Objectivity Case History

Customer Information

Customer:Landis & StaefaStatus:(X) SOLD() Prospect() IntegratorIndustry:Process ControlApplication Domain:Monitoring & Response Systems

Landis originally sold building control systems to manage building HVAC (heating, ventilation and air conditioning). This included sensors in the building and simple temperature controls. Over time building control became more sophisticated to include humidity, fire alarms, door locks/security, lighting etc. The newer systems included a building network to connect the various sensors to a controlling terminal. Landis' "terminal" is now a PC running their software product called Insight (based originally on Windows 1.0). It has given them a competitive advantage but is now being re-written using Objectivity/DB.

Objectivity is used to store the network configuration information and collect historical information. Historical information (temperature, humidity etc.) is of particular importance for some of their key regulated customers such as pharmaceutical manufacturers, hospitals and food processing plants. The new, distributed Insight consoles have a seductive (marketable) Windows interface and can control anything from a small office to an entire college campus. Key installations include the Transamerica building in San Francisco, the United Center (Go Bulls!), O'Hare International and the building I live in.

Platform:	Windows NT
Compiler:	Microsoft Visual C++
Other Tools:	Rational Rose

Buying Criteria

See below

Why Objectivity

See below

Contact Information

Objectivity Rep: John Jarrell Customer Contact: Amy Ikenn Phone: Email:

Objectivity Detailed Case History for Landis & Staefa

(Formerly Landis & GYR, Later Siemens Building Control Systems) Project Name: Insight

Project Purpose:

Insight is a Workstation based portion of Landis' System 600 APOGEE. System 600 APOGEE also includes all the network wiring sensors and controls for HVAC, Building security, Fire alarms etc.

The hallmark of Insight is its flexibility and accessibility. Its "sit anywhere," do anything architecture provides managers with endless opportunities to design cost reduction strategies and improve facility performance. Examples include:

- Monitor, command and program any controller on your system from any Insight workstation on the Management Network. System activity reports log every change made to the system by every Insight operator.
- Improve productivity through the flexibility of Windows NT multitasking environment.
- Locate problems quickly using the System Profiler application. Analyze data using the Dynamic Plotter or export it to other analysis software programs.
- Troubleshoot quickly with the system's 30 character naming convention and Insight's industry-leading drag and drop navigation.
- Share information and files between Insight workstations.
- Quickly schedule facility usage using the Event Builder and Scheduler applications.
- Track, analyze and document system performance and efficiency with the Event Builder.
- Create reports using Report Builder and send reports to any Ethernet printer or file. Schedule report generation using Scheduler.
- Costs effectively add multiple advanced workstations.
- Assign each user unique system-wide access privileges based on name and password.

Insight also provides flexibility in access to building control from any workstation. Building Engineers/Managers can:

- Dial into the site-wide Management Network or Building Network from a remote Insight workstation.
- Dial into workstations from remote sites to report alarms or upload performance data.

Most importantly, the combination of Using System 600 APOGEE with its Insight workstations allows integration of all the following:

- Protective Isolation
- Surgical suites
- Critical care
- Laboratory
- Clean rooms
- Fire/Life Safety
- Security and access
- Refrigeration
- Power Management
- Chillers

- Boiler Controls
- Process Control Systems
- Air Handling
- Units Security
- Heat Pumps
- Lighting
- Programmable Logic Controllers Paging

Lastly, it is designed for future growth. The System 600 APOGEE with Insight includes the ability to:

- Add unlimited Advanced or Base Insights to the Management Network. Each Insight can support up to four Building Networks. Base Insights can grow into Advanced Insights by adding application options.
- Add up to five Open Processors to each Modular Building Controller.
- Access high-speed network optimized for real time data transfer.
- Leverage expanded memory and enhanced programming language to allow for larger programs and more data archiving routines at the controller level.

Who is our customer?

Our customer is the Insight development group in Buffalo Grove IL. Their customers are building and facilities managers across the world. Key markets for them include Healthcare Facilities, Colleges and Universities, Commercial office Buildings, Labs, Clean rooms and Schools.

What does the customer consider value?

Landis places special value on the distributed database capabilities of Objectivity. Since many of their larger customers such as universities and Hospitals are widely dispersed geographically with several control points, the ability to distribute building control across all these is critical. In addition the distribution capabilities enable Data Replication on which Landis also places value, so much so that they will soon offer their own fault tolerant option based on Objectivity's. They are also very concerned about the company, its longevity and ability to support them long-term.

Are we delivering value?

Yes, in terms of distribution and replication. They felt we might deliver more in terms of SQL support, which thus far they have chosen not to use primarily because they don't know enough about it's capabilities. They have extensive reporting requirements which up to now they are satisfying via alternative means.

They are very happy with customer support which they rate 80% good.

How has Objectivity helped differentiate their product in the marketplace?

It has enabled several new features to Insight making it the premier building control workstation on the market. The key areas of differentiation are Management, Access, Integration and Control. Many of these are detailed in the section titled "Project Purpose" above.

Discuss the Selection/evaluation process including competition and why Objectivity was selected.

Originally they selected Raima but that company never delivered on its promised Window support so Landis reopened the evaluation. The subsequent benchmark revealed the power of Objectivity's distribution capabilities. Their two main reasons for picking Objectivity were the distributed architecture and price.

On what platform(s) are they developing?

Windows NT

On what platform(s) will they deploy?

Windows NT

How is Objectivity actually being used in the project?

Objectivity is used to model the building and campus level network. It maintains state information on all the notes (sensors and controls).

Can	npus N	et (Ob	jectivi	ty Dat	tabase)
Buildin	a Net i	Objec		 Datah	
Dunum				Jatal	ant
Floc	or Net ((Objec	tivity]	Datab	ase)
Sens	sors an	d Con	trols		
(0)	biectiv	itv Co	ntainer	s/Obi	ects)

Also stored are settings and alarms (change the humidity to X at time Y) and historical data for later analysis (a legal necessity for pharmaceutical manufacturers).

What Language(s) are being used?

Microsoft Visual C++

Are any of the following technologies implemented:

Object modeling tools

Rational Rose is used to store object models and generate Objectivity DDL.

MFC/ Other Class Libraries

MFC is used for Insight's GUI

Object Request Brokers

None

Web/Email integration

None

Features used:

Indexes

Yes, they use our container level indexes but were forced to create their own global indexes, as ours were not available when they started designing Insight (Objectivity version 3.5).

Maps

Yes

Named Objects

No

Associations

Yes, they use our bi-directional associations and referential integrity extensively.

Iterators

Yes.

Versioning

No.

Predicate Query

Yes.

SQL

Not yet but they are still considering for their reporting requirements.

ODBC

Not yet but they are still considering it for their reporting requirements.

FTO

Yes planned for their new "Fault Tolerant Option" to be released next winter.

DRO

Yes planned for their new "Fault Tolerant Option" to be released next winter

Schema Evolution

Currently in testing. They ran into a few problems in version 4.0.

Heterogeneity of O/S

No, although they can run on Windows NT or Windows 9X.

Heterogeneous Languages

No

Multithreading

Yes they implemented their own Mutex type of multithreading that now will not work with ver 5.0 so are reworking it as it is no longer needed.

ODMG interface

They have their own layer which follows the ODMG standard.

How are they using Containers?

They designed their container and Database usage with distribution and replication in mind. Physical entities are modeled as databases. These include an Insight Workstation, a campus network or a building network. Containers are used to group objects that make up a network or a workstation. These include points, alarms, trends and applications.

Camp	us Net ((Object	ivity D	Databas	e)
					-
Building	Net (Ol	biectivi	tv Dat	abase)	
ĺ					
Floor	Net (Ol	bjectivi	ty Dat	abase)	
Senso	rs and (Control	S		
(Obi	ectivity	Contai	ners/O	biects)	

Describe how transactions are used (long vs. short, MROW vs. non-MROW) and describe GUI and its transaction semantics (short vs. long locks for update).

They do all short transactions within their GUI. One transaction is used to read and display the data and a separate transaction is used to update. All read transactions are MROW. They do not check to see if the data has changed since display and before update. The nature of the Insight application is that it is unlikely two Insights will be updating the same configuration simultaneously. If so, the last one wins.

Things that they like most about Objectivity:

Customer support.