



SUCCESS STORY

PROFILE

- Subject : SCADA
- Process : Traffic management
- Client : CANCA - ST2N
- Integrator : Ineo Atlantique
- Date : 2007
- Installed base:
 - Panorama E²
 - 9000 variables
 - 6 servers
 - Siemens Industrial Ethernet ET200 PLCs
 - Modbus, Ethernet, and SNMP protocols
 - 300 devices

Panorama Conductor of the Nice tramway



Panorama E² assures the Nice tramway traffic management : 60 000 people travelling every day.

AIMS

Nice tramway traffic management.

Controlling several systems using a single interface.

BENEFITS

Reliability and security for 60 000 people.

Improve the user's comfort.

The Nice Côte d'Azur Metropolitan Area (CANCA) and Ineo Atlantique, systems integrator specializing in transportation, have selected the Panorama E² real-time information system to manage the Nice tramway traffic. The tramway Digital Control System project was launched in 2005 and delivered at the end of 2007 to ST2N, the company operating the tramway for the city of Nice.

All those involved in the project appreciated the open design and reliability of Panorama E², which manages the traffic. Residents of Nice are satisfied as well : some 60,000 people take the tram every day - a level of traffic which had not been projected for another 5 years !

The Operations Center for the Nice tramway

The operations center for the Nice tramway performs three key functions: tram car maintenance (storage, cleaning, maintenance and repairs), direct management of tram car circulation (from the central command centre), and exchanges with other means of trans-

port (pedestrians, cars, and the bus network).

Las Planas, the terminus for line 1, is integrated with the tramway's operations center. As with the other stations on line 1, this one - which has a video surveillance system - provides travellers with a wide range of services to ensure a safe trip: ticket vending machines, infor-



CCC: Central Command Centre in front of the operators is the OCP (Optical Control Panel) managed by Panorama E², which provides information on the status of the tramway line.

mation via visual displays and audio announcements, network maps and timetables, emergency help points, etc.

The Nice tramway operations center includes a tram cleaning facility, a garage for 28 trams, an electrical substation, a maintenance and repair workshop, a car park with 765 spaces, and the Central Command Centre (CCC).

The heart of the Central Command Center

The CCC is the operational nerve centre, providing around the clock real-time management of the tramway and bus routes. It is directly connected to the trams and the stations via an electrical transmission system managed by the Panorama E² information system. This solution both ensures real-time control of the trams (switching, signaling, electric substations, etc.)

and manages communications with the travellers (voice messages, information displays, responses to calls from the emergency phones located in the stations, etc.).

Connected to a network of video cameras, the CCC also guarantees passenger safety in both the trams and the stations. An on-call system

has been set up within the CCC, as the operator works alone from 7 PM onwards, and the trams run 21 hours a day. The CCC features an Optical Control

Panel (OCP) displaying the tramway control data from any workstation in the command/control room. "For example, white means the tram car is on

time, green means it's late, and red means it's early," said Laurent Chauvin, IT Department Manager at the Nice CCC for ST2N. "In order to provide top-quality service to passengers, the tram must not be early since people will miss it, nor late for they will have to wait. A flashing light means the tram has issued

an emergency call. Should the tram stop, it would signal a major problem because trams are always moving at an average speed of 17 kph (10 mph)."

Technologies used

Power supply

The train is powered by an Overhead Contact System covering the line's 8.7 km (5.4 miles). However, in order to preserve the view at certain popular tourist sites, tram cars can run in an au-

tonomous mode using electrical power from a 1.5 ton battery built into the roof. Thus on a 435 m run along Place Massena and a 485 m run along Place

Garibaldi, the tram lowers its pantograph and switches to battery power.

- Why Choose Panorama E² ?
- Compatibility with communication technologies.
- Control several systems using a single interface.
- Reliability and user's comfort.

The communications network

Data is transmitted along the tram line using a redundant Ethernet ring over 20 km (12 miles) long. All the DCS data travels along this very high-capacity fibre optic link. The network combines a number of different technologies:

IP PA system, IP telephony, traveller information, ticketing, and video surveillance. "In the long run we plan to use part of the existing video camera network (20 of the 200 cameras around the city of Nice), in addition to the 80 plus tramway and equipment cameras," said Laurent Chauvin of ST2N. Data is updated and downloaded via wireless terminals. "All the information - train occupancy data (statistics from the ticketing devices), files for the tram cars' internal PA system (station arrival announcements), etc. - is updated when the tram reaches or leaves the maintenance center."

open design, a vital criterion for us," said Frédéric Coué, Business Manager at INEO Atlantique. "Furthermore, benefits such as productivity, compatibility with communication technologies including OPC and SNMP, along with system robustness convinced us to choose Panorama E² for all our tramway projects."

The main reasons for choosing Panorama also included:

- alarm summaries,
- object modeling,
- the SQL Server database integrated with Microsoft reporting tools,
- support for multiple screens on operator workstations,
- the dual data acquisition features via pairs of redundant distributed servers,
- hot redundancy of servers without data loss,
- the ability to transparently interface to several legacy applications in a manner totally transparent to users.

"Panorama E² allows the user to control several

systems using a single interface. This provides total reliability and ease of use for the Nice tramway operators," said Denis Chevrel, Project Manager at INEO Atlantique. "The main OSS (Operations Support System) supervises traffic control. However there is also a system for monitoring passenger stations, another for DCS, one for line power, one for tram signaling, one for passenger information, one for video surveillance, one for the PA system, and one for the information displays."

For example, Ineo Atlantique has developed an application called "PUser" which manages user rights. "This custom development combined the flexibility of external C++/VB programming with Panorama E² security features. At any time we can check who is logged in, and what they are up to, etc. this supervision covers all operators, workstations, and sites," said Denis Chevrel of Ineo Atlantique. The strength of

KEY FIGURES

- 5.4 miles long
- 60 000 travellers each day
- 21 stations including 18 hypercenters
- 20 tram cars
- 7.9 acre maintenance depot
- € 570 million budget
- Power : 750 volts DC
- 100% electric
- 10.6 to 11.2 mph standard speed
- First train leaves Las Planas: 4:25 AM
- Last train leaves Pont Michel: 1:35 AM

Why was Panorama E² Chosen?

The request for quotations for the Nice tramway project was launched in 2005. After assessing several SCADA systems, the presentation of Panorama E² software during the "Panoramadays" promotional tour convinced INEO Atlantique of the product. "INEO Atlantique chose Panorama E² for its



Operator workstation: the Panorama E² interface allows the user to manage multiple external systems : video-surveillance, signaling, passengers information, ect.



Place Massena: The tram runs on battery power along part of its route.

Panorama E² is due to its built-in industrial software bus which can integrate both off-the-shelf and custom-developed applications.

Customer feedback

"CANCA's objective in setting up an Operations Support System was to obtain a system with good performance and reliability for the 60,000 travellers who use the tramway daily. Our major requirement was a simple yet robust operational system at a reasonable cost. The Panorama E² solution offered by INEO

Atlantique addresses all these needs," said Nicolas Deschamps, Director of the Tramway Project for CANCA.

"Today we have optimized and will continue to optimize all future development on our tramway and transportation system projects," said Frédéric Coué of INEO Atlantique. Panorama E² has also been installed to manage tramway applications in the cities of Nice, Bordeaux, and Clermont-Ferrand.

ARCHITECTURE

- 6 servers :
 - Real-time OSS (Operations Support System)
 - Traveller operations server
 - Deferred mode server for archiving and history functions
 - Administration and maintenance
 - Video & visoweb storage
 - DCS acquisition
- Siemens Industrial Ethernet ET200 PLCs
- Modbus protocol for tramway signaling, point controllers, and ticketing hubs
- Industrial Ethernet protocol
- SNMP protocol for the management of video, audio, IT equipment, etc.
- 9000 variables
- 300 devices
- 2 redundancy units
- 11 workstations

From industrial SCADA to a global information system

