Maintenance VicBracons

Maintaining a multi-tunnel system in Spain that is unique in its size.

Since 1995, the year when the first tunnels of the C25, C60 and Collabós highways were put into operation, Kapsch has been continuously involved in all the maintenance contracts for the Generalitat's tunnels and has also actively participated in the installation of the safety systems of most of the tunnels, which are now under the supervision of the Centre de Control Viari de la Generalitat in Vic.

Kapsch has also been actively involved in several upgrades and modernisations of its security systems, such as the Automatic Incident Detection (DAI) system, the migration to IP cameras or the renewal of the SOS posts.
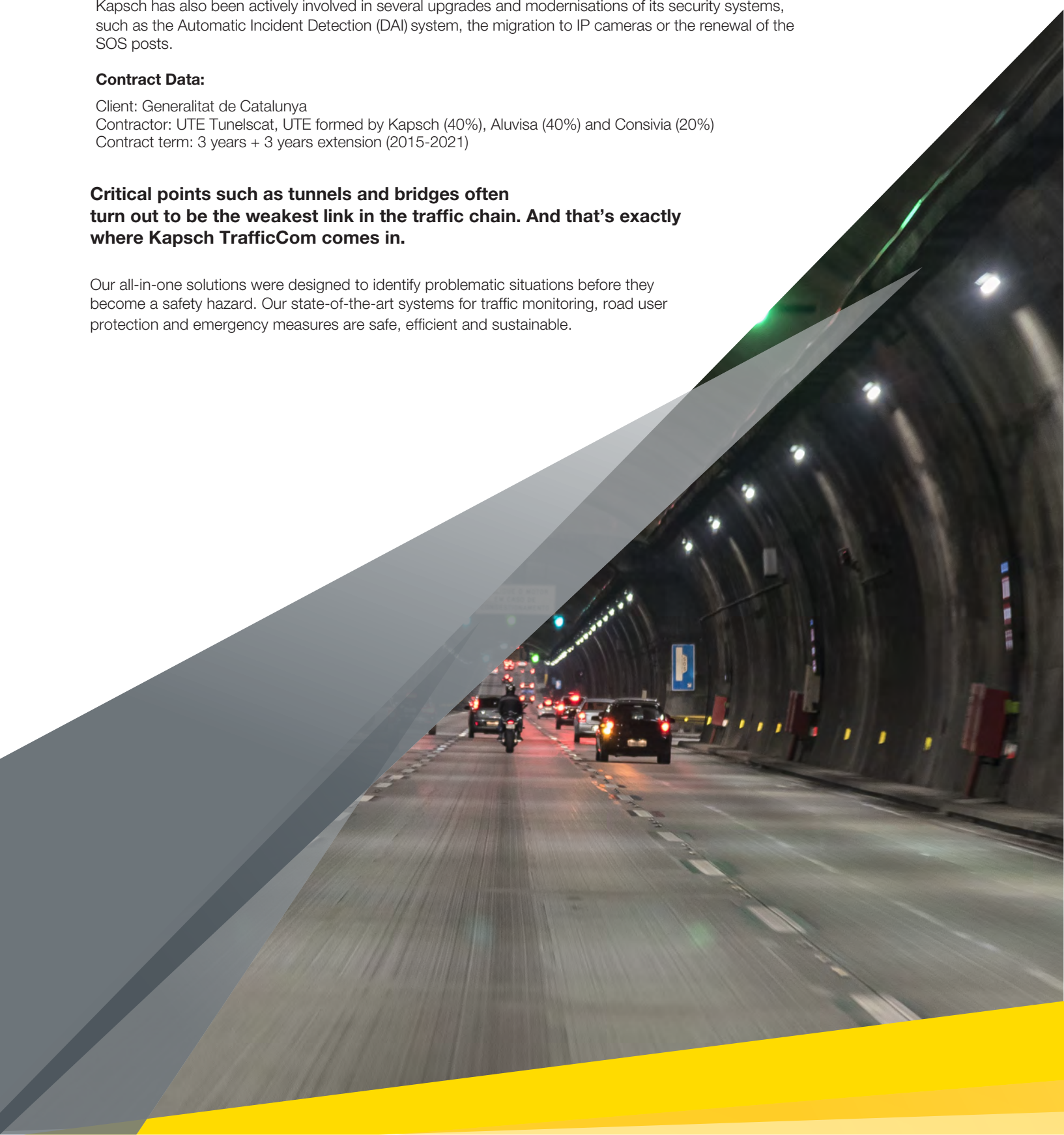
Contract Data:

Client: Generalitat de Catalunya
Contractor: UTE Tunelscat, UTE formed by Kapsch (40%), Aluvisa (40%) and Consivia (20%)
Contract term: 3 years + 3 years extension (2015-2021)

Critical points such as tunnels and bridges often turn out to be the weakest link in the traffic chain. And that's exactly where Kapsch TrafficCom comes in.

Our all-in-one solutions were designed to identify problematic situations before they become a safety hazard. Our state-of-the-art systems for traffic monitoring, road user protection and emergency measures are safe, efficient and sustainable.

Project Scope:

- Extensive maintenance of the systems, hardware and software of the Vic Road Control Center, the tunnels it manages and their access points

- Preventive and corrective maintenance

- Maintenance of tunnel safety systems, mainly:

  - 300 IP cameras ▪ 190 SOS IP poles ▪ 126 fans ▪ 70 variable information panels ▪ 150 arrows ▪ 45 Universal Remote Stations
  - 200 communication nodes ▪ 23 distributed tunnel servers
  - 11 distributed workstations ▪ 8 local control sub-centers
  - 1 main control center (CCVC - Vic) ▪ 1 redundant control center (CCBracons) ▪ 35,000 signals connected to the control via fiber optics, radio relay stations and 4G communication.

- Maintenance covers 27 tunnels, with a total tunnel length of 20 km.

Kapsch's scope within the contract

- Management
- Work at the Control Center:

  - Preventive, corrective and evolutive maintenance of software.
  - Hardware maintenance (workstations, servers, video walls, communication nodes)
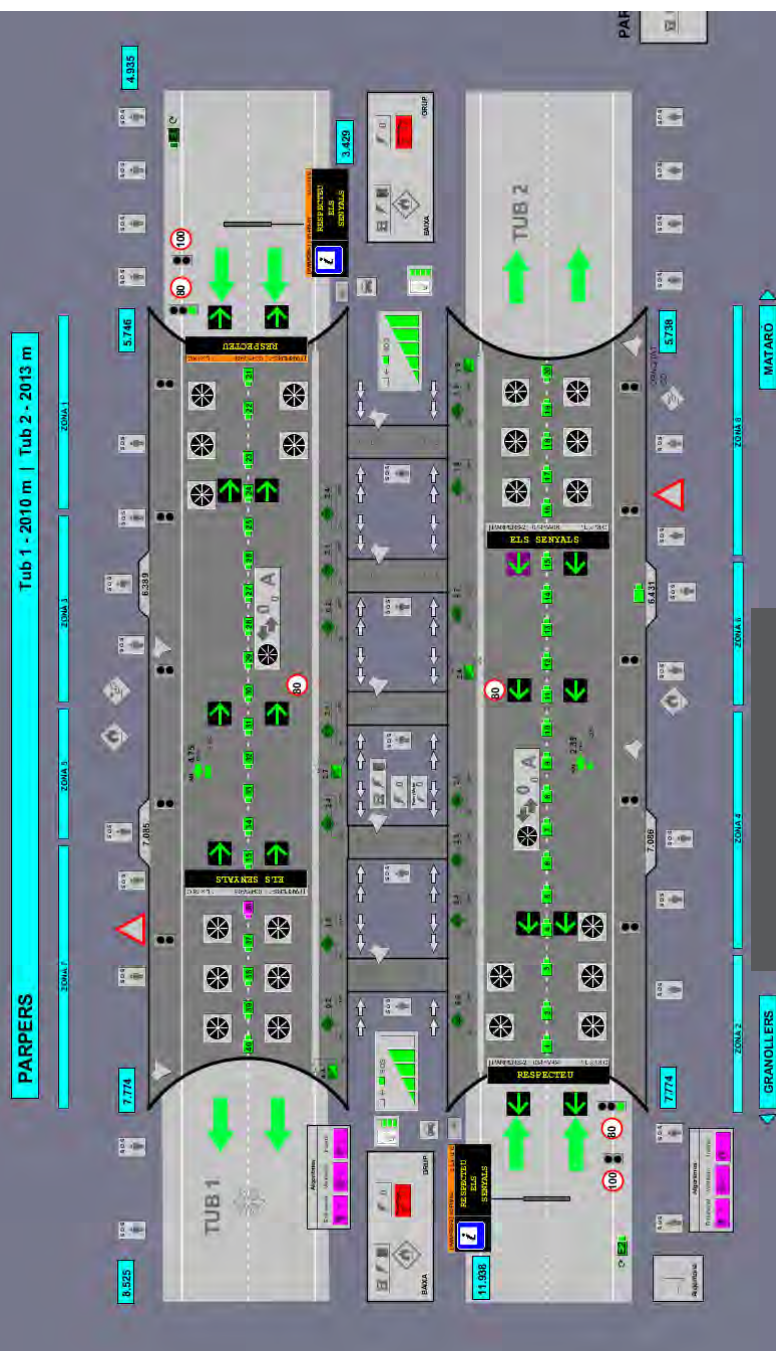
- Tunnel works:

  - Preventive and corrective maintenance of the communications network and the Universal Remote Stations (ERUs)

- System upgrades and modernization:

  - Renewal of IAD system and CCTV cameras
  - Improved access barriers, with the incorporation of homogeneous signalling, PLC control and programming of closing and opening logic
  - Renovation of real time servers and DB servers
  - Renovation of jobs
  - Renovation of Universal Remote Stations
  - Renovation of the Communications Backbone Network
  - Renewal of SOS poles

The Challenges:

- The steady increase in the number of tunnels taken over by the Vic Road Control Centre over the years could lead to problems and complexity in the operation and maintenance of the tunnels.

- Obsolescence of the equipment of some systems .

The Solution:

- After consultation with the customer, standards were defined that each new tunnel had to meet in its architecture, making integration into the control center much easier. This also simplified maintenance work and reduced the spare parts plan.

- Multi-tunnel system centralized in Vic, so that all tunnels can be monitored and controlled from a single operating station. In response to the obsolescence of several critical systems, the most important ones have been gradually renewed or upgraded: access barriers, DAI system, CCTV, servers, workstations, ERUs, SOS posts and communications network.

- All of this with the minimum possible impact on tunnel operations, either because the tunnels were fully open or because scheduled tunnel closures for maintenance were used.

The Added Value

- The experience and knowledge of 25 years in the same contract, being involved and being a proactive part of the constant growth in the number of tunnels controlled from a single control center, as well as their security systems.