

Varna, Bulgaria

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/Municipality of Varna/
Date: 27.03.2023



Strategy and concept for cargo bike routes and micro-hub design



<https://mgims.eu/>

<https://www.varna.bg/>

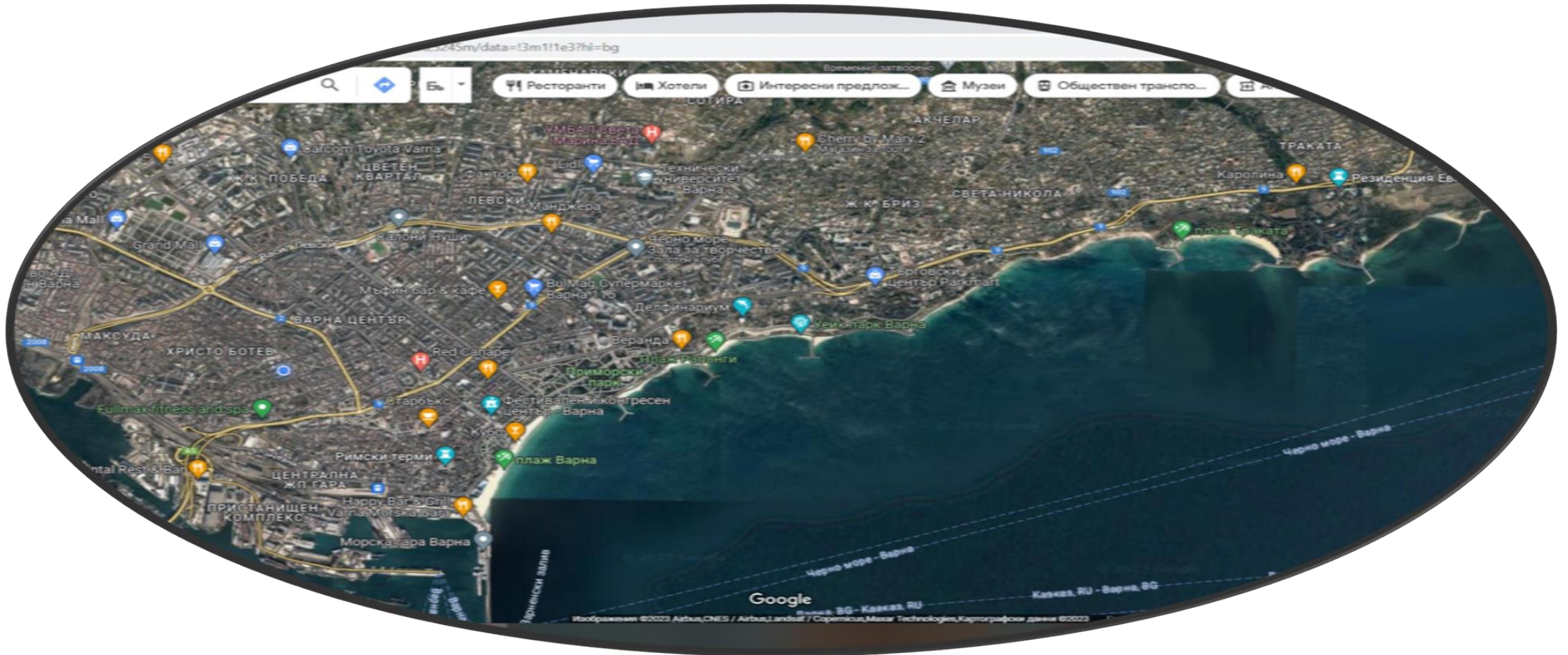
Strategy and concept for cargo bike routes and micro-hub design

Varna, the third-largest city in Bulgaria, is a key economic and cultural center situated along the Black Sea coast. It is often referred to as the "summer capital" due to its thriving tourism industry. With a population of approximately 330,000, Varna faces the urban logistics challenges common to many growing cities.

Importance of addressing urban logistics challenges:

As Varna continues to grow and develop, it is essential to address urban logistics challenges to ensure efficient and sustainable transportation of goods within the city. Efficient urban logistics not only reduces traffic congestion and pollution but also improves the overall quality of life for residents and contributes to a more vibrant local economy.

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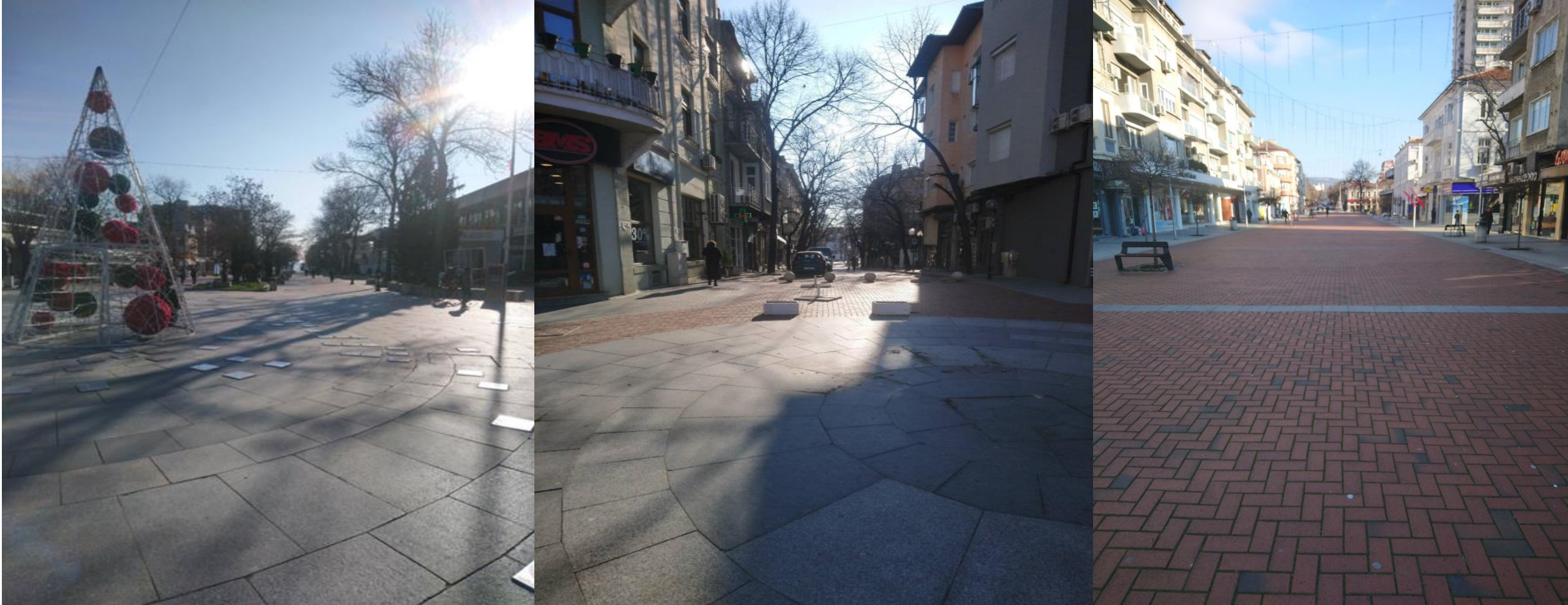


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Challenges:

- The great challenge the city is facing is the accessibility to the POI and the beach and the delivery of goods for the commercial activities (restaurants, hotels) along the seaside in the area.
- The issue over motorized traffic in the Seaside garden, the oldest and the largest landscaped public park in the Balkans, is constant, as within the 90 km² greenery there are residential, accommodation and commercial facilities.
- Plenty delivery companies (DHL, Transpress, Econt, Speedy, UPS, Takeaway, etc.) with thousands of deliveries per year struggling with time, access and cost issues due to the poor parcel distribution and absence of a logistic hub nearby the central part of the city;
- However, we have already started the implementation of strategies and policies aiming at improving the logistic in the central part of the city and reducing the delivery time to the seaside area, despite the lack of easy accessibility to the motorized vehicles, such as vans, cars, etc.

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The last mile refers to the final leg of the supply chain, where goods are transported from a central hub to their final destination, usually the customer's doorstep. It is a critical aspect of the delivery process that significantly affects overall customer satisfaction.

Challenges in urban delivery that we have identified:

- Traffic congestion
- Limited parking availability
- Narrow streets and pedestrian areas
- Growing demand for same-day and faster delivery
- Environmental concerns, such as air pollution and noise
- Importance of the last mile to customers
- The last mile directly impacts the customer experience, as it is the most visible part of the delivery process. Timely and efficient last-mile delivery is crucial for maintaining customer satisfaction and fostering positive relationships between businesses and their clients.

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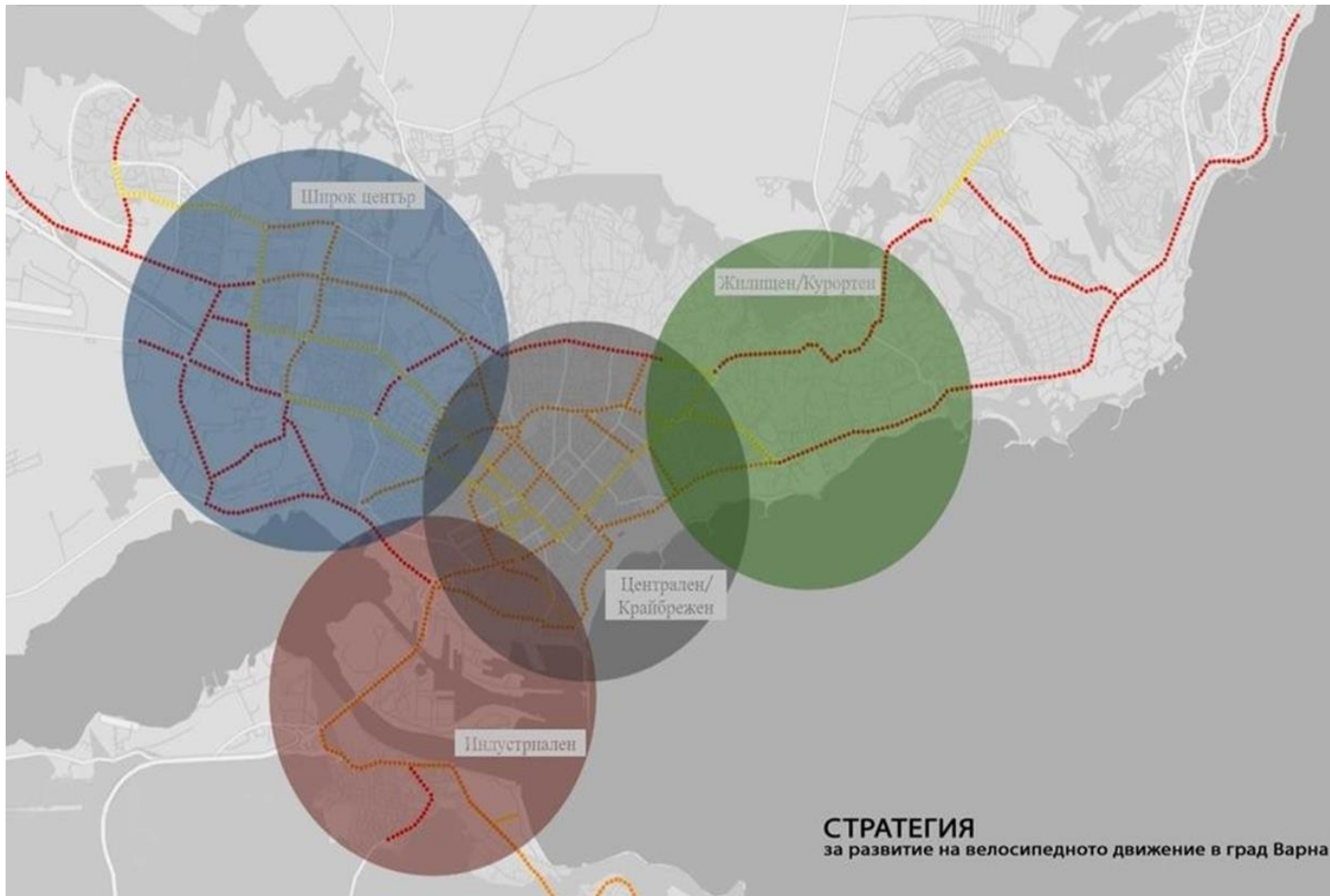
Our solution:

The increasing traffic in the city center is the key factor that has made the last mile the segment that involves the most regulations that companies must comply with. This affects deliveries of goods that have, for example, fixed loading and unloading times, traffic restrictions and vehicle type restrictions (usually for environmental reasons), among other restrictions. That reason for we prepared a specific document which contains potential cargo bike routes for fast deliveries in areas with a lot of restrictions, mainly in the central part. Based on analysis and surveys a local boutique company dealing with urban mobility issues (MGI Mobility Services) designed a strategy called Potential cargo bike routes for better, greener and faster deliveries by dividing the city into four main areas :

- Residential / Resort
- Central / Coastal
- Industrial
- Wide central

These are suitable cargo bike routes due to the sufficient width of the bike lane and the accessibility to the central part of the city without entering the traffic lanes, for possible deliveries to businesses and citizens. (next slide picture)

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Blue circle – Wide center

Red Circle – Industrial zone

Grey circle - Central / Coastal

Green circle - Residential / Resort



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Residential/Central - suitable for quick deliveries in the city center if the bike base is close to the central pedestrian promenade. This route allows a quick descent to pedestrian walkway and walkway one. Ideal for food deliveries and other shipments. The well-developed infrastructure for cyclists allows the selection of multiple routes along which the cargo bike can move without entering the flow of cars.

Industrial - suitable for access to most warehouses and bases in the city of Varna. In some of the sections of this route, it is necessary to merge into the road of movement of motor vehicles, due to the lack of bicycle lanes. Due to the few route options available, it may be necessary to build a recharging hub to the central and coastal areas.

Coastal - The Coastal route is most optimal for the use of cargo wheels that load "last mile" businesses. The area is mainly pedestrianized, and access to it is easy for cyclists due to the fact that the final destination of almost every bike lane in the city leads there. Many businesses find it difficult to load goods by car, and the area is a preferred pedestrian destination for the city's citizens. Building a transshipment hub from which vans or trucks can load their goods or product onto a cargo wheel would be beneficial for businesses.

Wide center - has quick and easy access to a large part of the residential areas of the city, and a small part of it has narrower sections and it is possible to wait for another cyclist before crossing. Wide range and developed bicycle infrastructure for delivering parcels to residential areas and businesses.

Resort - The current situation of the bicycle infrastructure is not favorable for the use of cargo bikes, which would safely deliver goods to any resort near the city of Varna, without actively entering the flow of cars.

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Description of the urban micro hub concept:

The urban micro hub concept is a logistics solution designed to address the challenges of last-mile delivery in urban areas. It involves establishing a centrally located micro hub just outside the pedestrian city center, where large trucks (>7.5 t) can unload their consolidated shipments. The last-mile delivery is then carried out by environmentally sustainable means, such as cargo bikes, tricycles, or electric handcarts. This approach streamlines the delivery process and reduces the need for large trucks to navigate narrow city streets and congested areas.





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Urban Micro Hub Concept and Benefits of the urban micro hub:

- **Reduced congestion:** By limiting the entry of large trucks into the city center and promoting sustainable last-mile delivery methods, the urban micro hub concept can significantly reduce traffic congestion in the area.
- **Lower emissions:** The use of eco-friendly delivery methods, such as cargo bikes and electric handcarts, leads to a considerable reduction in carbon emissions and air pollution.
- **Increased efficiency:** With the centralized micro hub, last-mile delivery providers can optimize their routes and reduce the time it takes to deliver packages to their final destinations, ultimately enhancing customer satisfaction.
- **Enhanced safety:** As large trucks are kept out of the city center, pedestrian and cyclist safety is improved.
- **Cost savings:** The urban micro hub concept can lead to cost savings for logistics companies by optimizing resource utilization and reducing fuel consumption.

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TRANSPRESS is a leading logistics company in Bulgaria, established more than 27 years ago with a focus on transport services.

- Over 500 kilometers
- Over 1400 kilograms of delivered cargo
- 2 trucks replaced
- Develop a comprehensive last mile delivery strategy

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Implementation in Varna:

Selection of a centrally located micro hub:

A thorough analysis of the city's layout, traffic patterns, and infrastructure were conducted to identify the best location for the micro hub.

To implement the urban micro hub concept in Varna, it is crucial to select a suitable location for the micro hub that meets the following criteria:

- Proximity to the city center: The micro hub should be close enough to the city center to minimize the last-mile delivery distance and optimize delivery routes.
- Accessibility: The location should be easily accessible for large trucks to unload shipments and for last-mile delivery providers to pick up packages.
- Space availability: The micro hub should have enough space to accommodate the unloading and sorting of packages, as well as parking for delivery vehicles.

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Integration with existing infrastructure and services:

Once the micro hub location is established, it is essential to integrate it with existing infrastructure and services to ensure a seamless delivery process. This may involve:

1. Collaboration with local authorities to obtain necessary permits and support for the micro hub.
2. Coordination with major logistics providers to ensure efficient shipment consolidation and delivery to the micro hub.
3. Integration with public transportation, where possible, to further enhance the eco-friendliness and efficiency of the last-mile delivery process.
4. Development of digital platforms for tracking and managing deliveries, allowing for real-time information sharing and route optimization among last-mile delivery providers.
5. Training and education for last-mile delivery providers on the use of environmentally sustainable delivery methods, such as cargo bikes and electric handcarts.

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Urban Micro Hub Characteristics and Combined Use in Varna:

- Stationary type, cargo bike accessible ramp
- Accessible by van, truck, and car
- Cooperative mode of use
- Located next to the main road, near a supply center, and close to bike lanes
- Situated in an existing building
- Solar-powered for battery charging
- Secure overnight loading and storage facilities
- For semi-stationary solutions in public spaces: artistically and creatively designed
- Transparent implementation process for residents (open and timely communication)
- Proposals for population participation
- Communication of environmental benefits and safety enhancement (especially for vulnerable groups)

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Types of use: Cooperative or concessional use

- Cooperative: Transportation services jointly use and share an area while maintaining separation of goods, means of transport, employees, and information flows.
- Concessional: Logistics companies deliver their shipments to the urban micro hub, and another logistics firm delivers them to end customers on behalf of all logistics companies on a consolidated basis.
- Combined use of the urban micro hub

Potential additional uses include:

- Bicycle repair service
- Bicycle rental station
- Parcel receiving and returning station for citizens
- Charging station for electric vehicles or swappable batteries
- Café
- Food sharing station
- Parking spaces for bicycles and strollers
- Passenger transport (rickshaw service for children or persons with reduced mobility)
- Temporary storage for private individuals

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Conclusion:

The implementation of a transshipment hub in the central area of Varna presents numerous benefits for businesses operating in the city:

- **Enhanced Accessibility:** Cargo bikes provide businesses with better access to the central pedestrian areas without the need for large delivery vehicles, ensuring smooth and efficient delivery of goods.
- **Time Savings:** By transferring goods onto cargo bikes at the transshipment hub, businesses can avoid navigating through congested streets, reducing overall delivery times and enhancing productivity.
- **Cost Reductions:** Cargo bikes have lower operational costs compared to conventional delivery vehicles. By adopting this mode of transport, businesses can potentially reduce fuel, maintenance, and insurance expenses.
- **Improved Customer Satisfaction:** Faster and more reliable deliveries can enhance customer satisfaction, leading to increased loyalty and positive word of mouth for businesses.
- **Eco-friendly Image:** By opting for cargo bikes as a delivery method, businesses can demonstrate their commitment to sustainability and reduce their carbon footprint, which can resonate well with environmentally conscious consumers and improve brand image.
- **Scalability:** As the city continues to grow and the pedestrian areas expand, businesses that adopt cargo bikes for deliveries can easily scale their operations without the need for significant investments in infrastructure or additional vehicles.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 861833