

## Urban COCKPIT

### PART OF SMART SOLUTION 8: BIG DATA MANAGEMENT



Figure1: The Urban Cockpit

- Fast and easy overview of the current situation in your city concerning traffic, energy and environment
- Data and information can be used for city planning, traffic and energy management, and environmental monitoring
- Data can also be provided on open data platforms of cities. All urban data can be included independently of the manufacturer of the data provider

INTEGRATED  
INFRASTRUCTURES



Cologne

Technical partners: [ui!] – the urban institute

AGT

Ampido

Cambio

Dewog

KVB

RheinEnergie

Contact: Stephan Borgert: [stephan.borgert@the-urban-institute.de](mailto:stephan.borgert@the-urban-institute.de)



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## What is the solution?

The picture on the front page shows a possible setting of the Urban COCKPIT for the city of Cologne.

On the left hand side the “pulse” of the city can be seen. This is a grouping of many indicators and is updated every few seconds. What the indicators show can be adapted for every city and for every user group like citizens or control centre staff.

The indicators are adjusted during the project according to data available. The better the values or KPIs of the cities, the better the indicators are (as shown by how green it is). For values that are worse, it will turn yellow or red and the pulse will rise to indicate that the city is in a stressed state. This can happen for example when the environmental data is very bad, when there are too many traffic jams in the city or when the percentage of renewable energy production is too low.

On the right hand side of the COCKPIT, there is more detailed information about various different aspects of the city’s current condition. This may include the number of free parking spaces, number of cars shared, current use of public transport and so on.

## How does it work?

The image overleaf (Figure 2) depicts the high level architecture of the overall system. The UrbanPulse module in the middle is a multisided big open data platform. It is open to any kind of urban data on the urban data source side and can provide data and information via open standards to different data consumers.

Urban data is provided from traffic management systems or from project partners or urban companies such as energy providers. Additionally environment data from sensors can be used. All data will be processed in real time to generate value added data (=information). The data will be stored to provide a historical perspective for the data analytics.

Data and information are provided to apps or as Data Services to consumers. In this case, the Urban COCKPIT is the data consumer. Urban COCKPIT, Urban TRAFFIC and URBAN ENVIRONMENT use the same data backend, the UrbanPulse.

The apps differ in how the information is shown. For example traffic jams are better shown in an app like Urban TRAFFIC where a large map is used as the background. In contrast, the Urban COCKPIT uses only small maps, if any.

## Business Model Used

The Urban Software Institute GmbH (= [ui!]) is developing the UrbanPulse and the Urban COCKPIT and offering them to cities and urban management companies. Furthermore [ui!] is analysing the data to determine which information can be sold. Cities could sell the urban data and information to interested parties.

The business models have to be adapted for the cities to fit their needs and requirements.

## Integration with other smart solutions

The Urban COCKPIT works well in combination with the other smart solutions. One example is the smart solution “mobility hub” where many different means of transport are accessible from one spot.

At a mobility hub the user can choose between bikes/ebikes, shared cars/ecars, and buses. They can also can park their car and use the charging stations for loading their eCars/ebikes.

All the relevant data for a mobility hub can be represented in the Urban COCKPIT, to gain a quick and easy overview of the current or historical usage of the mobility hubs.

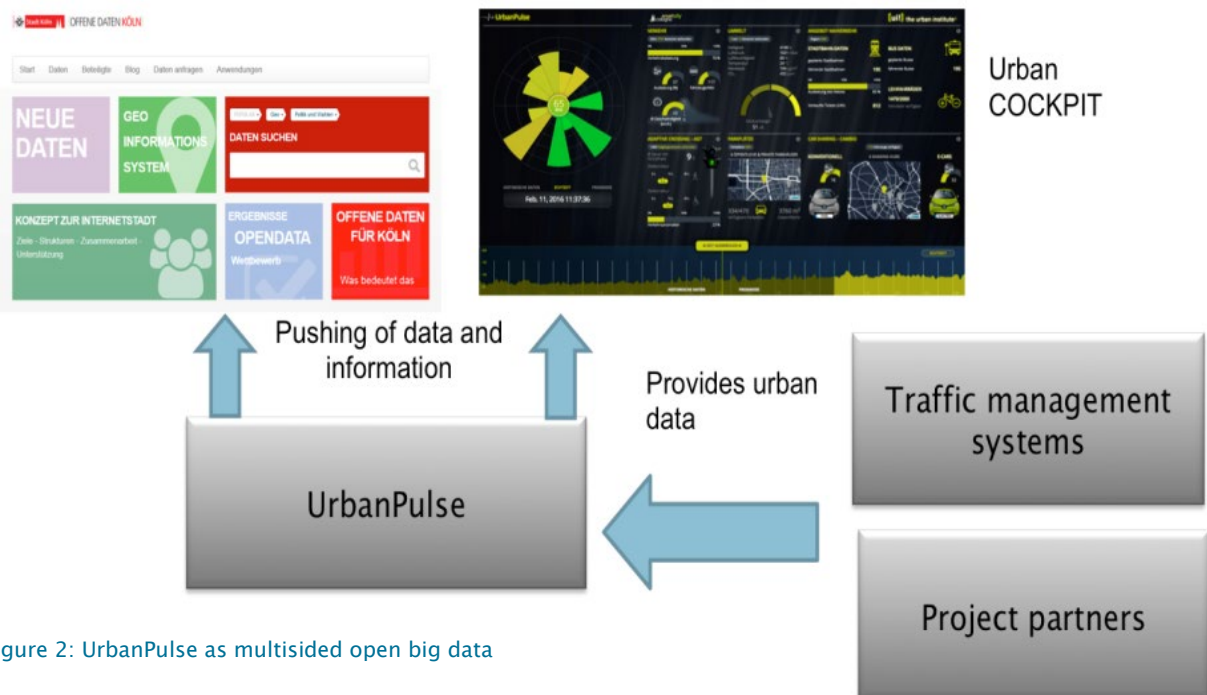


Figure 2: UrbanPulse as multisided open big data

## Expected impact

We expect 3 impacts:

1. With the help of the Urban COCKPIT it is easy to explain the Horizon 2020 20/20/20 goals, what the City of Cologne is doing to fulfil them and the current impact of these measures. This information is helpful for mayors of other cities or other stakeholders or institutes who are looking for measures to make their cities smart or smarter.
2. The interfaces of the displayed information channels will also be provided as Data Services on the open data platform of Cologne. Thus service and app developers are supported to develop new ideas for using this information to create new value added information and data for users of e.g. the mobility hub measure of the City of Cologne.
3. The information can also be used to support cities to manage and optimise their traffic flows, energy consumption and production, and pollution outputs for future city planning as well as to find out which measures have the largest impact on achieving the Horizon 2020 goals. This can also help to work out which measures could be the most interesting ones for replication in follower cities.

## Potential for replication

The solution can be easily replicated in other European cities for several reasons.

Firstly, the Urban COCKPIT is independent of implemented measures and their domains. All integrated traffic and energy measures can be supported as well as measures to reduce waste or to save energy by for example the use of humble lampposts.

Secondly, the backend module of the Urban COCKPIT, the UrbanPulse, is independent from the data source. UrbanPulse does not use proprietary standards and therefore connectors can be developed from any data source to the UrbanPulse for every sensor/service interface.

Thirdly, [ui!] is documenting the high level process which is being used by the City of Cologne to design and put in place the cockpit and how to identify the most important data and information to display.

This process can be adapted and applied to other cities to accelerate the implementation of the COCKPIT itself and start early with the monitoring of any implemented measures.