

NODE AND JUNCTION BOX SERVICES AND INTERFACES FOR A LOCAL SEA BOTTOM OBSERVATORY

Aoustin Yannick, Auffret Yves, Barbot Stéphane, Blandin Jérôme, Coail Jean-Yves, Dussud Loïc, Gétin Nathanael, Lanteri Nadine, Le Vourch Damien, Podeur Christian, Rolin Jean-François, Woerther Patrice
IFREMER, Centre de Brest, BP 70, F-29280 Plouzané, France yauffret@ifremer.fr

Sea bottom observatories, based on a submarine cabled network, are designed to collect, at high frequency and in real time, valuable data over a long period of time (up to 25 years), they are used in many multidisciplinary research projects including geophysics, chemistry, biology and physical oceanography... they provide an end-to-end service; from the sea bottom to your computer.

The main differences between a local and a large scale cabled network are the backbone specifications linking the shore station and the nodes on the seafloor. Power and voltage must be compatible with a long distance to connect on the network a large number of instrumentation.

This simplified and optimized design for a local sea bottom observatory provides the same infrastructure, services and interfaces for the instrumentation connected to the junction box as a large scale cabled network: trawl resistant frame, corrosion and fouling resistant design, maintainability, nodes and junction boxes, wet mateable connectors, various voltages and data interfaces, network extension (optical or VDSL2), time synchronization (NTP, PTP 1588v2, NMEA PPS), embedded controller for monitoring internal parameters and science ports, fail over, redundancy, network management protocol, remote control and supervision.

We describe in this paper how can we optimize the design and reduce the cost of such a local or coastal network, without jeopardizing the reliability of a submarine network.

This architecture will be deployed later this year on a marine conservation area near Brest, France for the MeDON project. MeDON has been selected within the scope of the INTERREG IV A France (Channel) - England cross-border European cooperation program, co-funded by the ERDF.

All these recommendations, specifications, interfaces are based on the ESONET/EMSO label to ensure compatibility and interoperability between sea bottom observatories in Europe.

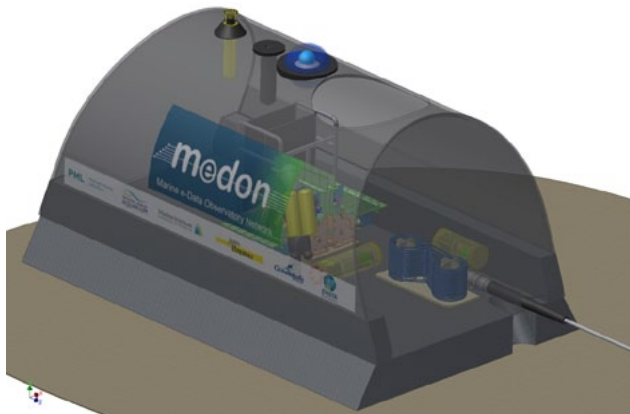


Figure 1 - MeDON - Infrastructure - General overview

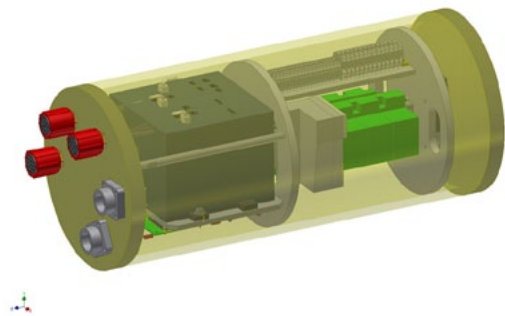


Figure 2 - Local sea bottom observatory - Node

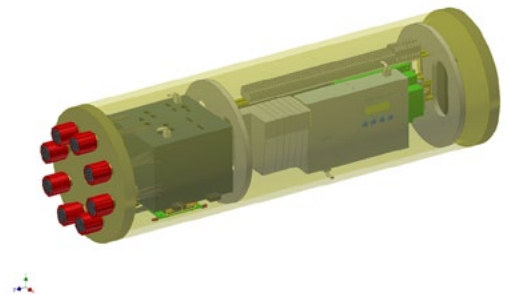


Figure 3 - Local sea bottom observatory - Junction box