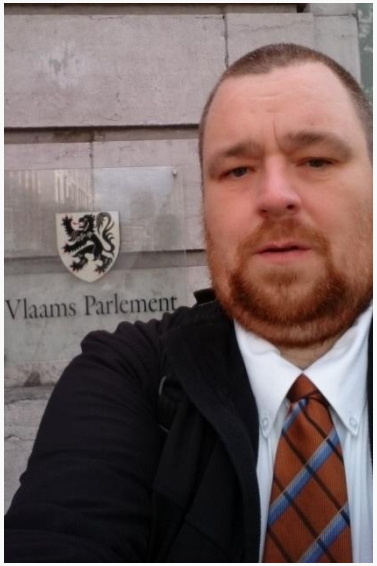
Mobility in Danish Public DRT Transport



Flemish Parliament

30th. April 2015

Finn Kock Sørensen

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Experience

FlexDanmark

- 2014 - Senior consultant
- 2011 -2014: Chief of business processes and business systems
- 2013: Chief of FlexDanmark callcenter, Traffic monitoring unit
- 2008- 2011: consultant & team leader for support unit

And:

- PTO (NT): ”Traffic monitoring”
- Region Nordjylland: Evaluation and booking of trips to/from public hospitals
- Aalborg Taxi: Booking trips (including from PTO)
- Ghostwriter for member of Danish Parliament

Education

- 2014: Executive MBA, Master in Management of Technology (MMT)
- 2001: Master of Science in Public Administration (Cand. Scient. Adm.)

fks@flexdanmark.dk

FlexDanmark

Facts:

- Started in 1997
- Independent public owned company from 2012
- Yearly budget of 53 million DKR
- 110 employees placed in Aalborg (including call center and part time jobs for students). 35 employees in non call center
- We support and implement a process, not only an it-system
- We handle a nationwide IT-solution for Flex Traffic
- We run a 24/7 call center (booking and management of vehicles)
- We handled Flex Traffic for 150 million EUR 2014
- We handled more than 6 mio. Flex-travels in 2014

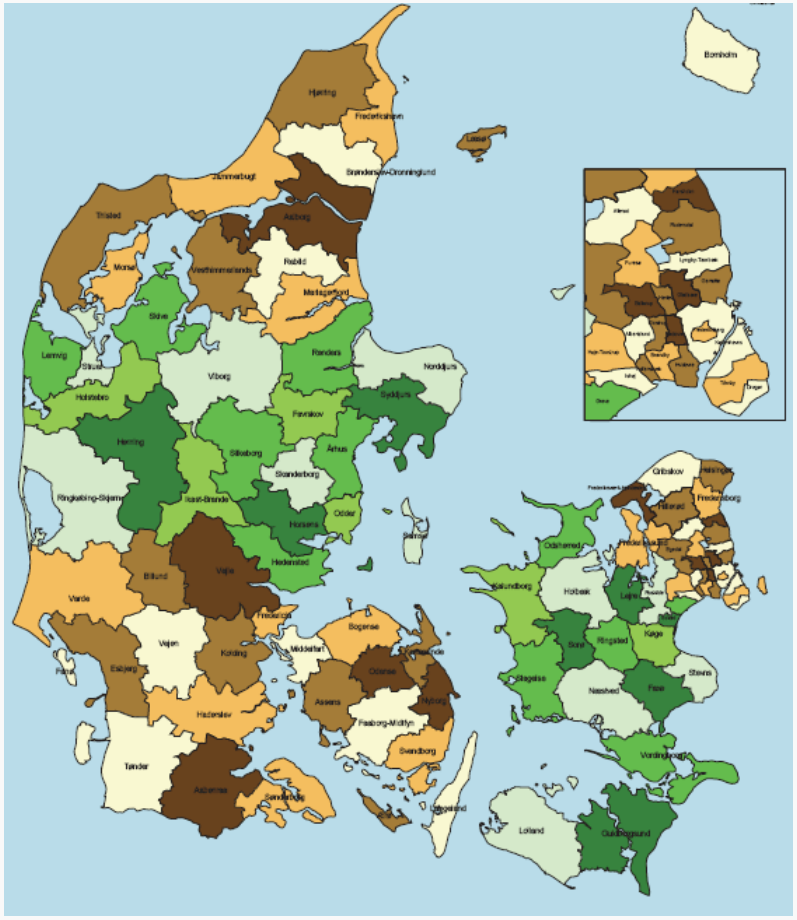
Our mission:

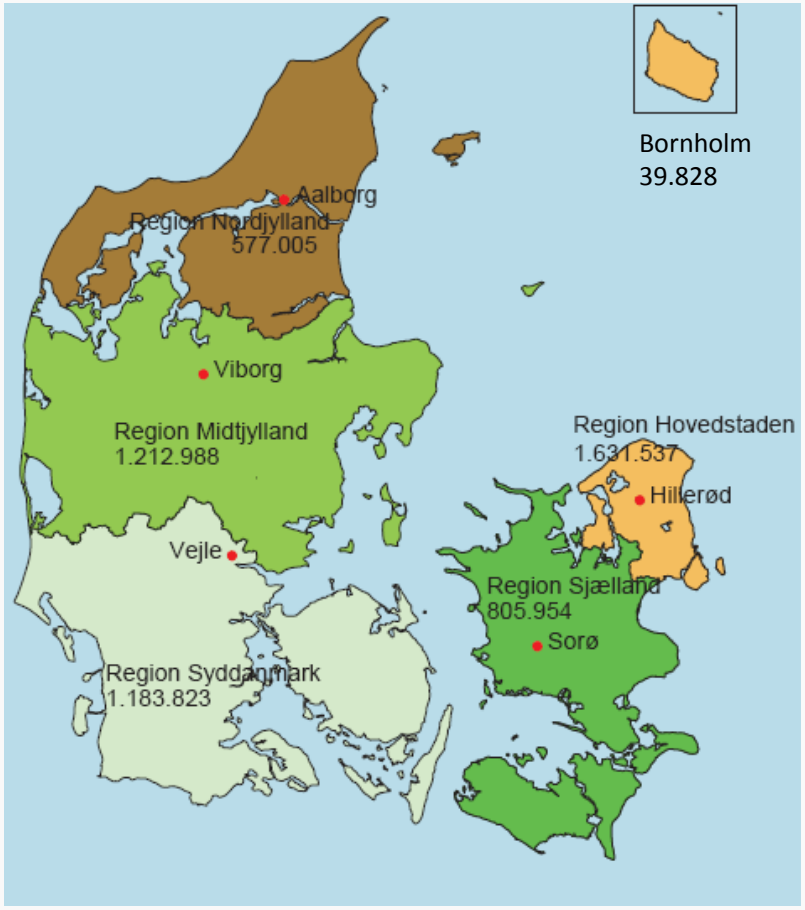
- Reduce total costs of FlexTraffic
- Improve our operation
- Improve services solution to citizens and stakeholders

Agenda

- Denmark-trivia: Some key facts and numbers
- DRT as Mobility-solution in Denmark
- Our core business model – The Danish model
- Advantages & features
- Requirements and recommendations

Denmark: 5.6 million people





98 Municipals
The basic level

5 Regions (Level between state and municipalities)

Danish PTOs

Area 7.878
Residents 580.242
R pr SQ km 74

Area 13.005
Residents 1.272.510
R pr SQ km 98

Area 7.222
Residents 816.359
R pr SQ km 113

Area 12.255
Residents 1.201.419
R pr SQ km 98

Area 2.533
Residents 1.731.976
R pr SQ km 678

Danish PTOs (Public Transport Organisations)

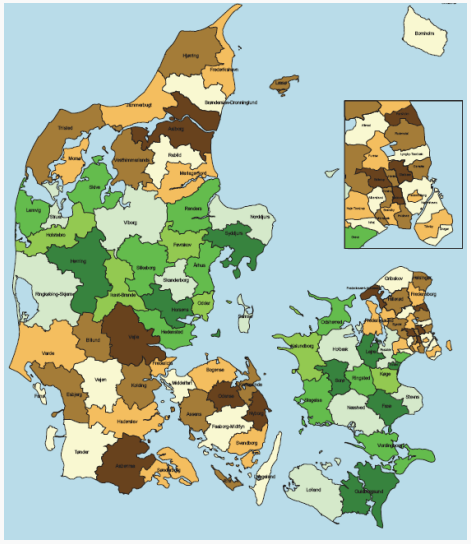
- Responsible for local railways, buses and DRT.
- A PTO does not operate any vehicles of its own. Transport services are procured from private operators.
- PTO is responsible for contracts with the operators (vehicles), dispatching and traffic management, software(*), introduction and implementation of the DRT-model in regions and municipalities.

(*) Software handled through FlexDanmark

Who pays

Municipalities pays for

- Transportation of citizens to health care providers. Mostly senior citizens who are not able to use conventional public transport
- Citizens in (often rural) areas where DRT is a supplement to the conventional public transportation.
- Disabled citizens who are not able to use conventional public transportation
- Children with special needs



Who pays (continued)

Regions pays for:

- Citizens who need transport from home to hospital or between hospitals

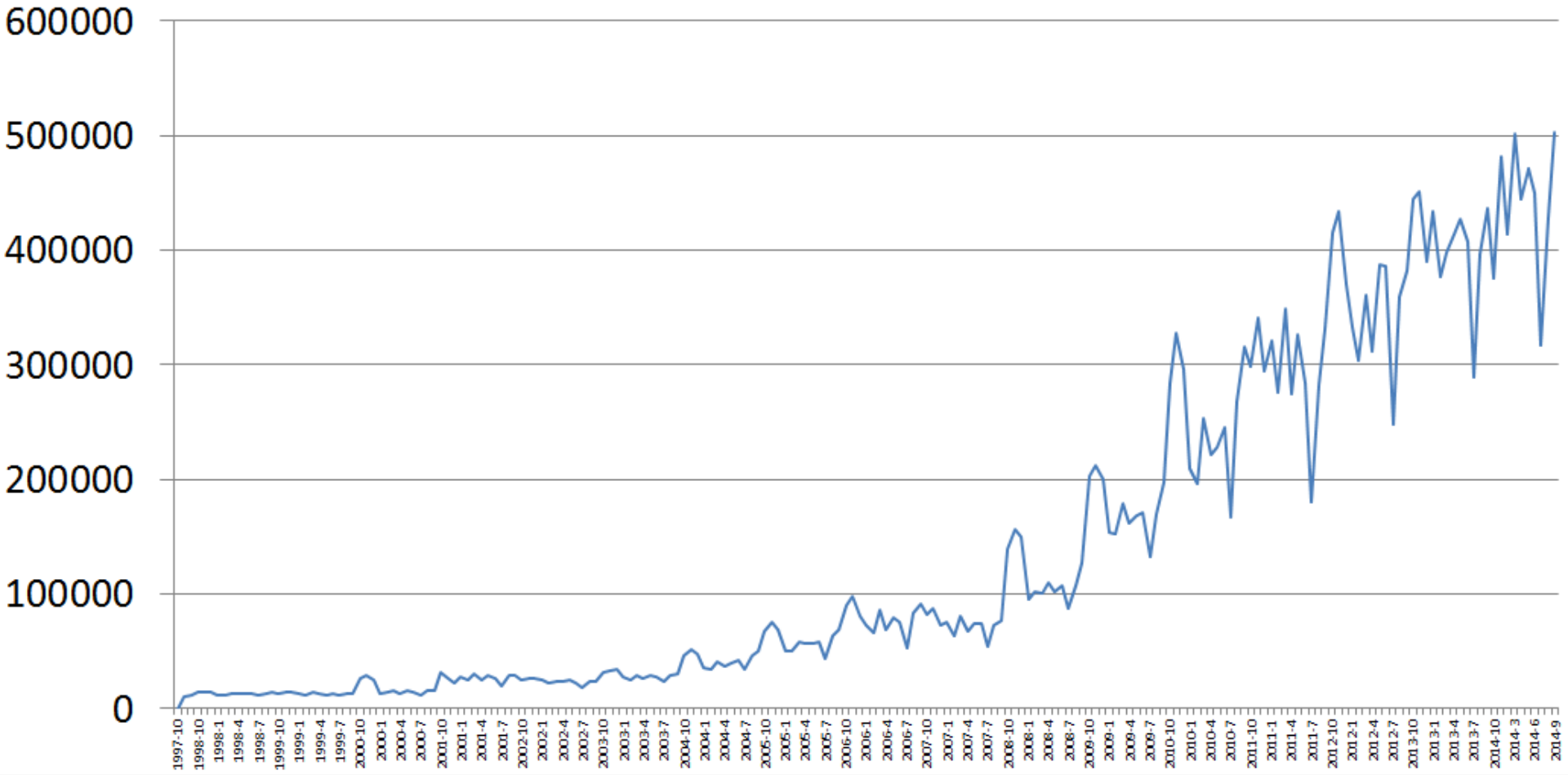
Volunteer network

- No Danish tradition for volunteer network for transportation needs

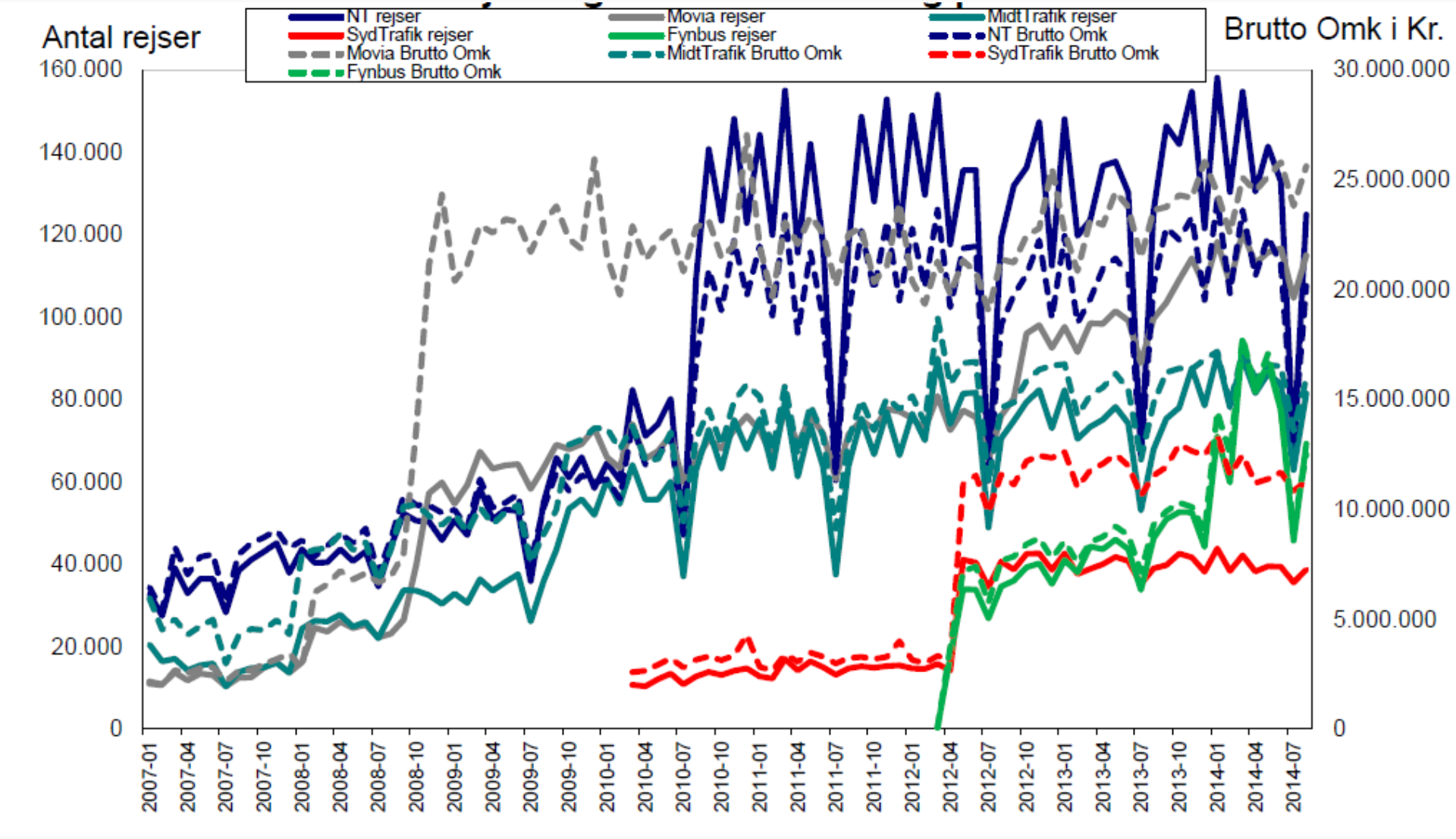
Insurance transportation

- Very low volume

Number of trips per month in FlexDanmark



Trips and cost in FlexDanmark's system



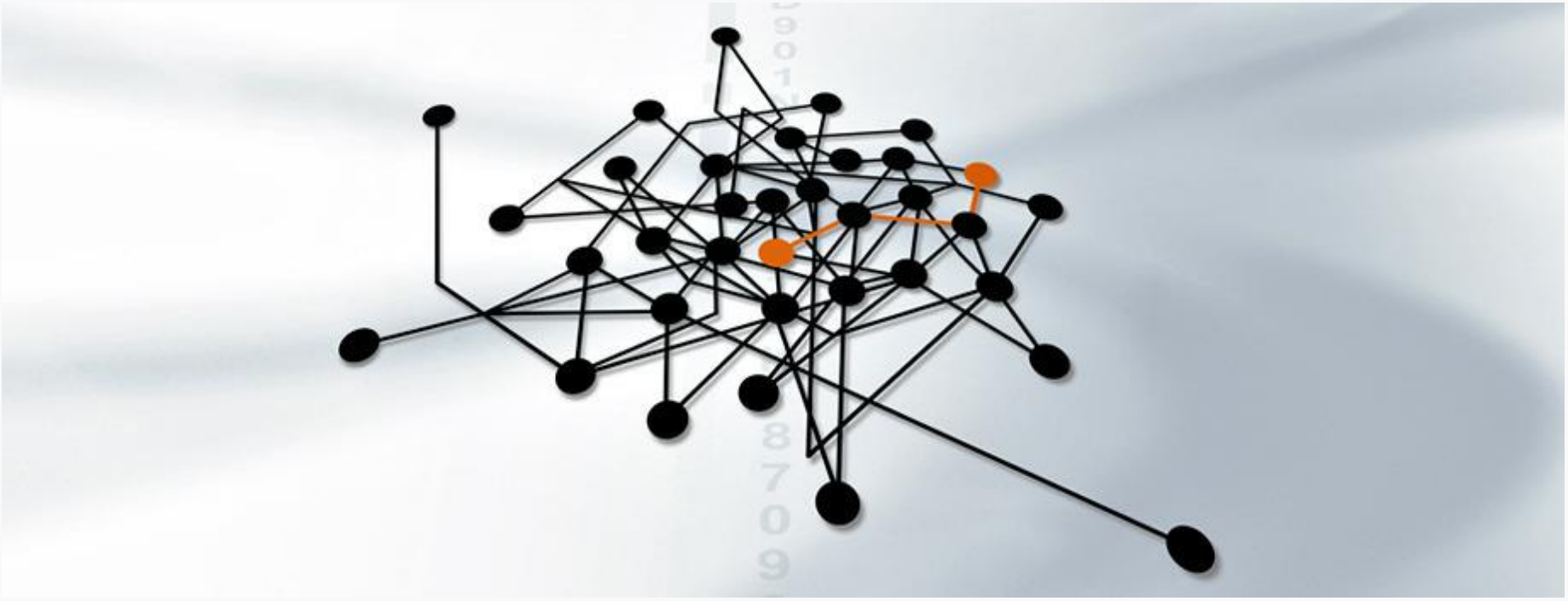
DRT and Mobility

We use DRT in solving mobility issues of not being able to use traditional public transportation

- Not just a question of having a disability
- Not just a question of being elderly an not able to drive own car or take bus/train.
- Mobility is as well a question of offering DRT in rural areas with none or almost none time table public transport

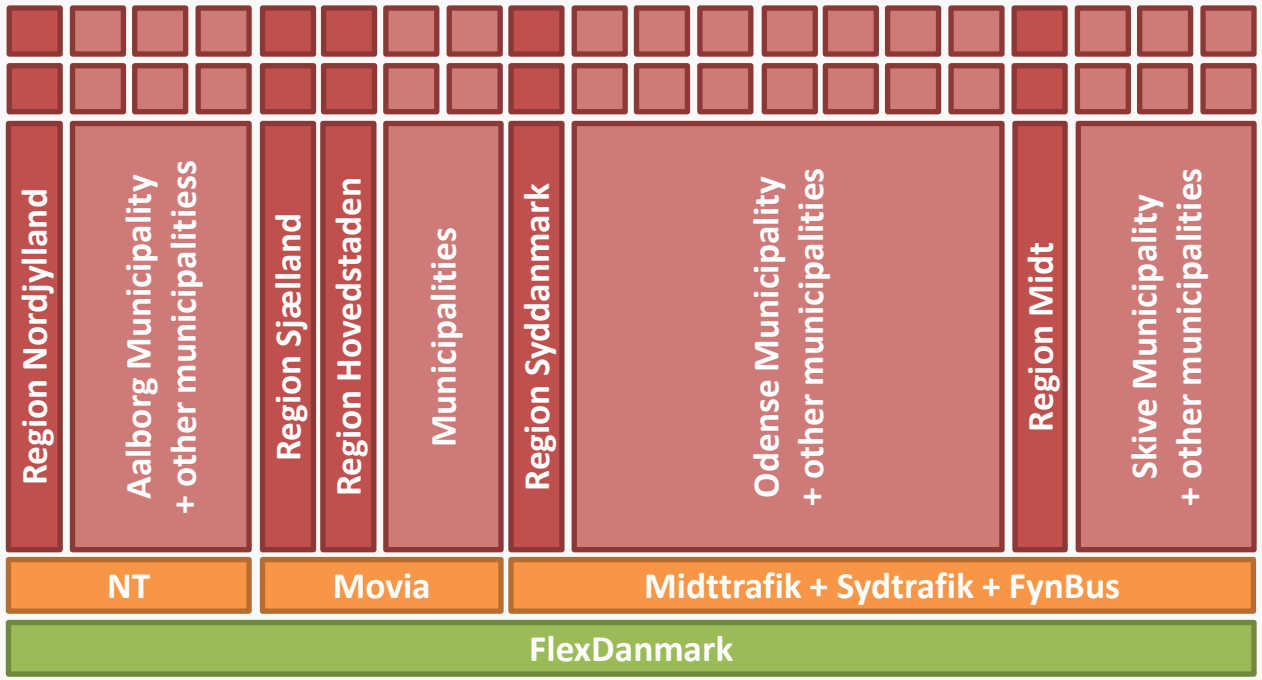
The Basic Idea

To optimize each separate trip best possible, based on known means, the need of the individual customer, and considering the inconvenience to the customer – and the service those who place the order is willing to pay for.



Basic idea in IT perspective

One shared DRT IT system, with one facilitator in each region, supporting numerous online authorities and operators.



Volume is important

The possibility of mixing transport from different authorities is a key factor in optimization

Flex Traffic bounded by law

- Transport to healthcare
- Transport of disabled citizens
- Institution and school transit
- Transport of patients

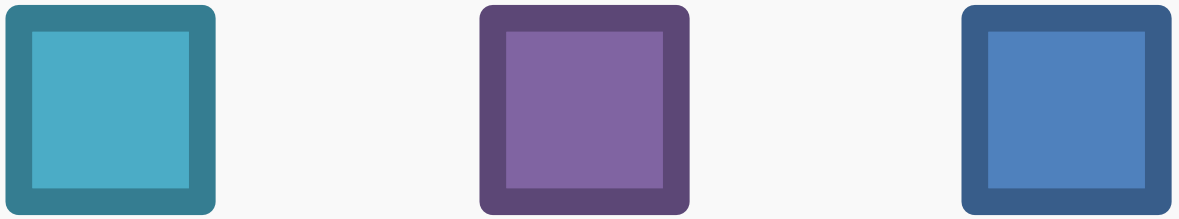
Flex Traffic substitution of traditional BUS transport

- Tele Taxi
- Demand Responsive Buslines

- Taxi cab
- Private hire
- Mini bus
- DRT bus

The Flex Concept

FlexDanmark combines different trips from many different authorities, illustrated by the ”bricks” below:



Rehabilitation

General Health

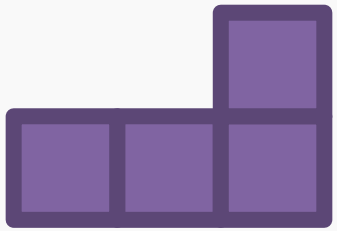
Flex

The Flex Concept

FlexDanmark combines different trips from many different authorities, illustrated by the ”bricks” below.

But citizens and their needs are not uniform – they have different service needs and other requirements.

Rehabilitation



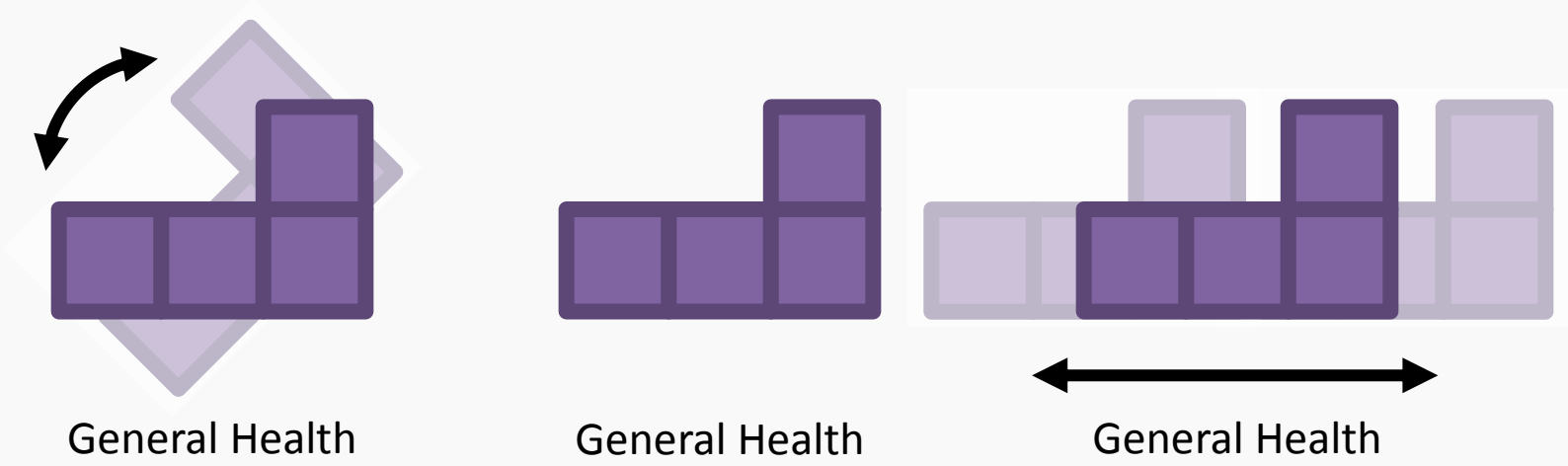
General Health

Flex

The Flex Concept

Each trip is described with all of its needs, requirements and flexibility (or lack thereof).

Authorities are able to adjust the flexibility (i.e. the time or service) which will increase or decrease utilization.



The Flex Concept

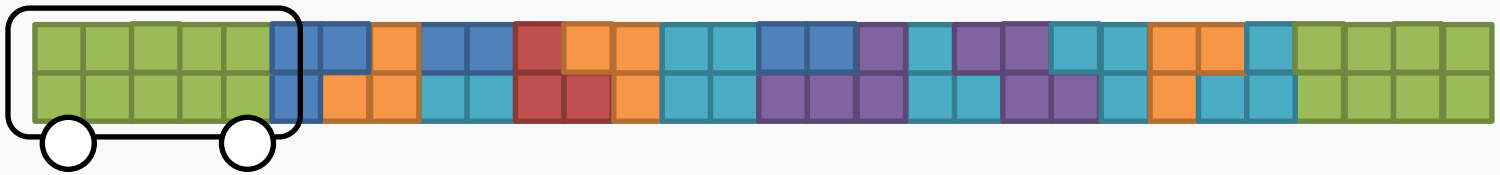
Comparing the flex concept to the classic game of ”TETRIS”, then becomes a way of explaining FlexDanmark and its core system’s function of planning and optimization.

The goal of the game is to create complete lines of ”bricks” without any gaps, which in this analogy means an optimized planning without any wasted time.

Combined & Optimized Utilization

The Flex Concept

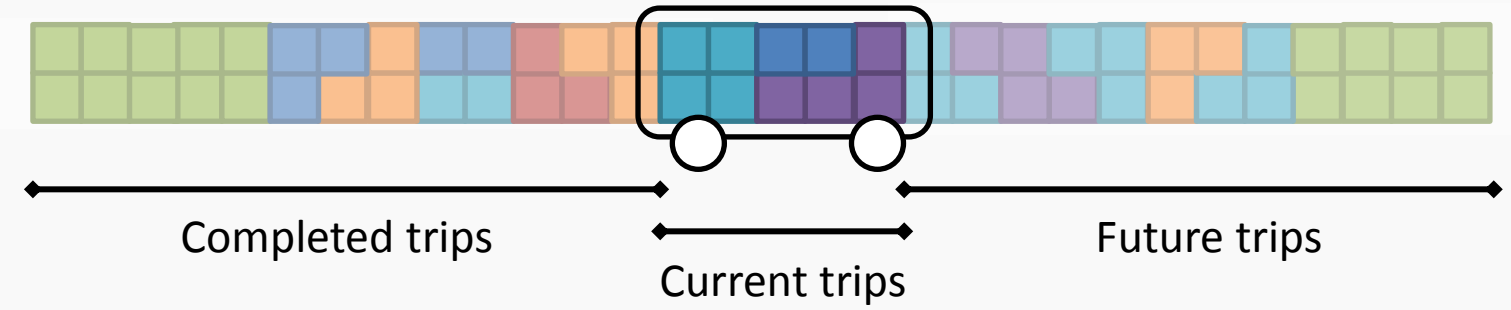
The core system also identifies and books a resource which fits the requirements to execute the plan.



Identified Resource (Vehicle) is Booked

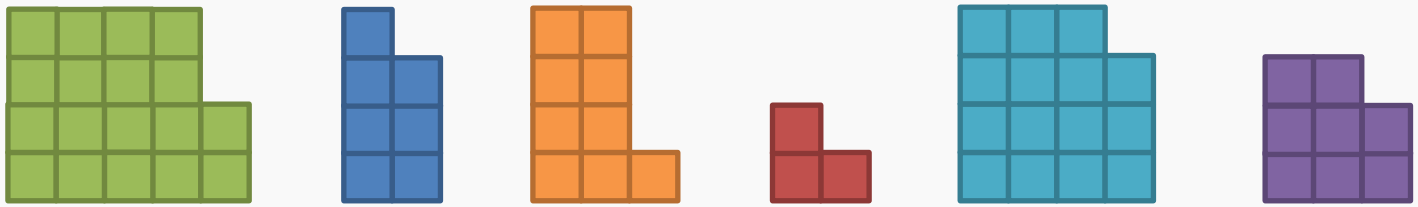
The Flex Concept

During the day of execution, future trips are continously optimized to ensure a minimum of ”gaps” in the planning.



The Flex Concept

When all trips for a given day has been completed, the core system also calculates the cost for each authority on a per citizen level.



Cost Allocation

Who pays?

The authority who orders the transport must pay!

This is often decentralized such that for instance a department in an hospital pays. High expenses equals less money for medicine and staff – and vice versa

= Incentive structure: Grant transport only for those who really need it – and don't give better service than needed

A unique procurement model

Transport services are procured from private operators in a manner which is compatible with the European Directive for Public Procurement.

We have a unique procurement model for the DRT operations:

SPOT-MARKED VEHICLES

A unit price (€ per vehicle hour) is given at the bidding moment (e g every year) and then used each time when assigning a suitable vehicle for the actual transport task (combined with other parameters).

FIXED VEHICLES

A guaranteed minimum availability in the contract (contracts for 2-4 years). Drivers are not allowed to refuse trips without good cause.

High level of competition

Our model makes room for several operators (in 2014: approximately 500 nationwide) competing for the trips

- Single-owned taxi-companies (Regulated taxi)
- Major shared taxi-centrals (Regulated taxi)
- Single-owned minibus-companies (Regulated bus)

High level of competition – and high level of transparency about our model of choosing among the 500 operators when planning each trip.

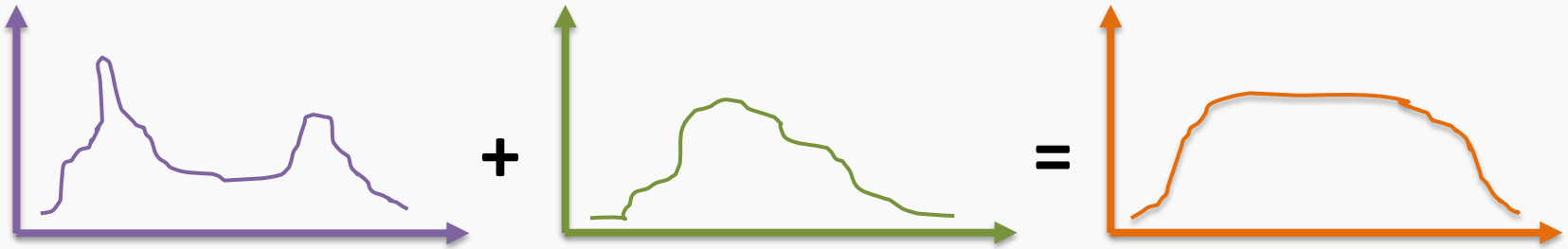
Selection on spot market

Selection is based on lowest generalized cost, considering factors such as

- Proximity to actual caller
- Vehicle operating cost according to driving times and bid unit price in the contract
- Special needs of customers
- And even quality rating for the 500 companies having contract with PTOs.

Why the Mixing?

Why do we mix the scheduled transport with the individual variable transportation?



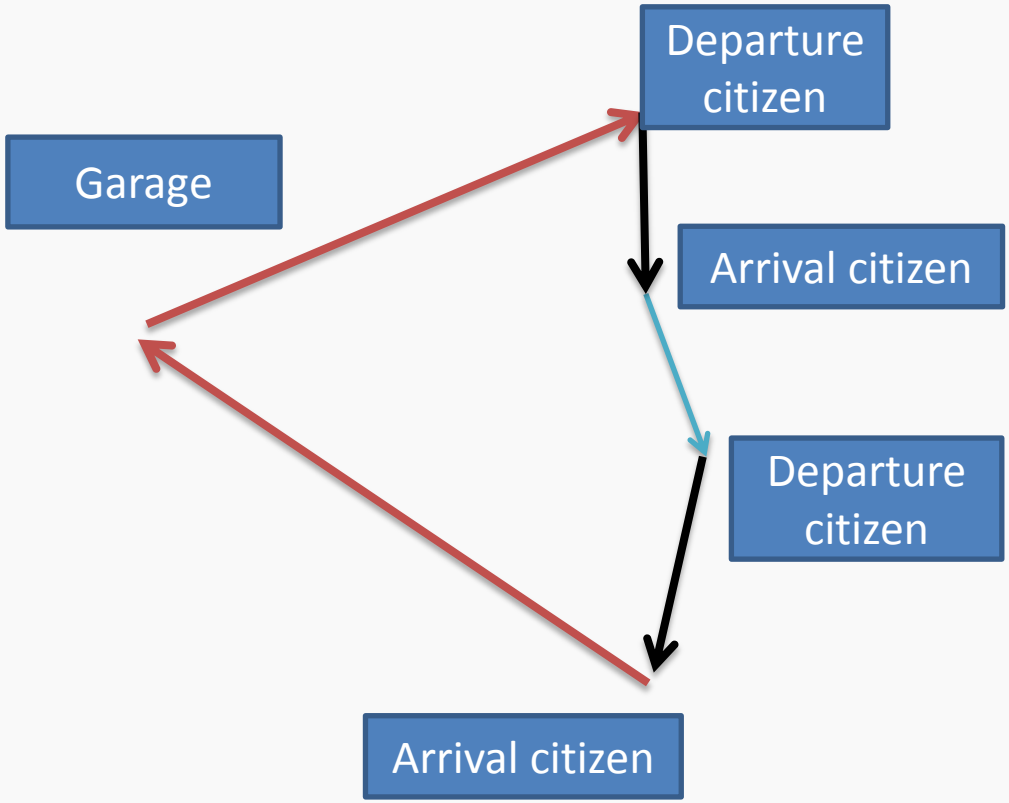
Scheduled Transport Utilization

Individual Variable Transport Utilization

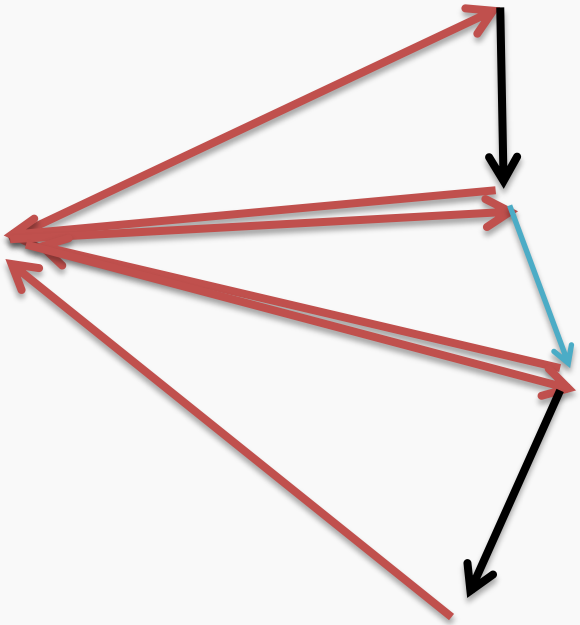
Combined Transport Utilization

Another advantage of mixing

Only 2 x empty runs



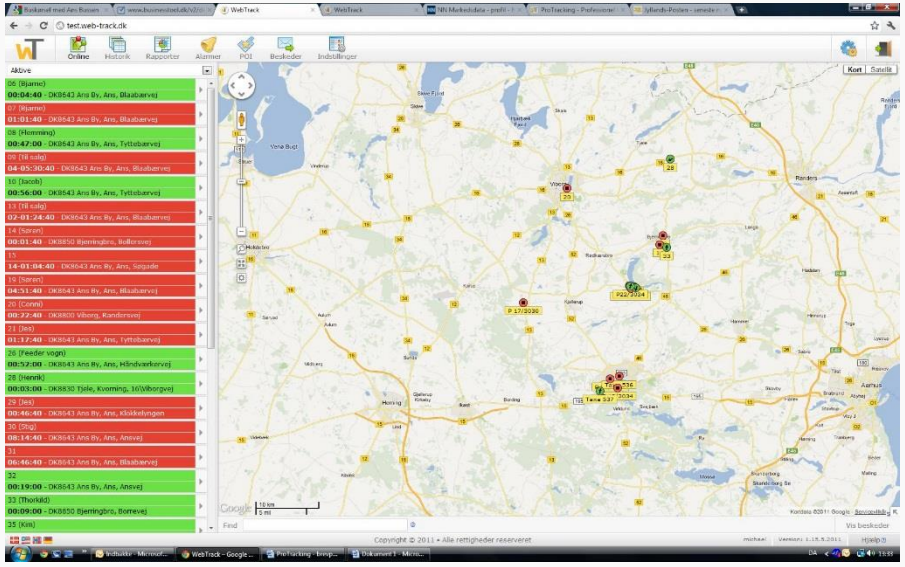
6 x empty runs



Real time

A trip can be booked in near real time i.e.10 min before desired pick up.

In contrast to many other similar systems, our system manages a fully automated dispatch where manual intervention is only necessary for trouble shooting.



Transparency for the supplier

- We have built a system with transparency for the taxi companies
- On a website they can se details of the payment
- We use reverse invoice (we decide the amount on basis of rules for e.g. service level, time of day, rush hour traffic)
- Insures less administration for taxi companies and gives easier access for small transport companies

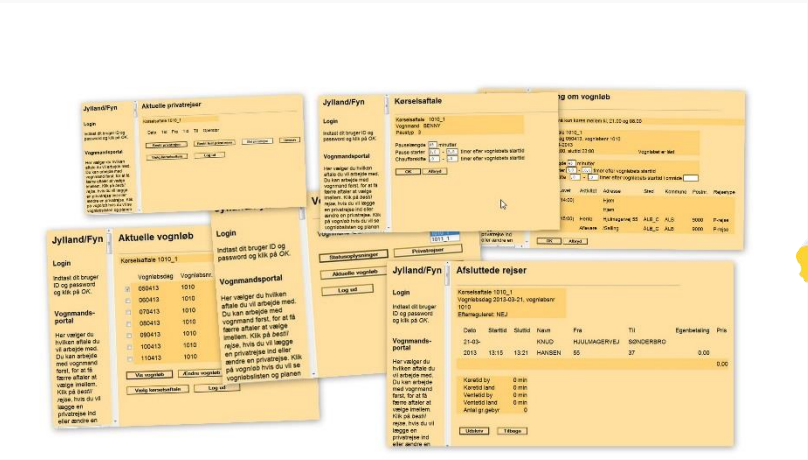
Flexibility for the suppliers

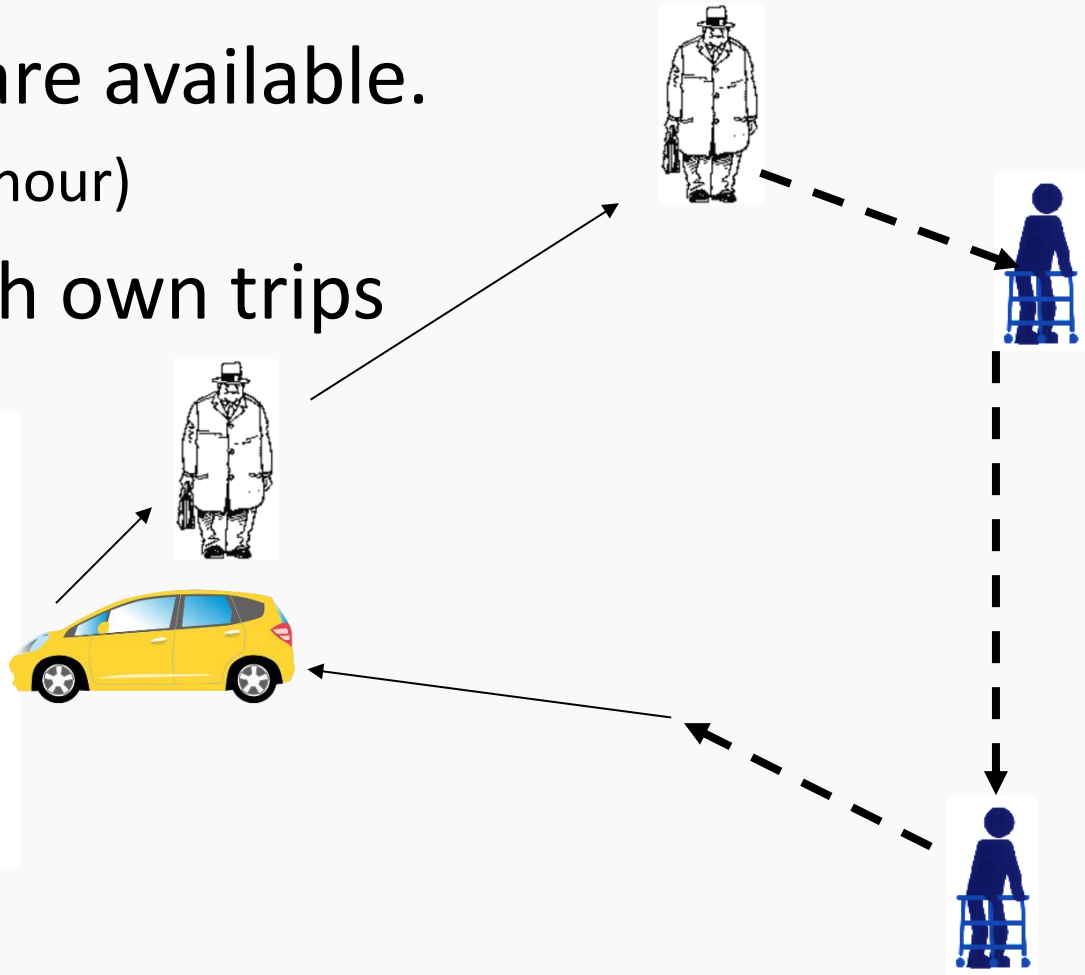
Spot-market vehicles:

Decide when they are available.

(Day-to-day and hour-to-hour)

Can place block with own trips





Reverse invoicing

Procurement: cost per hour

Invoicing: The amount of time we “decide”

Decision based on

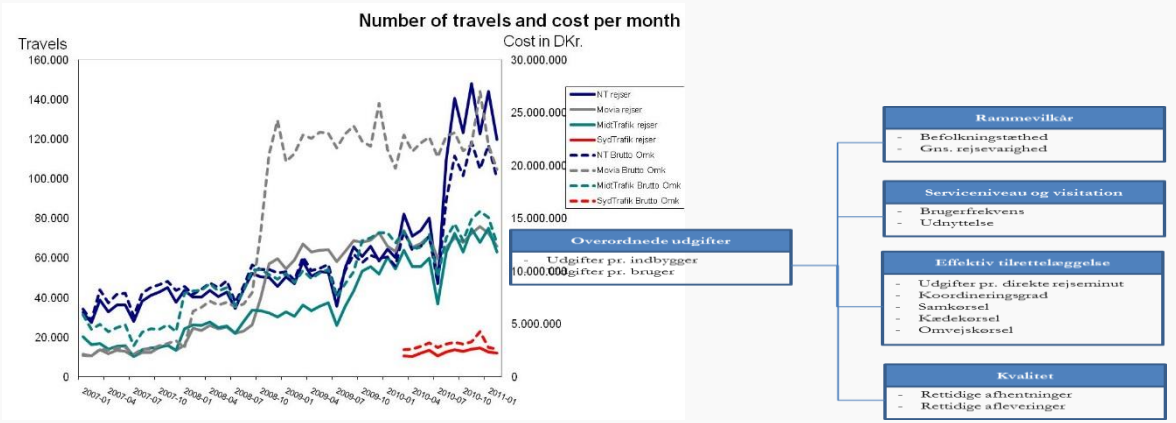
- Calculated driving time (based on measured GPS)
- Extra time for helping, walking to department of hospital, door of citizen

Transparency for the payer

We deliver high degree of information to the paying authorities. E.g.:

- The price of each trip with a citizen.
- Level of precision (on time or too late)
- Key figures for benchmarking expenses among different municipals

Work Item	Vendor	Labor	Equipment	Materials	Subcontr.	Subtotal	Markup %	Markup	Total
Permits/Fees	City of Los Angeles				$1,500.00	$1,500.00		$0.00	$1,500.00
Excavation		$6,000.00	$8,000.00	$500.00		$14,500.00	15.00%	$2,175.00	$16,675.00
Utilities		$3,500.00	$2,500.00	$2,750.00	$1,000.00	$9,750.00	15.00%	$1,462.50	$11,212.50
Water Well						$0.00		$0.00	$0.00
Septic Tank						$0.00		$0.00	$0.00
Foundation	Connie's Concrete				$3,500.00	$3,500.00	5.00%	$175.00	$3,675.00
Concrete Flatwork	Connie's Concrete				$1,900.00	$1,900.00	5.00%	$95.00	$1,995.00
Framing		$3,500.00	$1,500.00	$9,000.00		$14,000.00	15.00%	$2,100.00	$16,100.00
Roofing	Robert's Roofing				$3,500.00	$3,500.00	5.00%	$175.00	$3,675.00
Windows/Ext.Doors	Wally's Windows				$8,000.00	$8,000.00	5.00%	$400.00	$8,400.00
Garage Door	Gary's Garage Doors				$2,250.00	$2,250.00	5.00%	$112.50	$2,362.50
Siding						$0.00		$0.00	$0.00
Electrical	Ernie's Electric				$18,500.00	$18,500.00	5.00%	$925.00	$19,425.00
Plumbing	Mac's Mechanical				$16,500.00	$16,500.00	5.00%	$825.00	$17,325.00
HVAC	Mac's Mechanical				$23,000.00	$23,000.00	5.00%	$1,150.00	$24,150.00
Insulation		$3,500.00		$1,000.00		$4,500.00		$0.00	$4,500.00
Masonry	Mason's Masonry					$14,500.00	5.00%	$725.00	$15,225.00
Drywall	Doug's Drywall					$12,500.00	5.00%	$625.00	$13,125.00
Interior Trim	Doug's Drywall					$9,000.00	5.00%	$450.00	$9,450.00
Painting	Paul's Painting					$13,500.00	5.00%	$675.00	$14,175.00
Floor Coverings	Carl's Carpets					$16,500.00	5.00%	$825.00	$17,325.00
Cabinets	Ken's Kabinets					$22,500.00	5.00%	$1,125.00	$23,625.00
Appliances	Abby's Appliances	$2,500.00			$11,500.00	$14,000.00	15.00%	$2,100.00	$16,100.00
Landscaping	Sonny's Sodding					$2,750.00	5.00%	$137.50	$2,887.50
Overhead Costs		$10,000.00				$10,000.00	20.00%	$2,000.00	$12,000.00
Other						$0.00		$0.00	$0.00
						$0.00		$0.00	$0.00
						$0.00		$0.00	$0.00
						$0.00		$0.00	$0.00
						$0.00		$0.00	$0.00
						$0.00		$0.00	$0.00
TOTALS						$236,650.00	7.71%	$18,257.50	$254,907.50



Nationwide cooperation benefits

- Cost reduced daily operations
- Capacity to achieve better public transport services for a reduced cost
- Capacity and power to make new things happen
- Better it-solutions, mobile apps and www solutions

Benefits for municipalities

Government analysis of public transport setup by Deloitte conclude:

Through joint procurement, planning and daily operations Danish municipalities can yearly save another 56 mio. EUR from 2014-2017

Picture copyright: Danmarks Nationalbank

Requirements for cost Reduction

- A ”large” transport volume
  - there must be something to co-ordinate!
- Preferably longer trips ! (20 min +)
- Large service window
  - minus 15 min and plus 45 min
- Flexible customer space requirements
  - Everyone cannot get a front seat

Recommendations

If You want a Flemish model inspired from us I recommend:

- Work closely with everybody involved. Take time to involve experts from many levels and areas.
- Be sure to manage expectations (service level, time to succeed etc.). Also with citizens.
- Spirit of The Three Musketeers and stay on course even when it gets though (less expensive means that someone gets less service or less income)

Thank You for Your attention! ☺

FlexDanmark Office at the innovation business park, Gabriel in Aalborg, Denmark