

# How to get more out of your existing resources

—

## Learn from the big ones

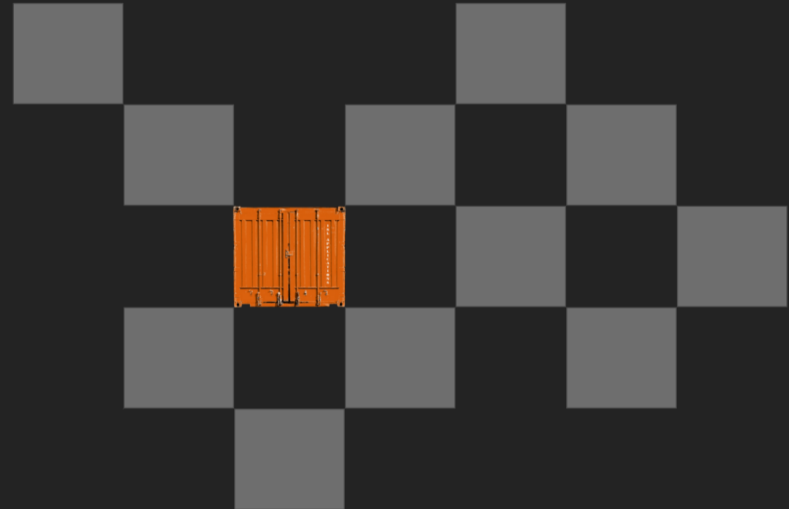


Holger Schuett

ISL Applications GmbH

*Baltic Sea Ports & Shipping 2017*

*Tallinn, September 25<sup>th</sup> – 27<sup>th</sup>*



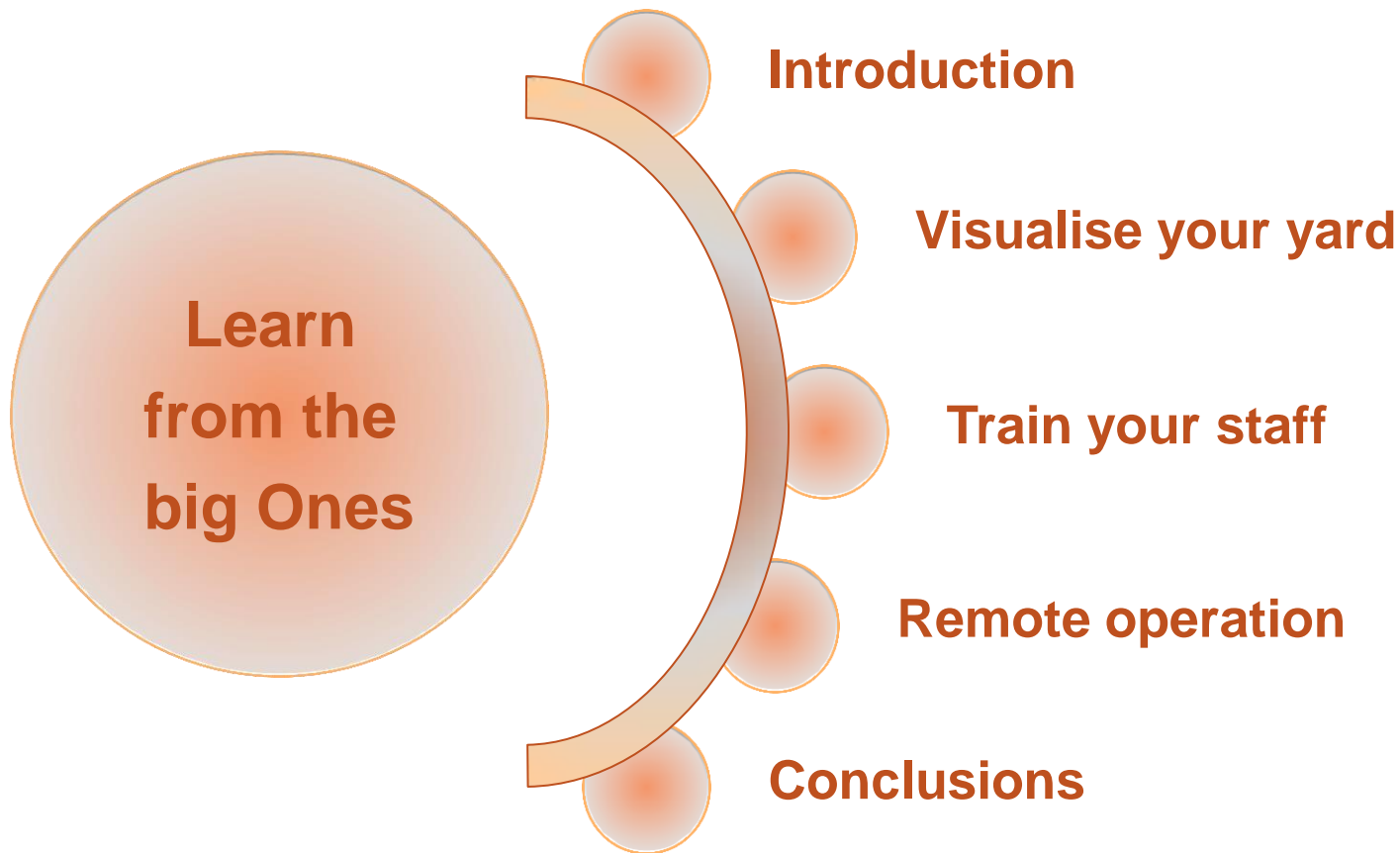
*\*participation funded by:*

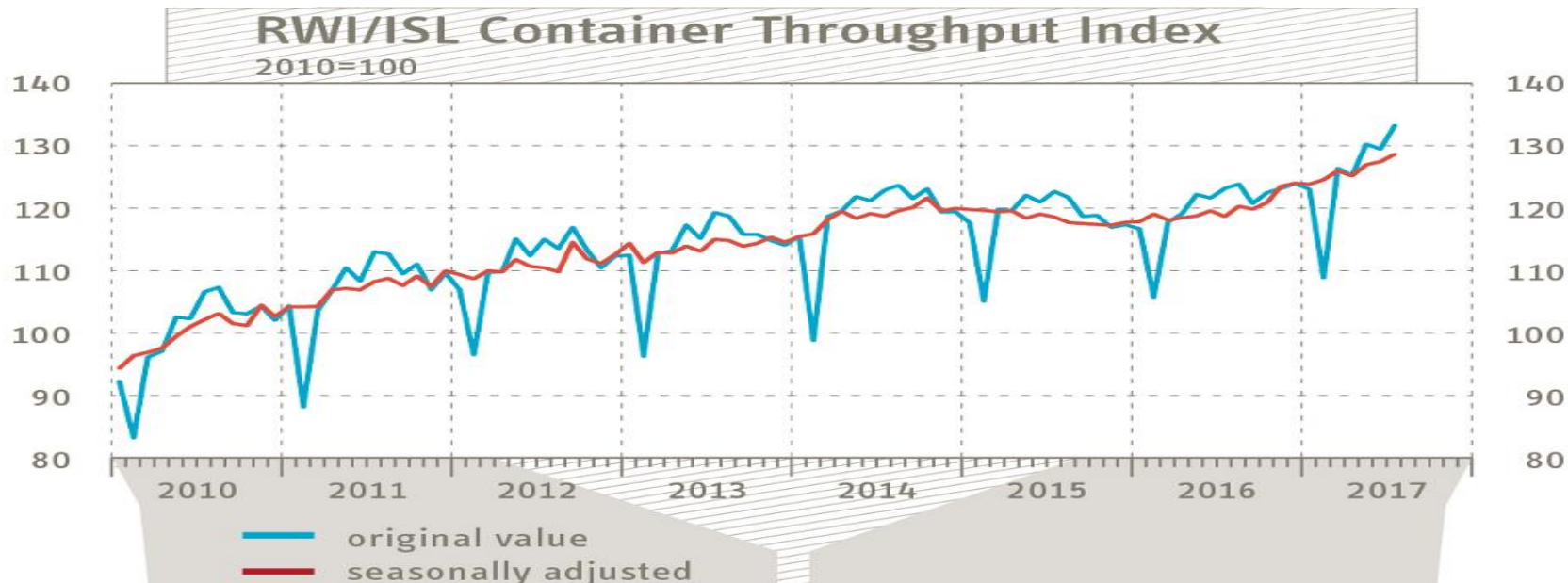


European Union  
Investing in Bremen's Future  
European Regional  
Development Fund



## Agenda





The Container Throughput Index rose in July 2017 from 127.4 (revised figure) to 128.6 and reached a new all-time high. At the same time there were upward revisions – for the May value slightly and for the June value significantly. All of these figures indicate a rather strong expansion of the world trade.

*RWI/ISL Container Throughput index*

- 82 ports worldwide
- ~ 60 % of worlds throughput
- available 3 weeks in new month [www.isl.org](http://www.isl.org) → news

# 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



## 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

TCP Valparaiso, Chile

TecPlata ICTSI, Buenos Aires, Argentina

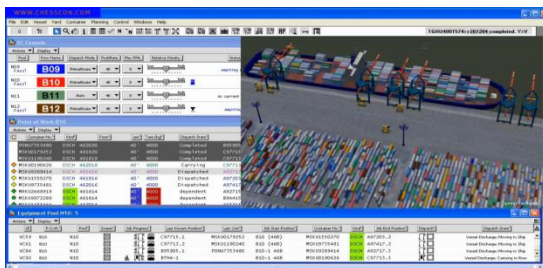
Terminal Investment Ltd, Netherlands

TotalSoftBank, Korea

TPT, South Africa

Warsteiner Brewery, Germany

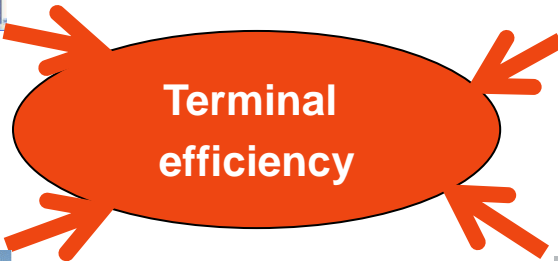
# How to improve terminal's efficiency



**TOS**  
Control system



**Process automation**



**Equipment**



The first ALV of KMI

**Terminal staff**



Terminal's productivity is driven by

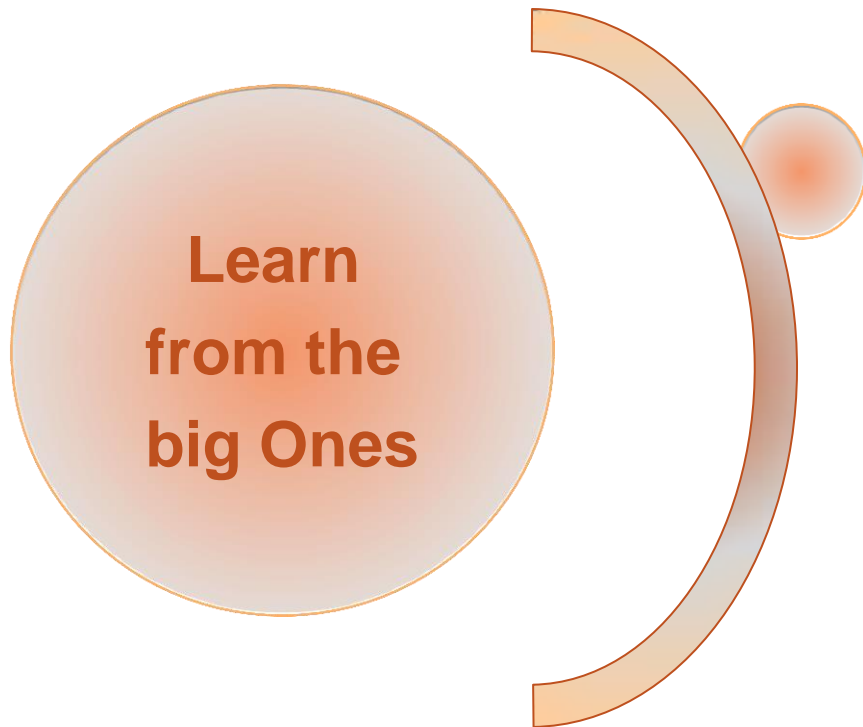
- The equipment
- The control system (TOS)
- The processes

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“**

## Agenda



**Learn  
from the  
big Ones**

**Visualise your yard**





**Yard View – Visualize your Yard**

**Where are the boxes for the next 31 vessel?**

**... and how many restowers will occur?**

**Are the hazardous stacked properly?**

**How utilised are my stacks / areas?**

## CHESSCON Yard View

- Software tool for yard planners
- no simulation tool
- for operational planning



# HOW DOES IT WORK

- TOS writes the container inventory to a flat file
  - ✓ online connection also possible
- this flat file can have an unlimited number of attributes
  - ✓ POD, POL, Voyage, ....
- Yard View reads this flat file
- the user can create container filter like in Excel
- get a 3D overview with just one click

**TOS writes inventory** (arrow pointing from the 3D view to the filter dialog)

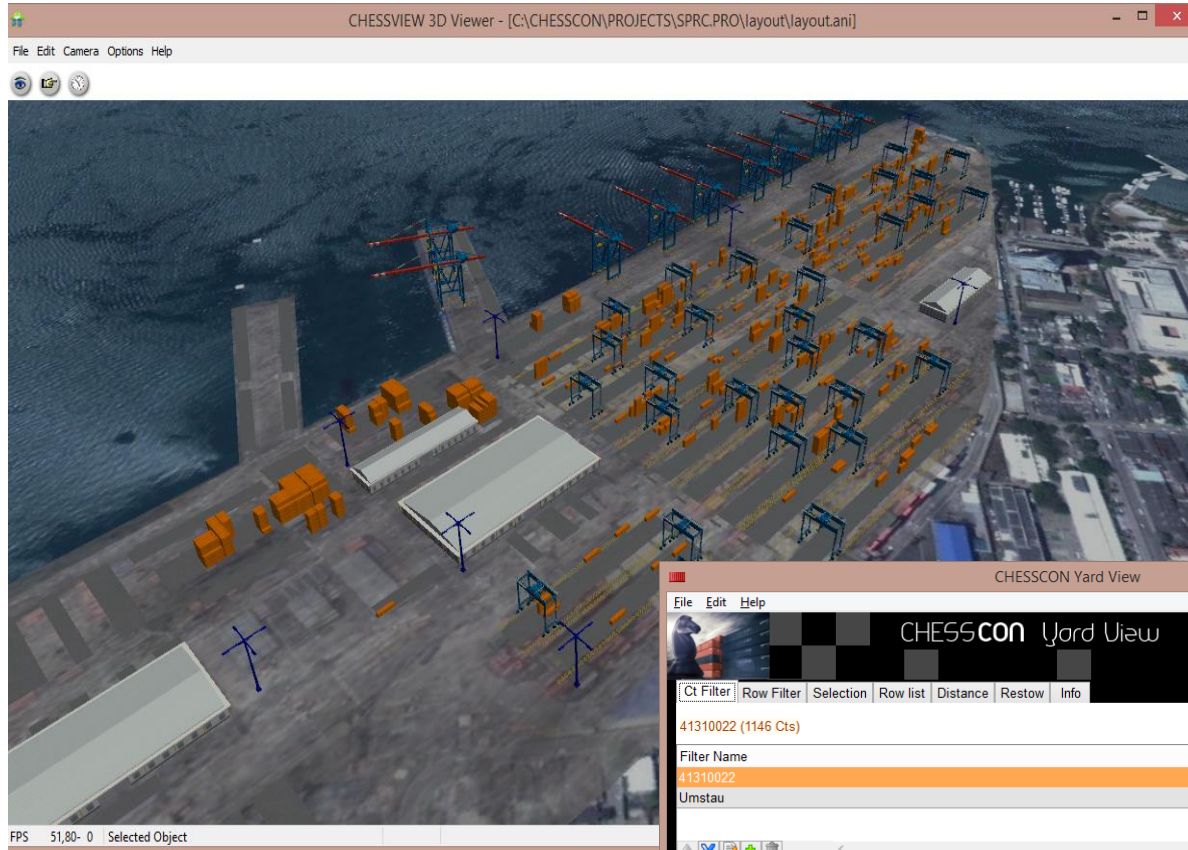
**User defines filters** (arrow pointing from the filter dialog to the data table)

**Only one click to show filter in 3D** (arrow pointing from the data table to the 3D view)

**No limits in filtering container inventory** (text at the bottom right)

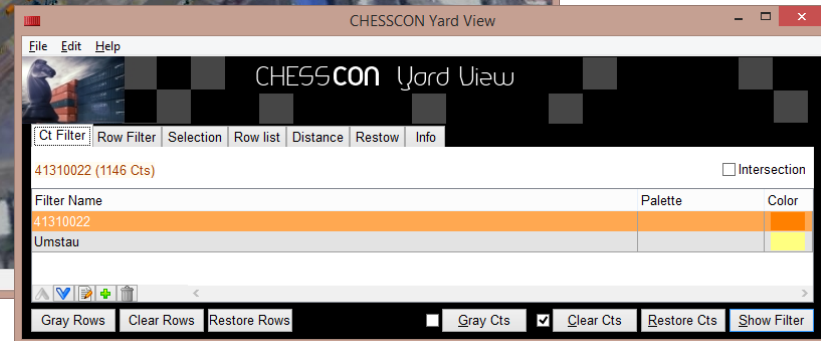
ID	ISO	Length	Weight	Area	X	Y	Z	Flow	Empty	Amul	Chapat	LOPR
MECAL17313	2051	20	2200	E06	E06-039	F	2	EXPORT	E	TRUCK	BARC026	CMA
SEUS01680	2051	20	2100	E06	E06-039	E	2	EXPORT	E	TRUCK	BARC026	CMA
INBU378888	2201	20	2200	E06	E06-039	E	1	EXPORT	E	TRUCK	BARC026	CMA
SPUJ241382	2201	20	2200	E06	E06-039	F	3	EXPORT	E	TRUCK	BARC026	CMA
SLU0367622	2209	20	8600	CVY	CVY-109	E	1	TRANSHIP	E	OSHADA	VESS038	MLC
SLU0489992	49P3	40	8600	CVY	CVY-112	E	1	TRANSHIP	E	OSHADA	VESS038	MLC
MSU0812974	4501	40	4000	CZ2	CZ2-004	B	1	EXPORT	E	TRUCK	CCT001	MAE
TALU081624	2051	20	2200	E06	E06-039	F	1	EXPORT	E	TRUCK	BARC026	CMA
CLOU024793	2251	20	2200	CVY	CVY-013	C	1	EXPORT	E	TRUCK	BARC026	CMA
CMBU0487828	4100	40	3900	CZ2	CZ2-006	B	4	TRANSHIP	E	SCAR003	CCT	
2200	D06	D06-049	E	1	TRANSHIP	E	1	TRANSHIP	E	TESS008	NAM	
2300	D06	D06-049	F	1	TRANSHIP	E	1	TRANSHIP	E	TESS008	NAM	
2300	D06	D06-049	F	2	TRANSHIP	E	1	TRANSHIP	E	TESS008	NAM	
2300	D06	D06-049	F	1	TRANSHIP	E	1	TRANSHIP	E	TESS008	NAM	
1900	CZ2	CZ2-004	A	1	EXPORT	E	1	EXPORT	E	TRUCK	CCT001	PON
1300	CVY	CVY-106	D	2	TRANSHIP	E	1	TRANSHIP	E	TAM001	MLC	
2000	CZ2	CZ2-055	B	1	EXPORT	E	1	EXPORT	E	TRUCK	CCT001	CCT
4300	C06	C06-064	C	1	TRANSHIP	E	1	TRANSHIP	E	TAL006	MLC	
4100	CZ2	CZ2-005	B	3	EXPORT	E	1	EXPORT	E	TRUCK	CCT	CCT
1700	CVY	CVY-014	E	4	IMPORT	E	1	IMPORT	E	BUCK017	TRUCK	CCT
2200	CZ2	CZ2-010	A	1	EXPORT	E	1	EXPORT	E	TRUCK	BARC026	CMA

# EXAMPLES

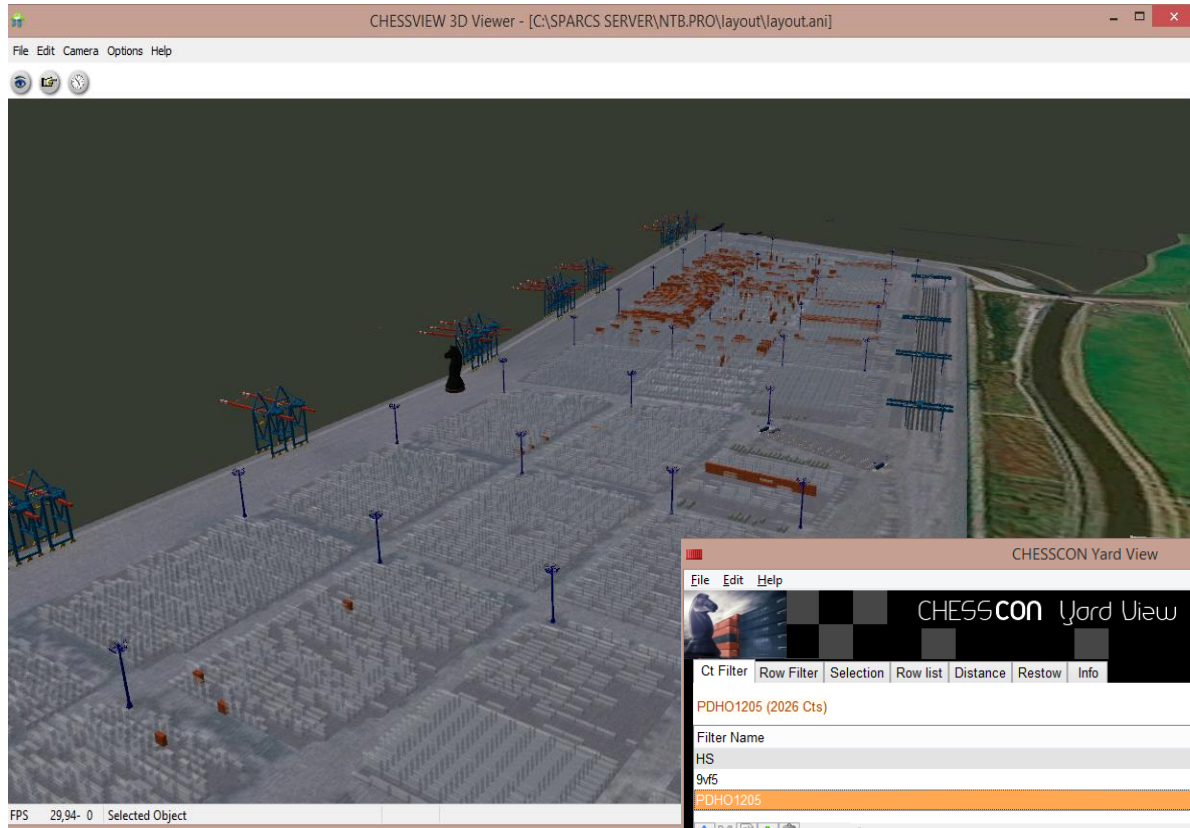


## RTG Terminal

- Prestow for the next vessel

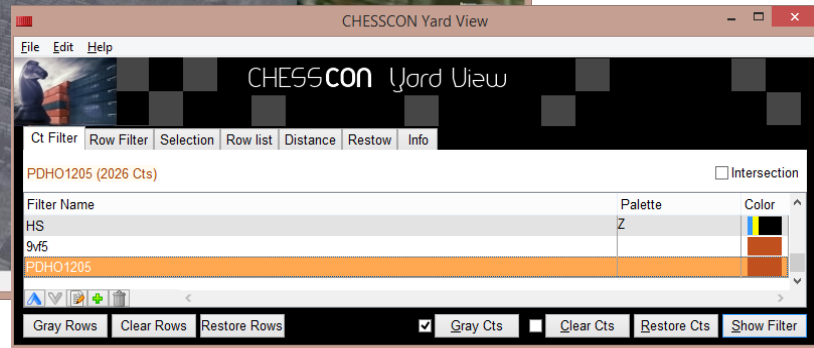


# EXAMPLES



## Straddle carrier Terminal

- Prestow for a “3I” class vessel



# EXAMPLES

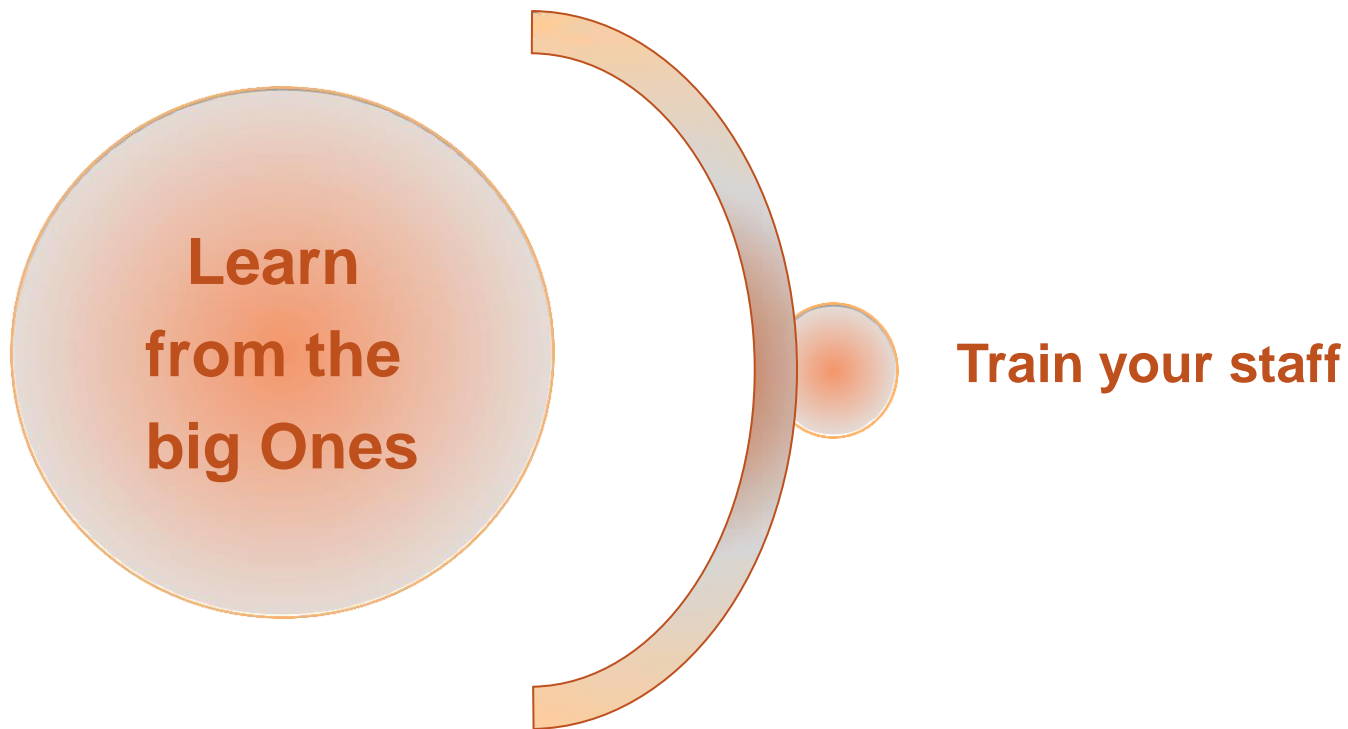


A large, light-orange thought bubble with a black outline, containing text. To its right are three smaller, light-orange circles of decreasing size, also with black outlines, arranged in a descending line.

**A picture shows more than 1000 words**

**→ ... and is more intuitive than 100 tables**

# Agenda





## Vessel simulator

- train your control staff (as shipping lines do)

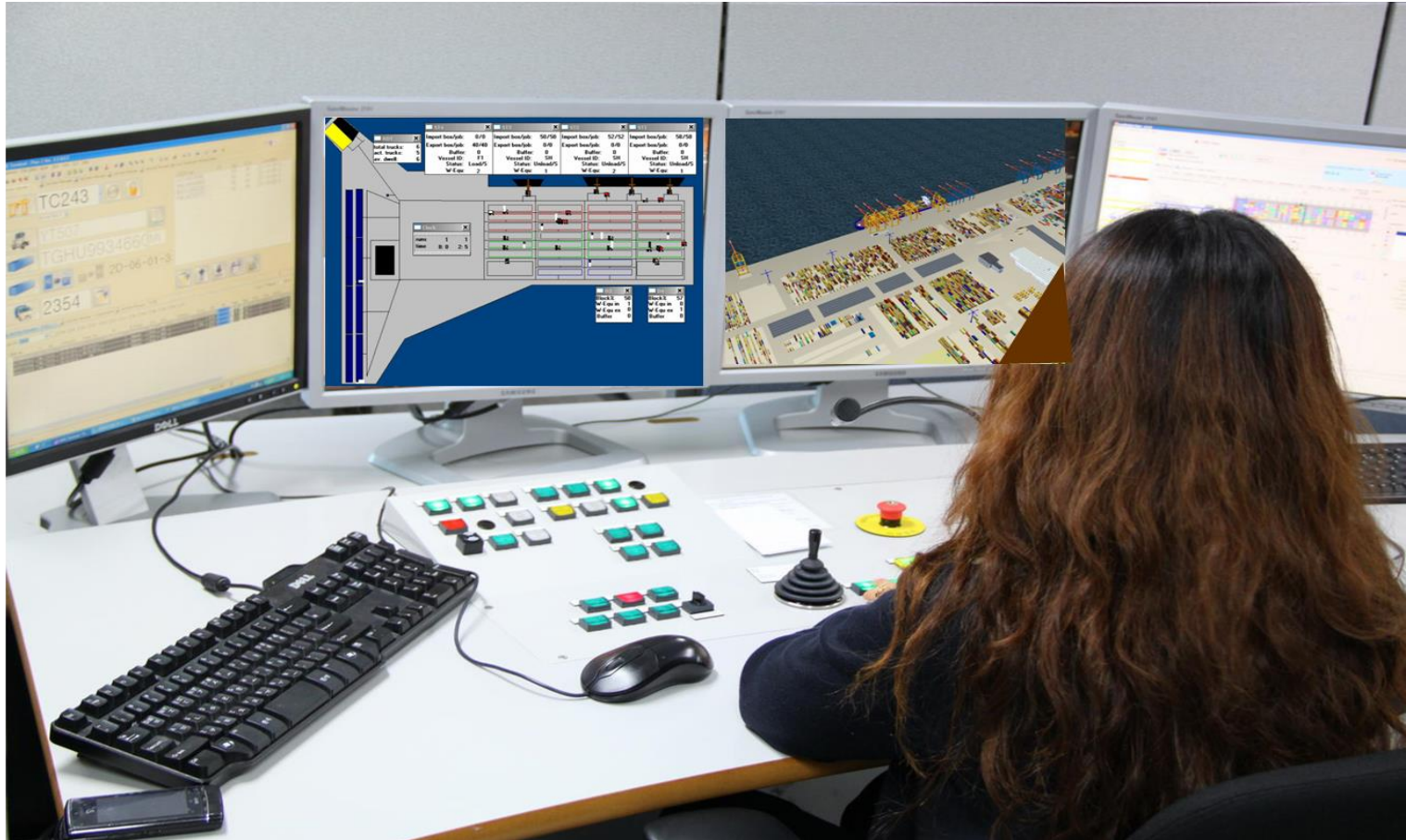


## Crane simulator

- train your control terminal staff (as you do with crane drivers, e.g. Liebherr:)



# Learning from the huge ones

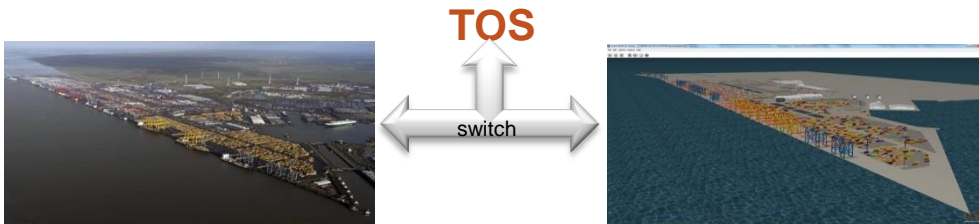


# The main mission of CHESSCON VIRTUAL TERMINAL

what you can do with CHESSCON

## 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

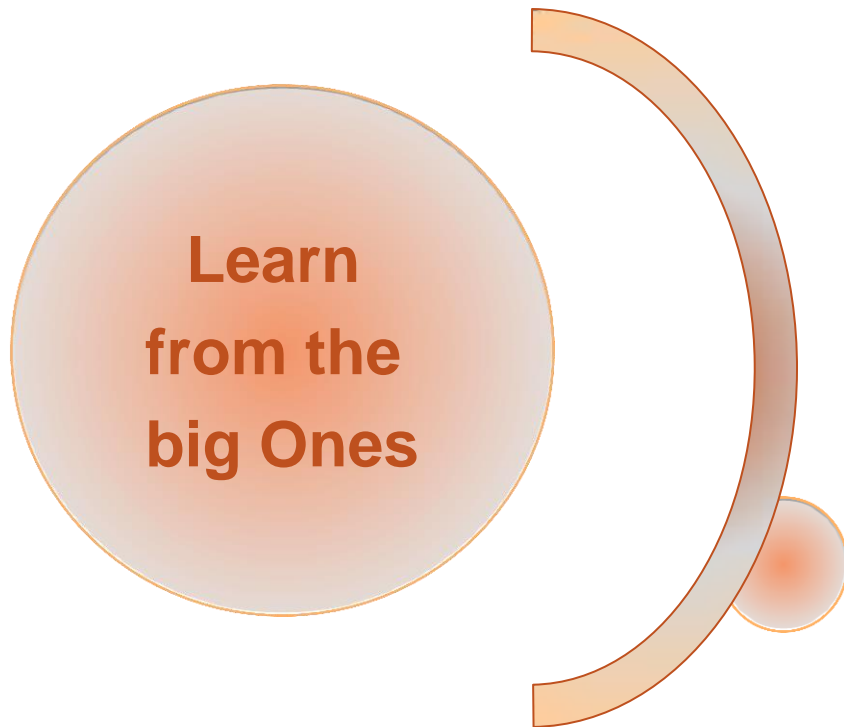
Handler id*	Icon Only*	Screen*	Dispatch State*	Move D
121			Carrying a container; Waiting at Row	1321+
122			Go to crane; Waiting at Ship	1321+
124			Go to crane; Waiting at Ship	1321+
125			Go to crane; Waiting at Ship	1321+
C06				
R33				

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)
6	CPSU16439396	45G1 CANX020*0361488			(not evaluated)

# Agenda



**Remote operation**

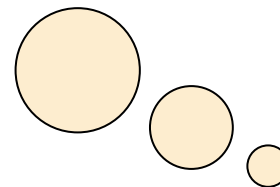
**Case Study (Just started)**

→ Remote Operated RTG



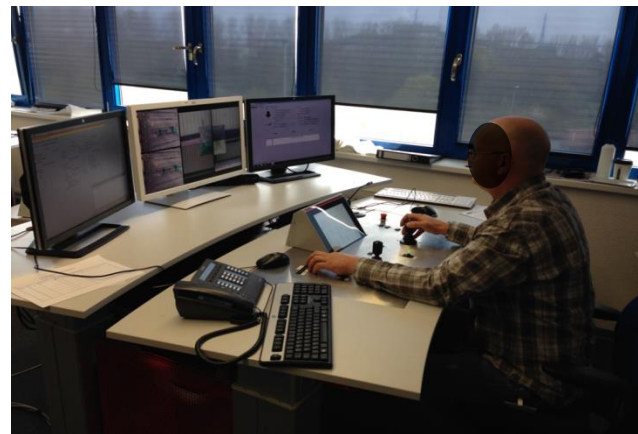
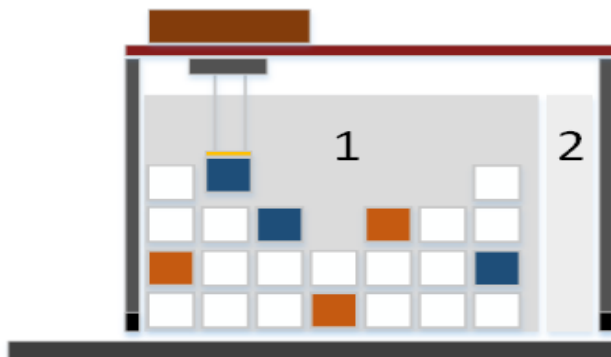
→ Partner: HPC Hamburg Port Consulting GmbH

→ Client (terminal) not to be named yet



## Case Study - Remote Operated RTG

- 1: automated area
- 2: remote controlled area





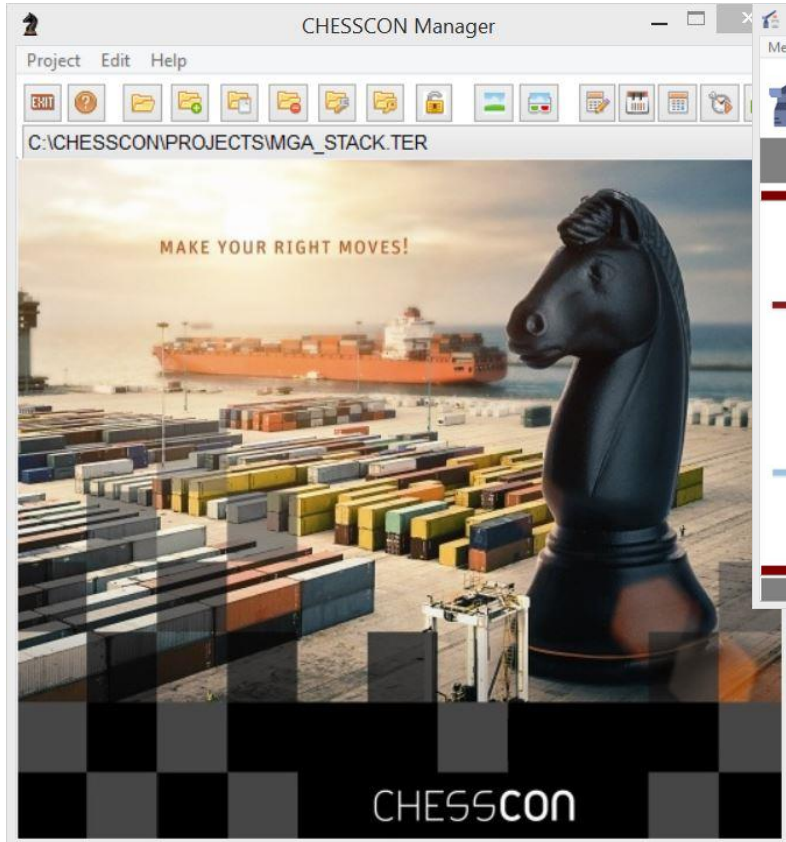


Real site with 15 RTG available (manned)



→ How many drivers will be needed by an Remote Operation of a semi-automated RTG

# Case Study - Remote Operated RTG



CHESCON Manager

Project Edit Help

C:\CHESCONPROJECTS\IMGA\_STACK.TER

MAKE YOUR RIGHT MOVES!

CHESCON

Simulation - Input

Menu Site notice Modify RO parameter

HHLA HANDBURGER HAFEN UND LOGISTIK AG fhwedel UNIVERSITY OF APPLIED SCIENCES

Welcome to the Remote operator Manager (RoM)

Set RO parameter

Menu Site notice Undo Set values


HHLA HANDBURGER HAFEN UND LOGISTIK AG fhwedel UNIVERSITY OF APPLIED SCIENCES

Input parameter for Remote Operator

Set the amount of required RO:

4  ✓

Slack time in seconds:

5  ✓ 

RO operating behaviour:

slack time active time

04.02.2017 17:41:45 | Remote Operator Manager

# Agenda



**Conclusions**

## 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 5 sec. per move

### Performance RO use

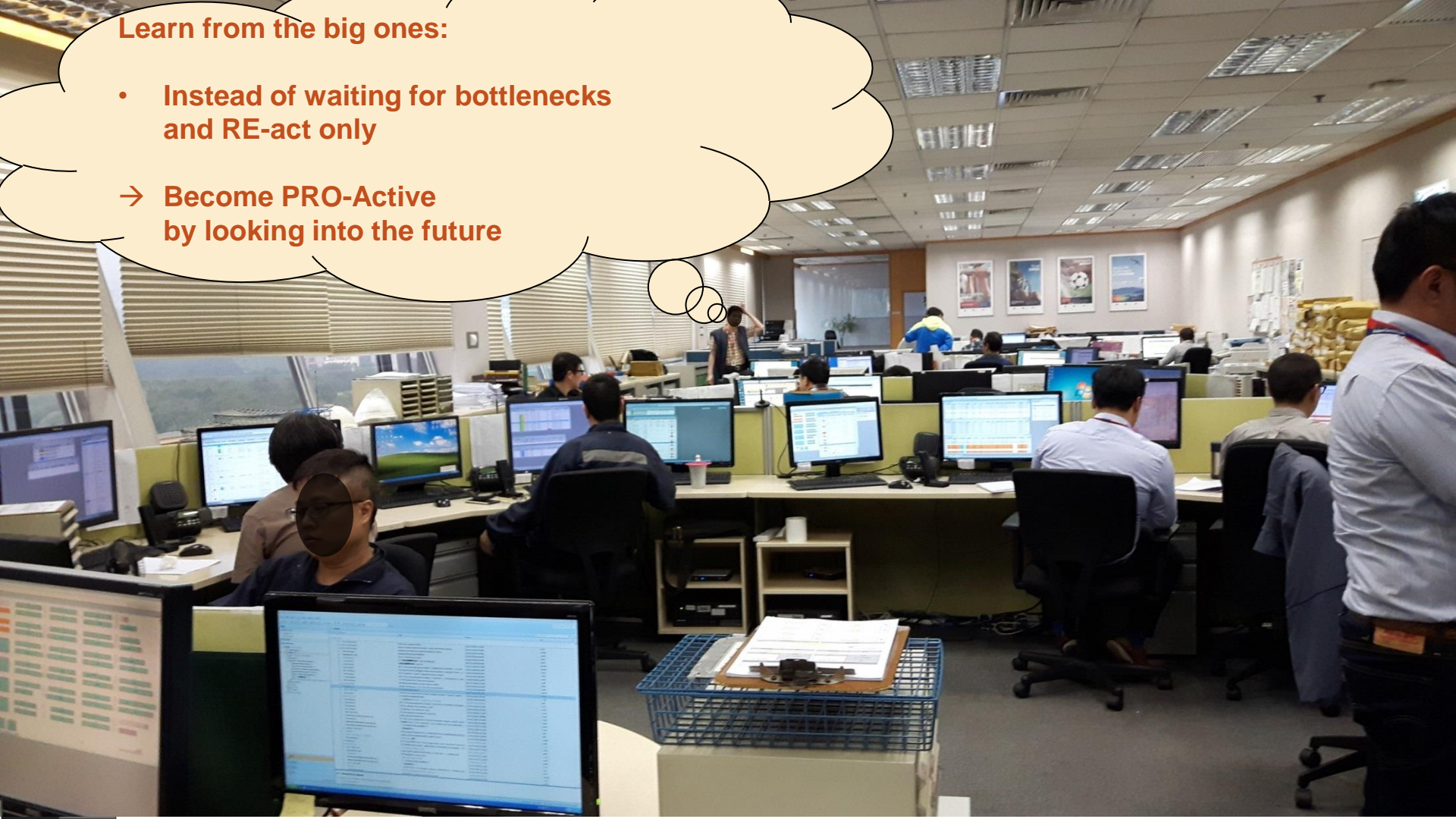
	mvs/h	waited in %		gross time/job in min
5 RO	18	0,09%	✓	3,3
4 RO	22	0,78%	✓	2,73
<b>3 RO</b>	<b>30</b>	<b>5,92%</b>	✓	<b>2</b>
2 RO	43	25,37%	✗	1,39

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)
- ...

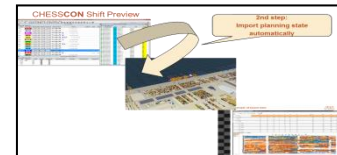
**Learn from the big ones:**

- **Instead of waiting for bottlenecks and RE-act only**
- **Become PRO-Active by looking into the future**

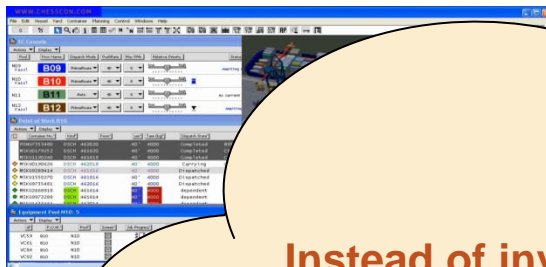


# Conclusion

- Visualise your actual container inventory
- Train your staff with Virtual Terminals
- Look into the future operation

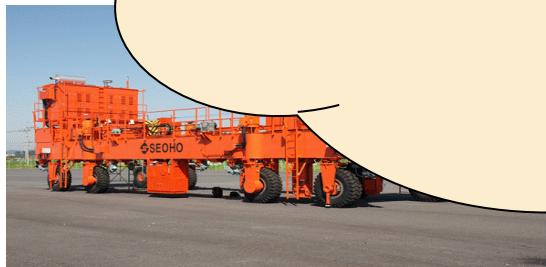


## How to improve terminal's efficiency

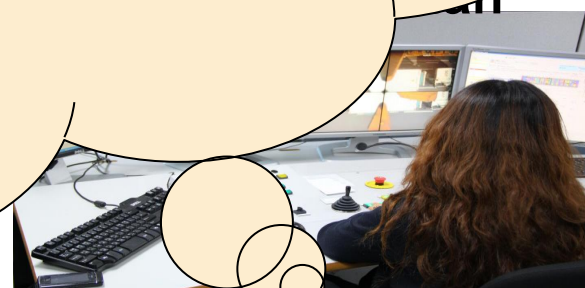


Instead of investing in more and more man and machines:

*Get more out of your existing resources*



The first ALV of KMI



MAKE YOUR RIGHT MOVES!



[WWW.CHESSCON.COM](http://WWW.CHESSCON.COM)

**CHESSCON**  
VIRTUAL TERMINAL



# I'm looking forward to the following discussion!

Holger Schuett, Prof. Dr.-Ing., CEO



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