Description of the System Function.

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1. The system will turn on or off with a push button. To the system start will be turn on the Green led to indicate that the system have begined and the red led will be turn on when the state of the system be off. When the device is on will be send a message through to SIM 800L Module.
2. Later the system is on, it will be verify each one of the parameters of the planting. If any variable are out of range execute a determinate action and send the alert message.
3. The first variable to be inspected will be soil moisture, if it is below the set range, the solenoid valve is activated to start drip irrigation for a set time and a notification message is sent.

   If, instead, the moisture of soil is over to the stablish range, will be send the alert message to the sowing manager.

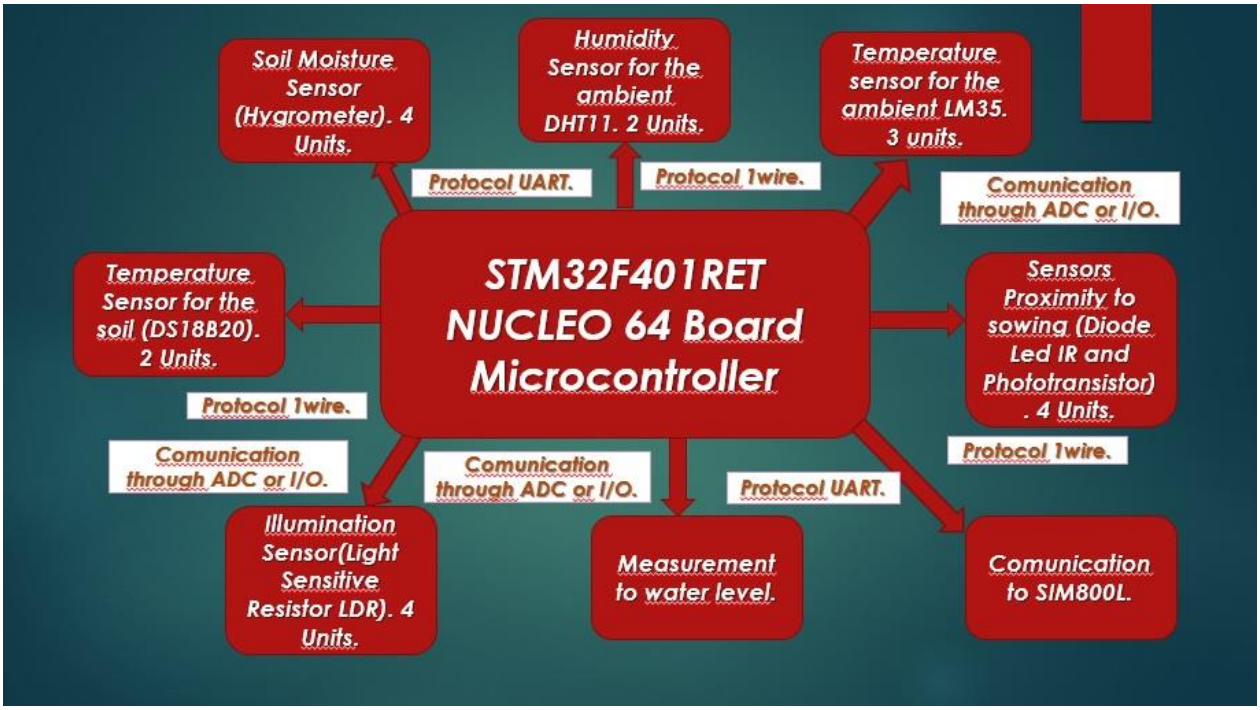
   If the system is with the soil moisture in the set range no action is performed, but after a certain time a notification message is sent.
4. The second variable to verify is the moisture of the ambient, if this is under the range will be actívate the relays to turns on the air conditioners and besides will be send the alert message to the sowing manager. If the moisture of the ambient is in the stablish range will be desactivated the relays who turns on the air conditioners or fans, after a while will be notificate through the message.
5. The third variable to verify is the ambient temperature. If its exceeds the stablish range will be actívate the relays that turns on the air conditioners or fans (in case that the relative moisture of the ambient and the soil doesn't over the range, since if is over the range doesn't active this relay but send the notification). If the ambient temperatura is under the range will be notified to the sowing manager thorugh message and desactivate the relays. If the ambient temperature is in the range will be turns of the relays.
6. The 4th variable to verification is will be the ambient illumination, it will be integrated by 3 sensors which all of them are LDR (Sensitive Light Resistive), when the light exceeds the range will be desactivate the relays that turns on the light bulbs and will be send the

notification message. When the system is in the stablish range or under this will be actívate the relays to turns on the light bulbs.

7. The fifth variable to consider is the detection of presence in the planting, if it detects presence in the specified zone in a certain time, relays are activated to activate emergency lights and emergency signals are sent.
8. 8. Measurement of the level of water in the tank is important since it indicates how much water is available to supply to the planting, in such a case that the level is low, alert messages are sent to the sowers.

After the first revision of the variables and determine that all the planting is stable, a notification message is sent to the plant manager that everything is in perfect condition. Then the system will constantly keep checking all the variables and if one is out of range take the forecasts as the case may be, otherwise the system will remain checking the variables and it will be possible to request information to the system through the SIM800L module and even indications What actions to take. The system will also be able to send information through the module SIM800L constantly from the planting, as well as its configuration. Everything will be working on the microcontroller under an RTOS operating system.

Sensors and Actuators		
-	Inputs	Outputs
1	Push Button	Led RGB
2	Switch 2 estates.	Solenoid of 12V
3	DHT11	Relays to fans
4	DS18B20	Relays to light bulbs
5	LM35	
6	LDR	
7	Soil Moisture Sensor	
8	Diodo Led IR	
9	Phototransistor	
10	Water Level	
11	Sim 800L	


Soil Moisture Sensor (Hygrometer). 4 Units.
Humidity Sensor for the ambient DHT11. 2 Units.
Temperature sensor for the ambient LM35. 3 units.
Protocol UART.
Protocol 1wire.
Comunication through ADC or I/O.
STM32F401RET NUCLEO 64 Board Microcontroller
Temperature Sensor for the soil (DS18B20). 2 Units.
Sensors Proximity to sowing (Diode Led IR and Phototransistor) . 4 Units.
Protocol 1wire.
Protocol 1wire.
Comunication through ADC or I/O.
Comunication through ADC or I/O.
Protocol UART.
Illumination Sensor(Light Sensitive Resistor LDR). 4 Units.
Measurement to water level.
Comunication to SIM800L.