

From FreeBelt, LifeShirt and digital twin to BigBrother

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In three recent columns, I argued that storing and possibly sharing files (texts, photos, music, etc.) in the cloud, as well as the creation of an unstoppable Internet of Things (IoT) is about the worst that can happen to us as humanity. Not only will the IoT soon use more energy than all our current air traffic, it will also be quite easy to create an Orwellian (1984) terror from it. In particular, the IoT is powered by sensors, in cars, shavers, mirrors and ultimately probably even in printed newspapers and magazines. However, if sensor technology is used outside the context of IoT - a "centralized monster" (Big Brother) - it does have a lot to offer.

A few examples. The German scientist Peter König designed the FeelSpace belt, which receives information regarding the North-South orientation of the body via the smartphone and converts it into vibrations on the belt around the belly. When people walk with this belt for only a few weeks, they automatically start to orient like many other animals, including birds. For instance, they learn to move quickly and adequately through a city. People naturally miss the sensors on which, for example, birds orientate and find their way, but the sensors in the belt prove to be able to compensate for this deficiency. If the belt is taken off after a sufficient training period, it appears that people do not lose the newly acquired power (at least not immediately). Apparently while using the belt, they've learned to interpret contingent facets such as the incidence of light and the time of day. Understandably, this is of the utmost importance, for example in the training of soldiers. Due to "smart" navigation devices, they can no longer rely on compass and map reading skills and are therefore susceptible to the failure of smart devices nowadays.

A second example is a designed program for people with dementia. On the basis of sensor data, for each patient a digital twin is generated. Via a large number of sensors both on the body (for example in smart clothing or in a wristband), and in the patient's environment, the person with dementia is monitored from hour to hour. The daily activities are stored in a database (the base rate memory) and the current information is continuously compared with the stored information. In case of deviations of the actual behavioural data from the stored data, something might be wrong and a nurse is automatically called, including the actual coordinates of the patient. In this way, the patient can be given more freedom without continuous attention from the nurses.

Consequently, good care is cheaper and even better, because also structural behavioural changes become visible quickly. As a result, care and medication can be adjusted faster and more adequately to the development of the clinical image. With similar digital twin technology, Schizophrenia and Bipolar disorder can be better distinguished (diagnosed) using sensor technology in smart clothes (LifeShirt). Also educational programs may benefit from this kind of technology.

However, it is of great importance that this technology runs on local servers, offline and that the programs and servers are managed by the end user (or by a professional or other trusted person authorized by her/him). Only in this way the behavioural "tracking" can be done safely and be safeguarded against the risk that tracking will turn into prosecution. For example, if an insurance company starts to charge a higher premium because it determines via the IoT on the basis of machine learning algorithms that the risk of someone is higher (he or she drives a car that is more often involved in accidents, or (s)he belongs to an abstract class that is less risk-averse), tracking has been transformed into prosecution. There's only a thin line between the two ...