Data Acquisition

Services Brochures

Connecting your devices

NCODE applies the latest industry standard technologies to bring your devices connected

What is Data Acquisition?

Data Acquisition (DAQ) is the process of sampling signals that measure real world physical conditions and converting the resulting samples into digital numeric values that can be manipulated by a computer. Sometimes only one sensor is needed, such as when recording local rainfall. Sometimes hundreds or even thousands of sensors are needed, such as when monitoring a complex industrial process. The signals from the sensors are transferred by wire, optical fiber or wireless link to an instrument that conditions, amplifies, measures, scales, processes, displays and stores the sensor signals. This is the Data Acquisition instrument.

In the past Data Acquisition equipment was largely mechanical, using smoked drums or chart recorders. Later, electrically powered chart recorders and magnetic tape recorders were used. Today, powerful microprocessors and computers perform Data Acquisition faster, more accurately, more flexibly, with more sensors, more complex data processing, and elaborate presentation of the final information.

While each Data Acquisition System (DAS) has unique functionality to serve application-specific requirements, all

systems share common components that include signals, sensors, signal conditioning, data acquisition hardware, and computers with software.

Data Acquisition Systems can also form part of a process control system that through the use of appropriate software provides direct digital control of various industrial processes. Similarly they can be used for data logging and process or alarm monitoring, these systems are used pervasively in a wide range of industries including electricity generation and transmission, Chemical and Petrochemical, Highways and Transport, Oil and Gas and Steel production, as well as research and development.

NCODE is experienced in developing the whole lifecycle of data acquisition software solutions. We develop from the device Serial or Ethernet communication protocol that brings the data to a computer, to a full business intelligence solution that analyzes and reports useful information calculated data.

NCODE's Data Acquisition Framework is a strong well-developed and maintained solution for collecting data from any device.

NCODE's Data Acquisition Framework is the base witch allows us to connect to any device. Our framework was built using modular patterns allowing the solution to be constantly under development with a strong solid base. Basically our architecture allows the development of new plugins to connect new devices or new drivers to databases or other kind of storing places. This plugins can be easily installed and maintained at the same that the core witch evolves and gets more and more mature with each project we deploy. Our current architecture is already capable of giving features such as Redundancy, allowing the configuration of parallel data acquisitions servers, to ensure your data is always acquired; Data basing, witch allows a configurable connection to several kinds of databases such as Microsoft SQL Databases, MySQL; OPC adapter that supports any OPC compliant server from any manufacturer; MODBUS adapter, that enforces the legacy compatibility. S7 adapter witch allows a very fast communication with SIEMENS devices without the need of any other third party software; Virtual Adapter that easy burdens the integration with other software you may have in your plant floor.

NCODE as already installed several applications using the data acquisition framework. These applications are currently under use in industries like food and packaging, aero spacing, automotive and others.
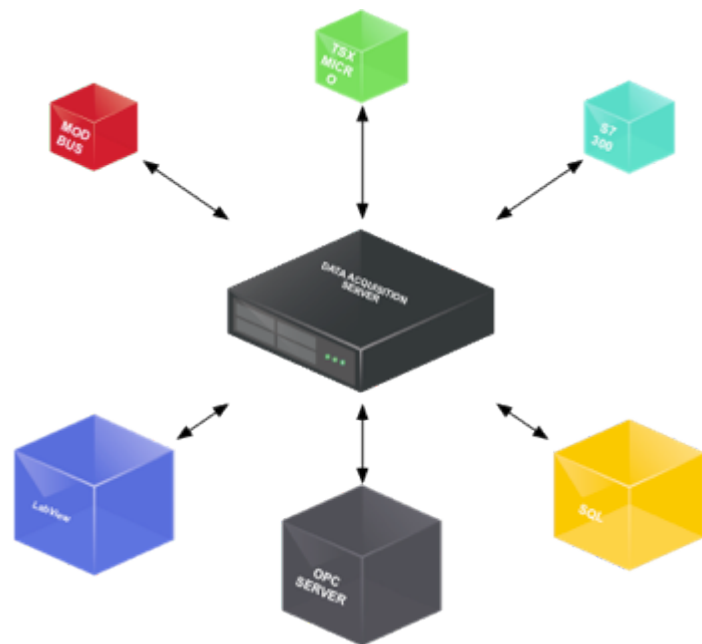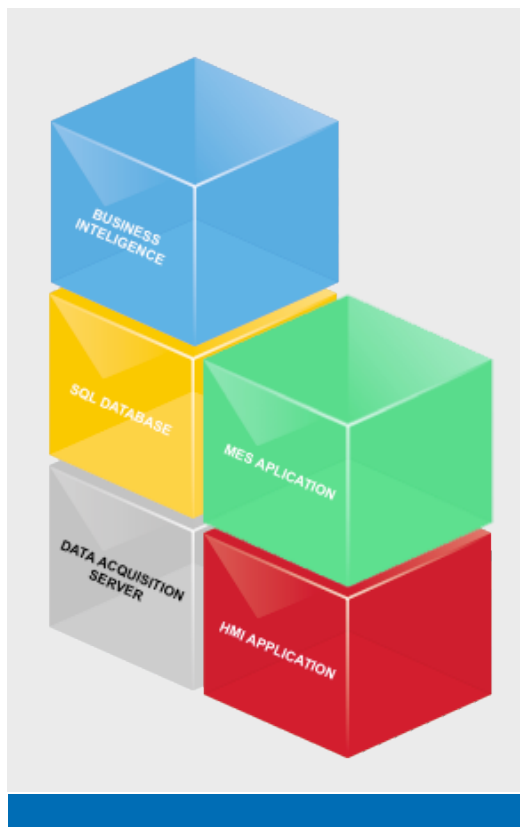
Data Acquisition Server connections example

NCODE's data acquisition framework provides software adapters to connect to any kind of device. Its modular architecture allows the easy and fast development of connectors for new devices.

OPC

OPC was designed to provide a common bridge for Windows based software applications and process control hardware. Standards define consistent methods of accessing field data from plant floor devices. This method remains the same regardless of the type and source of data. An OPC Server for one hardware device provides the same methods for an OPC Client to access its data as any and every other OPC Server for that same and any other hardware device. The aim was to reduce the amount of duplicated effort required from hardware manufacturers and their software partners, and from the SCADA and other HMI producers in order to interface the two. Once a hardware manufacturer had developed their OPC Server for the new hardware device their work was done to allow any 'top end' to access their device, and once the SCADA producer had developed their OPC Client their work was done to allow access to any hardware, existing or yet to be created, with an OPC compliant server.

OPC servers provide a method for many different software packages (so long as it is an OPC Client) to access data from a process control device, such as a PLC or DCS. Traditionally, any time a package needed access to data from a device, a custom interface, or driver, had to be written. The purpose of OPC is to define a common interface that is written once and then reused by any business, SCADA, HMI, or custom software packages.

Once an OPC server is written for a particular device, it can be reused by any application that is able to act as an OPC client. OPC servers use Microsoft's OLE technology (also known as the Component Object Model, or COM) to communicate with clients. COM technology permits a standard for real-time information exchange between software applications and process hardware to be defined.

Modbus

Modbus is a serial communications protocol published by Modicon in 1979 for use with its programmable logic controllers (PLCs). Simple and robust, it has since become one of the *de facto* standard communications protocols in the industry, and it is now amongst the most commonly available means of connecting industrial electronic devices.

Simatic S7

Simatic S7 is a widely used SIEMENS standard of industrial equipment. Its communication protocol allows the fast and reliable integration of Simatic devices and computers based on SIEMENS high standards. NCODE's adapter can fully interact with any Simatic S7 device without the need of any extra integration mechanism, transforming it in a low cost but high efficient solution for SIEMENS equipment.

National Instruments

National Instruments hardware and software can easily communicate with NCODE's data acquisition framework by the use of OPC technology and the in-place NI network variable engine. No extra configurations are needed and full support is guaranteed.

Virtual Devices

The use of virtual devices, such as SQL databases or web services, allows the easy integration of several applications by the means of a shared source. Using just a simple configuration interface, you can setup a virtual device that is monitored or controlled just like a real device would. Sampling frequency can occur at a specified interval and actions can be made upon events.

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