Modernising Undergraduate Renewable Energy Education:
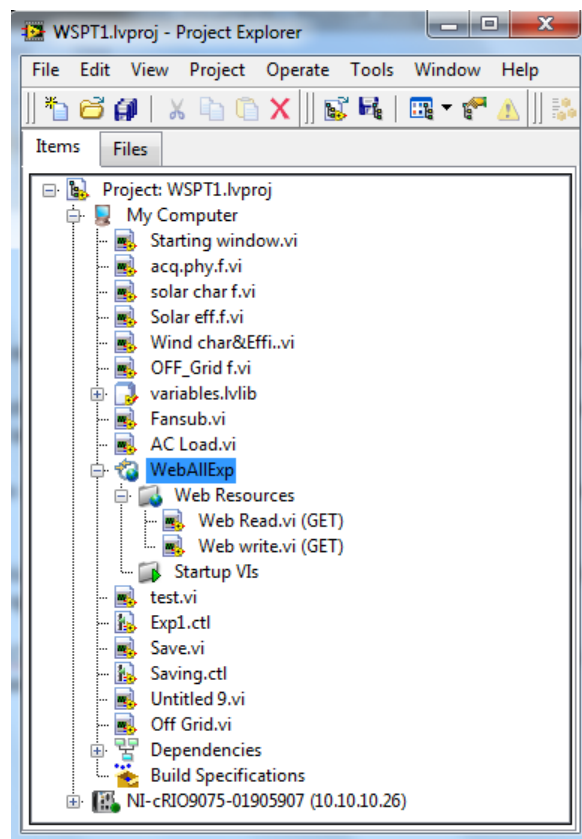## EU Experience for Jordan
MUREE
Project Number: 530332-TEMPUS-1-2012-1-JO-TEMPUS-JPCR
Services Adaptation to Connect Remote Labs to VLE

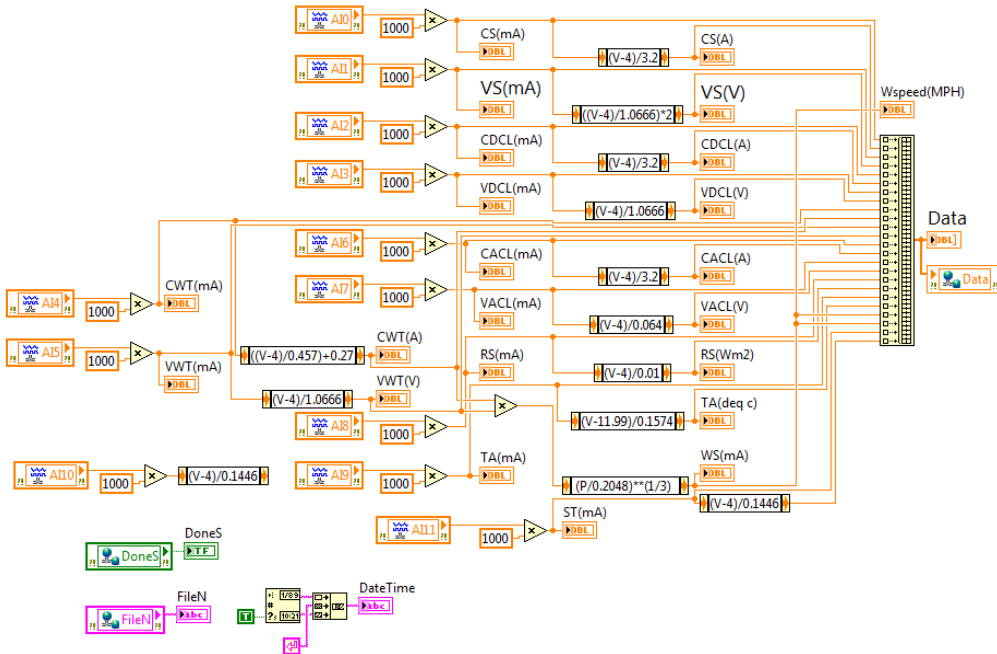**Annex II: Laboratories Web Services Development Description**

A Web Service is a method of communication between two electronic devices over a network. The software system is designed to support interoperable machine-to-machine interaction over a network and the function provided at a network address over the web with the service *always on* as in the concept of utility computing.

Develop a Web service in a LabVIEW project to group together and configure the VIs and other files that will make up the Web service.

So we create a LabVIEW project to organize the Web service files, and publish it on the host computer, as shown in the following figures.

In the Web Read VI, we build the block diagram, front panel, and connector pane as shown in the following figures.
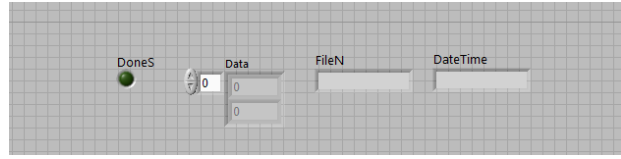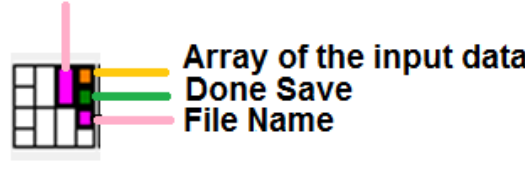

Figure 1. Web Read VI Block Diagram, Front and Connector Panel.

The same with Web Write VI, we build the block diagram, front panel, and connector pane as shown in the following figures.
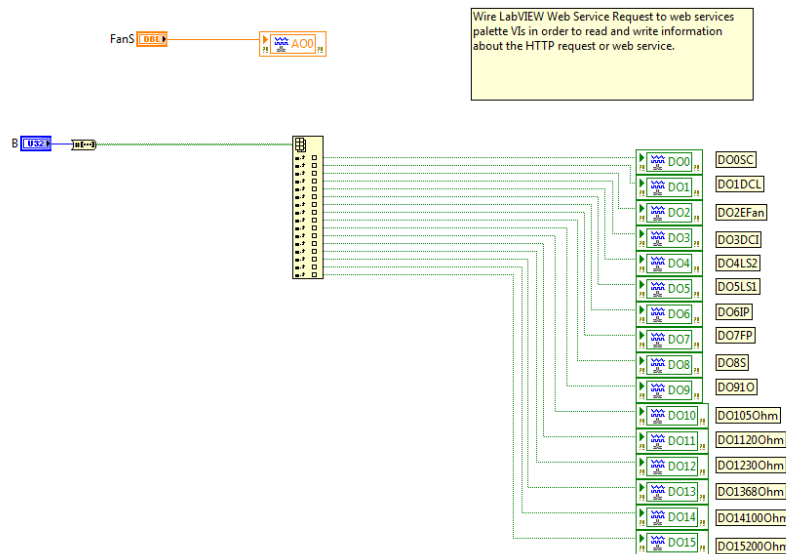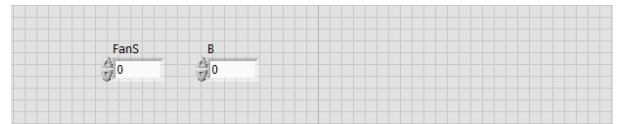
Figure 2. Web VI Write Diagram Pannel, Frontal Diagrama and Connect Pannel.

When we publish this VI as part of a Web service, a web client can send an HTTP request to invoke it. When invoked, this VI performs the following actions:

- Receives the values of any input array assigned to the connector pane from the HTTP request the client made. **LabVIEW Web Service Request** acts like a refnum by identifying the current HTTP request.
- Sending Parameter from C-RIO to LabVIEW and put them in array of input data.
- Returns the array of input data of those values to the client via the **array** indicator
- assigned to the connector pane.

Notice that each control and indicator appears on the connector *pane. Web services can receive data from clients or send data to clients* only through inputs and outputs assigned to the connector pane of an HTTP method VI.