|| EXIS TECHNOLOGIES - Hazcheck Detect

the challenge

Non-declaration and Misdeclaration of Dangerous Goods

In recent years there has been a steady rise of reported incidents of particularly container fires on ships, with an estimated sixty-day average occurrence of serious fires (www.cinsnet.com). These incidents occur for a variety of reasons and often a combination of factors, one recurring theme is misdeclared or undeclared dangerous goods cargo which can result in incorrect stowage onboard vessels. Stowage of dangerous goods incorrectly can have catastrophic consequences to life, infrastructure and the environment and incur huge costs.

With Hazcheck Detect, Exis Technologies Ltd. has established a real time Cargo Screening solution. A tool for Shipping lines to assist the identification of misdeclared and undeclared cargoes prior to loading. This early intervention allows DG teams to question shippers, obtain further information such as Safety Data Sheets and even arrange cargo inspections.

Once suspicious cargo is identified it becomes possible to better inform the shipper as to correct declaration and going forward ensure the correct and safe handling of the cargo, thereby reducing incidents.

the innovation

Hazcheck Detect is a SaaS solution offering powerful cargo screening which scans all booking details for keywords and phrases, validates against rules and highlights suspicious bookings to identify misdeclared and undeclared dangerous goods (DG) and other compliance cargo.

The tool uses around 10,000 keywords to find undeclared dangerous goods, working through 4,500 'rules'. Currently over 500,000 bookings are being screened each day.

Within Hazcheck Detect a Case Management tool supports the mobilisation of the inhouse Cargo Screening team, acting as an extension to the DG Team, who are better placed to investigate risky containers presented by the system on a daily basis.

- Undeclared DG – checks cargo that is not declared as DG; suspicious items are looked for that perhaps should be declared as DG.
- Misdeclared DG – checks cargo which is declared as DG, but not declared as the correct DG.

The rules have in-built complex logic, which has been designed so that it can be replicated and shared between shipping lines. This is vital, only when rules are applied consistently through industry can we hope to stop bad actors or ill-advised shippers from misdeclaring and undeclaring cargo.

All exchange of information is handled via a secure API The large amounts of anonymised data being generated by the system in the form of detailed analytics is being provided to both inform industry as to the scale of the issue of misdeclared and undeclared DG and to feed machine learning models with a view to continuously improve the quality of rules.
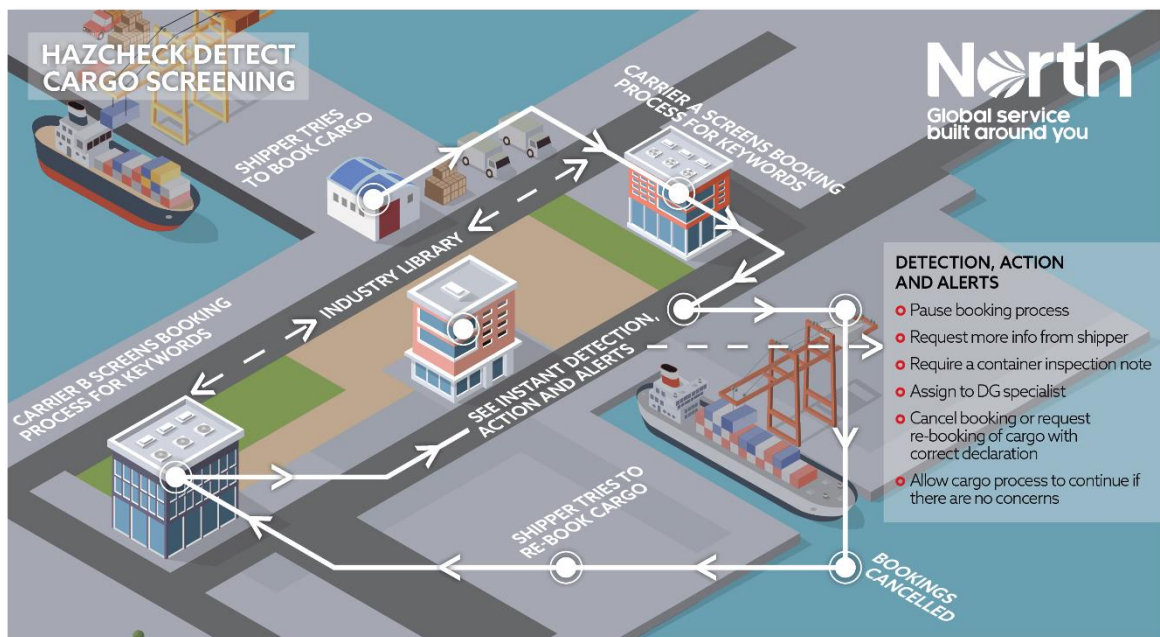
how it was implemented

Maersk was the first customer signed to the new tool. The technical challenge was to ensure that very large amounts of booking data, over 500,000 booking items per day, are screened quickly against 10,000 rules providing outcomes to the client within seconds.

Being developed with the cooperation of major shipping lines has allowed rules logic to be refined. Throughout 2022 we have been on-boarding and testing with many more shipping lines to the point where now 4 major carriers are using Hazcheck Detect. These carriers accounting for approximately 30% of the global container volumes carried.

Onboarding these new customers has ensured that the system has been developed to be highly configurable to other data sets, as clients data is not always presented in the same way. Organising the source data effectively allows for consistent screening against similar rules producung the same outcomes and also consistent analytics.

To ensure alignmment between users and rule continuity we're actively engaged in regular Industry Library Discussions and workshops attended by Hazcheck Detect users, an initiative that has not previously taken place within the industry.

result

The solution is designed to significantly reduce the amount of misdeclared and undeclared DG cargo carried in Container vessels at sea.

Hazcheck Detect is currently screening more than 10 million requests per month. One customer has advised from their 500 'hits' a day around 40 or 50 containers a week are stopped from being loaded onto a ship. Typically Hazcheck Detect will flag between 1-2% of cargo as 'suspicious' of those we are typically finding 1-2% of the cargoes as Misdeclared or Undeclared, typically. 1,000-2,000 containers per month overall are being identified with the potential to cause harm or incident.

These 10 million screening requests generate a lot of analytical data. We are now exploring this data to understand those items considered to be most likely to be undeclared or misdeclared, and how machine learning may be used to improve and refine results moving forward.

We already use information on popular rules to steer our industry discussions to ensure the most frequently hit rules operate with greatest efficiency. Very clear patterns are emerging where shipping lines are consistently identifying similar cargo types which are commonly undeclared or misdeclared.

conclusion

Exis Technologies are absolutely delighted with the impact Hazcheck Detect is having on the identification of misdeclared and undeclared Dangerous Goods.

Our customers having implemented screening for dangerous goods as a priority are now exploring how the same technology may be used to identify illegal wildlife shipments, compliance cargo or any other cargo where there are additional checks or controls in place.

We are now looking to collaborate with other organisations to consider how new rules libraries can be introduced and what additional analytical data output adds value to both the industry and Hazcheck Detect. Therefore, the solution will not be stagnant it will continue to evolve, adapt and grow with the industry.

Pre-empting incidents on board ships or in and around port areas is not a perfect science. Implementing tools like Hazcheck Detect which offer prevention, rather than putting out fires after the fact, can help shipping lines to ship DG more safely without the risk of high costs associated with damaged goods and ships.

Further information can be found at https://existec.com/