

# Designing a Remote Control Center: an operator's perspective

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One of the largest remaining tasks for unmanned or autonomous ships to become a reality is the navigation system. Strides have been made in terms of collision avoidance and route following, but it is far from capable of replacing a competent human navigator. Therefore, most research assumes that when a ship is sailing with an automated navigation system, it needs to be monitored by an operator located in a control center on shore.

There are many factors that still need to be investigated regarding these control centers. Currently, several pilot projects are running around the world. These projects are successful in operating a ship safely from shore. Most of the research in this area is focused on the technology. There is very little focus on the needs of the operator, the skills they require and the information needed to safely operate a ship remotely.

Bureau Veritas have written comprehensive rules with regards to the remote control station (RCC). To do this, they take the design of a conventional bridge as a basis. However, these rules also state that attention should be given to ensure that the controller is not overloaded by information. In practice, prototypes of RCC's look very much like a ship's bridge, displaying all of the information that is conventionally available on a bridge and in some cases even more. From the research it becomes unclear if the information is actually needed for safe operations or if it is displayed simply because it is available.

In this article we will look at the design of the RCC from the needs of the controller. The aim is to identify what information an OOW uses in different situations thereby determining what information needs to be readily available and what information could be placed at a second screen or could even be left out completely. The article concludes with a preliminary design of an RCC, from an operators perspective.

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