Sentinel on watch

Do you know who’s visiting?
Sentinel Borderforce

Intelligent Transportation Systems
Solution for a safer environment

Bad news for smugglers, car thieves, traffickers and other criminals. The risk of being caught at the Dutch border has increased significantly since the introduction of Sentinel Borderforce. The aim of this system for the Dutch Military Police (KMar) is to check every passing vehicle without stopping it, and to pre-select candidates for further examination. Sentinel Borderforce can cope with large numbers of passing vehicles in free flow and does not cause traffic jams because of stopping every vehicle.

@MIGO-BORAS is the solution the Dutch Military Police designed and built when the Schengen Agreement was signed. Schengen abolished border control between member states and guarantees the free flow of traffic across the borders. However, KMar still faced the challenge of how to prevent criminals and illegal immigrants crossing the border in either direction. DXC developed the Sentinel Borderforce system which combines ANPR (Automated Number Plate Recognition) cameras with a central database of suspect vehicles. The system can be used for both data collection and surveillance.

Motivation

International developments in Europe and the rest of the world have brought border protection to the forefront. In 2010, the Dutch government took steps to monitor national borders on a regular basis without interrupting the regular flow of traffic. DXC installed 100 smart cameras at all major border crossings.

The @MIGO-BORAS system is a powerful way to track and prevent unwanted visitors while maintaining the free flow of traffic. Since suspect vehicles are stopped for inspection at a designated place off the highway, the system causes no traffic delays, allowing vehicles to flow freely.
Functionality

Sentinel Borderforce has three functions:

1. To collect anonymous data for analysis;
2. To observe vehicles and select those to be stopped and examined on the basis of analysis;
3. To respond to alerts in situations where there has been a serious or large-scale breach of public order, or in the interests of emergency assistance (as in the case of an amber alert).

The system consists of fifteen fixed camera (or sensor) installations with 100 cameras in total and six vehicle-mounted mobile sensors, plus a central control server application to which all data is sent and processed. The fixed sensors are positioned on the Dutch side of all major motorway border crossings with Belgium and Germany.

The cameras above the motorway recognize the license plate and country of origin of the majority of the passing vehicles of the EU countries and neighboring countries. If the license plate is present in the central database or meets certain criteria, the vehicle is stopped for further inspection. Mobile supervision operations conducted by KMar are intended:

1. To combat illegal immigration, organized or otherwise (human trafficking or people smuggling) at the earliest possible stage, and to prevent and discourage other foreigners from crossing the Dutch borders illegally;
2. To help combat cross-border and migration-related crime.

Figure 2. Sentinel Borderforce fixed camera and sensor.
Versatile

Sentinel Borderforce is the solution for border security. It can cope with large number of passing vehicles and does not lead to traffic jams. A result is determined in a matter of seconds, even if the central database is located several hundred kilometers from your checkpoint. The system has a fixed and a mobile solution. In the case of the mobile solution, a camera is mounted inside the grill of an unmarked vehicle; the result of any vehicle check is available via a laptop inside the unmarked vehicle.

Sentinel Borderforce can be adapted to meet your specific requirements and budget. For example, instead of color cameras, black and white cameras, which are more cost effective but which do not compromise the recognition of vehicles, may be chosen.

Figure 3. Sentinel Borderforce on watch.
Operation

The 2015 refugee crisis forced several European countries including Sweden, Denmark and Austria to reintroduce old-fashioned border controls. The 1985 Schengen Agreement allows these kinds of border controls only for a limited period of time. The Dutch government recognized at an early stage that it wants to monitor its national borders on a regular basis. To meet this requirement, in 2010, DXC installed smart cameras at all major border crossings. These cameras register every passing vehicle, after which the central application compares it in 5 seconds with a central database and signal a border security officer down the road to stop any suspicious vehicles for further inspection.

Management

DXC can take care of the managed services for you. Changes and upgrades to the Sentinel Border Control system can be planned and executed within SLA’s.

DXC executes the managed services of all Traffic Law Enforcement systems according to the ITIL V3 processes and can count on an international 24/7 service desk for receiving calls, 24/7 monitoring and 2nd and 3rd line support. Field services are executed by a combination of own SMEs and field support workers from partner organizations. The Service Manager reports incident management reports, daily reports and service level reports to the customer.

DXC can call upon their own Subject Matter Experts (SME) and several software suppliers for the license plate training and setting up volume rich truth tables which are used in iteration to achieve the required performance.
Conclusion

Sentinel Borderforce is a powerful weapon in the fight against border crime. It does not interrupt the flow of traffic or create traffic jams since only those vehicles deemed suspicious are stopped at a designated place beside the motorway. Sentinel Borderforce is a good example of the DXC approach: smarter solutions at the moment you need them. At no point during the refugee crisis, the Dutch government was forced to close the border thanks to the good work of the Military Police and its DXC observation system Sentinel Borderforce.

This success demonstrates DXC’s ability to implement smart solutions, ready when you need them. Thanks to the good work of the Dutch border security agency and DXC’s Sentinel Borderforce, the Dutch government has been able to track, detect and control border crossings without increasing travel time or having a negative impact on the economy.

Figure 5. Maintenance on the road side.
Other innovative applications

Vehicle recognition and registration technologies can be used for more than enforcing speed limits, traffic laws and borders.

- The Amsterdam RAI Exhibition and Convention Centre uses ANPR (automatic number plate recognition) technology to facilitate parking.

- The Dutch transport ministry (Rijkswaterstaat) pays motorists to avoid driving in areas with roadwork during peak hours. The program runs on ANPR cameras, installed at the road worksite and on bypass roads that monitor vehicles.

- DXC also delivered the central system for the Netherlands’ traffic information broker, which provides traffic control centers and service providers with reliable and predictable access to data. Over 6,600 km of motorways, provincial roads and secondary roads feed traffic information into the system. DXC’s unique parallel processing technique is able to deliver vast datasets to these parties, tailoring data delivery to the information each user requires.

Why DXC ITS?

DXC ITS has vast experience, technologies and a compelling partner network to translate clients’ traffic management goals into practical solutions and systems.

As an independent and full-service provider, we stay in touch with industry challenges and provide expert, innovative solutions tailored to each project.

Through a vendor-agnostic approach, we work to find the best solution to your total highway needs by integrating best-of-breed products and delivering solutions with a high success rate.

We take full responsibility for the solutions we deliver, from concept, design and infrastructure development to the creation of back-office systems, data processing, maintenance and support. When appropriate, we leverage our extensive partner network to bring in external expertise and help deliver high-quality results.

Conducting each project is a specialized DXC team composed of project and delivery managers, architects, software and hardware developers, and system and database administrators. As principal contractor, DXC is the single point of contact for all parties and partners involved. Our ITS specialists are responsible for the software development and the maintenance of the solution, and we enable close cooperation with both the client and specialized partners in our engagements.

In addition, DXC’s global data science and analytics teams help customers across the globe interpret vast datasets, delivering unique data-driven insights.

Our technology independence gives us the agility to create the right solution, tailored to your unique challenge, every time.

It also frees us to innovate at the speed of technology, offering you the most cutting-edge solutions. Our talent works alongside yours, understanding your business at a fundamental level to ensure that change transforms your organization for the future without breaking what works.
Company overview

DXC Technology helps clients harness the power of innovation to thrive on change. For more than 60 years, we have successfully guided the world’s largest enterprises and government agencies through successful change cycles. We take pride in our technology independence and our role as a trusted advisor. Our deep experience gives us a clear and confident vision to help clients navigate the future.

As the world’s leading independent, end-to-end IT services company, we are uniquely positioned to lead digital transformations — creating greater value for clients, partners and shareholders, and presenting growth opportunities for our people. We are among the world’s best corporate citizens.

We have 170,000 employees in more than 70 countries, serving some 6,000 clients. We tap into global talent, powerful next-generation IT solutions and extensive partner relationships to help clients transform digitally and seize opportunities. Our extensive partner network helps us drive collaboration and leverage technology independence. We have established more than 250 industry-leading global Partner Network relationships, including 14 strategic partners: Amazon Web Services, AT&T, Dell EMC, HCL, Hitachi, HPE, HP, IBM, Lenovo, Micro Focus, Microsoft, Oracle, PwC, SAP and ServiceNow.

For more information about DXC’s Intelligent Transportation Systems solutions, contact Edwin Roestenburg by telephone: +31.30.657.4406 or email eroesten@dxc.com.

Learn more at www.dxc.technology/its

More reasons to choose for DXC Technology Intelligent Transportation Systems

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<tr>
<th>Experience</th>
<th>Employees</th>
<th>Countries</th>
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<tbody>
<tr>
<td>More than 50 years of experience in Outsourcing, Business Solutions &amp; Technology.</td>
<td>More than 170,000 employees worldwide.</td>
<td>Represented in more than 60 countries.</td>
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<th>Legacy</th>
<th>International</th>
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<td>ITS operates since 1996.</td>
<td>Placed and manages several Weigh-in-Motion systems in Belgium.</td>
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<tr>
<th>Multiple</th>
<th>Large</th>
<th>Clients</th>
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<td>Realized and managed more than one hundred Sentinel Spot Force systems in the Netherlands.</td>
<td>Supplier of the most section control systems in the Netherlands.</td>
<td>Serving some 6,000 clients worldwide.</td>
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