



LIVING IN THE CITY OF THE FUTURE

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LIVING THE CITY OF THE FUTURE

“Smart cities” are networked cities. In smart cities, many areas of public life are interconnected: health and education, traffic and transportation systems, municipal authorities and much more. This interconnectedness not only opens up new possibilities for mobility, but also for more participation in society.

What makes a city smart?

Quality of life for residents

Parks and green spaces, better air quality through environmentally-friendly heat generation or optimal health care through telemedicine and real-time monitoring for chronically ill people: all of these factors contribute to an increase in the quality of life of a smart city's residents.

Sustainability and environmental protection

Thanks to digital networking, smart cities are sustainable and save resources. For example, modern sensors control street lighting and waste disposal – fully automatically. Smart street lamps dim the light when no one is on the sidewalk. And thanks to built-in sensors, garbage collectors only empty public garbage cans when they are actually full.

Mobility

New technologies help, for example, to avoid traffic jams and find other means of transport. If a vehicle reports an accident, the other vehicles are notified per app and automatically diverted. The practical thing about this: this also prevents further traffic jams on the detours.

Citizen-friendly public administration

Thanks to digital citizen portals and self-service terminals, inadequate opening hours and long waiting times in public administrations might soon be a thing of the past. As soon as citizens log on to the portal, they can carry out administrative tasks themselves (e.g. registering their place of residency or applying for an identity card). This not only promotes communication between citizens and administrations, but also increases individual participation (e.g. through online petitions).

Social cohesion

Ready to leave on vacation but the refrigerator is still half full? Your flowers need to be watered while you are away? New applications such as “nebenan.de” help citizens in smart cities network with like-minded people and thus, promote social cohesion – e.g. by sharing food or small favors (such as watering plants).

How smart is my city?

Networked technologies are already being used in many cities. But people often do not yet feel that their city is smart. Why is that? In order to make a city “smart”, it needs an advanced technical infrastructure, the necessary financial resources and the participation of many creative people. Cities often lack the structures to meet these requirements or to use creativity in a meaningful way. They therefore initially tackle the idea of the smart city in small steps (e.g. the networking of public transport with an app). These first steps often take place in the background and are not visible to many people at first glance. Which cities are already smart? Use the interactive map to find out more about your city!

Brave new world?

A higher quality of life, less traffic jams and considerably more time – at first glance this sounds promising. But smart cities also bring new challenges with them. Read the case studies on the following pages and form your own impression.

Case 1

Paul lives in a smart city in which, among other things, almost all areas of life are networked with the authorities. A “social credit point system” indicates how exemplary he is as a citizen. Good behavior (e.g. donating for a good cause) is rewarded, bad behavior (e.g. driving too fast) is penalized by deducting points. The consequence: if Paul's score is too low, for example, he receives significantly worse credit from banks and may have to fear for his job.

What sounds like something from a film to us, is unthinkable in Germany. In Rongcheng, a city on the coast of China, it is reality.

Case 2

Thea lives in a smart house. In it, the fridge, pantry and co. are networked with her smartphone. Just now her garbage can reported that four milk cartons have already been thrown away. It offers to order more milk. And while Thea is still thinking about this, she receives the next notification: the toilet paper holder reports that the roll is running out. In addition, Thea's fork just teamed up with her belt to point out that she has been eating too much and too fast. Well, at least Thea is informed.

Brave new world?

Smart cities and smart homes are created for people. When private individuals and companies work together to implement smart infrastructure, smart household appliances and the like for the benefit of citizens, they make life easier for them in the long term. But the decision as to exactly which of these technologies will make our lives easier in the future, will ultimately depend on user acceptance. The inhabitants of smart cities thus retain control over how their lives are shaped. How would you like to live in the future? Take a look around the smart home and let it inspire you!

SMART LIVING

The city of the future begins at home – in the “smart home”, the intelligently networked home. The smart home is equipped with computer technology, sensors, lighting control and networked devices. They provide more comfort and security.

Which devices make everyday life at home “smarter”? Which tasks can little helpers, such as robots, perform in the household?

Smart Home – An Overview

Smart lighting systems

A lighting system that adapts to your needs and mood? This is possible, for example, with smart lighting system from “Philipp's Hue”. If the lighting is linked to the stereo system, the lighting automatically adapts to the sound and rhythm of the music.

Video surveillance

Smart video surveillance systems transfer the camera images of your home directly to the cloud – an

online storage space that only you can access. With the help of a corresponding application (e.g. "Arlo" or "Bosch Smart Home") for your smartphone, you can make sure that everything is all right at home – on holiday and at work.

Smart plant irrigation

Sensors for temperature or humidity make everyday life smarter. Your plants will, for example, indicate when they have not been watered properly by displaying a light signal and thus, help you to maintain them. For those who like it even smarter, the intelligent "Smart Gardener" irrigation system could be an option. It waters gardens independently, as needed. This is also possible from holiday via app control.

Intelligent language assistants

Intelligent language assistants are enjoying increasing popularity. Whether "Siri", "Alexa" or "Google Assistant" – when used correctly, they can make everyday life easier. The assistants are connected to various devices – e.g. telephone, lighting or television. Commands can then be conveniently given via voice control – e.g. "Hello Magenta! Call Anna."

Intelligent window and roller shutter systems

Window and roller shutter systems can be remote controlled using sensors and apps. Here is an example: When the sun shines, the roller shutters automatically open so that the warmth can enter the home. When it's dark or stormy, the shutters automatically close. This saves energy and makes your home safer.

The kitchen that thinks for itself

In the future, not just the coffee machine – the entire kitchen will be smart. Projections on the rear wall, 3-D food printers and smart refrigerators – in a smart kitchen, everything thinks for itself. Learn more about this in the video.

Smart refrigerator

Of course, a smart kitchen cannot be without a smart refrigerator. These clever appliances have quite a few tricks up their sleeve. The refrigerator takes a picture every time the door is closed. The content is then displayed on a screen in the door or in an app. This allows you to check what you need at home while you are on the move. You do not know whether the bell pepper in the refrigerator is still good? Sensors that filter gases from the air and then assign them to spoiled food in various areas of the refrigerator can help here. This means that only food that is actually spoiled ends up in the garbage.

Home office and smart city

Home offices save time, resources and the environment. Modern technologies such as video telephony or virtual reality and a good network infrastructure make it possible to communicate with superiors and colleagues. And if you have to meet in person, there are fewer cars on the road – because more people work from home.

A recent study by Bitkom Research has shown: approximately 30% of all employees occasionally work from home. But unlike in the office, working at home is often less regulated. When do you take a break? When do you stop working for the day? The boundaries between work and leisure are becoming increasingly blurred. A summary of the advantages and disadvantages of home office work can be found here.

Types of robots

Social robots

Social robots are robots that are very similar to humans in their behavior and that take on social tasks – e.g. caring for humans. Social robots communicate and interact, they conduct conversations, understand the gestures and feelings of others and react appropriately to them.

Domestic robots

Domestic robots take over household tasks. Vacuum robots keep your carpet clean; mop robots even remove stubborn stains on the tiles. And you will never have to mow your lawn again when you have the help of a mowing robot.

Entertainment robots

Entertainment robots include programmable drones for adults and programmable building blocks for children and adolescents. In the future, robots will even be used as digital babysitters that have been specially developed for communication with babies and toddlers and can read stories or play music on command.

Industrial robots

Industrial robots are automatically controlled devices that are used primarily in the automotive industry. Assembly robots, for example, assemble the individual parts of the car, while painting robots apply the selected paint. The commands for this come from the plant's human employees; the robots then execute them in a supportive manner.

Robots in nursing care

Pepper is 1.20 meters tall, weighs about 28 kilograms and has cute saucer eyes. Her behavior is very similar to that of a human. In Japan, Pepper works, for example, in stores or as a tour guide. In professions where there is a shortage of skilled workers, this robot support is the perfect solution – e.g. in nursing professions.

Man or robot?

How are robots perceived by humans? Robots can quickly cause fear and rejection if they are confusingly similar to humans. This feeling is called “uncanny valley”. In science, the “uncanny valley” is represented as a line diagram. The uncanny valley is located where the line suddenly drops – i.e. where people feel fear or dislike.

Smart living

Smart homes have countless possibilities. Many of the benefits only become apparent once you have tested the technologies yourself. Nevertheless, everyone decides for themselves which areas of the home should become smart or not.

It is your decision: Which devices and technologies do you think should be smart? Which could you do without? Use the questionnaire to find out what your smart home should look like.

SMART CITY

Smart cities have many facets. A networked traffic system ensures less traffic on the roads and therefore, better air quality. Smart buildings are environmentally friendly because they consume very little energy. And smart citizens are at the heart of the smart city. Because through their active participation, a smart city can achieve its full potential.

Taking care of tomorrow today

The city of the future is sustainable! This means that the needs of current generations (e.g. for food or raw materials) are met without adversely affecting the living conditions of future generations - for example by producing too much waste or polluting the air too much. To keep it short: Do nothing today that you or your children will regret tomorrow.

Mobility

From Munich to Berlin in 30 minutes – You think that is impossible? The solution is called “Hyperloop”. It is a train that moves underground through tubes at the speed of sound. But will you only be shot through tubes at high speed in order to get from one place to another in the future?

Not yet: Mobility in the smart city does not mean that no one drives a car anymore. The aim is to make driving in cities more environmentally friendly – e.g. by banning polluting engines or limiting the number of cars on the roads.

A car networked with a bicycle and even a skateboard – Not possible? Oh yes it is! You can find the solution here.

Intelligent traffic control

Parking – stress-free

How nice would it be to not have to search for a parking space in cities? Using a smartphone and apps such as “park&joy”, free parking spaces are assigned and controlled via navigation system. If, for example, a vehicle drives past an available parking space, it anonymously notifies other vehicles in the vicinity that are currently looking for a parking space.

Underway together

Would you like to meet nice people while underway? Intelligent car-sharing opportunities such as “BlaBlaCar” or “fahrgemeinschaft.de” will be used more and more frequently in the future. The apps are used to network people who are travelling in the same or a similar direction.

Car-sharing, i.e. the shared use of a car, is also becoming increasingly popular. You can find and unlock free cars with an app (e.g. “Free2Move”, “Urbi” or “Flinkster”). However, it has not yet been proven whether this will actually relieve traffic in cities.

Smart support

Smart technologies often sound unrealistic. In the future, cars could be driven by mind control. Nissan's “Brain-2-Vehicle-Technology” measures brain waves with electrodes on the head. This makes it possible to predict when curves won't be taken correctly or when danger is imminent. In these cases, the car automatically adjusts its driving style. The automobile manufacturer's goal is to be able to control cars exclusively by thought in the future.

Go green!

Sustainable infrastructure, intelligent bridges and apps that navigate you to the nearest free parking space: All of this makes traffic in the city smart. In order to make the cityscape “greener”, there are already numerous concepts.

One example is the Danish capital of Copenhagen. Back in 2009, plans were published to turn Copenhagen into a CO₂-neutral capital by 2025. To this end, the city is promoting ideas and concepts about water, energy and mobility – including the Carlsberg beverage brand, which is completely converting beverage production to renewable energies.

Green buildings

“Green buildings” are buildings that have already been sustainably planned and built. Green buildings waste no water and use only as much electricity as they need. Read more about green buildings all over the world.

Ng Teng Fong Hospital – Singapur

The Ng Teng Fong Hospital in Singapore consists of green roofs, parks and plants. Due to the special layout of the building (sawtooth shape) the existing space is optimally used. Patients can reach a green area from every floor – even if they have to stay in their beds. This gives them a chance to relax and recharge their batteries.

Telekom-Data-Center – Biere

The data center in Biere is 30% more energy efficient than other data centers. All of its components can be dismantled and reused. The data center not only operates environmentally friendly, but the entire building can be recycled.

Eden Hall Campus – Pittsburgh

Chatham University's Eden Hall Campus produces more energy each year than it consumes. The surplus is fed into the general power grid. In addition, food for cafés and cafeterias is grown on campus and waste and wastewater is processed.

Smart citizens

Modern technologies and a good infrastructure are important, but the people who live in cities are even more important. They are also called “smart people”. A networked city also needs networked citizens who actively participate.

One example for this is the “Design for Local Change” initiative. The idea: No one can judge a smart city better than the people who live in it. A bus stop is not barrier-free? A neighborhood doesn't offer enough activities for young people? On the online platform “Changify”, citizens report on their experiences and participate directly in designing their city.

Smart administration

For many people, going to an administrative office is an unpleasant task. Often, they have to deal with long waiting times and unpractical opening hours.

With the help of modern “digital administrations”, the concerns of citizens can be dealt with independently of time and location in the future. An online portal can be used to make complaints or

inquiries - e.g. changing your place of residency or applying for child benefits – and to safely exchange data between public authorities. However, not only services can be provided more efficiently. A smart administration should also encourage interaction between citizens and the administration itself and increase participation.



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