Iceland
Liechtenstein
Norway grants

INESCTEC   IPMA   MARLO

BLUECOM+

Cost-effective Broadband Communications at Remote Ocean Areas

Rui Campos et al.

INESC TEC
Centre for Telecommunications and Multimedia

REPÚBLICA PORTUGUESA
MAR

dgpm
Direção-Geral de Política do Mar

BLUECOM+

Motivation

Monitoring
marine ecosystems and their biodiversity

Blue Economy
traditional and emerging activities

Motivation

Dissemination of marine data
collected by ocean intelligent platforms in remote ocean areas

Applications and services
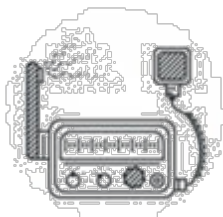access to Internet-based applications/services in remote ocean areas

Problem

HF – narrowband

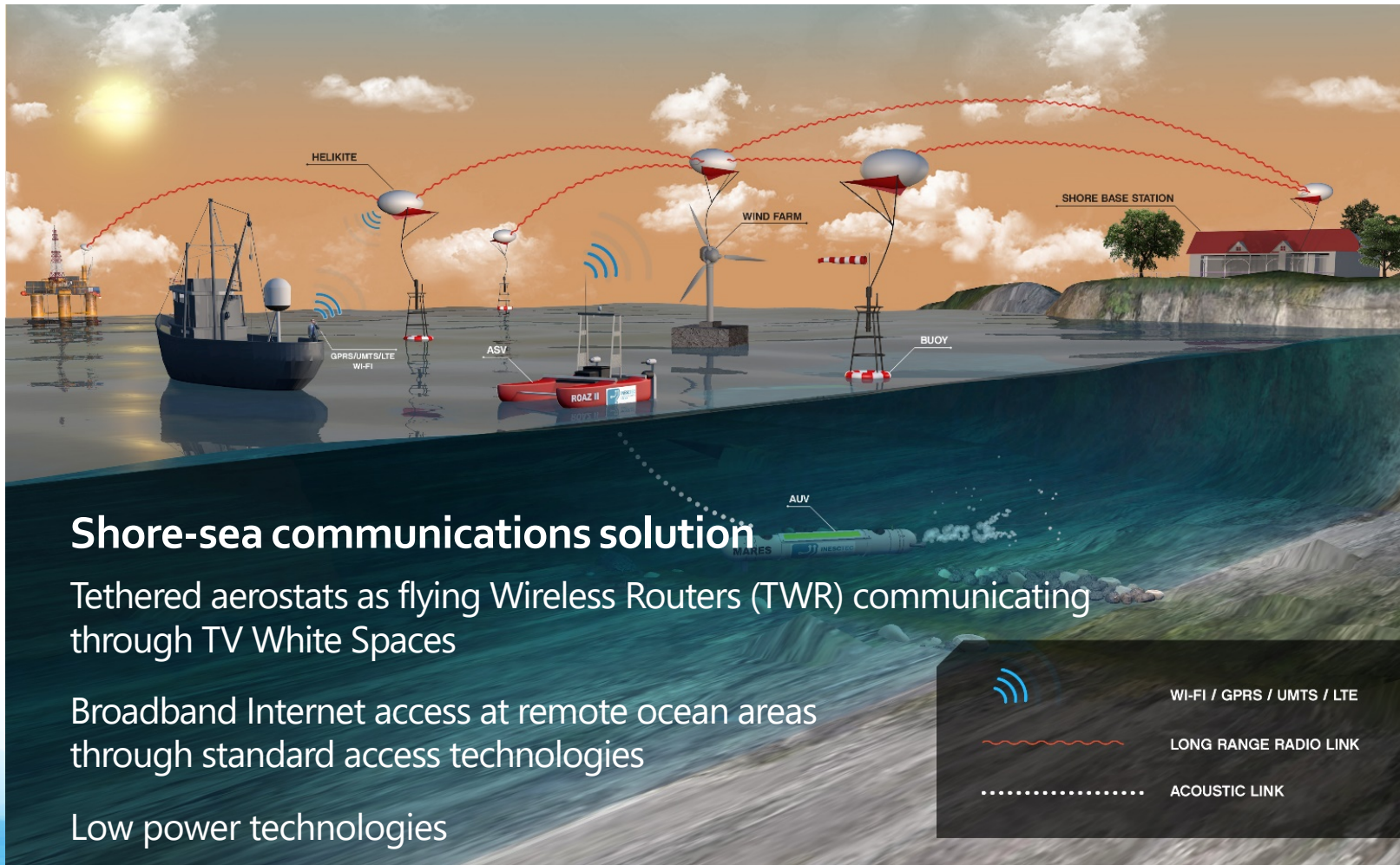**Satellite –** high costs and narrowband

VHF Radio – narrowband and half-duplex

Mobile GPRS/3G/4G – broadband, only near shore

There is **no communications solution enabling broadband, cost-effective Internet access at remote ocean areas** in alternative to satellite
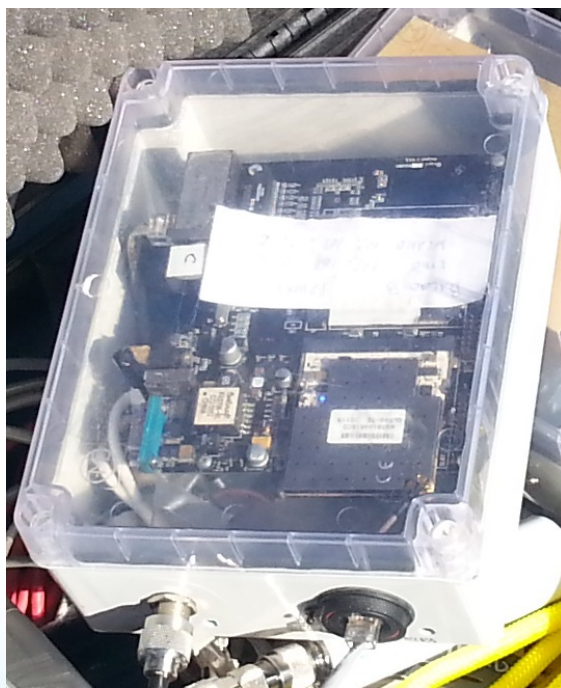
Concept

Shore-sea communications solution

Tethered aerostats as flying Wireless Routers (TWR) communicating through TV White Spaces

Broadband Internet access at remote ocean areas through standard access technologies

Low power technologies

Implementation

Communications box

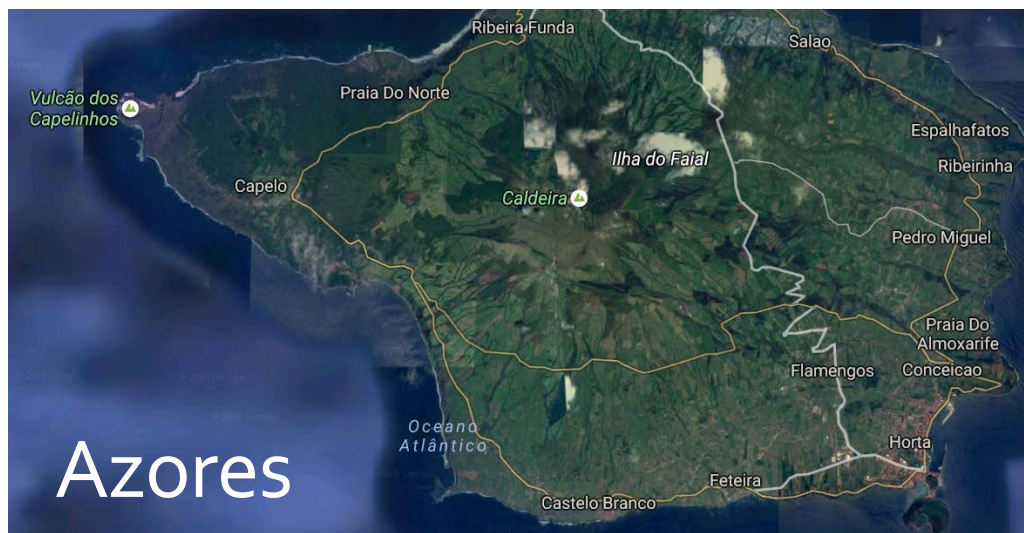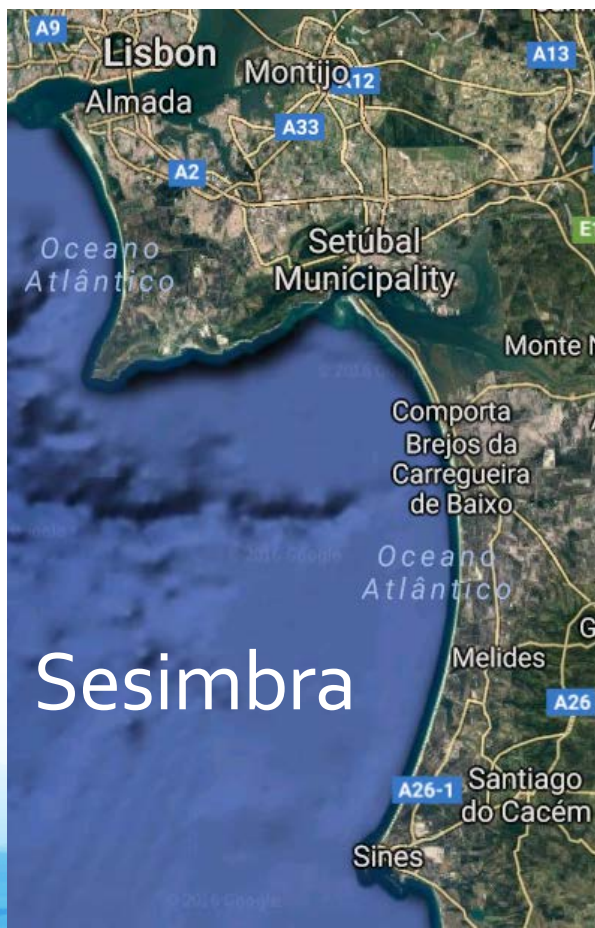Single Board PC, wireless interface cards, designed antennas, and software

Implementation

Familiarization with aerostat operation

Launch at INESC TEC building

Sea trials

July and September 2016, April 2017

Sesimbra

Azores

Sea trials

Sesimbra campaigns

Cabo Espichel

Land station
165 m above sea level

Sea trials

Sesimbra campaigns

NRP Auriga

1.5 Mbit/s up to 42 km

MARES

Sea trials

Sesimbra campaigns

NRP

0.7 Mbit/s up to 52 km

Bolhas

Sea trials

Sesimbra campaigns

Video conference at 40+ km from shore

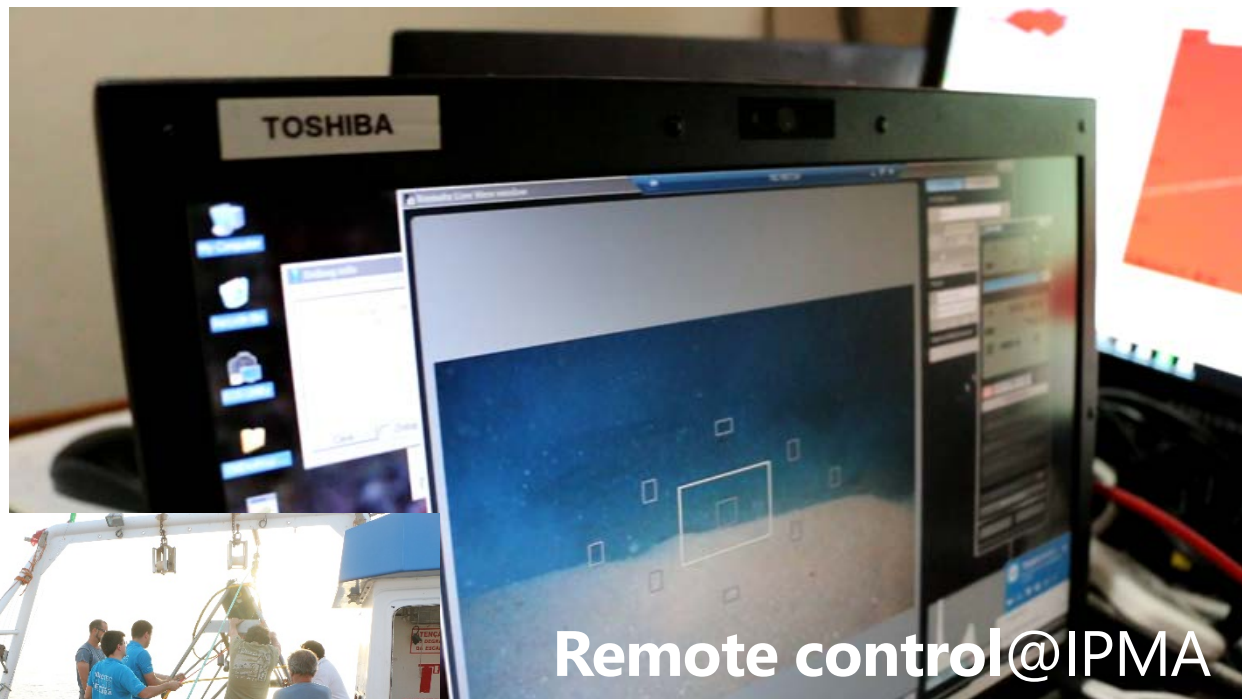# Sea trials

Sesimbra campaigns

Sea trials
Sesimbra campaigns

Seaspyder

Remote control@IPMA

Diving ...

Conclusion

Convergence to Maritime Internet of People and Things
demands wireless communications for humans and systems

Problem …
affordable broadband Internet access lacking offshore

BLUECOM+
cost-effective solution extending broadband from land **beyond 50 km**
from shore with bitrates up to **1.5 Mbit/s**

Thank you!

http://bluecomplus.inesctec.pt