What can you expect today?

1. This is Duisburg
2. The Smart City Duisburg eco-system
3. Smart City Duisburg Projects
28th of May 2019: Award ceremony for the eGovernment competition 2019

» The eGovernment competition is under patronage of the Head of the Office of the German Chancellory.

» Duisburg won the silver medal for "Best digitalization project in cities/regions" with the Smart City concept.
1 This is Duisburg

» Where do we come from?

» What is special about our city?

» Why do we need to become „smart“?
History of Duisburg

First settlements in the first century

1655 foundation of the first university

Gerhard Mercator, famous cartographer

Industrialization in the 19th century

First production systems for textile and tobacco in the 17th century
Duisburg today

- 15th biggest city in Germany
- Over 500,000 inhabitants
- Central location in the European Union
- 233 km² area
- 5th biggest city in North Rhine Westfalia
Steel location Duisburg

Largest steel location in Europe with 7 blast furnaces. About half of the pig iron produced in Germany and one third of the crude steel are produced in Duisburg.

» Structural change:
From 1960 to today decline from 70,000 to 16,000 steel workers.
Culture, Landscape and Sport

» Remarkable Culture Institutions
» International Festivals
» Lakes and Natural Places
» International Sporting Events
» Olympics application for „Rhine Ruhr City 2032“
Duisburg is one of the most important Logistic Sites in Germany

Duisport

» Biggest Inner Port of the World
» Straight connected with the Sea Port of Rotterdam
» International Freight Trains: Yuxinou, Hanxinou
» Terminal for combined Freight Transport
» International Logistics Centre logport
International relations

» China as an important partner for city partnerships, logistic and technology

» New Silk Road – Railway line between China and Europe

» Students from all over the world study at University of Duisburg-Essen
The research and education sector in Duisburg is growing permanently

University of Duisburg-Essen
- one of the youngest and largest universities in Germany
- holding place 19 in the Times Higher Education Ranking of the world's 200 best young universities
- member of the University Alliance Ruhr with partnerships around the globe
- ~ 43,000 students in total
- 14 % of the students have a foreign entrance qualification: Asia 61 %, Europe 27 %, Africa 9 %, The Americas 3 %
- Around 500 partnerships

Fraunhofer Institute for Microelectronic Circuits and Systems
Research, development and pilot fabrication of microelectronic solutions for industrial and public clients

Fraunhofer-inHaus-Center
Novel room concepts, innovative construction materials, intelligent building technology, and electronic systems for assisted living.

The hydrogen and fuel cell center ZBT GmbH
Development of fuel cells, battery technologies, hydrogen generation processes
The Smart City Duisburg eco-system

» What does Duisburg aim for?

» How do we work and decide?

» With whom do we work?
Goals of the Smart City Duisburg eco-system

» To develop a sustainable vision for Duisburg
» To increase the economic efficiency of the city
» To improve the citizen’s quality of life in Duisburg

Gather ideas of citizens  Develop innovations  Staff participation
The city of Duisburg is working together with partners to become a Smart City

On the 9th of July 2018, all partners signed the letter of intent. This layed the foundation for the conception of the Masterplan for a Digital Duisburg.
The partner organisations with their various competences are essential for city development.

- City of Duisburg
- Subsidiary for supply and transport
- Subsidiary for recycling economy
- Subsidiary for housing
- University of Duisburg-Essen
- Fraunhofer Institute for Microelectronic Circuits and Systems
- Chamber of industry and commerce for Duisburg and the Lower-rhine region
- Emloyer’s association of Duisburg
- Huawei

Partnerships with further organisations are currently in progress:

- Association for economic development
- Harbour and innovations platform for logistic
- Tourism and city marketing for Duisburg
The Special Office for Digitalization coordinates internal and external processes

Political governance

All main desicions need a presentation, discussion and resolution in the city council.

- Summer 2018: The Concept for the Masterplan Digital Duisburg contains the idea process, areas of activity and partners
- Summer 2019: The Masterplan Digital Duisburg contains concrete projects, a process for project management and all partners

Smart City governance

- Strategy: Strategy council
- Decision: Program council
- Planning and controlling: PMO
- Execution: Smart City Projects, GEO/GIS, E-Government
Becoming a smart city is still a process full of administration and bureaucracy.
The development of a Smart City is expensive

Government aid is necessary to realize projects in Duisburg, but strict requirements need to be fulfilled.

Examples for development programs in Duisburg:

» Competition „Modell project Smart Cities“ by the German ministry of the interior: up to 17,5 mio. EUR (ongoing application)

» Government aid for broadband expansion: around 18 mio. EUR

» Different development programs for the digitalization of schools
Smart City Duisburg
Areas of activity

- Infrastructure
- Broadband & 5G
- Economy
- E-Government
- Education
- Living
- Mobility
A systematic innovation process was defined for the Smart City Duisburg eco-system

- Workshops for the seven areas of activity
- Identify ongoing projects
- Realization of project ideas of the partners
- Create a culture of innovation
The first step for gathering ideas:
Workshops with citizens, and participants from city government / administration, political parties, university and firms
The acceptance process needs to be managed actively

» make the work sustainable
» involve citizens and employees in digitalization processes
» create understanding from employees and a will for change

involving citizens

Future workshops with citizens (two in 2019)
Communication via duisburgsmartcity.de
Public events to present the present project status

involving employees

Future lab with city administration employees
Change Management in the city administration
First Digitalization teacher at an Institute for Studies on the Municipal Administration
Cooperation with the university for Smart City study programs
Target concept for the smart city architecture

- Apps
  - Broadband & 5G
  - E-Government
  - Economy
  - Mobility
  - Smart Living
  - Infrastructure
  - Education

- Platform
  - Big Data service support platform
  - City Management Platform
  - ICT application enablement platform

- Network
  - City communications network
  - City IoT

- Cloud
  - Rhine Cloud Data Center

- Joint Innovation Center
  - Partners
Smart City Duisburg Projects

» How to transform the ideas into projects?

» Which projects are realized?

» What’s next?
After gathering and evaluating the ideas, the realization of projects has started

- **271** ideas were created in the seven workshops
- **51** ideas were presented to the decision circle after evaluation
- **18** ideas were chosen to start projects with priority

**Continuous innovation process**

- Everyone can send new ideas via duisburgsmartcity.de. New ideas are included in the idea backlog.
- The smart city team constantly evaluates the backlog and suggests to initiate new projects.
In cooperation with the German Aerospace Center, the city of Duisburg put in use an Unmanned Aerial Vehicle (UAV) for fire brigade responses:

**Vertical Take-Off and Landing UAV**

- Flight time: minimum 90 min
- Speed: minimum 60 km/h
- Payload: minimum 2 kg
- Save flight use out of sight
- Automatic flight and manual control

**Started in January 2019**
Project example 1: Drone for fire brigade

Several use cases for drone missions

» Area scouting
» Early scouting of site of operation
» Scouting of approach roads
» People search
» Smoke detection and spread
» High tide
» Major events with crowds of people

Video available on Youtube: https://youtu.be/1ed1jGud-u4
Project example 2: Portal for voluntary activities

New portal on duisburg.de

» Organizations and non-profit associations can offer voluntary activities

» Citizens can search for specific activities (district, kind of activity etc.)
Project example 3: Open Data Portal

The city provides various data for everyone on opendata-duisburg.de.

Goal:
» Raise attractiveness for economy and startups
» Transparency
» Efficient information handling
» Partner organizations are asked to provide their data too.
Project example 4: Online Appointments

» Pilot project in two citizen’s administration office from January 2019 to April 2019.

» Since May 2019, appointments for all services in Duisburg’s citizen’s administrations offices can be booked online.

» Soon: Extend the service to the Road Traffic Licensing Department
"Land electricity" is comparable to charging station for ships.

» Ships in the Duisburg harbour used to leave the diesel engine running during their stop.

» Six new electricity stations in the harbour are already available, an extension is planned

» Booking and payment via a mobile app

» Less CO2-emission
Further prioritized ideas

- Wifi in bus, tram and stations
- Real time bus
- Optimised control of traffic flow
- Smart street lightning
- Portal for Startups
- IoT Network (LoRaWan)

- 3D scan of municipal buildings
- Construction site viewer
- Online approval portal for buildings
- Portal for commercial areas
- “Serviceportal“ (online end-to-end processes for administration services)

to be continued