

Webinar: IoT in de bouw en de Haven van Rotterdam

Een samenwerking tussen de Cisco Networking Academy, KIVI en BAM
14 mei 2020

André Brugman
Technisch Directeur Cisco Nederland



Nederlandse IoT projecten

- Logistiek
- Transport
- Slimme Steden
- Retail & Productiesector (Remote and Mobile Assets)



Voorwaarden gelaagd IoT project

- Standaard transport protocol (IP/Ethernet Convergence)
- Normalisatie van data dicht bij de sensor
- Gebruik van Edge- en Cloud-computing
- Innovatie gedreven (incl. budget)
- IoT-Ecopartners



Sea Ports

...in transport and logistics...



Port of Rotterdam



ENERGY TRANSITION

“Play a pioneering role and make the port an inspiring example for the global energy transition”

DIGITAL TRANSFORMATION



“Embrace innovation with partners to stay digitally connected and develop favorable new services”

AUTOMATED TERMINAL



AUTONOMOUS VESSELS



Digital Twin





SECURITY



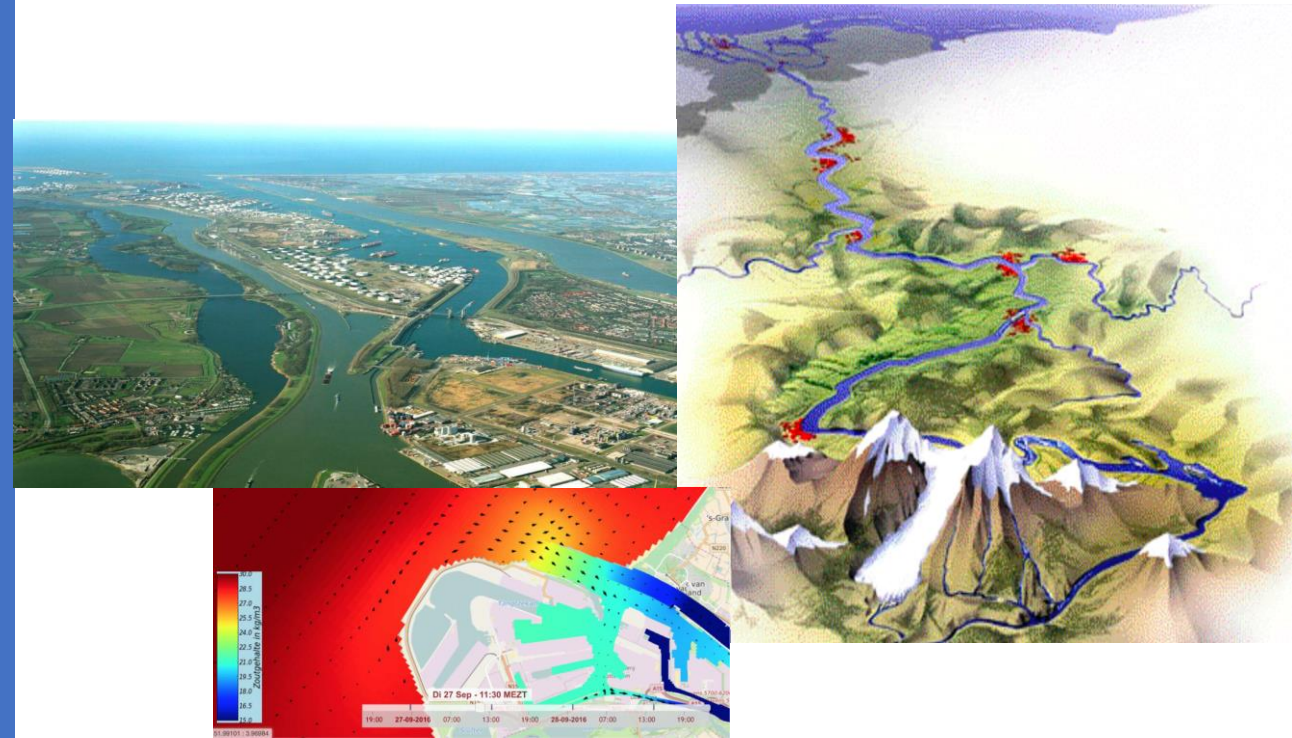
RELIABILITY



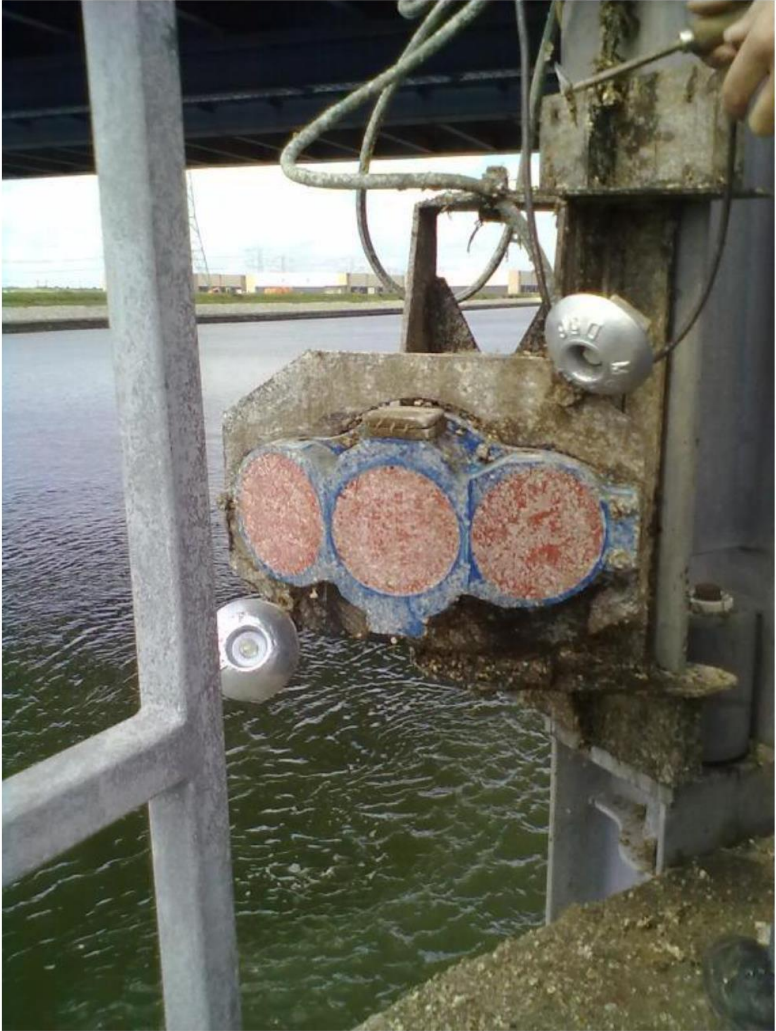
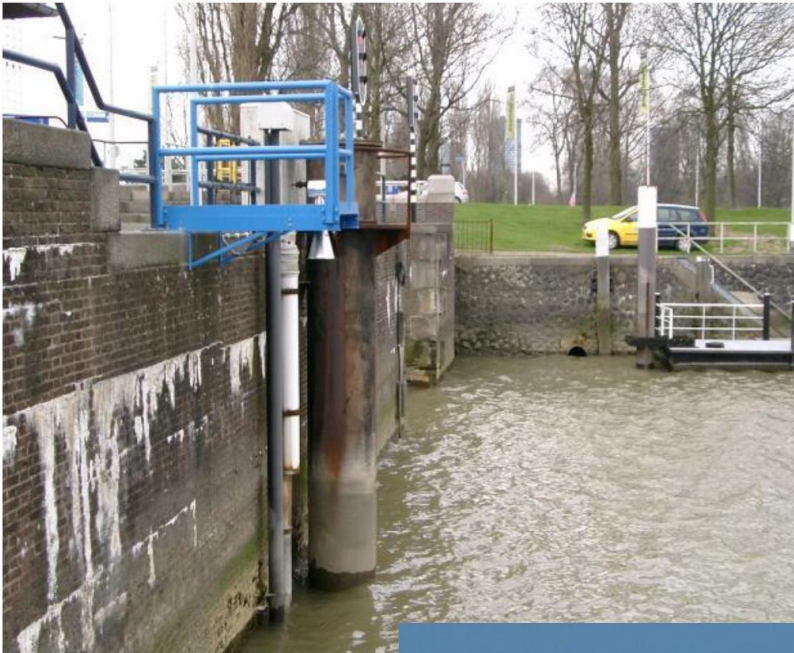
STANDARDIZATION

1^e Use-case(s)

- Hydro-Meteo Applicatie
 - Wind, Water, Stroming, Zoet/Zout gehalte
- Slimme Infrastructuur
- OT en IT
- Data



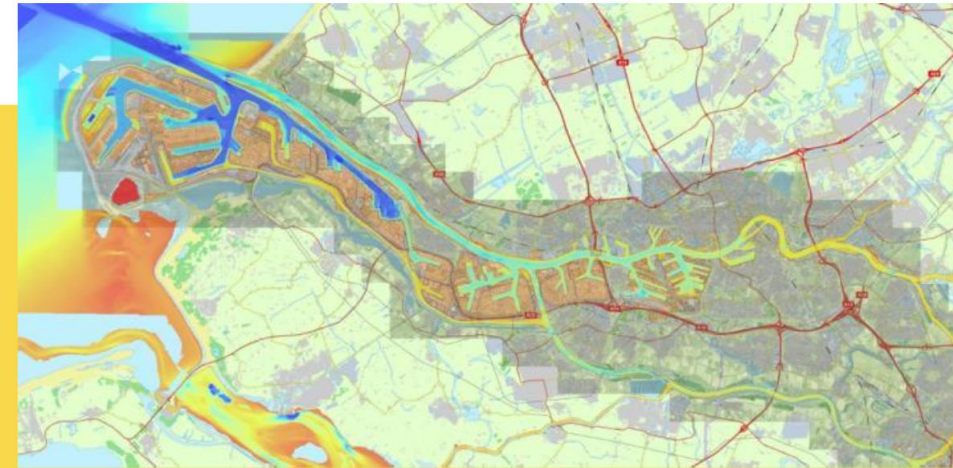
Sensoren



Control Tower



Hydro / Meteo Constructie



WEB/AMETHYST

Profielen

Waterstanden VCH

Strooming VCH

Stroming Waalhaven-Ruier

Geflronge

Water VCH

Zicht

Meteo waarden

Calenbraten

Info VCH

Windrozen

Astro-nomische waterstanden

Applicatie

Tekstpagina's

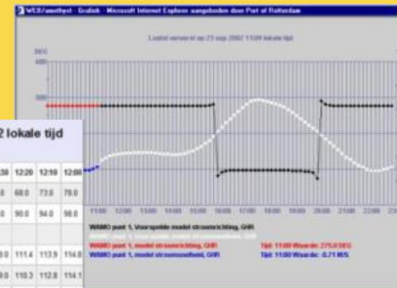
Profiel Waterstanden VCH Laatste ververs op 13 mei 2015 14:12 lokale tijd

Metingen -6 uur

lokatie	parameter	eenheid	14:10	14:00	13:50	13:40	13:30	13:20	13:10	13:00	12:50	12:40	12:30	12:20	12:10	12:00
BLRP	VHS	CM	6.0	13.0			34.0	41.0	47.0	53.0	60.0	63.0	68.0	73.0	78.0	
LD01	VHS	CM	20.0	29.0			54.0	61.0	69.0	75.0	80.0	85.0	90.0	94.0	98.0	
H00K	VHS	CM					72.0									
T004	VHS	CM	54.7	63.9	71.1	78.3	85.7	92.6	98.8	102.1	107.7	109.0	111.4	113.9	114.9	
SLAR	VHS	CM	58.3	67.2	75.2	83.0	90.4	97.6	101.9	104.4	107.7	109.0	110.3	112.8	114.1	
W000	VHS	CM	79.3	86.3	91.1	96.6	100.9	109.0	112.1	113.4	114.7	114.8	115.4	117.2	119.0	
ABVA	VHS	CM	55.8	63.8												

Voorpellingen +23 uur

lokatie	parameter	eenheid	13:00	13:00	12:00
BLRP	VHS	CM	96.0	98.0	104.0
H00K	VHS	CM	96.0	98.0	104.0
T004	VHS	CM	96.0	102.0	105.0
SLAR	VHS	CM	97.0	102.0	107.0

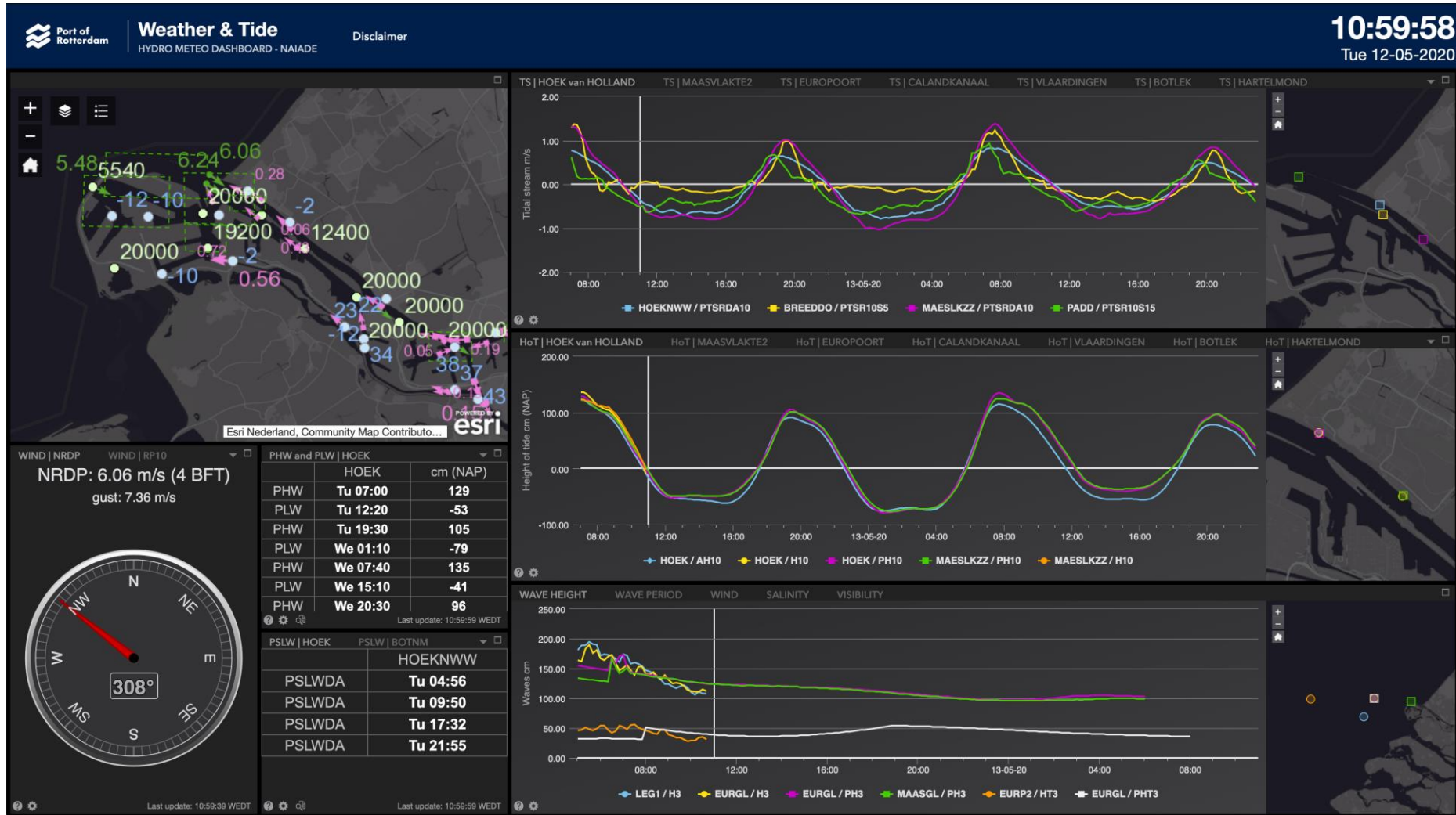


Laatste ververs op 13 mei 2015 14:20 lokale tijd

MeetLokatie	HVH	GEULH	BOTB	HARTB	SPYK	WH
Waterstand	84.9			89.3		
Hoogwater (p=0)	12:20	13:00	13:00	13:10	13:10	
Laagwater (p=0)	17:10	17:50	18:00	18:10	18:10	
Kentering (p=0)	05:40	06:20	06:20	06:30	06:30	
	21:55		15:32	14:25	15:20	22:54
	02:02		23:32	22:58	23:27	01:57
Stroomsnelheid			0.59			-0.09

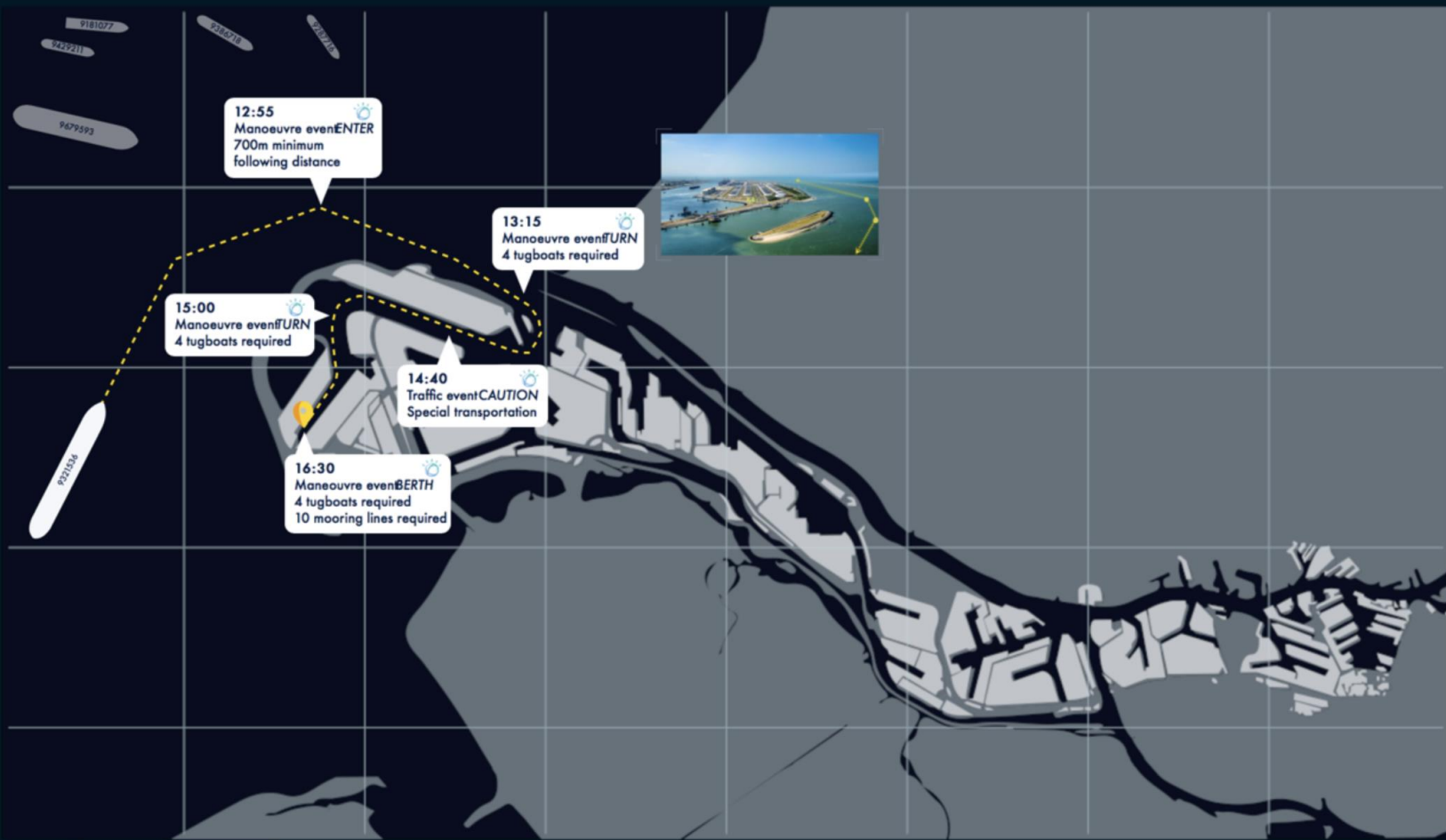


Demo tijd!




[PoR Portal](#)





Safe Passage


Fast ETA: Today 16:30

Fuel Used 

 Emissions 

 Time 

Restrictions Radar




Required Resources

Tugboats 








 Mooring lines 

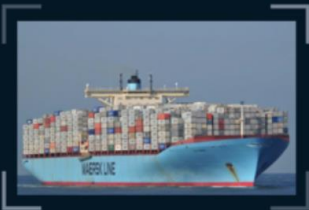
[Fast Route](#)

 Green Route





[Routes](#) [Wind Map](#) [Traffic Map](#)

Incoming Vessels

 Elly Maersk	 Bakkafoss	Container 
 Zourva	 Estraden	Cargo: Hazard A
 Navi Baltic	 Fenja	Length: 399m
		Draught: 14.5m





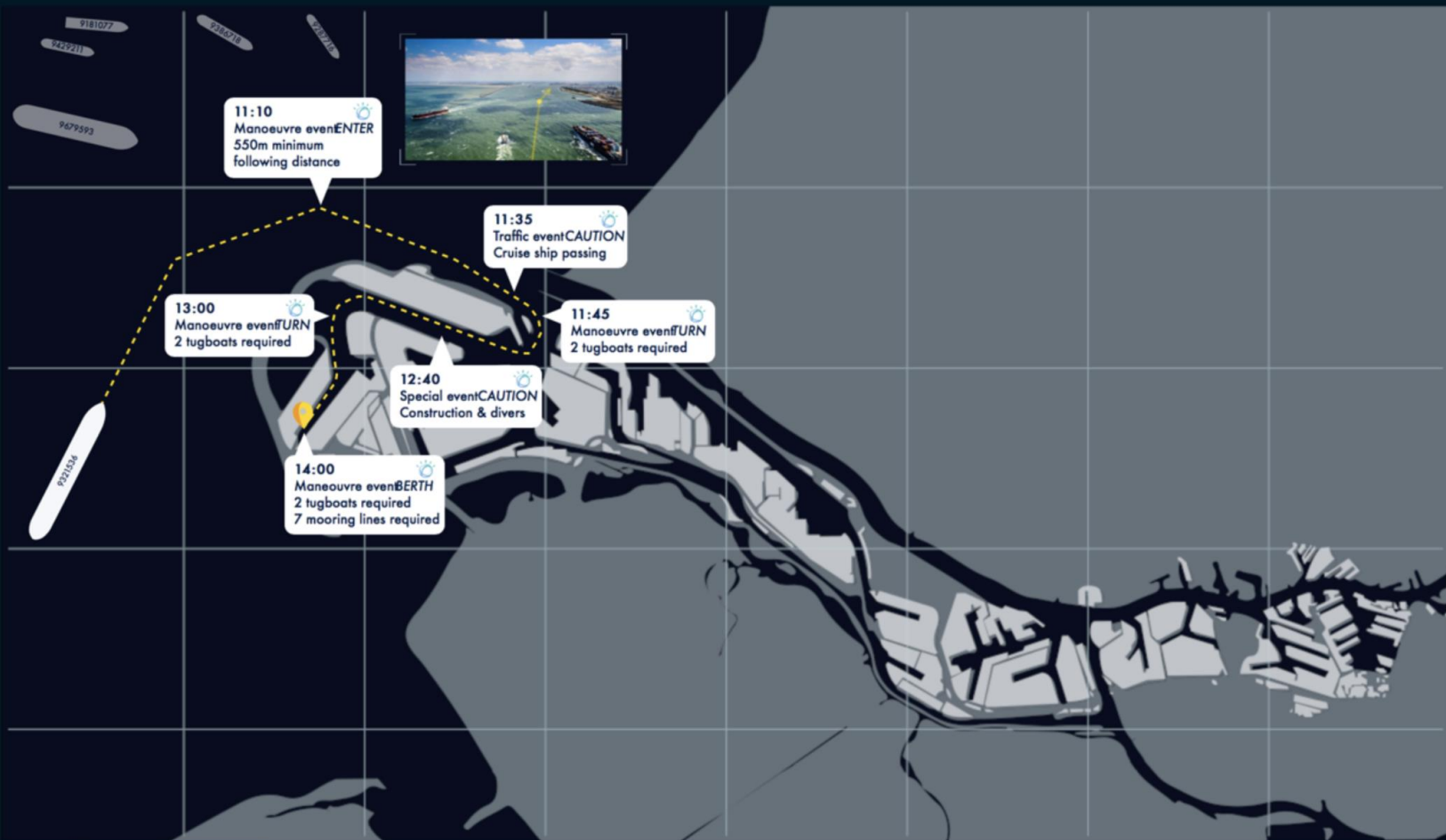
Safe Berth: RWG DS1

-  Check for Dimensions
-  Check for Cargo type
-  Check for ISPS level
-  Check for Availability

ETD Ship: 16:10

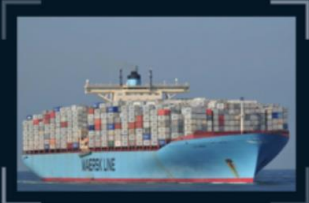
Alerts and Messages

-  Incoming storm: Entering and leaving the port is not allowed
-  Environmental restriction: 76% of daily pollution space reached



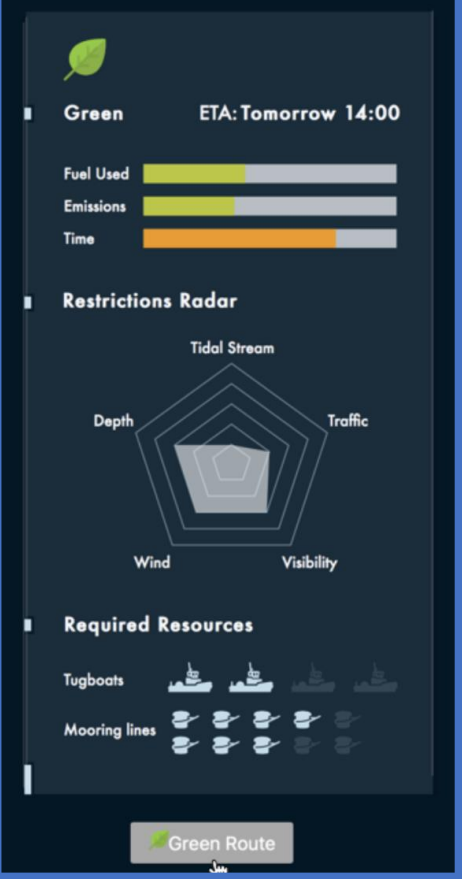
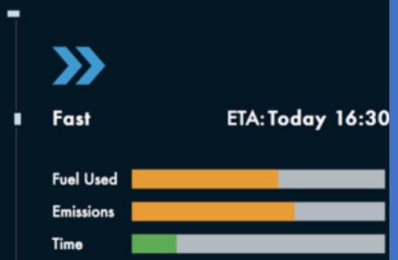
[Routes](#)
[Wind Map](#)
[Traffic Map](#)

Incoming Vessels
 Elly Maersk
 Bakkafooss
 Estraden
 Fenja
 Zourva
 Navi Baltic
ELLY MAERSK
 Container
 Cargo: Hazard A
 Length: 399m
 Draught: 14.5m



Safe Berth: RWG DS1
 ✓ Check for Dimensions
 ✓ Check for Cargo type
 ✓ Check for ISPS level
 ✗ Check for Availability
 ETD Ship: 16:10

Safe Passage



Alerts and Messages

- Incoming storm: Entering and leaving the port is not allowed
- Environmental restriction: 76% of daily pollution space reached

Digital Twin

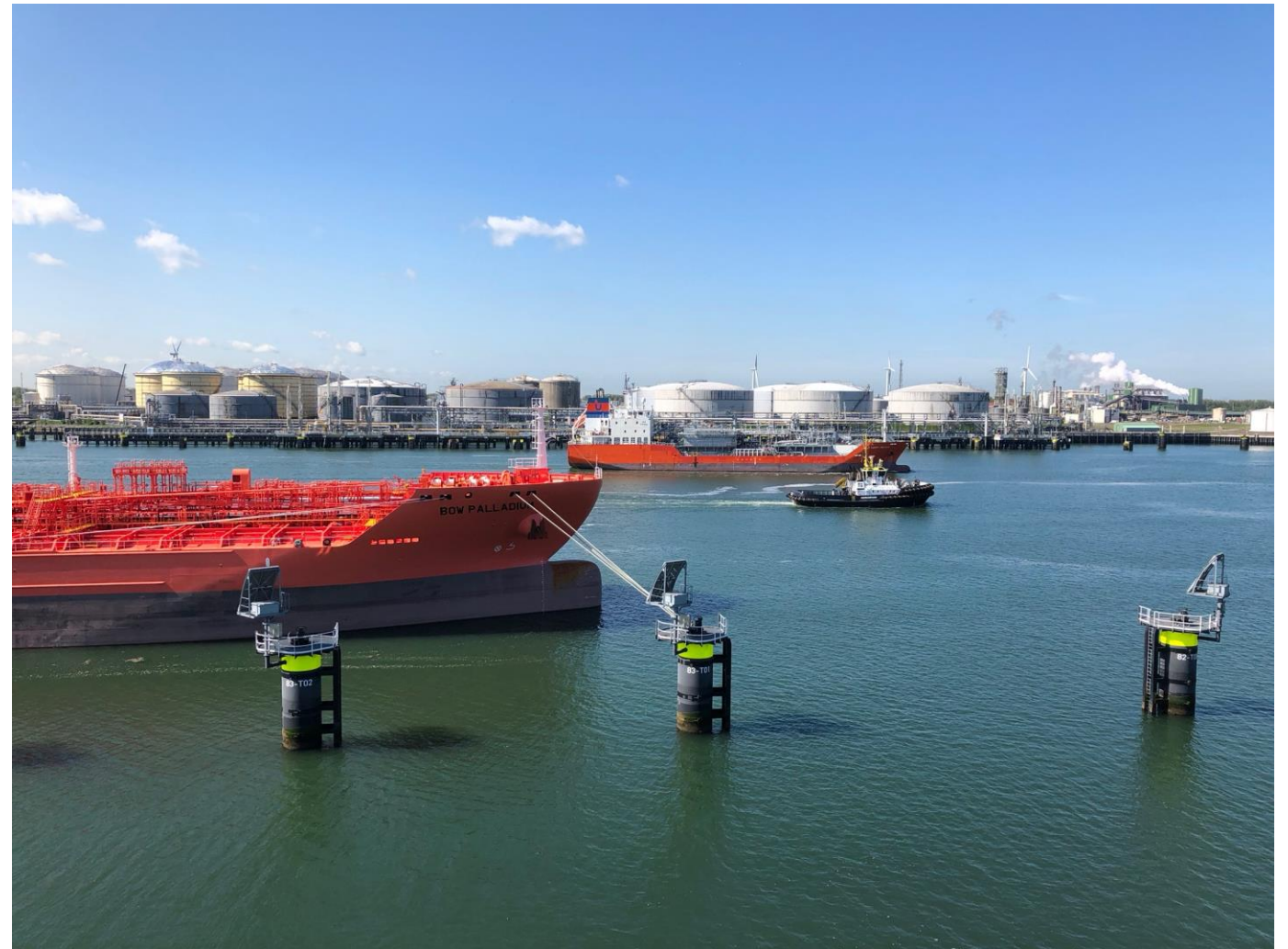
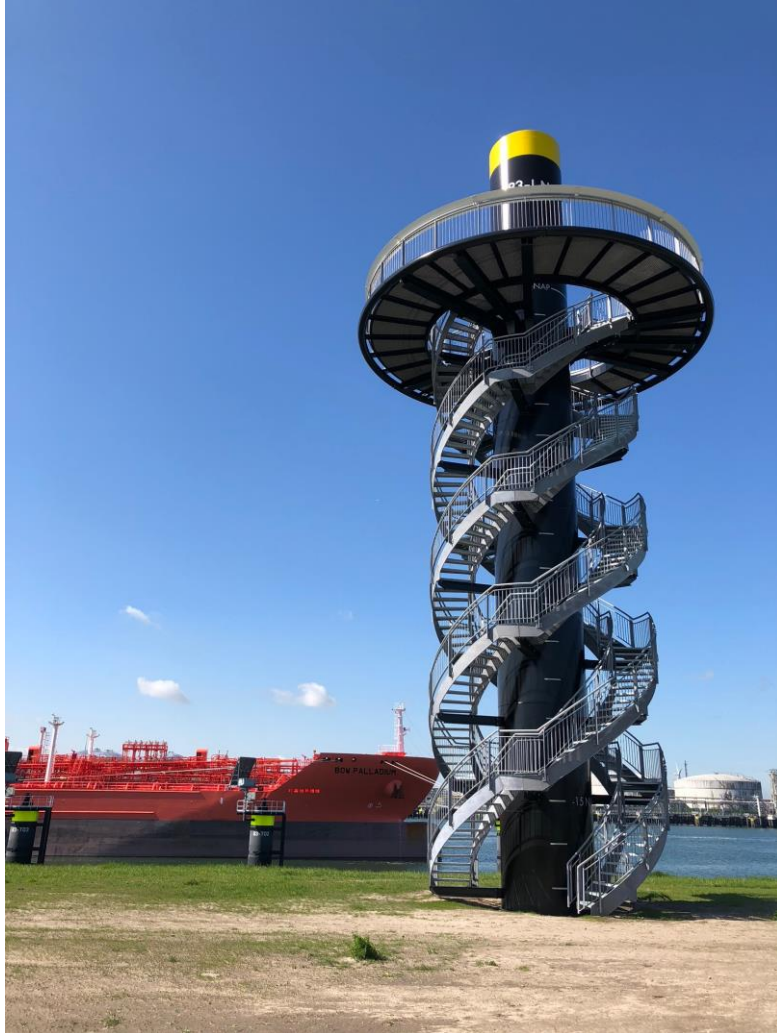
- Maakt “early warning detection” mogelijk
- Reduceert de tijd aan de kade
- Reduceert “havengelden”
- Authenticatie Laag





Volgende Use-cases

Use-case voorbeelden



Container Probe 42





Rijkswaterstaat Verkeersmanagement

- 5 Verkeerscentrales
- 5600+ Cisco IoT systemen voor de “Road Side Systems”
- Een landelijk dekkend glasvezel netwerk koppelt 305 objecten

Leidsche Rijntunnel



Rijkswaterstaat
Ministerie van Infrastructuur en Milieu

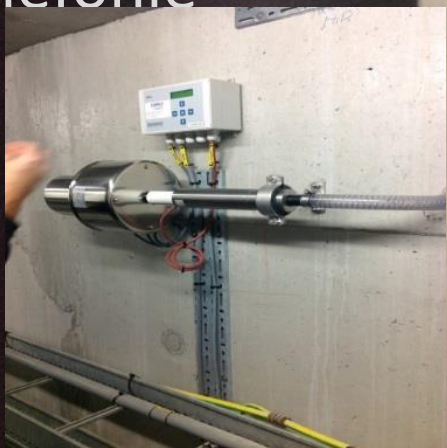
Gas metingen

HVAC

Camera systemen

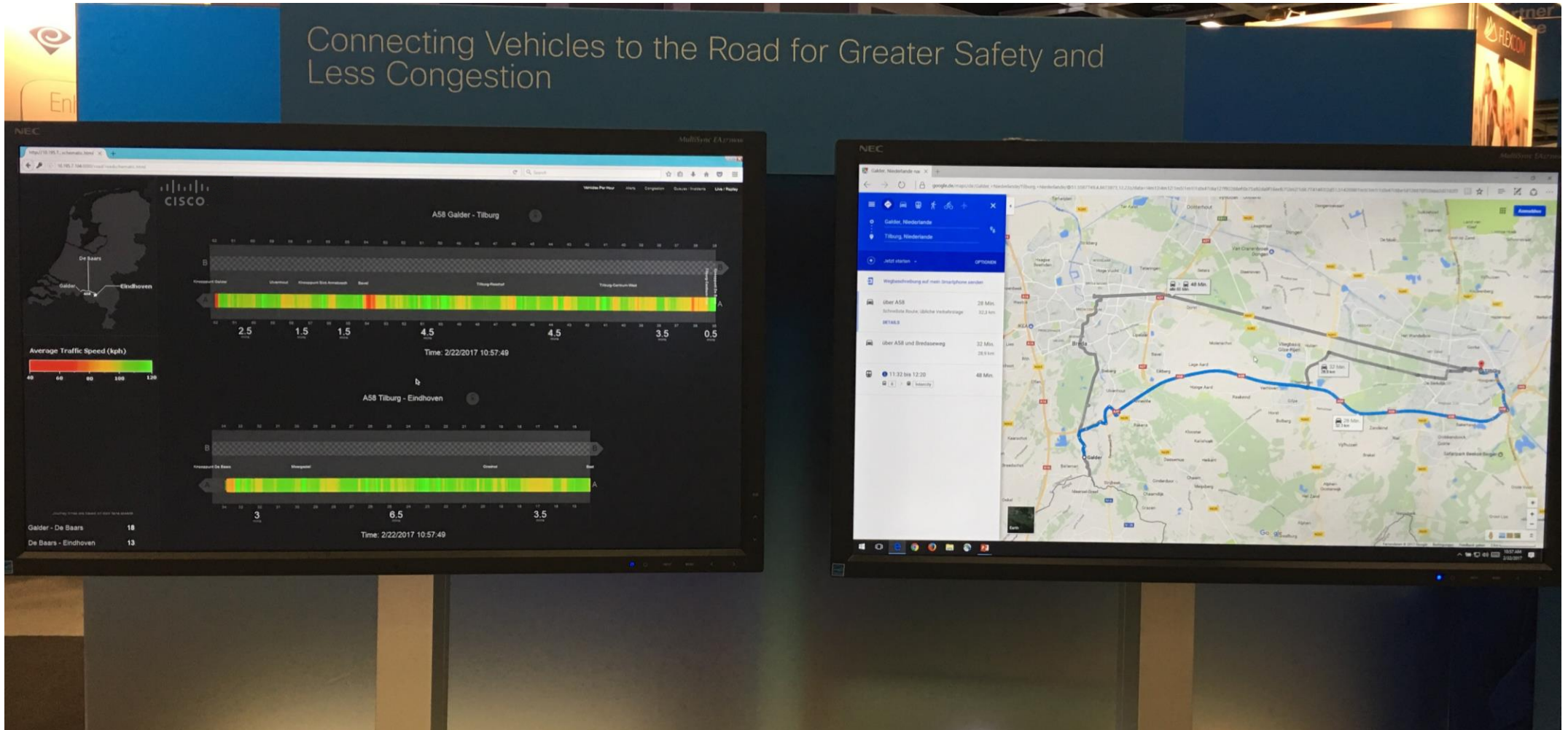
Radio systemen

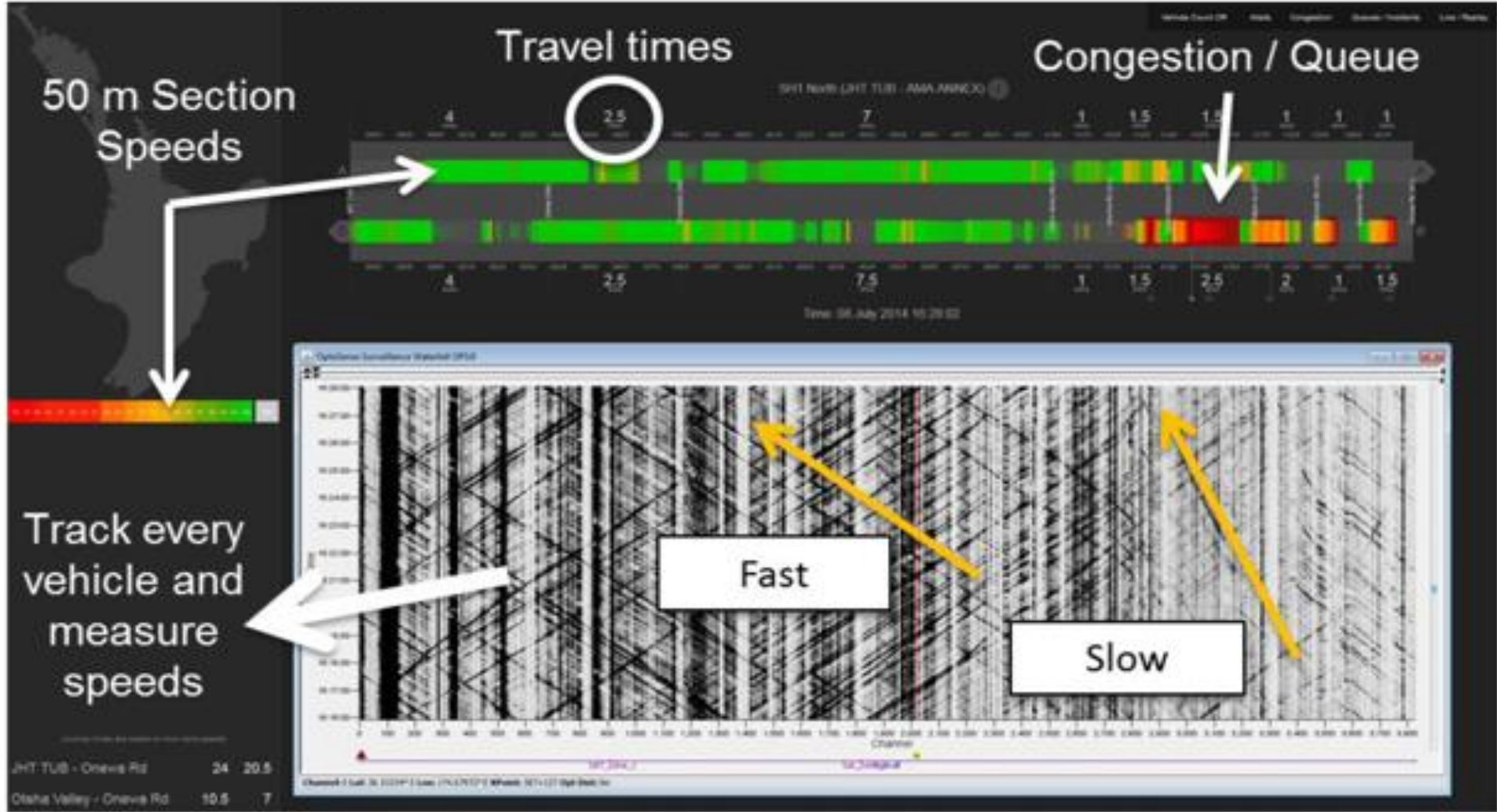
Telefonie



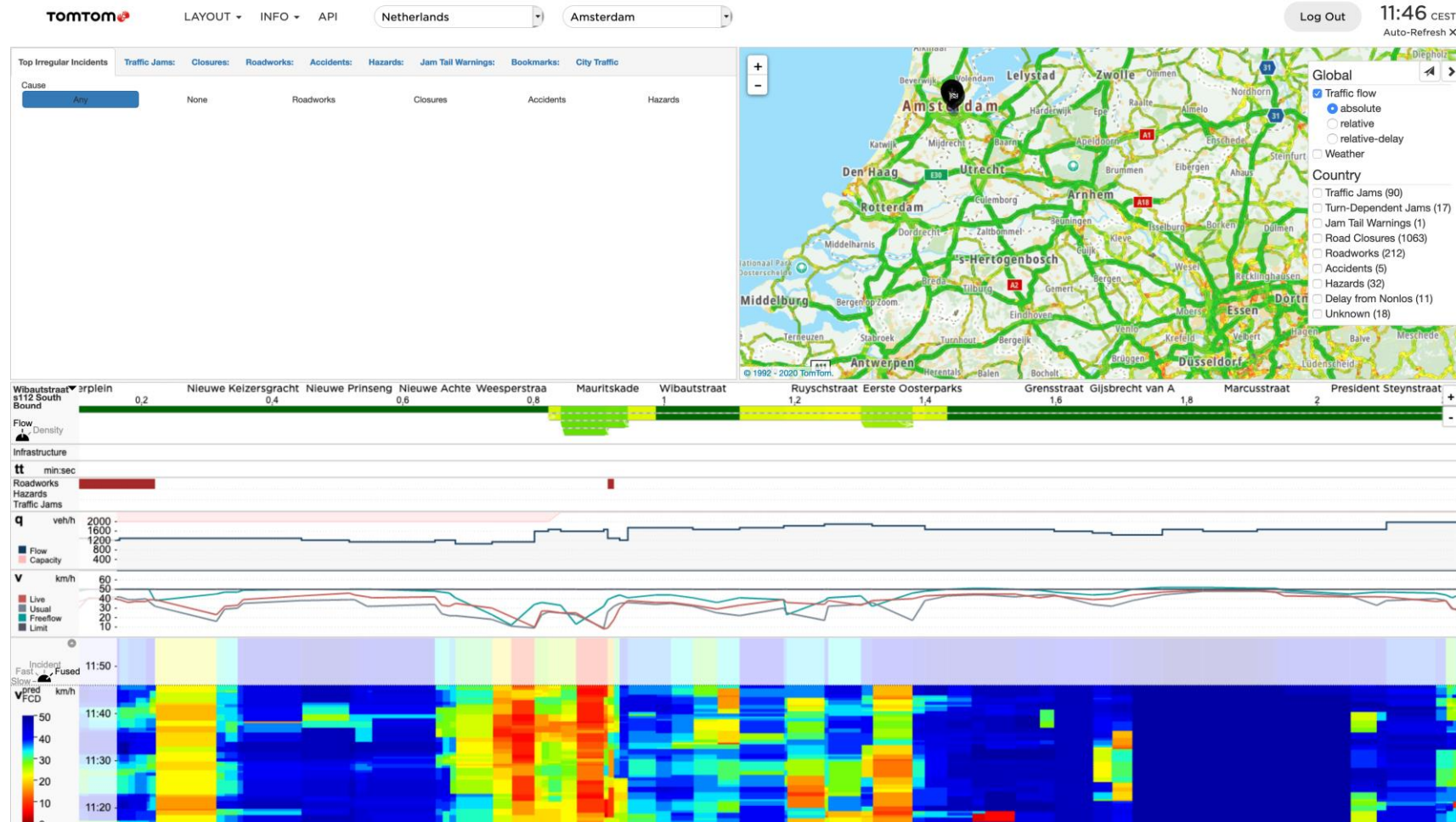
Optical Sensing – A58

Live Data vs. Calculations





Demo tijd!



[RWS Portal](#)

Conclusie

- Digital Twins worden nu gebouwd
 - Het belang van (big) data
- Security is belangrijke factor!
- Digitalisering in elke sector:
 - Kennis van IT (ICT) én OT (bouwkunde, mechanica, geneeskunde, vrijetijdsbesteding, logistiek, enz.) is belangrijk
 - Investeer in nieuwe kennis (“T-shape” model)
 - Programmeren wordt basis kennis
- “WEconomy” – Ecopartners hard nodig



