

Report by Not In Our Name TU, Berlin, 03. April 2025

This report presents evidence demonstrating that TU Berlin's participation in the Modifiable Underwater Mothership¹ (MUM) project constitutes a violation of its Civil Clause. Although MUM has been described as a "civilian" project, there is overwhelming public evidence that it is designed for and intended to serve military purposes. This document compiles verifiable facts, official statements, and analyses to support this claim.

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1. The TU Berlin Civil Clause: Commitment to Peaceful Research

On 29 May 1991, the Academic Senate of Technische Universität Berlin (TU Berlin) adopted the Civil Clause (Zivilklausel), a binding commitment to refrain from any form of armament-related research. This decision was made with full recognition of TU Berlin's historical role in supporting military research and weapons development during World War II, including contributions to the German war machinery of the Nazi regime.²

The adoption of the Civil Clause was not only a response to the formal conditions imposed by the Allied Forces after the war but also an ethical self-obligation, a commitment to ensure that the university's research serves peaceful, civil, and socially responsible purposes. The Clause is therefore both a historical responsibility and a future-oriented promise, to never again be complicit in the creation of technologies that could be used in warfare or oppression.

“The members of the Academic Senate agree that armaments research should not be conducted at TU Berlin... TU Berlin and its research institutes may not accept any contracts or grants for armament-related research.”³

Importantly, the Civil Clause emphasizes that this prohibition applies even in cases of doubt. Where there is any uncertainty about the potential military use of a research project, the burden of proof lies with the researchers to demonstrate that the research does not primarily serve military objectives. This clause reflects an understanding that dual-use technologies, those with both civilian and military applications, must be subject to special scrutiny, and that TU Berlin is committed to erring on the side of peace and caution.

Thus, the Civil Clause is not merely a passive statement of intent but an active, and ethically binding framework that shapes the university's research policies. It is meant to prevent participation in projects precisely like MUM, where “civilian technology” is designed in such a way that military use is not only foreseeable but already advertised.

2. TU's involvement in MUM

TU Berlin has been involved in the MUM Project in two key phases, contributing crucial technical expertise that makes the modular, adaptable nature of MUM possible:

² [Civil Clause - TU Berlin](#)

³ [Civil Clause - TU Berlin](#)

2.1. DesignMUM (2017–2020): Foundational Development Phase⁴

In the first project phase, DesignMUM, TU Berlin played an important role in developing the conceptual and technical foundation of the MUM system, focusing on:

- Developing the modular architecture of the vehicle, breaking down traditional vehicle structures into standardized base and mission-specific modules that can be combined and reassembled for different purposes. This modular design is the core feature that allows MUM to be rapidly adapted for various missions.
- Designing an assembling layout and system solutions for transport and modular integration, enabling the flexible construction of different mission profiles.
- Defining mission scenarios and operational concepts, including industrial and scientific applications such as seabed mining, deep-sea drilling, and transport and precise placement of heavy payloads.
- Contributing to a system simulation that includes the hydrodynamic properties of MUM and its payloads as a coupled multi-body system, and investigating energy supply through fuel cells.
- Developing a Design-to-Cost strategy to ensure the system is economically feasible for later industrial use, a strategy equally applicable to defense procurement, though this is not mentioned in official descriptions.

2.2. MUM2simulate (2021–2025): From Simulation to Reality⁵

In the recently completed MUM2simulate phase, TU Berlin is deeply involved in the validation and practical testing of the MUM system, focusing on turning the previously developed concepts into functioning prototypes:

- Simulating and optimizing hydrodynamic properties of the MUM demonstrator to ensure efficient and stable operation.
- Contributing to the system simulation and risk analysis, predicting MUM's operational limits and behavior during trials, directly feeding into the design of its autonomous control systems and mission management.
- Extending the functional scope of the modular vehicle platform, ensuring that market-relevant functionalities (which can include surveillance, transport, and deployment of underwater equipment) are integrated.
- Working with the MONIQUE functional model, a modular test platform, to test and validate various mission-specific components.

TU Berlin's work is thus central to making MUM modular, stable, autonomous, and adaptable, and ensures that it can carry various types of payloads. TU Berlin's simulations and system

⁴ [Design MUM - TU Berlin](#)

⁵ [MUM2simulate - TU Berlin](#)

designs also contribute to the commercialization and future deployment strategies of MUM, which are described as adaptable to user-defined needs.

The project, while officially funded by the Federal Ministry for Economic Affairs and Climate Action (BMWK), is coordinated and led by ThyssenKrupp Marine Systems (TKMS), one of Germany's largest arms manufacturers and globally known for producing advanced military submarines, including for Israel, Egypt, and other states. TKMS's role as project coordinator makes MUM already fundamentally embedded in a military-industrial context.

3. Evidence of Military Application of MUM

Although MUM is officially presented as a system for "civilian" marine engineering and research purposes⁶, there is overwhelming public evidence that MUM has been developed with military applications in mind and is already publicly promoted as such. Below we outline the clearest and most irrefutable pieces of evidence, demonstrating that TU Berlin's involvement is directly connected to the creation of a dual-use, military-capable system.

3.1. Public Presentation of MUM in Military Configurations (NEDS 2019, UDT 2023)

Already in 2019, at the NIDV Defence and Security Exhibition (NEDS), one of Europe's leading military and defense technology exhibitions, ThyssenKrupp Marine Systems (TKMS) presented MUM in explicitly military configurations. The showcased models included:

- Mine-laying XLUUV (Extra-Large Uncrewed Underwater Vehicle)
- Hunter-Killer XLUUV
- Scout/Intelligence XLUUV

(Source: [TKMS Presents the Results of its 'MUM' Modular XLUUV Study - Naval News](#), February 2023, See Appendix A for image)

These configurations clearly indicate military combat roles, including offensive capabilities such as laying naval mines and conducting autonomous underwater attacks. The 'Hunter-Killer' configuration was later presented again at UDT (Undersea Defence Technology) 2023⁷, the world's largest underwater weapons expo, where TKMS showcased MUM explicitly as an armed combat drone designed to become Germany's flagship uncrewed submarine weapon, according to *Zeitung vom Lützebuenger Vollek*. This shows continuity and consistency in TKMS's presentation of MUM as a military system, from 2019 to 2023. This public presentation demonstrates beyond doubt that MUM is designed from the outset for military use, undermining any claims that the project is purely civilian.

⁶ [thyssenkrupp Marine Systems presents new modular underwater vehicle: MUM project to set new standard for unmanned underwater operations](#)

⁷ [Tauchend in den Krieg zur See](#)

Furthermore, according to the Naval News (2023)⁸, indicative properties of the military version of MUM include:

- **Length:** 25 meters
- **Width:** 4 meters
- **Height:** 3 meters
- **Energy storage:** 3,000 kWh
- **Range:** >400 nautical miles
- **Payload:** Up to 4 heavyweight torpedoes, 9 naval mines, or a 30+ meter towed array

These specifications reflect a combat-capable unmanned submarine, able to carry lethal payloads and engage in underwater warfare, confirming the military intent behind MUM's design. This level of armament capacity, including torpedoes and naval mines, is entirely inconsistent with civilian use and clearly demonstrates that the military applications were planned from the start.

Notably, these military uses were publicly projected and advertised even before TU Berlin began its involvement in the second phase of the MUM project (MUM2simulate). This fact raises serious concerns that either TU Berlin failed to perform the required due diligence under the Civil Clause, or that the university leadership is deliberately bypassing the Clause's clear restrictions against armament-related research.

3.2. TKMS Admissions at Their Annual General Meeting (2022)

During ThyssenKrupp's official Annual General Meeting (Hauptversammlung) on February 4, 2022, when specifically asked whether MUM would have military uses, TKMS admitted:

"Militärische Nutzung ist nicht vorgesehen." (Military use is not intended)⁹

However, crucially, TKMS did not exclude future military use, as documented by independent observers from [freiheitsfoo](#):

"[also auch nicht ausgeschlossen.]" (but also not excluded)

It is important to note that this addition in brackets reflects the interpretation of the author of the report and is not part of an official TKMS statement. Nevertheless, it highlights a reasonable conclusion based on the company's evasive response.

TKMS had already publicly announced military configurations of MUM at the NIDV Defence and Security Exhibition (NEDS) 2019¹⁰, well before TU Berlin's participation in the second phase of the MUM project (MUM2simulate) began. This military framing of MUM was reaffirmed at UDT

⁸ [TKMS Presents the Results of its 'MUM' Modular XLUUV Study - Naval News](#)

⁹ [freiheitsfoo Wiki | Main / Thyssen-Krupp-Hauptversammlungen](#)

¹⁰ [TKMS Presents the Results of its 'MUM' Modular XLUUV Study - Naval News](#)

2023¹¹, where TKMS again presented MUM as an armed 'Hunter-Killer' system, demonstrating the company's sustained vision for MUM as a military asset. This makes it clear that the military use of MUM was known and foreseeable from the outset. Therefore, when TKMS later responded at their Annual General Meeting (2022) that "military use is not intended" while refusing to exclude such use, this evasiveness must be seen as a deliberate strategy rather than an honest answer.

3.3. TKMS's reference to "Market-Relevant Functionalities"

On the official MUM project website, it is stated that the MUM system and its functional prototypes will be supplemented with "market-relevant functionalities", and that the overall scope of MUM's functionalities will be "enhanced accordingly."¹²

While such language is deliberately vague, in the context of TKMS's core business which is producing military submarines, it is reasonable to conclude that these "market-relevant" functions include military roles. Given that MUM is publicly presented in combat-ready versions, there is no reason to believe that military clients are not part of the "market" for which MUM is being designed. This implies that TU Berlin is contributing to the development of a system with foreseeable and likely military uses.

3.4. Analysis by Defense Industry and Technology Publications (European Security & Defence, Hartpunkt, Techbullion)

Leading defense publications, including European Security & Defence (ESD) and Hartpunkt, have recognized and reported MUM as a military-capable system.

- ESD (2023) reported that MUM is part of Germany's broader maritime strategy and highlighted its role in seabed warfare, a military domain focused on controlling and manipulating the underwater battlespace. It reports that "**According to images released by tkMS**, its modular design allows the MUM eXtra Large Unmanned Underwater Vehicle (XLUUV) to be used for military applications, such as minelaying, anti-submarine warfare (ASW), or reconnaissance."¹³
- Hartpunkt (2023) noted that although MUM is officially framed as a civilian system for industrial use, observers expect it to be used for military purposes as well, such as deploying mines, torpedoes, and surveillance sensors like sonar¹⁴.
- TechBullion (2023) highlights that while MUM is officially presented as a civilian system, its military applications are likely to be explored. The article notes MUM's massive payload capacity, advanced propulsion, and modular design make it suitable for

¹¹ [Tauchend in den Krieg zur See](#)

¹² [TUB – the mum project](#)

¹³ [Seabed Warfare: NATO and EU Member State Responses](#)

¹⁴ [tkMS präsentiert neues Unterwasserfahrzeug](#)

reconnaissance, surveillance, and strategic missions, pointing out that military interest in MUM is already evident as it moves toward the prototype phase.¹⁵

These independent assessments by professional defense and technology analysts confirm MUM's dual-use nature and underline the military interest in MUM as a platform for future underwater warfare. At this point, it would have been the responsibility of TU Berlin to check with TKMS or the researchers and obtain a clear statement affirming that 'this is not for military purposes,' especially because this amount of professional assessment casts doubt on the previously stated civil purpose of the project.

3.5. Legal Analysis of Modular Submarines and Military Potential (MARESEC/DLR 2022)

A 2022 legal and technical analysis presented at the European Workshop on Maritime Systems Resilience and Security (MARESEC) by researchers from the German Aerospace Center (DLR) highlights the military potential and legal challenges of modular submarine systems like MUM. The study emphasizes the following key points:¹⁶

- Due to their modular structure, systems like MUM undermine the traditional distinction between civilian and military vessels, making it difficult to categorize them under international maritime law. This ambiguity creates opportunities for states to covertly develop military capabilities disguised as civilian research platforms.
- The paper also points out that modular submarines could contribute to an underwater arms race, as nations could rapidly develop offensive capabilities under the guise of civilian research, further destabilizing maritime security.

The study is based on and explicitly employs MUM as an example of how these legal ambiguities can be exploited in real-world systems. While supporters may argue that the issue lies with outdated legal frameworks, the reality is that MUM has been intentionally designed in a way that takes advantage of these regulatory gaps. Given TU Berlin's involvement in developing MUM's modular architecture and autonomous navigation systems, the university is actively contributing to the creation of a system with clear military potential, in direct violation of the principles set out in the Civil Clause.

¹⁵ [German shipbuilder TKMS \(Thyssenkrupp Marine Systems\) is preparing to start construction of their MUM underwater drone - TechBullion](#)

¹⁶ Halog, J., Margat, P., & Stadermann, M. (2022). *Legal challenges for the law of the sea in the light of disruptive technologies: Modular and autonomous submarines*. [\(PDF\) Legal Challenges for the Law of the Sea in the Light of Disruptive Technologies: Modular and Autonomous Submarines](#)

3.6. TKMS's Arms Exports to Israel and The Context of MUM's Possible Future Users

In addition to the clearly fitting design and promotional aspects of MUM for military purposes, it is crucial to consider the existing client base and history of TKMS, which provides strong indications of who will operate MUM and how it will be operated once developed.

Germany's Export of Nuclear-Capable Submarines to Israel

TKMS has had a long-standing role as a provider of advanced submarines to Israel that have been central to its military strategy, including its nuclear capabilities.

According to a detailed investigation by *Der Spiegel* (2012)¹⁷, TKMS-built Dolphin-class submarines are widely recognized by German and U.S. defense experts as capable of launching nuclear-armed cruise missiles, a fact that had been long obscured from public discourse. Several former senior German defense officials confirmed that these submarines were equipped with nuclear-capable features from the beginning. One former high-ranking official told *Der Spiegel*:

"From the beginning, the boats were primarily used for the purposes of nuclear capability."

Moreover, these submarines were specifically designed at Israel's request to include unique 650 mm torpedo tubes, not found on any other Western submarine, which U.S. experts identify as capable of launching nuclear-tipped missiles.

This is part of a deeply troubling pattern of concealing or downplaying military capacities in TKMS projects. In the case of the Dolphin submarines, the nuclear role was never officially admitted at the time of delivery, but it later became undeniable. This mirrors what is now happening with MUM: while TKMS and its partners present MUM as a civilian platform, it has been publicly showcased twice in military configurations (NEDS 2019¹⁸ and UDT 2023¹⁹), and military roles have been discussed in specialized defense publications. This makes the assumption highly plausible and makes it necessary to investigate, that just as with the Dolphins, critical military applications of MUM are being concealed or minimized at this stage, despite the portrayal of the contrary.

Such a pattern of misleading or withholding critical information about military potential is fundamentally incompatible with the values of a civilian research institution like TU Berlin, which is bound by the Civil Clause.

¹⁷ [Israel Deploys Nuclear Weapons on German-Built Submarines - DER SPIEGEL](#)

¹⁸ [TKMS Presents the Results of its 'MUM' Modular XLUUV Study - Naval News](#)

¹⁹ [Tauchend in den Krieg zur See](#)

TKMS's Weapons Used in Armed Conflicts Involving Alleged Grave Human Rights Violations

Furthermore, TKMS is not only implicated in hidden nuclear capabilities but also in supplying military hardware that has been used in conflicts involving serious and ongoing allegations of war crimes and crimes against humanity.

One of the clearest examples is the Sa'ar 6-class corvettes, built by TKMS for Israel. These warships were used for the first time in combat operations against Gaza in October 2023, as confirmed by multiple defense news sources, including Naval Technology²⁰ and Army Recognition²¹. According to the Israeli Defense Forces (IDF) itself, these TKMS-built corvettes were used to fire on targets inside Gaza using their main gun systems. This means that German-built ships, provided by TKMS, are directly part of an ongoing military operation that is now under investigation by the International Court of Justice (ICJ) for plausible genocide²².

The ICJ has already accepted the plausibility of the charge of genocide regarding Israel's conduct in Gaza. Moreover, independent human rights organizations²³ and UN experts have described Israel's military operations as involving indiscriminate bombings of civilian areas, raising significant concerns about violations of international humanitarian law.

In addition to Israel, Egypt is another long-time recipient of German naval equipment, including submarines²⁴ built by TKMS, and is identified by defense experts as a likely future buyer of MUM. According to IsraelDefense (2021), which covers developments in the Israeli and regional defense industries, given that Egypt is already a key buyer of TKMS submarines, it is highly probable that Egypt will also acquire MUM once operational. The report explicitly states:

“If ThyssenKrupp is developing such vehicles, it can be assumed that Egypt will possess them in the coming years.” (IsraelDefense, 2021)²⁵

This is deeply alarming given Egypt's documented history of grave human rights abuses involving its navy. Investigations by Lighthouse Reports²⁶ and De Volkskrant²⁷ have exposed that Egyptian naval forces are involved in systematic violence, including:

- Attacks on Palestinian fishermen from Gaza, including fatal shootings, arbitrary detentions, and torture.
- Participation in operations in Northern Sinai, where the Egyptian army and navy special forces have committed alleged war crimes, such as extrajudicial executions, forced

²⁰ [Naval Technology](#)

²¹ [Israeli Navy uses Sa'ar 6-Class corvettes for first live combat against Hamas](#)

²² [ICJ report](#)

²³ The Genocide accusation was reiterated by [Amnesty International](#) and [Human Rights Watch](#)

²⁴ [Fourth Class 209/1400mod Submarine Officially Handed Over To Egypt - Naval News](#)

²⁵ [Soon in Egypt: ThyssenKrupp developing modifiable unmanned underwater vehicle | Israel Defense](#)

²⁶ [Turning a blind eye to Egypt's violent navy - Lighthouse Reports](#)

²⁷ [Is the Netherlands getting involved in human rights violations in Egypt?](#)

displacement of civilians, and destruction of homes, as part of counterinsurgency campaigns.

- Support for special forces operations in Sinai, as confirmed by Egyptian Defense Ministry videos and satellite-verified footage, showing naval units patrolling, coordinating assaults, and participating directly in raids.
- Use of naval ships in combined land-sea operations involving summary executions and assaults on civilian areas.

Evidence presented in court cases against Dutch arms exports to Egypt shows that naval assets, including frigates and special forces units supported by naval systems, are fully integrated in Egypt's violent military campaigns²⁸. The Netherlands Lawyers Committee for Human Rights and PAX, in their legal filings, emphasized that the Egyptian navy is actively involved in actions that violate international humanitarian law and human rights. The Court documents also confirm that these operations include attacks on civilians and possible crimes against humanity in Sinai.

As is documented above, TKMS is a company who has repeatedly and to multiple countries supplied weapons not only designed for warfare but actively used in armed conflicts associated with grave violations of international law, including allegations of war crimes and crimes against humanity. This makes TKMS an entirely unsuitable partner for TU Berlin, as it is directly tied to the development and export of advanced warfare systems and their use in conflicts involving serious allegations of crimes against humanity, both of which fundamentally contradict the university's ethical commitments and Civil Clause.

4. Conclusion

The Civil Clause of TU Berlin is a binding commitment designed to prevent the university from participating in any form of armament-related research. It explicitly requires that in cases of doubt, researchers must prove that their work does not serve military purposes. The case of TU Berlin's participation in the MUM project raises serious and urgent concerns about systemic failures to uphold this principle.

Based on the overwhelming evidence presented in this report, including public displays of MUM in military configurations, the military history and client base of TKMS, and independent analyses of MUM's dual-use potential, it is clear that the possibility of military applications is not only foreseeable but publicly documented. TU Berlin should have been aware of this from the outset, or at the very least, raised these concerns for thorough ethical examination, at the very latest at the time of engaging in the second phase by which the military uses had already been presented. The fact that this did not happen constitutes a serious breach of the Civil Clause.

There are two possible scenarios, both equally unacceptable:

²⁸ [Pleading-Notes-9.11.2021_Unofficial-English-Translation.pdf](#) | [Pleading-Notes-09.11.2021.pdf Original](#)

1. Either: the Ethics Committee was not informed about these glaring risks, thereby violating the obligation under the Civil Clause to subject research to scrutiny in cases of doubt.
2. Or: the Ethics Committee failed in its responsibility to investigate properly, by either not asking TKMS explicit and necessary questions about the military uses of MUM or by accepting vague reassurances without critical inquiry, despite TKMS's well-documented role as one of the world's largest arms manufacturers.

Furthermore, if TU Berlin did question TKMS and was provided false or misleading information, the university must acknowledge that this constitutes a breach of trust. No institution committed to peace and ethical research can continue cooperating with a partner that conceals military purposes behind a civilian research project. If such behavior is not met with consequences, there is every reason to believe it will be repeated in future collaborations.

Continued cooperation with TKMS also risks lending academic legitimacy to technologies that are, or may be, deployed by armed forces credibly accused of serious violations of international humanitarian law. TU Berlin's involvement may indirectly support the development of such systems, even if unintentionally. This directly undermines the very purpose for which the Civil Clause was established: to ensure that, in light of Germany's historical responsibility, academic institutions do not contribute—knowingly or otherwise—to military activities that may lead to grave breaches of international law and human rights.

Therefore, we call on TU Berlin to:

- Immediately cease all present and future cooperation with TKMS, not only because they already violated the Civil Clause, but because TKMS has a proven pattern of misleading the public about the military capabilities of its technologies, and because its weapons are used by clients involved in documented breaches of international humanitarian law. Continued cooperation risks making TU Berlin complicit in these crimes.
- Investigate and publicly clarify how this breach of the Civil Clause occurred, including a transparent review of internal ethics procedures and responsible personnel.
- Strengthen internal mechanisms to ensure that no research project with military potential can proceed without full and honest evaluation, including clear and binding protocols for Civil Clause compliance.

TU Berlin's continued partnership with TKMS directly contradicts its own stated principles. President Geraldine Rauch has publicly committed to defending the Civil Clause, declaring:

"Solange ich Präsidentin der TU Berlin bin, werde ich für den Erhalt der Zivilklausel eintreten. Wissenschaft muss dem Frieden dienen."²⁹

²⁹ [„Das Vertrauen der Hochschulen wurde verspielt“: Warum die TU Berlin gegen Kürzungen des Senats klagen will](#)

However, this is not about one person but about TU Berlin as an institution failing to uphold its regulations and guidelines³⁰. If the entire leadership genuinely stands by the rules the University has imposed upon itself, then it must take immediate action to cut ties with TKMS and implement safeguards to prevent further violations.

This is also not only about one project, it is about protecting the integrity of TU Berlin as an institution that claims to uphold peace, social responsibility, and ethical research, and that claims to have learned from its dark past.

³⁰ [Guidelines/Directives - TU Berlin](#)

Appendix - A



Title: MUM in its military variants: Mine-laying, hunter killer and scout/intelligence. First unveiled at NEDS 2019.

Source: [TKMS Presents the Results of its 'MUM' Modular XLUUV Study - Naval News](#)

