The White Paper holds good AI intentions from the EU - Denmark must be ready, because we have an advantage

The Danish Academy of Technical Sciences (ATV) has asked its member for the digital theme to comment on the whitepaper from EU. Below their comments is assembled. The members are the following:

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About the European Commission's strategy
The strategy contains good intentions, and we support the elements mentioned. We have a position of strength in artificial intelligence in Denmark, and there is a responsibility with such a position of strength. It requires political support and new investment.

In ATV, we are thrilled that the EU will come up with a strategy and plan for digitalization, including AI, across the EU. It is positive that there are concrete action points that lie in the near future. The strategy has good visions for what you can with AI and the use of data.

Among other things, we believe it is good that the strategy not only focuses on AI but points out that digital technologies over a broad front are essential for growth and welfare in virtually every area. We are pleased that democracy and trust in digital solutions are paramount.

Not least for Denmark, it is exciting that there is such a massive focus on the development of a European approach to AI, and that the approach puts man at the center of technological development. Denmark is well placed to play a role, as we have a long tradition of user involvement in the design of IT-based systems and excellent research environments that focus on the role of technologies in society.

The report calls for a debate on the use of AI. This is an important step, not least when talking about AI in critical areas such as health, social work, transport, climate, etc. It is important that we actively relate to the ethical aspects, which means to relate to all actively and single-mindedly that lies in what can be called a gray zone area.

Increased use of data and artificial intelligence can create positive effects for humans if, for example, it helps with more accurate diagnosis. However, there are also potentially very negative aspects

such as detailed monitoring of the individual and specific population groups. In the Netherlands, for example, a public system that has been in use since 2013 has just been shut down following a Supreme Court ruling that ruled that a human rights violation had taken place.

There is no clear formula for how to divide the effects of digitalization into good. What we do know is that there are loads of grey zones that we need to deal with now and in the future. It is therefore important that there are platforms where citizens, experts, authorities and industry can be in dialogue and that the dialogue is also action oriented.

What we can do in Denmark: Denmark is an obvious test country
The Danish Innovation Fund and McKinsey has published a new analysis that show that Denmark can keep track of a number of parameters. ATV have also showed and addressed the Danish potential. It is pointed out that Denmark can compare with regions such as Silicon Valley, Massachusetts, Cambridge, South Korea and Israel on a number of important points.

• The EU places Denmark among some of the most digitized countries
• Large Danish companies such as Danfoss, Grundfos, LEGO are digital front-runners, also in an international perspective
• The Danish public sector is world class for digitization with solutions such as NemID and e-Boks across public and private use
• Denmark has talented researchers in computer science, who are richly cited and who are among the world's leaders
• A solid Danish IT industry that is growing
• Denmark has created and created computer science growth entrepreneurs who have either been sold abroad or have grown large, such as Denmark. Navision (Microsoft), Simcorp, Systematic and Netcompany.
• We have lots of raw data
• A trust-based collaborative culture
• Strong research environments, including clinical and computer science research
• We have everything we need to create value and improvements through the use of artificial intelligence

ATV see computer science, which largely provides the foundation for artificial intelligence and machine learning, as one of the growth drivers that can bring Denmark to the forefront as a world-class science & engineering region in digital territory. There is also no doubt that business and organizational understanding is also crucial when it comes to successful implementation of the solutions.

There are barriers that need to be removed
However, we also experience some national political voices, including that the government has so far completely failed to discuss and shape a Danish strategy for what we want with artificial intelligence.

There are several issues that need to be addressed that can be taken into account in a Danish, national strategy:

We have neglected to build the food chain so that there are enough teachers who - both in primary school and at all levels of education - are able to teach computer science.

Past successes are mostly due to our quick internet access. Most countries have the Internet now and the competition is now on educating and attracting talent.

Large investments are needed to compete with the major regions - the EU seems ambitious on this front. However, national focus is also needed on this. Investments in companies doing business on technology are proving to make a significant contribution to the Danish economy - and thus our

welfare.

Funds are also needed to strengthen the capacity of universities, GTS institutes and more.

Data ethics and knowledge of ethics more generally must go hand in hand with digital innovation, so that companies - small and large - can help to innovate and grow responsibly.

Ethical dialogue is important, and we must find a way to discuss ethical guidelines and considerations while companies create products and business. There are examples of companies that would like to use artificial intelligence for obvious good purposes, but which cannot get started, including due to access to data. A recent analysis has shown that most Danes would like to donate their data for research or business purposes for a good cause. So maybe it is time we find solutions to more innovation with data? One possibility is to initiate real data donation, managed by the authorities on a secure platform. We risk losing our opportunities if we do not find a way to combine ethical discussions, data use, development, and collaboration.

Research is crucial

The role of research is very important. The industry is demanding research in digital technologies, including artificial intelligence. Competencies are also in demand. Core competencies that can help develop artificial intelligence.

Artificial intelligence is based on algorithms fed by data. Lecturers and professors in computer science and software have research-based knowledge of this. They teach students, they do research, and they teach other teachers. Of these, currently ca. 290 researchers at universities, and a small proportion of them are real scientists in artificial intelligence. It is about. 20,000 IT companies in Denmark and, as I said, quite a few experts. And these experts must also help lift tuition. Not just for college students - but for an entire population lacking continuing education to be able to act in the future world.

In Denmark, there is a need to focus on how more people gain knowledge and skills to create new development with artificial intelligence, as the environments at universities are crowded and the industry is demanding skills. There is a need for a multiplication of Danish lecturers and professors in data logistics and software, and areas such as data science, science and technology studies and businessIT should be expanded massively.

The Danish public funds and business foundations have seen the need to strengthen Denmark in digital research areas, and this is a recognized and necessary need to strengthen Denmark as a digital growth region.

It is mentioned in the European Commission's strategy that in high-risk areas such as health, police work and transport, special requirements will have to be set for the algorithms and the quality of the data on which they are trained. This is to avoid subsequent discrimination. Danish researchers and companies will be able to offer knowledge and expertise.

Danish researchers and companies must have access to resources so that we utilize the knowledge we must create AI that is ethically, democratically, diversity-supporting, and technically advanced. In parallel, the technology must be implemented in a way where it can be integrated into complex interactions with people and the infrastructures already in place. Developers of AI solutions, whether in private or public domain, therefore, need contact with the research communities who understand social interaction and ethics in practice.

For us to see, the report indirectly points out that now is the time to make some principled decisions on how experiments with AI should take place in Europe at all. Right now, experiments by Danish authorities are taking place in contexts that are both very complex and very resource-

heavy, such as in the social field. If we look at the digital technologies at play here, we are not exactly on the threshold of the 4th industrial revolution. The social field is technologically and communicatively burdened and also managerially challenged. Due to scarce resources, the principle of the existing seam is often worked on. There is a lot of data on citizens receiving public benefits, but there is also a big shift in staffing, which is why important knowledge about how to register is lost. It is these registrations that are the basis for automation and for whether the municipalities can succeed in being law-abiding in the decisions that are made about the citizens and achieve the expected financial gains with the artificial intelligence. Unfortunately, experimenting with data in organizations that already live from hand to mouth is not enough to bring Denmark to the forefront in the AI field.

Therefore, a major challenge when talking about AI in Denmark is not so much whether caseworkers or others who register are competent to use AI solutions or whether these solutions exist, but that economically-pressured areas such as social - and the field of employment is not suitable as a laboratory for advanced solutions requiring a robust infrastructure base. Extra and renewable resources must be provided (not project money) and there must be a strong managerial focus on implementing AI into existing workflows and processes if it is to succeed, that is, in a responsible manner. On the other hand, many - companies and research environments - would like to offer knowledge and expertise and with laboratories where participants and actors themselves are able to join.

What we can contribute in ATV

At ATV, we continue to discuss where we are going in Denmark, gather knowledge, analyze Denmark and Europe’s possibilities and how to get there. In addition, we will focus on how to overcome the barriers that are. ATV has through some years visited tech hotspots around the world and has increasingly knowledge on elements that contribute to tech development and value.

ATV Annual Meeting: August 18, 2020 14.00-18.00 pm in Copenhagen:
Denmark as a global tech hotspot

At the annual meeting, we launch a discussion of Denmark's technological positions of strength in an international perspective, and how we promote Danish forces through innovation and interaction across research and business.

Denmark must be ready
We look forward to continuing the dialogue on Denmark, EU, and artificial intelligence. We appeal that we set solid visions for the use of artificial intelligence in Denmark and do not lose our advantage on the floor. We believe that there should be room for development and testing in Denmark, but investments as well as political commitment and support will strengthen the Danish opportunities.