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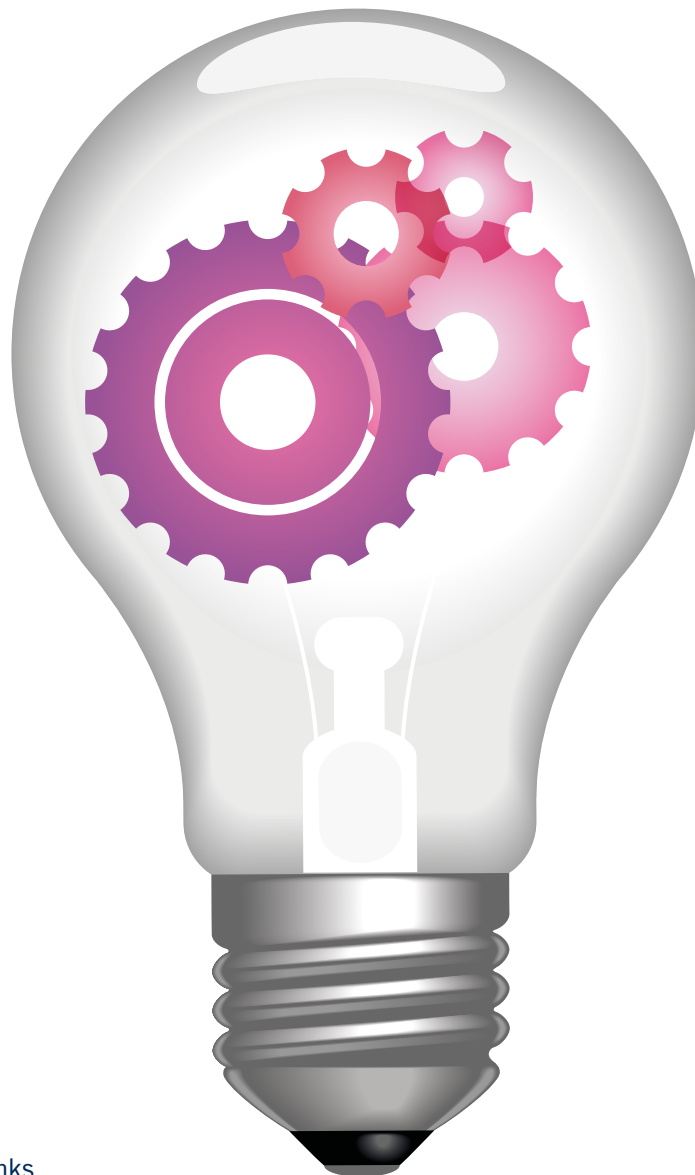
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The business school that thinks
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The value of big data to big ports

By **Rob Zuidwijk**

The Port of Rotterdam is sitting on a goldmine of data. But is this gold being effectively mined? The “internet of things” is fundamentally changing global supply chains. The effective use of information will have a positive impact on everything from operational efficiencies to credit terms and cash flow.

In the 1960s a standard was introduced for shipping containers and the infrastructure needed to process them during transport. Although the standard was slow to be globally adopted, the time it takes to move 30 tonnes of goods from a ship to dry land has been reduced spectacularly to a mere 100 seconds.

While this is great news for stakeholders it means that a ship's captain can no longer physically inspect the goods. Instead we rely almost completely on the information surrounding the containers to efficiently (and securely) move them.

Research we have recently undertaken, in essence, offers a stylised examination of these two high-level concepts: how to efficiently move large

quantities of goods and (more importantly) the appropriate management and dissemination of the *information* surrounding the containers in order to make intelligent decisions about the handling of goods.

Shifting from a physical inspection of goods to a reliance on information has changed the shape of supply chains. As Ronald Paul, chief operating officer of the Port of Rotterdam Authority succinctly puts it: ‘Without data, no logistics.’

The amount of available information on transported goods is vast. There may be hundreds of stakeholders in a single supply chain, with each stakeholder having very different priorities and viewpoints, as well as very different types of information to add to

the pool. The Port of Rotterdam deals with thousands of supply chains and 12 million containers every year, making it one of the most potentially information-rich transport hubs on the planet.

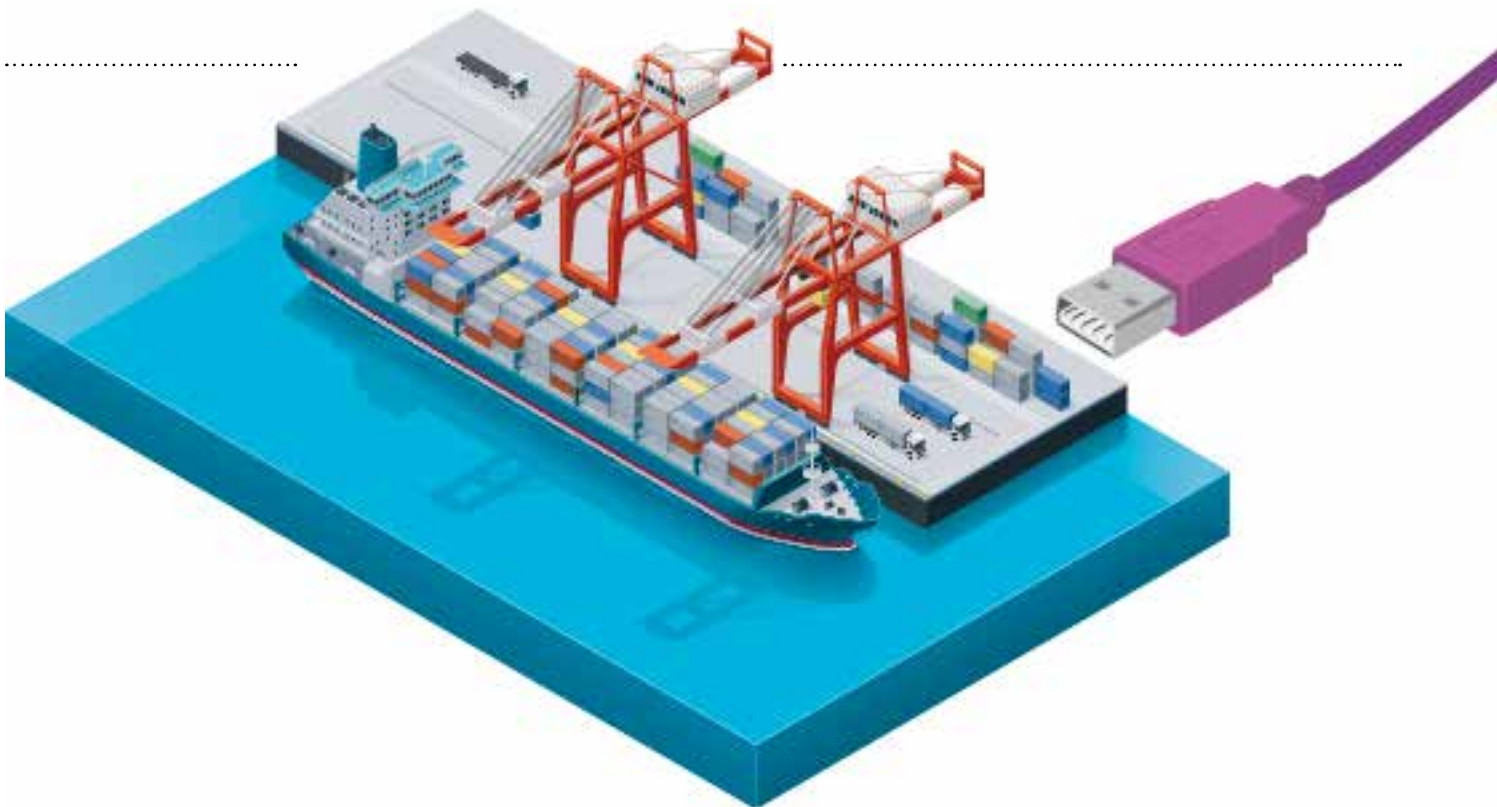
However the only way to create value with information is to use it. This seems intuitive but many companies struggle with the application of this principle. In our paper *The value of information in container transport*, we demonstrate using mathematical argument that even if you gather only a little more information than you had before, the result could be a significant improvement in current processes. But this only holds true if that available information is actually used.

The transport industry has traditionally been relatively slow to understand the full potential of the information it holds. Even the Port of Rotterdam's white paper, *Port Vision 2030*, does not consider information much beyond its enabling role in operations highlight the role of ports. In this paper, the port is naturally described as a global transportation hub and industrial cluster, but not as the hub of information that economic and social theory expert Jeremy Rifkin foresees when he says: ‘Rotterdam is the future world port capital of the Internet-of-Things.’ However this is progressively changing...

Mining the golden data

As recently as 2013 there have been pleas for a coherent approach to information gathering and distribution within the shipping industry. Since the beginning of this century the Port of Rotterdam has invested

*“...if you gather only a little more information than you had before, the result could be a **significant improvement** in current processes.”*



€100 million in its intelligence systems, with an end-goal of refining its role in supply chains.

Portbase is a central information system allowing every stakeholder in a supply chain to log in and add relevant information as well as track goods and other key details. There are more than forty services offered via a single portal. This has had a positive effect on lowering administrative costs while reducing the combined number of yearly phone calls by 30 million and the number of yearly emails by 100 million.

It has also reduced the number of trucking kilometres to and from the Port of Rotterdam by 30 million per year. This emission reduction is paired with the port's commitment to be part

of the Third Industrial Revolution in which renewable energy, particularly wind energy, is the primary or only source of power and Rotterdam will offer the lowest ecological footprint of any port in the world by the year 2030. It is interesting to note that windmills now power the new APMT terminal in the 'world's smartest port'!

Jeremy Rifkin's statement that 'there will always be transport' does not imply that the nature of the transportation business will not change. This change has been signified by the introduction of the maritime container standard, and new developments are under way. Indeed, the Netherlands and the Port of Rotterdam are forerunners in the deployment of automated trans-

port solutions, both for the transportation of people and freight. Such developments will change the transport business completely, as the supplier of freight mobility services using automated transport are yet to be determined. And again, information is key.

In order for large hubs like Rotterdam to thrive, Rifkin urges the port to establish itself as the hub of 'the logistics internet: a network that integrates existing logistical infrastructure so that the billion plus people in the EU region can engage in commerce and trade with efficiency and ease - and with a low carbon dioxide footprint.'

Mathematically, our ideal-scenario paper offers some proof of this notion: that collection, processing, and ►

efficient dissemination of information is a valuable, and probably very saleable, asset. This basic principle may be extrapolated to any industry that sells products or services.

Customisation of services

The one-size-fits-all approach to shipping cargo worked in the 1960s. Standardised processes were established that significantly decreased shipping and handling times. Fifty years later though, we believe this system has matured to a point where we can use information and information systems to diversify service options for the customer. This kind of diversification can be seen in airlines' different class offerings, and some transport companies are doing it on an ad-hoc basis. However, there is not yet a systematic approach, although port operators are making first steps as we speak.

The lack of a systematic approach is partly due to knowledge gaps surrounding particular cargo. While broad sub-groups of container types are clearly defined (refrigerated units are easily identifiable, as are those containing hazardous substances), the specific contents are often not

known to key stakeholders. For instance a port operator may not be aware that a particular container contains valuable computer parts or blood samples requiring extremely delicate handling.

On one hand this can be advantageous: ignorance is often bliss where liability is concerned. But on the other hand an opportunity is lost: it is pure speculation to wonder how many customers may prefer a more expensive "premium" handling option for their goods, but with no systematic way to include this information in the cargo's notes we will never know. As fast and reliable shipping is often an integral part of the credit terms and cash flow of businesses, global port authorities may be well served by following the Port of Rotterdam's example and more effectively collecting and managing crucial information.

Although our paper itself is theoretical, we do believe it signals an important fact in practice; namely that the port as a global hub has still a lot to gain from sharing and using data, in particular to improve container transport performance and therefore improving efficiency across the entire supply chain. ■

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