newgen

[Newgen I&S]
MarineTech & AX Solution Provider

We are dedicated to solving real-world challenges across
the maritime, shipbuilding, and marine equipment sectors



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Client Portfolio

General Institution

케이조선 KShipbuilding
YNCC
대선조선 |주|
Goltens Korea
대한조선 DHShipbuilding
HSD engine
HAEMIN
HANLA ENS
JCONJIN MS
SnB
부산조선해양기자재공업협동조합 Busan Marine Equipment Association
KANGNAM CORPORATION
PANASIA
DongHwa Entec
Seho Marine Solutions
HMM
G-MARINE SERVICE

Public Institution

KIOST 한국해양과학기술원 KOREA INSTITUTE OF OCEAN SCIENCE & TECHNOLOGY
KOMSA 한국해양교통안전공단
대한민국해군 REPUBLIC OF KOREA NAVY
한국남부발전주식회사
대한상공회의소 부산인력개발원
대한상공회의소 서울기술교육센터
K water
Joia (재)전남정보문화산업진흥원 Jeonnam Information & Culture Industry Promotion Agency
재단법인 부산테크노파크 BUSAN TECHNO PARK
KOMERI

Educational Institution

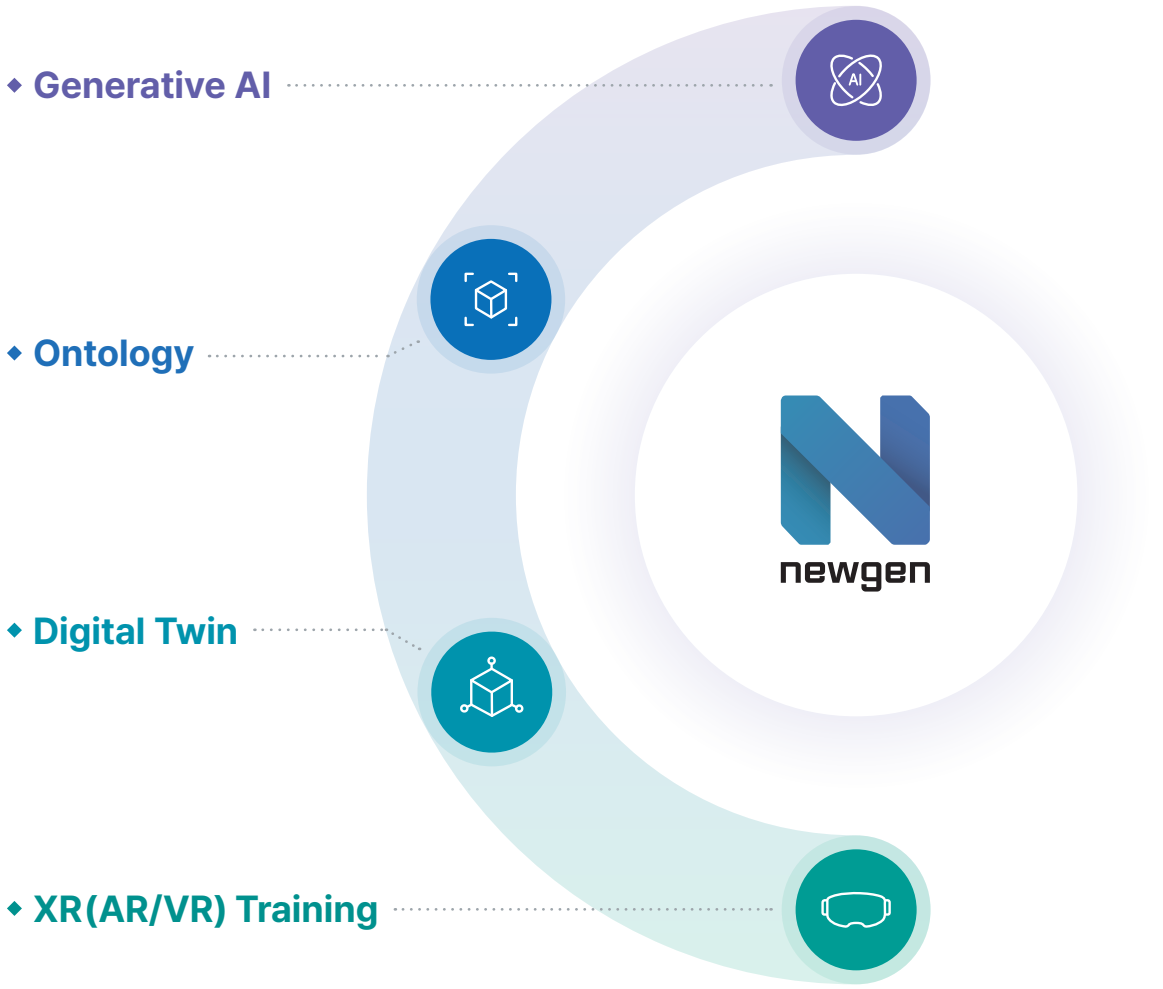
국립 목포해양대학교 MOKPO NATIONAL MARITIME UNIVERSITY
국립 한국해양대학교 NATIONAL KOREA MARITIME & OCEAN UNIVERSITY
전남대학교 CHONNAM NATIONAL UNIVERSITY

Our Mission

Newgen I&S is an AI and digital technology company specializing in the shipbuilding & marine, shipping & ship management, marine equipment, and defense industries.
We deliver vertical AI Solutions that transform industrial workflows across design, production, operations, maintenance, safety, and education & training, powered by Digital Twin, Generative AI, AI Agents, and XR(VR/AR) technologies.

We connect real- world operational data with domain expertise to deliver RAG- based knowledge services, Ontology & Knowledge Graph-powered AI Agents, Computer Vision-based process and safety monitoring, and Digital Twin & XR-based simulation solutions.

By integrating industrial data and AI technologies, Newgen I&S helps organizations intelligentize operations, improve productivity, enhance safety, and develop workforce capabilities.





We enable intelligent AI transformation across the shipping, ship-building, defense, mobility, and energy through industry-specific AI and Digital Twin technologies.

Our Journey

2015
Establishment

2017

- **Certified as a Corporate Research Institute**
  (Ministry of Science and ICT
- **Qualified to Participate in Public Procurement Competitive Bidding**

2018

- Defense Venture Company Designation Defense Agency for Technology and Quality
- Marine Information VR Visualization System
- Venture Company Certification Korea SMEs and Startups Agency

2019

- Defense Small & Medium Venture Program — Newgen Proprietary Technology
- Multifunctional AR Education & Training System — Patent
- SD Engine — SCR VR/AR Training Program
- Mokpo National Maritime University — AR Training System
- Virtual Training System for Small & Medium-Sized Ship Repair
- Digital Twin-Based Maritime Officer Training System

2020

- Defense Small & Medium Venture Program — Newgen Proprietary Technology
- Multifunctional AR Education & Training System — Patent
- HSD Engine — SCR VR/AR Training Program
- Mokpo National Maritime University — AR Training System
- Virtual Training System for Small & Medium-Sized Ship Repair
- Digital Twin-Based Maritime Officer Training System

2021

- Maritime Officer Engine - Room Training System
- AVEVA Piping Automation System — Development & Deployment
- 2D/3D Synchronized Piping System Generation — Patent

2022

- 6.5K LNG Bunkering Vessel — Virtual Training System
- Hydrogen Fuel Cell 3D Process Model & Digital Twin
- LNG-Fueled Vessel Digital Twin Operations Support Platform
- ISO 9001:2015 Certification
- Lloyd's Register Certification & IGF Basic Training
- Remote Inspection Support System for Small Vessels

2023

- Mokpo National Maritime University — Experiential Content Development & Delivery
- Minister of Oceans and Fisheries Award — Avatar Visualization Patent
- Nakdong River Estuary Salinity Visualization — Development & Delivery
- Digital Ship Structure Training Equipment — Supply Agreement
- DHST & DHSS — Copyright Registration
- KR · DHSS · DHST — KOLAS Accreditation

2024

- Development & Deployment of AI Equipment Operation & After -Sales QA System
- LNG Metaverse Training Simulator Enhancement Project
- Excellence Award, 2024 Korea Maritime & Fisheries Science and Technology Awards

2025

- Ship RAMP Handling Simulator Supply
- BIPA Metaverse Support Program
- Generative AI & 3D ModelBased Safety Content Development
- Filed 2 Patents for Shipbuilding & Marine Equipment MRO
- AI & Ontology-Based MRO Technology Seminar

2026

- Regional Digital Foundation Capacity Support Program
- Industry-Linked Digital Content Development Program
- Commercialization of Ice Hazard Prediction for the Arctic Sea Route
- Busan BIPA Virtual Convergence Support Program
- Development of Education & Training Content for KIOST Virtualization Center

Core Technology

Generative AI & RAG-Based Industrial Knowledge Services

- Knowledge search and Q&A powered by manuals, regulations, reports, and maintenance records
- Industry-specific AI services supporting PSC, operations, maintenance and inspection

Ontology & Knowledge Graph-Based AI Agents

- Industry knowledge modeling across equipment, components, systems, procedures, and failure data
- Reasoning-based AI Agents for procedural guidance, troubleshooting, and decision support

Digital Twin, AR & VR Simulation

- 3D digital twins reflecting real-world vessels, equipment, and operational processes
- AR/VR visualization of structures, operating principles, operations, and maintenance procedures

Digital Manuals & Industrial Knowledge Content

- Digitization of paper/PDF manuals, technical documents, and work procedures
- Field-ready microlearning and work support integrating images, videos, 2D drawings, and 3D models



Integrating Generative AI, Autonomous Agents, and Digital Twins with Maritime Domain Expertise



YouTube

Full Video

Business Areas



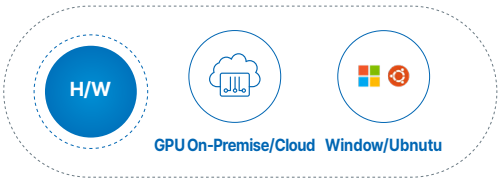
Planning an Ontology-Based AI System for P&ID / E&ID Design in Shipbuilding Equipment

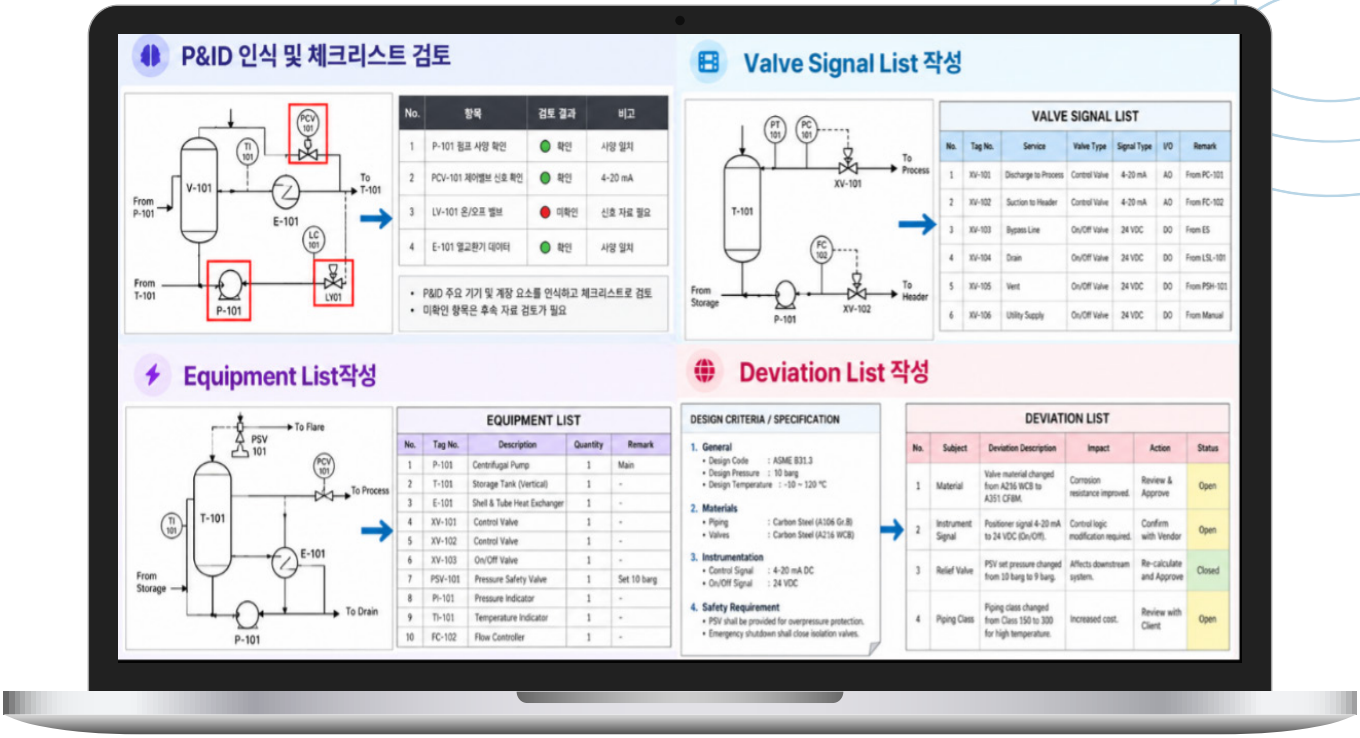
summary

Planning an ontology-based AI system that extracts and structures design information from P&ID and E&ID drawings to automate design checklist reviews and support the quality assurance of engineering deliverables.

Application

- AI-based recognition of P&ID and E&ID drawings and automated design checklist validation
- Automatic generation of Valve Lists and Signal Lists
- Automatic generation of Equipment Lists
- Analysis of deviations between design standards and automatic generation of Deviation Lists





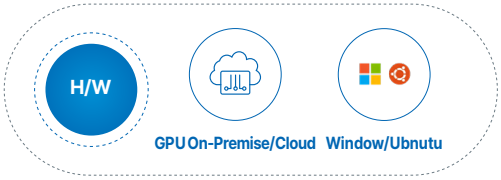
Generative AI Claims Support Chatbot Based on Shipbuilding Equipment Manuals

summary

A generative AI-powered claims support chatbot that integrates equipment manuals, technical documents inspection criteria, and historical claims data to analyze user inquiries, identify potential root causes, recommend appropriate response procedures, and provide supporting technical references.

Application

- **Manual- and Technical Document-Based Q&A**
  - Answer questions based on equipment manuals and technical documents, automatically classify claims, and retrieve relevant similar cases.
- **Root Cause Analysis & Troubleshooting Guidance**
  - Identify potential failure causes, recommend inspection and corrective procedures, and provide supporting references from relevant manuals, drawings, and technical standards.
- **Claims Response & Report Generation**
  - Generate draft responses and claims reports, maintain a history of claims and resolutions, and support the handling of similar claims in the future.
- **Customized Solutions Using Proprietary Patented Technologies**
  - Provide customized solutions incorporating the following registered patent technologies:
    - AI-Based Equipment Service Document Generation Server and Method of Operating the Same (Patent No. 10-2983246)
    - Ontology-Based Operation Support Server and Method of Operating the Same (Patent No. 10-2996995)





Indonesia Tender Intelligence Platform

summary

An integrated tender information platform for Indonesia that collects and analyzes procurement and tender information from Indonesian government agencies and public institutions, enabling Korean companies to efficiently identify and pursue business opportunities in the local market. The platform systematically collects and organizes tender announcements, project details, procuring agencies, bidding schedules, budgets, and contract information from various sources, while providing industry-, item-, region-, and agency-based search and filtering capabilities for efficient opportunity discovery.

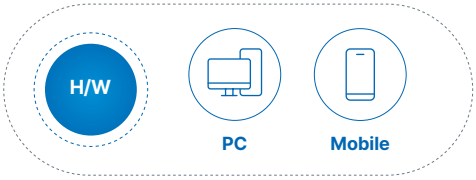
Application

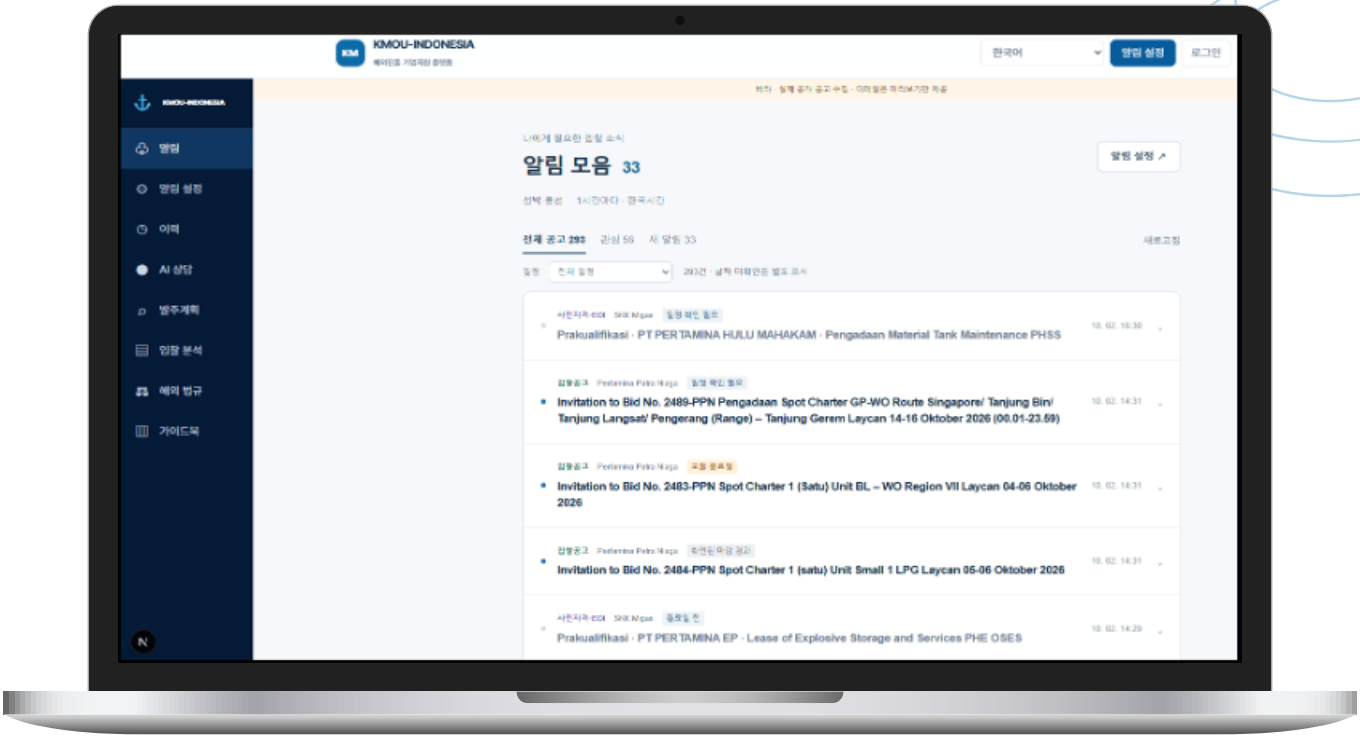
Integrated Tender Information Collection
- Aggregation of tender and procurement announcements from Indonesian government agencies and public institutions
- Provision of key information including tender title, procuring agency, business sector, location, announcement date, and deadline

Customized Tender Search & Classification
- Classification by industry, including shipbuilding & marine, plant, construction, and IT
- Search and filtering by keywords, agencies, regions, project types, budgets, and other criteria

Tender Schedule & Project Information Management
- Management of key milestones from tender announcement to submission deadline
- Provision of project scope, budget, procuring agency, bidding method, eligibility requirements, and other details

Business Opportunity Identification & Analysis
- Identification of relevant local business opportunities based on each company's areas of interest
- Support for new market entry through analysis of promising tenders and procuring agencies
- Market and business trend analysis based on accumulated tender data





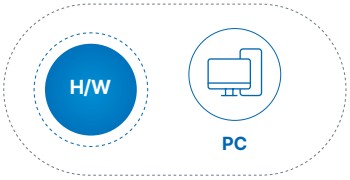
Northern Sea Route (NSR) Information Visualization & Hybrid RAG Platform

summary

- An Industrial AI Safety Monitoring Platform for Real-Time Detection and Quantification of Complex Hazards Along the Northern Sea Route (NSR) through Multi-Sensor Fusion of Satellite Observation Data, Onboard Camera Imagery, and AIS Navigation Data
- Real-Time Detection of Maritime Objects—including Vessels, Buoys, Port Facilities, and People—Using On-Device AI, with Satellite Sea Ice Data Aligned and Visualized on Maps
- AIS-Based Mini-Map Centered on Own Vessel, Matched with Camera Detection Results, Enabling Integrated Risk Scoring and Standardized Alerts for Real-Time Decision-Making by Vessel Operators and Traffic Controllers

Application

- **AI-Based Real-Time Multi-Object Maritime Detection**
  - Real-time detection of seven types of maritime objects—including vessels, buoys, port facilities, people, and kayaks—using on-device AI
  - Object identification through cross-matching camera detections with AIS navigation data
- **Satellite Sea Ice Data Integration & Hazard Zone Prediction**
  - Real-time visualization of sea ice concentration and extent on maps based on satellite observation data
  - Prediction of sea ice and drift ice hazard zones using satellite and field data, with route risk assessment (Year 2 enhancement)
- **AIS Mini-Map, Risk Scoring & Alerts**
  - Real-time display of own-vessel AIS navigation data on a mini-map
  - Multi-sensor fusion-based risk scoring and tiered alerts
- **XR Content for Integrated Maritime Situational Awareness**
  - Integration of camera detection, satellite, and AIS panels into a single display
  - Real-time integration of detection, observation, and navigation data to support vessel operations





Generative AI-Based LNG Carrier Manual & PSC Support Service

summary

- An industrial metaverse platform that recreates the cargo containment system and engine room of a 170K-class LNG carrier in a 3D environment based on the actual vessel structure, enabling crew members, maintenance personnel, instructors, and trainees to access the same virtual space simultaneously and collaborate in real time.
- Integration of on-premises generative AI and RAG technology trained on PSC, IMO, IACS, and LNG technical documents
- Support for region-specific PSC regulation search, checklist retrieval, inspection compliance assessment, and proactive preparation based on historical inspection records
- An integrated platform combining 3D equipment information, maintenance history, field inspection logs, AI chatbot, and 360° exploration to support the digital transformation of shipboard training, inspection, and maintenance operations.

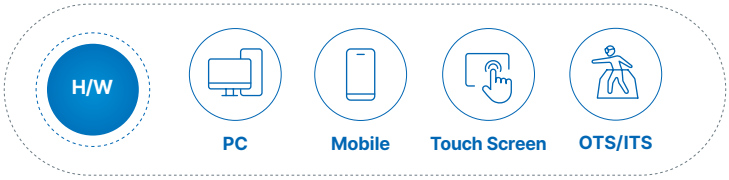
Application

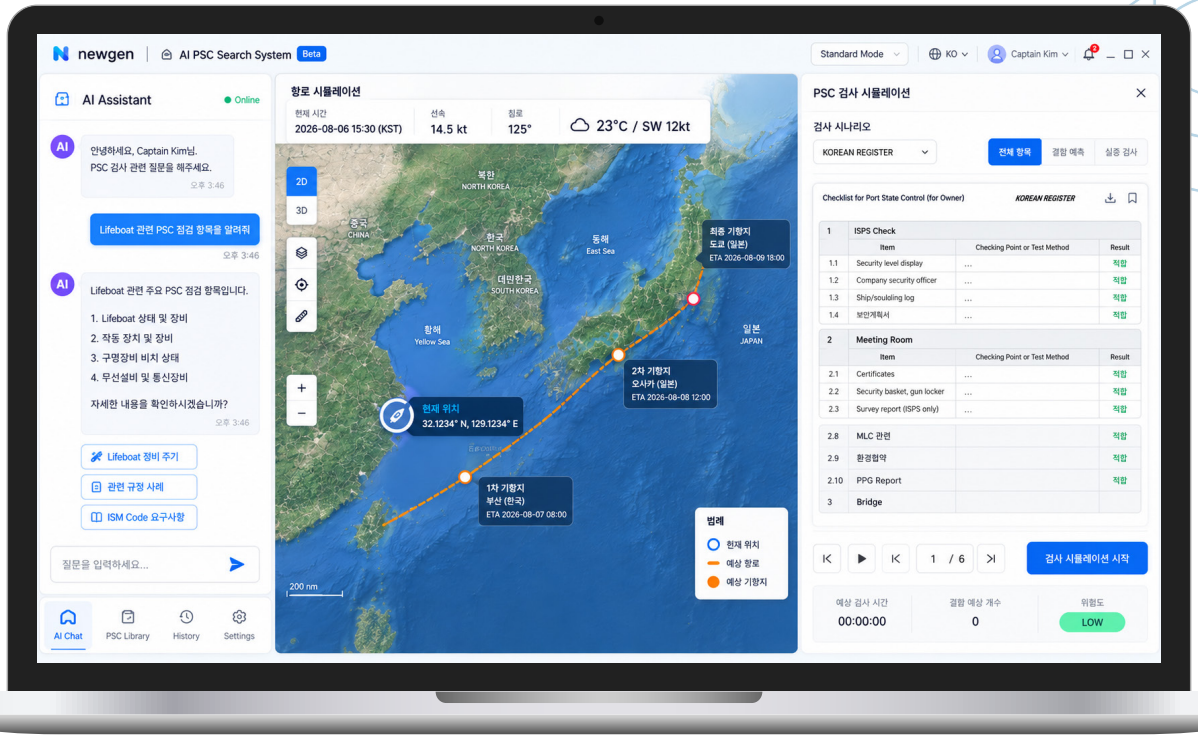
3D Modeling & Immersive Exploration of a 170K-Class LNG Carrier
- Detailed 3D modeling of 38 areas, including 20 cargo hold areas and 18 engine room areas
- 360°-view-based exploration and training of key vessel areas

PSC Regulation Search & AI Compliance Assessment
- Access to regulations across 11 PSC regions and AI-based automated compliance assessment
- Pre-arrival inspection support based on PSC deficiencies and inspection and maintenance history

RAG-Based AI Field Support & Evidence Retrieval
- RAG-based Q&A using PSC, IMO, and IACS regulatory and technical documents
- Provision of supporting regulatory clauses and references to assist field operations and decision-making

Multi-User Real-Time Collaboration Environment
- Simultaneous access for crew members, shore-based personnel, instructors, and trainees
- Real-time information sharing and collaboration among multiple users





Northern Sea Route (NSR) Visualization & Hybrid LLM-Powered RAG Platform

summary

- A Hybrid Search AI Platform that Integrates and Visualizes Port, Weather, Sea Ice, and Vessel Tracking Data on a Unified 3D Nautical Chart, with Natural-Language Query Support
- Visualization of Satellite Observation Data and AIS Vessel Tracks Precisely Aligned on a 3D Globe
- On-Premises Generative AI provides integrated answers on route navigability, applicable regulations, and historical transit records, combining explanations, maps, tables, and documents
- Adoption of internationally standardized geospatial data formats enables seamless integration with various GIS tools

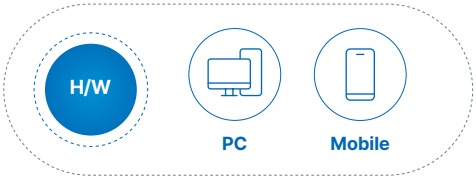
Application

3D Visualization Integrating 4 Types of Route Data
- 4 Data Types (Ports, Weather, Sea Ice, and AIS), Integrated on a 3D Map
- Real-Time 3D Rendering of Routes, Ports, and Vessel Positions

Natural Language Query-Based Hybrid RAG Chatbot
- Automated Vector, Graph, and RDB Routing for Complex Route and Regulatory Queries
- Multi-Modal Responses Combining Explanations, Maps, Tables, and Documents

Real-Time Multi-Vessel AIS Tracking
- Real-Time Visualization of Multiple Vessel Positions and Tracks
- Unlimited Multi-Vessel Real-Time Track Tracking

Satellite Weather & Sea Ice Data Integration and Visualization
- Server Integration and Processing of Satellite Weather & Sea Ice Data
- Optimized Visualization of Processed Satellite Data on a 7-Day Basis





Smart Platform for Welding carriage

Digital manual in my Hand

Integrated Smart Platform for Automated Welding Carriage Management
- from Information Search and Work Setup to Inspection and History Management

summary

- Easily search and access specifications, configurations, and operational information of used equipment on a smart platform
- Minimize welding errors and defects by checking key points before welding operation
- Integrate with internal systems to manage equipment information, operational data, and maintenance history

Application

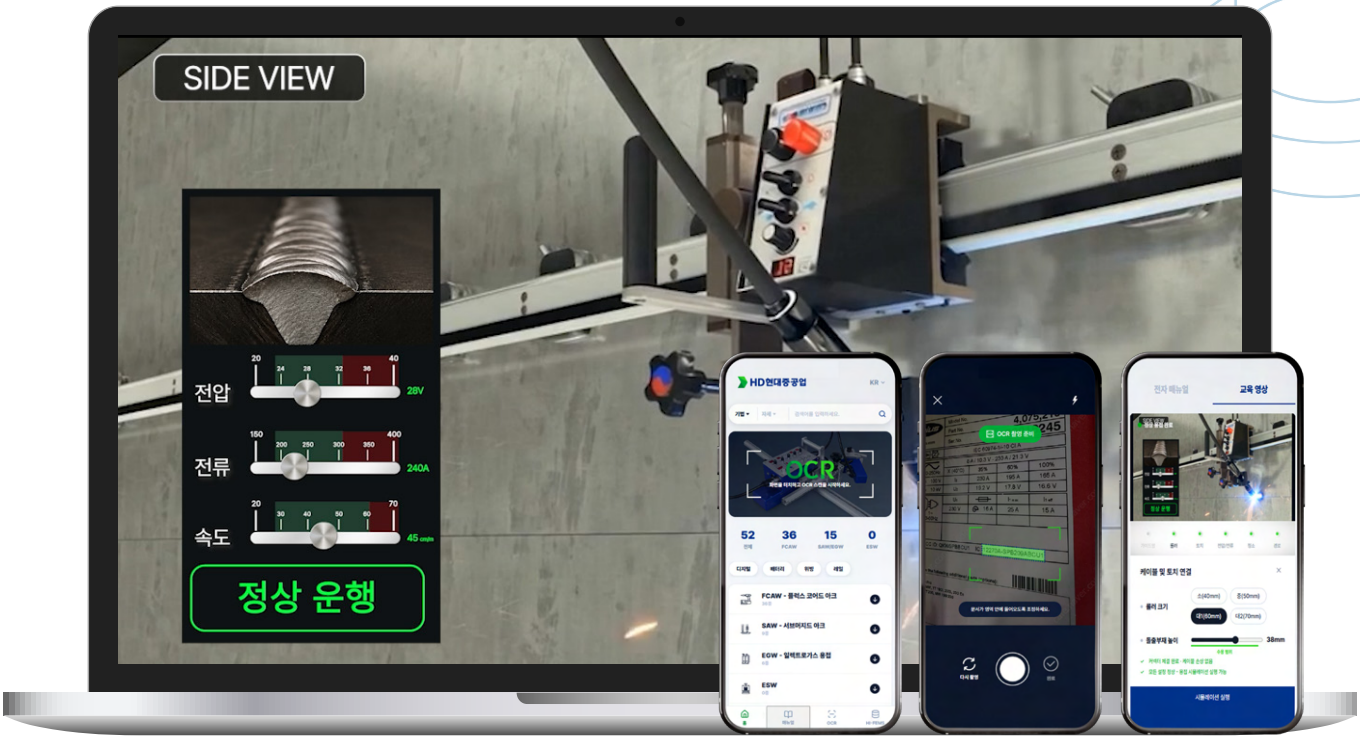
Digitization of Analog Information
- Create a database of welding machine information for searching and utilization
- Digitizing paper-based materials such as user manuals and maintenance manuals
- Multilingual support for foreign workers

Welding Machine Operation Settings
- Verification of usage parameter settings via welding machine checkpoints.
- Apply to training by analyzing causes of welding defects and providing videos.

Triple-Layer Hybrid Key Encryption Architecture
- User and device authentication process
- GPS geofencing-based dynamic access control
- Data encryption and token-based access control

Integration with Internal Systems
- Manage welding machine information (history, location, and status) through integration with internal systems.
- For user training

H/W — PC — Mobile — Touch Screen



02 XR (AR/VR) Training Content

Digital Twin Simulator for Vessel Navigation and Engine Room Training

summary

- Digital Twin-Based Training System Integrating 3D Ship Models with Equipment Photos and Drawings for Comprehensive Learning of Ship Structures and Key Equipmen
- 3D Visualization of Navigation & Engine Room Equipment, Piping, and Electrical Systems across the Wheelhouse, Compass Deck, and Engine Room to Support Learning of Equipment Structure, Location, and Operating Principles
- Practical, Hands-On Training through Simulation Content for Key Shipboard Systems, including CO_2 Fire Suppression Systems and BWTS

Application

3D Practical Training on Key Navigation & Engine Room Equipment
- 3D visualization of key equipment in the Wheel House, Compass Deck, and Engine Room
- Hands-on training based on 33 navigation equipment items and 53 core engine room equipment items

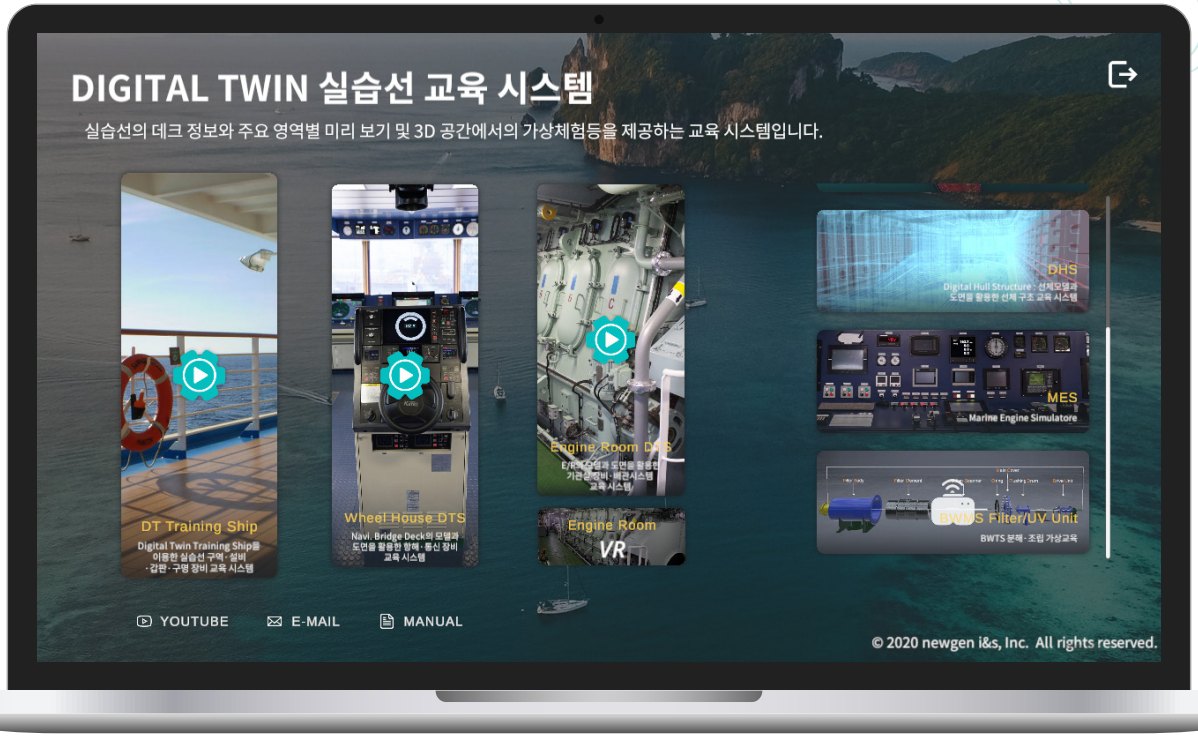
Integrated Visualization of Equipment & Systems
- Integrated visualization of electrical systems, power distribution, piping systems, and equipment interconnections
- Intuitive understanding of equipment locations, structures, and operating principles

Functional Equipment Operation & Simulation
- Interactive operation and simulation of 23 key engine room equipment items
- Integrated simulation of key systems, including CO_2 fire-fighting systems and BWTS
- Hands-on, field-oriented training for navigation and engine room operations

Training Based on Realistic Operating Environments
- Simulation of day/night conditions and various operational environments
- Hands-on, field-oriented training for navigation and engine room operations

H/W — PC, Touch Screen, Dual Monitors

YouTube
Play video



DHS (Digital Hull Structure)

summary

- An educational system that leverages 3D vessel models and key drawings to facilitate effective learning of ship structures and technical terminology
- Educational content that enables visual understanding of key hull structures and components while enhancing practical competencies in ship operations and design

Application

- **3D Model-Based Ship Structure Training Content**
  - 3D Model-Based Training Content for Bow, Stern, and Cargo Hold Structures
  - Training based on 74 detailed structural components
- **Drawing- and Standard Glossary-Linked Training**
  - Use of 24 Basic Drawings with Immersive 3D Models
  - Enhanced Structural Understanding Using 8 Standard Glossaries Developed by IACS
- **3D Models and LNG-Fueled Ship Content by Vessel Type**
  - 3D Implementation of 13 Representative Vessel Types Reflecting Vessel-Specific Structural Characteristics
  - Cargo Hold Structure Training Content for LNG-Fueled Ships, including Aframax Tankers, MR Tankers, Feeder Containers, and PCTCs
- **Internal Structure Analysis Using Six-Direction Clipping**
  - Six-Direction Sectional Views Using Clipping Functionality
  - Intuitive Visualization and Analysis of Internal Vessel Structures

H/W

PC Mobile Touch Screen

YouTube

Play video



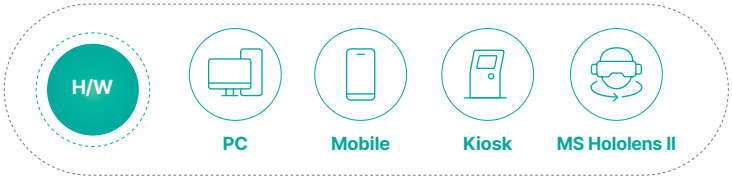
LNG-Fueled Vessel (IGF, 115K COT-HGS)

summary

- Promotional & Marketing Content Using 3D Models of LNG-Fueled Tanker Vessels and FGSS
- An Immersive Visualization Solution that Enhances Understanding of Products and Technologies by Implementing Eco-Friendly Vessel Technologies as Immersive Conte

Application

- **3D Content of the Upper Deck Exterior and FGSS System of a 115K COT Vessel**
  - 3D implementation of the upper deck exterior of a 115K COT vessel
  - 3D modeling of the vessel's FGSS system to support identification of key equipment and system configurations
- **Digital Twin System Integrating IoT Data with 3D and Process Models**
  - Implementation of a digital twin system integrating IoT data from 3D and process models
  - Integration of real-time IoT data with the 3D environment to monitor equipment status and operational information
- **Immersive Content for Hololens 2 Augmented Reality Smart Glasses**
  - Implementation of immersive content using Hololens 2 augmented reality smart glasses
  - Delivery of intuitive AR content by integrating 3D information with the real-world environment
- **XR Content Designed to Address the Limitations of HMD Devices**
  - Implementation of XR content that addresses common usability issues associated with conventional HMD devices
  - Provision of an XR environment optimized for user convenience and content usability



YouTube
Play video



AR/VR-Based Ship Repair & AI based MROTraining Center

summary

- Intuitive Learning of Ship Engine Equipment Structures and Operating Principles Using Unity 6-Based 3D Models and AR Content
- 3D Visualization of Key Equipment—including BWTS, SOx Scrubbers, Generators, and Large Two-Stroke Engines—on Smartphones and Tablets
- Hands-On Training Environment Centered on Real-World Equipment

Application

AR-Based Equipment Placement & Intuitive Interaction
- 3D equipment placement in physical exhibition and training spaces
- Multi-angle viewing of equipment structures through drag, rotate, and touch interactions
- Intuitive UI/UX designed for immediate use without additional training

Equipment Disassembly, Assembly & High-Quality Visualization
- Step-by-step disassembly and assembly of key components
- Intuitive visualization of internal structures and component configurations
- Immersive visualization with graphical effects such as holograms, glass blur, and water reflections

Equipment Technical Information-Linked Learning
- Access to operating principles, key specifications, and component information for each piece of equipment
- Integrated access to AR content and technical documentation
- Unified exhibition, hands-on experience, and training materials

H/W

Mobile

YouTube

Play video



AR/VR-Based Ship Repair & AI-Based MRO Training Center – Ship Fire Evacuation VR

summary

- Immersive VR Training Content for Ship Fire Evacuation, Enabling Trainees to Experience Realistic Emergency Scenarios and Learn Proper Evacuation Procedures
- VR Training System for Experiencing Simulated Fire, Smoke, Vessel Heeling, and Other Emergency Scenarios to Enhance Emergency Response Skills and Safety Awareness
- IGC/IGF Code

Application

- **Scenario-Based Ship Fire Evacuation Training**
  - Immersive training based on real-world scenarios, from fire outbreak to evacuation completion
  - Step-by-step evacuation scenarios and routes to support learning of proper emergency evacuation procedures
- **Intuitive Hand Tracking-Based Interaction**
  - Action- based interaction for movement, door opening, and other real-world actions using hand tracking
  - Intuitive controller-free interaction using natural hand gestures
- **Immersive Simulation of Diverse Emergency Scenarios**
  - Realistic simulation of various onboard emergencies, including smoke, fire, vessel motion, and explosions
  - Enhanced training immersion through realistic emergency environment
- **Enhanced Emergency Response Skills Through Repeated Training**
  - Repeated emergency scenario training in a safe virtual environment without realworld risk
  - Improved emergency response capabilities and safety awareness through repetitive training

H/W | Galaxy XR | Meta Quest | VIVE

YouTube
Play video



Hydrogen Vessel Simulation & Digital Twin Monitoring System

summary

Development of a User Operation Interface Integrating Process and 3D Models for a Digital Twin of a Hydrogen Fuel Cell System for Small Vessels

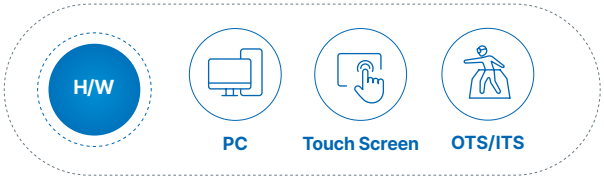
Application

HMI Development Integrating with the Process Model

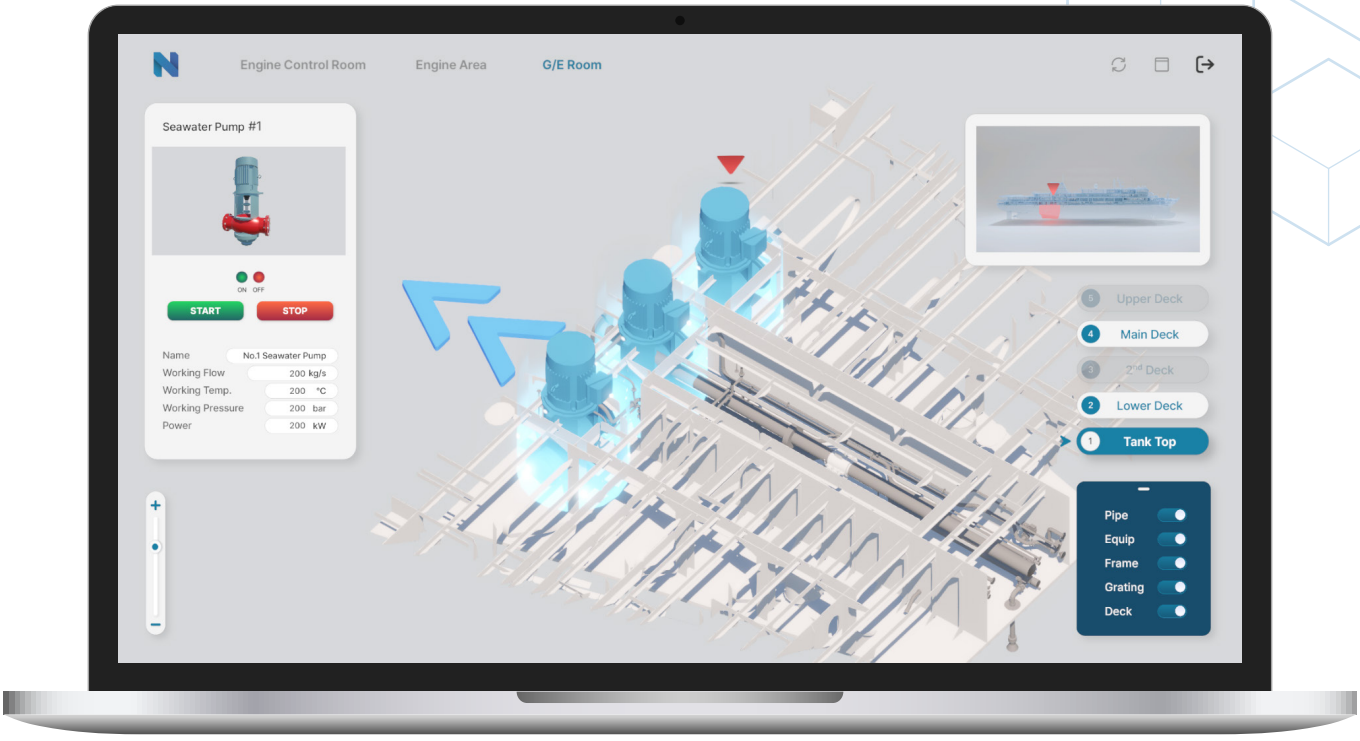
- Development of a 2D interface based on the runtime model
- Monitoring model status and adjusting model input parameters
- Real-time model execution on NI PXI for real-time implementation

Communication & Hardware I/O Interface for 2D HMI–3D Model Integration

- Device-to-device communication over a local network
- OPC UA communication for integration with the 3D model
- Hybrid wired/wireless network support for a seamless user experience



YouTube
Play video



Digital Information Hub (DIH-AVEVA NET)

summary

Implementation of the Digital Information Hub (DIH) based on AVEVA's platform for integrated management of big data to effectively manage various information and visualize digital assets in the hyper-connected era of 4th Industrial Revolution technologies

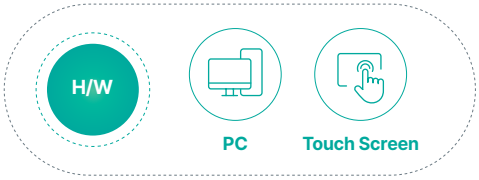
Application

Web-Based Integrated Information Hub

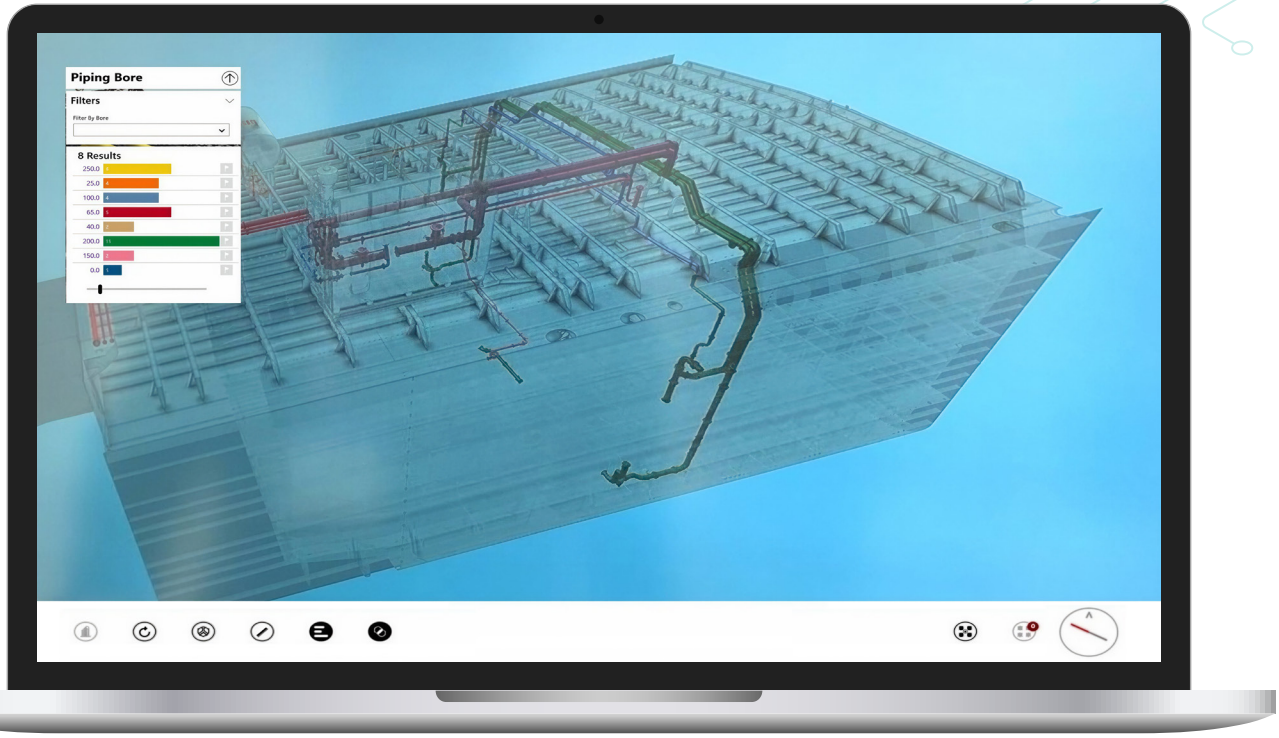
- Key contract documents alongside engineering drawings, technical data, and certificates generated during construction

3D Model-Based Integrated Environment

- Cross-linking data by tag items, including equipment, systems, specifications, and color codes
- Seamless integration of diverse content such as technical drawings, photos, videos, and documentation
- Advanced interactive capabilities including Walk-Through, Measure, Sectioning, Visual Query, and X-Ray views



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Nakdong River Estuary Salinity Behavior Visualization

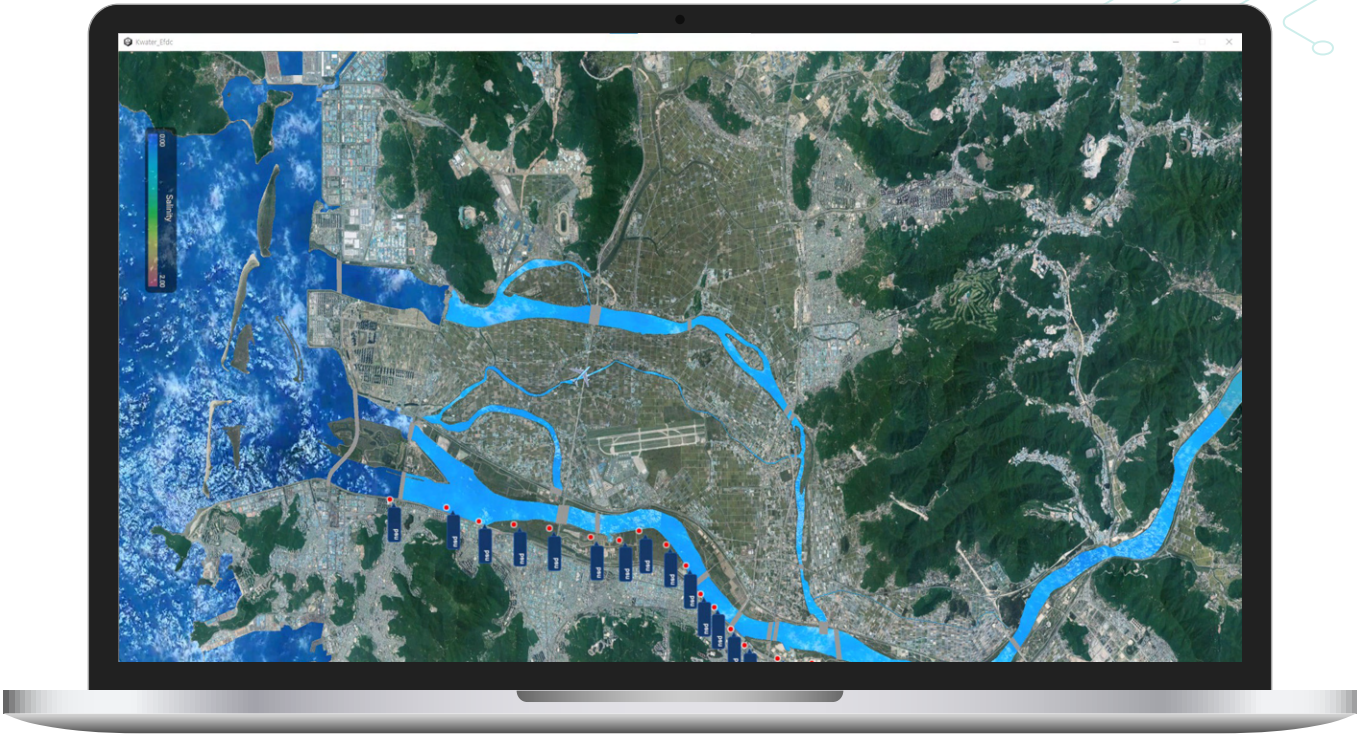
summary

- Development of a Visualization System that Projects Real-Time Salinity Distribution Analysis onto a Diorama-Scale Model of the Nakdong River Estuary, Using Measured Data or Simulation Results for a 25 km River Section
- Utilization of the Nakdong River Estuary Integrated Operations Center to Support Decision-Making for Aquatic Ecosystem Restoration

Application

- **Nakdong River Estuary Salinity Dynamics Digital Twin**
  - Salinity Data Conversion Program
  - Support for Two Standard Data Formats (EFDC: .nc & W2: .bson)
- **Real-Time Salinity Dynamics Visualization Program**
  - User-Defined Color Settings by Salinity Concentration
  - Visualization Linked to Diorama Terrain Data
  - Real-Time Display of Sensor Values through Live Database Server Integration





Onshore Plant Reverse Engineering (Refinery)

summary

High-precision 3D models are developed from 3D scan data of large-scale plant sites to accurately represent the location, geometry, and arrangement of equipment and piping. The models are integrated with P&ID and piping isometric drawings to establish digital reverseengineering data.
Equipment interconnections and piping routes are visualized to support design review, maintenance, design modifications, and future digital twin implementation.

Application

High-Precision Spatial Data Acquisition Using Large-Scale 3D Scanning

- Precise acquisition of equipment and piping location and geometry data across large-scale plant facilities
- Digitization of site spatial information to establish a reliable basis for engineering and operational applications

Point Cloud Registration and High-Precision 3D Modeling of Equipment and Piping

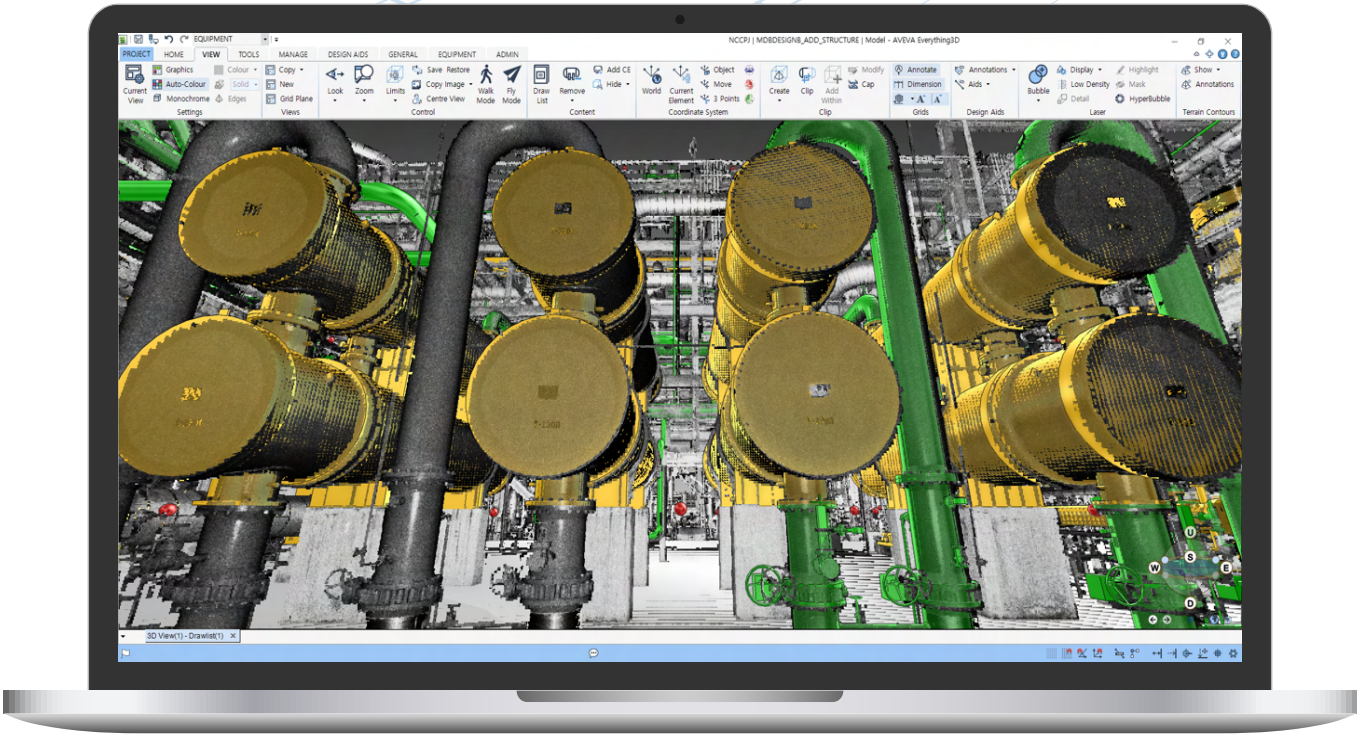
- Registration and alignment of scan data to accurately reproduce actual equipment geometry and layout
- High- precision 3D modeling of major equipment and piping systems based on site scan data

P&ID / Piping Isometric Integration and Digital Reverse-Engineering Data Development

- Integration of P&ID and piping isometric drawings with 3D models for engineering data comparison and verification
- Development of reverse- engineering data to support design modifications, maintenance, and digital twin applications

H/W

Engineering



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