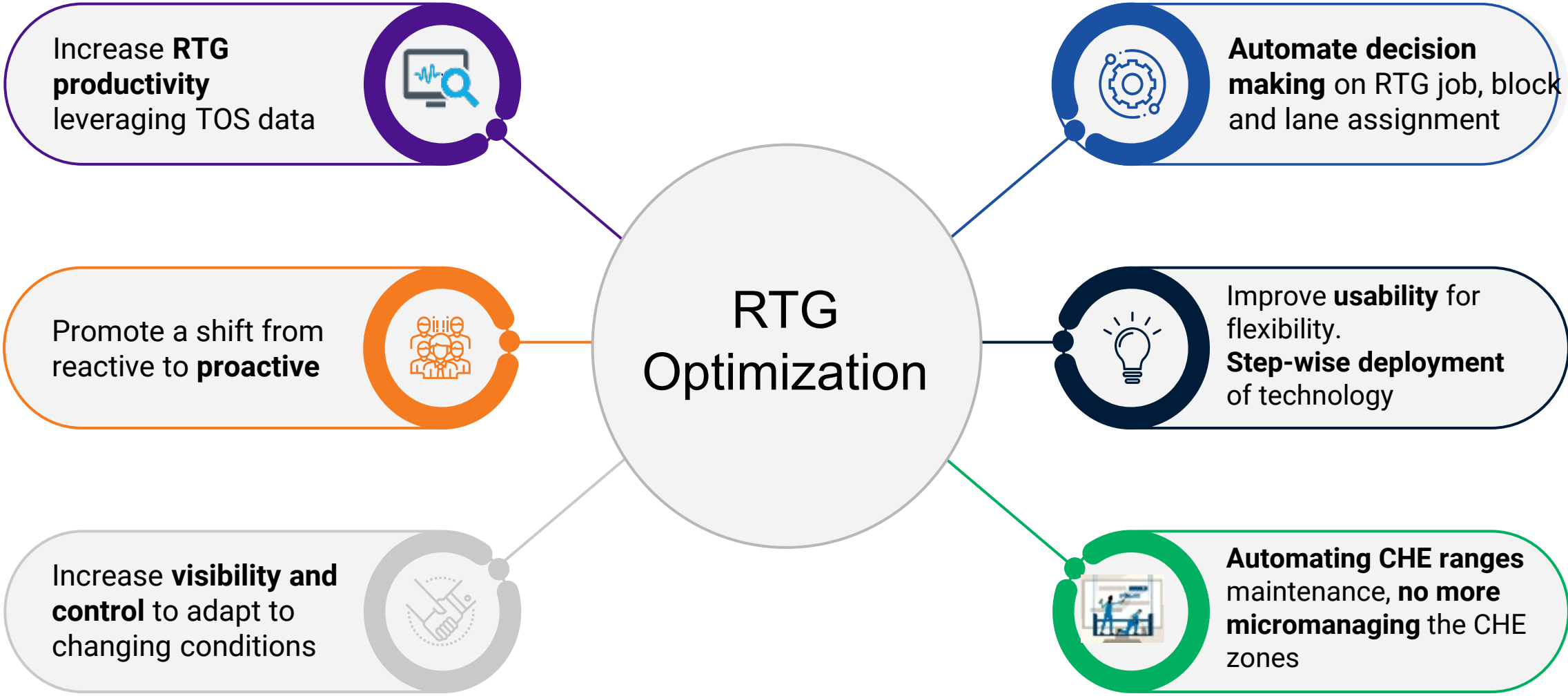# RTG Optimization & Automation

Date:
Prepared for:

AGENDA

- What is RTG Optimization?

- PTP Case Study

- Terminal's Journey to Automation

- Q&A

navis

KALERIS

RTG Optimization: Leveraging Holistic TOS Data

Increase **RTG productivity** leveraging TOS data

Automate decision **making** on RTG job, block and lane assignment

Promote a shift from reactive to **proactive**

Improve **usability** for flexibility. **Step-wise deployment** of technology

Increase **visibility and control** to adapt to changing conditions

Automating CHE ranges maintenance, **no more micromanaging** the CHE zones

RTG Optimization

PTP Overview

WE REMAIN
RESILIENT

CAGR: **17.2%** (2000 – 2021)

SARS

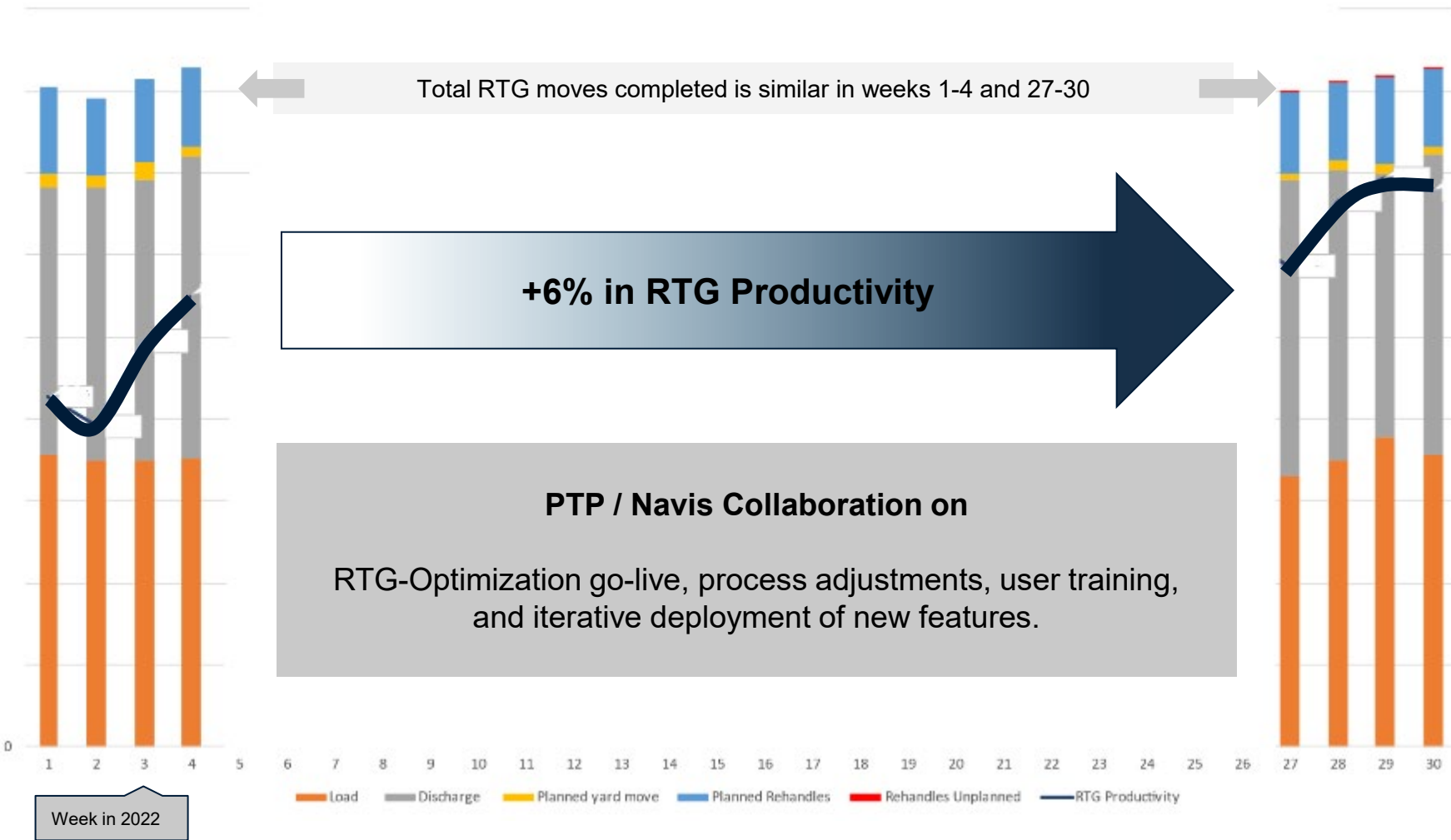GLOBAL RECESSION

H1N1

SHIPPING LINE CONSOLIDATION

COVID-19

TEU million

2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020	2021
0.4	2.7	3.5	4.8	5.6	6.5	7.7	8.5	8.3	9.0	9.85	11.2

0.4 / 2.0 / 2.7 / 3.5 / 4.0 / 4.2 / 4.8 / 5.5 / 5.6 / 6.0 / 6.5 / 7.5 / 7.7 / 7.6 / 8.5 / 9.1 / 8.3 / 8.4 / 9.0 / 9.1 / 9.85 / 11.2
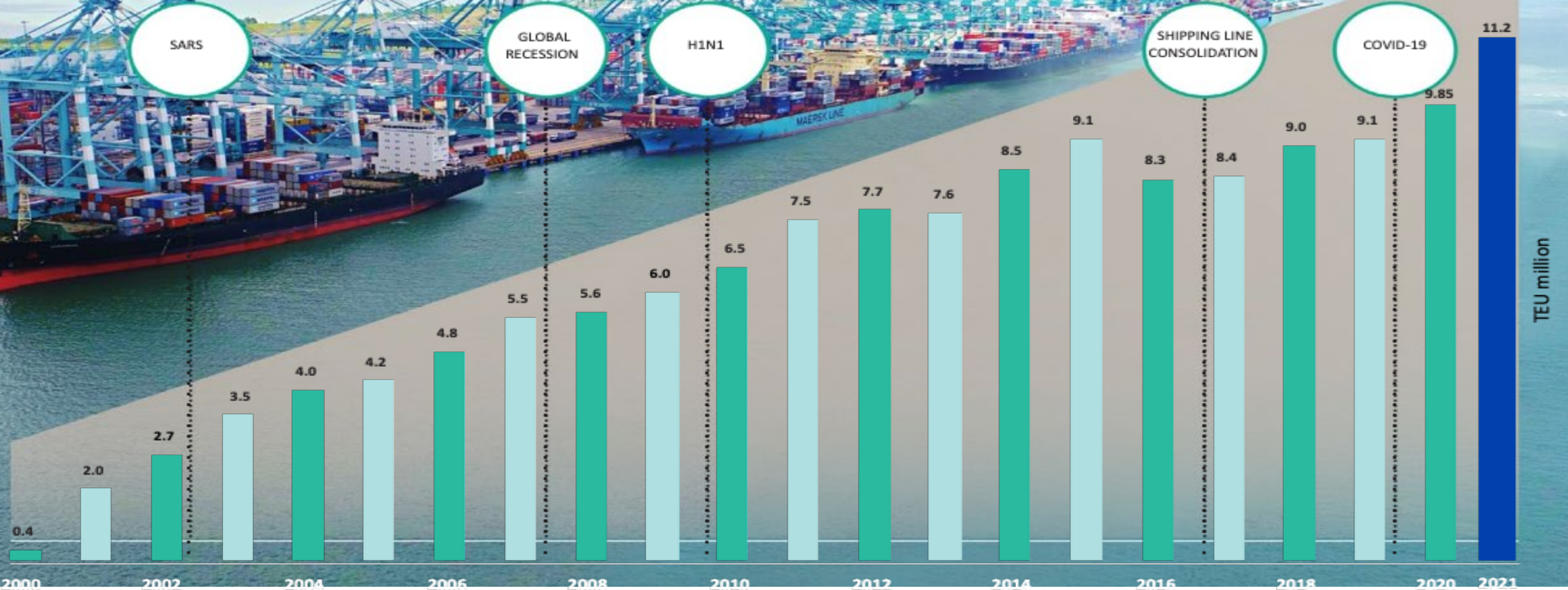
RTG Productivity Improvement with RTG

RTG moves and Productivity

Total RTG moves completed is similar in weeks 1-4 and 27-30

+6% in RTG Productivity

Preparation work to make RTG-O ready for a mega terminal.

PTP / Navis Collaboration on

RTG-Optimization go-live, process adjustments, user training, and iterative deployment of new features.

Ongoing deployment of new product features to further drive performance

Week in 2022

Load   Discharge   Planned yard move   Planned Rehandles   Rehandles Unplanned   RTG Productivity

RTG Productivity: the total number of RTG moves / hours between log-on/log-off events of all involved RTGs
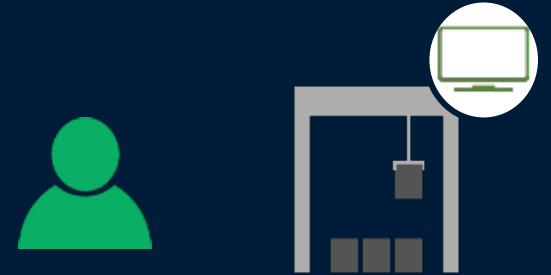
Every Terminal's Journey is Different

Supporting any stepwise deployment
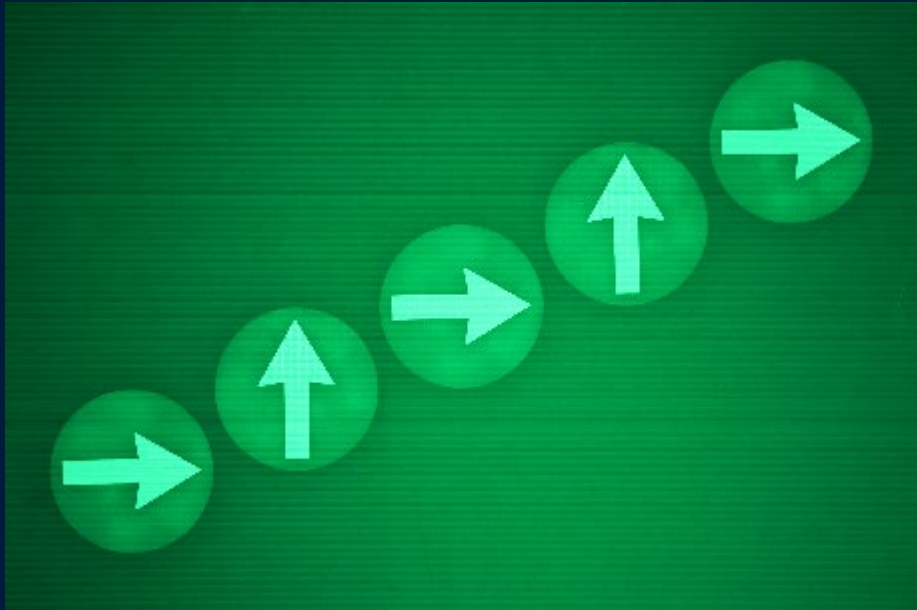
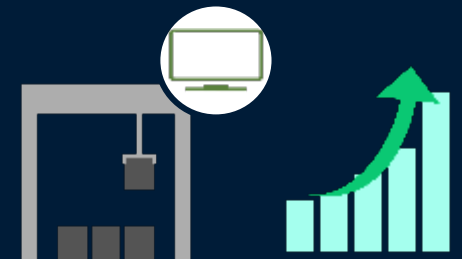What are the automation steps you are considering?

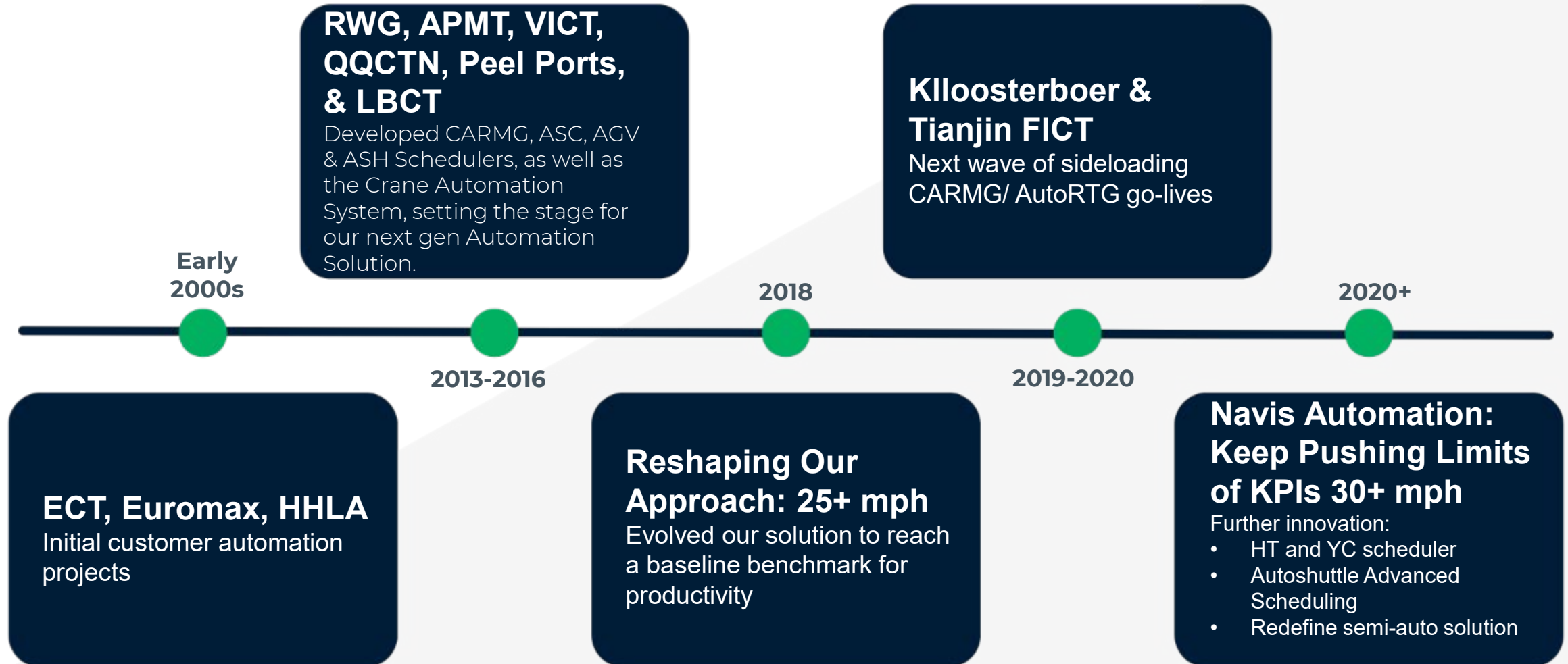**Conventional RTG Sites**

Remote Control RTGs

Pooled Driver Remote Control RTGs

Automated RTGs

Navis Automation Track Records

RWG, APMT, VICT, QQCTN, Peel Ports, & LBCT
Developed CARMG, ASC, AGV & ASH Schedulers, as well as the Crane Automation System, setting the stage for our next gen Automation Solution.

Klloosterboer & Tianjin FICT
Next wave of sideloading CARMG/ AutoRTG go-lives

Early 2000s

2018

2020+

2013-2016

2019-2020

ECT, Euromax, HHLA
Initial customer automation projects

Reshaping Our Approach: 25+ mph
Evolved our solution to reach a baseline benchmark for productivity

Navis Automation: Keep Pushing Limits of KPIs 30+ mph
Further innovation:
- HT and YC scheduler
- Autoshuttle Advanced Scheduling
- Redefine semi-auto solution

Navis' Vision on Curb Equipment Automation Solutions

Stay ahead of the curb by **switching from focussing solely deeply technical functions** (e.g., scheduling or equipment integration) to putting more emphasis on **higher level functions**
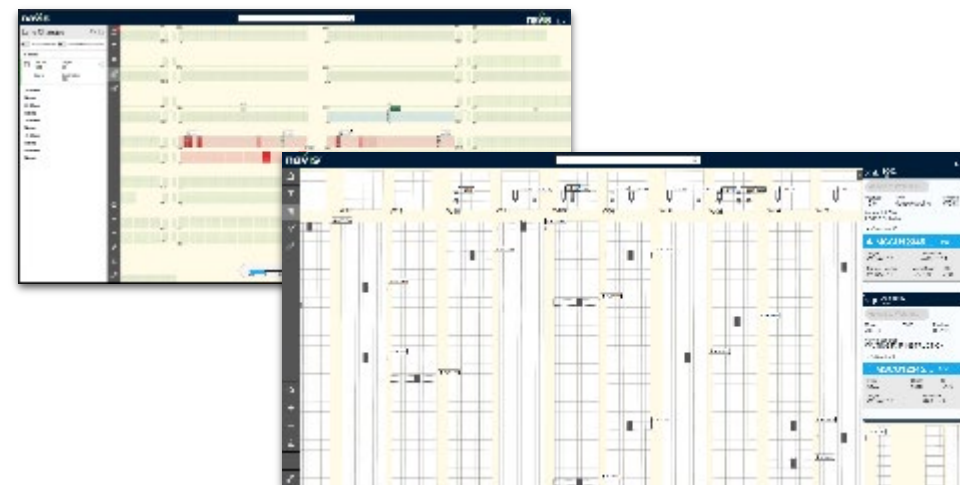
Goal: give users a **macrovision on operations**

Provide clear insights what the algorithm is doing and why
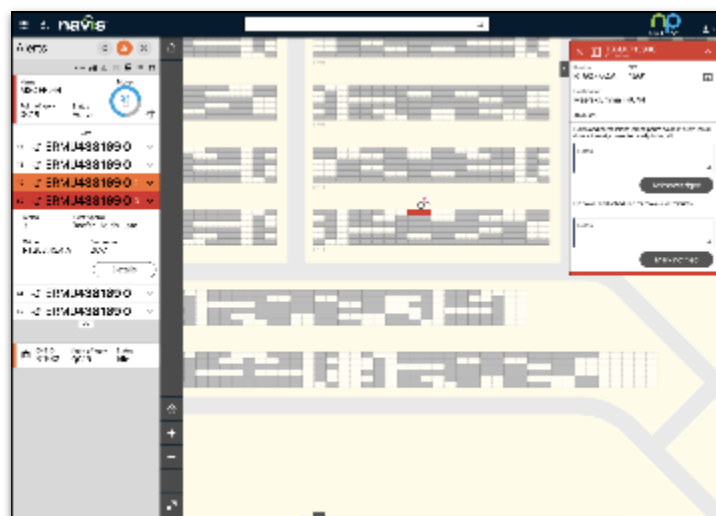
Alerts to promote proactiveness instead of reactiveness

Tool to manage yard performance

Navis Cloud & Hosted Products

Cloud-Based TOS

Cloud-Based Apps

navis SMARTSUITE

Berth Window Management Vessel Planning	**Compass** Vessel Planning	**Berth Optimization** Vessel Planning	**MACS3** Vessel Planning	**AI/ML** Optimization and Planning	**OpsView** Data Analytics
Smart Access Mobile Terminal	**Lashing** Mobile Terminal	**Hatch** Mobile Terminal	**Twist Locks** Mobile Terminal	**Reefer Monitor** Mobile Terminal	

navis N4SaaS

octopi by navis

master terminal by navis

Proven hosted solutions available live today

A more resilient supply chain starts here

350+
Fortune 1,000 Shippers

490+
Marine Terminals

91,000
Connected Carriers

80+
Countries

300+
Truck Yards

500+
Repair Shops

150+
Rail Sites

"Navis adds a vital mode to our customer ecosystem and uniquely positions our platform to unlock new value for shippers, carriers, terminals, and asset owners through significant efficiency and productivity gains.

They can pass this productivity through to their customers, delivering better outcomes for everyone through a connected, visible, sustainable supply chain."

Kirk Knauff
CEO, Kaleris & Navis

Navis joins Kaleris as the premier brand for terminal and vessel operating solutions worldwide

KALERIS   navis

Thank You

Please reach out to Gabriel.ong@navis.com
with any additional questions.