SUMP - FROM PLAN TO IMPLEMENTATION
The Role of Digital Parking Technologies

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Parking Role Evolves

Percentage of parking experts involved in different fields of mobility.

Source: IPMI
Parking Management in Climate Protection Policy

Source: European Energy Award, SCGP
Parking for Interconnected Mobility

Applicaton integrating real time data about parking and mobility options, end-to-end trip planning across all modes of transport.

- Park & Ride, Park & e-Ride
- Public transport (train, bus, tram, metro)
- Parking for (e)cars, (e)scooters, (e)bikes
- Charging points
- Shared mobility services (ride-to-work, e-shuttle bus, carsharing, micromobility)
- Pick-up/drop-off spaces for (e)taxis, ride hailing
Towards Parking and Multimodality Integration

Source: Centre for London
Reference Architecture for Urban Data Platforms

Source: IEEE, OASC
Interoperability Imperative

Key for Procurement, Deployment, Replication

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**Table 1: OASC Minimal Interoperability Mechanisms**

<table>
<thead>
<tr>
<th>MIM</th>
<th>MIM Name</th>
<th>Interoperability Point</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OASC Context Information Management MIM</td>
<td>Context Information Management API</td>
<td>This API allows to access to real-time context information from different cities.</td>
</tr>
<tr>
<td>2</td>
<td>OASC Data Models MIM</td>
<td>Shared Data Models</td>
<td>Guidelines and catalogue of common data models in different verticals to enable interoperability for applications and systems among different cities.</td>
</tr>
<tr>
<td>3</td>
<td>OASC Ecosystem Transactions Management MIM</td>
<td>Marketplace API</td>
<td>The Marketplace API exposes functionalities such as catalogue management, ordering management, revenue management, Service Level Agreements (SLA), license management, etc. Complemented by marketplaces for hardware and services.</td>
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</tbody>
</table>

Source: OASC
Establishing a common language for data elements in the parking, transportation and mobility sector to facilitate seamless integration between parking entities, automotive industry, ITS operators, app providers, other stakeholders.
Lack of Harmonized Standards

- **Hampers scaling opportunities**
  
  Makes replicating costly, time-consuming, not economically feasible

- **Vendor lock-in**
  
  Cities to avoid dependency on a single vendor may be reluctant to invest in urban data platform

- **City lock-in**
  
  APIs vary between cities making it difficult for smart services developers to have the solution developed for one city being replicated in another city
THERE IS LITTLE POINT IN CREATING STANDARDS if there is no willingness to cooperate in the first place.
From Siloed Data into Digital Assets

Parking Digitalization Enabled by:

- System-agnostic solutions
- Access Controller Integration with Parking Barrier, Allowing for App-based Entry/Exit
- Smart Parking Platform Integration with Parking Management Systems through Open APIs strategy
- PCI DSS Compliant Mobile Payments for Parking
Abolishing minimum parking requirements. Dynamic pricing stimulating turnover (5-10% spots vacant). Smart Parking for city inhabitants.

Digital Parkings repository overcoming problems with suboptimal parking spots allocation. Uniform global standard allowing to share parking data across platforms.

Integration not only within parking industry but also with multimodality platforms (MaaS-approach) facilitating access to more sustainable ways of moving around, once parked.

Sustainable Parking Management Components

Parking policy

Digitalization

Cross-Integration
Smart Parking Supporting Carbon Neutrality Goals and Transition into Zero Emission City Centers

Cooperation with e-mobility services providers:

- municipality electric fleets
- logistics companies with EVs
- electric taxis
- e-carsharing
- e-bike /e-scooter shared systems
Understanding different requirements for EV parking and the need for comprehensive e-mobility management:

- Energy and infrastructure planning
- Distributed/renewable energy sources integration (PV, battery energy storage, EVs)
- New business models (multistakeholder approach, access control to private parkings, payments for individual and fleet clients)
- E-bikes docks, charging
- EV station power from 3.7kW to bus chargers
- Integration with energy infrastructure
- Smart Charging
- Maintenance
Background

Searching for parking contributes to urban traffic and GHG emissions
The number of foreign travelers in Poland is growing year by year
Increasing role of transport buses in urban centers
Polluting impact of buses, given their power
EU commitment to reduce GHG emissions to comply with Paris Global Climate Agreement
EU cities look for smart solutions making transport more efficient and less environmentally harmful

Number of tourists in millions

(source: Polish Tourism Organisation, Statista)
TECHNOLOGY for Parking Efficiency

• Real-time information about parkings – temporary (up to 15 minutes) and permanent bus parking
• Ground sensors, LoRa connectivity (possible alternative data sources)
• Level of parking occupancy
• Navigation to the nearest available bus car park
• Information accessible from the mobile application or web service

Benefits

Easy finding parking, reduced drivers and visitors frustration
Improved traffic flow, more balanced urban mobility
Limiting pollution emissions and noise
Parking enforcement tool for municipality police
Competition Dialogue for e-Parking App Provider in Warsaw

- App displaying in real time a map of vacant parking spaces within the Unguarded Paid Parking Zone
- Payments integration
- Sensors and/or cameras
- Total 30,000 parking spots (1/3 financed by EU funds, 2/3 funded from the City’s budget)

How to make it happen?

- Partnerships for creating consortium
- Revenue share between partners
- Long-term relations building with city (as contribution to City Transport Authority’s APIs creation in previous dialogue).
Bicycle Parking

- European Cyclists Federation’s recommendations for bike parking regulations as impacting mobility
- Smart Cycling, Bicycle and ITS
- Technology supporting regulation of bike parking (e.g. smart locks, geofencing)
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