



 SHORELINE

# Design™

DESIGN, SIMULATE & MODEL

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# Virtually plan, construct, and operate wind farms in a risk-free environment



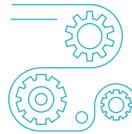
## **INCREASE PRODUCTION & AVAILABILITY**

As few as 24 extra annual production hours can deliver several million \$ in additional revenue.



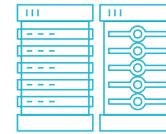
## **OPTIMIZE RESOURCING & SCHEDULING**

Reducing personnel downtime and increasing vessel utilization and fuel efficiency can result in up to 10% OPEX savings.



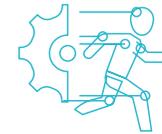
## **ELIMINATE LAST MINUTE, SUB-OPTIMAL CHANGES**

Stay optimized in real time with fast, intelligent complex field service and scheduling re-planning & dispatching. scenario simulations.



## **ALLEVIATE BRAINPOWER & RESOURCE LOAD**

Shift planners' mindset from short to long-term focus and achieve safer & more reliable operations.



## **SPEED UP OPERATIONS**

Gain the data insights necessary to streamline operations, increase time-to-production and save up to \$300K daily.

# Custom-tailored to your specifications

Shoreline Design™ is built to meet your business-critical requirements for all phases of wind farm construction or operations and maintenance.

Significantly increase efficiency through improved resources management, and reduced manual handling of operational data.

## CONSTRUCTION DESIGN™

Simulate the entire process of installation, completion, commissioning and testing for renewable energy projects, including estimating costs and the financial performance of early production. Assess weather and project schedule risk and predict where obstacles could arise.

## O&M DESIGN™

Receive unparalleled insights into costs, availability and resource utilization in the O&M phase of designing and developing a sustainable energy project.



Shoreline provides a single tool to engineer, analyze and manage data from multiple projects, whilst providing all the following options within one software package:

- ✓ **ADVANCED ANALYSIS FOR COMPLEX PROJECTS**
- ✓ **INTEGRATED PHASES IN ONE BUSINESS CASE**
- ✓ **INCREASED PROBABILITY OF MEETING PROJECT DEADLINES**
- ✓ **CUSTOMIZED REPORTING, AS REQUIRED**
- ✓ **BUDGET MANAGEMENT AND FINANCIAL PROJECTIONS**
- ✓ **INTELLIGENT SIMULATIONS TO GENERATE P10-P90 PROJECT SCHEDULES AND WEATHER DOWNTIME ASSESSMENTS**

# Construction Design

Build faster and more efficiently in less time with data-driven insights.

Generate the accurate modeling data required to optimize resources, and reduce time to production, cost and risk with unlimited virtual scenario simulations.

Simulate entire sustainable energy projects from installation, completion, commissioning and testing, and generate accurate cost estimates, early production financial performance forecasts, weather and project schedule risk predictions, and potential obstruction data.

## PRODUCT FEATURES

- Intuitive project management interface
- Case comparison & output dashboard views
- Powerful production forecasting
- Third-party export support
- Customizable performance characteristics
- Simulate with historical & predictive weather data

- ✓ OPTIMIZE LOGISTICAL PLANNING WITH FLEXIBLE AND INTELLIGENT SCHEDULING SIMULATIONS.
- ✓ DECREASE PROJECT RISK AND SPEED UP TIME-TO-PRODUCTION.
- ✓ BUILD COMPLEX SCENARIOS WITH THE COMPREHENSIVE INPUT LIBRARY.
- ✓ GENERATE GRANULAR-LEVEL SIMULATION DATA QUICKLY AND EASILY FOR ANY SCENARIO.
- ✓ GENERATE GRANULAR-LEVEL SIMULATION DATA QUICKLY AND EASILY FOR ANY SCENARIO.
- ✓ GAIN ACCURATE FINANCIAL PERFORMANCE DATA.



# O&M Design

Increase operating efficiency and improve resource and asset management at every lifecycle stage.

Quickly assess complex supply chain, field service, logistic scenarios, pre-assembly and load-out, and installation, commissioning and maintenance with the industry standard in algorithm-driven simulation SaaS.

Integrates with your trusted systems to deliver critical, time-sensitive project data proven to boost productivity, reduce costs, create optimal workflows and drive efficiency at each process cycle stage.

## PRODUCT FEATURES

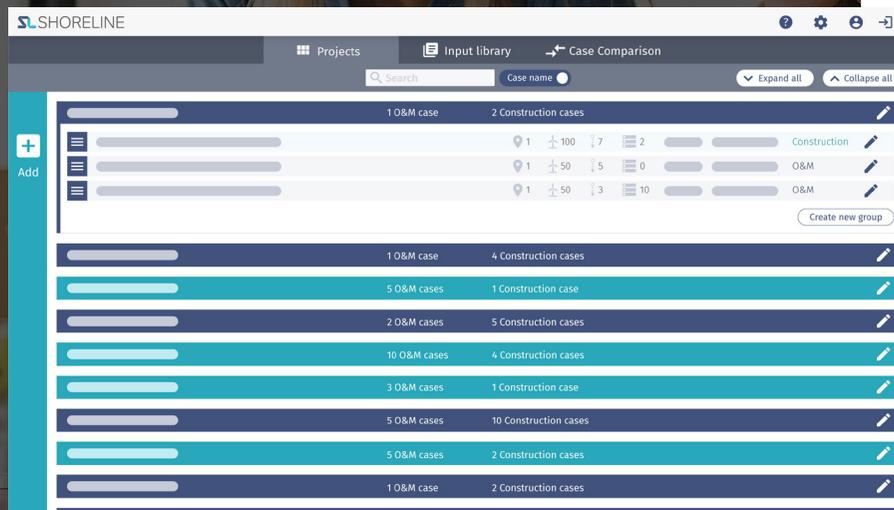
- Agent-based modeling
- Adverse event and weather downtime assessments
- Advanced finance and production analytics
- Customizable dashboards & reporting
- Collaborative interface
- Aggregated data integrations

- ✓ ACCURATELY MODEL COMPLEX OPERATIONAL SCENARIOS.
- ✓ GENERATE INSIGHTFUL COST AND RESOURCE ESTIMATES AND DEVELOP OPTIMAL, COST-EFFECTIVE O&M STRATEGIES.
- ✓ EFFORTLESSLY CONNECT INFORMATION ACROSS PROJECTS.
- ✓ UNITE AND STREAMLINE YOUR SYSTEMS AND DATA.
- ✓ UTILIZE THE COMPREHENSIVE INPUT LIBRARY TO POPULATE COMPLEX SCENARIOS.
- ✓ CENTRALIZE AND SECURE YOUR DATA WITH PREMIUM CLOUD HOSTING.



# Project collaboration

Facilitate collaboration and information flow across projects and teams.



## INTER-ORGANIZATIONAL ACCESS

Increase inter-departmental transparency between personnel, from analysts to management.



## SYSTEM CONSOLIDATION

Achieve greater cooperation by removing siloed spreadsheets and reducing internal databases.

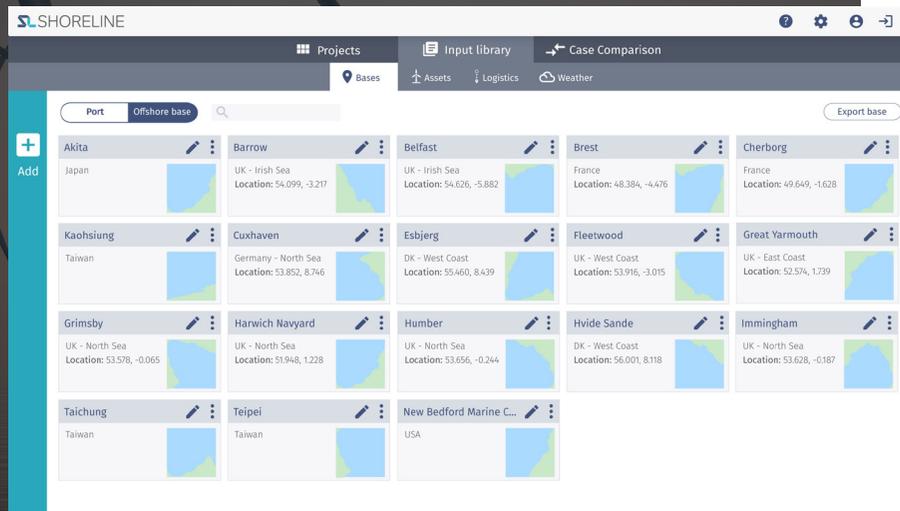


## PROJECT MANAGEMENT INTERFACE

Organize projects in folders for flexible case management and allocation, and review relevant information at a glance.

# Input library

Build a comprehensive input library including base, logistic, turbine and weather data, and analyze performance and cost.



## BASES

Store and view base details including location coordinates, repair slots, and more.



## ASSETS

Enter and store turbine, cable and foundation and other asset details along with maintenance activity information.



## LOGISTICS

Add and track logistic and vessel details including costs, processes and performance characteristics for accurate scenario modeling and assessment.

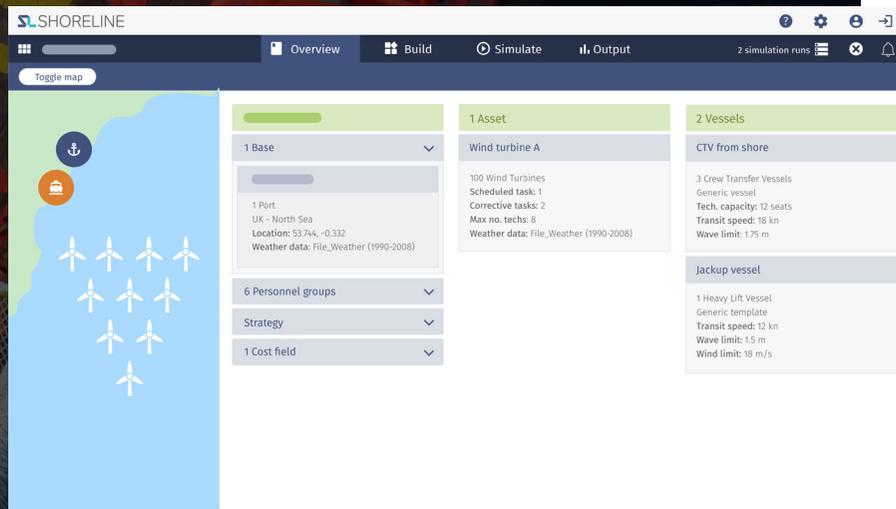


## WEATHER

Apply and model with historic weather data details including dates, resolutions and more.

# Custom transit routes

Create optimal transports routes with accurate transit base data.



## CREATE CUSTOM ROUTES

Define specific transiting routes from a base, and save the route for future use.



## FLEXIBLE ROUTE CONFIGURATION

Click and create routes directly in the map view, or with specific coordinates.



## DEFINE SPEED LIMITS

Set speed limits along the route by applying vessel variables for loaded, empty, and towing.

# Workflow dependencies

Define and create task parameters and requirements including personnel and logistics, and model interdependencies.

The screenshot displays the 'Wind Turbine X' configuration page in the Shoreline software. The interface includes a sidebar with navigation options like 'Members', 'Parameters', 'Weather criteria', 'Power curve', 'Tasks', and 'Weather'. The main content area is titled 'WTG service 2' and contains several configuration sections:

- Task type:** A dropdown menu set to 'Scheduled maintenance'.
- Book keeping:** A dropdown menu set to 'WTG Preventative maintenance'.
- Start date:** A date selector set to 'Jan 1st'.
- Scheduling:** A checkbox for 'Allow percentages of assets' is checked.
- Recurrence:** A section for 'Years intervals'.
- Production impact during work:** A section for '& reduced production'.
- Learning curve:** A section with an 'Apply' button.
- Relationship:** Radio buttons for 'Related to selected asset' (selected), 'Related to assets connected to selected asset', and 'Unrelated'.
- Earliest start date:** A date selector set to 'Jan 1st'.
- Dependency type:** Radio buttons for 'Date' (selected), 'Individual', 'All', and 'Some'.

At the bottom of the form are 'Cancel' and 'Save' buttons. On the left, a table lists various tasks with their types and start dates.



## FLEXIBLE TASK TYPES

Create commissioning, installation, assembly, transport, testing, scheduled maintenance, corrective maintenance, and more.



## RELATIONSHIPS AND DEPENDENCIES

Specify task relationships to assets and dependencies to other tasks.



## TASK REQUIREMENTS

Set and define required logistics, and personnel including team size, required skills and certifications, and more.

# Process cycle builder

Define and create process parameters including potential weather and environmental impact.

Members Fuel consumption Costs Processes

0 - Vessel lead time Xh  
0 days

1 - Mobilising Xh  
Add process

2 - Loadout Xh  
2.1 - \*Variant\* Xh  
2.2 - \*Variant\* Xh  
2.3 - \*Variant\* Xh  
2.4 - \*Variant\* Xh  
2.5 - \*Variant\* Xh  
Add process

3 - Transit to wind farm Xh  
Add process

4 - Activate dynamic positioning Xh  
Add process

5 - Jacking up Xh  
Add process

6 - Installation Xh  
6.1 - \*Variant\* Xh  
6.2 - \*Variant\* Xh  
6.3 - \*Variant\* Xh

<Selected variant> Learning curve Edit

Apply to <Task>, <Task>

<Group name>

1 -<Step> Flexible  
Duration: 0h Weather window: 0% Min. work duration: 0h Max. wait since prev. step: 0h Max. wait between work periods: 0h  
-!Weather type: 0h -!Weather type: 0h -!Weather type: 0h Environmental schedule type: Date range: \*Time period\*  
Date range: XXXX-XX-XX - XXXX-XX-XX Time period: 00:00 - 00:00 repeat: Every year

2 -<Step> Flexible  
Speed: 0h Weather window: 0% Min. work duration: 0h Max. wait since prev. step: 0h Max. wait between work periods: 0h  
-!Weather type: 0h -!Weather type: 0h -!Weather type: 0h Environmental schedule type: Date range: XXXX-XX-XX - XXXX-XX-XX

3 -<Step>  
Duration: 0h Weather window: 0% Min. work duration: 0h Max. wait since prev. step: 0h Max. wait between work periods: 0h  
-!Weather type: 0h -!Weather type: 0h -!Weather type: 0h Environmental schedule type: Date range: \*Time period\*  
Date range: XXXX-XX-XX - XXXX-XX-XX Time period: 00:00 - 00:00 repeat: Every year

4 -<Step>  
Speed: 0h Weather window: 0% Min. work duration: 0h Max. wait since prev. step: 0h Max. wait between work periods: 0h  
-!Weather type: 0h -!Weather type: 0h -!Weather type: 0h Environmental schedule type: Date range: XXXX-XX-XX - XXXX-XX-XX

5 -<Step>  
Duration: 0h Weather window: 0% Min. work duration: 0h Max. wait since prev. step: 0h Max. wait between work periods: 0h  
-!Weather type: 0h -!Weather type: 0h -!Weather type: 0h Environmental schedule type: Date range: \*Time period\*  
Date range: XXXX-XX-XX - XXXX-XX-XX Time period: 00:00 - 00:00 repeat: Every year

Cancel Save



## CYCLE BUILDER

Create workable cycles for mobilizing, loadout, transit, etc., and define required actions at every step.



## STEP PARAMETERS

Define step parameters including speed, weather windows, wait times, work durations and more.



## WEATHER AND ENVIRONMENTAL LIMITATIONS

Outline weather and environmental limitations affecting every cycle stage.

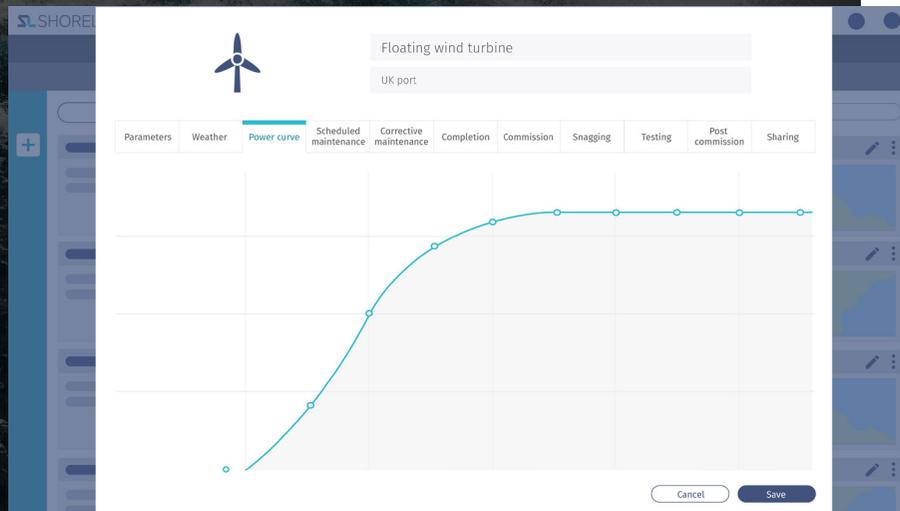


## LEARNING CURVES

Define and apply case or process specific curves and increment frequencies.

# Adverse event and weather predictions

Generate precise adverse event and weather downtime assessments and reduce project risk before construction begins.



## DOWNTIME ASSESSMENTS

Generate P10-P90 weather downtime assessments in minutes for business case or tender and export to Primavera and MS Project.



## HINDCAST AND MEASURED TIMESERIES

Use Hindcast or measured weather timeseries to model significant wave height, direction, period, speed, velocity, tide, visibility and daylight.



## WEATHER SIMULATIONS

Simulate single or multiple variable weather scenarios including Markov chain based probabilistic distribution.



## S-CURVES

Utilize S-curve data to predict the knock-on effect of changes, and quickly and precisely adapt risk forecasts, estimates, schedules and more.

# Custom strategies

Create and simulate custom strategies based on work orders, schedule timings and more.

The screenshot displays the SHORELINE software interface with the 'Strategy' configuration panel open. The panel is divided into several sections:

- Case timezone:** A dropdown menu set to '(GMT +1:00) Brussels, Copenhagen, Madrid, Paris'.
- General:** Includes fields for 'Emergency response limit' (30 min), 'Minimum working length' (1 hours), and 'In-park speed limit' (No limit km).
- Technician breaks and shift lengths:** Includes fields for 'Break time in total per workshift' and 'Workshift length', both in hours.
- HIV charter strategy:** Includes a 'Lead time' field set to 72 days.
- Crew change strategy:** A dropdown menu set to 'None'.
- Scheduling strategy:** Includes 'Scheduling times' with fields for 12:00 and 01:00, and an 'Add scheduling time' button.
- Work order priority:** Includes checkboxes for 'Bundle work orders on assets' and 'Redeploy personnel', and buttons for 'Expand all' and 'Collapse all'. It also features sections for 'Major corrective tasks', 'Minor corrective tasks', and 'Started scheduled tasks', each with a list of task parameters and 'Add/Remove tasks' buttons.



## STRATEGIC CASE SETTINGS

Set emergency response limits, working lengths, speed limits, crew change, time schedules, technician breaks and more.



## LEARNING CURVE

Create a learning curve to modify minor and major task durations.

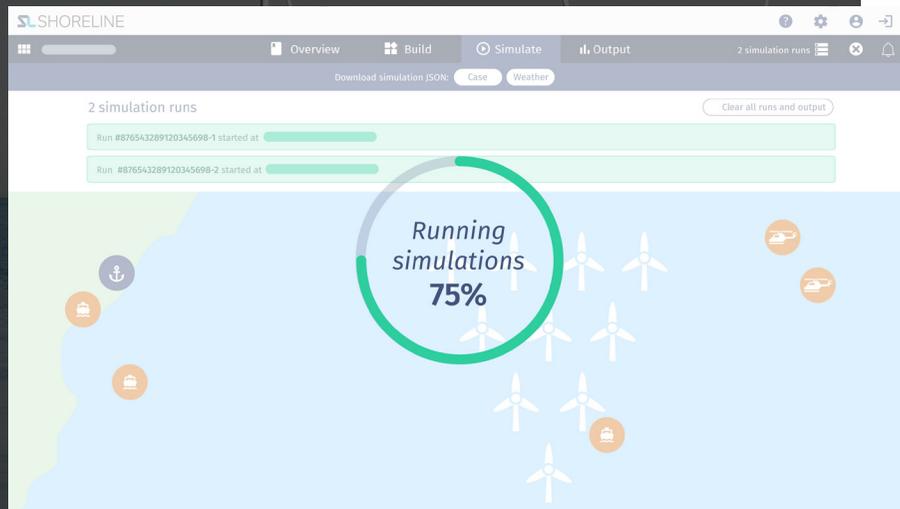


## PQ SHEET DETAILS AND WORK PRIORITIES

Define various times, lags and durations, as well as rules for how the simulation engine should prioritize work orders.

# Virtual simulations

Intelligent, high-speed simulation technology for full life-cycle scenario modeling in a risk-free virtual environment.



## SHORELINE SIMULATION ENGINE™

Accurately predict cost, production, time and utilization with state-of-the-art agent-based modeling and our patented optimization algorithm.



## MULTI-SCENARIO ASSESSMENTS

Run multiple and complex supply chain, field service and logistic scenarios and precisely estimate availability and cost.

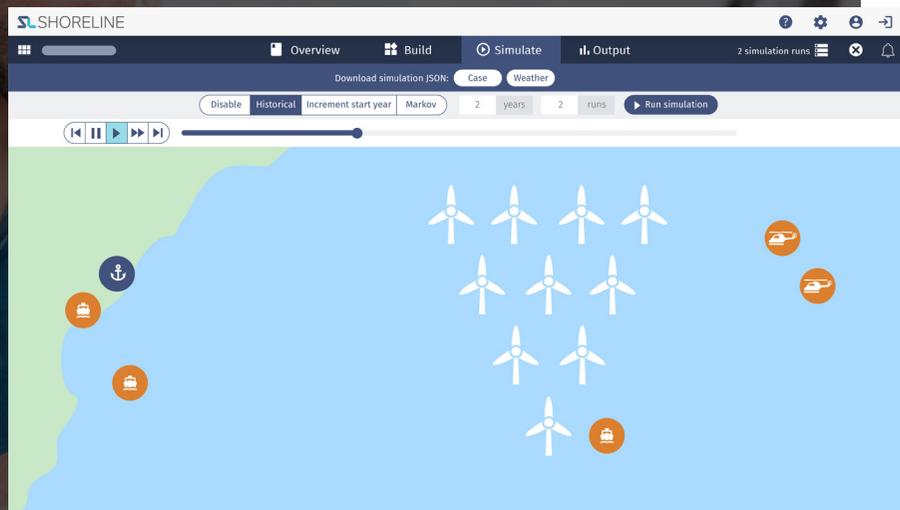


## FULL-CYCLE SIMULATIONS

Assess pre-assembly, loadout, installation and commissioning within a single simulation.

# Intelligent modeling

Model and simulate wind farms in any location within hours, and streamline your development timeline.



## WEATHER AND TRANSPORT CONSTRAINTS

Model personnel, assets and logistics given variable conditions, such as weather and transport limitations, within minutes.



## SCHEDULED MAINTENANCE MODELING

Model and run schedule maintenance scenarios to pinpoint and resolve potential costly inefficiencies.



## WIND TURBINE GENERATOR MODELING

Detailed modeling features include power curve, installation and commissioning timings and required resources and cost.



## ASSET INSTANCE MAPPING

Locate assets on the map to create wind farms, and connect instances such as mono piles, transition pieces and more.

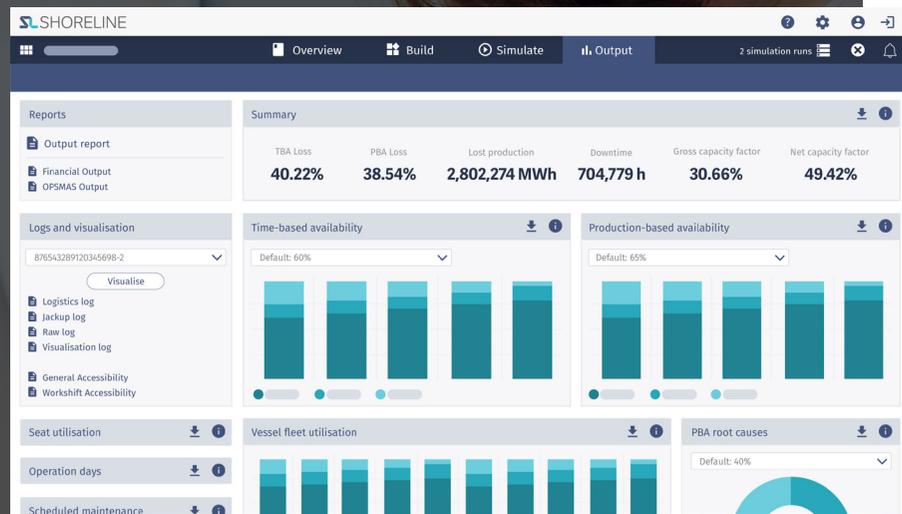


## COMPONENT FAILURE MODELING

Model and measure detailed component failure capabilities on connected asset instances.

# Dashboard reports

Compile and analyze results, and extract reports in the format that best suits your needs with configurable dashboards.



## REPORT EXPORTS

Produce, export and communicate findings and business cases to stakeholders and clients with easy-to-interpret reports.



## MULTI-FACETED REPORTING

Compile and generate reports that include cost, power production, progress, resource utilization and more.



## CUSTOMIZABLE DASHBOARDS

Configure and highlight data relevant to each user at any given time for a customized visual graphical analysis.

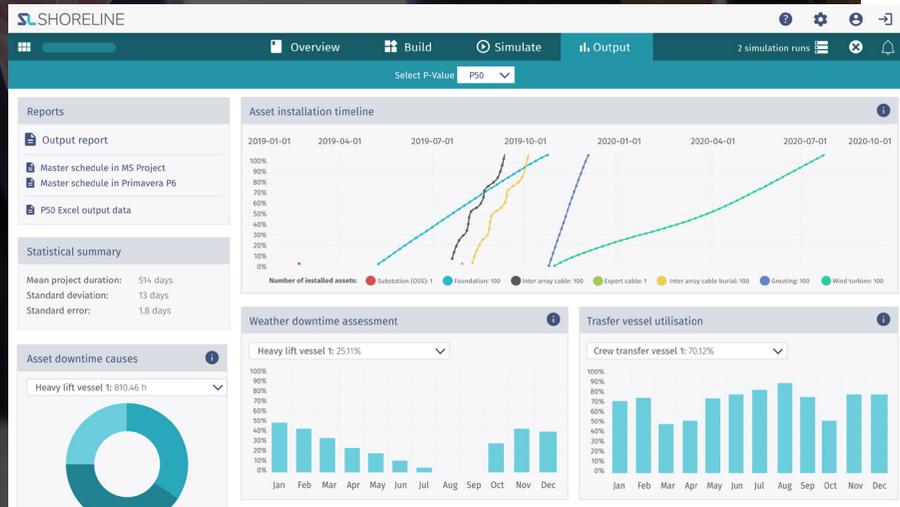


## EXPORT

Export detailed data to Excel, MS Project, Primavera and more, or integrate with data visualization tools like Tableau.

# Finance and production

Build accurate, data-backed investment business cases.



## COST SCENARIO FORECASTS

Simulate advanced cost scenarios and financial forecasts from early production to testing.



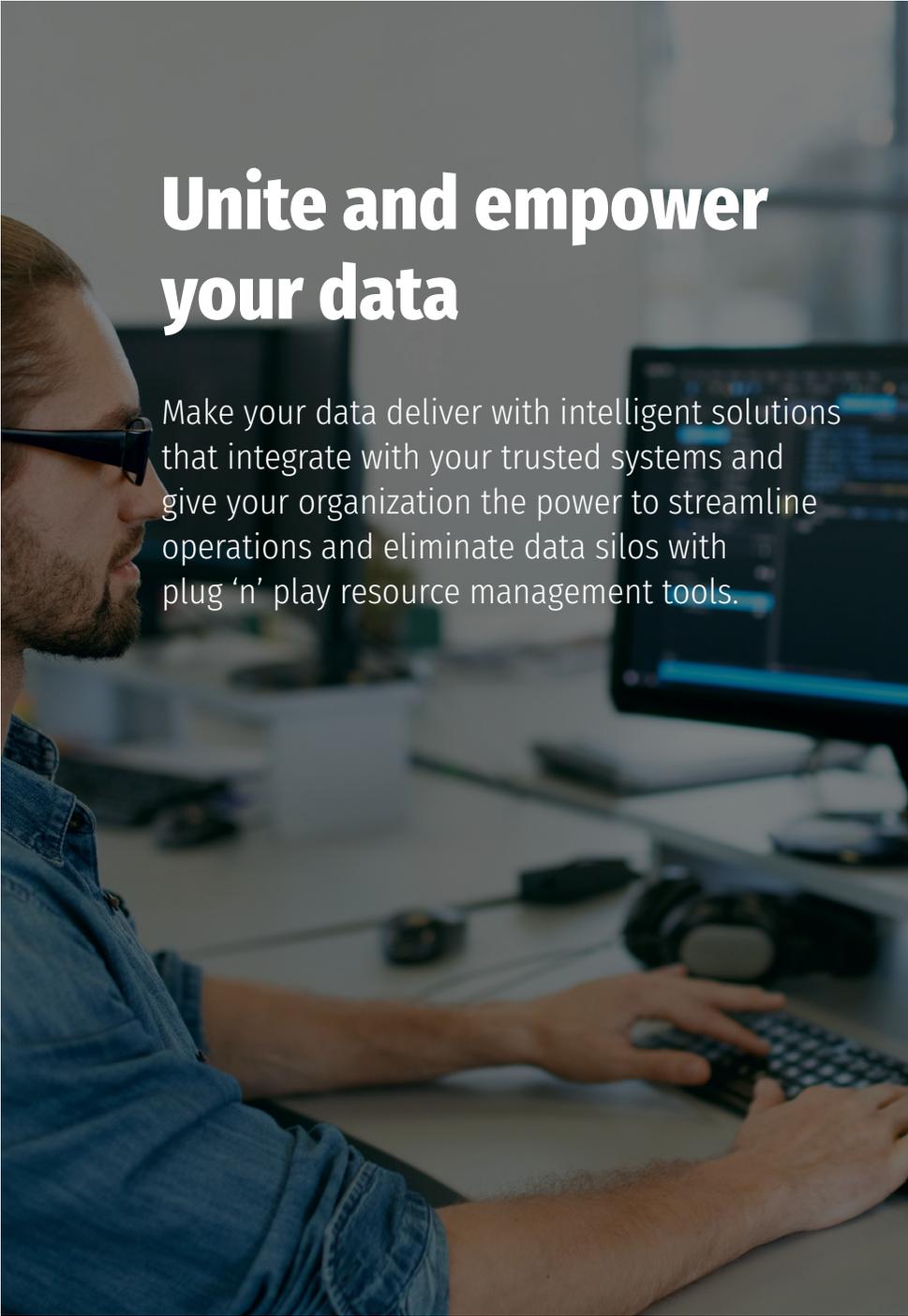
## FINANCIAL AND OPERATIONAL IMPACTS

Visualize the financial and operational impact of lead time, weather downtime, and resource availability.



## TIME AND PRODUCTION-BASED AVAILABILITY

Estimate time and production-based availability scenarios, and identify the cause of bottlenecks leading to production loss.



# Unite and empower your data

Make your data deliver with intelligent solutions that integrate with your trusted systems and give your organization the power to streamline operations and eliminate data silos with plug 'n' play resource management tools.



## **GENERIC APIS**

Safely integrate data from your trusted systems with secure, generic APIs and 3rd party integrations.



## **AGGREGATE DATA SOURCES**

Maximize resource utilization, increase production volume and PBA, and automatically generate manifests, calculate contractual bonuses, and dispatch work orders.



## **MAINTAIN LIBRARY DATA**

Create and maintain a comprehensive library of vessels, helicopters, and ports, as well as weather, maintenance and reliability data.



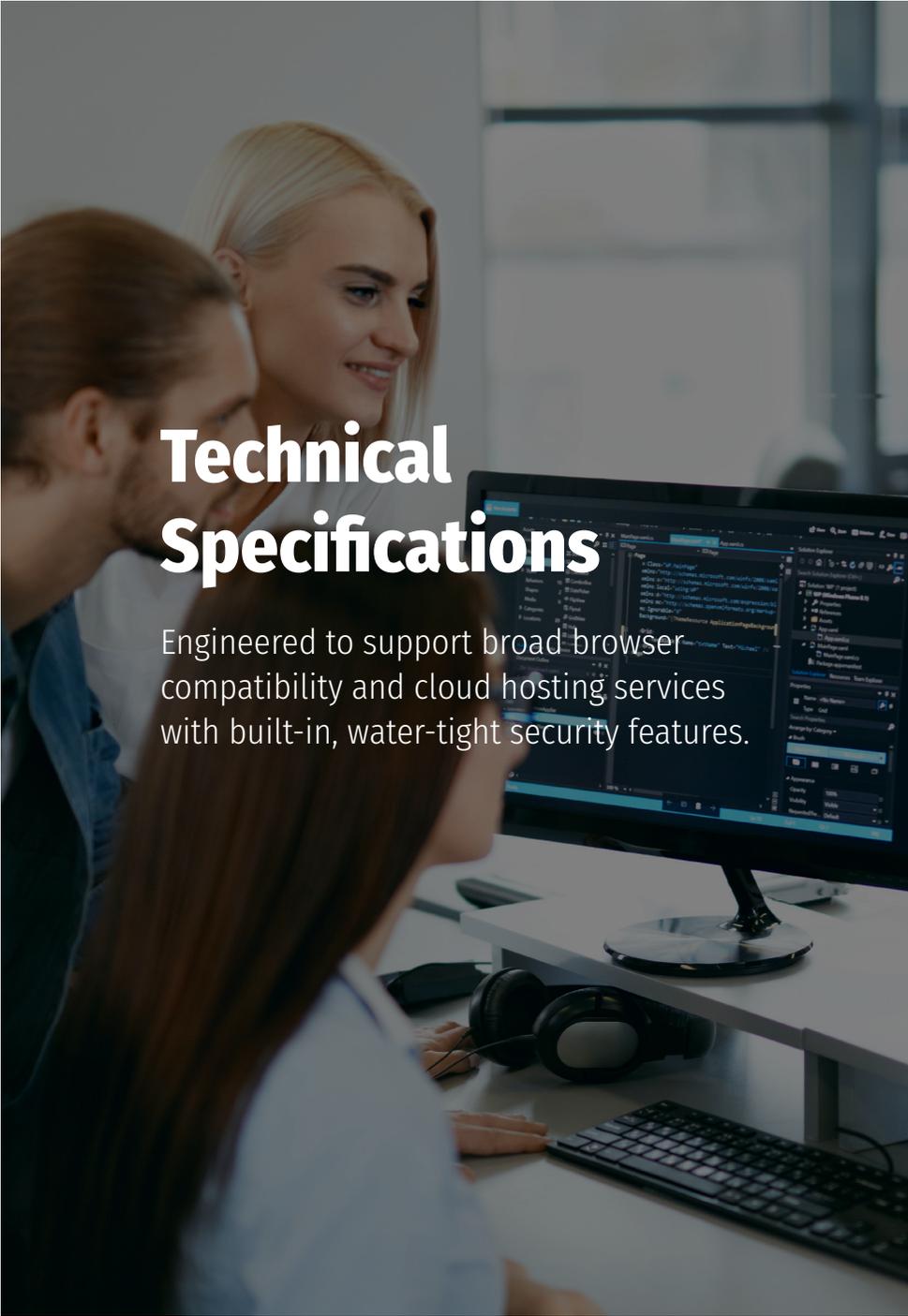
## **CROSS-PROJECT DATA SHARING**

Ensure project accuracy throughout the asset lifecycle with shared data across project teams.



## **MULTIPLE LANGUAGES**

Translate between languages on demand in one simple step.



# Technical Specifications

Engineered to support broad browser compatibility and cloud hosting services with built-in, water-tight security features.



## **CROSS-BROWSER COMPATIBILITY**

Full support in Chrome, Edge, Safari and Firefox.



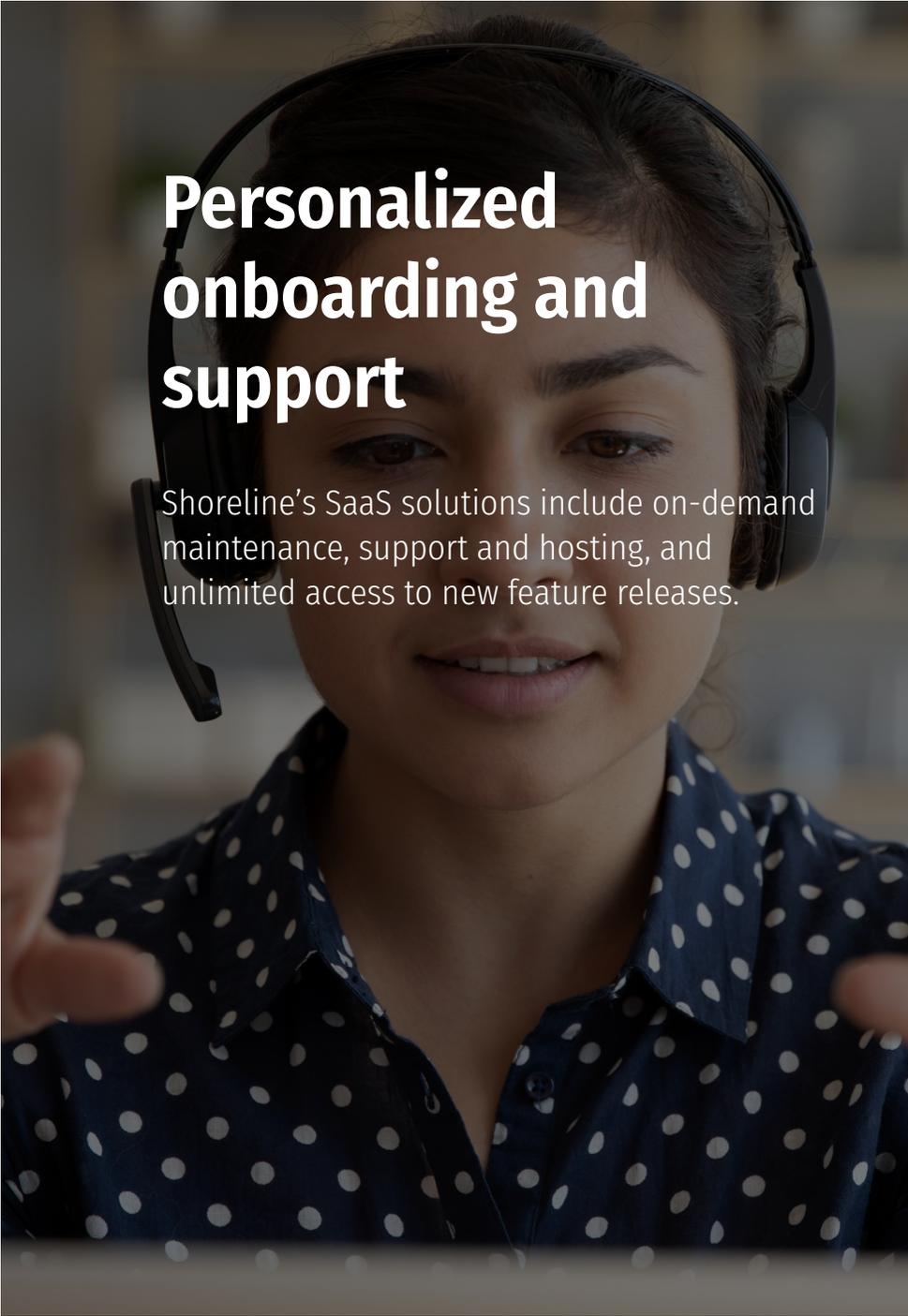
## **ADVANCED AWS HOSTING**

Amazon Web Services in Europe (Frankfurt) and fully redundant setup with multiple availability zones and infrastructure as code.



## **BUILT-IN SECURITY**

Single-tenant company specific and isolated private cloud complete with enterprise-grade data security and GDPR compliance.



# Personalized onboarding and support

Shoreline's SaaS solutions include on-demand maintenance, support and hosting, and unlimited access to new feature releases.



## **24/7 MULTILINGUAL SUPPORT**

Round-the-clock, multi-language access to our team of experienced wind industry experts via chat, email, phone, and even on-site whenever possible.



## **PROJECT MANAGEMENT**

Dedicated project management from system implementation through onboarding.



## **CUSTOMER SUPPORT MANAGEMENT**

Dedicated customer support manager (CSM) representative for the duration of the subscription.



## **TRAINING AND ADMIN SUPPORT**

Site (back office and on-premise) training and administrative support.



## **ONLINE TRAINING MATERIALS**

Comprehensive online knowledge library and training materials.



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