

Digital Waves

A vision for the digitalization of ship management



CMMI

**Cyprus Marine and Maritime Institute
A Center of Excellence in Maritime
Technology**



**COLUMBIA
SHIPMANAGEMENT**

**A World-Class Shipmanagement and
Maritime Services Provider**

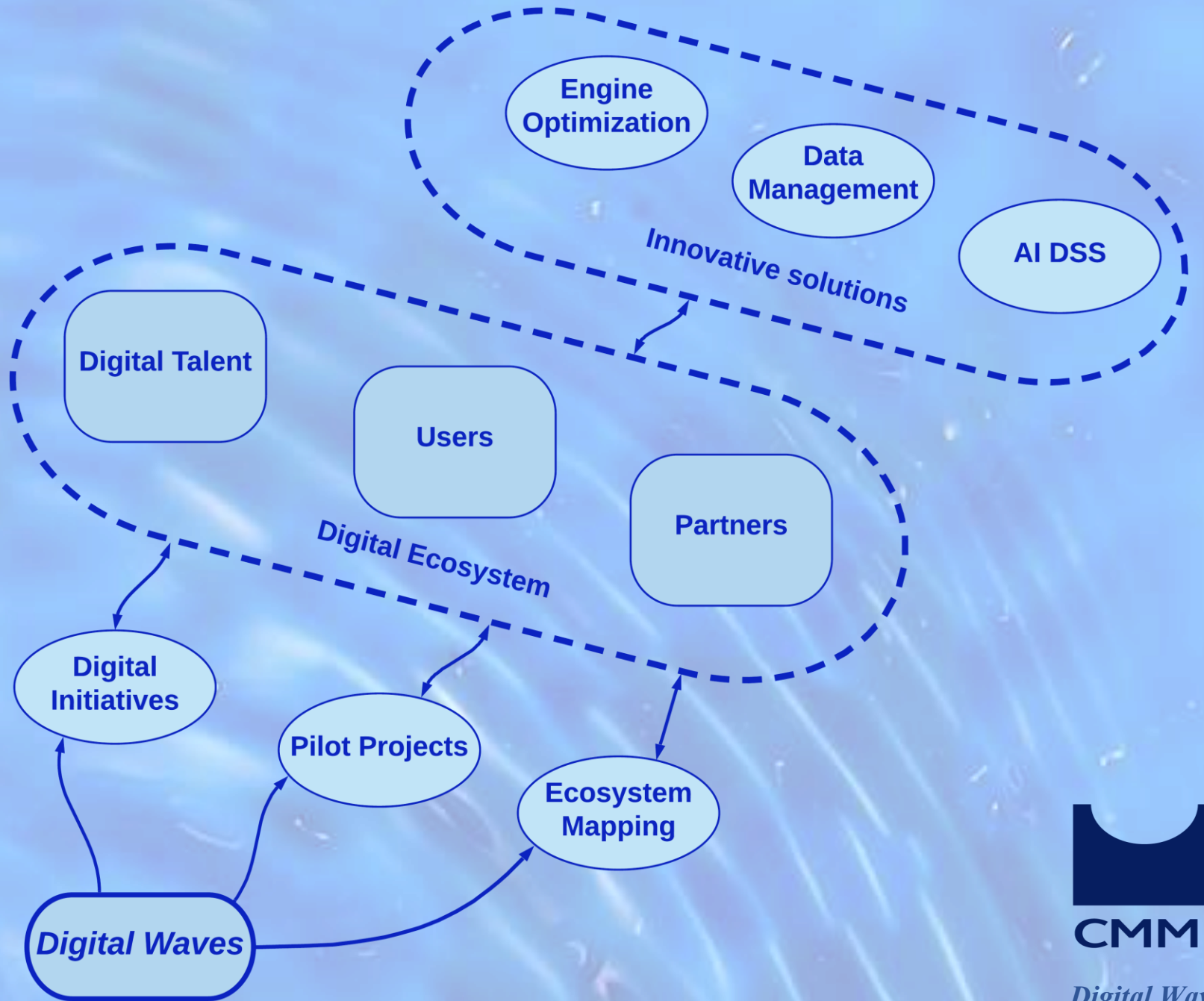
 **BLUE DYNAMICS**

**A Shipmanagement Digitalization
Leader**

The Need

- Decarbonization goals and environmentally sustainable shipping
- Increasingly complex operational systems and maritime regulations
- Increased demand and usage of the maritime environment. Many industries competing for marine space
- New challenges for crew health and safety (Covid-19)
- Integrating and optimizing new diverse capabilities in sensing and processing of data
- Rapid changes in business models and culture – adaptability and retraining
- Retrofitting of old systems
- Demand for real-time interaction with users and transparency
- To go up the Maintenance Maturity Pyramid from planned / condition based to predictive maintenance

Digital Waves Vision



The Core Team

- CMMI Center of Excellence
- CSM World-class shipmanagement
- BD Shipping IT solutions

Additional Partners

- Additional partners for specific projects:
Combination of partners with strengths in
 - Research and Innovation
 - Shipping Industry
 - Digitalization Specialists
 - Government

CMMI

- An independent, international, scientific, and business Center of Excellence for Marine and Maritime Research, Technological Development and Innovation
- Driven by the needs of the Industry and Society in addressing major challenges that the Marine and Maritime sectors face
- Established in 2019 following its selection for funding under the EU's HORIZON 2020 Program, Spreading Excellence and Widening Participation



CSM

- An international organization with 40 years of experience
- A world-class ship management and maritime services provider
- > 20 management and representative offices, crew agencies, and training centers
- 15 000 Employees
- Custom services optimized to each client's business scenario
- Embraces the digitalization era and contributes to the technological revolution in the maritime industry.



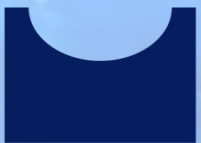
BD

- A dynamic and innovative IT company
- Experience in automation and digital transformation of key business sections and solutions for the maritime industry
- Specializes in conceptual designs, maritime software architecture, and development/integration



Consortium Capabilities

- Complementary capabilities allow development of technological solutions towards maritime digitization enhancing the capabilities of partners
- Develop advanced R&D capabilities in Maritime Digitalization
- Digitalize and optimize operations related to costs, sensors, and connectivity
- Enhance capability in IT, data management, and system integration
- Increase of the consortium network and further collaboration
- Combination of research and hands-on industry
- Increase in funding possibilities
- Receive feedback from partners on business models and procedures



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Application Areas

- Engine room – engine optimization and preventive maintenance
- Visualization of hull and machinery
- Performance Optimization
- Visualization for emergency decision support and training
- Crew health and well-being
- Crew and office staff training



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Projects

- POOCR Vessel Optimization
- Ship Digital Twin DSS
- Maritime IoT Laboratory
- Innovative Crew Training



POCR Vessel Optimization

- Off-shore Data acquisition
- Maritime IoT
- Edge processing software
- Connectivity
- On-shore Cloud AI platform
- Data Standardization and Management
- Data Fusion and Validation
- EnginAlyser: An innovative concept to enable the digital transformation journey of machinery optimization points
 - Edge hardware for engine data acquisition
 - Data integration, validation, and standardization
 - Blockchain-based data management platform
 - Data fusion, verification, and classification
 - Hull and engine risk assessment and optimization for performance and efficiency



Ship Digital Twin DSS

- Visual representations of the ship in its entire lifecycle
- Performance Optimization and root cause analysis on real-time parameters
- Crew familiarization and training
- Emergency decision support and planning
- Information consolidation and visualization of essential operational asset values



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Maritime IoT Laboratory

- Ready-made ecosystem for testing and evaluation of new sensors
- Simulating the ship as a maritime IoT lab
- Data acquisition and edge processing capabilities
- Custom embedded hardware development
- Ready-made standard data management processes for deep dive on analysis and ML
- Low investment simulation of ship operations in a digital platform



Innovative Crew Training

- Link to Digital twin
- Digital walkthrough of ships and digital offline familiarization with safety and other aspects
- Simulator training (i.e. bridge simulator) or with AR technology

<https://www.maritime-executive.com/article/u-s-navy-tests-augmented-reality-tech-for-training-and-operations>

<https://etraining.naftes.eu/main/toolbox.php?department=apps>

<https://www.flashover.com.au/augmented-reality-firefighter-training/>