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SMASH!

Ministry of Infrastructure and Water Management

Smart Shipping on the Neterlands' inland waterways

Nancy Scheijven-Westra

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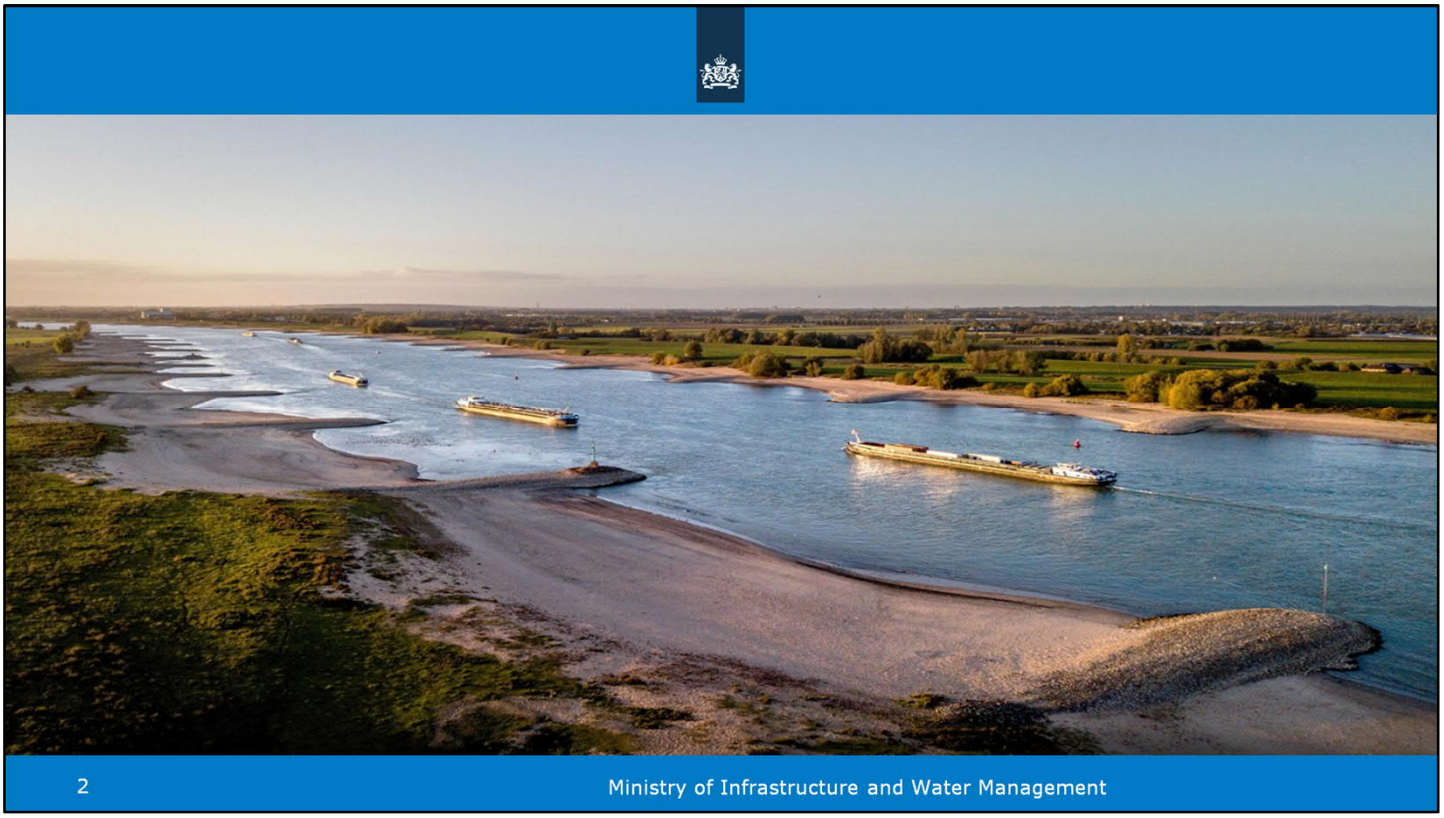
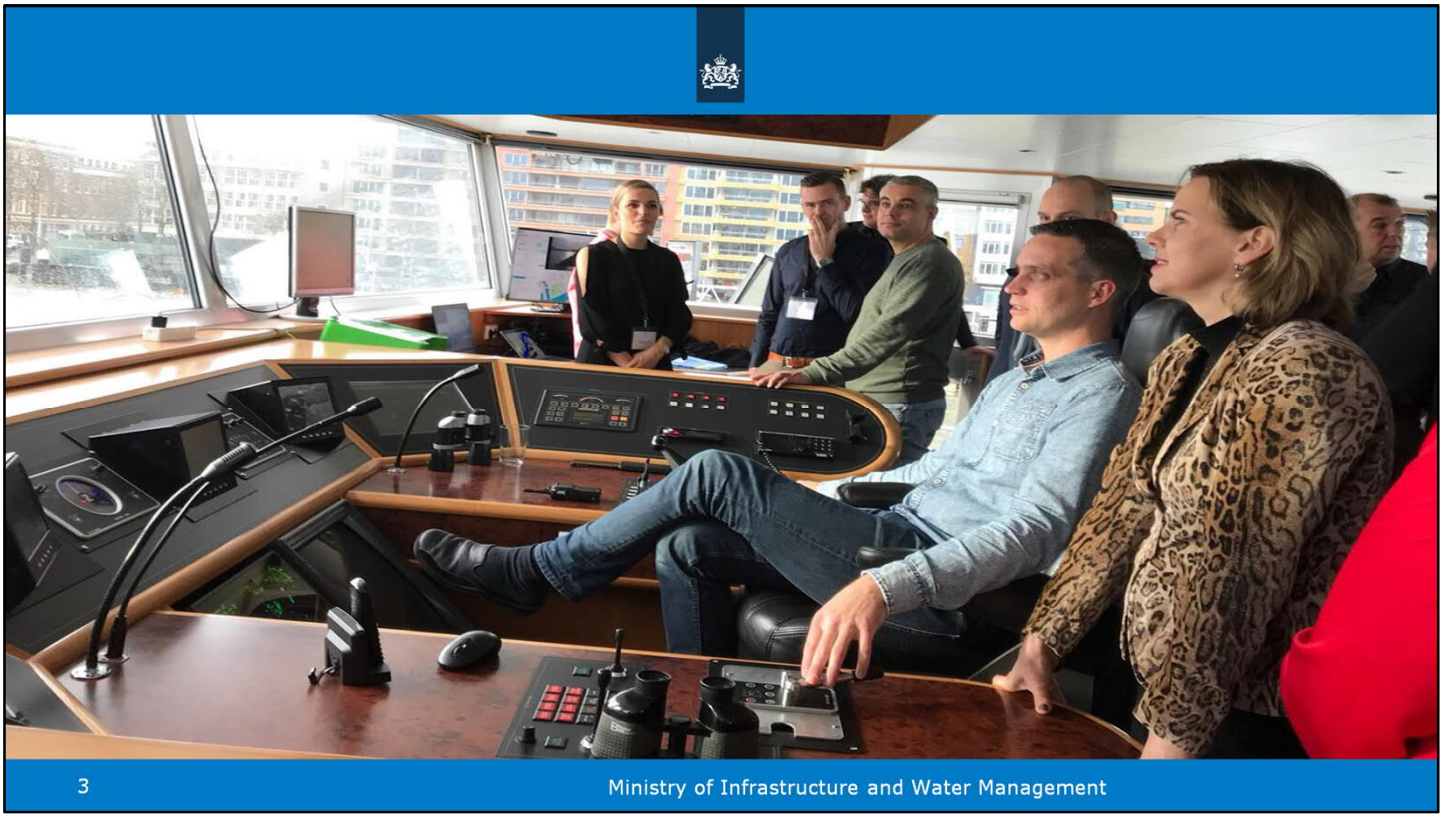


In 2017, the Ministry of Infrastructure and Water Management committed itself to what we call Smart Shipping: all innovations with regard to accommodating highly automated sailing at sea and inland waterways. The ministry foresees a lot of potential in this development in relation to its policy goals: like sustainability and adaption to climate changes. Therefore we facilitate these developments.

A Ministry-wide Smart Shipping program has been set up for this purpose. Our program does not only focus on waterway infrastructure, but also on policy making, legislation and safety inspections. Different units within the Ministry are involved: not only the policymakers and legislators, but also more operational units like the coastguard, inspection bodies and Rijkswaterstaat.

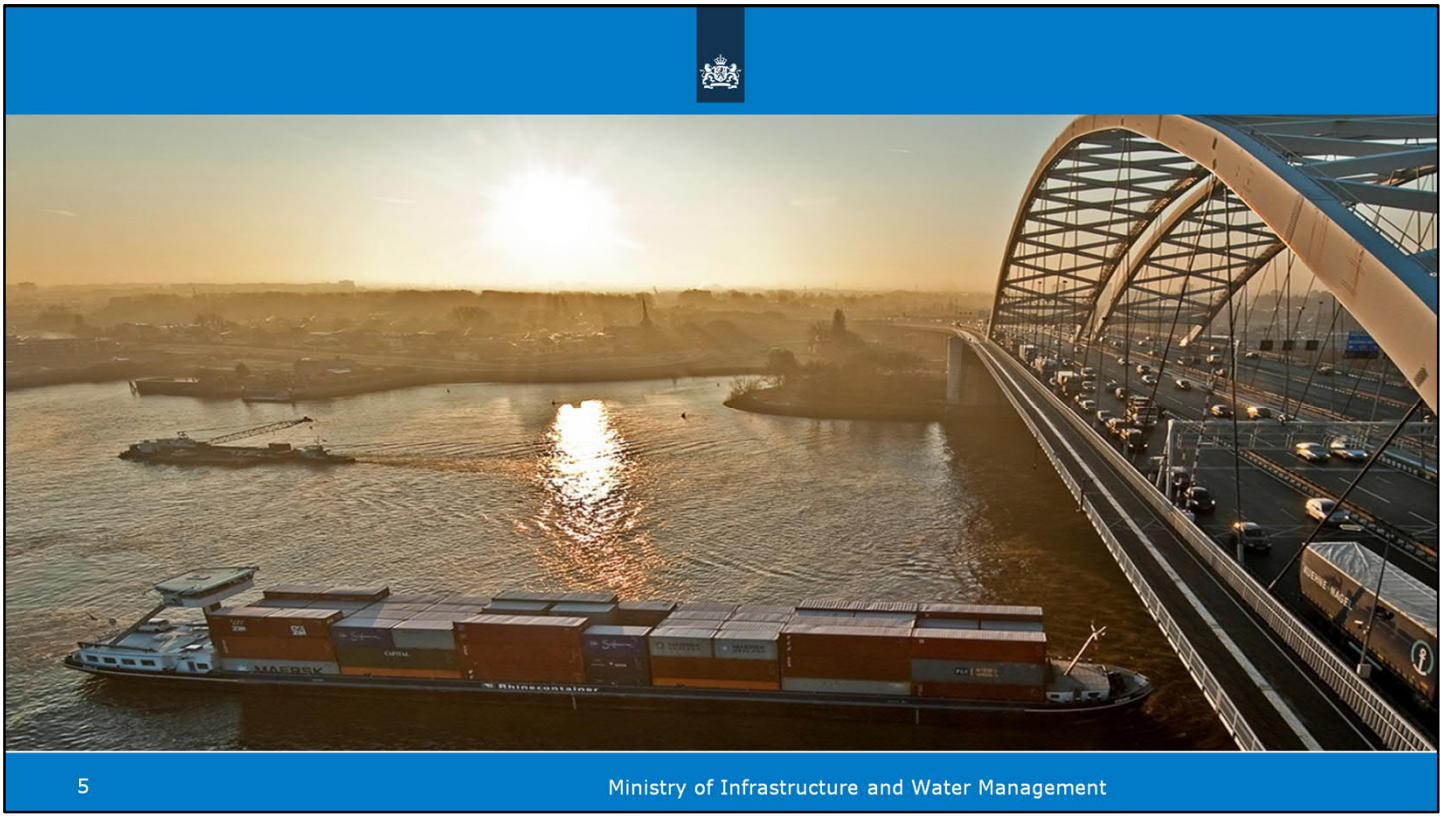


There are good reasons for our Ministry to invest in this subject. We feel that Smart Shipping will contribute to the competitiveness of the Dutch economy, in particular the shipping sector. But we also feel that large improvements on safety and sustainability can be made through smart shipping. In fact: we will need these improvements to justify the activities and investments of our Ministry on this subject.

First, let me go into the importance of the shipping industry in the Netherlands.

The port of Rotterdam is the largest port in Europe. Starting the Golden Age, sea shipping is an important activity in our country. For serving the hinterland around 6000 Dutch inland ships are essential: 365 million tons of cargo are transported by the inland fleet annually, representing one third of the total volume transported. In a lot of cases using our 3.460 kilometers of inland waterways for transportation of cargo is a excellent alternative for transportation via road, relieving the pressure from our overloaded roads. When inland shipping would be absent, ports like Rotterdam simply would not be able to function. It's vital for our economy.

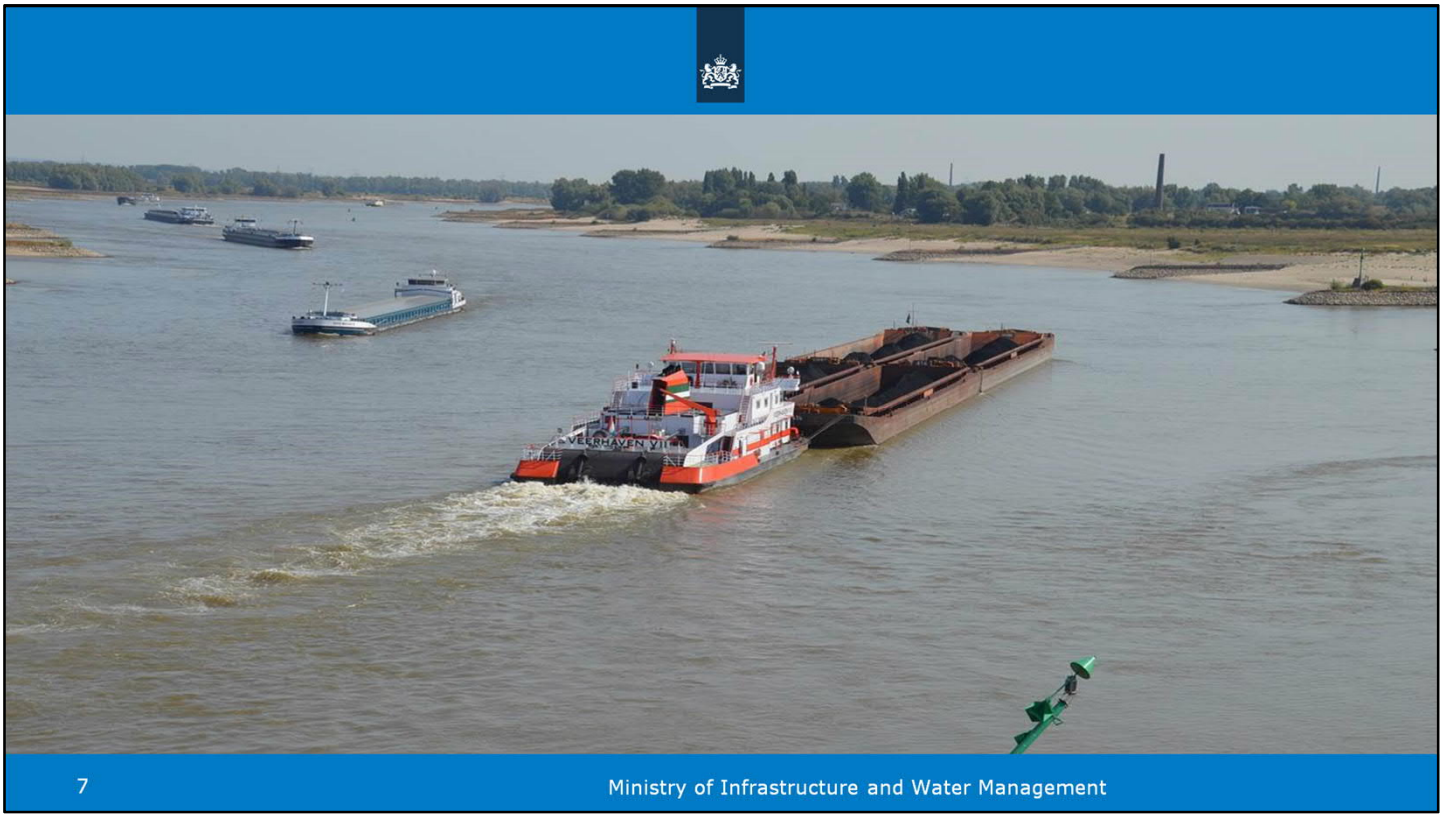
More than 30.000 people work in the shipbuilding industry. And with a turnover of 7.3 billion euro, the sector has a significant contribution to the Dutch economy. To ensure the Dutch shipping industry will play a role in the future, it is essential that innovations like smart shipping are used by our industry. And they have to be frontrunners!



Besides the economical potential, Smart Shipping is of great importance for our Ministry as well. One of the policy goals of the Ministry of Infrastructure and Water Management is the accessibility of the Netherlands through safe and sustainable transport by water.

Inland water transport is not only much more sustainable and more safe then road freight transport, it also helps relieving the Dutch highly congested roads. While expansion of our road infrastructure network is only possible to very little extent, with increasing freight volumes it is a relief that the blue infrastructure of rivers, canals and inland ports do have remaining capacity. We will need the shipping capacity very hard.

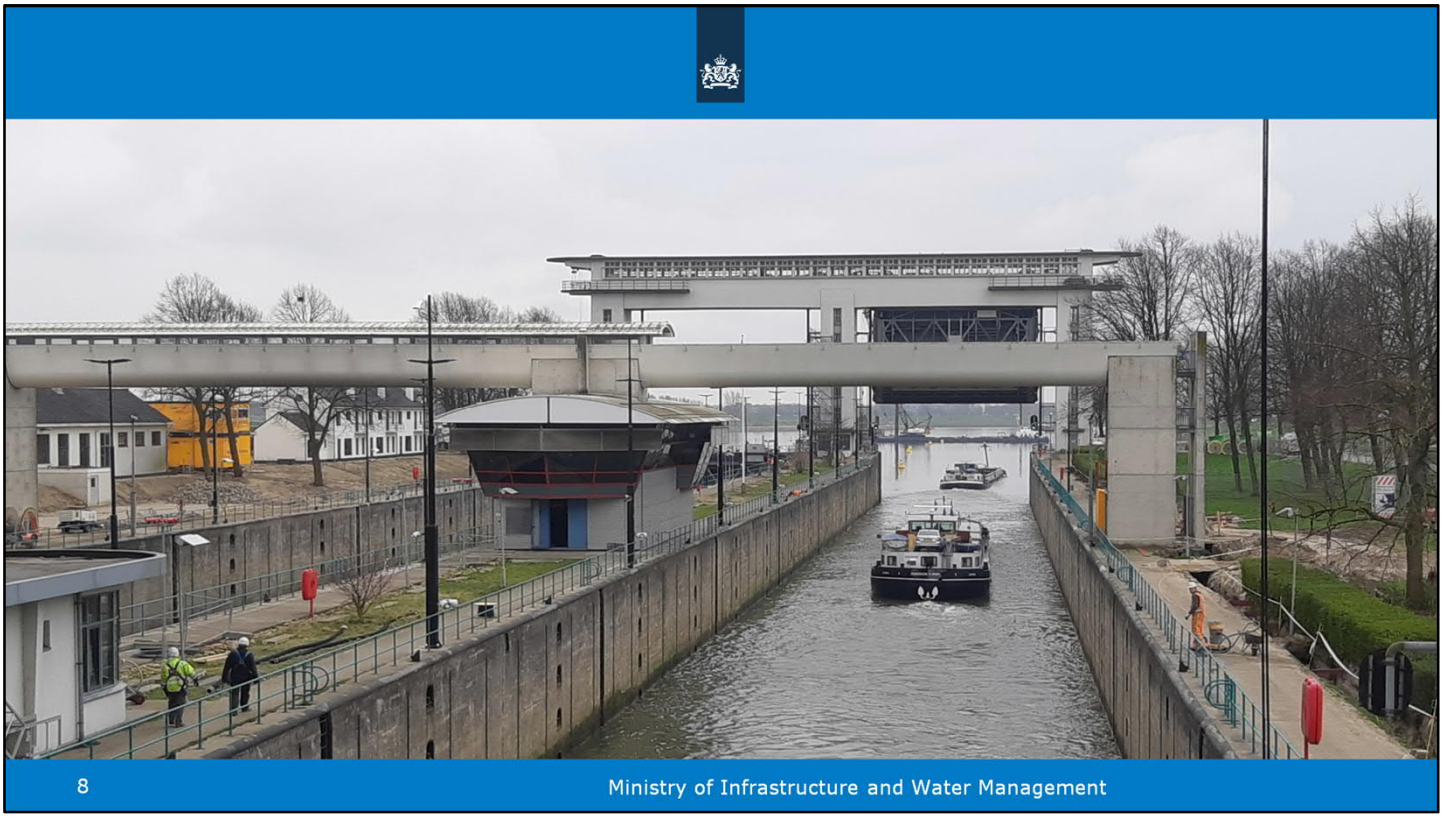
But let's face it: innovators on road freight transport do not sit still. There are predictions that self driving trucks will drive on our roads in ten years. They will be much cleaner as they drive on sustainable fuels. Lack of qualified personnel is no longer an issue because the trucks will drive autonomously, and therefore they can be operated day and night. This means that a large deal of the advantage of the inland shipping sector can diminish.



This is a real threat to the inland shipping sector and it urges inland shipping to make use of smart technology to keep up with the advantages. Do the same, but better. Only by becoming more sustainable, more efficient and also more safe, inland shipping will hold its position or will even be able to improve that.

Another big win would be when inland shipping would become more flexible, making it possible to deal with the issue of water shortage as we had last year. This calls for example for smaller ships, with less draft. When these smaller ships can be operated autonomously, this gives our society exciting new possibilities.

Imagine the situation where it is possible to use our many small canals and rivers. They have been used in the past, but nowadays they are hardly exploited. It will become economically feasible again to serve these waterways with small automated ships. This is just one reason why we think that Smart Shipping will change the inland shipping sector to a high extent.



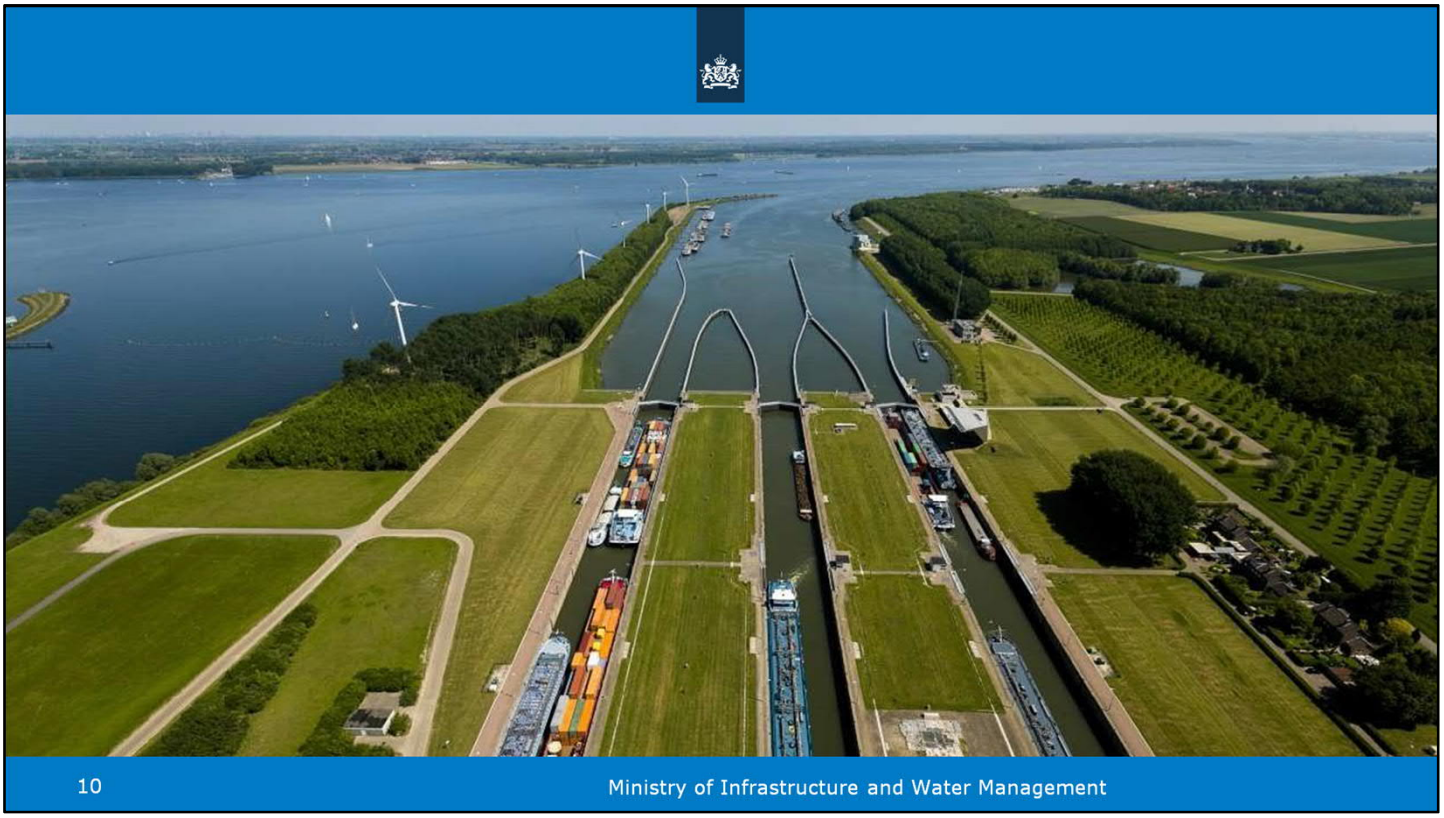
Nowadays, a large proportion of inland ships are typically operated by a family, with both spouses working together on the ship. They own their vessel and live on it, at least most of the time. The typical ages of these married couples is 50 years or older. Becoming an inland shipper means several things: relative freedom, but also working long days, suffering high costs regarding your social life and having a large financial commitment to the bank that gives you a mortgage. New business models that emerge with Smart Shipping will ensure the sector remains attractive, also for future generations looking for employment.

In our country only a few shipping companies operating two or more ships do exist, sometimes one vessel company is working together in a cooperation mainly to share risks. With the introduction of smart shipping, it will be necessary to invest in new techniques, the amount of technology implemented will increase quite dramatically. When parts of the trip will be operated by a shore control center, more easy compared to seagoing vessels thanks to the presence of rather cheap telecommunication infrastructure on most rivers and canals, this also calls for an organization structure operating more than one ship.

We foresee that these developments will drive the market to a new ecosystem: small or bigger inland shipping companies that are less dependent on their clients. This also will help to make more margin, essential to cope with the new investments necessary.

Because of new technology and new opportunities, we already see that new players start activities in inland shipping. Entrepreneurs rather than shippers, adapting and implementing the techniques that help them to become more flexible, more efficient and more sustainable. We see these companies as a nice addition to the already innovative sector. We will need them very badly in the years to come. And we want to help them.

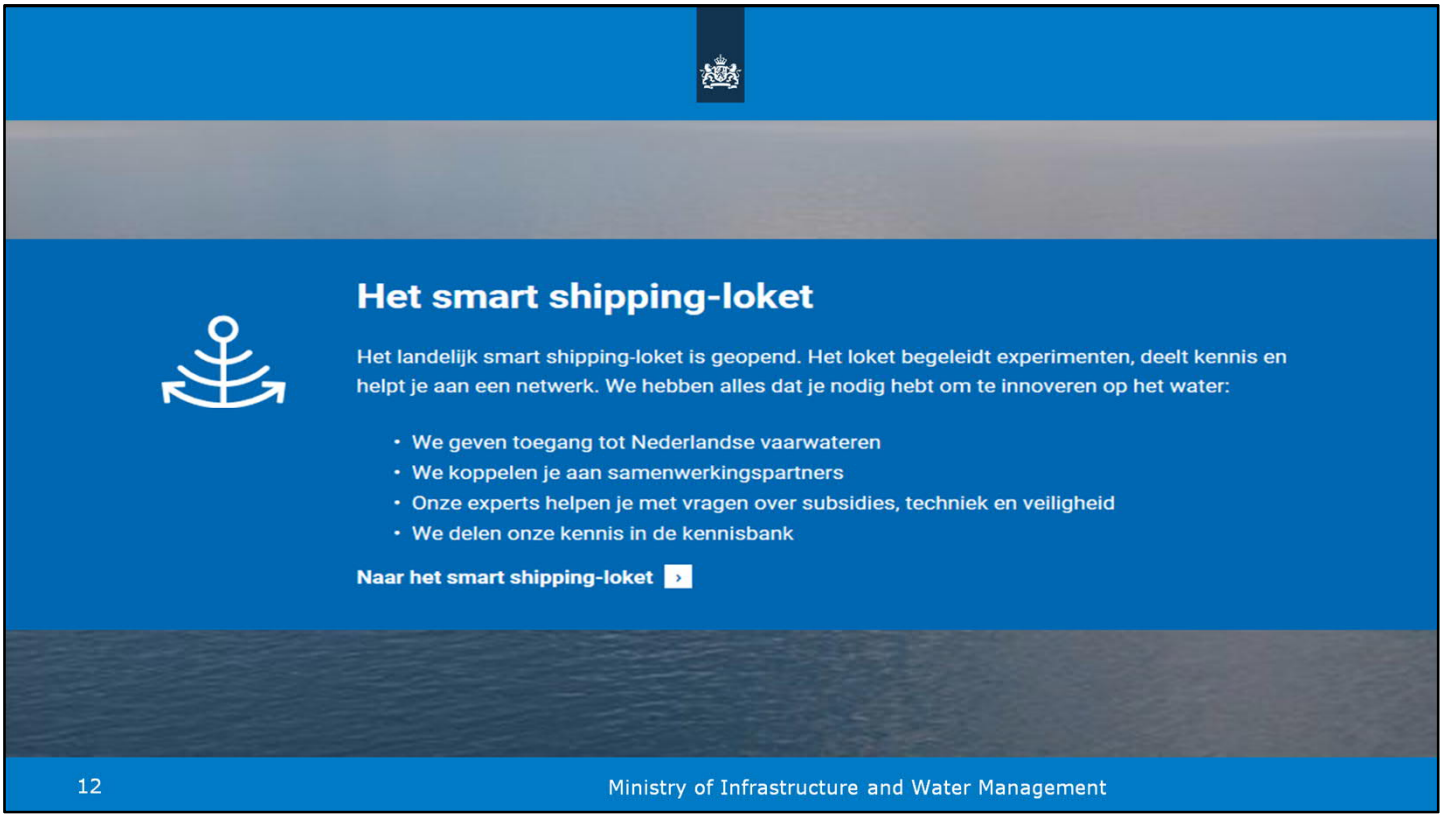
As I already stated: smart shipping will give social benefits like economic welfare, more safety and more sustainability. This is the reason for our Ministry to facilitate these developments. Although it will not be governments, but primarily commercial businesses and knowledge institutions that have a role to play at automatization and digitalization of shipping. We are not in the ship building business, and we are only a very small user of ships.



As a legislator, or in an international context as a co-legislator, the government has the tasks to realize legislation that makes Smart Shipping possible. Our Ministry is sympathetic to that, but we will explicitly set strict preconditions. And those preconditions are, not surprisingly, that safety and sustainability must not suffer from Smart Shipping. Promising is that even insurance brokers expect a gain on safety, since a large number of incidents is related to human failure.

Using a more academic approach, we have examined which parts and elements of laws and regulation will hinder the implementation of Smart Shipping. But we are also very keen to use more practical information as well.

To help the industry improve, we are happy to let innovators use our fleet. If possible we wil act as a launching customer, to help the innovative companies to reach critical mass. An example is the use of the Rijkswaterstaat fleet by CoVadem. CoVCadem is a company gathering data on river depths, having installed equipment on the Rijkswaterstaat fleet as well as ships from private companies.



To stimulate the creation of practical feedback, we made testing with smart shipping on Dutch waterways possible, even on our densely populated waterways. Since the autumn of 2018, parties aiming to test their innovations and inventions are very welcome. Via the contact point Smart Shipping they can obtain a permit allowing them to test on our inland waterways. This summer, our Ministry will enlarge this area to the sea, making testing possible in the twelve mile zone. Of course: testing parties have to take measures to ensure safety and not to hinder other vessel traffic. And again: my ministry is keen to learn from these tests, giving us input for the alterations in relevant laws.

In recent years, we have seen quite a lot of experiments on the Dutch waterways. I'll give you a few examples, varying from remotely operated vessels to vessel with more autonomy:

In March, an exciting experiment has been carried out by the Joint Industry Project. A Crew Supplier ship was fitted with collision avoidance technology and took part in several nautical scenarios to determine how the vessel would interact with seagoing traffic. By testing the scenarios on the North Sea, the partners involved were able to show the decision-making process of an autonomous system in ensuring safe sailing and avoiding collisions with other vessels. This was simulated before at the MARIN institute. Knowledge institutions, industry and governments were involved in this Joint industry project;

A new company, Shipping Technology, has been founded by a shipping entrepreneur and a software company specialized in artificial intelligence. They have developed an black box that gathers data from sensors on the ship. This data can be used for operational analyses of the ship behavior, but the data is also intended to be used in the development of artificial intelligence. By learning what the behavior of the shipper is related to observations of the sensors, the artificial intelligence can be trained.

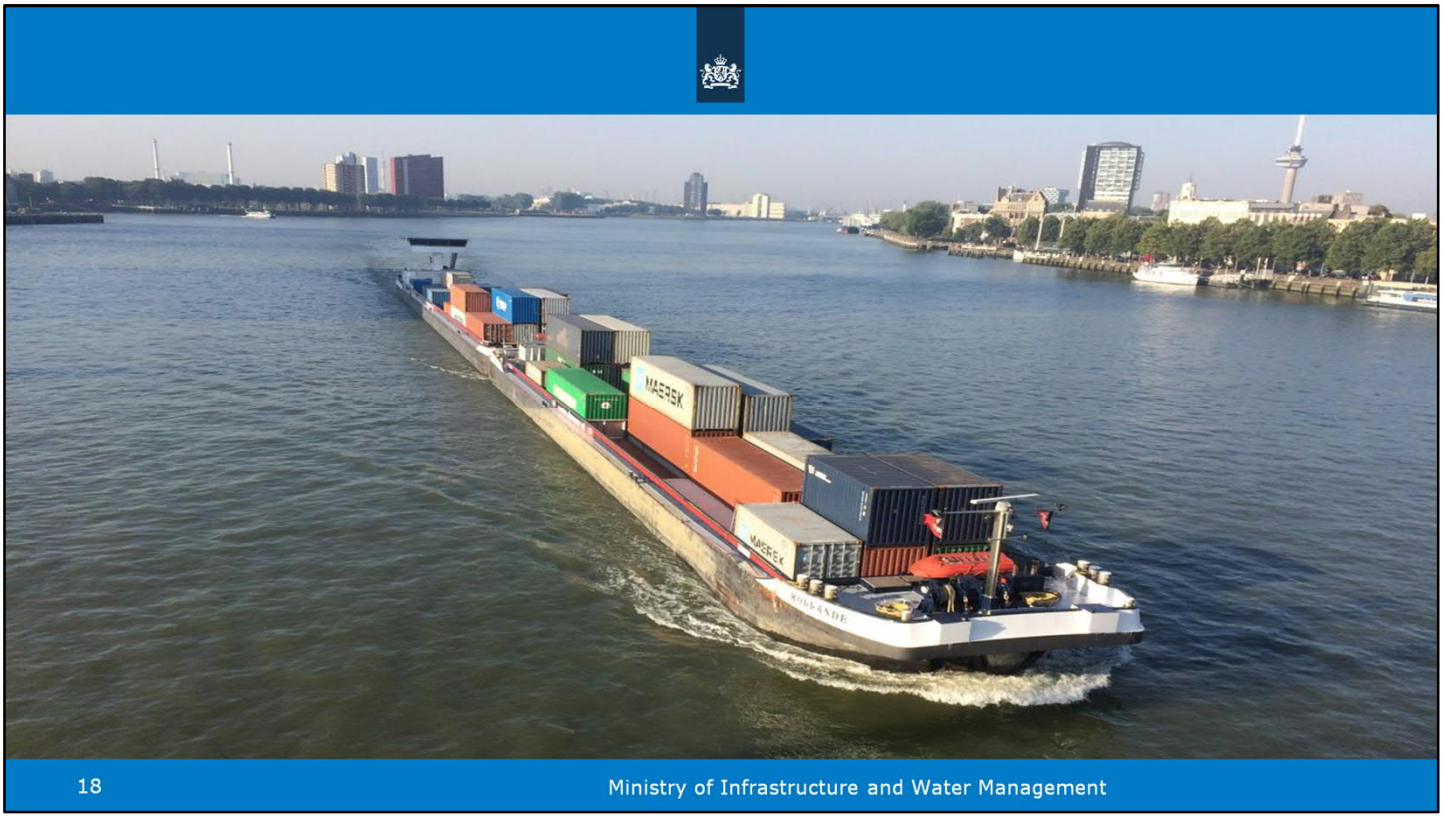
Captain AI uses a similar approach, but focusses on training the algorithms in a simulation environment. They use a port service vessel of the port of Rotterdam and a watertaxi in Rotterdam to gather data and compare the simulation environment with the reality outside. Needless to say that the AI in Captain AI stands for the artificial intelligence they are using. Big parties like Google, Invidia and Dutch telecommunications operator KPN are partnering with Captain AI.

Within the Maritime Research Institute MARIN, world famous for their expertise in ship design and testing, a few vessels were build and tested to gain operational expertise. They also aim to build a test facility for simulations with autonomous vessels, especially regarding to nautical safety.

Just four examples, but it's important to state that this is just a selection of developments in the private sector.

Governments do have a role to play when it concerns the management of ports and waterways. In inland waterways, you will typically see locks and bridges, but also area's with Vessel Traffic Service mainly aimed at nautical safety.

An unmanned ship cannot simply pass through a lock or through an area with VTS. We need new ways for communication, but it requires coordination in the provision of services too. It is not excluded that new activities that must take place also necessitate a new division between public and private stakeholders. Will governments facilitate automatic mooring in ports and locks, for example, and how will we do that? Can we leave this to be a market activity, like the mooring done in seaports when a see ship docks? And what about an international context?



This means that Smart Shipping will have a certain impact on our infrastructure and the way it is operated. But since Smart Shipping will likely change the inland shipping industry too, the impact will be even bigger. More small ships, even if the total volume of freight stays the same, will have a great influence on our lock operation. How much that will be, is still uncertain.

I do realize that I raise a lot of questions, and give little answers. The way we will organize this new eco structure has to be figured out in cooperation with other parties involved, on a national as well as a international level.

On a national level, therefore, my ministry has taken the initiative to create a national Dutch cooperation on Smart Shipping. Together with provinces, municipalities, port authorities, universities, knowledge institutes, private companies and branch organizations, we will try to stimulate innovation, but also try to draw a roadmap for implementation of Smart Shipping in the Netherlands. Not only on inlands waterways, but also for sea. I expect this National Forum on Smart Shipping to start operation in the autumn of this year.

Knowledge, business opportunities and legal possibilities are essential for successful implement-tation of innovations in society: we will need cooperation on these aspects to get the job done.

This National Forum on Smart Shipping will take place in relevant international consultations and join the International Forum on Autonomous Shipping, for instance.

All these actions require effort from governments, and those governments too must justify this commitment in a socially responsible manner. Given the huge challenge we have on sustainability, industry is required to make a huge contribution in that area. A more sustainable world thanks to Smart Shipping makes it legitimate for us authorities to invest in this subject.

We also do that investing today, by being here. Whether it concerns sea shipping or inland shipping: knowledge exchange and international coordination is essential to achieve standards for, for example, the transfer of information and the physical docking of ships. And that's why I'm here today.

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