Online_v2 – An upgraded control & monitor software for GMRT

Presenter : Raju Uprade

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Online_v2 Team :-

Santaji Katore	**Charu Kanade**	**N.G.Kantharia**
Deepak Bhong	**Naresh Sisodiya**	**S.Nayak**
Sachin sherkar	**Mahadev Misal**	
Raju Uprade	**C Sateesh**	

Features of Online_v2

The features of OnlineV2 include :

(1) Parallel & fast control of 30 antenna

(2) Extensive web-based control data monitoring tools allowing for real time and statistical studies

(3) Full web based tools & support for observing in absentia

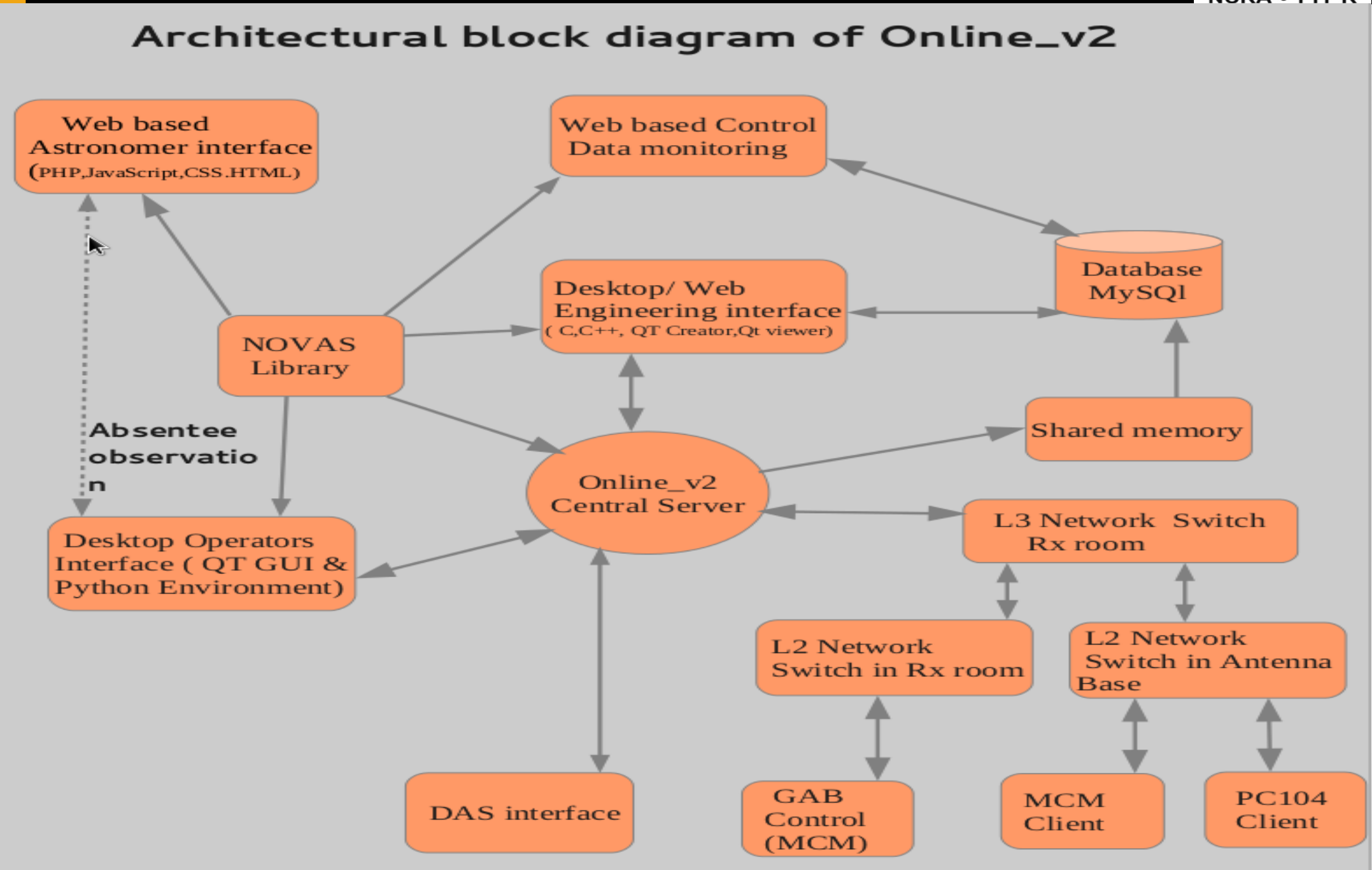
(4) Generalized & modular framework to support future expansion

(5)Customized graphical interfaces for operators, engineers and astronomers

(6) Fast background monitoring of system parameters

(7) Higher level Python Environment

Online_v2 Architecture diagram



Online_v2 core software

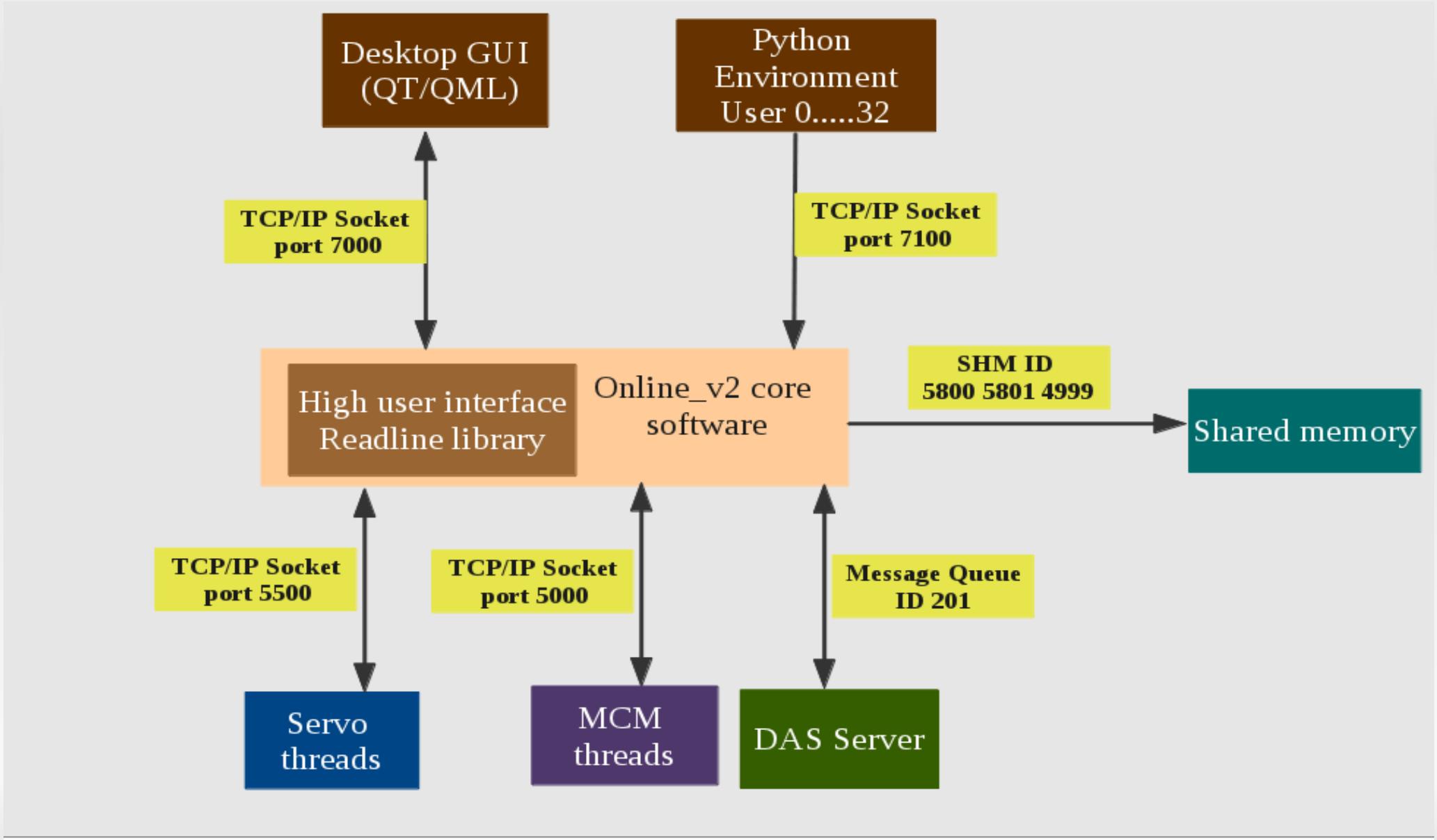


Fig : Block Diagram of Online_v2 core Software

Python Enviornment

1. Interactive command line environment for Online_v2 using Ipython.

2. Grouping of commands, custom procedure and automation in execution of science observations and system tests.

3. Power of Python is utilized in decision making on basis of complex logic of tasks.

4. Python package is developed to control all GMRT subsystems using Object oriented Programming. It provides API to control and monitor systems.

5. Exmaple :

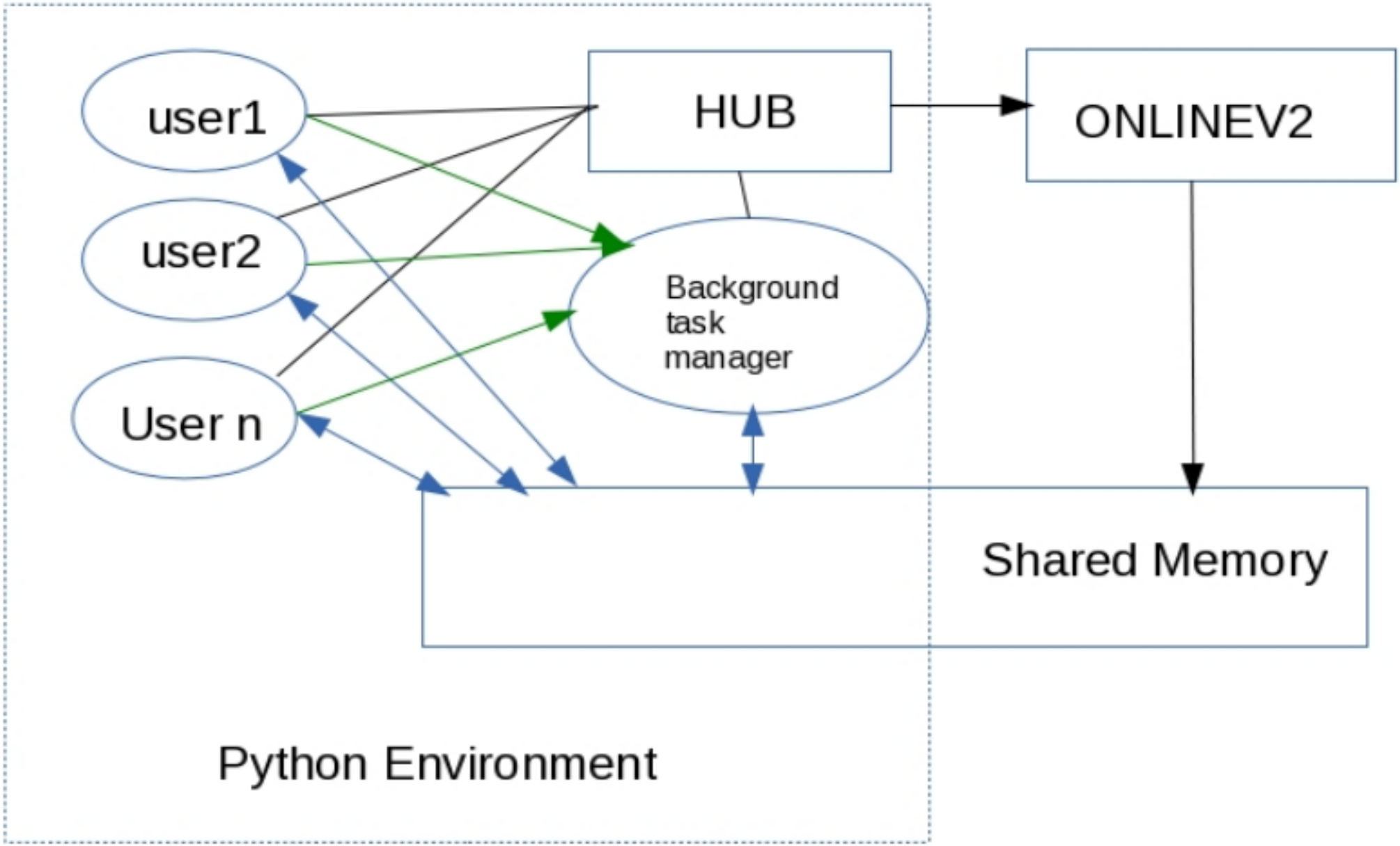
Move servo of C00 antenna in elevation by +10 degree

```
$ C00.servo.mvelev(10d)
```

GAB setting command to define sub array of antennas

```
$ gab.set()
```

Python Scripting Environment



Object Oriented Design of API

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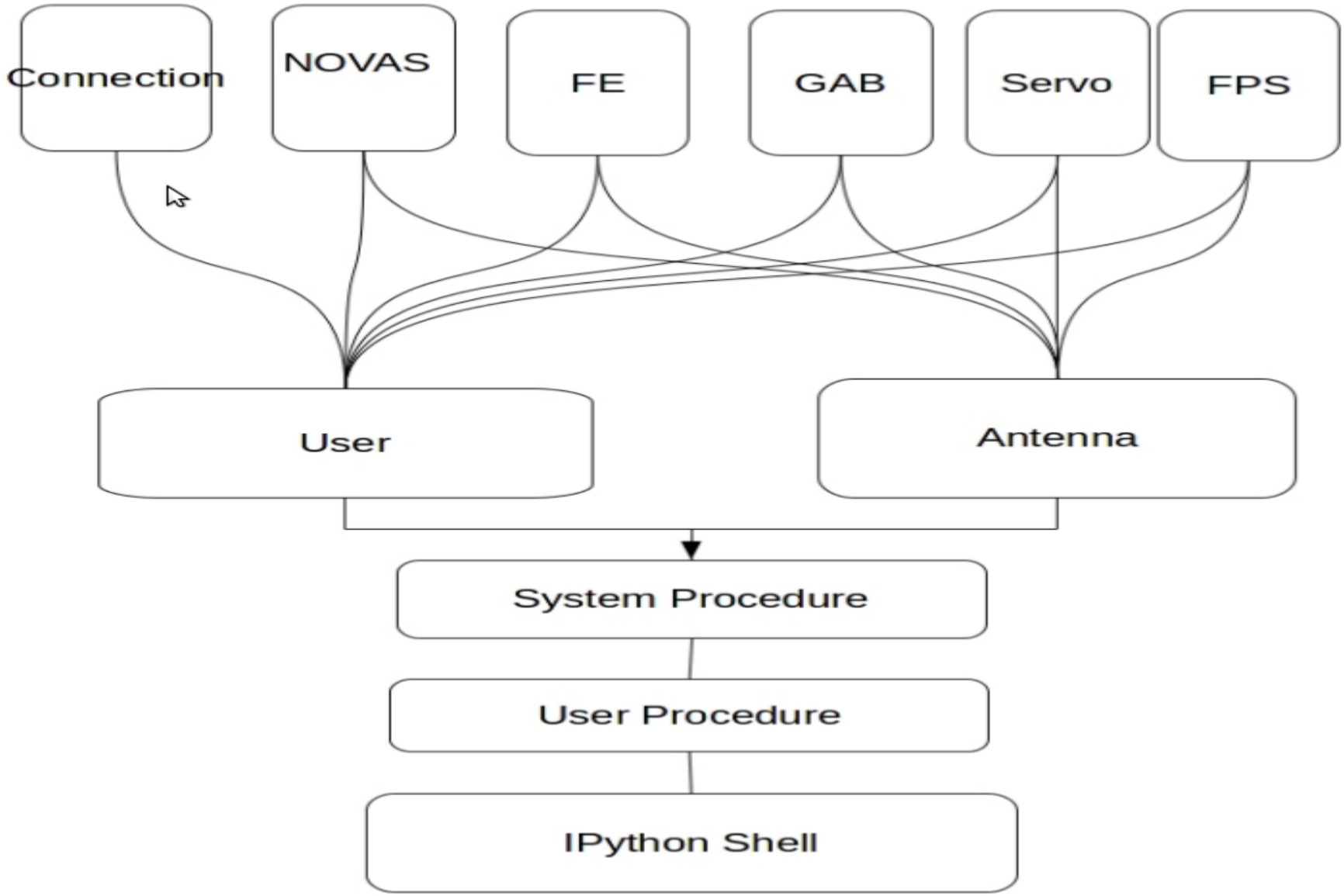
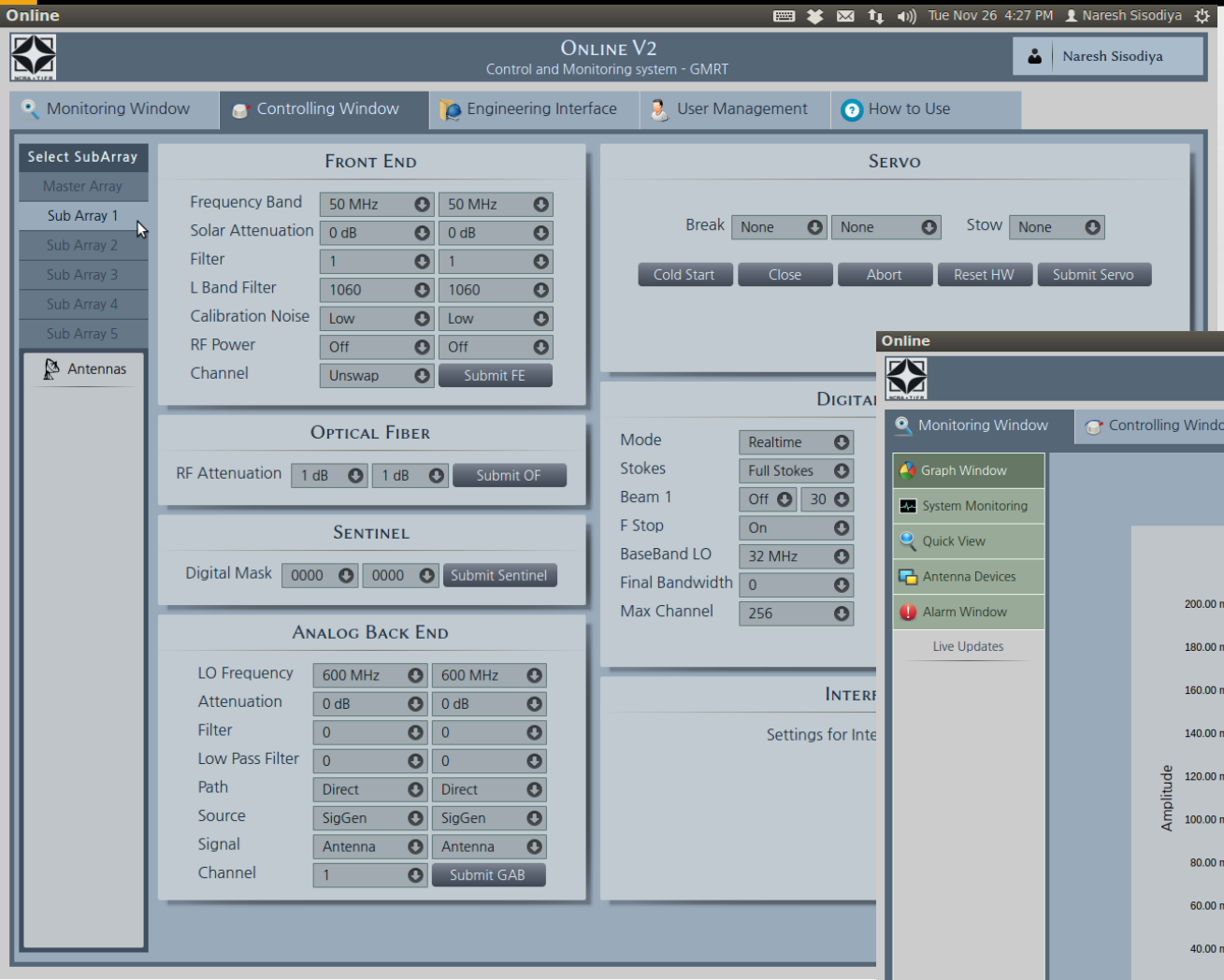
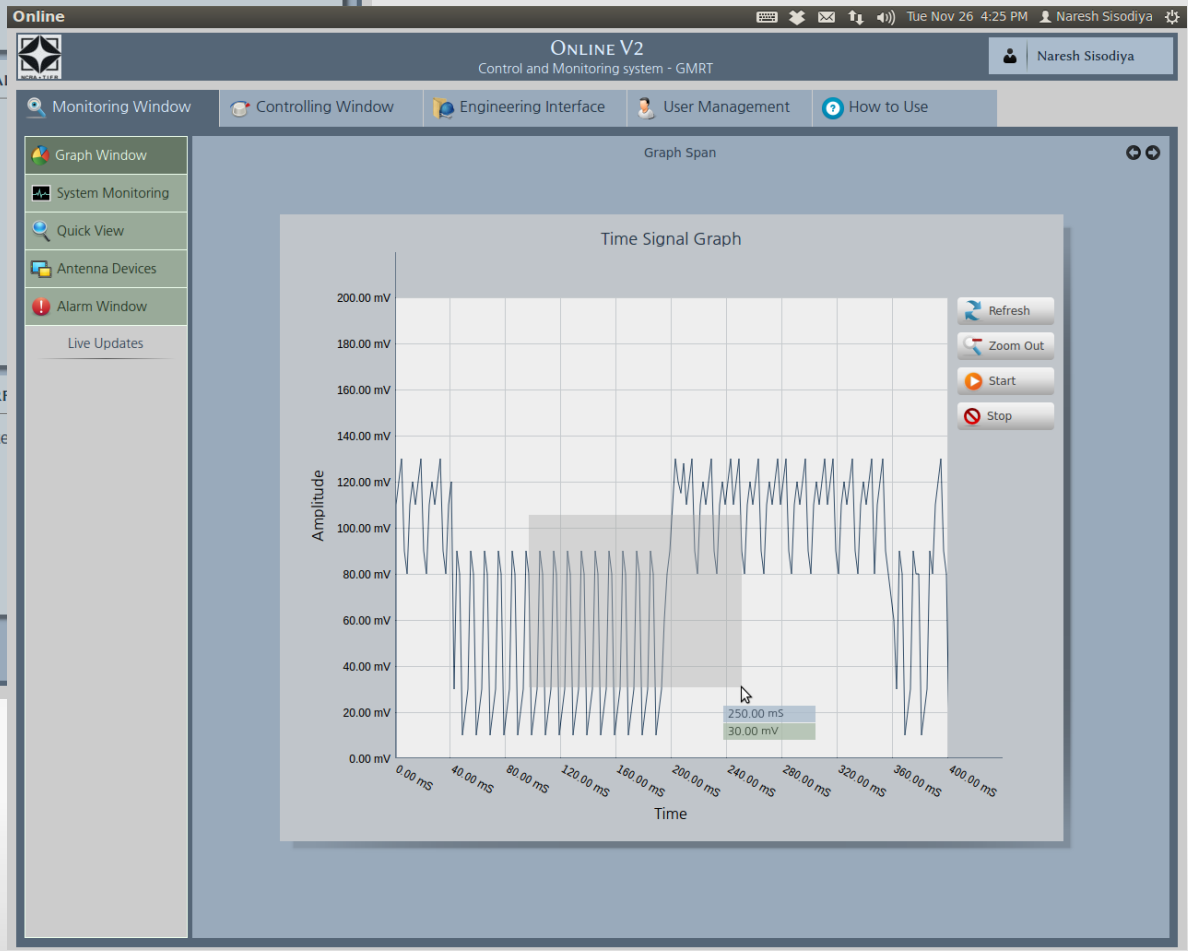


Online_v2 : QT/QML GUI





Online_v2 monitoring tools

c) Temperature monitor test:

One temperature monitoring unit was connect to the MCM card at C03 antenna. The data behavior was similar like existing online with higher resolution.

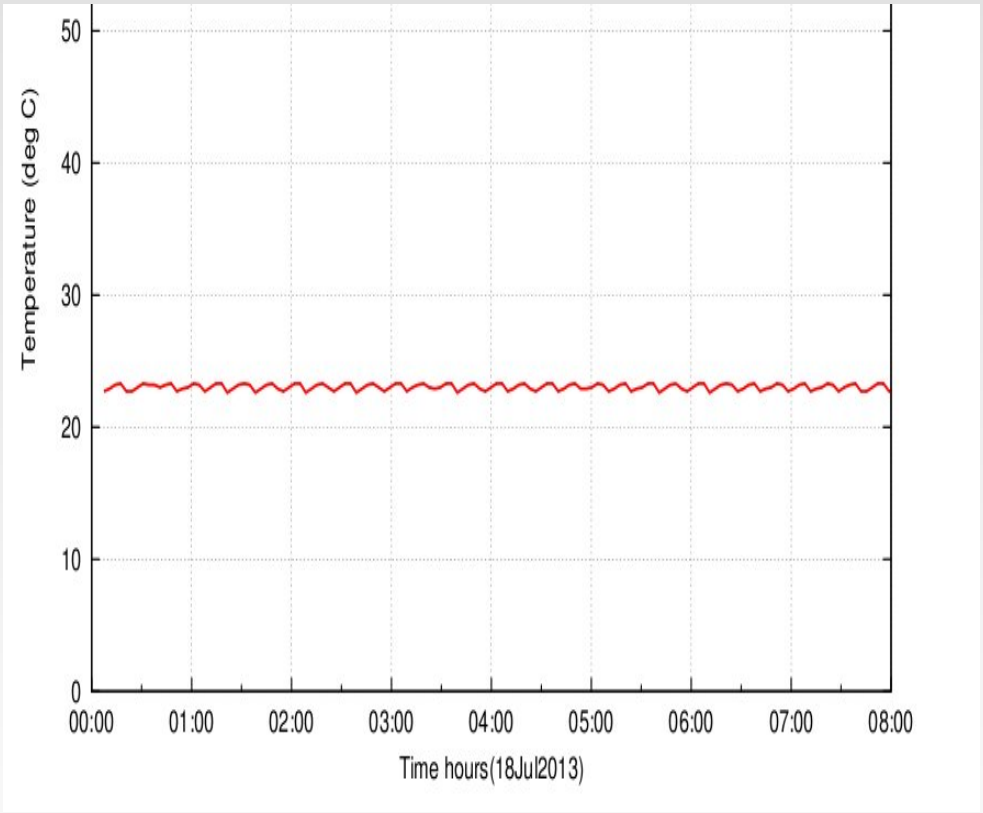


Fig. existing online temperature monitoring @ C03 antenna

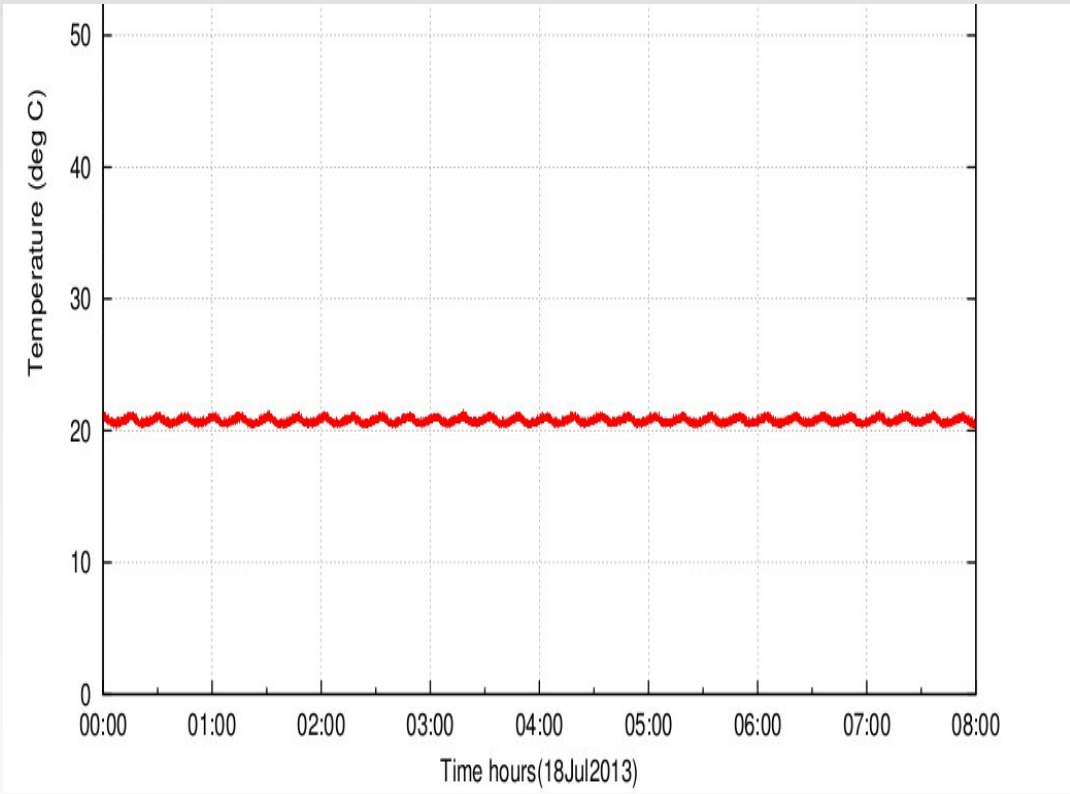


Fig. online_v2 temperature monitoring @ C03 antenna

Online_v2 details

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Software Languages used :

Insistence on using Open Software - LAMP

Software Language used: C, C++, Dynamic C, Perl, Python, PHP,HTML, Javascript, gnuplot, QT/QML

Database: MySQL

Libraries: XML, Readline, TCP/IP, HTTP, Pthread

Time Line

Project started: October 2012

Prototype Demonstration: April 2014

Three antennae tested software: October 2014

16 Antennae tested software : April 2015