

Smart meter functionality – for today and the future

4th Annual Smart Grids & Cleanpower 2012 Conference

14th June 2012 Cambridge

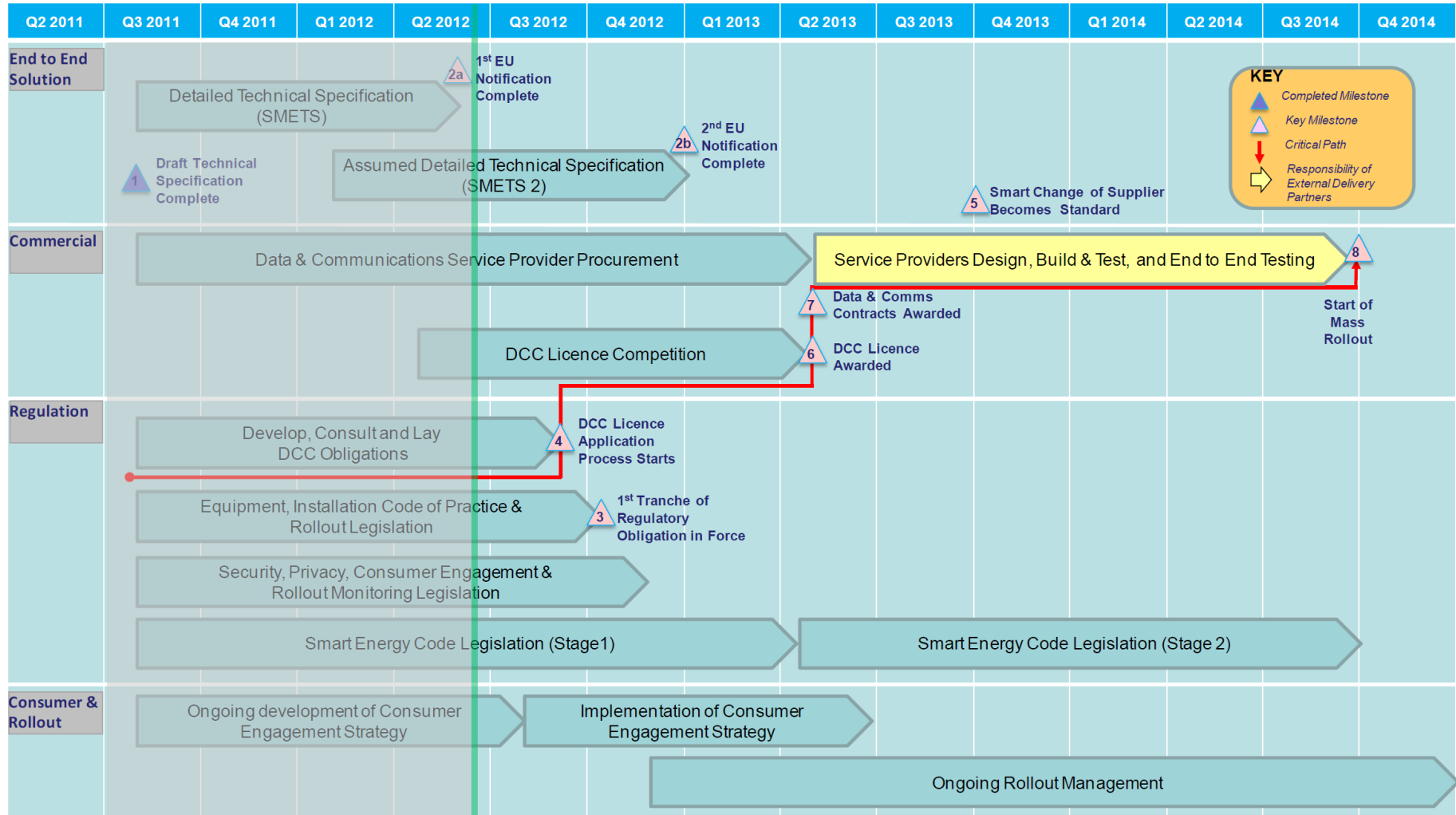
www.cir-strategy.com/events

Overview

- UK smart meter deployment is starting now
- SMETS I published in April
 - **S**mart **M**etering **E**quipment **T**echnical **S**pecifications
 - Defines minimum functionality for meters and displays
- Key design considerations beyond SMETS
 - Total cost to install, not just asset cost
 - Communications performance
 - Future-proofing the hardware
 - Models for meter firmware and applications



UK status June 2012



Issues in deployment and commissioning



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SMART ENERGY TECHNOLOGIES

- Initiating a new positive relationship with customers

The screenshot shows the 'Which?' website interface. At the top left is the 'Which?' logo. To its right are navigation links: 'About Which?', 'Careers', 'Contact us', and 'Help'. Further right is the 'Member access: Log in | Sign up' link. A search bar with a 'GO' button is positioned below these links. Below the search bar is a navigation menu with categories: 'Campaigns home', 'Personal finance', 'Technology', 'Food and health', and 'Energy and environment'. The breadcrumb trail reads: 'You are here: Campaigns home > Energy and environment > Our smart meter campaign > The ideal smart meter installation'. The main content area features a section titled 'Our smart meter campaign' with a sub-heading 'The ideal smart meter installation'. A paragraph explains that waiting for a delivery or someone to read the meter can be frustrating, and the site offers advice on how to ensure a good smart meter installation. To the right of this text is a photograph of a technician in a blue shirt working on a smart meter. On the far right edge of the screenshot, there is a vertical strip showing various smart meter components and wiring.

Which?

About Which? | Careers | Contact us | Help

Member access: Log in | Sign up

Search GO

Campaigns home

Personal finance | Technology | Food and health | Energy and environment

You are here: Campaigns home > Energy and environment > Our smart meter campaign > The ideal smart meter installation

In this section

- Our smart meter campaign
- > What is a smart meter?
- > The smart meter challenge
- > Smart meter advice for consumers
- > The ideal smart meter installation

You may also be interested in

- The Big Switch
- What is a smart meter?
- Video guide
- Tell us your energy story


Our smart meter campaign

The ideal smart meter installation

Waiting in for a delivery, or for someone to come round and read your meter, can be really frustrating. That's why alongside our [smart meter challenge](#), we're also asking your energy company to follow our top ten principles for a good [smart meter](#) installation.

Before your smart meter installation

- Your energy supplier should offer flexible appointment times and explain to you what to expect on installation day, particularly on how long it will take.
- They should tell you how often they will be collecting information about their energy use from their smart meter. They should also tell you that you have the choice to opt out of this data collection.



WAN and HAN performance

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- Strongly influenced by property characteristics
 - Location (overall WAN coverage)
 - Meter location (indoor, meter box, semi-concealed)
 - Distance between gas and electric meter
 - Construction materials (timber, brick, stone etc)
 - Type of dwelling (apartment, detached property etc)
- Minimise chance of failed installation
 - Collect information on the meter locations and properties
 - Use coverage maps for WAN
 - Provide tools, feedback and alternate options for installer



Beyond installation – future proofing

- Challenge of rapidly evolving markets for a long lifetime asset
 - Maintaining functionality
 - Predicting total cost of ownership and ROI
- International experience – it isn't easy!
 - Italy
 - Australia/New Zealand
 - Sweden
- But it is possible
 - E.g. In-field upgrade of FlexNet meters in USA

Choosing the right smart meter

- Traditional

- Hardware cost
- Performance stability
- Reliability
- Day 1 functionality
 - Standards
 - Protocols
 - Compatibility

Consumer analogy:

buying a mobile phone, 10 years ago

- Additional Smart specs

- Which processor
- How much memory
- Which OS
- WAN hardware capability
- HAN hardware capability
- Metrology capability
- User interface capability

Consumer analogy:

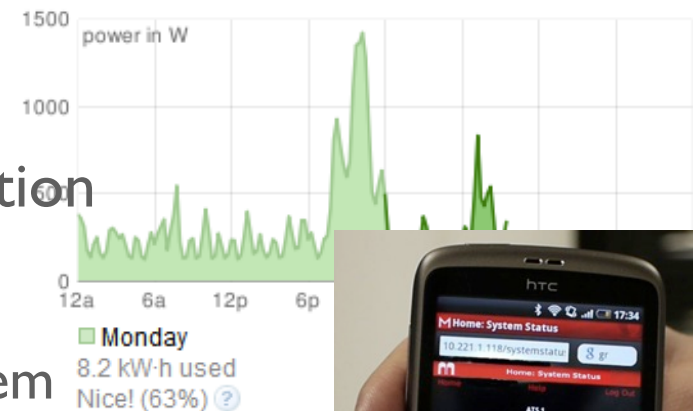
buying a Smart Phone today

Requirements trends to consider

- Core functionality

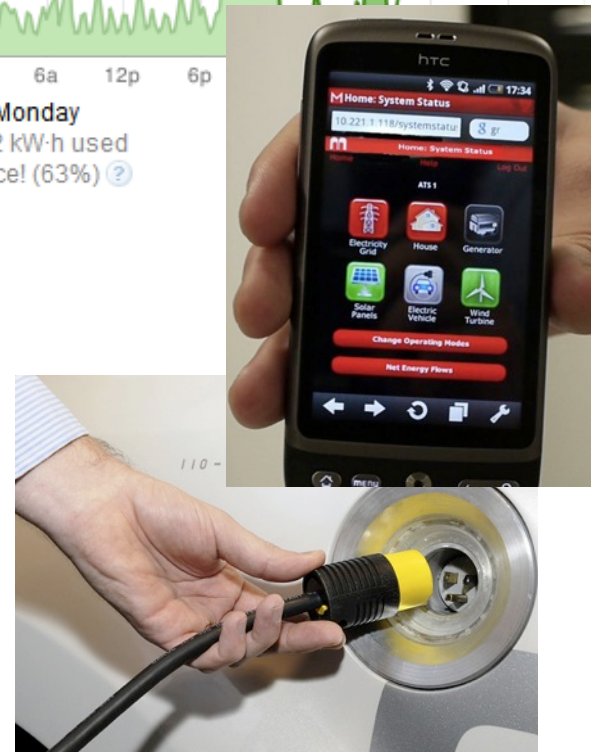
- Increasing complexity of Time of Use
- Credit, Prepayment and PAYG operation
- Increasing resolution of load profiling
- User interface with smart meter system

Day [Daily Totals](#) [Week](#) [more](#)



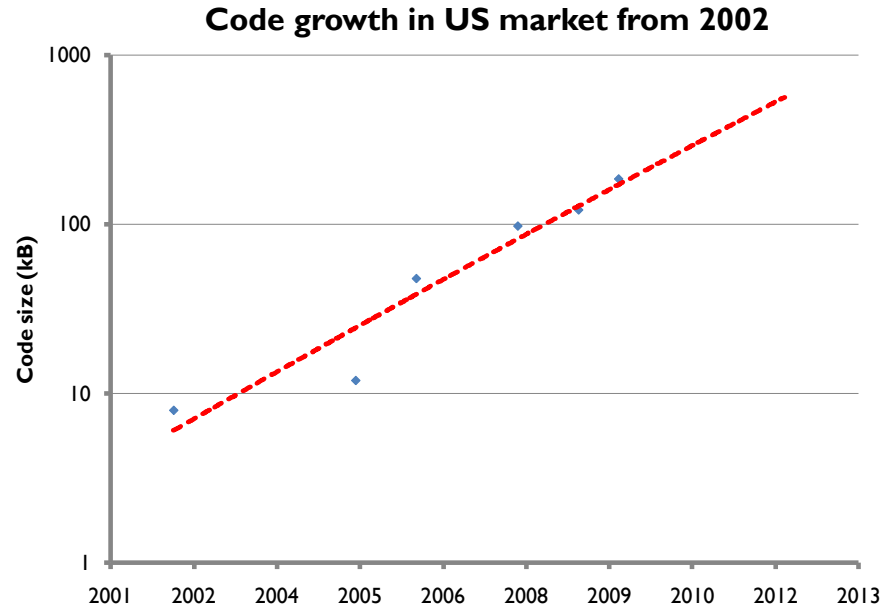
- Future applications

- EVs
- HEMS
- Microgeneration
- Demand response appliances



Recent history in smart meter evolution

- Code growth
- Non volatile storage
 - Even faster than code size
- Increasing frequency of comm
 - From monthly to hourly
- Increasing communications bandwidth
 - Larger volumes of data
- Security requirements
 - Increasingly heavyweight



Writing meter firmware applications

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SMART ENERGY TECHNOLOGIES

- Traditional
 - Meter vendor writes firmware
 - Using subcontractors
 - Licensing in stacks etc
 - No third party access
 - Code is proprietary
 - Code often monolithic
 - Security issues
 - Slow code evolution
 - Limited set of resources
 - Limited customisation per customer
- Smart
 - Meter vendor provides core OS
 - Including core metrology
 - Including hardware drivers
 - Applications for everything else
 - Third parties can develop
 - Defined interfaces
 - Independently installable
 - Meter vendor certifies

Predictions

- Small choices in design will have **BIG** impact on installation
- Expect unknown applications – for home and grid management
- Expect third party app development (already happening in US – ‘Green Button’ initiative)



For further information



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www.sentec.co.uk

<http://sentec.co.uk/case-studies/connect-and-disconnect-smart-meter>

<http://sentec.co.uk/case-studies/icon>

<http://sentec.co.uk/case-studies/energy-control>