

ePTI (beta name: RAPS)

Increasing certainty on our reefers' operating condition



Dear flower bulb exporter,

Remote container management has transformed the data landscape on reefer operation conditions. With the introduction of ePTI Maersk Line is able to identify if units are performing as expected. This replaces PTI's by a visual inspection and repair.

This change doesn't affect your process, but you will benefit because we can offer:

- **Higher Quality** - Quality improvement in terms of how we assess our reefers
- **Less damage on bulbs** - Due to water related to recent PTI can now be eliminated
- **Faster turn time** – Reefers will not be checked manually, so if there is no damage they will be available right away.



Attached you will find a PDF where we will explain the ePTI more into detail.

Kind regards,

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Agenda

Introduction to ePTI

What Changes?

Pilot Results

Back-up

Fault Detection Example

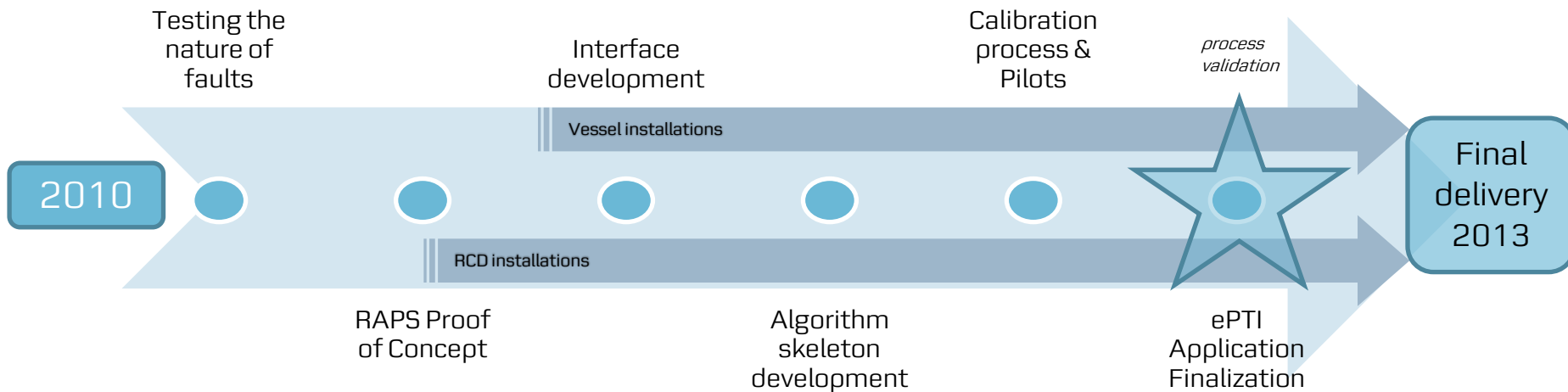
Model Conclusion



Introduction to



The pieces have come together



We are ready for ePTI



Remote Container Management has *transformed* the data landscape on *reefer operating conditions*.

Through the wealth of data now available, we have developed a solution that:

- ✓ Originates from 10+ years R&D from DTU on refrigeration models
- ✓ Uses Algorithms to analyze Operational Condition of a Reefer
- ✓ Predicts reefers' Export Suitability and flags faults
- ✓ Removes the need for an old style Pre-Trip Inspection
- ✓ Is replicable globally

Welcome to ePTI



What changes?

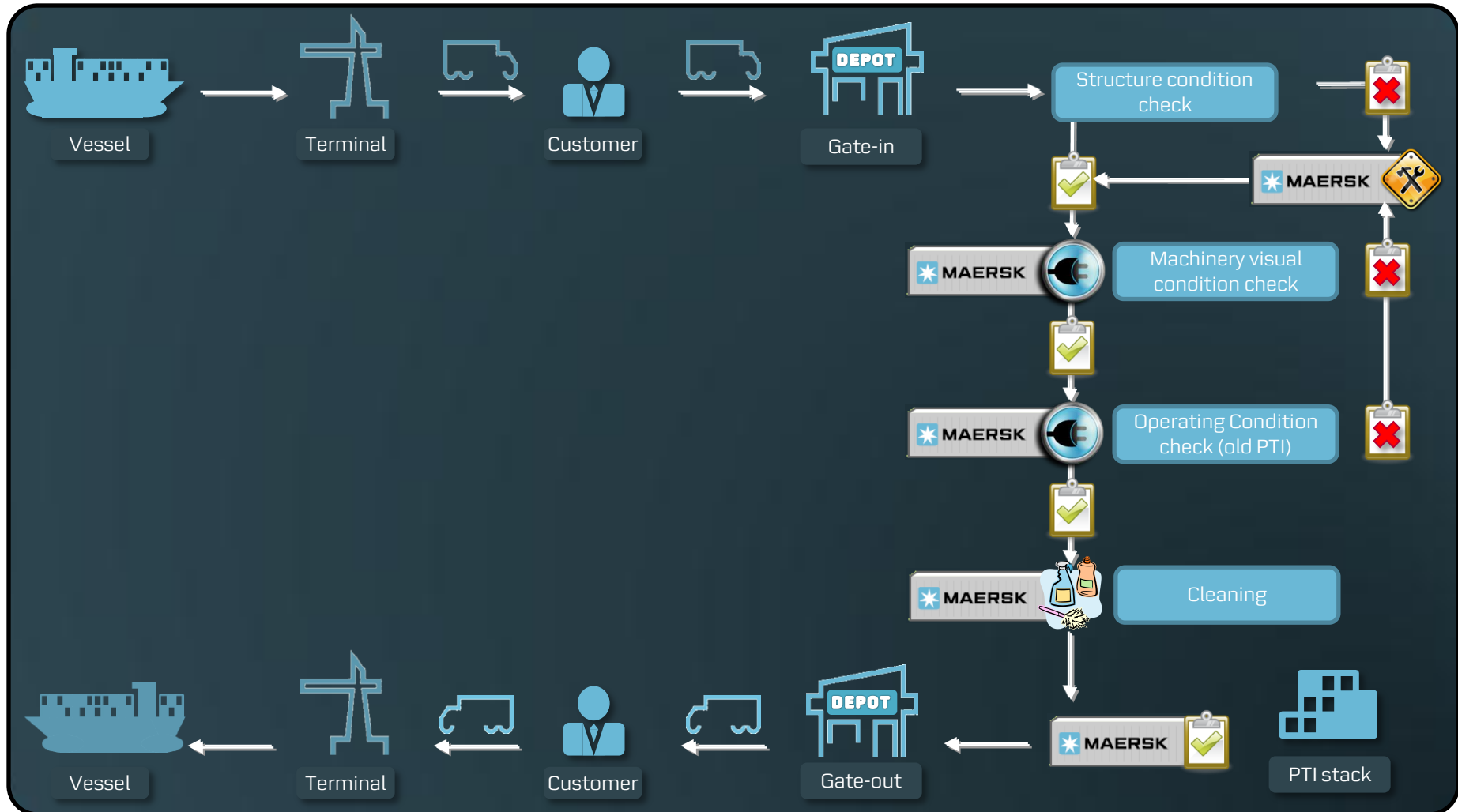


Changing how we verify our reefers



	Old PTI	ePTI
1 Definition	<ul style="list-style-type: none">• Verifying if basic functions are operational and pull down test to specific temperatures 0°C and -18°C	<ul style="list-style-type: none">• Continued monitoring of performance determining whether system operating conditions are degrading from 100%
2 Process	<ul style="list-style-type: none">• After each trip, empty• Done irrespective if needed or not	<ul style="list-style-type: none">• Visual inspection when GREEN• Repair when status RED
3 Frequency	<ul style="list-style-type: none">• Stand-alone spot-check• Every 3 months on average	<ul style="list-style-type: none">• Hourly reading of sensor values & alarms• Status at discharge, gate-out and gate-in
4 Quality	<ul style="list-style-type: none">• Function test in isolation• Simplistic mechanical test• Limited stress on machinery (empty)	<ul style="list-style-type: none">• Scientific approach: Thermodynamics, refrigeration principles, sensor values• Monitored when full (high stress on unit)• Machinery visual inspection remains
5 Data	<ul style="list-style-type: none">• No information on previous load	<ul style="list-style-type: none">• Reefer diagnostics after each trip• Unit history available

Releasing a cargo worthy unit – old PTI

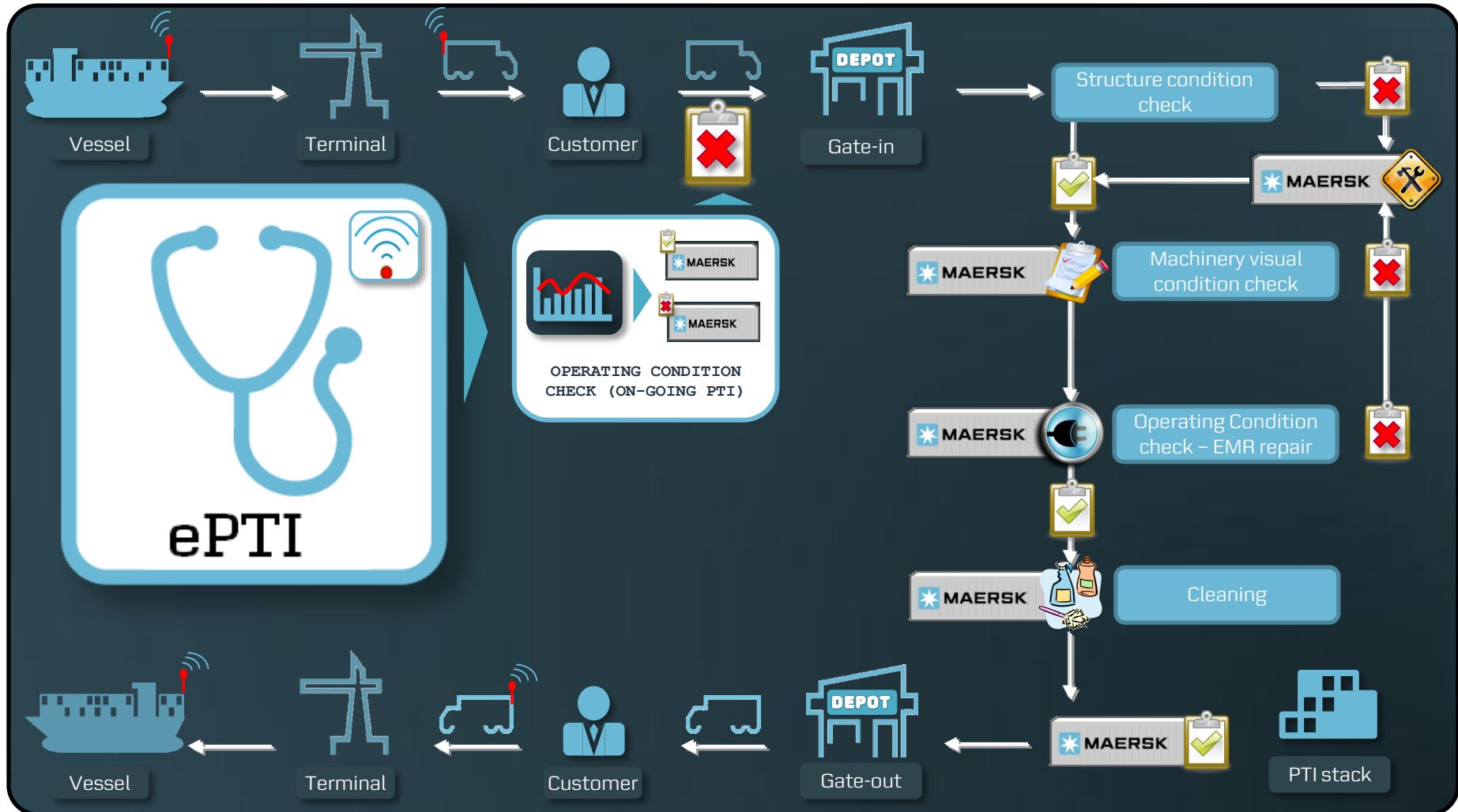


Releasing a cargo worthy unit – ePTI (1/2)

(1/2)



ePTI status: not OK

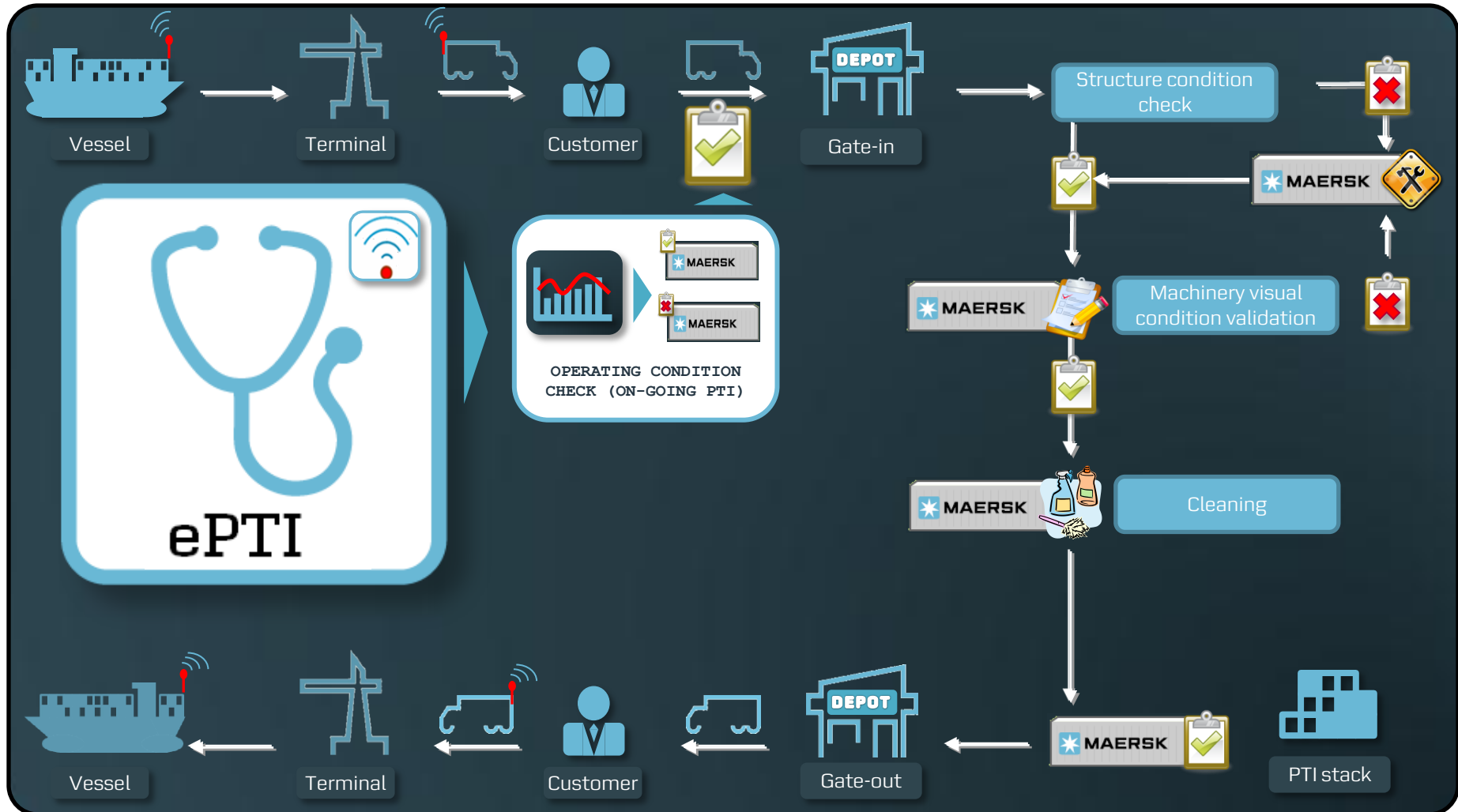


Releasing a cargo worthy unit – ePTI

(2/2)



ePTI status: OK



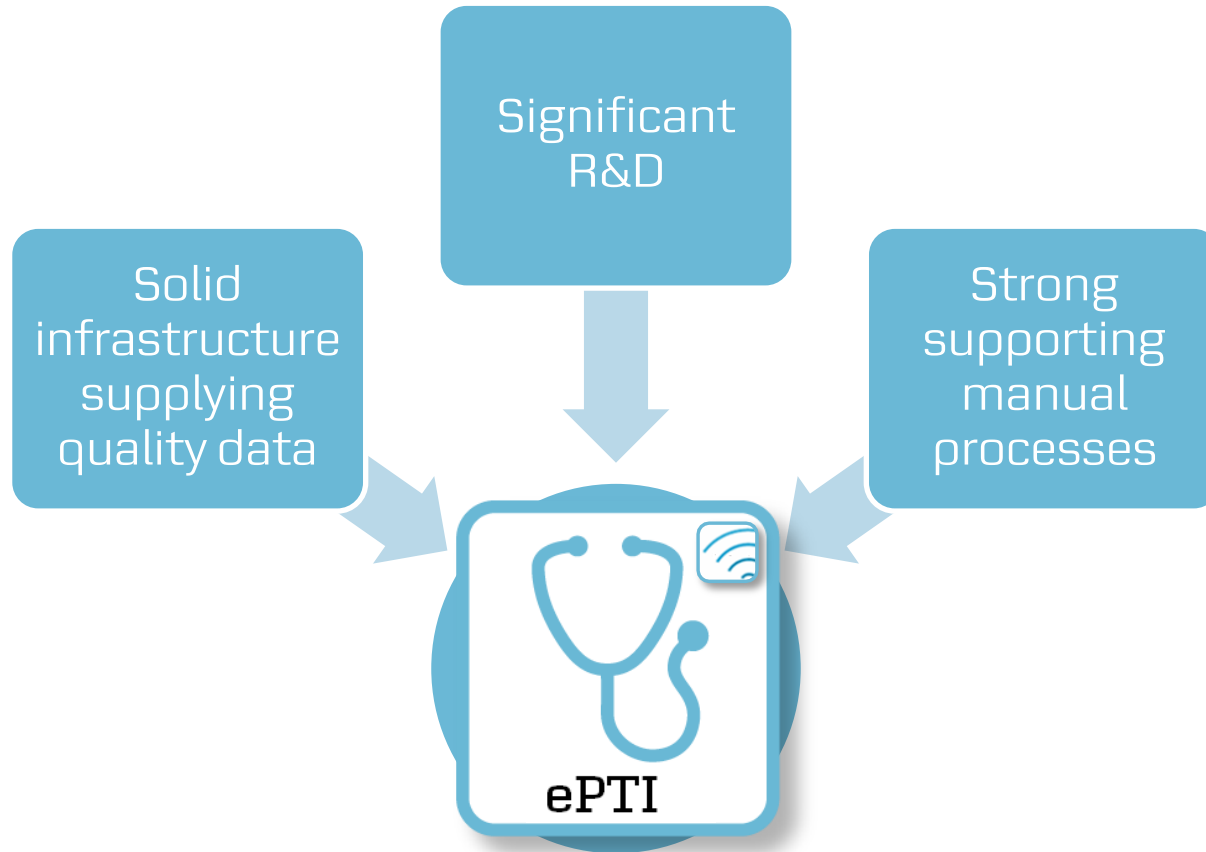
Quality improvements

	Old PTI	ePTI
1 Journey visibility	<ul style="list-style-type: none">• Only event and sensor data available through datalog (manual download)	<ul style="list-style-type: none">• ePTI report with analysis of whole journey including sensor readings, alarms and operations
2 Time to prepare reefer for export	<ul style="list-style-type: none">• Lengthy PTI process• Higher stock to cover Export	<ul style="list-style-type: none">• Increased availability of reefer techs for units needing repairs• Faster turntimes and availability of units
3 Cargo Care	<ul style="list-style-type: none">• Simple pull-down test as a validation for cargo worthiness• 3-4 PTIs yearly/box	<ul style="list-style-type: none">• Analyzing on loaded units 24/7• Validates cargo worthiness in real operations, when units are under stress• Advanced analytics applied
4 Reefer status and PTI	<ul style="list-style-type: none">• Reefer status not available until after PTI has been performed	<ul style="list-style-type: none">• Reefer status known prior gate-in empty• Reefer technicians validate ePTI results



Modernized PTI process is leaner, more reliable and efficient

Conclusion



We now make the most out of technology, processes and reefer expertise to continue delivering always higher quality standards



**YOUR
DIAGNOSTIC?**