AIAMO

THE AIAMO INTEGRATION ZONE – NETWORKING DATA, SHAPING MOBILITY

FOCUS #2

THE INTEGRATION ZONE – A KEY ELEMENT OF AIAMOnexus

AIAMOnexus comprises two main components:
the Integration Zone acting as an interface for a seamless connection of data, technologies and applications and the AI Foundation Models which, as a powerful AI basis, provide general and specialised models. Together they create a smart, scalable basis for seamless, efficient and personalised mobility.

SMART DATA PROCESSING WITH ARTIFICIAL INTELLIGENCE – THE KEY TECHNOLOGY FOR SUSTAINABLE FUTURE MOBILITY

In today's AIAMOfocus edition, we will take you along into AIAMO's power house – the Integration Zone.
We reveal how mobility data interacts with the aid of AI and are connected in an ecosystem. And how this makes both smart, safe traffic control and environmentally friendly mobility possible. Despite technological advances and increasing data availability, the mobility landscape remains fragmented and inefficient. Towns, local authorities and companies are struggling with integrating multifaceted data sources.
Technical barriers and a lack of interoperability result in valuable information being left unused. Artificial Intelligence, in particular, can only develop its full potential on a broad, diversified and curated data basis – one with a sufficient number of data records and samples for detecting precise samples and making reliable predictions and sound decisions.
This is where the Integration Zone comes in: a low-threshold access and standardised formats ensure integration of different systems enabling diverse data sources and virtual data rooms to be linked up.
In turn, the enormous data range and depth allow for the use of high-grade AI models.

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IN PRACTICE: OPTIMISED MOBILITY MANAGMENT

Cities are faced with the demanding task of making mobility more efficient and environmentally-friendly. Data plays a central role here in innovatively coping with traffic-related challenges and making the urban environment a more liveable place. From a web-based interface those responsible for municipal mobility can simply access the AIAMO Integration Zone. They are supported by an AI-based search function which is specially designed to efficiently navigate them through the extensive data source network. A typical enquiry could be, for example:
"I need some information on the cycling rush-hour times in the town centre during the last quarter."
The AI-powered search algorithm processes the enquiry and scans the system data both rapidly and with every precision. In seconds they receive a list of relevant data sources including information from bike rental firms, sensor data on bike lanes or aggregated findings from user surveys.

Thanks to this efficient and user-friendly interaction, those with mobility responsibility access a wide range of mobility data almost immediately – data that otherwise might have remained inaccessible. By using this rapid data analysis, traffic patterns become more easily understood, bottlenecks are detected early on and sound decisions made for a sustainable improvement of urban area mobility.

OVERVIEW: WHAT EXACTLY IS THE INTEGRATION ZONE?

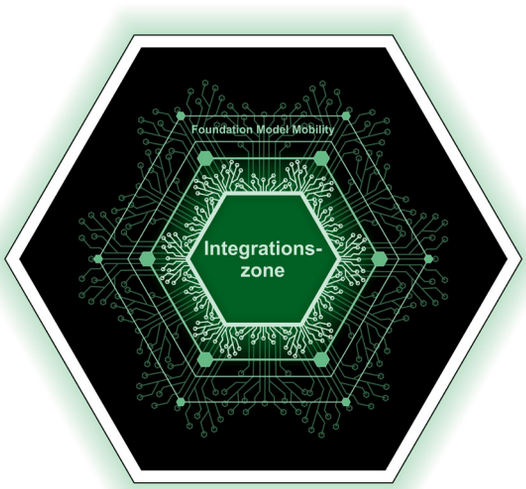
The Integration Zone is a system that with the aid of AI integrates, prepares and accesses data sources. It uses existing virtual data rooms such as Mobility Data Space (MDS) and Mobilithek which it – via standardised API interfaces – horizontally connects to other regional data sources, such as environment data measuring stations, vehicle sensors and weather information.

The centralised management of written meta data, smart search/filter options, classifications and relevant tagging ensures easy, rapid retrievability. At the same time both the availability and quality of the data are enhanced. After the raw data check, AI uses feature engineering and compaction to optimise both latencies and analytical data quality and provides the findings as input data for other AI applications. In this way, a mobility data ecosystem arises providing a comprehensive overview on the sustainable traffic and mobility options of a city or region and establishing a new data utilisation/sharing culture.

THE KEY: NETWORKED DATA

Cities and municipalities, but also small and medium-sized companies can access data via an intuitive interface. This means that mobility service providers, urban planners and developers can easily access a broad, well-structured and processed data portfolio with which to improve their services and further innovations.

The multiplicity of data from environment information, legacy traffic data and real-time mobility information, control systems such as traffic lights through to utilisation statistics of public and private transport and their networking provide for an enormous potential.
A practical example is urban traffic flow optimisation. By accessing comprehensive traffic data, urban administrations can – in real-time – identify any looming traffic bottlenecks and take immediate steps, such as adjusting traffic light sequences or diverting traffic flows.



The AIAMO data strategy

For AI effectiveness it is curated, qualified data that count. Only by providing and maintaining this type of data in secure virtual data rooms can AI solutions develop their full potential and provide real added value.

DEEP DIVE

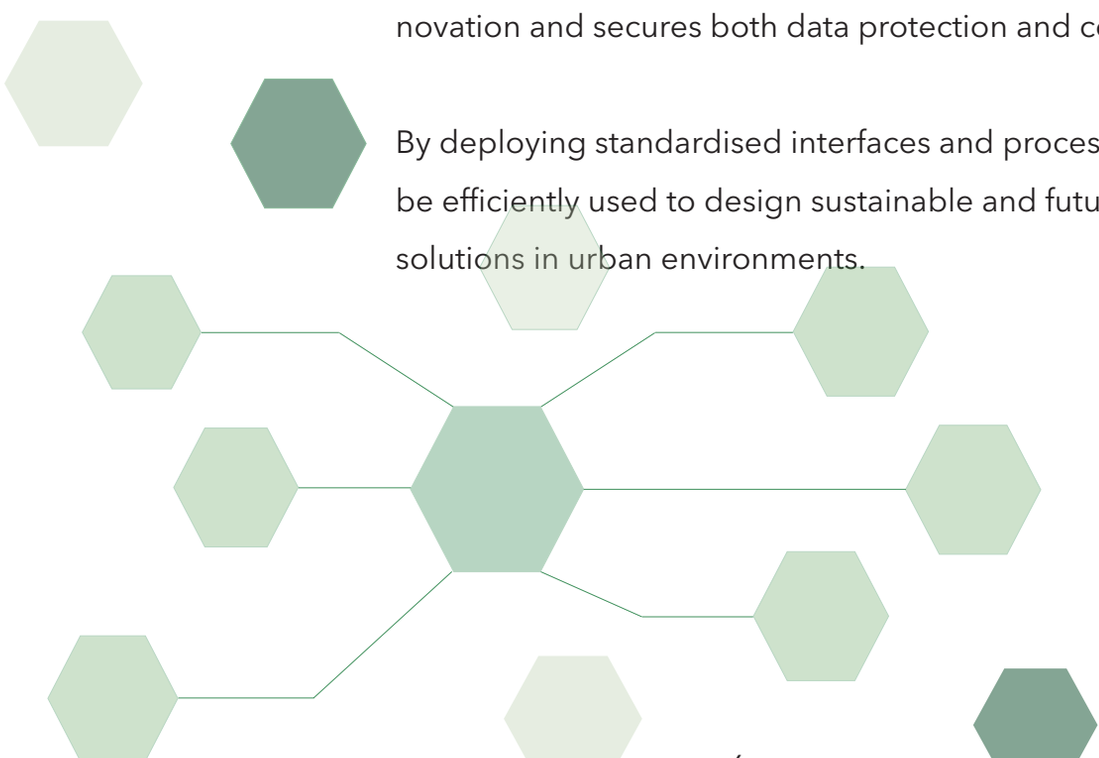
NAVIGATING IN THE DATA FLOOD – AI & DATA MESH

The concept of data mesh provides an innovative solution here.
It organises the responsibility for data and ensures their quality directly at source. This approach ensures flexible, efficient and secure real-time data usage without the need for centralised systems.

A prime factor for effective usage of this data comes from deploying Artificial Intelligence (AI). AI tools evaluate the data from the AIAMO Integration Zone and make their findings available for specific mobility applications and services, such as networking vehicles and infrastructure, as well as for traffic control purposes.

At the same time, AI secures data quality, detects samples and analyses trends. Neutral interfaces ensure connectivity to other services – thus speeding up innovation implementation. As such, a data-oriented decision basis is created raising mobility solutions to a new level.
The AIAMO Integration Zone implements this approach by orchestrating mobility data of the various players into a secure and interoperable framework. It integrates decentralised data sources, protects data owner control and furthers a seamless interchange of information. In this way, a consistent and scalable data ecosystem develops that drives on innovation and secures both data protection and compliance.

By deploying standardised interfaces and processes, mobility data can be efficiently used to design sustainable and future-oriented mobility solutions in urban environments.



"AIAMO generates AI data for mobility applications and creates the basis for data-driven decisions in the mobility sector."

Markus Wartha, President

ITS Germany e.V.

OUTLOOK: SMART MOBILITY – VISION OR FICTION?

In a world striving for seamless and environmentally friendly mobility, there is a clear-cut discrepancy between the vision of smart traffic systems and the fragmented reality of mobility data. The innovative approach of data mesh combined with the efficiency of AI-based search mechanisms provides a promising solution in overcoming this gulf. Thanks to decentralised data exchange and provision of a mobility data system, the AIAMO Integration Zone is laying the foundation for an integrated, efficient and user-oriented mobility network. This system not only simplifies access to relevant data but also ensures their secure usage in conformity with data protection considerations. As a result, cities and municipalities can then manage traffic flows more effectively and create sustainable, data-controlled mobility solutions that significantly improve the quality of urban living.

In the next edition of **AIAMOfocus** we will be presenting the digital twin for the Leipzig pilot region. This will reveal the opportunities for real-time evaluation, fusion and further processing of quite distinct data sources, visualisation of the ongoing traffic and surrounding area situation and modelling dynamic traffic scenarios – a key for tomorrow's mobility.

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