NIDO is on TRL 4 (01/2019) (Technology Readiness Level 4 https://www.nasa.gov/pdf/458490main_TRL_Definitions.pdf), we have build a prototype that demonstrate feasibility, basic fuctionality of the system on critical environment. Some of the pictures in link (https://labni.org/nido), has been taken with NIDO under paramo environment conditions of temperature, humidity etc. Software is a basic version allowing wifi , manual interoperability and movement sensing, infrared light and basic image shooting. Next stages of development are: Automation on networking M2M, IOT embedded system, interoperability through API with citizen science platforms (like inaturalist), and Android Mobile Application. N.I.D.O. will have three components:

• PARTICIPATORY SCIENCE PS
• NETWORK SISTEM NS (in this page i show early testing of camera) and
• ANDROID MOBILE APPLICATION. AMA

N.I.D.O.
Network Interactions Designed For Observation
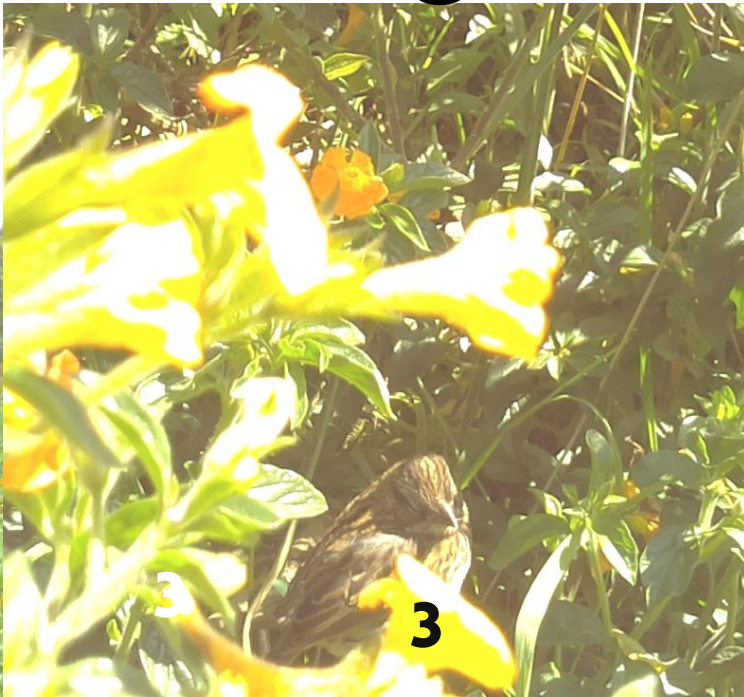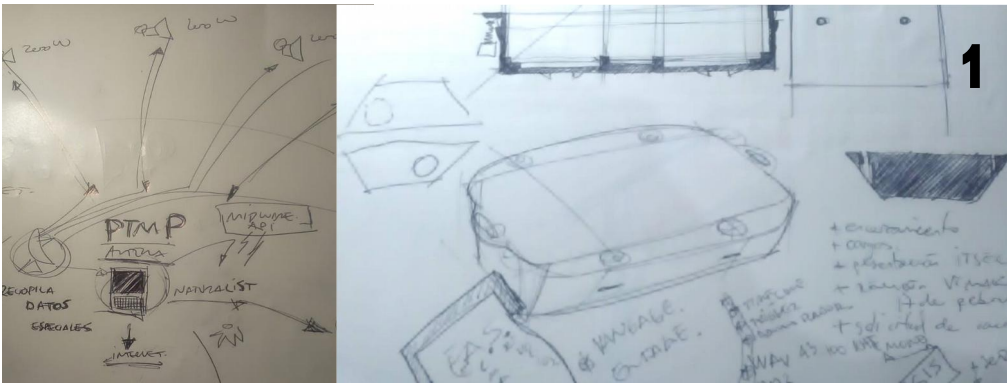
Hugo Bautista Reyes
Industrial Designer

1. Early sketches and network topology.
2. Coeligena Elianthea
https://www.inaturalist.org/observations/19404041
3. Zonotrichia Capensis
https://www.inaturalist.org/observations/19404045
4. Diglossa Lafresnayii
https://www.inaturalist.org/observations/19404047
5. Camera testing prototype
6. Motion sensing testing
7. NOIR camera testing
8. Singleboard testing

The aim of the device is to sense different variables of the aquatic environment, such as temperature, salinity, contamination, presence of chemicals.

Because the device will be anchored to a buoy which will be floating in the Caribbean Sea, its enclosure must be IP67, the metal assembly and the device must be resistant to the corrosive saline environment, therefore the housing of the device is made of POLYPROPYLENE and the metal assembly has a coating by electrodeposition.

Plastic housing consists of 4 pieces which are designed based on the dimensions of the embedded system and accessories such as:

Main electronic card, GPS and GPRS module, battery, wiring and connectors, button

emergency or panic. In the event of detecting unexpected changes in the sensed variables, it emits an alarm signal via GPRS.
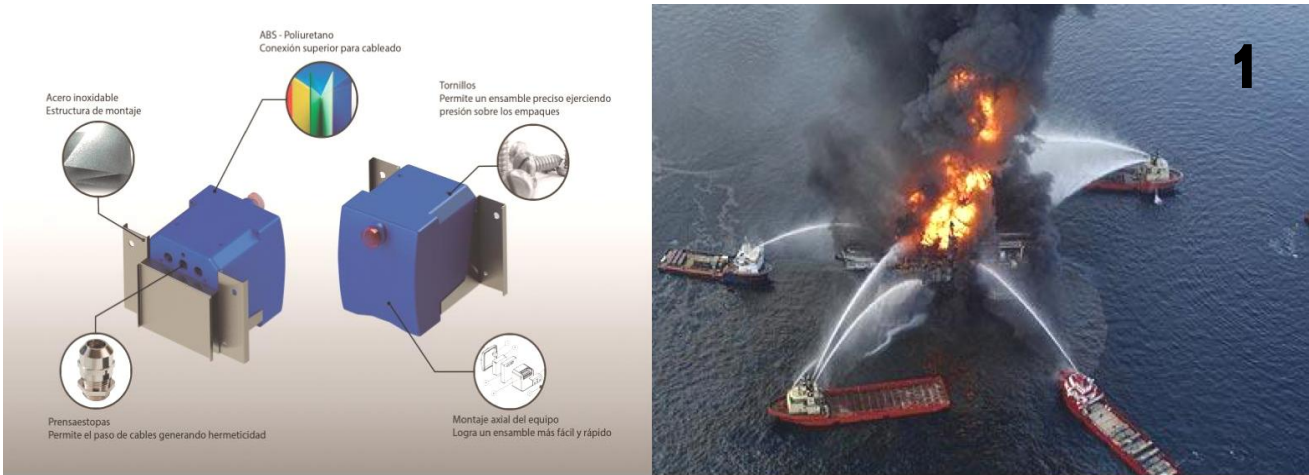
EMBEDDED SYSTEM – EARLY ALERT PORT BOUY
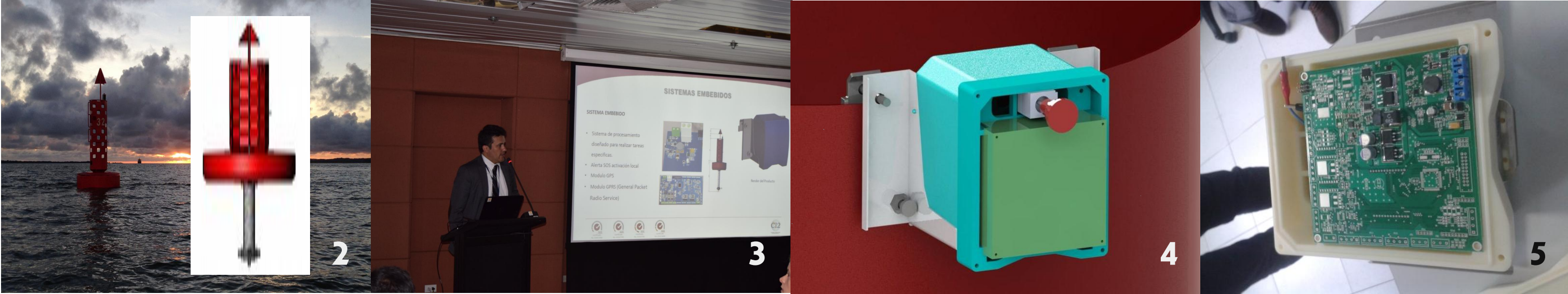
Hugo Bautista Reyes
Industrial Designer

1. Description scheme / emergency context.

2. Bouys type to be applied.

3. COLOMBIAMAR Conference 2015.

4. Installation renders

5. PCB/Assembly test

6. Emergency context, oil spill

7. Industrial Protoype

LED based photovoltaic traffic lights confirm to all the specifications related to Road Traffic signals.

Programmable day and night dimming of solar traffic lights conserve energy without having any impact on the visibility to the users.

The photovoltaic traffic lights have a very long life thanks to the polycarbonate casings which are 100% UV resistant and weather proof.

 the batteries used in these lights are heavy duty solar grade batteries giving reliable backup to the solar traffic lights
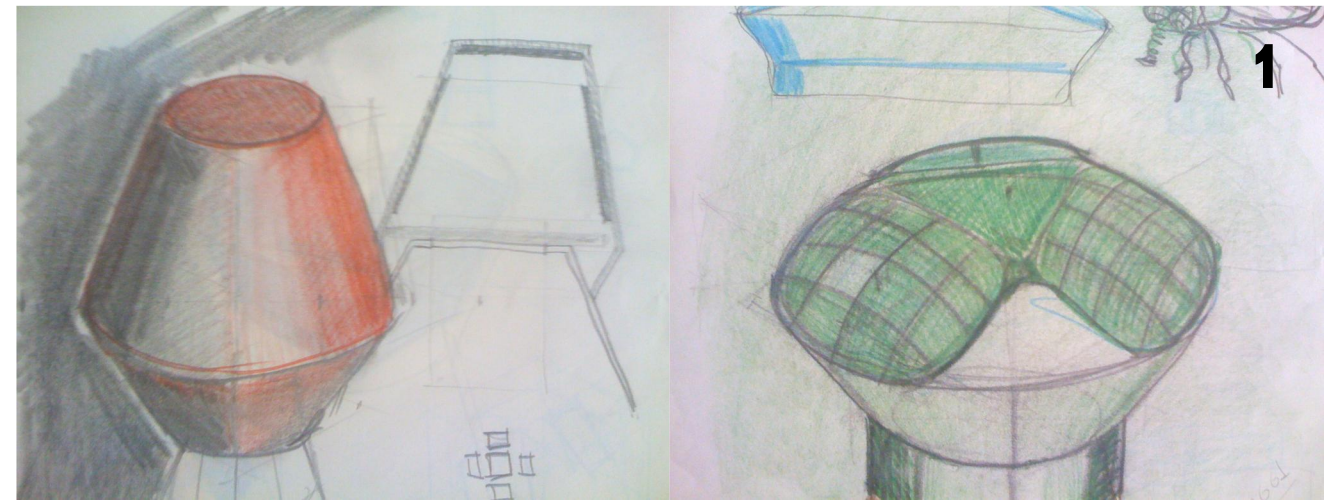
SOLAR CONE – TRAFFIC LIGHT

Hugo Bautista Reyes
Industrial Designer
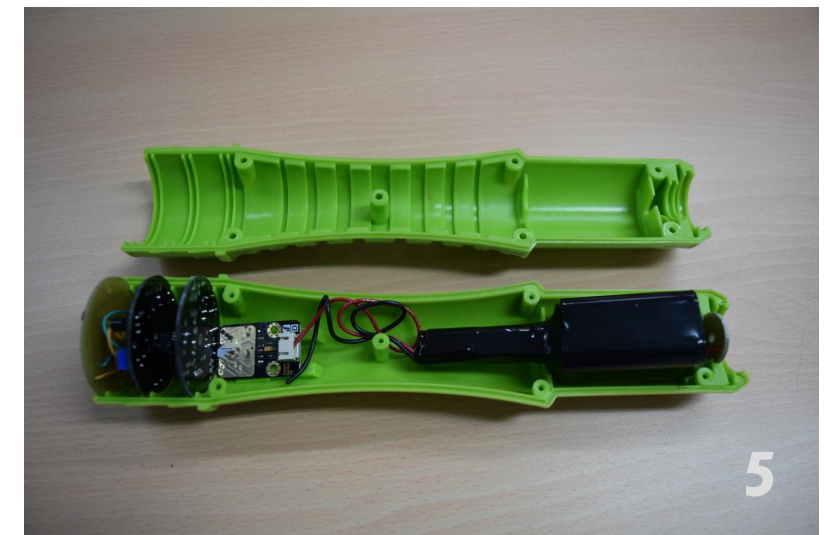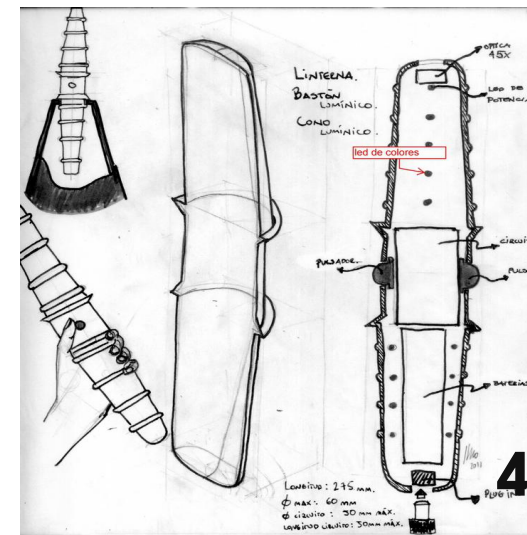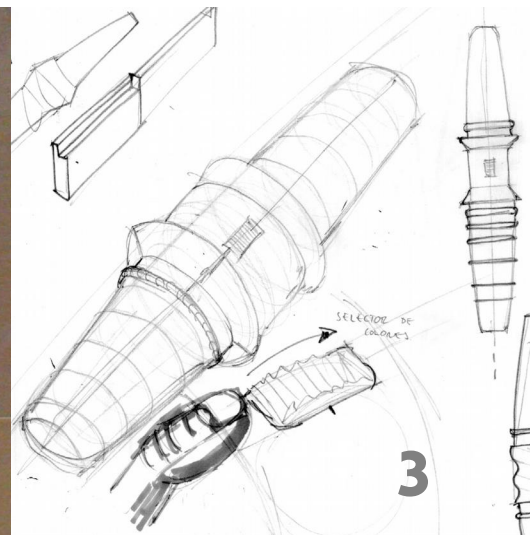
1. Early sketches.

2. Scale model 1/1.

3. Usability sketches.

4. Usabiltiy sketches

5. Assembly test

6. PCB/Breadboard test, rapid prototyping test

7. Final industrial manufactured product

The emergency light bar monitors video and generates a 4g streaming 4g, that could be remotely monitored.

The design and engineering team consisted of three electronic engineers and three industrial designers. After iterating the design process and obtaining several prototypes that tested different subsystems, the final design was obtained for manufacturing. Installed in the vehicles of the National Police, to ensure its durability the structure is manufactured by CNC in duralumin and the plastic components are 3rd. generation polycarbonate.


1
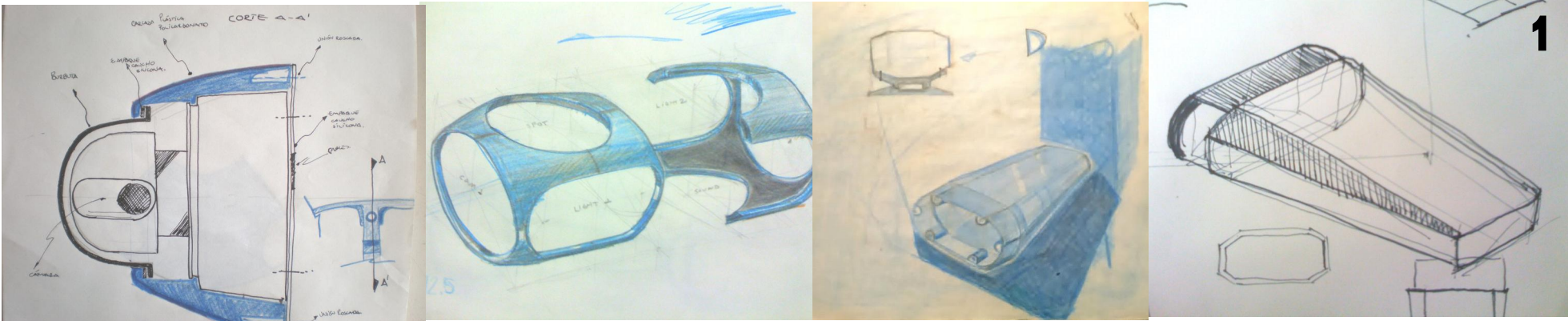
VIDEO MONITORING – EMERGENCY LIGHTBAR

2

3

4

5

6

Hugo Bautista Reyes
Industrial Designer
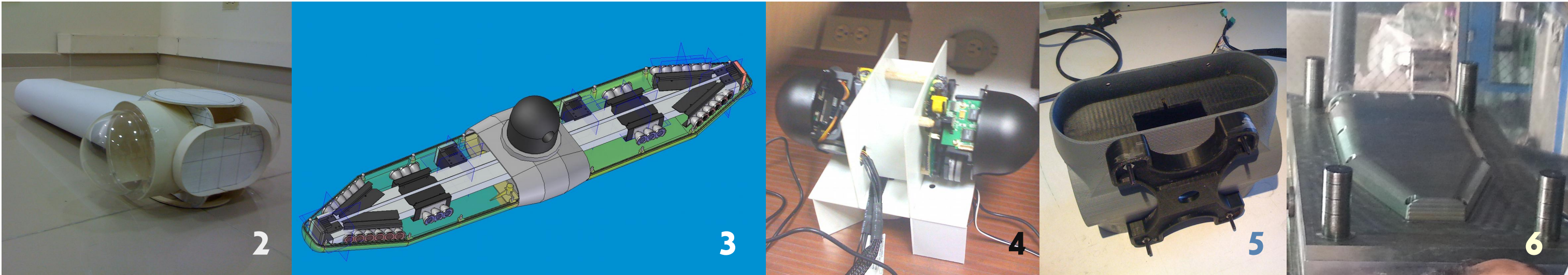
1. Early sketches.
2. Scale model 1/1.
3. Solid works render.
4. Early Electronic tests
5. Rapid Prototyping
6. Injection mould CNC Manufacturing
7. Some projects exhibition
8. Installed product on police vehicles
9. Policarbonate and Alluminum manufactured

7

8

9

This project was carried out inside the project "Strengthening the R + D + i in COMPAÑÍA INTERNACIONAL DE INTEGRACIÓN S.A. Ci2.", funded by COLCIENCIAS through call 534 - 2011. This project seeks to improve the competitiveness of the company through better management of innovation capabilities by implementing an industrial design project.

For IMO (International Maritime Organization) integrated bridge system is the combination of interconnected subsystems facilitating and centralizing access to information from sensors, command and control ship from workstations in order to increase efficiency and safety. An IBS can monitor and control: electronic navigation, communications, machinery and internal security of the ship. It Is a modular system that fits several types of vessel or can be applied in simulation.

# STRENGTHENING THE R&D+I: INTEGRATED BRIDGE SYSTEM
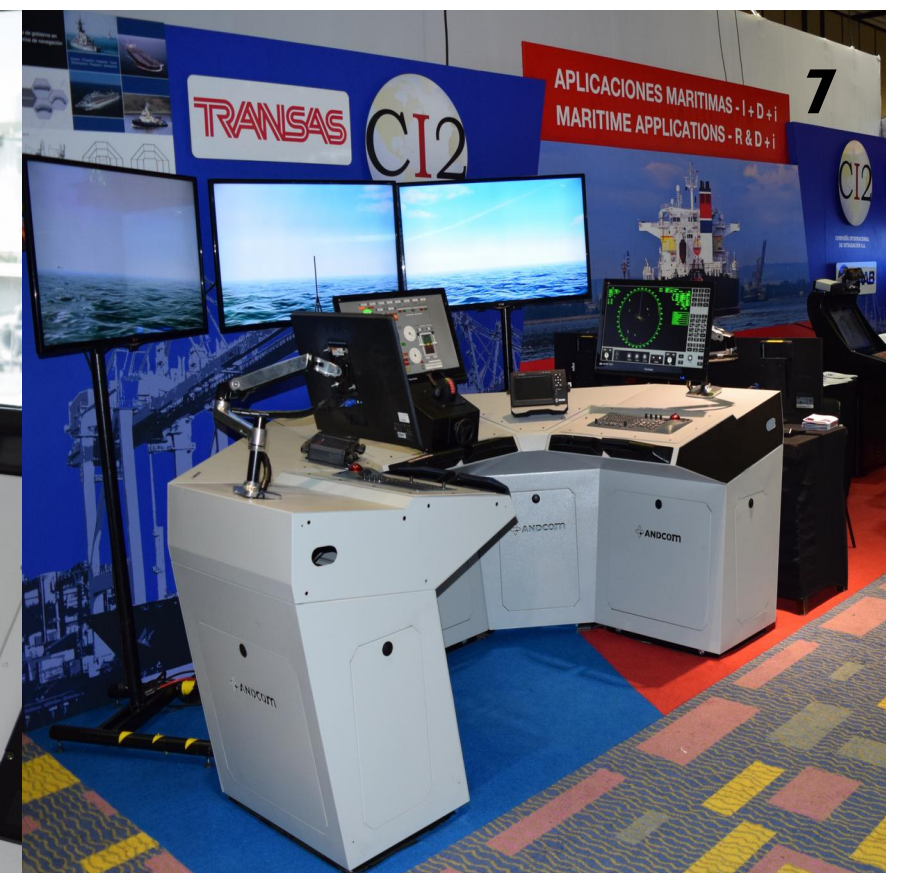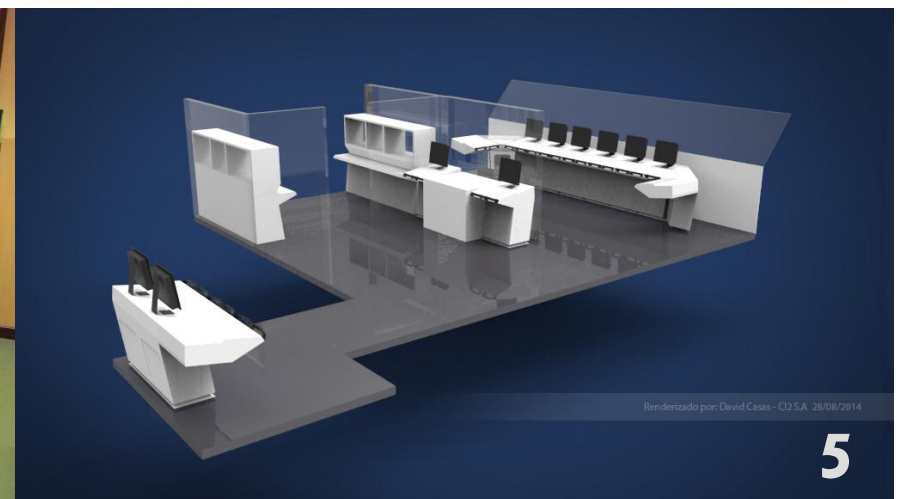
Hugo Bautista Reyes
Industrial Designer

1. Early sketches.

2. Scale model 1/10.

3. Industrial prototype.

4. Application on board ARC Malpelo Vessel.

5. Application proposal ARC Providencia Vessel.

6. ARC PROVIDENCIA HAT (Harbour Acceptance Test).

7. Simulator Application.

WADE Water Devotion URBAN SPRING MONITORING SYSTEM is on TRL 4 (01/2019) (Technology Readiness Level 4 https://www.nasa.gov/pdf/458490main_TRL_Definitions.pdf), We have build a prototype that demonstrate feasibility, basic fuctionality of the system on critical environment. under paramo environment conditions of temperature, humidity etc. Software is a basic version allowing wifi , manual interoperability, humidity and temperature measurements. Next stages of development are: Automation on networking M2M, IOT embedded system, interoperability through our citizen science web platform, and Android Mobile Application. N.I.D.O. will have three components:

• PARTICIPATORY SCIENCE PS
• NETWORK SISTEM NS (in this page i show early testing of remote sensor embedded system) and
• ANDROID MOBILE APPLICATION. AMA

WADE Water Devotion
Urban Spring monitoring system
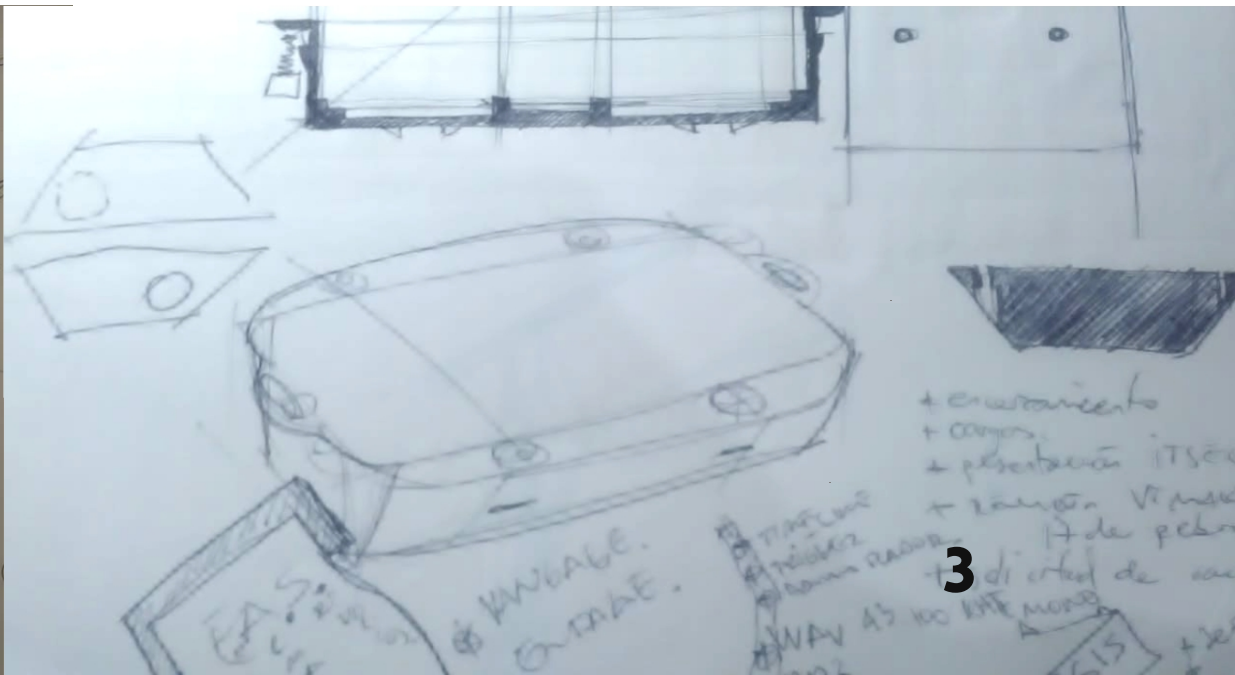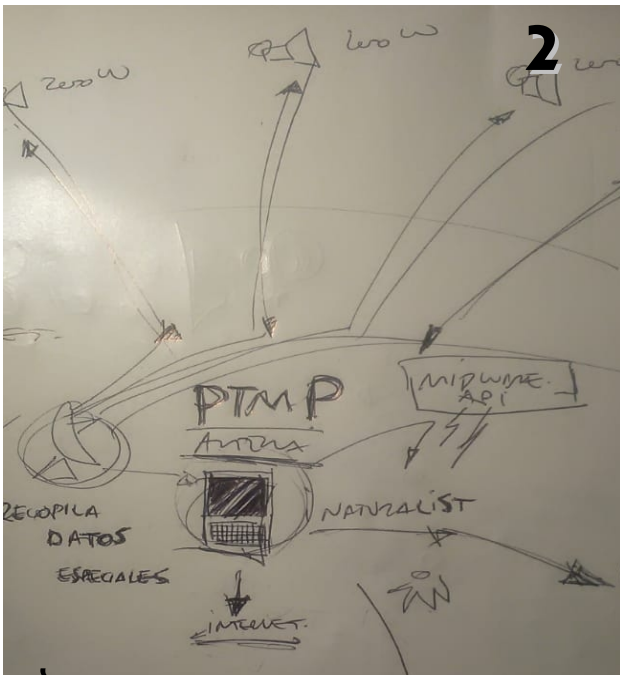
Hugo Bautista Reyes
Industrial Designer

1. single board computer early protype
2. topology sketch
3. enclosure sketch
4. How could be fieldwork
5. Bogotá, urban and rural zone to WADE