

Production and Day-to-Day Distribution Planning

Wimm-Bill-Dann Foods OJSC

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Wimm-Bill-Dann at a Glance...



Who Is Wimm-Bill-Dann?

Russia's Largest Food Company with Growing CIS Business

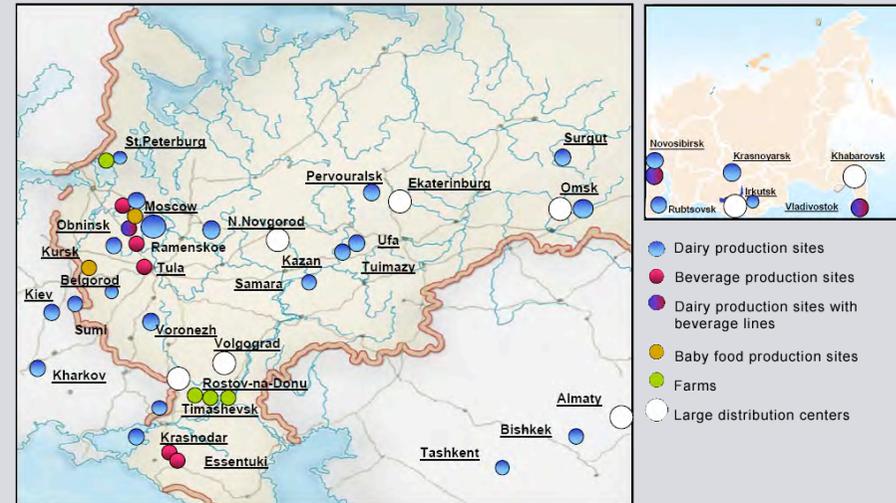
Headquarters:	Moscow
Founded:	1992
Manufacturing: Independent	33 production sites in Russia and the Commonwealth of States (CIS)
Products:	A full range of diversified branded dairy products, juice, nectars, water and fast growing baby food
Listing:	WBD: NYSE - Level 3 ADR
Market Cap:	US \$3.7 Billion
Employees:	Over 21,000
Market Position:	Russian dairy market leader
Revenue Structure:	Dairy ~75%; Beverages ~18%; Baby Food ~7%
Corporate Governance:	WBD assigned highest corporate governance score in Russia by Standard & Poor's Governance Services


3

Logistical System Overview

Network Includes 15 Warehouses

- 1 Production Warehouse
- 2 Production/Trade Warehouses
- 5 Trade Warehouses
- 1 Store Warehouse
- 2 Railway Stations
- 3 Refrigerator Warehouses
- 1 Key Client Warehouse



Daily Shipping Requirement Averages 25-30 Trucks

- 23 European Pallet Capacity

Production Assortment Consists of 200 Products with Different...

- Trade Marking
- Testing
- Packaging

Project Objectives

- Automate the Product Distribution Process
- Reduce Costs of Production Distribution System for Regional Moscow Warehouses
- Visualization of Day-to-Day Planning for Production Distribution System



Project Tasks



- Maintain Trade Warehouse Product Mix in Accordance with Sales Forecasting
- Product Distribution from Production Warehouses
- Optimize Truck Utilization and Planning

Requirements

- Planning Time cannot Exceed 1 Hour
- Distribution Model must match Real Processes
- Project cannot Exceed 3 Months



The Project Constraints

Incomplete Links to other Processes, like...

- Sales Planning
- Production
- Product Distribution in other Regions

Transport

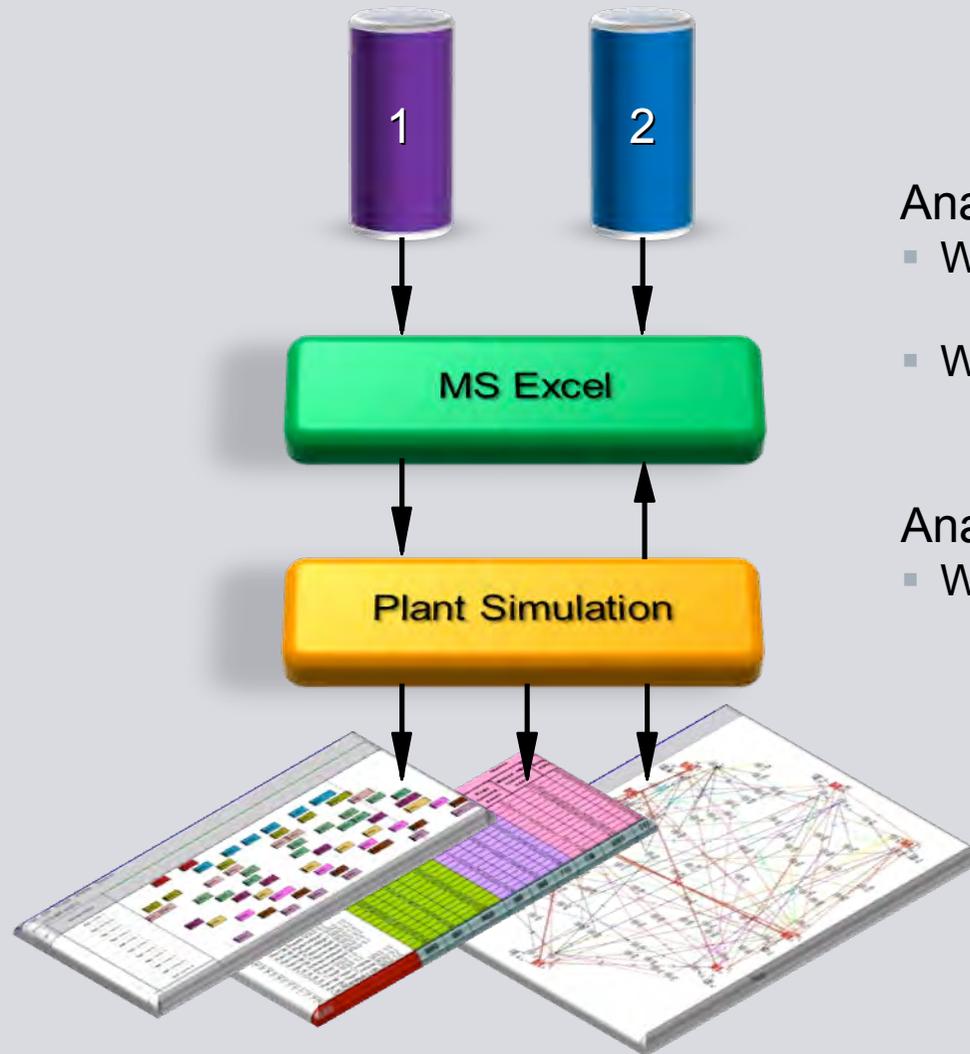
- Average Rates were Adopted
- Rate of Run from Garage not taken into Account
- Forwarder Presence/Absence Dependence of Routs not taken into Account

The warehouse fullness operative data absence – an experienced in the product distribution specialist had to carry out some operations

The comfortable user interface was lacking



Project Structure



1. Static Input Data
2. Dynamic Input Data

Analytic Module (Step 1)

- What Needs to be Delivered?
 - What is Possible to Deliver?
- What Needs to be Removed?
 - What is Possible to Remove?

Analytic Module (Step 2)

- Where to Pick-Up and where to Transport
 - From-and-To which Warehouse?
 - What Time?
 - What Products and how many?

Results:

- Truck Routes
- Product Transport Specs
- Sanykey and Gantt Charts

User Interface at the Analytic Module

Эти цифры могут корректироваться вручную		Потребность завоза		Факт	Потребность вывоза		Факт								
Код продукта	Наименование продукта	Наличие на складе, п	МО прогноз а продажах, п	СКО прогноз а продажах, п	Пороговый уровень запаса, т.д	План произв., п	План произв., п	Время доступа к продукции и для вывоза	Надо довести, п	Можно довести, п	Завоз, палет	Надо вывезти, п	Можно вывезти из наличия и пр-ва, п	Время доступа к продукции и для вывоза	Вывоз, палет
70	ДП1 ИСЕ-ТЕА "Персиковый" 0.33	12.30	0.610	0.56	2	0	0.00		0	25			0	0:00:00	
71	ДТ1 Сох Ананас 1.0	0.94	0.559	0.61	2	0	0.00		2	2			0	0:00:00	
72	ДЯ1 Сох Ананас 0.2	23.67	0.608	0.58	2	0	0.00		0	0			5	0:00:00	
73	КАП Сох Апельсин 1.0	1.12	0.000	0.00	2	0	0.00		0	0			0	0:00:00	
74	КВ1 Сох Апельсин 0.2	0.75	0.301	0.33	2	0	0.00		1	3			0	0:00:00	
75	КВ2 Нектар Банан 0.2	0.00	0.000	0.00	2	0	0.00		0	0			0	0:00:00	
76	КВМ Сох Виноград 1.0	1.13	0.000	0.00	2	0	0.00		0	0			0	0:00:00	
77	КС8 Сох Виноград 0.2	0.35	0.000	0.00	2	0	0.00		0	0			0	0:00:00	
78	Л1В Нектар Вишна 1.0	12.10	1.177	0.99	2	0	0.00			48			0	0:00:00	
79	Л1Н Нектар Вишна 0.2	2.85	1.771	1.40	2	0	0.00			1			0	0:00:00	
80	Л1П Сох Грейпфрут Белый 0.2	3.66	1.968	1.70	2	0	0.00		5	12			0	0:00:00	
81	Л1С Нектар Грейпфрут - Яблоко 0.2	10.19	0.438	0.45	2	0	0.00		0	15			0	0:00:00	
82	Л1Т Сох Грейпфрут Красный 0.2	5.54	1.343	1.38	2	0	0.00		1	5			0	0:00:00	
83	Л1Ф Сох Грейпфрут Красный 1.0	10.97	0.720	0.98	2	0	0.00			8			0	0:00:00	
84	Л1Я Сох Виноград Красный SL 1.0	36.15	1.800	1.72	2	0	0.00			0			0	0:00:00	
85	Л1Я Сох Виноград Красный 0.2	0.00	0.000	0.00	2	0	0.00			11			0	0:00:00	
86	Л1Я Сох Виноград Красный 1.0	0.00	0.000	0.00	2	0	0.00			1			0	0:00:00	

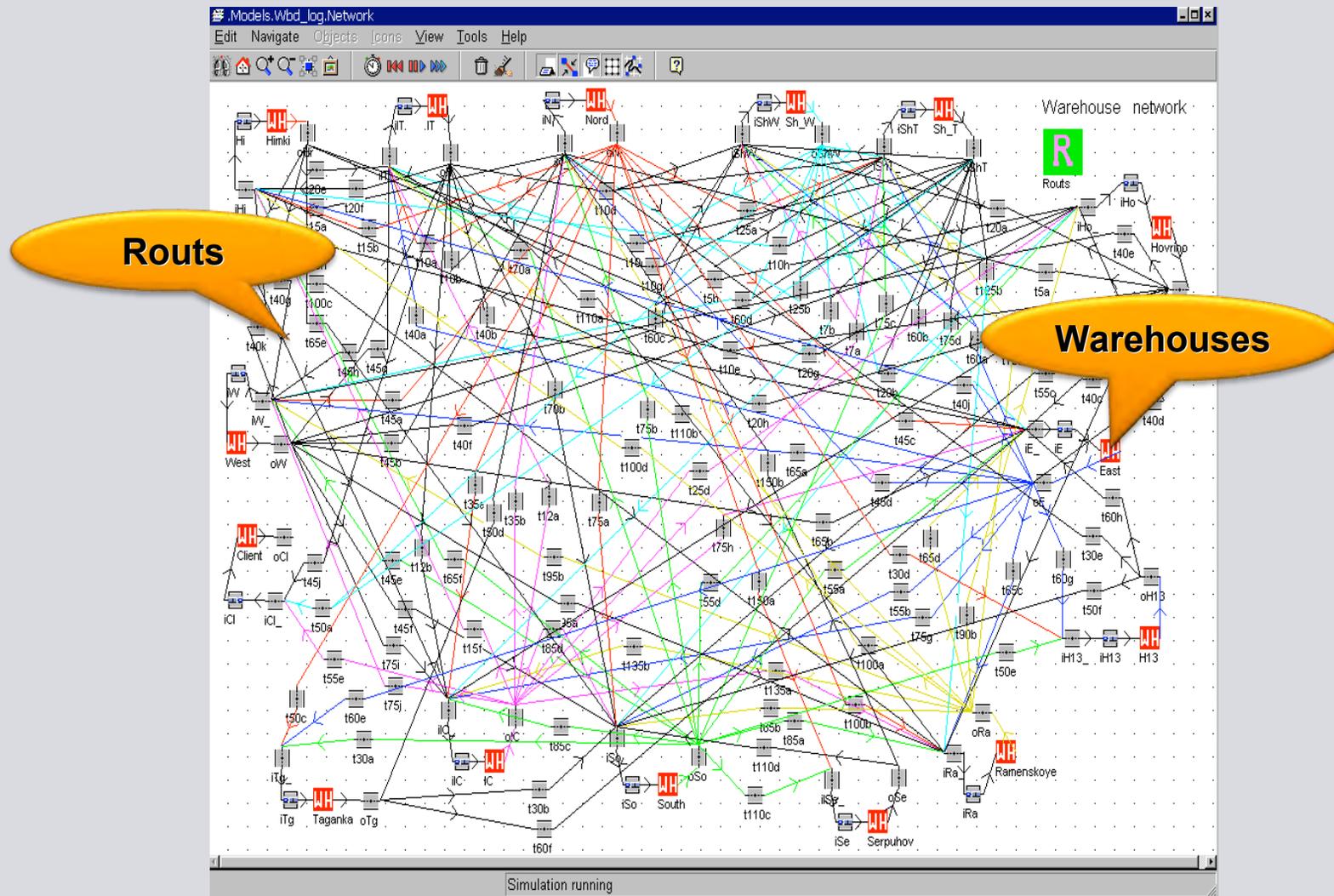
Products

Input data

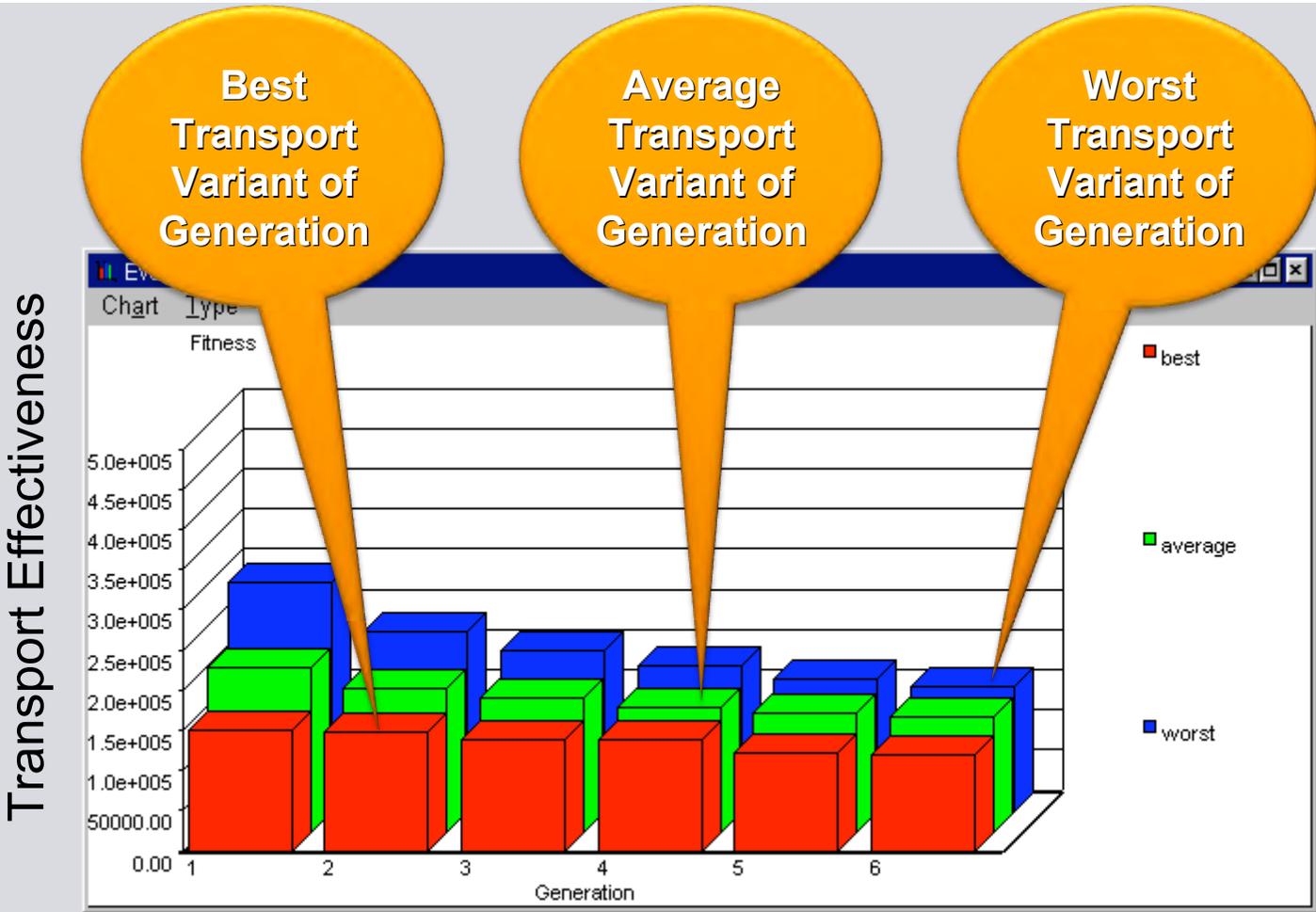
Defined Delivery

Defined Removal

Logistic Network Model in Plant Simulation

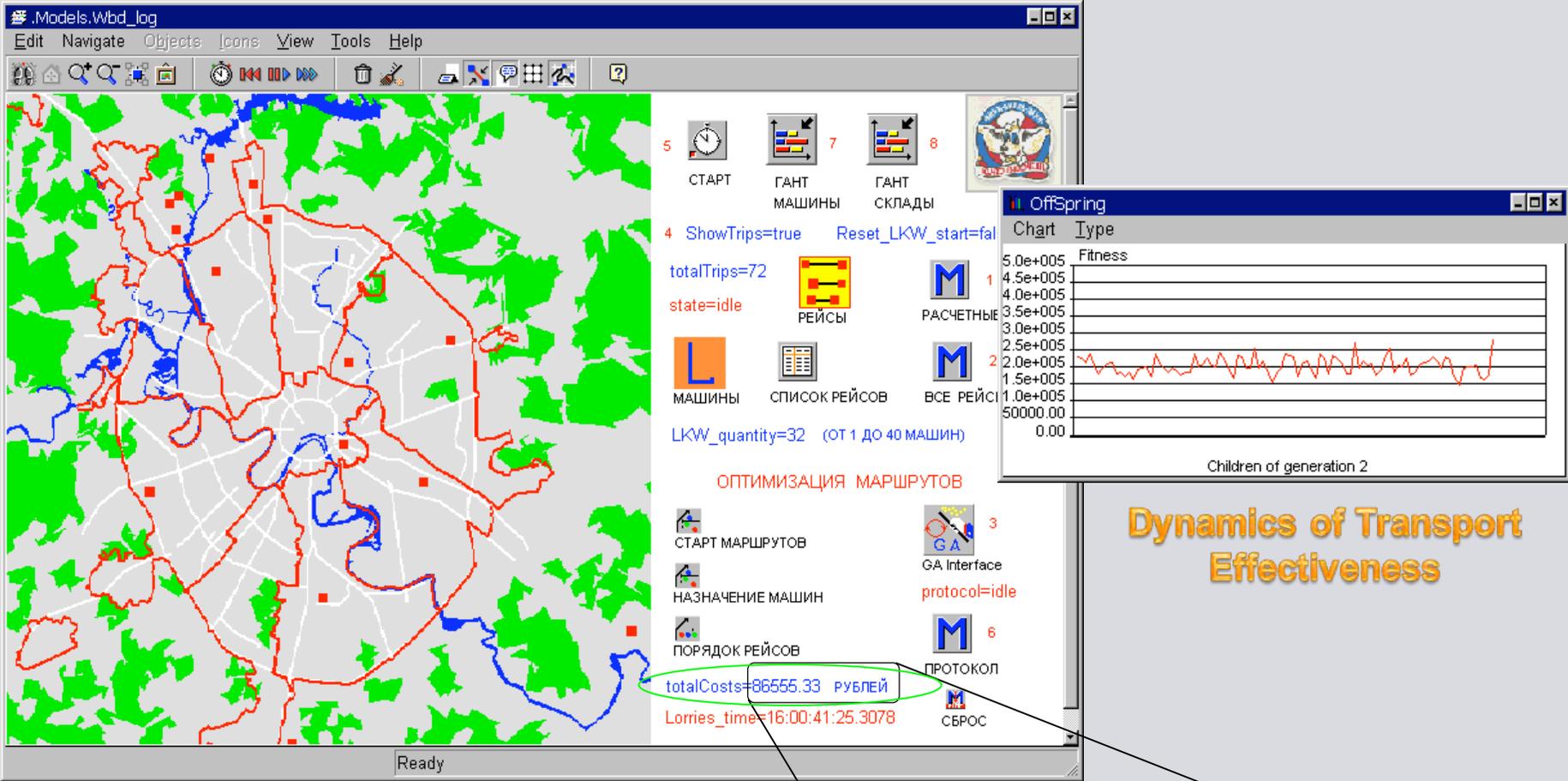


Transport Optimization



Transport Variant Generations

Daily Transport Optimization

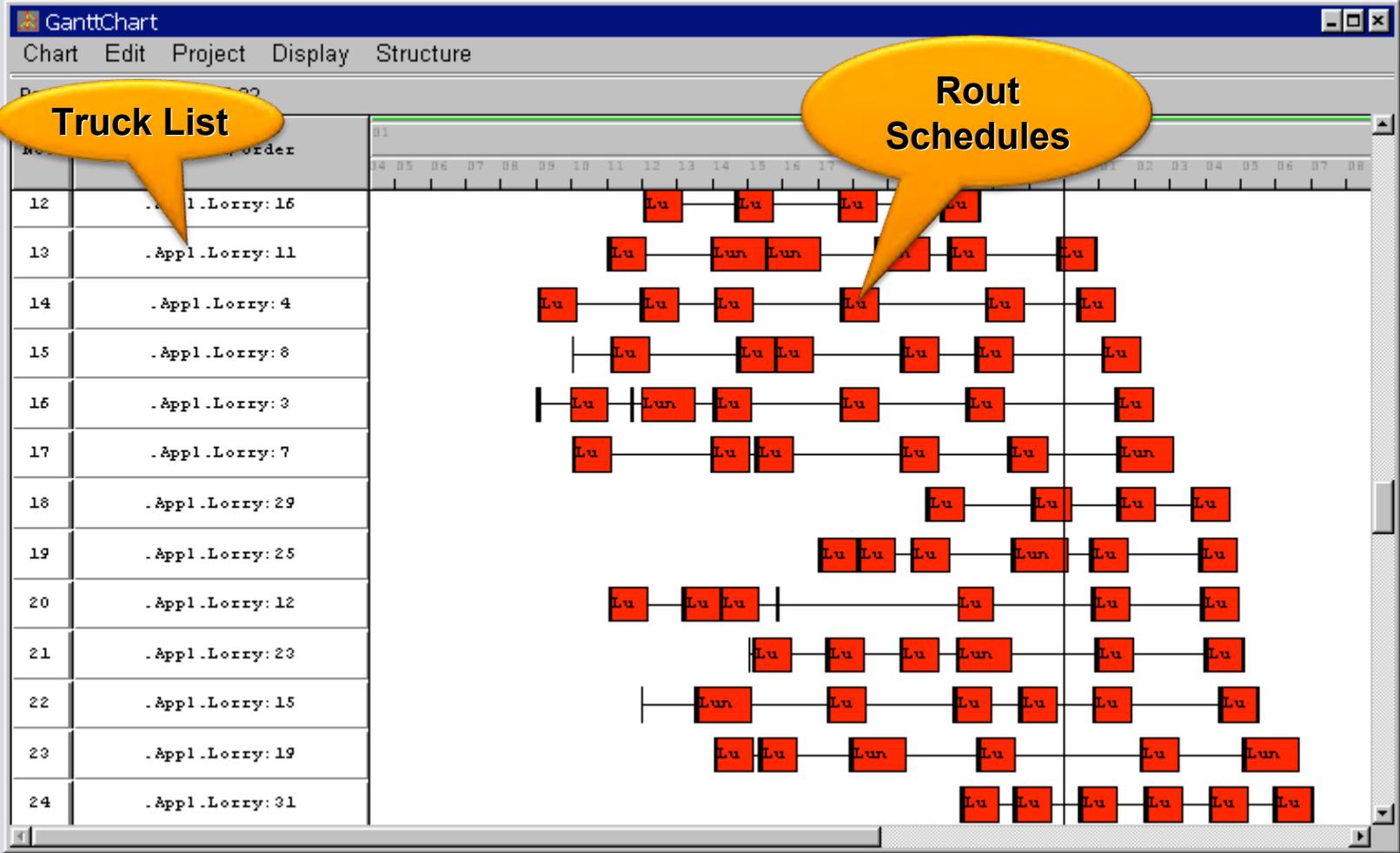


Optimization Results – Minimum Cost of Daily Transport

86555.33 Rubles

Dynamics of Transport Effectiveness

Truck Orders and Work Schedules



Warehouse Operations Schedule



The screenshot displays a software interface for warehouse operations scheduling. It features a main grid with rows representing resources and columns representing time slots. The grid is populated with colored blocks, each labeled 'Lu', indicating scheduled operations. Three callouts highlight key features:

- Warehouse List:** A callout pointing to the left-hand column of the grid, which lists resources such as `.Models.Wbd_log.Netwo rk.Nord.LunL1`.
- Warehouse Schedules:** A callout pointing to the grid area, which shows a detailed view of operations for a specific resource, including a tooltip for `.Models.Wbd_log.Network.South.LunL1` with details like `.Appl.Lorry:7` and `LunL1`.
- Operation Time Adjustment:** A callout pointing to a dialog box titled 'Item' that allows for adjusting operation parameters. The dialog includes fields for Resource, Order No., Part, Operation, Start/End times, Duration, Lot Size, and Layer.

Results

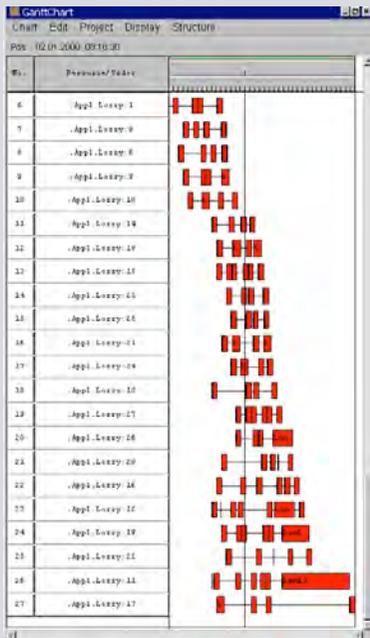
Actual Transport Operations 1-day/60 loads

Manual:

Trucks - 27 trucks

Time - 38 hours

Costs - 75770 Rubles



Surprise Benefit
 A bottleneck was detected at the Himki railway station, indicating it could not handle the 12 manually schedule deliveries. (work time 9PM – 8AM, 1 unload per hour maximum)

Plant Simulation:

Trucks - 20 trucks

Time - 27 + 6 hours

Costs - 67747 Rubles



1 Day Transport Economy:

Reduction of needed trucks - 7 trucks

Reduction of transport time - 5 hours

Reduction of Costs - 8023 Rubles (10,6%)