



HARBOUR MASTER

NEXT GENERATION

(NAUTISCH) VERKEER VAN DE TOEKOMST



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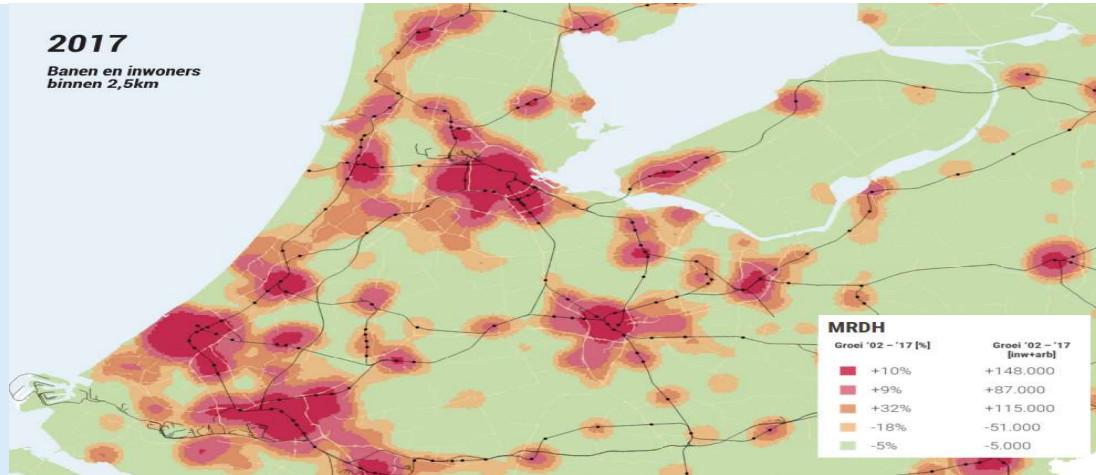
Klaar voor de toekomst? SMART MOBILITY??



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Bereikbare arbeid

2017
Banen en inwoners
binnen 2,5km



MRDH	
Groei '02 - '17 [%]	Groei '02 - '17 [inw'arb]
+10%	+148.000
+9%	+87.000
+32%	+115.000
-18%	-51.000
-5%	-5.000

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AUTOMATISERINGNIVEAUS VOERTUIGEN (SAE)

The evolution of driverless cars
 The motorist dream of having fully automated vehicles on the road inches toward reality.

0 No automation
 A human driver performs all driving tasks.

1 Drive assistance
 Driver-assistance system either steers or controls speed using information about the driving environment. A driver is expected to perform all other aspects of driving.

2 Partial automation TODAY!
 One or more driver-assistance systems both steer and control speeds using information about the driving environment. A driver is still expected to perform all other aspects of driving.

3 Conditional automation 5-10 YEARS
 An automated driving system can perform most tasks, but there's an expectation that a passenger will respond to a request to intervene.

4 High automation 5-10 YEARS
 An automated driving system can perform all tasks, even if a passenger does not respond to a request to intervene.

5 Full automation 10+ YEARS
 The automated driving system performs all driving tasks, full time, under all road and environment conditions that can be managed by a human driver.

Source: MarketWatch research, SAE International

For on-road vehicles

	Human driver	Automated system	
	Steering and acceleration/ deceleration	Monitoring of driving environment	Fallback when automation fails
0 NO AUTOMATION			N/A
1 DRIVER ASSISTANCE			SOME DRIVING MODES
2 PARTIAL AUTOMATION			SOME DRIVING MODES
3 CONDITIONAL AUTOMATION			SOME DRIVING MODES
4 HIGH AUTOMATION			SOME DRIVING MODES
5 FULL AUTOMATION			SOME DRIVING MODES

Human driver monitors the road

Automated driving system monitors the road

Adaptive Cruisecontrol, Lane keeping warning,....

Autopilot Tesla/BMW/....

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JUST IN TIME



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IMPACT VAN DIGITALISERING



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GREEN LOGISTIC



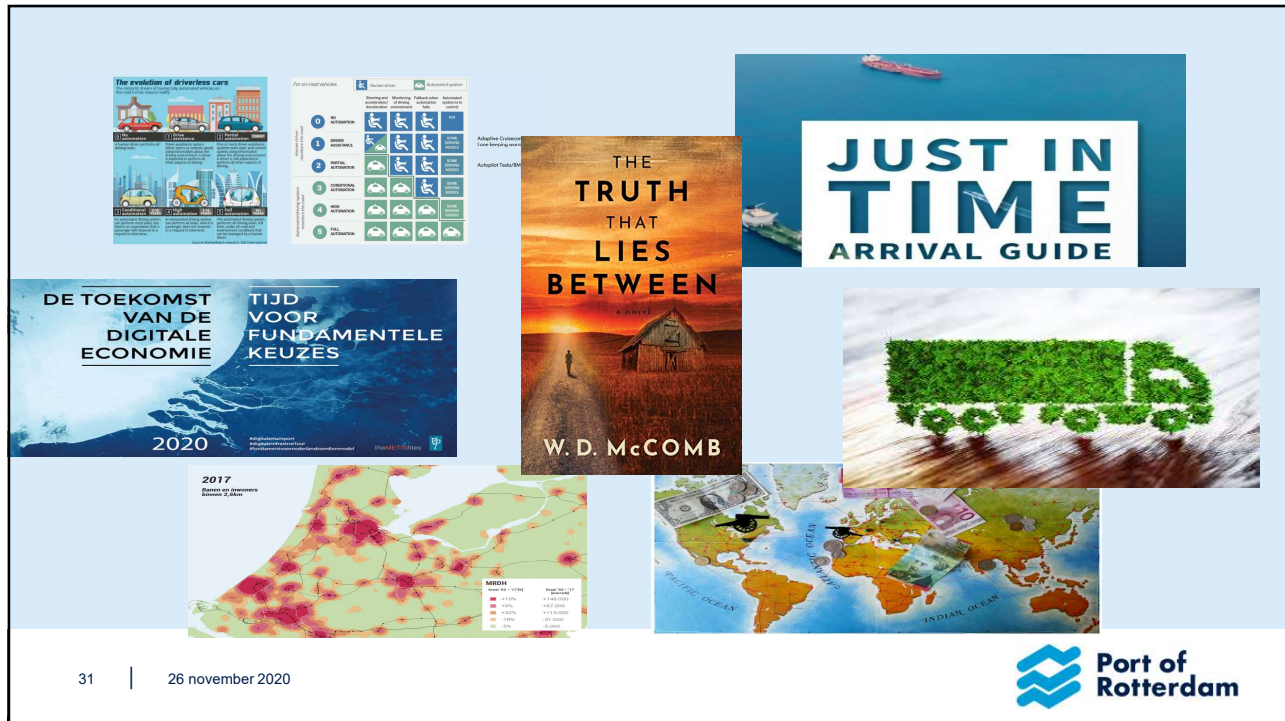
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GEO POLITIEK



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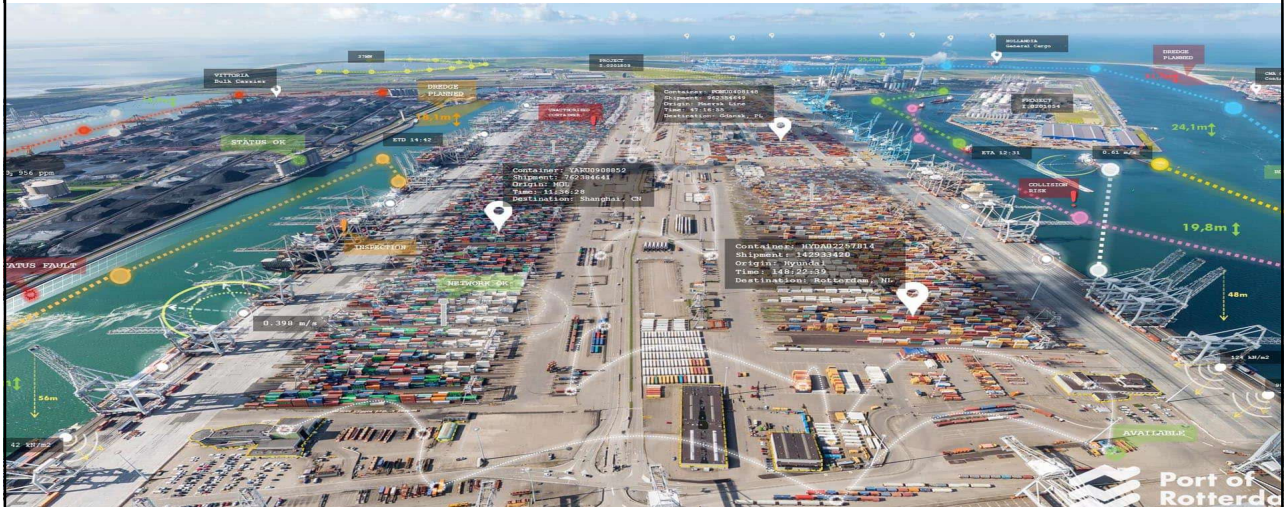


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VISIE OP DIGITALISERING "DIGITAL TWIN"



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VISIE OP SCHEEPVAART ONTWIKKELINGEN

Digital situational awareness

Interacting objects

Human behaviour and advanced decision support



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BEELD OP DISRUPTIE

🏠
NIEUWS
SPORT
ENTERTAINMENT

SINTERKLAAS BETAALT GEEN HAVENGELD MEER, HIJ GAAT BEZORGEN MET DRONES!

Vrijdag 30 november 2018

Cadeautjes thuisbezorgen per drone, Sinterklaas introduceert deze noviteit in 2018. 'Wij bezorgen binnen enkele minuten de gewenste cadeautjes bij de kinderen thuis!', vertelt vliegens vlugge Piet namens Sinterklaas.



In het afelande jaar testte

Enorm veel tijdswinst
Op ons coördinatie centrum op Pakjesboot 12 zien wij alle wenslijstjes van de kinderen binnenkomen. De dronepieten zetten de gevraagde de cadeautjes van de hele straat in de kooi en vertrekken vanaf pakjesboot 12 Met slechts één druk op de knop bezorgt de drone, via een volledig geautomatiseerd systeem, de cadeautjes bij de juiste schoorsteen', vertelt vliegens vlugge Piet enthousiast.



Ontheffing Nederlands luchtruim
 Tot dusver was in Nederland deze nieuwe vorm van bezorging niet toegestaan. De Inspectie Leefomgeving en Transport (ILT) gaf Sinterklaas gezien de steeds verder oplopende Pietendiscussie echter de ruimte om de



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USE CASE AUTONOME SCHEEPVAART

<https://smart-port.nl/smartshipping-white-paper/smartport-whitepaper-smartshipping/>


	Level of autonomy	Human presence	Operational control	Human role
Degree 1	Ship with automated processes and decision support	Yes	Seafarers are on board to operate and control shipboard systems and functions. Some operations may be automated and at times be unsupervised but with seafarers on board ready to take control	Supervision and operation
Degree 2	Remotely-controlled with seafarers on board	Yes	The ship is controlled and operated from another location. Seafarers are available on board to take control and to operate the shipboard systems and functions	Backup to manoeuvre, supervise the systems
Degree 3	Remotely-controlled without seafarers on board	No	The ship is controlled and operated from another location. There are no seafarers on board	Monitoring and remote control
Degree 4	Fully autonomous	No	The operating system of the ship is able to make decisions and determines actions by itself	Monitoring and emergency management


SmartShipping – White Paper

door Joan van Winsen | sep 13, 2018 | Nieuws

Smart ships and the changing maritime ecosystem

How digitalization and advanced automation of barges, service vessels and sea ships create new opportunities and challenges for the maritime industry





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FROM SHIP TO SHORE

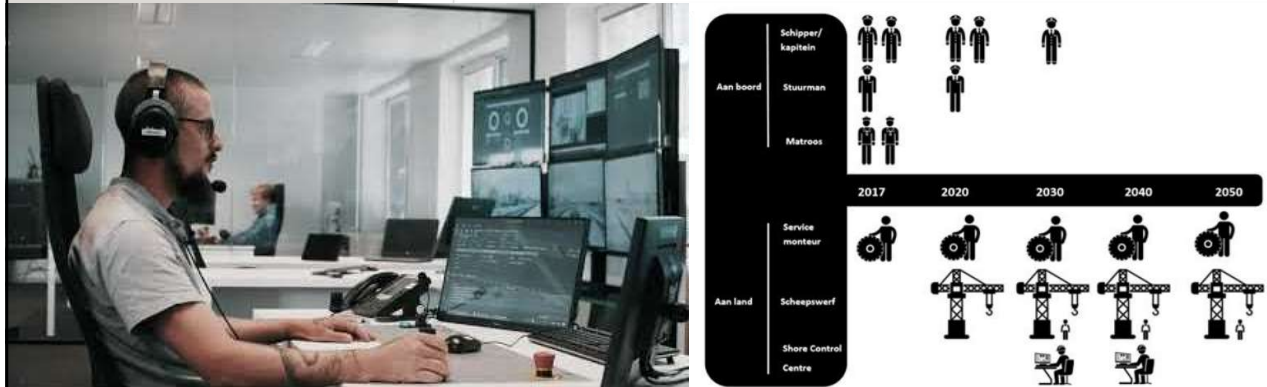


Figure 5: Potential development of balance offshore / onshore crew for inland vessels (TNO, 2017).

REGULATIONS. A LONG WAY TO GO (MSC 98 2018)

Looking back...
MSC VIII (March 1964)...

INTER-GOVERNMENTAL MARITIME CONSULTATIVE ORGANIZATION



Autonomous/Smart ships
IMO's regulatory scoping exercise on MASS

Timeline for the regulatory scoping exercise (MSC)

- First step: January-April-September 2019
- Inter-Sessional Working Group September 2019
- Second step: October-December 2019
- MSC 102 Final consideration: May 2020

Instruments to be considered

- COLREGs 1972
- CSC 1972
- LL 1966
- LL PROT 1988
- SAR 1979
- SOLAS 1974
- SOLAS AGR 1996
- SOLAS PROT 1978
- STCW 1978
- STCW-F 1995

- MARPOL 73/78
- FAL 1972
- SUA 2005
- SALVAGE 1989
- OPRC 1990
- CLC 1969
- NUCLEAR 1971
- HNS 1996
- ...

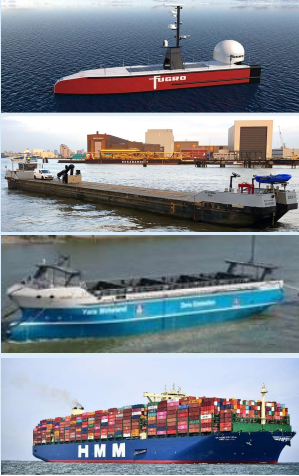


Early results... (as per Swedish preps)

	Option 1	Option 2	Option 3	Option 4
SOLAS II-1	IV	II		
SOLAS II-2	IV			
FSS Code	IV			
FTP Code	IV	IV	IV	IV
SOLAS III	IV			IV = Non above
LSA Code	IV	IV	IV	IV
SOLAS IV	II			
SOLAS V	II			
SOLAS VI	IV			
IMSB Code	IV			
Grain Code	IV			
CSS Code	IV			
SOLAS VII	IV			
IMDG Code	IV			
IBC Code	IV			
INF Code	IV			
IGC Code	IV			
SOLAS IX	IV	IV		
ISM Code	IV	IV		
SOLAS XI-1	IV			

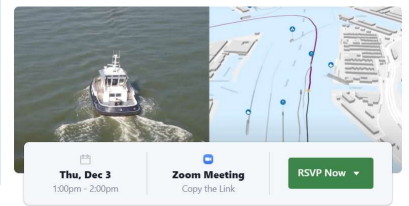
	Option 1	Option 2	Option 3	Option 4
RO Code	IV	IV	IV	IV
ESP Code	IV	IV	IV	IV
CI Code	IV			
SOLAS XI-2	IV			
ISPS Code	IV	IV		IV
SOLAS XII	IV			
SOLAS XIII	IV	IV	IV	IV
SOLAS XIV	IV	IV	IV	IV
Polar Code	IV	IV	IV	IV
COLREG	I			II
TONNAGE 69	IV	II	II	II
SAR 79	IV	II	II	II
STCW		I+II+III+IV+V	IV	IV
STCW-F		I+II+III+IV+V	IV	IV
CSC 72	IV	IV	IV	IV
LL 1966	IV	II	II	II
LL PROT 88	IV	IV	IV	IV
IS Code	IV	II	II	II
III Code	IV	II	II	II

De toekomst is nu!



Shipping Technology
839 volgers
3 mnd • 🌐

📍 Our very first experimental autonomous test trial from the **Port of Rotterdam** to the **Drechtsteden** with our improved AI- model.



Thu, Dec 3
1:00pm - 2:00pm

Zoom Meeting
Copy the Link

RSVP Now ▾

Autonomous Ship Mission Planning



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EXPLORING SMART MOBILITY MAKE IT HAPPEN TOGETHER

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