

# The Superyacht Captains Report

*“The crewmembers who operate these vessels have an important role to play in the optimisation of yacht design for the owner and their guests.”*

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# IN A TIGHT SPOT



The Superyacht Report *speaks to TEAM Italia about the evolving issue of bridge complexity, and asks how bridge integrators ensure their configurations remain innovative, as well as being safe and user-friendly.*

 A look into the evolving issue of bridge complexity

BY BRYONY MCCABE

The bridge of a vessel has historically been modular in design, with a focus on the functional rather than the aesthetic; a collection of stand-alone controls and equipment, each with the capability to be manually and individually operated. However, with increasing guest interaction taking place in the bridge of a superyacht – due to its naturally advantageous views and constant buzz of activity – this space has evolved to become an extension of the owner and guest areas, resulting in a drive towards futuristic bridge design and integration, something that has not happened on commercial shipping vessels to the same extent.

But has this shift towards aesthetics and enhancing the guest experience overshadowed the key functions of the bridge – that of safe pilotage and navigation? This question was raised recently when, in February, footage emerged of the 77m M/Y *Go* colliding with a dock in Simpson Bay, St Maarten at a slow speed while attempting to manoeuvre out of the notoriously tight exit through the Simpson Bay Bridge.

In the immediate aftermath of the incident, the captain was quoted in *The Daily Herald* as saying the collision would likely be attributed to a computer malfunction that seized the yacht into gear, causing it to plough into the dock twice, bow first, before a back-up system could be engaged to return the vessel to its berth at Isle del Sol Marina. “The yacht started moving mysteriously forward,” he said. “There was nothing I seemed to be able to do, all the controls on the bridge were showing normal. I called the engine room and everything was normal down there. I found I had extremely limited control, almost limited to only the bow thruster ... the

fact that there were no warning alarms, no lights on board to indicate something was wrong, was really scary.”

While the findings of the ongoing investigations into the incident have not yet been publicly released, the captain was also reported as criticising modern electronics as “ridiculously over the top”, with no manual overrides or back-ups if something went wrong.

So what do those who design and oversee superyacht bridge systems and safe bridge operations think about this sentiment in more general terms? Having approached a number of manufacturers and flag states about the topic, many declined to be involved in this particular discussion because of the ‘contentious’ nature of the issue. It’s a shame that so many key industry stakeholders would willingly pass up the opportunity to promote, and advise on, safe operations.

Therefore, it was greatly appreciated when bridge integration specialists TEAM Italia answered the call. “We don’t know which system is installed on board and, in particular, what the system architecture is,” says TEAM Italia CEO Massimo Minnella. “But I honestly believe that an electronic integrated bridge can only put you in a dangerous spot if there is no Plan B if something goes wrong on the technology side. From the first moment we started working on integrated bridge projects more than 20 years ago, we have always considered safety as not a compromise, but a priority. Our motto is ‘safety first’.

“A system architecture based on the concept of multi-level redundancy, with the implementation of CPU master/slave and, in addition, the use of watchdog technology and fail-safe techniques, means greater complexity, and therefore

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*Previous page: TEAM Italia bridge on board 80m Columbus M/Y Dragon.*



*TEAM Italia display on board S/Y Sybaris.*

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costs. But in the engineering of our new projects, the cornerstone is always safety. Integration at advanced levels has to take these principles into consideration in the engineering phases of the system architecture.”

However, Minnella does acknowledge that the growth in the complexity and elaborate design of superyacht bridges has created some navigational challenges. “Too often, ‘integrators’ from the world of serial boats appear on the market thinking that they can apply the same solutions to those that are actually ships and, therefore, have totally different navigation needs,” he explains.

“To create a safe, innovative, ergonomic and stylistically exclusive dashboard console, you need to have a very specific electronic know-how because even if technology is running and evolving very quickly, not all new technologies can be applied if they are not properly evaluated and tested for the environment for which they are intended first. The correct balance between these four elements is the only way to obtain suitable solutions for a professional, safe and pleasant navigation.”





**Daniele Bottino, manager of regional business development and yacht sector lead at American Bureau of Shipping (ABS), comments on the evolving complexity of superyacht bridges from a classification society perspective.**

Class requirements that stipulate a certain level of redundancy and a certain number of functions that would override automated functions in an emergency may be seen as imposing unnecessary layers of protection to the system. But the reality is that if the bridge is increasingly becoming an extension of owner and guest spaces, the initial scope of that space is turned upside down. Technology evolves, of course, but the principle supporting these changes must remain the same, which is safety.

Yachts can have a high level of automation and unless it is formally recognised and acknowledged with

the appropriate descriptive class notation on the yacht, the philosophy of this complex automation is reviewed insofar as the minimum level of safety is concerned at the boundaries with the other equipment and systems in order to avoid detrimental effects in case of malfunction. As a minimum, regardless of whether more or less advanced class notations are issued, adequate arrangements are required by class rules to be in place to disable the automatic control mode and restore manual controls.

Automatic control, remote and local controls, alarms, safety shut-downs and safety systems are well defined in the class rules and are all verified against the fail-safe principle whereby upon failure or malfunction of a component, subsystem or system, the output automatically reverts to a predetermined design state of least critical consequence.

I personally think that the industry should push for the next step, which is aiming at higher class notations that are not normally mandatory. We want safety for the asset and the crew, which is part of ABS's mission of promoting the security of life and protecting the environment, so the industry should not cut corners, especially economically speaking. For the owners and builders, we all need to understand that the rules are there – I don't think that there is a problem of lack of regulations – but the key is that class rules set the minimum standards of safety. ■

So how can manufacturers strike a balance that ensures their configurations remain innovative, as well as safe and user-friendly? Minnella believes one key element to this is a continuous exchange of information with the end-users – the captains – who actually operate the systems and who will be able to provide critical and valuable feedback on the user experience from a functionality perspective.

Another goal for TEAM Italia is to always integrate the increasing number of devices and/or systems based on the correct system architecture that ensures a high level of security. “This, in our opinion, is also achieved by implementing an intuitive and uniform human machine interface in the system in order to make the use of all ship systems extremely easy and intuitive, even if they are of different brands, and therefore operate according to different logics,” adds Minnella. “Furthermore, with the aim of having cutting-edge systems on board that are constantly upgradable, one cannot ignore the implementation of remote diagnostic systems which are essential for the continuous maintenance.”

A bridge system must provide not only the look and feel that owners demand, but also allow for the control that the captain needs. While class rules require a minimum level of manual back-ups, these rules do not touch upon operational aspects that impact the experience of the end user, which are mainly left to the manufacturers and shipyards. As technological advancements continue apace, and the integration of bridges evolves, now might be an appropriate time for the industry to step back and ask how to ensure that the bridges of the future remain safe and user-friendly from an operational perspective. Captains have to be confident that, in a tight manoeuvre situation, there's a quick and easy way to take back control of the vessel should there be any computer difficulties. **BM**