

**Euro-CASE Annual Conference, 2 November 2015**

## **'Engineering Smart Cities of the Future, a summarized view'**

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### **Cities**

The conference on 2 November 2015 in Delft organised by the European Council of Academies of Applied Sciences, Technologies and Engineering Euro-CASE and the Netherlands Academy of Technology & Innovation AcTI, was focused on the influence the digital industry may or will have on the behaviour of people in cities. A popular theme these days.

Worldwide, cities grow with a pace of 60 million inhabitants per month, the size of France or the UK. This growth differs across the continents. In Europe three quarters of the population live in urban areas, but cities are growing quite slowly. The population is decreasing rather than increasing. Existing cities are extending their peripheries and old industrial areas are given an urban infrastructure. In other continents cities are exploding in size as people migrate from the hinterlands to the cities in order to attain better working and living conditions. The results are expansions of squatter towns without proper planning, without regular infrastructure, water, drainage, energy and food supply. In China this migration leads to the top down creation of thirty-two planned mega-cities of multi-million inhabitants, of which eight cities have already been realized in this millennium. In the oil-rich Arab countries, cities are built of impressive high rise buildings where the actual occupation does not keep pace with the planning and building.

Towards 2050, 60% of the world population will live in urban areas. In Europe cities have century long histories. Their growth was accelerated in the industrial 19<sup>th</sup> century and the economical 20<sup>th</sup> century. In The Netherlands, dry grounds were reclaimed from the sea and river waters and since the Middle Ages the famous Dutch Water Board districts have been as important as the governmental bodies. To keep their feet dry, the Dutch have a long tradition of communal agreements known as 'poldering' before any actions are taken. This has led to an outstanding tradition of landscape and town planning. Per square kilometer, The Netherlands are the most densely populated country in Europe. Yet there are regular well-planned green areas around the cities. The cities are quite small. Not one city surmounts one million inhabitants. The flow of families from the city to the surrounding countryside has been stopped and more ageing people are attracted by the cultural environments of the larger cities. People feel comfortable in this habitat and are used to speak out. This leads to excellent opportunities to view the Netherlands as a living laboratory.

### **People in cities**

People in different city environments behave differently. The European cities are quite in balance. Some of the Dutch cities can even be characterized by the word cosy, in Dutch: 'gezellig'. In the Chinese megacities, societal life still has to grow in communal areas and on street level. This process will take years and decades as street life has to develop itself.

People are studied by social and psychological scientists, who are largely absent in the Smart City discussion. Architects are used to including the behaviour of people in their concepts. How is the life of people in cities influenced by the current overwhelming ICT revolution? Will smarter people be happy in the smarter cities? Will smarter inhabitants with their social media be a nightmare to govern in future?

### **Developments in the ICT industry**

In the recent years the use of digital technology exploded. Individual companies mainly think of their own wellbeing and profit. ICT companies are no exception. The first target of many developments has always been towards more efficiency. Sensors are measuring many aspects of the environment, of infrastructure and trafficking of goods and people and of the behavior of people. Enormous amounts of data are collected: 'Big Data'. But big data alone are not yet Information. Information is not yet knowledge. Knowledge in itself is not yet an 'Action Perspective' and even an action perspective is not yet a plan (according to prof. Dirk Sijmons). Without insight and creativity big data are useless to make plans for the future. Manipulation of data leads to insight of average behaviour, which is fruitful for politicians to better base their decisions on; influential for companies to

target their marketing of products; influential for energy producers to see how and when their energy is consumed to improve their supply. The same applies to water supply, sewage and rain water drainage, traffic and vehicle parking. Automated driving will require other solutions for parking to be developed. In the last two years as much data have been assembled as in the previous 2000 years. This trend will continue in an ever increasing speed.

### **Consequences of making Cities and People 'smarter'**

It is true that many aspects of society and certainly of society in urban areas can be made more efficient by means of collecting users data and extracting average outcome from these big data. ICT also improves personal information and communication. Both developments influence the city and the habitat of people living in cities. As the circumstances in cities differ in many countries and continents, so will be the influence of ICT. ICT can have a revolutionary influence on driving cars. Cars can literally become 'automotive'. This will change traffic between the cities and can have a large influence on traffic in cities. Vulnerable urban pedestrians and cyclists will have to be protected from robotic automobiles. Households will be made more efficient by ordering groceries via internet which may be delivered and picked up at people's convenience in special nearby stations. There are many more examples.

### **ICT influences on behaviour of people**

Big data contain many data on private persons. Privacy will become an almost impossible concept in the future. Large amounts of people will distract themselves from 'Big Brother'. But there are more surprises. Nobody ever anticipated that after the 'Arab Spring' a large scale migration from the Arab countries towards Europe could have grown without the ICT capacities of social media. Smart phones have opened a world of information for private persons and encouraged the current Arab migration stream. Combined with emotions, social media can also lead to unexpected excesses. In 2012, a private birthday party in a small Dutch village of Haren exploded, when thanks to Facebook an unexpected stream of 5.000 youngsters amassed within one day and showed up. The local governance was helpless. In Germany similar uprisings took place. What can the city authorities expect from these accelerations of social media? How to keep society in balance? What has been advertised as 'smart' or 'smarter' (being the popular expression of 'accelerated by ICT') can have unexpected consequences for society on a whole, and governance in particular. So the consequences of the introduction of development in the ICT industry and affiliated industries have to be monitored and balanced, so that society remains in balance. So far, local governments have seemed to underestimate such unintended consequences.

### **Conclusions from the Conference**

- Technological developments can be steered and disseminated from European bodies as EIT and KIC's. Both demand and supply of ICT related initiatives are developing fields of interest.
- Think tanks on a European - and national level can be filled with independent specialists who can oversee broad perspectives ('cupola thinkers'). The European Academies of Engineering, the national Ministries of Housing and local governance could initiate these think tanks, staffed with a combination of experts from natural & social sciences and humanities. These think tanks could explore the long term future, as the Advanced Metropolitan Solutions Institute (AMS) does in Amsterdam.
- Exchanging experiences in success and failure with other continents will shorten learning curves and will be very beneficiary for all sides. It will help our living environments to be more efficient, liveable and enjoyable. Europe can learn from the large scale developments in China and China can learn from the integrated people behaviour in European cities.

A handwritten signature in black ink, appearing to read 'Midefelhard', followed by a long horizontal line extending to the right.