

Combining GIS and SCADA with zenon

Give static geoinformation a new breath of life

The combination of geoinformation systems (GIS) and the process data from SCADA systems finds its way to control rooms of transmission and distribution networks, of municipal services, and of industrial facilities. COPA-DATA is researching the ergonomic integration of GIS into SCADA and can provide proof of concept with zenon.



THE BASIC IDEA BEHIND IT

Lines, such as for power, gas, water or information and communication technology (ICT), have to be documented in a system according to their location. As this geoinformation data is stored digitally, the plan is to combine this data with the SCADA system in more and more control rooms. The idea is primarily to provide status information for a line in its geographically correct location. Mostly, this is achieved by means of coloring the lines, whereby each color is assigned with information. In this way, the status of energy devices can be monitored, including information about the geographical location of the device.

STEP ONE: CREATING A ZENON SCADA SCREEN

The .NET control in zenon can be used as a graphics container. The corner points of the lines are stored as geo-coordinates (lateral and longitudinal) in an XML file. In this way it is possible to display the lines in the geographically correct form. By doing this, a SCADA screen is created where zooming in and out as well as moving through the graphics is possible. Information about the environment is, however, still missing.

FAST FACTS

- ▶ Show dynamic process data in static geoinformation
- ▶ Monitoring of status information including geographically correct location
- ▶ Integrate the advantages of the zenon Energy Edition (like ALC or Worldview)

STEP TWO: INTRODUCING THE MAPPING MATERIAL

In a second step, a layer with mapping material from satellite maps must be shown. COPA-DATA has used online services for this purpose, in particular Open Streetmap. The satellite maps can be overlaid with the previously drawn lines. Then, the process information is connected with the display elements within the map. The process information relevant for the electrical lines results from the switch settings in the substations. The module zenon ALC (Automatic Line Coloring) which is available with the zenon Energy Edition, calculates if a line is powered, unpowered or grounded. The process status is then shown in the .NET control in the zenon screen.

ONLINE OR OFFLINE MAPS

Not every network control system has internet access and thus cannot use online maps. Still, there are two possibilities to use the solution:

- ▶ Online mapping that has been viewed when an online connection was available is stored in a cache. So it can still be provided offline.
- ▶ Many network operators use their own mapping rather than publicly-accessible sources. As there are many different formats available, a converter was programmed by COPA-DATA to bring the different materials into the OSM (Open Street Map) format to enable simple displaying in the zenon .NET container.