Lon Works type systems interfacing to smart instrumentation State of the Art or "Change for the Sake of Change" ??

Lon Works is a data collection approach that has been actively promoted by Echelon using Neuron Chips fabricated by Motorola. You may see Lon or Works combined with other words to form a trade name. The concept was designed to collect small amounts of data from a large number of points using serial communications. An example would be instrumenting the air conditioning/heating/lighting systems in a building. There are a large number of points (AC/heating ducts, lights, etc.) to monitor and control, distributed about a large area, but none having many data points.

Some manufacturers are trying to expand this approach to collecting data from smart air quality analyzers, claiming a serial connection with the instrumentation. With most existing data loggers, analog and digital wires are connected from the instrumentation to the data logger. The analog to digital converter and the level detectors are normally housed in the data logger enclosure. The Lon Works approach just moves the analog to digital converter and the level detectors from the data logger enclosure to the back of the instrumentation.

In air quality applications, this amounts to nothing more than *change for the sake of change*, and serves only to make the data collection procedure more complicated. The systems are still converting analog voltages to digital signals and sensing status levels. They are not taking advantage of the features inherent in new smart instrumentation.

Now, all air quality instrumentation has been upgraded with embedded microprocessors to provide units that deserve a **more state-of-the-art data collection method**. All air quality instrumentation is smart and allows a user to collect data, status, calibrations and alarms as well as set up configurations, view operational parameters and conduct on line diagnostics over an RS-232 port.

In contrast to a Lon Works system, the CPP was designed to interface to all instrumentation over their serial ports, in their native language, to collect data, calibrations, status and alarms. **The CPP also allows the user direct access to the instrumentation in a real time mode, e.g. the CPP is still collecting data even when an operator is interrogating an instrument.** The instrumentation can be from different manufacturers each operating at different baud rates and with different protocols.

Newer instrumentation digitizes internal parameters and processes this information to provide a state of the art reading. Why convert this back to an analog voltage, then run it over twisted shielded pairs (where noise and ground loops can be coupled in), only to have a data logger (or Lon Works unit) convert the signal back into a digital signal. Rather redundant, costly and unnecessary.

Other complications exist in most data loggers as well. They convert the analog voltage into a binary signal for processing. This requires operator intervention to ensure that this binary signal can be reconverted back into the proper engineering units. In addition, mathematics and data storage in binary can lead to "conversion errors." Again in contrast, the value received from the instrumentation over the RS-232 port by the CPP is the correct reading, already in engineering units. H2NS has implemented **fully floating point routines** in the CPP. Data is accepted in engineering units, manipulated in engineering units, stored in engineering units and printed in engineering units. There are no "conversion errors" possible.

At todays state of the art, there is no good rational to purchase a logging device that provides only analog data collection capabilities, be that in a logger or distributed like Lon Works, and uses binary and fixed point data manipulation. Newer State of the Art instrumentation deserves a new State of the Art logging device to take full advantage of the features inherent in such instrumentation. **The CPP was designed to fulfill this need, by providing serial interfacing to smart instrumentation with an optional analog to digital section for interfacing to not so smart instrumentation.**