Leveraging AI and Big Data Analytics for Smart Logistics

Adopting next generation Linehaul Planning for your Business

Presentation by David Torosyan

Account Manager Post and Parcel, Transmetrics

Transmetrics in a nutshell

Transmetrics

- SaaS engine exclusively for Transport & Logistics;

- Applying AI, big data, and predictive analytics to super-charge planning;

Team

- Management team with transport background and repeat entrepreneurs;

- Experienced and growing team of 45 professionals (70+ % technical);

Strengths

- Combination of Data Science, IT & Logistics / Transportation background;

- Product designed specifically for optimizing logistics networks flows;

- Advanced BI, Granular Demand Forecasting, Tactical & Strategic Logistics Planning;

- Successful software implementations with some of the largest T&L companies;

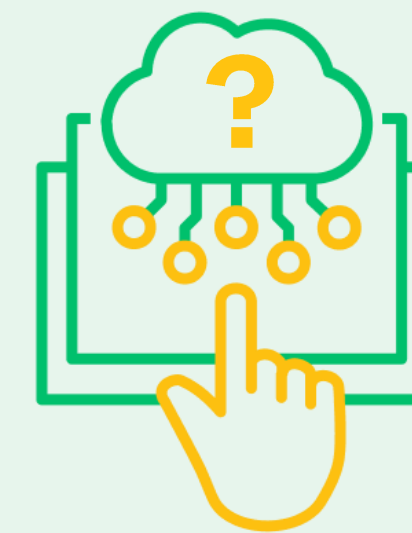# Proven Commercial Success

Current Industry Challenges

Highly competitive landscape and increasing service level expectations (Amazon, marketplaces)

There is a lot of uncertainty about the market conditions (Covid, inflation, labor shortages, etc.)
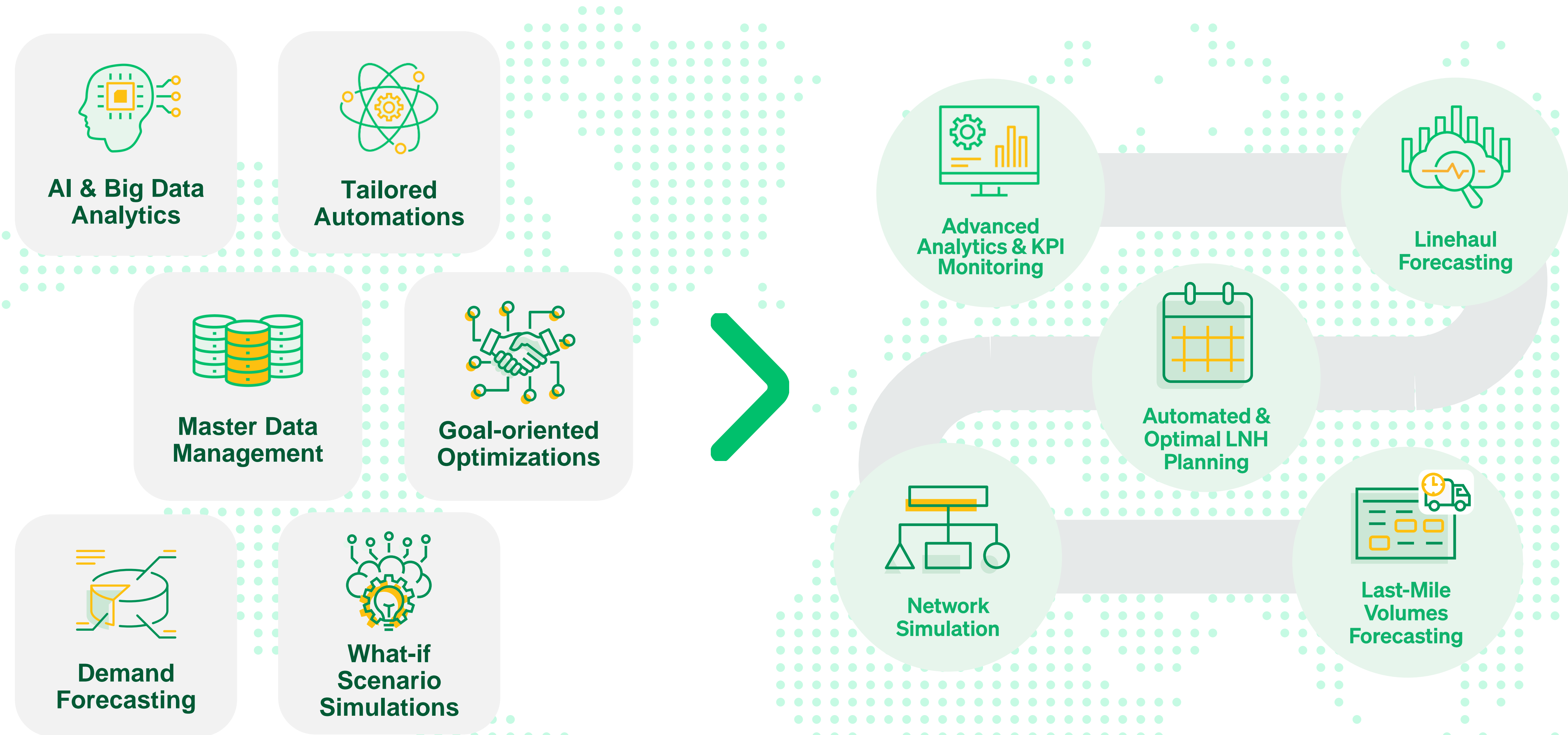
Characterized by <u>single digit margins</u>

<u>High volatility and peaks in demands</u> are combined with unpredictable events making optimal planning extremely difficult
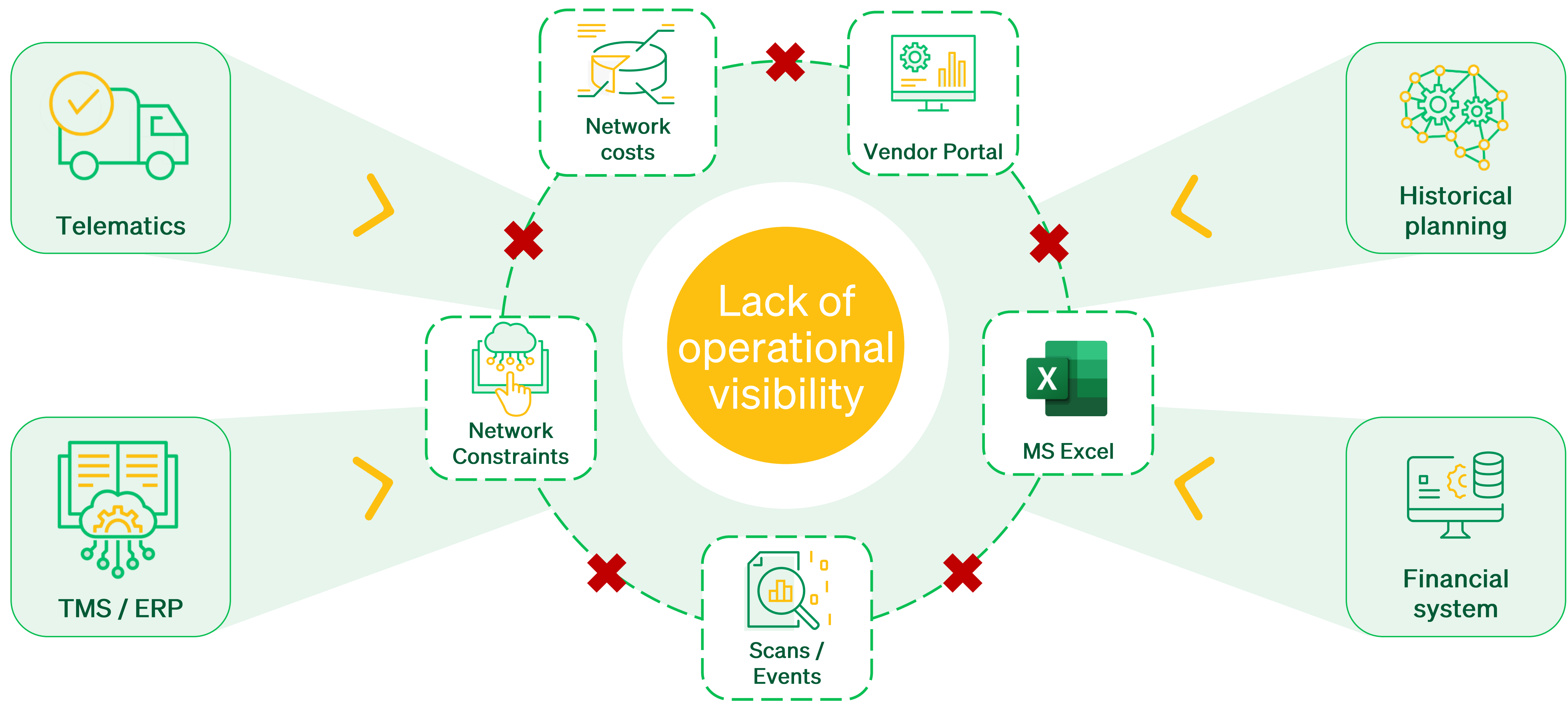
Linehaul Planning 4.O

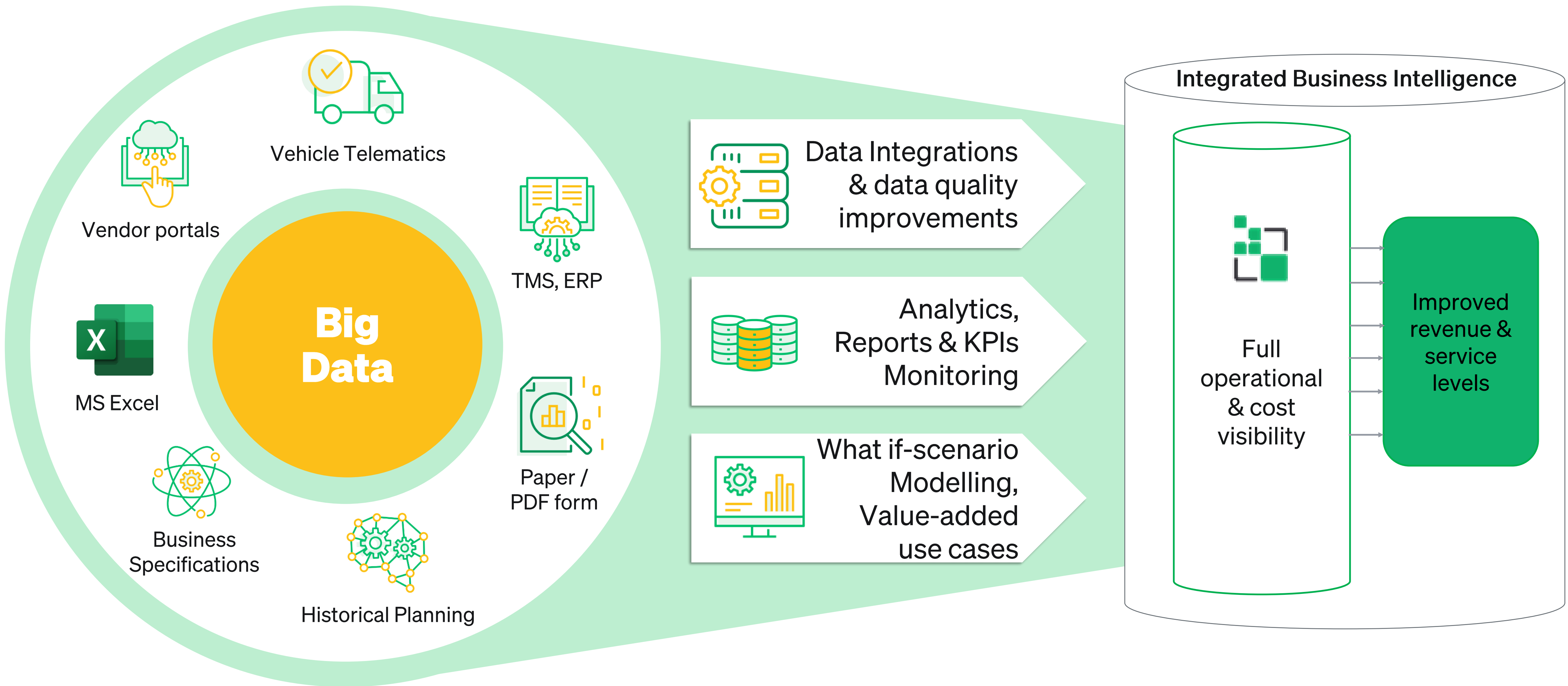Technologies translated into modules that ensure the successful achievement of linehaul network transformation goals

AI & Big Data Analytics

Tailored Automations

Master Data Management

Goal-oriented Optimizations

Demand Forecasting

What-if Scenario Simulations

Advanced Analytics & KPI Monitoring

Linehaul Forecasting

Automated & Optimal LNH Planning

Network Simulation

Last-Mile Volumes Forecasting

Industry landscape

A lot of barely connected systems and questionable data quality.

Telematics

Network costs

Vendor Portal

Historical planning

Network Constraints

Lack of operational visibility

MS Excel

TMS / ERP

Scans / Events

Financial system

Complex Technological Landscape

Leveraging multiple data sources, complex integrations, etc.

Vehicle Telematics

Vendor portals

TMS, ERP

Big Data

MS Excel

Paper / PDF form

Business Specifications

Historical Planning

Data Integrations & data quality improvements

Analytics, Reports & KPIs Monitoring

What if-scenario Modelling, Value-added use cases

Integrated Business Intelligence

Full operational & cost visibility

Improved revenue & service levels

Analytics & KPI Monitoring

Strategic and Tactical Business KPI Monitoring that allows to analyze past performance and monitor daily operations

- Customer / lane / tour profitability;
- Precise linehaul utilization;
- Planned vs. Executed monitoring;
- Cross dock utilization / efficiency;
- KPIs on productivity;
- Customer service levels.

Success story: Top 5 EU forwarder

Solution
- Data standardization using canonical data model;
- Precise reconciliation vs. financial reports / P&L / Telematics;

Result
- Operational savings in real-life context;
- Full network operational & cost visibility.

Linehaul Forecasting

Forecast demand and leverage this data for optimal capacity planning / purchasing.

- Forecasts the number of trucks from A to B on a daily basis

- Provides visibility on transport capacity needs days / weeks in advance

Success story: DPD

Solution
- Linehaul Planning software used daily since 2016;
- Precisely measuring truck capacity utilization and suggesting the number of trucks / route to plan across the network.
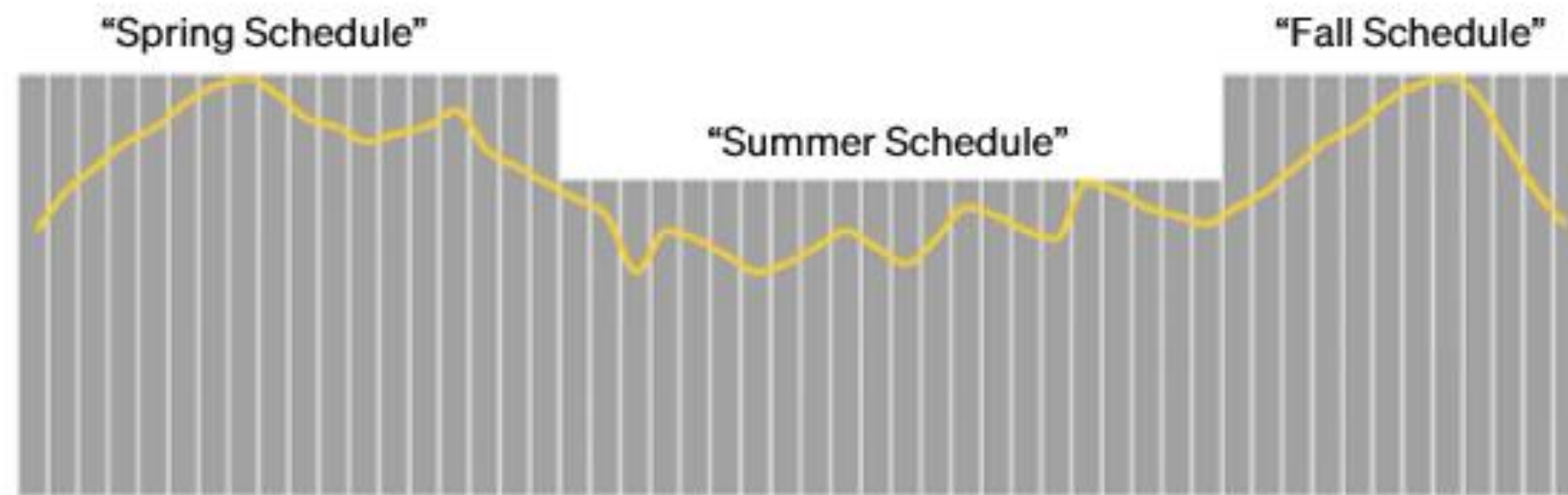
Result
- Reduction of total transport cost by 7-9%
- Increase of capacity utilization of trucks by 10%+

Tools to gain planning efficiency
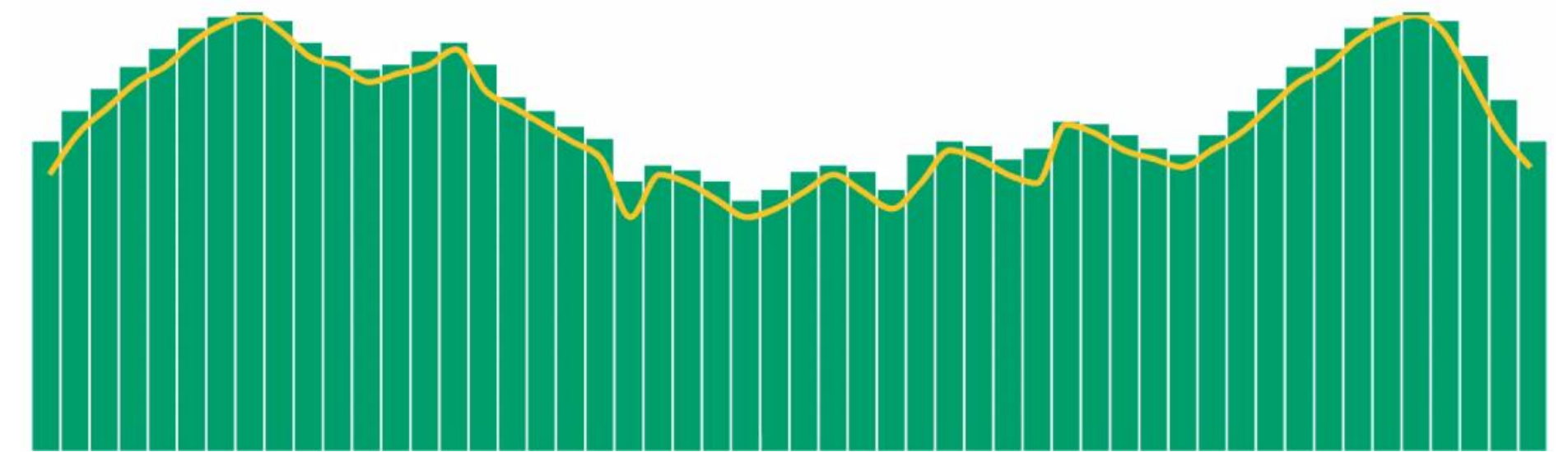
By aligning supply and demand

NOW:

Transporters rarely adjust their capacity / resources

WITH ARTIFICIAL INTELLIGENCE:

Predictive, agile tactical management

"Spring Schedule" "Fall Schedule"

"Summer Schedule"

Transition from static plans and gut feeling to precise agile resource planning with AI

Multi-variate demand forecast

To achieve an optimal plan tailored to every day / week

Historical Data

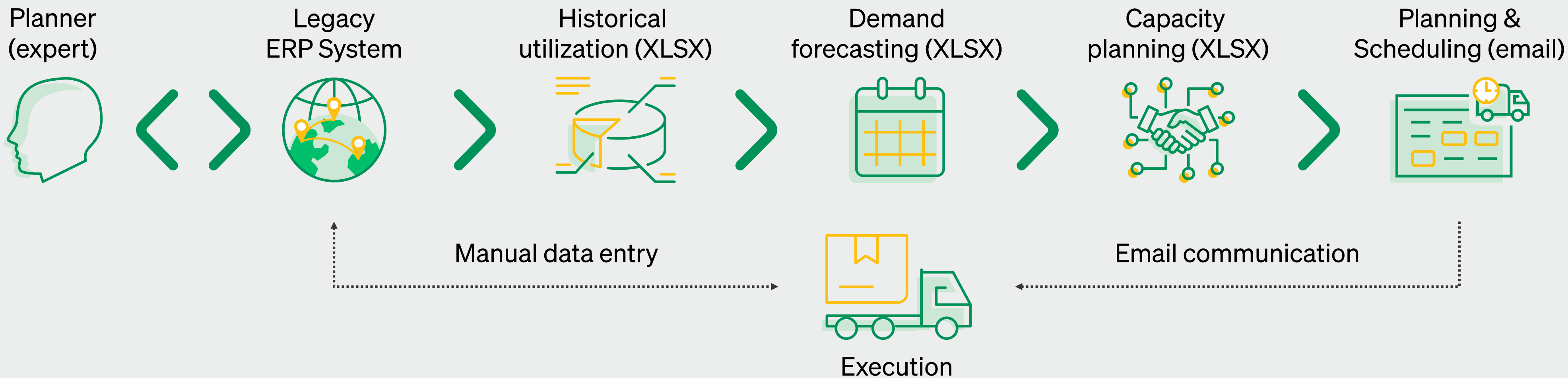- Shipments
- Consolidations
- Linehauls
- Customers
- Events

+

- Trade balances & economic indicators
- Freight exchanges data
- Business cycles
- Adjustment levers
- Weekdays
- Port data
- Weather
- Forex, commodities & futures prices
- Industrial seasonality
- Customer Forecasts
- Consumer Sentiment
- Public holidays
- Fairs and events

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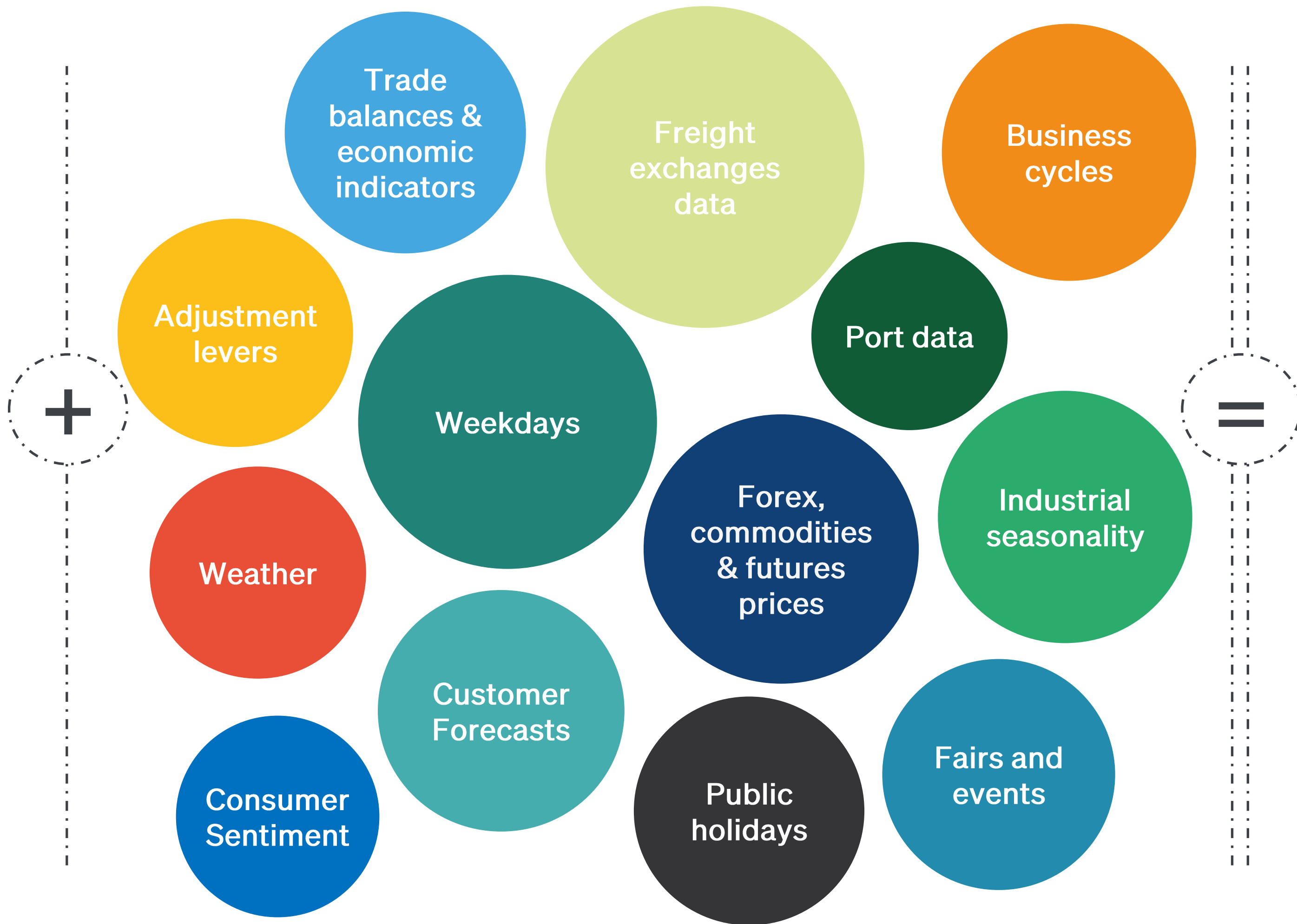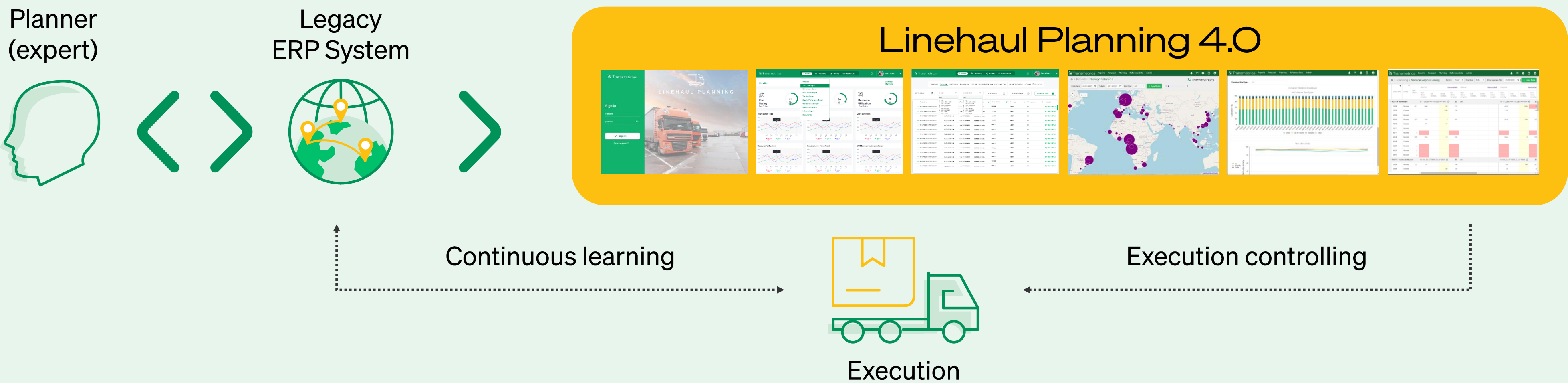
Demand Forecast

Align supply & demand for optimal linehaul planning

AI automates Linehaul Planning

Bringing multi-million EUR efficiency savings

Today's LSP planning: manual process

Planner (expert) ‹ › Legacy ERP System › Historical utilization (XLSX) › Demand forecasting (XLSX) › Capacity planning (XLSX) › Planning & Scheduling (email)

Manual data entry → Execution ← Email communication

Integrated planning with AI

Planner (expert) ‹ › Legacy ERP System ›

Linehaul Planning 4.0

Continuous learning → Execution ← Execution controlling

Efficient consolidation management
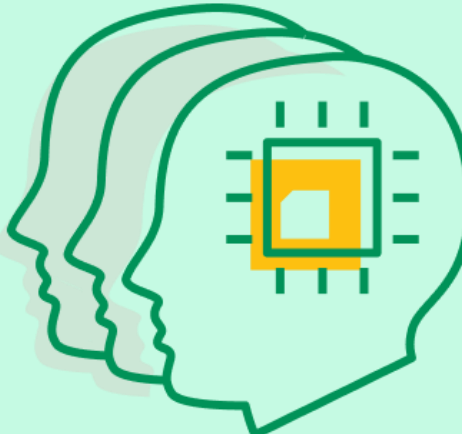
Resulting in less linehauls and higher utilization

Default schedule + routing
Same for every day

Optimized schedule + routing
Tailored for the specific day

Terminal Departing Linehauls
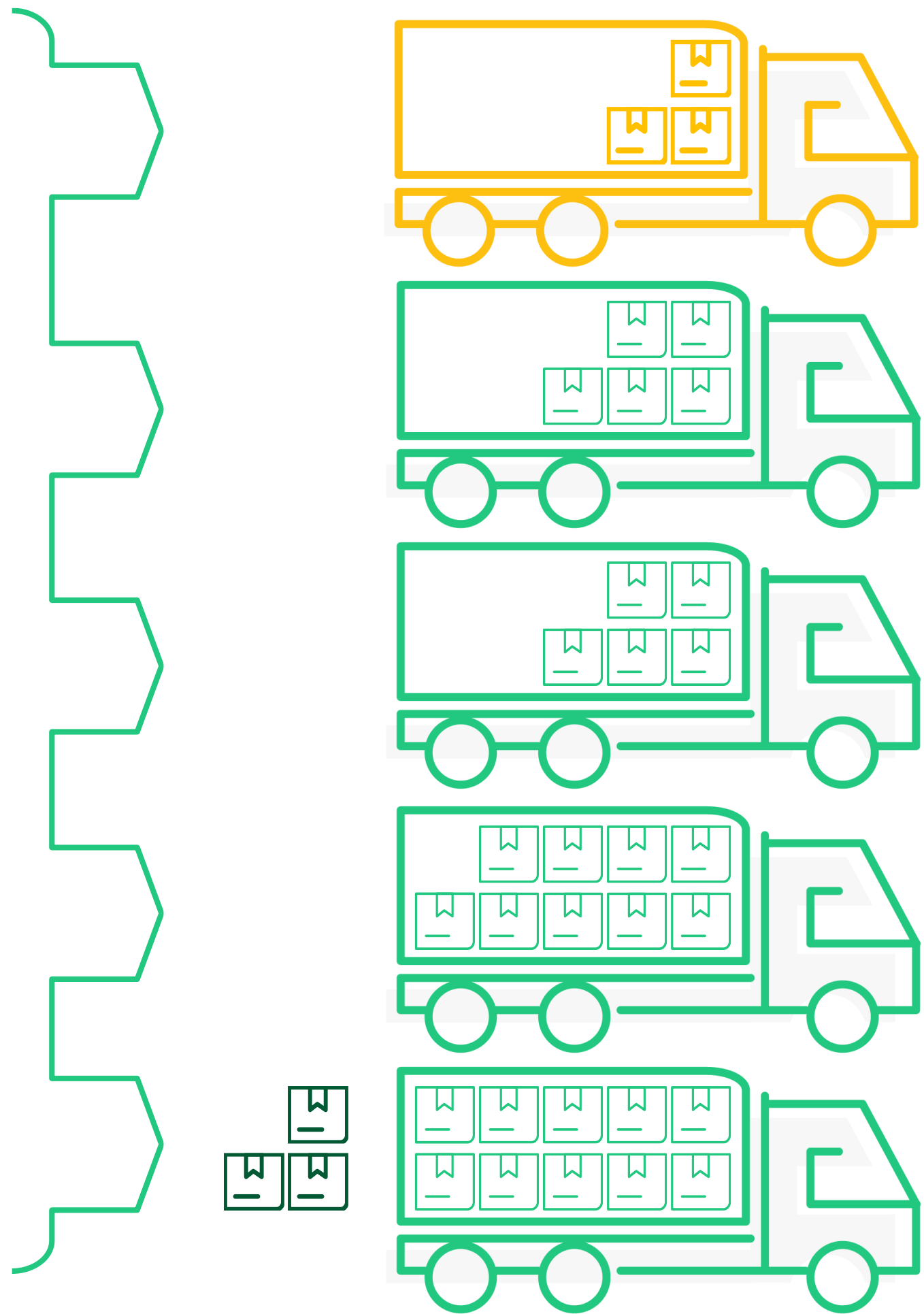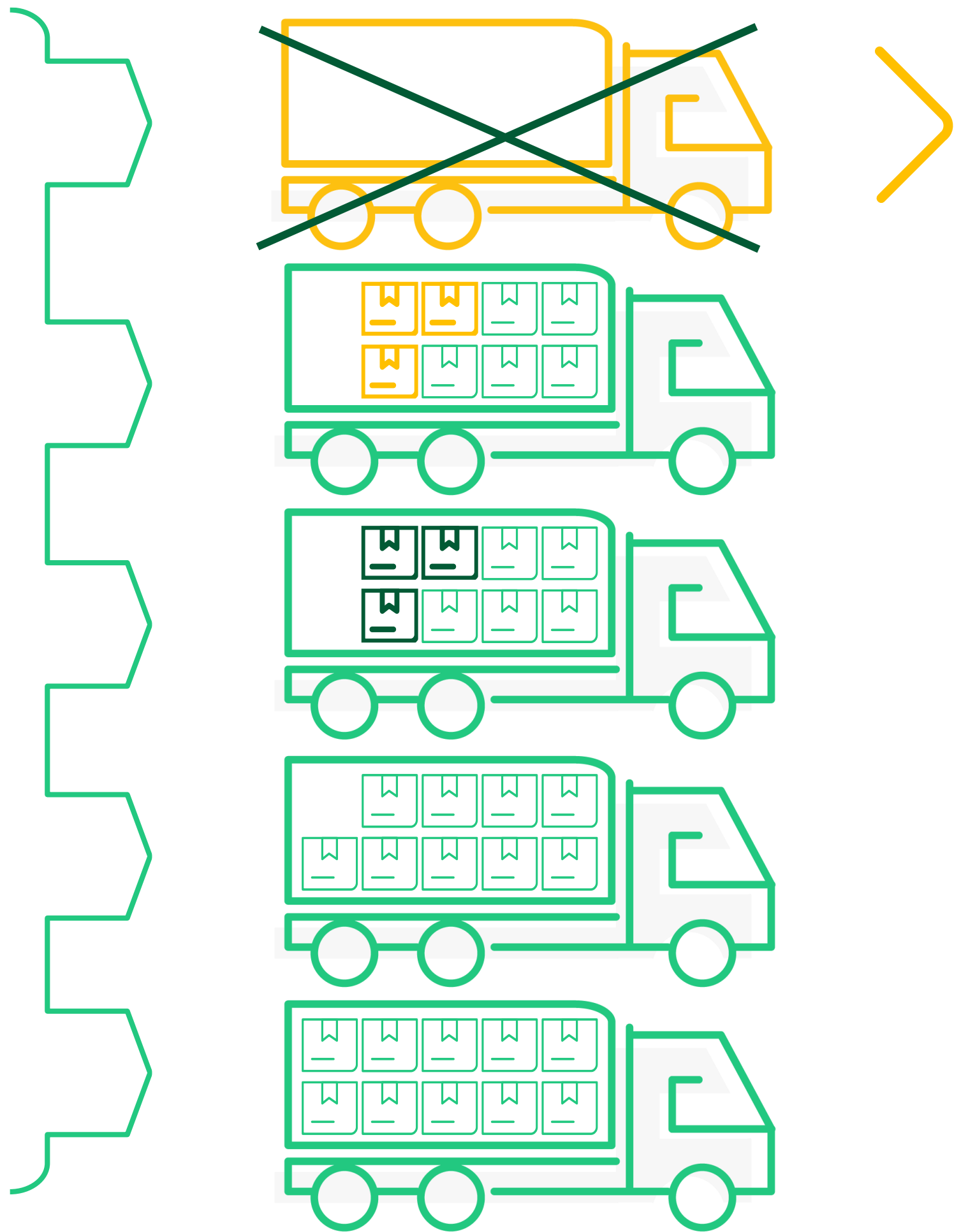
AI-powered
Logistics
Optimization
Engine

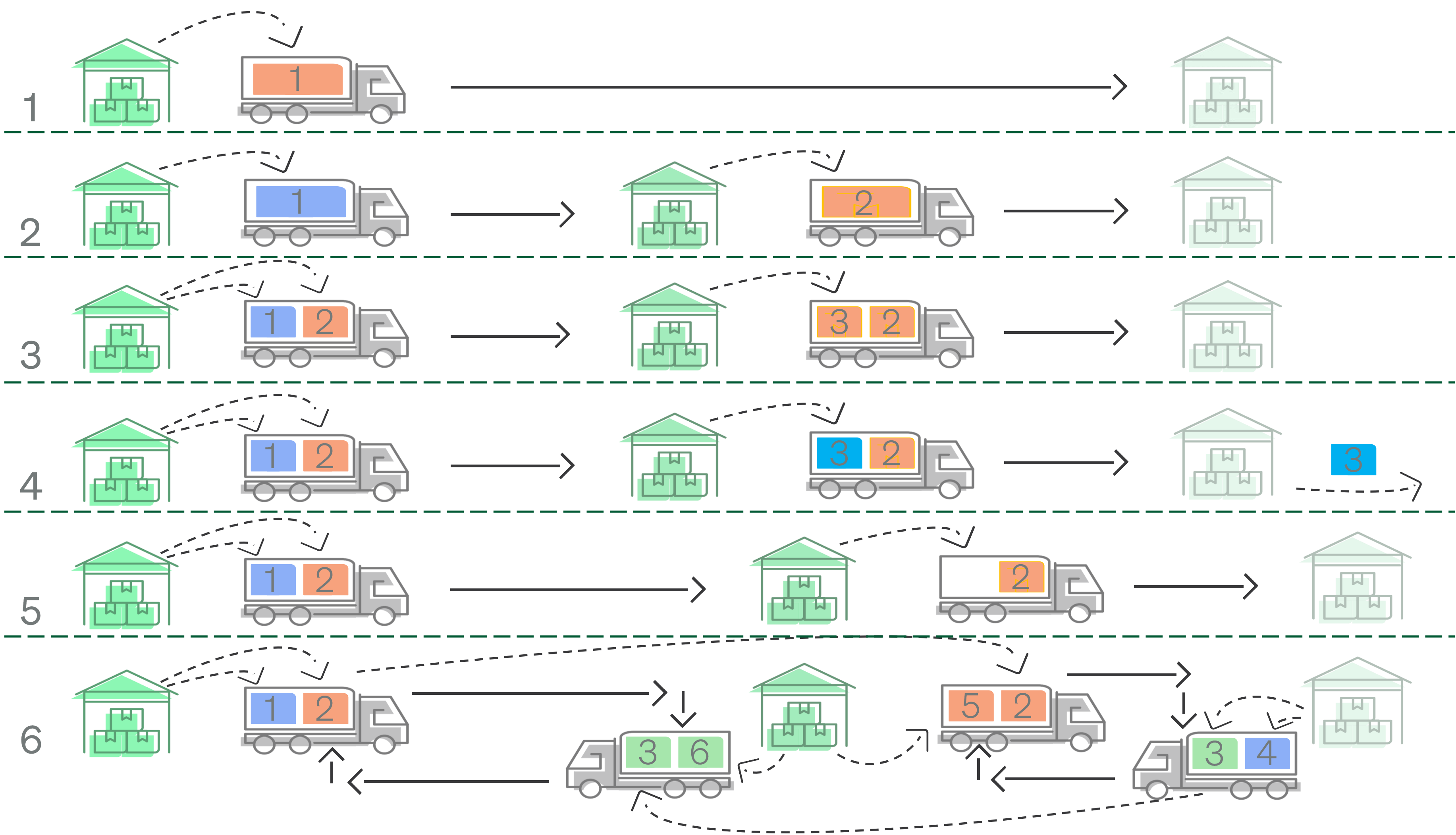Simple decisions on the outside – complex AI on the inside to make them optimal.

Dynamic routing

Utilizes complex rotations to reduce logistics cost in the complex networks

... and many more possible

Augmented Intelligence

The best of both worlds

AI

- Repetitive, tedious work
- Unbiased prediction
- Data cleansing and enrichment
- Fall-back decisions

Planner

- Experience
- Customer knowledge
- Market knowledge
- Vital for predictions in case of unreliable data

Last-mile Forecasting

Increase resource utilization by accurately forecasting last-mile volumes per location for short-term planning

- High forecasting accuracy for next day allows for the most efficient last-mile planning;
- Decrease the amount of subcontractor vehicles used to facilitate next-day deliveries;
- 3-5 days forecasting can improve the efficiency even further.

Success story: Gebrüder Weiss

Solution
- Predicting the exact number of last-mile delivery shipments for optimal courier planning;

Result
- Forecasting accuracy: 96+%;
- Increased service levels, improved courier capacity planning.

Simulations

Network modelling and redesign

Allowing to simulate with different network parameters to plan for future peak periods, test network resilience, build disaster recovery plans, etc.

- Demand
- Enable / disable location(s)
- Limit throughput capacity
- Routing
- Service levels
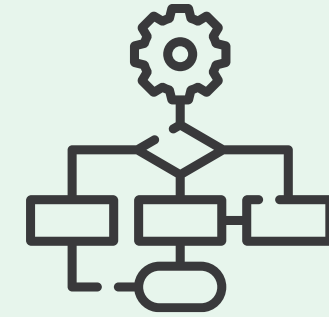
Success Story: DB Schenker

Solution
- Performing network simulations with different parameters, measure impact on key KPIs such as utilization, service levels, cost per shipment, etc.

Result
- 10%+ cost savings on daily operation costs.

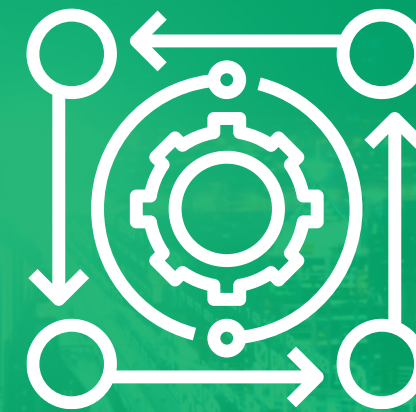# Planning modes & scenario simulation

Tactical

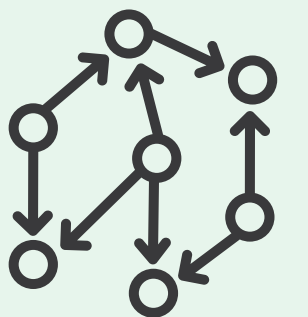- Create LNH schedules for low/high volume periods;

Strategic

- Simulate network with different parameters for future periods

- Test network resilience;

- Build disaster recovery plans, etc.

Most reliable and robust scenario simulations

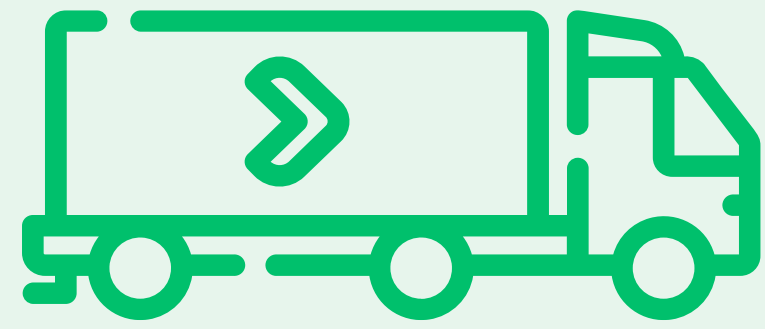Check the effect of different scenarios on your KPIs (utilization, cost per shipment, service levels, etc.)

Operational (daily)

- Build daily / weekly plan;

- Simulate execution scenarios and pick the best plan.

Quick Wins

Adopting Linehaul Planning 4.0 allows your company to achieve efficiency and cost savings of **up to:**
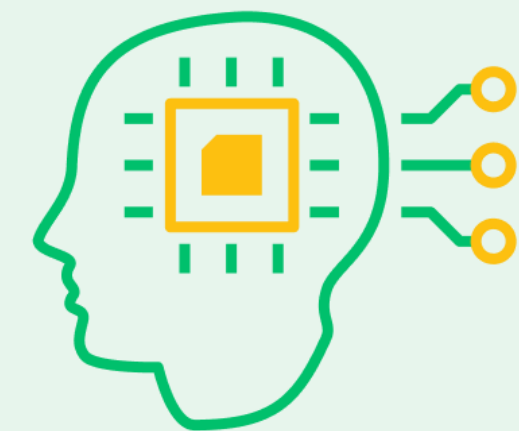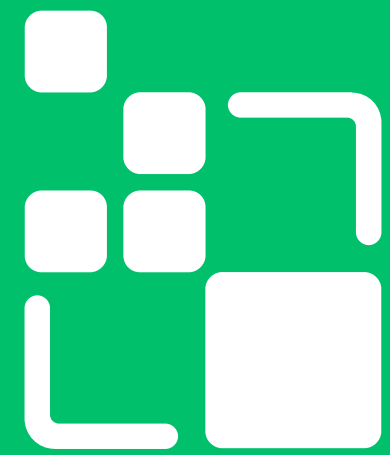
14%
capacity
utilization

10% LNH
cost improvement

90%+
forecasting
accuracy

80%
process
automation

Transmetrics

Thank you!
Any questions?

David Torosyan
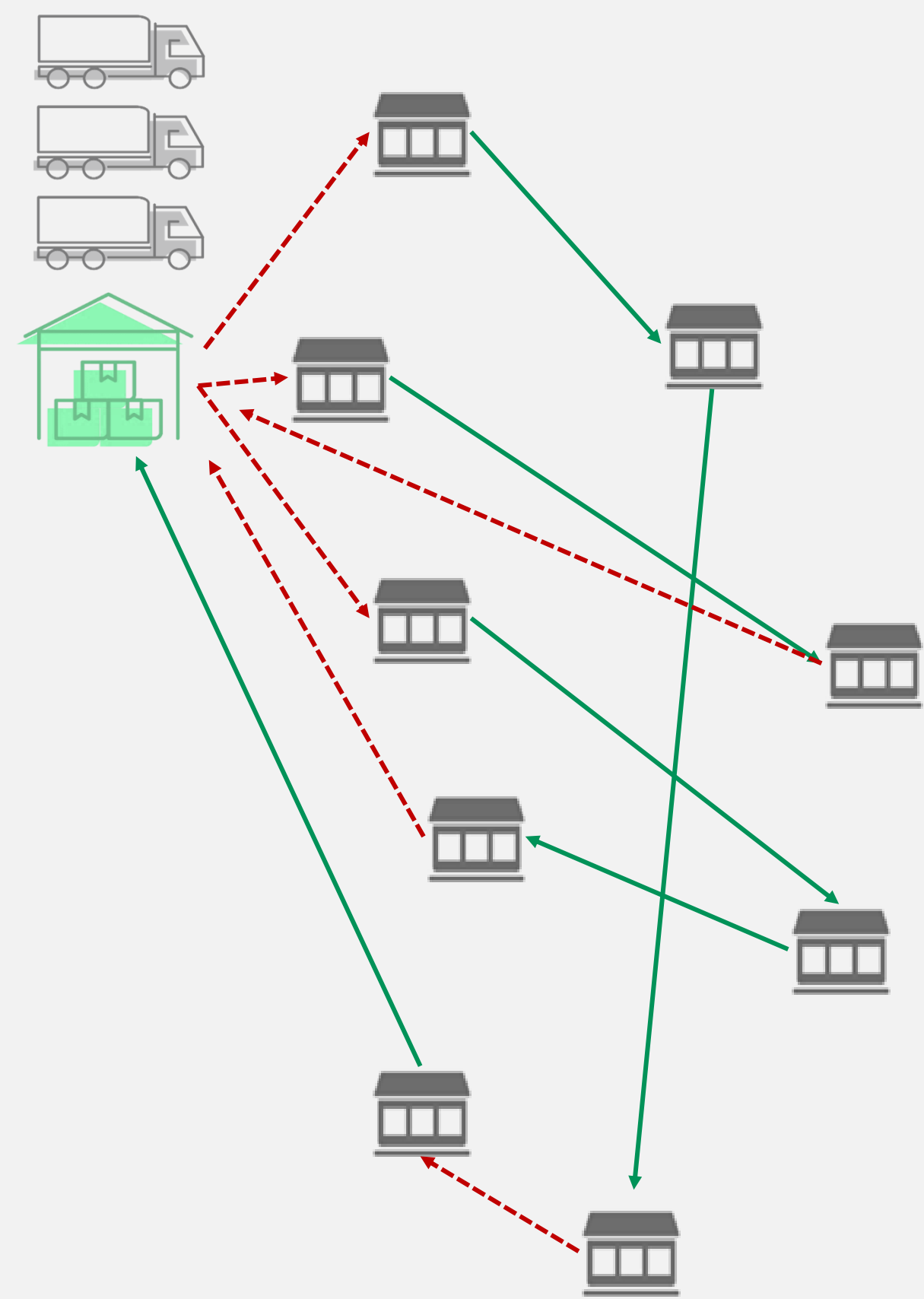Account Manager Post and Parcel
david.torosyan@transmetrics.eu

Optimal Resource Planning Powered by Big Data and AI

Predicting demand and suggesting the optimal supply + plan

Data cleansing and enrichment
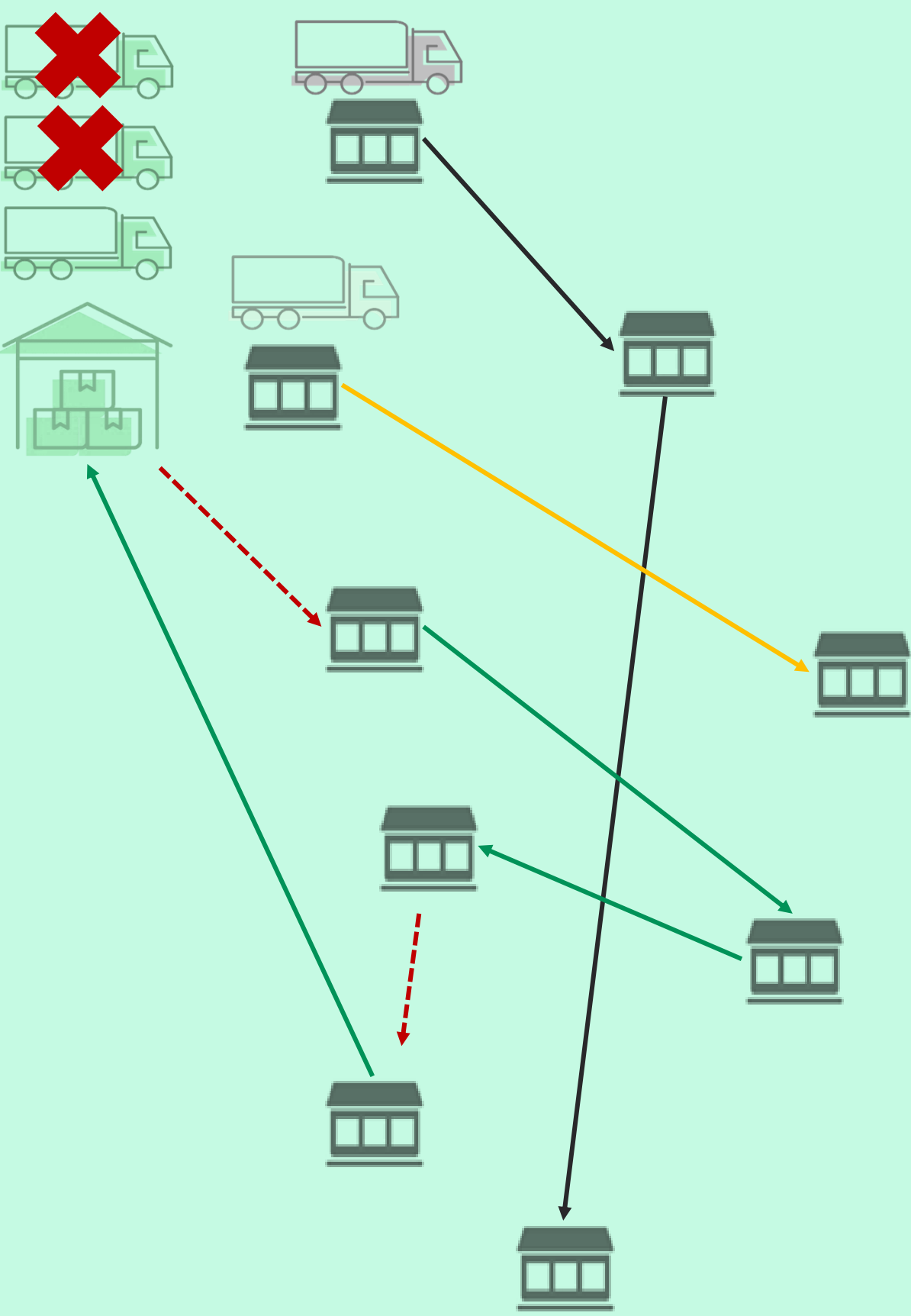
Past data - Unoptimized situation

Demand forecast modelling

Short – term demand forecast

Shipping History

at least 3 years

Shipping orders

Consolidations

Linehauls

Events

...

DATA CLEANSING!

+

- Customer Forecasts
- Freight exchanges data
- Adjustment levers
- Weather
- Trade balances & economic indicators
- Port data
- Forex, commodities & futures prices
- Fairs and events
- Industrial seasonality
- Public holidays
- Weekdays
- Business cycles
- Consumer Sentiment

Logistics optimization

Resource plan for next week(s): optimized vs. expected demand

Customer Testimonials

Nicholas Minde

Senior Vice President
Overland Germany

KUEHNE+NAGEL

"The main key differentiator for me is that unlike other AI/Big Data companies, Transmetrics understand the realities of the logistics industry.

Transmetrics apply mathematics, statistics and AI algorithms to create a product that makes sense for us, logistics experts, and which can be used in our daily operations to actually benefit our business."

Danail Danailov

Board Member

dpd
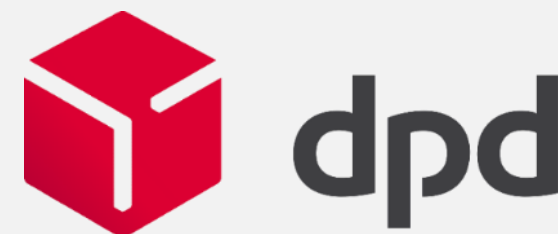
"With the Transmetrics' application, the benefits are very visible. Before using Transmetrics' solution, the rate of fleet utilization was 72%. Currently, we have above 82% [utilization] and we are expecting this to increase.

We estimate the total cost reduction at 7-9%, which is a great result for us."

Transmetrics

Platform & infrastructure
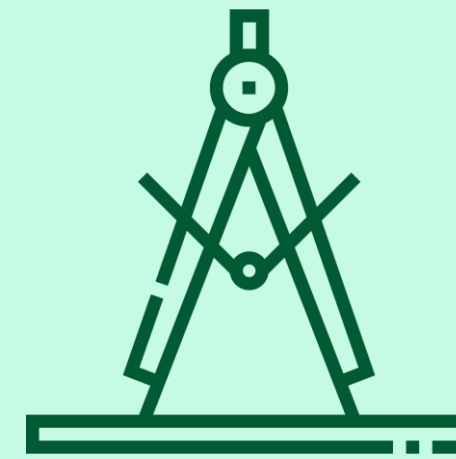
Built for the future
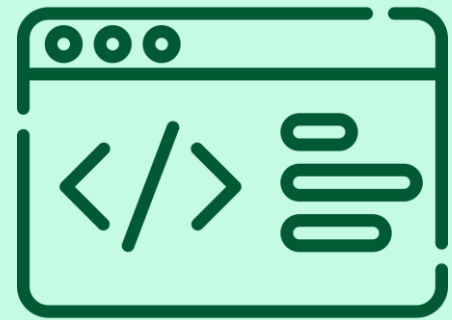
Single code base

Built in-house from day 1, deployed globally.

Hyper secure

State-of-the-art encryption and security, ISO 27001 certified.

Precise

Backed by IBM's high performance machine learning algorithm, Watson.

Agile

Continuous innovation, capable of adapting to rapidly changing industry standards.

Daily learning AI loop

Ensures planning always relies on latest data

Customer IT Systems

Transport Management System (TMS)

records operations + business constraints

Ops staff execute plans

Planning System

Secure VPN

Historical Data

Continuous Daily Learning Loop

Optimized Plans

Transmetrics Cloud SaaS Platform

Data uptake cleansing and enrichment

Business Optimization Modelling

Predictive Logistics Optimization

Transmetrics