

What we can do (for each other) – and how we think about it

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What we (can) do - 3 examples:

1. Inventory: Targeting performance
2. Routing: Collecting waste
3. Distribution: Supplying retail stores

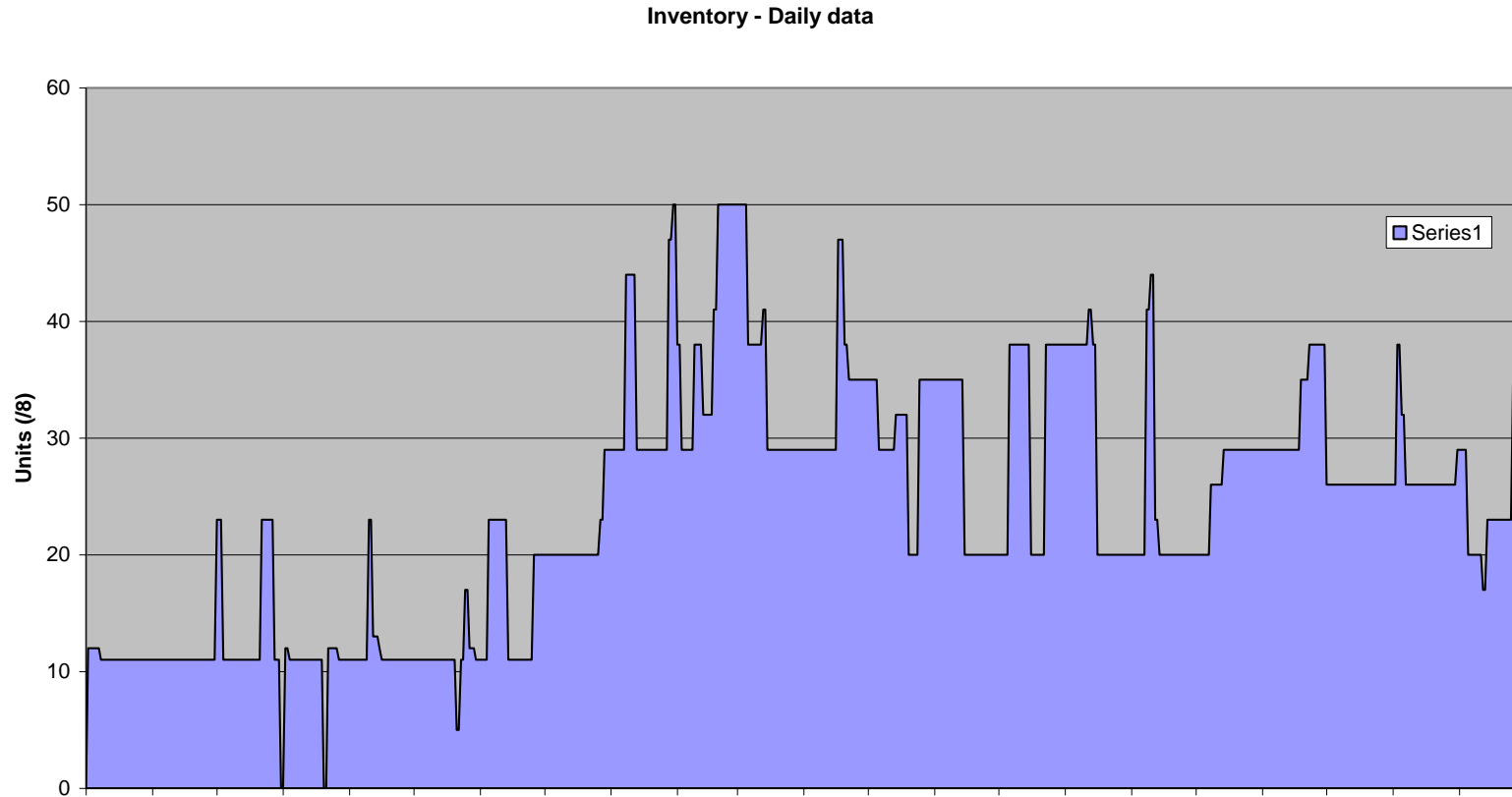
What we think - 3 thoughts:

- I. Business Analytics
- II. Decision Support
- III. The Way Forward

Keeping stock of your inventory



1. Inventory: Targeting performance



Based on this kind of data, how should performance be improved in a manner consistent with company goals?

1. Inventory: Targeting performance

Statistical analyses leading to

- Separation of different types of demands
- Specification of order flow
- Estimation of performance

Analytical modeling leading to

- Specification of consistent performance measures
- Setting of inventory levels to reach performance targets

Project leading to

- Improvements of business operations and further innovations in the company
- Research publications and dissemination

Large data set with challenging decision analyses under uncertainty about future demand:

OM (*Operations Management*)

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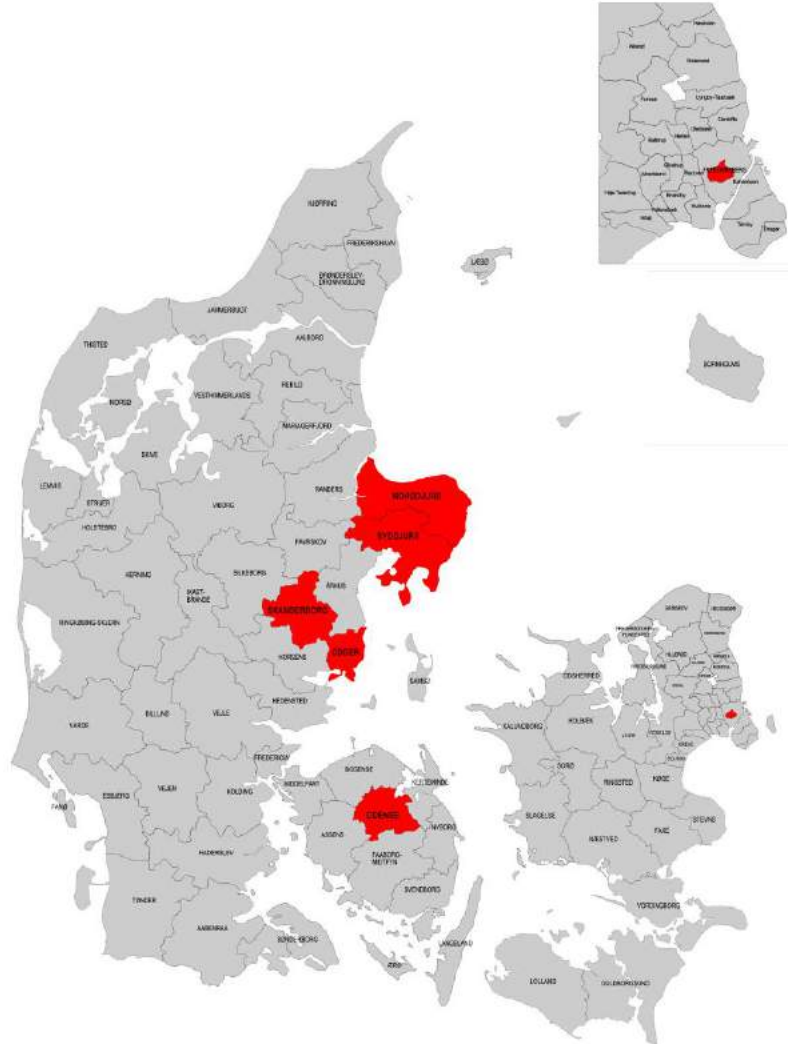
Borgere brugte tid på at sortere affald – i skraldebilen blev alt blandet sammen

I Vordingborg Kommune har borgeres affaldssortering i flere tilfælde været spildt arbejde.



Billedet her er fra Aarhus, hvor man bruger et andet sorteringssystem end i Vordingborg. Her er det også et andet firma, der står for indsamlingen. Arkivfoto: Morten Lau-Nielsen

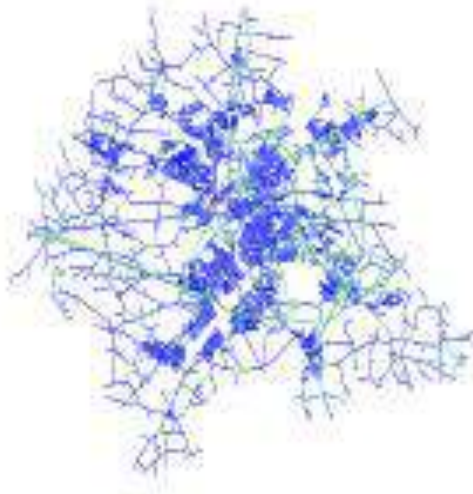
2. Routing: Collecting Waste



2. Routing: Collecting Waste (cont'd)



Frederiksberg (F)



Odense (O)



Skanderborg and Odder (K)



Norddjurs (N)



Syddjurs (S)

2. Routing: Other Contexts

- Retail deliveries
- Milk routes
- Home care scheduling
- Bus routes
- Pick-up and delivery
-

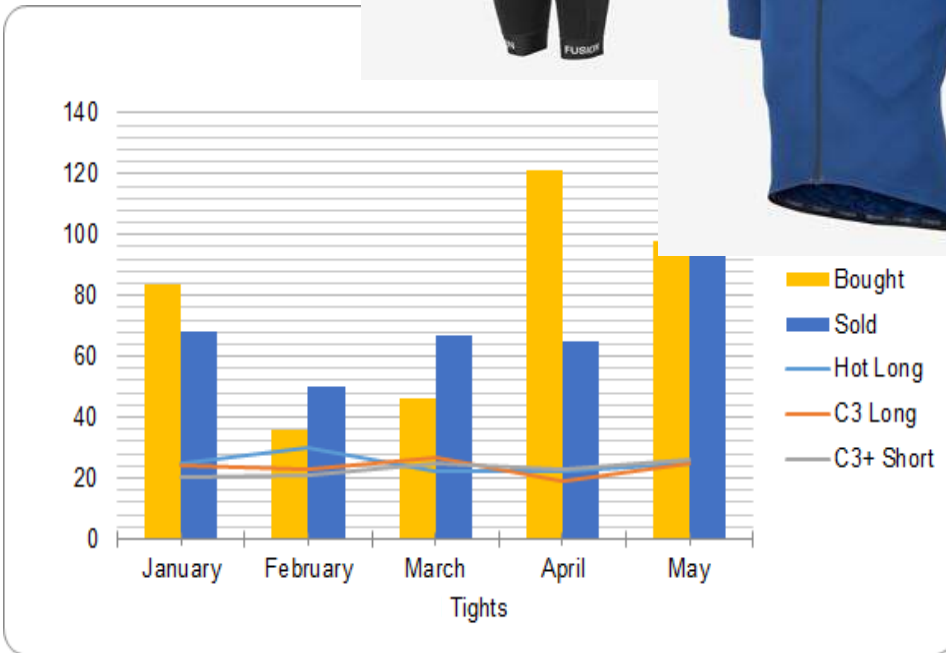
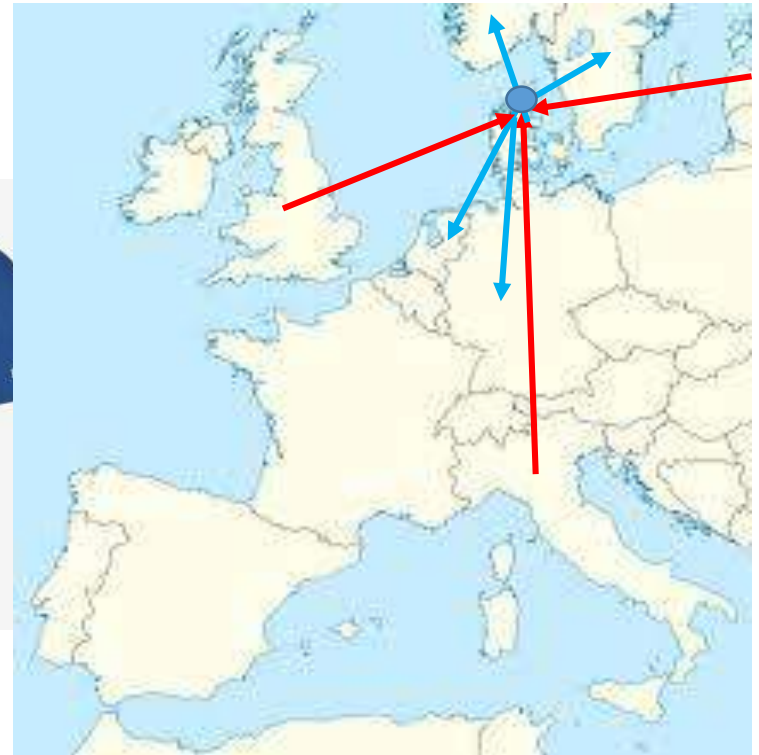
Complex routing and scheduling problems with large amounts of input data:

VRP (Vehicle Routing Problems)

H&M or Zara? – The Danish Connection



3. Distribution: Supplying Retail Stores



3. Distribution: Supplying Retail Stores

Supplying in bulk or by flow?

- Inventory and transportation costs
- Flexibility of supply and lead times
- Store management
- Sales and surpluses
- Sustainability
-

Coordination of stages and processes across the value chain with varying sources of data:

SCM (Supply Chain Management)



"Looks like you've got all the data – what's the holdup?"

I. Business Analytics

Prescriptive Analytics (**Decision Anal.**)

Predictive Analytics

Explanative Analytics

Descriptive Analytics

Data for Analytics

Validation
&
Implementation

Big Data?

“With too little data, you won’t be able to make any conclusions that you trust.

With loads of data you will find relationships that aren’t real.

Big data isn’t about bits, it’s about talent.”

(Merrill, 2012, p. 1; quoted in: Tarvin et al., Interfaces 2017)

II. Decision Support



The Black Box Syndrome:

Black Box

“Practitioners with years of experience won’t accept numbers that come from a black box. The black box needs to be opened, and this can only be achieved through education or training.”

vs.

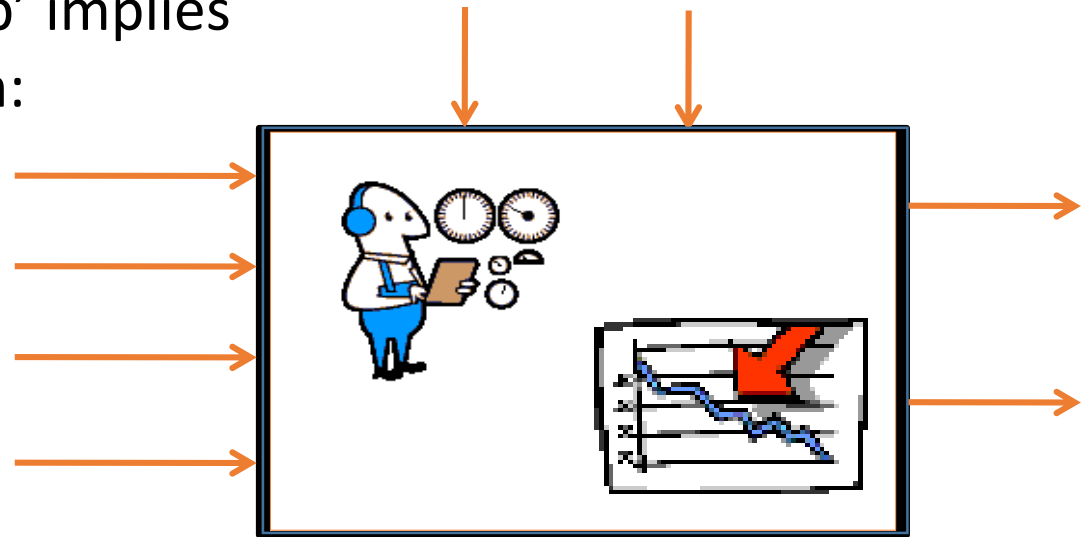
“Develop methods to make mathematical models tangible and concrete;

Spreadsheets are ubiquitous because they are algebra by example and communicate to managers.”

II. Decision Support (cont'd)

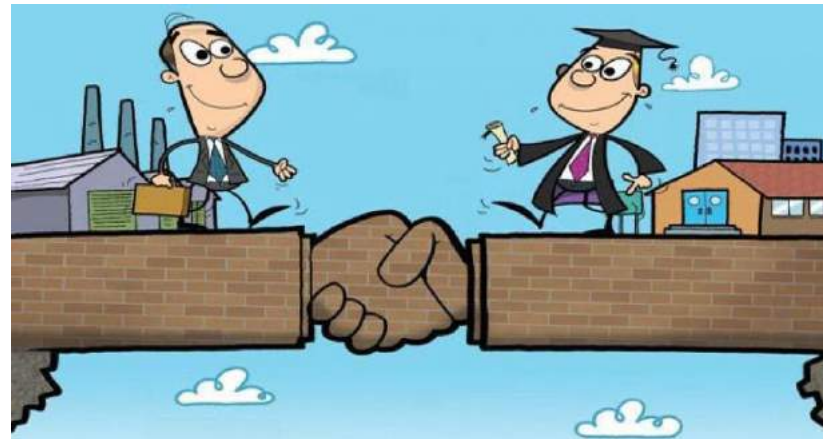
The Black-box 'wrap up' implies increasing the focus on:

- Validation
- Testing
- Visualization
- 'Dashboards' & 'cockpits'
- Simulation capabilities
- User interface



Decision Support System

III. The Way Forward



Recognize & Respect:

- Partly different time perspectives
- Partly different agendas
- Partly different experiences

But

- Shared interest in problem solving
- One common goal: Improvements

And the practicalities can have a number of different formats ...

