



MAY 2024

## dTHOR CONSORTIUM NEWSLETTER #2



Dear Partners, Dear Readers,

We are thrilled to introduce you to the second 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.

As the 18<sup>th</sup> month of the project is approaching fast, we believe this newsletter is of particular interest for you to grasp the most important updates from the consortium.

Feel free to reach out to us at [sr@seaeurope.eu](mailto:sr@seaeurope.eu) for any questions.

### IN THIS EDITION:

dTHOR Consortium Meeting #3 and General Assembly hosted by MARIN in the Netherlands

Consortium Meeting #4 and General Assembly in June hosted by ISD

WP6 is Generating Momentum

First Episode of 'Meet the People Behind dTHOR'

dTHOR presented in front of the Norwegian and Swedish Ministries of Defence

WP9's state of the art, increase weapon and radar accuracy

WP3's first prototype of SSHM system and design of a data pipeline

Upcoming WP4 Workshop to Align Contributions to Benchmark and dTHOR Use Cases

Focus: Modeling and Simulation

Upcoming Events

Recent Publications



## **dTHOR Consortium Meeting #3 and General Assembly hosted by MARIN in Egmond aan Zee**

*"As the Project Coordinator, I take immense pride in being part of the dTHOR project, witnessing the collective dedication that propels us toward the development of a cutting-edge Ship Structural Health Monitoring system. Our journey is closely aligned with the needs of the end users, underscoring our commitment to making a meaningful impact through innovation."* – said Trond Kvamsdal, dTHOR Project Coordinator.

From 5 to 7 December, the dTHOR Partners were reunited in Egmond Aan Zee, the Netherlands, for the third Consortium Meeting. The biannual meetings are essential to achieve the best cooperation possible. Indeed, not only do these physical meetings enable the partners to provide detailed inputs about their work and share their achievements or challenges, enhancing the project's effectiveness and outcomes, but they are also the opportunity to meet representatives from the Ministries of Defence, the main end-users.

MARIN kindly hosted last December's Consortium Meeting. The dTHOR Partners' representatives had the opportunity to visit Zr. Ms. Groningen, one of the four Ocean Patrol Vessels of the Royal Netherlands Navy, and to initiate interesting exchanges with the crew onboard.

More importantly, the dialogue with the Ministries of Defence who joined the Consortium Meeting highlighted the value of the dTHOR research from their side.



## **UPCOMING EVENT : dTHOR Consortium Meeting #4 and General Assembly Meeting, 11-13 June 2024, Athens, Greece**

The next Consortium Meeting and General Assembly will take place from 11 to 13 June, in Athens, Greece, and will be organized and hosted by ISD. As the 18<sup>th</sup> month of the project is approaching, this Consortium Meeting will be particularly important as it will enable the work packages to showcase their advancements or results. Particularly, a prototype of digital twin will be ready for this meeting, said the Project Coordinator, also WP4 leader.

This time, ISD will propose a get-together dinner and a visit to the Acropolis Museum during the free time.



## Workpackage 6 is Generating Momentum

Within the work package on condition-based maintenance, the consortium makes developments in translating monitoring data to information in support of maintenance efforts. As a first deliverable, the members had already defined a recommended monitoring sensor suite based on past experience.

With three of the five tasks starting at the beginning of 2024, a joint kick-off meeting was organized. The meeting was carefully prepared by the task leaders by clarifying and aligning the contribution of each partner. Technical discussions among the participants were helpful in further sharpening the scope of work and understanding the potential future usage of all activities. The meeting was very productive in identifying how contributions from different partners can interact and how activities with other work packages can be aligned.

Moreover, collective challenges and priorities for partners were identified. By addressing these challenges together, we aim to create the best-added value possible for dTHOR.



### Meet the People Behind dTHOR: First Episode

In order to grasp more detailed information about each work package work within dTHOR, don't hesitate to click [here](#) to access the first episode of the series 'Meet the People Behind dTHOR'.

### dTHOR Presented to the Norwegian and Swedish Ministries of Defence

The consortium had the opportunity to introduce dTHOR in front of the Norwegian Ministry of Defence in Bergen, Norway, on 29 March, at a conference dedicated to marine systems.

Then, on 26 April, the SAAB headquarters hosted an event with the Swedish Defence Materiel Administration (FMV), the Swedish Defence Research Agency (FOI) and the Swedish Armed Forces. dTHOR was also presented during this event.



## Work Package 9's Latest Developments on Weapon System Accuracy

Workpackage 9 (Weapon System Accuracy), in its process of identification and quantification of individual sources of errors – to ultimately minimize potential errors – established a state-of-the-art of the various existing error factors. The partners worked out four areas, involving the navies: sensors, combat management system, effectors, and platform system. This pre-analysis was the first step, the second step being the determination of relevant effects on weapon and radar accuracy, using 3D models provided by SINTEF and Navantia.

## dTHOR's Digital Twin's First Prototype is Under Elaboration: focus on Workpackage 3

The consortium is working to anticipate the next Consortium Meeting in June, where the prototype for the dTHOR digital twin will be shown (see p.2). In this instance, workpackage 3 (Digital Framework)'s core work is to enable technologies, support the first prototype of a Ship Structural Health Monitoring system on the Gunnerus vessel.

## Work Package 4's Alignment Workshop

On 6 and 7 May is planned the work package 4 (Modelling) workshop, at ENSAM, Paris. The objective of this face-to-face meeting is to align the beneficiaries' work to efficiently prepare for the upcoming deliverables dealing with the modeling technologies and sensor placement). In addition and more importantly, on the agenda will be the discussion on each partner's contribution to the work package's benchmarks and dTHOR's use cases.



### UPCOMING EVENTS:

- **6/7 May: WP4 Workshop at ENSAM, Paris**
- **25 June 2024: Jotne's Digital Twin Conference (8:30-13:00)** – click [here](#) to access the program.

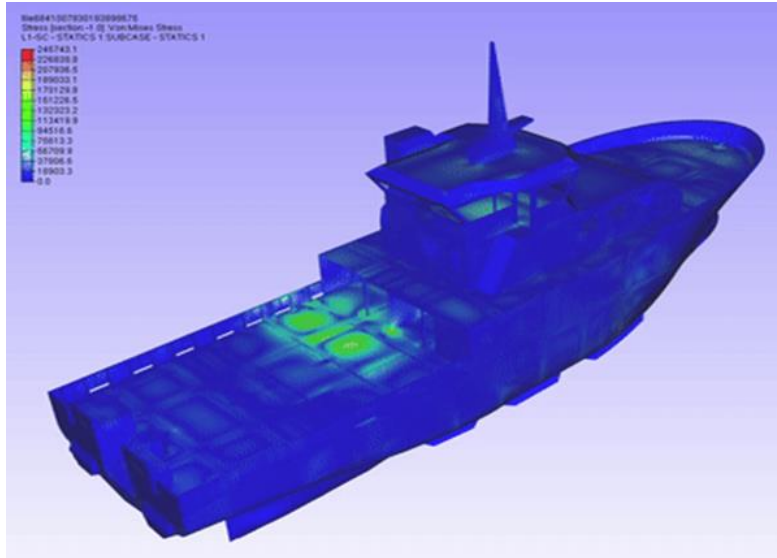
### To Follow our Content:



[@dTHOR](#)



[www.dthor.eu](http://www.dthor.eu)



## Focus: Modeling and Simulation

Over the past months, the modeling and simulation of the Swedish and Norwegian use cases have started, and an initial collection of sensor data has been completed. This enables dTHOR partners to share and exchange CAD/FEM/Simulation information and time series data from many various types of sensors. For example, the above picture illustrates the ship hull structure in the ISO 10303 data repository, both CAD, FEM and results data stored in the Jotne application.



## RECENT PUBLICATIONS:

- 'A Review of Methods for Modelling Flooding, Its Progression and Outcome in Damaged Ships', José Miguel Rodrigues (SINTEF Ocean), 31/01/2024 – Journal of Marine Science and Engineering [here](#)
- European Defence Agency, "Combat Cloud – 'Cloud Intelligence for Decision Support and Analysis'" [here](#)