

Rijkswaterstaat, the Netherlands

Integrated and centralized management



“The vision was to provide a flexible display system based on individual control points.”

The Dutch Ministry of Transport, Public Works, and Water Management, also known as Rijkswaterstaat (RWS) is responsible for the management of all national transport matters in the Netherlands. To achieve this, RWS is organized into nine regional directorates spanning 12 provinces, 489 municipalities, seven greater city areas, and 48 water board districts.

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In the South West Netherlands Directorate, around the major port city of Rotterdam, the integrated management of both roadways and waterways has become crucial. Historically, its natural harbor and strategic location at the mouth of the Rhine and Maas rivers made Rotterdam the main land-sea transfer point for the rich output of the industrial heartlands of Germany, France, and Belgium. While its natural waterways still provide very cost-effective transport, road and rail transport have also matured over the years and also provide alternative transport for goods from areas not traditionally served by the Rhine. As such today, the efficiency of the Rotterdam port is impacted by traffic flows of the road and rail networks, as well as those of the waterways and especially by the interaction of the two modes of transport. Therefore, the integrated management of all modes of traffic is key to ensure the continued effectiveness. This namely translates into how effectively the RWS can manage its complex infrastructure of waterways and the bridges and tunnels that span them in this region.

Traffic management

In the South West Netherlands Directorate (RWS-ZWN), there is a complex network of rivers and an equally complex network of tunnels and bridges to support the port and various economic activities of the region. One of the main concerns of



RWS-ZWN is to monitor the shipping traffic and ensure that bridges are raised in time for the ships to pass.

With some larger ships potentially taking up to several minutes to come to a stop, it is critical that traffic is managed and cleared of the bridges in time. It is also important for RWS-ZWN to route traffic properly around these raised bridges to ensure that the road and rail networks feeding the port (as well as serving other stakeholders) are not adversely affected by delays. To overcome significant bottlenecks, RWS-ZWN has built tunnels to alleviate delays. However, the tunnels themselves also present a safety and management concern. This is because it is equally important that the traffic in the tunnels be closely monitored and incidents cleared quickly, to ensure smooth road and rail traffic flow.

Recently, as traffic volume has increased, delays and actions on individual bridges and tunnels have started

to affect traffic flows on adjacent bridges, tunnels and waterways. Therefore, integrated management and coordination of the once “independent” bridges and tunnels is required to balance the needs of the various modes of transport and maintain maximum efficiency for all users – not only the port.

Flexibility

Before the Barco solution was installed, the RWS-ZWN managed each bridge and tunnel individually at its own control center. At each control center, a collection of traditional CRT monitors were used to display local traffic sensor information as well as applications. These monitors were laid out so that the content was in the right order, for example, the mouth of the tunnel, middle of the tunnel and then the exit to aid understanding of this situation. Although this system worked, it was costly to maintain and manage, and did not have any flexibility. In addition, the individual management of each

bridge or tunnel did not adequately solve the overall network efficiency issue. The new solution mandated that operations be centralized to allow better overall coordination. Thus a new central control room was built to consolidate the once independent and distributed operation centers. The new control center has now been equipped with flexible display systems that are based on individual “control points”. These control points can be used to monitor any tunnel or bridge in question. In addition, multiple control points can be configured so as to monitor a single incident collaboratively in order to allow more people to work on major problems simultaneously. Last but not least, these control points are to be equipped with large displays to allow the supervisor or other operators in the same control room “over the shoulder” viewing access of each control point. This is to facilitate better collaboration and decision making.



The Barco solution

In the new control room, RWS-ZWN deployed 15 control points (12 for bridges and 3 for tunnels). For each tunnel control point, Barco delivered two modules of 67" displays in a 2x1 configuration which are visually integrated as one display wall. For the bridges, a 3x1 67" Barco display solution was utilized. These large displays are used for collaboration purposes as well as to display the large amount of pixels required to simultaneously present application data and video all on one screen in a large enough size to be viewed simultaneously by multiple users.

By means of touch panels, operators of each control point can adapt the display and change their views at the touch. For example, the operator can switch displays to show sources from one bridge to the sources from another, or remain at the same bridge but display different cameras or applications. Moreover, thanks to the specific set-up of the system, each operator has its own personalized layout (of displayed items)

regardless of the control point used. As such, operators are able to move about the control room and, again with the touch panels, adapt the layout of any control point to their own preferred viewing requirements.

This way, operators can use any control point to control any remote bridge or tunnel to enable fast and accurate decision making. In addition, with such flexibility, any control point can be used as a backup in case another one fails.



The flexibility to display any signal anywhere is provided by Barco's display controllers. Barco's Transform A controllers which are used to drive the Barco displays, are able to accept video feeds from the Gigabit Ethernet networks used to transmit the different types of signals from the various sites to the central location. The network connects 16 remote sites, including tunnels, remote controlled bridges and special-purpose lanes to the new center. This network is able to transport up to 600 video streams simultaneously, including audio, various telemetry and control data, and LAN-services.

To enable effective remote control of the system, high-quality video images and a very high availability of the services are key. Integrated into the Transform A display controllers, Barco's Streaming Video Card is used, to allow direct connection to the Gigabit Ethernet network to minimize any image quality loss or signal delay. With this solution, the control point displays can present any signal with high quality and minimal.

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