Peter Hemmingsen’s (CEO, AscendXYZ) vision for the Danish space industry

Are we ready for the data stream from above?

Contours are forming of an industry which not only works purposefully on making data from space available, but which will also have a huge transformative effect on people, societies, trade and industry. Denmark can participate too – but only if we dare to take risks and are ready to begin our effort already in the educational system.

In recent years the number of companies working with data from space has exploded. This changes our world, but at this point, you would have to be a specialist to notice. Some possibilities are so obvious and well-known that they are almost trivial. Almost all of us have an advanced GPS receiver in our smartphones, for instance, which makes it a lot easier to locate that rented summer house in the other end of the country or perhaps just the nearest gas station. Other possibilities are only in their infancy or are yet to be discovered. This development will only accelerate, and it will impact both the public sector, trade and industry and you. Even though you may not have realised it yet.

Finance and insurance: Satellite data to help decide the price and estimate the risk
Insurance companies will be able to easier survey the areas they insure, improve their claim management and focus their sales effort through automated and targeted analysis of satellite data. Banks can estimate a company’s turnover and value based on e.g. traffic data and the number of visitors in the company parking lot. Forestry can be priced and sold through satellite-based analyses. Not only does this provide the financial sector with more precise data, it also paves the way for truer and more accurate offers – as well as for entirely new business areas.

Food and agriculture: Autonomous machines and intelligent fertilisation

Satellite data and photos of the fields taken on-site – e.g. by drone or from a plane – are combined with algorithms to optimise the use of fertiliser. Information is transformed into detailed field maps that allow the tractors to steer themselves with the aid of satellite navigation. This increases agricultural efficiency while minimising waste and leaching of nutritional substances to the aquatic system. Such a scenario may sound like science fiction, but it is indeed becoming a reality.

Education: Satellites in class

Satellite solutions are already a part of the teaching in public schools and upper secondary schools, but we could be more ambitious. In Denmark, for instance, Sentinel Playground and Copernicus Open Access Hub can be used to turn yesterday’s photos into part of today’s teaching and inspire pupils to use data and knowledge in entirely new contexts. In a not-too-distant past, Knud Hemmingsen (my father) used a lot of research on the economy, geography, climate and more to write “Verden i temaer og tabeller” (The World in Themes and Tables) for use in public schools. Today, pupils can follow rainforest reduction on a weekly basis or see the development of Danish rapeseed fields in May by comparing free Sentinel photos. The possibilities exist, and the potential for application is unlimited.

Fields around Roskilde Airport from May 5 to June 12

However, we need many more teachers and institutions to demonstrate the possibilities to generations entering the universities and the Danish companies. This requires active participation from the trade and industry sector, as well as the research community. New ideas, solutions, and innovation require better knowledge about available data, as well as a strong vertical understanding of individual business areas.

A critical view and special qualifications

The more companies that focus on using big data from space, the faster the need for specialist employees arises, which can turn into a bottleneck quickly – just as we experience in the IT sector today. If companies cannot recruit data scientists and software engineers, they cannot improve their
business. Specialists with the right qualifications will become even more attractive, and it is with good reason that Harvard Business School proclaimed data scientist to be “The sexiest job of the 21st century”.

There are lots of examples of how data is used already today. I recommend looking to ESA Business Applications for inspiration.

**New business areas in development**

Many industries focus on space data. But even though the application case may be clear, implementation is not always easy. The benefits of big data from space typically take the form of optimisations, better end-user understanding, logistical improvements and – perhaps most importantly – new products. When we combine the enormous amounts of historical and near real-time data with machine learning, new patterns and contexts emerge that were not available before. In addition, there is a variety of already existing or near-market solutions that crop up all over the world, helped along by initiatives such as the European Space Agency’s “ARTES Applications Programme”.

**Accessibility is a prerequisite for success**

All the efficient solutions share one thing in common: the combination of a relatively complex concept like satellite data and a strong understanding of a specific work area, wrapped up as an accessible solution for the end user.

You could say that no one wants more data. Only results count.

As users, we do not really care how our smartphone works in detail, for instance, if we have easy access to the Internet, mail, navigation, streaming, etc. In the same way, users do not care if data are accessible somewhere if there are no solutions that make them easy to use in practice. In this area, there is a great potential for development for Danish companies in an overwhelming global market.

I have no doubt that data from space will change our everyday lives – because it is already happening. Likewise, the question is not if we will see new solutions that use big data from space – but which role Danish companies and researchers will play.

To understand how we bring about changes in companies’ and consumers’ lives, we must include them in the process. We need to include those who will be using the solutions in the development process to match our products and services to their needs. This requires us, as companies, to be able to communicate the possibilities – also to those who may not have the same professional background or who may not be able to see and understand all the exciting possibilities.

**But are there as many possibilities as we think?**

Yes. The possibilities are there. But they require a strong focus from the Danish trade and industry sector and research community if we are to get our share since many other countries and companies are already in the race.
Companies that develop solutions based on satellite data work for a global market. In other words, they produce knowledge-based export that we should support. In this context, we should focus on both near-market solutions and long-term research and development. Quite simply, we cannot afford not to do anything, and we need to get on the train before it picks up so much speed that we can no longer jump on board.

This will not only open possibilities of a traditional financial nature; it will also give Danish companies the opportunity to help define the solutions that will revolutionise the way we perceive the world. That is not a bad target to aim for.

Peter Hemmingsen, CEO AscendXYZ.