

To: Margaret Coaster
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(submitted by email to
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Re Response to Smart Metering Consultation by Real Wireless Ltd

Dear Margaret,

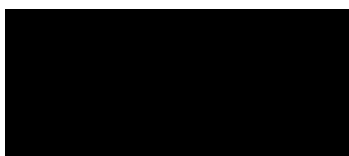
Please find attached responses from Real Wireless Ltd to questions in the *Consultation on Smart Metering for Electricity and Gas*. We have provided responses to those questions relating to the communication function which are due on 28th September.

Real Wireless Ltd is a UK-based consultancy with deep expertise in wireless communication technology and systems, with an independent capability to assess and advise on the fit of differing technology approaches to complex technical and market requirements. Our consultants also have many years experience of deploying and operating such systems and dealing with the associated real world challenges. We think we are therefore well placed to comment on certain aspects of this complex programme.

We will be providing further responses to a number of the remaining questions prior to the second deadline of 28 October.

We would like to be included in any relevant briefings, meetings, workshops and communications regarding the Smart Metering project, could you please clarify how we formally register our interest?

Yours sincerely



Document: Smart Metering Implementation Programme : Prospectus

Question 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 staged implementation strategy proposed effectively allows energy suppliers to commence the rollout of smart meters from early 2012 – some 18 months before the DCC services are scheduled to be available. In what is already an extremely complex programme with very tight timescales we believe that this approach places significant additional risks and burdens on all parties as well as potentially on consumers. Such an approach requires the energy suppliers to negotiate their own short term communication contracts, which have to include some mechanism for the DCC to take over as soon as the DCC is in service. This raises a number of questions for example:

1. What standards, including security and service availability, will these short term contracts be operating under and who will define these standards?
2. As the in-service date for DCC approaches we would envisage that the commercial viability of providing such short term services will disappear due to the upfront installation costs. This could lead to the cessation of installations as connections could not be provided. At this stage it is not clear how far ahead of the DCC service availability date this might occur and would depend on the commercial assessment done by each communication service supplier.

Our view is therefore that the installation of smart meters should only commence once the DCC is fully operational.

Document: Smart Metering Implementation Programme – Statement of Design Requirements

Question 1: Should the HAN hardware be exchangeable without the need to exchange the meter?

We see this is a trade-off between the additional cost, complexity and potential decrease in reliability introduced by making the HAN hardware exchangeable and the potential cost savings should there be a need at some point during the lifetime of the meter to upgrade the HAN system. The cost savings would arise because only the HAN hardware would need replacing and not the whole meter or all of the internal circuit boards.

Whilst we consider it extremely likely that new home area networking technologies will be introduced during the lifetime of a meter we do not think this will necessarily require the change out of the smart meter HAN system. Provided the data rate and other requirements of the meter are well-captured at the start of the project, the rest of the HAN could be upgraded for other needs in a fashion which is backwardly compatible with the HAN technology

We envisage that the smart meter HAN and other HAN systems will co-exist without interference. Indeed we would not expect HAN systems to be allowed to be deployed if they did not meet this requirement.

Of course, if the HAN hardware is exchangeable on the electricity smart meter it should also be exchangeable on the other smart meters such as water and gas if the full benefit of being exchangeable is to be realised.

Overall therefore we think the HAN hardware should be permanently integrated into the meter, provided that the requirements specifically associated with the metering link are robustly set at the start.

Question 2: Are suitable HAN technologies available that meet the functional requirements?

Yes - we believe that suitable HAN technologies are available and that this project will serve to accelerate the adoption of new technologies in this area. There are several new technologies such as Zigbee and UWB that meter manufacturers will need to evaluate but based on the range, throughput and security considerations we are confident that these or other competing technologies such as Wi-Fi will meet the requirements for smart metering. We recommend the inclusion of the recently-introduced Bluetooth Low Energy Wireless Technology (a feature of the Bluetooth 4.0 standard based on Wibree) mode in any comparative evaluation. We agree with the non-prescriptive approach as this allows service differentiation by allowing manufacturers to develop additional products and services above the minimum requirements.

Question 3: How can the costs of switching between different mobile networks be minimised particularly in relation to the use of SIM cards and avoiding the need to change out SIMs?

We believe that where cellular connections are utilised then cellular operators should be mandated to offer a no SIM change solution if the meter needs to change networks. Technically we believe there are several approaches that the operators could utilise to meet this requirement.

Of course we recognise that there is no guarantee that the new network will actually provide the connection to the meter due to coverage issues and this will then require a different WAN solution to be adopted for that customer. However, we note that coverage challenges are a feature of *every* wireless network technology, at whatever frequency. Processes will therefore need to be introduced by the energy supplier and DCC that shield consumers from such uncertainties when they change their energy supplier.

Question 9: Are there any particular technical issues (e.g. associated with the HAN) that could add delay to the timescales?

Overall we feel that the timescales proposed are very aggressive and as such we believe that there are many risks which could prevent these timescales from being achieved. We consider that it is the sheer complexity of the programme and the number of organisations involved that gives rise to this uncertainty. Such a programme requires many organisations to work together to agree

specifications, timelines, contracts, design and run processes, develop new products and services and much more. Our experience in such programmes is that timelines are optimistic even without accounting for the unexpected – which always occurs.

Our focus is on the communications aspects including the WAN, HAN and DCC. The overarching requirement here is for a robust, and secure communications service that achieves first time automatic connection of the smart meter back to the DCC servers. Meters that do not connect or have an unreliable connection will impose additional costs on either the DCC or utility and could delay the programme if numbers are significant. The main WAN risk is likely to be the certainty of achieving this connection, particularly if one or more wireless solutions are deployed. The range of domestic meter locations coupled with variable local topography is likely to lead to the unpredictability in achieving the required first time automatic connection. Furthermore there is the possibility that the connection will not be achieved at all. Careful coverage calculations are required based on a large number of likely meter locations to calculate the spread of path losses that are likely to be experienced. Coverage planning should then be done using the extreme statistics of path loss in order that the lack of first time connection is exceedingly low. However, greater gains are likely to be achieved by using a diversity of wireless technologies with complementary capabilities. For example, in the case of some types of building construction, higher frequencies can yield better coverage than low frequencies. The emphasis should be on including the ability to change to fall-back technologies – potentially automatically – when the default technology is unavailable. In such instances the DCC needs to have an alternative that can rapidly be deployed.

The main technical issues with the HAN are in regard to the selection of which HAN technology to deploy – a decision left to each energy supplier. This is a complex choice as there are several different technologies available with differing capabilities in the home environment. The main risk we perceive here is a delay in finalising which HAN technology is to be deployed by each energy supplier resulting in delays to the start of the roll out of smart meters.

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