Automation Utilisation

By Integrated Control &
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January 2012 Rev 3

*i*cis strategies on the utilisation of a sites existing Automation architecture to provide plant wide reporting solutions

Introduction

The Reporting "Cost"

Many companies when reviewing the need for some form of Enterprise plant reporting balk at the initial costs that some of these solutions tend to be. The products offered by major corporations and 3rd party resellers in the market generally tend to be MES / ERP offerings. These require a user to invest in proprietary Data Historians and Reporting Servers before any Enterprise reporting can even be considered. Whether the reporting required is basic in nature or not, the product offering by these companies generally require the same infrastructure. In conjunction to this, the software licence and system integration costs can be in the average arena of hundreds of thousands of Euro.

Examples of some costs are as follows:

Item	Cost Estimate*
Data Historian Server	~€20K
Reporting Server	~€20K
Historian Licence	~€50K to €150K
Reporting Licence	~€15 to €100K
Infrastructure Costs	~€15K
Integration & Validation	~€100K

*Prices are based on costs of 3 separate data historian providers and current Engineering rates surveyed by ICIS.

Before a system has even been designed, or the concept of a report thought of, there can be a projected project outlay cost of over €200K on licences alone. These costs inevitably lead small to medium size companies being put off the idea of implementing an Enterprise plant reporting project no matter how beneficial to the company it may be.

The Enterprise Historian Explained

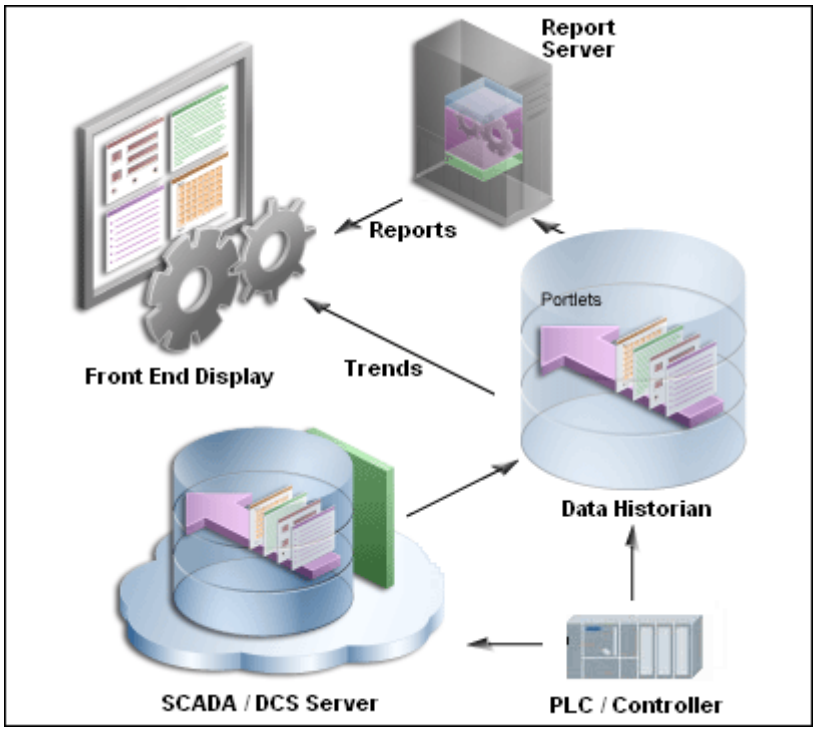
Re-sellers of MES/ERP integration solutions and Data Historians will present you with many of the current market ideas and concepts, for example:

1. Batch Release by Exception
2. Operational Excellence (OE)
3. Overall Equipment Effectiveness (OEE)
4. Enterprise Connectivity

In reality the power of the above and more may actually be available at your SCADA / DCS and Automation layer and can be sourced by ICIS technology.

MES and Data Historians, regardless of the brand, source their information from either your Automation layer or some form of raw data import.

This is normally achieved by an OPC interface into your Plant Controllers / SCADA / DCS systems or by some form of proprietary interface application developed.



Data Historian Reporting

This information, be it Batch or Continuous, is then transferred to the Historian for storage. Tools supplied (additional licences required) by the Historian manufacturer will then allow for the basic querying and display of this data.

However, in order to transform this Historian data into some form of Business Information a system integrator will be required to design and code any simple or complex calculations and reports that now obtain their raw data from within the Historian, as opposed to directly from the Automation layer.

This method of reporting may result in a site actually embarking on a full blown Historian integration project when in fact all that was required was some reporting tools to provide users with day to day reports and analysis software to review their plants performance, usage and costs.

The ICIS Modal - Plan, Review and Decide

Before a company embarks on the road to getting some form of plant reporting application for Batch, Process and Utility systems they need to follow some basic steps as specified to ICIS customers.

Plan

The first action to take is plan on what is required. This may seem totally obvious but it is very easy for a site to get caught up in the momentum of a potential reporting project and end up purchasing large scale systems that in the end get under utilised and do not provide a good return on investment. Meet and review on the actual sites needs, for example:

1. What is required in terms of plant reports?
2. Is it process reporting, utility usage / costing or some form of maintenance reporting?
3. Is it only the reports that need to be generated from the Enterprise Desktops or is raw data and trending required also?

Review

On completion of the sites plan the next step is to review what's available at the moment. A site should review what its SCADA / DCS and Automation infrastructure currently provides in terms of data collection and history storage duration. At times a site may not realise that there is an abundance of data already logged into the current systems and that this data could be going back years. It's also possible that some form of metered data that is essential is not being collected at all and so the reporting project is held up before it even starts.

Decide

On completing the plan and review tasks a site is now in the position to make an informed choice on what they want, and more importantly what's currently available to them. The next challenge is deciding on the path forward and making the decision on whether a Data Historian integration project is one that is really required.

This raises the fundamental question of this paper:

Can a site use its existing Automation infrastructure to provide the same information that any of the market brand Data Historians will be able to provide at a fraction of the cost?

If the answer is yes, then this suddenly opens up the world of Enterprise web based plant reporting for sites that do not necessarily want to invest in a Data Historian and its entire infrastructure, but would however like to reap the benefits of some of their functionality.

So when do you need to get a Data Historian?

If a site is fragmented with islands of Automation systems and it requires a central data store with large quantities of data to be retained online for a number of years.

Or if a site is looking to implement a full S95 ERP integration with its Automation system to provide top to bottom planning, scheduling and inventory movements. Then the road to purchasing a Data Historian with MES/ERP integration at its core is the one that the site should be on.

Which one to select though can raise its own challenging questions.

Utilise Existing Infrastructure

The Current Design

So how do sites achieve similar Historian reporting and information from their Automation systems existing infrastructure and ICIS technology?

The majority of Automation systems installed into manufacturing sites while being extremely powerful applications are under utilised. For SCADA / DCS applications vendors will install the basic process control system with tag / alarm trending established for historical review and leave the system with little else configured. In previous years servers were heavily loaded with these control systems, however in modern servers a standard box ships with large amounts of memory and multiple processors. Thus the hardware performance has improved exponentially, but most SCADA / DCS systems provided by vendors still only perform the most basic of tasks in terms of plant control. By utilising a SCADA / DCS server to provide information out to a customised reporting solution within the Automation infrastructure a company can begin to obtain the same reporting capabilities to that of a Data Historian at a fraction of the cost.

Plant Impact

The impact of using a SCADA / DCS server in this way on your process control system is negligible as the server only sends data to the reporting application when it is not busy or running idle. In human terms this could translate to a data transfer every few seconds, which translates to an age in computing terms. The plant operation tasks will always take precedence over any reporting tasks that the server may be performing.

In essence isn't a Data Historian doing the same thing, with higher loading costs onto your servers? After all they're polling your SCADA / DCS and Process Controllers for

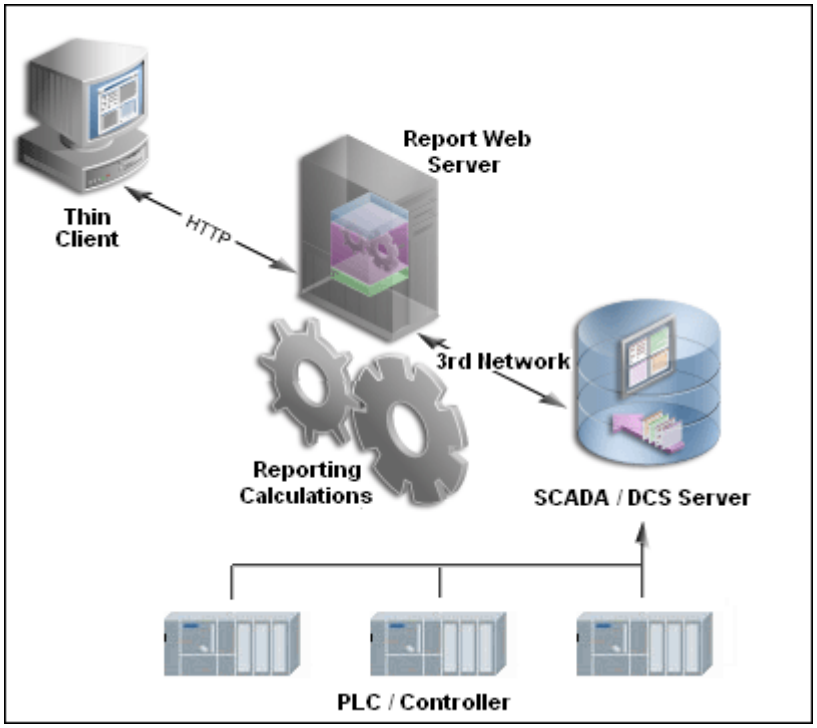
information as often as they can. With the customised reporting solution the SCADA / DCS system is designed to be in control of the acquisition and reporting services.

Report Integration

For sites with SCADA / DCS batching applications such as Delta V, IBatch, InBatch etc the batch and process information is ready for review within its own database or event files. For other continuous control strategies and utility monitoring systems small customisations to a site SCADA / DCS system can be performed to generate the necessary data into the required reporting format. Any necessary reporting calculations can be written (these would be required for a Data Historian also) and the results stored into either the SCADA / DCS or reporting system developed.

For example ICIS technology can plug straight onto your Batch and Continuous systems and instantly provide you with web based batch and performance analysis with PDF reporting without the need for the Data Historian middleware.

This can then allow for report information to be transferred out to your enterprise network via the reporting web server for review in your local browser.



SCADA Reporting

Now, as opposed to a site buying a large tag based Historian system to gather the same data as its SCADA / DCS, only for it to be manipulated into its actual reports. It can bypass the bulk cost and obtain the same reporting information to that of the Historian.

Other examples of possible data that can be retrieved from the SCADA / DCS system are Alarm / Event information, Maintenance Data and even OEE, OE, Utility Usage / Cost and Cycle Time Information. Again *i*cis solutions can generate this information directly into your enterprise web browser for review and analysis.

Be under no illusion, the purchase of a Data Historian and its resultant tool set does not provide you with an off-the-shelf reporting solution to fit your sites instant needs. There will be customisations required along with development work in order to generate the necessary reports. This will in turn lead to a level of validation that may be just as large to one that would be required for a customised solution.

Summary

Review the following questions and see how many you answer No to:

1. Does your site have a large number of SCADA / DCS Historians?
2. Is your site fragment with multiple islands of information?
3. Do you require real-time desktop trending and large archiving capabilities?
4. Can your budget stretch to include report development on top of the Historian investment?
5. Are you looking for complete S95 integration?

If the answer is No to most of the above then maybe your sites existing SCADA / DCS architecture can be leveraged to get the plant reports required at a fraction of the cost.

About Us:

*i*cis provide custom Data Historian and SCADA / DCS reporting solutions for a variety of systems. As we are not affiliated with any specific vendor and have crossed the divide in terms reporting we can provide unbiased reviews and recommendations for your best path forward in terms of plant reporting. Contact us to see what we can do for you in terms of a site / system design review and study.

For further information, queries and questions on this article or *i*cis please contact us at info@icissoftware.com or visit our website at www.icissoftware.com

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