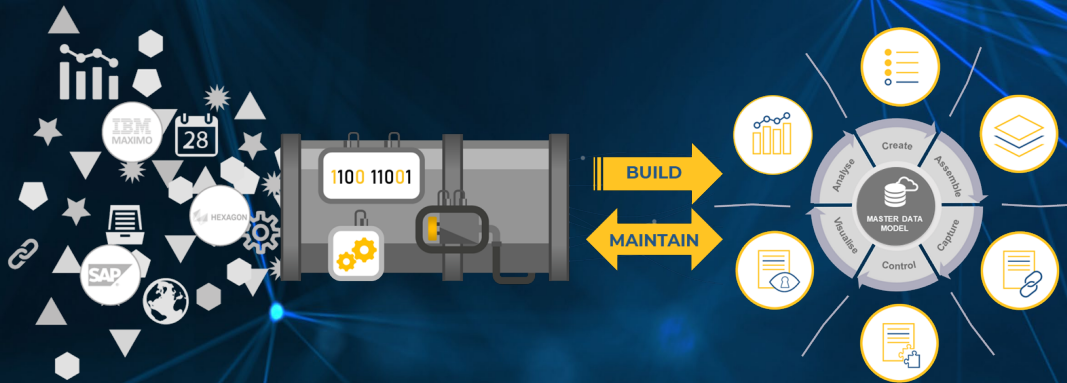# Sword Engineering Information Services

INTELLIGENT SOLUTIONS THAT TURN COMPLEX ENGINEERING INFORMATION INTO A POWERFUL, TRUSTED AND VALUABLE ASSET


SWORD

UPGRADE *YOUR BUSINESS*

SUPPORTING YOUR INFORMATION GOALS

Sword works with organisations that want to drive value from their engineering information. By providing accurate engineering data anytime, anywhere, we help companies to increase efficiency, reduce costs and adhere to regulatory compliance.

We offer tailored solutions to address critical challenges in information management; assisting our clients to discover, digitise, and migrate information and data through common obstacles such as inaccessible data, limited resources, and resistance to change.

By leveraging Sword's **IM Managed Services**, **Data Factory**, and **Digital Engineering Platform**, organisations can establish a single source of truth, enhance operational efficiency, minimise downtime, and ensure regulatory compliance. These solutions empower clients with domain-specific expertise, efficient data management, and streamlined decision-making processes.

In summary, Sword's tailored engineering solutions address industry pain points, providing clients with accessible and trustworthy data, increased efficiency, faster information retrieval, and advanced data visualisation tools. Allowing you to navigate the challenges of engineering information management with agility and confidence.
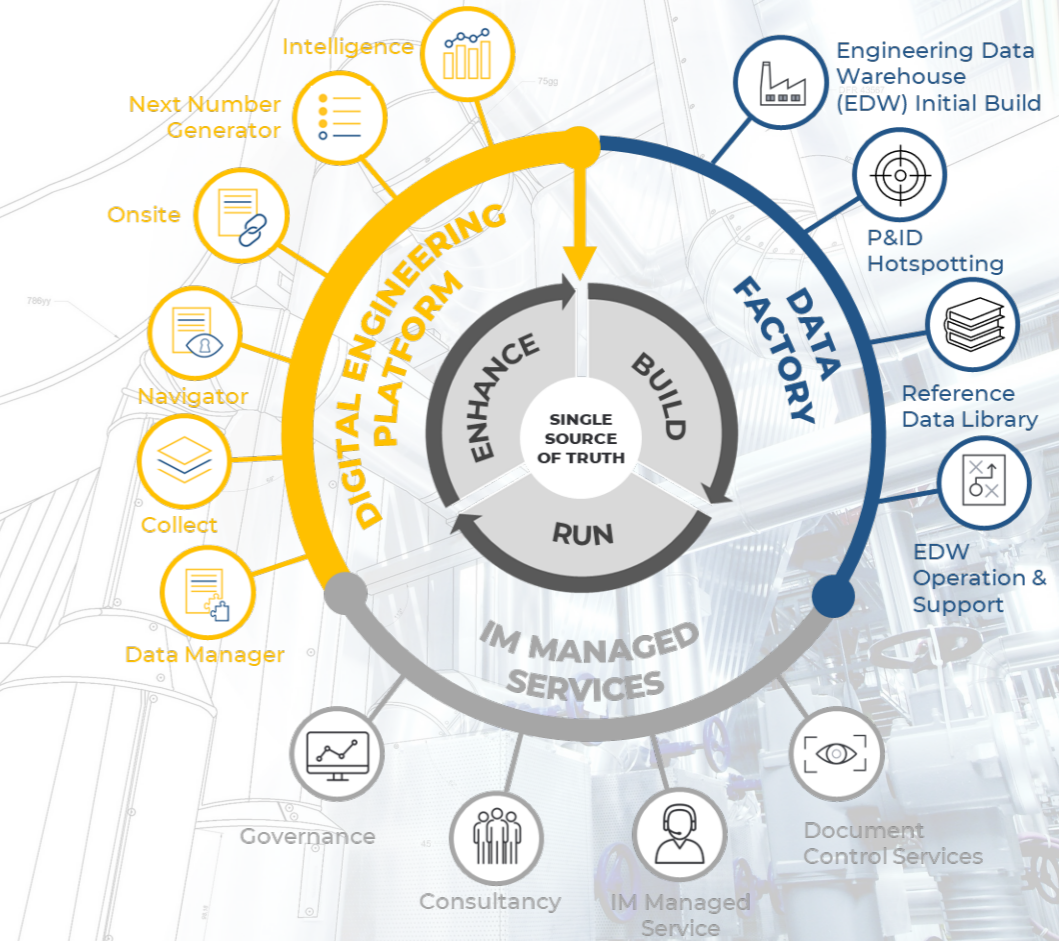
DATA FACTORY

Accessing qualified and experienced data management resources is a challenge for any company and can hinder digital initiatives. Timely access to experienced IM resources brings enormous benefits when implementing a new system or building a new asset.

Our Data Factory provides document and data deliverables via the automated processing of P&ID (Piping and Instrument Diagram) Hotspotting, Tag to Document Linking, ODMP file processing and Reference Data Library (RDL) processing, all with an itemised unit price per document.

BUILD

We can support the initial creation and development of an Engineering Data Warehouse, including:

- Tag number generation configuration and validation
- P+ID Hotspotting
- Convert unreadable documents to readable.
- Tag to Document Crawl and Linking
- Load data from existing sources
- Setup APIs to existing Document Management Systems
- Custom Power BI reports and data exports

MAINTAIN

Continued operations and support to ensure that your Engineering Data Warehouse remains evergreen:

- Extraction of Data from Documents for loading
- P+ID Hotspotting for new documents/new revisions
- Tag to Document linking for new documents/new revision

IMPORT PROCESS

DATA REVIEW

DOCUMENT

TAG

MODEL

COMPLIANCE

EXPORT PROCESS
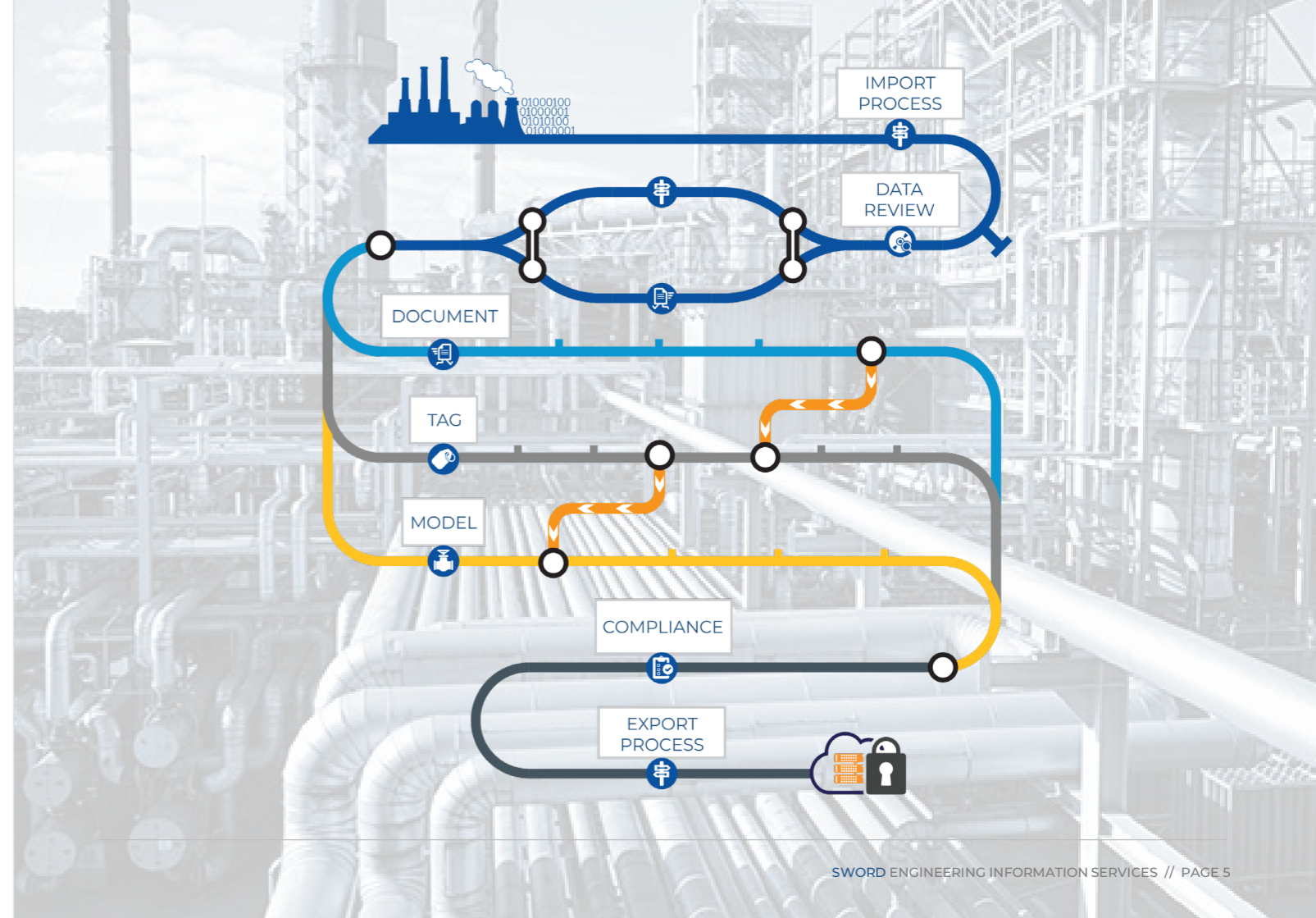
IM MANAGED SERVICES

Our IM Managed Services are designed to provide end users with access to trusted, verified and auditable data and documents, supporting your day-to-day operations from a global talent pool of technical professionals. We work with a wide variety of customers, from multiple industry sectors, who are all interested in driving better decision making.

Sword can deliver **fully outsourced managed services**, providing the data and information management function on behalf of our customers, through to augmenting specific customer capability with industry experts. Whether you require Data Management, Document Control, Governance or Consultancy support, our dedicated teams are here to assist in providing timely access to assured information and data across the energy industry (asset engineering, well engineering, subsurface and corporate end users), improving interpretation and reducing uncertainty and risk.

We provide industry-renowned **Document Control services** across the energy industry, supporting asset integrity and management, and reducing operational risk.

DOCUMENT
CONTROL SERVICE

IM MANAGED
SERVICE

CONSULTANCY

GOVERNANCE

DIGITAL ENGINEERING PLATFORM

Our Software as a Service (SaaS) applications are designed to allow our clients to visualise and manage their own engineering data estate. Our toolset is agile in design and fully configurable to multiple user groups, ensuring that the right users access the right tools to maximise production and minimise cost of use.

Designed to allow customers to retain ownership of their master database, while benefitting from visualising that same data in our applications. Combining this modular approach based around a central data model provides cost agility rare in the technology market, without the requirement for bulky systems, installations, or heavy initial investments.

NEXT NUMBER GENERATOR

Tag and Attribute generation, workflow approval tool.

COLLECT

Collect, review and share engineering information through templates.

ONSITE

Mobile and web-based software for the collection and inspection of data.

DATA MANAGER

Manage, edit and compare asset database content and structures.

NAVIGATOR

Online tool for 1D/2D/3D visualising and searching asset database content.

INTELLIGENCE

Business Intelligence and Management Dashboards.
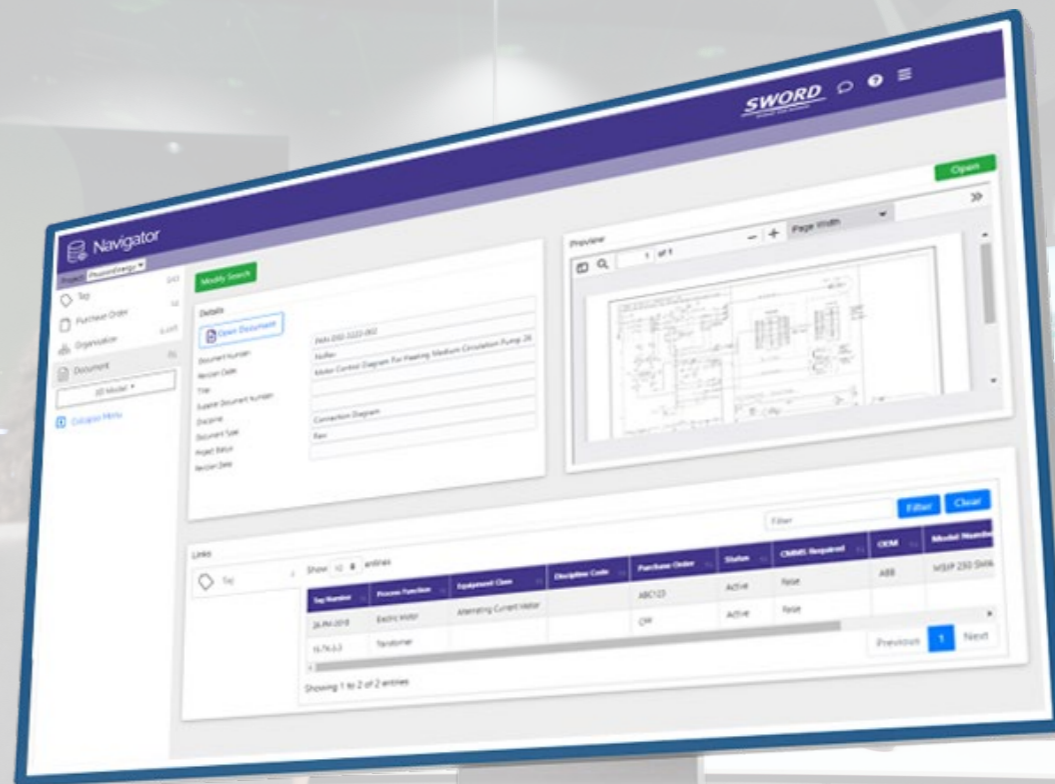
YOUR NEXT STEPS TO INFORMATION MATURITY

Sword's information maturity model serves as a roadmap for organisations to assess and enhance their capabilities in managing engineering information effectively. This approach offers a structured method to evaluate current practices, identify areas for improvement, and align technology investments with strategic goals.

The use of an information maturity model in engineering information management facilitates a systematic approach to handling engineering data, documents, and processes. It allows organisations to streamline information flows, enhance collaboration, and optimise data driven decision making. By assessing maturity across key dimensions such as data governance, integration of digital tools, and automation of workflows, engineering teams can better align their practices with industry best standards.

Our approach empowers organisations to stay agile in the face of technological advancements, ensuring they remain at the forefront of innovation. As industries evolve, leveraging an information maturity model for engineering information management becomes a foundational strategy to navigate the complexities of modern engineering information ecosystems.

INFORMATION MATURITY CAPABILITY

	Documents	Management of Change	Visualisation	Engineering Data	Analytics	Behaviours	3D Models
5	Intelligent P&IDs	Synchronised system updates/ delivery	Publish immersive environment	X-reference to integrity	Predictive Analytics	Virtual tours/ training in Digital Twin	All Central Tag Database and Structural Tags available in model
4	Interactive isolation schemes	Information handover specification implemented	Publish corrosion circuits, anomalies, minor mods, shutdown scopes	X-reference to 3D model/subsea	Remote visual inspections	Constructability reviews performed in Digital Twin	All equipment packages modelled at core tag level
3	Dynamic Plot Plans	Handover validated against class library	Compilation of laser scan imagery	Central Tag Database Generated Registers	InfoMap	Self capture	Verify model completeness/ future
2	Hot spotted P&IDs	EDS driven change control	Consolidated equipment photographs (internal & external)	Class Library implemented	Visual queries	Data sets published to 3rd parties	Model view of process systems
1	Document to tag links	Unstructured/ informal process	360 degree photo survey of asset	Tags in a Central Tag Register	Site-based	Data sets published within CNOOC	Core equipment tags placed on 3D Model
0	Discrete	Document Centric	Ad-hoc images on shared folders	Document registers	Fix on failure	Application specification	Uncontrolled

AREA

CASE STUDY: Turnkey solution for digitising and validating asset information

MCDERMOTT

THE CHALLENGE

McDermott's customers trust their technology-driven approach to design and build solutions that deliver certainty, innovation and added value to each project. McDermott's approach to the Tortue project was no different as they strived for new methods to drive efficiencies, synergies and enhanced delivery times.

With a reputation for using the latest software and services to support the delivery of information on engineering projects, McDermott selected Sword to provide an Engineering Data Warehouse solution for the Tortue Project.
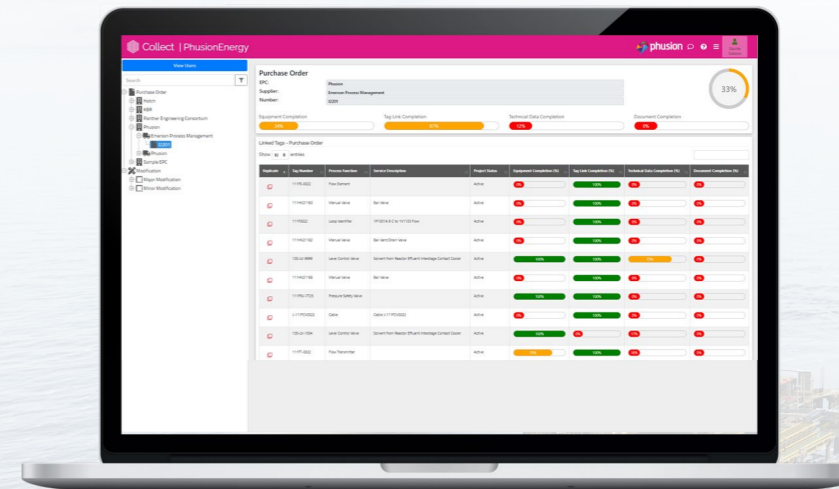
THE SOLUTION

Sword's solution provided McDermott with a suite of SaaS applications (including Pick & link, Collect, Generator and Intelligence) to support the Engineering Data Warehouse requirements of the bp Tortue Project.

The solution delivers a secure and complete tag/data management cloud-based solution that can expand or shrink in line with the project's requirements.

Data Class Library management, validation and error handling, now go hand-in-hand with Tag Allocation and Purchase Order management. Combine this with project Document references, and McDermott have a fully validated digital overview for all assets.

The solution is backed up by the interactive, dynamic and powerful reporting capabilities that reaffirm data validity and data completeness while tracking progress, trends and aiding decision making.

THE OUTCOME

McDermott now have a complete turnkey solution for digitising and validating asset information, that provides them with:

- **Complete Control** - full SaaS solution that is intuitive to use and easy to govern simplifying the data management process.
- **Seamless Information Handover** - fast implementation and streamlined validated processes ensure an efficient handover process..

- **Powerful Real-time Reporting** -ensures that all project stakeholders are informed with web-based real-time information and timelines of data collection activities being performed by McDermott, their sub-contractors, and suppliers.
- **Increased Efficiency** - smooth collection of data and automated validation provides a more efficient method of information management.

CASE STUDY: TotalEnergies solution for maintaining essential engineering documentation & data

THE CHALLENGE

To meet the needs of regulatory compliance and a safety-focused environment TEPUK requires assurance that they have access to the most up-to-date Engineering Documents/Data. As well as access, confidence in the integrity of documents/data is essential when undertaking critical infrastructure engineering tasks. There can be no doubt that they are working with a validated, correct set of data.

Given the dynamic work environment and multiple data sources, users must have confidence in what essential information is available and trust its verifiability.

THE SOLUTION

Providing reliable documents and improved operational efficiency, reduced risk and enhanced collaboration across teams and disciplines.

Sword has helped TEPUK drive a culture of self-service enabled by strong data governance and data stewardship services provided by the Information Management team. Providing users with the ability to interrogate and interact with the data landscape there is now a reduced need to call upon subject matter expertise when searching for up-to-date verified data. We provide fully managed services or augment your own capacity in supporting business users to collate, store, use and share the data asset.

As part of our Managed Services, we manage safety-critical engineering documents based on our best-practice from decades of experience in Oil & Gas. Our services apply to O&M work and major capital projects.

THE OUTCOME

Through our managed services at TEPUK, Sword provides the following outcomes:

- **Accelerated Insights** – access to engineering data/documents located in one source, allowing for faster decision-making.
- **Managed Environment** – Critical Documents and Data are continuously maintained by a team of dedicated SMEs.
- **Data Ownership and Trust** – Through our Service Team we ensure correct ownership of data throughout its lifecycle.
- **Digital Building Blocks** – Implementation and sustainment of the key building blocks required for trusted Digital Twin implementation.

TotalEnergies Timeline

2008
Commencement of our data and Information Management relationship

2009
Implemented service catalogue, SLA and KPIs – increasing quality

2012
Assisted emergency response team during Elgin G4 gas leak

2015
Service optimisation and efficiency drives, doing more for less

2016
Created Global Tagging Specification for New Developments

CASE STUDY: Global Deployments of Master Data Models and Digital Twin for Brownfield Assets & Greenfield Projects

THE CHALLENGE

Access to data can be time consuming, posing a risk of compromising the quality of work preparation activities. Additionally, the transmission of information between teams and the management of review and approval workflows present significant challenges. This can lead to missed opportunities for improving operational performance due to a lack of a comprehensive understanding and the ability to make timely decisions.

Also, data preparation for fully aligned Digital Products at scale emerges as a major obstacle, further complicating the process. Addressing these challenges is crucial for TotalEnergies in enhancing efficiency and effectiveness in organisational operations.

2017
TEPUK Master Data Model build

2018
Total/Maersk integration

2020
Quantum (HQ) SasS development

2021
'RunDMC' project- access to safety critical information easier

2022
Asset in Operation roll-out

Timeline continued

THE SOLUTION

Sword empowers TotalEnergies to utilise data for informed decisions, employing people, processes, and technology. By using Sword's SaaS digital engineering platform, TotalEnergies can build, manage and maintain their Quantum Master Data Model (MDM) for each of its global affiliates, joint ventures, brownfield assets and new greenfield projects.

This cloud-based solution ensures secure and scalable data management, accommodating evolving project needs. It facilitates easy access to technical information, documentation, interactive drawings, maintenance data, 3D models, and links to other Quantum digital products.

Sword also provides sustained delivery of brownfield data preparation and ongoing services, yielding demand-driven outcomes for TotalEnergies' global assets.

THE OUTCOME

Quantum offers a standardised digital representation (Digital Twin) of global facilities, enhancing operations and transitioning from document-centric to data-centric processes. Enhanced Data Governance ensures optimised value.

- **Complete Control** - a cloud-based SaaS solution, delivers modular functionality globally economically.
- **Collaboration** - informs all project stakeholders intuitively.
- **Scalability** - enables rapid expansion across affiliates, joint ventures, brownfield, and greenfield projects.
- **Increased Efficiency** - comes from easy access to trusted single-source data (1D, 2D, and 3D), facilitating better decisions and operational optimisations.

SWORD

UPGRADE *YOUR BUSINESS*

Engineering Information Services

For further information on this service and other projects, please contact us:

uk.info@sword-group.com
www.sword-group.com/uk