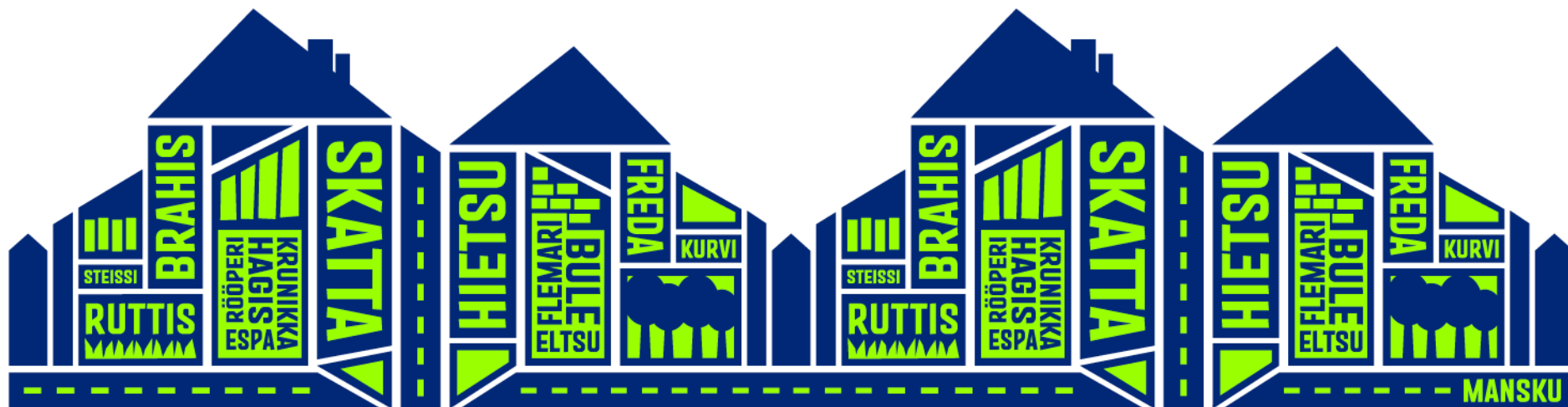


Electrification of mobile machinery and public maintenance

EVI Pilot City Forum



Sami Aherva, Director of Logistics

Stara takes care of Helsinki



City of Helsinki, Stara construction services

- Stara is a versatile expert in the fields of construction, environmental management and logistics
- A reliable and sustainable professional service provider from Helsinki who knows its way around the city.
- Stara's roots are in the construction office of 1878. Since 2009, it has operated as an independent bureau.

Stara's vision for 2020: Stara is the most attractive service provider and employer in its field – a responsible and competitive pioneer.



Stara constructs hundreds of sites annually, ranging from small renovations all the way to major school renovations and regional construction projects.



Stara's main products

- Construction of roads and parks
- Maintenance of streets and parks
- Renovation and maintenance of city-owned buildings
- Maintenance of natural areas – forests, fields, meadows, sea areas
- Surveys, mapping and reconditioning of soil and bedrock
- Transport and repair shop services

Stara maintains over 1,300 hectares of streets, 900 hectares of parks and 6,100 hectares of natural green areas. During the record year 2010, Stara relocated 290,000 truckloads of snow.

STARA
Pidetään Stadista huolta.



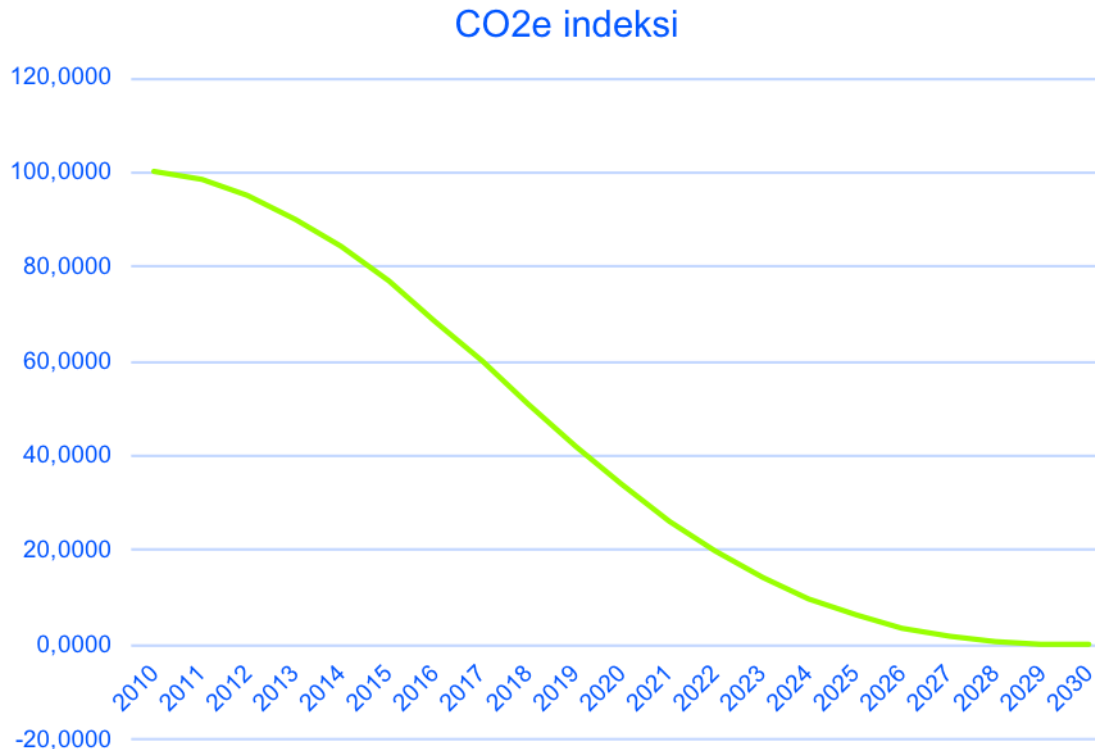
Stara's strengths

- An extensive and comprehensive network of subcontractors, tendered framework agreement partners.
- In-house operations: a reliable player within the city, defending responsibly against the black economy.
- Partnership and strong local knowledge. Extensive experience in working in Helsinki.
- Flexibility and joint use of resources – Stara provides professionals for any job you require and cooperation is smooth.

Stara is a part of the everyday lives of the residents of Helsinki. For example, the award-winning and praised Baana light-traffic route was constructed by Stara.



Stara's environmental policy: CO2e neutral by 2030



- This means that Stara is committed to reduce 1,62% CO2e emissions in comparison to previous year!!!

Stara Fleet

Vehicles			
Cars			460
Vans			575
Trucks			231
Maintenance vehicles and tractors			503
Total			1769



Evolution of lawn mower

environmental friendliness



efficiency

Evolution of lawn mower

intelligence ↑



→ efficiency

STARA

Diätään Stadieta huolto

POC's of Stara

- Automatisatisation and research of work flows
 - self locating and moving multipurposal machines
- Stara IoT platform
 - Telemonitoring of roll-offs and stationary work points
 - Telemonitoring (partial) fleet management and asset management, emission management
- Route and resource optimisation of maintenance
- Electric Maintenance machines

Electric street sweeper Schmidt

STARA
Pidetään Stadista huolta.



Electric street sweeper Bucher

STARA
Pidetään Stadista huolta.



Electric multipurpose tractor eWille

STARA
Pidetään Stadista huolta.



Light electric truck Goupil G4



MySMARTLife Goals

- Transforming the City into more sustainable place where smart people and smart economy become reality.
- Making the city more environmentally friendly by reducing CO2 emissions and increasing the use of renewable energy sources.
- Making the City more inclusive and allowing a high quality of life and Involving citizens in the development of an integrated urban transformation strategy.
- Increasing the digitalization of the cities thanks to the urban platforms.

MySMARTLife

Heavy duty e-vehicle chargers

- Heavy duty charger for:
 - eBuses
 - eTrucks
 - eMaintenance vehicles

- In co-operation with:

STARA, HELEN, HKL, HSL, VTT, Tampere University of Applied Sciences,
Tampere University of Technology and Niinivirta European Gargo

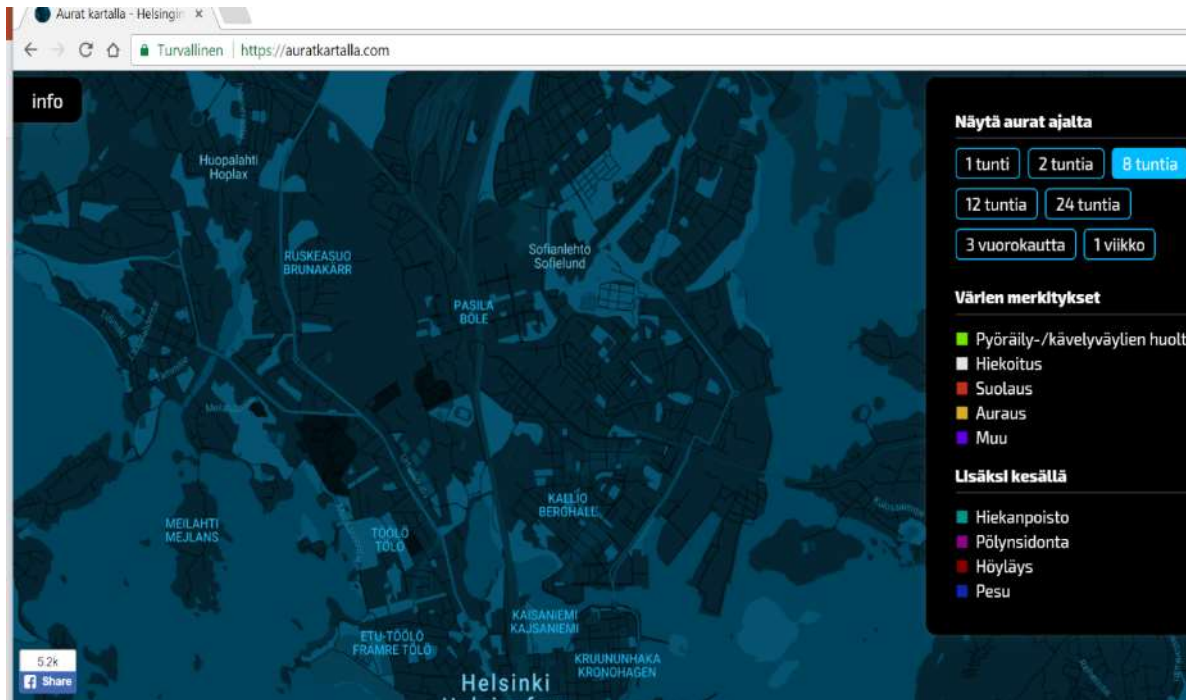




6Aika: Urban big data as innovation platform in smart city context, A72209

- Cities of Helsinki and Tampere and the University of Tampere have launched the Urban Big Data Project.
- With this Project Helsinki and Tampere will develop their capability to create exploitable big data to be utilized as an innovation ecosystem and platform for agile digital enterprises in Helsinki and Tampere.

What have others done based on our open data?



- Road maintenance performance model based on open data.
- Made by Sampsa Kuronen, open data hobbyist.

6Aika Big Data Project

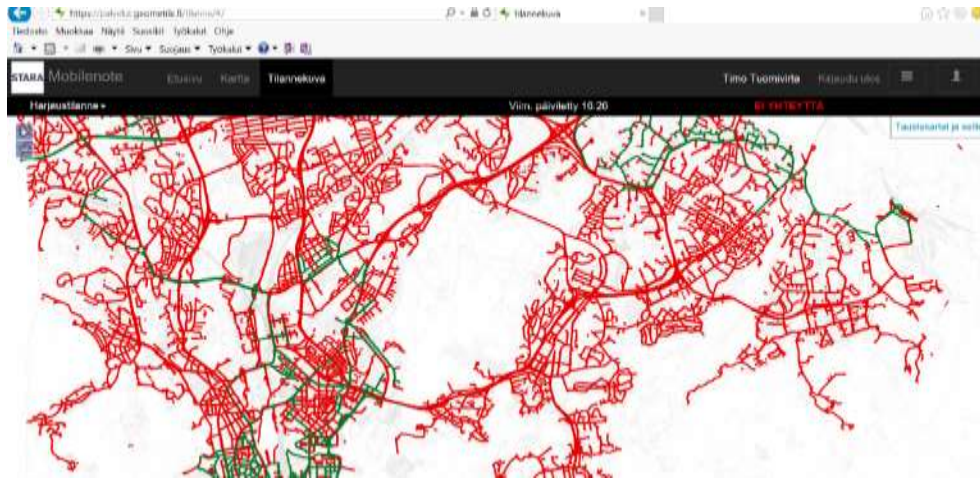
- Targets
 - New ecosystems and models how municipality and business partners co-operate
 - Everything is based on actual demand
 - An overhaul on organisation's ability to learn and innovate
 - Organizational leadership and management is based on analyzed and visualized data
 - Enables total optimization of contracts, locations, fleet, routes, planning and real - time asset management
 - Enables full scale automation and robotization

Route optimization as real time data in IoT platform

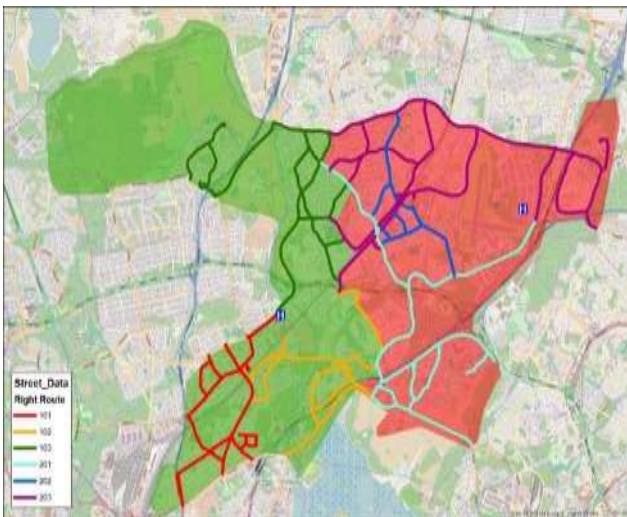
- Street maintenance
- Fleet telemetry
 - Fleet & asset management
- City maintenance related real time logistic examinations
 - Antiskid treatment
- Digi road & digi traffic



What do have now?



MobileNote

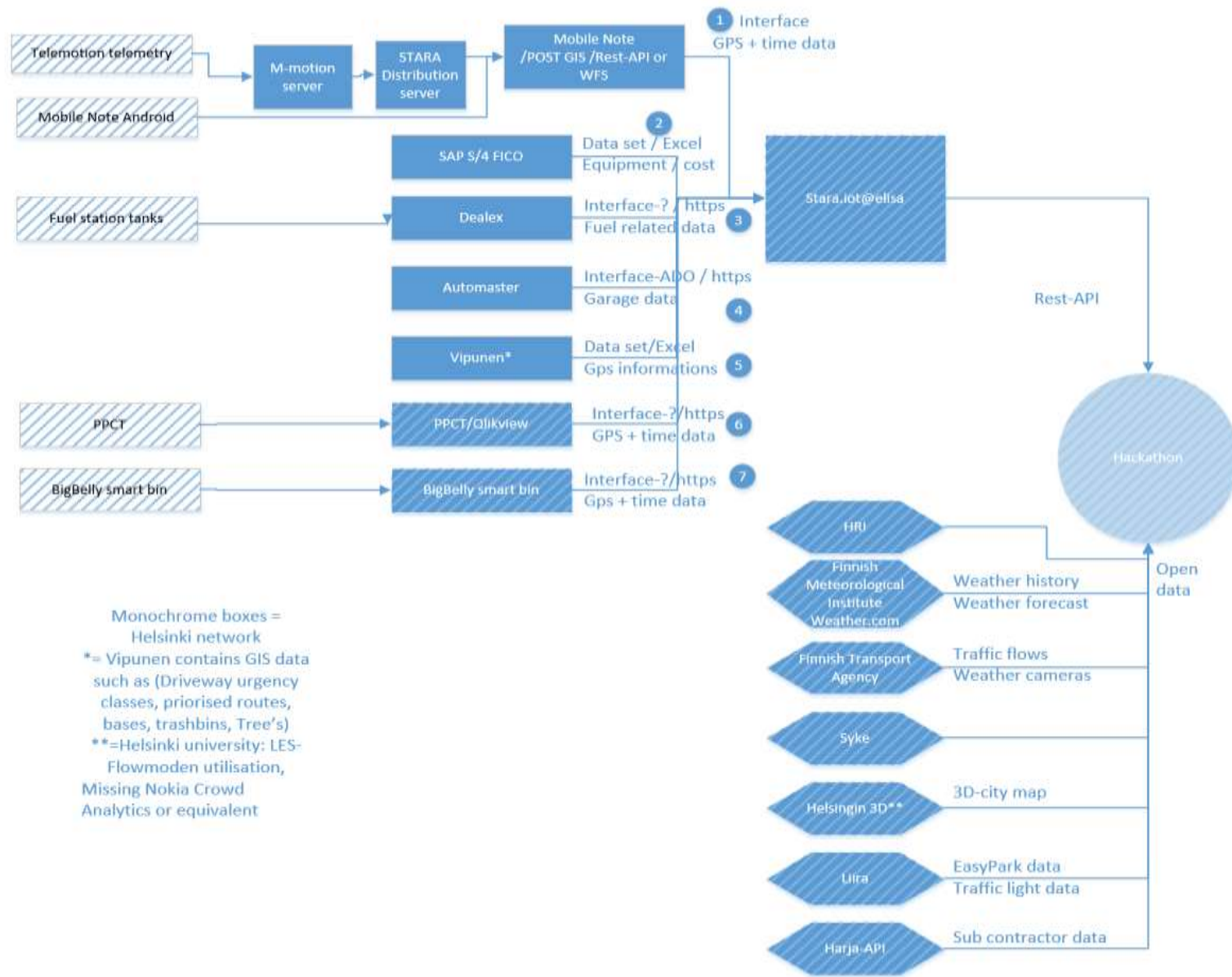


RouteSmart / ArcGIS

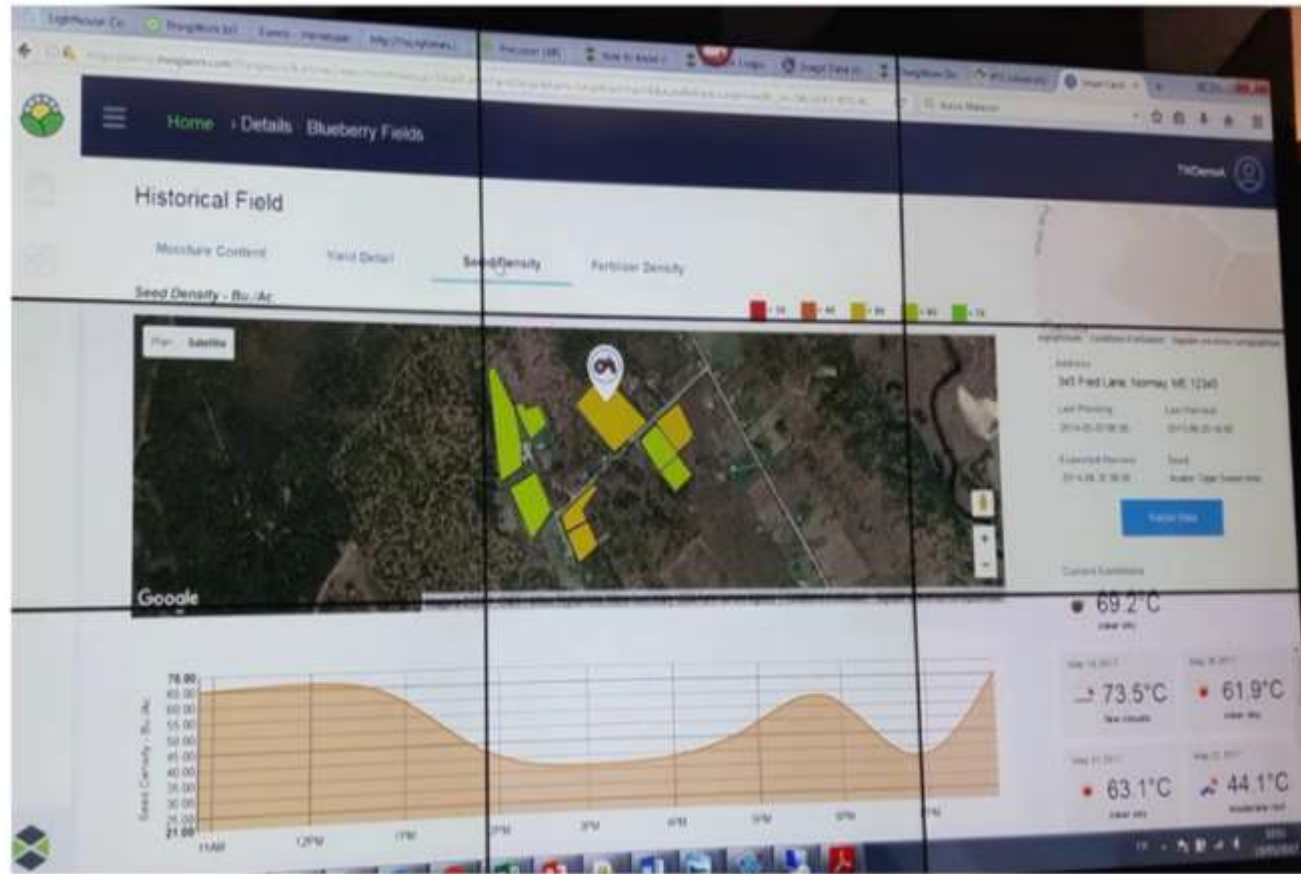


PPCT

System architecture sketch



Reboot the city with big data



As framework
SmartFarming
-> SmartCity
maintenance

Helsinki is the Capital of SnowHow



We keep the City functional 24/7/365

STARA
Pidetään Stadista huolta.









Location information in logistics enables...

More analytic and
objective planning
as routing and
network
optimization

Basic need in
operations to react
into changing
circumstances

Balanced and
optimized
networks, service
areas and routes

Less
vehicles,
distance,
time and
gasoline

Modeling
business
needs and
changes

Optimal
number
and size of
service
areas

Efficiency
and better
service
level

Thank you!

