Harnessing the Power of Data in the Utilities Sector

Bjoern Reinke, Director of Data and Data Science, Drax
Our Purpose

We’re enabling a zero carbon, lower cost energy future.
About Drax

– We’ve transformed from the UK’s largest coal-fired Power Station, into Europe’s largest decarbonization project

– We’re the largest generator of UK renewable electricity (12%)

– We’re the third largest generator in the UK (8.3m homes)

– Our operations and supply chain support 18,000 jobs

– We’re a leading producer of wood pellets from sustainably managed working forests

– Our B2B supply brands, Haven Power & Opus Energy, are the UK’s largest suppliers of renewable energy to businesses (396,000 meter points)

– Our BECCS pilot project could create the world’s first carbon negative power station
Our Business
Across 21 sites in England, Scotland, Wales and the US

Generation
Manages our portfolio of flexible, low carbon and renewable assets

Customers
A leading supplier of renewable energy to business customers

Capital Projects
Develops and invests in large scale projects such as new OGCT & CCGT

Innovation
Explores and develops genuinely new technology such as BECCS

Core Services
Ensures our colleagues and businesses operate effectively
Using data effectively

How it can support Net Zero
The Drax Data Hub...

Allows us to connect and manage disparate data sources

Easier business performance management
• Up to date Drax Group KPIs on every smart phone
• Shared Core Services Information, such as Joiners/Leavers

State of the Art Data Science
• Pellet quality prediction, cost modelling
• Advanced Condition Monitoring, Predictive Maintenance
• Customer Behavior Prediction, including Debt, Renewal, Use

Wider Drax Group collaboration
• Trading data exchanges between Generation and Customers Business
• Data Exchange between DBI, Generation and Supply Chain

Inside Out Data Flows
• Secure sharing of data sets with 3rd party service providers
• Links to facilities management, EV and Battery providers

Outside In Data Flows
• Purchase / Ingestion of strategic data sets
• Energy Data Taskforce: democratised data
We have several data estates that already enable value.

System integration leads to both self-serve reporting and data science trials.
There are 6 main areas of interest by our internal stakeholders … these are reoccurring and need to be addressed by the core data team

- **Data Foundations**
  - Data Governance
  - Security & Privacy
  - Data Project Integration & Prioritisation

- **Data Experts across Drax**
  - Job Descriptions and Career Paths
  - Peer reviews and expert communities
  - Cross BU collaboration and Lessons Learnt

- **Data Platforms**
  - USA Data Store
  - Drax Generation Data Store
  - Drax Customers Data Lake

- **Data Reporting**
  - Interactive Reporting Tools
  - Data Models and Data Quality
  - Self-serve reporting

- **Data Analytics**
  - Centralised and Embedded Analytics
  - Real time and predictive/prescriptive analytics
  - Alignment of data quality requirements

- **Data Science**
  - Establishment of internal capability
  - Integration of state of the art tools
  - Review of highest value benefits cases

18 June 2020
We are governing the basics of data with a proven approach.
How to ensure investment into data is complete and balanced?

We selected three frameworks to map investment and services capabilities to business processes.

1. **Maturity Model**
   - **Business Processes**: Assessment of business process maturity, KPI management and integration, decision making based on data sets and data quality management.
   - **Governance Processes**: Benchmarking and maturity assessment around data governance, information asset ownership, etc.

2. **Capability Model**
   - **Business Insight and Analytics**: Underlying architecture, storage and loading, embedded analytical content, scalability, metadata management, dashboards, interactive exploration, publish/share/collaborate, ease of use.
   - **Data Science Capability**: Data preparation, exploration and visualisation, user interface, machine learning, performance and scalability, automated model selection, project management and delivery.

3. **Business Process Framework**
   - **End to end business process**: Standardised end to end business process framework, divided into operational processes and management services.
   - **Cross Industry Benchmarking**: Framework is used for cross industry benchmarking through assessment of process performance with selected metrics.
We will prioritise investment into business priority areas
Linking the two frameworks together, we developed a roadmap towards our Target State?
over time
Our Data Science Engagements usually follow 8 phases, with three checkpoints
This allows for lean governance and iterative funding approval

<table>
<thead>
<tr>
<th>Funding</th>
<th>A) Seed Funding</th>
<th>B) Prototyping</th>
<th>C) Deployment</th>
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<tbody>
<tr>
<td>Model Phase</td>
<td>1. Objective Definition</td>
<td>3. Data Pre-Processing</td>
<td>6. Model production deployment</td>
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<td>Duration (wks)</td>
<td>0 - 1</td>
<td>1 - 2</td>
<td>1 - 3</td>
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Conclusion: Harnessing the power of data
Creating tools that support the business

Today, data is king. It can be used to predict customers’ usage behavior and support in the development new products

- **Data driven decision making** - At the core of product development, is data. Harnessing the data we capture from our customers helps inform how products are not only created but how they evolve

- **Identifying customer needs** – Using data to identify needs before they arise. This is key when innovating. Creating a product after the fact isn’t using data effectively

- **Developing tools to analyse** – Data is useless unless you create tools and processes to analyse the data you’re collecting.
Helping our Customers take control of their energy

Putting it into practice
We keep the lights on for over 350,000 businesses in the UK.
Helping Our Customers take control of their energy

Our Customers Businesses

Our Drax Customers business is the third largest business supplier in the UK;

- Haven Power supplies over 40,000 meters and specialises in servicing large industrial users
- Opus Energy services over 340,000 meters in the SME sector, helping our customers grow their business
- Our innovative products are helping customers take control of their energy

The Chart below demonstrates the breakdown between our Customers businesses

(1) Source: Annual Report & Accounts 2018
Helping Our Customers take control of their energy

Electric Vehicles

In 2019, we announced our End-to-End electric vehicle proposition;

– We help our customers analyse the cost of switching their fleet to electric vehicles and advise them on the best technologies to use

– Once the new technology is in place, we teach our customers how to use their new vehicles in the best way for their bank balance and for the environment and supply them with our own renewable electricity
Helping Our Customers take control of their energy
Getting Smart and maximizing data

SMART meters enable customers to have greater control and insight of their energy consumption. We are innovating products to help our customers get the most out of their SMART meter.

– We have already switched a number of our customers to SMART meters, helping them grow their business
Thank You