

**S' MART**

**CITY**

**B | R | N | O |**

**BRN'S**

## DEAR LADIES, DEAR GENTLEMEN,

We would like to briefly inform you about what Brno is implementing and planning and what we could work on together. The material itself is divided into projects that are already being implemented, projects that are in preparation and also common solution areas. At the end, there are links and contacts you can refer to if you would like to get more information or start working together with us.

Our main goal in the Smart City area is the „**CHANGE OF THE CITY'S APPROACH**“. Important as they are, I would like to introduce to you the basic principles of our Smart City:

- / **Open**
- / **Responsible**
- / **Modular**
- / **Respectful**
- / **Efficient**
- / **Diversified**
- / **Smart**

Based on these principles, we want to avoid “vendor lock-in” solutions and always find the optimum solution to a problem.

Given that Brno is not only the Brno City Hall and civil servants at the Municipality, we felt that in the framework of the change of the city's approach it was important to involve all partners (stakeholders) in the city in the planning and implementation of individual projects, and that is why we created a so-called **CITY ECOSYSTEM**, which consists of 6 components.

**SCIENTIFIC BRNO / Brno Science Partners / BSP**

Universities, research and development centres and the Czech Academy of Sciences

**BUSINESS BRNO / Brno Business Alliance / BBA**

Self-employed, small and medium sized enterprises, big corporations, investors and chambers of commerce

**NON-GOVERNMENTAL BRNO / Non-Governmental Organisations / BNO**

Non-governmental and non-profit organisations, associations, foundations and endowments

**ACTIVE BRNO / Brno Smart City Community / BSCC**

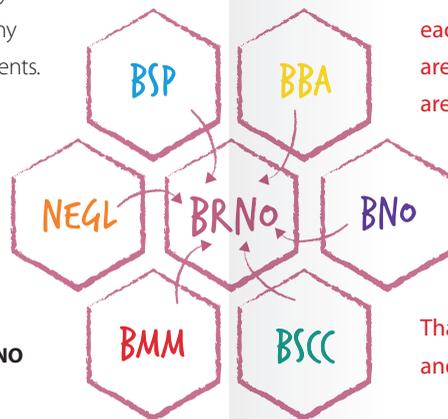
Active citizens, professionals and expats

**BRNO LOCAL GOVERNMENT / Brno Managing Members / BMM**

Municipality, city districts, political clubs, municipal companies and organisations

**MULTILEVEL BRNO / National and European Governmental Levels / NEGL**

Brno metropolitan area, the South Moravian Region, regional, state and European institutions, government and ministries



At the end of 2017, the **#brno 2050** vision and strategy of the city was approved. The document was created through a completely open and transparent bottom-up process. The vision contains 25 values, each of which has its own professional guarantor. These guarantors are respected independent professionals for the various development areas of the city.

Last year, we issued a Report on the State of the City for the first time. We will issue this report every year going forward. You will find a lot of interesting information in it about Brno in an interactive form.

Thank you for your interest in the city of Brno and its activities and I will look forward to working together with you.

Yours sincerely,

**Jaroslav Kacer**

Deputy Mayor in charge of Smart City,  
Strategy and ICT



**PROJECTS  
UNDER  
IMPLEMENTATION**

# BRNO ID



PROJECTS UNDER IMPLEMENTATION

The objective of the project is to provide services to citizens of the city in an electronic form and communicate with them. The project started with the implementation of electronic season tickets for public transport and the creation of an e-shop related thereto. Since the spring of 2017, payment of the fee for municipal waste has also been implemented in the e-shop. Recently, a Tourist Card module has been launched. The e-shop also allowed voting in the **city's participatory budget**. Currently we are working on interconnection in the area of access to sports facilities. Over a longer horizon, an information module is also planned, as well as capturing of cultural services (offers from contributory organisations) and other areas.

All the individual services can share the e-shop payment channels and also entirely share the identification carrier of the acquired services. The carrier is any contactless bank card that a user can link with his or her

account via the e-shop by him- or herself and use the carrier immediately. This significantly saves costs (by using existing technology that is universal and internationally compatible).

All services are primarily linked to the user's account, so if the carrier gets lost or replaced, it is really easy to transfer all the e-shop services to another identification carrier. The e-shop is also able to notify users about the upcoming expiration of a service.

## OBJECTIVES

The objective is to make the user account in the e-shop gradually become an urban electronic identity (which is called BrnoID). In the future, this identity can be used in a wide range of services to which customers will gain access.

# SMART CITY VOUCHER

The latest technological trends are currently being dealt with by a number of new companies; however, the city must create conditions for their application. It is precisely the city-invested companies that should create the conditions and platforms for the application of smart solutions. Often though, unlike in the private sphere, they do not have sufficient capacities to monitor and implement new technological trends. It is therefore a rather demanding job to prepare a project in the area of **Smart City** and correctly define the requirements for the initiation of a public procurement procedure. In order to overcome these barriers, we want to use Brno's research institutions, which could help municipal companies in their choice of optimum technological solutions.



## OBJECTIVES

The project focuses on cooperation between municipal companies and the Brno's research institutions in the professional and the strategic preparation of the introduction of new technological solutions. It will provide municipal companies with objective information for their decision-making on public procurement, thus enabling an optimum technological solution to be put into operation. Cooperation based on the Smart City Voucher will lead to a detailed specification of the needs and opportunities of municipal companies and to the establishment of further (long-term) cooperation with specific Brno-based research institutions that deal with the given set of issues. The pilot run of the programme has the objective of launching cooperation between the academic sphere and the municipal companies, and it is supposed to continue later even „without a voucher“. **The cooperation will lead to increased efficiency, cost-effectiveness and usefulness of the requested smart solutions.** For both stakeholders, the cooperation will mean working on real and local challenges in harmony with the Brno Smart City Concept („the city as a laboratory of solutions“).

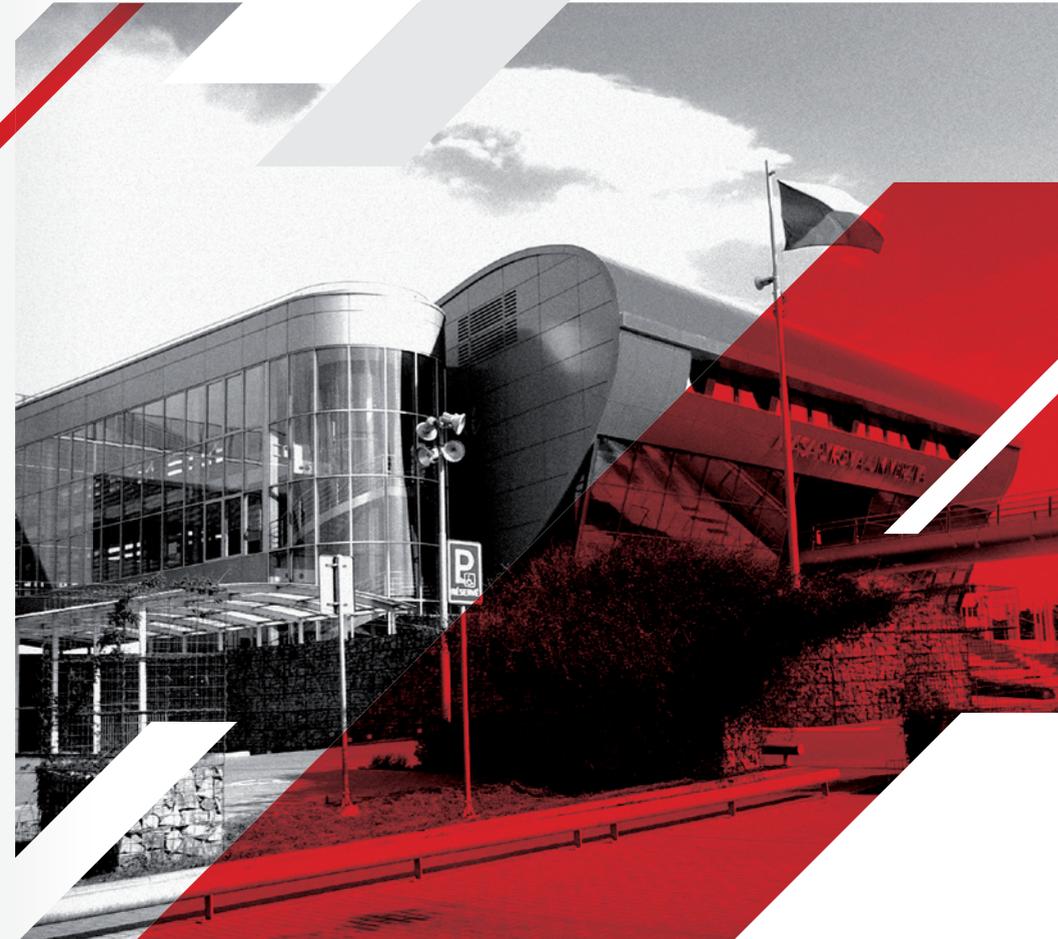
# DATAHUB

PROJECTS UNDER IMPLEMENTATION

The data web will present interesting data about the city in a captivating form. It will contain machine-readable data sets for the professional public, as well as simple statistics and articles for the general public. All GIS applications such as the city's 3D model and other modern analytical tools will be accessible from here. The platform will also gather data and applications from third parties – students, companies, enthusiasts and programmers. It will be the main data guidepost of the city. The data will be provided primarily in an open data format.

## OBJECTIVES

All data about the city accessible from a single location; data of good quality, verified and regularly updated. The objective is to obtain data from third parties for a comprehensive overview. An adequate portfolio of high-quality open data sets will allow for the development of a new data-based economy (applications, web solutions and data combinations) and will lead to the development of new services that can improve the quality of life for both city residents and its users. In a future development stage of the datahub, a virtual urban test-bed is planned to be created in order to model individual solutions.



# PROJECT H2020 SCC01

## RUGGEDISED REVITALISATION OF A BROWNFIELD SITE

The RUGGEDISED project is a part of the **Horizon 2020 programme**. It brings together 6 European cities: **Rotterdam, Glasgow, Umea, Gdansk, Parma and Brno**. For a period of five years (November 2016 to October 2021), the above cities will collaborate and share experience in implementing smart solutions in the areas of mobility, energy and ICT, as well as in social, economic and environmental issues that lead to an overall improvement in the quality of life in the city. The city wants to transfer its experience from this project to all cities and large municipalities within the South Moravian Region.

PROJECTS UNDER IMPLEMENTATION



## OBJECTIVES

In this five-year period, Brno will choose purposeful solutions for the transformation of a selected site into an energy-efficient neighbourhood. The choice of these solutions will be conducted in coordination with the local academic sector and other stakeholders. An open international urban planning and architectural competition will be announced for the selected site. Temporary use of the site will also be proposed for the period until the redevelopment of the site begins. This as well as other activities, including communication with local residents and key partners (stakeholders), will be dealt with by the locality manager.



# BRNO ERASMUS STUDENT

PROJECTS UNDER IMPLEMENTATION

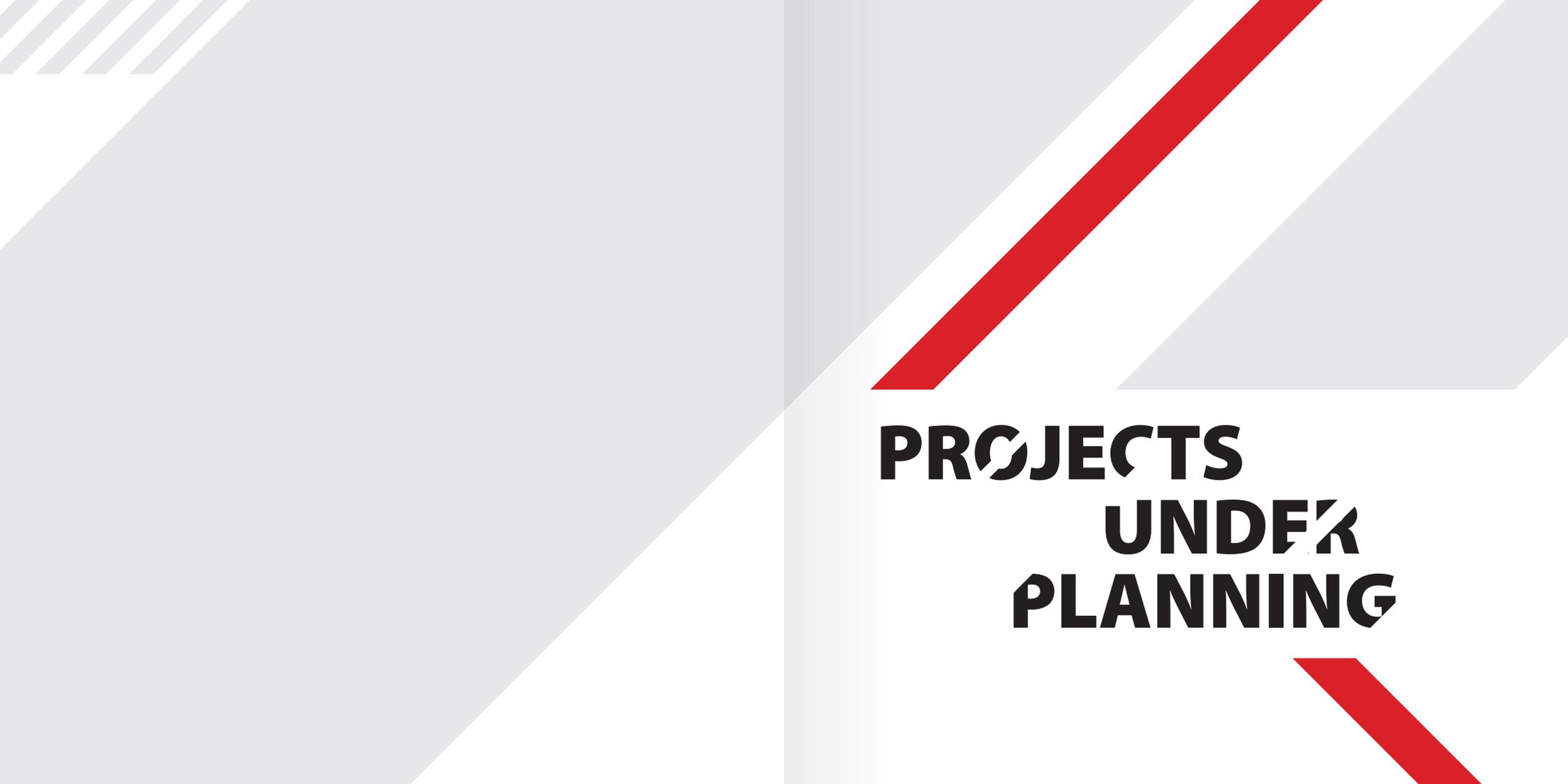


A project for active involvement of mobility students (coming from abroad or going abroad) at universities on the territory of the city of Brno in the preparation of specific proposals for improving the quality of life in Brno. The project is based on the assumption that the majority of mobility students are the most active ones who are not afraid to travel and learn new things. The acquisition of their ideas and their views of city development is therefore an interesting strategic asset. The project consists of two parts. The first part is the collection of specific ideas. The second part is then about the comparison of the city of Brno in an international context through the eyes of mobility students (benchmarking). A partial objective of the project is to introduce Brno to the incoming students as a very lively and interesting location for their future studies, work and life.



## OBJECTIVES

- 1 Ensuring the collection of data on interesting smart solutions from foreign cities and their possible transfer to the city of Brno (Erasmus Spy Brno).
- 2 Ensuring the collection of data on the position of the city in the context of other foreign cities (Erasmus Benchmarking Brno)
- 3 The city's endeavour at collaboration with the active community and the possibility of students getting involved in work on real problems of the city while they are still studying.



**PROJECTS  
UNDER  
PLANNING**

# TEST-BED

In the Brno Smart City Concept, a city laboratory was described as a space that serves for testing. The space will be used for the testing of combinations of sensor solutions. This test-bed will include the area of the Brno Exhibition Centre, the adjacent roadways and the residential neighbourhood. The test-bed can serve research purposes to explore the optimum use of smart solutions. Individual manufacturers can also research the modularity of sensor solutions in combination with competitive solutions. The space will allow for all known sensor solution data transfer options. Stationary and mobile sensors can be combined here.

## OBJECTIVES

The setting up of a space for the testing of sensor solutions.  
Creation of conditions for the research and development of IoT and sensor solutions.



# INTEGRATED PLATFORM

An integrated platform will follow up on the Datahub project; it will not only deal with static data but also with dynamic data gathered from the city's sensor network and IoT devices. Based on such data, it will be possible to perform more advanced analyses and surveys.

## OBJECTIVES

A functional integration platform that will combine suitable data from the city and its sensor network, research centres, universities and municipal companies, while all these stakeholders will use the data for their further research and analyses.

# WIRELESS TRAM

The city of Brno is characterised by its high proportion of tram and trolleybus transport, which has a positive impact on the environment. A disadvantage of these solutions is the large number of pillars, wires and cabling that compromise the attractiveness of the city's historic centre. New trams would not be purchased, but the vehicles currently in operation would be fitted with new technology (batteries, control, power recuperation, etc.) based on a feasibility study and prototype tests.

## OBJECTIVES

The objective is to enable the development of a tram that would use a battery-powered drive on some stretches of its route in order to facilitate its passage through the historic centre without the overhead traction line and also ensure safe transport in emergency situations (frost, etc.).

# HYPERLOOP

Hyperloop is a revolutionary transport solution introduced by Elon Musk; it appears to be a new developmental stage of mass passenger transport for the future. It is attractive due to its speed, positive energy balance and not creating barriers on the hyperloop track. Reducing transport times and on-demand transport would mean a revolution in the internal transport function of cities and would interconnect European cities into wider regions. The development of this technology may support the emergence of new innovations that can find their application in related industries as well.

## OBJECTIVES

The primary objective is to get the entire potential of the city (the academic and business sectors) involved in development around Hyperloop technology. The City of Brno is participating along with the South Moravian Region in a feasibility study of the Vienna-Bratislava-Brno-Prague route. This study should provide the first realistic expert estimates of the difficulty, demand for the service and optimum routing on the European continent. Involvement of research and development capacities present in the region will facilitate access to data and make the conducting of the study more efficient.



# CUBESAT

Space research, which is on the agenda of the European ESA agency, has a direct impact on solutions adopted on Earth. The dispatching of a nanosatellite can help develop a broad range of solutions being offered to cities. Accurate measurements, imaging and proportions of green areas all can be cheaper in the long run if they are carried out from orbital level compared to aerial photography or imaging done by drones. Also, for research and development organisations in Brno, the dispatching of a Brno minisatellite may be an interesting opportunity.

## OBJECTIVES

Survey the options of minisatellite use for research purposes in the city.  
Creating a feasibility study, including its service lifetime and necessary costs of the implementation of the project.





**WHAT COULD  
WE WORK ON  
AND DEVELOP  
TOGETHER**

## CITY TO CITY PLATFORM

The ideal is the transfer of experience between the cities and in the first place the bad ones, so that we can learn from mistakes and avoid them. An open platform would be ideal.

## MOBILITY

Solutions for sustainable urban mobility. Experience (unsuccessful in the first place) with introducing support for shared modes of transport (bicycles, cars, carpooling and carsharing) and innovative solutions to parking. Solutions focusing on the reduction of individual car traffic in favour of shared and mass modes of transport. We are very interested in experience with E-mobility (e-cars, etc.) as well as experience in the sharing economy in general.

## URBAN PLANNING AND SMART DEVELOPMENT

Tools for site development, involvement of stakeholders in urban development. Planning that leads to time savings in project implementation – promoting the construction of smart neighbourhoods and innovative ways of urban planning with involvement of the public and the stakeholders. Experience with urban planning and architectural competitions.

## SUSTAINABLE ENERGY POLICY FOR THE CITY

City policy that leads to energy savings and the support of environmentally-friendly sources of energy. Low-energy building standards and their regular application on constructions in the city. Experience with public involvement and collaboration with the public, academic experts and partners from the private sector (producers and distributors of energy).

## DIGITAL CITY

The digital agenda is becoming increasingly important. Experience from e-government, the provision of services in an electronic form. Data portals and open data. Obtaining data from partners (third parties) and using them for the development of the city and the development of entrepreneurship. Comprehensive IT solutions that do not lead to a vendor lock-in situation. Cyber security is also an important issue.

## INSTRUMENT FOR THE COOPERATION AND ENGAGEMENT OF ALL STAKEHOLDERS

Experience and tools for the involvement of the general public in the development of the city – all forms of participation and support of active citizens. In addition, cooperation programmes with partners in the city (academic sector and universities, entrepreneurs and industry, non-profit and non-governmental organisations, active citizens, including partnership and cooperation at higher levels of governance).

## INSTRUMENT FOR SMART IMPLEMENTATION

Use of experience in pre-commercial public procurement, public-private partnership and public procurement using the best value approach, public tenders and opinion polls, etc.

## WASTE MANAGEMENT

Waste management including waste logistics. Experience with the circular economy. Programmes for the reduction of waste generation. Waste as an energy source and its subsequent use. Experience with the logistics of bio-waste and its subsequent use.

#brno2050 Strategy



Report on the SOC



RUGGEDISED Project



Brno ID



Datahub



Should you wish to learn more about the individual projects or start working together with us on them, please get in touch with **Mr Jakub Rybář**, Head of the Cooperation and Development Department at the Brno City Municipality.

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CITY ECOSYSTEM BRNO

**#brno2050**