OVERARCHING CONTROL SYSTEM
QUEST

QUEST
EIS 2024, Liverpool

Technology to increase capacity of existing infrastructure to support growth in renewables and LCTs.

Andy Howard

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QUEST Explained

What is being developed?	A voltage optimisation algorithm which will co-ordinate the actions of multiple voltage control and optimisation techniques across the whole system to optimise their use and facilitate the increased use of Low Carbon Technologies (LCTs).
What are the benefits?	Several discrete voltage management techniques have been deployed by DNOs which have been successful in helping to manage the network. By coordinating the interactions of these techniques QUEST will increase the benefits they generate. Additionally, QUEST will demonstrate that optimising voltages across all levels of the network can maximise efficiency and allow for the increased uptake of LCTs and associated increase in demand on the network.

Project Partners

Schneider Electric	smarter grid solutions	FUNDAMENTALS	nationalgridESO	IMPACT FROM INSIGHT TO INFLUENCE
Our current NMS partner	Leading ANM provider to GB industry	Experts in voltage control and leading AVC provider to GB industry	Operator of the GB transmission network	Leading consumer research consultancy with proven experience in NIC projects
NMS provides end to end real time network visibility required	Enable project to prove transferability	Facilitates transferability	Enables project to examine issues at TSO / DSO interface	Provides independent customer feedback

The Project

OVERARCHING CONTROL SYSTEM
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New overarching control system software

- Full control at all voltage levels below Grid Supply Point
- Optimise / maximise voltage control at each voltage level
- Interface with other elements of Network Management e.g. ANM, emergency situations
- Interface with external / 3rd party ANM systems

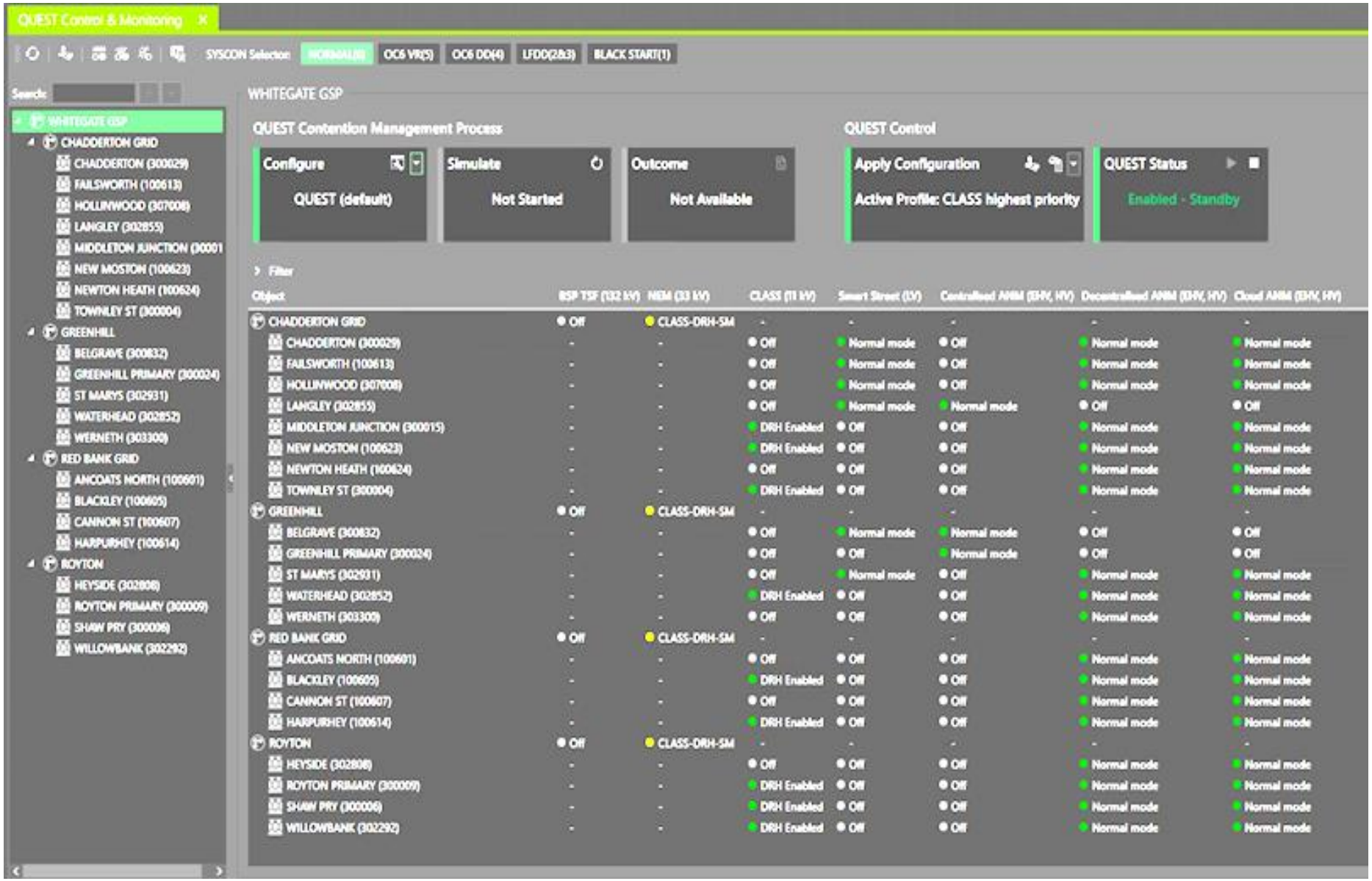
Offline studies to inform and corroborate results

SMART STREET

CLASS

Active Network Management

QUEST management dashboard



Learnings & Impact (to Date)

Cyber Security Challenges

Led to an IT infrastructure design change including:

- QUEST decoupled from NMS
- Additional ICCP connections
- IT Configurations & Security firewalls

Infrastructure

On site build went smoothly

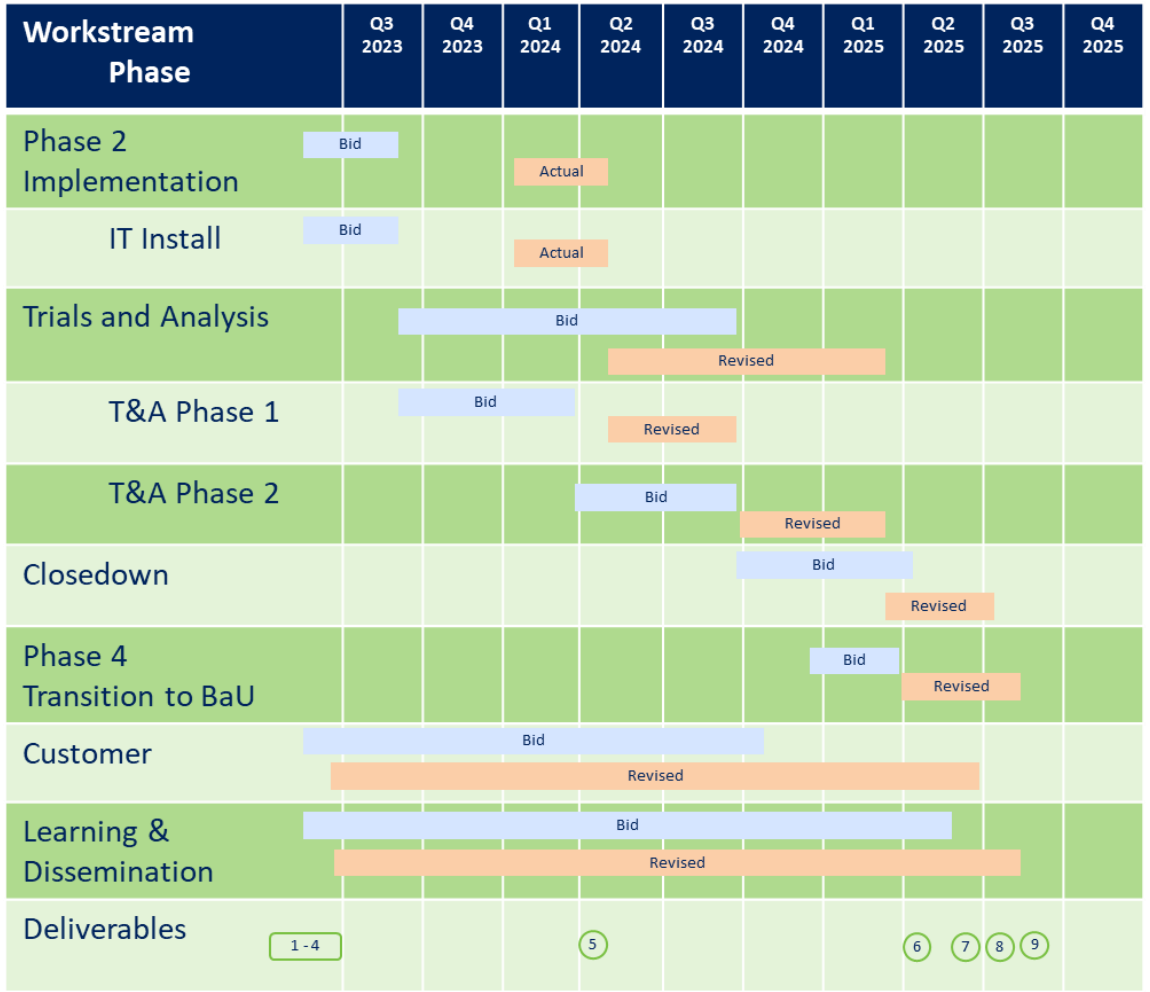
- Relay development
- Site Installs

Customer

- Impact on domestic customers tied to trials
- Sensitive HV customer work complete
- Voltage Generation contract work in progress

Project Extension of 3 months, with reduced trial period agreed in December 2023 / April 2024

QUEST Project timescales and deliverables (April 24)



Deliverables

1	QUEST Initial Report - Use Cases
2	QUEST System Design and Architecture Lessons Learned
3	QUEST Trials, Design and Specification Report
4	QUEST Interim Report - System Design and Technology Build Lessons Learned
5	QUEST System Integration Lessons Learned Report
6	QUEST Customer Research Findings Report
7	QUEST Trials and Analysis Report
8	QUEST Final Report
9	Comply with knowledge transfer requirements of the Governance Document.

Additional Learnings…..

ICCP – Testing and Modifications

April 2024 – First operation of real-world relay from the QUEST dashboard

July 2024 – First operation of the Full QUEST system and the interaction with the LIVE network management control room systems

However…….

This identified additional changes to ICCP points, QUEST software configuration and Relay configuration

Required a full design, implementation, test and approval cycle to implement with additional delay

QUEST What Next?

Continue trials

Initial trials prove basic functionality of individual elements at each voltage

Increasing complexity in trials mix (Simulated and Real Time)

Sense check of results, and real time monitoring to SGS network model

Customer Engagement

Domestic customer engagement: revisit during Trial period with changed voltage management

Completion of engagement work assessing possible future voltage management generator contracts

BaU Transition

QUEST anticipated to be successful for adoption

Software code will need embedding on core NMS and updated to match core product version.

QUESTIONS & ANSWERS

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Please contact us if you have any questions or would like to arrange a one-to-one briefing about our innovation projects