VEEROUTE↗

Cloud-based combinatorial optimization engine

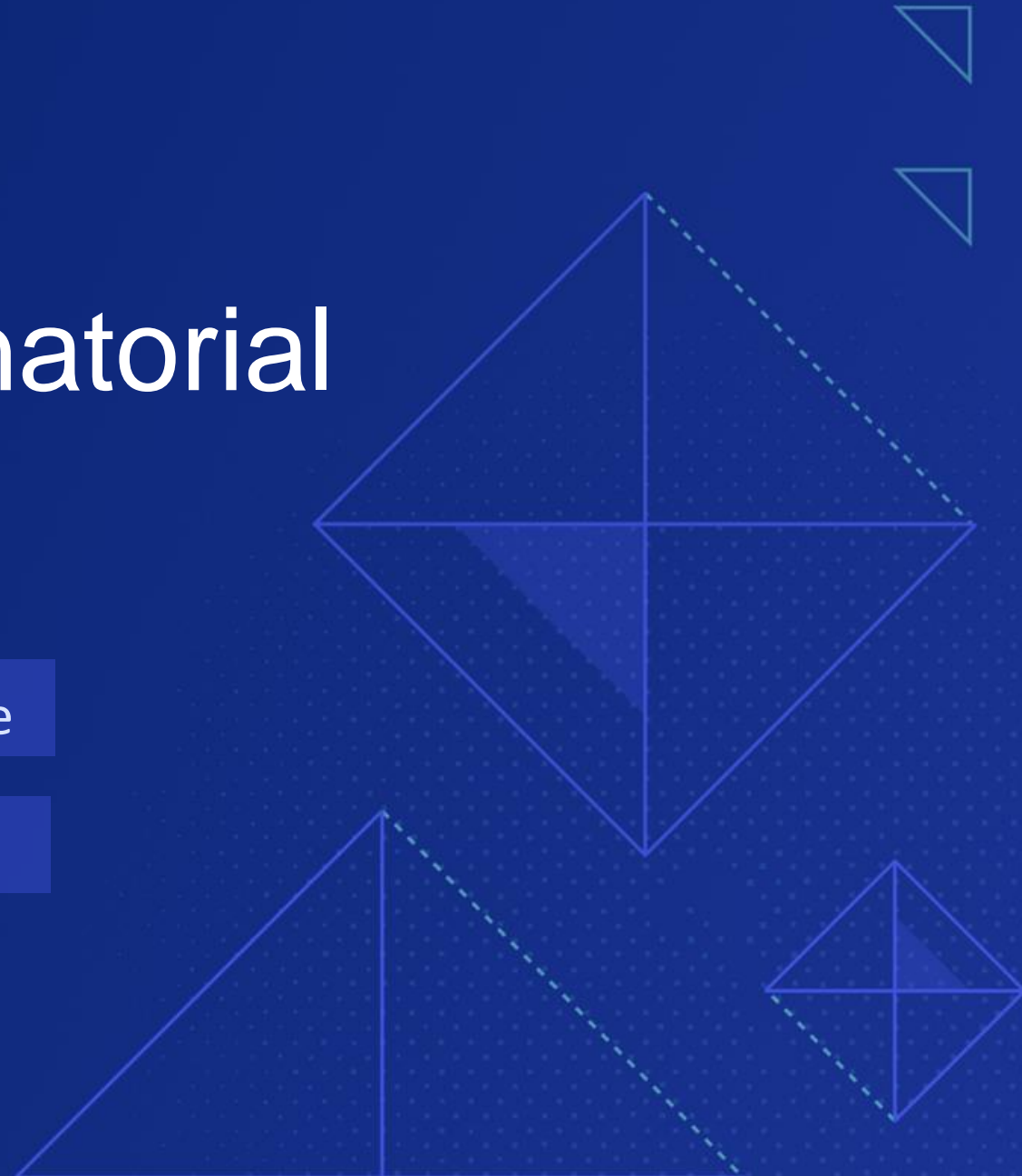scheduling   transportation   last mile

long haul   field service   production

About Veeroute

Product:

Cloud-based combinatorial optimization engine
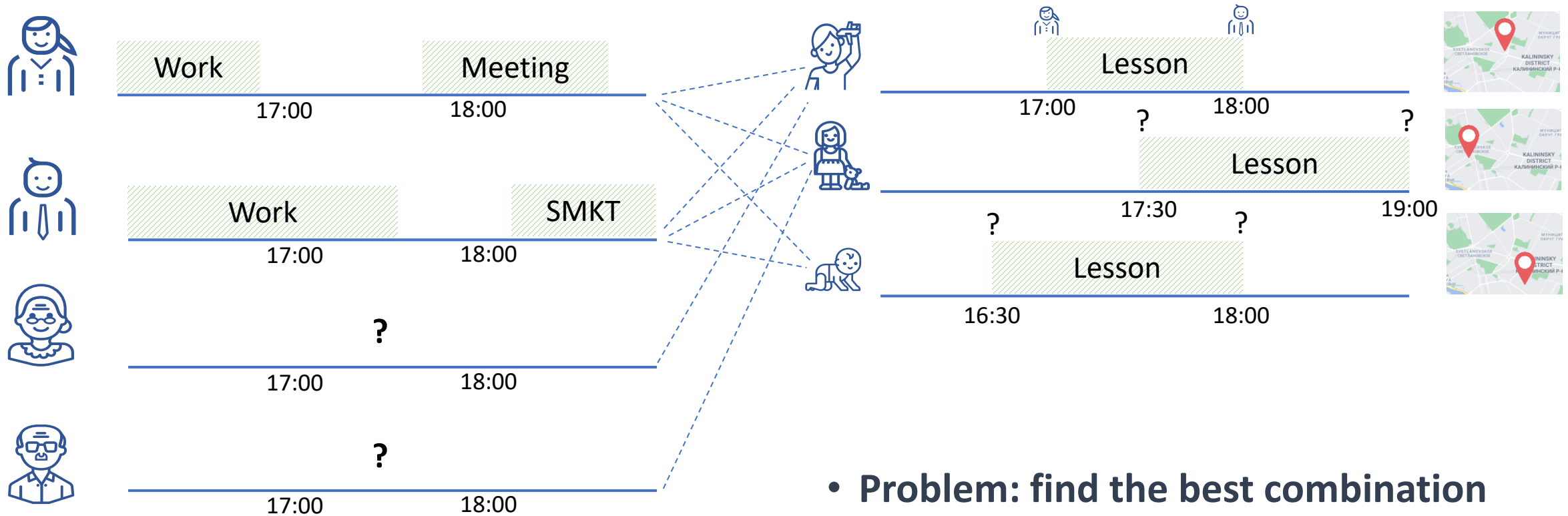
Application areas:

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

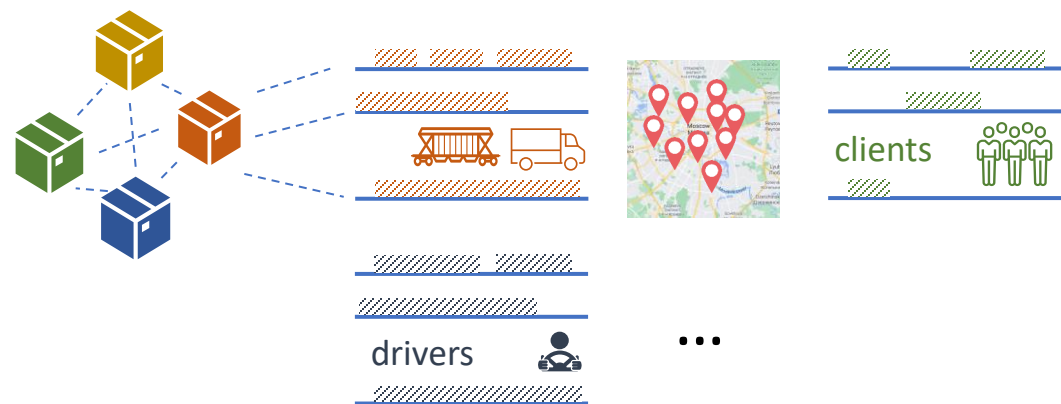www.veeroute.ru

Combinatorial problems

Simple combinatorial problem

Work | Meeting

17:00 | 18:00

Work | SMKT

17:00 | 18:00

?

17:00 | 18:00

?

17:00 | 18:00

Lesson

17:00 | ? | 18:00 | ?
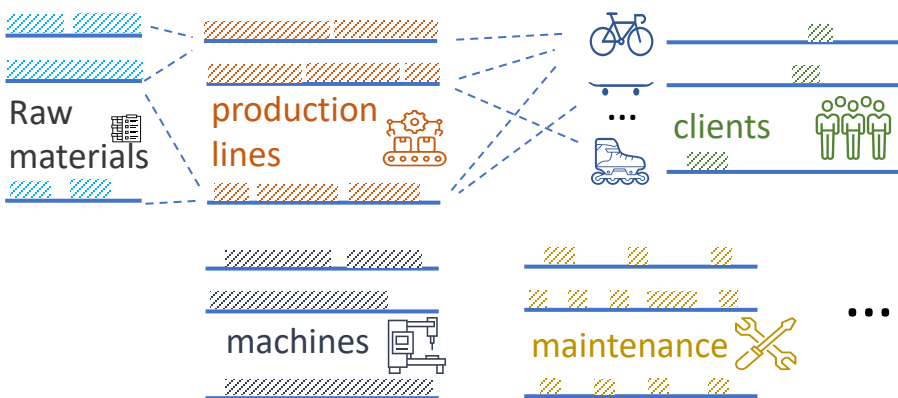
Lesson

? | 17:30 | ? | 19:00

Lesson

16:30 | 18:00

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

Examples of combinatorial business problems

Delivery/Transportation

clients

drivers

...

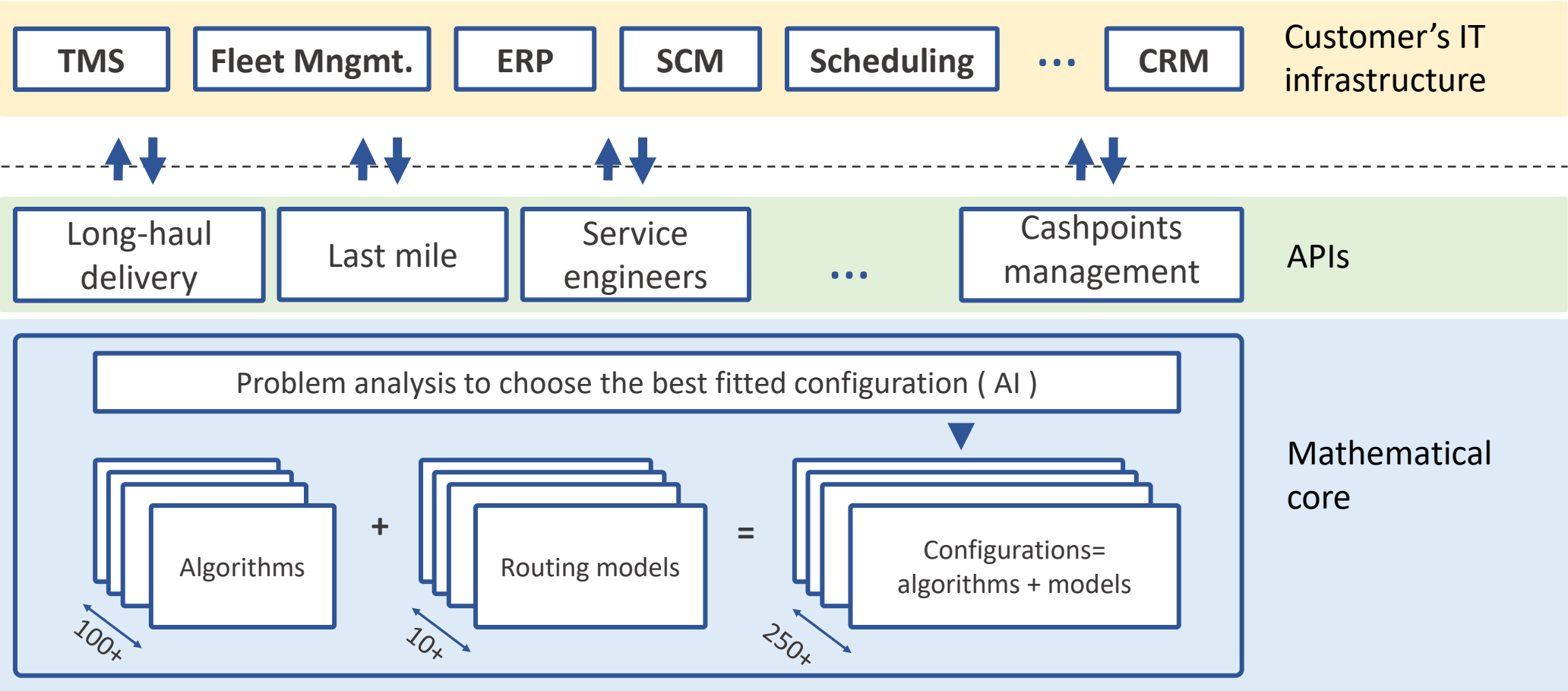Production scheduling

Raw materials

production lines

clients

machines

maintenance

...

Field service engineers

engineers

clients

resources

...

Cash replenishment

clients

resources

...

Veeroute – SaaS combinatorial optimization engine

How the engine works

Customer's IT infrastructure

| TMS | Fleet Mngmt. | ERP | SCM | Scheduling | ... | CRM |

VEEROUTE – SaaS optimization engine

APIs

| Long-haul delivery | Last mile | Service engineers | ... | Cashpoints management |

Mathematical core

Problem analysis to choose the best fitted configuration (AI)

Algorithms 100+

+

Routing models 10+

=

Configurations= algorithms + models 250+

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 milage

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

 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 panning delivery

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

27 year on the market

17 cities of Russia

50 retail stores

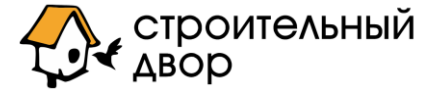## Result

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

Case 3. Online trade

ОНЛАЙН.РУ
ТРЕЙД

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

ГОЛЬФСТРИМ
ОХРАННЫЕ СИСТЕМЫ

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

МЫ РЯДОМ –
В САМЫЙ НУЖНЫЙ
МОМЕНТ
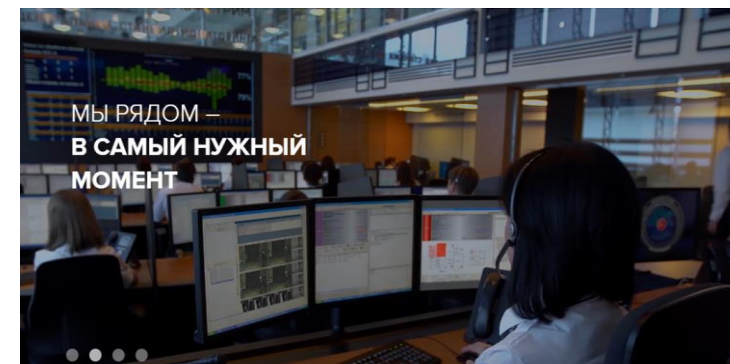
25 year on the market

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