



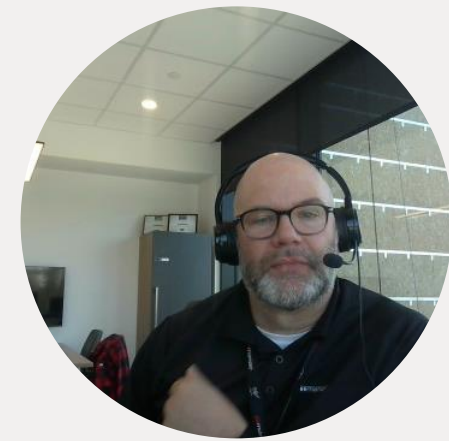
The smart trailer system, an OEM perspective

Rodrick Levesque, Vice president Engineering & Innovation at Manac, Canada

22 April 2026



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Agenda

1. How a trailer OEM fits into the smart transport ecosystem
2. Why the trailer becomes a key intelligent asset
3. A journey from product development to real-world connected applications



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OUR HISTORY



Founding of
Manac Inc.

1966

Manac Inc.
acquires Canam
Steel

1972

First Sales &
Service Centre

1974

2004

Privatization and
exit of the Canam
Group

Manac goes
Public (IPO)

2015

2013

Privatization

Dutil Family &
FSTQ - IQ -
CDPQ

2026

2023



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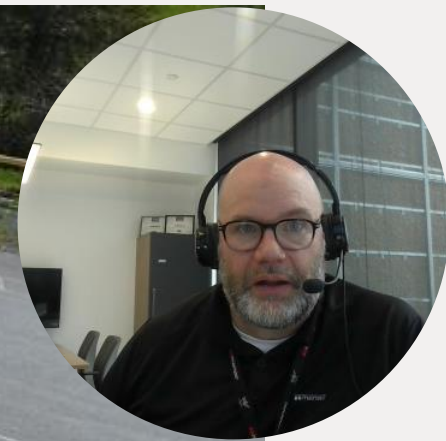


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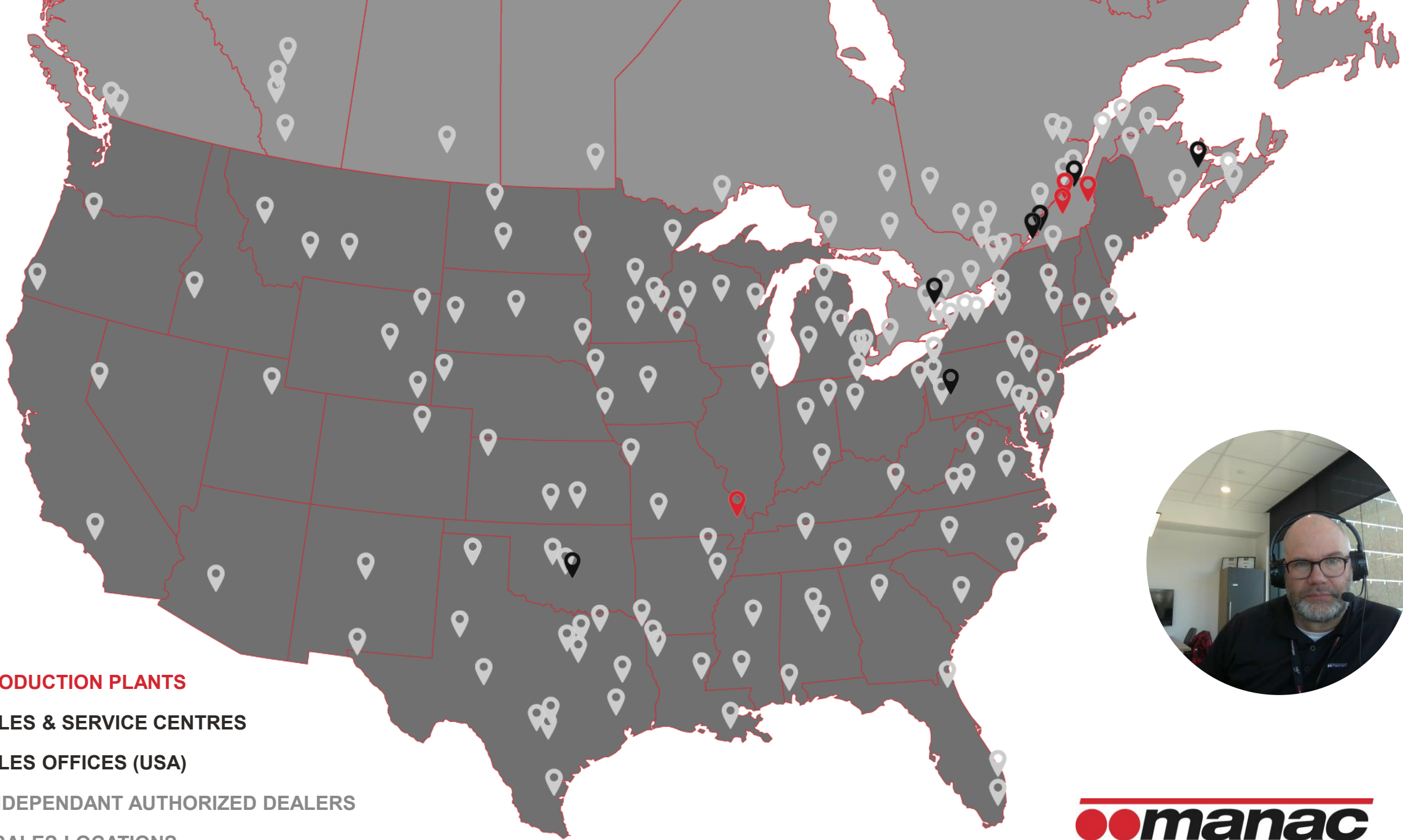







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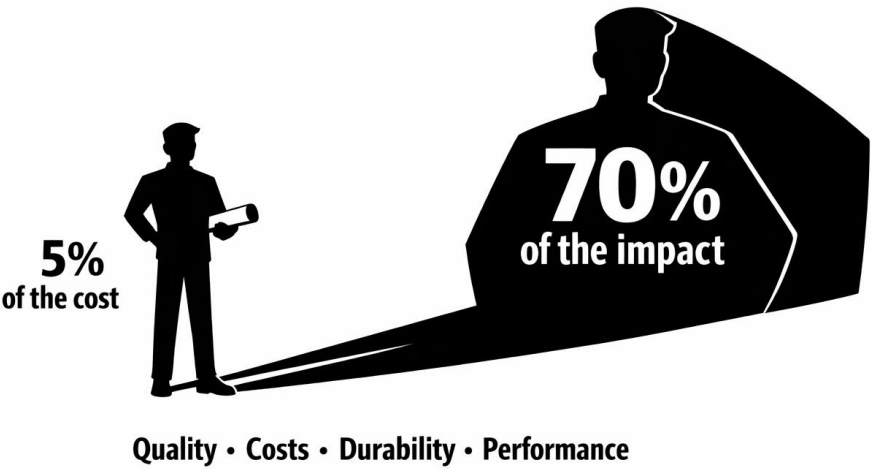
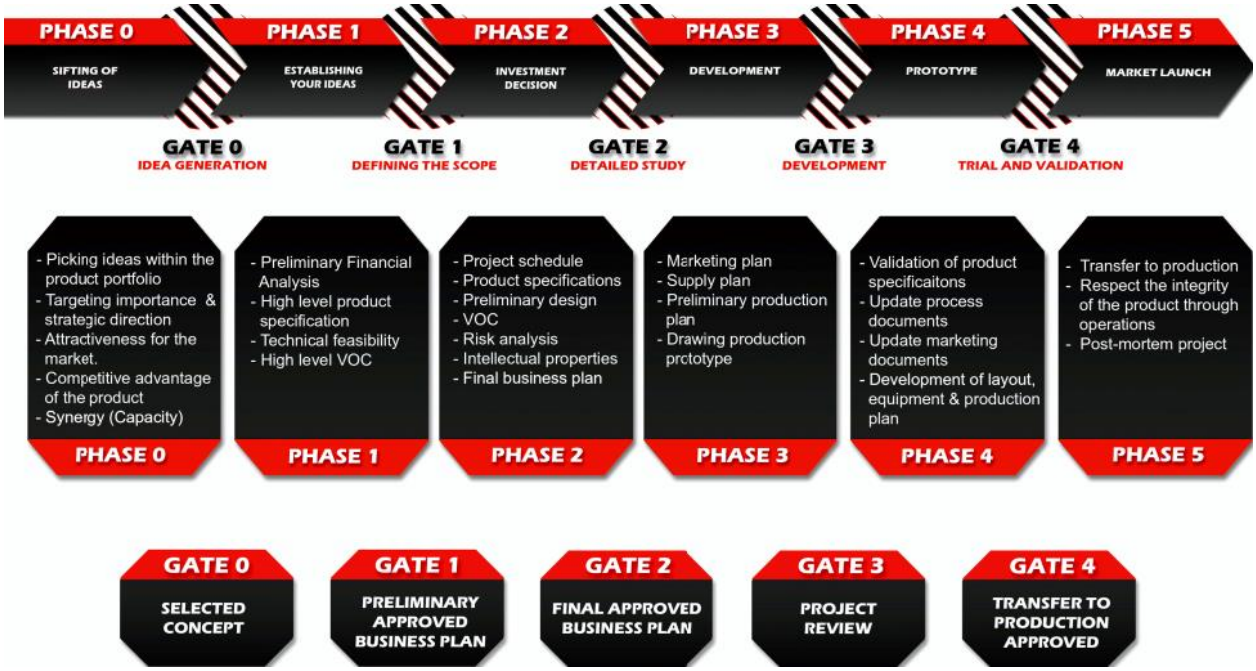
-  **4 PRODUCTION PLANTS**
-  **5 SALES & SERVICE CENTRES**
-  **2 SALES OFFICES (USA)**
-  **75 INDEPENDANT AUTHORIZED DEALERS**
-  **150 SALES LOCATIONS**



The Manac Product Development Process (PDP)



- Stage-Gate approach from ideation to market launch
- Intelligence is a design dimension, not an afterthought
- Early evaluation of suppliers, protocols, **sustainability** and manufacturability



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Inspired by R.G. Cooper – Stage-Gate® Process



Operational Scenarios: Single Tractor, Multi-Tractor, Brokers

- Fixed tractor–trailer pairing simplifies integration
- Most operations involve trailers pulled by many tractors
- Brokered operations require trailer autonomy and independence



- LTL – Less Than Truckload
- TL / Long Haul – Full Truckload
- Regional / Short Haul
- Final Mile / Last Mile
- Flatbed / Specialized / Heavy Haul
- Reefer / Cold Chain
- Dedicated / Contract Carriage

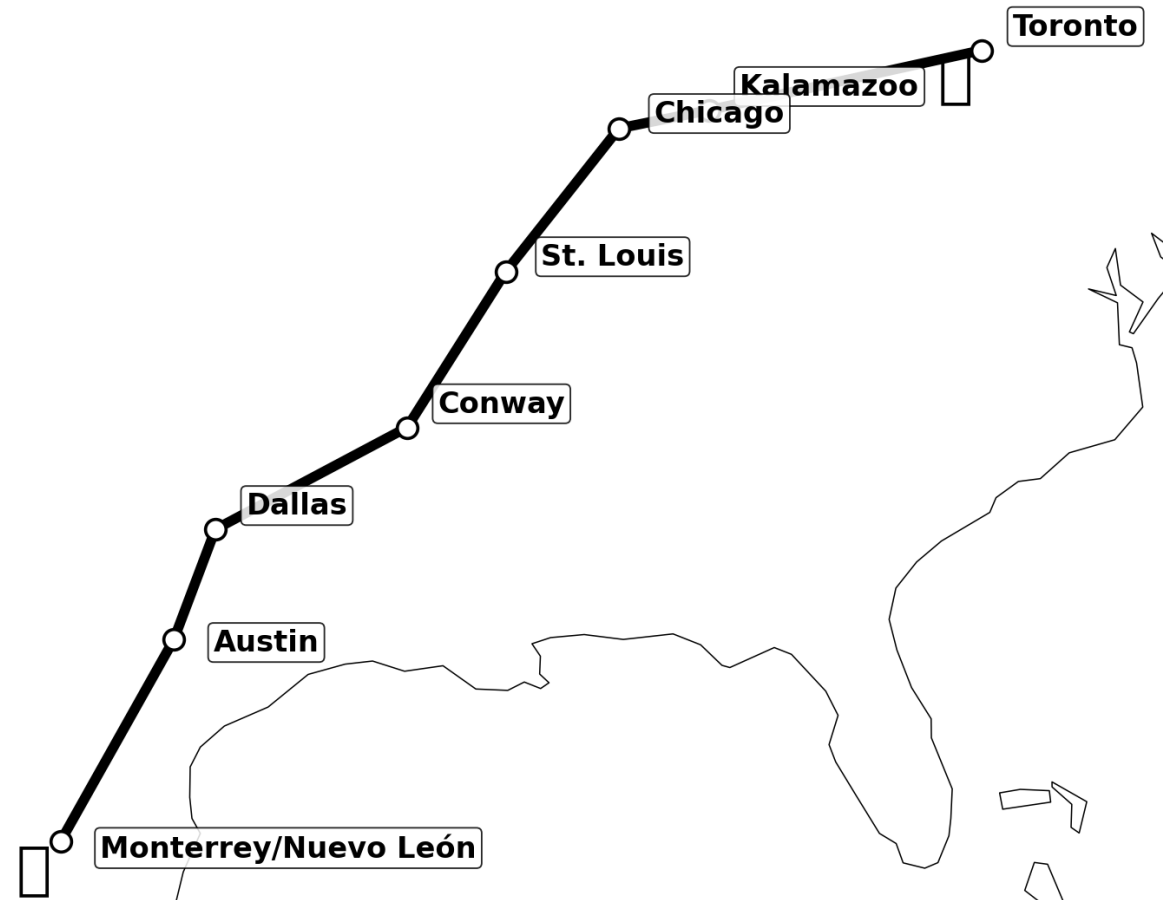


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The New Reality of Hiring Drivers

- It takes extra equipment to travel the same route it would have 20 years ago.



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Drybox



Reefer



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Flatbed

Aluminium flatbed



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North America vs Europe: Two Design Philosophies

- North America: heavy loads, long trailers, harsh environments
- Europe: weight optimization, shorter length, dense networks
- Different regulatory and operational realities shape design



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LCV



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60'



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Truck vs Trailer: Two Worlds, Different Maturity

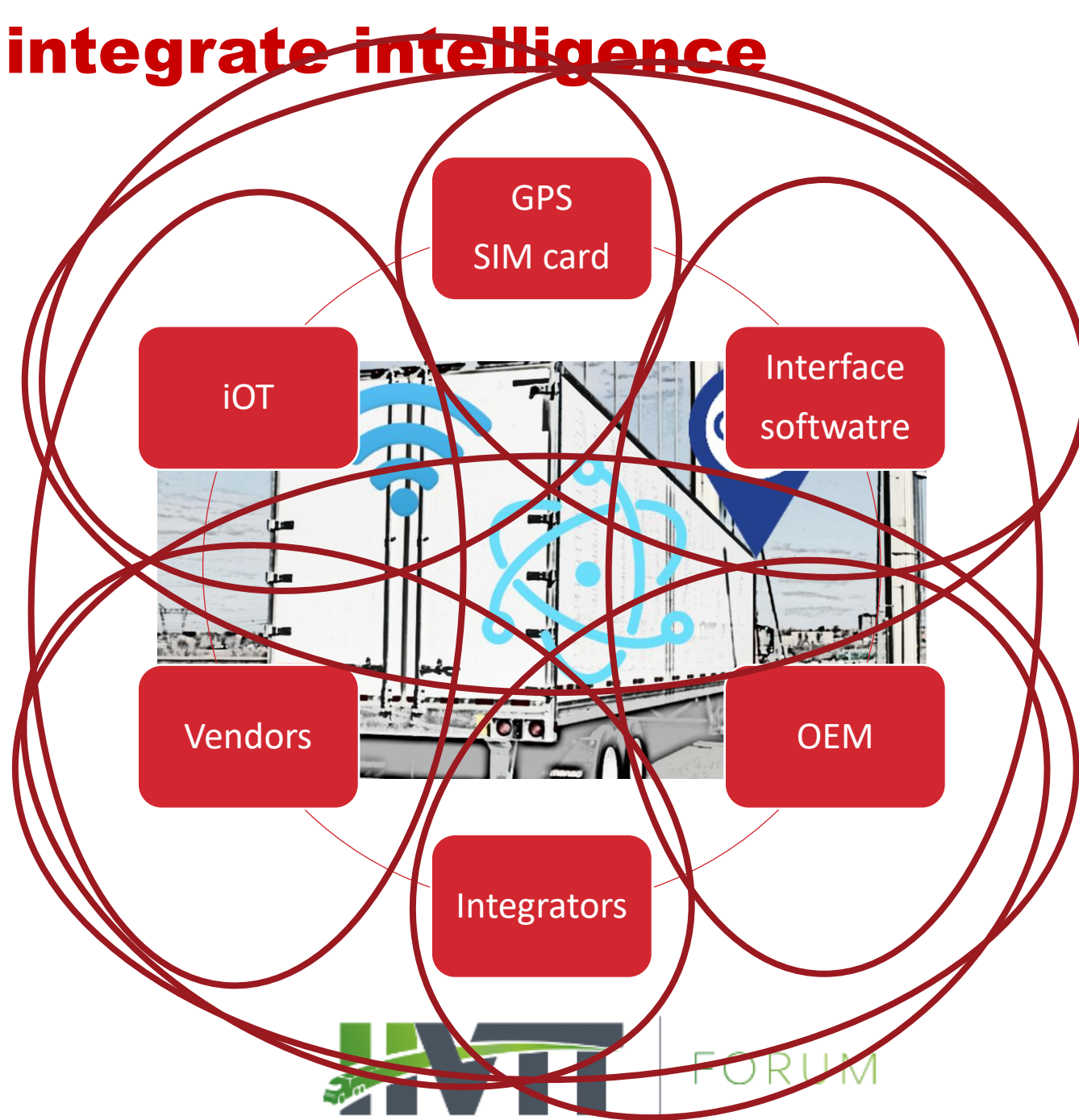
- Trucks are already highly instrumented and connected (ELD)
- Fleets typically digitize tractors first, trailers later
- The trailer becomes the missing link—and a major opportunity



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Challenge: integrate intelligence



Smart trailer connectivity



Today (reading)

- Lift Axle control
- Rear area auto deploy
- **Tire inflation & temperature**
- Door ajar
- **ABS Anti-lock braking function**
- Reefer temperature control

Tomorrow (prediction & AI)

- **Axle load information**
- Brake pad wear indicator
- Cargo volume & Camera
- **Predictive light failure**
- Smart solar roof
- Side wall & floor deflection alert
- Door opening monitoring
- Surrounding camera and sensor (Auto docking)
- Predictive services / maintenances
- **Air leak detection**
- **Over heat wheel end**
- Etc.



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Challenges



Assembly Line

- Smart components added at different stations on the line
- Need a unified "core" to pair sensors and subsystems
- Multiple suppliers and technologies must work together

Power Management and Data on a Resting Trailer

- Trailers cannot run all sensors at full power 24/7
- Idle mode with minimal signals: position and basic health
- Smart wake-up for pre-trip inspection and departure



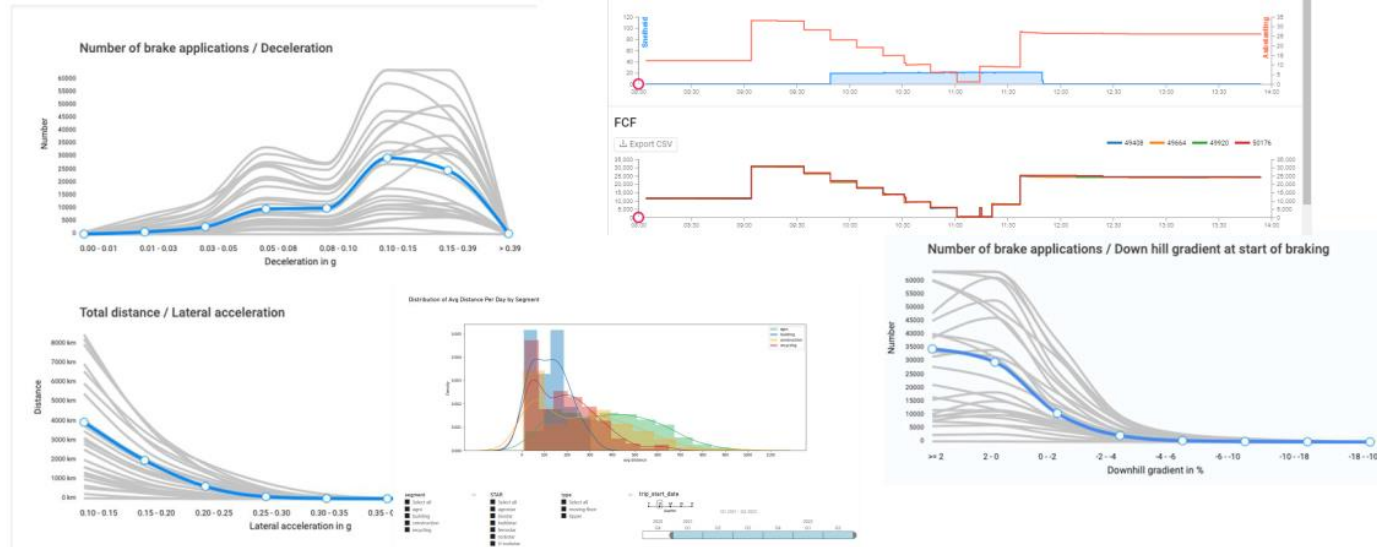
Digital Twin: The Baseline at Time Zero



- Capture structural, mechanical, and thermal behavior at birth
- Use baseline to detect deviations in real operation
- Support safety, asset health, and lifecycle decisions

Histograms

Data for each trailer is accumulated over the full time of recording the trailer



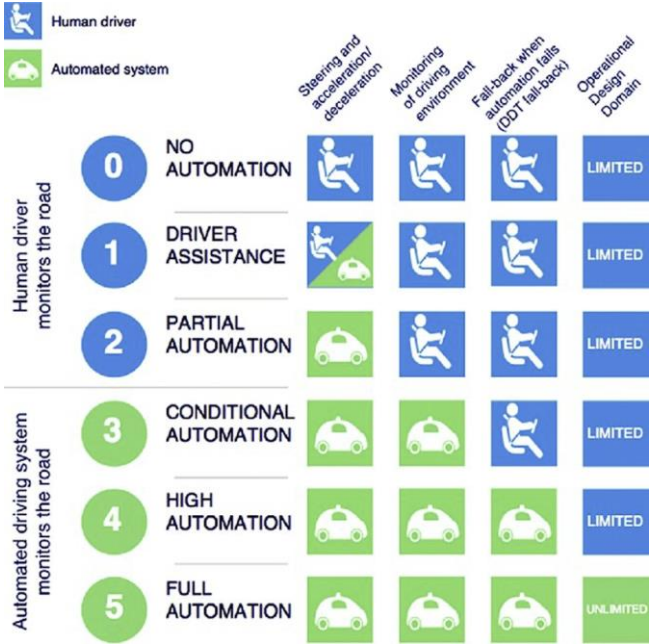
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The Trailer as an Autonomous-Ready Asset



- Prepare for V2V and V2I communication and standards
- Explore electrified axles and on-board energy systems
- Enable self-diagnostics and readiness for autonomous fleets



Serban, Alexandru Constantin, Erik Poll, and Joost Visser. "A standard driven software architecture for fully autonomous vehicles." 2018 IEEE International Conference on Software Architecture Companion (ICSA-C). IEEE, 2018.

<https://tc.canada.ca/>



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CREATING A CONNECTED TRAILER
ECOSYSTEM CUSTOMIZED TO YOUR NEEDS



Conclusion

The smart ecosystem is incomplete without an intelligent trailer

Value shifts from asset alone to asset plus data and uptime

Manac's mission: make the trailer a fully integrated smart asset

