

Smart Meters, Smart Grids and IPL

About IPL

IPL is a software and IT services company specialising in the delivery of intelligent business solutions. We help our clients to exploit corporate information assets to yield tangible business benefits.

IPL's consulting is renowned for its quality and value. We consistently exceed our clients' expectations through a combination of imaginative thinking, managerial and technical expertise and many years of systems engineering experience.

IPL's track record in end-to-end business solutions development is exceptional. Our proven development methodology allows us to cut through technical complexity, manage risk and completely focus on delivery. We always deliver reliable, efficient and accurate systems to a precise schedule.

IPL is certificated against three international standards:

- ISO 27001:2005 (Information Security)
- ISO 9001:2008/TickIT (Quality)
- ISO 14001:2004 (Environmental)

The company has a permanent workforce of 260, revenues of ca. £29M p.a. and 40,000 sq ft of secure office space in central Bath.



The meter is running!

Smart Metering

In October 2008 the UK Government announced its intention to mandate a roll out of electricity and gas Smart Meters to all homes in Great Britain, with the aim of completing the roll out by the end of 2020.

Currently, the domestic meter population stands at 47 million, located in 26 million homes, and a major programme of meter roll-out has yet to start. The necessary installation rate is already more than double our current installation capability for the 'dumb' meters which do not require home network connections.

With Smart Meters, new tariff schemes can be introduced. Differential tariffs, exemplified by the old and rather simple Economy 7, will become commonplace and extensible. Along with complex time related unit pricing, it will be possible to incorporate consumption related pricing. Smart Meters will also measure micro-generation feed-in contributions (e.g. from wind power and PV panels).

With Smart Meters, the consumers' ever growing demand for electricity and gas may be better moderated. And the general public will become:

- more interested in making use of off-peak power,
- more willing to contribute domestically generated electricity,
- keener to employ alternative water and space heating sources.

Smart Metering will bring with it the necessary foundations for radical improvements in power distribution. It will also help to teach consumers about the need for these major changes – a difficult 'hearts and minds' issue in its own right.

Smart Grids

Smart Metering is only the start: Demand-Side Management is a real goal, along with a more agile approach to energy price management.

By 2017, the UK will become a net importer of energy. We must turn our demand-led electricity and gas industries into efficient suppliers of scarce resources to a managed community of consumers. There is no need for draconian control of power consumption. We simply need to make better use of the generating capacity that we will have. However, this presents a number of complex challenges.

Future electricity generating capacity must rely heavily on a nuclear base load, with opportunistic supplements from sources such as wind, tidal, wave and solar power.

IPL can help

IPL has significant experience derived from the major communications roll-out programmes associated with the introduction of modern mobile telephony and digital television. We are at the leading edge of those new technologies, helping service providers and major international equipment manufacturers to successfully deploy their complex solutions.

From Smart Meters, across the communications networks, to central and supplier computing services, the necessary Smart Grid infrastructure, although unique, bears some striking similarities to those of mobile telecommunication and digital television broadcasting. IPL is well placed to enable a smooth introduction of reliable and secure Smart Grids and Smart Metering solutions.

Smart Meters

Smart Meters have to be “future proof”. They really need to last for decades, so they will have to support remote software updates and the computational demands of the next 20 years, at least.

Smart Meter security is also vital. With rising energy prices and a population with growing ICT capabilities, Smart Meters will operate in a hostile environment. Data security is vital, both for the consumers and for the suppliers. Simple consumer churn introduces some very complex problems. Also, there are some interesting opportunities in the management of prepayment meters that will be worth exploiting.

IPL has a 30 year track record in producing solutions to meet the demanding requirements of consumer electronics. Smart Meters are remotely managed, embedded, secure communications devices: we’ve done all of that in our work on TV set-top boxes and femtocells.

Home Area Networking

Smart Meters may use Home Area Networks to link to the outside world. A vast number of HAN and WAN technologies offer potential solutions, but they all have major challenges to face, especially to cover a significant proportion of the 27M UK households.

IPL is active at the cutting edge of Home Area Networking, for example with femtocells – devices that improve in-building mobile network coverage by using ADSL backhaul. Again, IPL has experience of residential gateway design from the world of digital set top boxes.

Signalling

Smart Grid signalling standards will consolidate in due course. However, the demanding Smart Meter installation deadline will inevitably lead to the early realizations based on proprietary protocols.

With IPL’s experience of both proprietary and standards based protocols, we can bridge protocol gaps and integrate disparate technologies. We also contribute to the standards process.



Central Communications Model

A Department of Energy and Climate Change (DECC) consultation led to the selection of a Central Communications Model as it offers to simplify the roll-out of Smart Meters and to incentivise energy suppliers. To be effective, this will rely on a highly available communications network – one that incorporates numerous technologies. Outages would compromise the accuracy and timeliness of billing and operational data.

IPL has decades of experience in management systems for national-scale networks. We have deployed systems to monitor and control some of the UK’s largest fixed and mobile telephone networks; and to the Highways Agency’s motorway control network (itself a significant contributor to fuel consumption management).

Billing

IPL has a great track record in designing and delivering business-critical real time charging systems for mobile networks; for example the “Pay-As-You-Go” service platforms for two of the UK’s biggest GSM operators.

These systems implement many features that are relevant to Smart Metering: for example: time variable charging, usage-base bonus deals and multi-service bundling.

In summary

Smart Metering and effective Smart Grids present the energy industry with unique and monumental challenges.

IPL has already met the demands of large, innovative and strikingly similar national development and roll-out programmes. So, we offer the head start that is absolutely critical to the successful, first time delivery of accurate, secure and reliable Smart Metering and Smart Grid solutions.



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