion of places on an electrical</p>

		network (though we recognise that this is logistically difficult).
34.	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.	<p>This fundamental question depends on the probability of changing a significant proportion of the meters' WAN comms before the end of the meters' useful lives. Given the ever rising costs of site visits, it may be more economical to change the entire meter and WAN communications after a certain number of years than to have two costly site visits within a relatively short timeframe – first to change the WAN, then later to change the meter.</p> <p>Modularity helps mitigate this risk though the line needs to be drawn at some point before the higher cost flexible system outweighs the advantages it brings.</p> <p>In EDMl's opinion, we estimate the probability of a full WAN technology change to be relatively low within the next 10 years. We thus believe that fully integrated meters should be allowed within the SMETS.</p> <p>If not allowed during the initial stages of the rollout, it should at least be reconsidered once the rollout is underway.</p> <p>We note that the highest Net Present Value in table 5 of this consultation are the highest for the fully integrated solution and for the intimate communications hub.</p>
35.	<p>Do you think the Smart Metering Implementation Programme objectives would be better met by:</p> <p>a) Using the SMETS to mandate a separate Communications Hub with a fixed WAN transceiver? Or</p> <p>b) Giving suppliers flexibility over options for configuration of the Communications Hub?</p>	<p>We believe that Suppliers are in the best position to judge the pros and cons of the smart metering system architectures possible; their priorities will differ depending on the proportions of dual fuel, gas only, elec only and bad paying customers. DECC must mandate the minimum to ensure interoperability of the system in the case of change of supplier, but should leave it up to the Suppliers rolling out the systems as to which architecture they feel best suits their business and their customers.</p> <p>EDMI supports option B: supplier flexibility.</p>

	Please explain your reasoning.	
39.	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?	<p>EDMI agrees that it is important for the devices of the smart metering system to be interoperable, in order to do so they need to have a common language, the most comprehensive common language that is standardized is DLMS/COSEM (which will require GB extensions such as those developed by SSWG), and so overall we agree that DLMS/COSEM should be a mandatory communications option on all UK smart meters.</p> <p>However, it must be recognised that DLMS may not be the most efficient protocol and that the majority of meter management systems presently operating in the market are already multi-vendor and able to communicate using many different manufacturer's protocols to the meters; the industry is used to such integration. Allowing meter manufacturers to innovate and offer more efficient protocol alternatives will provide communication cost savings, and therefore should be considered.</p> <p>DECC should mandate devices to have the ability to communicate using DLMS/COSEM sufficiently to be interoperable (which would have to be proven before industry acceptance), however suppliers should not be obligated to use this protocol; they should be free to use more efficient protocols over the WAN to optimise the efficiency of the system, provided they publish the protocol and make it available to the market (perhaps under license or agreement).</p>
40.	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	<p>Interoperability on the HAN is of the utmost importance for the success of the smart metering rollout.</p> <p>EDMI agrees that SEP 1.x is a well developed protocol and de-facto standard with many products on the market.</p> <p>EDMI believes that SEP 1.x should be used between the communications hub and the gas meter and to the IHD. We believe, though, that a more flexible protocol should be permitted between the electricity meter and any external comms hub – DLMS or manufacturer protocols should be permitted between these</p>

	you have any economic, technical or consumer evidence to assist Government in evaluating industry's proposal?	devices to encourage innovation and allow for system expansion.
60.	Do you agree with the Government's assessment of the advantages and disadvantages of the cryptographic solutions identified above? What other options should the Government consider? Please explain your reasoning	<p>EDMI suggests that the following issues should also be considered in the development of the security specifications of the Smart Metering System:</p> <ol style="list-style-type: none"> 1. A potential issue with key management is that if the meter for instance deleted all keys if a tamper attempt is detected, such a tamper attempt would result in inaccessibility of all secured data within the meter – which is virtually all data. What is considered the most important item – data protection, or access to data? The concern is that the aim of such a tamper could simply be to trigger the intrusion detection and render the meter useless. 2. Some such asymmetric (PKI) systems such as ECC may be protected by patents – this could be seen as a disadvantage. We agree in particular that there is an additional cost of implementing PKI or Hybrid systems. 3. EDM I believes that there is not a need to go to a higher security level than FIPS 140.2 level 2.