



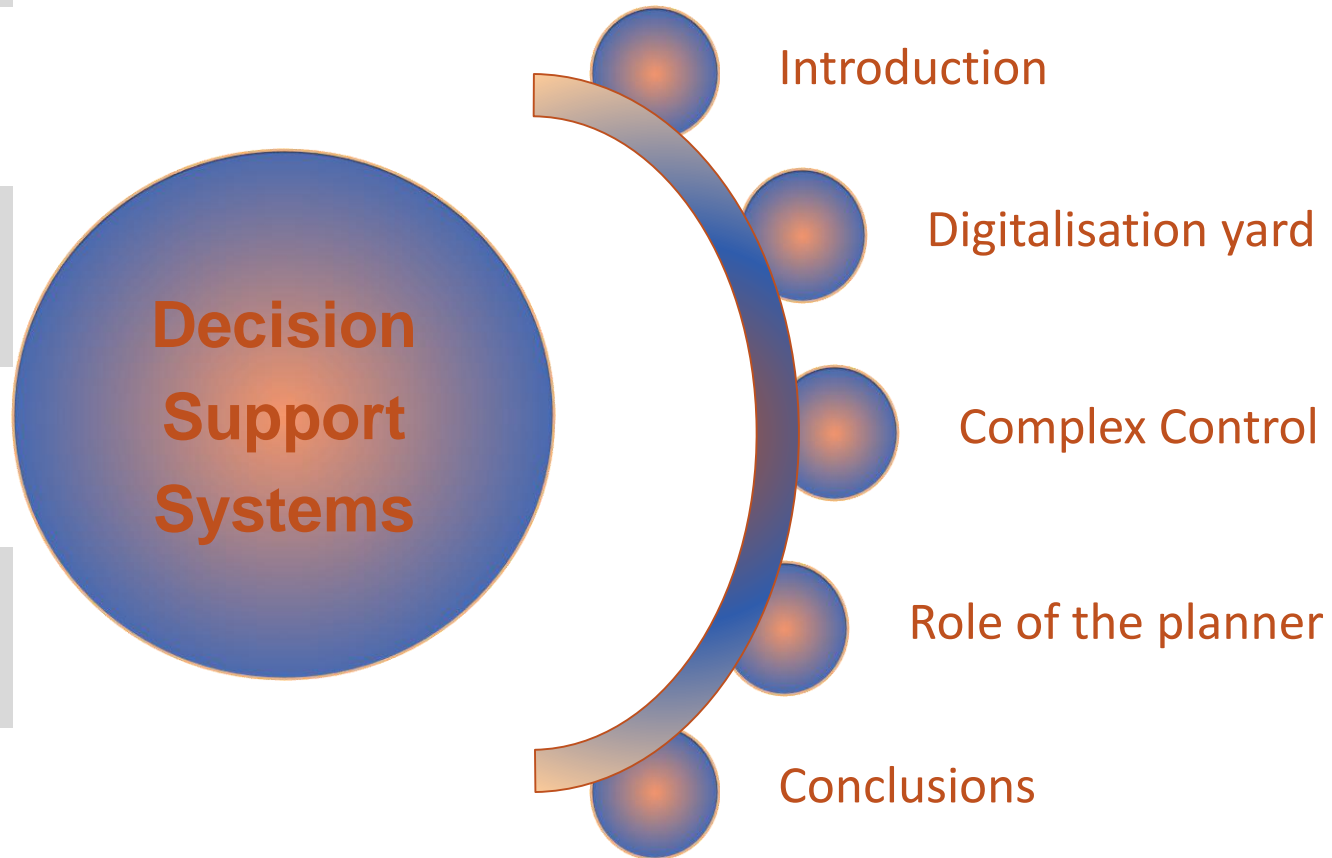
## Digitisation

—

How decision support systems  
improve terminal's operation and efficiency

Holger Schuett, MD, Prof. Dr.-Ing.  
akquinet port consulting GmbH  
*3<sup>rd</sup> Baltic Ports & Terminals*  
*Gdynia, Oct. 22<sup>nd</sup> – 24<sup>th</sup>*

# Agenda



# 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 2019



Products rebranding:

CAPS  
SCUSY  
ViTO



CHESScon

Development funded by

European Union



Land Bremen



Bremerhavener Gesellschaft  
für Investitionsförderung  
und Stadtentwicklung mbH



# 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

November 2018

## Great news: We are growing

### ISL Applications GmbH becomes akquinet port consulting GmbH

ISL Applications recently joined the akquinet group in Hamburg. As a new AKQUINET subsidiary named akquinet port consulting GmbH we stay based in our head office in Bremerhaven and get two offices in Bremen and Hamburg. The idea is to get more manpower, to bundle know-how as well as to expand our services for ports and container terminals worldwide. Managing directors of the akquinet port consulting GmbH are Norbert Klettner and Prof. Dr.-Ing. Holger Schuett.

Of course our CHESSCON software stays the main tool to secure and optimise the operation of container terminals and ports worldwide in a wide range of applications

- optimising operational processes
- test-beds and training environments for TOS
- planning green and brownfield terminals
- evaluation of handling strategies
- visualising yard inventory in 3D
- supporting shift planning
- and many more!

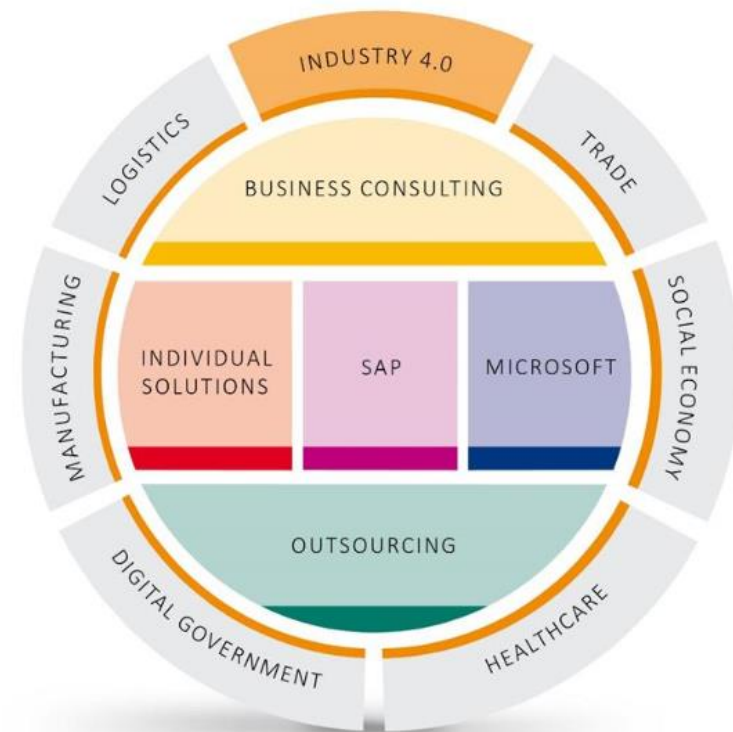


Figure 2 – Areas of competence akquinet AG

# Agenda



The diagram features a large blue circle on the left containing the text "Decision Support Systems". To its right is a large, thin, curved arc that resembles a stylized parenthesis or a bracket. At the top of this arc is a small blue circle with a glowing orange center. The text "Digitalisation yard" is positioned to the right of this small circle. The entire graphic is set against a background with a vertical strip of alternating orange and grey squares on the left and a horizontal bar of various colored squares at the top.

**Decision  
Support  
Systems**

Digitalisation yard

- Digitalisation – a new technology???

- Digitalisation is an ongoing process
- Let's have a look at the yard plan

Wenn I started in CT logistics,  
container information was  
„stored“ in cards in  
a board at the wall





- Digitalisation – a new technology???

- Digitalisation is an ongoing process
- Let's have a look at the yard plan

... and first data was typed into computers





- Digitalisation – a new technology???

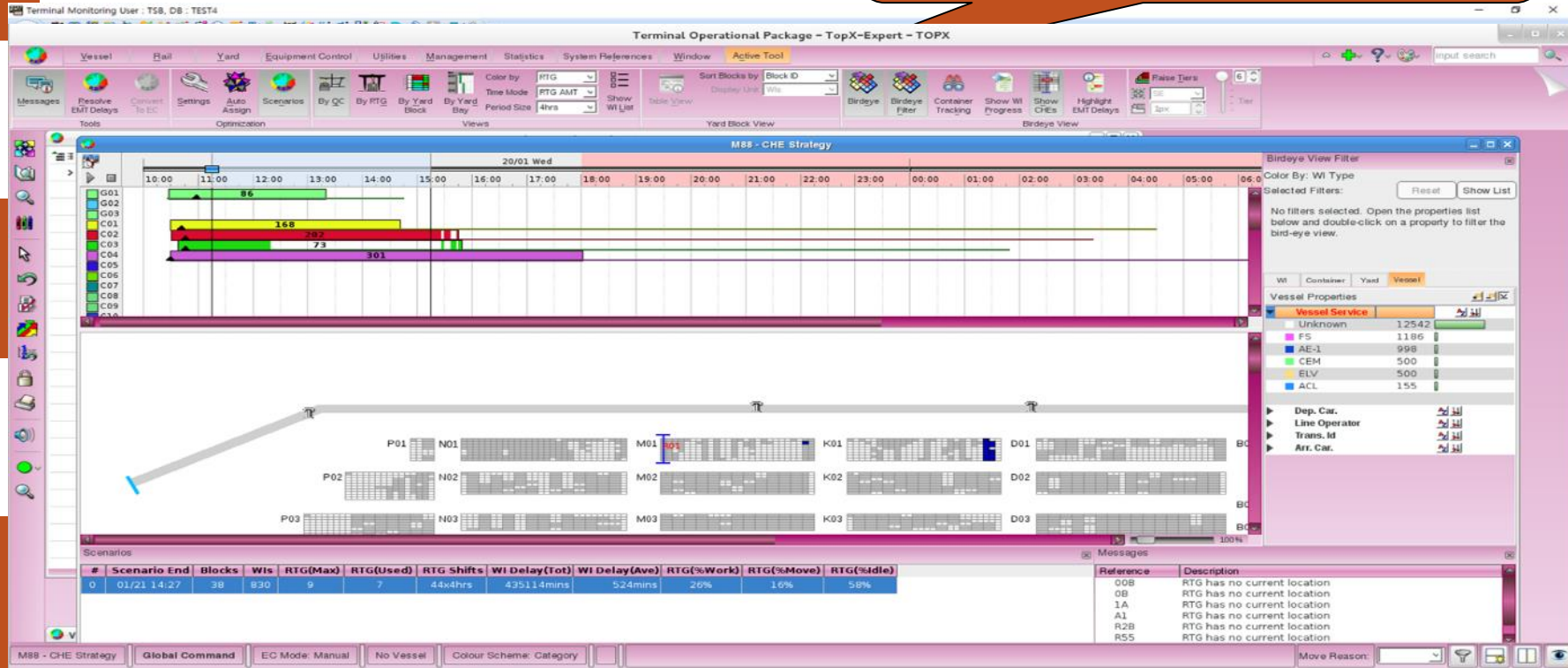
- Digitalisation is an ongoing process
- Let's have a look at the yard plan

**With the years more and more  
data is available**

- Digitalisation – a new technology???

- Digitalisation is an ongoing process
- Let's have a look at the yard plan

And is displayed in the TOS  
(examples TSB, Navis, RBS)



- Examples



But what about this view?





Yard View – Visualize your Yard

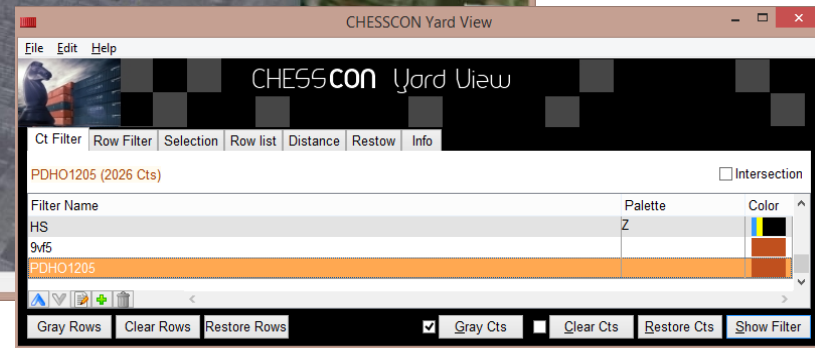
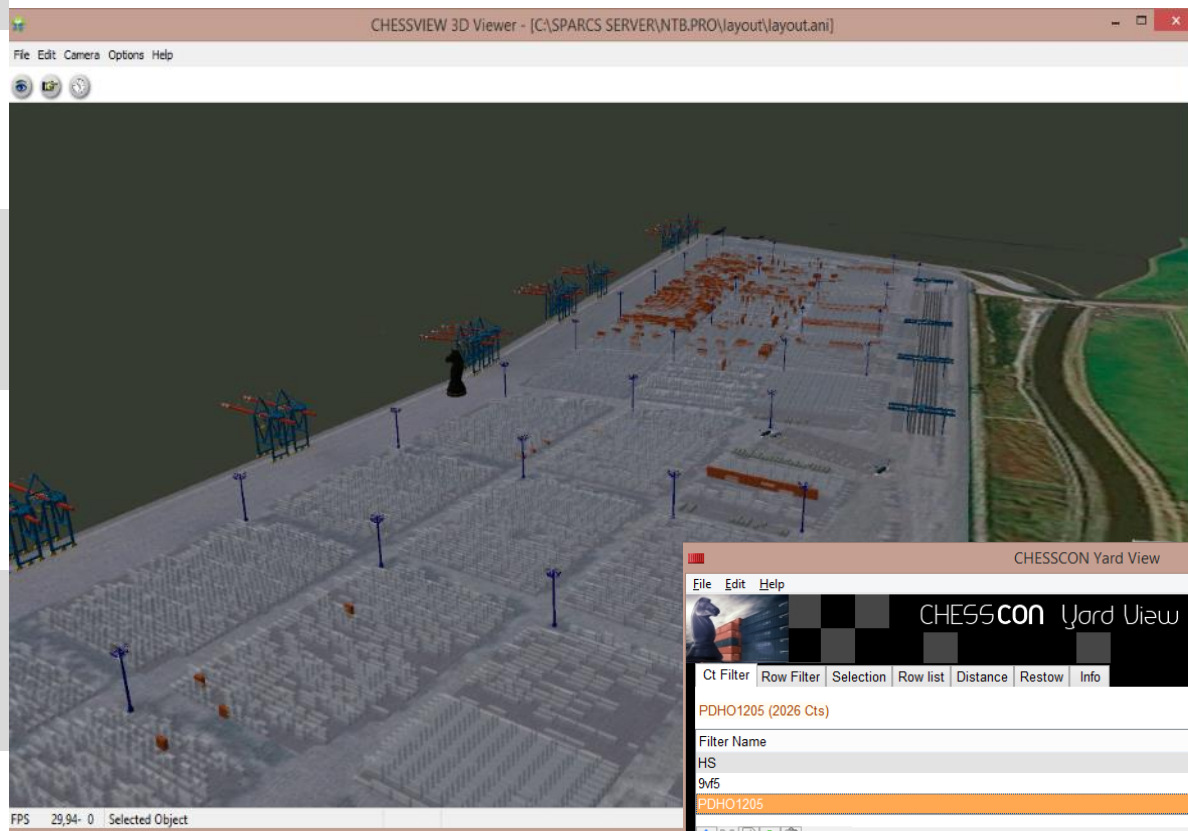
Where are the boxes for the next 31 vessel?

... and how many restowers will occur?

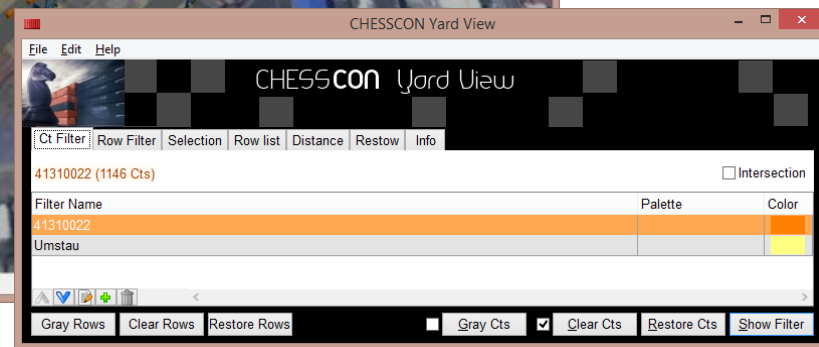
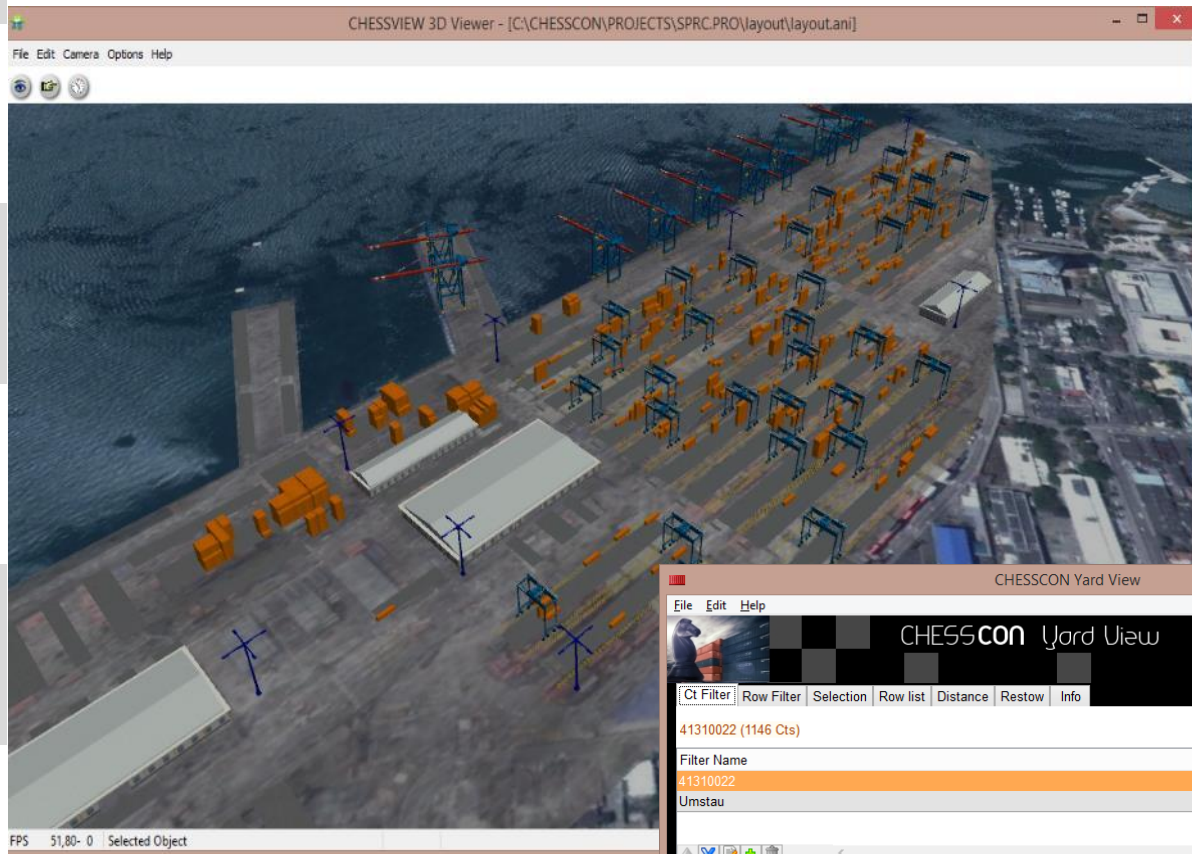
Are the hazardous stacked properly?

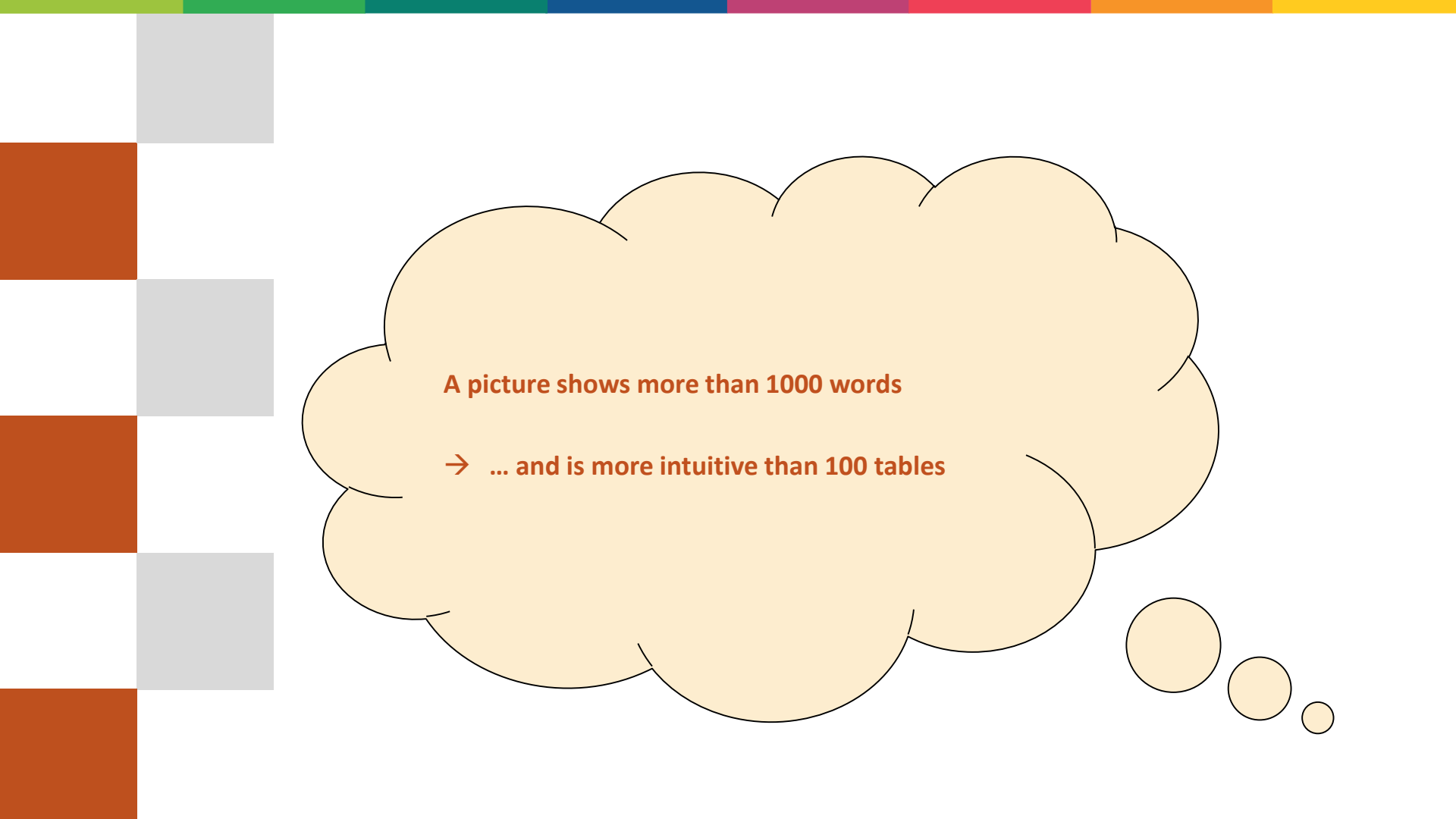
How utilised are my stacks / areas?

- Examples



- Examples



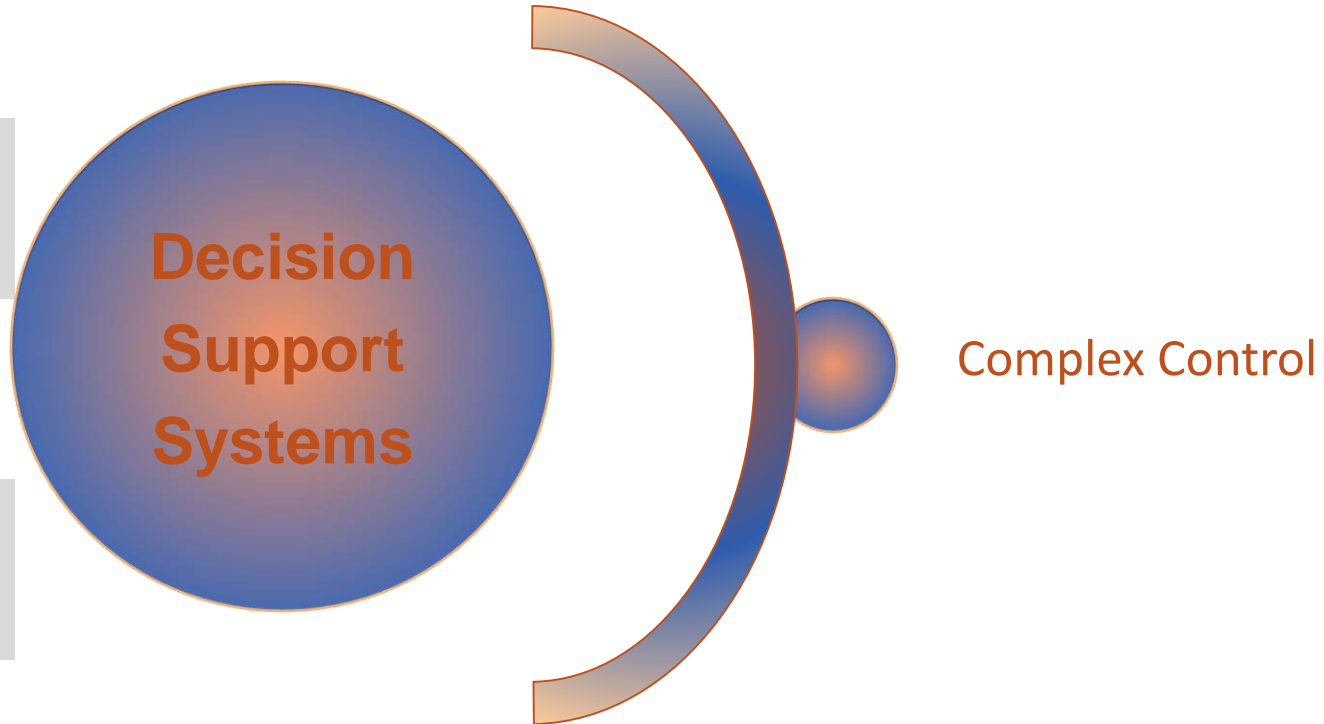


**A picture shows more than 1000 words**

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



# Agenda



# IT architecture

ERP  
(Administration)

Accounting

Statement

TOS  
(Planning)

Berth  
Planning

Crane Split  
Planning

Yard  
Planning

Transport  
Planning

Stow  
Planning

...

TLS  
(Real Time  
Scheduling)

Coordination

FMS  
(Execution)

STS  
Manager

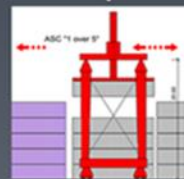
ASiC  
Manager

ASC  
Manager

LMTT  
Manager

OHBC  
Manager

EC,SPS  
(Equipment)

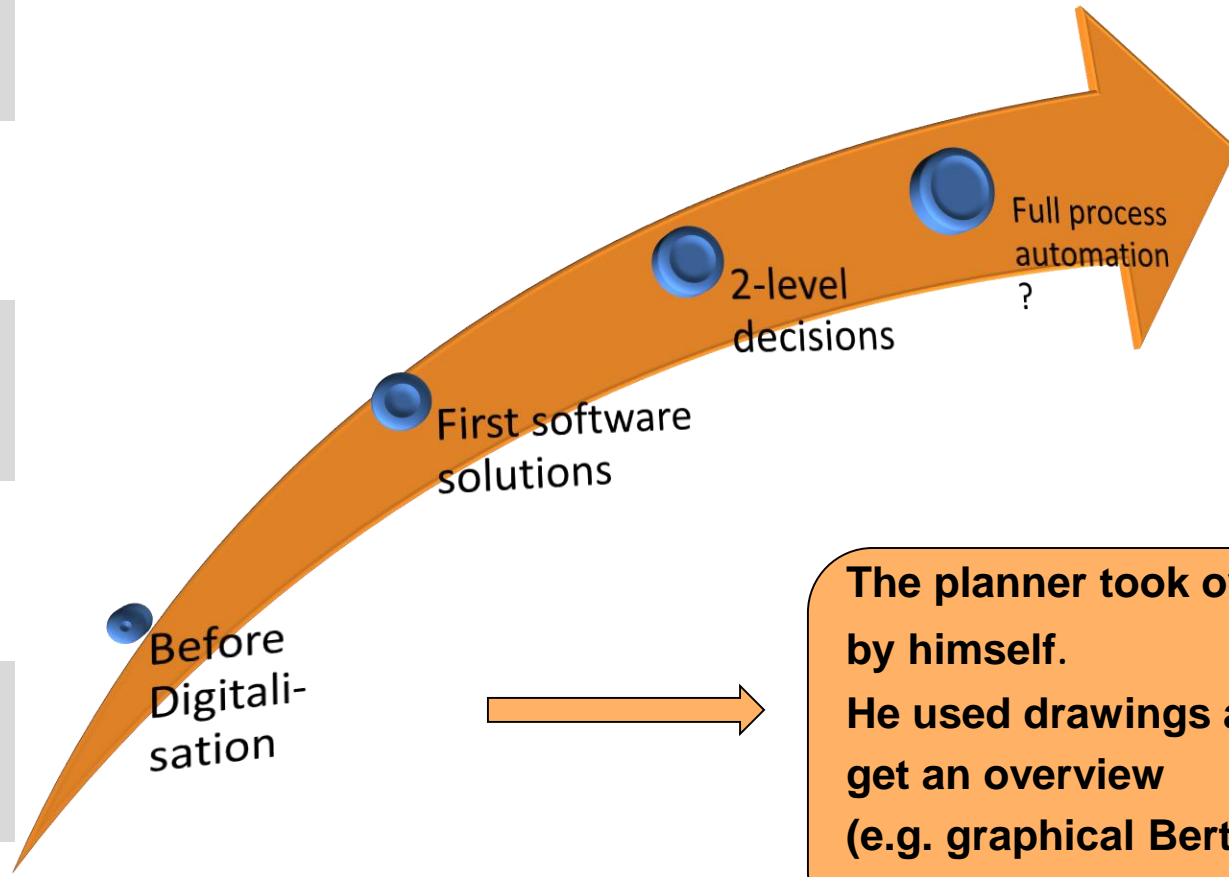


# Agenda

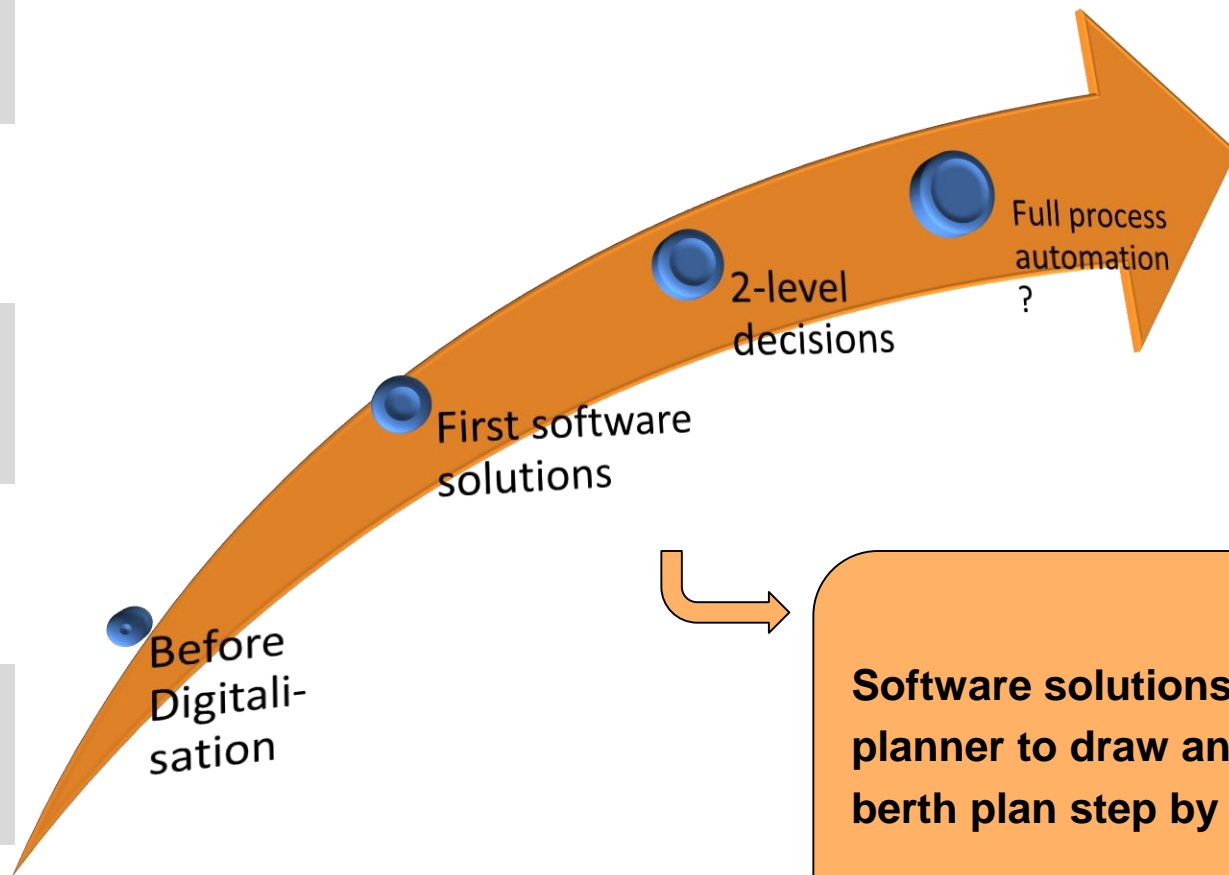


**Decision  
Support  
Systems**

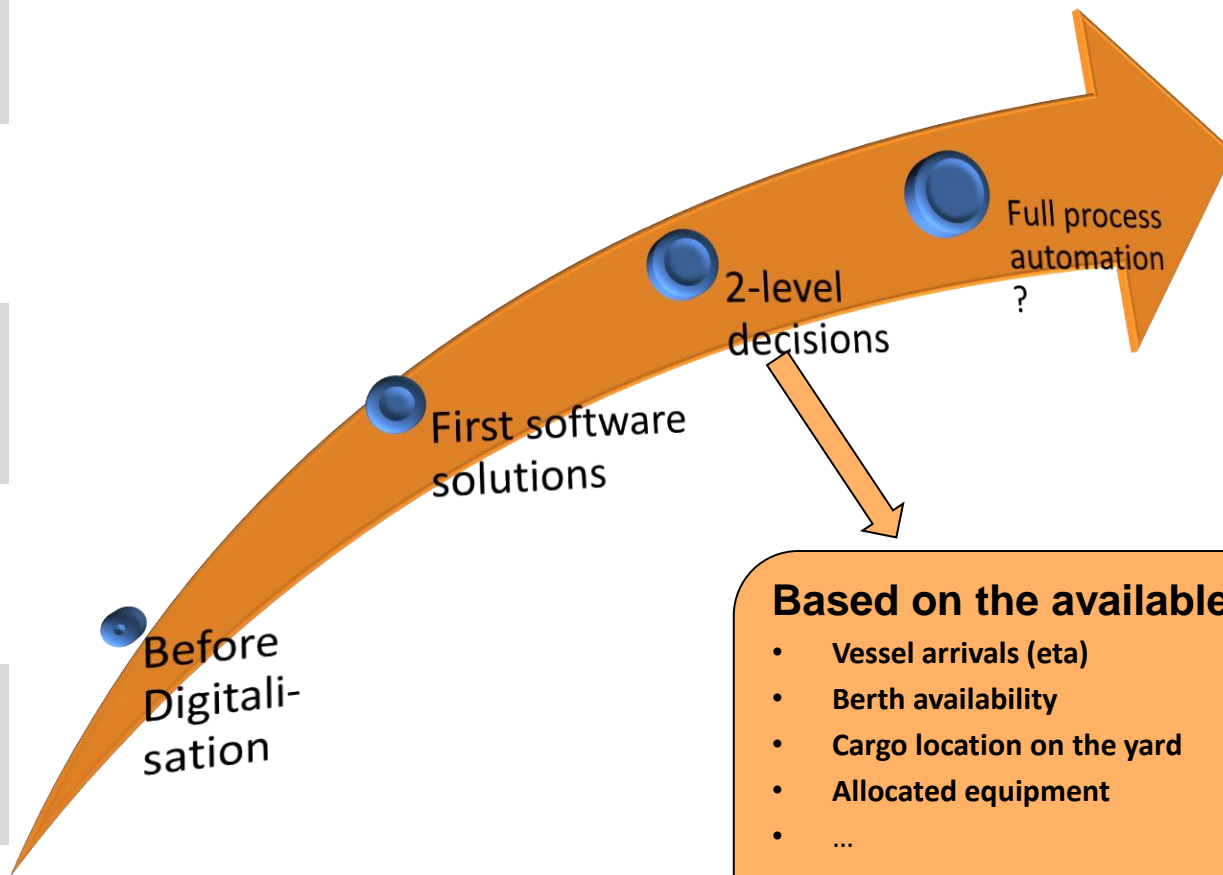
Role of the planner



**The planner took over all decisions by himself.**  
**He used drawings and tables to get an overview**  
**(e.g. graphical Berth-plan – to be Revised 5-times a day)**



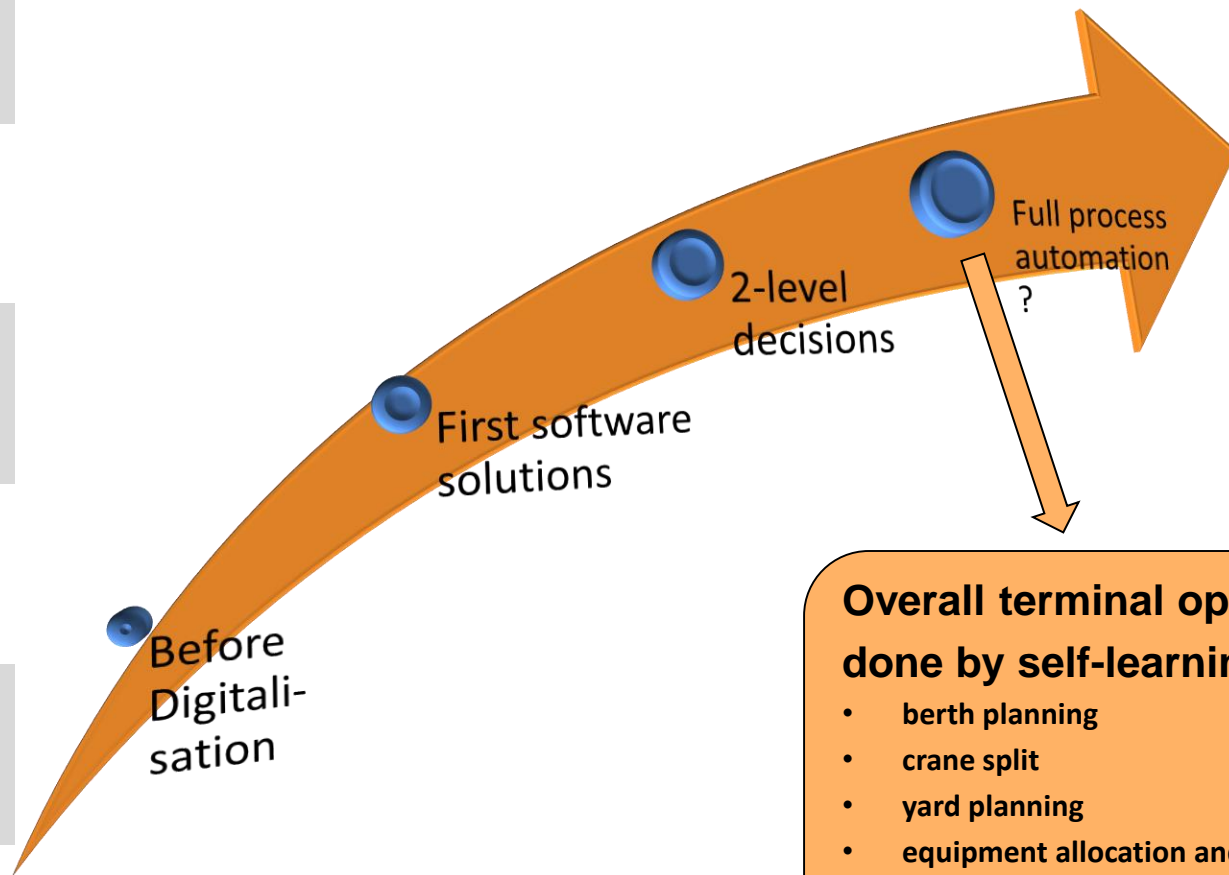
**Software solutions supported the planner to draw and change the berth plan step by step.**



**Based on the available data**

- Vessel arrivals (eta)
- Berth availability
- Cargo location on the yard
- Allocated equipment
- ...

**Decisions are proposed automatically**



**Overall terminal optimisation will be done by self-learning algorithms**

- berth planning
- crane split
- yard planning
- equipment allocation and control
- stowage planing

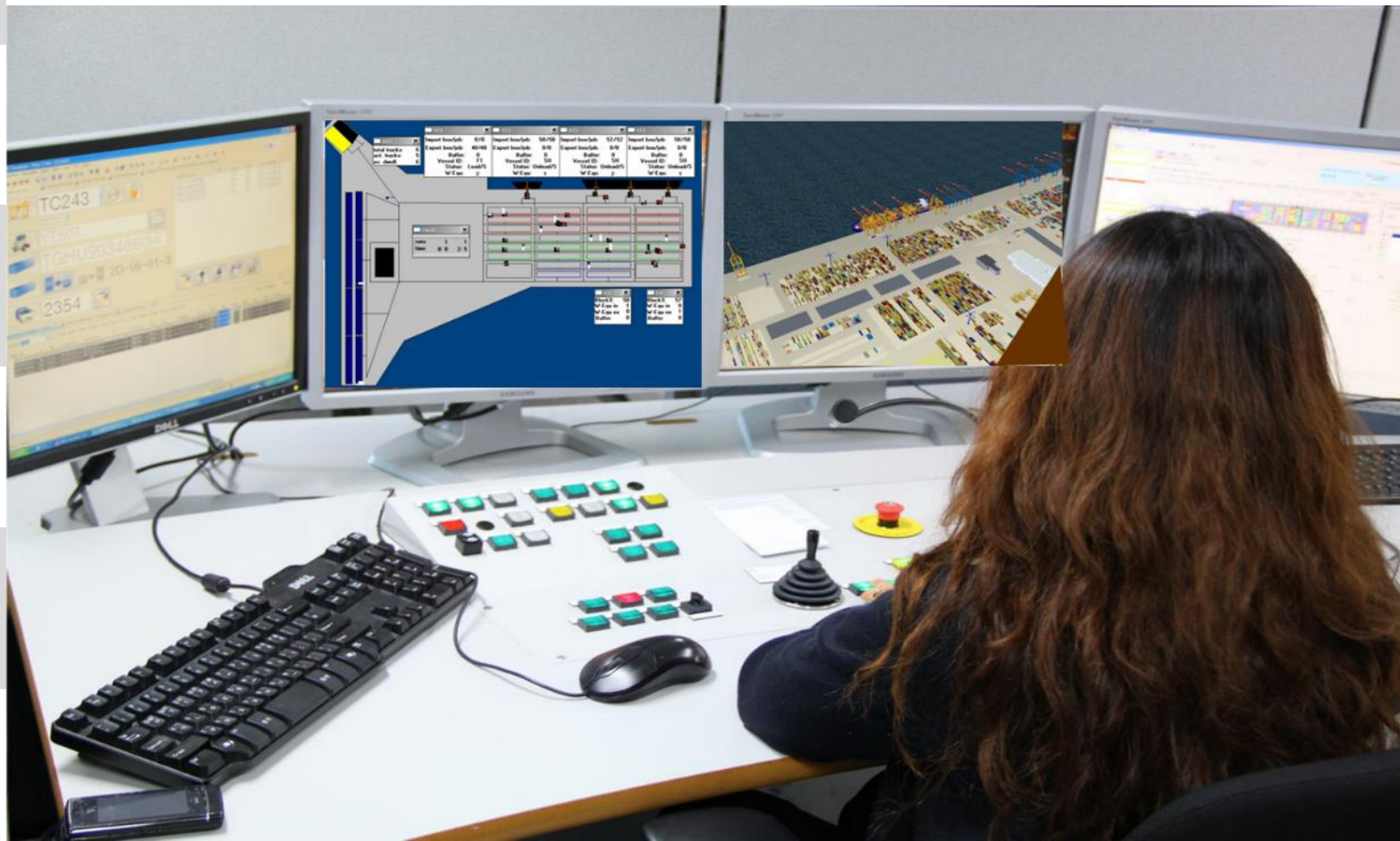


# Vessel simulator

- train your control staff (as shipping lines do)



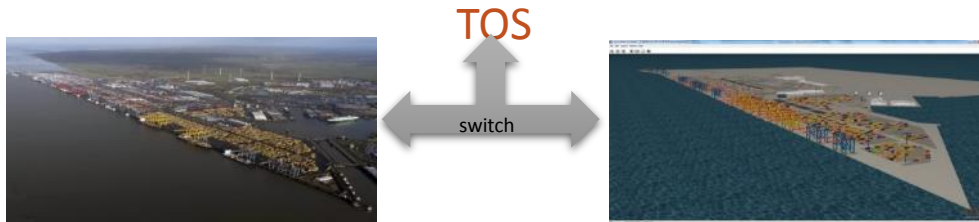
## Learning from the huge ones



# The main mission of CHESSCON VIRTUAL TERMINAL

## 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				
033				

Point of Work Q06

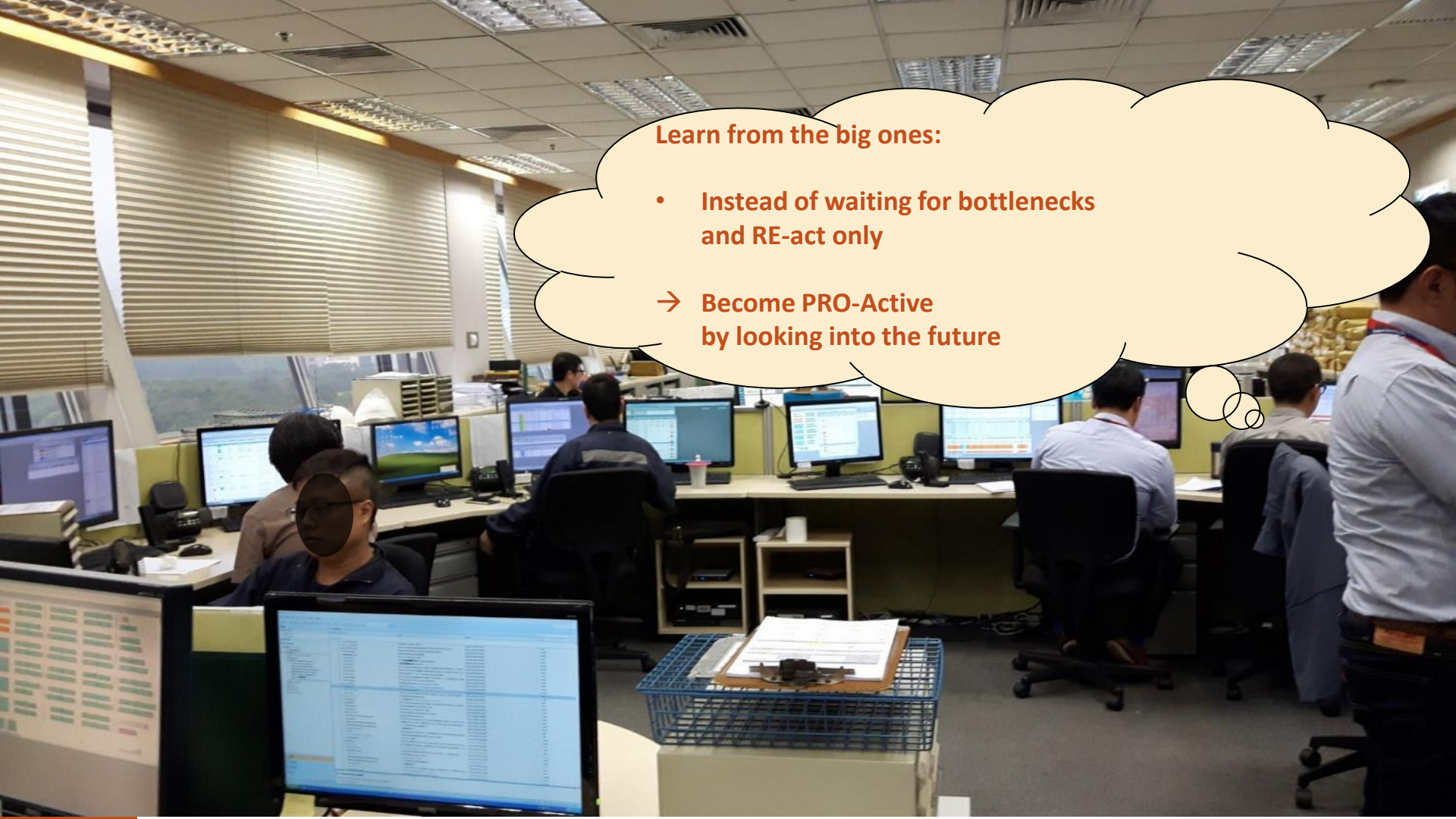
Actions Display

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)

Agenda

**Decision  
Support  
Systems**

Conclusions

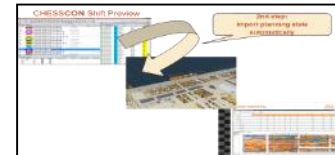


Learn from the big ones:

- 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
- Forecast the future operation  
→ Become Pro-Active





MAKE YOUR RIGHT MOVES!



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

**CHESScon**  
VIRTUAL TERMINAL



I'm looking forward to the  
following discussion!

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akquinet port consulting GmbH  
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