

# LISANet Video Script

## Larus Technologies Corporation

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### Introduction:

Sensor Networks consist of spatially-distributed sensor nodes that measure heterogeneous data types. This video demonstrates a developing product from Larus Technologies incorporating novel features for sensor network data acquisition.

### LISA:

LISAs are physical sensor nodes that contain plug and play modules.

One such module is the environmental module, which contains sensors for measuring:

- Ambient temperature, U.S. Sensor Thermistor 103JG1F
- Atmospheric pressure Freescale Pressure Sensor MP3H6115A
- Relative humidity Sensirion Humidity Sensor SHT11

A communication module is used to communicate wirelessly.

Finally we have a power module, which supplies power to the LISA as well as monitors battery voltage and current consumption.

These modules all interface to Commercial-Off-The-Shelf sensors, allowing the user great flexibility when selecting the desired sensors and communication protocol.

Other possible sensors include [air quality, gas], **positioning, range detectors, inertial, and motor control.**

### Floorplan:

Multiple LISAs connect to a single gateway, comprising a LISANet.

In this scenario, two LISANets are deployed; one on the first floor, and one on the second floor.

The LISAs communicate to the Gateway, which in turn, connects them to the LISANet Services.

### Network Management:

The Network Management application is a graphical interface used to manage the sensor network and visualize streaming data.

The left pane shows a network map of all the LISANets available. We can see the two LISANets setup, one upstairs and one downstairs.

The right pane shows the list of sensors for each LISA.

The boardroom LISA contains 5 sensors:

- voltage and current are provided by the power module;
- while temperature, pressure and humidity are provided by the environmental module.

### **Network Discovery:**

As mentioned, the LISA has plug and play modules. We will demonstrate this feature by plugging an Infra-Red range detector into the LISA.

When we reconnect the LISA to the LISANet the new sensor is detected and accessible.

### **Data Acquisition:**

Subscribing to any of these streams will activate the LISA and samples will be plotted in the chart below. For example, we can monitor

- the temperature on each floor of the building,
- the outdoor pressure, or
- the remaining voltage level of a battery-powered LISA.

### **Policy Management:**

Predefined policies are used to control the sampling frequency of specific sensors. These policies are used to decrease power consumption and network traffic.

- A **high-sampling policy** is used for rapidly changing measurement-values, such as current.
- A **low-sampling policy** is used for slowly changing measurement-values, such as atmospheric pressure.

Some policies use variable sampling frequencies depending on the sensor characteristics.

- The **measurement-change policy** increases the sampling frequency when the change between measurement-values increases.
- The **low-value-trigger policy** decreases the sampling frequency when voltage drops, thus extending the life of the battery.

### **Conclusions:**

In this video, we have demonstrated LISANet, which is part of Larus' end-to-end sensor networking solution. The LISANet's features include

- plug-and-play modules,
- network discovery,
- network management and visualization, and
- policy management,

providing a flexible, usable package to suit your sensor networking requirements.