

# “Accessibility Passports” Service in Information Environment for Persons with Disabilities

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# Project KA432 of Karelia ENPI programme “Journey planner service for disabled people (Social Navigator)”

## Partners:

- Petrozavodsk State University (lead partner)
- University of Oulu
- Open Innovations Association FRUCT
- Ministry of Health and Social Development of Karelia



# Overview

- The significance, aim and objectives of development
- Program architecture of the Information Environment for Persons with Disabilities
- Information service “Accessibility passports” and method of accessibility evaluation
- Further work and conclusion

# Significance

The infrastructure of some cities in Russia is not friendly for persons with disabilities:

- Inaccessibility of lifts, narrow doorways, high stair steps etc.
- Incomplete information on services for persons with disability



- Problems with selection of a route to social facilities using actual road situation

Actual accessibility information should be provided by services

# The aim and objectives

Development of Information Environment for Persons with Disabilities

Development of social information services for Persons with Disabilities



Accessibility passport

Accessibility Map

Root Planning

Social Network

Other services

# The aim and objectives

Accessibility  
Passport

collection information  
on social facilities

Accessibility  
Map

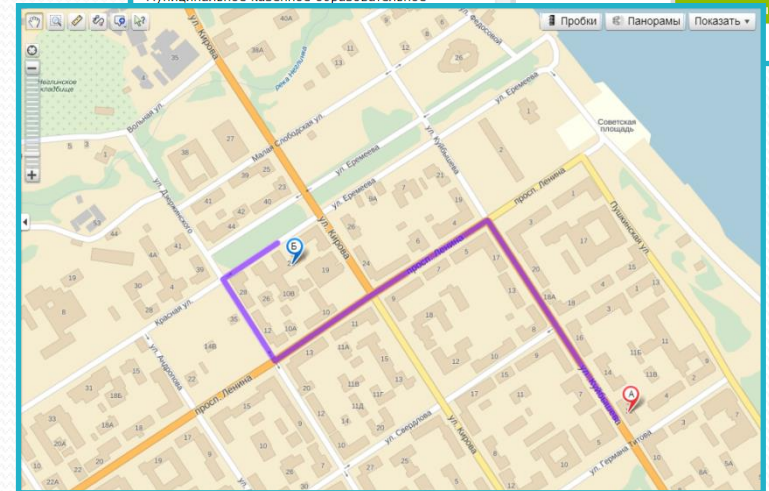
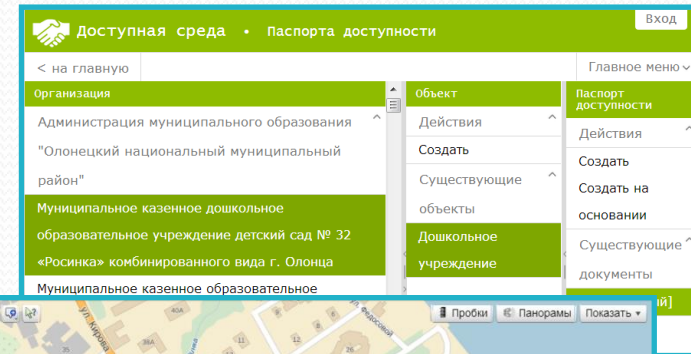
geographical map of  
the Region with its  
socially significant  
facilities

Root  
Planning

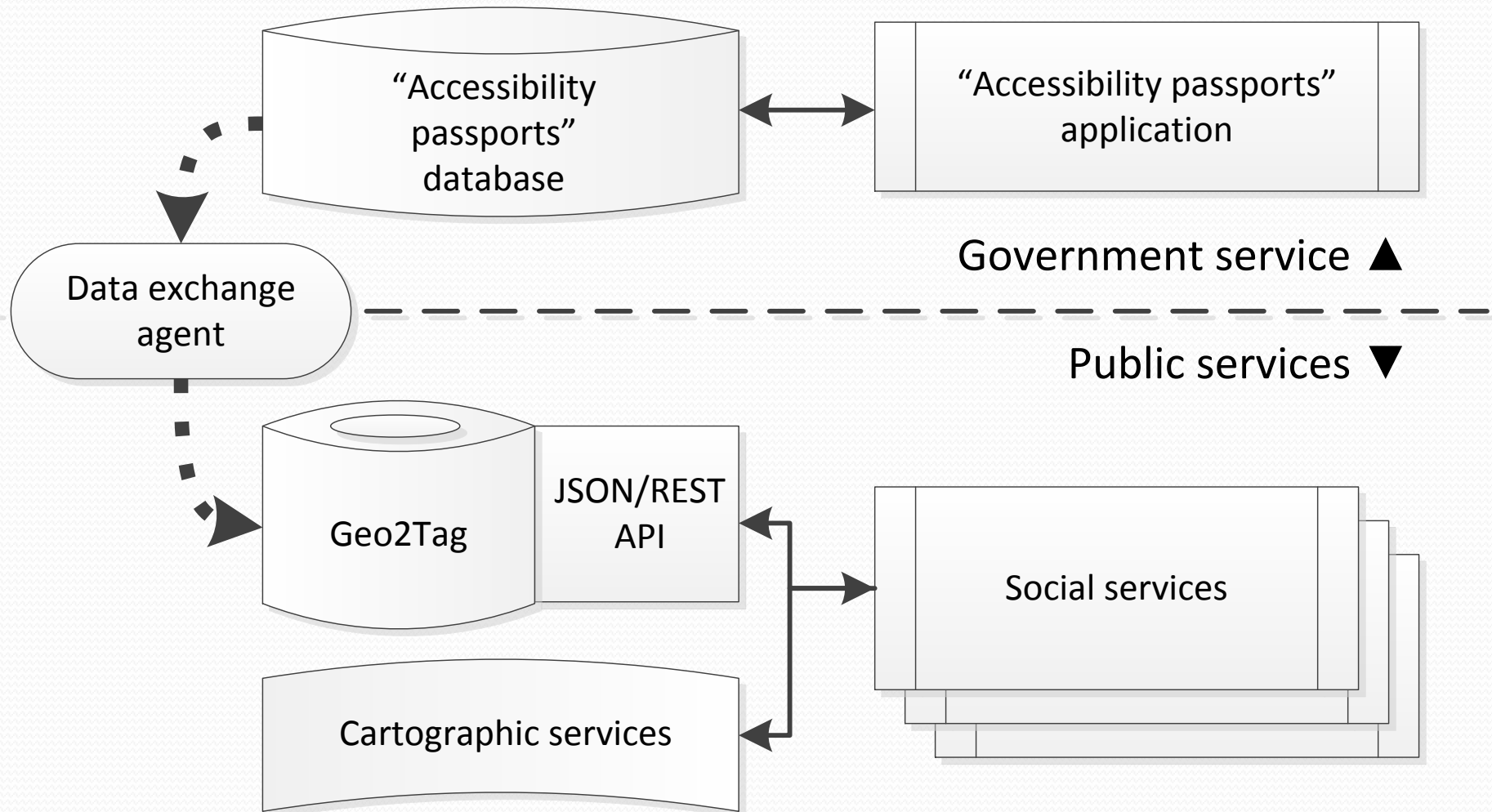
service adapted for  
disabled persons

Social  
Network

dialogue between the desabled  
and social institutions



# Information environment architecture



# “Accessibility passport” service



The service is carried out with Ministry of Healthcare and Social Development of the Republic of Karelia under the National Program “Accessible Environment”



## Service functions:

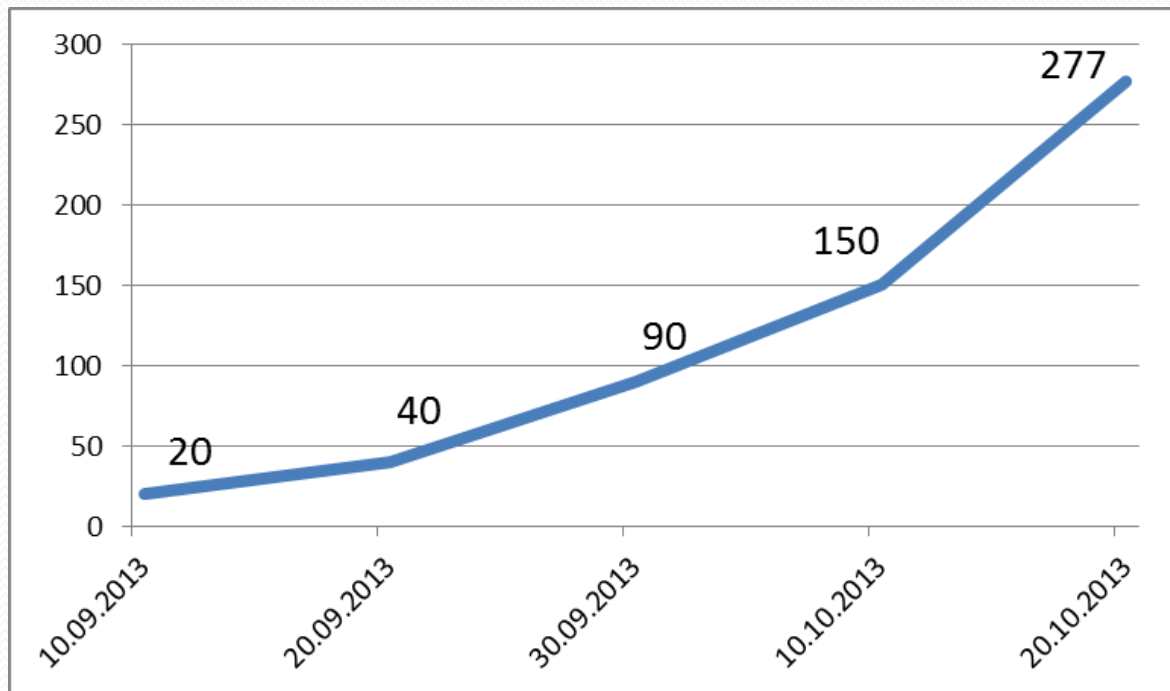
- collecting data on socially significant facilities
- monitoring the accessibility of the social facilities according to the unified criteria
- creating “accessibility passport” of the facility
- binding the facility to the geographical coordinates



# Service database

Database contains information about social, medical, cultural, etc. objects of the Karelia Region

This information is presented in database as “accessibility passport” with detailed information about object

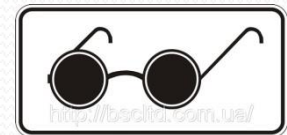


Number of  
objects in  
database

# Evaluation of accessibility

System provides the capability to **automatically evaluate the level of accessibility** of the social infrastructure facility

- **Tree levels of accessibility** are used in the System: “fully accessible”, “conditional accessible”, “inaccessible”
- The evaluation is processed for **several categories** of persons with disabilities: “moving on a wheelchair”, “hearing-impaired”, “visually impaired” etc.
- The evaluation uses accessibility criteria for each category of disability. Examples: “the width of the doorway”, “availability of a lift” etc.



# Evaluation of accessibility

Accessibility of the facility for persons with disabled category  $j$ :

$$F_j = \prod_{i \in M} \mathbb{P}(X_{ij} | \Omega_{ij}) \quad (1)$$

$\mathbb{P}(X_{ij} | \Omega_{ij})$  – probability of access to the facility evaluated by criterion  $i$  for persons with category  $j$ , under the condition that criterion  $i$  has given significance  $\Omega_{ij}$  for category  $j$ ;  $F_j \in [0; 1]$ ,

$j \in M$  - a set of criteria;  $i \in K$  – a set of categories,

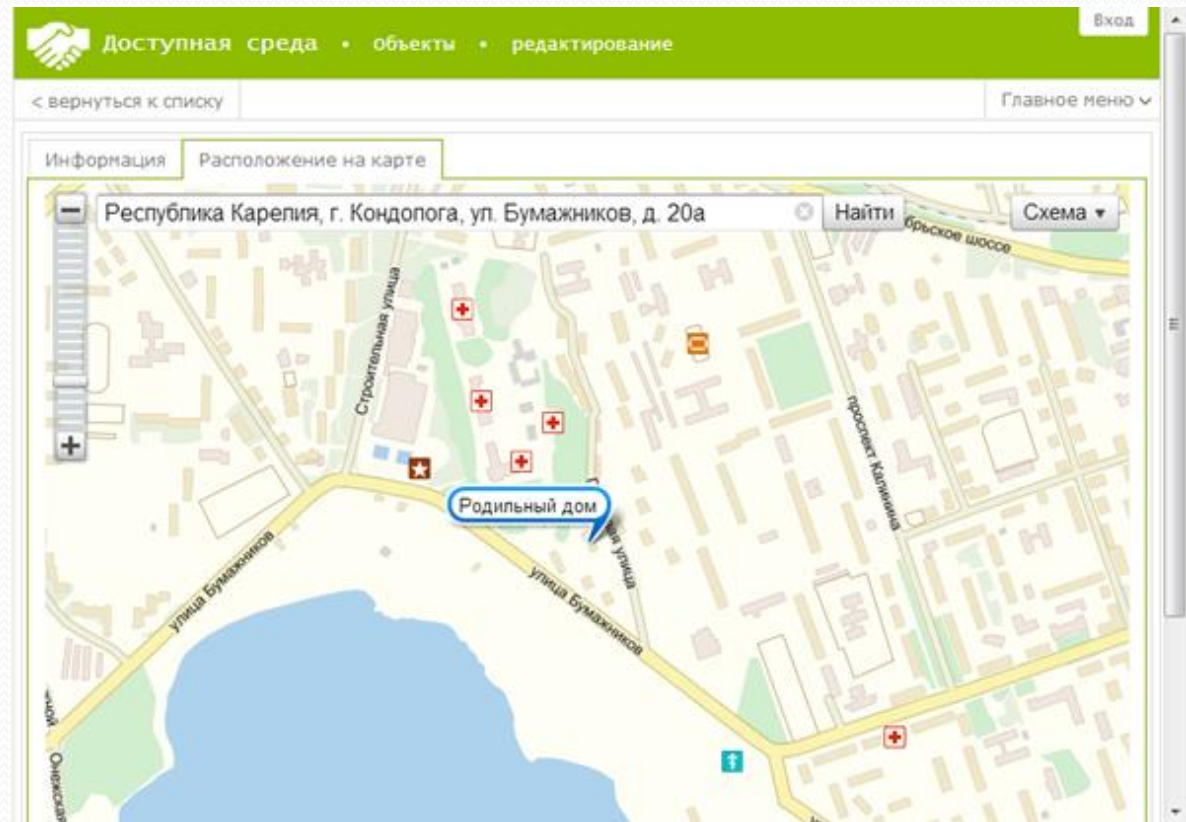
$$\mathbb{P}(X_{ij} | \Omega_{ij}) = \begin{cases} 1, & \text{if } \Omega_{ij} \text{ impossible event} \\ x_{ij}, & \text{otherwise} \end{cases} \quad (2)$$

$x_{ij}$  - probability of access to the facility.

# Binding objects to geographic coordinates

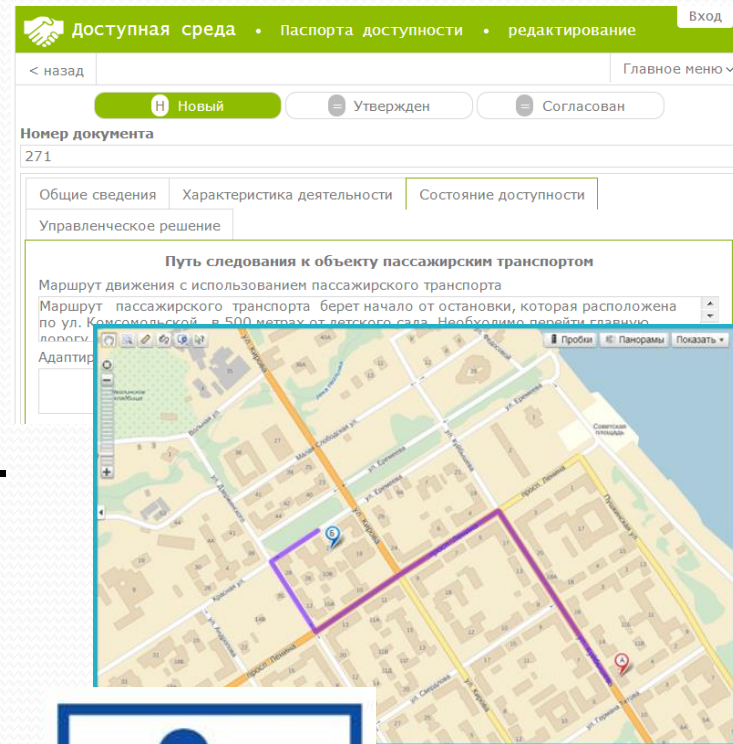
The function is useful for the development of:

- accessibility maps of socially significant facilities,
- root building services



# Conclusion

- The information system “Accessibility passports” has been developed and put into operation under the auspices of the Ministry of Healthcare and Social Development.
- The system is the key instrument for collecting data and consequent development of the services for persons with disabilities
- The Geo2Tag platform are planned to be used for storing and manipulating the data of the social infrastructure facilities.



# Further work

- Development of regional “Social Navigator” portal and new free mobile services, which will provide information support for persons with disabilities.
- Informing the disabled about the possibility of usage of developed services
- Exploring new opportunities of mobile healthcare for improving monitoring of life quality for persons with disabilities



Thank you for attention!