FINESCE
WP5 Overview

10 Sept 2013

Overview

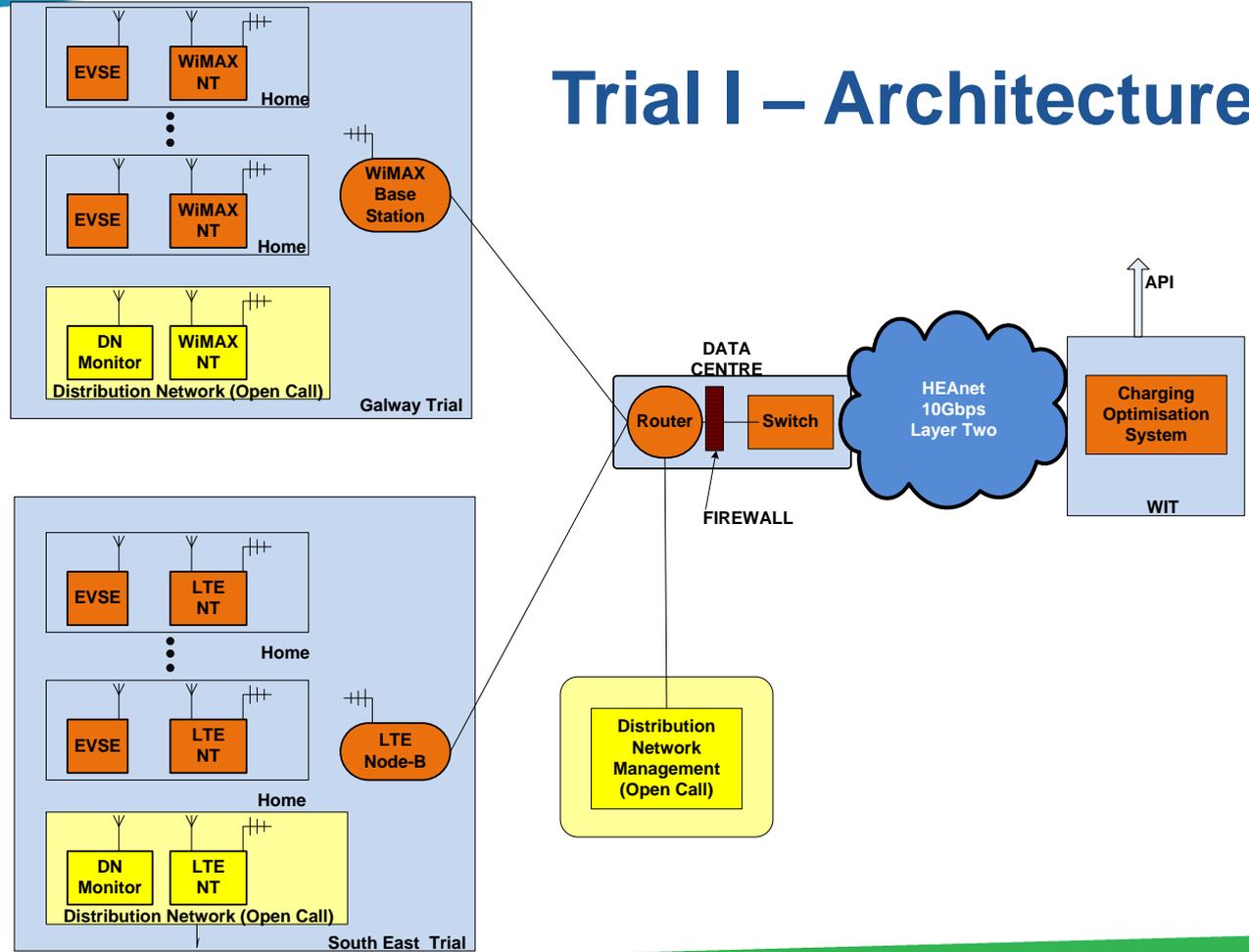FUTURE INTERNET SMART UTILITY SERVICES

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- Two smart energy trials both based in Ireland
- Eight Partners
- Approximately €4.5m funding
- Trial I – EV Grid Integration
- Trial II – Smart Grid IP communications

Trial I - Objectives

- Electric Vehicle integration into the grid
- Develop charging optimisation systems using Generic and Domain Specific Enablers
- Use WiMAX and LTE access technologies
- Large scale modelling
- Provide answers to key issues:
  - Will EVs be integral to the grid ?
  - How will GEs be deployed ?
  - What communications technology to use ?
  - Economic impact ?
- Distribution Network Integration - Open Call
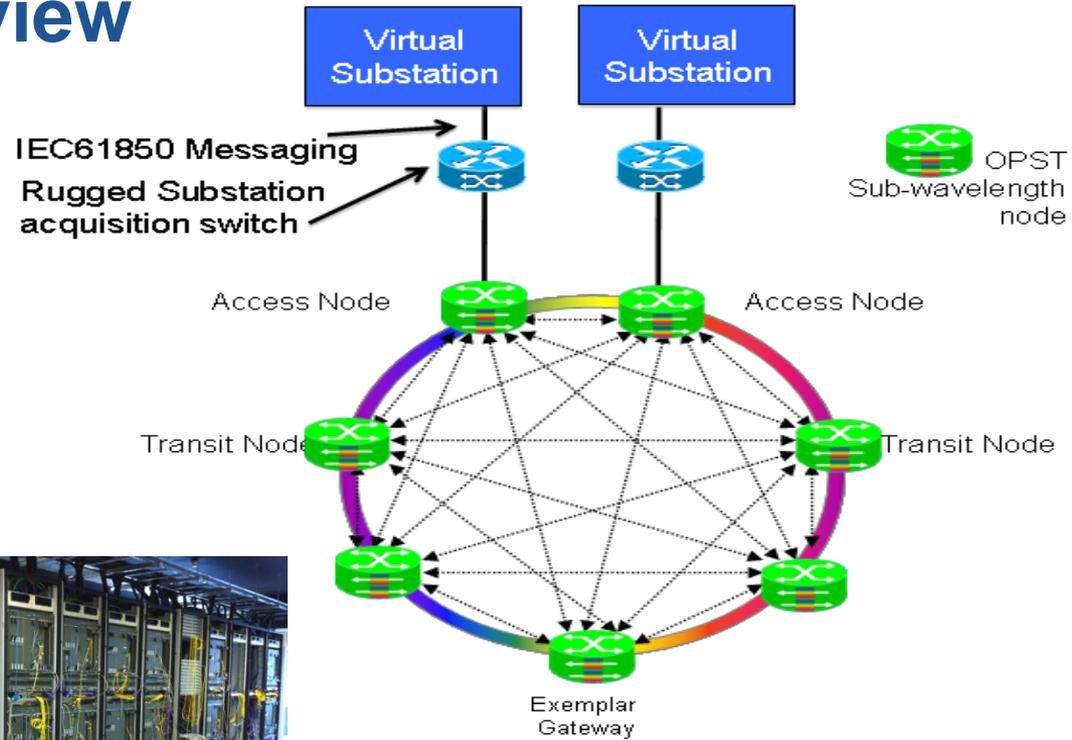
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Trial II - Objectives

- Advanced IP based smart grid communications
- Utilities slow to adopt IP
  - Electrical protection
  - Cyber security threats
  - Legacy systems
- Impact
  - Missed IP economic of scale
  - Lack of innovation
  - Hybrid solutions
  - End of life issues

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Trial II - Approach

- Use fully optical network – reduce opto-electric transitions
- Achieve greater determinism
- FI-Ware Generic Enabler to provide management security layer
- Test network parameters
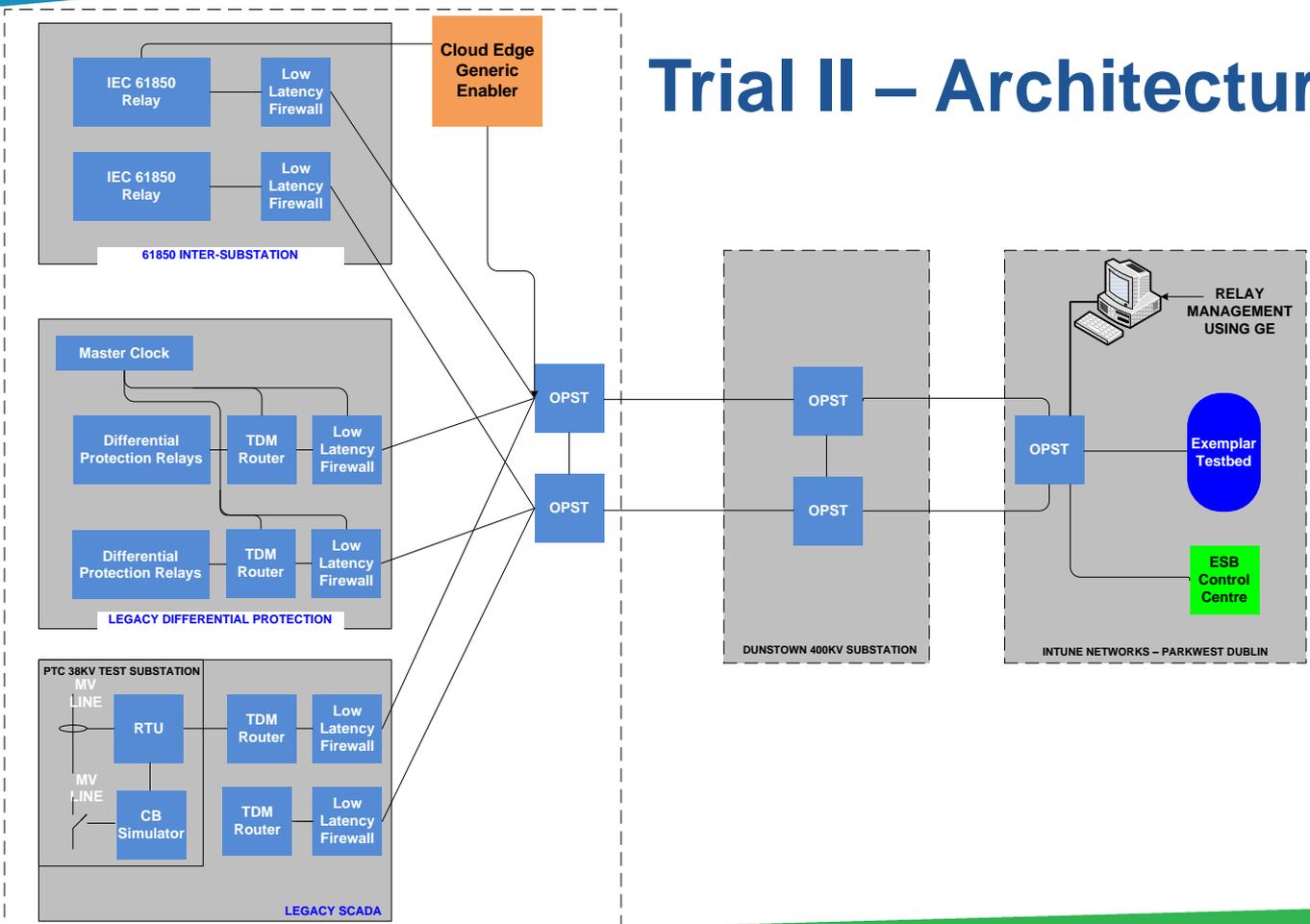- Trial future orientated and legacy electrical systems

Trial II – Overview

Trial II – Architecture

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61850 INTER-SUBSTATION
- IEC 61850 Relay
- Low Latency Firewall
- IEC 61850 Relay
- Low Latency Firewall

Cloud Edge Generic Enabler

LEGACY DIFFERENTIAL PROTECTION
- Master Clock
- Differential Protection Relays
- TDM Router
- Low Latency Firewall
- Differential Protection Relays
- TDM Router
- Low Latency Firewall

PTC 38KV TEST SUBSTATION / LEGACY SCADA
- MV LINE
- RTU
- TDM Router
- Low Latency Firewall
- MV LINE
- CB Simulator
- TDM Router
- Low Latency Firewall

PORTLAOISE TRAINING CENTRE

OPST
OPST

DUNSTOWN 400KV SUBSTATION
- OPST
- OPST

INTUNE NETWORKS – PARKWEST DUBLIN
- OPST
- RELAY MANAGEMENT USING GE
- Exemplar Testbed
- ESB Control Centre

Partner roles

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Partner	Main technical role
ESB	Trial components deployment, integration and testing. Trial implementation. Workpackage coordinator
Ericsson	Wireless communications. Generic Enabler development and integration
ALUD	Algorithm development-supply matching, grid design, Specific enabler development, generic enabler integration.
Intune Networks	Sub-wavelength core network and integration with Exemplar test bed.
RWTH	Mapping small scale trial results to large scale system using simulation.
TSSG-WIT	Algorithm development- charging interruption, Specific enabler development, generic enabler integration.
Alstom	Distribution network systems.
Telefónica Poland	Smart grid mobile communications.