Rhineland-Palatinate State Office Simplifies Water Management with Map-based Solution

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Mainz, Germany
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GDV Gesellschaft für geo-
grafische Datenverarbeitung mbH
www.gdv.com

"Our new measuring points solution is much easier to administer, saves time through the automation of master data acquisition, facilitates geographical navigation and— thanks to the map view—provides a better quality of data. What's more, in Oracle Application Express we now have a tool with which our division can very efficiently implement development tasks as they come up." – Salvador Gámez, Head of Division for Specialist Data Processing, Water Management, Rhineland-Palatinate State Office for the Environment, Water Management and Business Supervision

In water management, measuring points are a key part of the infrastructure. Various regional bodies and specialist departments are responsible for administering them in Rhineland-Palatinate. The ultimate coordinating responsibility for the more than 30,000 measuring points rests with the Rhineland-Palatinate State Office for the Environment, Water Management and Business Supervision (LUWG). The information and maintenance system for the LUWG's measuring points therefore plays an important role in the administration of the data. And, as with many businesses and authorities, the organization's years-old system by no means corresponded to current requirements, with numerous consequences.

With the new Web-based application AKSMS.web—based on Oracle MAPS, Oracle Application Express, and Oracle Spatial— developed by Oracle partner GDV and LUWG within a very brief period, LUWG now has a modern solution in place.

The system considerably simplified all measuring point-based activities in water management thanks to decentralized data management via the internet using a set form supported by maps, role-based rights assignment, and the extremely simple map-based navigation and search capabilities.

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Key Benefits:

- Provided simple map-based navigation for all measuring points in Rhineland-Palatinate

- Enabled map-based searching

- Provided secure decentralized administration of data, as well as efficient cross-functional use

- Automated many aspects of data acquisition

- Improved data quality and eliminated redundant measuring points

AKSMS.web – Central Information System for Widely Varying Requirements

Salvador Gámez, head of division for specialist data processing, Water Management, Rhineland-Palatinate State Office for the Environment, Water Management and Business Supervision, became familiar with the capabilities of Oracle Application Express and Oracle Mapviewer with MAPS at a meeting of the German Oracle users group, DOAG. The lectures convinced him and he recognized the potential to use these tools to create a new measuring points solution for the LUWG.

The resulting AKSMS.web acts as the information system that forms the link between the water management facilities and various qualitative and quantitative measurements taken by specialist departments and regional bodies across treatment plants, waterworks, wells, and springs. These measurements ensure the appropriate management of water supply and distribution in the countryside.

As this measurement covers all areas, from the groundwater, to drinking water, and right down to wastewater, the requirements relating to the measuring points vary widely in some respects for each specialist department.

For example, there are automated measurements for various types of quantitative information such as the groundwater level, water table level, or the outflow. Many water quality samples—at public health authority biological measuring points or in the drinking water supplies—must be taken by a staff member on site. Every measuring point has a site with corresponding coordinates that precisely specify its location.

However, prior to the implementation of the AKSMS.web system, this geographical information was not utilized. Measuring points were identified by numbers instead and there were redundancies in the system time and time again—especially where manual sampling occurred. Because searching was so arduous a task, a measuring point was often set up for a given location despite the fact that one was already present.

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 "A number-based system is not suited to enabling people to navigate. You need other search options for that," Gámez explained. "We already had geodata capabilities in Oracle Spatial, but Oracle MAPS now enables us to efficiently exploit these capabilities for our measuring point management requirements."

Optical Searching – For Simple Navigation

Now, the master data contain all the information on the measuring points and facilities. Their spatial location is recorded using point geometries in Oracle Spatial. Line geometries are used to construct a model of all the bodies of water in Rhineland-Palatinate. The system uses surface geometries, among other things, to show water protection areas. LUWG also uses all this data to manage the measuring points.

Users can also carry out searches for measuring points on a spatial basis. Navigation, for example, can take place using bodies of water or communities. Users can make selections using a dialogue box search, e.g. by specifying the community, or directly using the map. In addition, there are various background maps—and from a certain level of zoom, these consist of aerial photographs— for optimal navigation.

In addition, by using regionally defined queries such as "Show me all the measuring points along the river Mosel in the vicinity of the community XY" immediately before setting up a new measuring point, users can avoid redundancies.

"On transferring the data into the system and on producing the maps in GIS, it became apparent that there were clusters of measuring points in some localities," Gámez recalled.

"The map view in AKSMS.web makes it possible to assess in advance whether we have already set up a measuring point, enabling us to improve the data quality considerably."

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Optical Processing – With Clearly Regulated Task Allocation

While, in the past, the acquisition of the master data from new measuring points had to take place centrally, each regional body can now directly perform this task. Not only are the staff supported in their data processing through map-based navigation, they can also automate steps as they can easily locate measuring points using Oracle MAPS. One click on the map is all it takes, and the master data derived from the geometry, such as the community identity number, river basin number, or elevation is automatically entered into the background.

Of course, users can also process measuring points directly from the map. Here, too, one click in the browser is enough to show the relevant master data, providing that the user holds the appropriate permission level.

In addition, LUWG has implemented a user group concept in AKSMS.web that ensures that every water management worker processes precisely the information that he or she is responsible for.

The concept also offers overviews across regional bodies and specialist departments, as well as extensive search options across Rhineland-Palatinate so that the organization can take cross-agency support or cross-area action at any time. Gámez believes that Oracle Application Express was very well suited to implement this high level of flexibility in the user group concept. Yet that is just one of the reasons why staff at the LUWG learned to value this development technology over the course of the project.

The project clearly showed that Oracle Application Express makes the development of applications very easy and also very efficient, which is a major advantage, especially for small teams. The fact that the rollout of the Web applications developed using Oracle Application Express can take place at the push of a button is another important bonus that was not to be underestimated for the introduction of AKSMS.web.

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Why Oracle?

Oracle Database Enterprise Edition has already been in use as the central database at the LUWG for 12 years and the organization's experience using Oracle Spatial for the storage of spatial data as native data types within the database had also been positive.

The use of Oracle Application Express and Oracle MAPS in the course of the development of AKSMS.web by Oracle Partner GDV was therefore a good fit. LUWG is currently assessing whether and to what extent it is possible to replace other old applications using Oracle Application Express and Oracle MAPS. Gámez's aim is to reduce expenditure on administration considerably by standardizing the landscape.

"Oracle Application Express is an extremely expedient solution for our in-house development," Gámez declared.

Why GDV?

GDV Gesellschaft für geografische Datenverarbeitung mbH, based in Ingelheim, has experience stretching back to 1993 in relation to the development of specialist applications in the GIS/mapping field. The company develops tailor-made specialist applications as desktop or Web solutions and enables its customers to exploit the potential of digital spatial data to optimize work or decision-making processes.

Salvador Gámez can confirm this from his project experience: "The collaboration with GDV went really well. I'm happy to act as a reference for this competent Oracle partner, as GDV has extremely well-founded experience in the development of geodata-based solutions."

The Rhineland-Palatinate State Office for the Environment, Water Management and Business Supervision (LUWG), based in Mainz, is one of the top level environmental, consumer, and worker-protection authorities in the German state of Rhineland-Palatinate. Its responsibilities include business supervision, monitoring worker health and safety in Rhineland-Palatinate, nature protection, preservation of the countryside, waste management, soil protection, the Measurement Institute, the Central Laboratory, water management, the Central Panel of Experts on Environmental Protection (ZEUS), and climate protection.

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