Demand forecasting for optimization and planning.
Transmetrics Case Study
OVERVIEW

100% coverage of the territory in Bulgaria, Romania & Greece

2,400 employees and partners

Over 12,000,000 shipments per year

Over 800 vehicles with loading capacity from 1.5 to 23 T

Over 540,000 unique customers

346 offices and PUDO locations in Bulgaria

Over 20,000 corporate accounts

20 courier electric vans Renault Kangoo Zero Emission

Public since 2012
• The largest courier company in Bulgaria
• Speedy brand – synonym for speed, security and quality
• Brand awareness over 96%
• Largest market share in Bulgaria in courier services market
• Effective management and sales team
• Constant two-way customer communication
• Organized and efficient logistics system
• Advanced IT infrastructure in the whole transportation industry in Bulgaria
• APT – automatic post terminals deployment
• Successful people motivation, development and HR management
• Member of the one of the largest road networks in Europe - Dynamic Parcel Service - DPD
Distribution centers/hubs, depots and offices with a total area of over 48,000 sq. m

116 trucks
503 vans
181 pick-ups
IMPORTANCE OF DEMAND FORECASTING AND OPTIMIZATION

• Increasing linehaul capacity utilization is a high priority for Speedy, since linehaul is a major cost item.

• Gains in capacity optimization can reduce transportation expenses by more than 25%.

• Challenges in planning for holidays and other volume peak periods:
  • Require extra capacity to be planned in advance.
  • Even after capacity increase, risk to be overloaded with shipments.
  • Affect both customer satisfaction and employee motivation.

• Demand forecasting can estimate the capacity needs for such peaks more precisely:
  • Historically, Speedy relied on subjective information, with high level of error.
  • Even though a statistical demand forecast is not 100% accurate, the error will be lower.

• Using software to take network optimization decisions, based on the demand forecast, brings benefits:
  • Taking decisions based on numbers, not on subjective assessment.
  • Informing partners in advance of expected changes.
Project update

• Phase 1: historical load factor reports, network efficiency monitoring - implemented

• Phase 2: forecasting of needed line haul resources (31 December, 2016)

• Phase 3: cost analysis and planning (31 December, 2016)

• Phase 4: real-time logistics optimization (30 June, 2017)
Project update - technical implementation

- **Speedy AD IT Environment**
  - **Sky Logistics** (Transport Management System)
  - Reports for users

- **VPN**
  - Shipping history
    - Shipments, capacities, contracts, events
  - Forecasts
    - Optimized schedule

- **Transmetrics servers**
  - Transmetrics Cargo transport predictive optimization product

*Runs daily at 5:30 AM*
The Big Data product of Transmetrics forecasts future shipping orders, unlocking opportunities for linehaul optimization.
How does the Transmetrics forecasting product work in detail?

**Automated inputs**
- Customer historical data
- External data sources (e.g. export, import, google trends, holidays, seasonality, B2C indicators, campaigns, weather[?])
- Cargo demand forecast model (automatic learning and calculation from inputs)

**Manual inputs ("adjustment levers")**
- Yearly orders curve
- Business growth %
- Holiday coefficients
- Shopping peaks
- Large customer growth + yearly curves
- Other statistically detected trends

With limited data (e.g. 6 months of history)
- Transmetrics suggests initial values for the adjustment levers from past experience
- Customer users can review / override values

With a big data set (e.g. 3+ years history)
- Levers ‘default setting’ is data-mined from historical data.
- Customer users can still review / override them.
Transmetrics: new forecasting functionality: roll out early 2017
Predictive analytics is critical for transport capacity optimization

- **Traditional network capacity planning:** without prediction
  - Same plan every day, at most changes once per year (winter/summer schedule)

- **Transmetrics network capacity planning:** with predictive optimization
  - Adjusted plan for every week or even every day, much less excess capacity
Optimization scenario for groupage, parcel and pallet networks

Default schedule + routing
Same for every day

Optimized schedule + routing,
Tailored for the specific day
Transmetrics: current trip planning screen Speedy

### PLANNED TRIPS - 24/11/2016

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Main levers of benefits

- Reduce cost for P&L impact
- Cancel unneeded linehauls
- Optimize warehouse resourcing
- Order variable linehauls in advance
How is Transmetrics different from other forecasting and optimization tools?

**Predictive Optimization**

- “Predictive optimization” - optimize based on a forecast, not on last-minute actual data.
- Taking optimization decisions 1 month ahead of time allows for bigger changes - more P&L impact.
- One integrated end-to-end workflow, using the same system for forecasting and optimization.

**Forecasting**

- Very granular forecasting (per depot/ZIP per day) to enable optimization.
- Forecasting via data mining (bottom-up) improves precision at detailed levels.
- Utilizes external big data sources to achieve unbeatable forecast accuracy.

**Optimization**

- Optimization uses all detailed forecast data via a seamless integration.
- Optimizing 1 month ahead enables time to review, buy-in and approve changes.
- Support strategic decisions with what-if studies, based on future - not past - data.
Today, due to imbalances in the flow of freight between economic regions, vehicles have to make too many empty return trips.

Across the EU, the average of empty return kilometers is 24% of total kilometers driven.

Transmetrics will predict the likelihood of finding a matching return trip, based on internal company data and external data.
Thank you for your attention!