




## Transmission and Distribution (T&D) Utilities: Managing risk in a high threat landscape

Smart action requires sharper insight





The world in which we live is changing – and fast. T&D utilities are more aware than most of the impact of the global push towards electrification. Personal and public EV transport, heating and cooling, and even industrial processes are replacing fossil-fired technologies with electric ones, and new sources of distributed energy demand, such as datacenters, add more variables to the mix.

This is set against the backdrop of a scenario that sees more **hazards, threats and risks for utilities** than ever before. Extreme weather increasing in frequency, coupled with historic underinvestment in infrastructure, lays down a difficult gauntlet: Do more with less in a harsher environment.

A challenge ahead? No doubt. But utilities can look to **technology innovations** to provide support in **future-proofing business**. Revolutionary software that leverages **artificial intelligence and machine learning** can provide accurate **data collection and analysis for sharper insights** and mission planning.

Those that carve their path towards the grid of the future today will be tomorrow's leaders, delivering a more sustainable, **better connected, safer world**.



# Utilities at the cutting-edge:

Leveraging technologies to create efficiencies, manage risk and improve safety in today's environment.

## GOING THE DISTANCE



**160,000 miles**

of high-voltage powerlines make up the US power grid, connecting **145 million customers**.



**22,000 miles**

= total length of the German transmission grids.



**90,000+**

electricity pylons in the UK

Demand for power is heightening - and so are the lengths it must travel. Technology-driven powerline planning delivers detailed inspection across vast distances so communities can stay connected, supplied and safe.

## EXTREME WEATHER



**Extreme weather events have increased x5 over the past 50 years.**



**15 US weather disaster events**

in 2022 resulted in losses **exceeding \$1B** respectively



In 2022, **1.63M acres of European land** and over **7.2M acres of US land** were ravaged by wildfires

Flooding, severe storms, tropical cyclones, and wildfires all pose risk to life, infrastructure, and the economy. Powerlines are widely exposed to these events, and in some wildfire cases, can contribute to them. Against today's environmental threats, data-driven and dependency based mission planning is crucial for mitigating safety, supply and cost risks.

## AN AGING INDUSTRY



**70%**

of US transmission lines are more than **25 years old**

**40 years**

minimum age of approximately one third of the EU's grid



**50%**

of the US utility workforce will retire in the next **5-10 years** (US dept of energy)

**42 years**

average age of substation transformers, despite designed age of **40 years**

Underinvested in, aging infrastructure is prone to vulnerabilities and faults, and an aging workforce will see institutional knowledge lost. Advanced cloud-based SaaS can protect against both, improving knowledge sharing and workflow efficiencies through automation while interpreting vital asset data into insights through artificial intelligence and machine learning to keep costly downtime to a minimum.

## THE GRID OF THE FUTURE



It could take a **50% rise in global grid spending** to meet advancing and diversifying transmission needs



**70-80%**

of all new production capacity to 2050 will be renewable sources



**20%**

y-o-y increase in renewable energy capacity expected in 2022

Increasing and fluctuating loads require more stable, flexible and resilient T&D infrastructure than ever before. Predictive maintenance and scenario planning through data visualization are critical to managing risk while moving toward a more sustainable future.

**SharperShape**



**Every inch of the powerline corridor holds insights that can inform utilities of error, risk and opportunity.**

Sharper Shape's software has inspected over 40,000 miles of corridor and 6 million T&D assets, recording 50 million detections, equating to over 6.4 petabytes of data.



Navigating the road ahead successfully requires a robust approach to technology adoption and use.

Sharper Shape is a partner that brings together some of the brightest minds in the industry to deliver a Software+X solution for T&D utilities.

At its heart is the Sharper CORE software that is already being delivered on a cloud-based SaaS basis to multiple Tier 1 utilities across the globe, supporting in efforts to future-proof performance, improve safety and ultimately manage risk.

Utilizing CORE, Sharper Shape develops Living Digital Twins (LDTs), creating a near **real-time virtual reflection of critical infrastructure assets**. This allows for early identification of risks, from advanced vegetation management using LiDAR and hyperspectral data, to mapping of **'what if' scenarios** to be better prepared for disaster events.

Powered by **artificial intelligence and machine learning**, it goes one step further, creating prioritized action plans that hold and enhance institutional knowledge.

Improved workflows, reduced operational risk, and stronger planning empower utilities to overcome complex risk matrices and **deliver reliable power** to the communities they serve.

