

# Catamaran controlled by mobile phone via Bluetooth

## Introduction

The project consists to build an ecologic catamaran controlled by mobile phone via Bluetooth technology, which all the power supply comes from the renewable source - sunlight and central processing unit (CPU) is implemented by Mbed NXP LPC1768 Microcontroller programmed in C++.

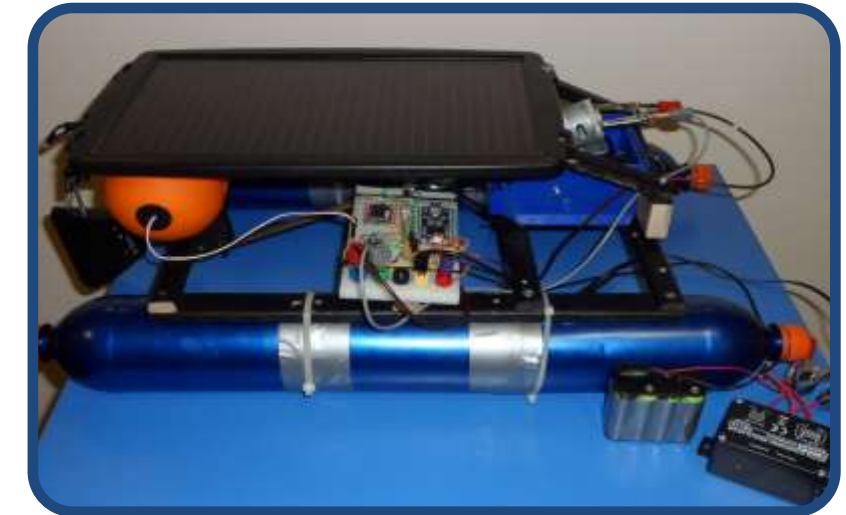
## Methodology

Once the CPU powered, the Bluetooth module will be able to pared and connect with a mobile phone using SPP – Serial Port Protocol.

The set of keys chosen, it will drive the catamaran, when they are typed on the mobile phone, using BlueTerm App (SPP emulator for Android Systems).

The microcontroller receives the data through Bluetooth module and computing it into a function that applies PWM – Pulse Width Modulation signal as an output to drive the DC motor and Servo motor.

### Controlling Servo position with PWM



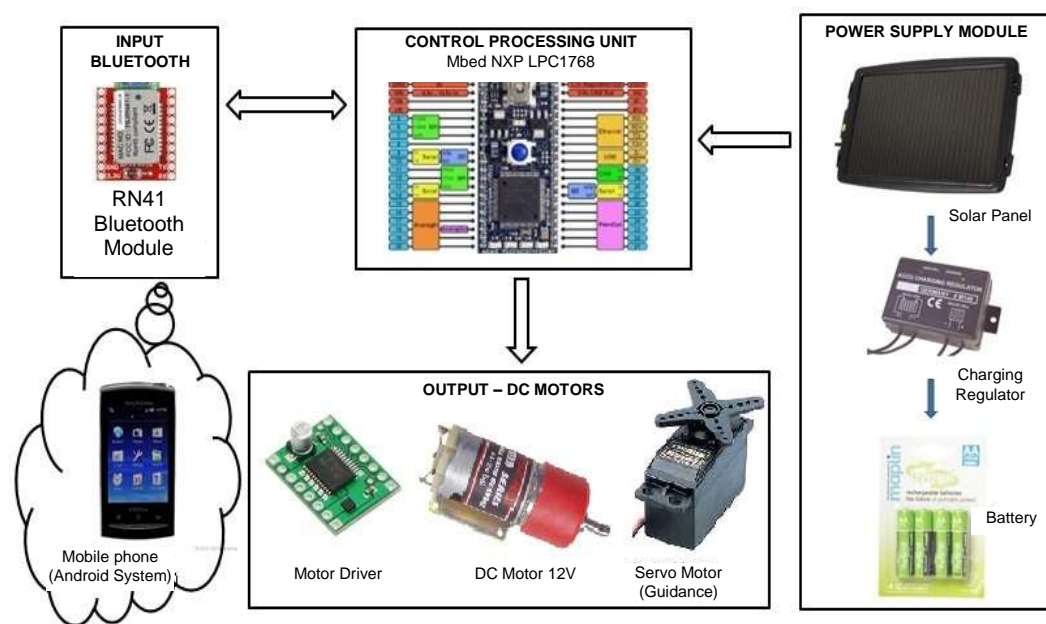
Catamaran (prototype)

## Conclusion

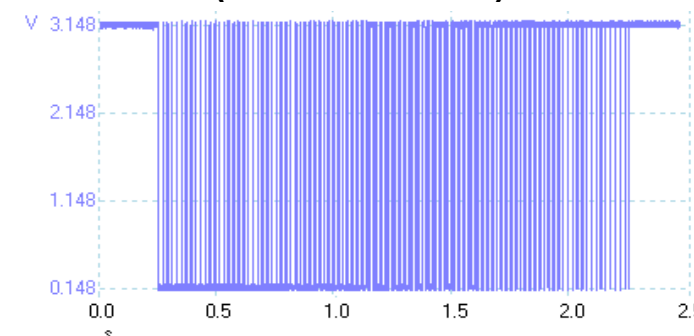
This project gives a complex and useful procedures to implement an embedded system. The usability of renewable sources is one of the main aspects, together with such portable system. It delivers many ways to control any plant (device, room, object, environment, etc.).

The Bluetooth technology is only one option, future work can be done by GPRS or different network communication. The control of the catamaran can be developed using an accelerometer and it will be controlled by motions.

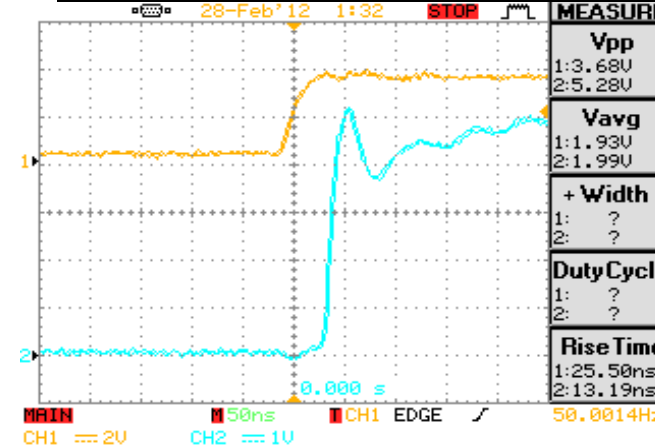
### Layout of the System



### PWM for DC Motor – Speed (Forward/ Reverse)



### Step Response - Settling Time DC Motor



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