TRAXENS
real data for logistics excellence

The Coming of Age of Smart Containers

Hanane BECHA, Ph.D.

SMDG 16th March 2017

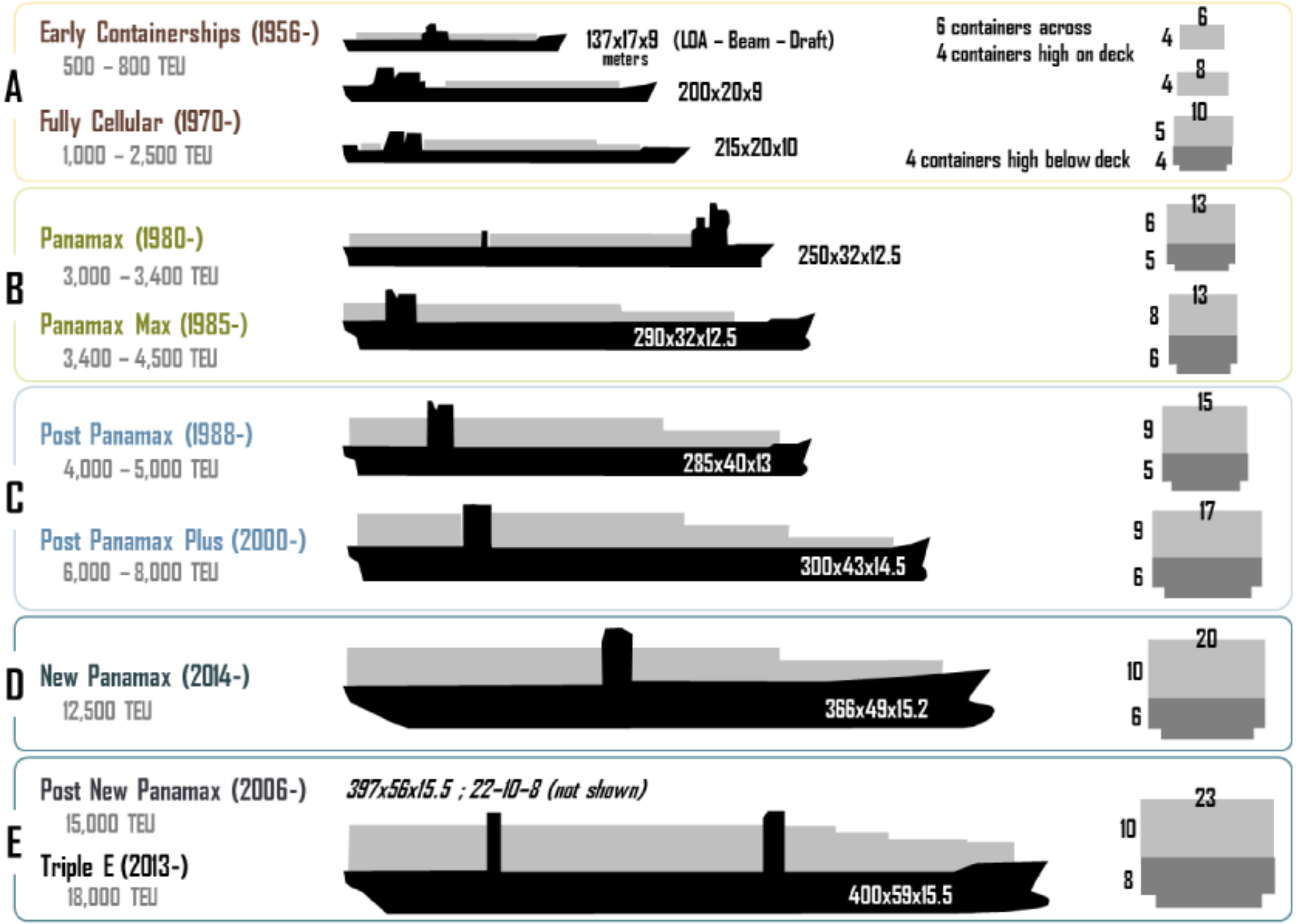
The Coming of Age of Smart Containers

- What exactly are they?
- Why now?
- What for?
- How are they used?
- How do they work?

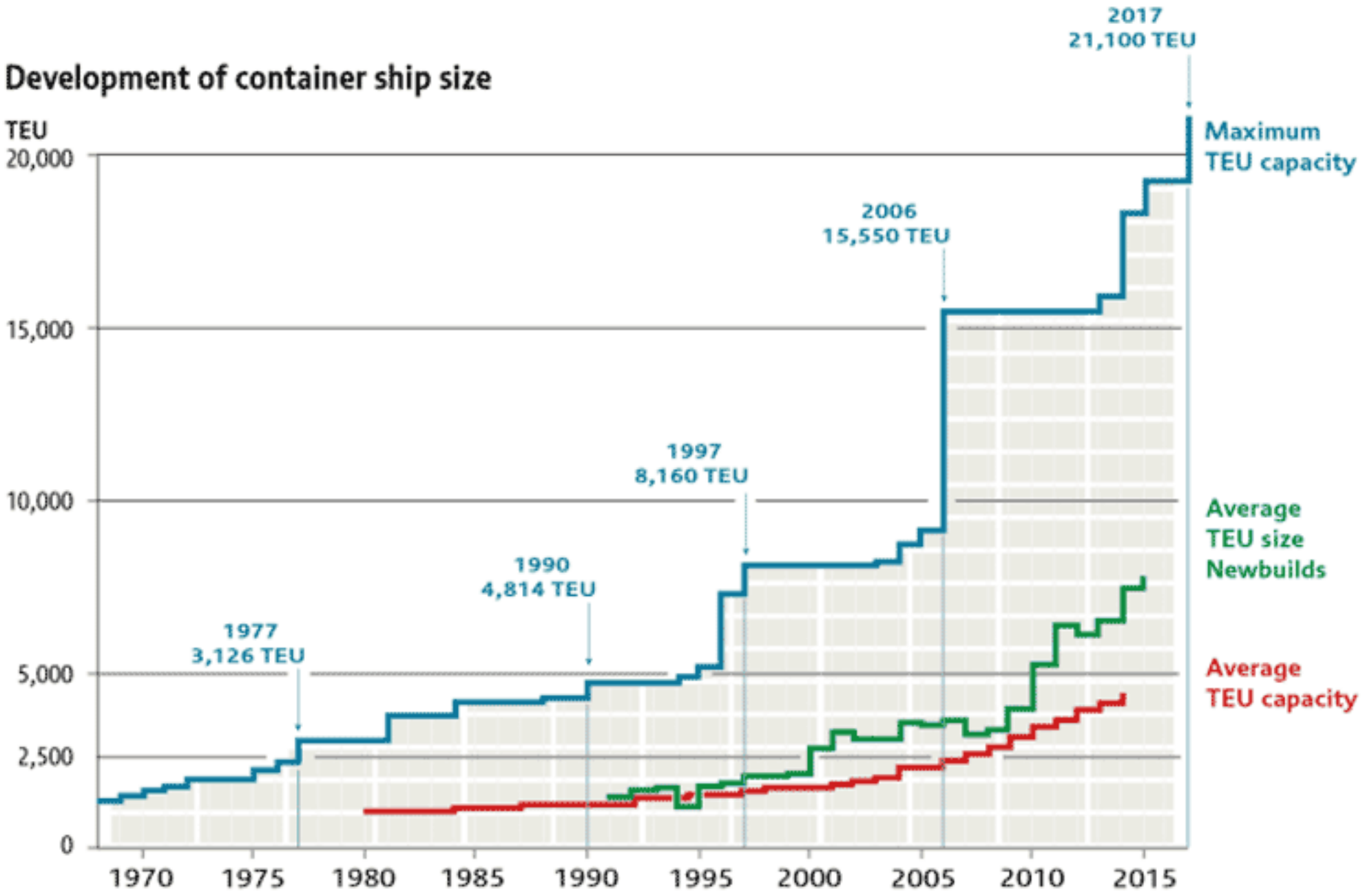
Smart Container

- Automatically generate data
  - Position
  - Door Open/Close status
  - Temperature
  - Movement
  - Impact
  - + extensions
- Communicate near real-time
  - From (nearly) anywhere
  - Economically
- Permanently attached
- Built-in or back-fitted

Why Now?


A
Early Containerships (1956-)
500 – 800 TEU
Fully Cellular (1970-)
1,000 – 2,500 TEU
137x17x9
meters
(LOA – Beam – Draft)
200x20x9
215x20x10
6 containers across
4 containers high on deck
4 containers high below deck
6
4
8
4
10
5
4
B
Panamax (1980-)
3,000 – 3,400 TEU
Panamax Max (1985-)
3,400 – 4,500 TEU
250x32x12.5
290x32x12.5
13
6
5
13
8
6
C
Post Panamax (1988-)
4,000 – 5,000 TEU
Post Panamax Plus (2000-)
6,000 – 8,000 TEU
285x40x13
300x43x14.5
15
9
5
17
9
6
D
New Panamax (2014-)
12,500 TEU
366x49x15.2
20
10
6
E
Post New Panamax (2006-)
15,000 TEU
Triple E (2013-)
18,000 TEU
397x56x15.5 ; 22-10-8 (not shown)
400x59x15.5
23
10
8

Development of container ship size



Source: The International Transport Forum

George Youroukos, CEO of Athens-based containership owner Poseidon Containers has said cost savings are not being offered by the mega-ships that are being ordered and deployed and that economies of scale are not being realised, according to the Journal of Commerce.

CMA CGM

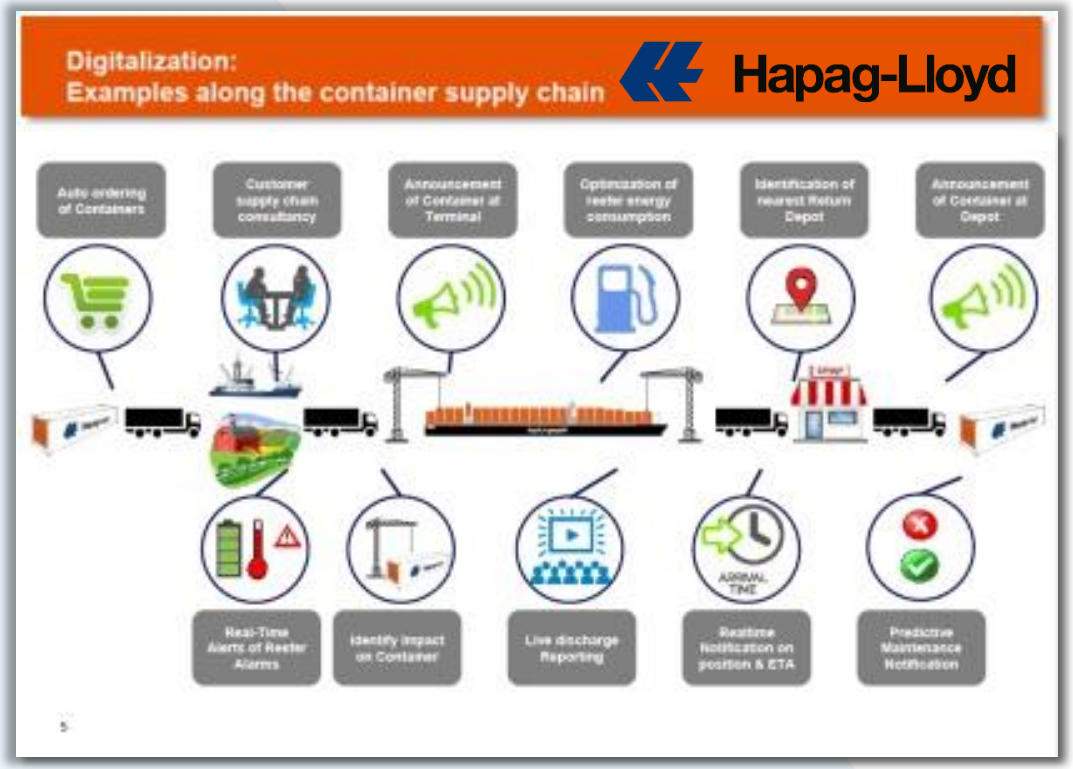
MSC joins CMA CGM in backing TRAXENS

Monday, July 25, 2016

Cargo Monitoring Innovation Gets Strong Endorsement from Leading Shipping Lines and Set to Become an Industry Standard

Geneva and Marseilles, 25th July - MSC Mediterranean Shipping Company, a world leader in global container shipping, has joined CMA CGM, in backing French start-up, TRAXENS.

msc



Reefer, Dry, Tank, …

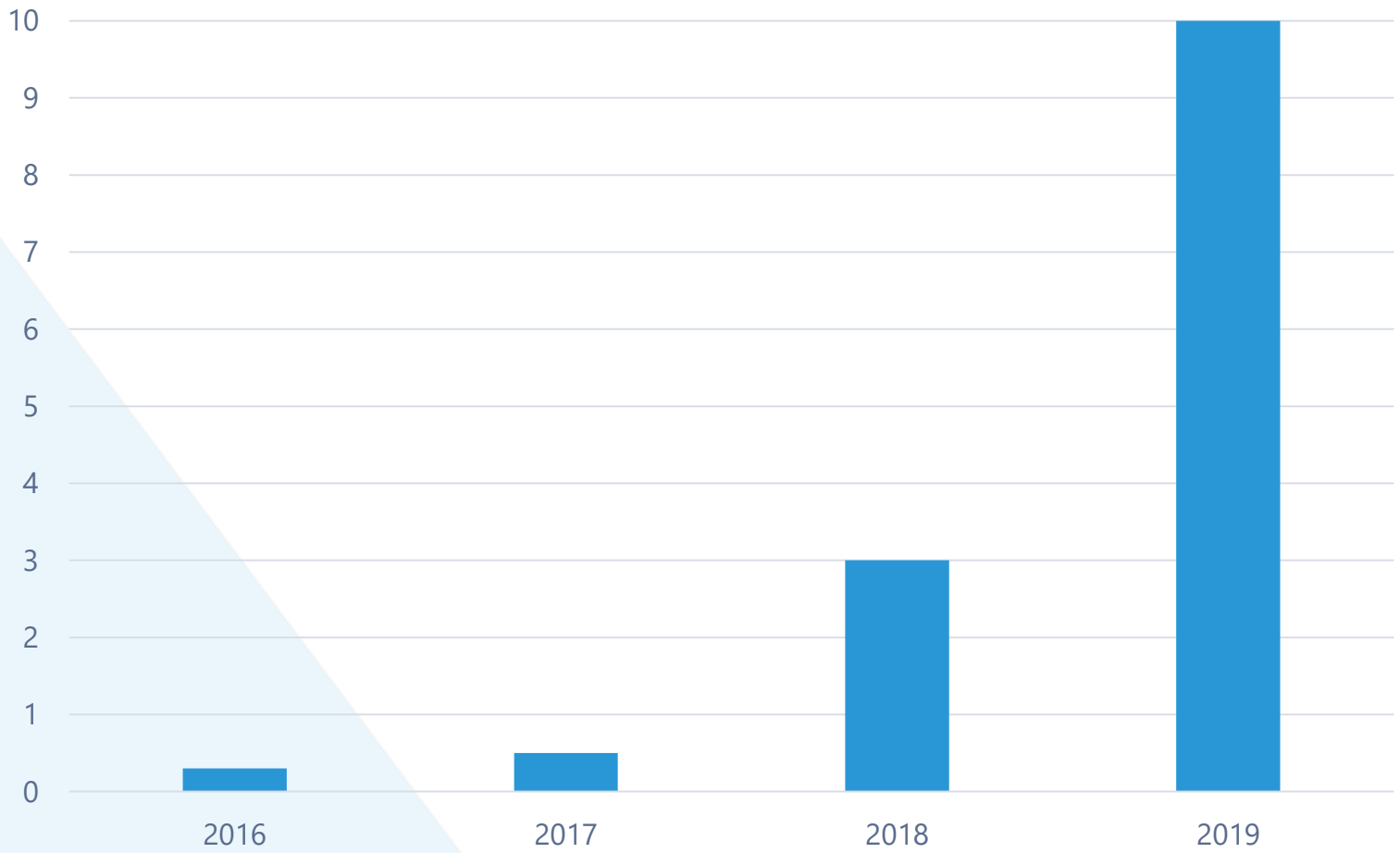
The Missing Link in the Digitalization of the Supply Chain

Digitalized Supply Chain

Digitalized Supply Chain

Awareness of the value of digital in logistics/SC/Transport

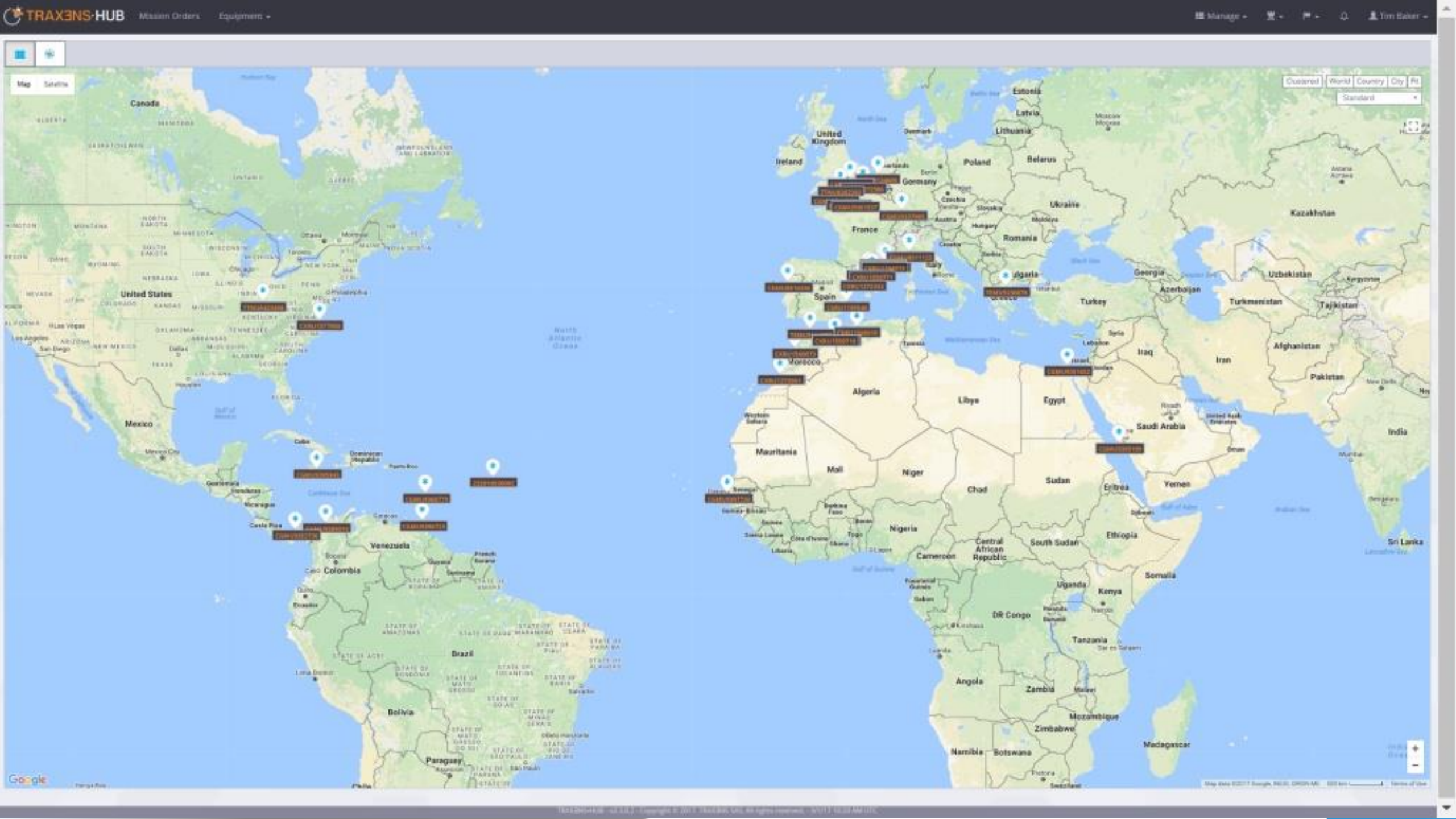
Smart Container Deployment Forecast (Millions)



What for?

Video: Smart Containers

https://vimeo.com/155658816


TRAX3NS-HUB
Mission Orders
Equipment
Manage
Tim Baker
Map
Satellite
Clustered
World
Country
City
Fit
Standard
Canada
United States
Mexico
Venezuela
Colombia
Brazil
Bolivia
Paraguay
United Kingdom
Ireland
Germany
France
Spain
Morocco
Algeria
Libya
Egypt
Mauritania
Mali
Niger
Chad
Sudan
Nigeria
Cameroon
Central African Republic
South Sudan
Eritrea
Ethiopia
Yemen
Saudi Arabia
Iraq
Iran
Turkey
Ukraine
Belarus
Poland
Romania
Kazakhstan
Uzbekistan
Turkmenistan
Afghanistan
Pakistan
India
Sri Lanka
Somalia
Kenya
Uganda
DR Congo
Tanzania
Angola
Zambia
Mozambique
Zimbabwe
Namibia
Botswana
Madagascar
Google

Equipment CXRU1272333

Refresh

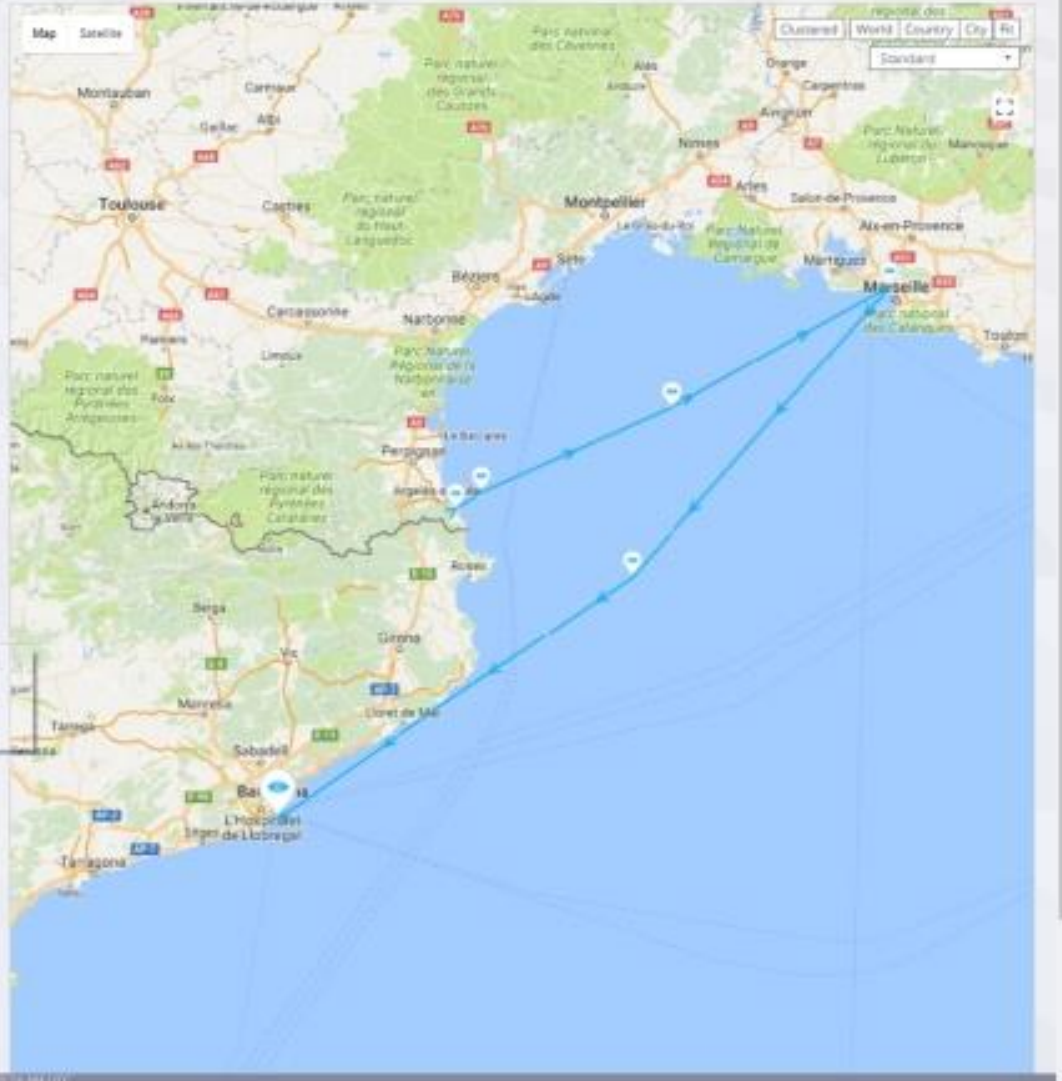
Type 45R1 Container Reefer
Device 232010030084
Current Service Level
Default Service Level

Last Mission Order N/A

Overview Trends Reefer Alarms Log File Targets Mission Orders History Notifications Notification Rules Documents

+ Create a new filter

Event Date	Event Type	Mission	Sensor	Value	GPS	Measures
3/1/17 7:07 AM	Position from device				41.351169,2.196116	PRECISION = 36 SV = 4 TTFF = 31
2/28/17 7:02 PM	Position from device				42.257866,4.017964	PRECISION = 45 SV = 3 TTFF = 58
2/28/17 10:58 AM	Position from device				43.348457,5.334899	PRECISION = 14 SV = 5 TTFF = 40
2/28/17 6:56 AM	Position from device				43.348457,5.334899	PRECISION = 25 SV = 4 TTFF = 24
2/27/17 10:54 PM	Position from device				42.895660,4.219447	PRECISION = 98 SV = 3 TTFF = 78
2/27/17 6:51 PM	Position from device				42.578644,3.243125	PRECISION = 41 SV = 4 TTFF = 65
2/27/17 10:47 AM	Position from device				42.515335,3.112064	PRECISION = 6 SV = 6 TTFF = 39
2/27/17 6:45 AM	Position from device				42.515335,3.112064	PRECISION = 5 SV = 7 TTFF = 34
2/26/17 10:42 PM	Position from device				42.515335,3.112064	PRECISION = 7 SV = 8 TTFF = 59
2/26/17 6:40 PM	Position from device				42.515335,3.112064	PRECISION = 8 SV = 6 TTFF = 35
2/26/17 10:37 AM	Position from device				42.515335,3.112064	PRECISION = 5 SV = 6 TTFF = 39
2/26/17 6:35 AM	Position from device				42.515335,3.112064	PRECISION = 4 SV = 6 TTFF = 18
2/26/17 2:34 AM	Position from device				42.515335,3.112064	PRECISION = 4 SV = 8 TTFF = 36
2/25/17 10:32 PM	Position from device				42.515335,3.112064	PRECISION = 9 SV = 5 TTFF = 24
2/25/17 6:30 PM	Position from device				42.515335,3.112064	PRECISION = 12 SV = 4 TTFF = 34
2/25/17 2:28 PM	Position from device				42.515335,3.112064	PRECISION = 6 SV = 7 TTFF = 28
2/25/17 6:25 AM	Position from device				42.515335,3.112064	PRECISION = 5 SV = 7 TTFF = 21
2/25/17 2:24 AM	Position from device				42.515335,3.112064	PRECISION = 4 SV = 8 TTFF = 39
2/24/17 10:22 PM	Position from device				42.515335,3.112064	PRECISION = 7 SV = 6 TTFF = 36
2/24/17 2:19 PM	Position from device				42.515335,3.112064	PRECISION = 39 SV = 4 TTFF = 34
2/24/17 10:17 AM	Position from device				42.515335,3.112064	PRECISION = 12 SV = 5 TTFF = 29
2/24/17 2:14 AM	Position from device				42.515335,3.112064	PRECISION = 8 SV = 6 TTFF = 20
2/23/17 10:12 PM	Position from device				42.515335,3.112064	PRECISION = 6 SV = 5 TTFF = 39
2/23/17 6:10 PM	Position from device				42.515335,3.112064	PRECISION = 4 SV = 7 TTFF = 37
2/23/17 10:07 AM	Position from device				42.515335,3.112064	PRECISION = 95 SV = 3 TTFF = 37
2/23/17 6:05 AM	Position from device				42.515335,3.112064	PRECISION = 8 SV = 6 TTFF = 36
2/22/17 10:02 PM	Position from device				42.515335,3.112064	PRECISION = 17 SV = 5 TTFF = 37
2/22/17 6:00 PM	Position from device				42.515335,3.112064	PRECISION = 5 SV = 7 TTFF = 34



TRAX3NS-HUB v4.3.9.2 - Copyright © 2013 TRAXENS SAS. All rights reserved. - 2017-10-24 08:11:01 UTC

Reefer TXHU000024

Refresh

Type 45R1 Container
Device S/N 565254580004
Pairing Date Mar 10, 2016 6:20:08 PM

Last Mission Order N/A

Overview | Trends | Alarms | Log File | Targets | Post-Mission | Notifications

Charts parameters

Displayed Charts* Temperatures O2 CO2 Humidity

Range Presets: Between these two dates

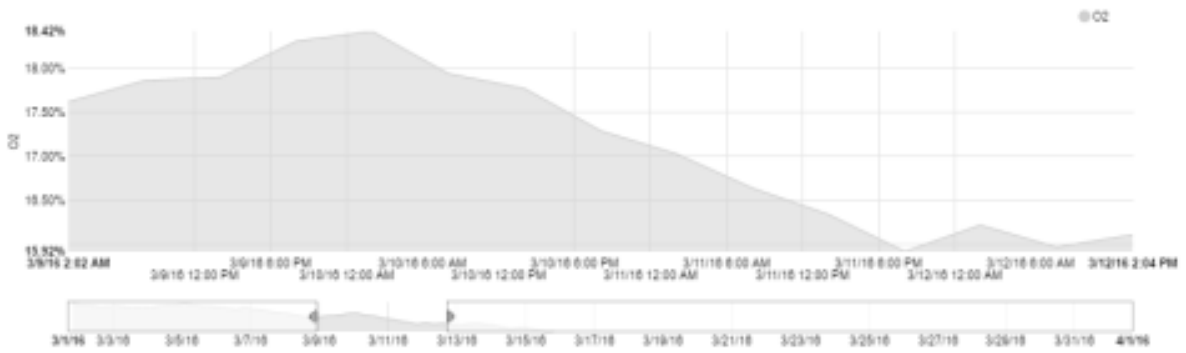
From: 3/1/16 6:47 PM

To: 4/1/16 6:47 PM

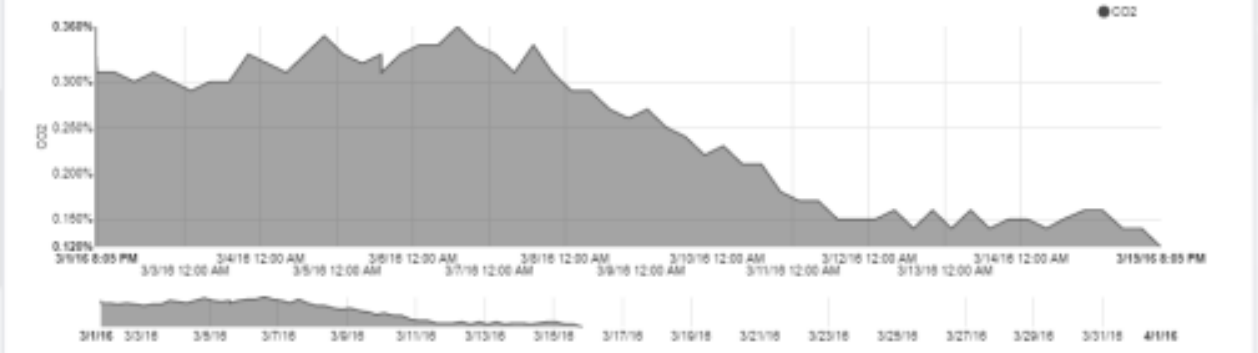
Load

Temperatures

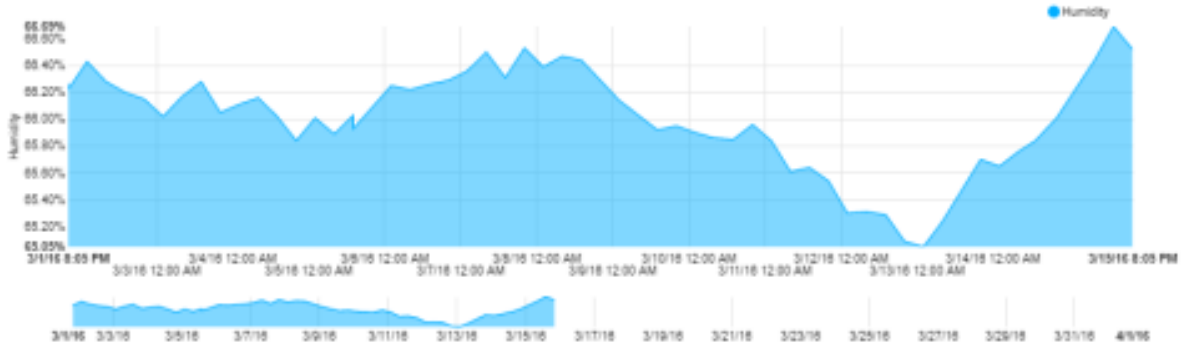
O2



CO2



Humidity



Back

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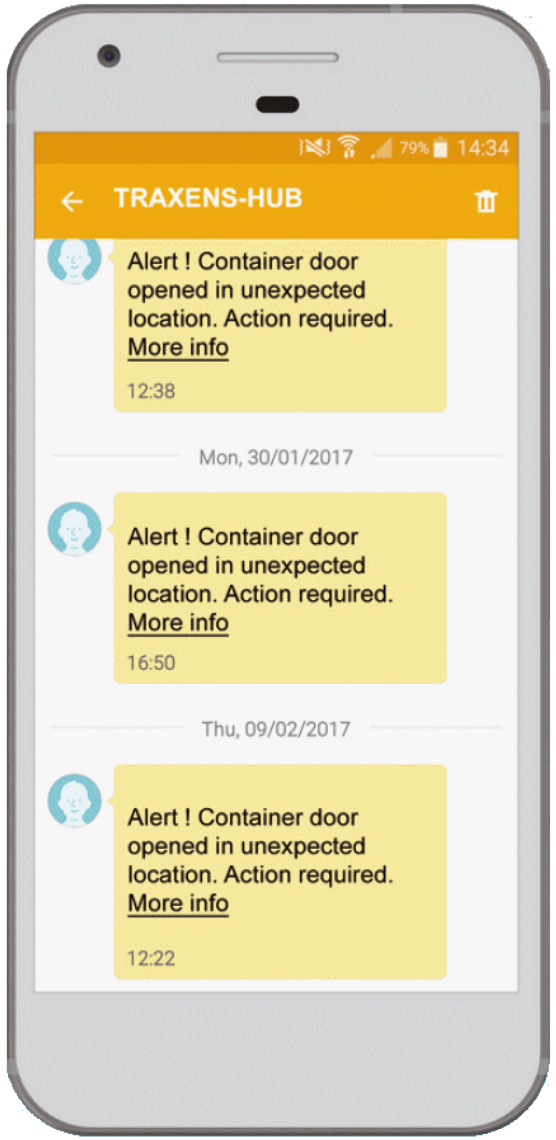
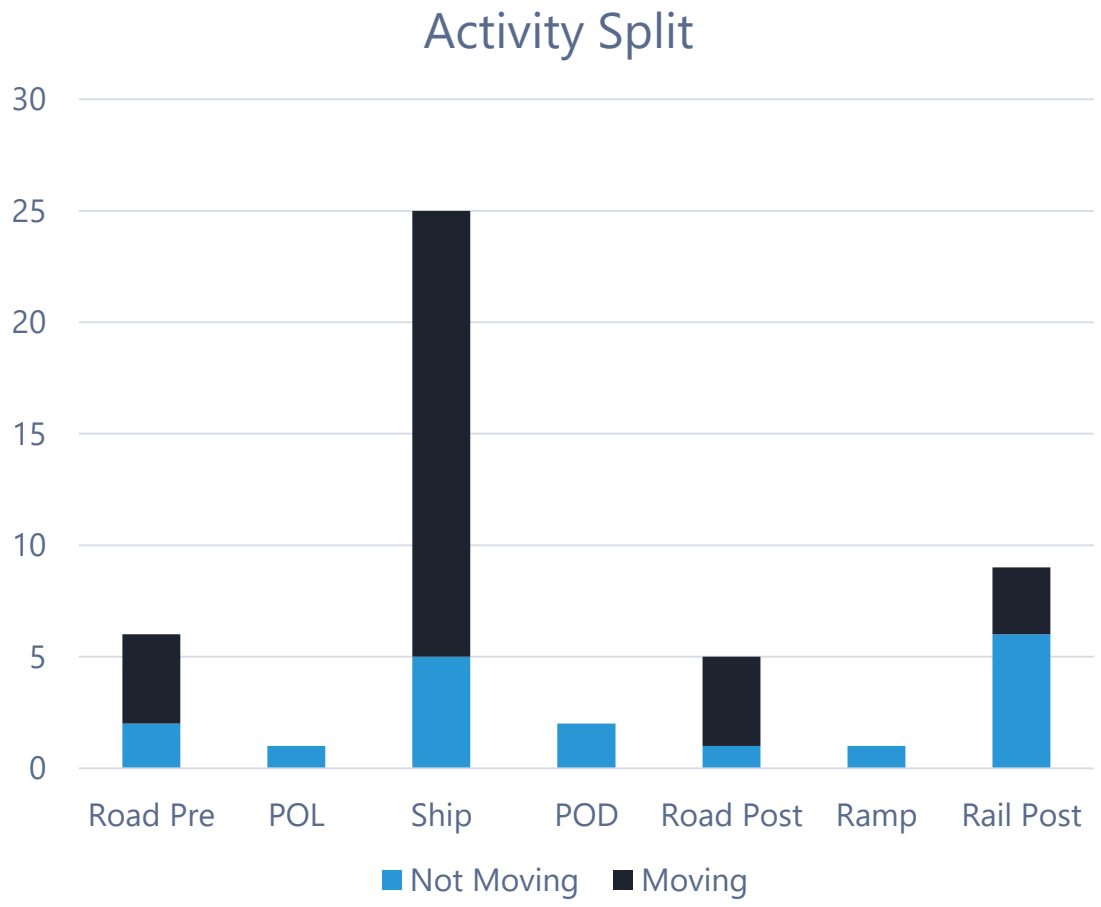
Alerts & Notifications

- Significant events
  - Arrival at warehouse
  - >1 hour stop on truck
  - Door open
  - >8°C
  - Running late
  - Etc.
- Delivered to the right person at the right time
  - Web interface
  - Email
  - SMS

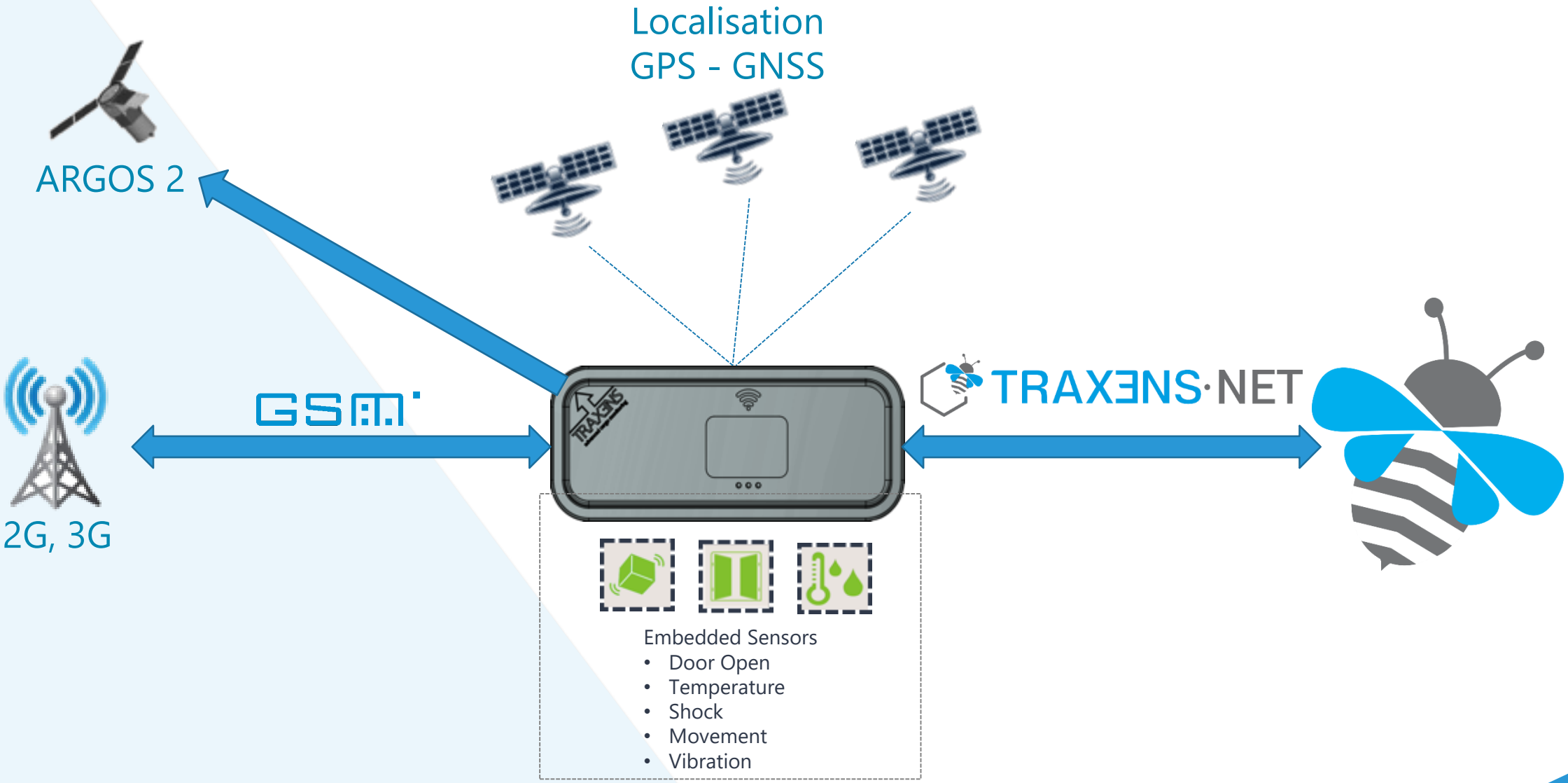


Dashboard (Per trip + All trips)



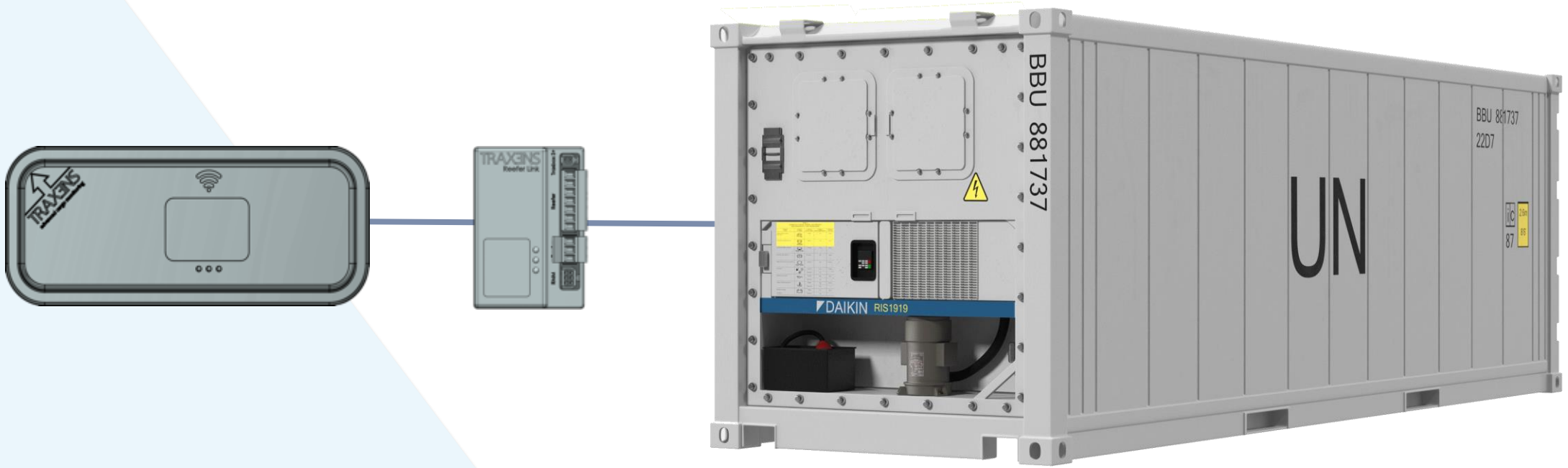
How does it work?

TRAXENS·BOX

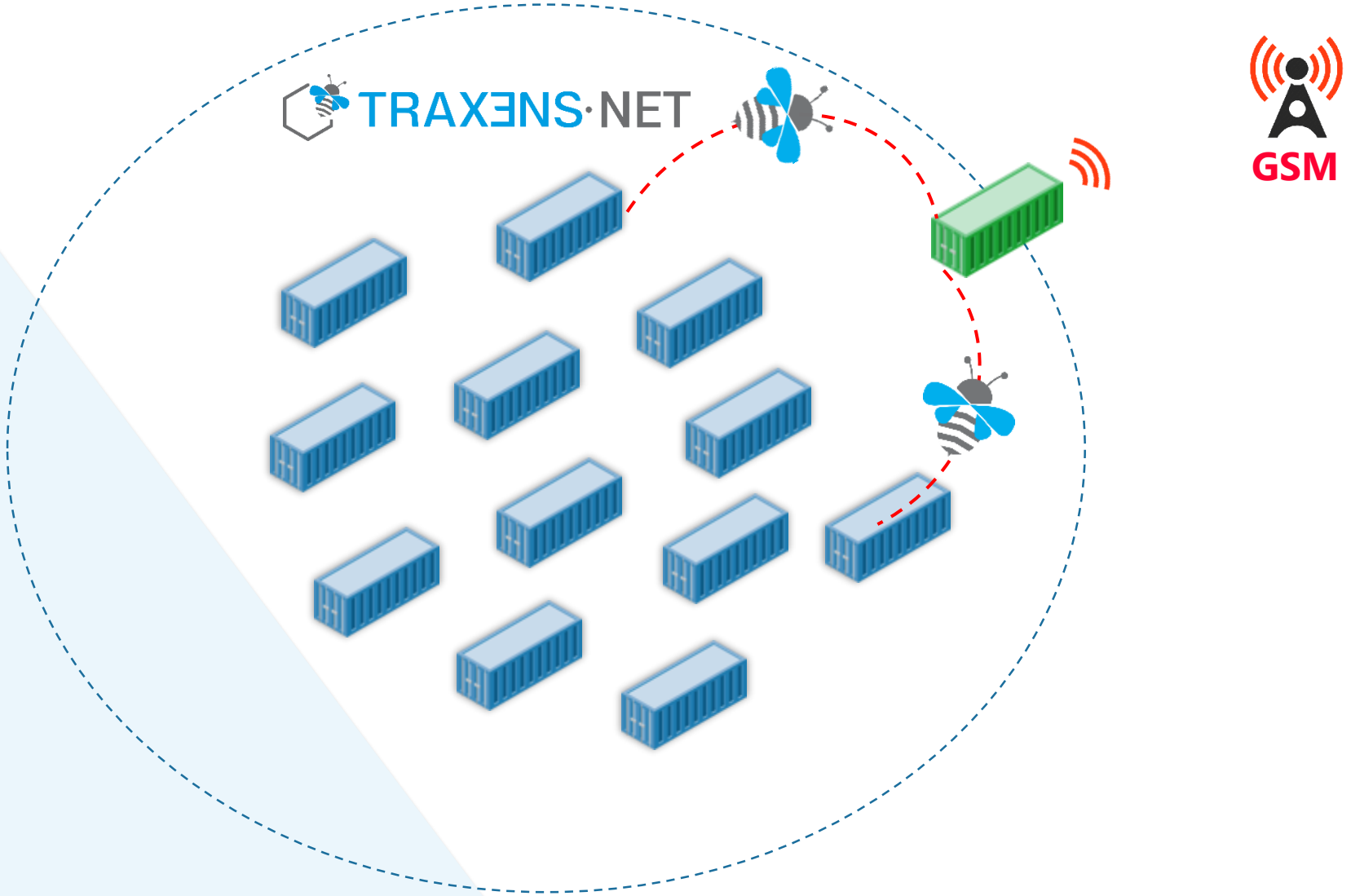

Localisation
GPS - GNSS
ARGOS 2
GSM
2G, 3G
TRAXENS·NET
Embedded Sensors
• Door Open
• Temperature
• Shock
• Movement
• Vibration

Dry and Reefer

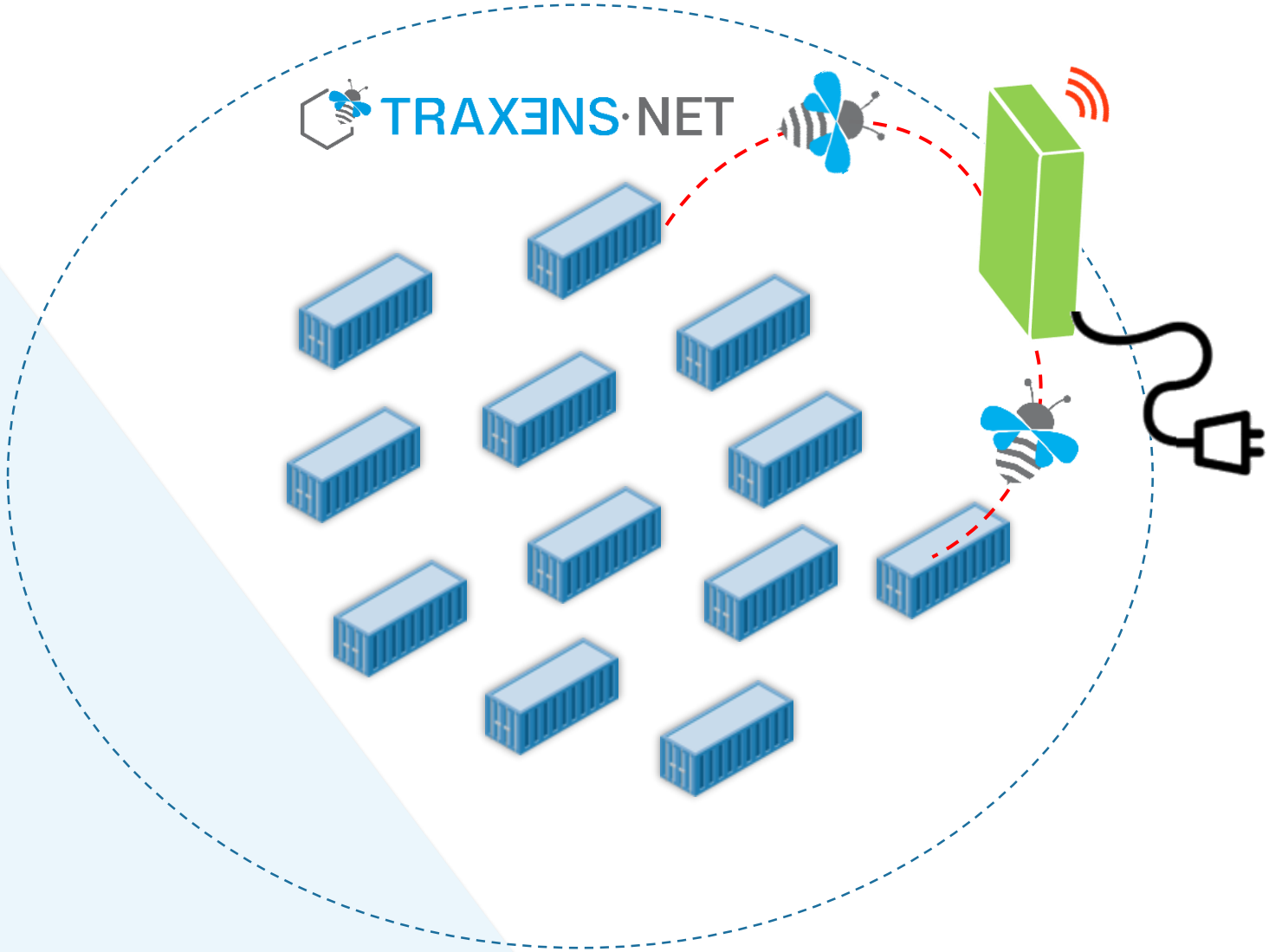
Reefer


TRAXENS
TRAXENS
Reefer Unit
DAIKIN RIS1919
BBU 881737
UN
BBU 881737
22D7
87

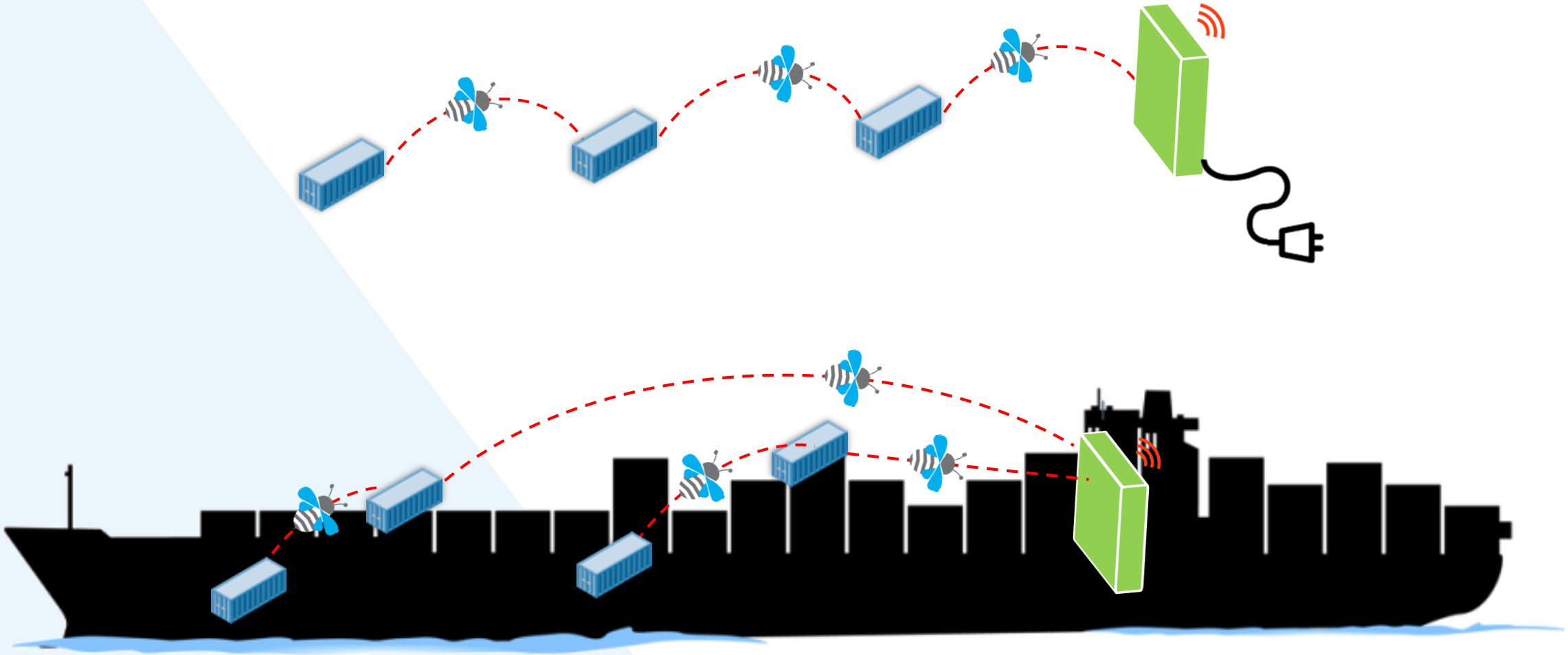
TRAXENS-NET Benefits: Power Sharing



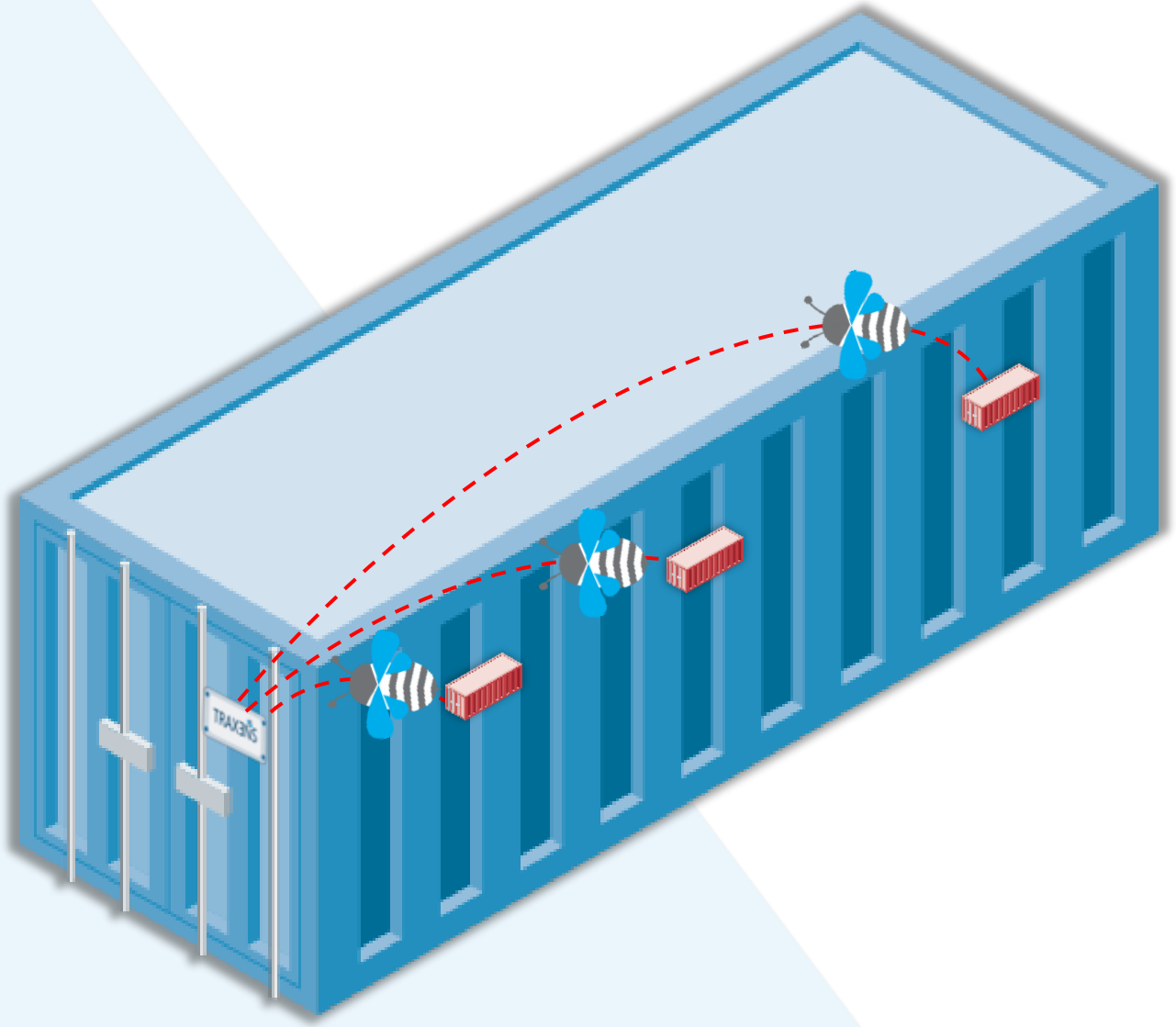
TRAXENS-NET Benefits: Power Sharing



TRAXENS-NET Benefits: Reach



TRAXENS-NET Benefits: Sensor Extension



- Cargo Temperature
- Humidity
- Pressure
- Gas detection
- Human presence detection
- Specialized Sensors

Smart Container as a Data Sharing Enabler

- Smart containers offer an **end-to-end visibility of shipment execution**

Stakeholders: shipping lines, freight forwarders, Beneficial Cargo Owners, cross-border agencies and port authorities, etc.

Deployment and benefits of smart containers:

- Smart containers in support of smart ports and terminals by enhancing local monitoring and dangerous goods management (unplugged Reefer alerts, idle cargo, planning), etc.
- Smart containers in support of fast lanes by enhancing documents sharing (secure element) and “reality” versus “declarations” matching (Provenance traceability, open door detection, physical parameters monitoring), etc.

What is the Role of the SMDG?

- **Gathering requirements and new processes definition**

- The right audience and expertise for *gathering requirements* (what data should be captured and shared?) and *new process definition* integrating the smart container new flow of data (what KPI to be enhanced and how).

- **New EDI messages in support of the new data flow**

- Dangerous goods management
- Cross border-agencies
- For declarations and certifications availability

TRAXENS
real data for logistics excellence

Thank You

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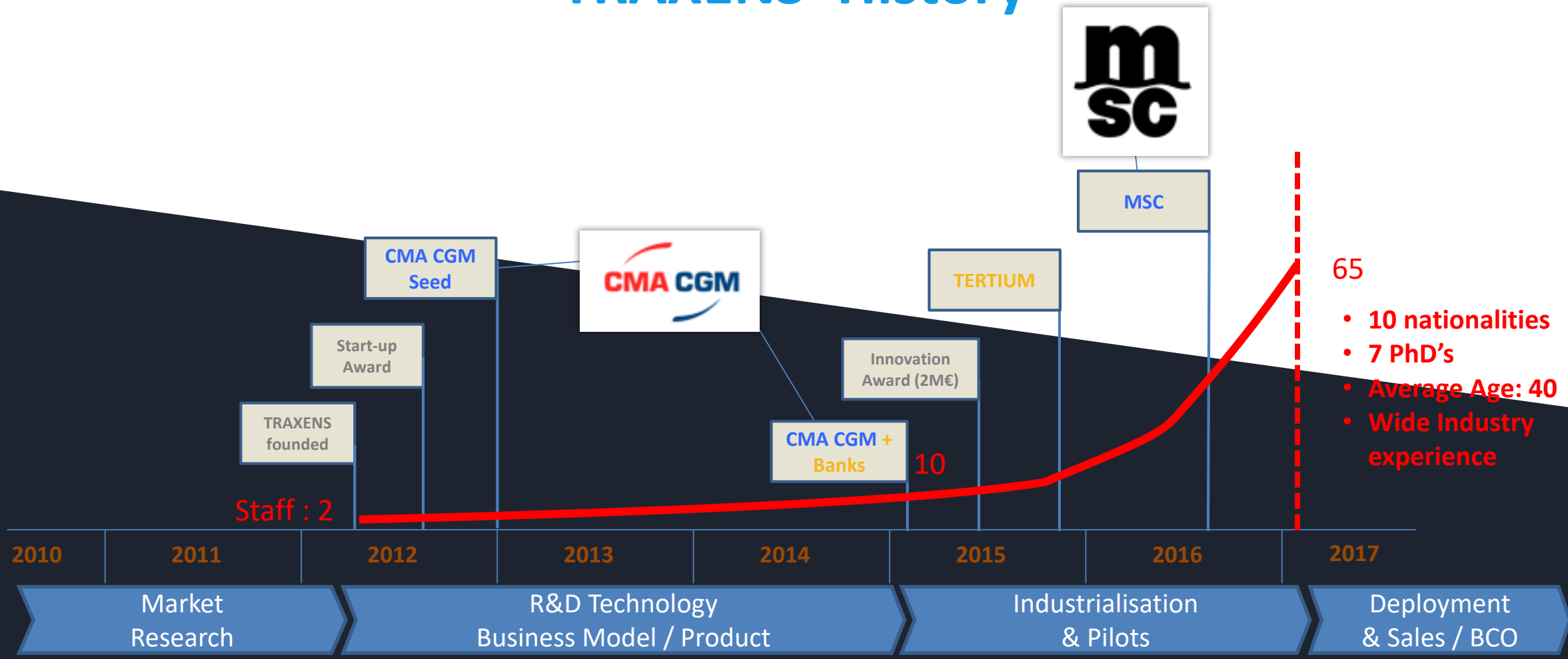
TRAXENS' History



- **10 nationalities**
- **7 PhD's**
- **Average Age: 40**
- **Wide Industry experience**