

Interreg



EUROPEAN UNION

North-West Europe

BE-GOOD

European Regional Development Fund

THEMATIC PRIORITY:



INNOVATION



PROJECT
AREA



Source: EuroGeographics Association

BE-GOOD is a pioneering project aiming to unlock, re-use and extract value from Public Sector Information (PSI) to develop innovative data-driven services in the area of infrastructure and environment.

Total budget received from Interreg North-West Europe (2014-2020):

€ 3.87 million of ERDF

Total project budget:
€ 6.45 million

www.nweurope.eu/begood





Building an Ecosystem to Generate Opportunities in Open Data

OPEN DATA FOR A SMARTER SOCIETY

BE-GOOD is a pioneering project aiming to unlock, re-use and extract value from Public Sector Information (PSI) to develop innovative data-driven services in the area of infrastructure & environment.

BE-GOOD's main outputs:

At least 10 novel commercial PSI-based services prototyped operationally, with the aim to commercialise 5. Examples: applications, visualisations, software, algorithms for traffic management, air and water quality monitoring, infrastructure maintenance planning.

CHALLENGES

- Continuity of traffic flow
- Smart Waste Water Information System
- Safer Roads
- Rate My Transport Service
- HGV permit Checker
- Discovery of Natural Heritage
- Data 4 Organisational Change
- Waste Water Tracing
- Cleanest Air Route
- Energy Efficient Infrastructures
- Predictive Maintenance of Roads

PARTNERS

Lead partner organisation:
Ministerie van Infrastructuur en Waterstaat

Partner organisations:

- Vlaamse Milieumaatschappij
- Orléans Métropole
- Département du Loiret
- Comhairle Cathrach Bhaile Átha Cliath (Dublin City Council)
- Glasgow City Council
- Luxembourg Institute of Science and Technology
- Hoogheemraadschap van
- Delfland

CONTACT DETAILS

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BUDGET

- Total budget: € 6.45 m
- EU funding: € 3.87 m



Continuity of traffic flow



CONTEXT

The area of Loiret was strongly impacted by the floods in 2016. These major events pointed out the lack of a common information system between different administrative authorities in order to ensure the continuity of traffic flow. Such a lack also affects the everyday life of road users.



KIND OF DATA

Which kind of data will be used?

- Roadworks
- Public transport
- Environmental
- Parking
- Weather forecast



THIS WILL BENEFIT

- The general public (road users)
- Public authorities
- Crisis managers



EXTRA UPTAKE

To create extra uptake for the solution the following activities are expected:

- Implementation in different countries and cities
- Market of the solution
- Dissemination activities
- Further development of extra functionalities
- Mobility as a service

SOLUTION

The solution coming from this challenge is a data platform and two applications, one for the public and one for the road managers.



LEAD TO

To ensure the continuity of daily trafficflow, this solution will lead to:

- Continuity of services
- Security of people and goods
- Economic activities
- Improved public health
- Better territorial attractiveness



SOCIETAL BENEFITS

Several societal benefits are identified:

- Less traffic congestion
- Lower stress levels
- Less travel time
- Improved image of public partners



USED BY OTHERS

This solution can be used by others like:

- Road contractors for the planning of the maintenance of roads
- Rescue services





CONTEXT

In the Netherlands, different governmental bodies (municipalities and regional water authorities) must cooperate in collecting, transporting and treatment of domestic waste water. Also within the Delfland region each organisation runs its own part of the water infrastructure. To improve the management of the waste water infrastructure it is necessary to share and use data from each other.



KIND OF DATA

Which kind of data will be used?

- Infrastructure Geo Data
- Data from sewers pumping stations, waste water treatment plants
- Meteo data



THIS WILL BENEFIT

- The municipalities
- Other water management organisations
- The environment in general



EXTRA UPTAKE

To create extra uptake for the solution the following activities are expected:

- Communication of activities and outcomes
- Publicity initiatives
- Dissemination activities
- Sharing experiences with other municipalities, regional water authorities and other waste water related organisations

SOLUTION



The solution coming from this challenge is the realisation of a "demonstration model" of an ecosystem that combines waste water data and information from individual partners to optimise waste water management.

LEAD TO



This solution will lead to:

- Quick and effective acting on calamities
- Optimal decisions on necessary investments and maintenance (asset management)
- Optimal day to day operations (including real time control)
- Information of the whole wastewater system, to improve integral solutions

SOCIETAL BENEFITS



Several societal benefits are identified:

- A better environment
- Cost savings
- Savings on waste water purification

USED BY OTHERS



This solution can be used by others like:

- Other water boards and municipalities
- Urban planners

CONTEXT



Casualty accidents datasets are published in the French national open data platform but little, if anything, is known about smaller accidents, mainly impacting property damages. Coupling the two kinds of information, casualty accidents and property damage ones, can help to better appreciate the factors that contribute to road accidents, then improving road safety. "Safer Roads' ambition is to experiment the possibility to develop a predictive analytic model in the territory of Loiret through the establishment of a robust road safety ecosystem.



KIND OF DATA

Which kind of data will be used?

- Accident characteristics (location, time, number and type of cars involved, etc.)
- Road conditions (e.g. infrastructure, traffic)
- Weather data (historical and forecast)



THIS WILL BENEFIT

- Drivers
- Road infrastructure managers
- Fire and rescue services
- Insurance companies
- Research institutes



EXTRA UPTAKE

Communication and disclosure of results of the predictive model will lead to extra uptake within and beyond the BE-GOOD period. Even the first results of standardisation and harmonisation of the heterogeneous datasets would likely encourage further uptake.



SOLUTION

The solution will be a predictive model including a risk analysis. The anonymised data from persons who have reported a vehicle disaster will be crossed with other data to identify areas with a high likelihood of accidents. It will also lead to suggestions to improve road infrastructure.

LEAD TO

This solution will lead to:

- Reduced probability of accidents by influencing infrastructure and user information
- Reduced management and maintenance costs by targeted and better planned interventions

SOCIETAL BENEFITS

Several societal benefits are identified:

- Reduction of road accidents
- Reduction of injuries
- Better efficiency of rescue services
- Better driver risk awareness

USED BY OTHERS

This solution can be used by others like:

- Different French regions
- Road managers to have a better planning of maintenance and repair of roads
- Rescue services
- Insurance companies for risk management

Rate My Transport Service

CONTEXT



Currently there is no way for public transport users to engage with transport providers that allows the users provide feedback on the performance of their stop while at the same time allowing them to choose the best performing stop in their area. Such a system will empower users to provide feedback on the quality of service they are receiving.

SOLUTION



The solution is a system to retrieve and analyse stop specific information (e.g. real-time information and input from customers) where information about the user experience is received and analysed. Other customers can get information about their stop before departure. The solution will be delivered via an APP to crowd source the customers' experience, and present this feedback information to transport providers.

LEAD TO



This solution will lead to:

- An engaged public, giving the customer a voice
- Improved performance of public transport through informal continuous improvement processes in public transport services

SOCIETAL BENEFITS



Several societal benefits are identified:

- Customers and bus drivers will be happier
- More people will get the incentive to take the public transport

USED BY OTHERS



This solution can be used by others like:

- Transport providers to assist them in providing a better service
- Opportunities for other cities for feedback on their transport service

KIND OF DATA



Which kind of data will be used?

- Public transport data sets via RTP1 REST web services API (existing open API)
- Real-time data
- Data crowd sourced from the public via a mobile device application

THIS WILL BENEFIT



- Public transport users
- Public transport providers

EXTRA UPTAKE



To create extra uptake for the solution the following activities are expected:

- Design the APP to be adaptive for the "Open transport data" that is available in other cities to create plug and play potential, including language independency.
- Market the solution for different services by making the app with a modular design for other public services like housing maintenance and libraries.



CONTEXT



Heavy good vehicles (HGV) are not permitted to enter the restricted area in Dublin without a permit. Currently citizens have no mechanism to check whether a HGV has a valid permit to enter the restricted cordon, and An Garda Síochána (Police) have limited means to check permits. Having a mobile device application to verify and report permit infringements along with analysis of reported infringements could be used to improve compliance of the permit together with the safety and wellbeing in the city.



KIND OF DATA

Which kind of data will be used?

- Data out of existing HGV permit system
- Data generated through the API



THIS WILL BENEFIT

- The vulnerable road users (general public)
- The City of Dublin



EXTRA UPTAKE

To create extra uptake for the solution, other versions of the app can help to catch infringements for similar schemes.



SOLUTION

As a solution we expand the HGV Management Strategy to allow the use of public service information to develop an API, a HGV Permit Checker mobile device application and monitoring system.

LEAD TO

This solution will lead to:

- Improved enforcement
- Transparency in the city where there is an occurrence of HGV's without permits

SOCIETAL BENEFITS

Several societal benefits are identified:

- Increase in safety
- Increase in wellbeing in the city

USED BY OTHERS

This solution can be used by others like:

- The An Garda Síochána (police) who will use the app for their enforcements duties
- DCC staff who will have increased access to information on possible infringements
- Other cities within the BE-GOOD framework who can also use similar apps



Discovery of Natural Heritage



CONTEXT

Orléans Métropole has an amazing environmental wealth which must be exploited but there is no overview of it.



KIND OF DATA

Which kind of data will be used?

- Information on biodiversity and green spaces
- Opening times of certain assets
- Information of events taking place
- Weather and transport information
- Urban furniture



THIS WILL BENEFIT

- Citizens
- Tourists
- Local authorities
- Local companies



EXTRA UPTAKE

To create extra uptake for the solution the involved SME will promote the app in other regions.



SOLUTION

The solution coming from this challenge is a digital solution proposing personalised walks in order to take part of an original and full experience.

LEAD TO

Enhancement of the value of natural heritage will lead to:

- Popularisation of biodiversity
- Discovery of natural heritage through personalised walks (unique experience)
- Improve the attractiveness of the city
- Environmental awareness of the general public
- Involvement of public companies to make commercial use of the area



SOCIETAL BENEFITS

Several societal benefits are identified:

- Better health thanks to walks
- Environmental awareness
- Crowds will be more spread



USED BY OTHERS

This solution can be used by others like:

- Different regions since the app can be personalised and used elsewhere
- Stakeholders who will receive more information on the popularity of the various sites



Data 4 Organisational Change



CONTEXT

We want to develop new ways for engaging with citizens so that we can better connect people and place. The outcome will be improved services with an impact on issues including mobility, social isolation and a more inclusive economy.



KIND OF DATA

Which kind of data will be used?

- Citizen-based information
- Detailed information on households
- Travel patterns
- Economic indicators
- Health indicators



THIS WILL BENEFIT

- Citizens
- Service providers



EXTRA UPTAKE

To create extra uptake for the solution the following activities are expected:

- Marketing to showcase the potential of the solution
- Export the concept to other cities and countries



SOLUTION

The solution is a citizen-based app to create a dialogue between citizens and the council. The outcome of the conversations will be used to improve services along with other forms of publicity-available data.

LEAD TO

This solution will lead to:

- Increased accessibility to services
- Increased activities of people to improve their health
- Improved image of the city
- Improved information on public transportation use

SOCIETAL BENEFITS

Several societal benefits are identified:

- Improved connections between citizens and services
- Better health and more effective anti-poverty measures
- Increased awareness around social isolation and mobility

USED BY OTHERS

This solution can be used by others like:

- Deploying it outside of the original stakeholder community
- Sharing information with trusted partners

CONTEXT



During heavy rainfall a lot of water enters the sewer system, causing it to reach its maximum capacity and activate overflows. The overflows causes untreated waste water and possibly pollution to be released into the environment leading to environmental damage and health issues. The proposed solution will allow incident managers and environmental actors to gain new insights and utilise the already available information more efficiently. This will improve the management of the sewer network and allow for quicker response in emergency situations.

KIND OF DATA



Which kind of data will be used?

- INSPIRE harmonised network data (sewer data and hydrography data)
- Delineations of protected and sensitive areas

THIS WILL BENEFIT



- The general public
- First aid responders
- Sewer managers
- VMM and the environment

EXTRA UPTAKE



The following activities will be performed in the context of this challenge to ensure the wider uptake of the solution:

- Presentations on conferences and industry information days
- Demo's showcasing the proof-of-concept and working API
- A well-documented GitHub page allowing the Geo open source community to adopt the algorithm and further expand on it
- Exploration of possible future expansions of the algorithm

SOLUTION



The solution will be a tracing algorithm that allows tracing of waste water in both sewer and surface water networks. Upstream and downstream tracing functionality will allow the algorithm to both determine the possible sources and destinations of the waste water. The solution will be able to consider factors such as the build date of the sewers and whether overflows are activated due to the rainfall.

LEAD TO



This solution will lead to:

- Prevention of environmental and health issues due to the release of sewage in the environment
- Localisation of potential missing links in the sewer system
- Tracing results showing the route followed by the waste water through the sewer system and surface waters
- A tracing algorithm which is extensible and adjustable to the needs of the stakeholders

SOCIETAL BENEFITS



Several societal benefits are identified:

- Reduction of environmental damage
- Health protection
- More effective and efficient expansion and maintenance of the sewer system leading to more efficient use of tax money

USED BY OTHERS



This solution can be used by others like:

- Help first responders
- Guide polluted water immediately to the treatment plant
- Prevent the release of polluted water through an overflow
- Better plan the sewer infrastructure
- Solve tracing related problems using INSPIRE network data in other domains and other countries



CONTEXT

People run or cycle as a recreational activity or commute by bicycle without taking the factor of air pollution of their route into account. In general, the knowledge of citizens about air pollution is very limited. Including air pollution in routing planners and recreational apps, which currently doesn't exist, can result in a more pleasant commute and in improved health. Indirectly this will also increase awareness of air pollution and its effects.



KIND OF DATA

Which kind of data will be used?

- Raster data from air pollution models: Black Carbon, Nitrogen Dioxide
- Trajectory measurements of Black Carbon and Nitrogen Dioxide sample data for model validation



THIS WILL BENEFIT

All citizens who walk or run for their commute or in the context of recreation



EXTRA UPTAKE

To create extra uptake for the solution the following activities are expected:

- Publicity initiatives (e.g. promotion of the API on conferences)
- Scientific publication providing quality-ensured methodology for implementing
- Negotiations/meetings with IRCEL



SOLUTION

For this solution an API quality with data is implemented in a routing / recreational app that can be integrated in routing and recreational applications.

LEAD TO

This solution will lead to: a quality assured, scientifically sound data endpoint which can be used by any existing routing application to identify the healthiest route alternative.

SOCIETAL BENEFITS

Several societal benefits are identified:

- Health benefits (individual & society)
- Innovation: at the moment no similar app exists
- Education: people learn about air quality through using the applications
- Stimulate healthier transport modes
- Knowledge related to scientific publication

USED BY OTHERS

This solution can be used by others like:

- Routing companies (SMEs and larger companies like Google)
- Recreational apps (e.g. Strava and Runkeeper)
- Companies can implement the API in their application
- Science



CONTEXT

The ways and waterways are of great importance for the Dutch economy. Rijkswaterstaat is always looking for ways to make the maintenance of bridges, tunnels and locks more efficient. Predictable maintenance helps to schedule maintenance at precisely the right time.



KIND OF DATA

Which kind of data will be used?

- Sensor data of energy consumption and vibrations (commands to operate bridges and sluices)
- Open data like weather information



THIS WILL BENEFIT

- The general public (road users)
- New (data) companies
- Universities who can use the data



EXTRA UPTAKE

Based on the collected data of the current challenge, new ideas or projects could get started to create extra uptake.

SOLUTION

For the solution, Rijkswaterstaat will use sensors to collect data. The data will be stored securely and combined with other existing data.



LEAD TO

This solution will lead to:

- Optimisation of the maintenance of infrastructure
- Reduced costs by reduction of energy and materials used



SOCIETAL BENEFITS

Several societal benefits are identified:

- Less obstructions due to reduced downtime of infrastructure
- Reduction of energy usage and CO2 emission
- Increase in safety and reliability



USED BY OTHERS

This solution can be used by others like:

- Other asset managers
- SME's
- Maintenance companies
- Suppliers of machinery



Predictive Maintenance of Roads

CONTEXT



Rijkswaterstaat spends approximately € 200m a year on road maintenance. Big data techniques are expected to help Rijkswaterstaat to perform 'just in time' maintenance, instead of the current practice of maintaining roads with regular intervals. This will in turn result in cost savings and reduced use of raw materials.

KIND OF DATA



Which kind of data will be used?

- Actual road conditions (monitored on a regular basis)
- Historical maintenance data, usage data and environmental data (such as the weather)
- Open and shared data from partners and other institutions

THIS WILL BENEFIT



- The general public (road users and tax payers)
- Rijkswaterstaat
- Other road managers and businesses.

EXTRA UPTAKE



To create extra uptake for the solution the following activities are expected:

- Collaboration with end users and SME's, using Agile project management. In order to tailor the presented tools to the end user processes and practices
- Communication to potential users of the solution

SOLUTION



The solution consists of one or more data driven optimization tools for road maintenance, using open and shared data, and big data analysis. The tools may be monitoring, data management and analysis tools.

LEAD TO



These tools will help road managers to monitor road conditions and determine the optimal moment for maintenance. And thereby

- Minimize unnecessary or late maintenance
- Save on maintenance costs
- Increase road quality due to optimized asphalt conditions

SOCIETAL BENEFITS



Several societal benefits are identified:

- Improved road safety, due to optimized asphalt conditions
- Decrease in traffic congestions
- Lower emissions
- Less tax money used

USED BY OTHERS



This solution can be used by others like:

- Contractors who require more insight in current and predicted asphalt conditions
- Other road managers
- SME's, that can develop add-on solutions
- Partners within the FEHRL network



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