

# INNOVATION STRATEGY PROGRESS REPORT

PROJECT TITLE	SERVO Modeller
PROJECT OWNER	Paul Hayes
CONTRIBUTOR(S)	Eoghan O'Sullivan Ciaran Geaney
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## OVERVIEW OF PROJECT & EXPECTED BENEFITS

The aim of the project is two-fold. Firstly, to develop a sandbox data lake to allow research projects that generate data, a single location for data storage in a uniform and structured way. This then enables dashboards & reporting on the data for trial evaluation. Secondly, to use SERVO as a testbed software platform to deliver use cases on Networks data and evaluate the DSO requirements for interconnected data sources into the future. The development of SERVO is based on the Common Information Model structure that enables connectivity across currently separated data in Networks. See Figure 2 – Data Sources in Project Scope section below to understand different data sources. This will enable more efficient use of the data in all areas of the Networks business.

ESB Networks along with 10 other DSO's are partners of the Electric Power Research Institute (EPRI) led Grid Model & Data Management supplemental project which is looking to define a standard for DSO grid model and data requirements and SERVO has been designed on the principles being used in this project. Our work on SERVO led to being awarded the EPRI Interoperability Leadership award.



Figure 1: Servo project manager, Paul Hayes, accepting EPRI Interoperability Leadership award

SERVO is being developed in three modules which are:

1. SERVO Modeller – the central database containing all historic time series data collected by Operations, Large Customer Metering, plus the ability to store Operations Management System (OMS) data and Network Topology from the Geographical Information System (GIS)
2. SERVO Live – Innovation Trials such as the Solar PV, Heat Pump and Electric Vehicle trials in Dingle will require near real time data analysis to evaluate network status and impacts on Low Voltage networks due to electrification. SERVO Live will take in via the “Microsoft Internet of Things” (MS IOT) Hub all data collected from network sensors and distributed energy resources employed by research trials
3. SERVO Flex – An external facing module to allow broadcast of network state to third parties via secure Application Programming Interface (API). This module will enable flexibility trials to unlock the available capacity on the network and allow greater connection of Distributed Energy Resources (DER’s)

Please note that this progress report focuses solely on the SERVO Modeller module of SERVO as it will become an enduring business solution whereas SERVO Live & Flex will be used initially in the Dingle Trials and will thus be part of a separate progress report.

## PROJECT SCOPE OF SERVO MODELLER

The scope of the SERVO Modeller module is to develop a central repository for all Network Asset data and time series data relating to those assets to obtain a “one source of truth” for data management and reporting. ESB Networks contracted TSSG of WIT to develop the platform using the most up to date software and guided by the EPRI Grid Model and Data Management Architecture Project to ensure interoperability into the future. Figure 2 shows the existing and proposed data sources for SERVO Modeller.

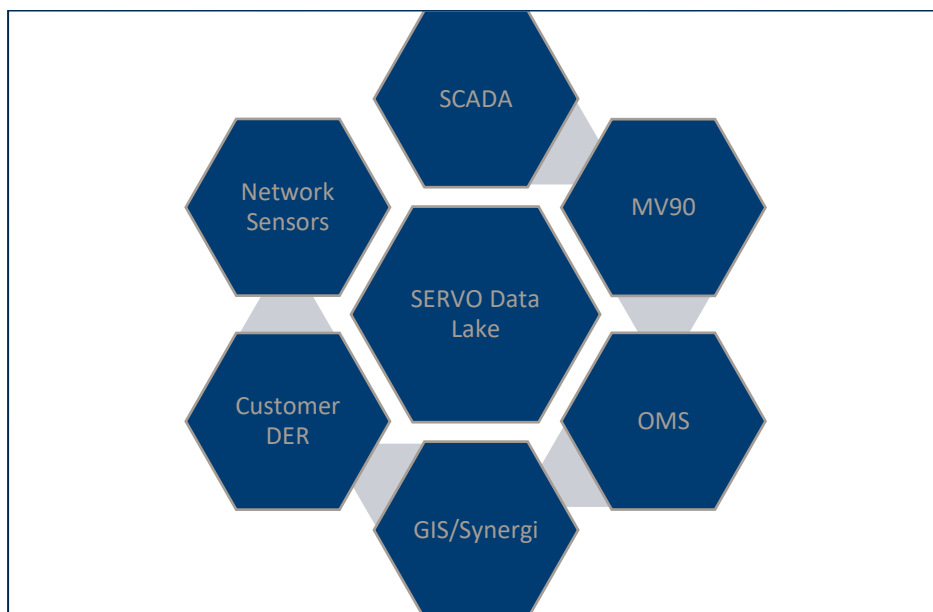


Figure 2 – Data sources

## MILESTONES ACHIEVED TO DATE

SERVO Modeller module has been successfully set up in ESB Networks’ MS Azure Cloud infrastructure thus enabling use cases for the data to be rolled out to the business. The first such use case is a web-based interface to the Supervisory Control and Data Acquisition (SCADA) and MV90 billing data that Network Planners use to assess network loading for studies relating to new connections for load and renewable generation applications.

Network Planners will benefit from this use case by reducing data gathering and validation times thus allowing them to evaluate load and generation connection applications quicker enabling planners to produce additional studies annually.

It provides a central facility for all Networks reporting. It is giving ESB Networks the opportunity to retire a legacy system and make cost savings from that, while it also increases the learnings and capabilities of the IT and Business units on new technologies that are available.

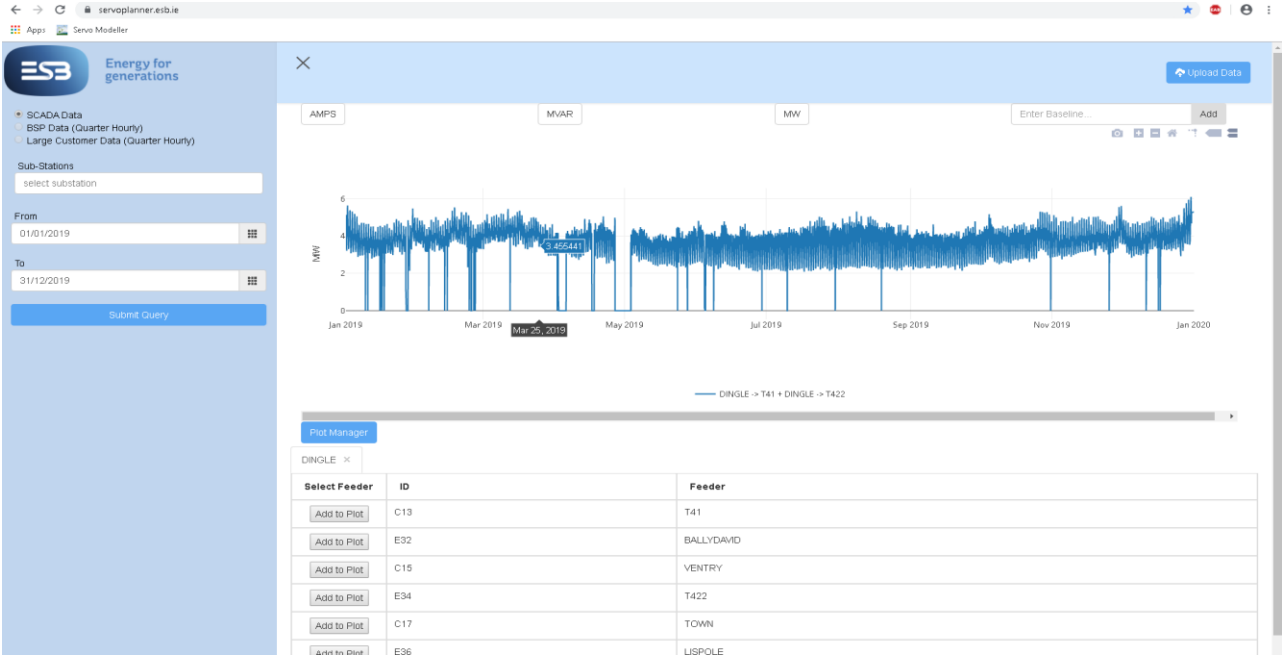


Figure 3 – Web Application for Data Visualisation

## PROJECT TIMELINES

Development Timeline for SERVO Modeller:

- Q3 2016 to Q4 2016 Vision definition, analysis of available data sources and readiness assessment
- Q1 2017 to Q2 2017 Definition of requirements, user stories, actors and scenarios
- Q3 2017 Development of first prototype (Engineering release 1)
- Q4 2017 Engineering release 2
- Q1 2018 Engineering release 3
- Q2 2018 Engineering release 4
- Q3 2018 Engineering release 5

- Q4 2018 Engineering release 6
- Q1 2019 Engineering release 7
- Q2 to Q3 2019 Redesign Modeller to be hosted in ESB's MS Azure platform
- Q4 2019 to Q1 2020 Rehost and deploy on ESB's MS Azure platform
- Q2 to Q3 2020 Test and deploy enhancements

## PROJECT BUDGET

The SERVO project budget is €400k including the database and associated systems.

## RESULTS TO DATE

SERVO Modeller module has been designed, developed and set up in ESB Networks' MS Azure Cloud infrastructure thus enabling use cases for the data to be rolled out to the business. The first such use case is a web-based interface to the SCADA and MV90 billing data that Network Planners use to assess network loading for studies relating to new connections for load and renewable generation applications.

Over 5 years' worth of SCADA data is now available on SERVO Modeller for Network Planners to use for planning activities.

## LEARNINGS/BENEFITS REALISED TO DATE

The lessons learned and benefits achieved to date are:

- Delivery of a Web Application use case for SERVO Modeller. This will reduce data gathering and validation times thus allowing planners to evaluate load and generation applications quicker.
- Centralisation of the data in one location will enable other use cases such as Special Load Readings (SLR), Asset Health Indexes, Load Indexes etc to be met.
- The value for the IT delivery and support team has been the build-up of knowledge and capabilities from self-educating and training in what has been designed and built. This ranges from building a customised container hosted in a Kubernetes pod to declaring the IOT Hub and device specification and connection standards for all other IOT devices to follow.
- The benefits for a DSO in utilising new IT techniques for Grid Model and Data Management to improve existing processes and opening the way we utilise our network capacity to engender electrification.
- Retirement of older technology SCADA data platform
- Reduction in data gathering/provision
- Central facility for all Networks reporting

## NEXT STEPS

Complete the transition to business as usual of SERVO Modeller with ownership within ESB Networks IT. This will allow "the centralisation of data in one location" for data management.

If you would like further information/data from this project, please contact us at [innovationfeedback@esbnetworks.ie](mailto:innovationfeedback@esbnetworks.ie)