Way.Pro auto

This is the optimization of automobile routes

Automatic route generation system

reduces logistics costs

considers the nuances of your business

optimizes operational performance

About the company

Smart Machines LLC
developer of integrated logistics optimization

We create intelligent solutions that cover all supply chains:

from product planning and distribution to route optimization and management of last-mile logistics

Our technologies allow businesses to

reduce costs

make logistics efficient

increase customer satisfaction

We ensure efficient movement of all types of cargo

from small parcels to oversized goods, ensuring minimum costs and maximum speed of delivery
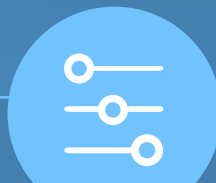
The importance of **efficient routing**

Cost reduction

Save fuel and reduce maintenance costs

Increased reliability

Minimizing delays and improving service levels

Increasing resilience to change

Flexibility in management and adaptation to new conditions

Increased delivery speed

Fast delivery and improved inventory management

Decision analysis and transparency of processes

Analytical block - reports and metrics with assessment of changes

Delivery

Analysis of delivery time and downtime

Efficiency

Empty mileage ratio

Analysis of changes

'Was-became' assessment, consideration of scenarios

Route density

Number of delivery points, average distance, departure frequency

Cost of transportation

The cost of transportation per route, vehicle, kilometer, unit of goods, type of cargo.

Expenses

Transportation costs and separate routes

Main advantages

Optimization of the entire contour transport logistics

- first mile
- trunk line
- last mile
- courier delivery

Powerful mathematical apparatus

Mathematical apparatus with optimal solution for a specific task

A strong Math and Data-Science team

A team with experts with many years of experience in mathematics and DS in logistics
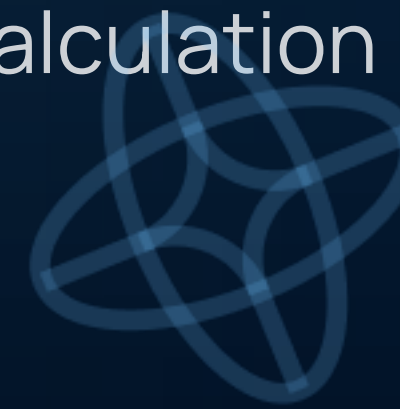
Scaling

Maximum number of logistics facilities and calculation parameters

Working with BigData

Working with millions of data matrices with amazing calculation speed

Cartography

Integration with cartographic services and visualization of solutions

A wide range of parameters

Basic

- ✓ number of points in the route
- ✓ delivery point opening hours
- ✓ loading the transport
- ✓ number of departures per shift
- ✓ traffic
- ✓ cost of expenses
- ✓ optimization function
- ✓ route distance
- ✓ car type

Extended

- ✓ loading time at the warehouse
- ✓ route duration
- ✓ working shift time
- ✓ time windows
- ✓ priority of delivery
- ✓ automatic transport request
- ✓ the specifics of the layout
- ✓ arrival forecast
- ✓ normative speeds

Premium

- ✓ new linking of points to warehouses
- ✓ Miles + Trunk line
- ✓ optimal warehouse location

Fuel cost optimization module

Double optimization

Building optimal gas station routes within optimal routes

Consideration of all parameters

- gas station price including fuel cards
- prioritization of gas stations
- fuel seasonality
- car characteristics
- telematics data

A unique database

- › 40 thousand GAS stations
- 99.9% accuracy due to transaction analysis
- full information about the gas station:
  - brand, coordinates
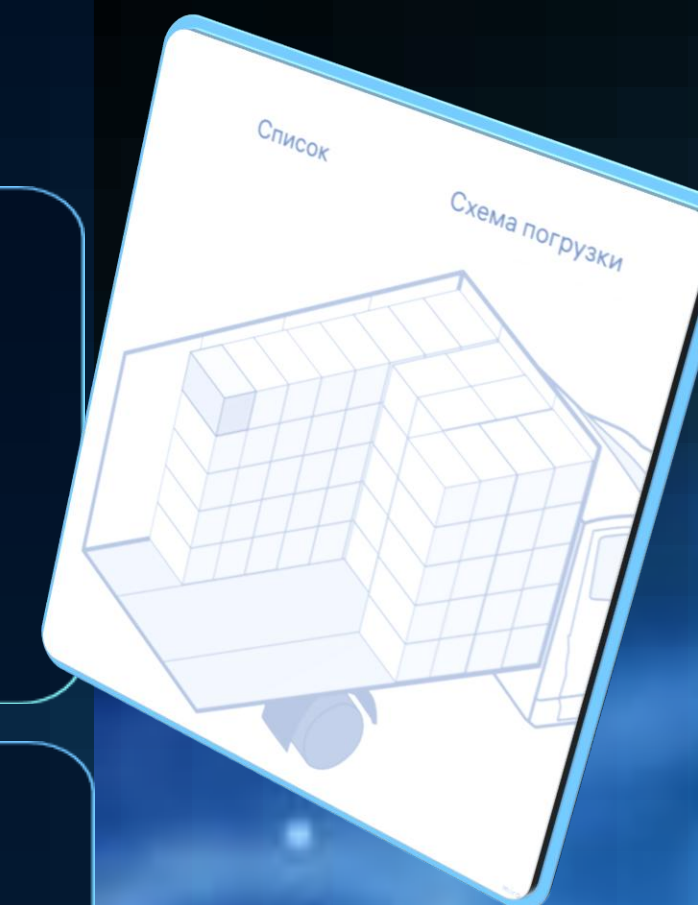 - fuel cards
  - price and discounts

Additional services

Unique services that add value to the routing product

Cargo layout

allows you to determine the order of loading and unloading of each product, visualization of its location in the car body
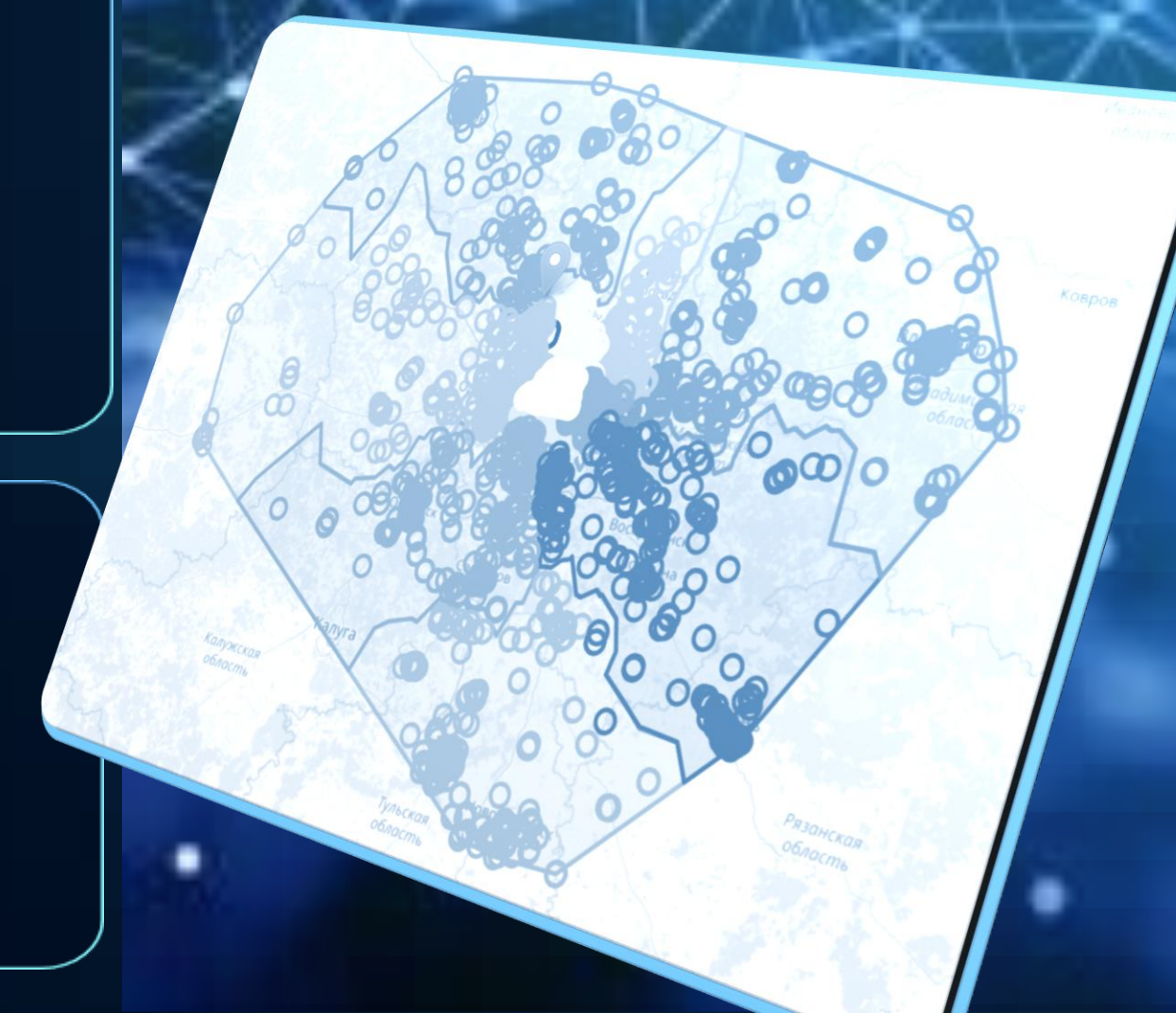
Formation of standard speeds

ML models calculate the regulatory speed between logistics facilities to control order fulfillment

Automatic transport request

Informing the user about the need for an additional transport order to reduce logistical costs

Zoning

Formation of clusters according to the required parameters

Список   Схема погрузки

Technological features

Algorithms

Optimized, reliable algorithms tested on real-world tasks

Architecture

Flexible micro-service architecture designed for load any product issue

API

A simple and consistent API with clear parameters

Changes

Quick changes and CI/CD without interrupting the system operation

Mathematical features

Working through a variety of mathematical algorithms and choosing the optimal solution for each type of problem

A multi-step solution

Optimization of calculation using several solution methods

Using heuristic algorithms

Large Neighborhood Search (LNS) method and simulated annealing

Using precise methods

Using integer linear programming

Accounting for a subset of graph edges

The Minimum Connected Tree (MST) method

The efficiency of solutions

The DataSet of the largest logistics companies was used

> 1000
own warehouses of the Russian Federation and the CIS

Positive feedback from experts and logisticians

- approval of implemented solutions from logistics specialists has been received
- the result surpasses manual labor and previous solutions

The tasks of the main stages of logistics have been solved

> 500 thous.
last mile routes per month

> 200 thous.
trunk lines per month

> 1 millions
courier routes per month

Main usage results >>>

- **Distance**
- **Delivery time**

↓ **10%**

- **Waiting for the goods**

↓ **12%**

- **Costs of transportation**

↓ **11%**

- **Cost of 1 liter of fuel**

↓ **3%**

↓ reduction of transportation costs for all types of logistics

↓ reduction of the total distance and delivery time at all logistics facilities

↓ reducing the waiting time for goods in stores and pick-up points

↑ total fuel consumption is reduced

UI Example*

custom implementation for the client

Analysis of the calculation of last-mile routes

General indicators   **Calculation details**

General indicators

Field name:

	Value	Unit
Number of selected points:		
Number of routes generated:	272	unit
Number of units product per day:	274	unit
Number of units product per 1 point:	27 425	unit per day
	100	unit per point

Сравнительный анализ:

Field name:

	Was	Became	Difference	Unit.
Total distance:				
Average route distance:				
Departure frequency:	8 582	7 783		
Density of points:	536	563	- 799	km
Units of goods per 1 km:	0,9	0,7	+ 27	unit
Waiting time:	15,2	14,8	+ 0,2	per day
	3,4	3,6	- 0,4	km
	03:40	03:19	+ 0,2	per km
			-00:21	

Close

Analysis of the calculation of mainline routes

Comparative analysis:

Indicator	Metric	Calculation 1	Calculation 2	Difference
Pallets	Number of pallets (units)			
	Number of pallets (units/km)	151 776	115 270	-36 497
Streams, routes	Number of unique routes (units)	6,6	7,5	+0,9
	Number of unique routes (units)	3 385	3 344	-41
	Share of direct routes (%)	1 222	1 125	-97
Distance	Share of transit routes (%)	29	23	-6
	Distance of unique routes (km)	71	77	-6
	Average shoulder distance (km)	995 677	859 308	-136 369
Time	Average route distance (km)	815	764	-51
	Time on unique routes (hour)	1 665	1 579	-86
	Average time on routes (hour)	5 933	5 209	
		5,5		

Main routes

Route	Departure	Transit	Arrival
115	Moscow_1	Rostov	Pyatigorsk
115	Moscow_2	Kazan	Surgut
115	St. Petersburg		Moscow
115	Yaroslavl	Volgograd	Kemerovo
115	Kazan		Omsk
115	Tomsk		Krasnoyarsk
115	Tula	Volgograd	Krasnoyarsk
115	Barnaul		
115	Novosibirsk	Irkutsk	Irkutsk
			Pyatigorsk

Choose a route

Departure Warehouse ⌄   Route number ⌄

Calculated ones only

Apply   Clear

Route №	113	Distance	452	
Points	15	Time		Details
Warehouse	MSK_1	Speed	04:35	
Volume	1765		45	

Route №	15	Distance	327	
Points	13	Time		Details
Warehouse	Мск_1	Speed	03:28	
Volume	2 173		39	

Route №	165	Distance	462	
Points	17	Time		Details
Warehouse	Мск_1	Speed	04:54	
Volume	1 958		46	

Contacts

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