POLAND GOING DIGITAL

THEN, NOW AND TOMORROW

New Direction
the foundation for european reform

AUTUMN 2017

COMPLETING THE DSM

CAN EUROPE CATCH-UP AND BECOME DIGITAL WORLD LEADER?

A FIFTH FREEDOM?

FREE MOVEMENT OF DATA

THE WAY TO GO

INDUSTRY+

STUDY PROVES THE LINK BETWEEN DATA USE AND HIGHER PRODUCTIVITY
INVESTING IN POLAND'S DIGITAL FUTURE # MODERN THINKING - MODERN SOLUTIONS
HOW PUBLIC SERVICES ARE UNDERGOING A TRANSFORMATION
MAKING LIFE BETTER FOR CITIZENS AND BUSINESSES

New Direction

A Brussels-based free market, euro-realist think-tank and publisher, established in 2010 under the patronage of Baroness Thatcher.

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REGISTERED OFFICE: Rue du Trône, 4, 1000 Bruxelles, Belgium. EXECUTIVE DIRECTOR: Naweed Khan.

FOREWORD
by Tomasz Poręba

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by Krzysztof Szubert

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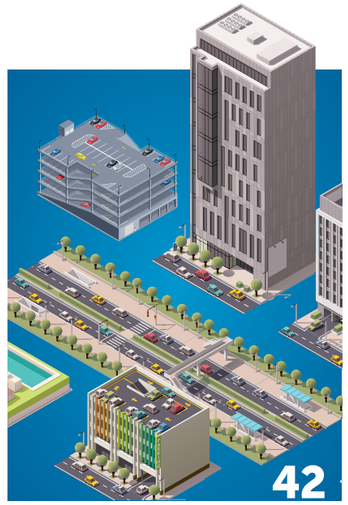

INFOGRAPHICS

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The most important task of the administration and of my office is to ensure the right conditions for a long-term development and a stable environment for businesses. We want to continue working on that as a meaningful and active partner in the EU and globally. This is to serve not only Poland, but also the European Union. The digital realm is what makes the global economy grow. It also has a unique quality of uniting countries in pursuing common goals. This is why we put the idea of Industry+ forward and propose that Europe take it up. This idea is based on trust which paves the way for the digital and undivided European Union.

Anna Streżyńska
Minister of Digital Affairs

The digital revolution is based on data. And Europe is well positioned for benefiting: by 2020 the value of the EU data economy can double to 4% of GDP – if we create the right framework conditions. The principle of free flow of non-personal data is one such condition. With the free flow of personal data already guaranteed by the GDPR, this new proposal by the Commission targets all current and future unjustified requirements for storing data at specific geographical locations. Providers of storage and processing will serve a truly European market and everybody can put their data where it is best for them. At the same time, security requirements will continue to apply regardless of where the data is. We are getting closer to a true Digital Single Market.

Mariya Gabriel
European Commissioner for Digital Economy and Society

Poland's economy is among the fastest in the EU to go fully digital. The European Digital Single Market is also on the right way to be completed. As much as I am proud of the progress we are making to get all citizens and businesses connected, my government is fully aware of the challenges that still lay ahead of Poland and the EU. I think that one of the key tasks is ensuring cooperation, and that the DSM implementation is well coordinated in the EU Members States and on the level of the relevant European institutions. We are committed to contribute to further developing Europe's digital economy and invite all to work with us. Growth and jobs, as well as the EU's global competitiveness are at stake here. We can do it together.

Beata Szydło
Prime Minister

Tomasz Poręba
Member of the European Parliament and President of New Direction - The Foundation for European Reform.

Data is revolutionizing our economy. Businesses have always used data but the scale and sophistication of today's data analytics is unprecedented. From combining weather data with customer shopping habits to more accurately predict how many heads of lettuce you will sell, to using machine generated data to improve your production process, big data is transforming the way we do business. It is important that all EU businesses are able to reap the benefits of this transformation.

Governments should lead by example, making their data available for re-use by private enterprises and removing unjustified requirements to store data in a particular location. Back in December a number of EU Member States, including Poland, urged the Commission to take action to ensure the free flow of data within the EU. As a result of their efforts the EU Commission recently came forward with a regulation aimed at establishing the principal of the free flow of data throughout the EU.

While this is a promising start more still needs to be done. Amazon, Facebook, E-Bay and Google are American firms that dominate the western world. Their success is due in part to their ability to scale up quickly. The same can be said of Chinese firms such as Alibaba, WeChat and Baidu. EU businesses find it far harder to do this due to differing national rules and regulations. This needs to change. The EU must do more to remove the barriers to providing digital products and services. This includes investing in infrastructure.

On average only around a third of businesses in the EU have high speed broadband[1]. This figure is a damning indictment of the current state of digital infrastructure in the EU. Thankfully, there are plans to change this. The EU has committed €700m to helping the rollout of 5G[2] (ultrafast, reliable, wireless internet) and the industry has promised to invest €5 for every Euro they receive in EU funding. Provided this money is used effectively, businesses and citizens in the EU can expect to see a real improvement in their connectivity, especially as most people use their phones[3] rather than a laptop or computer to browse the internet.

As well as investing in infrastructure, the EU also needs to do more to protect people and businesses using digital technology. Cyber-attacks like WannaCry show how important cybersecurity is. In an increasingly connected world, good cybersecurity is vital to safeguarding businesses and citizens. International collaboration can play an important role in tackling these threats. Businesses and citizens need more help to make sure they are protected. Digitalisation is not possible without good cybersecurity. However, cybersecurity should not be used as an excuse by countries to introduce protectionist measures and increase burdens on businesses.

Digital skills are also key. At the moment there is a severe lack of digital skills in Europe. It is estimated that globally 2.7m[4] more data analysts will be needed by 2020, yet in Europe businesses struggle to find suitable people to fill their current ICT vacancies. This problem needs to be addressed if Europe wants to compete with powers such as the US or Japan.

Public authorities also need to open up access to their data. Innovations like Citymapper have only been possible thanks to public sector organisations giving open access to their data in way that is easy for others to re-use. The EU's Copernicus programme, which provides free and open access to vast amounts of global data from satellites and other measurement systems, is a good example of what can be done. However, despite the obvious advantages for businesses and citizens of opening up public sector information, too many governmental organisations are still jealously hoarding their data. And if they do make their data public, it is very hard to re-use.

There are some exceptions. This edition of New Direction Magazine focuses on Poland and the work they are doing to create a successful digital economy in Europe. As the largest economy in Central Europe, Poland has experienced a period of relatively stable economic growth since they joined the EU back in 2004. For Poland digital technologies are a great opportunity to continue that progress.

The Polish Government has an important role to play in this process. In addition to building on the work they are doing at home, such as expanding and improving the digital delivery of public services, Poland can be influential in shaping the EU's digital agenda. As a pragmatic and creative country, Poland could be instrumental in ensuring that the EU's digital policies help businesses and citizens rather than just create more red tape. This will mean forging alliances and persuading other countries to buy into Poland's vision for the EU's digital future.

Poland focuses on what people and business want when designing and implementing polices. This shows what can be achieved when Government, citizens and business work together. If each country in Europe listened to and acted on what people and businesses need then the EU could once again become a digital world leader. ■

1 https://www.destatis.de/Europa/EN/Topic/ScienceTechnology/internet_high_speed.html

2 https://ec.europa.eu/digital-single-market/en/towards-5g

3 http://ec.europa.eu/eurostat/documents/2995521/7771139/9-20122016-BP-EN.pdf

4 https://www.pwc.com/us/en/publications/data-science-and-analytics.html

Krzysztof Szubert
Secretary of State, The Government Plenipotentiary for Digital Single Market

As someone with more than 20 years experience working in the ICT sector, I have seen first-hand the improvements that digital technology can bring. I'm proud of the progress that Poland has made so far and excited about our plans for the future. Our new approach to digitalisation of public services and nationwide IT management will make life easier for people and businesses.

Unlocking the power of data can bring real benefits to the Polish economy, increasing productivity and creating exciting new business opportunities. **As the independent study[1] we recently commissioned shows, Poland and other EU countries could see substantial productivity and GDP gains, if there was greater use of data related technologies.** To achieve this we need to create a truly integrated digital single market (DSM) in the EU. Poland is leading the way in calling for the removal of protectionist measures that prevent our businesses from making the most of the opportunities of the data economy. Together with 13 other countries, Poland urged the Commission to take action to ensure the free flow of data throughout the EU. As a result, the Commission has committed to introducing an initiative on the free flow of data by Autumn 2017.

And this is just the start. Through the creation of the Plenipotentiary for the DSM, Poland is well placed to take a leading role in the EU. International collaboration is key if we want to truly harness the power of data driven technology to increase jobs and growth. Our Digital Strategy sets out how Poland will work with others to achieve our aim of using digital technology to build on our strong economic growth and improve people's quality of life.

International collaboration is especially important in the field of cybersecurity. In the wake of the recent spree of cyberattacks it is clear that we all need to step up our efforts to increase cybersecurity. Poland's Cybersecurity Strategy sets out what we are going to do to make sure that cyberspace is as safe as possible. This includes working together with the EU, NATO and other organisations such as the OSCE, to exchange information and improve our cybersecurity skills. As well as the work we are doing internationally, we are also doing a lot in Poland. For example, we are improving the co-ordination and operation of the institutions responsible for cybersecurity, providing information for businesses and members of the public on how to safeguard themselves and raising awareness of how you can report cybercrime.

To truly make the most of the digital technologies, we also need to support innovation. Poland is a creative country. In 2016 there were around 2,700 start-ups in Poland[2] and this number is growing every day. Our Cyberpark Enigma Programme is helping Polish businesses start-up, scale-up and develop new ideas. Poland was one of the first countries to open up access to publicly held data, with widok.gov.pl being the third platform in the world to publicise statistics on the use of digital services. This information will be invaluable not only to the Polish Government as we develop our e-services, but also to entrepreneurs and innovators.

Poland has ambitious plans for e-government. We are in the process of developing gov.pl which will bring all the online government services and information together in one place. As part of this work we will also be improving and expanding the public services we offer online. Already over one million people are using our Trusted Profile (eGO), an e-signature for people using online government services. This will allow people to do the whole process online rather than having to print, sign and scan in the forms. E-government saves businesses, citizens and the public sector time and money, which is why it is one of our top priorities.

I know that we also need to do more to help people and businesses adapt to and take advantage of data-driven technologies. This includes speeding up the roll-out of 5G. Poland was fast to advance high speed wireless communication for mobile phones, and we hope to be 5G avant-garde as well. Not only super quick but also very reliable, allowing large amounts of data to be transmitted in near real-time, 5G is an essential component for the development of our digital economy. With the help of 5G businesses in Poland will be able to use big data analytics to reduce waste and improve their productivity. 5G will be the building block for smart cities, factories and transportation systems. Rolling out 5G in Poland will also allow people to enjoy the same high quality gaming, movie and TV series streaming experience on the go as they do at home.

Helping people and businesses adapt to and take advantage of data-driven technologies also involves improving digital skills. Thanks to the successfully completed pilot projects, which saw 36 schools in Poland getting access to Internet at least 100 Mbps, we are now in the position to begin work on providing more than 30,000 schools in Poland with high-speed internet access. This is probably the biggest project of its' kind in the EU, and will help our children learn the skills they need to succeed in a digital world. We have also committed PLN 48m to improving teachers' programming skills so that they can pass this knowledge on to their students.

Our work to open up access to public sector information has seen Poland move up 8 places on the OECD ranking for Open, Useful and Reusable Government Data. We intend to continue this progress, allowing Polish people and businesses to make good use of the data we hold.

What we do in Poland must go hand-in-hand with pursuing an ambitious European agenda. This is why continuous cooperation at all political and administrational levels is particularly important. This can be seen by the success we have been able to achieve through our participation in the digital like-minded group. This group is made up of many EU countries who share the same vision for Europe's digital future. By working together we have been able create a positive and forward looking digital agenda in Europe. Poland aims to continue our active membership of this group, and we hope others can join in the future.

I believe that Poland, because of our active pro-European approach in the digital area, and because of our economic and political potential, especially in the Central-European region, is what Europe needs now. Poland wants to and does make a difference in Europe; our voice is heard and recognised, and we want to go on using digital to make the EU stronger and more unified.

It is in the interest of the Polish economy to have a fully-fledged European Digital Single Market. A true European DSM is also essential for Europe to become a meaningful force in the global economy. It's a win-win that we cannot afford to miss out on.

This is an exciting time for Poland and the world. Digital technologies are bringing change at an unprecedented speed and scale. By working together with other countries we can help our businesses and people make the most out of opportunities digital gives us. ■

1 A Report for the Ministry of Digital Affairs of the Republic of Poland- Data utilization intensity and economic performance – a diagnostic analysis, G. Koloch , K. Grobelna, K. Zakrzewska-Szlichtyng, B. Kamiński, D. Kaszyński

2 https://www.researchgate.net/publication/308889547_Polish_Startups_Report_2016_English_version

COMPLETING THE DSM

CAN EUROPE CATCH-UP AND BECOME DIGITAL WORLD LEADER?

Not that long ago Europe was leading the world in digital technology. The World Wide Web originated in Europe and the Global System for Mobile Communication was developed there. However, since then North America and Asia have overtaken Europe to become the leaders in digital technology. Why has Europe fallen behind and what can be done to change this?

The Digital Single Market Strategy published in 2015 provided some explanation for why Europe has failed to capitalize on their early lead in digital technologies. It identifies a number of barriers hindering digital development of Europe: insufficient harmonization with the EU law and insufficient synergy of actions undertaken by Member States.

To solve these problems the Digital Single Market Strategy sets out a number of actions to remove barriers between Member States in order to grow the EU digital economy. This strategy aims to allow European enterprises to compete globally, while at the same time ensuring high-level protection of competition and consumers. When unveiling the Digital Single Market Strategy, the President of the Commission - Jean-Claude Juncker, stressed importance of better regulation and enforcement to achieving a Digital Single Market in the EU:

> ***we will need to have the courage to break down national silos in telecoms regulation, in copyright and data protection legislation, in the management of radio waves and in the application of competition law.***

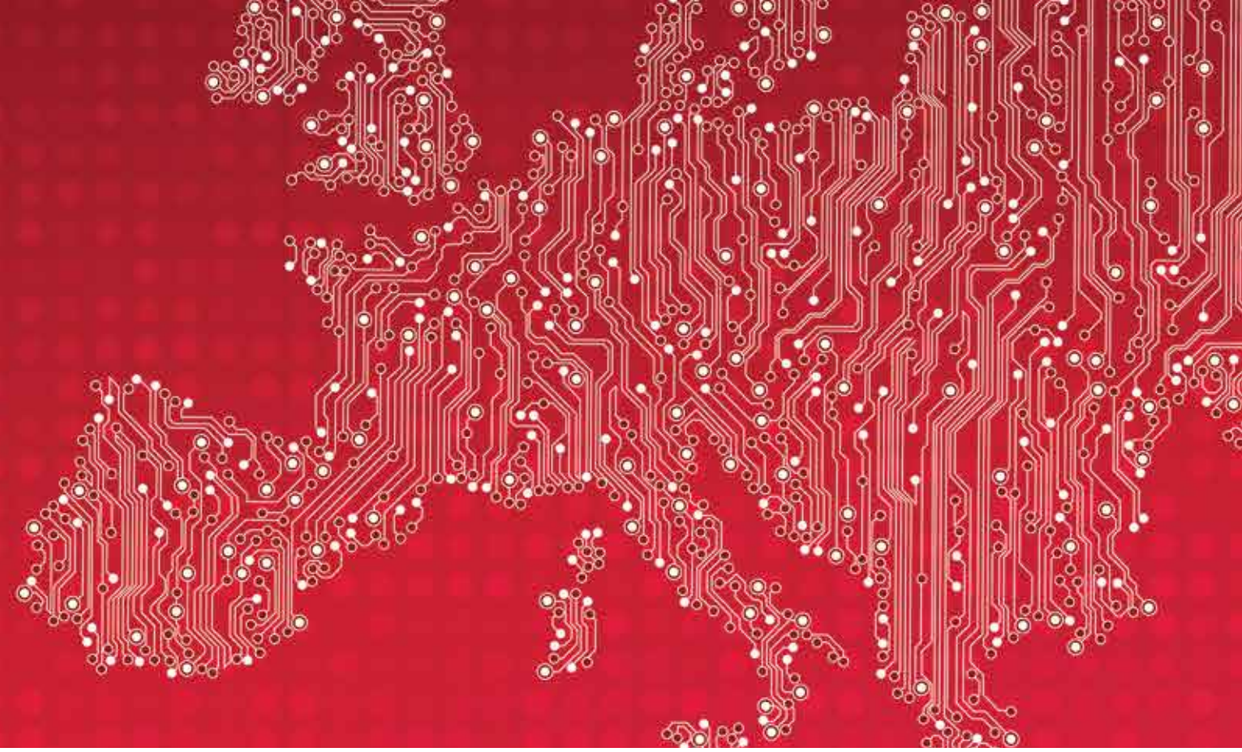
The Digital Single Market Strategy is not the first time the Commission has tried to increase growth in the EU digital economy. There was the slightly forgotten Digital Agenda for Europe carried out in 2010-2015. Its main purpose was to:

> ***deliver sustainable economic and social benefits from the digital single market based on fast and superfast Internet and interoperable applications.***

There was a diagram in this document that presented the "self-propelled digital economy process", the start-up of which was dependent on the Commission removing problems and barriers in the EU market. One of the seven priority areas of the Digital Agenda was the Digital Single Market.

The Digital Agenda might have been a little too large. It included more than 100 actions making it difficult to realize this common vision. The Digital Single Market Strategy comprises of 16 leading initiatives. It might seem that the limitation of the strategy's

EU COUNTRIES NEED TO CONTINUE TO WORK WITH THE COMMISSION TO HELP EUROPE TO ONCE MORE BECOME A LEADER IN DIGITAL TECHNOLOGY. CREATING A DIGITAL SINGLE MARKET SHOULD NOT INVOLVE ERECTING NEW BARRIERS TO INNOVATION, RATHER IT SHOULD SUPPORT EUROPEAN BUSINESSES IN MAKING THE MOST OF THE OPPORTUNITIES OF DIGITAL.



scope would make it easier to coordinate its actions. As optimistic as the Commission seems to be in the DSM Mid-Term Review of the strategy, the narrower scope may have not remedied inconsistencies between the different initiatives.

Two years on from the launch of the Digital Single Market Strategy, its progress leaves room for improvement. Trying to deliver a larger number of initiatives within a short time frame has resulted in overlaps between them. With the huge potential the DSM Strategy has to offer, there is too much at stake and we cannot afford to let the DSM follow the Lisbon Strategy and fail to deliver, wasting the chance for the EU to regain global economic competitiveness. While it is important to be ambitious and act quickly, this should not be at the cost of ensuring that what is done is effective. **It is important that any changes made promote innovation are technologically neutral.**

Unfortunately, it seems that solutions undertaken within the Digital Single Market do not always address these two aspects properly. Despite the stated aim of supporting innovation in the digital economy and telecommunications infrastructure, the actions that the European Commission takes are often too restrictive and burdensome on businesses. Doing something innovative involves a high level of risk. Support for innovations requires political, legal and mental acceptance of such a risk instead of attempting to eliminate it via regulations. Excessive regulation stifles innovation. Without risk there will be no innovation.

Europe does not exist in isolation. The digital market is a global market. Additional requirements increase operational costs within the EU and contribute to the reduction of the competitive advantage of European enterprises compared to the global players. Big players from outside Europe manage very well on the EU market. Their products are available in every Member State despite the barriers that the European Commission would like to remove. Large companies will deal with new burdens. But what about small and medium sized Entrepreneurs? What about start ups? What about European companies looking to do something new and innovative?

By prioritizing high levels of privacy and consumer rights over global competitiveness the Commission risks jeopardizing their efforts to make the European Union a leader in digital solutions. As much as we need our privacy and consumer rights protected, we also need to ensure that the EU is globally competitive.

Poland, together with a large number of other EU countries, supports greater openness of the digital market. In a joint ministerial letter[1], sent before the review of the Digital Single Market Strategy, they called on the Commission to put openness to innovations and new business models, greater competitiveness, removal of market barriers and creation of an environment that would be favorable for new players at the heart of all the actions under the Digital Single Market Strategy. The successful transformation into a digital economy will only be possible by supporting the growth potential and productiveness of small and medium-sized European companies.

In the Strategy of 2015, the European Commission announced that realization of the Digital Single Market would lead to economic growth in Europe worth approximately EUR 415bn. It was predicted that a fully functioning Digital Single Market would create thousands of new jobs, especially for young people, as well as a dynamic knowledge-based society. It would be valuable for the European Commission to evaluate to what extent action points undertaken within the Strategy have brought the European Union closer to achieving this level of economic growth and job creation. We must always ask ourselves how effective are we.

This is not to say that none of the actions undertaken under the Digital Single Market Strategy have produced a positive result, rather that there needs to be a clearer link between the changes made and how these will help achieve increased growth and job creation. For example, to help companies operate in other EU countries and reduce the cost of them using cloud services we need to guarantee free flow of data within the European Union. This is why the legislative initiative is so welcomed in this area. **But we need to pay more attention so the development of the future competitiveness of the digital market remains the key objective when developing digital policy. This is why, on 21 June 2017, Prime Minister Beata Szydło together with 16 other Heads of State sent a letter to the President of the European Council, Donald Tusk, stressing the need for the EU to continue to prioritize developing the digital dimension of the Single Market.** The letter called on the Commission to take a future orientated positive approach to emerging technologies. The EU should see the digital agenda in terms of its global ambitions and ensure a coordinated approach on horizontal issues.

EU countries need to continue to work with the Commission to help Europe once more become a leader in digital technology. Creating a Digital Single Market should not involve erecting new barriers to innovation, rather it should support European businesses in making the most of the opportunities of digital technology.[2] ■

1 You can read more about this on the website of the Ministry of Digital Affairs: https://mc.gov.pl/aktualnosci/list-ministrow-ue-ws-jednolitego-rynku-cyfrowego

2 https://mc.gov.pl/files/170620_hosgs_euco_digital_letter_final.pdf

A FIFTH FREEDOM?

FREE MOVEMENT OF DATA

Today small and big companies from all sectors depend on data flows. Data transfer between countries is essential for trade and production due the global nature of supply chains. The importance of data transmission will grow when technologies such as the Internet of Things, Big Data analytics, Artificial Intelligence and cloud computing become more widespread. Data flows are expected to become so important, that some, including the Estonian Presidency, are calling for the free movement of data to become the fifth freedom in the EU, alongside free movement of goods, services, capital and people.

Data is a valuable resource. They can be used to increase productivity and reduce waste. This is a fact acknowledged in the European Commission Communication from January 2017 on "Building a European Data Economy". It lists a number of uses for data analytics including optimization of processes and decisions, speeding up innovation and helping to predict incidents. Digital technology and data analysis have the potential to drive growth in a number of sectors, including transport, energy, food safety, environmental protection. Data analytics can improve logistics by reducing fuel consumption and speed up delivery through more efficient stock storage and delivery routes. Data analytics can reduce food waste by more accurately predicting demand or create fairer insurance premiums through personalized risk calculations.

But do we really understand the significance of data? When we talk about data we often use metaphors. For example, we speak about new crude oil, a digital world currency or we compare the acquisition and analysis of data to mining (thus the term "data mining"). **In using metaphors we seek to embed data in a safe and well-known world based on processing of crude oil, coal and gold. However, these attempts may mislead and result in misconceptions about data analytics and, as a consequence, lead to bad decisions.**

Data is data, nothing else. They are reusable goods - meaning they can be utilized many times - contrary to traditional economic assets that exhaust when consumed[1]. Use of data does not require such regulations that are necessary in case of physical goods.

But this does not mean they can't have a significant economic impact. A recent independent study[2] commissioned for the Polish Government found that data driven productivity accounts for 40% of total productivity and that increasing data-driven productivity is an effective way to increase economic performance.

We protect certain categories of data because we believe they are valuable. There is an emerging global trend towards closing data within State boundaries, however, companies require data movement to be able to operate cross-border. According to ECIPE statistics, the number of limitations in data movement around the world has almost doubled since 2007[3]. So-called data location restrictions means that the companies are forced to place servers and process data in the territory of a given state.

1 This is described to broader extent in *A New Framework for Free Movement of Data in the Digital Age: Making Europe a Data Economy,* Paul Hofheinz and David Osimo

2 A Report for the Ministry of Digital Affairs of the Republic of Poland- Data utilization intensity and economic performance – a diagnostic analysis, G. Koloch , K. Grobelna, K. Zakrzewska-Szlichtyng, B. Kamiński, D. Kaszyński

3 *Unleashing Internal Data Flows in the EU: An Economic Assessment of Data Localisation Measures in the EU Member States,* European Centre for International Political Economy,Matthias Bauer, Martina F. Ferracane, Hosuk Lee-Makiyama, Erik van der Marel

There are also regulations that strictly determine the conditions for data transfer abroad. Motives for such actions are different (e.g. privacy protection, security). They can be justified, but they can also be a form of protectionism. Barriers in data movement, as suggested by (among others) the World Bank, may influence the world trade to a much greater extent than tariffs[4]. For example, while customs do entail additional costs, data movement restrictions can make it impossible for companies to operate.

While talking about limitations in data movement we need to differentiate between personal and non-personal data. Personal data protection is justified by human rights including the right to privacy. It has its price because ensuring high level of data protection costs money, but we also get something in return - respect for our basic rights. Of course, there are different ways to protect these rights while at the same time allowing for the innovative use of data.

4 World development report 2016. Digital Dividends

POLAND AND THE OTHER LIKE-MINDED MEMBER STATES HAVE SUCCEEDED IN MAKING THE FREE MOVEMENT OF DATA A HIGH LEVEL POLITICAL PRIORITY.

The fact that it took four years to finalize the new General Data Protection Regulation (GDPR) proves how difficult finding the correct balance is. The GDPR forbids restrictions to the free movement of personal data within the European Union based on the need to protect this data.

However, the GDPR does not cover other limitations imposed on data movement. What is more, it does not cover non-personal data. Such a rule for free movement of data is not clearly expressed in EU law. Thus, the need to ensure the free movement of data.

The Digital Single Market Strategy published in May 2015 signaled that the Commission was considering coming forward with a regulation that would explicitly set out the principle of the free movement of data. Due to the fundamental significance of data for today's economic growth, it is important to ensure that national regulations do not become a barrier for the development of the EU economy, and that they will not hinder innovation e.g. solutions that use of cloud computing.

Moreover, having a clear regulation setting out the principal of free movement of data within the EU would also help strengthen the EU's negotiating position with non-EU countries. Data access and transfer are becoming central to trade negotiations with other countries such as Japan. **Being able to demonstrate that within the EU data can flow freely will allow the EU to effectively persuade other countries to remove their unjustified data localization restrictions.**

Therefore, numerous Member States, including Poland, were happy to hear that the free flow of data was included in the Digital Single Market Strategy, expecting bold moves that would counteract the tendency to adopt national regulations that force the providers to place data in a given territory.

Poland was instrumental in bringing together 13 other Member States to deliver a joint letter on the free flow of data, before the Telecommunications Ministers Council in December 2016 that took place in Brussels. Two countries later joined this group of " like-minded states" on digital affairs [5] to drive forward the digital transformation of the EU.

This group of Member States agree that free movement of data should be a general rule, guaranteed by EU legislations, but with specifically determined exceptions that are justified by the public interest (e.g. public safety). This view was communicated to the European Commission.

Poland and the other like-minded Member States have succeeded in making the free movement of data a high level political priority. This was the purpose of both the letter from the Prime Minister to the President of the European Council, Donald Tusk, from December 2016, as well as the joint letter of 16 PMs of EU Member States to the heads of the European Council and the European Commission, stressing the importance of good EU legislation for building the DSM.

As a result of this work, the Digital Single Market Mid-Term Review included the commitment to bring forward legislation on the free flow of data. Regardless of whether the free movement of data does become the fifth freedom of the internal market, we need to guarantee the actions taken to achieve the free flow of data are effective. This is the cornerstone to a fully-functioning Digital Single Market.
The European Commission announced publication of the legislative proposal for Autumn this year. It has been long awaited by Member States and businesses. ■

5 https://mc.gov.pl/files/free_flow_of_data_-_non-paper_od_lm_eu_member_states_dec._2.pdf

STUDY PROVES THE LINK BETWEEN DATA USE AND HIGHER PRODUCTIVITY

There has been a lot of hype about "Big Data" and the "Data Economy". Data has been called the new oil or likened to air in how essential it is to our modern economy. But how true is this? How economically significant is data and what difference will it make to future Gross Domestic Product (GDP)?

A recent study provides some answers. Entitled "Data utilization intensity and economic performance – a diagnostic analysis" this study was commissioned by the Ministry of Digital Affairs as part of its works on free flow of data and data economy, and examines the relationship between data usage, GDP and productivity. By examining data collection, transmission, analysis, storage and the use of data-related technologies, they have been able to calculate their impact on the economy.

According to this study, data-driven productivity accounts for 40% of total productivity and has a significant impact on GDP per capita.

> ***If data utilization intensity in an average European Union's economy was reduced to a near-zero level, gross domestic product (GDP) economy would reduce by about 46%.***

This shows how economically significant data use has become. However, not all EU countries are using data to the same extent. The study finds that data intensity (the level of data usage by businesses and economies) is highest in Finland at 37% and lowest in Greece at 11%. Poland is towards the lower end of this scale with data intensity at 17%. There is a strong correlation between levels of GDP *per capita* and levels of data intensity, while no correlation was found between overall level of GDP and data-driven productivity.

INNOVATION IS A MAJOR FACTOR

The study shows that there is a real opportunity for countries like Poland to increase their growth by increasing their use of data. The same can be said of the other countries in the Visegard Group (Czech Republic, Hungary and Slovakia). The study estimates that the ratio of data-driven productivity to other productivity factors could on average be 100% for Visegard countries. This gives them a strong incentive to work together to help their businesses use data effectively.

For more developed economies a similar percentage increase in GDP will be harder to achieve. The study indicates that the largest economies in the EU, as measured by the level of GDP, have difficulties shifting their levels of data utilization intensity above the 18%-21% threshold. After a certain point, there also appears to be diminishing rates of return to increasing the levels of data usage. However, that is not to say that there are no gains to be made.

The authors of this study argue that if countries that already have a high level of GDP *per capita* and data usage want to further improve their productivity and growth, then they need to broaden the environment in which data-dependent business models operate. This will also benefit those countries that currently have lower levels of data intensity, like Poland. According to the study, this approach is an effective way of increasing overall productivity.

Therefore, the evidence supports the hype surrounding data. It has the potential to be a productivity game changer, bringing significant GDP increases, especially in countries which currently have low levels of data intensity. ■

MAKING LIFE BETTER FOR CITIZENS AND BUSINESSES

Everyone agrees on the importance of creating an environment that performs the way it should in the fast changing digital landscape, but how can we make this happen? Three things could prove game changers.

CYBERSECURITY

Cyberspace is the new battlefield for national security. In June this year "Petya", a ransomware attack struck major companies and infrastructure sites. This followed after the "WannaCry" attack that took place just a month earlier. Infecting computers in more than 150 countries, "WannaCry" is estimated to have resulted in almost $4bn in losses, affecting a wide range of different organisations from the NHS in the UK to Renault factories in France. These attacks show how important cybersecurity is in the modern world.

Poor cybersecurity not only leaves us vulnerable to cybercriminals but also to those looking to illegally take down our critical infrastructure like power stations or transportation systems. Cyberattacks, whether on a global or local scale, can result in significant economic losses, undermine consumer confidence in digital products and services and negatively impact on the delivery of public services. Cyberattacks could also disrupt production processes as well as stop the provision of vital services.

What can we do to protect ourselves?

Some countries, like Poland, have set out clear plans for what they will do to improve cybersecurity. International collaboration forms an important part of these plans. As the recent attacks demonstrate, cybersecurity threats are global threats. They are not confined to one country, so it is important that countries work together to combat these threats. This includes building on the work that is already being done at an EU level and through NATO and the OSCE to help keep our businesses and citizens safe.

Poland has recognised that we all have a role to play in ensuring good levels of cybersecurity. Their National Framework for Cybersecurity 2017-2020, includes plans to provide businesses and citizens with advice about how they can protect themselves and what to do if they are a victim of cybercrime. It also focuses on how the different organisations can work together more effectively to combat cyber-threats. Poland is looking forward to joint cooperation and implementation of the "cyber package", announced earlier in September, to make them, and the rest of the EU much safer, stronger and cyber secured.

DIGITAL TECHNOLOGIES HAVE ALLOWED BUSINESSES TO LEARN A LOT ABOUT YOU. WHERE YOU ARE, WHO YOUR FRIENDS ARE, WHAT YOU EAT, WHAT YOU ENJOY DOING. THIS INFORMATION CAN BE REALLY HELPFUL FOR THEM TO DEVELOP NEW PRODUCT AND SERVICES, REDUCE WASTE BY MORE ACCURATELY PREDICTING DEMAND OR EVEN DEVELOP CURES FOR DISEASES.

DATA PROTECTION

Digital technologies have allowed businesses to learn a lot about you. Where you are, who your friends are, what you eat, what you enjoy doing. This information can be really helpful for them to develop new product and services, reduce waste by more accurately predicting demand or even develop cures for diseases. However this information is also deeply personal, and you might not be comfortable with businesses knowing this much about you. In the wrong hands this data could also be very dangerous. For example, criminals could use it to commit identity theft. Therefore it is very important that personal. data is kept secure. It is also important that people are able to control who has access to their personal data and what this information will be used for. This is why the EU has introduced the General Data Protection Regulation. This Regulation increases people's control over their personal data. It will now be easier to withdraw consent, get your online data erased and move your data between service providers. As this regulation applies throughout the EU, people can be confident that no matter where in the EU their data is stored and processed, they will have the same level of data protection. In this way data protection reform can help businesses regain consumers' trust in using their services. The General Data Protection Regulation can also be beneficial to businesses as it cuts a lot of red tape (e.g. by doing away with notification requirements) and embraces a risk-based approach by tailoring respective data protection obligations to the level of risk of data processing activities.

Businesses need to be prepared for these changes. Organisations that are not following the new rules by May 2018 could face heavy fines (up to 4% of annual global turnover or €20m -whichever is greater). EU Member States need to ensure that this Regulation is implemented in national law before this date and that their businesses and citizens understand what these changes mean for them.

Implementing the General Data Protection Regulation effectively so the right balance is struck between protecting people's privacy and supporting businesses is not an easy task. Involving citizens and businesses from the start is key to achieving this. **In Poland for example, the Ministry of Digital Affairs carried out an extensive consultation exercise before starting work on finalising the legislative package that will give effect to the General Data Protection Regulation in Poland. Through discussing the draft national regulations with scientists, citizens, chambers of commerce, NGOs and others, Poland was able to ensure that these meet the needs of people and organizations.** The law will take into account the needs of businesses – e.g. by allowing profiling in specified sectors like banking, and the processing of biometric data in the field of employment. This consultation work also raised awareness about the General Data Protection Regulation, with large parts of these discussions being broadcast live on the Ministry's website. The legislative work itself has been a challenge with as many as 140 other legislative acts needing to be amended as a result of the GDPR, as well as creating the implementing Act itself.

Only through building trust and confidence in the use of personal data, can we create a successful data driven economy. The changes being made by the GDPR should help achieve this, provided that like in Poland, the national implementation of the acts meet the meets of citizens and businesses.

ONLY THROUGH BUILDING TRUST AND CONFIDENCE IN THE USE OF PERSONAL DATA, CAN WE CREATE A SUCCESSFUL DATA DRIVEN ECONOMY. THE CHANGES BEING MADE BY THE GDPR SHOULD HELP ACHIEVE THIS, PROVIDED THAT LIKE IN POLAND, THE NATIONAL IMPLEMENTING ACTS MEET THE NEEDS OF CITIZENS AND BUSINESSES.

5G PUTTING US IN THE FASTLANE

LTE standards have revolutionized the use of mobile internet. For the first time wireless technology has the same speed as fixed broadband. Poland was the first country in the world to have high speed wireless communication for mobile phones and data terminals (LTE in 1800 MHz band). Polish mobile operators are continuously working to improve 4G networks. By investing in technological development, many new transmitters use the LTE Advance standard - giving speeds of up to 300 Mbit/s. LTE is available for 76% of households in Poland. Ranked 6 out of the 28 EU Member States for mobile broadband subscriptions, it is unsurprising that mobile applications are more and more popular with the 21m Mobile Internet users in Poland

Now Poland is looking to build on this success with 5G.

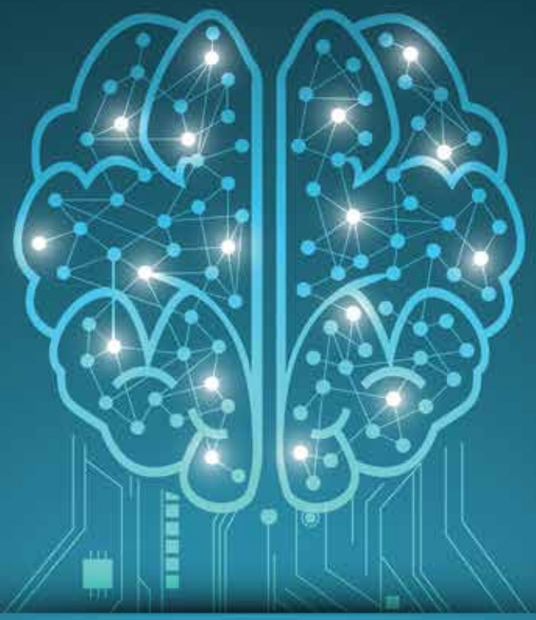
5G will offer reliable, ultra-fast mobile connectivity with high capacity and low latency. This is needed for a wide range of new digital technologies. For instance, 5G will allow a surgeon to operate on a patient hundreds of kilometres away, using a robotic arm, in near real time. Because 5G can handle high volumes of data, businesses will be able to capitalise on opportunities which are not possible with the current infrastructure. Smart cities, smart factories, Intelligent Transport Systems, all need mass scale fast data transfers. With 5G, entertainment will be able to offer a completely different level of user experience. For Virtual and Augmented Reality, 4K movies, online gaming, 5G will allow people to have the same high quality experience on the go as at home. 5G can also bring connectivity to remote rural locations.

In September 2016 the EU published their 5G for Europe Action Plan. This plan aims to speed-up the deployment of 5G infrastructures and services throughout the EU. **Poland is in a good place to lead the way on this. The 5G Strategy for Poland is being developed in partnership with telecommunications operators, chambers of commerce, providers of telecommunications services, equipment suppliers, research and development institutions, technical universities and Polish start-ups. It will allow Poland to become a leader in 5G deployment.**

The 5G Strategy for Poland will take Poland to the next level. It will set out the actions required to achieve wide-spread deployment of 5G in Poland, making them one of the world leaders in this technology. A partnership between government, industry and academics, this strategy commits government and the private sector to delivering what is needed for 5G in Poland.

Other EU countries are following suit. For example in Sweden they are piloting 5G in mines. For smart ventilation in mines you need to be able to process data in near real time from multiple sensors, similarly for remote control of mining equipment and vehicles you need reliable, low latency data transmission. 5G is able to offer this, improving the safety and productivity of mines.

Mining is just one of many areas where 5G can make a real difference. The potential benefits of the roll-out of 5G in the EU can be huge. A EU Commission study on the socio-economic impacts of 5G estimates that in 2025 the benefits of 5G to the automotive, health, transport and energy sectors will amount to €113.1bn per year, with an additional 2.3m jobs being created in the EU. However, for this prediction to become a reality more countries need to follow Poland's lead and support the roll-out of 5G. ■



MODERN THINKING SOLUTIONS

Changing the approach to designing and updating government systems for citizens requires a new approach not only in software engineering, but also in the entire creative process. It cannot be business as usual anymore. This is why GovTech and mDocuments are so important.

GovTech

In a revolutionary new approach, GovTech sees the Polish Government working alongside industry to create better online public services and a more efficient public sector. GovTech aims to improve the quality of existing online public services by using private sector expertise. From creating feedback tools to better understand what people want to improving the look and feel of Government websites, GovTech is making people's experience of using online public services better.

Because of GovTech, Poland has been able to develop a secure way for people to pay for public services online. This not only makes life easier for people and businesses but also cuts down on the administrative work done by the public sector.

GovTech is improving the efficiency of the public sector in other areas as well. By creating a platform which will integrate the data from across the public sector, GovTech will make it easier for different public sector organisations to exchange information. It will cut down on the need for businesses and citizens to provide the same information more than once and allow public sector organisations to work together more efficiently.

GovTech will also explore innovative ways to improve back-office processing, including by increasing the level of automation. This will mean that people working in the public sector will be able to concentrate on what matters most - delivering a high quality public service, rather than doing routine admin tasks.

It can also bring about huge costs savings. For example, when Germany digitalised and simplified 60 of their procedures they cut costs for users by over a third. They also reduced their administration costs by just under a third as well[1]. In the Netherlands their high quality online provision of the most common government transactions that businesses have to do (e.g. paying tax) is saving them 79.6m Euros a year, and saving their businesses a total of 17.9m[2] per year. The same could be true for Poland.

Through making use of private sector expertise, the Polish Government is able to deliver these improvements faster and more cost effectively. They are not the only ones to benefit. Open Data and Open Source lie at the heart of the GovTech approach. By making their source code and data publically available (except where for security reasons this is not possible), GovTech could help other businesses develop new products and services.

Through increasing public sector efficiency and improving the quality of online public services, GovTech will make a big difference to people and businesses in Poland. GovTech places their needs first and looks to see what can be done to improve things.

1 E-Government in Deutschland: vom Abstieg zum Aufstieg", Fraunhofer, commissioned by Nationaler Normenkontrollrat, November 2015

2 European Commission, stakeholder consultation on the single digital gateway

WE ALL SOMETIMES FORGET DOCUMENTS, WHICH MAKES US WORRY AND STRESS WHAT WILL HAPPEN WHEN WE NEED THEM. mDOCUMENTS SOLVES THIS PROBLEM BECAUSE WE USUALLY HAVE OUR CELL PHONES WITH US.

mDocuments

MDocuments is a service that will allow citizens to access their documents (including those confirming their identity, such as ID) using their cell phone.

Nowadays, you can do pretty much everything from your cell phone. Gone are the days when cell phones were only used for calling people and sending text messages. People use their cell phones for email, online banking, reading the news, watching movies, reading books - the list goes on. There is no reason why you should not be able to also have your official documents, such as your ID card, on your cell phone.

The official documents won't be stored on your cell phone, rather you will be able to access an electronic version of them from your phone. For example your ID card will remain on the Register of Identification but you will be able to access this using your smart phone (people using the Trusted Profile can already do this).To access these documents a verification code will be sent to your smartphone, which you will then enter. This ensures that other people are not able to access your documents. This is similar to how online banking works.

With over 19 million people in Poland owning a smartphone, mDocuments will give citizens convenient and secure access to their official documents. For people who don't yet own a smartphone or prefer having the traditional hard copy of their documents this will still be possible. **mDocuments is about giving citizens choice about what format they want their documents in.**

Even if you do choose to go for the traditional form of documentation, then mDocuments can be a handy back up in case you forget and leave the other ones at home. You will still need to have a traditional ID. However, with mDocuments you will not have to bother to take it with you, unless you are travelling abroad. In that case you have to make sure to take the traditional documents with you.

mDocuments are currently being piloted in Poland. They will be rolled out in stages. The first mDocument to become available will be mobile ID. By the end of 2017, the selection of documents will also include a mobile driving license, vehicle registration card and confirmation of insurance - all the documents you need for driving.

Work is underway to make other documents available as mDocuments: for example, a mobile version of student ID. While in the first stages of this rollout, you will only be able to use mDocuments with the police and government administration, this will hopefully be expanded so that other organisations, such as post offices, banks and hire car companies will recognise mDocuments as well.

With mDocuments, you will soon be able to leave the house with only your keys and your cell phone and have everything you need.

Using mDocuments will not only be a convenience, but will also give Polish citizens a sense of peace and security. After all, we all sometimes forget documents, which makes us worry and stress what will happen when we need them. mDocuments solves this problem because we usually have our cell phones with us. ■

HOW PUBLIC SERVICES ARE UNDERGOING A TRANSFORMATION

Browsing on widok.gov.pl you can find out all sorts of interesting information, like what the most popular e-public service in Poland is (checking the number of points you have on your driving licence) or how many people have visited the Ministry of Digital Affairs' obywatel.gov.pl so far this year (5.8m). It is part of the growing trend towards public authorities opening up their data. Opening up access to publically held data has not only helped businesses create innovative new products and services, like Citymapper, but has also helped governments have a better understanding of what their citizens and businesses need.

In Poland the government is using the data from widok.gov.pl to help them develop and improve their online public services. This has led to more than double the number of people visiting the obywatel.gov.pl website to use their online services. The number of people with a Trusted Profile (eGO) has also increased dramatically. A Trusted Profile is a free electronic standardized, transparent and secure identification method, which people and businesses in Poland can use for government transactions, such as completing their tax declaration. This means that you no longer have to print off the form and sign it, instead you can do the whole process online. Currently over one million people in Poland have a Trusted Profile.

Work is also underway to make it easier for people and businesses to know where to find information and online public services in Poland. In 2018, gov.pl will host all the information and online services which are currently found on various websites such as biznes, gov.pl, the taxpayer portal and emp@tia.

THE ADMINISTRATION SHOULD BE THERE TO SIMPLY MAKE THINGS EASIER FOR EVERYONE.

By bringing all this into one place, businesses and citizens will no longer have to search through various Ministerial websites to find what they need. Gov.pl is being developed with users in mind. It will improve and expand the number of services offered online and provide high quality, consistent and relevant information.

Why is this important? Changing the way that public services are delivered saves time and money. In Estonia for example, the e-tax system means you can complete your tax declaration in under 5 minutes. With their e-business registry you can now register a new business in 18 minutes compared to the 5 days it used to take.

The digital transformation of public services has seen a welcome shift from focusing on what government needs to what people and businesses need.

The administration should be there to simply make things easier for everyone. ■

INVESTING IN POLAND'S DIGITAL FUTURE

EDUCATION, EXPERTISE AND OPENNESS: THE BUILDING BLOCKS FOR SUCCESS

Just as a company is only as good as its people, so is a country. For Poland to become a digital leader, they need to invest in their people. Education, expertise and openness are the building blocks Poland needs to create a successful digital economy.

EDUCATION

Out of the 30,500 schools in Poland only just over 3,000 have high-speed internet (100 Mbs or over). A quarter of pupils don't use the internet even in IT classes. Lack of high speed internet is holding back the use of modern interactive teaching methods. Using multi-media content or streaming lessons is not possible without high speed internet.

The National Education Network (*Ogólnopolska Sieć Edukacyjna*) plans to change this. Having successfully completed their pilot programme, that saw 36 schools in Poland getting internet of 100Mbs or faster, they are ready to take things to the next level. Soon all schools in Poland will have high speed internet.

Through their pilot programme, the National Education Network was able to gain a good understanding of how schools use the internet, what they would like to be able to do with it, and the difficulties they experience. The knowledge they gained allowed them to develop the best strategy to achieve their aim of connecting all schools in Poland to high speed internet.

Co-financed by the EU, 1.6bn PLNs will be invested over 10 years to make this possible. As well as putting the high speed infrastructure in place, this project will give schools the tools they need to protect themselves from cyberattacks and give them access to digital educational resources and technical support. With safe, reliable high speed internet, Polish teachers will be able to make use of digital technologies to give interesting, useful and varied lessons, so children will have the skills they need to succeed in an increasingly digital world.

EXPERTISE

In 2016 two young individuals from Poland both won gold medals in the International Olympiad in Informatics, a programming competition for secondary school children. Their success is a reflection of Poland's wider success in the area of digital skills. Poland aims to build on this success by introducing programming to children at an early age. They are investing PLN 48m in improving the skills of their teachers so that they are able teach children programming.

Although not all children will go on to be software developers, what matters is giving children the opportunity to learn coding to decide whether this is something they would like to pursue. This gives them a better understanding of how the technology that surrounds them work. Learning to code teaches you problem solving and logical thinking skills which are useful in all walks of life.

Learning does not stop when you leave school. Thousands of over 50s in Poland have improved their digital skills thanks to the Lighthouse Keepers of Digital Poland Programme. This programme, which ran from 2012-2015, saw volunteers all over Poland teaching digital skills to people over 50 in their local community. 267,000 people learnt new digital skills as a result. What was taught depended on what the person wanted to learn –whether that be how to do online banking or web-design. If we want to make sure that everyone is able to benefit from digital technologies, we need to make sure that everyone has the ability to use them.

OPENNESS

For the younger generation having to find your way around the city using a paper map and the timetables at bus stops is almost inconceivable. Apps show you the best route to go, let you know if buses and trains are running late and update you on the traffic information. You can look up online which is the best performing hospital in your area or find the nearest pharmacist. All this is possible in part because of public sector organisations opening up access to their data.

In 2016 the Open Data Market in Poland was estimated to be worth several hundred million Zlotys. This could grow still further provided that public authorities continue the work they are doing to make more data available to the public in a useable format. Through their Open Public Data Programme, the Polish Government aims to improve the quality of and access to public sector information. They are also working on how to make it easier to re-use this data, creating new business opportunities for companies and increasing government transparency.

The 2016 public data hackathon is a great example of how this programme is helping to create an Open Data Community. As many as 90 people, in 17 different teams competed over a weekend to develop the best public data based software.

Through public sector bodies, NGOs, the scientific community and businesses working together it is possible to use Open Public Data in a way that benefits everyone.

For this to work all public sector bodies must be involved and committed to opening up their data. As part of Poland's Public Data Opening Programme Plenipotentiaries for Data Openness were appointed by a number of government agencies, including Ministries. This brings together people from across the public sector to increase the volume and quality of Open Public Sector information. They are also working on how to increase re-use of public sector information. In September 2016 the Ministry of Digital Affairs published a text book on the subject. This book helps people in the public sector make their data available in a re-usable format.

IF THIS RATE OF PROGRESS CONTINUES THEN POLAND LOOKS SET TO BECOME ONE OF THE LEADING NATIONS IN OPEN PUBLIC SECTOR DATA, CREATING EXCITING NEW OPPORTUNITIES FOR BUSINESS, CITIZENS AND THE PUBLIC SECTOR.

As a result of work that is being done under Poland's Public Data Opening Programme, Poland have already managed to increase their OECD ranking on "Open, Useful, Reusable Government Data"[1] by 8 places compared to their ranking in 2015. If this rate of progress continues then Poland looks set to become one of the leading nations in Open Public Sector Data, creating exciting new opportunities for business, citizens and the public sector. ■

1 Government at a Glance 2017 –OECD report

THE INDUSTRY+

Developed economies around the world are experiencing a profound transformation. The availability and increasingly widespread use of advanced ICT infrastructure generating large volumes of data has given rise to increasingly sophisticated data analytics. This is driving growth and change in the economy. Less developed countries are still in the early days of data-driven digital transformation. However, there is great potential for them to harness the power of data to drive growth and increase profitability. Technological developments such as Artificial Intelligence, the Internet of Things and big data analytics create a once in a lifetime opportunity for accelerated growth and increased productivity. Digitization is now, and will continue to be a major factor in social and economic change throughout the coming decade. The value of data is increasing. It has become the breathing air for the economy, allowing for the creation of new services and business models.

In the digital age, data has become a resource. Data forms the basis for creating added value and meeting the needs of businesses and consumers. It is generated both by human activity, environmental observation, and machine activity. In addition to capital and labour, data can be seen as another factor of production. Others regard it as essential infrastructure to act and undertake social or economic activities. It can also be seen as a natural resource of reusable and practically unlimited nature, or as a medium to convey information. Undoubtedly, data can be used simultaneously, repeatedly and independently. Irrespective of the definition, the impact of growing data volumes on the economy is undeniable. This can be seen in the emergence of services based on the analysis of large data sets and the increased use of Artificial Intelligence and machine learning. The power of data can be seen in five key areas:

+ **technological innovation,**
+ **innovative business models,**
+ **creation of new markets,**
+ **social innovation, and**
+ **public data-driven policies.**

A recent study[1] carried out for the Ministry of Digital Affairs, as part of its works on free flow of data and data economy, looks at the relationship between data usage, GDP and productivity. As much as we think there should be a strong connection between these, we rarely have the opportunity to see real figures behind popular notions. The study showed that data-driven productivity accounts for 40% of total productivity and has a significant impact on GDP per capita.

Poland is in a unique position to benefit from the advancement of digital technologies. With a tailor made strategy for digitalising it's economy, which will take into account the experience of economic transformation after 1989, Poland can:

+ **continue its strong economic growth and become more active on the world stage,**
+ **strengthen competitiveness by using digital technology to increase productivity,**
+ **build an inclusive and attractive labour market and increase quality of life.**

Key objectives for Poland's digital strategy include openness to cooperation with various partners, including non-European ones, active participation in shaping industry standards and policies in the EU and the digital integration of manufacturing sectors and groups. It is important to counter protectionism or abuse of market dominance that causes fragmentation of the digital economy.

Poland is a highly industrial country that has so far used low labour costs and a convenient location in the centre of Europe to its benefit. **The challenge facing Polish industry is how to adapt to and make the most of the opportunities of the next industrial revolution so that we can pay off an 'innovation debt' in the long run.** The term industrial revolution defines a set of changes in production processes leading to mass automation and digital integration of entire value chains. This gives a competitive advantage to those businesses leading the way in this, and becomes a decisive factor for others whose very survival depends on whether they are able to embrace the change.

DATA HAS BECOME THE BREATHING AIR FOR THE ECONOMY, ALLOWING FOR THE CREATION OF NEW SERVICES AND BUSINESS MODELS.

1 "Data utilization intensity and economic performance – a diagnostic analysis" G. Koloch , K. Grobelna, K. Zakrzewska-Szlichtyng, B. Kamiński, D. Kaszyński.

Poland's digital strategy should enable Polish companies to participate in European and global value chains. Poland can leverage the potential of state-owned companies through the use of digitization to enhance key transport and energy infrastructures through smart grid technologies, and the deployment of horizontal and platform solutions.

It is essential to build a platform for small and medium-sized enterprises to virtualize production processes. This will encourage them to combine different data sources so that they increase production, have greater production flexibility, and build new business models. This platform should provide access to open machine data (prior to algorithmization) in order to provide an environment for further innovation.

Making the next Industrial Revolution a reality will entail increased collection and generation of data. It will open up new opportunities for value creation both in the sectors where the data comes from, as well as related sectors that creatively use data to create new value chains. In order to create cross-sectoral synergy **it will be crucial to ensure the interoperability of data and information systems and data sets, free movement of data, and the prevention of the introduction of detrimental certification requirements which serve as a form of protectionism. These principles are at the heart of the Industry+ concept that Poland is working towards.**

Digital transformation will not be possible without building trust in the digital world. We need to create the appropriate security and value standards and incentive schemes, and promote the benefits to participants of digital collaboration platforms.

The experiences of the economic transformation of the last 25 years shows the importance of open standards. Open standards provide the best conditions for innovative solutions and collaboration between industry, national or cross-border ecosystems adopting the same or adequate technical and interoperability standards.

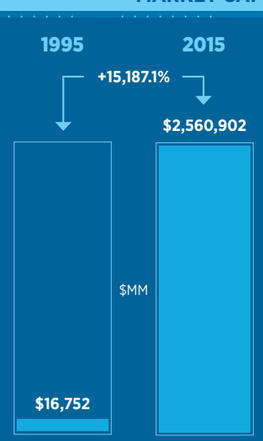
The work that Poland is doing to drive digitalisation goes hand in hand with the work that is done through trade agreements, treaties and at the European level. Companies that provide the necessary cloud computing infrastructure and data analytic tools are essential to building the data economy. However, their market dominance can lead to unfair terms and conditions for the businesses using their services and cause market fragmentation. The EU is active in trying to regulate the new economy, and these new regulations combined with the case law of the EU Court of Justice will have a profound effect on the development of the data economy in the EU and beyond. In addition to new regulations, the EU is exploring and experimenting with the possibilities of data management in various ares through its strategies and other programs including Horizon 2020. Individual countries are looking to do the same through bilateral cooperation.

We need to ensure that Europe does not put in place barriers to innovation in the form of data access restrictions, whether through contractual terms, business models or interoperability standards. To achieve the strategic challenge of creating an indivisible digital single market in the EU as well as the conditions for the sustainable development of cross-border cooperation with non-EU countries, data should be free and open and understood as a strong economic growth driver. We should also make sure that the flow of data within trusted ecosystems inside and outside the EU is unrestricted. ■

ONLINE PLATFORMS

With a host of promising start-ups based in Europe, and thirteen European 'unicorns' – billion dollar companies – together with a market of 500 million consumers across the continent, platforms operating in competitive and well-managed market present a real opportunity to smaller businesses looking to reach out beyond their home country. These benefits for businesses translate into benefits for consumers, and make it easier for them to engage actively in the digital economy.

MARKET CAP VALUATIONS



INTERNET VS. PLAFORM COMPANIES

INTERNET COMPANIES
Apple, Axel Springer, Copart, Fox Communications, IAC/ InterActive Corp, iLive, iStart Internet, Live Microsystems, Netcom Online, Netscape, PSINet, RenPath, Storage Computer Corp, Wave Corporation, Web.com

TECH COMPANIES AND BORN-DIGITAL ORGANISATIONS
Alibaba, Alphabet, Amazon.com, Apple, Baidu, eBay, Facebook, Google, JD.com, LinkedIn, Netflix, Priceline.com, Salesforce, Tencent, Twitter, Yahoo!

TAXONOMY OF PLATFORMS BASED ON CONSUMER ACTIVITIES

COMMUNICATION PLATFORMS
- communicate and stay in touch with friends, family and other contacts
- meet and get to know people

ENTERTAINMENT PLATFORMS
- access and share content such as music, videos or photos, and online gaming

ONLINE MARKETPLACES
- buy, sell or share products and services

INFORMATION PLATFORM
- look up information
- search for opportunities

COMPARISON PLATFORM
- find, compare or review products and services

Note: *This study has focused on the main platform categories, but this list is not exhaustive.* **Source:** *Oxera*

LOWERING TRANSACTION COSTS FOR BUSINESSES BY PROVIDING READY-MADE INFRASTRUCTURE

Collecting, organising and evaluating data to eliminate search costs.

Facilitating interactions with a larger base of consumers.

Boost cross-border activity and stimulate the growth of new and diverse business models.

The market value of platforms estimated to be over $4.3 trillion to the global economy.

Sector employs millions directly and indirectly.

176 platform companies worldwide are estimated to be worth a billion dollars or more.

Asia has the largest number of leading platforms with 82, exceeding those in North America

Top hubs for platform formation and operation include San Francisco, Beijing, London, and New Delhi.

THE DIGITAL REVOLUTION IS CHANGING EVERY ASPECT OF WORK AND LIFE - AS MANY OF THESE INFOGRAPHICS SHOW - VAST PARTS OF OUR ECONOMY AND SOCIETY ARE NOW OPERATING IN A DIGITAL WORLD.

TAXONOMY OF PLATFORMS BASED ON BUSINESS ACTIVITIES

RECRUITMENT
- tasks from the identification of a staff requirement up to the offer and acceptance of new staff

EXAMPLES
LinkedIn, Xing, Skype

FUNDING
- tasks from idea generation to projects inception

EXAMPLES
Crowdcube, Startnext

MARKETING
- tasks from product / service development to the start of the marketing campaign

EXAMPLES
adwords, Facebook, Pinterest, Twitter

E-COMMERCE
- tasks from making products and services available to customers to after-sales follow-up

EXAMPLES
iTunes, GooglePlay, Not on the High Street, Sagepay, Opineo

EUROPE'S ICT SECTOR PROBLEMS & SOLUTIONS

WE NEED TO RAISE THE NUMBER OF STUDENTS IN ICT – ESPECIALLY WOMEN

The number of **ICT graduates** has **decreased** by **13%** between 2006 & 2013.

There are **twice as many male as female graduates** in STEM (science, technology & mathematics).

Students in **all domains** need to be **educated** in **digital skills**, **not just those** who choose an **ICT career**.

DIGITAL TECHNOLOGIES CREATE NEW JOBS

There is **rising demand** for **ICT professionals**. These jobs are in **all sectors** of the economy.

Every job in **ICT** creates **3 more jobs** elsewhere in the economy.

With **high unemployment** in Europe, these jobs are sorely **needed**.

THE WHOLE WORKFORCE NEEDS TO BE DIGITALLY TRAINED

32% of the **EU workforce** has **low** or **no digital skills**.

15% of the workforce in the EU has **never used** the **internet**.

The **lack of graduates** in **ICT** is leading to a **gap** estimated at **825 000 unfilled jobs** by **2020**.

PROVIDE TRAINING & SUPPORT FOR THE UNEMPLOYED TOWARDS A CAREER IN DIGITAL DOMAINS

ONLINE LEARNING

CODING CLUBS

APPRENTICESHIPS

Digital firms employ 25% more people than non-digital firms.

3/4 of Europeans use the internet on a daily basis, only 15% shop online from another European country.

40% of Europeans lack basic digital skills.

It will create 3.8 million jobs.

It could result in a minimum 4% increase of EU GDP.

01 BETTER ACCESS FOR CONSUMERS AND BUSINESSES TO DIGITAL GOODS AND SERVICES ACROSS EUROPE

UNLOCKING E-COMMERCE POTENTIAL

15%

15% of consumers bought online from other EU countries in 2014, while **44%** did so **domestically**.

€11,7

EU consumers could **save € 11.7 billion** each year if they could choose from a full range of EU goods and services while shopping online.

7%

Only **7% of SMEs** in the EU sell cross-border.

€9,000

Small online businesses whishing to trade in another EU country face around **€9,000 extra costs** for having to adapt to national laws.

57%

If the same rules for e-commerce were applied in all EU Member States, **57% of companies** would either start or increase their online sales to other EU countries.

AFFORDABLE PARCEL DELIVERY COSTS

90%

More than **90% of e-shoppers** consider **low delivery prices** and **convenient return options** as important when buying online.

62%

62% of companies that are willing to sell online say that too high delivery costs are a problem.

SIMPLIFYING VAT ARRANGEMENTS

€5,000

Small online businesses wishing to trade in another EU country face a VAT compliance cost of at least **€5,000** annually for each Member State where it wishes to supply.

TACKLING GEO-BLOCKING

52%

In **52% of all attempts** at cross-border orders the seller does not serve the country of the consumer.

Less clients, less revenues for companies.

MODERNISING COPYRIGHT

1 in 3 Europeans is interested in watching or listening to content from their home country **when abroad**.

1 in 5 Europeans is interested in watching or listening to content from **other EU countries**.

An opportunity not to be missed: **Images, films or music and games** are the most popular online activities and digital spending on entertainment and media has double digit growth rates (around **12%**) for the next five years.

02 SHAPING THE RIGHT ENVIRONMENT FOR DIGITAL NETWORKS AND SERVICES TO FLOURISH

STRONG EUROPEAN DATA PROTECTION RULES TO BOOST THE DIGITAL ECONOMY

ROLLING OUT FAST BROADBAND FOR ALL

Take-up of fast broadband is low: only **22.5% of all subscriptions** are fast ones (above 30 Mbps) and Europe has witnessed significant time lags in the roll-out of the latest 4G technology due to the non-availability of suitable spectrum.

Spectrum reforms can decrease prices of mobile services and boost productivity over time (estimated EU-wide GDP increase **between 0.11% and 0.16% over 5 years**).

Poland currently has **63%** 4G coverage according to opensignal.com

03 CREATING A EUROPEAN DIGITAL ECONOMY AND SOCIETY WITH GROWTH POTENTIAL

BIG DATA AND CLOUD

20%-40%

Digital data stored in cloud: **2013: 20% - 2020: 40%**.

€425

The usage of big data by the top 100 EU manufacturers could lead to **savings worth €425 billion**.

€206

Studies estimate that, by 2020, big data analytics could boost EU economic growth by an additional **1.9%**, equalling a **GDP increase of €206 billion**.

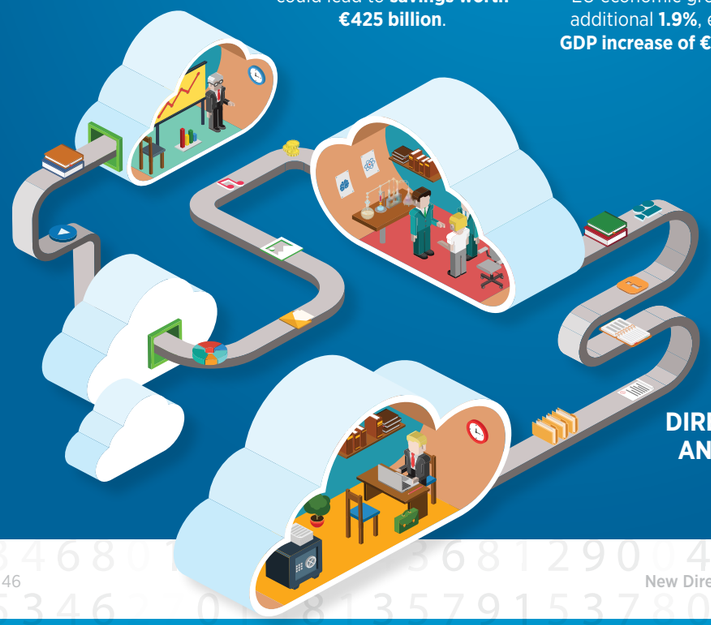
AN INCLUSIVE E-SOCIETY

90%

Almost half of the EU population (**47%**) is not properly digitally skilled, yet in the near future, **90% of jobs** will require somelevel of digital skills.

€10

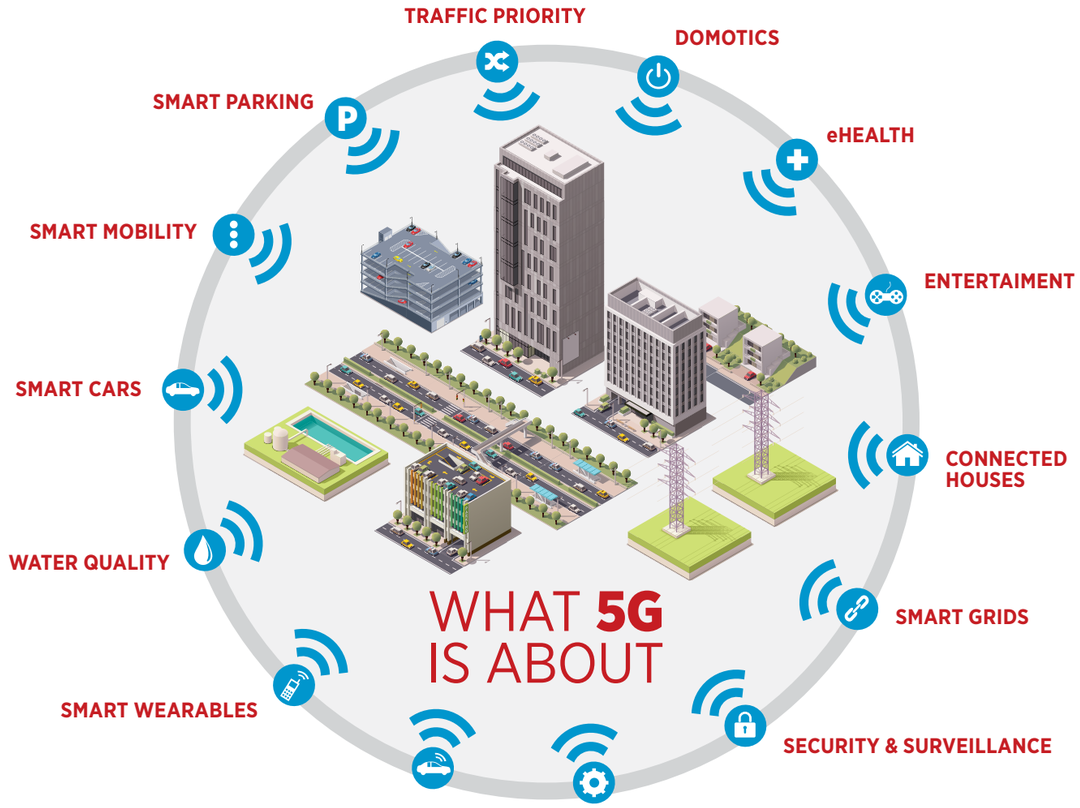
A strategy of 'digital by default' in the public sector could result in around **€10 billion of annual savings**.



IMPORTANT TOOL TO IMPROVE INVESTMENT PROCESS: COST BROADBAND REDUCTION DIRECTIVE – TIMELY IMPLEMENTATION AND ENFORCEMENT ACROSS THE EU.

Source: **New Direction**

5G VISION



5G will be the most critical building block in creating a digital society in the future. The benefits of a 5G network are not just limited to individual users. It is likely that 5G infrastructure will serve a wide range of professional uses, these include:

- *Assisted living*
- *eHealth*
- *Energy management*

5G will also be capable of providing ultra-high-speed links for HD video streaming, as well as low-date-rate speeds for sensor networks.

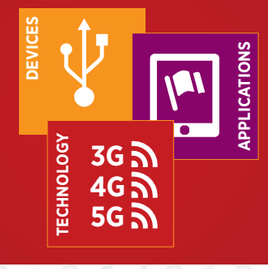
At the Mobile World congress in 2016, the EU revealed it has started working on an action plan to deploy 5G in the EU by 2020. However, if the EU plans on being successful with this goal, it must prioritize the improvement of ICT standardisation.

WHAT IS AN **ICT** STANDARD?

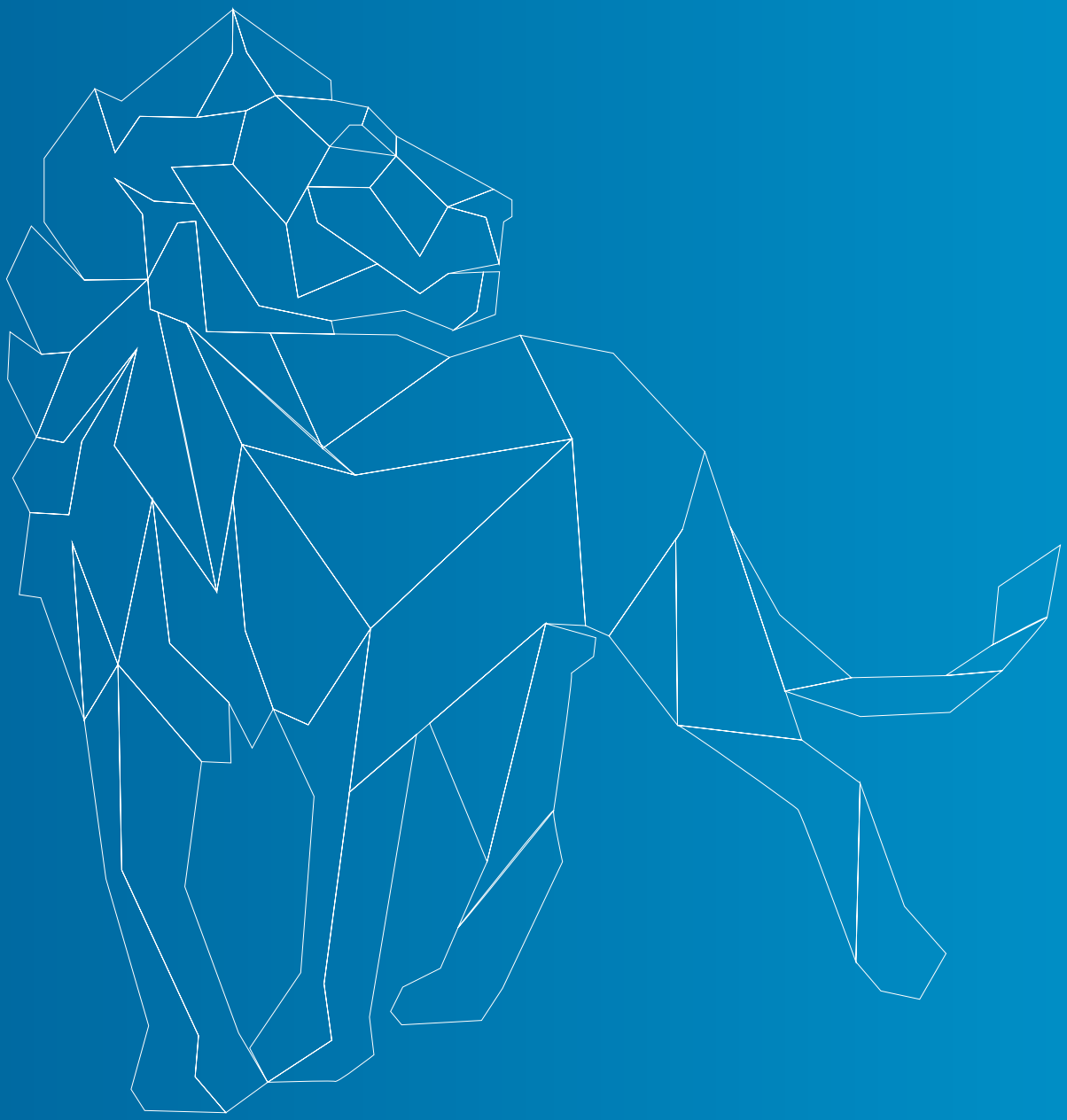
STANDARDS ENSURE

INTER OPERA BILTY

BETWEEN



THEY ARE A TOOL TO MAKE THINGS **WORK TOGETHER**



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