

Low Cost Data Collecting Platform Linked to Integrated System Of Environmental Data (SINDA)

SOUTO, Moisés Cirilo de Brito; MATIAS, Aryel Medeiros; NUNES, Letícia Souza; FIRMO FILHO, Almir Soares; LIMA, Lucas Bezerra de Medeiros; SILVEIRA, Max Miller; VITORINO, Bruno Augusto Ferreira.

MOTIVATION

Bearing in mind the wide variety of biomes in Brazil, one notes the necessity of monitoring the environment variables of different places, including more remote locations. However, conventional data collecting platforms are unaccessible and not all of them have an efficient system of centralization of data such as the Integrated System of Environment Data (SINDA).

OBJECTIVE

Therefore the platform integrated to SINDA, developed by the CCSL/IFRN seeks to increase the amount of data collecting platforms spreaded throughout the national territory as well as the disponibility of the information collected that can be accessed by those who are interested, not only the owners of the stations. And be able to display in real time, environment data such as temperature, atmospheric pressure of a specific region and to monitor them by the Nacional Institute of Space Research (INPE).

INTEGRATED SYSTEM OF ENVIRONMENTAL DATA (SINDA)

The SINDA is responsible for obtaining the meteorological, agrometeorological and hydrological data from all of the country.

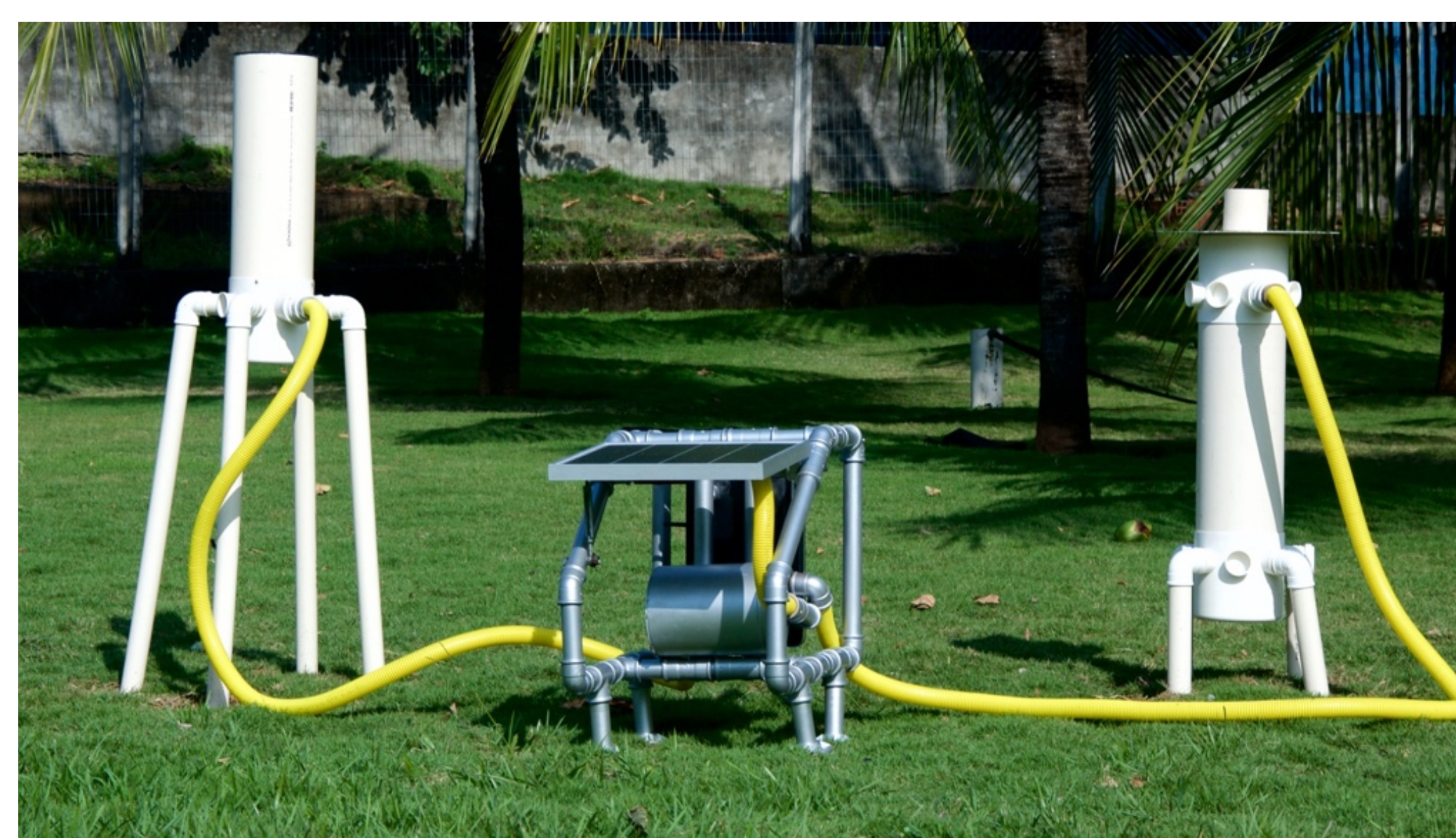
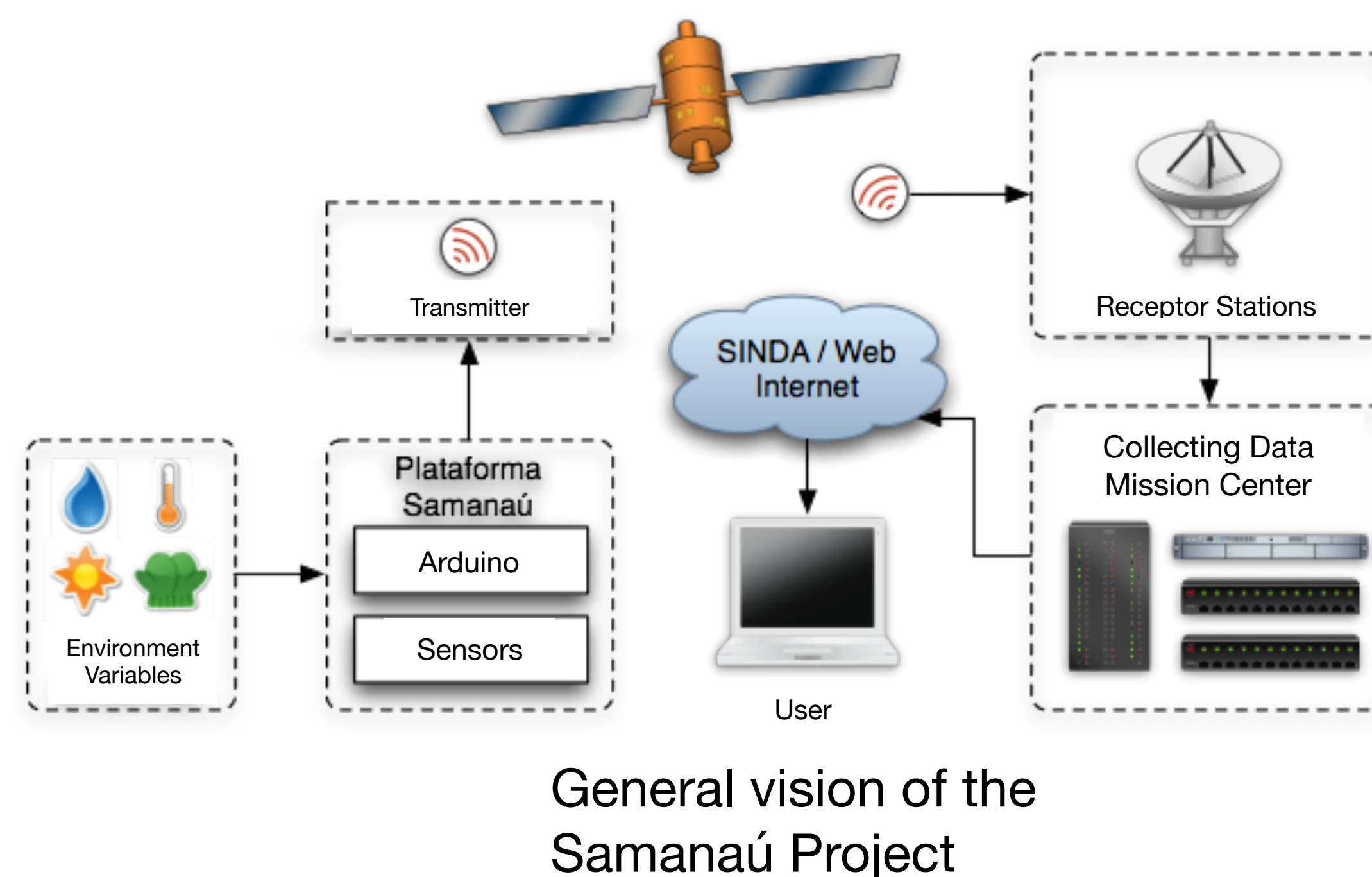
The informations collected by the PCDs are transmitted to the satellites, which are responsible to resend them to the antenna receptors located in Cuiabá - MT and Alcântara - MA. The antennas send what they receive to the Collecting Data Mission Center, located in the Northeast Regional Center of the INPE (CRN - INPE), where it's available via Internet.



SINDA
Source: CRN_INPE

THE SAMANAÚ STATION

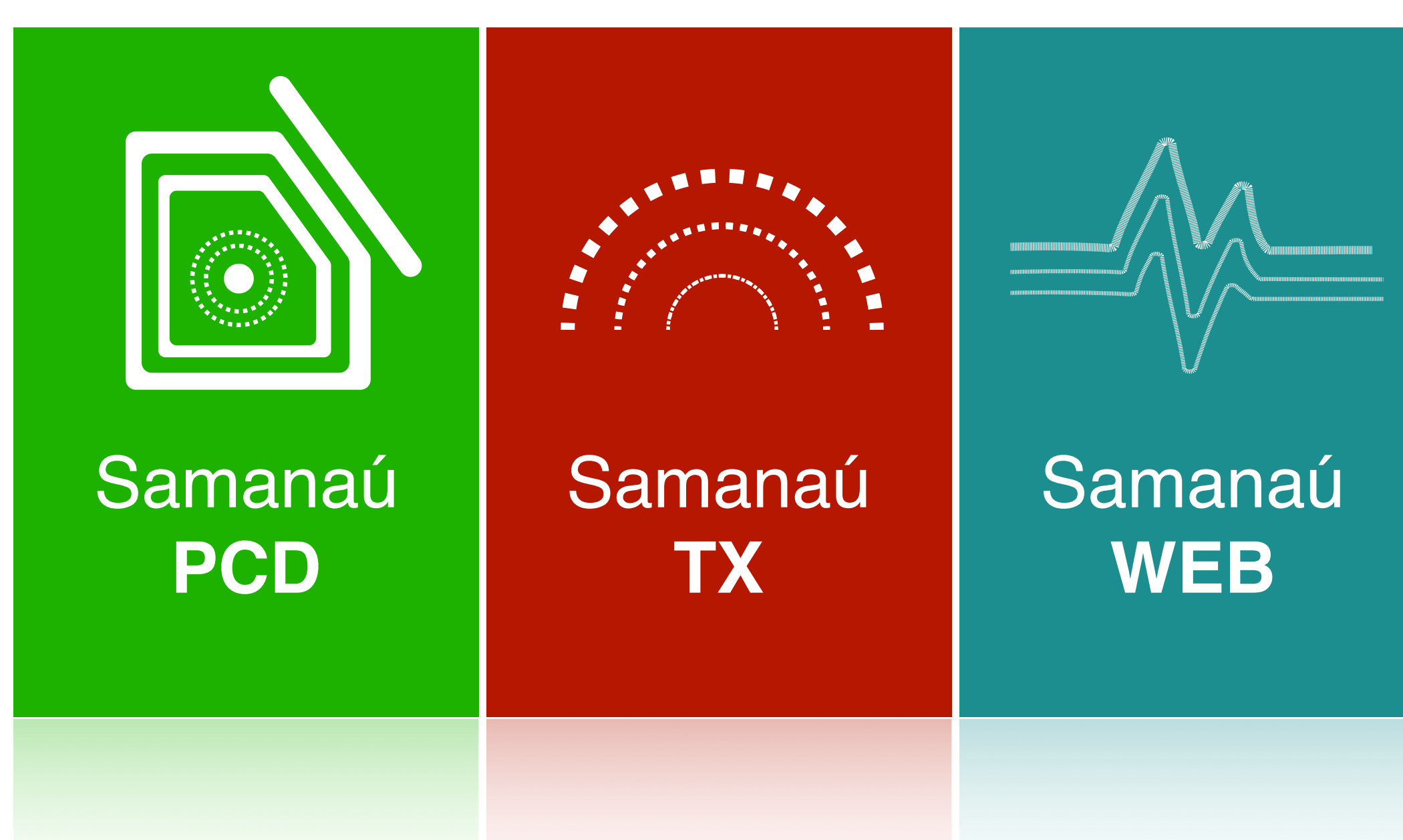
The developed station is a low cost, flexible, modular station that counts with a variety of sensors, which are able to collect a wide variety of different environmental variables, such as temperature, atmospheric pressure, precipitation and others, beyond its modular aspect, which enables the removal and the input of the sensors available according to the necessity of each owner. These variables can visualized on the SINDA's website, which receives the converted data sent by transmitter by the satellite ARGOS/SCD. The satellite is responsible for sending the data to SINDA, which is accountable for reconverting the information and providing it to its users.



Samanaú Platform in field.
Source: Personal Image

THREE PART PROJECT

The Samanaú data collecting platform system is composed by three main parts: Semanaú.PCD, Samanaú.TX and Samanaú.WEB.



The **Samanaú.PCD** englobes the low cost, self-sustainable station, that is easy to integrate, the micro controller and all of the of the different sensors.

The **Samanaú.TX** is the low cost (FPGA based) satellite transmitter that was developed to transmit data to the satellites of the Integrated Environmental Data System (INPE/SINDA).

The **Samanaú.Web** is the Desktop/ Mobile web platform compatible with different APIs which provides real time data along with historical consultation (graphs and statistics) about each station.

CONCLUSION

We implemented a flexible and modular system for data collection with an architecture that allows for mostly all types of use in the research field, this way, researchers can focus their attention just in the data, while the system deals with the details of collection, storage and sharing of the data.

The system uses a self-sustainable station for data collection, and an open-source web storage system, which allows for completely web based data visualization.

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