Global InfoVision

ISO 27001: 2013 Certified

ISO 9001: 2015 Certified

# Proposal

**to**

**Accelerometer Research & Development Facility (ARDF)**
**Research Center Imarat (RCI)**
**Dr. APJ Abdul Kalam Missile Complex**

**For**

# "Design, Development and Implementation of Data Log Connectors"

ISO 9001:2008 Certified

CDIA+ Certified

Cisco Certified Network Professionals

Microsoft Certified Systems Engineers

Microsoft Certified Developers

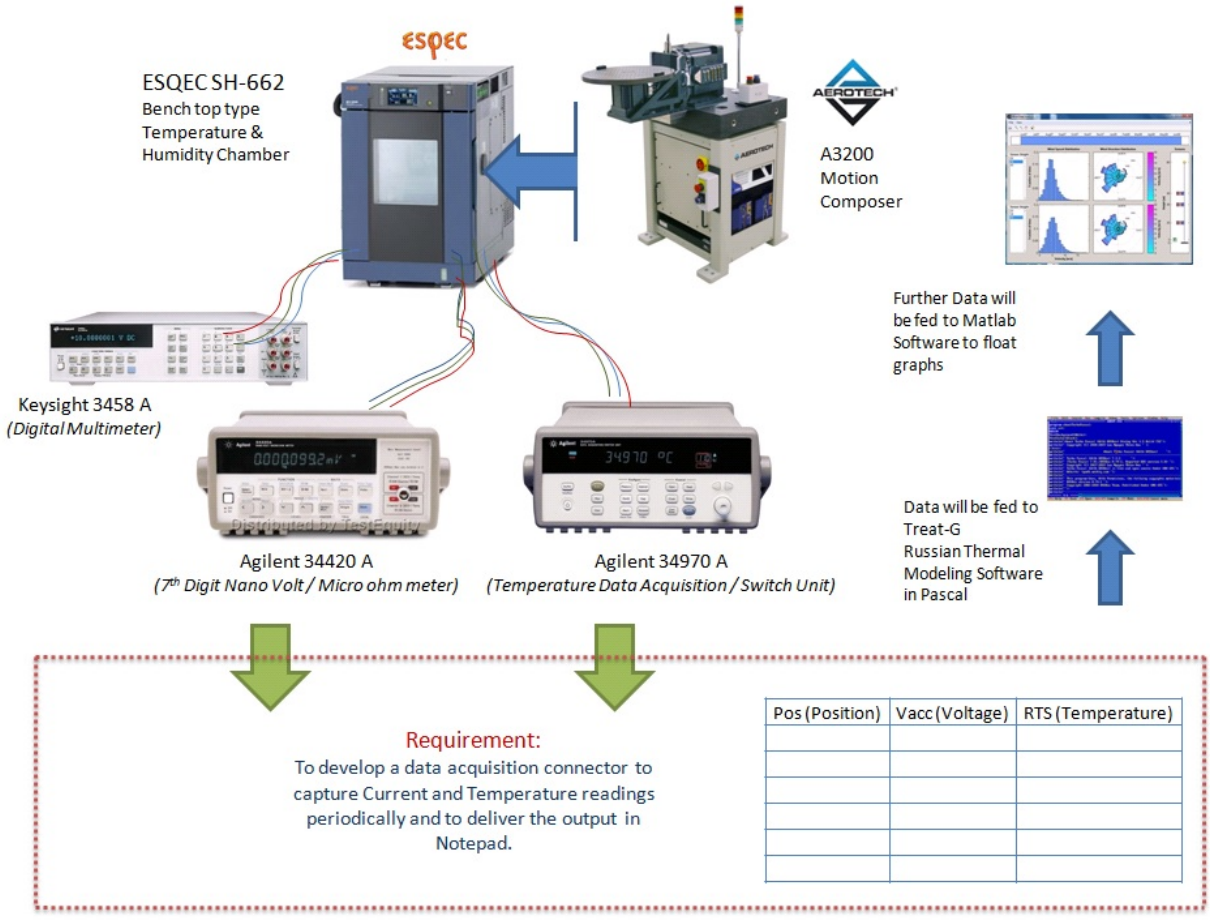
## Objective:

ARDF manufactures Sensors indigenously for their internal requirements as well as for Other Defence labs. ARDF would like to enhance the production and as part of their roadmap, they would like to automate the gaps in the testing procedures which are manually being addressed right now. Accordingly ARDF would like to develop data log connectors that helps in generating test reports automatically with lesser human intervention.

## Requirement

The objective is to automate the manual recording process of observed readings that are being generated during the component testing process. During testing process, Voltage and Temperature parameters are being recorded periodically and this numerical data will be fed to Thermal Modeling Software for further analysis. Further the data will be fed to MatLab for graphical analysis and review on the test data.

The requirement is to Design, Development and Implementation of Data Acquisition Connector to capture Voltage and Temperature readings being generated periodically during testing of components from the existing Agilent 34420 A and Agilent 34970 A equipment and to deliver the output data in notepad format so that ARDF can utilize the data for further processing using existing Treat-G and MatLab systems.



**Scope Of Work**

After preliminary study, it is observed that the automation has to be taken up at three areas in a phased manner.

***Phase 1:***

In this phase, the data i.e. voltage and temperature shall be acquired using rs-232 communication protocol from the Agilent switch 34970A. This data shall be written into prescribed file format. All the channels that are monitored are scanned using the step function in the switch.

Two different programs shall be made to automate the data log process.

1) The first program shall keep acquiring the data i.e. temperature and voltage every hour

2) The second program shall wait for an enter from the user, so that it can scan all the connected devices.

## Deliverables

| S.No | Item Specification | Qty | Responsibility with |
|---|---|---|---|
| 1 | Female to Female RS-232 Cable | Two Units | Vendor |
| 2 | RS-232 to USB Converter (TRENDnet USB to Serial Converter) | Two Units | Vendor |
| 3 | Personal Computer with Ubuntu OS installed | Two Units | ARDF |
| 4 | Internet Connectivity along with the Switch | Two Units | ARDF |

***Phase2:***

In this phase, the software adjusting the position and the switch program shall be integrated. The desired experimental goal of alternating the position and measuring the voltage shall be automated using AUTOIT programming.

Using the AUTOIT programming the obtained notepad files from the switch program shall be loaded into the Russian program without having any human intervention.
Thus, acquiring the data, analysis using the Treat-G (Russian software) and plotting using MatLab shall be automated.

The data log connector and relevant programs developed shall be deployed on Personal computer running with Ubuntu as OS. The integrated solution deployed on PC considered as one single module and will be arranged in a structured array of Rack Cabinet.

**Methodology that shall be adopted for phase1 and phase2 combined:**

Two different pathways can be envisaged to reach the above desired goal which shall be listed below. The pathways are enumerated considering the efficiency of the program. It should be noted that the although the efficiency of the programs are discussed below, they shall differ by few milliseconds, which should be of no consequence to our above desired goal.

**Method1:**

The switch shall be connected to the Rs232 of the computer in which the motion composer program is running. The working program, which changes the position upon clicking is already present and shall be integrated and utilized for automation. The position of the mouse pointer shall be automated. To this end, AUTOIT software shall be utilized. **AUTOIT** is a freeware automation language for Microsoft Windows. This software is primarily intended to create automation scripts (sometimes called macros) for Microsoft Windows programs. Thus AUTOIT program shall give us control over the position.

The AUTOIT program itself has an option to open a socket for RS232 protocol. Thus, on the windows operating system, the data can be collected from the switch using AUTOIT itself. However, python is a object oriented programming and the code shall be quite clear for future reference and modification. Thus, we wish to implement switch program in PYTHON language and shall be integrated with the AUTOIT.

Then, the desired format notepad file shall be kept in the shared folder of Windows XP system. Then, it shall be renamed (to say SWITCHDATA.dat). An AUTOIT file (in windows XP) running in the background shall be searching for this file SWITCHDATA.dat. Upon success, it shall open the TREAT-G (Russian software) and automated clicks shall ensue. Towards the end of the program, the SWITCHDATA.dat file shall be deleted and the output file (named OUTPUT.dat) shall be transferred to the computer with MATLAB program using the shared folder.

An AUTOIT file running in (computer with MATLAB installed ) the background shall be searching for this file OUTPUT.dat. Upon success, it shall open the MATLAB program and run the already existing .m file. A backup shall be taken for SWITCHDATA.dat and OUTPUT.dat and shall be stored in a local directory.

This completes the promised technical aspect of the goal.

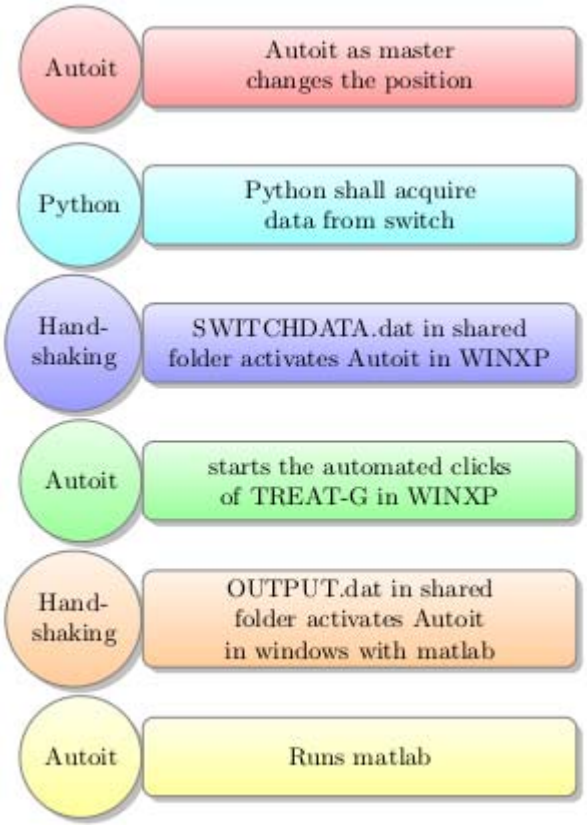



fig: Data flow and the methodology depicted above

**Extensions rather ornamentation that may be done although not promised:**

The MATLAB shall be made to save the desired graph in the .jpeg format. Furthermore, the windows system running the MATLAB shall be made as a local server and the data file and the jpeg files shall be hosted. This shall facilitate in accessing these files using a web browser within the local network and physical presence will not be required to view the obtained output from the MATLAB.

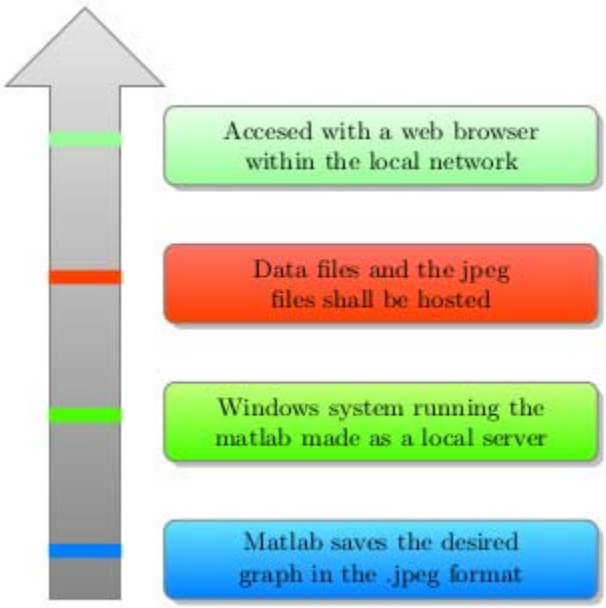



Fig: Possible extensions

## Method2:

As we have already tested the interface with the Linux / Ubuntu operating system, the interface shall happen with Linux system and the rest of the procedure remains un altered.

**Rack Cabinet:**

A modular Rack Cabinet to be installed as part of this implementation with the following specifications:

- 19" Sever/Networking Rack Cabinet(600*800*24U);
- Compatible with ANSI/EIA RS-310-D,IEC297-2, DIN41494, DIN41494, ETSI standard;
- 23.62(W) x 31.5(D) x 49(H) inch;
- 71% ventilated rate of the high-density vented door;
- Heavy duty casters and leveling feet;
- Removable side panels;
- Designed for enhanced airflow;
- Post-to-post depth : 28";
- Four post, depth-adjustable rack system with 19" mounts and square holes;
- Perforated roof with cable entry access in the rear;
- Perforated front and rear locking doors (easily removable);

**Global InfoVision Pvt Ltd**
Plot#28, Sunil Towers,
Srinagar colony, Hyderabad 500 073
Voice: +40-6666 6999
Fax:+040-66771155
www.globalinfovision.com

**Date:** 16-May-2019 **Ref No:** GIV/ARDF/RCI/01/19
**Validity:** 30 Days from the date of Proposal

To
The Director
Accelerometer Research and Development Facility (A RDF),
Research Center Imarat (RCI), Vigyankancha, Hyderabad - 500069

**Kind Attn:** Mr. S.S. Reddy Kumar, Sc-F

We are pleased to submit our competitive Proposal for the supply and implementation of Data Acquisition Connector at ARDF, RCI. The solution is highly comprehensive and will be implemented in a single modular form.

| S.No | Item Description | Quantity | Unit Price INR |
|---|---|---|---|
| I | **Item-I - Data Acquisition Connector** | | |
| | Design, Development and Implementation of Data Acquisition Connector as per the scope described in Annexure - 1 | One Unit | 4,12,500 |
| II | **Item-II - Design and Development of AUTOIT program for data logging** | | |
| | Design, Development and Implementation of AUTOIT Program for data logging as per the scope described in Annexure - 1 | One Unit | 5,35,700 |
| III | **Item - III- Rack Cabinet** | | |
| | Supply and Installation of Rack Cabinet as per the specifications described in Annexure-I | One Unit | 39,700 |

**Terms & Conditions:**

1. Price quoted is exclusive of GST @ 18%, that is applicable
2. Warranty: 1 Year from the date of Installation
3. Payment Terms: 50% payment along with firm PO and remaining 50% on acceptance.
4. Delivery Period: 8 Weeks
5. The implementation can be taken up phase (task) wise or as a single implementation.

**for Global InfoVision Pvt Ltd**

**Authorized Signatory**

## Some of the Key Clients