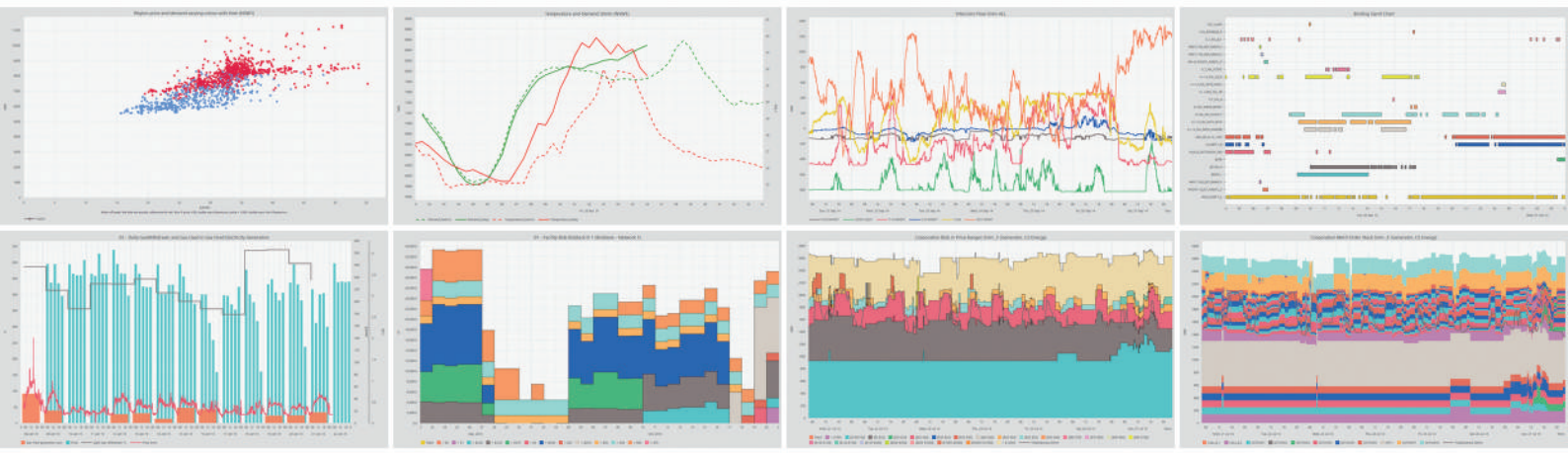
NEO

DATA VISUALISATION TOOL



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DATA VISUALISATION TOOL

Introduction

NEO is a software package designed to easily manage and display large and complex data from multiple sources allowing meaningful insights to be made.

NEO for the Australian NEM consists of the NEO software, a comprehensive set of queries to a replication of the AEMO MMS, and many hundreds of pre-developed analysis and graphical display routines.

For the Australian NEM, this enables phenomena such as the dynamics of generator bidding, competitive behaviour, price and physical market outcomes to be easily understood and associated relationships explored.

Advanced users of NEO can add to and personalise the analysis capability of the package through the use of the inbuilt Python scripting language.

NEO is easy to learn and use. This means new users can be using productively NEO within an hour of starting.

NEO Features

VOLUME OF DATA

NEO has no effective limit on the number of data points that can be analysed. This allows the user to focus on data analysis rather than data handling issues. NEO also has an easy to comprehend object model with multi-threaded object importers to allow handling of huge numbers of instances, e.g. generic constraints.

MULTIPLE DATA SOURCES

NEO can link to data from multiple databases and display it in a single report. For example, plotting temperature and demand for any time interval is as simple as point and click. NEO supports Oracle, SQL Server, MySQL, SQLCE, PostgreSQL as well as non-database sources of data via our open source NEOdatasource package.

COMPLEXITY OF DATA

NEO presents complex data sets in simple graphical formats. NEO is also able to display data of different periodicity on the same graph – for instance daily contract prices and 5 minute pool/spot prices. Aperiodic data can also be displayed. NEO can also display almost any combination of chart types and different scales in the one chart.

VISUALISATION

NEO provides pre-defined standard reports in graphical and tabular forms, distilling big data into easily understandable graphs. With NEO you can zoom into graphs and view sub-sets of data. NEO has advanced data tips, data links, chart types and a comprehensive interactive report styling capability for superb looking charts. Charts can also be styled dynamically based on the data.

ANALYSIS

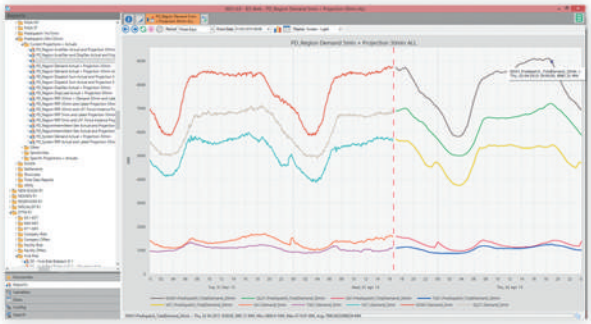
Split screens, cyclic means and freezing graphs while allowing other data to be plotted are some of the features available to assist in analysis. The scripting facility is supported by a library of mathematical and statistical functions for more advanced analysis. NEO also has in-built functions for processing many types of common market data such as bids, offers, supply curves etc. NEO also handles advanced time period visualisation (e.g. peak, off-peak, shoulder, holidays) and processing allowing you to process data using the same time period definitions you use in other parts of the business such as contracts.

CUSTOMIZATION

NEO is highly customisable. It allows users to both create new reports using existing variables and create new variables – all without writing or modifying any code. NEO has a “Favourites” feature that allows grouping shortcuts to reports.

SECURITY

NEO allows fine grained security with accounts and permissions down to the folder or object level. Global event logging is also an option that allows tracking of activity and identification of errors.



Report showing dispatch and pre-dispatch data

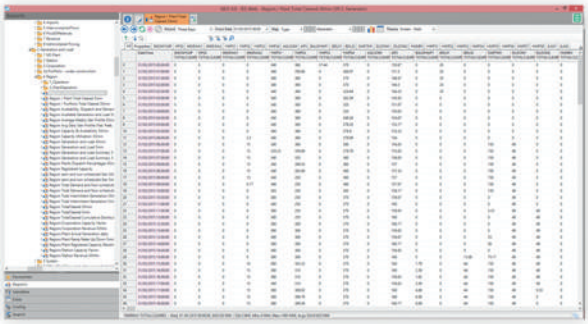
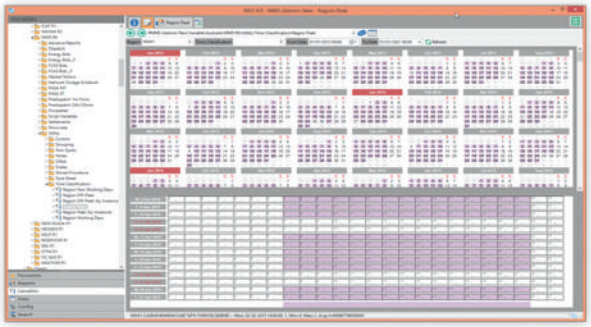
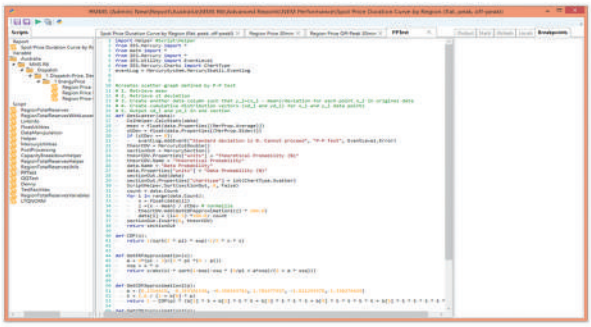


Table view



Time classification view



Scripting IDE

NEO Facilities

YOUR TOOLS

With NEO you can still use your favourite analysis tools like Excel, R, Matlab and Python.The NEOpoint web app provides a RESTful data service allowing you to easily access your NEO reports from within all of these tools and all without requiring any database drivers or in fact anything to be installed.

REAL TIME DATA

NEO's inbuilt Monitor function provides a fast lightweight facility for updating reports within seconds of relevant data being updated. This feature guarantees minimum loading on your network and database servers while at the same time delivering the fastest possible updates.

NON DATABASE DATA

We provide free open source software for users so they can develop their own data sources and thus allow access to e.g. non-database sources of data, e.g. CSV files, RESTful data services etc. This data can then be made available via NEOpoint and NEOdashboard.

CASCADING STYLE SHEETS

Similar to the way HTML CSS works, NEO has style sheets available at multiple levels such at the global level, shared style sheets, styles built in to a report and styles returned by data and finally the prevailing theme. Styles later in the processing chain take precedence over earlier styles. The style sheets allow setting almost any aspect of the NEO charts and processing.

STYLES EDITOR

The power of NEO's style sheets is enhanced with the interactive Styles Editor. It displays all the styles at every level and allows modifying, disabling, deleting or adding styles and immediately seeing the results without re-running the report. Any changes can also be optionally saved or you can jump to the actual style sheet and edit it directly.

SUPPORT

IES are subject matter experts in the Australian electricity and gas markets. As well as the complete and tested library of reports that we make available to our customers, we also provide a free service with assistance to understand the market or create reports on request subject to reasonable limitations.

BATCH RUNS

The Batch Run facility allows running of huge numbers of reports automatically at pre-programmed times, e.g. daily reports. The facility can save results as either PNG image files, CSV or NEO XML result files and these files can also be optionally emailed. Results can be saved to the file system or directly to a NEO workspace thus making them available to other users via Favourites – useful for reports that take a long time to run.

FULL SUITE

NEO is a desktop application but it just part of a large suite of products and services. One element of the suite is NEOpoint which is basically a web based version of NEO allowing easy access with just a browser and nothing else installed. The companion web service called NEOdashboard provides unlimited numbers of live auto-updated charts, tables or any data driven HTML element. This can be used to drive public web sites, trading screens, management reports etc.

TIME CLASSIFICATION

NEO allows flexible time period definitions, e.g. peak, off-peak, shoulder, and public holidays using the inbuilt Timeslices or using simple queries returning time transitions. The queries would typically be of time classification tables such as "holiday tables" as used by other systems such as for contracts and this ensures that your data analysis, e.g. average daily off-peak volume weighted price, is correctly calculated.

ABOUT IES

We help organisations to understand competitive energy markets. With high-performance software tools for data analysis, visualisation and simulation,we facilitate informed market decisions in key Asia-Pacific electricity and gas markets.

Developed with over 30 years of specialist knowledge, our systems put information directly at your fingertips, with real-time updates and in-depth analysis. From reviewing historical data to forecasting, analysing metering and interpreting the market, our software range meets the diverse needs of various market entities.

We provide support and training to help organisations extract optimal value from our software. Using cloud technology, we also offer Direct Database Access to current NEM data. Our development team has a solid track record in designing and implementing IT systems for energy market organisations.

Our clients include Australian Energy Market Operator (AEMO), Energy Market Authority (EMA) Singapore, Electricity Regulatory Authority of Vietnam (ERAV), Hydro Tasmania, Powerlink, Origin Energy, Asian Development Bank (ADB), Wholesale Electricity Spot Market (WESM), Clean Energy Regulator (CER), Australian Competition and Consumer Commission (ACCC), Australian Energy Regulator (AER), AGL, GDF Suez, Snowy Hydro, Stanwell, Transgrid, CS Energy, Intergen, Delta Electricity, Contact Energy, Deloitte, JACOBS, Macquarie Bank, SN Aboitiz Power (SNAP), Team Energy, Mitsui, NextGen, Ergon Energy, Western Power, State Electricity Commission of Victoria (SECV), Electranet SA and many others.

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