



RESPONSE OF MICROSOFT TO THE CONSULTATION ON SMART METERING FOR ELECTRICITY AND GAS

28 October 2010

EXECUTIVE SUMMARY

The proposed architecture for the smart grid and the functional requirements for smart-meters assume that detailed meter readings must be provided to utilities for the purposes of billing. At the same time, meter readings are considered personal information to be protected.

Microsoft Research has developed technologies that allow billing based on fine-grained readings, and complex dynamic tariff policies without the need for customers to disclose any electricity readings to any third parties. Technologies providing strong privacy for smart-grid billing should be assessed and their support should be considered for inclusion in the functional requirements for meters and their communications with in-house devices, to ensure compliance with applicable national and European law on privacy and Data Protection

1. PRIVACY TECHNOLOGIES & SMART METERING

Question 2: Do you have any comments on our overall approach to data privacy?

- The technical architecture underpinning the consultation is based on the assumption that smart metering and smart grid infrastructures inevitably require fine-grained readings to be made available to utility companies or a central communication facility for billing. This is not a technical inevitability. For example, Microsoft Research has developed privacy technologies that allow billing based on fine-grained readings and complex dynamic tariffs, without revealing any other personal data such as fine-grained readings to utilities or any other third parties.
- Privacy compliant solutions for smart-metering should implement the principle of “data minimization”. Novel but wholly practicable cryptographic techniques enable the calculation of bills and other functions of meter readings without revealing the detailed readings to any third parties. Other functions can include, for example, aggregate consumption reports to support fraud detection, or samples of fine grained readings for network management. Aside from the final bills and other aggregate functions of the readings no other information needs to be disclosed. In that respect, smart-meters and infrastructures supporting these privacy features would be in line with the data protection principle of data minimization, and would offer strong privacy protections to users of smart grids.
- The methodology of “Privacy by Design” requires a choice of technology, or at least support for technology, that improves protection of the privacy of customers. The approach proposed in the consultation document to privacy by design is very abstract. The vagueness resulting from this may make it difficult to guarantee that a privacy friendly technical solution is going to be implemented or supported for smart-metering and billing. Before

finalising the requirements for smart-meters and infrastructures, we recommend a thorough review of technical mechanisms that can ensure strong privacy and integrity for billing as part of the Privacy by design process.

2. METERS SUPPORTING PRIVACY TECHNOLOGIES

Question 1: Do you have any comments on the proposed minimum functional requirements and arrangements for provision of the in-home display device?

[Also relating to Question 6: Do you have any comments on the functional requirements for the smart metering system we have set out in the Functional Requirements Catalogue?]

- Functional requirements of the smart-grid infrastructure and smart-meters could include specific features to support data minimisation and to allow for the calculation and certification of bills without revealing personal information. Technically, only aggregate information regarding the final bills to be paid, as well as aggregate consumption per household for fraud detection needs to be disclosed to third parties. High level requirements may be drafted to reflect this.
- Some quite simple requirements on the meter's communication with in-home devices could enable the deployment of strong privacy technologies. In particular meters cryptographically certifying readings, and making them available to third party home devices (as part of high-level function C) would enable privacy friendly calculations and transmission of billing information to utilities or regulators.
- Ensuring that meters support strong privacy technologies future-proofs the infrastructure, and makes the smart-grid resilient to changes in the data protection regime concerning the sensitivity of detailed consumption measurements. Should privacy concerns arise at later stages, strong privacy technologies can be deployed to alleviate those concerns without requiring the installation or update of any metering hardware.

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More information about Microsoft Research privacy solutions for smart metering is available at:
http://research.microsoft.com/privacy_in_metering/

Microsoft would be pleased to provide further information or assistance on this review as required.
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