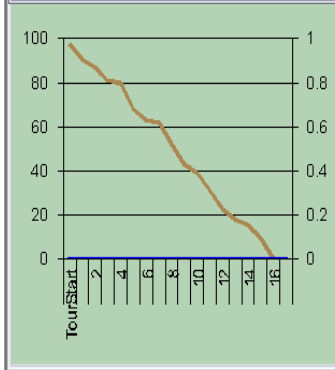
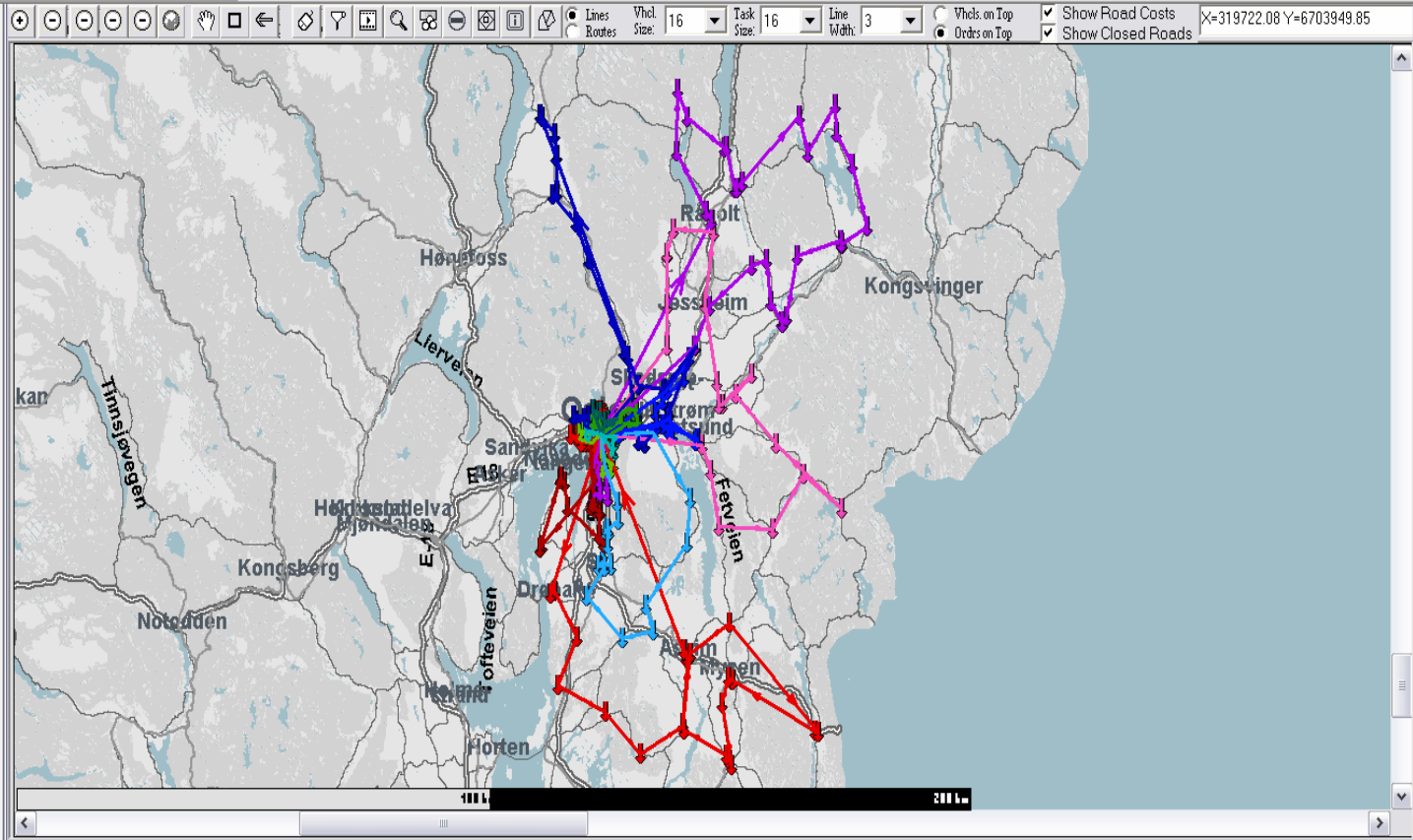
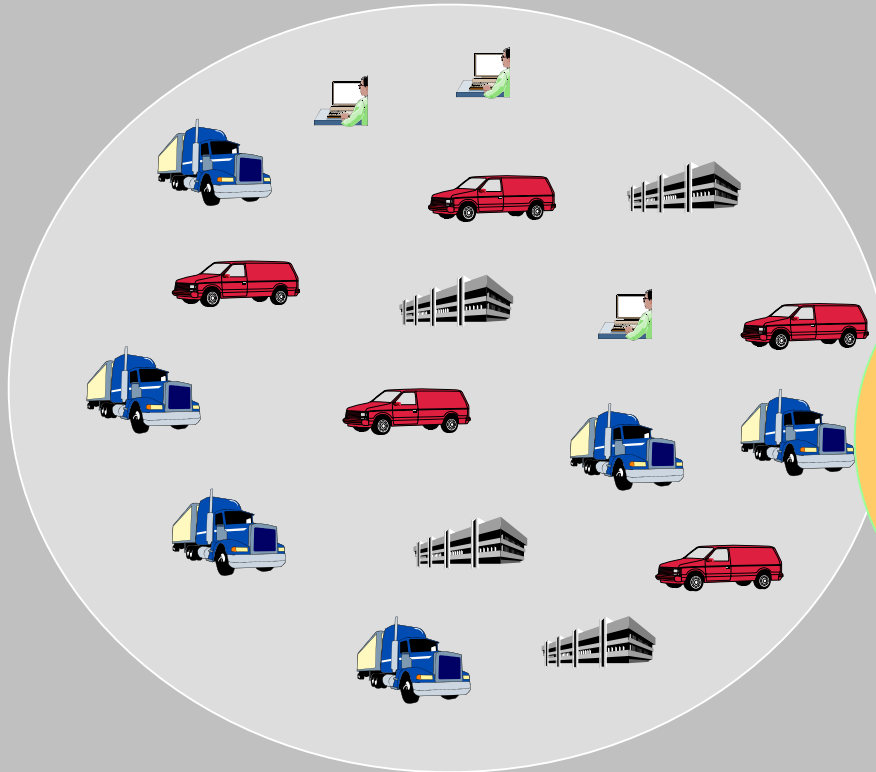


Order Inboxes Allocated Orders Central Nor

- Order Inboxes
- Allocated Orders
  - 210004-1.1 Bakers->Bakers
  - 210006-1.1 Bakers->Bakers
  - 210008-1.1 Bakers->Bakers
  - 210010-1.1 Bakers->Bakers
  - 210012-1.1 Bakers->Bakers
  - 210014-1.1 Bakers->Bakers
  - 210016-1.1 Bakers->Bakers
  - 210042-1.1 Bakers->Bakers
  - 210044-1.1 Bakers->Bakers
  - 210046-1.1 Bakers->Bakers
  - 21078 Kiwi Nordbyhagen Avd. 503
  - 24608 Spar Mat Flateby Mat AS
  - 25478 Matkarusellen AS avd. Enebakl
  - 21213 Spar Tomter Mathus
  - 20590 Joker Knapstad KN
  - 21212 Spar Hobøl V/S.Kristiansen AS
  - 20855 Pimi Stormarked Vinterbro
  - 23915 Pimi Ski, Kjeppstadveien Avd 3
  - 23172 Maxi Ski JERNB
  - 20424 Pimi Jembaneveien Avd. 3289
  - 23776 Kiwi 472 Finstad Mat A/S
  - 21786 Pimi Ski Hageveien Avd 3194
  - 22393 EPR Lilleborg Ski GL
  - 21105 Spar Bøleråsen CE
  - 22451 EPR Nexans Norge AS
  - 22442 EPR Holtung SNIF
  - 21797 Hakon Distribusjon AS Avd. Lar
  - 21659 Pimi Siggerud Avd 3523
  - 21917 Joker Martino Handel AS
  - 25581 Statoil Ica Express Abildsø
  - 210048-1.1 Bakers->Bakers
  - 210050-1.1 Bakers->Bakers
  - 210051-1.1 Bakers->Bakers



# Customer



Complex planning  
challenges



Front technology  
Advanced methods  
Advanced software

**GreenTrip**

# ERP

Booking

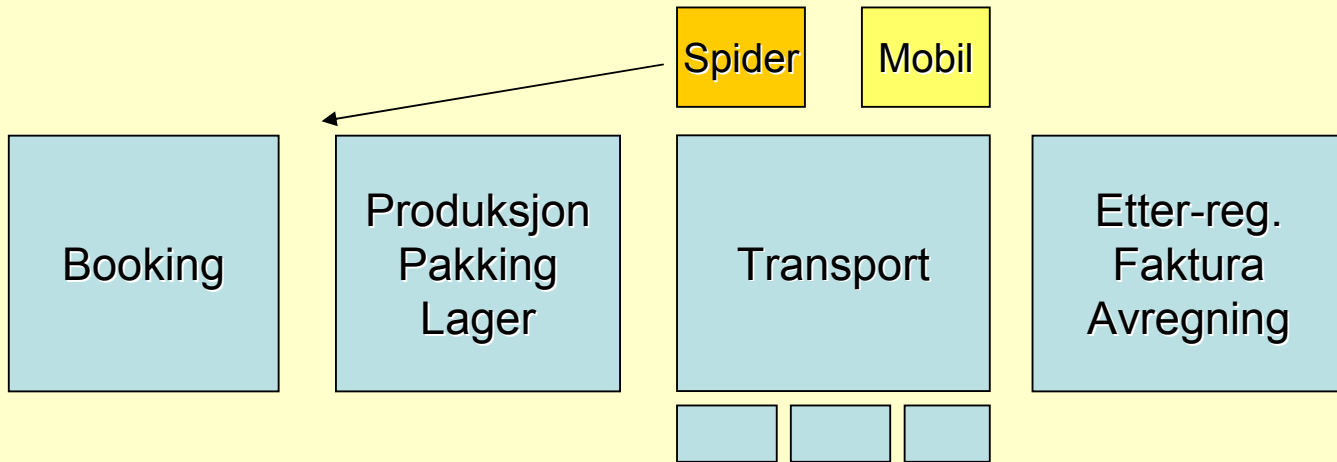
Produksjon  
Paking  
Lager

Transport

Etter-reg.  
Faktura  
Avregning



# ERP

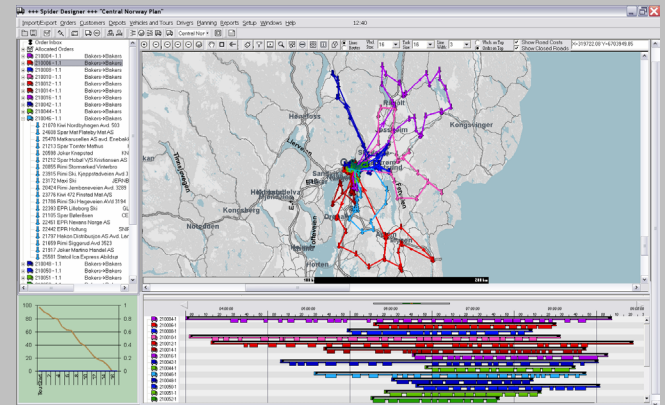


Prognose  
Stokastiske ordre

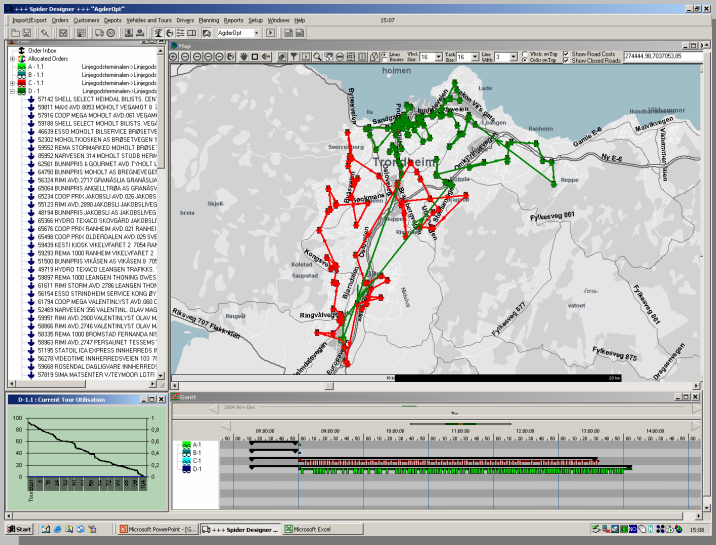
# Customers System (ERP)

Orders

Plans



# Dashbord



## SPIDER DESIGNER

- Views: map, gantt, labels..
- Optimization settings
- Drag and drop
- Reports
- Parameters and setup
- Import/export

## SPIDER PLANNER

- Advanced VRP
- Rich models that reflect the real world

## SPIDER GUIDER

- Roadnetwork, restrictions
- Cost, drivingtimes, distances
- Fast calculations

$$\begin{aligned}
 &\text{minimize} && \sum_{k \in V} \sum_{(i,j) \in A} c_{ij} X_{ij}^k && (1) \\
 &\text{subject to} && : \\
 & && \sum_{k \in V} \sum_{j \in N} X_{ij}^k = 1, && \forall i \in C && (2) \\
 & && \sum_{i \in C} d_i \sum_{j \in N} X_{ij}^k \leq q, && \forall k \in V && (3) \\
 & && \sum_{i \in C} X_{0j}^k = 1, && \forall k \in V && (4) \\
 & && \sum_{i \in N} X_{ib}^k - \sum_{j \in N} X_{bj}^k = 0, && \forall h \in C, \forall k \in V && (5) \\
 & && \sum_{i \in N} X_{i,n+1}^k = 1, && \forall k \in V && (6) \\
 & && X_{ij}^k (S_i^k + t_{ij} - S_j^k) \leq 0, && \forall (i,j) \in A, \forall k \in V && (7) \\
 & && a_i \leq S_i^k \leq b_i, && \forall i \in N, \forall k \in V && (8) \\
 & && X_{ij}^k \in \{0,1\}, && \forall (i,j) \in A, \forall k \in V && (9)
 \end{aligned}$$

Engine

# SPIDER Modules

- Spider Designer Standard
- Spider Area Planner
- Spider Tanker
- Spider Rest and Drive
- Spider Roster
- Spider Hotlink

## Engine-components

- Spider Planner
- Spider Guider

# SPIDER customers

- Linjegods
- Aftenposten
- Dagbladet
- Bakers
- Hennig Olsen
- HydroTexaco
- Stavanger Aftenblad
- Landbruksdistribusjon
- DimplomIS

## Services:

- Rema1000
- UUS
- Bladcentralen
- Norsk Gjenvinning
- Tollpost Globe
- Skogdata (forest)
  
- Many prospects



# Industries:

"Tasks and resources i geography"

## Freighttransport:

- Distribution
- Collection (waste)
- Tramp/Direct orders (express delivery)

Transport of persons (disabled)

Planning of service staffs (home care..)

# **SPIDER Advantages**

- **Rich model that reflect a complex real world**
- **Specialized**
- **Collaboration with the industry**
- **Short way theory – real world**
- **Fast calculations**

# SPIDER "best in test"

Benchmarks (international testcases)

2/3 best results on VRP with timewindow

3/4 best results directorders with timewindow.

Smaller speproblems –

optimum or max –0,5%

# Benefits – savings

- Reduced Driving cost 3 - 30% 3% av 10 mill= 300.000 .....
- Adapt changes faster (new customers..) .....
- Better customer servie .....
- Know, not just believe .....
- Overview i map, gantt, og tab. ....
- Bigger cases, more orders in a plan .....
- Less personal dependent, developpe the staff .....
- Simulate and evalute depot, roster, vehichle type .....

= *Short pay-back-time*  
*High "Return On Invesment"*

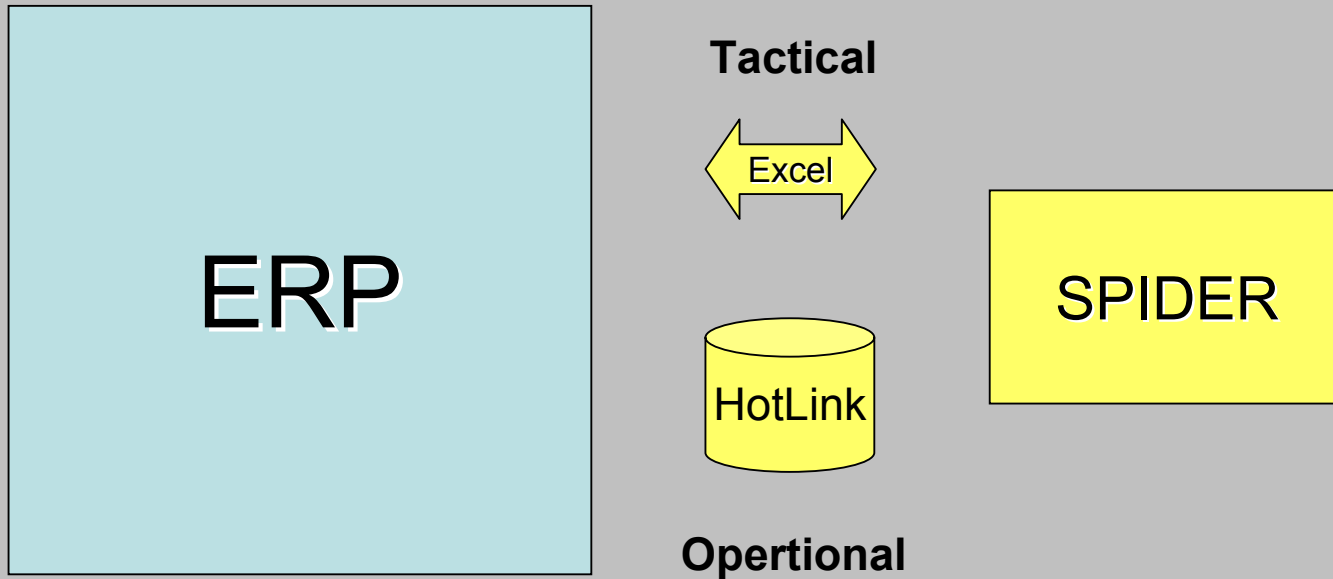
## Success requires:

- Rich GUI
- Rich model
- Project supported in all levels in the organization
- Customer must allocate time
- Accurate input-data, MAP quality
- Local involvement, specially the planners

Not replace the planners, but give them a tool.

- Involve the drivers
- Test, control speed, servicetime etc
- Implement the new plan

# Integration



# Spider Tanker

+++ Spider Designer +++ "180205#A#BergenSkålevik#AllProducts#2"

Import/Export Orders Customers Depots Vehicles and Tours Drivers Planning Reports Setup Windows Help 14:59

Plan

- Order Inbox
- Allocated Orders
- B506 Kjell A. Olsen -1.1 H506 Stor henger 51E'→51E' (Total 38 m3)
- B506 Kjell A. Olsen -1.7 51E'→51E' (Total 17 m3)
- B507 Betong og Tankfrakt-1.1 51E'→51E' (Total 17 m3)
- B507 Betong og Tankfrakt-1.6 51E'→51E' (Total 15 m3)

Chamber Width larger-2 No of decimals 0 Show Addresses

B506-1.1	4 4 4 3 4 6 4 2 4 5 5 4 4 4 3 4 6 4 2 4 0 5			
B506-1.2	4 4 4 3 4 6 4 2 4 5 5 4 4 3 3 4 6 1 2 3 5 5	4 4 4 3 4 6 4 2 4 5 5 4 0 3 0 4 6 0 0 3 5 0		
B506-1.3	4 4 4 3 4 4 4 4 2 3	4 4 4 3 4 4 0 0 2 0		
B506-1.4	4 4 4 3 4 6 4 2 4 5 5 4 4 3 3 3 6 4 2 4 5 5	4 4 4 3 4 6 4 2 4 5 5 4 4 3 0 3 0 0 2 0 0 0		
B506-1.7	4 4 4 3 4 4 3 4 3 4	4 4 4 3 4 4 5 4 3 3	4 4 4 3 4 4 5 4 0 0	4 4 4 3 4 4 0 0 0 0
B507-1.1	5 3 2 3 4 5 3 2 3 4	5 3 2 3 4 5 0 2 0 4	5 3 2 3 4 5 0 0 0 0	
B507-1.2	5 3 2 3 4 5 7 3 6 5 5 3 2 3 4 5 0 3 6 4			
B507-1.3	5 3 2 3 4 5 7 3 6 5 5 2 2 3 4 5 7 3 6 3	5 3 2 3 4 5 7 3 6 5 5 2 2 3 4 5 0 3 0 0		

Map

Map showing routes between various locations in the Bergen region, including Meland, Osterøy, and Voss. The routes are color-coded to match the order data.

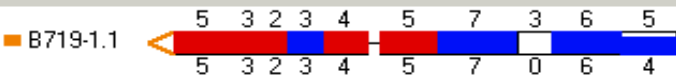
2005 feb-mar

Gantt chart showing the schedule for orders B506-1 and B507-1 from February to March 2005. The chart shows the duration of each order and the sequence of visits.

start +++ Spider Des... Appearance and... NO 14:59

Chambers

Chamber Width larger-3 No of decimals 0  Show Addresses



Plan

- Order Inbox
- Allocated Orders
  - HYDRO TEXACO OBS LADE (39m 31440kg)
    - 13200 19.0m 14.440kg
    - 17100 20.0m 17.000kg
  - B706 - 1.1 H706 (-45m -30.400kg -1080min)
  - B708 - 1.1 H708 (-46m -32.400kg -1080min)
  - B719 - 1.1 H719 (-43m -32.400kg -992min) (-4m -0.960kg -992min)
    - HYDRO TEXACO OBS LADE (39m 31.440kg)
      - 13200 19.0m 14.440kg
      - 17100 20.0m 17.000kg
    - B720 - 1.1 H720 (-44m -32.400kg -1080min)