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Unmanned Vehicles Are Changing Business Models

A quick glance at the headlines makes it clear that unmanned vehicles are profoundly impacting business models on land and in air. In fact, one could argue it is policy, not technology, limiting the growth of those markets.

In the maritime sector, this sort of growth has been lagging, but it is beginning to catch up. Traditionally, unmanned vehicles, especially ROVs, have been critical to successful marine operations but have not changed the business model for maritime industries. The cost of vessels and staff still dominates the economics of most marine operations.

This is now changing with the growth of "low-logistics" unmanned vehicles, including ROVs and AUVs. In the last decade, there has been a change in attitude towards AUV operations. Previously, the AUV was reserved for specialist activities in specific jobs, requiring much mobilization effort, dedicated vessels, and an extensive suite of ancillary equipment.

Today, the use of low-logistics modular AUVs has resulted in a dramatic change in the flexibility of AUV operations. With operations gear deployed on the vehicle now chosen for the mission at hand, operators have the ability to change tasking on site. This approach, along with the availability of compact AUVs rated to deeper depths, has had a powerful impact on commercial offshore survey tasks. Commercial operators are rapidly adopting low-logistics AUVs and embracing the operational flexibility, and favorable business model, they offer.

This trend also benefits noncommercial tasks, especially defense and public sector operations, such as mine countermeasures. Mission-critical applications drove early adoption of dedicated AUVs, but the new trend now centers on the use of modular AUVs. As just one example, search and recovery operations resulting from the crash of AirAsia flight QZ8501 in December 2014 were supported by modular AUVs. The ability to rapidly deploy necessary modules from halfway around the world allowed the search operations to benefit from AUV capabilities within days of mobilization. This flexibility allows operators to benefit from the force multiplier effect of AUVs without expansion of their vessel fleet.

Just as modular AUVs were derived from single-purpose predecessors, work-class ROVs of high cost and complexity inspired "smart" compact ROV developments. Key features in these advanced ROVs are closed-loop positioning systems, informed by advanced inertial sensors and Doppler velocity logs (DVLs), and software allowing operators to "point and click" their way through missions rather than manually operate the ROV. This improves productivity and response time. The addition of new, high-resolution sonars can make these compact ROVs powerful search and survey tools. Infrastructure, such as pipelines or dams, can be inspected and marine security missions can be addressed with these small form factor ROVs. As with modular AUVs, these low-logistics, high-performance ROVs offer operators the ability to reduce vessel and staffing costs while increasing response time and flexibility.

Reducing the cost and complexity of marine operations can profoundly impact the economics of many marine industries. The impact can be positive, as in the case of defense and science budgets that seem in a state of continual decline. But it can also create troubling issues for the private sector, similar to higher productivity in the oil and gas industry triggering recent drops in the price of oil, which is good for consumers but not so good for companies who have to cut staff as a result of lower revenues from cheaper energy prices.

The marine community may not be on the verge of profound disruption, like the kind brought about by aviation "drones," but new low-logistics, high-performance unmanned vehicles are definitely offering new options for improved productivity at lower costs, and changing old business models in the process. **ST**