

# 4G/LTE THROUGHPUT MAP

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# Motives/Changes/Goals



## EU strategic goals



by 2020 >30 Mbps  
by 2025 >100 Mbps

## Changes



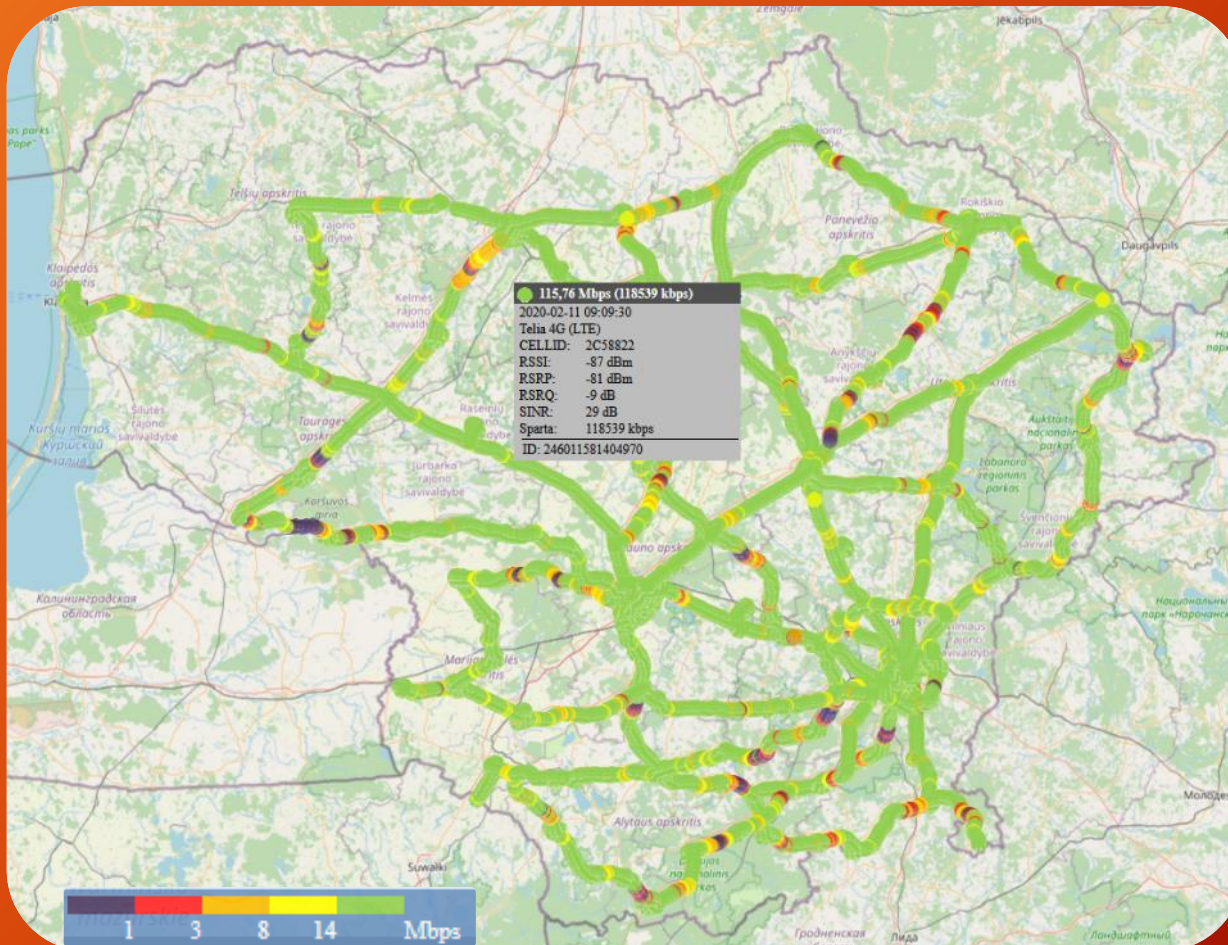
## Tool for regulator



## Tool for user



# LTE measurements



<http://matavimai.rtt.lt/>

# Practice and challenges



Preparation phase in Lithuania took almost 2 years:

- ✓ New more detailed digital map data
- ✓ Measurements and propagation model tuning
- ✓ Development of the methodology
- ✓ Data speed calculation tests
- ✓ Meetings with operators (3-4)
- ✓ The first calculations were officially published in June 2020

Challenges:

- ✓ Difficult to verify calculation results
- ✓ Constantly changing network load
- ✓ Operators refused to share network load because it's treated as sensitive and confidential. Finally it was agreed to use network load of 10% and 50%
- ✓ Prepare disclaimer (explanation) to the public on the throughput maps

# LTE network load

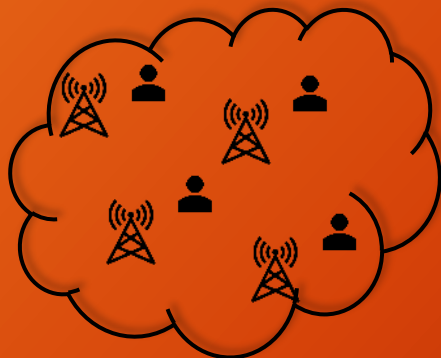


## Model 1



10 %

- ✓ Shows operator network capabilities for downloading data
- ✓ Based on this model, we can evaluate the implementation of the EU strategic objectives and the requirements set out in the operators licenses

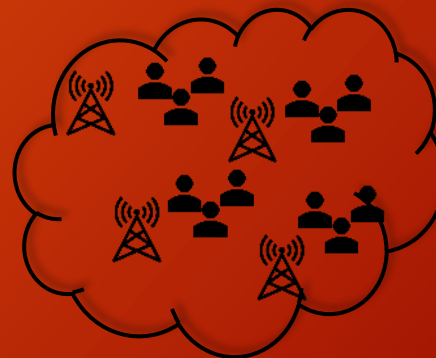


## Model 2



50 %

- ✓ Shows the situation on an average loaded network
- ✓ More applicable for user data speed predictions in daily service usage



# Calculation process



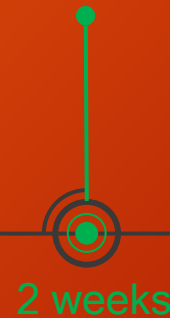
PREPARATION



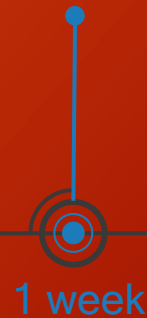
COVERAGE  
CALCULATION



THROUGHPUT  
CALCULATION



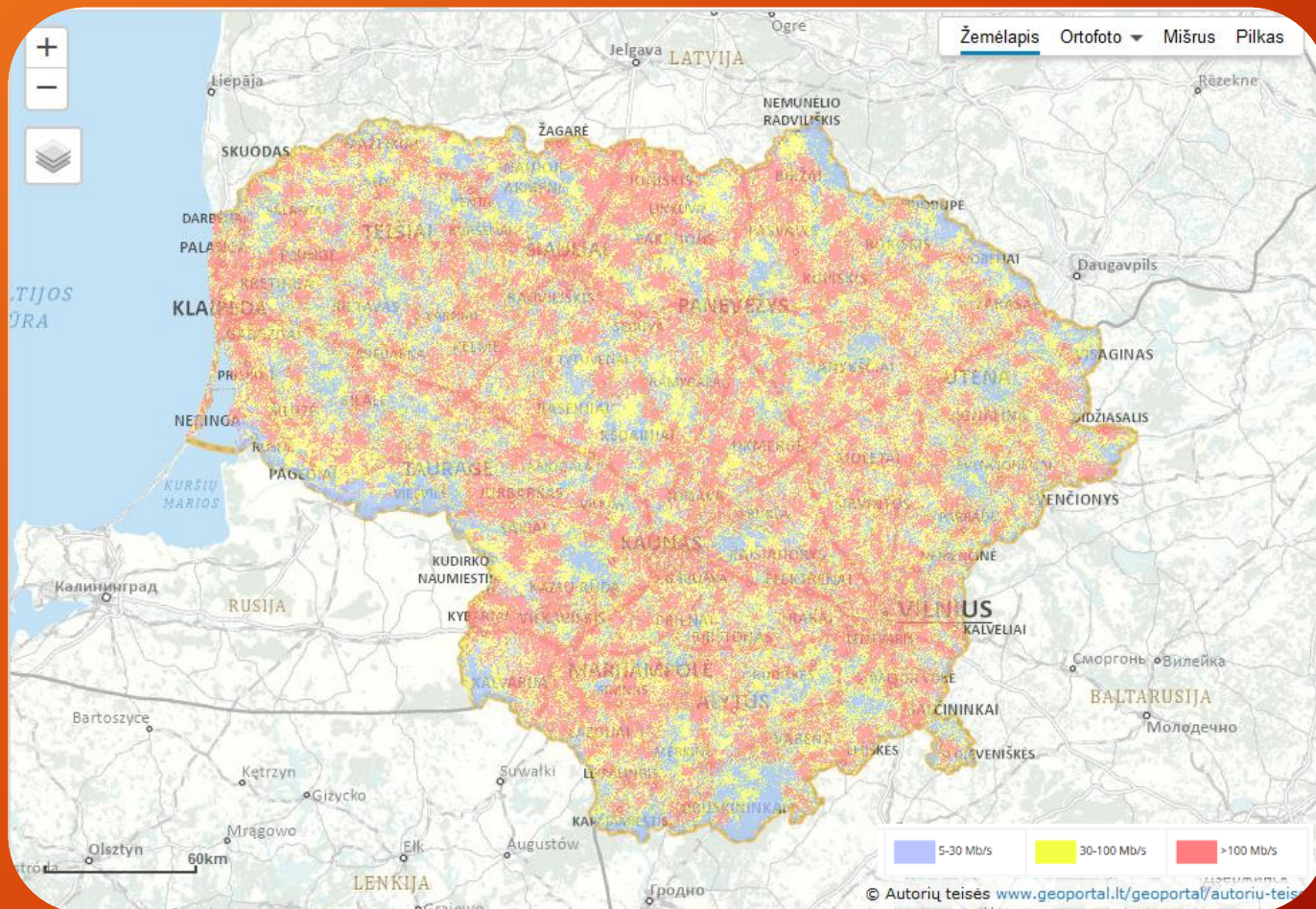
PROCESSING  
OF RESULTS



Total duration – 5 weeks



# Throughput map

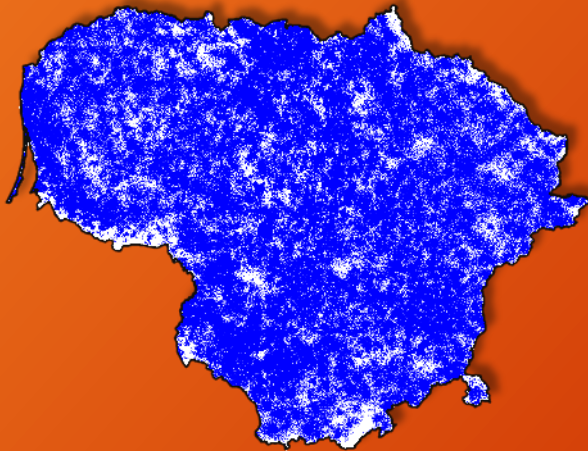


<https://www.rrt.lt/judriojo-rysio-tinklu-teoriniai-spartos-skaiciavimai/>

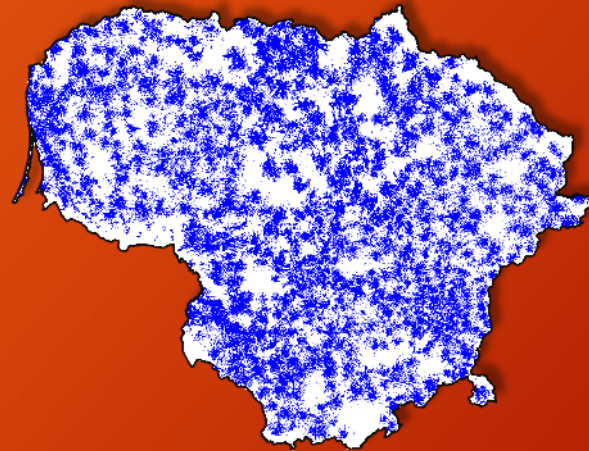
# Throughput (network load)



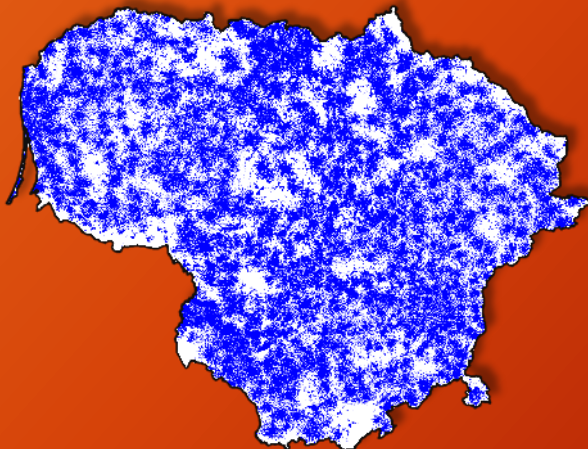
30 Mbps (10 %)



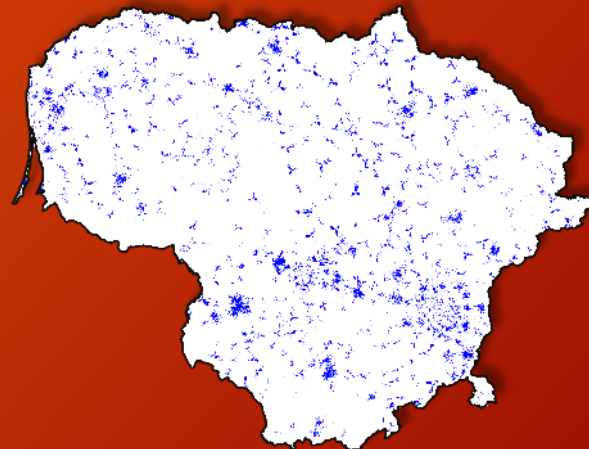
100 Mbps (10 %)



30 Mbps (50 %)

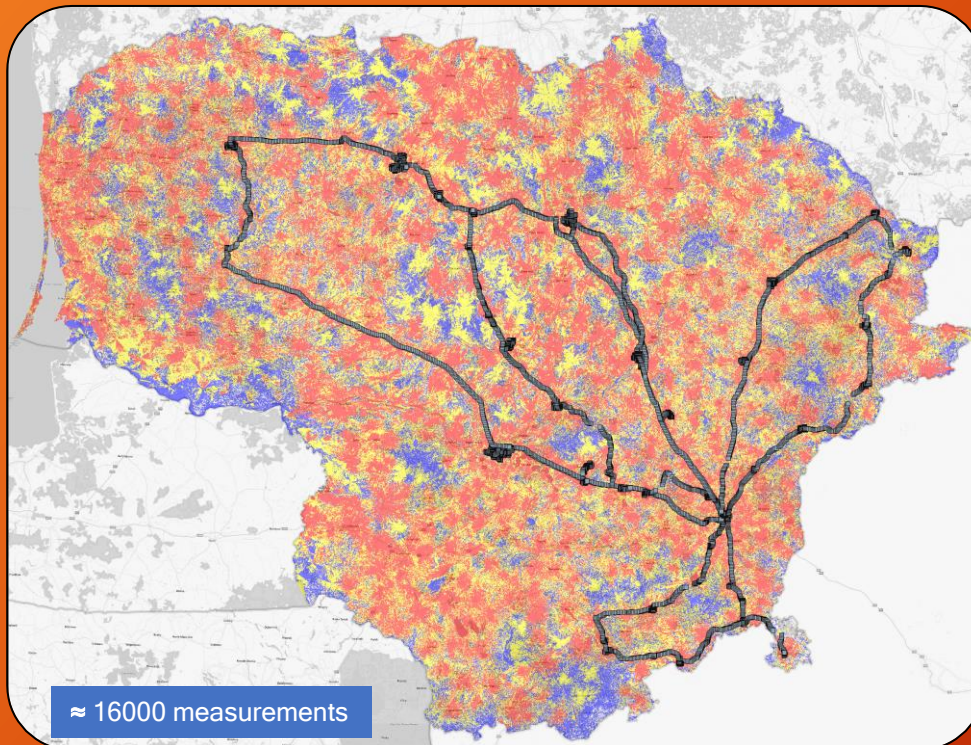


100 Mbps (50 %)

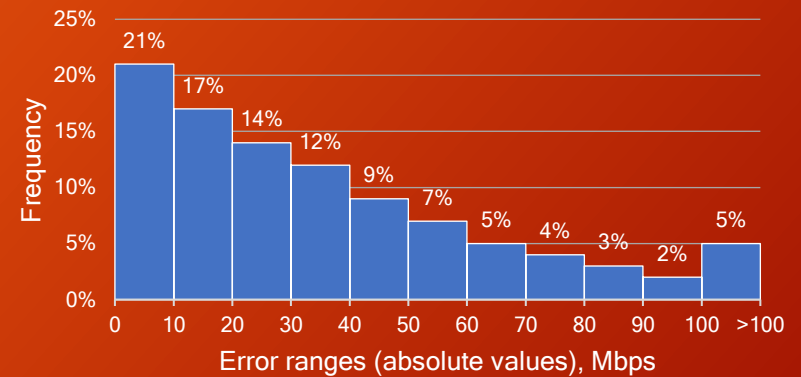




# Comparison with drive test



Error distribution



Method	Average throughput, Mbps		
	Operator 1	Operator 2	Operator 3
Drive test measurements	50	74	87
Simulation 10% load	98	159	183
Simulation 50% load	43	68	80

- ✓ Throughput calculation is a complex and specific task as we need to consider a lot of factors
- ✓ Lithuania is one of the first regulators doing throughput calculations
- ✓ Allows to evaluate throughput coverage across the country, and this could help for executing geographical estimations of Mobile IAS availability
- ✓ Would encourage the competition in the market
- ✓ Enables consumers to compare and choose mobile service provider based on their needs



# Thank you!

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