Last mile logistics optimization for e-Commerce

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About ORTEC

SCM Optimization experts

Optimization Software
Logistics, Workforce, Warehousing

Analytics and Consulting
Discover, Design and Develop

Smart Publishing Platform
Communications, Marketing, Publishing

Western Europe
Belgium
France
Germany
Italy
Netherlands
UK

Nordics
Denmark

Central and Eastern Europe
Greece
Poland
Romania

Asia Pacific
Australia
China
Singapore

North America
USA

South America
Brazil

35 years existence

2000+ customers

100 M USD revenues

750+ employees
What is Last Mile Fulfillment?

- The ‘last mile fulfillment’ problem is not a new phenomenon, but has become a hot topic the last few years due to two key trends:
  - Online sales is growing very fast
  - Delivery at home during the day is more and more difficult due to changing life styles
Why is Last Mile Fulfillment so difficult?

It is the most expensive part of the supply chain mainly due to:

- Delivery to end-consumers:
  - High degree of failed deliveries ("not-at-home")
  - High degree of returns
  - For some regions, the consumer density too low
  - Mostly done by small vans, which results in high cost & carbon footprint per kg
Last Mile Fulfillment is a Vehicle Routing problem

- The objective of vehicle routing is to create a highly efficient schedule for your vehicles to do the delivery of goods to your customers
- The aim is to minimize cost while meeting all business rules and service constraints
  - Delivery time windows
  - Vehicle types
  - Traffic congestion
  - Etc.
- This is a process that quickly becomes too complex to be done manually
How can technology help?

*More orders with less vehicles*

- In order to optimize the large number of stops within a route, while meeting multiple constraints (such as congestion, vehicle type, driving time regulations, delivery time windows etc.) requires functionality not found in ERP or TMS systems.

- To support such complex decision making, **powerful optimization software** is required.
Vehicle Routing Benefits

- **Increase productivity – reduce cost**
  - Maximize truck utilization and balance workload
    - Increase the number of orders per vehicle
  - Optimize routes
    - Reduce mileage, save fuel and working time

- **Improve customer satisfaction**
  - Commit to narrower delivery time windows
  - Predict more accurately arrival times
  - Increase responsiveness to last-minute orders

- **More efficient planning process**
  - Reschedule deliveries quickly and easily
Best practice: integration of Planning Optimization with Real-time tracking and tracing
Best practice: Real-time tracking / Mobility

*Seemless integration of planning and execution*

- **What:**
  - Real-time integration with on-board devices

- **How:**
  - Flexible middleware for integration with any onboard device system
  - Multiple device brands/types can be used concurrently
  - Continuous schedule updates using GPS signals and onboard device input

- **Results:**
  - Seemless integration of planning an execution
  - Improved security via vehicle tracking
  - Full visibility and control
Leading e-Procurement Platform service provider in Asia.

- Founded in 1999
- Privately funded
- Over 120 employees

As at December 2015:
- Over 25,000 companies
- Over 45 end-to-end integration
- Over 20 e-Procurement Platforms
Services

Procure-to-Pay Platform
Your order-to-cash process can be fully automated with the Power2E platform. Adopt our proven best-practices order-management with your suppliers today.

eCatalog & GDS Service
Manage your item information according to international standards.

Transportation Monitoring
Get real-time visibility into your fleet, drivers, carriers and other supply-chain partners.

EDI Integration
EDI fully integrates your trading-partners into your backend system. Save time, money and improve your service-levels. And your CSR-team will thank you for it!

eSCM
extended Supply Chain management (eSCM) integrates your business partners up and down your supply-chain, integrating seamlessly into any ERP system.

Cold-chain Monitoring
A solution for full-service monitoring of your temperature-sensitive trucks and warehouse-locations. Learn why clients such as Unilever Walls use Power2E.
Latest innovation: Integrating Routing and e-Commerce
Integrating Routing and E-commerce website

*Time-slotting*

- An important part of the online shopping experience: promising the delivery date (and cost)

- The old way
  - Promise fixed lead time for each delivery (i.e. 2 days, next day etc.)

- Why not take into account?
  - Which day of the week / time of the day
  - When is a delivery vehicle in the same neighbourhood

- The new way using optimization: time-slotting
  - Take vehicle capacity and deliveries already committed in the same neighbourhood into account when proposing the delivery date & time to the customer
Overview Time Slotting solution

Process outline

Key factors:
- Speed (of response)
- Reliability

Approach:
- Lookup table
- Continuous re-optimization
Time Slotting example

1. Current orders
2. Current schedule
3. New order
Time Slotting example

1. Current orders
2. Current schedule
3. New order
4. Determine available time slots

- Depot
- Vehicle 1
- Vehicle 2
- Current orders
- New order
Time Slotting example

1. Current orders
2. Current schedule
3. New order
4. Determine available time slots
5. Order confirmation
Time Slotting example

1. Current orders
2. Current schedule
3. New order
4. Determine available time slots
5. Order confirmation
6. Re-optimization
Case studies
Customer Cases – DPD e-commerce Parcel, Central Europe

- **Overview of the business**
  - DPD (part of La Poste, French mail service) is a leading European provider of parcel and express services
  - **Scope:** deliveries of parcels for e-commerce companies in 10 countries in Central Europe (Poland, Hungary etc.)
  - **Objective:** ‘1 hour predict’ program:
    - going from not being able to promise the customer when the delivery will be made during the day to a ‘1 hour delivery window promise’

- **Winner 2015 World Mail Award**
Case study: E-commerce deliveries

Solution
- Based on ORTEC Cloud Services for Vehicle Routing
- Integration in DPD back-end system and driver handhelds

Results
- Pick-up and delivery cost savings of 3.5%
- Customer delivery fulfillment up by 7%
- Increase productivity of new drivers by 25%
- Visibility and control of complex operations / depend less on human intervention
Customer Cases – Ahold Home Delivery Netherlands

- Overview of the business
  - “Albert.nl” is the transport organisation for home delivery service of Albert Heijn (groceries), Etos (pharma), Gall & Gall (wine), which all belong to the Ahold Group
  - Customer can place orders via internet and goods will be delivered within 18 hours
  - Two hubs and 4 depots
  - 65 trucks
  - 1000 orders per day
  - Customer can select day and time-slot of delivery; not every region is delivered daily
Case study: Home delivery

- **Solution**
  - Complete automatic transport optimization (no user intervention)
  - Direct interface to e-shop web-platform
  - Variable transport costs per time slot quoted to customer to flatten demand and minimize peaks
  - Integrated multi-depot planning (automatic assignment of delivery to right hub/depot)
  - 2 planning runs per day

- **Results**
  - More orders per trip (11 → 15)
  - Higher service level to customers by more accurately meeting time windows
  - Less time spent on planning
Why is it now a good time to adopt Optimization in e-Commerce Fulfillment?

- Fulfillment is the most difficult and expensive part of the e-Commerce business model
- While optimization techniques are a proven way for leading companies in the US and Europe to improve their supply chains, adoption in Asia is still low
- However:
  - The need is there
  - The tools are available
- This means by adopting it now, you stand a real chance to leapfrog ahead of the competition
Questions ?