

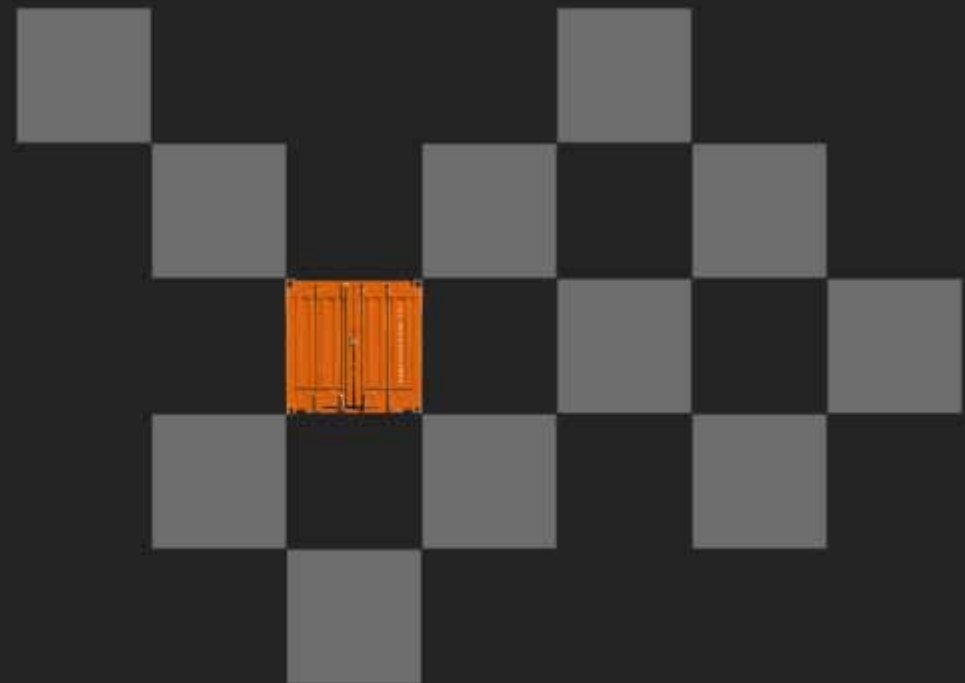
Modernise operational processes by forecasting next shift's operation

-
become pro-active



Dr. Holger Schütt
ISL Applications GmbH

3rd Med Ports 2015
Casablanca, March 25th - 26th



A vertical decorative bar on the left side of the slide, consisting of a black and grey checkerboard pattern with a single orange square near the top.

Agenda

ISL Applications

Container Terminal Simulation

Become pro-active

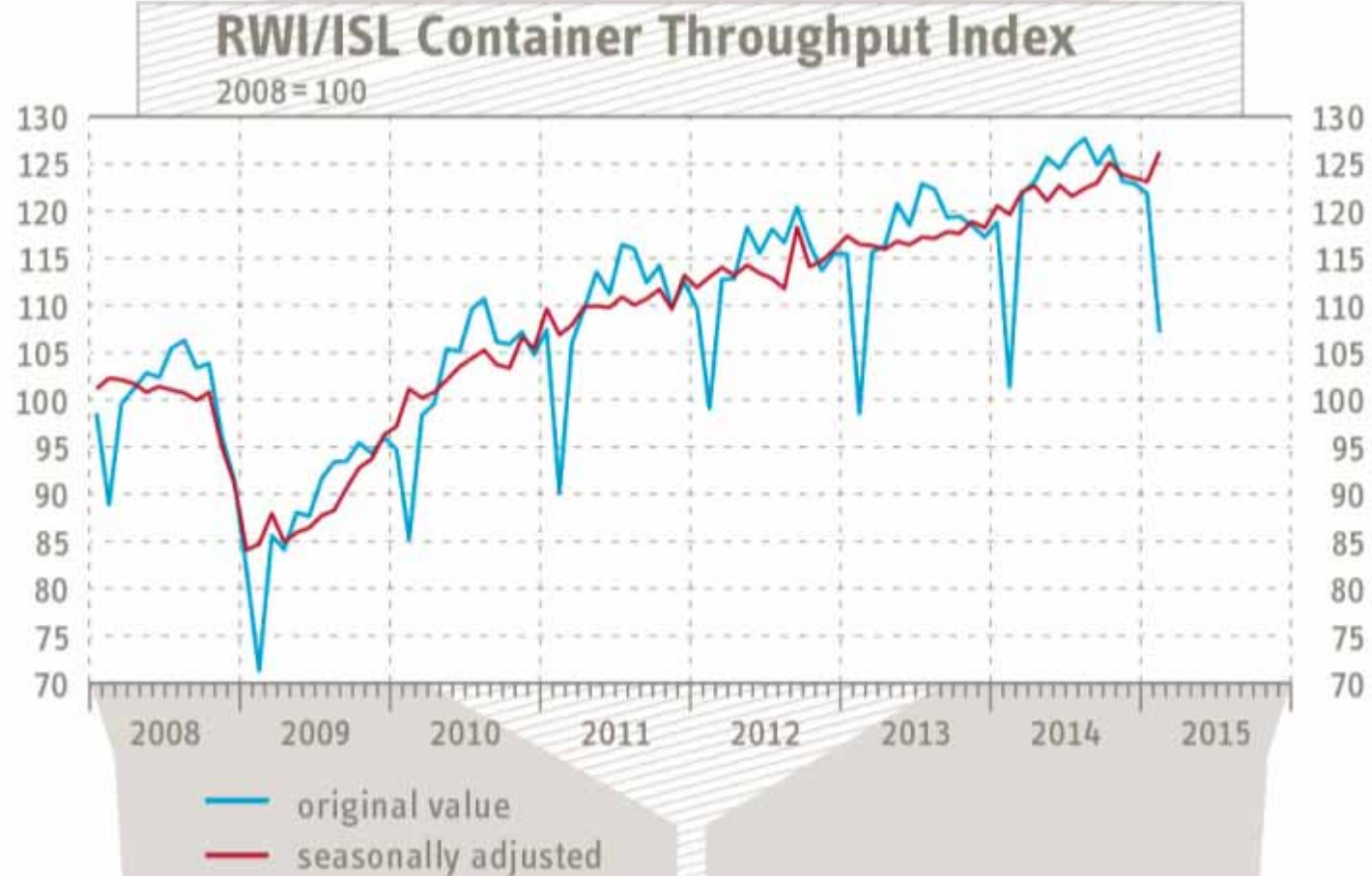


ISL Applications

Container Terminal Simulation

Become pro-active

ISL



During February, the RWI/ISL Container Throughput Index showed a robust increase from 123.1 points in January (unchanged) to 126.3 points.

RWI/ISL Container Throughput index

- ***75 ports worldwide***
- ***~ 60 % of worlds throughput***
- ***available 3 weeks in new month (typically on the 19th)***
- ***www.isl.org → news***

ISL Applications GmbH



Founded 2010 as ISL's commercial subsidiary



Holger Schütt
CEO, Prof. Dr.-Ing.



Horst-Dieter Kassl
CTO, Dipl.-Ing.



**– Institute of Shipping Economics and Logistics
(R&D)**

- founded 1954
- private foundation
- suited in Bremen & Bremerhaven
- some 50 employees
- research based consultancy institute in maritime logistics

25 Years Simulation Experience



1989 1991 1993 1995 1998 2000 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013



Products rebranding:
CAPS
SCUSY
ViTO



CHESScon



Optimisation and Simulation – References (selected)

ASEAN Terminals, Philippines

Bejaia Mediterranean Terminal, Algeria

Centerm Terminal, Vancouver, Canada

Contship, La Spezia, Italy

CSX, Jacksonville, USA

DP World Terminal Antwerp, Europe

DP World, Australia

EUROGATE, Bremerhaven, Germany

EUROGATE, Hamburg, Germany

HHLA, Hamburg, Germany

HPA Hamburg Port Authority, Germany

HIT, Hong Kong

JadeWeserPort, Germany

Kalmar Industries, Finland

CMSA ICTSI, Manzanillo, Mexico

MCT, Gioia Tauro, Italy

MTL, Hong Kong

Nhava Sheva Terminal, India

Noell Crane Systems, Germany

NTB, Bremerhaven, Germany

P&O Headquarter, London, Europe

Port of Odessa, Ukraine

Port of Tacoma, USA

PORTEK International Ltd., Singapore

Ports America, USA

PSA International, Singapore

Red Sea Gateway Terminal, Jeddah, UAE

Sandwell Eng. Inc., Vancouver, Canada

SCT, Southampton, U.K.

SPIA ICTSI, Columbia

TecPlata ICTSI, Buenos Aires, Argentina

TotalSoftBank, Korea

TPT, South Africa

TRP, Buenos Aires, Argentina

VTE, Genoa, Italy

Warsteiner Brewery, Germany

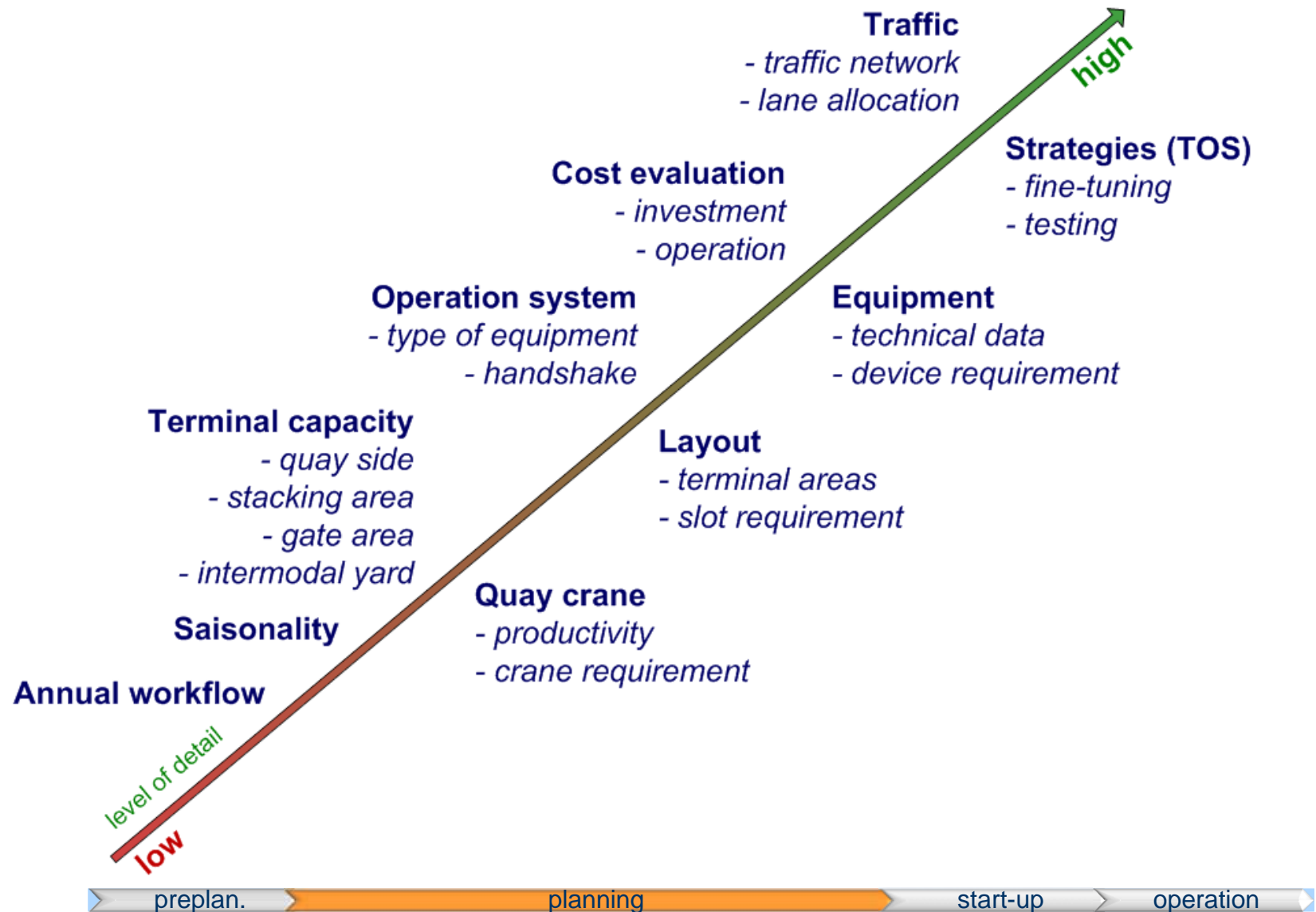
Agenda

ISL Applications

Container Terminal Simulation

Become pro-active

Tasks in terminal planing and optimisation





Various layouts, which one is the best?



Tandem lift cranes, truck/chassis and RTG



Case study

Comparison of operation systems selected

equipment
use

	SC 1 over 3	RTG/TC	RMG/AGV auto
No. of STSCs	12	12	12
No. of SCs	45	X	X
No. of TCs/AGVs	X	53	56
No. of RTGs/RMGs	X	25	17

The decision from an economical view is supported
based on operational costs and investment

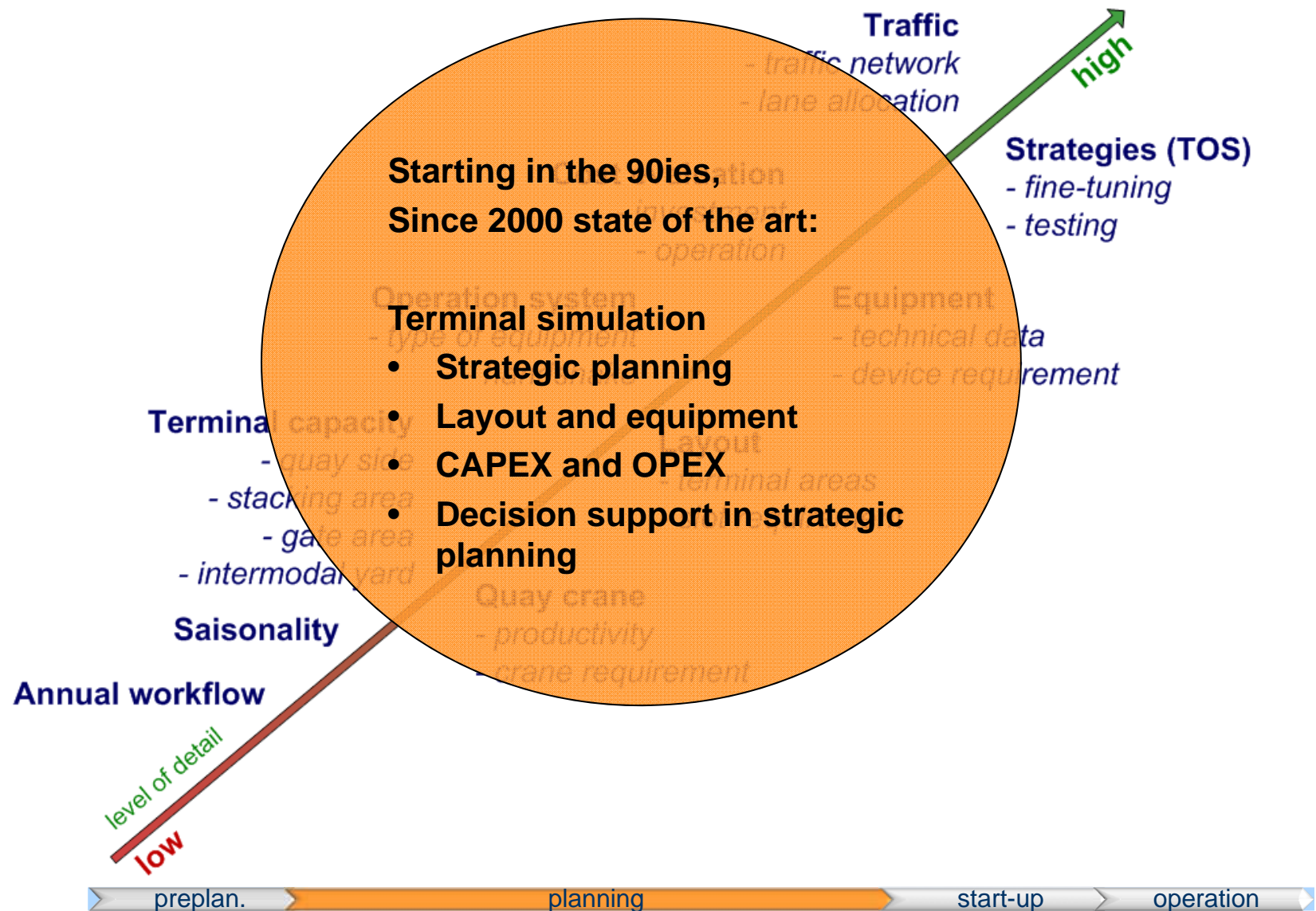
evaluation
production
centres

DS1000	average service time	147.0	107.0	171.0
	aver. moves/hr (total)			
	aver. moves/hr per STSC	29.5	32.3	33.4
DS800	average service time	12.5	10.5	10.1
	aver. moves/hr (total)	128.0	152.0	158.0
	aver. moves/hr per STSC	29.3	31.5	32.9
F120	average service time	4.5	4.3	4.1
	aver. moves/hr (total)	53.0	56.0	59.0
	aver. moves/hr per STSC	21.3	21.6	22.83
F250	average service time	8.8	8.0	7.8
	aver. moves/hr (total)	57.0	62.33	64.0
	aver. moves/hr per STSC	20.4	21.5	22.6
total berth operation time		218.0	195.0	189.0

costs

costs per move [€]			
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Tasks in terminal planing and optimisation

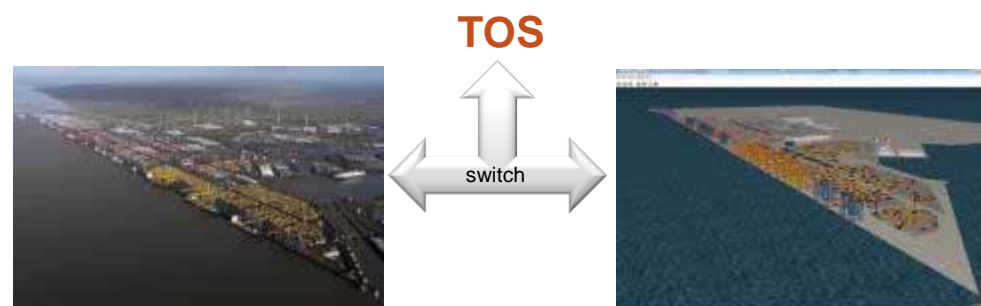


The main mission of CHESSCON VIRTUAL TERMINAL

what you can do with CHESSCON

Emulation:

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



NTB (controlled by Sparcs 3.7)



NTB (controlled by Sparcs 3.7)





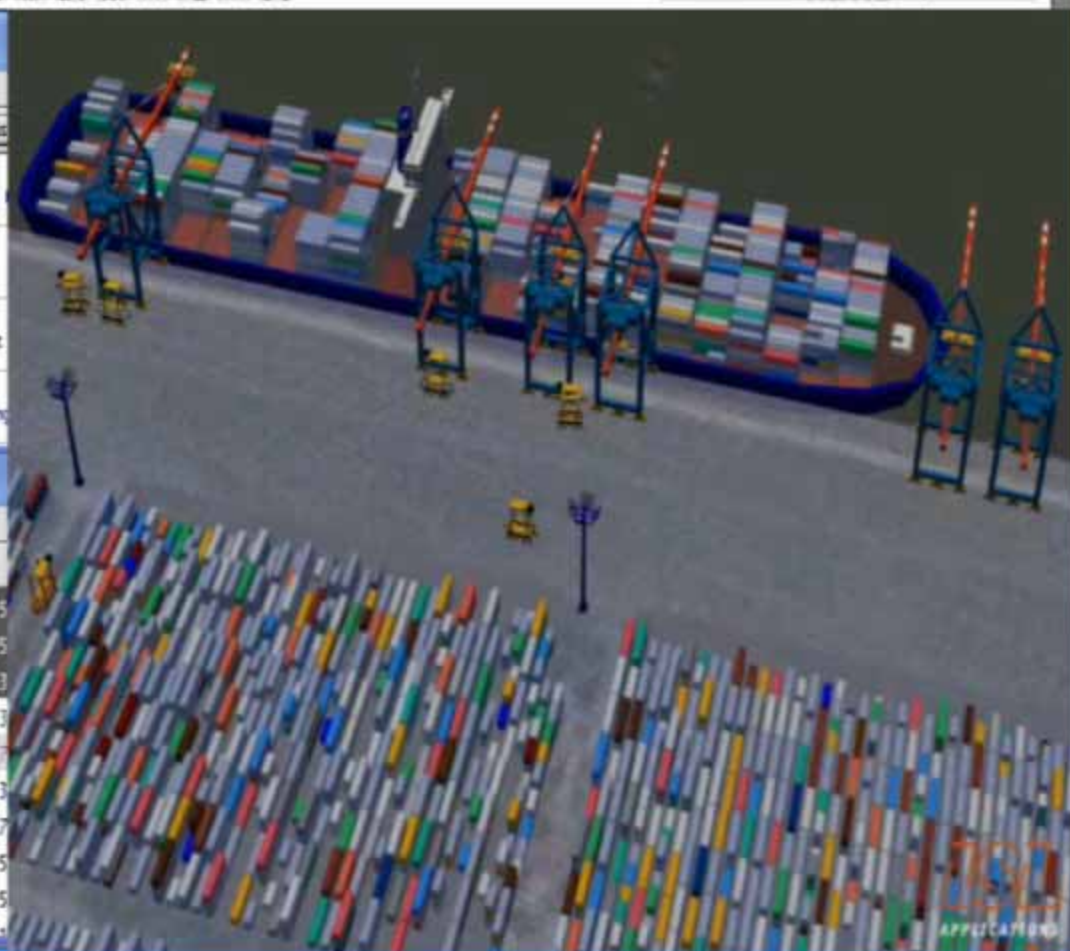
TGHU4001574>>261284 completed. Y>V

EC Console

Actions	Display	Pool	Pos Name	Dispatch Mode	PushRate	Max PMs	Relative Priority	Status
N09	Kassl	B09	PrimeRoute	40	8	low	high	Awaiting
N10	Kassl	B10	PrimeRoute	40	8	low	high	
N11		B11	Auto	40	8	low	high	no current
N12	Kassl	B12	PrimeRoute	40	8	low	high	Awaiting

Point of Work B10

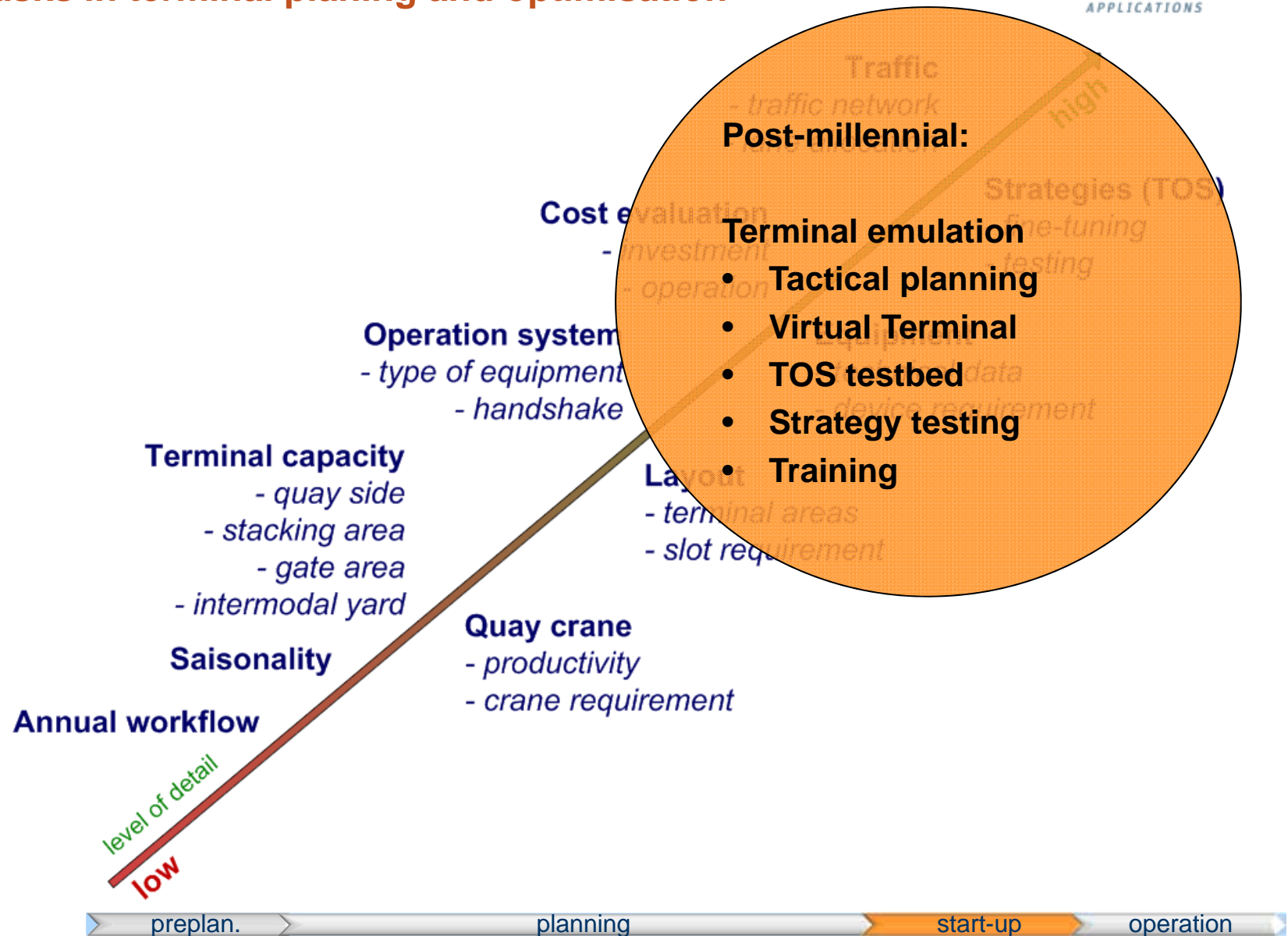
Actions	Display	Container No.	Kind	From	Len	Tare (kg)	Dispatch State
		PONU7353480	DSCH	462020	40'	4000	Completed B95905
		MSKU0179252	DSCH	461820	40'	4000	Completed C97715
		MSKU1190240	DSCH	461818	40'	4000	Completed C97713
		MSKU0190626	DSCH	462018	40'	4000	Carrying C97713
		MSKU9289414	DSCH	461616	40'	4000	Dispatched A92717
		MSKU1550270	DSCH	461816	40'	4000	Dispatched A97203
		MSKU9735481	DSCH	462016	40'	4000	Dispatched A97417
		MRKU2668918	DSCH	461614	40'	4000	dependent A92715
		MSKU9972288	DSCH	461814	40'	4000	dependent B94415
		MSKU1132164	DSCH	462014	40'	4000	dependent A02711



Equipment Pool N10: 5

Actions	Display	id	P.O.W.	Pool	Screen	Job Progress	Last Known Position	Last Cnt	Job Start Position	Container No.	Kind	Job End Position	Dispatch	Dispatch State
		VC59	B10	N10			C97715.1	MSKU0179252	B10 (468)	MSKU1550270	DSCH	A97203.2		Vessel Discharge: Moving to Ship
		VC61	B10	N10			C97713.2	MSKU1190240	B10 (468)	MSKU9735481	DSCH	A97417.2		Vessel Discharge: Moving to Ship
		VC84	B10	N10			B95905.1	PONU7353480	B10-1 468	MSKU9289414	DSCH	A92717.3		Vessel Discharge: Moving to Ship
		VC92	B10	N10			BTH4-1		B10-1 468	MSKU0190626	DSCH	C97713.3		Vessel Discharge: Carrying to Row

Tasks in terminal planing and optimisation



Going operational...

Agenda

ISL Applications

Container Terminal Simulation

Become pro-active

Terminal productivity



TOS



Process automation

**Terminal
productivity**

Equipment



The first ALV of KMI

Terminal staff





Stowage planning

Berth planning

Crane split planning

Equipment planning

Yard planning



Terminal's productivity is driven by

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

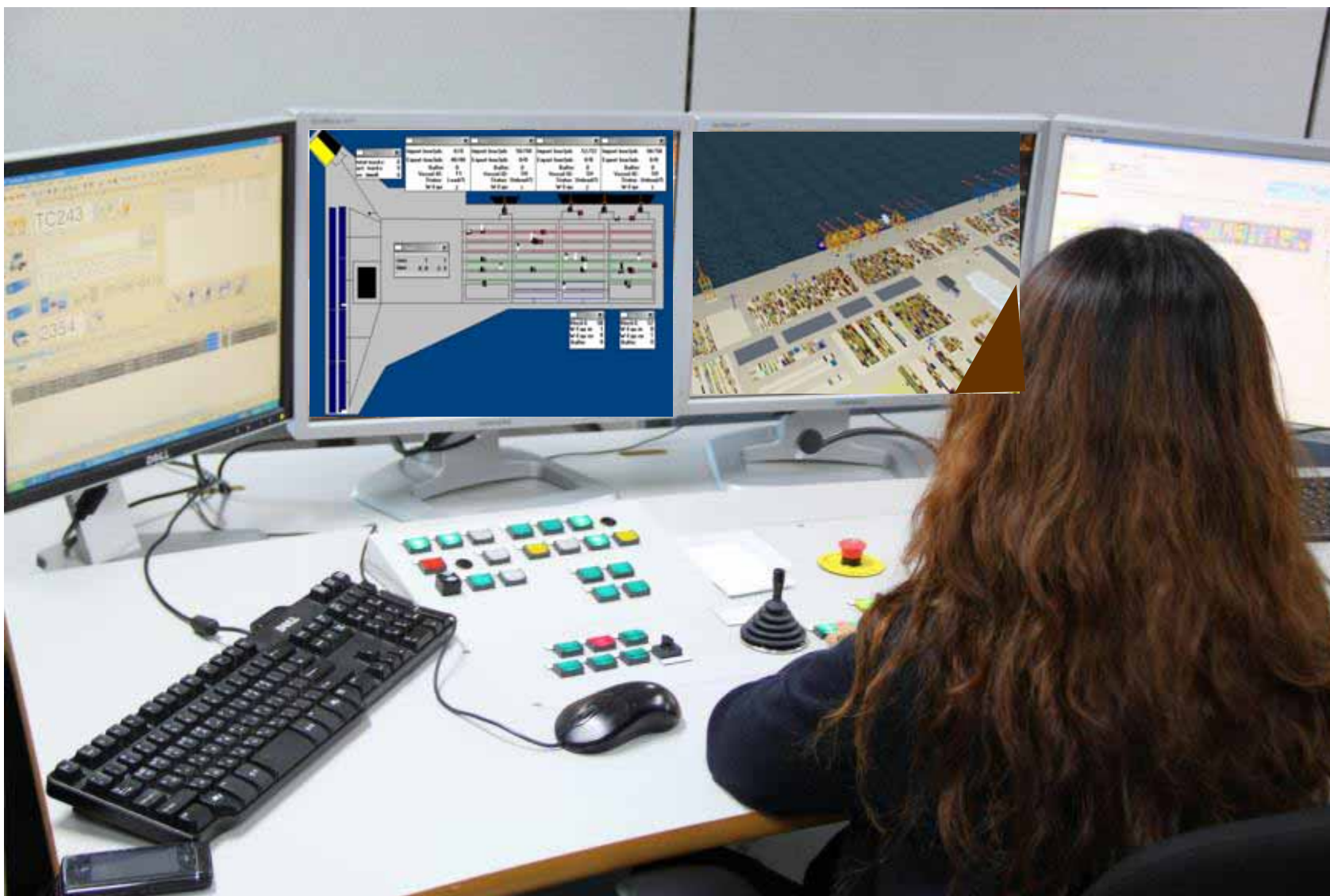
Terminal Automation (processes as well as equipment) prepares for optimised operation, but more than ever very skilled control staff is required.

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

„ It is man making the difference“



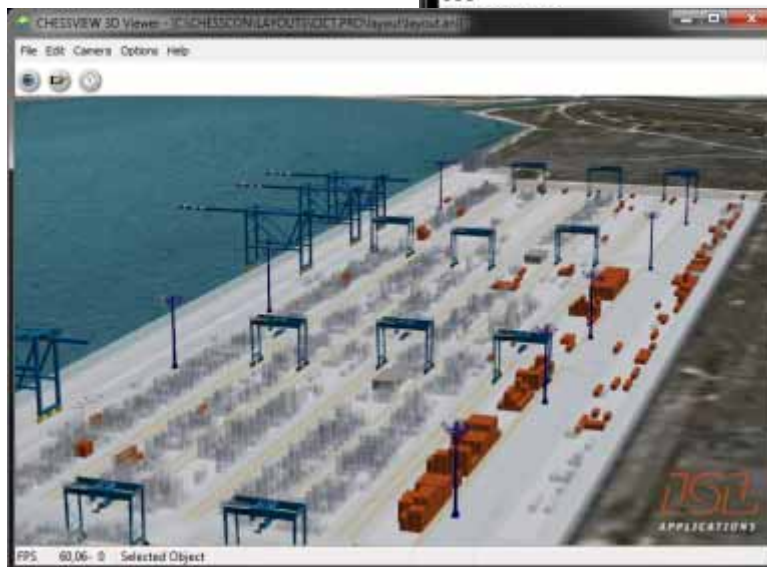
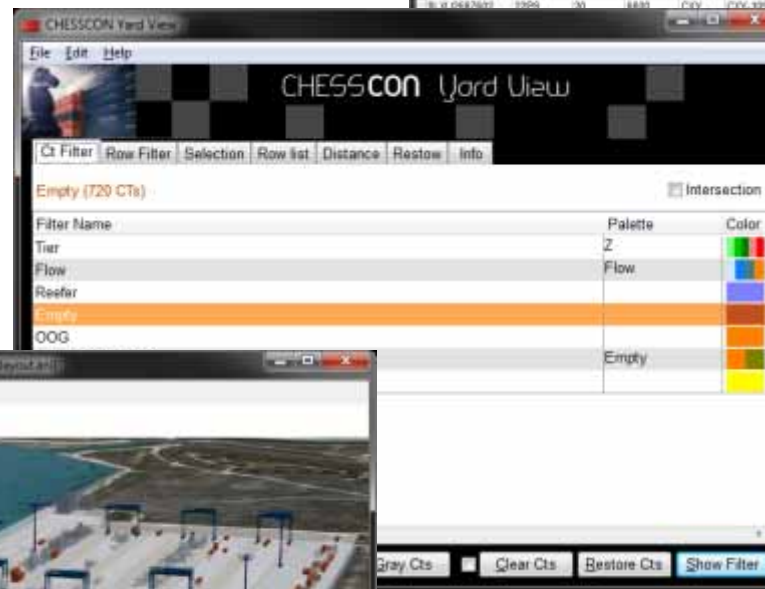
Become a grandmaster in terminal control





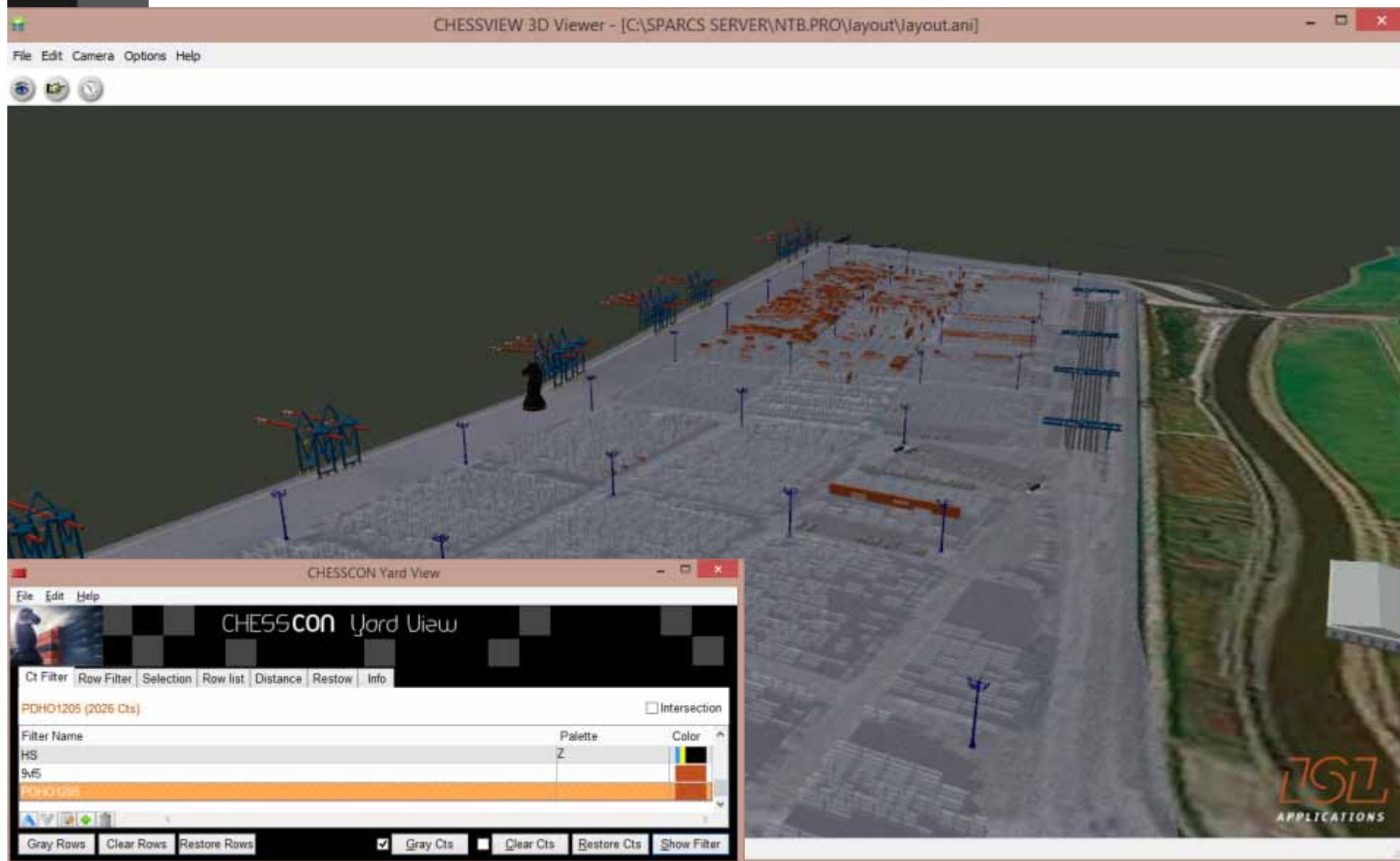
The screenshot shows the Delta 11 Hub software interface. The main window displays a table of shipping and receiving activities. A palette window is open in the foreground, showing color-coded categories for 'Intersection', 'Z', 'Flow', and 'Empty'. The palette includes a legend and a 'Save Size' button.

ID	ISO	Length	Weight	Area	X	Y	Z	Flow	Empty	Arrival	Depart	LDRP
ECM02173213	22G1	20	2200	E96	E06-439	F	2	EXPORT	E	TRUCK	BARC426	CMA
DEMU0553080	22G1	20	2190	E96	E06-439	E	2	EXPORT	E	TRUCK	BARC426	CMA
WDL07149506	22G1	20	2200	E96	E06-439	E	1	EXPORT	E	TRUCK	BARC426	CMA
IRL03415382	22G1	20	2200	E96	E06-439	E	2	EXPORT	E	TRUCK	BARC426	CMA
WLD06876001	22G0	20	6830	CV0	CV0-339	E	1	TRANSHIP	E	OSHA004	VE38EL	HLG
								TRANSHIP	E	OSHA004	VE38EL	HLG
								EXPORT	E	TRUCK	DCT001	MAE
								EXPORT	E	TRUCK	BARC426	CMA
								EXPORT	E	TRUCK		CCT
								TRANSHIP	E	SCDM003		CCT
								TRANSHIP	E	TESS008		HAM
								TRANSHIP	E	TESS008		HAM
								TRANSHIP	E	TESS008		HAM
								TRANSHIP	E	TESS008		HAM
								TRANSHIP	E	TESS008		HAM
								TRANSHIP	E	TAL006		HLG
								EXPORT	E	TRUCK	DCT001	PCN
								TRANSHIP	E	TAM001		HLG
								EXPORT	E	TRUCK	DCT001	CCT
								TRANSHIP	E	TAL006		HLG
								EXPORT	E	TRUCK		CCT
								IMPORT	E	BUD0017	TRUCK	CCT
								EXPORT	E	TRUCK		HLG



- Increases your yard planning
- Shows real container inventory
- 3D Overview of your terminal
- Easy connection to every TOS
- No limits to filtering container

NTB with Sparcs 3.7 – Yard View





SPRC with Sparcs 3.7 – Yard View



CHESVIEW 3D Viewer - [C:\CHESCON\PROJECTS\SPRC.PRO\layout\layout.ani]

File Edit Camera Options Help

A large 3D aerial view of a port yard. Numerous orange intermodal containers are stacked in rows. Several blue gantry cranes are positioned over the stacks. The yard is adjacent to a body of water on the left and a city area on the right.

FPS 51,80- 0 Selected Object

CHESCON Yard View

File Edit Help

The Chesscon logo, which includes a stylized chess knight, followed by the text 'CHESCON Yard View'.

Ct Filter

Row Filter

Selection

Row list

Distance

Restow

Info

41310022 (1146 Cts)

☐ Intersection

Filter Name	Palette	Color
41310022		
Umstau		

Gray Rows

Clear Rows

Restore Rows

☐ Gray Cts

☒ Clear Cts

Restore Cts

Show Filter

A picture tells more than 1,000 words!



3D Yard View supports terminal planner
intuitively

The mission of CHESSCON SHIFT PREVIEW



- Check your current shift planning
- Based on your current planned data:
Work-queues, Yard allocations, Yard inventory
 - Optimize deployment of equipment
 - Optimize yard allocations
 - Avoid yard clashes
- On short-term basis
- High-speed calculation: 8 hr shift within minutes



CHESSCON Shift Preview

0 step:
day to day work
use the TOS
to plan the next shift

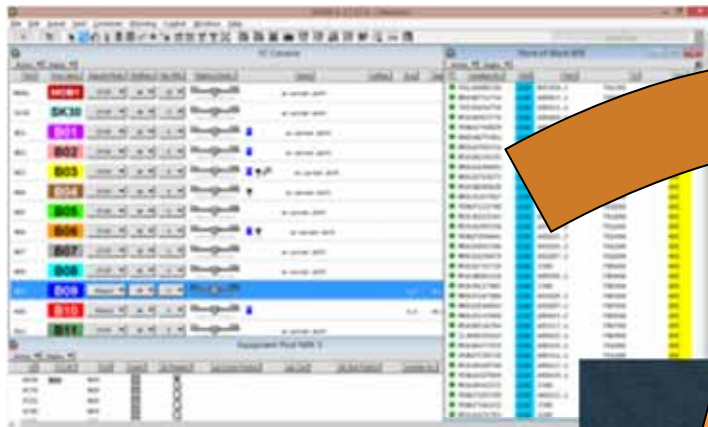
1 step:
shift planning finished

Pool	Pool Name	Dispatch Mode	Push Rate	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

ID	P.O.M.	Pool	Screen	Job Progress	Last Known Position	Last Cnt	Job Start Position	Container No.
H228	B09	N09		X				
VC78	N09			X				
VC81	N09			X				
VC88	N09			X				

MRKU	LOAD	A90717.1	780982	4HC
MRKU3257927	LOAD	A93117.3	782284	4HC
PONU7121740	LOAD	A92105.3	782084	4HC
MSKU8223243	LOAD	A91007.3	781884	4HC
MSKU1093528	LOAD	A93117.2	781684	4HC
PONU7956441	LOAD	A90615.3	781484	4HC
MRKU2855196	LOAD	A92105.2	781284	4HC
MRKU2639479	LOAD	A91007.2	781084	4HC
MSKU1715719	LOAD	3380	780684	4HC
MSKU8083218	LOAD	A90305.1	780484	4HC
MSKU8137905	LOAD	3380	780284	4HC
MRKU3147200	LOAD	A92105.1	780184	4HC
MRKU2568842	LOAD	A91007.1	780384	4HC
MRKU3133989	LOAD	A90615.2	780584	4HC
MSKU0514704	LOAD	A93117.1	780784	4HC
CLHU9125612	LOAD	A90615.1	780984	4HC
MSKU0277259	LOAD	A90315.1	781886	4HC
PONU7530538	LOAD	A90311.1	781686	4HC
MSKU9149794	LOAD	A90117.1	781486	4HC
PONU1627069	LOAD	A90419.1	781286	4HC
MSKU9542332	LOAD	3380	781086	4HC
PONU7183399	LOAD	A88213.1	780886	4HC
PONU7366152	LOAD	3380	780686	4HC
MSKU1675703	LOAD	3380	780486	4HC

CHESSCON Shift Preview



2nd step:
Import planning state
automatically



sample of based data



CHESSCON Shift Preview

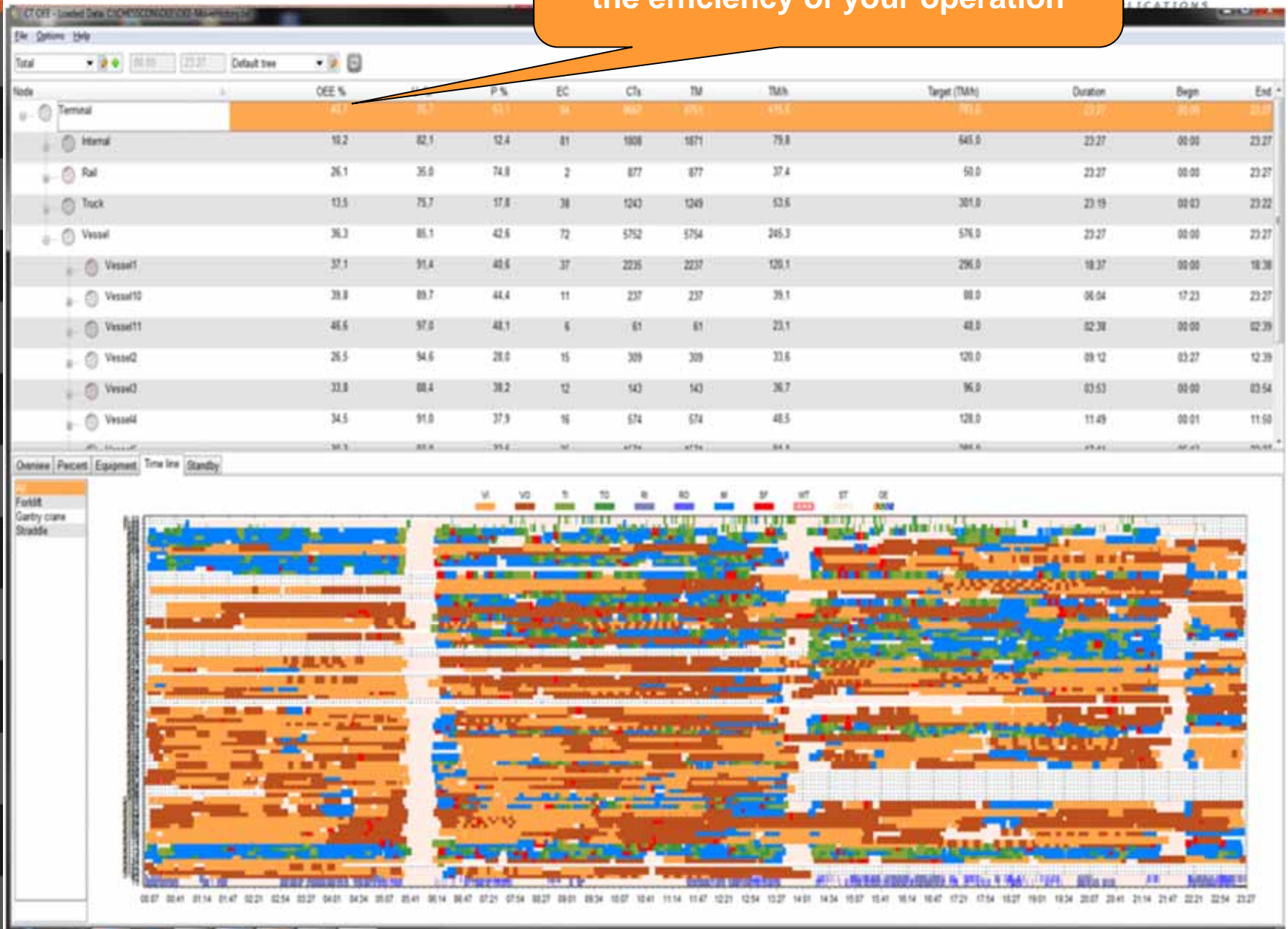
3rd step:
fast simulation of the shift

SL



CHESSCON Shift Preview

4th step: intuitive evaluation of the efficiency of your operation



File Options Help

00:02

19:23

☒ Auto time frame

Default tree

Refresh

Node	OEE %	U %	P %	EC	CTs	Ct/h	TM/h	Target (TM/h)	Lead time	Begin	End
Terminal	59,7	74,2	80,5	28	2946	152,2	268,9	334,0	19:21	00:02	19:23
Vessel	59,3	74,1	80,0	28	2915	150,6	267,3	334,0	19:21	00:02	19:23
MAERSK_SUR/	59,3	74,1	80,0	28	2915	150,6	267,3	334,0	19:21	00:02	19:23
QC-B07	56,1	75,2	74,6	4	359	21,2	40,3	54,0	16:55	00:02	16:58
QC-B08	68,1	73,5	92,6	6	617	36,5	64,8	70,0	16:55	00:02	16:57
QC-B09	63,2	74,5	84,9	6	686	35,4	59,4	70,0	19:21	00:02	19:23
QC-B11	66,0	75,9	86,9	6	634	34,3	60,8	70,0	18:27	00:02	18:29
QC-I	61,6	69,8	88,3	1	634	34,3	26,5	30,0	18:27	00:02	18:29
VC5	69,7	77,9	89,5	1	130	7,2	7,2	8,0	18:09	00:12	18:22
VC5	67,1	77,1	87,0	1	127	7,0	7,0	8,0	18:15	00:12	18:28
VC5	64,7	75,8	85,4	1	124	6,8	6,8	8,0	18:09	00:11	18:21
VC5	68,1	78,7	86,6	1	126	6,9	6,9	8,0	18:11	00:11	18:22

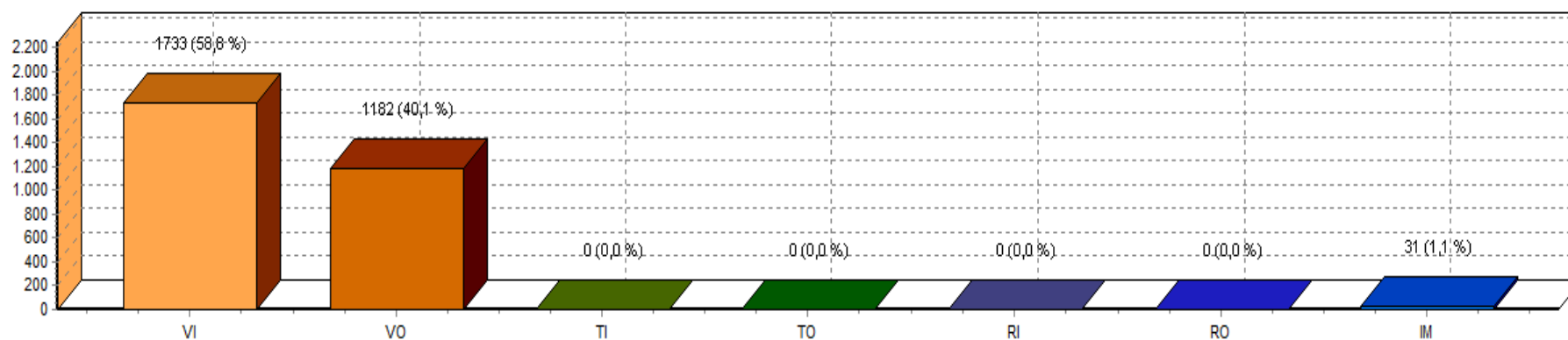
Overview

Percent

Equipment

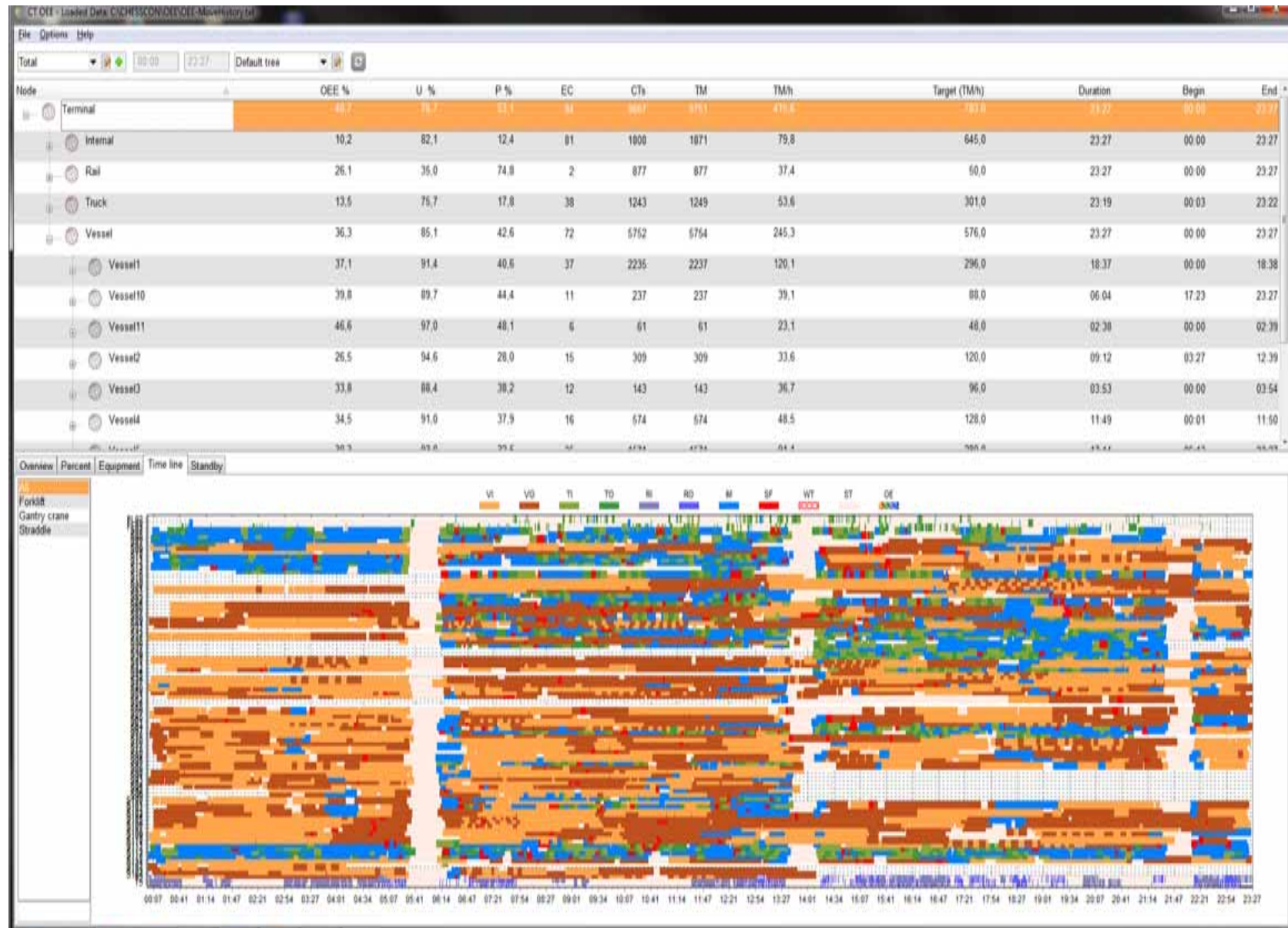
Time line

Standby





Example of based data



CHESSCON



1. Simulation in Terminal Planning

- Offline tool
- Very fast
- Needs only few input
- State of the art today

2. Virtual Terminal

- Uses Navis data and strategies
- Test the TOS
- Test new ideas (strategy)
- Train your staff
- But slow

combines the benefits

3. Shift Preview

- Imports Navis planning data
- Imports Navis strategy parameters
- Forecast next shift
- Fast (1 shift in minutes)
- Finding bottlenecks and underutilis.
- **Planner becomes pro-active**

Optimisation Tools for Container Terminals



CHESScon
VIRTUAL TERMINAL

CHESScon
SHIFT PREVIEW

CHESScon
YARD VIEW

CHESScon
SIMULATION

CHESScon
CAPACITY

CHESScon
TERMINAL VIEW

preplan.

planning

start-up

operation



MAKE YOUR RIGHT MOVES!

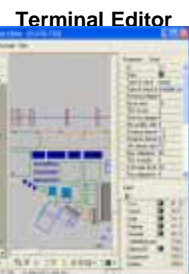
CHESScon
VIRTUAL TERMINAL

WWW.CHESSCON.COM

CHESSCON modules



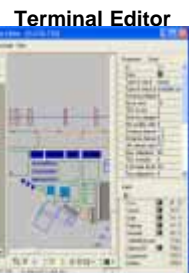
CHESSCON
TERMINAL VIEW



3D Terminal Viewer*



CHESSCON
CAPACITY



Capacity Input



3D Terminal Viewer



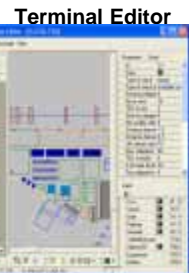
Capacity Simulation



Capacity Evaluation



CHESSCON
SIMULATION



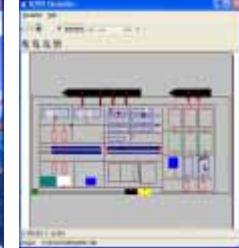
Input Module



3D Terminal Viewer*



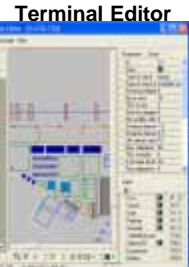
Simulation



Evaluation Module



CHESSCON
VIRTUAL TERMINAL



Input Module



3D Terminal Viewer



Emulation Manager



Evaluation Module

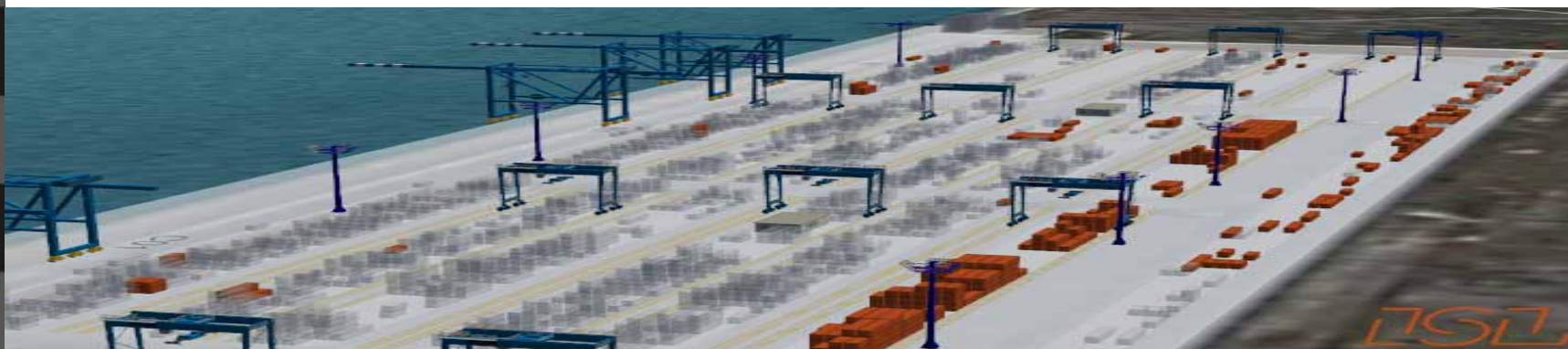


CHESSCON Modules

Main benefits

Why to choose CHESSCON Module Virtual Terminal?

- Easy to use as directly connected to the TOS
 - Import your layout
 - Backup current planning state as new scenario
- Fully configurable and scalable by the client
 - Layout definition incl. traffic network
 - Add new areas and extensions
 - Change equipment's technical data
 - Buy new devices of your equipment
- Open and distributed architecture
 - Plug in your own equipment emulators
 - Run evaluation and 3D visualisation on various computers



Terminal productivity



TOS



Process automation

**Terminal
productivity**

Equipment



The first ALV of KMI

Terminal staff

