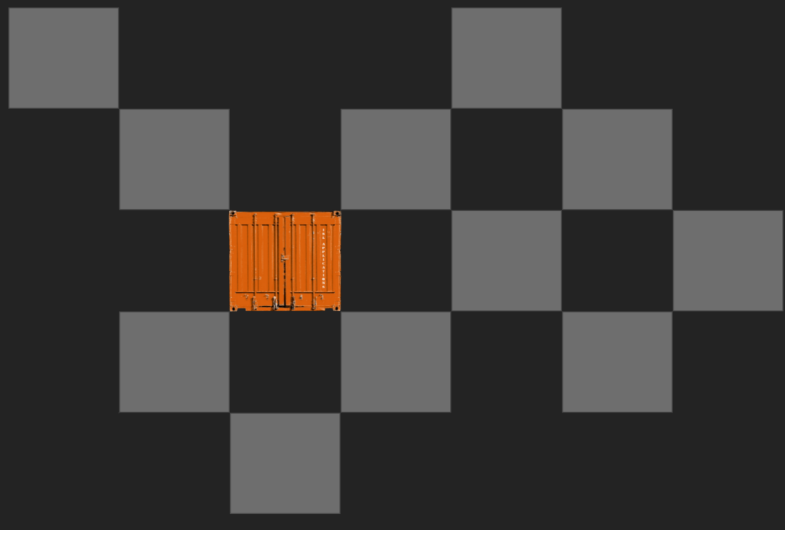
How to get more out of your existing resources

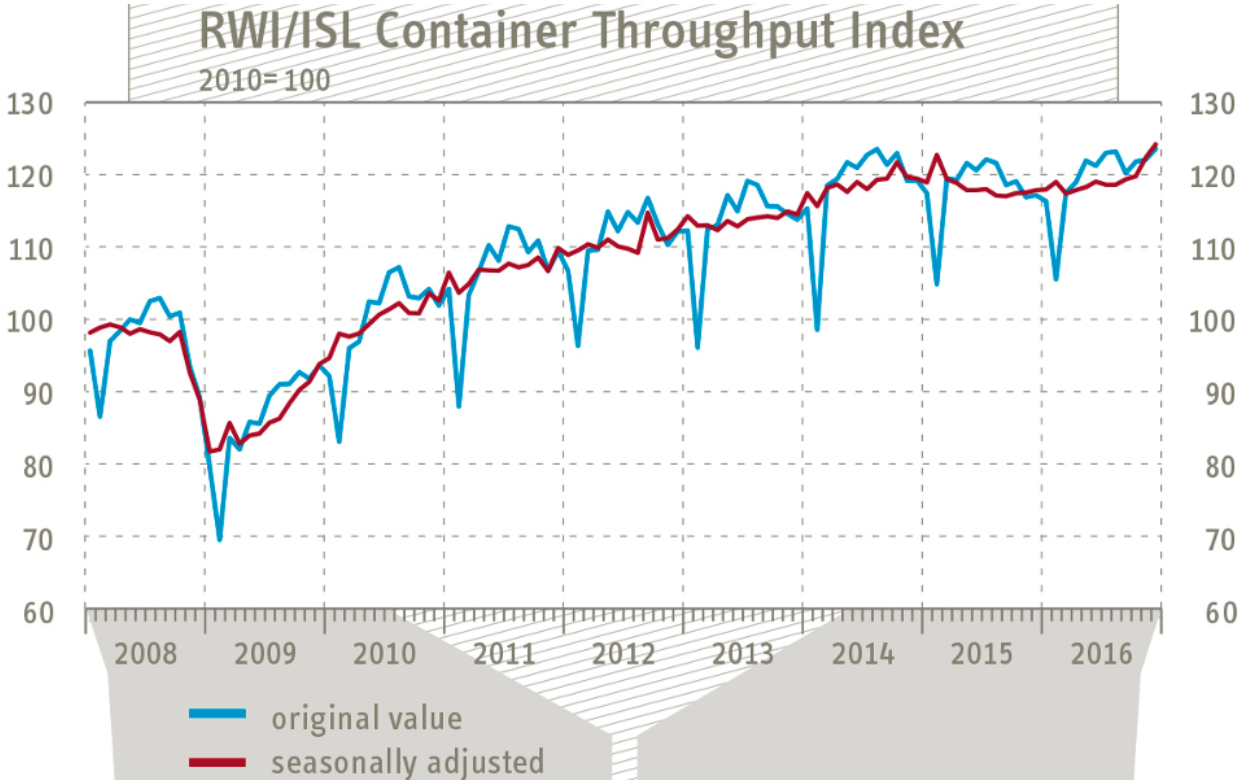
Dr. Lawrence Henesey

ISL Applications GmbH

9th Port and Terminal Technology 2017

Norfolk, April 11– 12th 2017





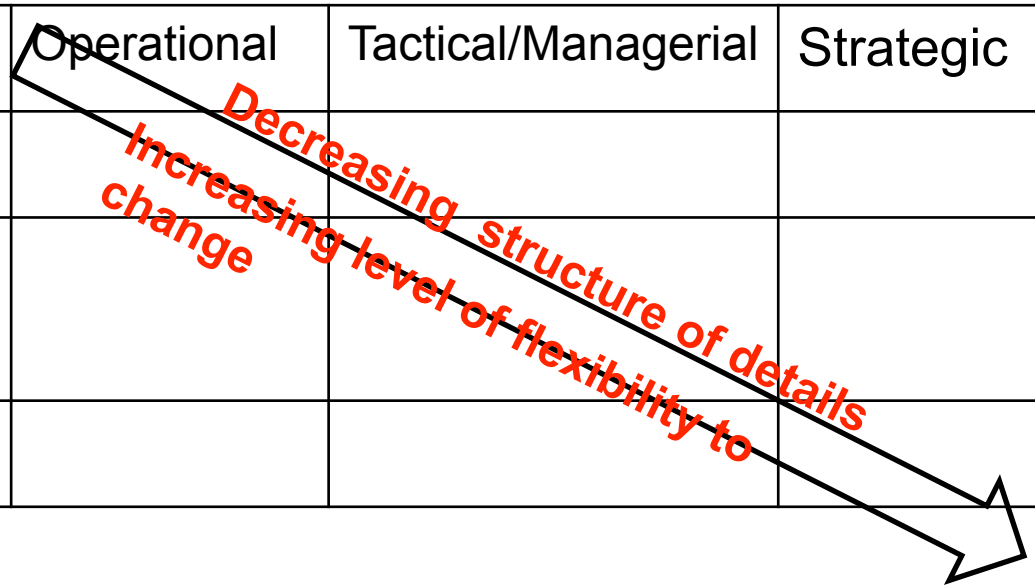
During December 2016, The Container Throughput Index reached a new all-time-high of 124.3 points. The previous record was observed in Feb. 2015 (122.8 points). The fourth consecutive increase of the index indicates that the world trade has gained momentum noticeably at the end of 2016.

RWI/ISL Container Throughput index

- ***81 ports worldwide***
- ***~ 60 % of worlds throughput***
- ***available 3 weeks in new month www.isl.org → news***

Decision type grid

	Operational	Tactical/Managerial	Strategic
Structured			
Semi-structured			
Unstructured			



More than 25 Years Simulation Experience

1989 1991 1993 1995 1998 2000 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2013 2015 2017

Products rebranding:
CAPS
SCUSY
ViTO

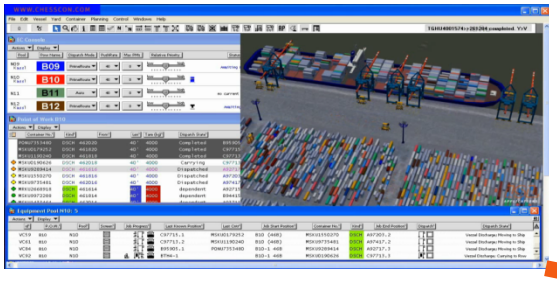
CHESSCON

Development funded by European Union Land Bremen Bremerhavener Gesellschaft für Investitionsförderung und Stadtentwicklung mbH bis

Optimisation and Simulation – References (selected)

ASEAN Terminals, Philippines
Bromma, Singapore
Centerm Terminal, Vancouver, Canada
CSX, Jacksonville, USA
DP World, Australia
EUROGATE, Germany
HHLA, Hamburg , Germany
HPA Hamburg Port Authority, Germany
HIT, Hong Kong
JadeWeserPort, Germany
Cargotec / Kalmar Industries, Finland
CMSA ICTSI, Manzanillo, Mexico
MCT, Gioia Tauro, Italy
MTL, Hong Kong
Noell Crane Systems, Germany
NTB, Bremerhaven, Germany
Port of Tacoma, USA
PORTEK International Ltd., Singapore
PSA International, Singapore
Red Sea Gateway Terminal, Jeddah, KSA
SPIA ICTSI, Columbia
Tata Consultancy Services, India
TecPlata ICTSI, Buenos Aires, Argentina
Terminal Investment Ltd, Netherlands
TotalSoftBank, Korea
TPT, South Africa
Warsteiner Brewery, Germany

How to improve terminal‘s efficiency



TOS
Control system

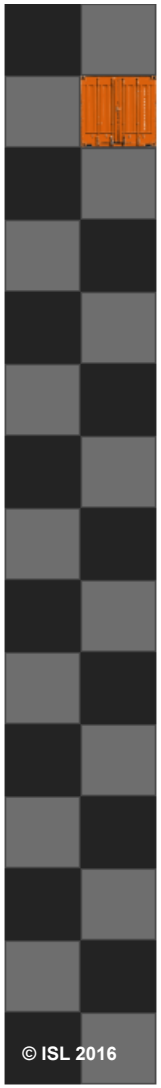
Process automation

Terminal efficiency

Equipment

The first ALV of KMI

Terminal staff



Terminal‘s productivity is driven by

- The equipment
- The control system (TOS)
- The processes

Terminal Automation (processes as well as equipment) prepares for optimised operation, but more than ever very skilled control staff is required.

The last sentence within the Singapore Maritime Gallery (opened 09/2012):

„ It is man making the difference“

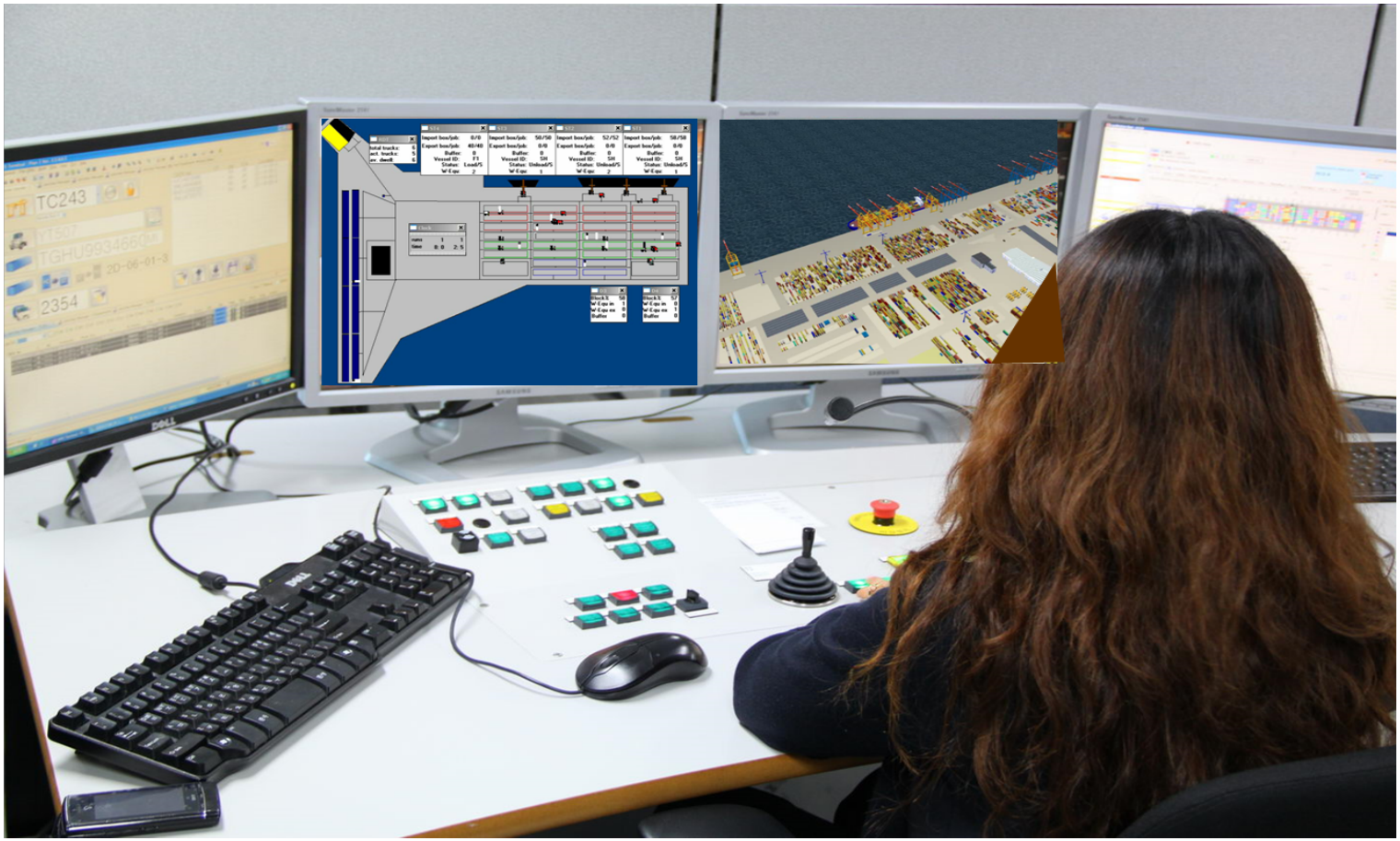
Vessel simulator

- train your control staff (as shipping lines do)

Crane simulator

- train your control terminal staff (as you do with crane drivers)

Learning from others

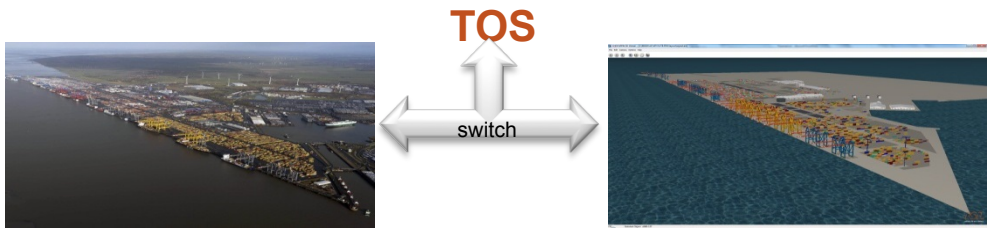


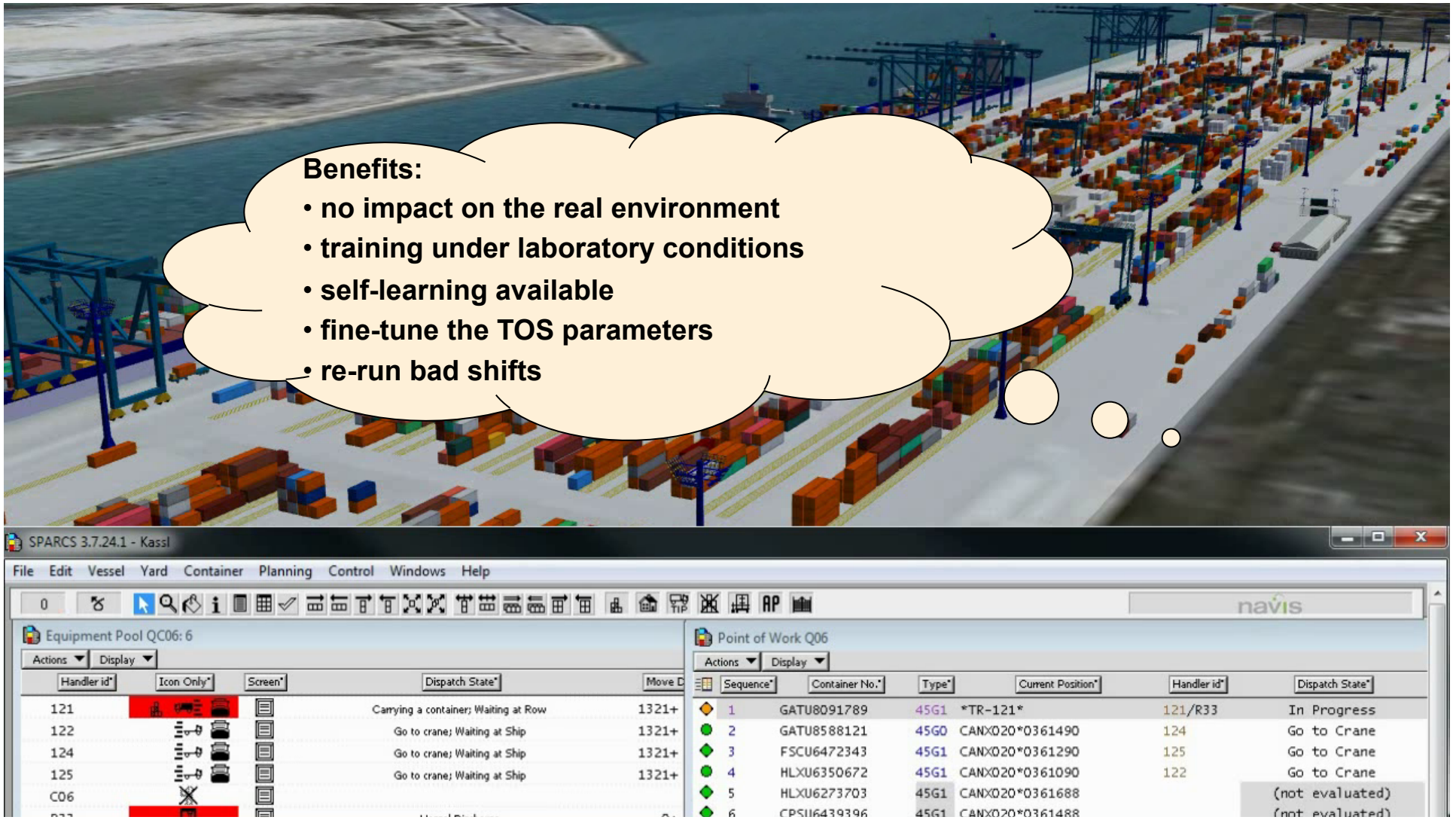
The main mission of CHESS**CON** VIRTUAL TERMINAL

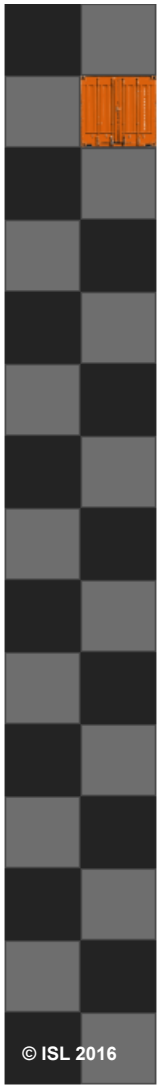
what you can do with CHESS**CON**

Emulation:

- use your Terminal Operation System (TOS)
- use your software interfaces
- but use a **Virtual Container Terminal**

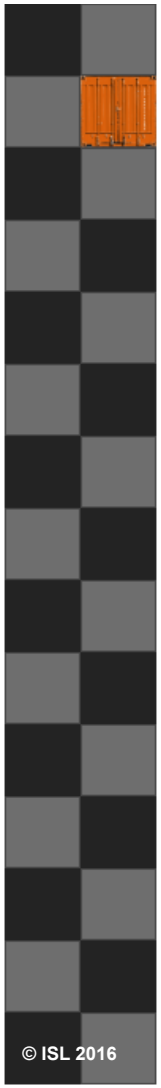


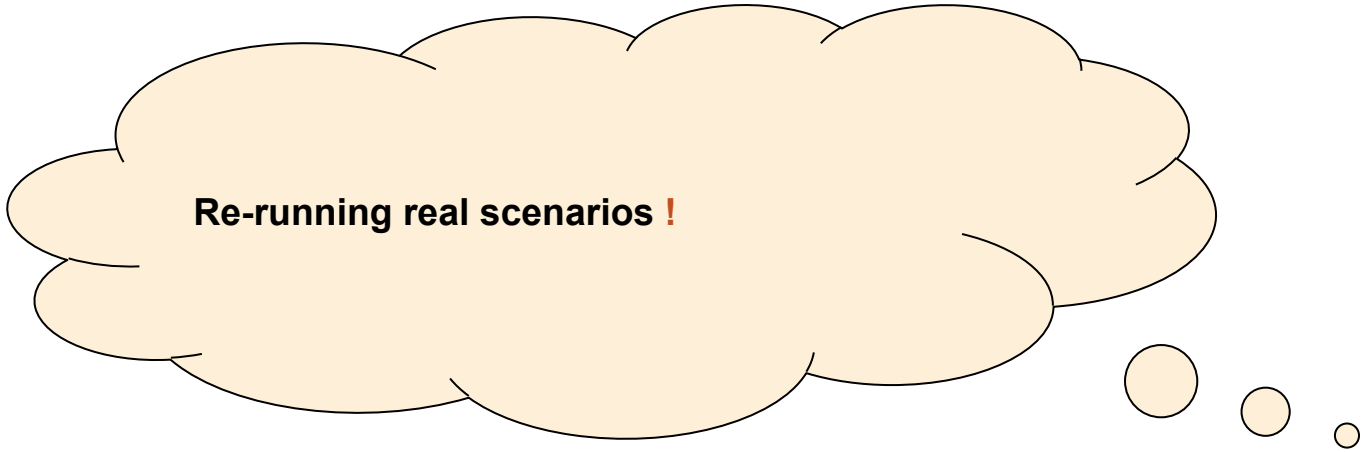

Benefits:
• no impact on the real environment
• training under laboratory conditions
• self-learning available
• fine-tune the TOS parameters
• re-run bad shifts
SPARCS 3.7.24.1 - Kassl
File Edit Vessel Yard Container Planning Control Windows Help
navis
Equipment Pool QC06: 6
Actions Display
Handler id Icon Only Screen Dispatch State Move D
121 Carrying a container; Waiting at Row 1321+
122 Go to crane; Waiting at Ship 1321+
124 Go to crane; Waiting at Ship 1321+
125 Go to crane; Waiting at Ship 1321+
C06
Point of Work Q06
Actions Display
Sequence Container No. Type Current Position Handler id Dispatch State
1 GATU8091789 45G1 *TR-121* 121/R33 In Progress
2 GATU8588121 45G0 CANX020*0361490 124 Go to Crane
3 FSCU6472343 45G1 CANX020*0361290 125 Go to Crane
4 HLXU6350672 45G1 CANX020*0361090 122 Go to Crane
5 HLXU6273703 45G1 CANX020*0361688 (not evaluated)



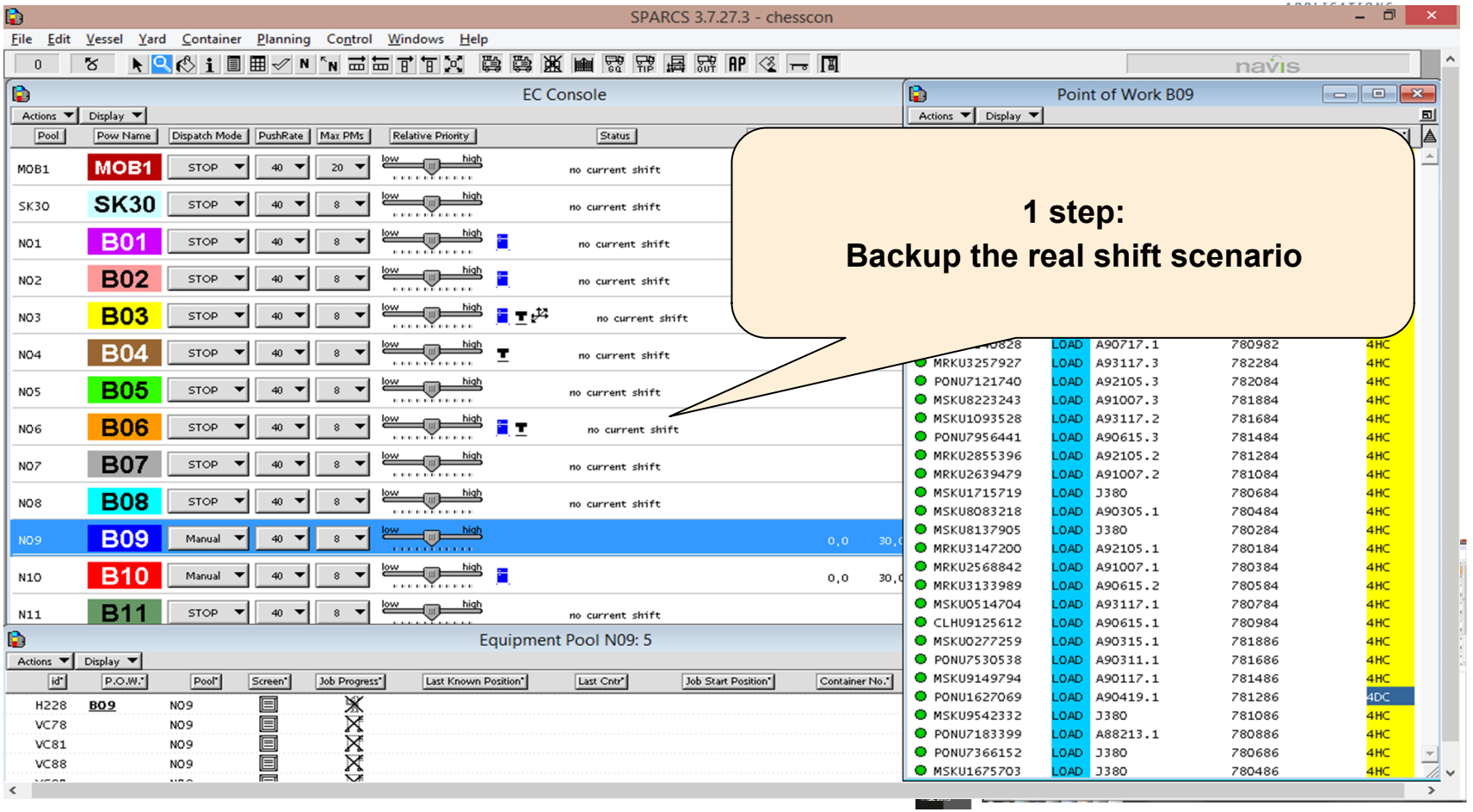
This is state of the art (at least at Greenfields)

→ But what are the next steps?

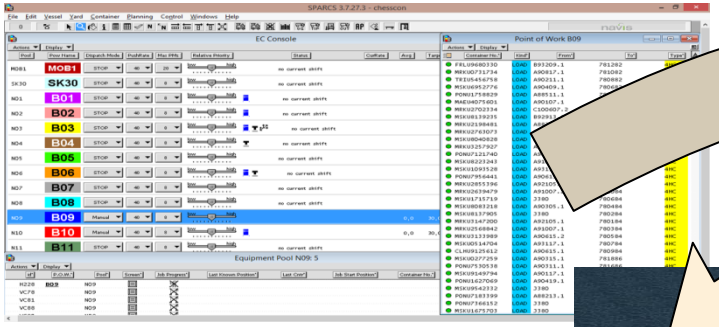




CHESS**CON** Shift Preview



CHESS**CON** Shift Preview



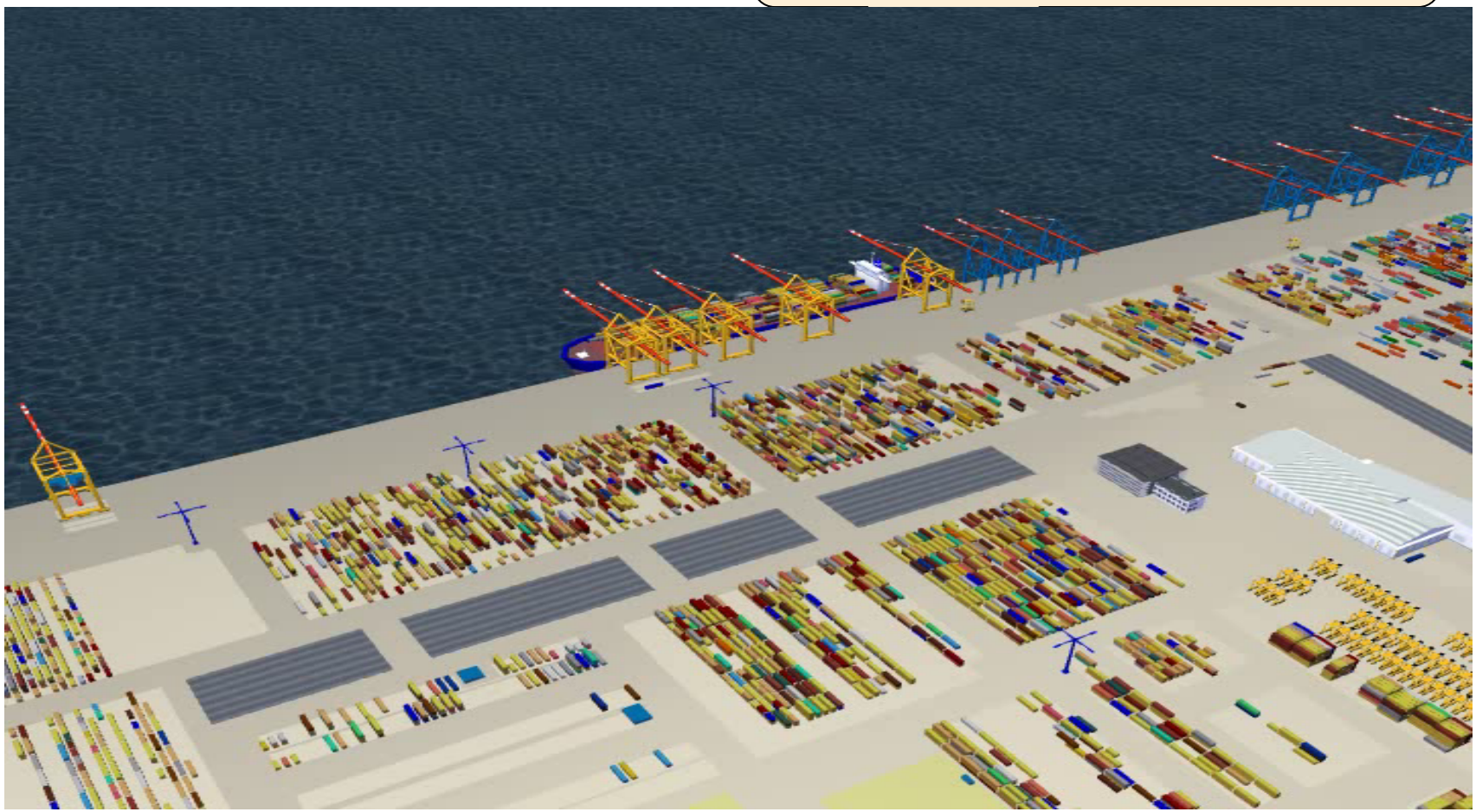
2nd step:
Import planning state automatically

ample of based data

Development funded by: Bremerhavener Gesellschaft für Investitionsförderung und Stadtentwicklung mbH b!s

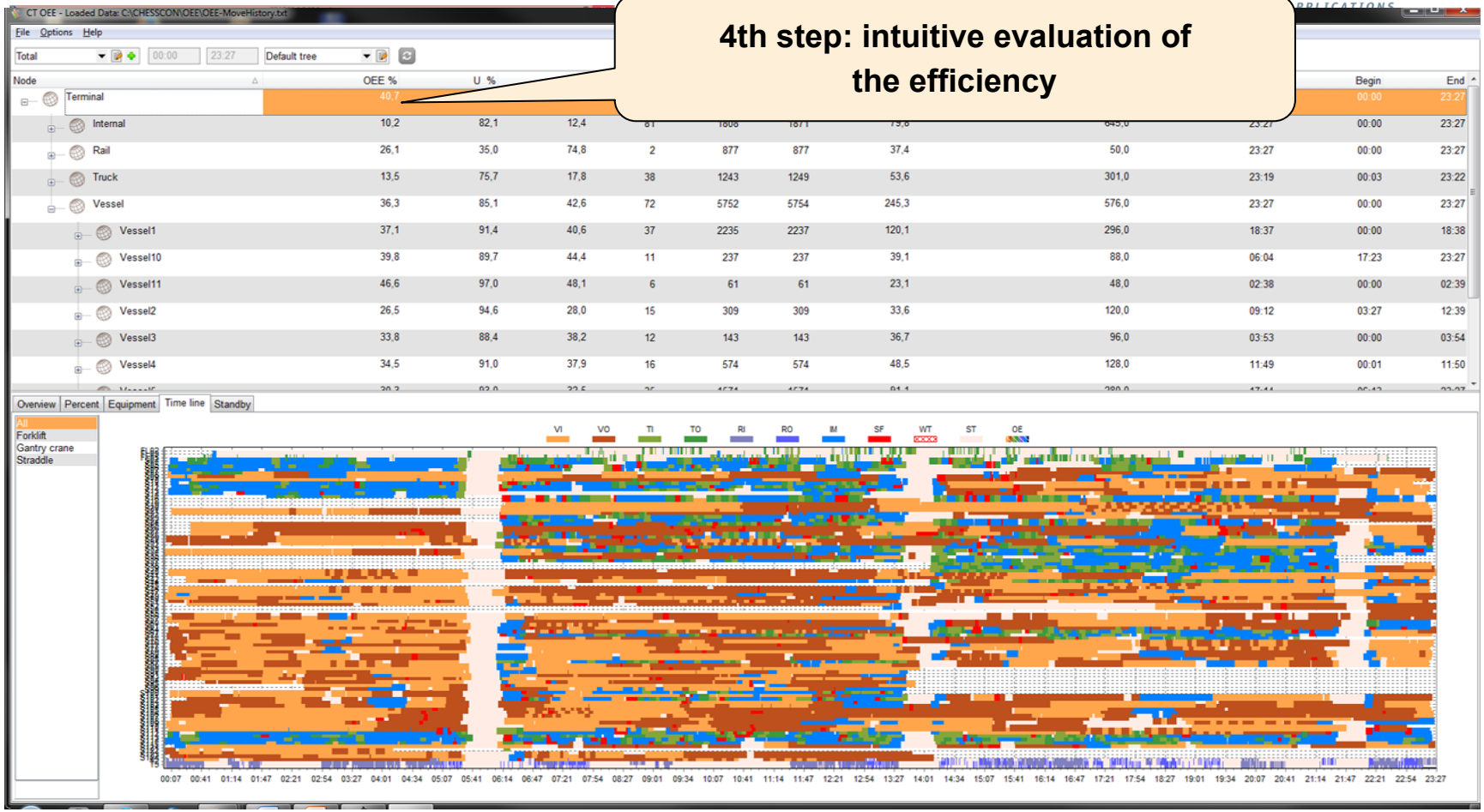
CHESS**CON** Shift Preview

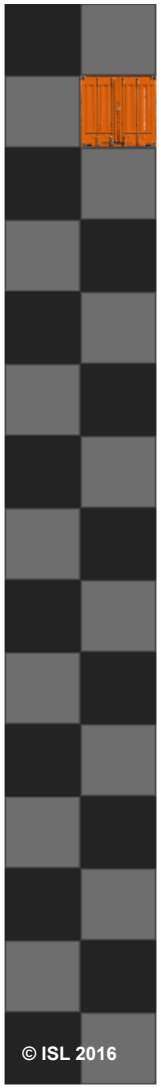
3rd step:
fast simulation of the shift



CHESS**CON** Shift Preview

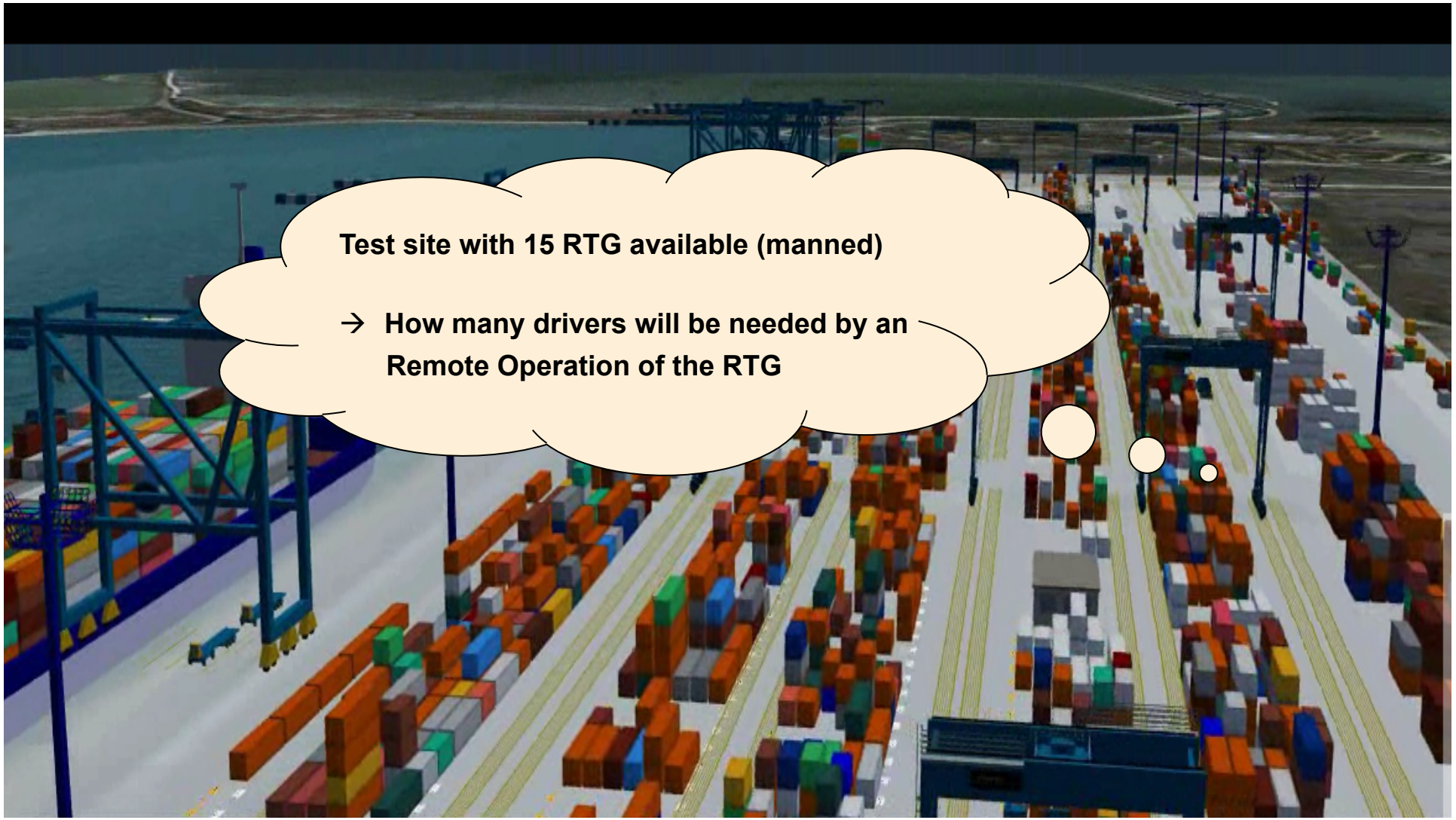
4th step: intuitive evaluation of the efficiency

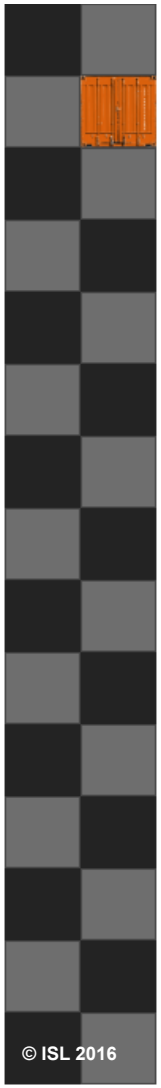




Case Study (Just started)

→ Remote Operated RTG


Test site with 15 RTG available (manned)
→ How many drivers will be needed by an Remote Operation of the RTG



Case Study - Remote Operated RTG

Base Scenario: Re-run the real shift

- 13 RTG have been in operation during the shift → at least 13 RTG drivers

1. Scenario: Remote operated, semi-automated RTG

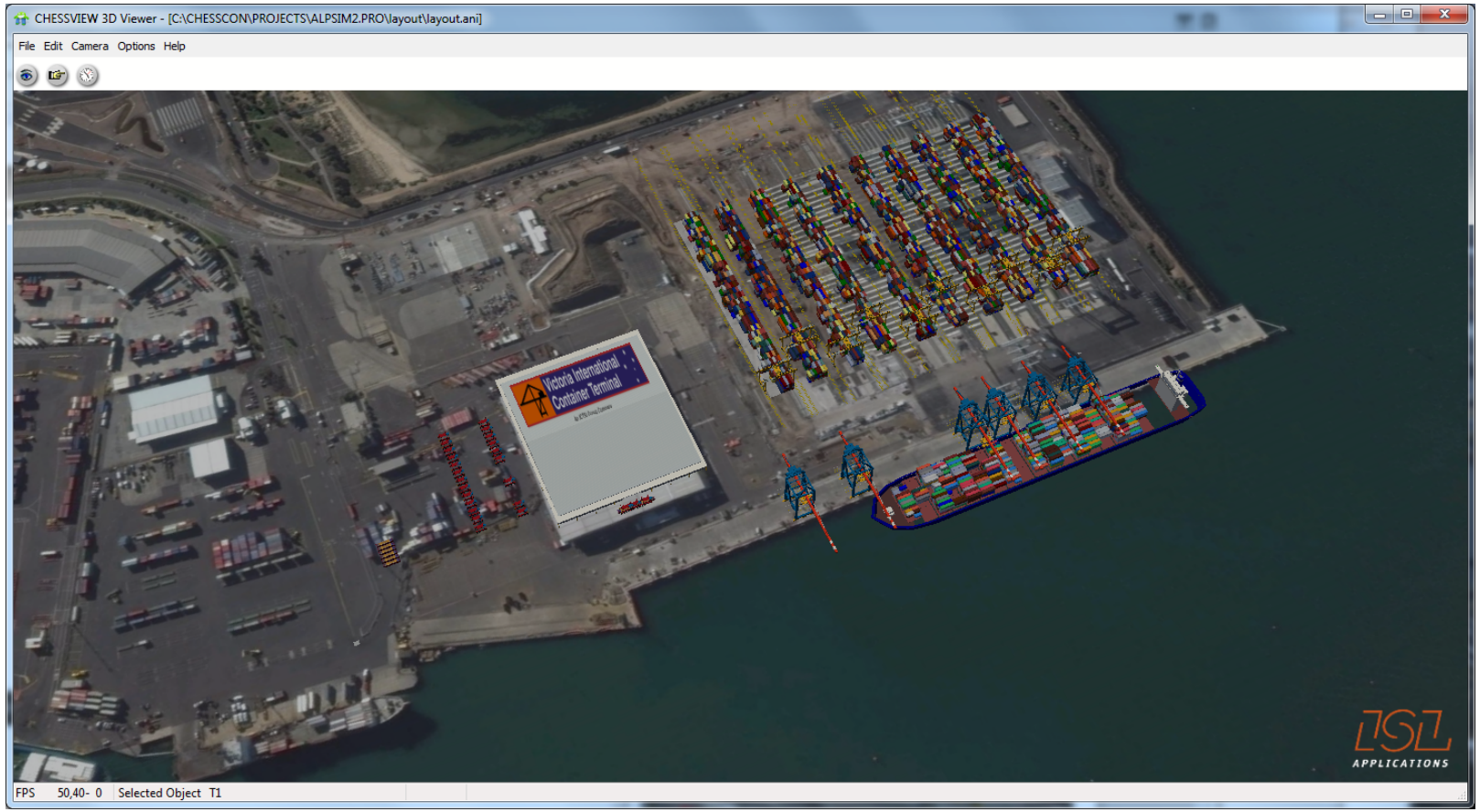
- Automated operation within the block
- Remote operated handshake for the truck operation
- Delay time for activating the Remote Operator some 10-20 sec. per move
- Max. 6 remote operators are required (max 6 requests in parallel) → 6 RTG drivers

More scenarios to come:

- use standard RTG instead of semi-automated ones
- High workload RTG (discharge/load operation) may get dedicated drivers (no remote control)
- …

→ Results will be published soon

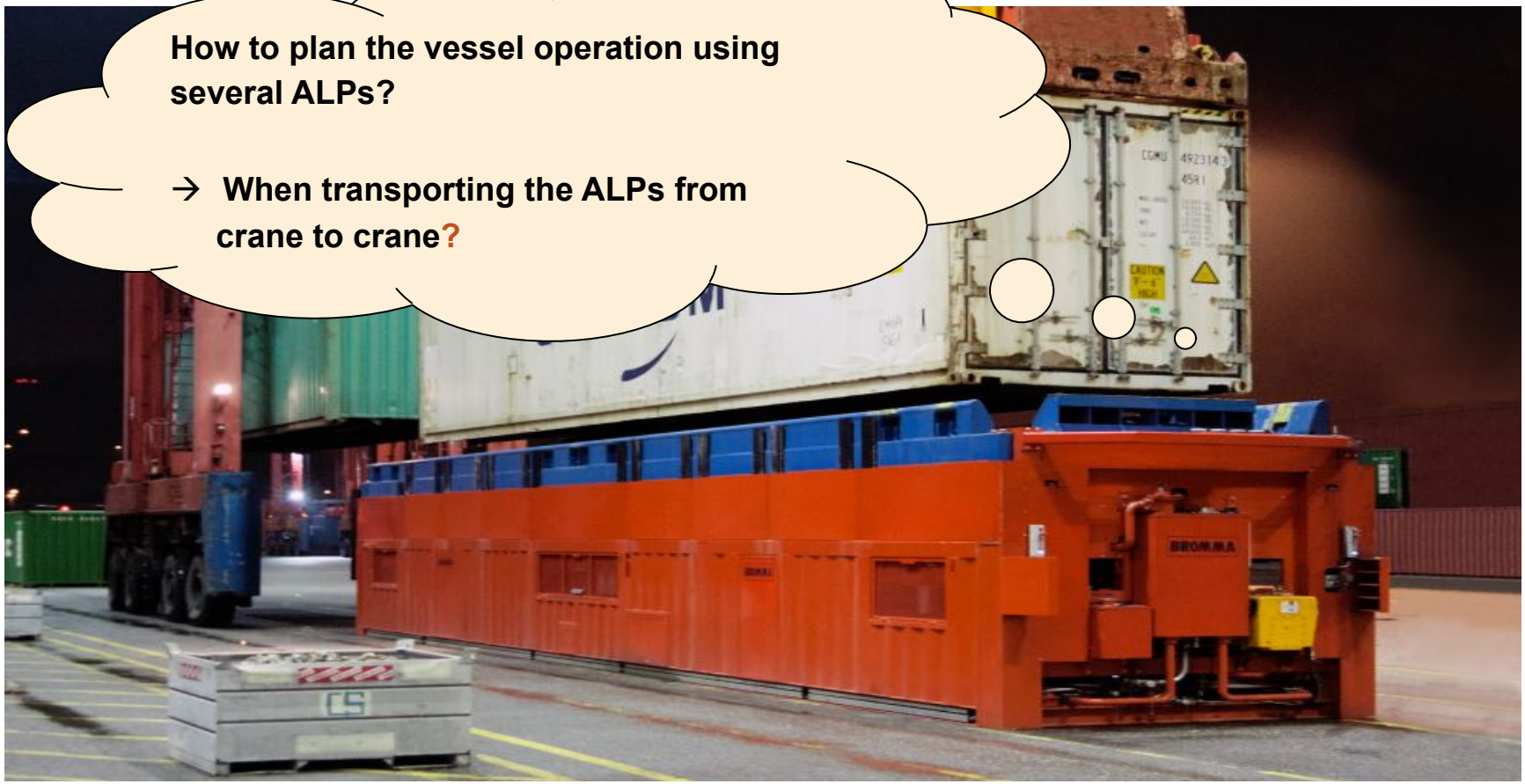
Case Study - ALP at Melbourne terminal



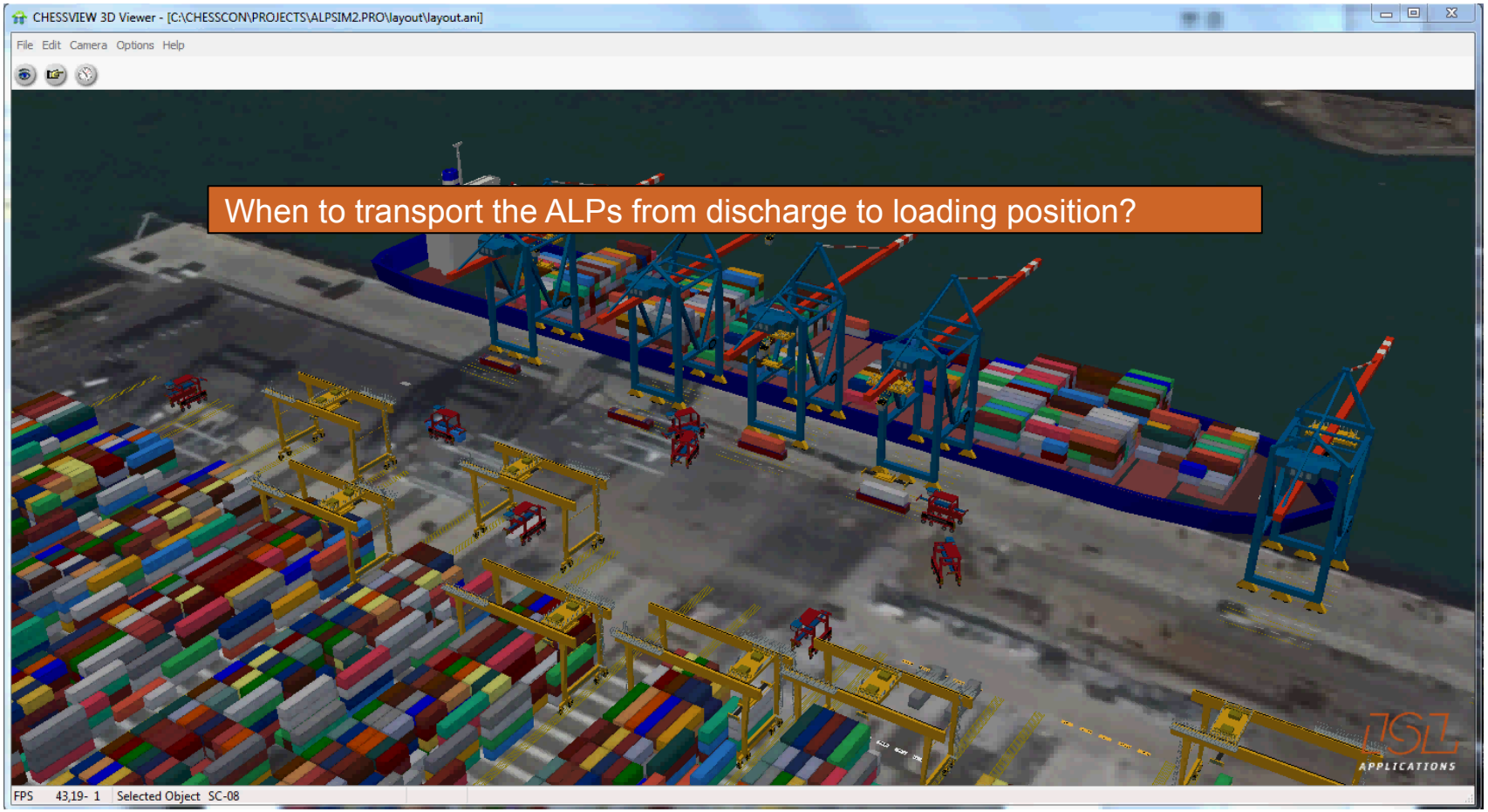
Bromma‘s ALP

How to plan the vessel operation using several ALPs?

→ When transporting the ALPs from crane to crane?



ALP emulator



AOS calculating the utilisations

Detail lashing platform

Logged in as user.

ALP 1

DISCHARGING_DECK

VESSEL NAME: ILS009

CRANE NAME:

Activate Transport Mode

5 % FUEL

2.6 V BATTERY

MAGAZIN 1/2: 81			MAGAZIN 3/4: 11	MAGAZIN 5/6: 11		MAGAZIN 7/8: 81	
1	81	11	3	5	11	81	7
1 2	1 2		3/5 4/6	3/5 4/6		7 8	1 8
2	81	11	4	6	11	81	8

 TYPE 3

 TYPE 2

 TYPE 3

ERROR TABLE

Severity	Error Description	Manipulator	State

TWIST LOCKS PER MAGAZINE

1

RAIL	TWL-TYPE	VESSEL	AMOUNT
1	3		10
2	3		10
3	2		10
4	3		10
5	3		10
6	2		1
7	3		10
8	3		10
9	3		10
10	3		10
11	3		1
12	3		0
13	3		0
14	3		0

Logged in as user.

ALP 3

DISCHARGING_HOLD ILS009

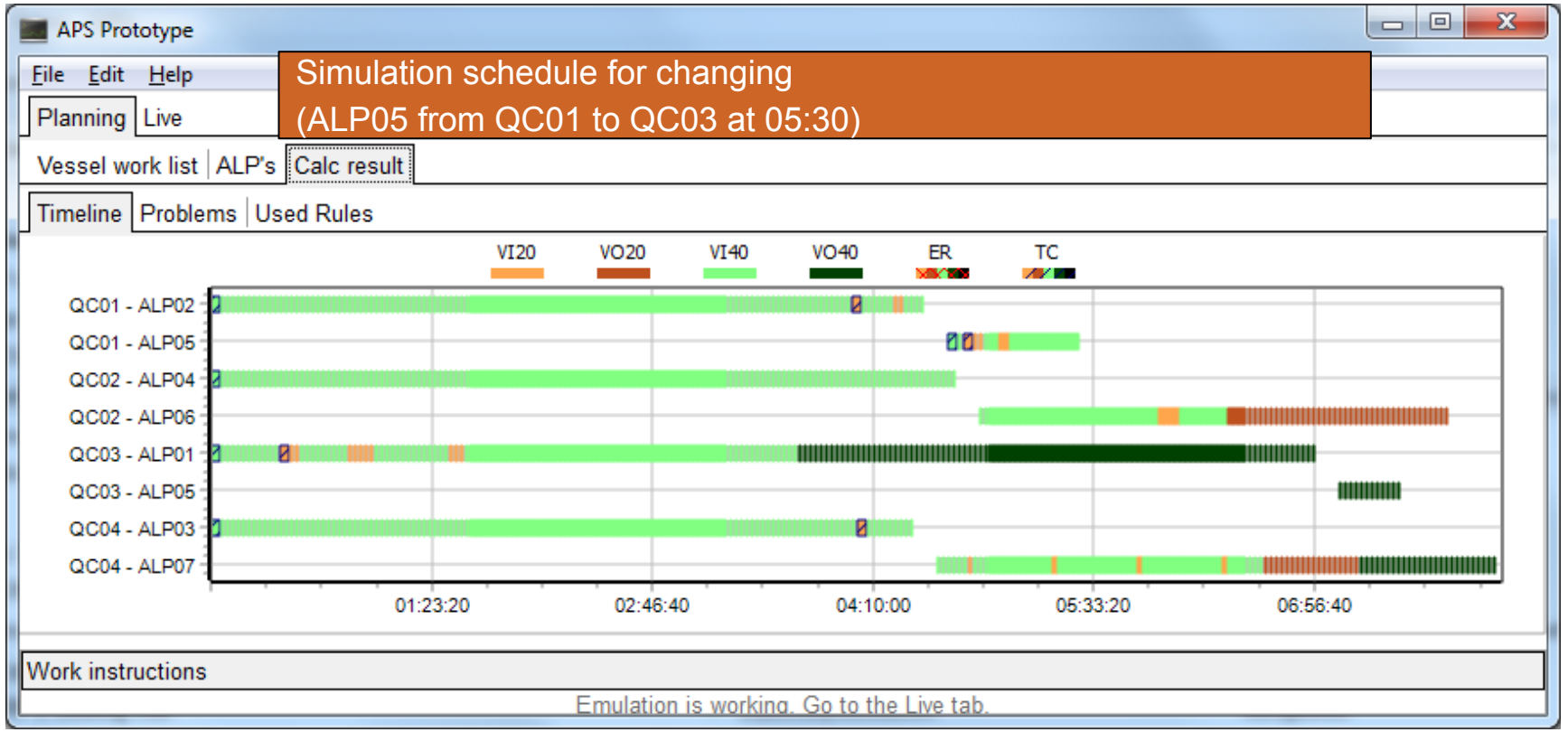
/2	3/4	5/6	7/8	BATTERY
94	0	0	94	
3	3	3	3	FUEL

ALP 6

OFFLINE

/2	3/4	5/6	7/8	BATTERY
1	-1	-1	-1	
1	-1	-1	-1	FUEL

AOS forecasting the operation



Cites from NTB – North Sea Terminal Bremerhaven

a joint venture of APM Terminals and the Eurogate group

- **<u>CHESSCON Shift Preview</u> was developed out of our demands for a fast simulation of the current state of shift planning.**
- **Together we (NTB) and ISL Applications GmbH defined a module, which is based on operational as well as IT expertise.**
- **The result is easy to use and supports short term optimisation of the day-to-day shift planning.**

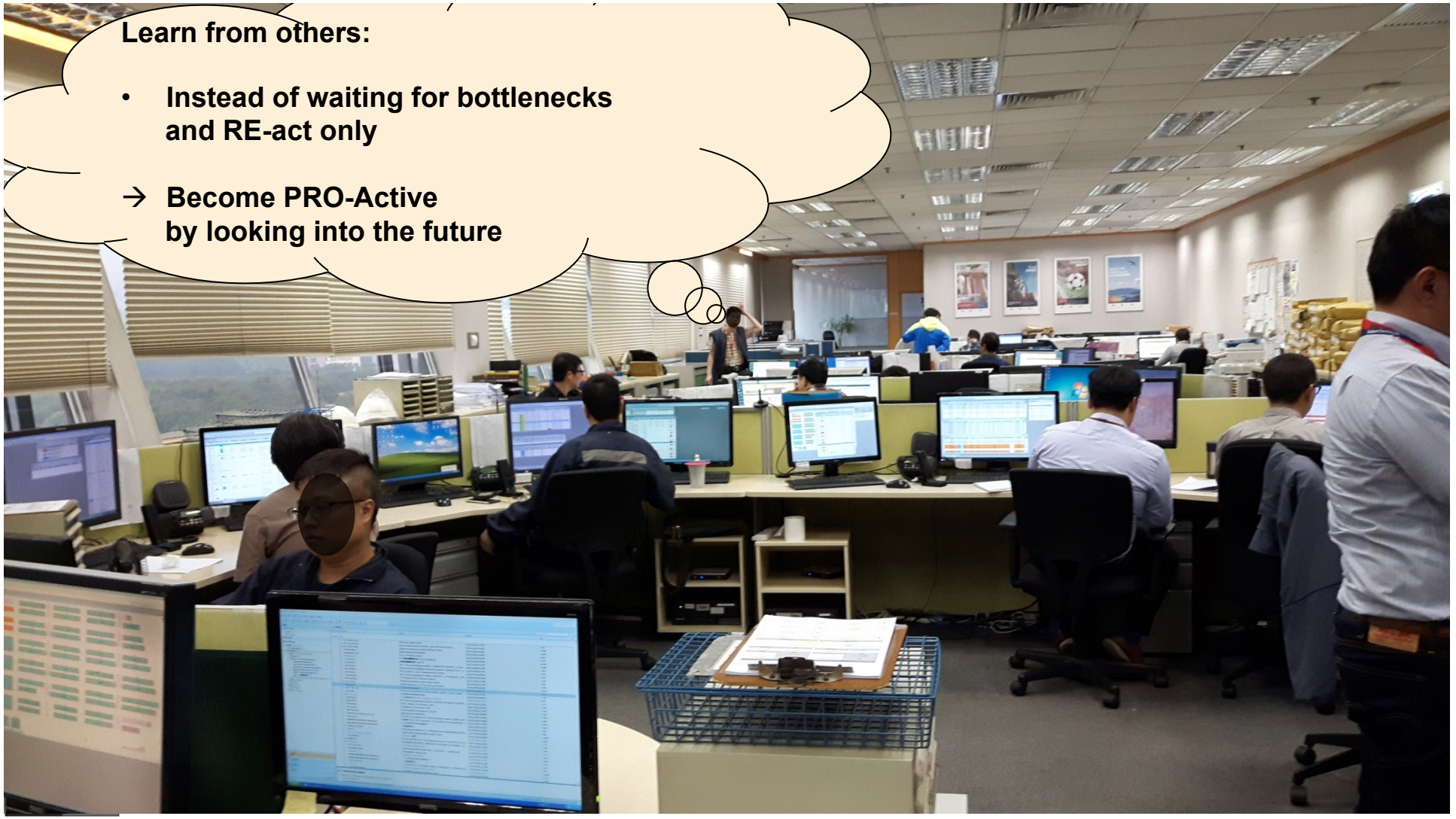
Why Shift Preview ?

→ Terminals,

which today are not in the position to analyse their operation predictively,

are living yesterday

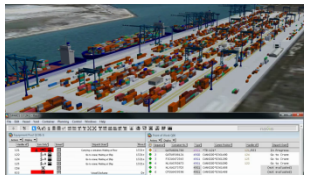
Marc Dieterich, Operations Manager at NTB


Learn from others:
• Instead of waiting for bottlenecks and RE-act only
→ Become PRO-Active by looking into the future

Conclusion

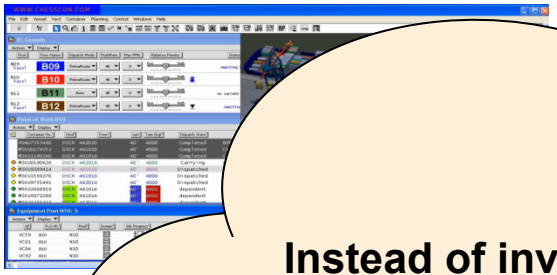
- Train your staff with Virtual Terminals

- Fine-tune your Terminal Operating System



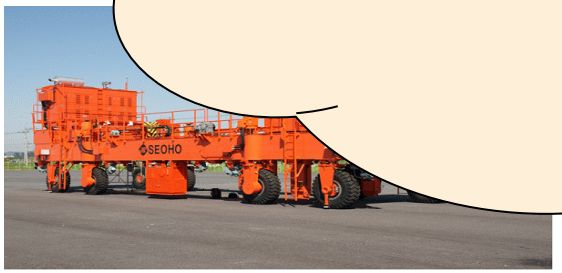
- Look into the future operation

How to improve terminal‘s efficiency

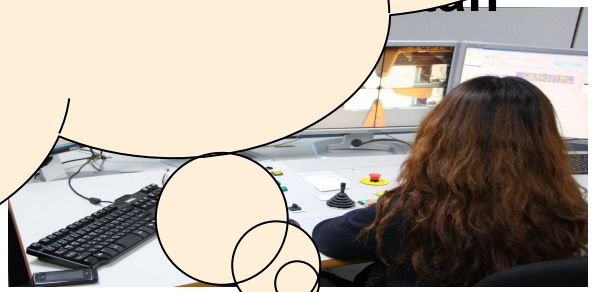


Instead of investing in more and more man and machines:

Get more out of your existing resources



The first ALV of KMI




MAKE YOUR RIGHT MOVES!
WWW.CHESSCON.COM
CHESSCON
VIRTUAL TERMINAL

I'm looking forward to the following discussion!

Dr. Lawrence Henesey
Business Development Manager

Lawrence.henesey@isl-application.com

ISL APPLICATIONS

ISL APPLICATIONS GMBH
Barkhausenstrasse 2
27568 Bremerhaven
Germany

P +49 471-30 98 38-38
www.isl-applications.com