

# A wireless network for off-shore marine research

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A mobile appliance allowing **broadband information sharing** between platforms isolated from an on-shore communication infrastructure, **acquisition of large data-sets** from variety of off-shore data sources (e.g. drifters or fleet of drones) as well as **remote access and control** of a research infrastructure.

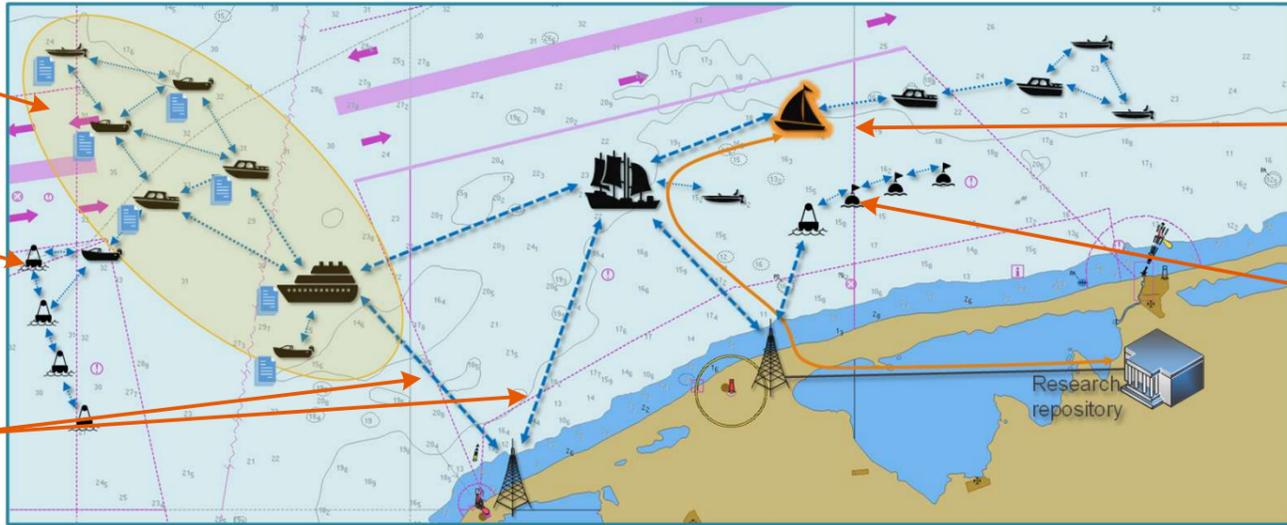
Self organization mechanisms allow appliances to automatically form and maintain a multihop mesh network, where each device can communicate using other devices as intermediaries. In case of lack of connectivity, devices will perform in Delay Tolerant manner and buffer the data to be delivered when possible.

A number of services has already been implemented on this platform, such as: real-time synchronization of documents, measurement data acquisition and remote reconfiguration of measurement devices.

File sharing: users on both ships and RIBs can easily access and modify data files gathered in easily created repositories.

Data acquisition: data can be gathered transiting multiple devices, even when their connectivity is only sporadic.

Redundant communication paths allow the system to maintain a high reliability level.



Remote access: multihop IP communication allows remote access to on-shore resources.

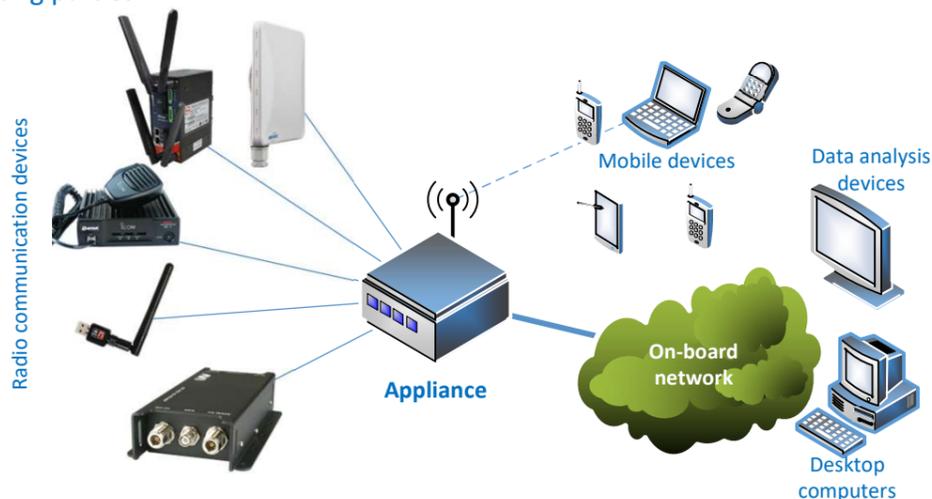
Infrastructure management: devices can be managed by sending messages delivered in delay tolerant manner.

The appliance can use any communication device capable of transmitting IP packets. Devices are easily connected with Ethernet cabling, so cost, physical requirements of installation and communication capabilities can be changed to best address a specific use-case.

All data stored within a system and transmitted between devices is both encrypted and protected from unauthorized modification. Digital certificates are employed to verify identity of communicating parties.

Any IP-compatible communication can be used: Wi-Fi, WiMAX, LTE, D-Star, satellite, dedicated marine communication systems, ...

Connecting devices by Ethernet wiring and employment of Power-over-Ethernet technology allows communication devices to be located away from the appliance – for example high above deck to facilitate long range communication.

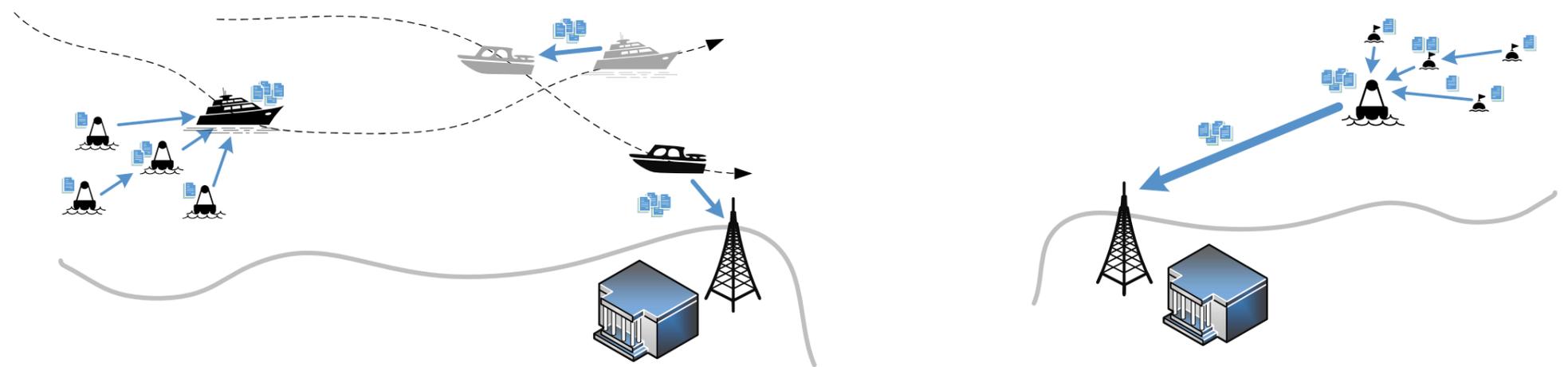


Users can access data wirelessly using laptops, tablets, phones, etc. or device can be integrated with an on-board network.

Appliance physical form can vary: from a 19" rackmount device capable of using multiple radio devices simultaneously, to a power efficient embedded module.

An appliance with multiple radio devices connected can act as a communication gateway between devices equipped with short-range, energy efficient technologies and a long-range communication network.

Each of devices can also buffer data for extended periods of time (hours, days, weeks, ...) and pass it to others for delivery.



Self-powered mobile devices with directional and omnidirectional antennas



Drifter deployment



RIB installation



Shipboard installation

