

How to get more out of your existing resources

–

Learn from the big ones

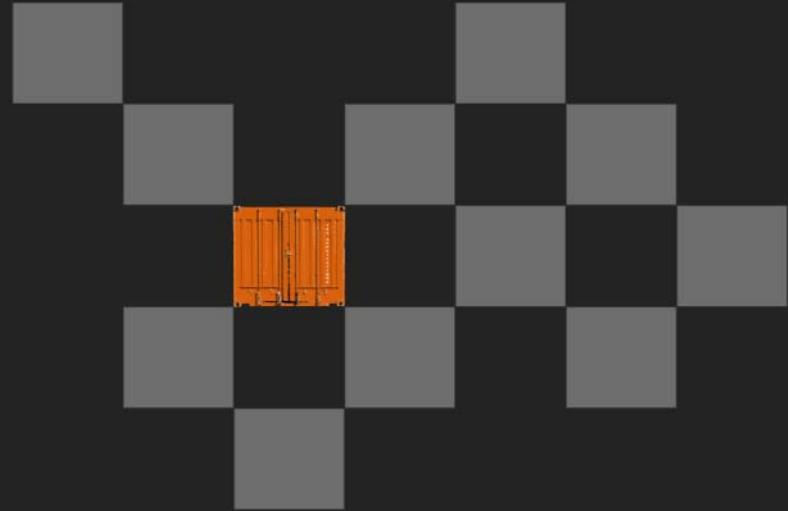


Holger Schuett

ISL Applications GmbH

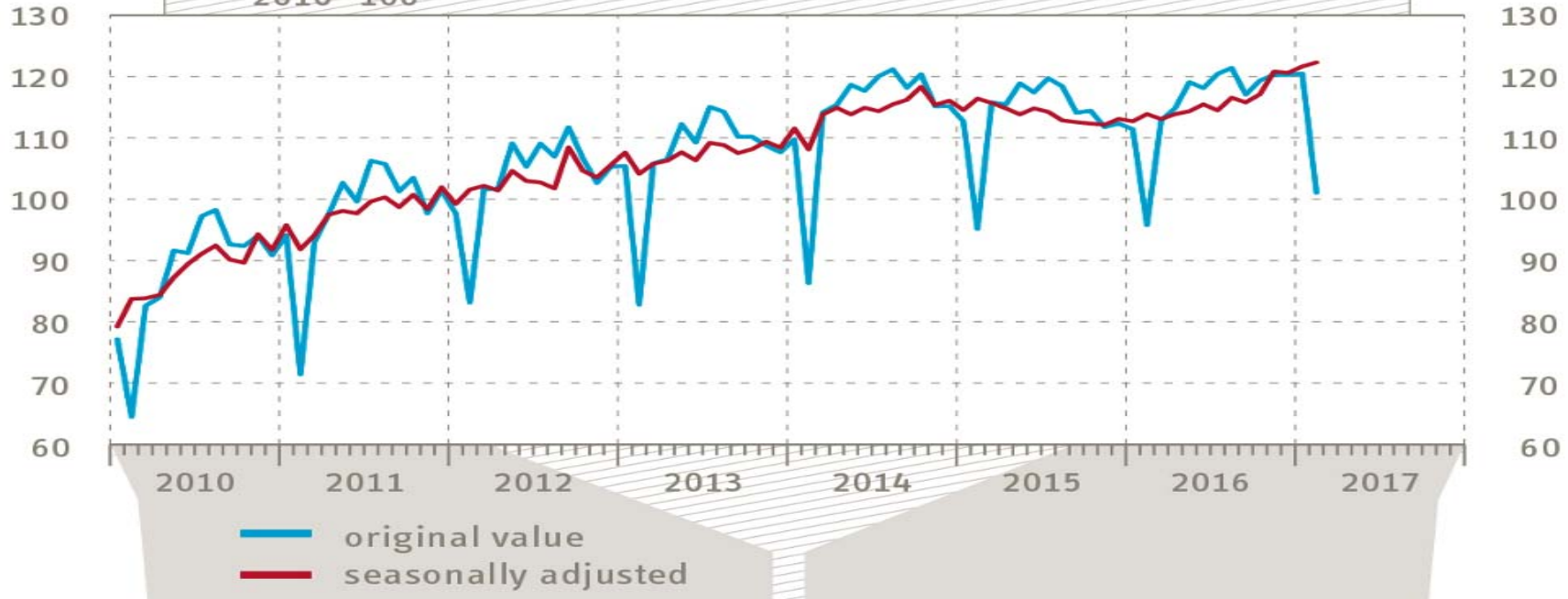
17th Intermodal Africa 2017

Cape Town, April 18th – 20th 2017



RWI/ISL Container Throughput Index

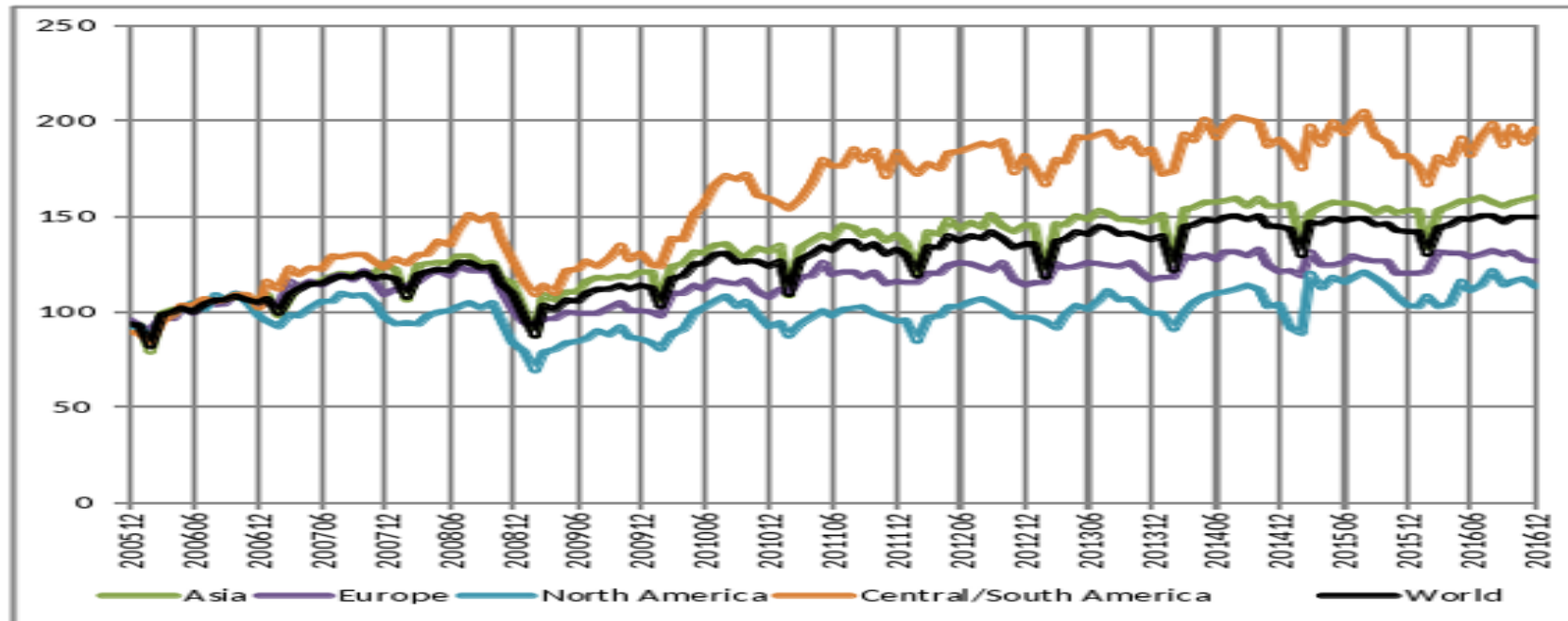
2010=100



During February 2017, the Container Throughput Index increased by 0.5 points, reaching 124.5 points. It thus seems that world trade has gained a solid momentum. Compared to the same month a year ago, the index stood 6 points higher. A similarly strong increase was last observed in 2012.

RWI/ISL Container Throughput index

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



	2016											
	Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	Jan
Total TEU (million)	37.3	37.3	37.3	36.7	37.5	37.4	36.9	37.2	36.3	35.9	32.4	35.4
Growth over previous month	0.0	0.0	1.8	-2.2	0.1	1.5	-0.8	2.6	0.9	10.8	-8.3	-0.2
Growth over same month previous year	5.3	5.2	2.4	1.3	1.1	0.7	0.2	0.2	-0.2	-1.7	0.5	-1.0

RWI/ISL Container Throughput index

- 82 ports worldwide
- ~ 60 % of worlds throughput
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More than 25 Years Simulation Experience



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
efficiency**



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“

Learning from the huge ones



Vessel simulator

- train your control staff (as shipping lines do)

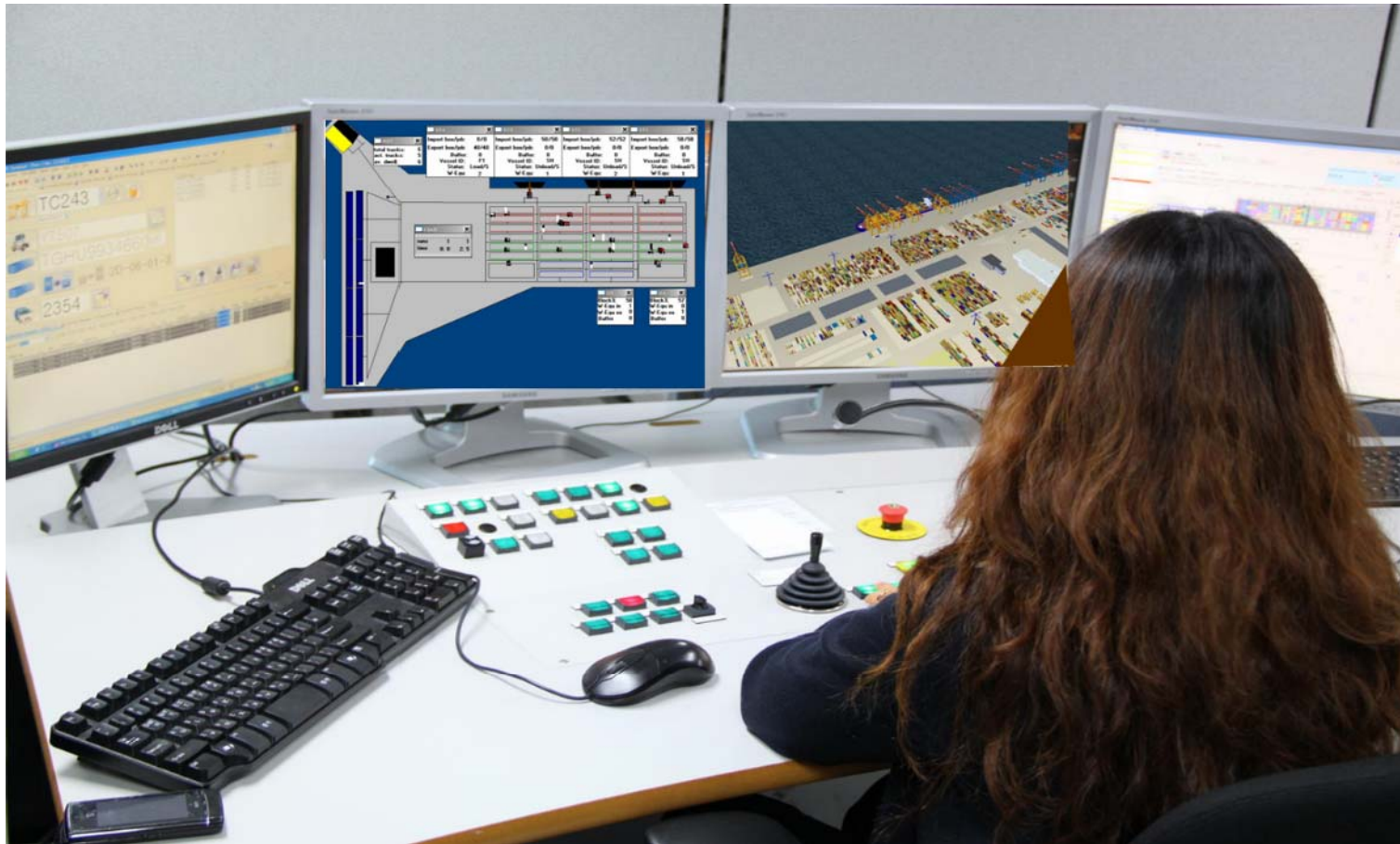


Crane simulator

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



Learning from the huge ones

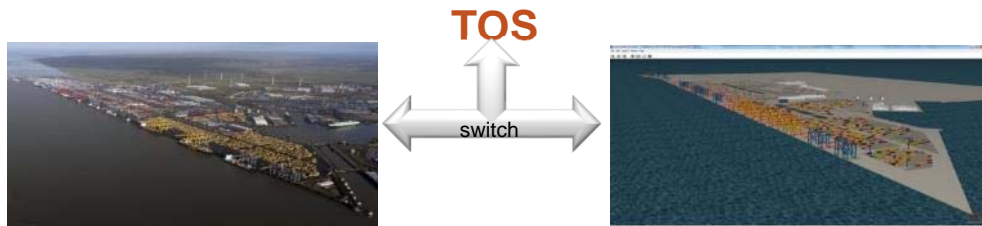


The main mission of CHESSCON VIRTUAL TERMINAL

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				
027				

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	CPSU6439396	45G1 CANX020*0361488			(not evaluated)

A large, light-yellow thought bubble with a black outline, containing text. Three smaller circles of the same color and outline trail off to the right from the bottom of the bubble.

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

→ But what are the next steps?

A large, light-yellow thought bubble with a black outline, containing the text 'Re-running real scenarios !'. To its right are three smaller, light-yellow circles of decreasing size, also with black outlines, arranged in a horizontal line to suggest a thought process or a sequence of ideas.

Re-running real scenarios !

CHESSCON Shift Preview



SPARCS 3.7.27.3 - chesscon

File Edit Vessel Yard Container Planning Control Windows Help

0 [Icons]

navis

EC Console

Pool	Pow Name	Dispatch Mode	PushRate	Max PMs	Relative Priority	Status
MOB1	MOB1	STOP	40	20	low	no current shift
SK30	SK30	STOP	40	8	low	no current shift
N01	B01	STOP	40	8	low	no current shift
N02	B02	STOP	40	8	low	no current shift
N03	B03	STOP	40	8	low	no current shift
N04	B04	STOP	40	8	low	no current shift
N05	B05	STOP	40	8	low	no current shift
N06	B06	STOP	40	8	low	no current shift
N07	B07	STOP	40	8	low	no current shift
N08	B08	STOP	40	8	low	no current shift
N09	B09	Manual	40	8	low	0, 0 30, 0
N10	B10	Manual	40	8	low	0, 0 30, 0
N11	B11	STOP	40	8	low	no current shift

Point of Work B09

id	P.O.W.	Pool	Screen	Job Progress	Last Known Position	Last Cntr	Job Start Position	Container No.
H228	B09	N09						
VC78	N09							
VC81	N09							
VC88	N09							

Equipment Pool N09: 5

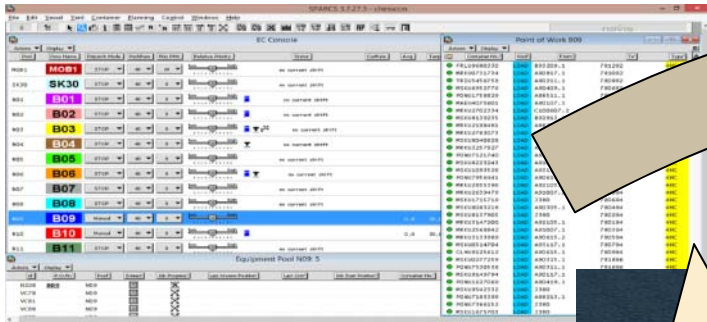
id	P.O.W.	Pool	Screen	Job Progress	Last Known Position	Last Cntr	Job Start Position	Container No.
MRKU3257927	LOAD	A90717.1						780982 4HC
PONU7121740	LOAD	A93117.3						782284 4HC
MSKU8223243	LOAD	A92105.3						782084 4HC
MSKU1093528	LOAD	A91007.3						781884 4HC
PONU7956441	LOAD	A93117.2						781684 4HC
MRKU2855396	LOAD	A90615.3						781484 4HC
MRKU2639479	LOAD	A92105.2						781284 4HC
MSKU1715719	LOAD	A91007.2						781084 4HC
MSKU8083218	LOAD	J380						780684 4HC
MSKU8137905	LOAD	A90305.1						780484 4HC
MRKU3147200	LOAD	J380						780284 4HC
MRKU2568842	LOAD	A92105.1						780184 4HC
MRKU3133989	LOAD	A91007.1						780384 4HC
MSKU0514704	LOAD	A90615.2						780584 4HC
CLHU9125612	LOAD	A93117.1						780784 4HC
MSKU0277259	LOAD	A90615.1						780984 4HC
PONU7530538	LOAD	A90315.1						781886 4HC
MSKU9149794	LOAD	A90311.1						781686 4HC
PONU1627069	LOAD	A90117.1						781486 4HC
MSKU9542332	LOAD	A90419.1						781286 4DC
PONU7183399	LOAD	J380						781086 4HC
PONU7366152	LOAD	A88213.1						780886 4HC
MSKU1675703	LOAD	J380						780686 4HC
	LOAD	J380						780486 4HC

**1 step:
Backup the real shift scenario**

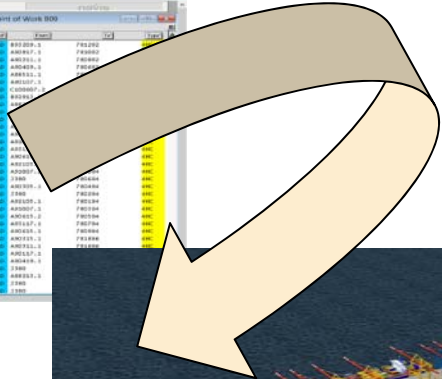
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CHESSCON Shift Preview

ISL

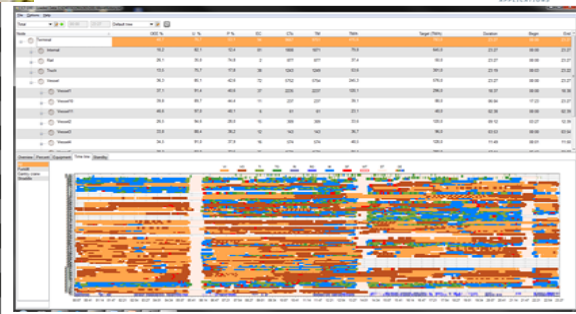


2nd step:
Import planning state
automatically



sample of based data

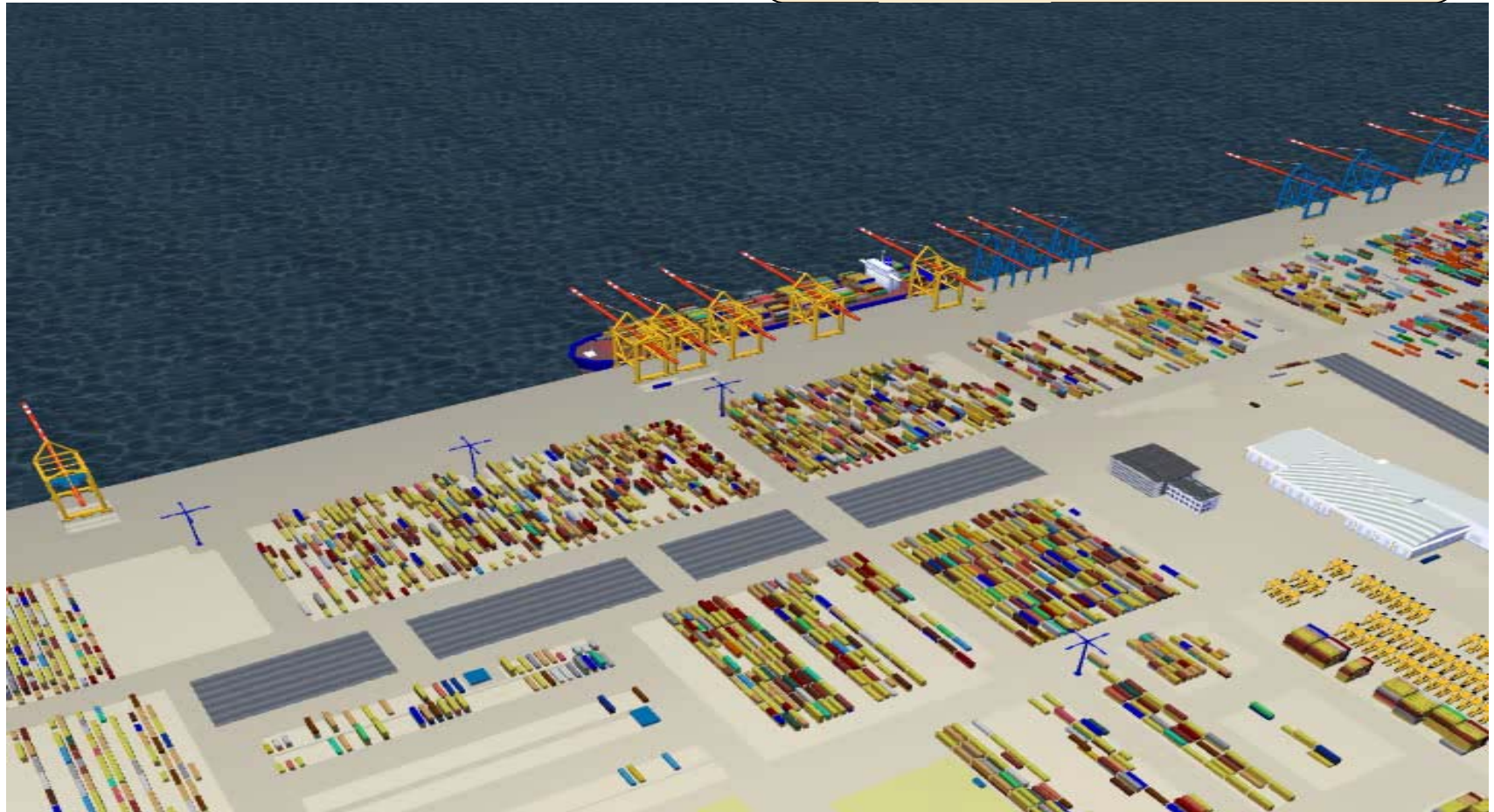
ISL
INTELLIGENCE



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CHESSCON Shift Preview

3rd step:
fast simulation of the shift



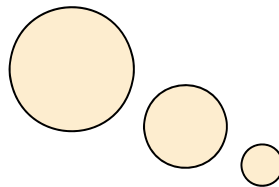
Case Study (Just started)

→ Remote Operated RTG



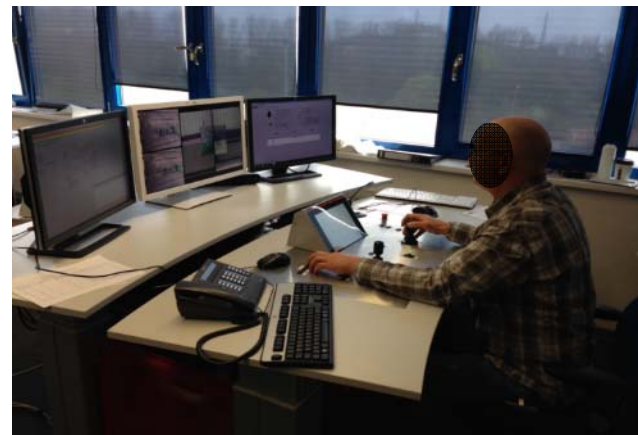
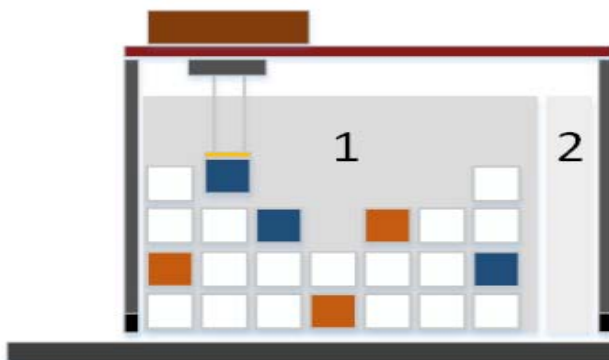
→ Partner: HPC Hamburg Port Consulting GmbH

→ 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

Simulation - Input

Set RO parameter

Project Edit Help

Menu Site notice Modify RO parameter

Menu Site notice Undo Set values

MAKE YOUR RIGHT MOVES!

WELCOME TO THE Remote operator Manager (RoM)

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

CHESCON

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

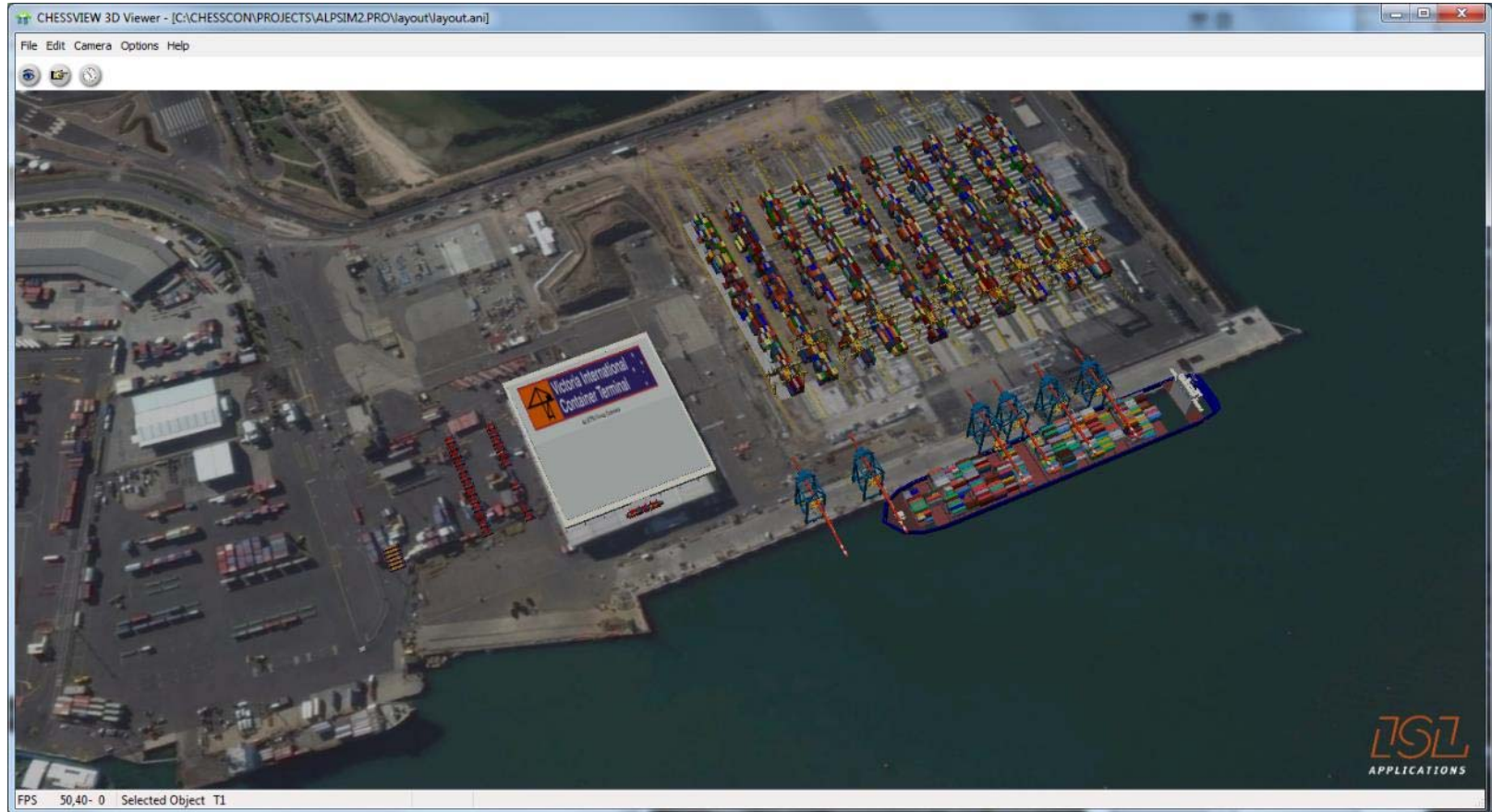
Performance RO use

	mvs/h	waited in %		gross time/job in min
5 RO	18	0,09%	✓	3,3
4 RO	22	0,78%	✓	2,73
3 RO	30	5,92%	✓	2
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)
- ...

Case Study - ALP at Melbourne terminal



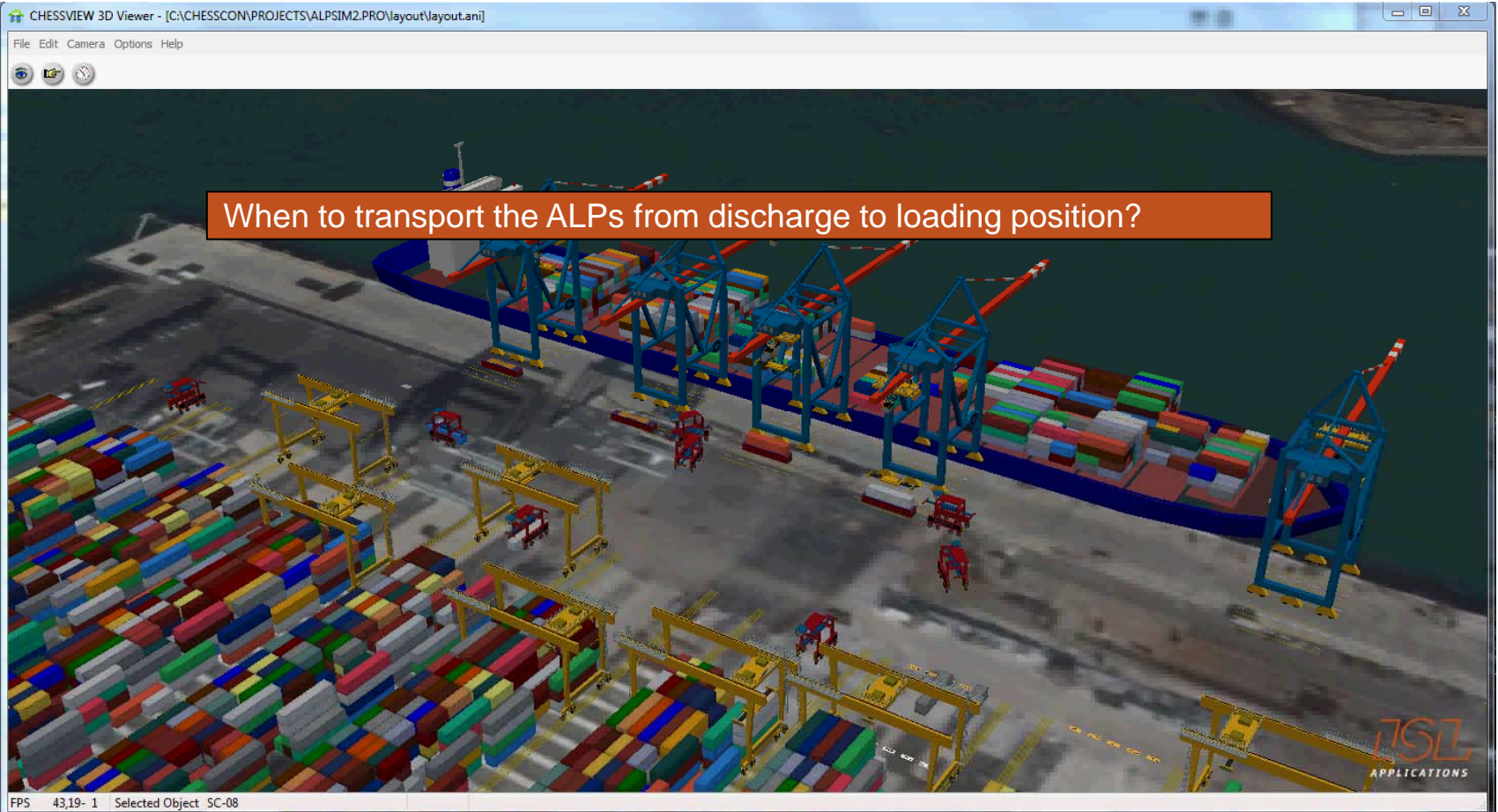
Bromma's ALP

How to plan the vessel operation using several ALPs?

→ When transporting the ALPs from crane to crane?



ALP emulator



When to transport the ALPs from discharge to loading position?

AOS calculating the utilisations

ALP 1

VESSEL NAME: ILS009

CRANE NAME:

DISCHARGING_DECK

Activate Transport Mode

5% FUEL

2.6 V BATTERY



Logged in as user.

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	1		3/5	3/5		7	1
2	2		4/6	4/6		8	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

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

ALP 3

DISCHARGING_HOLD

ILS009

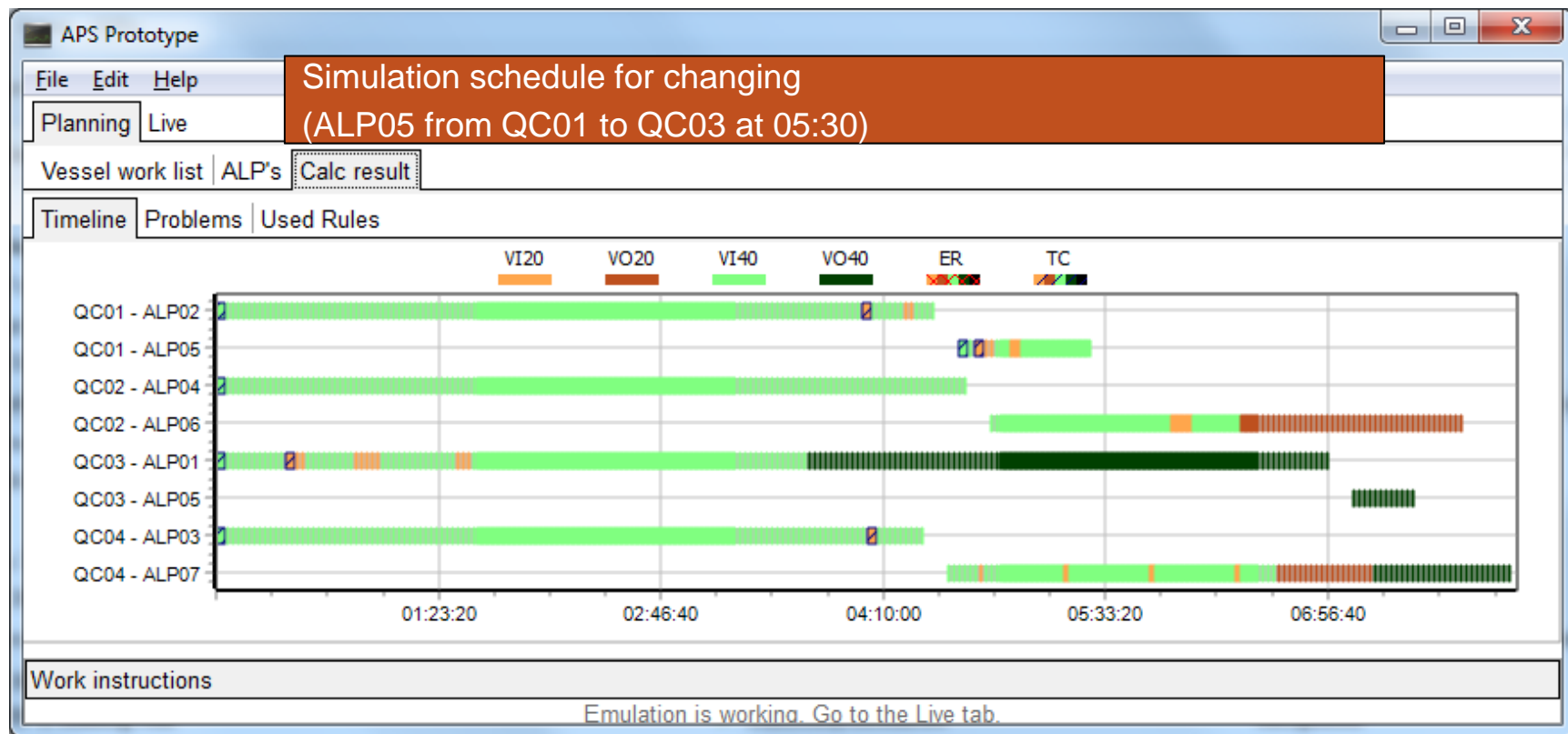
1/2	3/4	5/6	7/8
14	0	0	94
3	3	3	3

ALP 6

OFFLINE

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

AOS forecasting the operation



Cites from NTB – North Sea Terminal Bremerhaven



a joint venture of APM Terminals and the Eurogate group

- **CHESSCON Shift Preview 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 ?

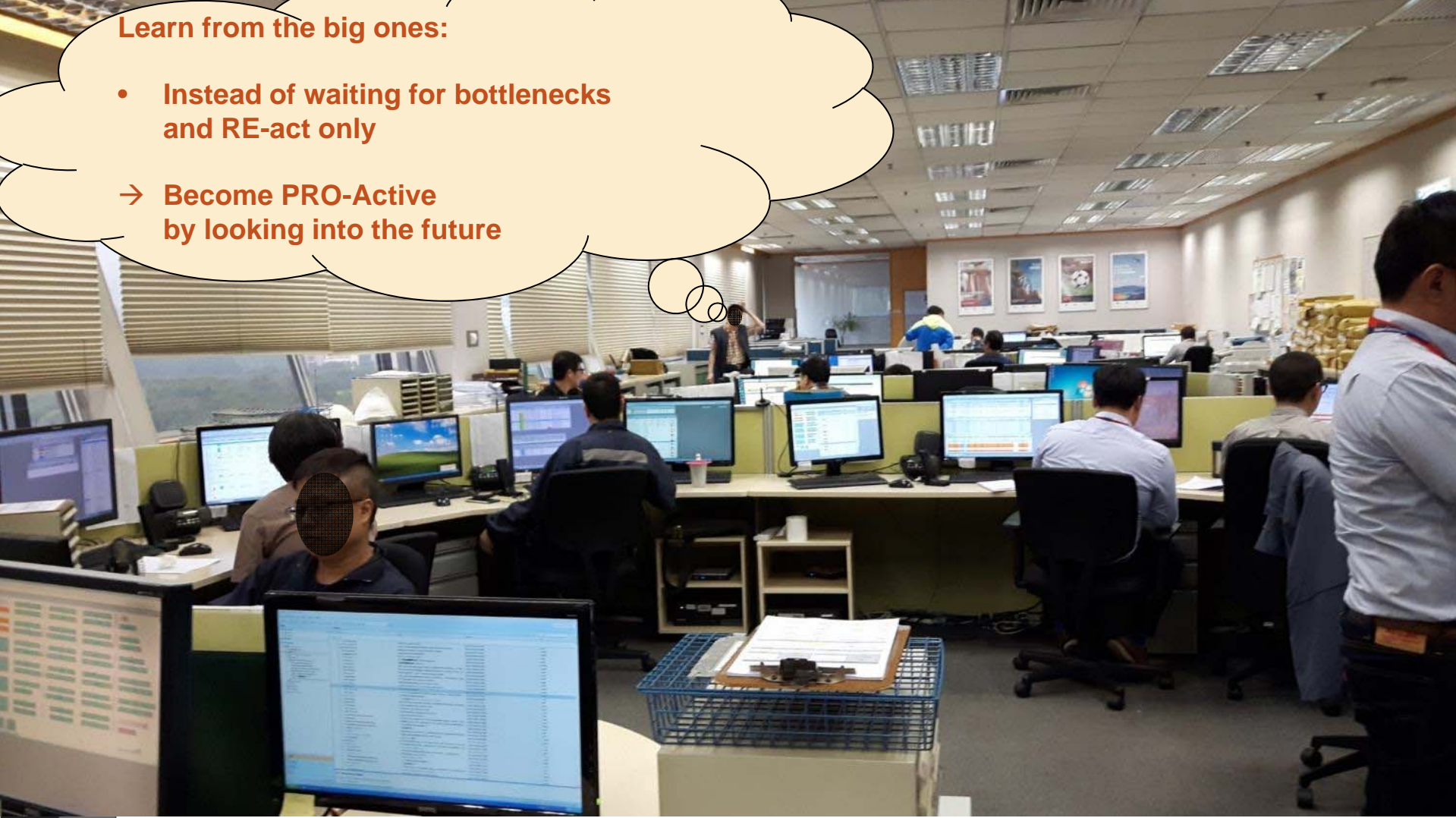
→ Terminals,

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

Marc Dieterich, Operations Manager at NTB

Learn from the big ones:

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

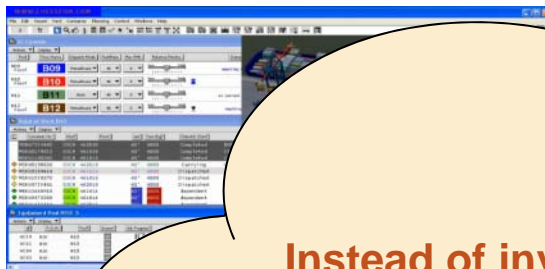


Conclusion

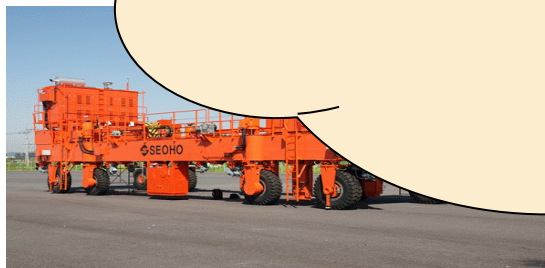
- Train your staff with Virtual Terminals
- Fine-tune your Terminal Operating System
- Look into the future operation



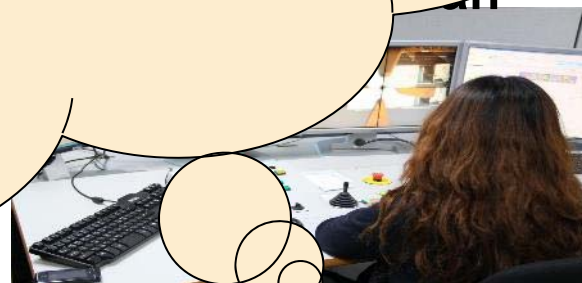
How to improve terminal's efficiency



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!

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



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