Moata Smart Energy

Mott MacDonald's suite of solutions to optimise performance and maximise returns from renewables
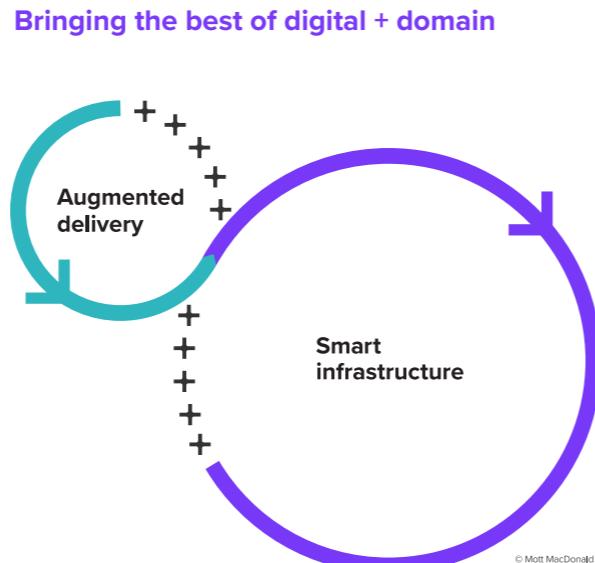
2021

Information is changing the world

A digital world

Data and technology are transforming the way we create value – the way we conceive, deliver and utilise the assets around us. Information and collaboration in a geospatial context are crucial to delivering projects efficiently and maintaining assets effectively over their life.

Over 20% of our time is wasted looking for information, let alone making decisions based on the wrong information. We have the world's information at our fingertips yet often struggle to find what we need at work. The right use of technology can save millions – from making the right investments, through productive delivery to optimising operation. Our platform can unlock that potential.

Bringing the best of digital + domain

Augmented delivery

Smart infrastructure

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The future is connected

Moata, our digital twin platform, hosts a range of solutions that use the power of data to solve today's most pressing problems around the globe. It is open, secure, scalable and adaptable, delivering predictive power in a geospatial context, through advanced analytics and machine learning.

Moata enables you to see the unseen, act with conviction and impact progress.

Moata Smart Energy Suite

Moata Smart Energy is a suite of solutions for the renewable energy market that help solve challenges associated with intermittent renewables, such as solar and wind. These might include energy market volatility due to demand being suppressed or curtailed, assets not performing as expected, problems with delivery and risks faced by investors, for example, improving the revenue performance of merchant projects.

The suite of solutions enables renewable developers, investors, transmission and distribution grid operators to design, construct, resource, operate and maintain assets throughout their life cycle. Offering a range of monitoring and plant oversight functions, the Moata platform architecture is scalable to multiple sites with disparate SCADA systems and physical configurations, with a customisable front end and tailored reporting.

Moata Smart Energy leverages Mott MacDonald's technical quality and depth of engineering expertise formed by many years spent at the forefront of renewable energy. We have extensive experience in supporting the development and operation of renewable energy projects for a wide range of clients including international finance institutions, banks, investment funds, developers and asset managers.

Our key point of difference in this space is our domain expertise - our real-world experience offers clients a significant advantage by combining engineering knowledge with digital capability from the outset.

Moata Portfolio Optimiser

With growing portfolios of operating renewable energy assets, rapidly identifying and diagnosing performance issues with at-a-glance diagnostics coupled with in-depth insights is essential for asset owners and investors to maximise revenues. Moata Portfolio Optimiser connects asset, environmental and other data sources in one platform, providing analytics on plant performance to facilitate proactive maintenance strategies.

With Moata Portfolio Optimiser clients can monitor, identify and tackle short- and long-term operation and maintenance (O&M) issues, as well as external factors such as weather variability and grid curtailment, in a customisable online platform that integrates and analyses operational data in real time.

Benefits
- Splits out forecasting, plant performance and grid curtailment impacts, so underlying issues can be identified and acted upon.
- Streamlined process and data storage enables fast diagnosis of performance issues.
- Rapid prioritisation of areas requiring further intervention facilitates pro-active maintenance strategies.

Features
- Vendor agnostic platform with flexible open source architecture.
- Can be implemented on large or complex portfolios with a range of site systems and technical configurations.
- Automated data collection and aggregation across multiple sites.
- Includes performance ratio, availability, weather correction factors and individual system losses analytics.
- Reporting options include benchmarking and comparing site portfolios, historical performance, and splitting out underlying trends.
- Ability to pool asset data (SCADA, user's feeds, O&M contractor reports) with other data sources such as public domain data sets.
- Customisable front end which can be implemented either as a manual or automated reporting cycle.
- API feeds available to other client systems.

Moata Solar Yield Forecaster

Access to accurate variable renewable energy (VRE) supply forecasts allows grid operators to reduce the spare capacity of generation needed to back up renewables, reducing grid balancing costs. Moata Solar Yield Forecaster is an AI based tool specifically designed to forecast the performance of large, complex or multi-site portfolios.

With more accurate forecasting from solar photovoltaic (PV) plants, project owners can sell their output 'subsidy free' or via Power Purchase to balance their output. Grid operators are able to balance the grid and asset managers can optimise the dispatch of their assets and determine reasons for underperformance - all in real-time.
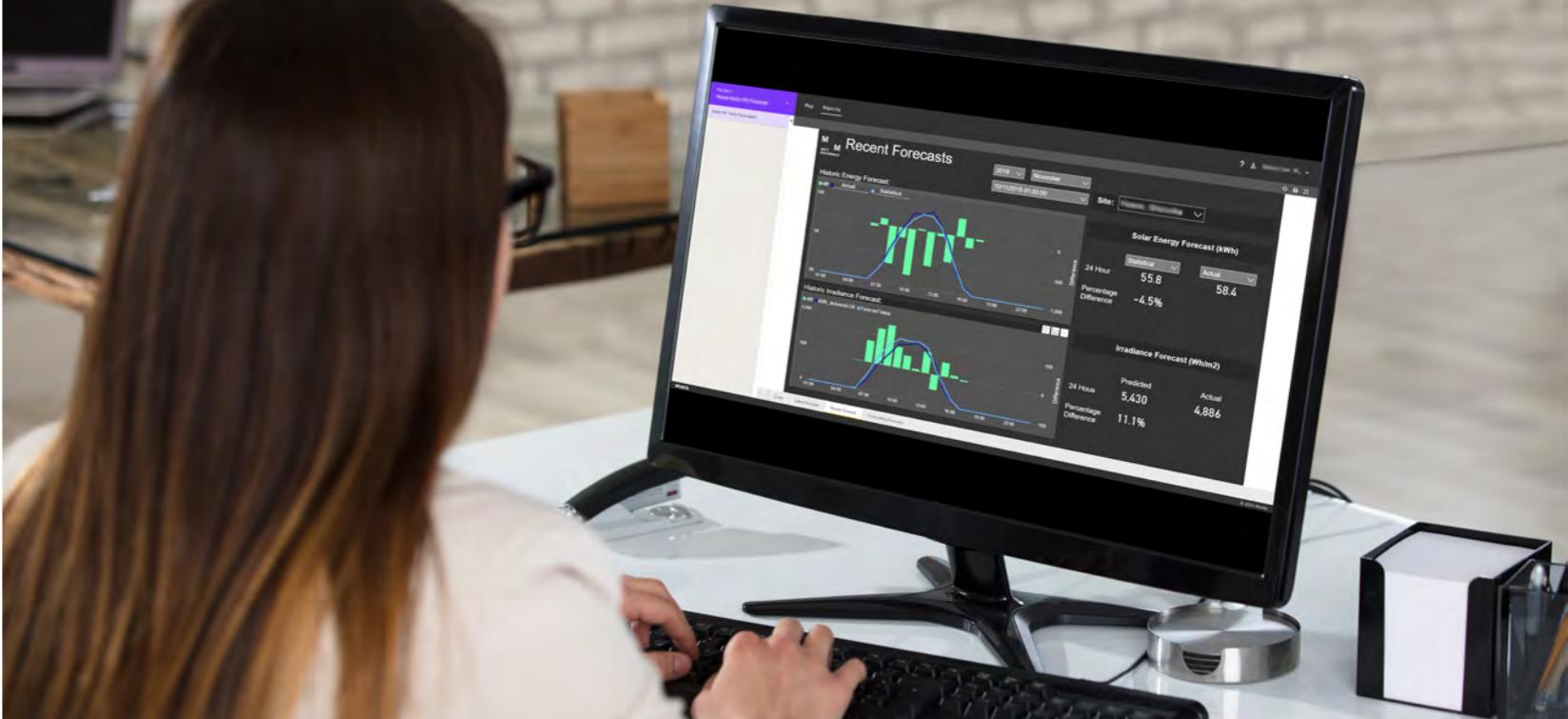

Features
- Fully automated platform, aggregating data to deliver a single source of truth.
- State-of-the-art forecasting analytics, with commercial grade weather forecasts at different horizons (up to 10 days ahead) and granularities, for multiple applications and global coverage.
- Forecasting accuracy reporting for continual improvement.
- Customisable solution that can evolve with client requirements.
- Combination of AI models with physical performance models to optimise performance.

Benefits
- Cost-efficient grid balancing from improved forecasting accuracy.
- Reduced data handling requirements and likelihood of human error with implementation of systematic and best practice data management.
- An end to manual processes with insights available instantly enabling information to be acted on in a timely fashion.
- Accelerated operational reporting and quicker decision making with instant access to data and real-time updates.

Moata Demand Forecaster

Electricity demand profiles are becoming increasingly unpredictable as consumer needs change and renewables are connected on the customer side of the meter, making it harder for operators to balance the grid. Moata Demand Forecaster provides electricity demand forecasts from real-time operational data, driving down the costs of grid balancing and integration by improving the accuracy of forecasts.

Accurate electricity load forecasts reduce the ongoing operational expenses associated with balancing the grid and assist operators in assuring security of electricity supply.

Features

- Fully automated data management platform with state-of-the-art forecasting analytics.
- Data aggregation and cleaning.
- Data visualisation tools and customisable reporting and analysis.
- Single source of truth for co-workers.
- Forecasting accuracy reporting for continual improvement.
- Fully customisable solution that can evolve with the requirements of the client.

Benefits

- Reduced operational costs from better decision making enabled by access to real-time reporting data.
- Improved forecasting accuracy enables cost efficient grid balancing.
- Systematic and best practice data management boosts efficiency and reduces the risk of human error.

Moata Met Wise

Having an accurate assessment of solar and wind resource along with other meteorological and site conditions is critical for developers needing to establish the feasibility of a renewable energy project and to produce a bankable estimate of its lifetime generation potential. Moata Met Wise is an environmental monitoring platform for solar, wind and marine renewables, which allows integration of multiple sensors, and other data sources from third parties or our own partners.

Integrating and analysing multiple sources of meteorological data along with instrumentation performance in real-time significantly improves the efficiency of resource measuring campaigns, leading to lower costs and increased confidence. Moata Met Wise is particularly valuable when baselining large, complex, and remote sites such as offshore wind.

Benefits
- Instant access to insight and analytics with integrated weather sensor data, regardless of supplier.
- Proactive maintenance and maximised efficiency of weather measuring campaigns.
- Increased confidence in site conditions and accuracy of meteorological variables for a bankable estimate of the project's generation potential over its lifetime.

Features
- Detailed comparison and visualisation of site instrumentation data with selected weather station, meteorological baseline and historical data.
- Vendor agnostic.
- Highly customisable, interactive web-based reporting and visualisation, including geospatial display of sites and data sources and user defined bounds on error and discrepancy checks.
- Detailed statistical analysis of key meteorological variables impacting the feasibility of solar and wind projects.
- Automated reporting and alarms for actionable insights on maintenance activities.

Track record

Return on investment

Portfolio Optimiser

12%

generation performance
gaps found in practice

Demand Forecaster

25%

improvement in demand
forecasting accuracy

Solar Yield Forecaster

Consistently outperforms

conventional dispatch forecasting

+

Benefits
- **Instant access to reporting and diagnostics** – for proactive maintenance of assets and early intervention.
- **Improved asset performance** – with insights to optimise developments from design through to operations, maximising yields and return on investment.
- **Reduced operational costs** – with improved forecasting, clients can reduce grid balancing costs.
- **Investor confidence** – with regular reporting about the state and performance of assets
- **Vendor agnostic** – allowing aggregation of data feeds from different sources and integration with the client's existing systems.
- **Reduced risk and reliance on manual processes** – with automated data collection and synthesis.
- **Scalable and customisable** – to meet client needs.

Why choose us?

Renewable developers, investors, transmission and distribution grid operators choose us because of our unmatched digital + domain offering

Moata Smart Energy leverages Mott MacDonald's technical quality and depth of engineering expertise formed by many years spent at the forefront of renewable energy. We have extensive experience in supporting the development and operation of renewable energy projects for a wide range of clients globally.

Get in touch to understand how Moata Smart Energy can help your team optimise performance and maximise returns from renewables.

Our team look forward to working with you.

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More Moata solutions

At Mott MacDonald we **drive digital transformation** by combining domain experience with digital expertise. Delivering social, economic and environmental value by **connecting innovation to outcomes**. All powered by our digital solutions platform Moata.

Geospatial

Moata Geospatial enables users to rapidly access and collaborate around geospatial data in an intuitive and secure way.

Talk to us

Information Architect

Create compliant deliverables tied to a single source of truth to provide stakeholders with reliable information in the format they need.

Talk to us

Route Optimiser

Revolutionises the pipeline design process, using a geospatial interface, ground-breaking genetic algorithm and domain expertise to generate an optimised route.

Talk to us

Insights

Ideal for any project or programme, Moata Insights provides real-time, automated, online project controls, document/data management, reporting and dashboards for various project disciplines.

Talk to us

Moata

Carbon Portal

Models the capital and operational carbon of new assets. It enables designers to quickly find carbon hotspots in a project, facilitating low carbon design.

Talk to us

Intelligent Content

A vast library of compliant, parametric 3D digital assets, derived directly from the manufacturer specifications, ensuring reduction in design time and cost.
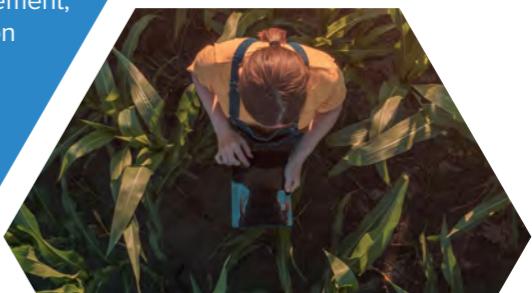
Talk to us

Land Management

Change the way all aspects of land projects are managed through this market leading solution that blends both spatial and non-spatial data in an easy to use system.

Talk to us

Rehearsive

Through virtual reality (VR), we can test complex scenarios and sequences, enabling risk management, ergonomics and construction management in real-time.

Talk to us

Moata.
The future is connected.

Moata is our digital twin platform, hosting solutions that use the power of data to solve today's most pressing infrastructure problems across the lifecycle.

Moata is open, secure, scaleable and adaptable, delivering predictive power in a geospatial context through advanced analytics and machine learning.

moata.com