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dTHOR CONSORTIUM NEWSLETTER #4



Dear Partners, Dear Readers,

Delighted to introduce you to the fourth edition of the dTHOR Consortium Newsletter. In this biannual format, you will find updates on the progress of the different work packages of the project to keep track of the latest developments in dTHOR.

For our new readers, the Digital Ship Structural Health Monitoring (dTHOR) project, funded by the EDF2021, is a 36-month research project that ambitions to develop the next generation of a predictive Ship Structural Health Monitoring system based on innovative utilization of sensor measurement and hybrid analysis modeling enabling digital twins with high physical realism.

In this edition, you will be able to dive into the last and major updates within the consortium, notably the first sea trial performed with the Gunnerus Vessel.

Feel free to reach out to us at sr@seaeurope.eu for any questions.

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November 2024: EURONAVAL

The dTHOR and EDINAF projects, together with the European Commission participated to a European Naval Project Booth at EURONAVAL. The workshop focused on Smart Ships Digitalization of Naval Platforms where, coordinated by DGDEFIS' Project Officer Francisco Casaldueiro from the European Commission, both dTHOR and EDINAF project coordinators were involved. On the one hand, the dTHOR Project Coordinator Trond Kvamsdal explained the key aspects and challenges of the project while, on the other hand, the EDINAF project coordinator Juan Ignacio Silvera Vez focused on the cooperation and synergies between the two projects.



December 2024: 5th Consortium Meeting and General Assembly in Rome, Italy

On the 3rd to 5th of December, the fifth Consortium Meeting and General Assembly, hosted by the Consiglio Nazionale delle Ricerche (CNR), took place in Rome, Italy. The meeting focused on the presentation of future plans and expectations for dTHOR followed by the general premise of constant and efficient internal communication about the results of the project to the end-users.





February 2025: DTE & AICOMAS 2025

On the 17th to 21st of February the 3rd IACM Digital Twins in Engineering Conference (*DTE 2025*) & 1st ECCOMAS Artificial Intelligence and Computational Methods in Applied Science (*AICOMAS 2025*) took place at ENSAM in Paris, France. Here, the dTHOR Project Coordinator, Trond Kvamsdal, guided the mini symposia on Digital Twins for Ships and Offshore Structures II. This event was pivotal in showcasing the collaborative approach among the two EDF2021 projects, hence dTHOR and EDINAF.

March 2025: Workshop on Condition-Based Maintenance & Battle Damage

The workshop on “Condition Based Maintenance of Ship Hull” and “Battle Damage And Structural Integrity” took place in Navantia’s premises in Madrid. The teams worked on defining how results of the work packages can be used in a future operational scenario, which will be presented in the final project results.

March 2025: RV Gunnerus Sea Trial

The RV Gunnerus Sea Trial Campaign was successfully carried out in Trondheim, Norway and it involved both WP8 and WP5 working groups. On the one hand, the work was led by WP8 “Hydro-acoustic signature control” working group consisting of experts from CETENA, TSI and SAES and, on the other hand WP5, consisting of CERTH, CEA and ISD experts, performed additional measurement tests to collect data focusing on fatigue and crack monitoring, corrosion monitoring and hull stress monitoring.



The sea trial campaign involved both static and dynamic measurements to explore the relationship between vibration patterns from the main machinery and the noise received in the far field. Additional transmission loss measurements and hammer tests were also conducted to improve the accuracy of the physic models developed for the prediction of acoustic signature in real-time.



May 2025: dTHOR Use Case Showcased During the First EDINAF Demonstration

The dTHOR use case was demonstrated during the 5th EDINAF General Assembly Meeting which took place from the 20th to the 22nd of May in Trondheim, Norway. The demonstration, which focused on Integrated Use Case, allowed to showcase the Digital Reference Architecture developed by the EDINAF consortium in nearly 3 years. dTHOR's role and contribution to the demonstration was a pivotal part for the consequent success of the event.



May 2025: MARSTRUCT25 - Key Papers from dTHOR Partners

From the 20th to 22nd of May, TSI presented two papers during the MASTRUCT2025 Conference in Lisbon, Portugal.

The first paper, entitled "Sensor systems for ship's hull structural health monitoring" was presented during the panel focusing on Structural Health Monitoring, notably chaired by Konstantinos Anyfantis & Nicholas Sillionis, both from NTUA and involved as partners within the dTHOR project. This paper gathers contributions from WP5 (Sensor Selection) partners (TSI, ISD, TU Delft, CERTH, Light Structures, CETENA and University of Patras) and outlines the different technologies and sensors for the structural monitoring of the ship's hull being developed in the dTHOR project.

The second paper, "Transfer paths characterization in the engine room of a Coast Guard vessel" describes the results obtained, on one side, from the transfer functions measurements done in the KBV202 Coast Guard in November 2023 within dTHOR's WP4 (Modelling)'s task focused on ship structured vibration, and on the other after the application of the DEMON algorithm on the same measurements to identify the spectral contribution of the propeller under different operational conditions of the vessel (WP8 – Hydro-acoustic signature control). This second work is a contribution from SAAB and TSI.



Picture taken during MASTRUCT 2025



May 2025: CapTech Naval System

On the 6th and 7th of May, dTHOR delivered a presentation during the CapTech Naval Systems, in Gnydia, Poland to the EDA and its Member States. The presentation focused on elaborating the dTHOR Structural Health Monitoring System (SSHM) requirement specifications document which has the main objective of listing a series of recommendations and guidelines meant for European Navies and EDA utilization.

June 2025: dTHOR 6th Consortium Meeting and General Assembly in Kiel, Germany

From the 2nd to the 4th of June, the dTHOR Consortium held its sixth Consortium meeting and General Assembly in Kiel, Germany, hosted by TKMS. The gathering brought together all project partners and representatives from the Dutch and Norwegian Ministries of Defence to discuss progress and identify next steps ahead of the project's conclusion in the end of November 2025. Key discussions focused on the circulation of Ship Structural Health Monitoring (SSHM) system requirement specifications, workpackages technical updates, and effective dissemination of results. The meeting underscored the importance of translating dTHOR's outcomes into practical applications. Attendees also visited TKMS facilities and German naval vessels "Dillingen" (minesweeper) and "Werra" (replenishment ship) at the Kiel Naval Base.





UPCOMING EVENTS

- 9-11 September: 15th International Workshop on Structural Health Monitoring, Stanford University CA, USA
- 16-18 October: International Congress on Transportation Research (ICTR 2025), Thessaloniki, Greece
- 18-20 November: Last Consortium Meeting and General Assembly, in Trondheim, Norway



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