

# Autonomous Inland Vessels

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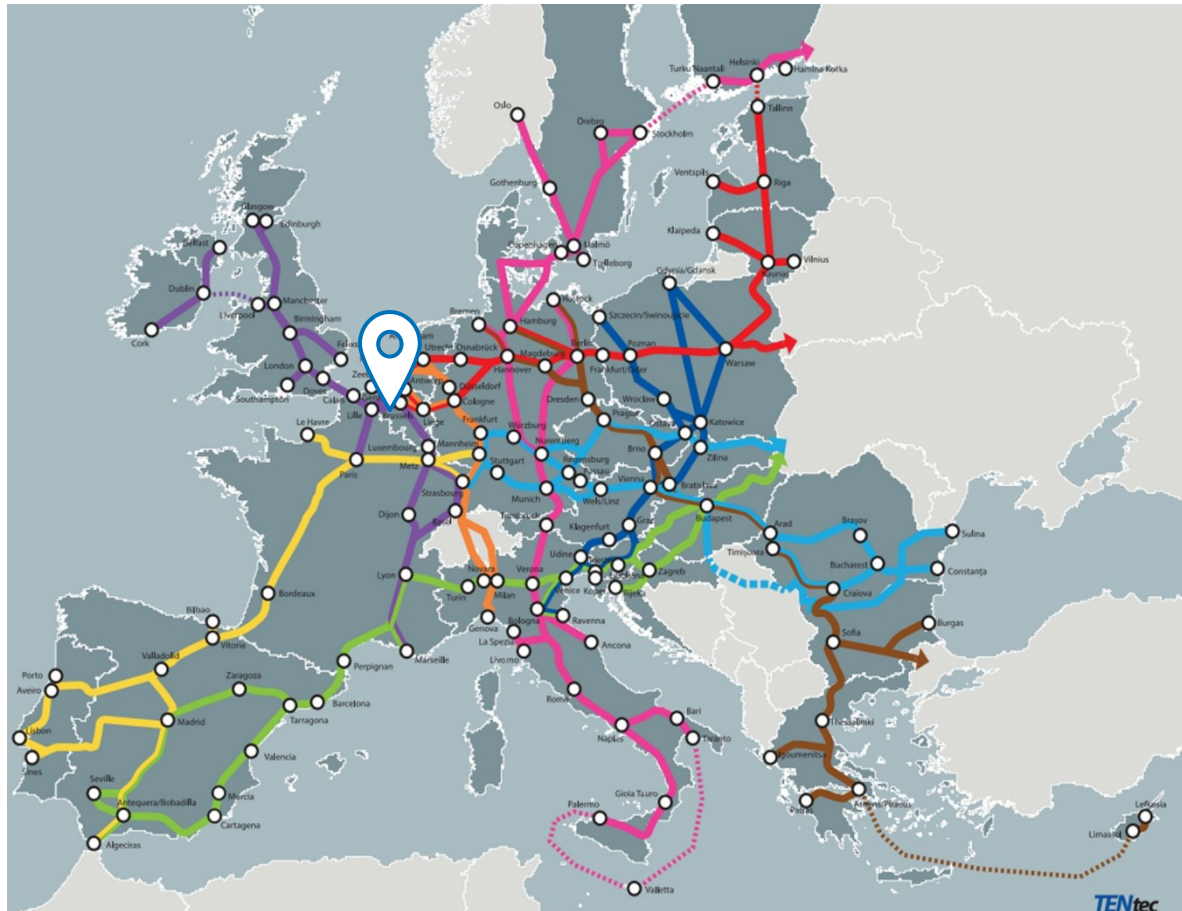




# 1. De Vlaamse Waterweg nv

# De Vlaamse Waterweg nv.

Flanders situated in the TEN-T network



# De Vlaamse Waterweg nv

De Vlaamse Waterweg nv in numbers

1076



1264



800



131



120.000



80%



### 1 Certification and regulatory framework



#### General regulation

- ▶ Setting up the regulatory framework for the operations
- ▶ Setting up the regulatory framework for the vessels

### 2 Infrastructure



#### Waterway technology

- ▶ Automation of the infrastructure
- ▶ Remote control of locks and bridges

### 3 Sharing information and providing service



#### River Information Services

- ▶ Defining the framework for the interaction between the vessel and the administration

### 4 Guiding innovation



#### International representation

- ▶ Participating in international fora
- ▶ Setting up private/public initiatives/discussion groups





## 2. Our approach - Regulation

# Our Approach - Regulation

After identifying the benefits, the path towards operating an autonomous vessel on the inland waterways of Flanders has been defined.

## 2. Law and regulation - Gaps

It has been identified that the current law and regulations are not adjusted to make autonomous vessel operations possible

## 4. Adjustment law and regulation

After the test cases the best practices and missing gaps in the law and regulation will be filled

## 1. Identified Benefits

The benefits identified for the people, the organizations and the planet illustrate that the step towards autonomous vessels is something that the authorities should work on.

01

02

03

04

05

## 3. Test areas

Test areas in which autonomous vessels can operate have been approved. It is however still up to the authorities to decide whether it is allowed to test or not.

## 5. Autonomous vessels in legal framework

The autonomous vessels will be able to operate on the Flemish inland waterways within a well defined regulatory framework



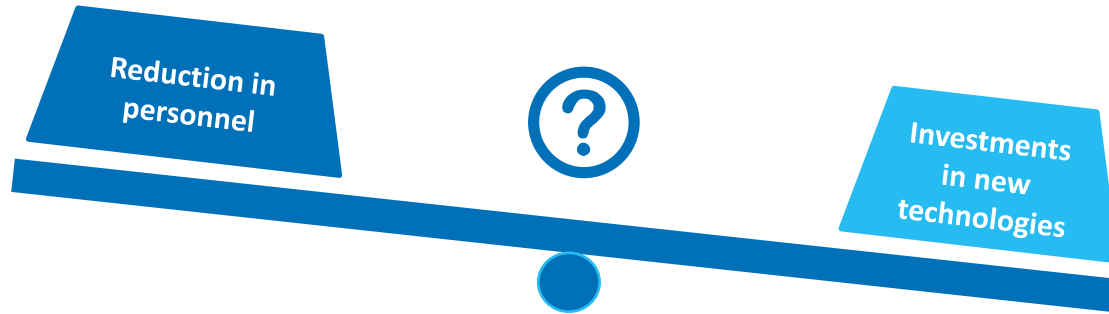
# 1. Benefits - People

The impact of autonomous vessels on people



# 1. Benefits - Profit

The impact of autonomous shipping on economical and social profit



## Economic advantages



- More efficient and reliable planning
- Navigating in a fluent motion leads to a reduction in energy consumption (eg. fuel)



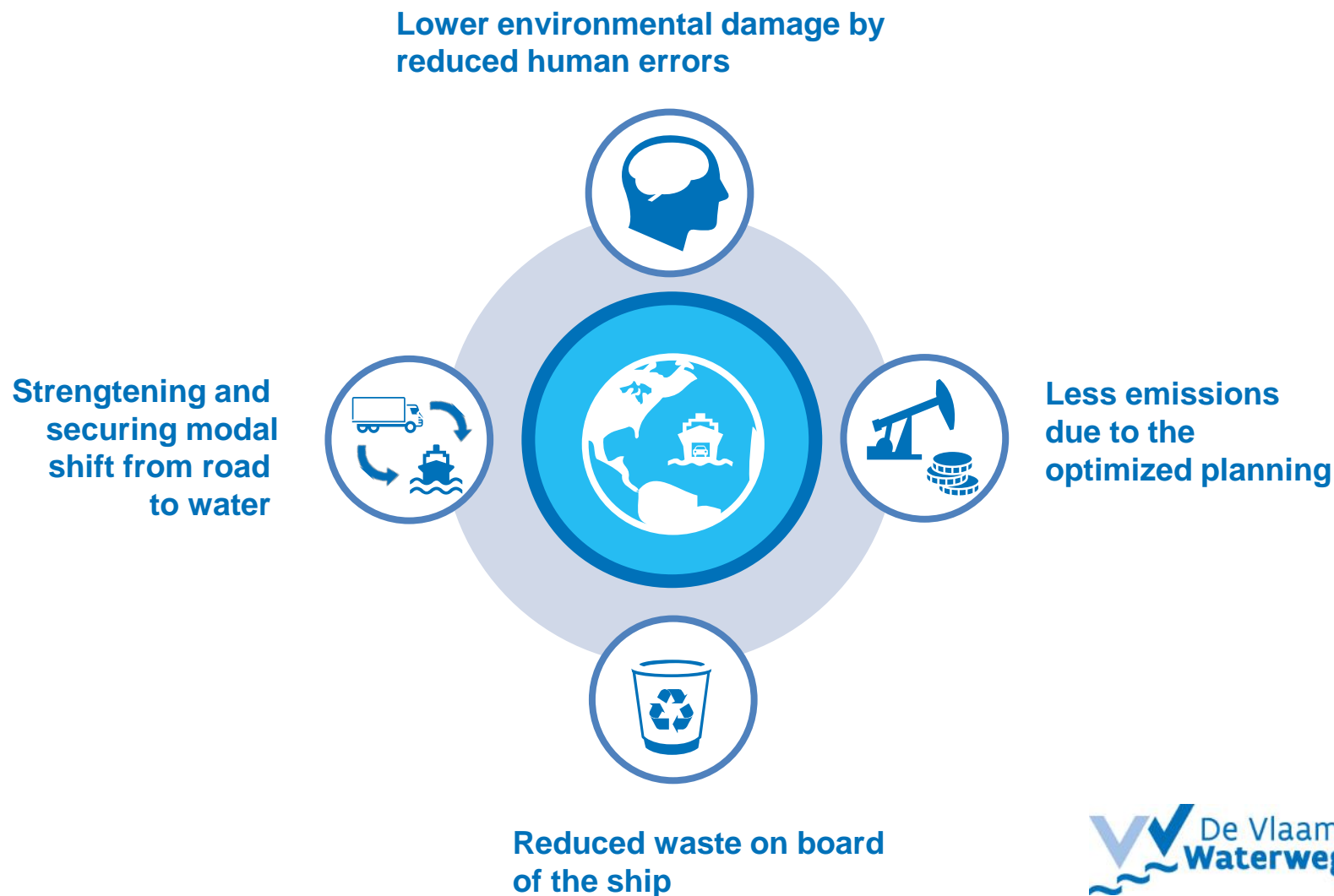
- Facilities for the personnel will no longer be necessary (living space, heating, ....)
- Smart solutions can help making the smaller vessels more competitive and making smaller waterways more profitable and thus create more waterfront locations for industry



- Possibility to restructure the entire logistic chain
- Support for new business models

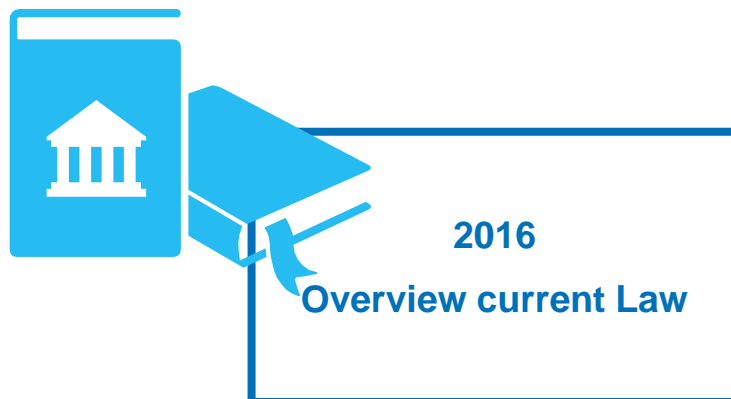
# 1. Benefits - Planet

The impact of autonomous vessels on the planet



## 2. Law and Regulations Gaps

The current law and regulation framework has been assessed in 2016



### Identified GAPS



#### Crew member regulation

- It is under no circumstance allowed for any type of vessel to sail without any crewmember



#### Traffic regulation

- The general traffic regulation including the General Police regulation for vessels on Inland Waterways contain several rules from which cannot be deviated



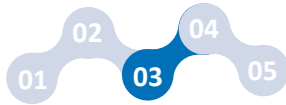
#### Dangerous goods

- The transportation of dangerous goods on water has to comply with several strict rules



### 3. Test areas

The steps taken to open test areas



#### Westhoek

The autonomous vessel project 'Shipping Westhoek' was identified in May 2017



#### Cooperation

In December 2017 the cooperation with the Netherlands was agreed



#### Regulation & Procedures

In February we will start with investigating procedures concerning Information sharing, codes of conduct.

2017

2018



#### Note

In September the vision statement on smart shipping was updated



#### Defined test area

The test area was defined and set to the entire territory of 1076 km

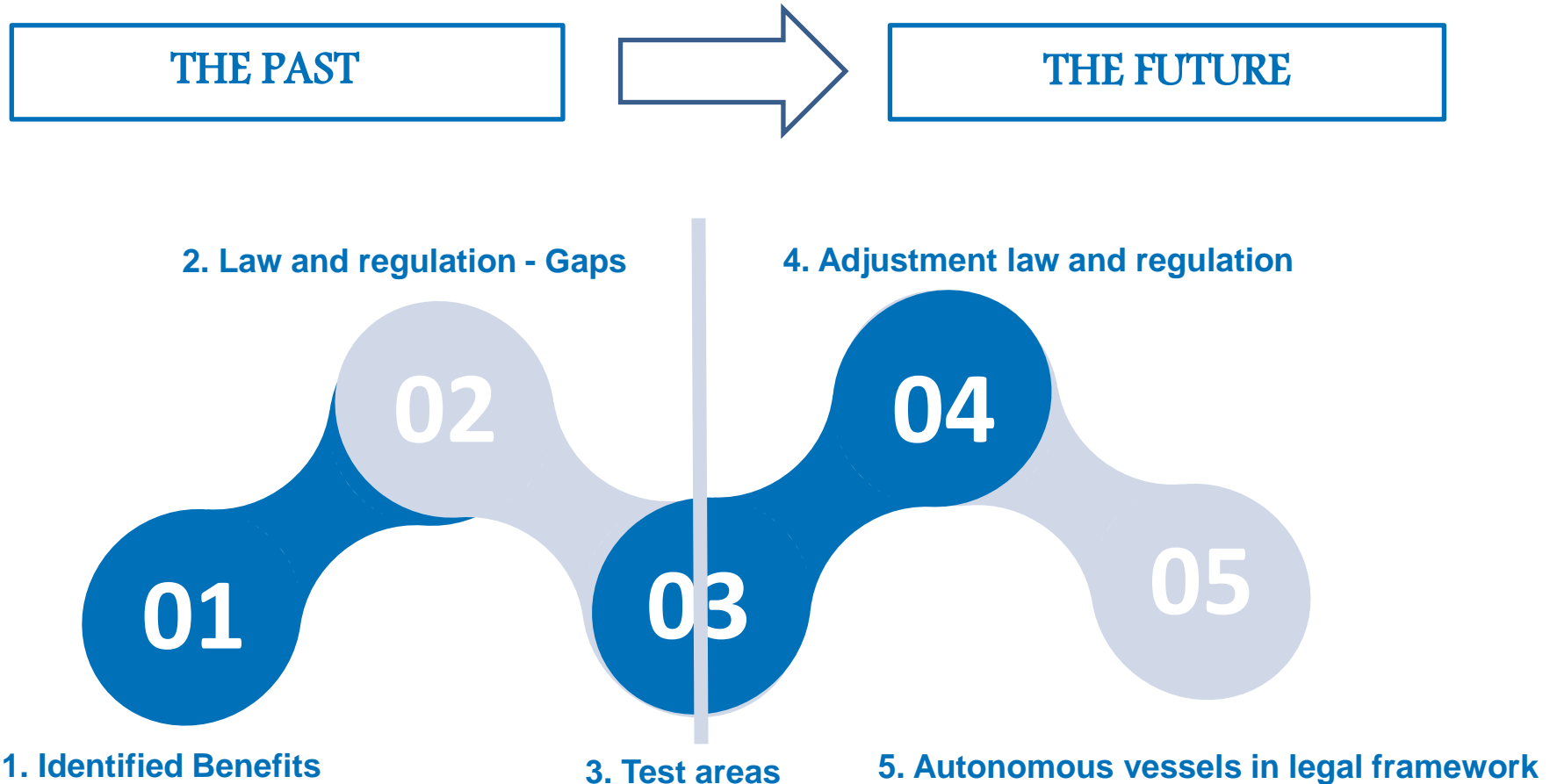


#### Opening Test Area

In May the Test Area's will be opened so possible test cases can be done.

# Our Approach - Regulation

Where are we today?





### 3. Other challenges

# The Challenges

Which other challenges concerning Autonomous Vessels does De Vlaamse Waterweg nv encounter

## 1 Law and regulations

- ✓ Applicable technical and safety requirements and the legislative base
- ✓ Time needed to put together a legal framework can be considerable

## 3 Social acceptance

- ✓ Qualification, training and certification for new jobs
- ✓ Possible social impact: could this imply actual job losses in the sector
- ✓ Communication to the public.

## 2 Technical

- ✓ Inland shipping infrastructure
- ✓ Inland vessel traffic services

## 4 Safety

- ✓ Cybersecurity
- ✓ Interaction between autonomous and manned vessels and between autonomous vessels



