PORT AND BORDER SECURITY: TECHNOLOGY TO TRANSFORM

The escalating problem of cross-border movement of contraband is driving the need for advanced technology, which not only detects a range of illicit or dangerous items, but also introduces a much higher level of automation. Add to this ever-increasing volumes of traffic at ports and land borders, a requirement for stricter controls and faster clearance times and the list of demands for border security is long and complex.

Image analysis operators are typically fed complex x-ray images, which they match with the cargo manifest but must rely on initiative, training and experience to recognise potential target items. Whilst some types of freight are easy to identify, others can be very difficult to distinguish – making the 'human factor' a very significant part of the process. So, is it suspicious or not? Is the quantity and weight correct? Is it really fruit or something completely different? Scanned images can, of course, be analysed further but with up to 20 vehicles or 100+ containers passing across a border every hour, there simply isn't the time. So what is the answer?

THE POWER OF TECHNOLOGY

In an ideal world, technology should provide operators with the tools they need to maintain exacting security standards and yet scan more cargo without increasing their workload. A system which automatically inspects loads and vehicles and highlights only those suspected of harbouring a range of defined targets and/or show abnormalities would undoubtedly lessen the guesswork, speed up analysis and support the secure movement of goods.

Focusing resources and streamlining the security process offers clear benefits, including saving valuable time on analysis. The burden on the operator checking the images is reduced by allowing them to centre their attention on the relevant threats and targets. Automated, assisted decision-making can therefore increase inspection rates and throughput and generally ensure a smoother procedure which, in turn, will limit illegal trade and increase tax revenue.

There are systems on the market today which offer this impressive technology. Conscious of the fact that it is virtually impossible to list everything that could usefully be identified, global specialist, Smiths Detection has, for example, initially concentrated on three key areas for its' innovative iCmore™ software suite: anomalies; radioactivity; and cigarettes.

As the name suggests, iCmore™ Anomalies searches out and detects any apparent abnormalities in the cargo container. It is not looking for known targets but anything that seems 'wrong' or 'out of place' – even contraband, illegal goods and all objects forgotten or intentionally left behind in containers which should be empty. iCmore™ Radioactivity detects anything emitting radiation; and iCmore™ Cigarettes finds cases of cigarettes hidden in a load using pattern recognition to find similarities between the active image and library data.
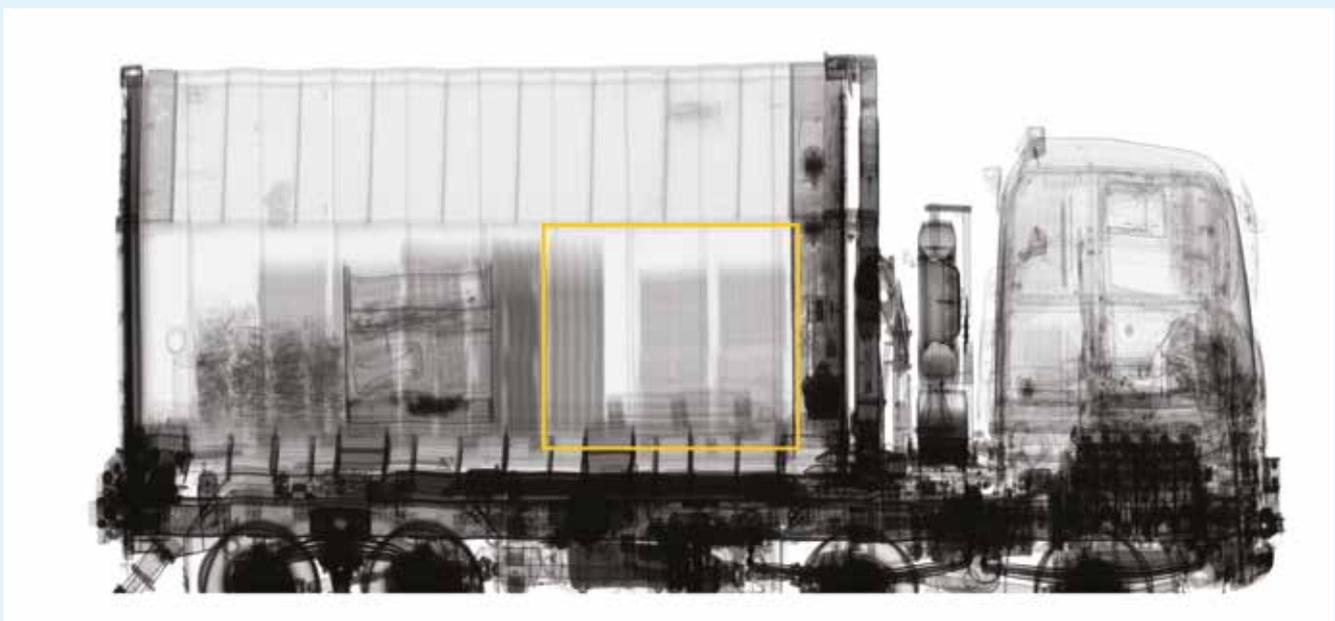
iCmore Cigarette Image in high resolution with mark 2

Top: iCmore Radioactivity with color range; Bottom: None empty container
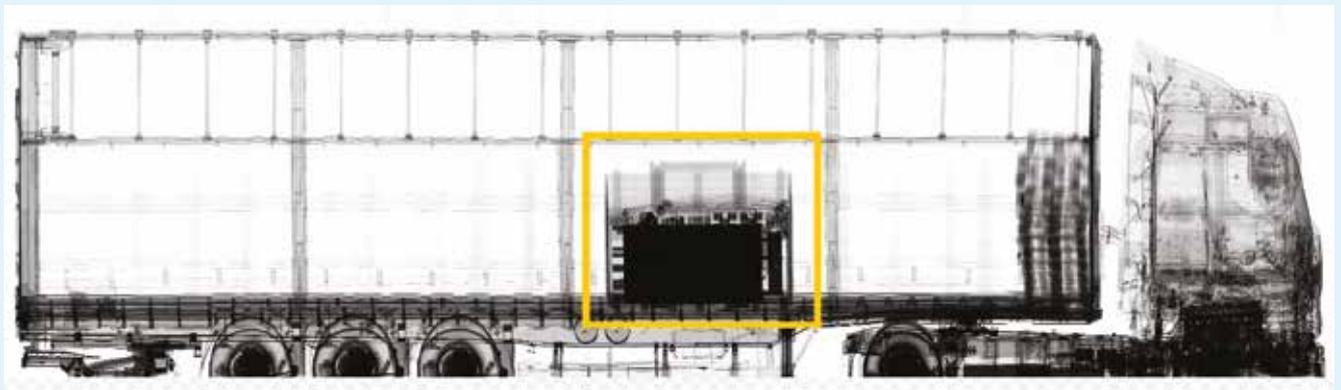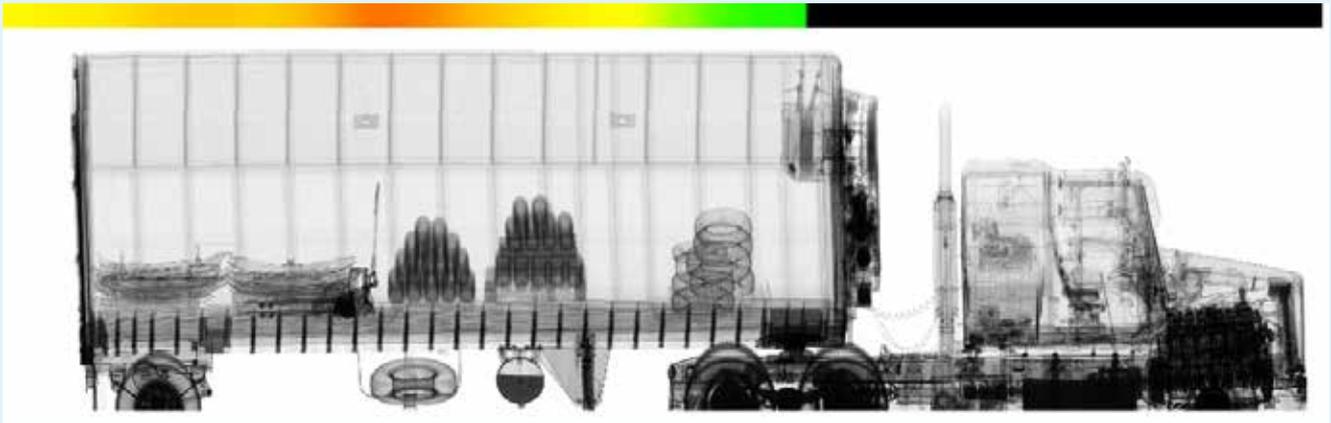
Further target items will be added to the iCmore™ Cigarettes software later this year.

KEEPING CONTROL

The best systems must also ensure that ultimate control remains with the security team by offering different operating procedures. Senior personnel should have the option to choose a fully automatic mode which filters the x-ray images and only displays those of suspect vehicles or loads; or they may prefer to have all images displayed with automatic alerts when a threat or target is detected. Alternatively, an 'on-demand' or 'demand assisted' mode would display all images but clearly tag them as 'suspicious' or 'not suspicious'. Finally, an operator may need to get reassurance from the system following a manual analysis.

GET READY FOR 'DIGITAL CUSTOMS'

Not only does determining whether a load is suspect or not need to be more automated, but the whole decision-making process would also benefit from being handled centrally, typically in a command office where key resources and people are aligned in their security mission. This can be achieved by integrating the new scanning technology into the overall inspection process – the first steps in growing the next generation 'digital customs' approach.

Centralisation, ease of use and a collaborative capability are the necessary ingredients for the creation of true data fusion. The convergence of inspection and external information into a single package produces the intelligent data needed for further smart analytics to support more accurate decisions and a more efficient inspection process.

ALREADY ON THE HORIZON

Security at ports and borders needs to evolve quickly as threats change, so preparation for the future is critical. Authorities will continue to demand the ability to process even more targets with fewer resources and today's partial solutions will have to develop with the market. New targets such as weapons, drugs, currency and alcohol will certainly need to be included and it should not be long before systems can detect anomalies in container walls, tyres and fuel tanks. The option to compare vehicles and cargo weights is also anticipated.

Modular digital systems built on a central platform will open the door to a stream of new tools and applications with compatibility between manufacturers – all viewed on a single window. Based on strict industry standardised, large enterprise architecture, these solutions will be fully scaleable to suit individual requirements. Tomorrow's technology is already being developed ready to upgrade today's systems.

ABOUT THE ORGANISATION

Smiths Detection is a world-leading designer and manufacturer of sensors that detect and identify explosives, weapons, chemical agents, biohazards, nuclear and radioactive material, narcotics and contraband. Our comprehensive range of detection technologies includes X-ray, trace detection and infra-red spectroscopy that helps customers in the global transportation, ports and borders, critical infrastructure, military and emergency responder markets.

ENQUIRIES

www.smiths.com/smiths-detection.aspx