How to optimize Supply Chain footprints:

**CAST** Supply Chain Simulation Tool
Supply Chain Footprint optimization

Objective

TO DETERMINE THE MOST OPTIMAL DISTRIBUTION NETWORK:

MEETING CUSTOMER SERVICE REQUIREMENTS

THE MOST COSTS EFFECTIVE SOLUTION

FACILITATES THE FUTURE STRATEGY
Optimized supply chain footprint design

- Supporting customer service requirements
- Cost efficiency
- European supply chain transparency
- Business continuity
Supply Chain Footprint optimization

Approach

Analysis Distribution Network

- Requirement analysis
- Volume & costs data
- Assumptions & definitions
- Set-up & verification of distribution network model
- Distribution concepts analysis & simulation
- Sensitivity analysis - sanity check
- Distribution concepts evaluation
- Implementation & transition plan
## Deliverables – Distribution Network Optimization

<table>
<thead>
<tr>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data verification and presentation of results: Basic Design Document</td>
</tr>
<tr>
<td>A distribution network model which will be used for further analysis of the</td>
</tr>
<tr>
<td>different distribution network concepts</td>
</tr>
<tr>
<td>Presentation of the various distribution network concepts: associated</td>
</tr>
<tr>
<td>operational costs and customer service impact</td>
</tr>
<tr>
<td>Validation of the robustness of the preferred distribution network &amp;</td>
</tr>
<tr>
<td>insight in the business parameters directly affecting the selection of the</td>
</tr>
<tr>
<td>preferred distribution network concept</td>
</tr>
<tr>
<td>Determine the preferred applicable distribution network concept</td>
</tr>
<tr>
<td>Plan of approach and quantification of financial implications of implementation and transition of the new distribution network</td>
</tr>
</tbody>
</table>
• Groenewout has Supply Chain Simulation experience with SAILS, Agylisis and CAST

• Groenewout has specialized warehouse & inventory optimization software available
  • Ware-2-Store®: to conduct a quick-scan on the operational design and costs of warehouse concepts during the Supply Chain Optimization
  • What-2-Store®: to determine an optimal balance between service levels versus stock levels in your warehouses

• Depending on the project objective and project scope Groenewout decides per individual project what Supply Chain Simulation software provides the best fit
Simulation tools
Considerations – best fit for project scope

MODELING SCOPE

Agylisis:
- Total supply chain
- Helicopter view
- Strong customization

SAILS:
- Total supply chain
- Helicopter view
- “Standard” supply chain

CAST:
- Warehousing & transport
- Detailed view
- Model actual figures (volume, costs)

MODELING SCOPE
• Geographical modeling, taking into account actual distances via the road network

• Optimizing allocation of customers to depots, based on time constraints and handling- and transport costs

• Optimizing ways of transport

• Multi-depot center of gravity analysis
• Up to 99 different distribution channels possible

• For supplier, manufacturing & warehouse locations, fixed and variable cost elements can be assigned

• Time and distance constraints are taken into account

• For modeling purposes, customers are aggregated based on the first two digits of the postal code
Input file

Territory properties
Input file

Inventory seasonality per product group
### Vehicle Rates

#### Current Dataset
- **Default Vehicles**
  - 1: [Cus] Secondary
  - 2: [Int] Intercompany
  - 3: [Sup] Primary

#### Vehicle Carrier Matrix
- **Drop**
  - 0.00001
  - 1
  - 2
  - 2.5
  - 3
  - 5
  - 7
  - 10

#### Service Load Time
- **Drop**
  - 1
  - 5
  - 10
  - 25
  - 50
  - 100
  - 200
  - 250
  - 300
  - 350
  - 400
  - 450
  - 500
  - 1000

#### Data Points
- **0.00001**
- **1**
- **2**
- **2.5**
- **3**
- **5**
- **7**
- **10**

#### Options
- **Cost per Unit**
- **Cost per Call**
- **Cost per Call (with interpolation)**

#### Additional Features
- **Col. width**: 1200
- **Dec places**: 2

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**GROENEWOUT**

CONSULTANTS & ENGINEERS
Input file
Parameters settings
Calculations and results

Transport calculation based on real road network
Calculations and results
Scenario comparison
Comparing strategies

The image shows a software interface for comparing strategies. The interface includes a pie chart and a table detailing various strategies along with their associated costs. The table is as follows:

<table>
<thead>
<tr>
<th>Strategy Name</th>
<th>Run Date</th>
<th>Total Distribution</th>
<th>Inallocated</th>
<th>Inallocated</th>
<th>Transport Collection</th>
<th>Transport Delivery Costs</th>
<th>Transport Main to Main</th>
<th>Transport Satellite</th>
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</thead>
<tbody>
<tr>
<td>3 depots</td>
<td>1/1/2005</td>
<td>1803306</td>
<td>0</td>
<td>0</td>
<td>450000</td>
<td>1350391</td>
<td>0</td>
<td>92</td>
</tr>
<tr>
<td>4 depots</td>
<td>1/1/2005</td>
<td>1772452</td>
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<td>0</td>
<td>450000</td>
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<td>0</td>
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<tr>
<td>5 depots</td>
<td>1/1/2005</td>
<td>1837813</td>
<td>0</td>
<td>0</td>
<td>450000</td>
<td>1151911</td>
<td>0</td>
<td>1351</td>
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<tr>
<td>DG Edit 1 Base</td>
<td>1/1/2005</td>
<td>1803306</td>
<td>0</td>
<td>0</td>
<td>450000</td>
<td>1350391</td>
<td>0</td>
<td>92</td>
</tr>
</tbody>
</table>
Calculations and results
Example supply chain flow – country focus
Calculations and results

Example isochrone results – country focus
Calculations and results

Example density results – country focus

[Map display of a density analysis with various data points and configurations]
Exporting and importing data

Input and results easy im-/exported to Excel/Access
Possible reports to be generated

- Network Strategy Model Results
- Network Strategy Isodrome Model Results
- Isodrome Model Results

Select Reports

16 Report(s) Available  0 Report(s) Selected

Export  Print  View

Exit Report Manager
### Customer Allocations

#### (Results for Output Time Period)

**Depot Allocated:** Poznan

<table>
<thead>
<tr>
<th>Customer Code / Location</th>
<th>Product Group</th>
<th>Quantity</th>
<th>One Way Distance</th>
<th>Transport Cost</th>
<th>Stock In Transit Cost</th>
<th>Vehicle</th>
<th>Combined Distance</th>
<th>Post Link Ap Cost</th>
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</thead>
<tbody>
<tr>
<td>04: Szym</td>
<td>PALLETS</td>
<td>36.08</td>
<td>275</td>
<td>299</td>
<td>0</td>
<td>1-Secondary</td>
<td>Single Del</td>
<td>0</td>
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<tr>
<td>48- Lewin</td>
<td>PALLETS</td>
<td>58.58</td>
<td>332</td>
<td>701</td>
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<tr>
<td>79- Koźle</td>
<td>PALLETS</td>
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<td>218</td>
<td>1.270</td>
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<tr>
<td>81- Olszowy Włocławki</td>
<td>PALLETS</td>
<td>52.73</td>
<td>201</td>
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<td>1-Secondary</td>
<td>Single Del</td>
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<td>82- Koźle</td>
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<td>72.99</td>
<td>148</td>
<td>1.269</td>
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<td>Single Del</td>
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<tr>
<td>99- Kołobrzeg</td>
<td>PALLETS</td>
<td>168.95</td>
<td>168</td>
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<td>14.269</td>
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<td>Single Del</td>
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<tr>
<td>112- Lębork</td>
<td>PALLETS</td>
<td>15.38</td>
<td>249</td>
<td>773</td>
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<td>Single Del</td>
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<tr>
<td>113- Wodzisław</td>
<td>PALLETS</td>
<td>170.01</td>
<td>177</td>
<td>3.214</td>
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<td>114- Wodzisław</td>
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<tr>
<td>115- Sosnowiec</td>
<td>PALLETS</td>
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<tr>
<td>116- Głogów</td>
<td>PALLETS</td>
<td>17.00</td>
<td>223</td>
<td>209</td>
<td>0</td>
<td>1-Secondary</td>
<td>Single Del</td>
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<tr>
<td>117- Legnica</td>
<td>PALLETS</td>
<td>68.38</td>
<td>194</td>
<td>1.345</td>
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<tr>
<td>118- Lublin</td>
<td>PALLETS</td>
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<td>119- Wrocław</td>
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<tr>
<td>120- Wrocław</td>
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<tr>
<td>121- Wrocław</td>
<td>PALLETS</td>
<td>100.38</td>
<td>177</td>
<td>674</td>
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<td>Single Del</td>
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<tr>
<td>122- Wrocław</td>
<td>PALLETS</td>
<td>108.56</td>
<td>177</td>
<td>2.349</td>
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<td>1-Secondary</td>
<td>Single Del</td>
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<tr>
<td>123- Dębno Wroclawskie</td>
<td>PALLETS</td>
<td>37.00</td>
<td>177</td>
<td>594</td>
<td>0</td>
<td>1-Secondary</td>
<td>Single Del</td>
<td>0</td>
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<tr>
<td>124- Strzelce</td>
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<td>125- Legnica</td>
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<td>194</td>
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<td>Single Del</td>
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<tr>
<td>126- Łódź</td>
<td>PALLETS</td>
<td>177.26</td>
<td>170</td>
<td>3.621</td>
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<td>1-Secondary</td>
<td>Single Del</td>
<td>0</td>
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<tr>
<td>127- Wieluń</td>
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<td>302.77</td>
<td>249</td>
<td>5,878</td>
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<td>Single Del</td>
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</tr>
</tbody>
</table>
Description

Ideal Standard is the world’s largest manufacturer of bath & kitchen products. The range of products include: faucets, fixtures, whirlpools, accessories, showers and sinks. Brands include American Standard JADO, Borma, Armitage Shanks, Ceramica Dolomite, Porcher and Ideal Standard.

Opportunities

As a result of several mergers and acquisitions, the “AS-IS” network in Europe contained around 25 distribution centers.

Ideal Standard desired to optimize its existing European supply chain for fixtures and fittings. The preferred distribution structure should be streamlined:

- Minimize the total distribution costs
- Maximize customer service.

Solution

A detailed analysis of existing distribution network and customer service metrics characteristics was conducted. This provided a critical overview of the current supply chain.

Supply chain simulation models were used to determine the optimal distribution structure: number, location, market region and function of the European distribution centers.

Benefits

- Insight into current supply chain characteristics and performance provided by the systematic analysis
- 15% savings on the total European transportation and warehousing costs were identified.
Description
Supply chain project for JohnsonDiversey, an industry leader in cleaning and hygiene solutions to the institutional and industrial marketplace.

JohnsonDiversey serves customers in the lodging, food services, retail, health care, food and beverage sectors as well as building service contractors worldwide.

Opportunities
Recently, JohnsonDiversey commissioned a business study, resulting in an updated business strategy. In the area of supply chain management JohnsonDiversey defined three main improvement opportunities. JohnsonDiversey management was committed to improve their supply chain in terms of operational costs and optimize their product delivery by detailing and implementing the defined supply chain opportunities.

Solution
Groenewout analyzed different alternative logistics networks for different supply chains.

A sub-regional logistics model was determined to be the optimal solution for chemical products and utensils.

For machines and accessories products a centralized solution with maximization of central stock function and direct shipments was determined to be the optimal solution.

Benefits
- Substantial annual operational cost reduction in total supply chain costs
- Significant decrease of European inventory
- Increased flexibility
- One integrated logistics concept and organization as a shared service.
Description
Client is a major manufacturer and distributor of food products.

Opportunities
Manufacturer questioned whether their current European supply chain offered opportunities for costs savings.

Solution
After analyzing the supply chain, it was determined that the current supply chain structure was close to optimal. Although no real cost savings were determined, manufacturer viewed the exercise of determining the current supply chain costs provided added value. The study included a scenario in which the finished goods warehouses at the production sites and distribution centers were combined.

Benefits
- Insight into supply chain
- Supply chain model used as a decision support system.
Description

Nestle Purina PetCare (formerly Friskies) is a producer and distributor of pet food and accessories. Nestle Purina PetCare owns several factories and numerous warehouses in Europe.

Opportunities

Friskies European Logistics team was committed to improve their distribution in terms of performance and costs for the Benelux countries and Germany.

Solution

Groenewout analyzed different alternative distribution networks. Caused by the uniqueness of articles per country market, consolidation per country was determined to be the optimal short term solution.

After executing a benchmark analysis Groenewout proved to Nestle that particular contracts for warehousing were too expensive. The decision was made to contract with one logistics service provider to consolidate the German warehouses.

Groenewout developed a RFP for selecting a new logistics service provider operating in a multi-client environment. Subsequently Groenewout supported Nestle in the development and negotiation of a new service level agreement.

Benefits

The selected service provider proposed:

- 10+% Cost reduction in German warehouse costs
- Increased quality and flexibility

Future opportunities

Creating overlap of articles between countries, product rationalization and changes in product sourcing will reduce the annual logistics costs significantly.
ESI Polska SP. Zoo. Poland

Description
ESI Polska is a division of Nestlé Waters and distributes mineral waters and other beverages within Poland.

Opportunities
As a result of changing customer’s strategies, ESI Polska questioned how to adapt their distribution network in order to meet customer requirements and reduce logistics costs. The high seasonal influences experienced by the company were considered an important issue for the development of the conceptual design.

ESI Polska wanted to identify customer revenue with the order fulfillment costs.

Solution
• Definition of customer service metrics
• Profitability analysis based on the ABC costing methodology
• Optimization of distribution structure through computer simulation. Solution towards centralization of distribution centers proved out to be the best solution for their business
• Identification of quick-wins in logistics costs: transfer and consolidation of distribution channels.

Benefits
• Customer profitability analysis
• Significant cost reduction in warehousing & transport costs
• Optimal distribution network meeting customer requirements
• Quick-wins for savings in distribution
• Implementation plan.
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