Case Study

Unmanned - Strategic Enabler for Modern Naval Warfare Network

Autonomous vessels are nothing short of the future of modern naval warfare, simultaneously projecting power, meeting critical humanitarian needs, and heightening the level of security in maritime infrastructures across the globe. At the forefront of modern naval warfare and innovation is Swiftships, a company that has been manufacturing highly specialized military surface vessels for over 80 years.

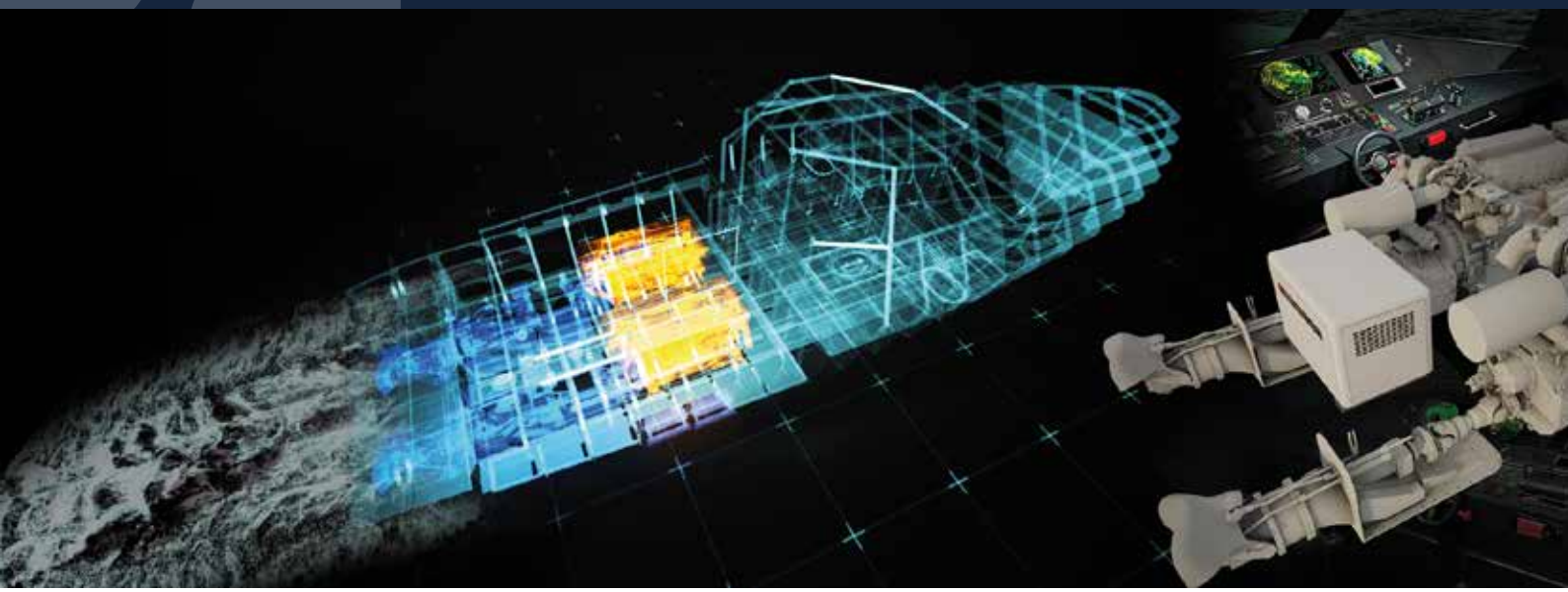
Swiftships' name has been central to conversations around Unmanned Autonomous Vessels (UAV) since the US Navy's 2018 selection of the Swiftships' Riley Claire – a 175 feet Fast Supply Vessel (FSV) – for transformation into a Large Unmanned Surface Vessel (LUSV), the first of its kind. Critical to Swiftships' success is its highly developed infrastructure and knowledgeable personnel that allow the company to adapt and innovate in the quickly evolving dynamics of the naval industry and its needs for autonomous capability.

Swift Challenger

In February 2022, Swiftships unveiled its 46 feet Challenger, a surface vessel designed for Unmanned missions that combine total situational awareness with functional design and performance using an Autonomous system of clients' choice. Reaching a top speed of 45+ knots and an endurance of over 40 hours,

The Challenger will greatly enhance maritime fleet force protection by identifying and engaging remote targets before they become threats. The Challenger's intelligence systems will enable mariners to work smarter and delegate routing efforts to advanced self-piloting technology. Multi-modal situational awareness aboard the ship allows for threat-based object recognition, while further tracking, high-speed data connectivity, and anti-collision capabilities will help the United States (US) Navy Fleet Forces Command (FFC) to meet its mission of achieving fully autonomous capability by 2025.

The human presence will likely be widely maintained until the autonomous technologies are solidified in their reliability. Still, the Challenger is one of many ships helping pave the way for a more reliable, independent future. Swiftships' high endurance platform supports both Manned and Unmanned configurations while complying with NATO Standardization Agreements (STANAG) 4586, Joint Architecture for Unmanned Systems (JAUS) protocol.



The Technology

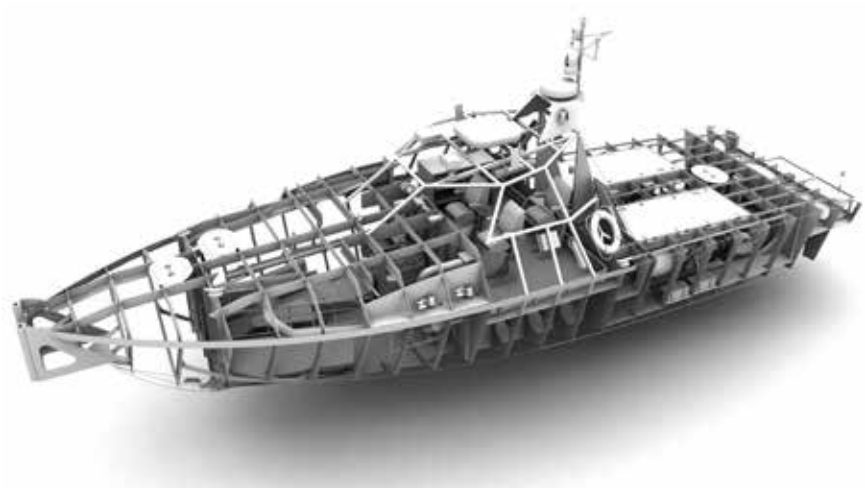
Swiftships is a full-service solution provider of complex support systems utilizing laser cameras (EO/IR). These sophisticated sonar systems gauge sea states and detect obstacles in the water, maintain state-of-the-art weapons systems, oversee Integrated Bridge Solutions (IBS), and provide platform solutions, maintenance, and training to ensure successful interoperability. Swiftships' dynamic multiplier platforms offer 4G/5G, line-of-sight, over-the-horizon, and satellite communication. The advanced sensors package allows for the instant capture and transfer of live information, creating a near-sentient computer system that reacts and makes highly accurate steering, accelerating, and high-speed maneuvering decisions while accounting for scenario situations like port security and mine countermeasure, surveillance, and more. Shehraze Shah, CEO of Swiftships, talked to the industry and said, "Our goal is to continuously exceed expectations, adding these new products to keep pace with technology while capturing the key elements of sustainability and safety."

Enabling Capabilities and Technologies

Our proven seamless autonomous systems integration: physical, electrical, and data interfaces between payloads and the platform, payload launch and recovery systems complimentary to USV capabilities and development. In addition, to the platform, Swiftships offers a full suite of services: cybersecurity, engineering, product support, and payload and weapons systems integration.

The Benefits

Unmanned ships are affordable in construction and easy to maintain. They reduce the standard manual requirements of seafaring vessels by their nature and they are also highly adaptable for multi-mission needs.



Deployed ships can provide remote support capabilities and establish availability in various scenarios of operations, integrating Swiftships' work with the Navy's ongoing shift toward a "distributed" architecture fleet that is forecasted to increase the number of Unmanned vessels significantly.

Furthermore, Swiftships retains all data rights to its designs and may adapt virtually any craft in its portfolio to conduct various missions depending on the need. Swiftships' vessels can perform tasks as variegated as surveillance, humanitarian aid, and supply chain support.

Mr. Shah further says, “This is the sweet spot for Swiftships due to our years of experience delivering diverse platforms that include small to large military and commercial vessels. We have extensive knowledge of Unmanned vessels [that we began to] develop before autonomy became a hot topic. In essence, we invested in autonomy over twenty (20) years ago in developing Dynamic Positioning System (DPS) integration with vessels, then carrying that to further Unmanned capabilities.

Swiftships’ in collobaration with University of Lousiana at Lafayetter (ULL) developed a partial manned remote-controlled system, aka Anaconda (AN-2), was the first step in developing an autonomous vessel in 2015. It was designed for brown water and near-coast missions with lethal capability while removing the threat of harm to the vessel’s crew during battle scenarios. We keep ahead of technology advancements in shipbuilding and all elements vital to a vessel to continue the fight even if a casualty occurs during combat. Autonomous platforms can be equipped with highly secure, steadfast, and reliable communication systems based on the requirement. Mostly, they require edge processing, artificial intelligence, and machine learning to filter and process mission data on board and adapt to any situation and environment.”


Riley Claire

Risen Sun


Nomad


SMSV

Competitive Edge

Swiftships have outpaced their competition by developing a fleet of small, medium, and large Unmanned Surface Vessels (USVs) that combine power, speed, stealth, mobility, ease of deployment, and mission readiness. Even without a sailor-in-the-loop (either onboard or remotely), these platforms are incredibly dependable, with integrated automation providing a sophisticated command and control system. Unmanned or autonomous missions require significant machine control capacity, including automated filter replacements and electrical system manipulations to ensure safe operations. Even more critical for Unmanned missions is a ship’s ability to have collision avoidance via radar and sonar sensors, allowing the vessel to maneuver in open water and busy harbors and ports safely. Collision avoidance is one critical area where an experienced integrator such as Swiftships and its industry partners can flourish. Swiftships has proven experience in converting its commercial FSV (aka Riley Claire) to militarized version (aka NOMAD) that encompasses extensive refit/ship modernization services. Different packages offer multiple aspects of maritime care based on the user’s needs. In cases of more stringent budgetary constraints, Swiftships provides a wide array of cost-effective maintenance packages, including predictive, preventative, corrective, and continuous maintenance.

“As part of our constant dedication to assisting our customers in succeeding, we have a comprehensive view of the shipbuilding lifecycle. We have the necessary skills and experience to extend the lifecycles of our boats and solve the crucial demands of converting our clients’ requirements. Our experience extends from ship exterior modifications to the most complicated machinery and electrical (HME) [components], electronics, communication and navigation (COM/NAV), weapons systems, and numerous system overhauls, servicing, and upgrades” *Mr. Shah explained.*

The Future

Swiftships has been working with US Navy (N95) divisions to improve its wide range and capability of commercial platforms to offer Multi-Missions USV (MM-USV) to fulfill the US and its Allied Forces responsibilities for a fraction of the cost of conventional naval ships. Swiftships’ systems are highly adaptable, allowing clients to integrate sensors, weaponry, autonomy, and various other technologies aboard their boats at a lower price than other vendors.

Conclusion

Swiftships craft are perfectly positioned to provide advanced Unmanned service vessels as modern naval warfare continues to evolve. These war vessels, ranging in size from a corvette to medium or small-sized craft, will, by 2025, define the modern fleet.

Recent advancements allow for leveraging naval platforms that are far less expensive to build, operate, and maintain. These advances, while helping nations project power, are also meeting critical humanitarian needs, allowing for lower casualty rates in terms of human life and a heightened level of security in naval infrastructures across the globe. Swiftships can offer its clients a turnkey operating capability, including developing tailored conventional or autonomous platforms, with MRO and sustainment programs that will help navies modernize their ships while slashing costs.

Riley Claire: https://www.electronicdesign.com/markets/defense/article/21211815/naval-ghost-ship-passes-panama-canal
Swiftships Challenger: https://swiftships.com/challenger-46-feet/
USN Fleet Forces Command Strategi Mission: https://stationhypo.com/2020/08/01/u-s-fleet-cyber-command-u-s-tenth-fleet-strategic-plan-2020-2025/
Swiftships ULL collaboration - https://louisiana.edu/news-events/news/20130812/ul-lafayette-helps-develop-unmanned-boat-military