

11th Trans Middle East, Doha 2015



# Automation in Container Terminals



**Regional Sales Manager**  
**[craig.halford@navis.com](mailto:craig.halford@navis.com)**  
**+971 566574811**

The navis N4 logo, which consists of the word "navis" in dark blue with a green arc above the 'i', and the number "N4" in a large, bold, green font below it. The logo is centered within a white square, which is itself centered within a black square.

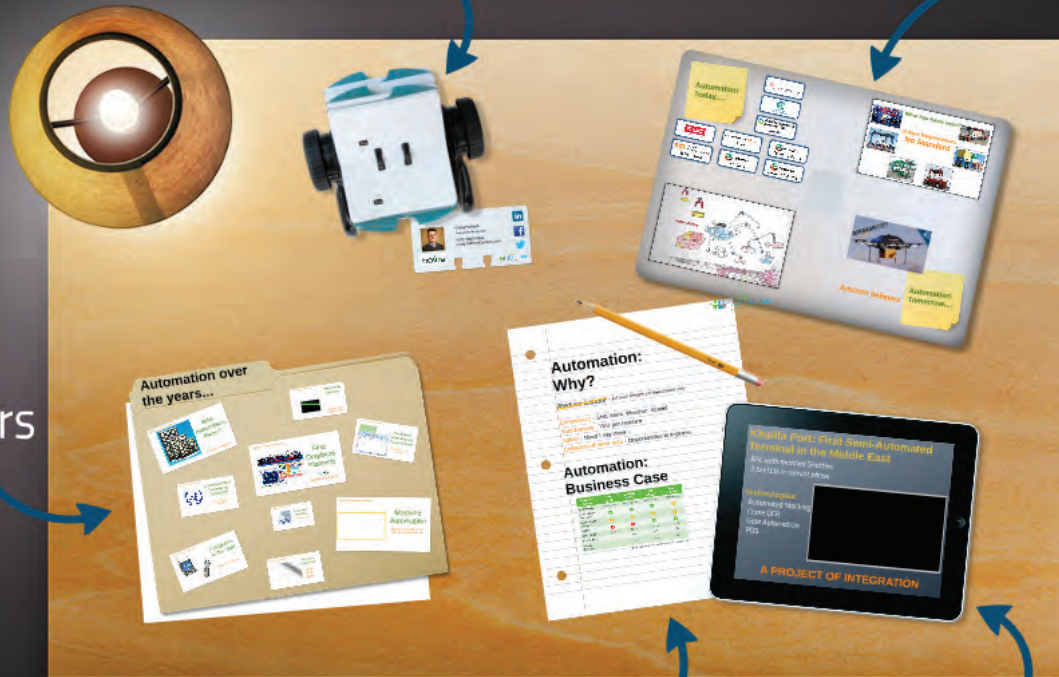
Contact Me

Today --> Tomorrow

Over the years

The Business Case

In the Region



11th Trans Middle East, Doha 2015

**navis** Automation in Container Terminals




Regional Sales Manager  
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Thank You..

# Automation over the years...

A journey through Automation...



Who remembers these?

T-Cards ~1960-70


A journey through Automation...



Mainframe Systems

Ability to create Printed Invoices

A journey through Automation...



First Graphical Planning

navis  
Established 1984

A journey through Automation...



Container Inventory via Spreadsheet

Data that can be searched

A journey through Automation...



Communication Developing Standards

UN / EDIFACT  
Fax and Email


A journey through Automation...



Paperless Invoicing

Regional Specific

A journey through Automation...



Machine Automation

Equipment moving without the direct aid of a person

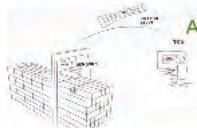
A journey through Automation...



Computers in the Yard

Real-Time Systems

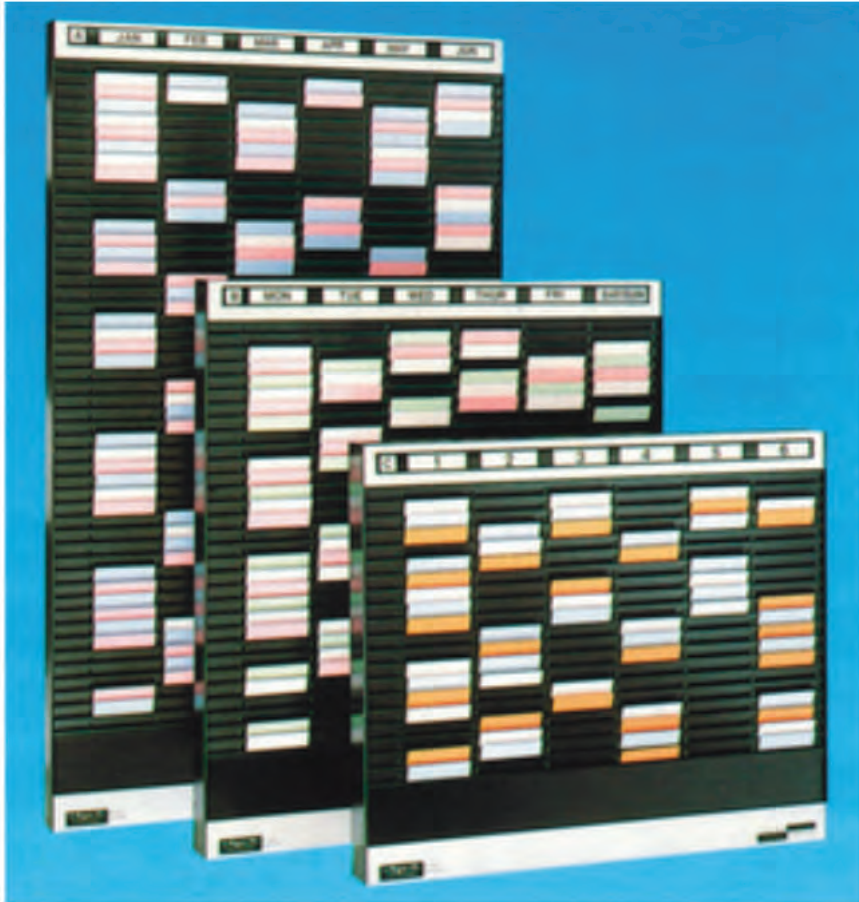
A journey through Automation...



Process Automation

GPS  
RFID  
OCR

*A journey through Automation...*



Who  
remembers  
these?

T-Cards ~1960-70

*A journey through Automation...*



```
Menu: FD24 26
CURRWA
FOOD DISTRIBUTION
-- Advance Sales Menu --

1. Order Entry
2. Route Recap
3. Staging Ticket
4. Picking Ticket
5. Order Posting
6. Bill Of Lading
7. Load Sheets
8. Order Entry Invoicing
9. Order Entry Confirmation
10. Order Entry Processing

11. Credit Memo Entry
12. Credit Memo Processing

13. Create Telxon/MSI Orders
14. Order Posting w/Scanner

15. Order List
16. Order Maintenance
17. Order Hold
18. Order Release
19. Order Cancellation
20. Order Change
21. Unsettled Invoice Report

22. -- Transaction Processing Menu --
23. -- Main Menu --
24. Sign Off

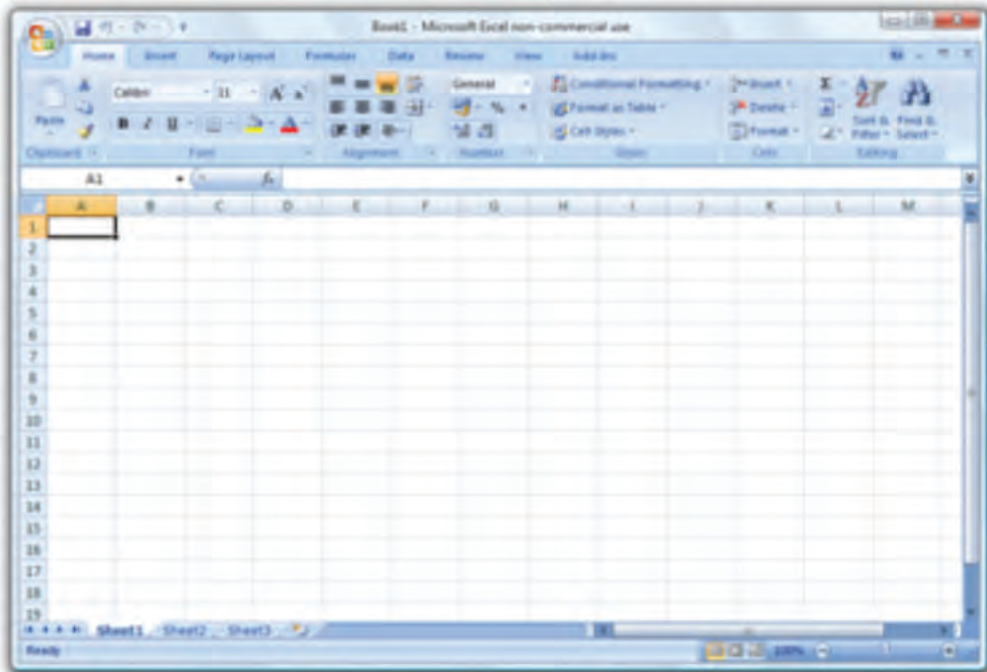
Ready for option number or command
==> 000
```

# Mainframe Systems



**Ability to create  
Printed Invoices**

*A journey through Automation...*



# Container Inventory via Spreadsheet

Data that can be  
searched

*A journey through Automation...*



# First Graphical Planning

navis®

Established 1984

*A journey through Automation...*



# Computers in the Yard

Real-Time Systems



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# Communication Developing Standards

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Fax and Email

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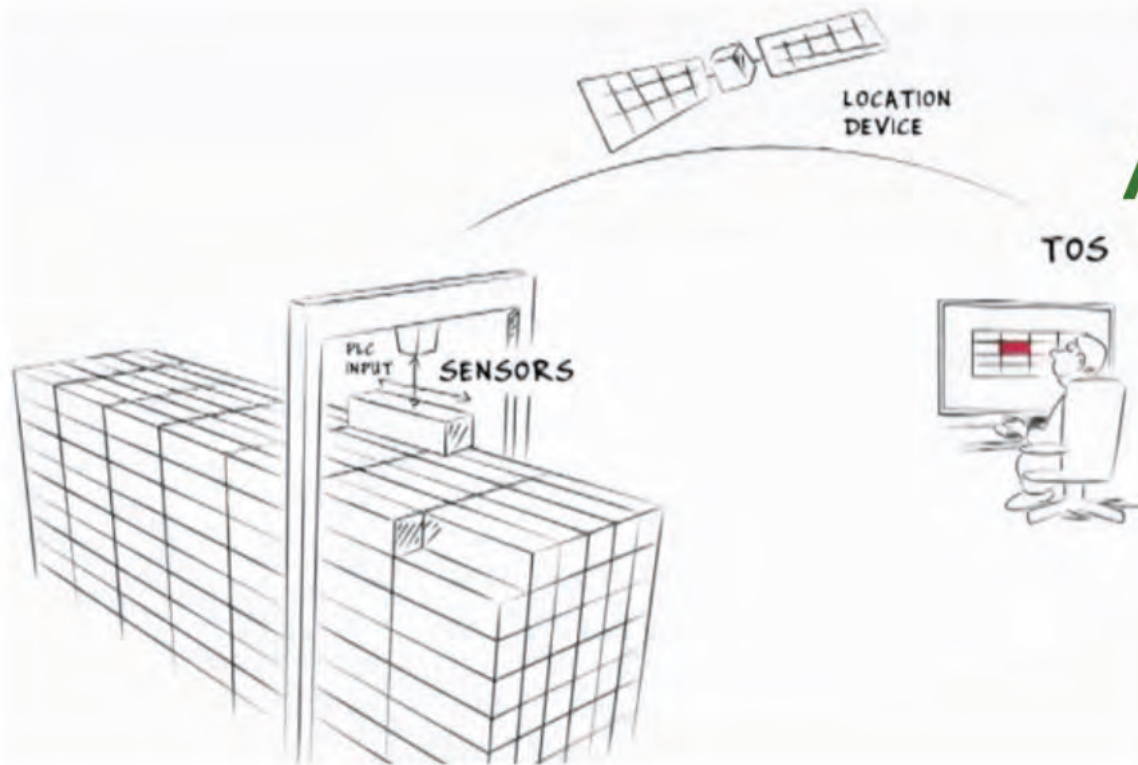


# Paperless Invoicing

Regional Specific

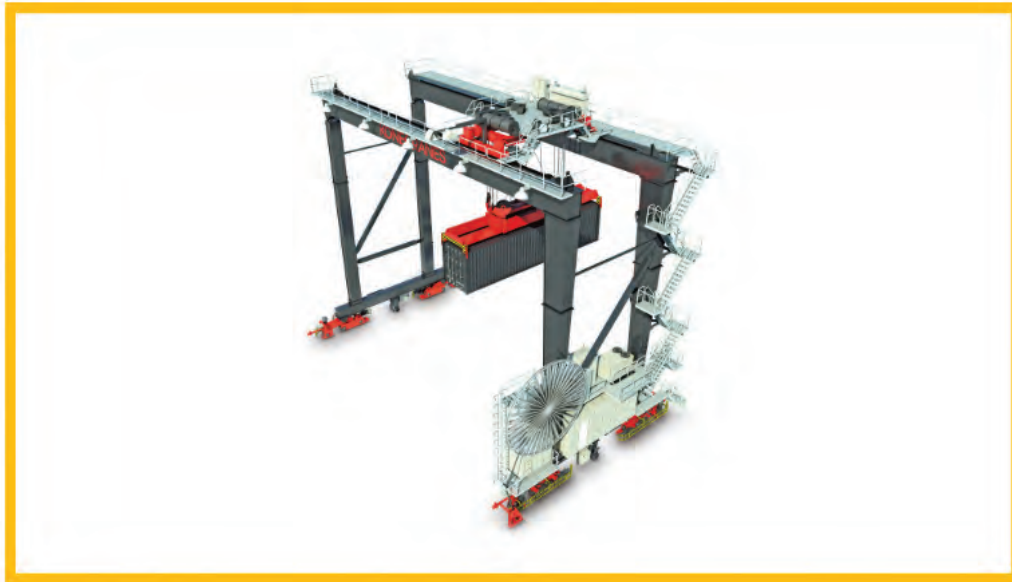
*A journey through Automation...*

# Process Automation



GPS  
RFID  
OCR

*A journey through Automation...*



# Machine Automation

Equipment moving without  
the direct aid of a person

# Automation: Why?

~~Reduce Labour~~ - 1st year Return on Investment only

**Consistency** - Shift Work, Weather, Speed

**Yard Density** - TEU per Hectare

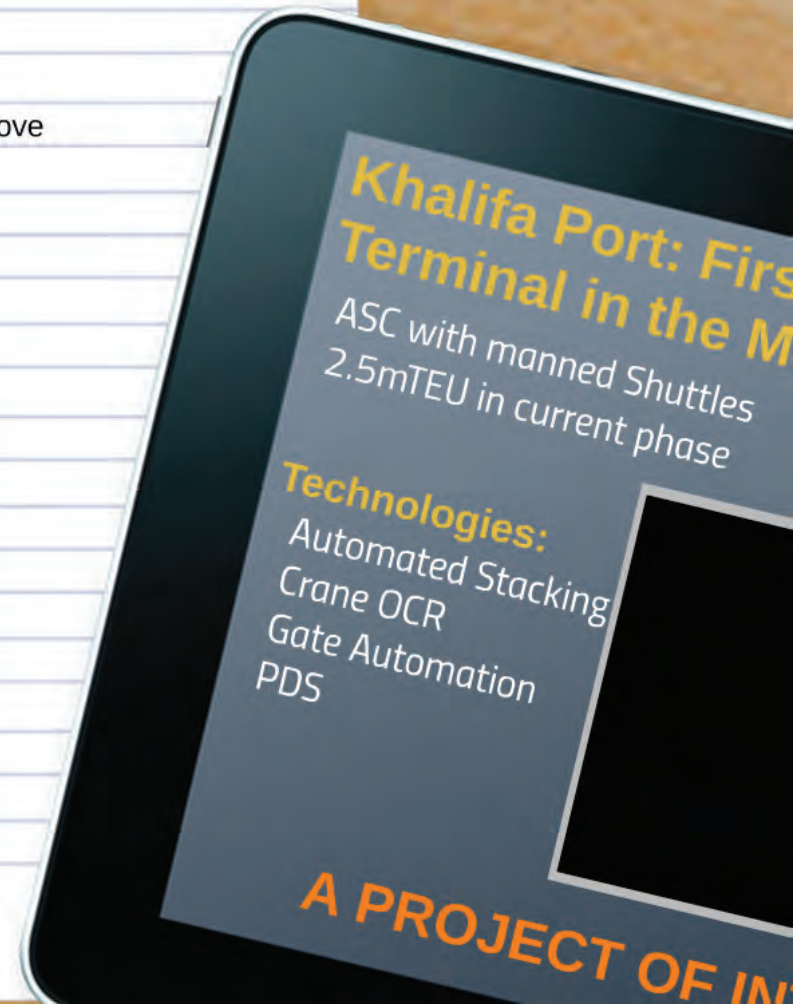
**Safety** - Need I say more...

**Collection of more data** - Opportunities to improve

# Automation: Business Case

Benchmark Criteria	RTG w/ TT	C-ARMG w/ TT	ASC w/a)SH	ASC w/ L-AGV
Yard Density	730 TEUs/Ha	900 TEUs/Ha	820 TEUs/Ha	770 TEUs/Ha
Service Level Waterside	●	●	●	●
Service Level Landside	●	●	●	●
Safety	●	●	●	●
OPEX (M \$)	34-62	29-50	27-38	25-32
CAPEX (M \$)	151	164	195	201
Energy (L/Move)	6.0	2.5	2.5	1.2

Note: Calculations for 1M TEUs Terminal. Source TBA.



**Khalifa Port: First Terminal in the M**  
 ASC with manned Shuttles  
 2.5mTEU in current phase

**Technologies:**  
 Automated Stacking  
 Crane OCR  
 Gate Automation  
 PDS

**A PROJECT OF IN**

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<i>Service Level Landside</i>	🟡	🟡	🟡	🟡
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Automation Today.....



Virginia International Terminals, LLC  
Virginia

RWG

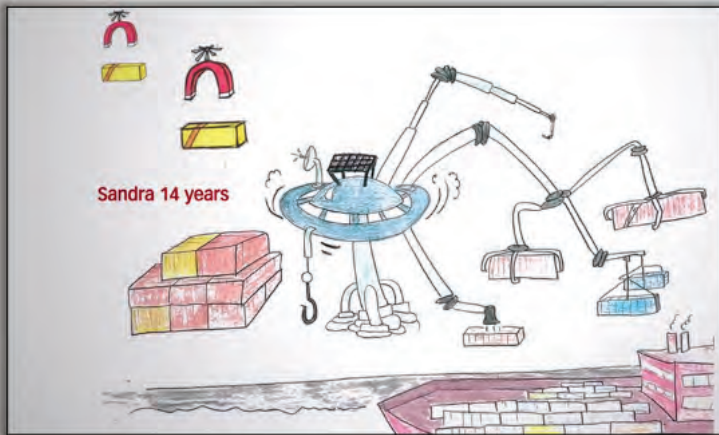
APM TERMINALS  
MVII

DP WORLD  
London Gateway

ect Europe Container Terminals  
ECT/Euromax

DP WORLD  
Brisbane

DP WORLD  
Antwerp Gateway



What has Navis seen?



Unique Requirements  
No Standard



Amazon believes

Automation Tomorrow.....



# Automation Today.....



Long Beach Container Terminal



مرفأ أبو ظبي  
ABU DHABI TERMINALS



Virginia International  
Terminals, LLC

Virginia



RECHTERSONDE WERELD CONTAINERS

APM TERMINALS  Lifting Global Trade.

MVII



DP WORLD

London Gateway



DP WORLD

Brisbane



DP WORLD

Antwerp Gateway

ect

Europe  
Container Terminals

ECT/Euromax

What has Navis seen?



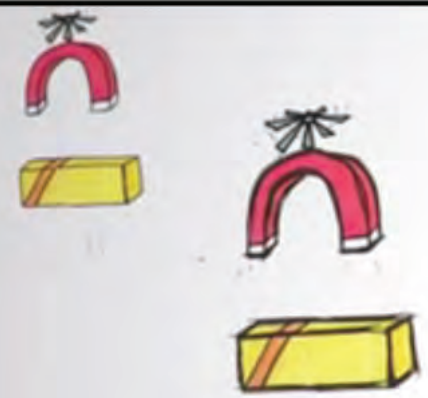
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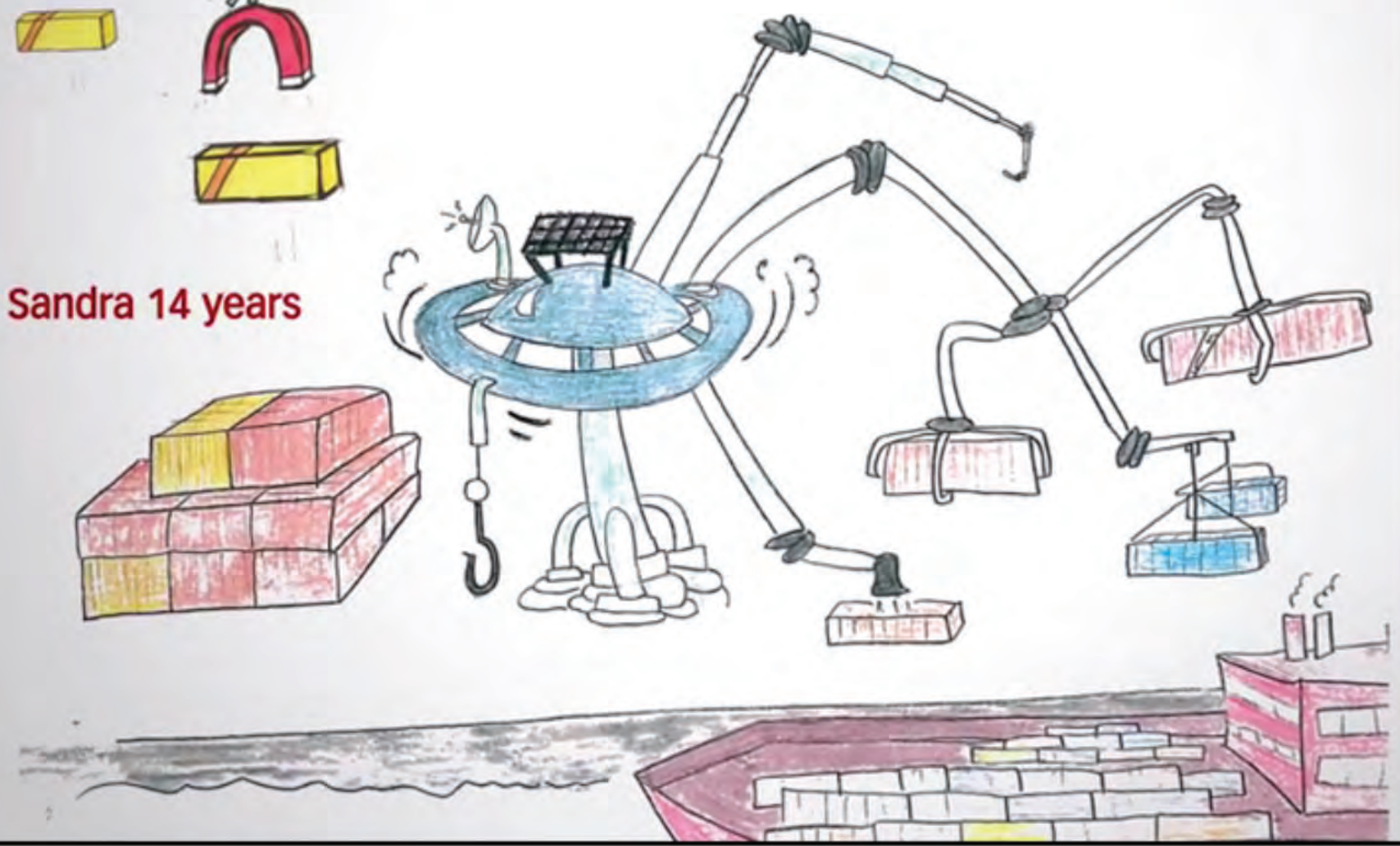


**Amazon believes**

**Automation  
Tomorrow....**



Sandra 14 years

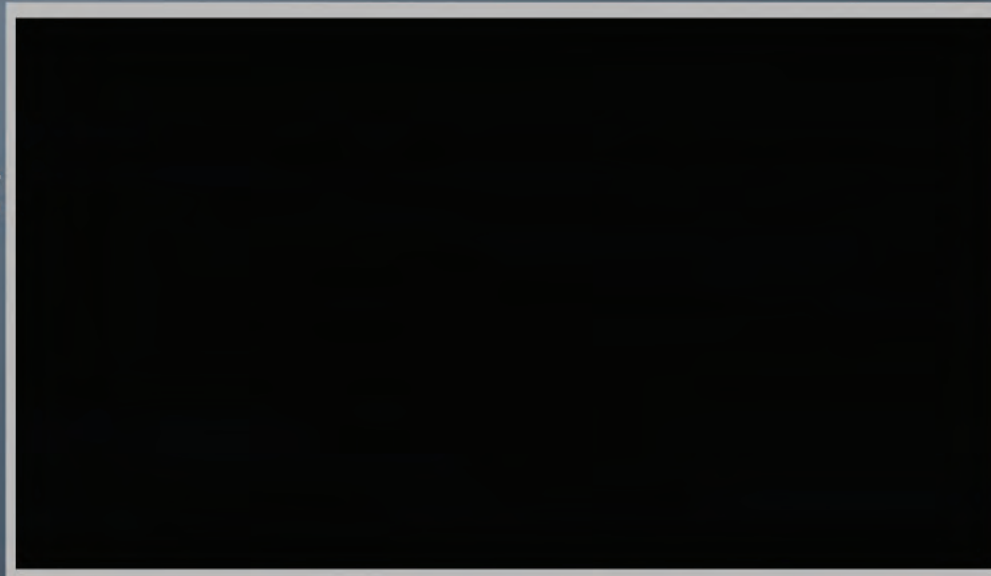


# Khalifa Port: First Semi-Automated Terminal in the Middle East

ASC with manned Shuttles  
2.5mTEU in current phase

## Technologies:

Automated Stacking  
Crane OCR  
Gate Automation  
PDS



**A PROJECT OF INTEGRATION**

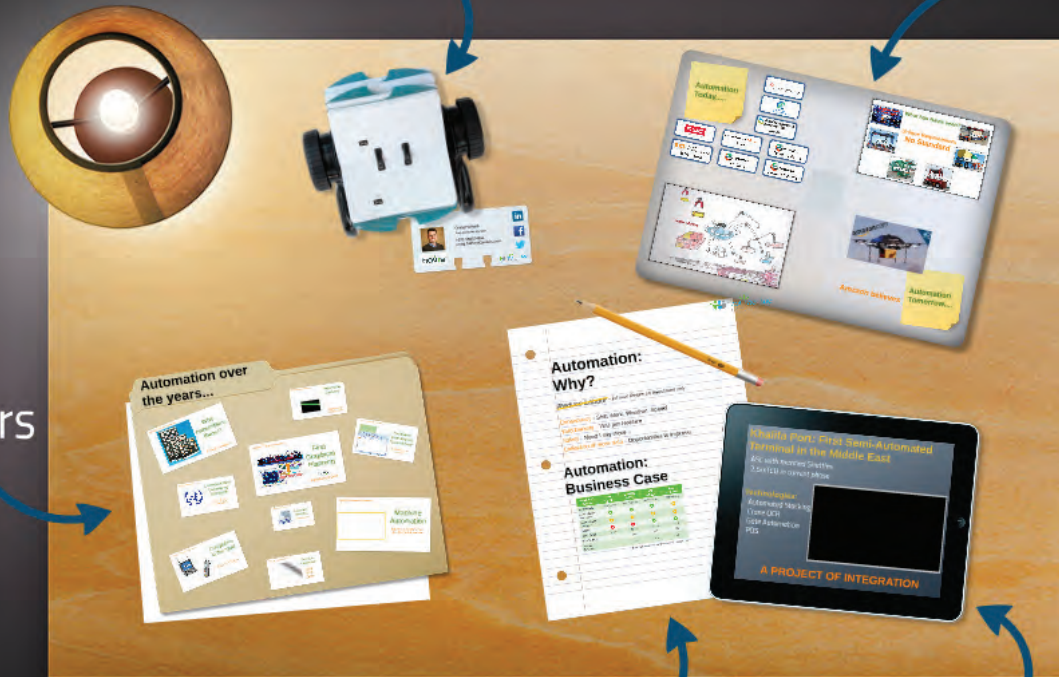
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