

### Wireless Crab Pot Counting system

McBride Fishing Company Ltd is a successful crab fishing company based in Downings, Co. Donegal with over 50 years' experience in the fishing industry. The company operates three crab boats in the 18m-26m range. McBride Fishing provide a continuous year-round supply of high quality crabs to the European and worldwide markets. The company approached the WiSAR Lab having been signposted by Bord Iascaigh Mhara (BIM).

**Funding:** Enterprise Ireland Innovation Partnership

#### PROBLEM TO BE SOLVED

McBride Fishing has had a long standing issue with losing fishing pots from their fishing lines. Each line is about two miles in length and has around 100 pots attached weighing 20Kg each. The company currently have over 6,500 pots in use on their fleet, and do not have any automated method of detecting the number of missing pots, relying on manual stock checks. The company required a system which would maintain a live record of how many pots are placed on each line, the location of placement when each pot goes out to sea and an automated count of how many pots are returned. Furthermore, the boats have a number of chutes on deck that feed into large crab storage tanks as well as chutes that are used to return unsuitable crab to the sea. The company expressed interest in developing a system that would count the number of crabs passing through each chute.

#### WiSAR SOLUTION

This project aims were split into the development of three technical areas

- A system to automatically count and record the number of pots deployed to sea and retrieved
- A count system to count the number of crabs going into each chute
- A backend database system to record data on the number of crab pots deployed, number of pots retrieved, entry location, return location, number of crabs caught and number of unsuitable crabs returned to the sea

The WiSAR solution was to develop rugged UHF RFID tags to be attached to the each of the pots. An RFID reader was customised with a bespoke antenna and strategically placed on the boat to detect tags as they leave and return to the boat. Each RFID tag has a unique ID which is recorded in the on-board database. The database software then utilises the boat's GPS system to attach a GPS location for a pot at each instance when it is being deployed and returned to the vessel. In order to detect and count the crab numbers, infrared sensors were deployed on each chute. These sensors were used to establish a count which was then relayed to the database.

## Wireless & Network



## Sensors Used



## IMPACT & BENEFITS

The development of the prototype counting system allows McBride Fishing to have a database containing the quantity and quality of crabs being caught which can then be used to outline crab stocks and where they are located. This data will be used to generate reports incorporating GPS attributes to determine the results of each fishing trip while indicating the location where pots were lost for future reference. Furthermore, it will assist the company to determine the cause of lost pots and assist with stock checks. Future commercialisation of the system will include utilisation of the vessel's Satcom system to provide real-time data analytics.



# WiSAR Lab

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### ABOUT WiSAR

The Wireless Sensor Applied Research Centre (*WiSAR*) provides solutions to industry for The Internet of Things (*IoT*) using expertise in wireless, embedded systems and power electronics. *WiSAR* is an established versatile engineering group experienced in a wide range of electronic challenges from industry. As technology is proliferating into all sectors we help companies develop products and integrate solutions into their systems in sectors such as Healthcare, Fashion, Sports & Tourism, Industrial Control, Environmental Management, Renewable Energy and Electric Vehicles.

We work with companies throughout Ireland (North & South) and can assist our clients draw down European and State research funding.