

VEERROUTE ↗

Cloud-based combinatorial optimization engine

scheduling

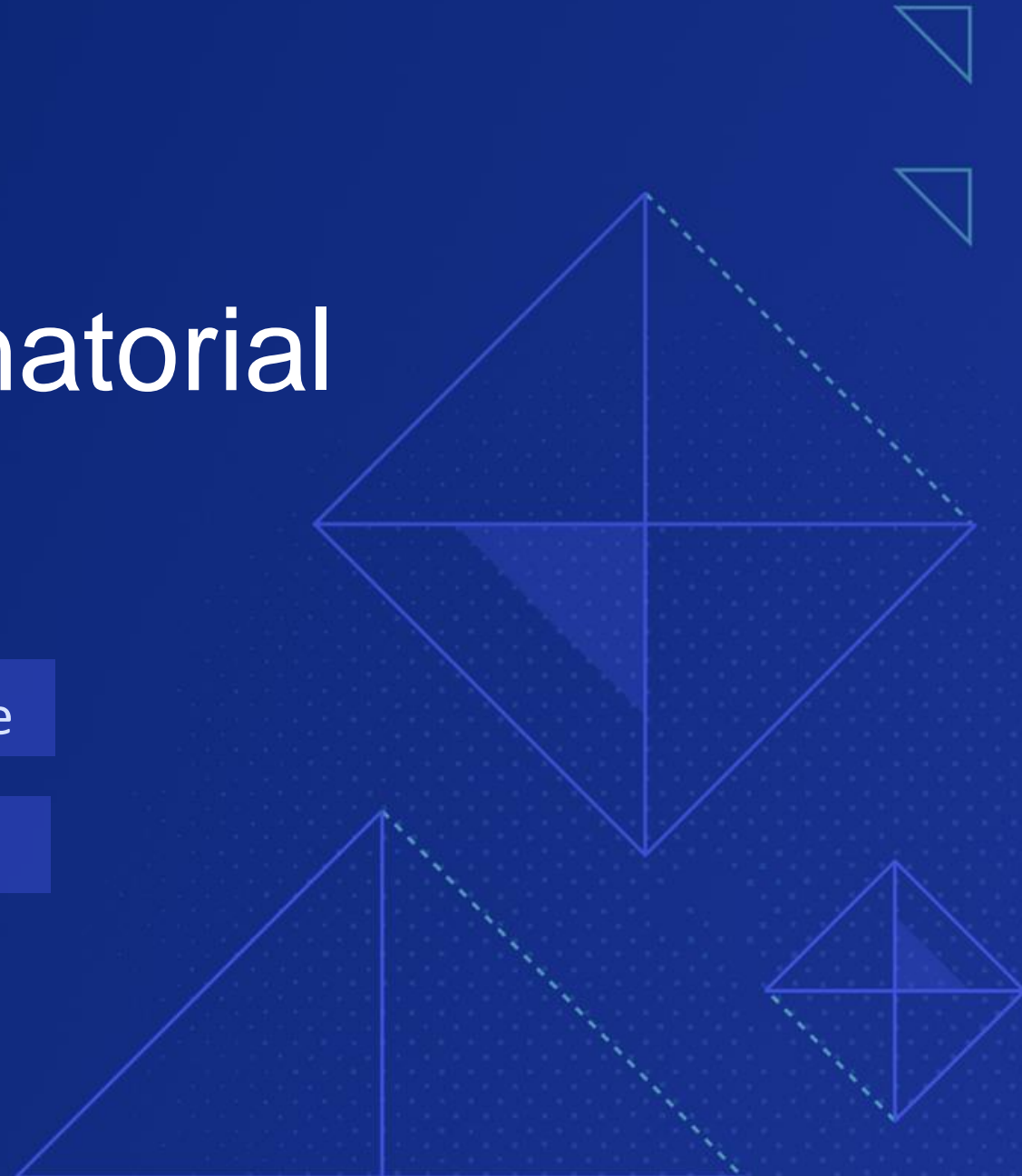
transportation

last mile

long haul

field service

production



About Veeroute

Product:

Cloud-based combinatorial optimization engine

Application areas:

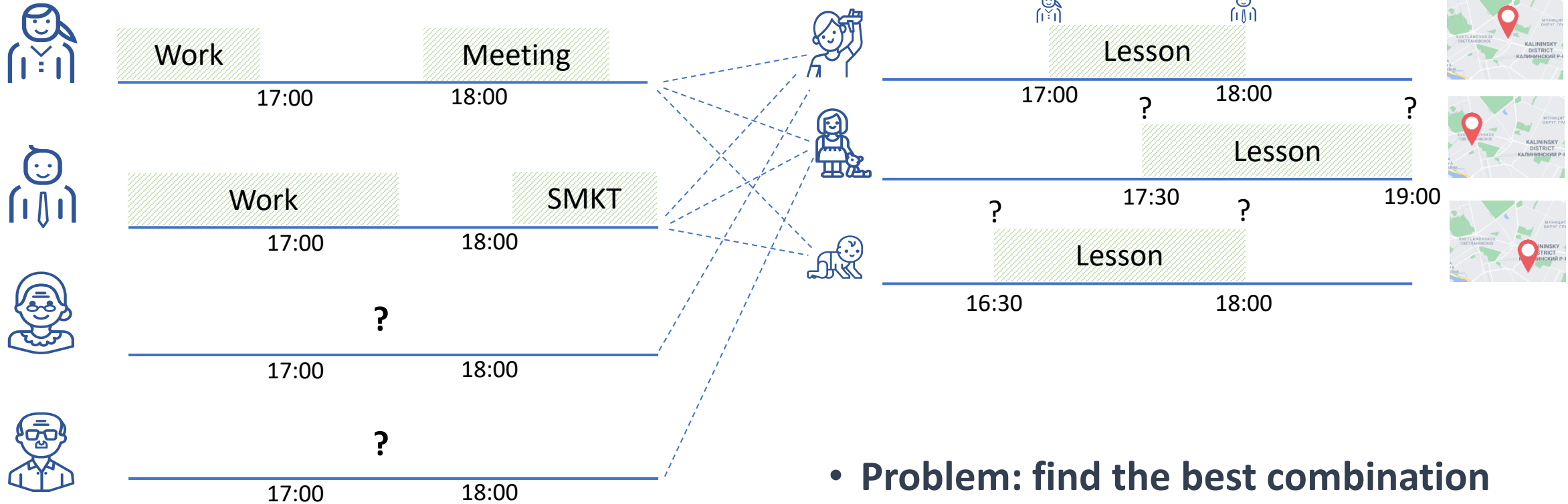
- Last mile delivery
- Long-haul delivery
- Field service engineers
- Cashpoints replenishment
- Production planning

www.veeroute.ru



Combinatorial problems

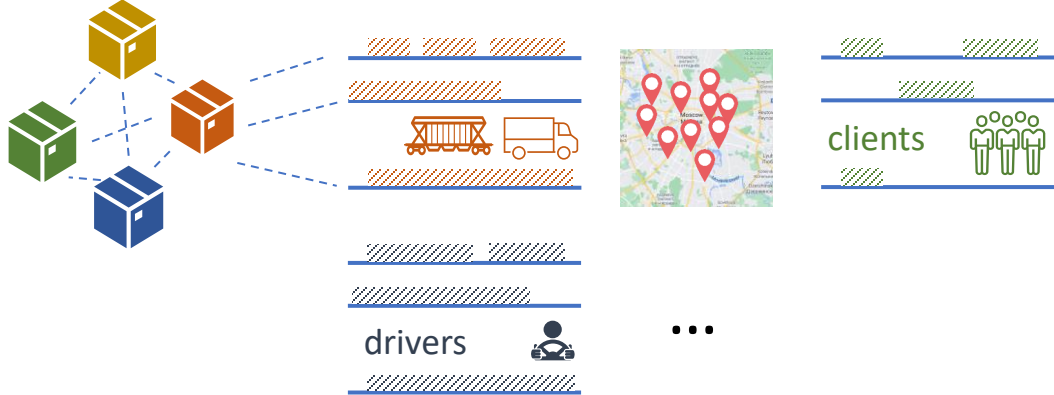
Simple combinatorial problem



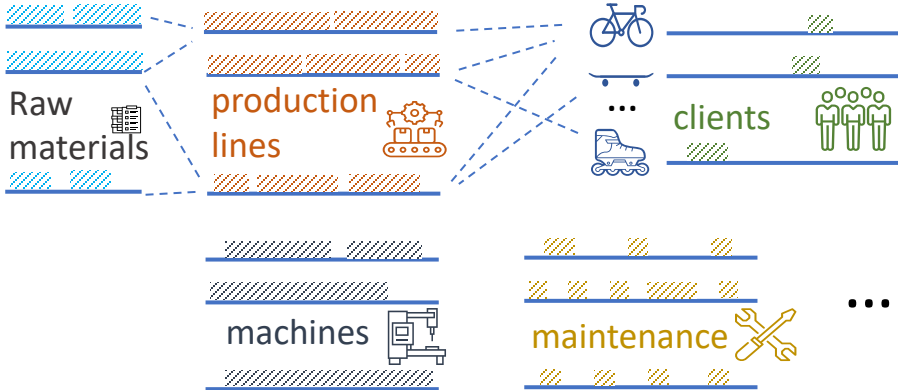
- **Problem: find the best combination**
- In such problems usually there are no linear/non-linear dependencies, or they are limited

Examples of combinatorial business problems

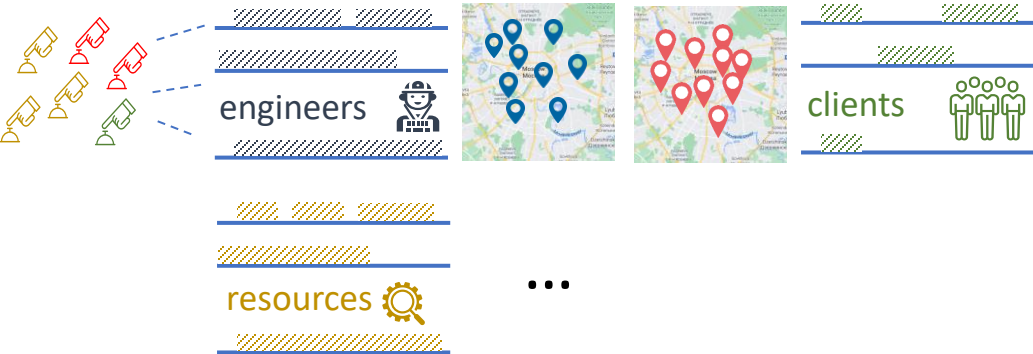
Delivery/Transportation



Production scheduling



Field service engineers



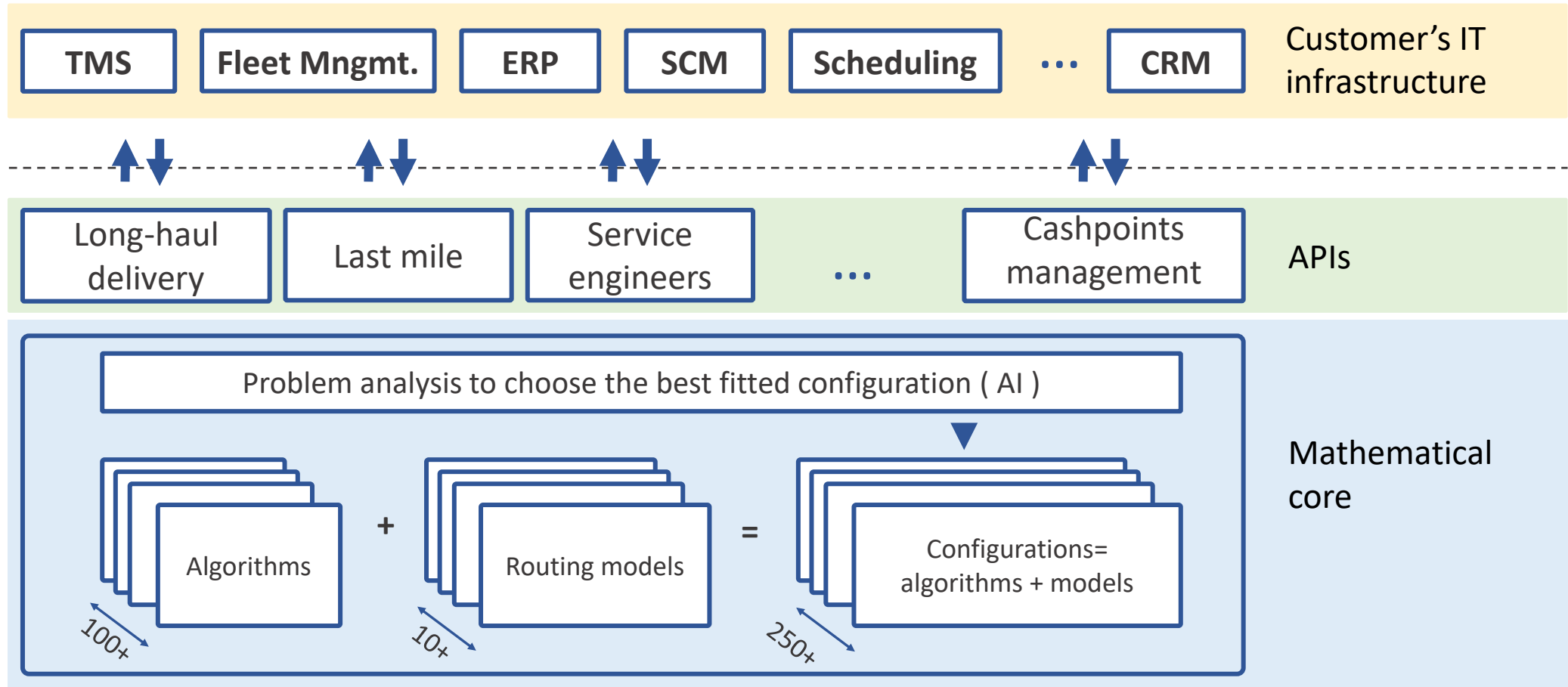
Cash replenishment



Veeroute – SaaS combinatorial optimization engine

How the engine works

VEEROUTE – SaaS optimization engine



Why Veeroute



Performance

Most of the optimization problems solved within 10-20 minutes



Scalability

It is easily scalable, just by adding computing power (CPUs)



Quality

The engine gets into 3-5% tolerance from the best results in 10 minutes



More details...

Accounting for the details which determines a system performance enables to find actionable results



Stochastics

Considering stochastic and uncertainty allows to find actionable plan and estimate risks



Optimization criteria

Optimizer offers a set of powerful criteria that you can use individually or in combination



Real-time planning

Optimization result may be updated on-the-fly based on the new input



Easy integration

The engine employs API developed according to OpenAPI standards



Extensibility

The set of developed algorithms is easily adjustable to solve new business problems

Examples of business problems



Transportation system optimization



Automated decision making



Risk assessment and mitigation



Reduce cost and mileage



Improve service quality



Last mile delivery



Dynamic planning and routing



Field service engineers scheduling



Fleet and driver optimization



Express delivery services and postal service



Long-haul delivery and multimodal transportation



Cashpoints cash management

Cases

Case 1. Magnit



About company

Magnit is one of Russia's leading food retail chains, number one by the amount of stores and geographical coverage.

Goals

1. Estimate transportation cost savings in the case of switching to Veeroute from another optimization engine



21 564 stores in 66 regions
3 800 cities and towns
38 DCs and 4 400 trucks

Result

**5-6% = € 7,6 M / yr
proved savings**

Better trip planning
and routing

**~40 min for optimization
instead of hours**

Enables to run optimization several
times per day

Automated planning

Suggested trips are actionable and
do not require any adjustment

Case 1. Selected requirements

- Vehicles' capacity in pallets and tons
- Trailers' capacity in pallet/tons and ability to transfer cargo between trailer and vehicle.
- Vehicles may do multiple trips per day i.e. do a delivery than return to warehouse and do another one
- Availability schedule for vehicles
- Loading\unloading time at warehouses/DC/stores
- Time windows
- Vehicle-cargo compatibilities for frozen and fresh products
- Warehouse/DC productivity – number of pallets per hour
- Time a vehicle spent at parking lot
- Trailers-store compatibility. If trailers are not allowed, it should be parked first and picked up on the way back
- Order split in case it can not be delivered by one vehicle
- Work and rest schedule
- Places where a driver can be replaced

Case 2. Stroydvor

About company

DIY reseller. One of the key components of its business model is prompt delivery

Goals

1. Improve business model scalability by implementing automated planning
2. Improve service level provided to customers
3. Consider products dimensions when planning delivery

Result

80% of the trips

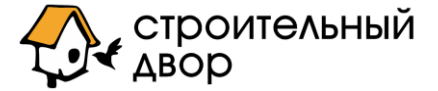
are executed as suggested by optimization engine without any adjustment

90% arrivals in time

Considering traffic and other stochastic. Time window was reduced to **1 hour**

+30% vehicle body utilization
+23% fleet utilization

Better use of the resources



общая площадь **244 300 м²**
торговых площадей, складов и баз

27 year on the market
17 cities of Russia
50 retail stores

Case 3. Online trade

About company

Online store, sells almost everything from electronics to food

Goals

1. Scale delivery service to cope with huge increase in demand and prepare for future growth
2. Reduce planning time
3. Optimize resources



22 years on the market
16 000 orders per day
Delivers to 100+ cities

Result

Planning time reduced to 20 minutes

Before it took several hours to plan all the deliveries and rescheduling was very painful process

Easy to scale

For optimization engine it does not matter how many orders to schedule

Improve delivery process

They got rid of walking delivery as an inefficient

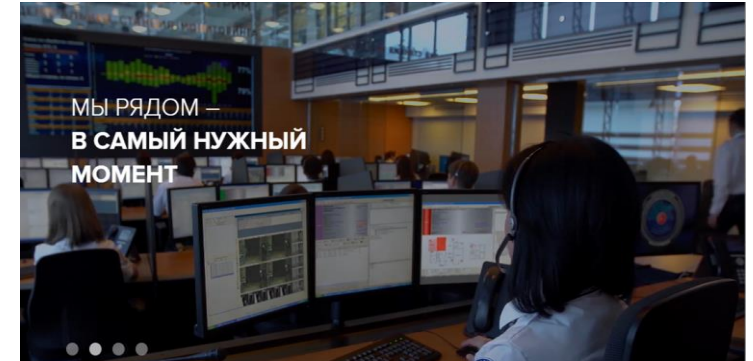
Case 4. Gulfstream

About company

Company provides security services to the households, installs and manage security systems. One of the essential part of the business is scheduling visits for service engineers which should consider cost of visit, locations of service engineer(s) and customer

Goals

1. Reduce time to choose time slot for visit
2. Optimize resources
3. Automatically creates trips for engineers



25 year on the market
21 regions of Russia
75 000 customers

Result

7 seconds to choose time slot

Now this process takes only one call and 7 seconds in comparison with 4+ calls before

+50% efficiency

Coefficient of efficiency of an engineer grew up by 50%

-20% fuel

Optimization in scheduling also led to fuel savings

Thank you!
Q&A

