The power to prioritise your electrical asset investment

Invest

Our risk-based **Invest** solution is the very definition of excellence in asset management, ensuring electrical assets can be maintained in a safe, reliable state at the lowest possible cost.

www.eatechnology.com

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What can Invest do for you?

Capture, utilise and communicate knowledge

Invest models use your asset data to make an objective and defensible evaluation of asset health, performance, consequence, and risk. Models harness the experience and expertise of your asset engineers who, combined with our worldwide specialist knowledge, ensure that your models reflect your reality.

Predictive analytics

Using our models can provide you with a predictive assessment of the future health and risk of failure, alongside an assessment of the current asset condition and likelihood of failure.

Prescriptive analytics

Using our models, you will assess repair, replace and maintain actions for each asset based on the future predictions. The implication of each action is modelled, allowing you to anticipate what will happen, when it will happen, and why.

Scenario modelling

Using our models, you will simulate different asset investment plans and assess the benefits of these on the network.

Scottish & Southern Electricity Networks

"**EA Technology's** key strengths are technical knowledge, experience and coming up with innovative solutions."

Landel Johnston
- Systems Integration Manager

Health Index
How healthy is my asset and how fast is it aging?

Probability of **Failure**
How likely is my asset to fail?

Consequences
What is the impact on the network, safety, environment and costs if my asset fails?

Risk
What is the risk my asset carries in my network portfolio?

Interventions
What can we do to control our risks?

Investment Tracking
Is the plan on schedule and is it having the expected effect?

In high-performing businesses, accurate information is paramount

🔧 **Build** the System

- Asset Expertise
- Historical Data
- Financial Info

🛒 **Feed** the System

- Engineers' Knowledge
- Condition Reports
- System Info

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Asset **Insights**

- Compare Diverse Projects
- Cost Benefit Analysis
- Monetized Risk
- Future Risk
- Impact of Investment
- Probability of Failure
- Regulatory Data

Smarter decision making

Our analytic models give you the asset information you need at your fingertips. We provide software encompassing our asset health and risk based modelling, optimised investment planning and benefits tracking. Our software is supported by a team of engineering domain experts, specialising in operations, planning, regulation, asset management and forensic analysis within the electricity industry.

Our decision support framework helps you to target investment for maximum return and ensure the ongoing performance of your assets.

Tackling the big questions

- How much can we reduce expenditure without impacting future performance?

- Which assets do we urgently need to get off the system?

- Is the asset investment plan delivering the expected benefits?

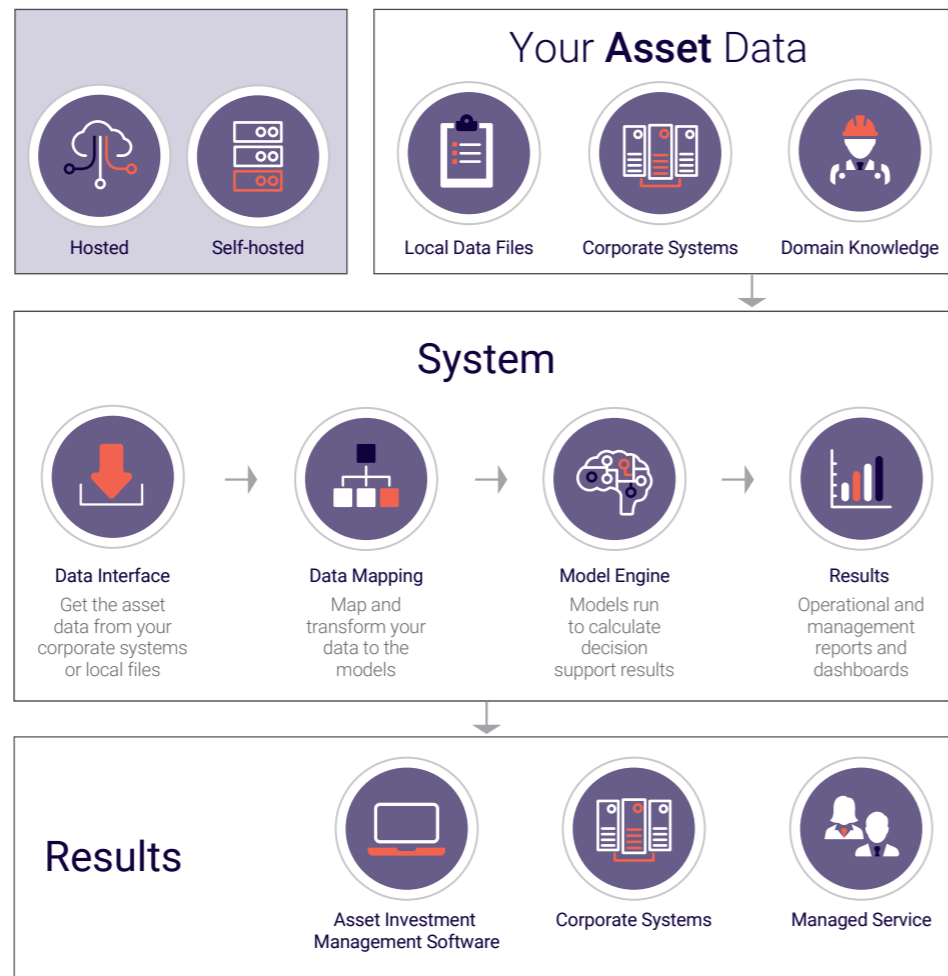- Where are there significant safety risks on our network?

Delivered to fit your needs

Our Invest system can grow with you, from a small-scale, manually-fed solution to an enterprise solution with full integration into corporate data systems and dashboards.

"EA Technology's knowledge of the DNO systems is very good, a healthy mix of engineering and consultant expertise."

Barry Walker
- Managing Director, Walker & Watts Ltd, on behalf of UK Power Networks'

Hosted   **Self-hosted**

Your **Asset** Data

Local Data Files   Corporate Systems   Domain Knowledge

System

Data Interface
Get the asset data from your corporate systems or local files

Data Mapping
Map and transform your data to the models

Model Engine
Models run to calculate decision support results

Results
Operational and management reports and dashboards

Results

Asset Investment Management Software   **Corporate Systems**   **Managed Service**

Asset Model Selection

We've been building decision support models with customers for over 20 years and have a wide selection of asset models at every voltage – from low voltage to transmission – in use globally.

Our asset models include:

Switchgear   Transformers   Overhead Lines   Cables

What does Invest look like?

The Invest system is web-based, graphical, intuitive, and configurable. The user can seamlessly explore from map and dashboard views to uncover detailed results and harness valuable collected data.
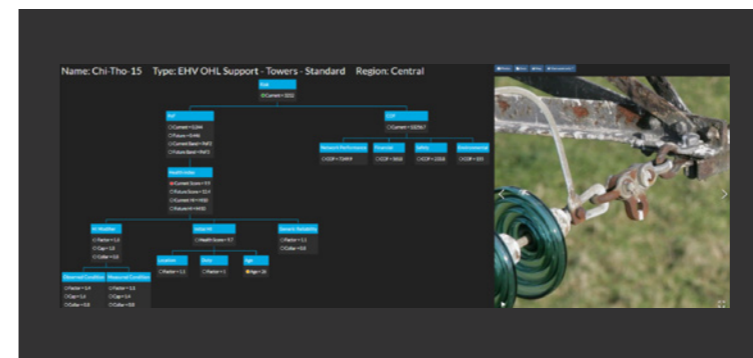
Dashboard

In the dashboard, the user can build their own view of exactly what is important to them.

Methodology Viewer

The Methodology Viewer shows the health, probability of failure, consequences of failure and risk for each asset allowing users to see key results drivers. The display also shows images and documents and links to related assets, such as those on at the same site.
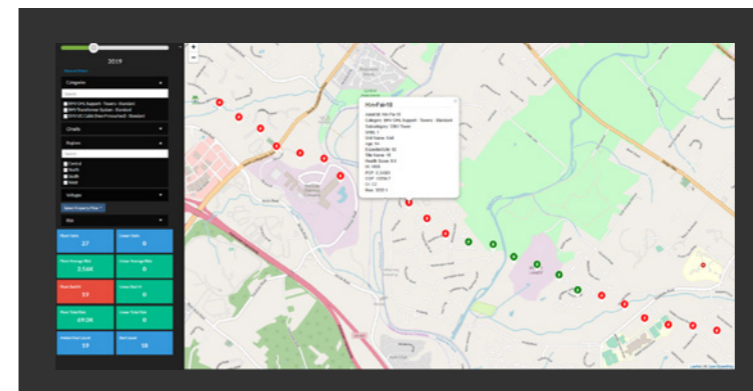
Asset View

In Asset View mode, the user can see the key information across the asset fleet on current asset health, probability of failure and risk.
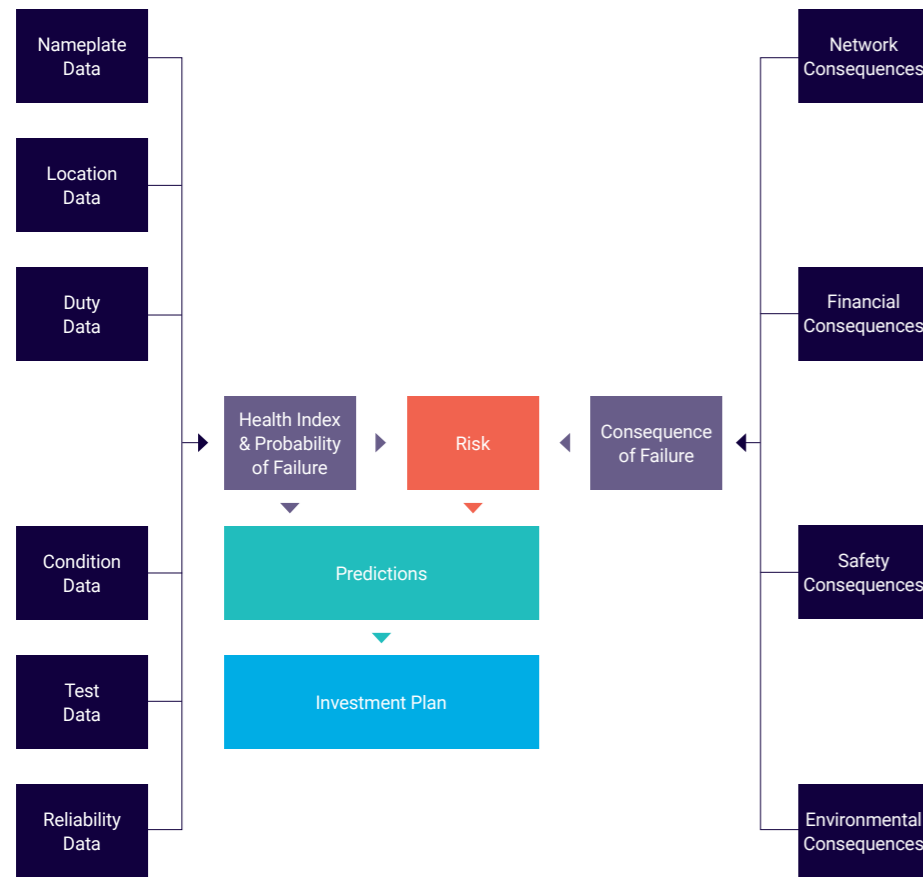
Map Dashboard

With the Map Dashboard, the user can quickly see where the asset issues are on the network. Filters and drill downs to asset detail allow the user to explore the asset fleet.

Plan and Track

In Plan and Track, the user can set up investment plans for bundled groups of assets and track the progress and performance of the work.

World Class Methodology

The Invest system relies on the methodology behind it to ensure results are derived from key data and proper implementation.

It is not enough to buy a software tool: the entire organisation needs to work together to make this system robust and sustainable, and to ensure business as usual.

Expert Assistance

Our highly experienced engineers are available to provide customers with any assistance they may need with their asset modelling or decision-making processes. This could include training, data collection, data mapping, technical consultancy or system deployment.

We call on the experts from our forensic department, field service team, instrument designers, transformer oil and SF6 lab engineers and utility experienced consulting group to make sure this system is technically superior to financial-only systems.

#FACT1
OUR INVEST METHODOLOGY IS IN USE BY OVER 75 UTILITIES GLOBALLY

#FACT2
INVEST GOVERNS BILLIONS OF $/YEAR OF ASSET INVESTMENT

#FACT3
EA TECHNOLOGY HAS MODELLED MILLIONS OF ASSETS ACROSS THE WORLD

What our customers are saying about us

national grid

"
EA Technology
ensure a professional delivery - very well structured and planned delivery process. "

Phil Mann
- Planning & Regulation Special Projects Engineer

NORTHERN POWERGRID

"
A genuine intellectual / scientific concern for the customer's problems. Great innovation where customer needs are paramount. "

Mary Black
- Electricity Distribution Engineer

HEP

"
The project has brought benefits in securing data, by analysing and linking multiple applications such as GIS, SCADA and others. "

Nikola Bogunović
- Head of Department, Asset Management

EIHP

"
A logical continuation of the improvement of network development planning activities in HEP DSOs, with a shift to a higher analysis of the condition of facilities and equipment. "

Tomislav Baričević
- Deputy Head of Transmission and Distribution Department

For more information please call us on +44 (0) 151 347 2376 or email us at **sales@eatechnology.com**

Our research underpinning the Invest approach

EA Technology has a long history of research into why assets fail, how these failures can be predicted, and how asset degradation curves can be used to inform Health Indices and quantify the risk associated with different electrical assets.

The combination of our detailed laboratory-based examinations with our algorithmic development of degradation curves has resulted in the creation of a world-leading methodology to evaluate asset health and risk - Condition Based Risk Management process.

Our Invest system, derived from this flagship process, has been progressively developed over many years and has been successfully applied many times. It has helped over 60 clients, with over 200 projects in 15 countries, to optimise their investment plans and make business cases to their regulators.

Some examples of the research that we have carried out to date, and the analytical work we continue to do, along with references to the provenance of the techniques that we apply when determining an asset's degradation and risk, are shown here.
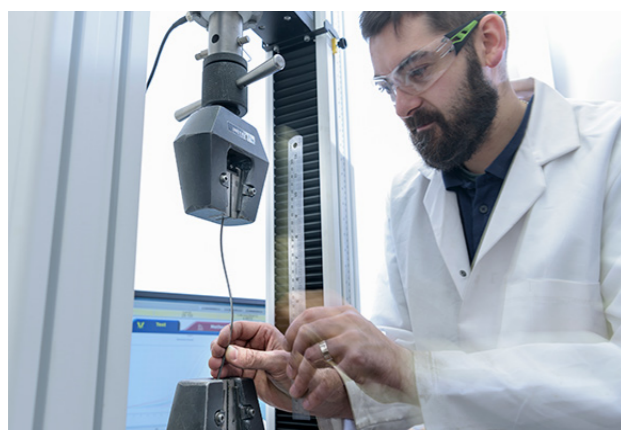
Forensic and failure investigations

EA Technology has been performing forensic and failure investigation for almost 60 years. Our expertise and experience cover all electrical assets from transmission and distribution to low voltage controls. Our team of experts investigates power asset ageing, failure, incidents and fires. Typically, we complete 150 projects annually primarily relating to cables, transformers, switchgear and overhead lines.

The objectives of our failure and forensic investigations include:

- Identification of the degradation and failure mechanisms

- Recommended asset management plan to implement specific actions to prevent future failures, these may include:

- Redesign

- Repair / refurbish / maintain / replace

- Educate / train personnel

- Implement condition monitoring

- Amend policies / procedures

- Feedback the learning and modify asset management tools such as the Condition Based Risk Management process and Invest for an improved Health Index and End of Life calculation

Actions implemented following the recommendations of our failure investigations are proven to reduce health and safety risks, improve asset reliability and assist in ensuring an uninterrupted supply.

Facilities for analysis and identification of degradation processes

EA Technology has a range of analysis equipment for the characterisation of different materials and identification of degradation processes for use during condition assessment and failure investigations; these include:

- Sampling Preparation Laboratory

- Optical Microscopy, Scanning Electron Microscopy (SEM) and Energy Dispersive X-ray Spectroscopy

- Metallurgical Examination

- Material Hardness, Compression and Tensile Testing

- Non-destructive surface crack detection, crack propagation intrusive assessment

- Electrical Testing Facility

- High voltage withstand

- Partial discharge detection (direct connection, TEV and ultrasonic)

- Long-term testing

- High current testing

- Dielectric testing

Oil Analysis Laboratories

EA Technology's Oil Diagnostics Laboratory delivers oil diagnostic services to a number of UK and global clients including UK DNO contracts, Industrial Clients, Power Stations / Generation, Facility Management and Oil Reprocessing companies. Analysis across the contracts varies from sample to sample and is dependent on the specific requirements of the client / asset. The samples delivered vary from large scale transformers through to switchgear units, cables, cable sealing ends, bushings, capacitors etc. and encompasses multiple fluid types from mineral oil, Midel fluid, silicone fluid and others. All samples are processed individually but part of one process driven system to maximise throughput in the laboratory to ensure efficient delivery of all samples.

Our Research and Development Work

Following the privatisation of the UK electricity supply industry, it became difficult for the companies to continue with centrally funded research due to the changes in regulation and the constraints imposed on operating expenditure. Nevertheless, many of the technical problems remained common to all companies. The Strategic Technology Programme (STP) was created by **EA Technology** with the objective of providing leading edge technology solutions to improve the efficiency and business performance of members.

The STP consisted of a number of modules devoted to specific areas of research, including substation assets, overhead networks and cable networks; all UK distribution network operators were a member of at least one STP module.

A large number of research projects were carried out under STP and have provided benefits to all of the UK DNOs, with many focussed on increasing understanding of asset degradation processes.

Global Footprint

At EA Technology we specialise in asset management solutions for owners and operators of power network assets.

USA, New Jersey   UK, Chester   Singapore   China, Shanghai

Australia, Brisbane

Founded in 1966 we have over 50 years' experience in the industry and 5 regional offices around the world to support our global customer base.

We work with a lot of our clients on a long-term basis to help them safeguard their power networks.

We advise our clients on strategy and implementation of a range of technology solutions to manage power assets, delivering maximum life and minimising cost

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Safer, Stronger, Smarter Networks

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