Maximizing the performance of your container handling system

Port & Terminal Technology USA 2017, Norfolk

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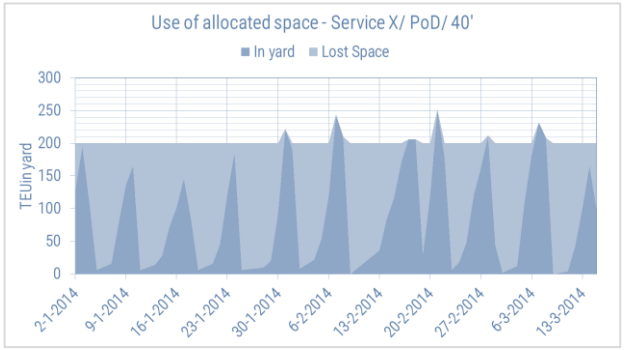
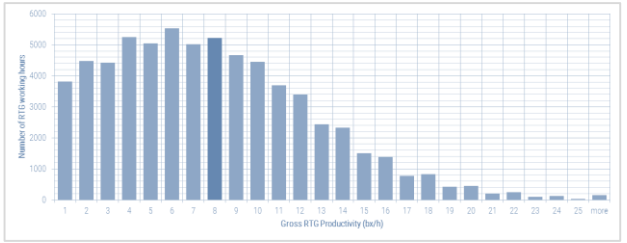
Introduction

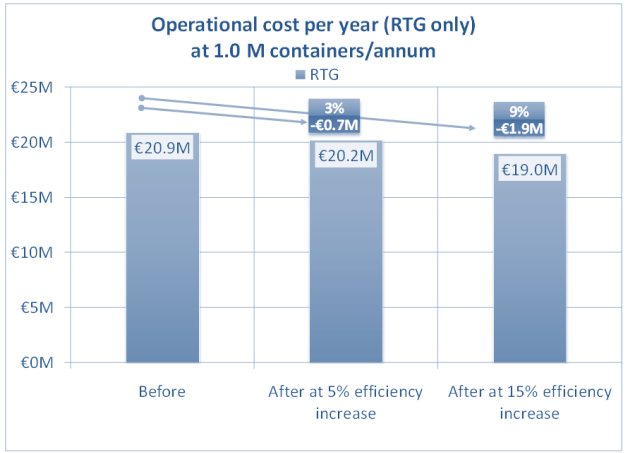
- In most terminals:
  - Lots of yard space is wasted (up to 50%)
  - Yard cranes are poorly used (less than 50% for some terminals)
  - Yard management is labour intensive and error prone



- This results in:
  - Lower waterside productivity
  - Longer road service times
  - Underutilized stack space



- On of the key components in the utilization and performance of your container handling system is the placement of containers in the yard (i.e. yard strategy).



- To maximize the capacity and the performance of your system, a flexible and well setup yard strategy is crucial!

Automated decking of containers

- A key component to improve the yard strategy is the use of automated decking of containers in the yard.

- Most terminals have some sort of automated decking functionality in their TOS, however few terminals actually deploy it in a way that will generate maximum gain.

- In most projects it has been observed that automated decking is:
  - Used to force manual processes into an automated mode
  - Not "set-up correctly" → undesired decisions
  - Set up correctly once and then changed over and over again → inconsistent setup
  - Manually overruled when decisions or set-up are misunderstood

Automated decking for all kinds of terminals

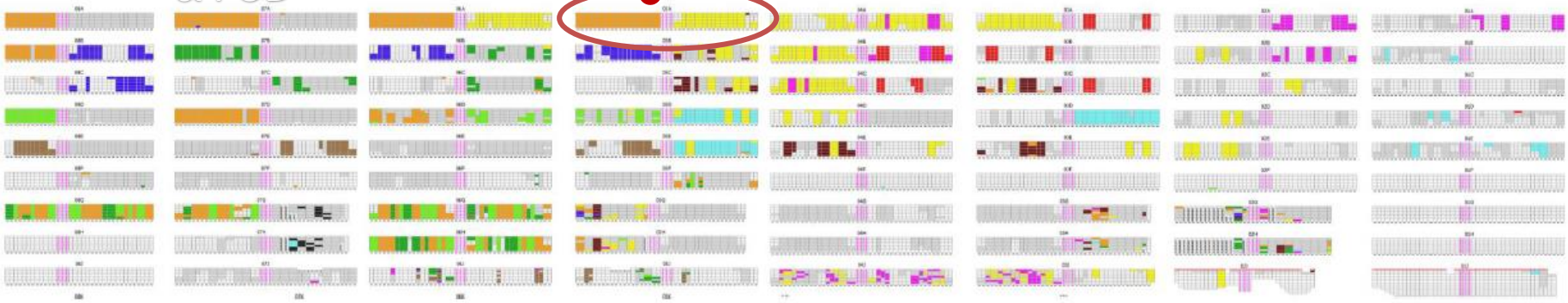
- This presentation will shows examples of implementations of automated decking for different handling systems, including:
  - RTG terminal
  - Straddle carrier terminal

Automated decking in RTG terminal

RTG / TT operation – Distributed Exports using Automated Decking
Large RTG facility (23 QCs)

Concentration of containers per Service & POD

Dedicated areas per service



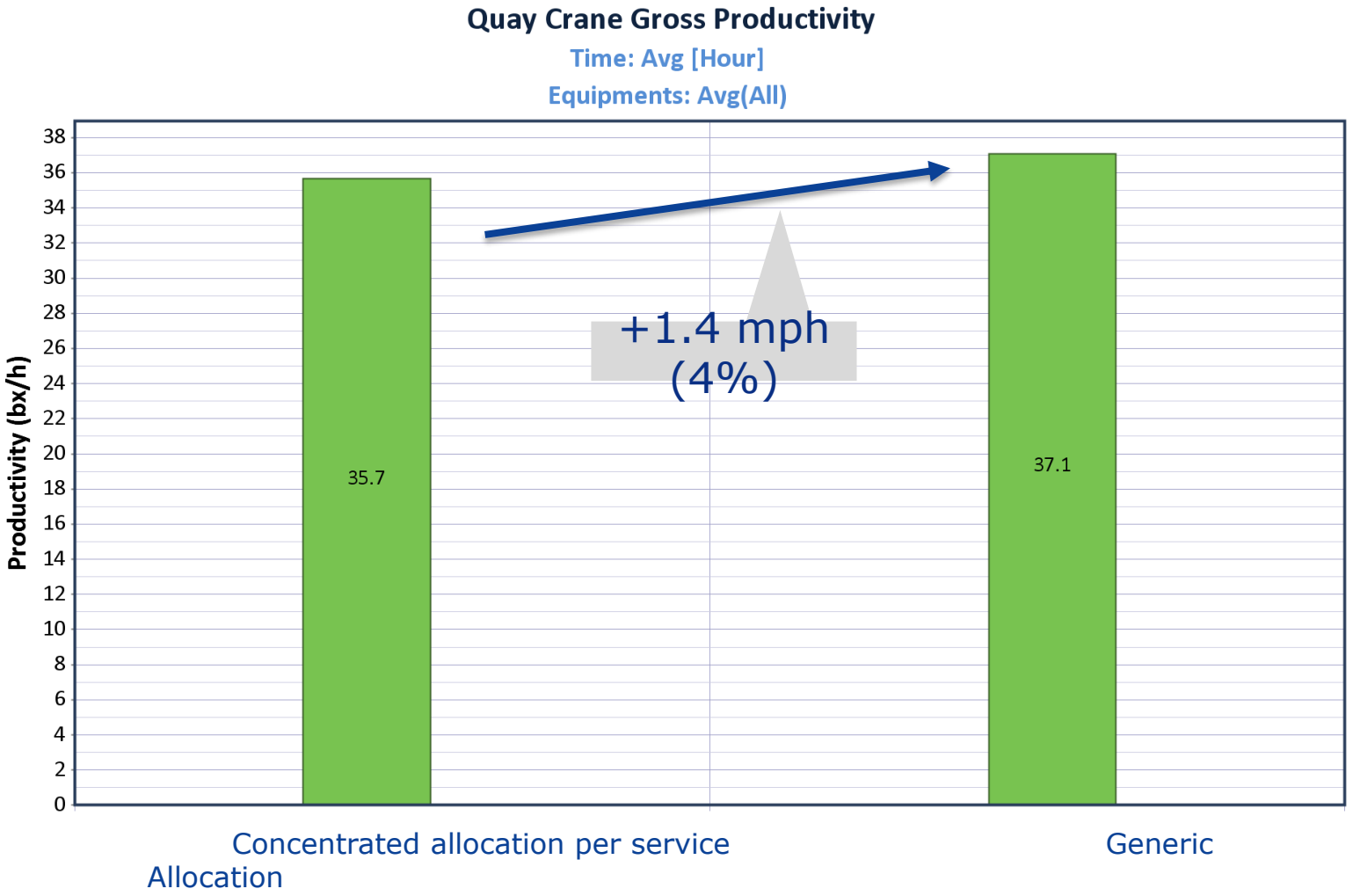
Dispersion of containers per Service & POD

- ☑ Better work distribution over RTG's
- ☑ Higher RTG productivity
- ☑ Higher performance during discharge (transshipment)
- ☑ More flexibility during loading
- ☑ Less congestion in the yard
- ☑ Less reservation of space
- ☑ Less planning
- ☒ More reliance on the TOS
- ☒ More dynamics during operations
- ☒ Yard coverage during "slow" hours

RTG / TT operation - Distributed imports
Large RTG facility (23 QCs)

- ☑ Better work distribution over RTG's
- ☑ Higher performance during discharge
- ☑ Less concentration during import delivery
- ☑ Lower truck turn time
- ☑ No housekeeping required
- ☑ Less planning
- ☒ Only possible during dense operations

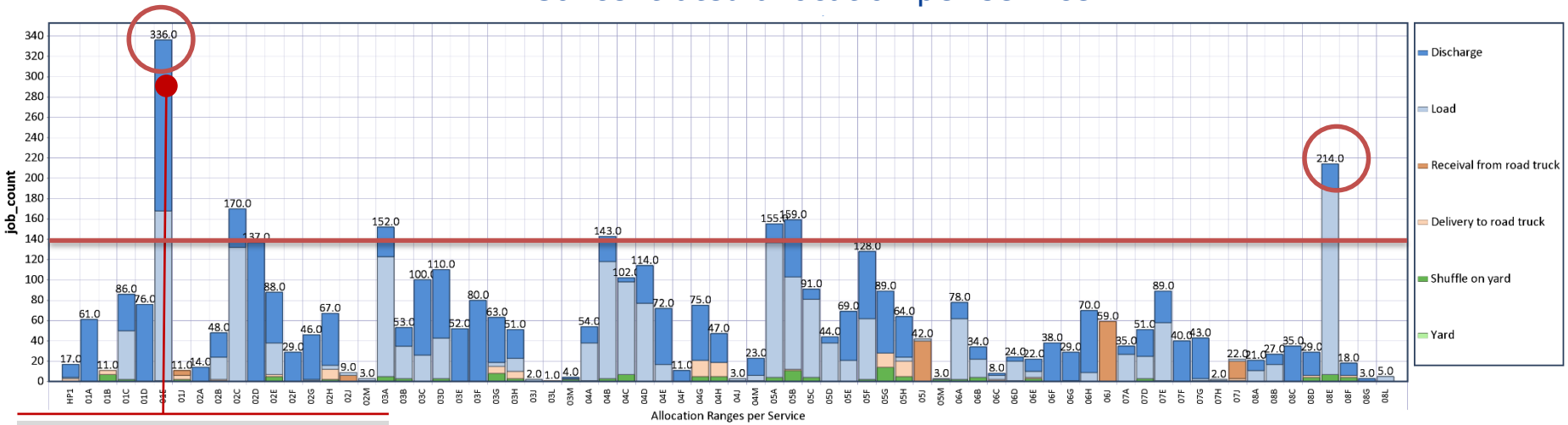
QC gross productivity
Large RTG facility (23 QCs)



- ✔ Using generic Allocation Ranges results in a higher Gross QC Productivity due to better utilization of equipment and better spread of workload.
- ✔ In addition, less yard space is used / reserved → yard capacity increase.

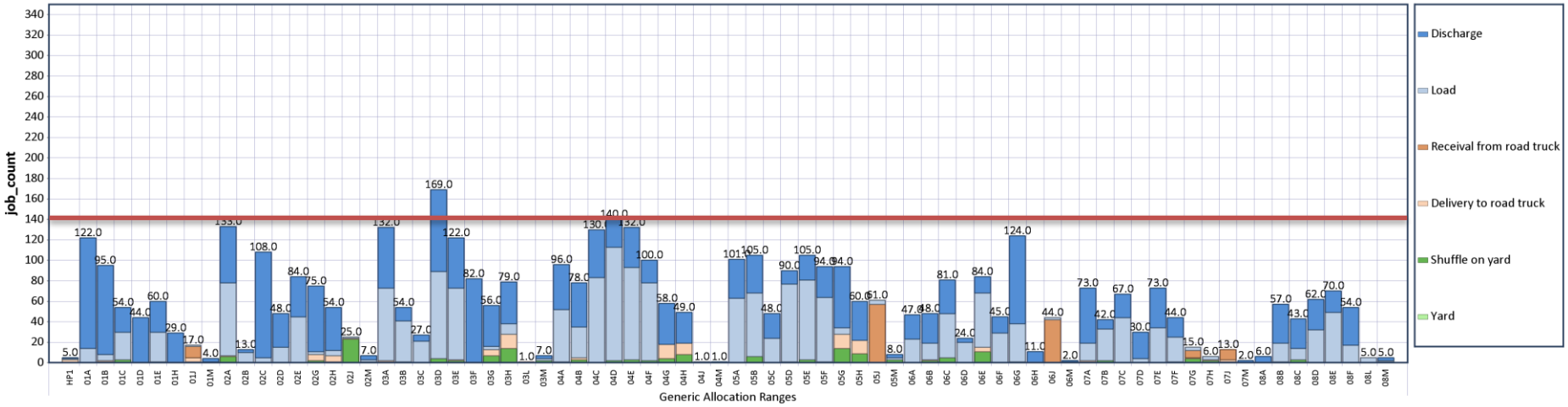
Distribution of jobs over the yard blocks per shift
Large RTG facility (23 QCs)

Concentrated allocation per service



Overloaded blocks

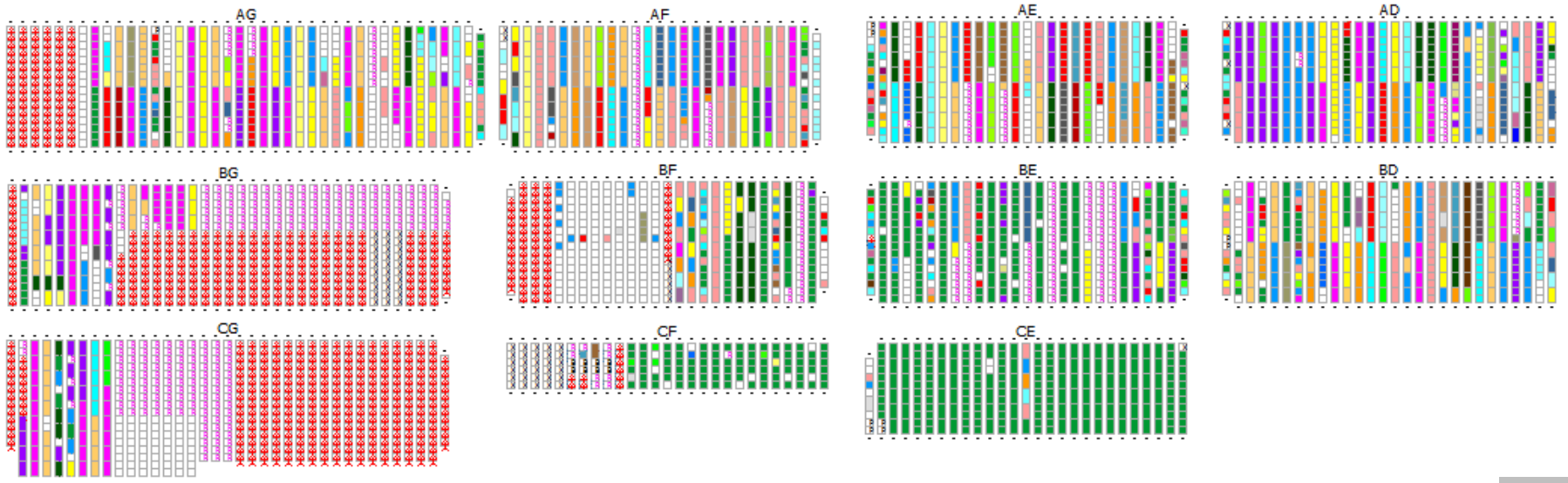
Generic Allocation



Automated decking in Straddle Carrier Terminal

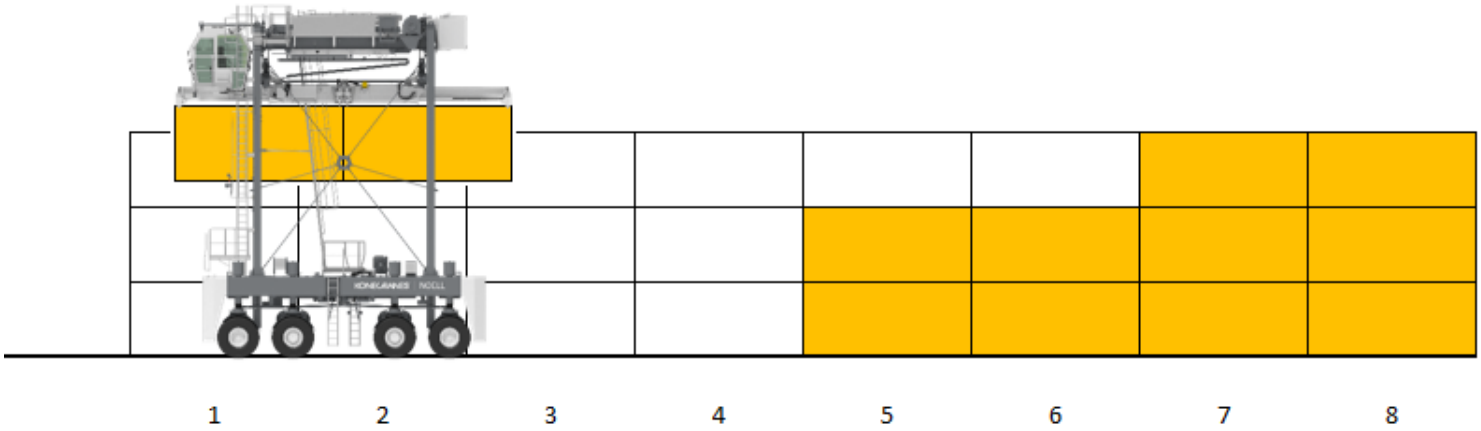
Decking in a straddle carrier terminal

- Similar (POD; service; size/type) containers are typically stored in the same (half) row.
- As soon as one container is placed in a row, that (half) row is reserved for that group of containers.
- This strategy result in reserved space that cannot be used other groups of containers

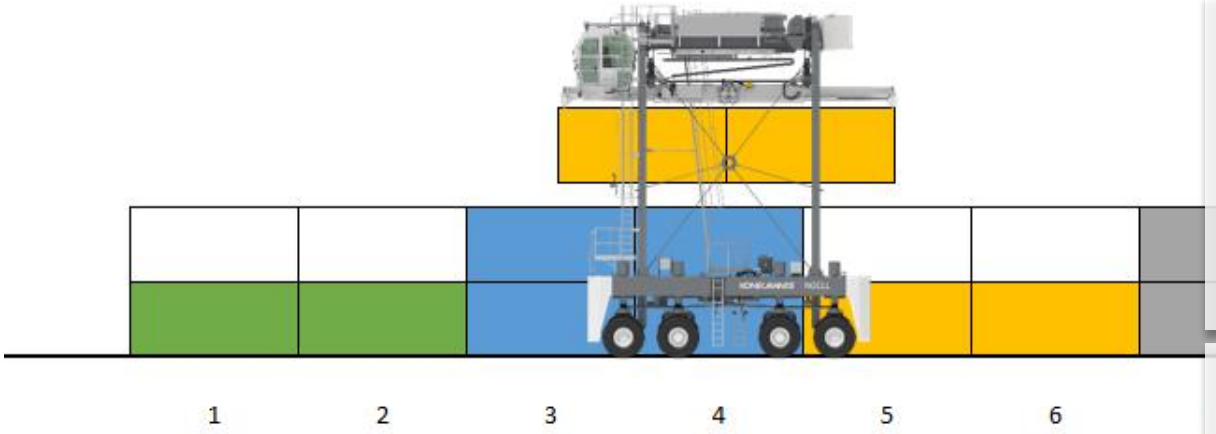


Decking of exports in a straddle carrier terminal Actual comparison of concepts (6M TEU straddle site)

Rows dedicated per group of containers (3 high)

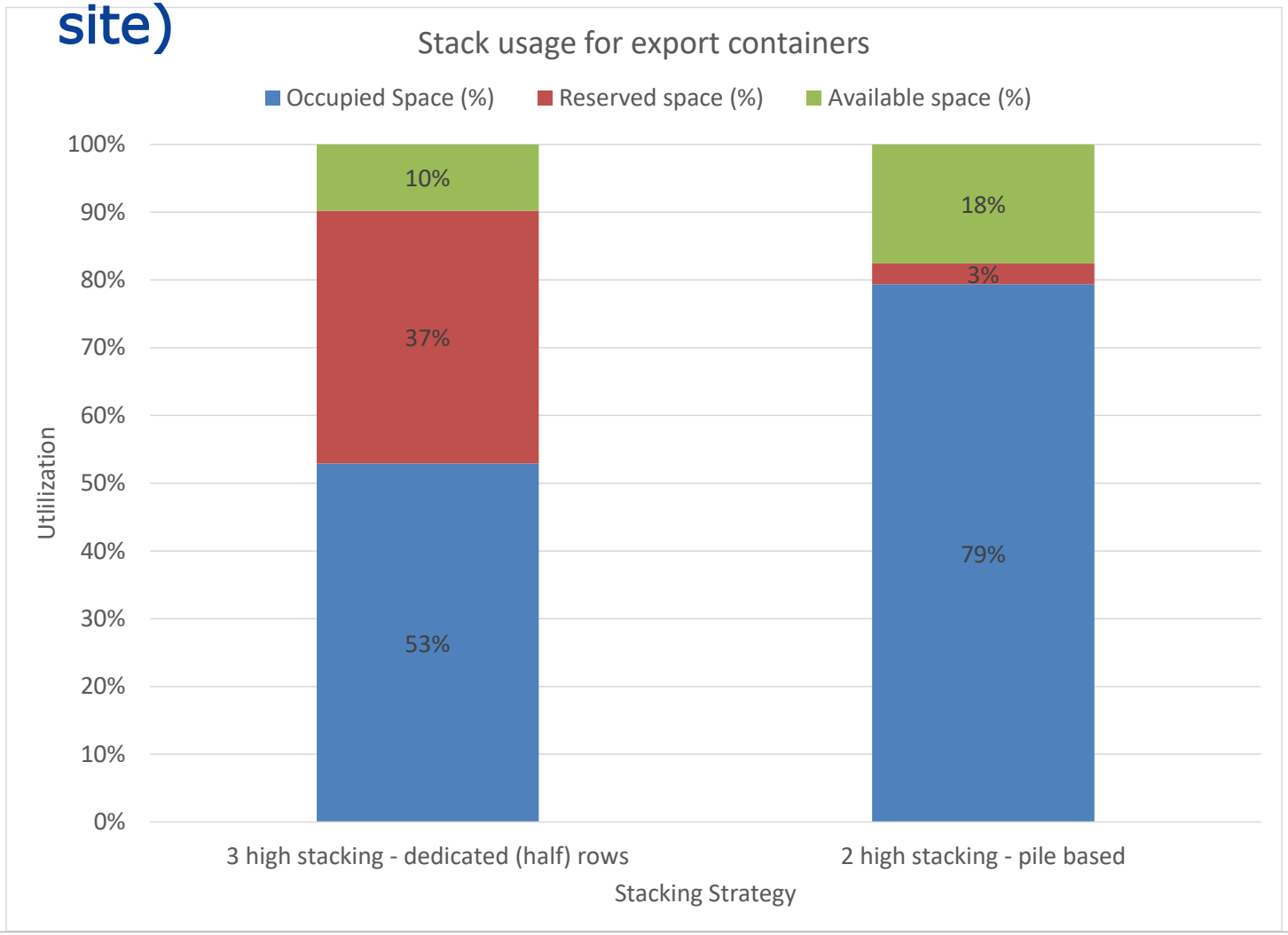


Pile based decking of containers (2 high)



- ☑ Better distribution of containers
- ☑ More flexibility during loading
- ☑ Less congestion in the yard
- ☑ Less reservation if space
- ☑ Less planning due to generic allocations
- ☒ More reliance on the TOS
- ☒ More dynamics during operations
- ☒ Requires accurate yard inventory

over 2 strad)
Actual comparison of concepts (6M TEU straddle site)



- ✔ Reservation of rows → high amount of unused but reserved slots → loss of space. Only 10% spare capacity.
- ✔ Pile based → only individual slots are reserved → very little reservation space → 18% spare capacity
- ✔ The pile based system increases capacity by 8%, while limiting height to 2 (meaning all boxes

Conclusions and remarks

Conclusions and remarks

- A well setup yard strategy can lead to:
  - Less space reservations and thus a better utilization of terminal space → 10 to 15% increase in yard capacity.
  - A better spread of workload over yard equipment → less bottlenecks in the yard.
  - Less unproductive moves for shuffling of boxes → more time for productive moves
  - Overall increase in QC productivity up to 15%.
  - Less time needed for planning as the system is in control.

- The system still relies on people:
  - Skilled people are needed
  - Analysis by experts and documentation is important. People need to understand the reasoning how it works and why it's setup in a certain way.
  - Yard strategy needs to be monitored, container flows can change over time → the yard strategy need to be adjusted

Contact Details

Thank you

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