SMART CITIES MADE IN GERMANY
OPEN DATA PLATFORM SOLUTION

Universal Platform Solution for Digital Cities

In many areas of our daily life, things and services are modernized, transformed and completely newly developed - privately, professionally, industrially and publicly. The possibilities for solutions that are fully associated with the buzzword digitization are almost endless. With new technologies, cities, communities and municipalities can offer their citizens, visitors and companies a multitude of modern "smart" services.

Smart buildings, digital images of a city (digital twin), traffic control systems (smart traffic), e-charging and parking management (smart charge & park), green space/parking management (green campus) or public information systems (digital city portal) are just a few application examples.

The basis for the various smart services is the intelligent and secure use of a wide range of information from a wide variety of existing and new data sources - in real time and with a time delay.

Two fundamental questions arise from these trends and requirements: Which is the best technological, most sustainable, organizationally and financially viable infrastructure solution and how can the funds available from the current economic stimulus packages be used by cities, communities and municipalities to implement the various digitization measures and help to set up the

modern IT infrastructures that are urgently needed for this?

Two companies - **Dell Technologies** and **WOBCOM**[1] - have the right answers and solutions to these questions - all from a single source. No matter how small or extensive the requirements are, whether it is an initial IoT pilot project or an overall Smart City concept, the WOBCOM Open Data Platform (ODP) is a flexibly scalable end-to-end solution for the smart city of tomorrow.

The use of a software-defined data center (SDDC) is recommended so that the IT infrastructure can keep up with the requirements of OT[2] in view of increasing Smart Cities requirements and solutions.

On the one hand, such SDDC infrastructures have a high degree of automation in order to be able to develop the smart applications quickly and operate them efficiently. On the other hand, in combination with edge computing, they enable the use of modern AI/ML[3] and IoT[4] applications for future new decentralized Smart Cities concepts.

The **WOBCOM ODP** solution therefore combines several solution concepts and flexibly designable usage scenarios in a single system architecture.
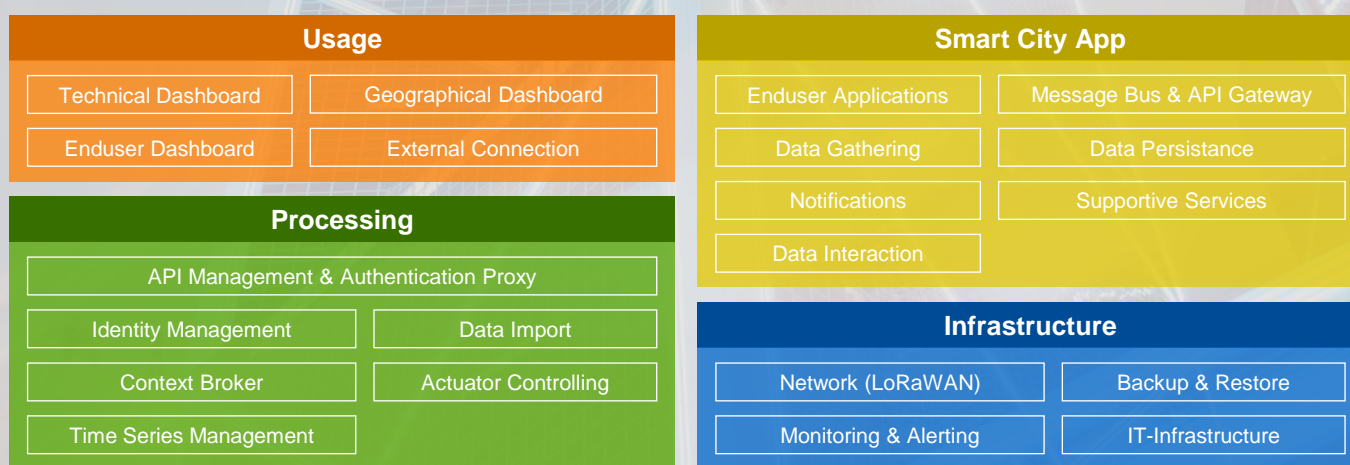
(1) WOBCOM GmbH is a wholly owned subsidiary of Stadtwerke Wolfsburg AG.
(2) OT = Operational Technologies = In this context in the context of Smart City requirements.

(3) AI/ML = Artificial intelligence / Machine Learning
(4) IoT = Internet of Things

DELLTechnologies

WOBCOM

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The WOBCOM Open Data Platform is an open and modular smart city platform that makes it possible to generate added value for the city and people from a wide variety of data forms and data sources as well as through integrated and flexibly configurable data analysis. The results of the data analysis can be displayed, instructions can be given, or further interactions can be requested via a user-friendly dashboard that can be customized to the needs of the user. Application scenarios (templates) can be loaded from the FIWARE Smart Cities reference catalog and adapted and expanded to the respective urban requirements. A mobile app also developed by WOBCOM itself - the Smart City App for iOS and Android - offers its users the versatile services of a city under a single interface.

Together with the unique portfolio of Dell Technologies, a holistic Smart City solution concept can be offered. Dell Technologies supplies all necessary hardware and software components such as clients, servers, network, backup, management, cyber security as well as consulting, planning and services for a fully integrated modern IT infrastructure. Another advantage of the joint collaboration between Dell Technologies and WOBCOM is that the Smart Cities platform was developed with a focus on data protection and end-to-end data security aspects. Users or operators of this Smart Cities platform know at all times what is happening with the data and where it is being processed and stored.
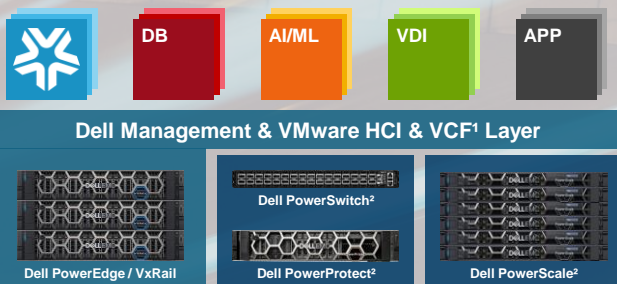
WOBCOM Open Data Plattform (ODP) - Architecture Scheme

Usage
- Technical Dashboard
- Geographical Dashboard
- Enduser Dashboard
- External Connection

Processing
- API Management & Authentication Proxy
- Identity Management
- Data Import
- Context Broker
- Actuator Controlling
- Time Series Management

Smart City App
- Enduser Applications
- Message Bus & API Gateway
- Data Gathering
- Data Persistance
- Notifications
- Supportive Services
- Data Interaction

Infrastructure
- Network (LoRaWAN)
- Backup & Restore
- Monitoring & Alerting
- IT-Infrastructure

WOBCOM ODP - Key Features, Areas of Use and Applications

- Modular open-source platform architecture
- Mobile apps for Android and iOS devices
- Web-based display and user interfaces
- Smart Cities applications tested in practice
- Smart Cities application templates
- Consumable as Smart Cities as-a-Service from the data center of WOBCOM
- Can be adapted on-premises in your own data center
- Scalable for any Smart Cities project size
- Large community for the development of new Smart Cities applications (FIWARE, Astrid iHUB, start-ups, etc.)
- Data sovereignty Made in Germany

Smart Park & Charge	• e-Charging stations: location, type, status, capacity • Real-time parking space finder
City Information & Tourismus	• Event calendar, event information • Points of Interessts (POI's)
Smart Waste	• Disposal calendar • Emptying, bulky waste dates • Location, type and fill level display/monitoring • Waste management company information
Smart Communication	• Notification of defects in the urban area
Smart Home	• Weather station/data for Smart Quarters
Smart Campus	• Rainwater cistern, level monitoring • Moisture monitoring of greenery, trees, parks
Public Security	• DSGVO-compliant object recognition

Dell Technologies Smart City Privat Cloud

- DB
- AI/ML
- VDI
- APP

Dell Management & VMware HCI & VCF[1] Layer

- Dell PowerEdge / VxRail
- Dell PowerSwitch[2]
- Dell PowerProtect[2]
- Dell PowerScale[2]

(1) VCF = VMware Cloud Foundation auf Dell VxRail
(2) Additional IT infrastructure components that can be integrated into the Smart Solution platform depending on the requirements.

SDDC with Dell VxRail - Features and Benefits

- The only hyperconverged solution on the market developed jointly with VMware
- 99.9999 % total operational security through validated & fully integrated system
- Clusters can be combined with different node types (compute, storage, GPU)
- Single-click update to new HW generations, without migration & downtimes
- Full-Stack Lifecycle Management: Continuously validated states with tested, automated upgrades and patches
- Single point of support for the entire HCI system (HW & SW)
- Improved IT infrastructure team efficiency up to 68 %[1]
- Downtime reduction of up to 88% in terms of unplanned outages[1]
- Up to 51% lower operating costs than after a classic IT infrastructure update[1]
- Up to 47% lower cost compared to a similar public cloud solution[2]

(1) Based on information from: IDC Business Value Snapshot of Dell EMC VxRail, November 2020
(2) Based on information from : The Cost of Using the Public Cloud, Evaluator Group, January 2019