Approaching 100% Automation at the Gate

Jeff Necciai, Sr. VP, Technology & Innovation
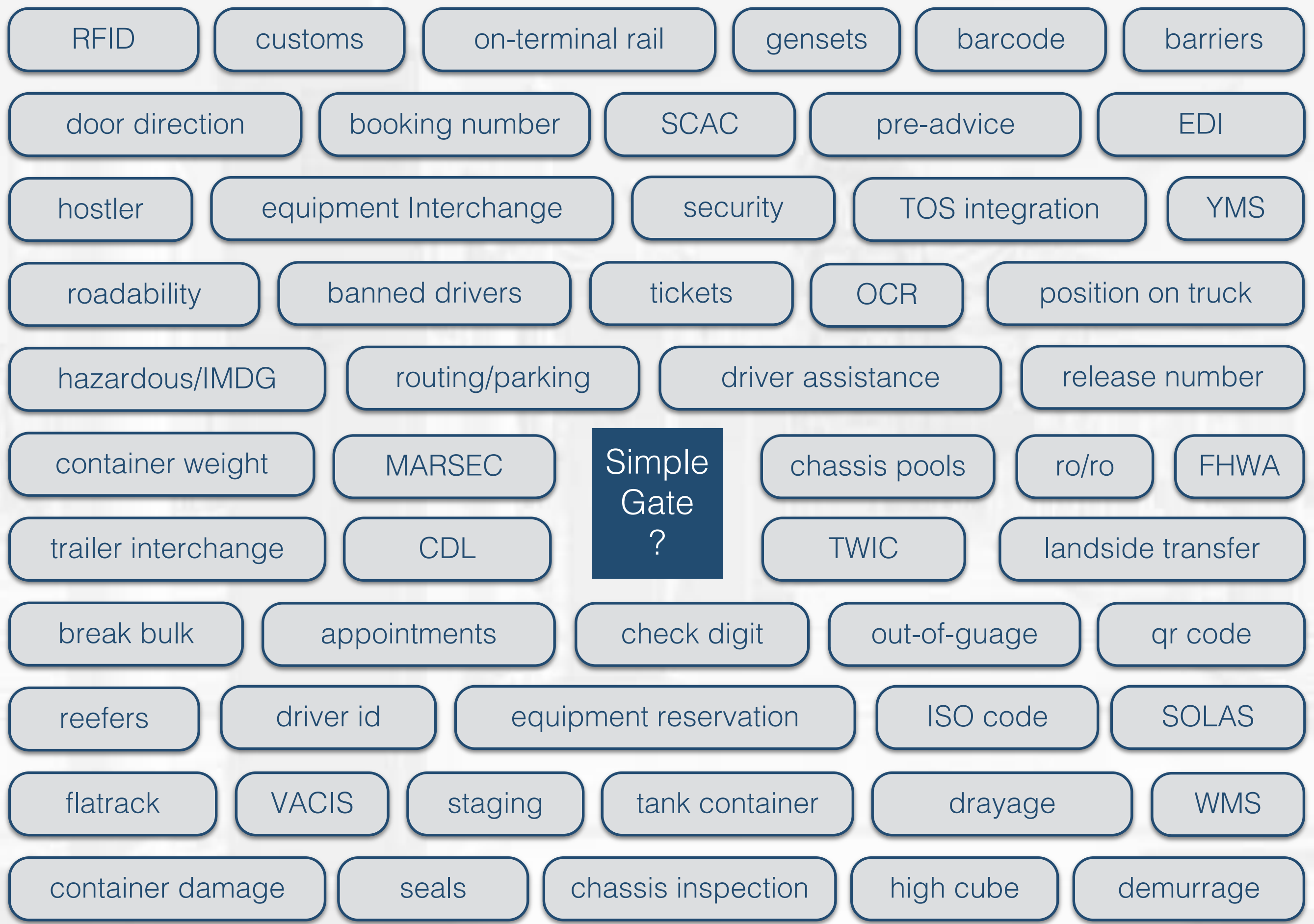
Wednesday, March 27, 2019
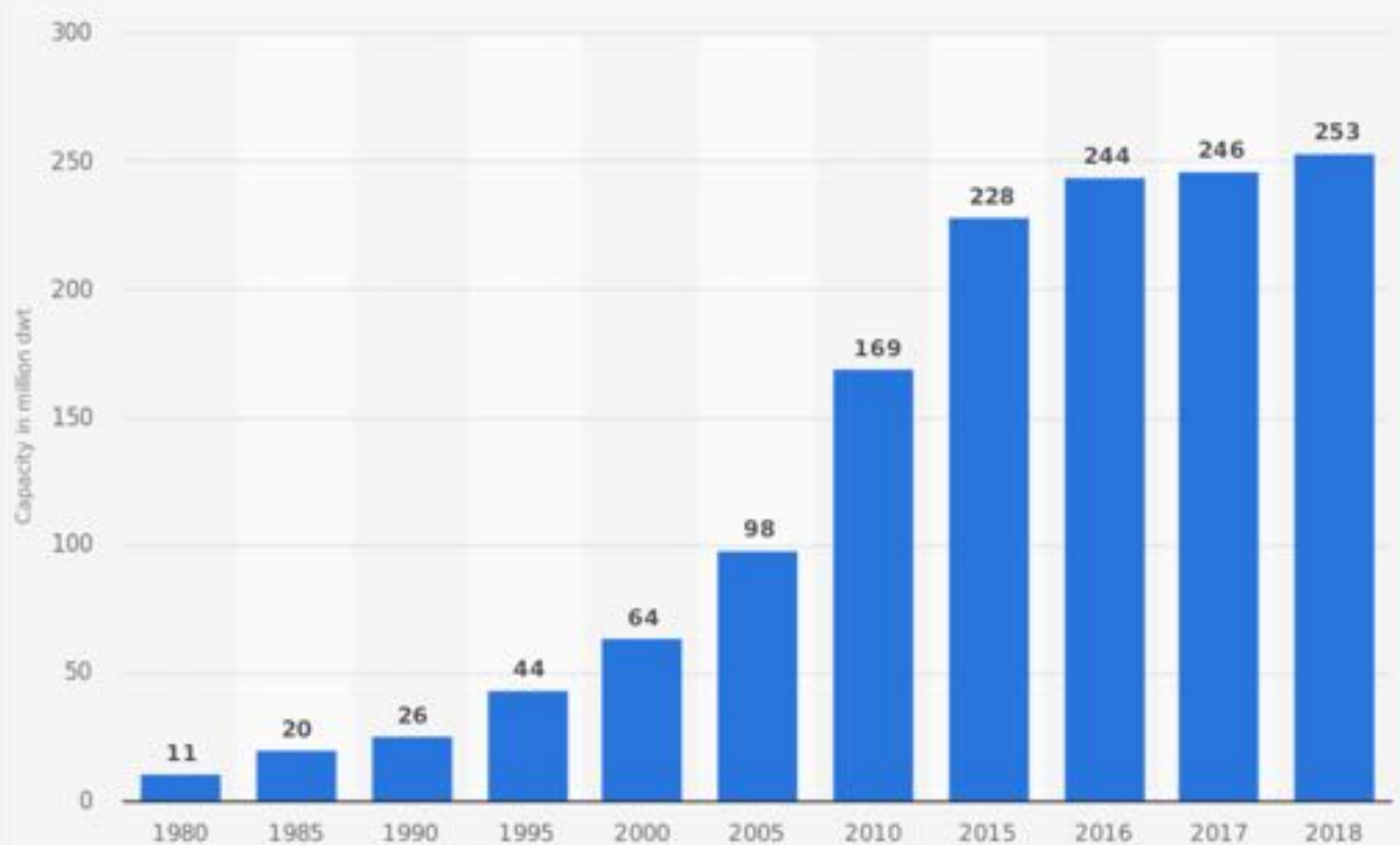
Simple Gate

RFID customs on-terminal rail gensets barcode barriers

door direction booking number SCAC pre-advice EDI

hostler equipment Interchange security TOS integration YMS

roadability banned drivers tickets OCR position on truck

hazardous/IMDG routing/parking driver assistance release number

container weight MARSEC **Simple Gate ?** chassis pools ro/ro FHWA

trailer interchange CDL TWIC landside transfer

break bulk appointments check digit out-of-guage qr code

reefers driver id equipment reservation ISO code SOLAS

flatrack VACIS staging tank container drayage WMS

container damage seals chassis inspection high cube demurrage

Capacity of container ships in seaborne trade from 1980 to 2018 (in million dwt)*

Capacity in million dwt

Year	Capacity
1980	11
1985	20
1990	26
1995	44
2000	64
2005	98
2010	169
2015	228
2016	244
2017	246
2018	253

Approaching 100% Automation at the Gate

First Wave

(approx. 1975 - 1995)

- Sporadic adoption of general technology

- Handheld Interactive Computer Terminals

- RFID, CCTV, Gate Pedestals

- Clerks/checkers in the lanes

- Most data entered manually or manually checked

- No truly "automated" gate transaction
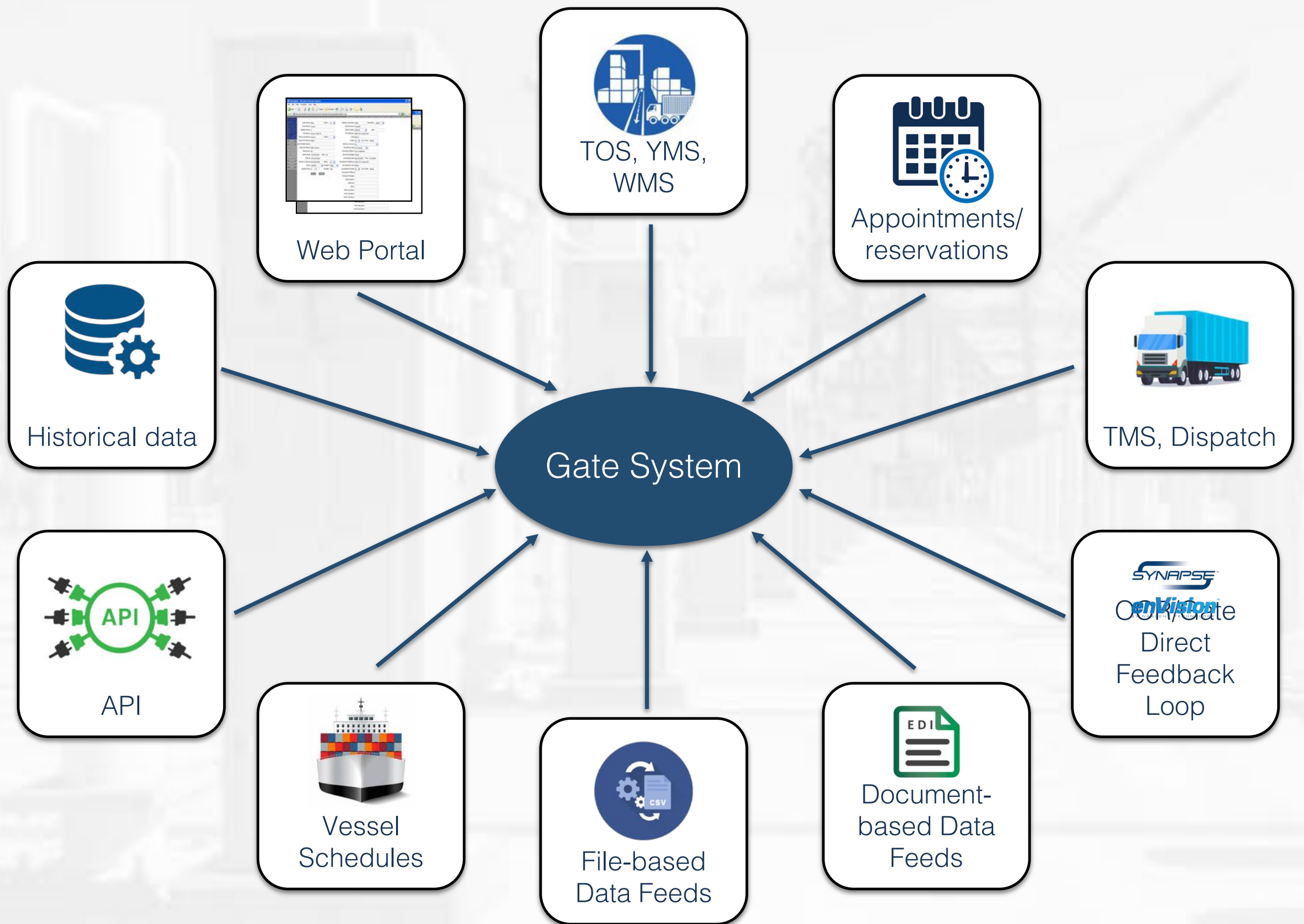
Second Wave

(approx. 1995 - 2015)

- Purpose-built technology

- OCR and Imaging

- Remote operation

- TMS & Appointments

- Mobile technology

- Clerks/inspectors in the "kitchen"

- Heightened security and regulation

- Abundance of information from detached sources

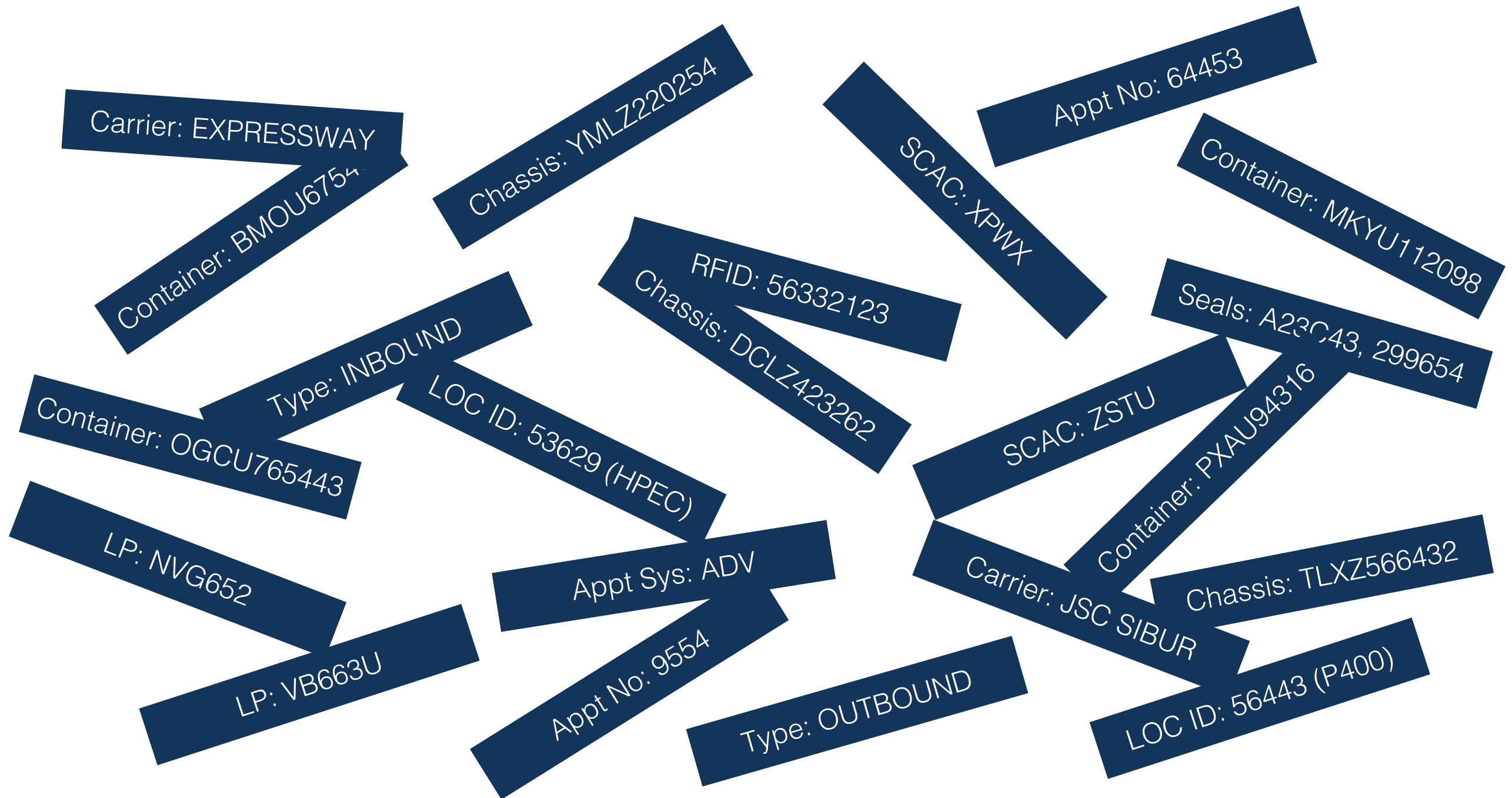- Very few (if any) truly "automated" gate transactions
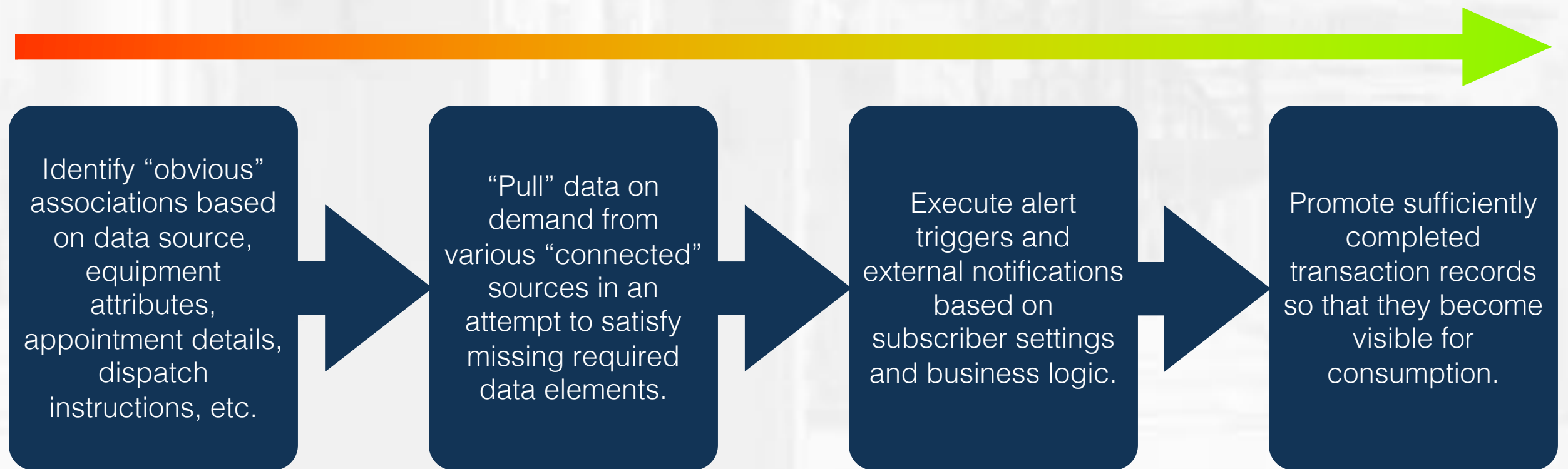
Third Wave

(approx. 2015 - ?)

- A "connected" awareness of supply chain activities

- Machine learning and AI techniques

- Data aggregation and advanced analytics
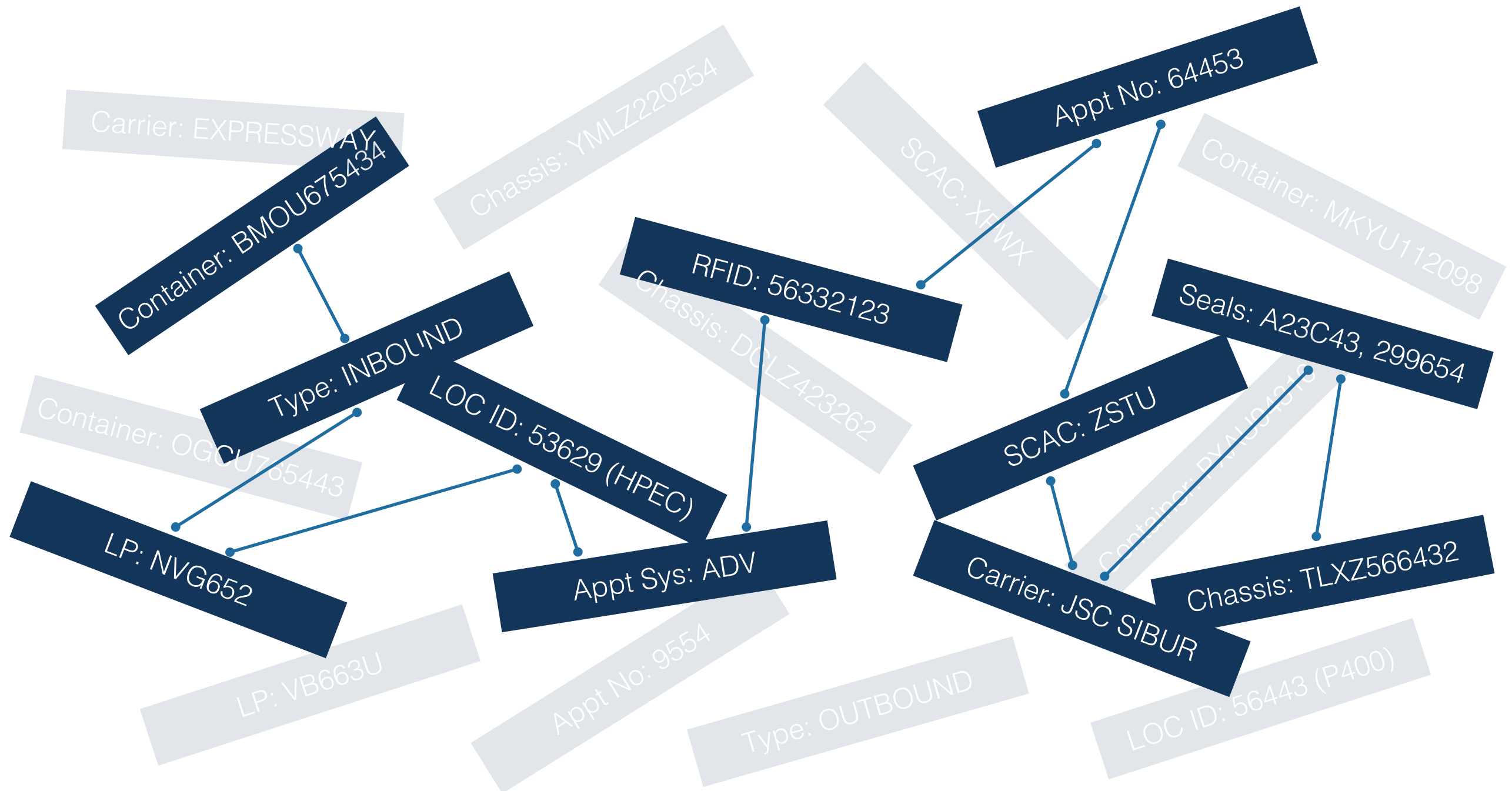
Web Portal

TOS, YMS, WMS

Appointments/ reservations

Historical data

Gate System

TMS, Dispatch

API

OCR/Gate Direct Feedback Loop

Vessel Schedules

File-based Data Feeds

Document-based Data Feeds

Approaching 100% Automation at the Gate

Lots of data - multiple sources

Carrier: EXPRESSWAY

Container: BMOU6754

Chassis: YMLZ220254

SCAC: XPWX

Appt No: 64453

Container: MKYU112098

RFID: 56332123

Chassis: DCLZ423262

Seals: A23C43, 299654

Type: INBOUND

LOC ID: 53629 (HPEC)

Container: OGCU765443

SCAC: ZSTU

Container: PXAU94316

LP: NVG652

LP: VB663U

Appt Sys: ADV

Appt No: 9554

Type: OUTBOUND

Carrier: JSC SIBUR

Chassis: TLXZ566432

LOC ID: 56443 (P400)

Assemble meaningful data

Identify "obvious" associations based on data source, equipment attributes, appointment details, dispatch instructions, etc.

"Pull" data on demand from various "connected" sources in an attempt to satisfy missing required data elements.

Execute alert triggers and external notifications based on subscriber settings and business logic.

Promote sufficiently completed transaction records so that they become visible for consumption.

Make connections and identify pending transactions

Carrier: EXPRESSWAY

Container: BMOU675434

Chassis: YMLZ220254

Appt No: 64453

SCAC: XFWX

Container: MKYU112098

Type: INBOUND

RFID: 56332123

Chassis: DCLZA23262

Seals: A23C43, 299654

LOC ID: 53629 (HPEC)

Container: OGCU765443

SCAC: ZSTU

Container: RXAU04949

LP: NVG652

Appt Sys: ADV

Carrier: JSC SIBUR

Chassis: TLXZ566432

LP: VB663U

Appt No: 9554

Type: OUTBOUND

LOC ID: 56443 (P400)

Using portal to match conveyance to transaction data

RFID

Container OCR

Chassis OCR

LPR

e-Seals

Match to pre-assembled transaction data

Other real-time data collection at the portal

Advanced image analytics
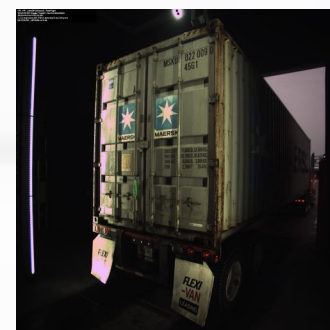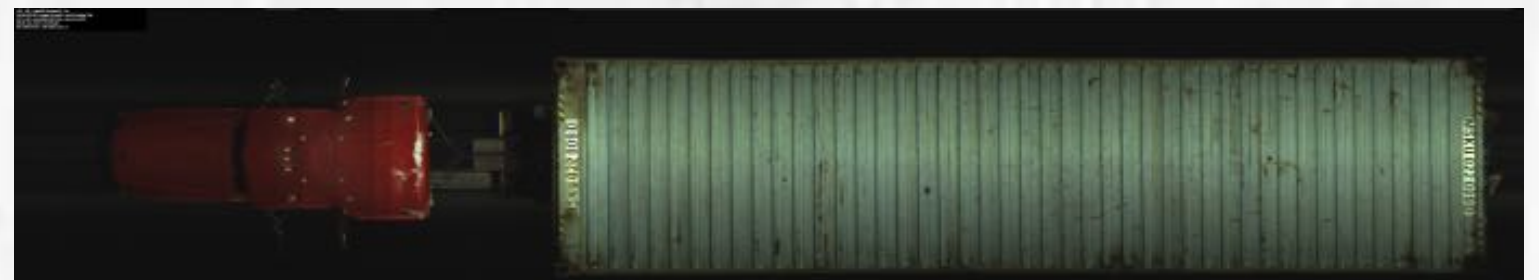
Pattern recognition

AI/machine learning
(supervised, unsupervised & reinforcement)

Surface-scanning lasers

More…

✓ Damage/anomaly detection

✓ Hazard placard identification

✓ Seal detection

✓ Door direction

✓ Position on truck

✓ Weight (WIM scale)
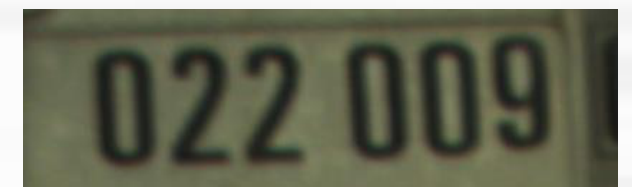
After the portal, we know

- Full intention and purpose of the visit

- Inbound AND outbound mission(s)

- Likelihood of container damage(s)

- Issues with hazardous placards or lack of seals

- More…

Target:
65 - 80%
of container
traffic

…all of the required information to satisfy a transaction without the truck needing to come to a stop at the gate.

The Vision

- Well-coordinated, free-flowing non-stop gate experience

- Kiosk/lanes used for exception cases only

Think about this…

- One of the largest public transportation providers in the U.S. doesn't own a single car

- The largest movie company in the U.S. doesn't own any movie theaters

- The largest hotel company in the world doesn't own a single hotel

- One of the nation's largest retailers doesn't really own any traditional stores

Thank You.

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