













**Figure 2: Physical and Virtual Intelligent Sensors**

It is seen in the figure that the PIS functions as a complete sensor providing information to the G2 shell. The VIS requires the use of analog to digital converters in order to provide digital data signals. Since the VIS is built for digital input, the technology can provide a powerful testing base for future applications of an intelligent sensor.

The architecture and experimental implementation is described in the following sections.

### 3. HARDWARE

The PIS (smart sensor) is a combination of a sensing element, a data acquisition chip, a microprocessor and an Ethernet connection. The hardware configuration of the PIS consists of a type K thermocouple, ADC7794<sup>2</sup> analog to digital converter (ADC), a Rabbit RCM3300<sup>3</sup>

<sup>2</sup> [Online]. Analog Devices. Available: [www.rabbitsemiconductor.com/products/rcm3300/docs.shtml](http://www.rabbitsemiconductor.com/products/rcm3300/docs.shtml)

<sup>3</sup> [Online]. Rabbit Semiconductor. Available: [www.rabbitsemiconductor.com/products/rcm3300/docs.shtml](http://www.rabbitsemiconductor.com/products/rcm3300/docs.shtml)

























