Integrating Energy Storage into Distribution Networks

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www.hvm-uk.com

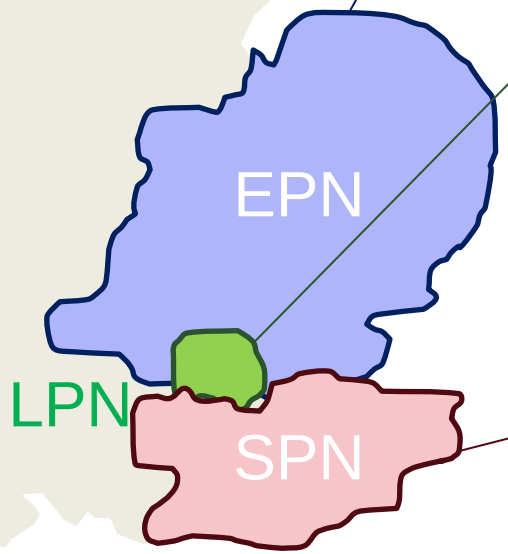
UTILITY INDUSTRY ACHIEVEMENT AWARDS 2012

UTILITY OF THE YEAR

UK Power Networks
Delivering your electricity

About UK Power Networks

UK Power Networks is a Distribution Network Operator (DNO), providing power to a quarter of the UK's population through its electricity distribution networks



3.5 million customers
96,000 km of network
6.6 GW Maximum Demand

2.3 million customers
37,000 km of network
5.2 GW Maximum Demand

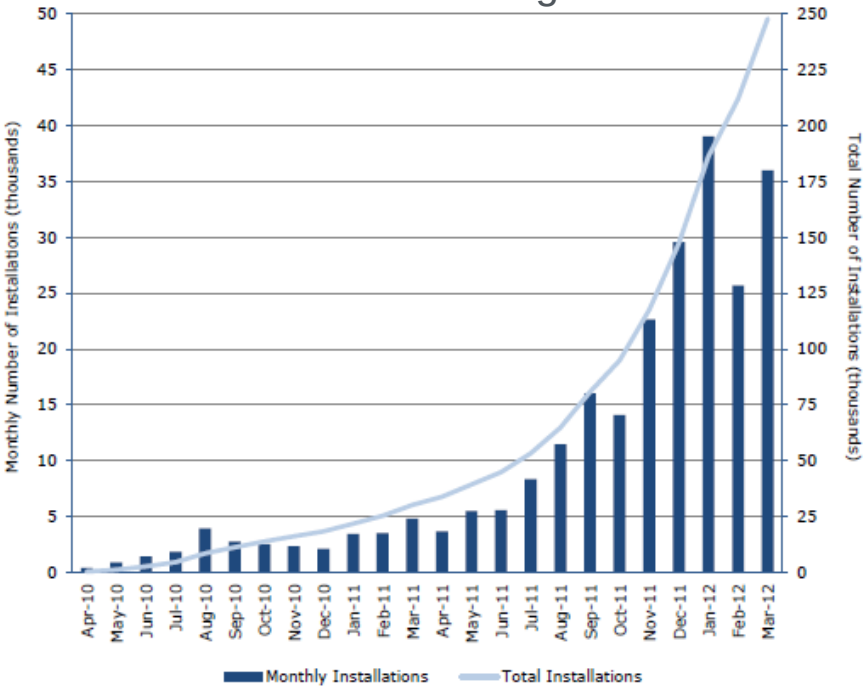
2.2 million
customers
52,000 km of network
4.0 GW Maximum Demand

Future Challenges

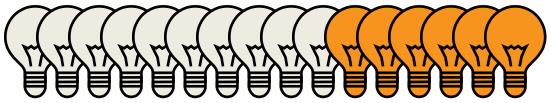
Climate & Energy Landscape

- Carbon Plan obligations are changing the mix of generation to more intermittent sources
- Increases in decentralised generation can cause bi-directional power flows and voltage regulation issues – but visibility is limited
- Increase in electricity demand due to electrification of heat and transport, drives the need for significant levels of distribution network reinforcement.

Sharp increases in deployments of distribution-connected generation



30-60% Higher Peak Demand



Source; Ofgem; http://www.ofgem.gov.uk/Sustainability/Environment/fits/Pages/fits.aspx

Thinking Grids

Why

To continue to operate our electricity networks:

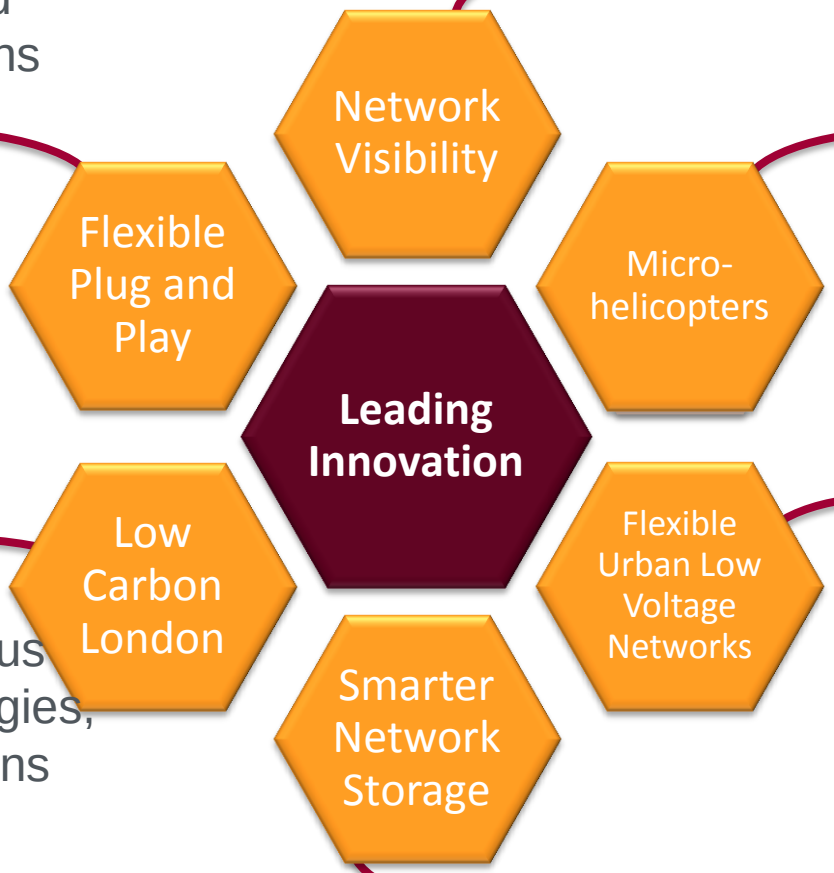
SAFELY **RELIABLY** **ECONOMICALLY** **ENVIROMENTALLY FRIENDLY**




How

- By creating a concise business plan for the RIIO-ED1 (2015-2023) period which will **foster innovation**
- Providing challenging, measurable and achievable outputs in safety, customer satisfaction, network reliability, connections, environment and our social obligations
- By running a major company transformation project

Thinking Grids – Case Studies



Bringing analytics into the business

Inspecting remotely our networks

Managing intelligently power flows optimising capacity

Using the largest energy storage device in Europe to test a range of unexplored applications

Turning London into an innovative test city for numerous smart grid technologies, methods, applications

Enabling faster and cheaper connections of distributed generators

http://innovation.ukpowernetworks.co.uk/innovation/en/why-we-innovate/why.htm

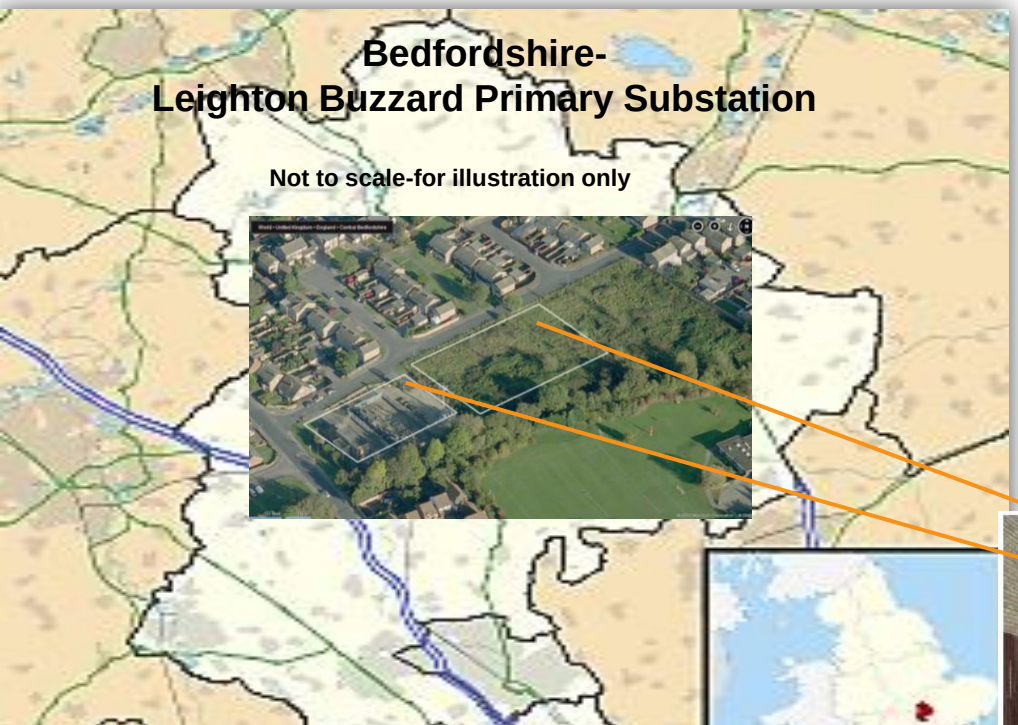
LCN Fund
Low Carbon Networks

Smarter Network Storage
Maximising the whole system value of grid-scale storage

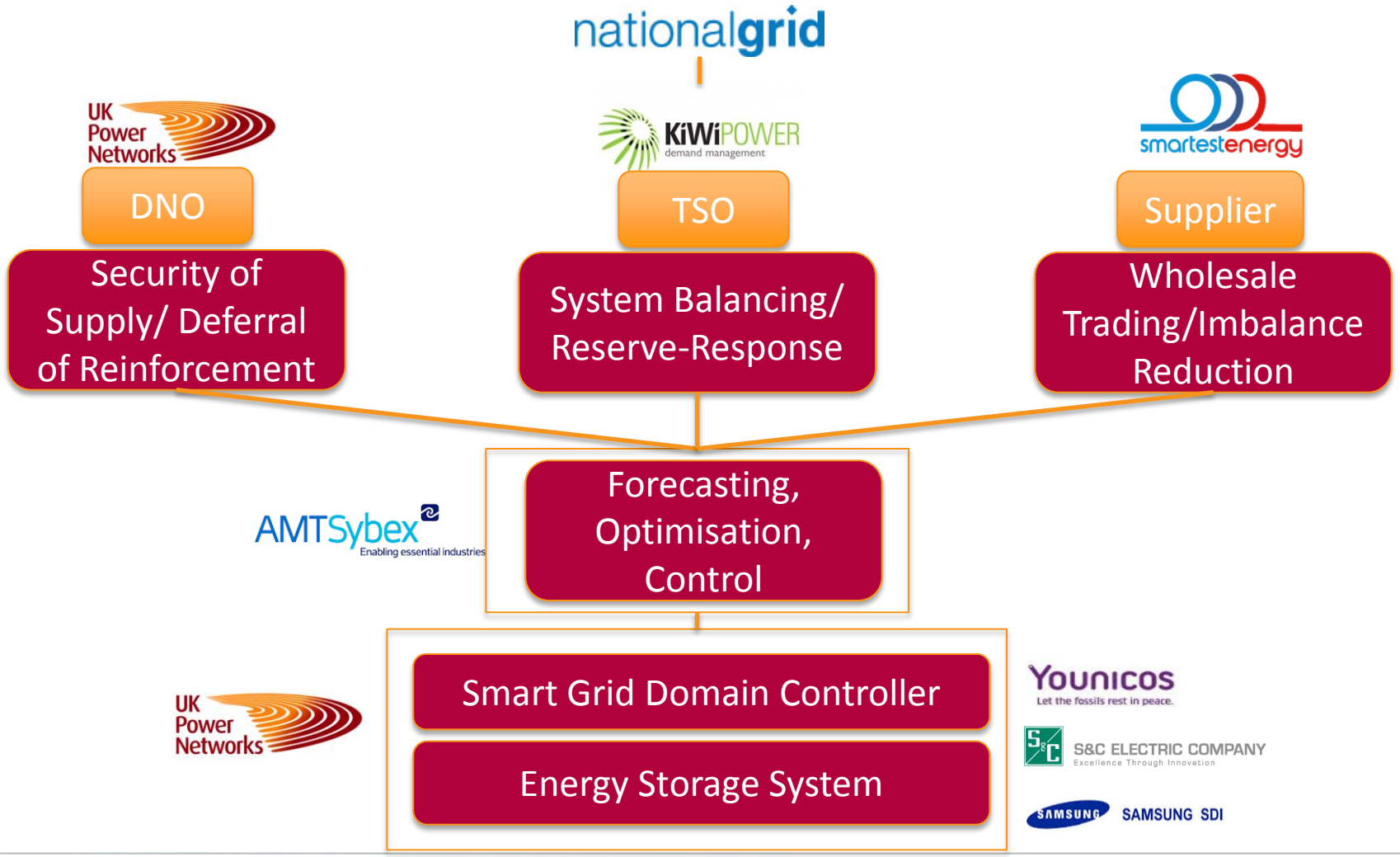
Core Aims

1. Demonstrate large-scale energy storage deployment - 6MW / 10MWh advanced lithium-ion storage system
2. Demonstrate multi-purpose application of storage across full value chain
3. Assess and quantify the various possible business models for storage
4. Develop novel optimisation and control systems
5. Develop novel commercial arrangements to enable the shared use of storage

- £13.2m LCN funding awarded in Nov 2012
- £4.0m investment by UK Power Networks



‘Smart Optimisation & Control System’ (SOCS)



Also in conjunction with:

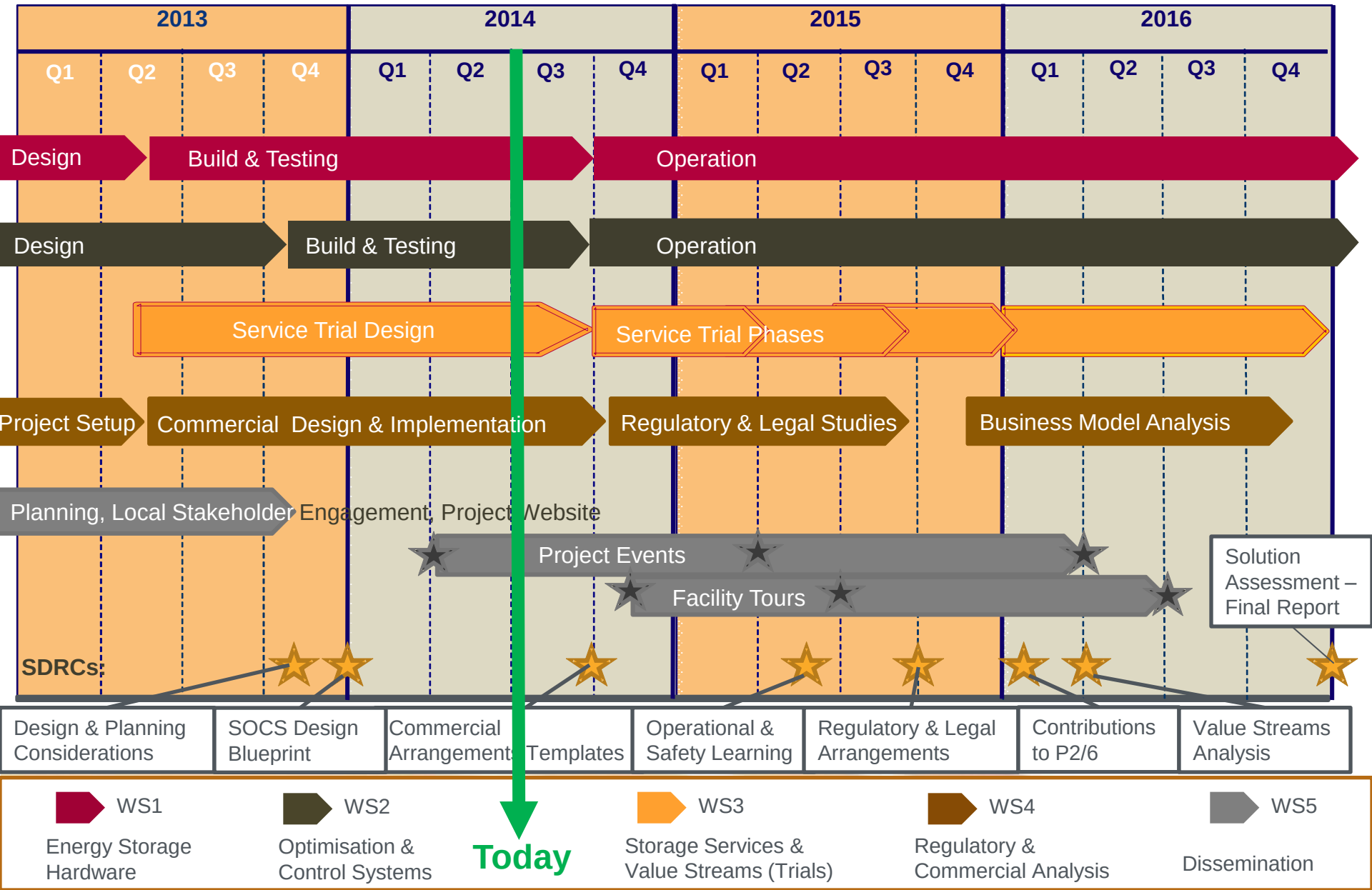
Imperial College London

Newcastle University

PÖYRY

Swanbarton Limited
Energy Storage Consultants

SNS – 4-Year High-Level Plan



The Journey to Commissioning the Largest Battery in Europe..

Thank you

http://innovation.ukpowernetworks.co.uk/innovation

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