Last mile logistics optimization for e-Commerce

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About ORTEC

SCM Optimization experts

Optimization Software

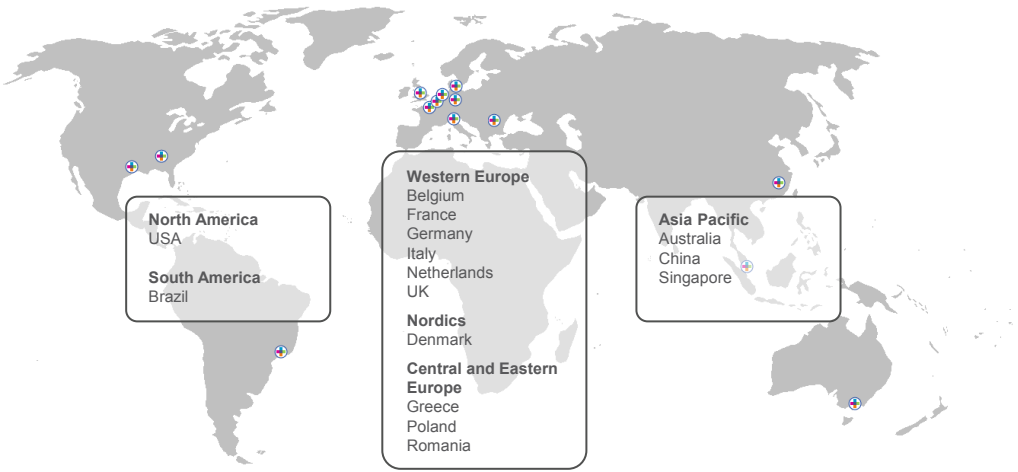
Logistics, Workforce, Warehousing

Analytics and Consulting

Discover, Design and Develop

Smart Publishing Platform

Communications, Marketing, Publishing



35 years existence

2000+ customers

100 M USD revenues

750+ employees

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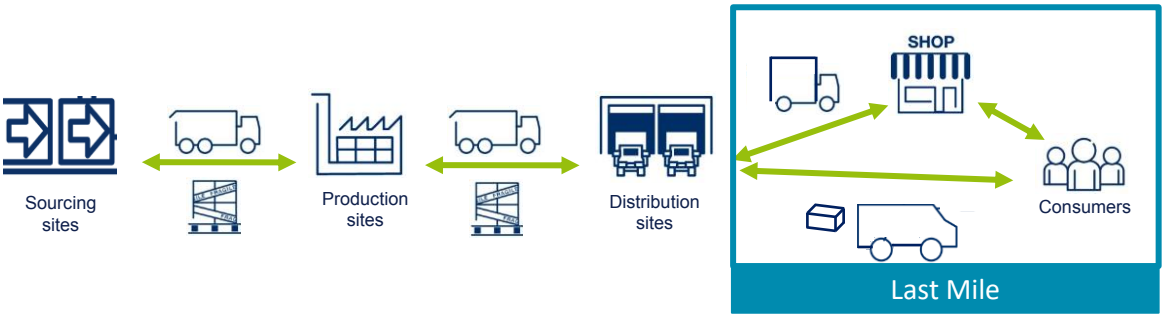
What is Last Mile Fulfillment ?



- 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

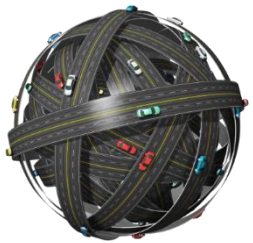
Why is Last Mile Fulfillment so difficult ?

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



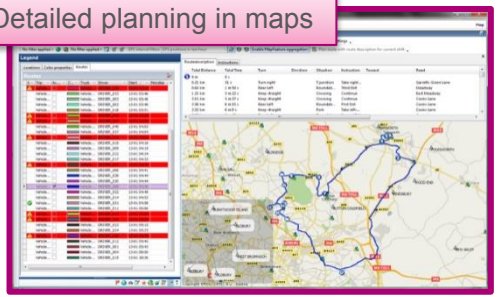
How can technology help?

More orders with less vehicles

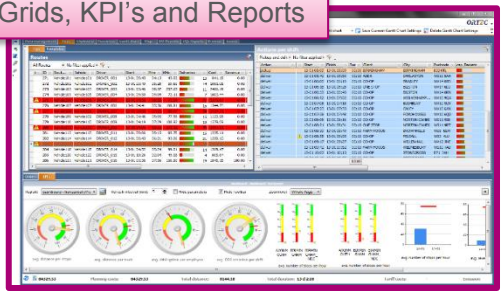
- In order to optimize the large number of stops within a route, while meeting multiple constraints (such as congestion, vehicle type, driving time regulations, delivery time windows etc.) **requires functionality not found in ERP or TMS systems**

- To support such complex decision making, **powerful optimization software** is required

Detailed planning in maps



Grids, KPI's and Reports



Vehicle Routing Benefits

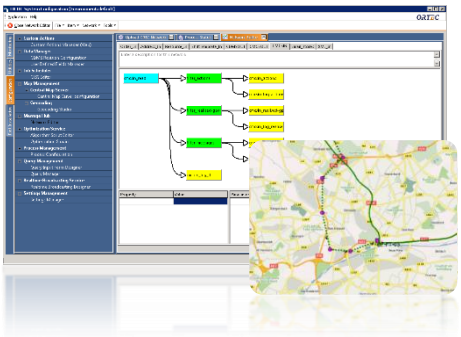
- **Increase productivity – reduce cost**
  - Maximize truck utilization and balance workload
    - Increase the number of orders per vehicle
  - Optimize routes
    - Reduce mileage, save fuel and working time
- **Improve customer satisfaction**
  - Commit to narrower delivery time windows
  - Predict 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



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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 PowerE2E e-procurement 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 you 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 PowerE2E。

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

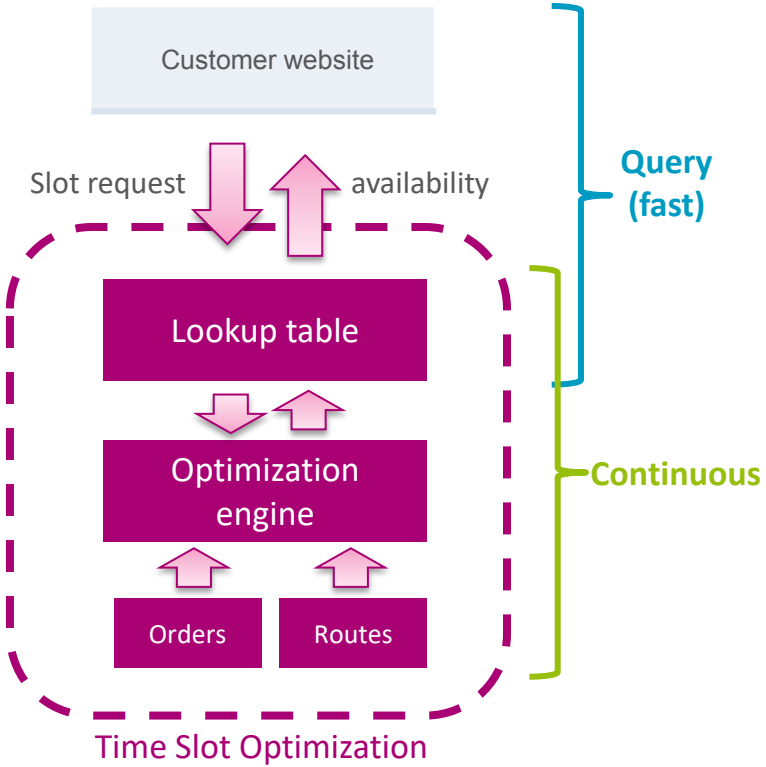
Process outline

Key factors:

- Speed (of response)
- Reliability

Approach:

- Lookup table
- Continuous re-optimization



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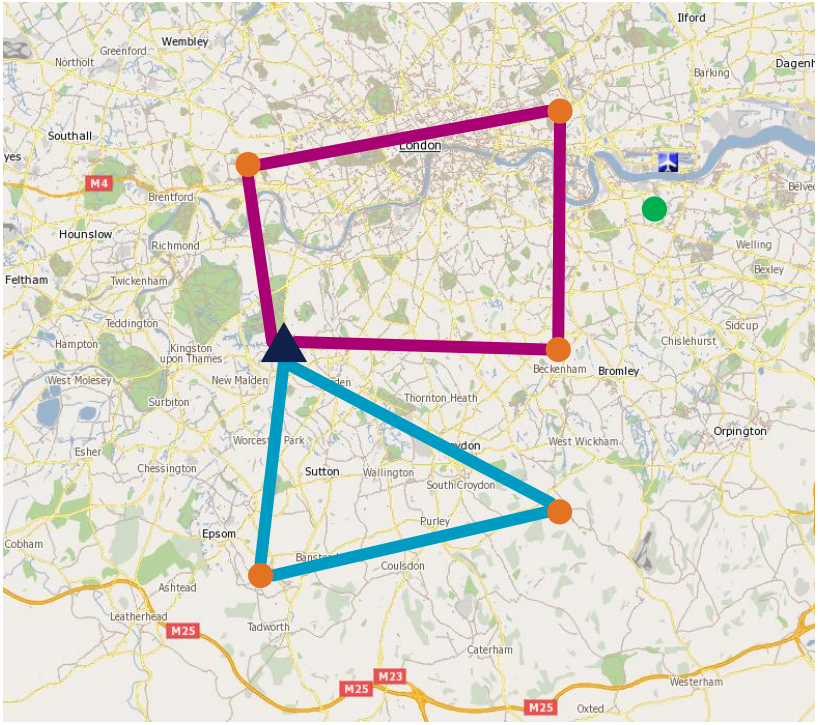
Time Slotting example



1. Current orders
2. Current schedule
3. New order

Depot Vehicle 1 Vehicle 2 Current orders New order

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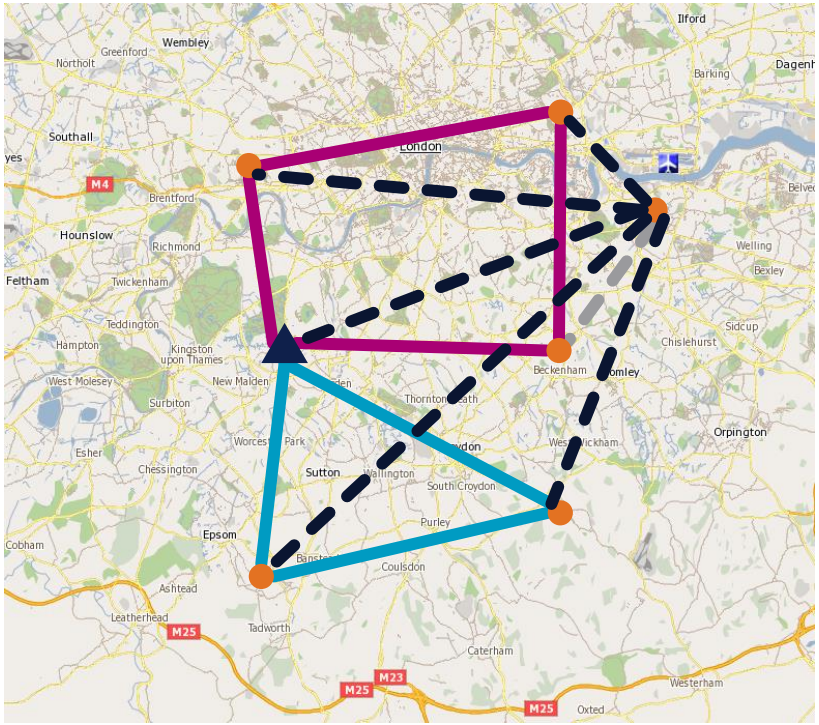
Time Slotting example



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

Depot | Vehicle 1 | Vehicle 2 | Current orders | New order

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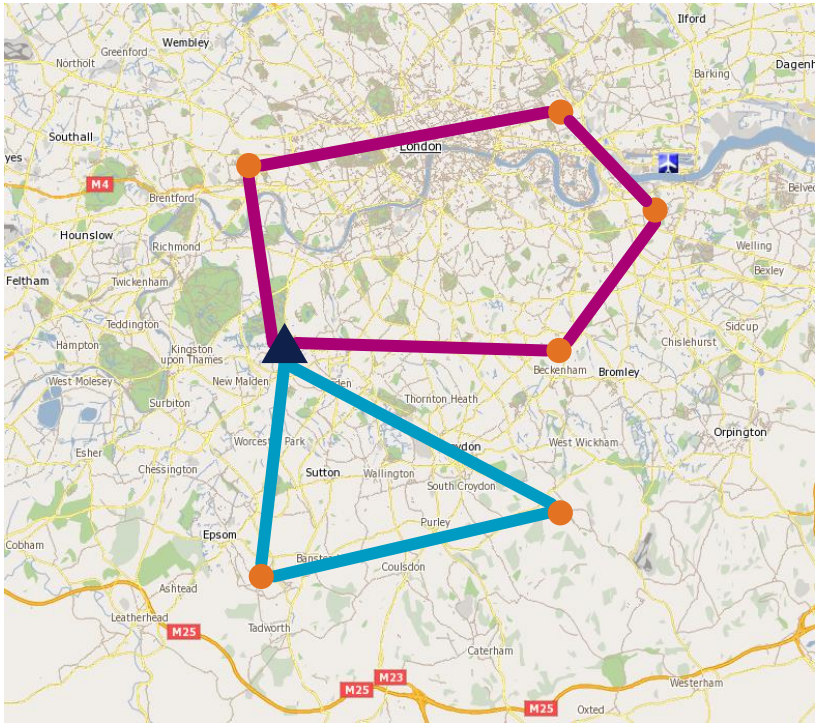
Time Slotting example



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

Depot Vehicle 1 Vehicle 2 Current orders New order

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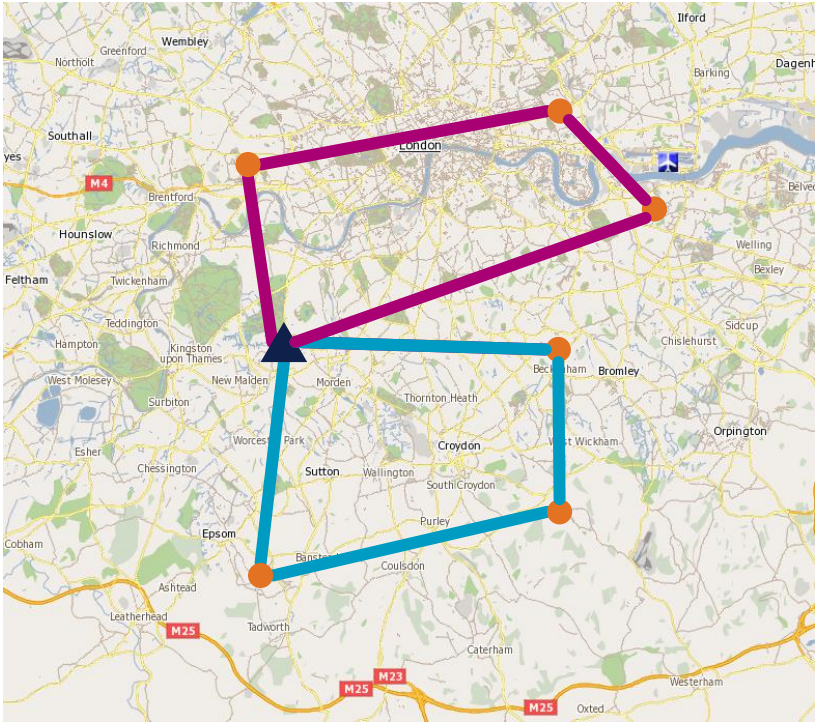
Time Slotting example



1. Current orders
2. Current schedule
3. New order
4. Determine available time slots
5. Order confirmation
6. Re-optimization

Depot | Vehicle 1 | Vehicle 2 | Current orders | New order

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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

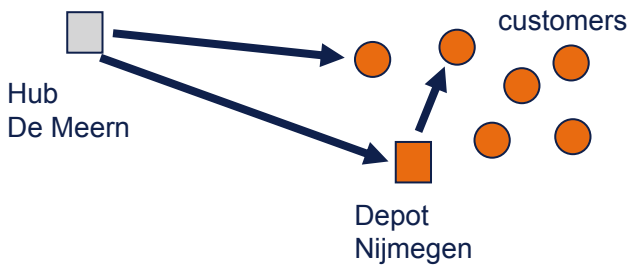
- Results
  - Pick-up and delivery cost savings of 3.5%
  - Customer delivery fulfillment up by 7%
  - Increase productivity of new drivers by 25%
  - Visibility and control of complex operations / depend less on human intervention

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

Summary and Conclusion

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 ?