Disruptive Technology and the impact on NMCAs

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1 Background

The objectives of this briefing paper are to:

- Raise awareness of disruptive technology
- Trigger discussion about its impact on EuroGeographics' members
- Consider how to address the issues.

It has been drafted using the input from a workshop organised by EuroGeographics' Head Office in which different aspects of disruptive technology were discussed by four focus groups.

The term disruptive technology has gained traction over the last decade as authors sought new definitions to describe new expansions, processes and circumstances.

Whatever definition we consider is the best fitting for our organisation, the recurring themes are of change, transformation, overturning, replacing and altering, as well as new and advanced technology. All provide context for the important work that NMCAs expect as a result of the inevitable digital transformation which continues to accelerate changes.

2 What might be disruptive for NMCAs?

Disruptive technologies cause disruption, hence the name. The technology by itself is "merely" new, but it will have disruptive effects on the value-chain and/or mode of operation of NMCAs.

To be better prepared for the transition, we need to consider carefully which specific disruptive technology might be used by NMCAs. This will ensure the smart continuation of existing roles and responsibilities, as sometimes existing operations will end and might be replaced by other processes.

Drones

Any government or organisation can use an unmanned aerial system or drone to gather data to drive results. For NMCAs, the feasibility of small drone technology is being realised for establishing property rights and cadastral updates. There are also multiple possibilities for agriculture, mapping, monitoring and controlling the urban development.

Since 2014, the call for rules governing the safe, secure and environmentally-friendly development of the drone industry has received strong political support. It is assumed that such development will stimulate employment and technological development within the European Union (EU). The European Aviation Safety Agency (EASA) proposal for a new modern and flexible EU-wide regulatory framework for drones is expected to be adopted by the end of 2018.

Smart cities

A Smart City is defined as: "An urbanized area where multiple sectors cooperate to achieve sustainable outcomes through the analysis of contextual real-time information shared among sector-specific information and operational technology systems." It is a place where traditional networks and services are made more efficient with the use of digital and telecommunication technologies for the benefit of its inhabitants and business.

Many European cities are developing an advanced and integrated Smart Cities concept. The European Innovation Partnership on Smart Cities and Communities (EIP-SCC) is an EU funding instrument that addresses city-specific challenges from different policy fields such as energy, mobility and transport, and ICT and it brings together cities, industry, small business (SMEs), banks, research and others.

Connected cars

Cooperative, connected and automated mobility (CCAM) - also known as autonomous/connected or self-driving cars - refers vehicles that can guide themselves without human intervention.

The European Commission is providing significant support for the development and testing of autonomous vehicles. Member States, industry and the Commission are collaborating to achieve the EU's ambitious vision for connected and automated mobility in a Digital Single Market, taking into consideration public authorities, citizens, cities and industry interests.

DG CONNECT's role is to bring together stakeholders and countries to foster exchanges of experience, ideas and proposals; to develop standards at European level; to co-fund research and innovation projects (H2020) that support actions and infrastructure pilots; and to legislate at the European level when needed.

The 29 signatory countries of a Letter of Intent signed at Digital Day 2017 agreed to designate digital cross-border corridors, where vehicles can physically move across borders and where the cross-border road safety, data access, data quality and liability, connectivity and digital technologies can be tested and demonstrated.

Cloud Computing

Within the Digital Single Market Strategy for Europe, the key role of cloud computing is established through the European Cloud Initiative and through the initiative on Building a European Data Economy. The latter led to a legislative proposal of a free flow of non-personal data regulation, which induces self-regulatory codes of conduct to facilitate portability of data and to switch cloud service providers.

The European Cloud Initiative focuses on a European Open Science Cloud; a trusted, open environment for storing, sharing and re-using scientific data and results, and a world-class European Data Infrastructure to securely access, move, share and process data in Europe.

Big Data

Whether it is geographical information, statistics, weather data, research data, transport data, energy consumption data, or health data, the need to make sense of "Big data" is leading to innovations in technology and the development of new tools and new skills.

Big data refers to large amounts of data produced very quickly by a high number of diverse sources. Data can either be created by people or generated by machines, such as sensors gathering climate information, satellite imagery, digital pictures and videos, purchase transaction records, GPS signals, etc. It covers many sectors, from healthcare to transport and energy.

Internet of Things

Internet of Things (IoT) represents the next step towards the digitisation of society and the economy, where objects and people are interconnected through communication networks and report about their status and/or the surrounding environment. According to a Commission study, the market value of the IoT in the EU is expected to exceed one trillion euros in 2020.

Internet of Things (IoT) merges physical and virtual worlds, creating smart environments. The Commission actively cooperates with industry, organisations and academic institutions in order to unleash the potential of the IoT technology across EU Member States and beyond.

5G

The "fifth generation" of telecommunications systems, or 5G, is a new network technology and infrastructure that will bring the capacities needed to cope with increased growth in the use of communication – especially wireless. It won't just be faster, it will bring new functionalities and applications with high social and economic value.

Europe has taken significant steps to lead global developments towards this strategic technology. Therefore, it is expected that the future 5G infrastructure will serve a wide range of applications and sectors, including professional uses (e.g. assisted driving, eHealth, connected homes, energy management, possibly safety applications, etc.).

Blockchain

The Blockchain Observatory and Forum recently established by the Commission will highlight key developments of blockchain technology, promote European actors and encourage governments, European industry and citizens to benefit from blockchain opportunities. Blockchain technologies, which store blocks of information that are distributed across the network, are expected to impact digital services and transform business models in a wide range of areas, such as healthcare, insurance, finance, energy, logistics, intellectual property rights management and government services. Blockchain is technology that promotes user trust. It makes it possible to share online information, and agree on and record transactions in a verifiable, secure and permanent way.

Georgia was one of the first countries in the world to pilot Blockchain technology for property registration through a partnership between the National Agency of Public Registry (NAPR) under the

Ministry of Justice and the BitFury Group. The project enhanced both the security and the transparency of the registration process.

Recently, 23 European countries signed a Declaration on the establishment of a European Blockchain Partnership. The Partnership will be a vehicle for cooperation amongst EU Member States to exchange experience and expertise in technical and regulatory fields, and to prepare for the launch of EU-wide blockchain applications across the Digital Single Market for the benefit of the public and private sectors. This should ensure that Europe continues to play a leading role in the development and roll-out of blockchain technologies.

Artificial Intelligence

In its communication "Artificial intelligence for Europe", the Commission puts forward a European approach to Artificial Intelligence (AI) based on three pillars:

- Being ahead of technological developments and encouraging uptake by the public and private sectors
- Prepare for socio-economic changes brought about by AI
- Ensure an appropriate ethical and legal framework.

Following the declaration of cooperation signed by 24 EU Member States and Norway work has started on a coordinated plan on AI. The main aim is to maximise the impact of investment at EU and national levels, encourage cooperation across the EU, exchange best practices, and define the way forward together to ensure the EU's global competitiveness in this sector. The DG CONNECT directorate that deals with digital industry has changed its name to the Artificial Intelligence and Digital Industry Directorate.

3 Expected impacts

Overall

Even though NMCAs are quite up to data with regard to adopting new techniques, public sector bodies have been traditionally labelled as being slow to adjust to any changes. In practice, changes such as digitalisation, have been accepted, not rejected. Digital became the new normal with many benefits to citizens and businesses but also generated new problems and policy issues for policy makers who are still struggling to respond to these.

Meanwhile, new disruptive technologies lay ahead, they are already growing and becoming more beneficial yet present new challenges which might be huge but are, at present, largely unknown.

We live in interesting times where the role of location data is being recognised. Innovation is not a threat, but an opportunity: Now is the moment to think and plan. A vision should not just be about data but incorporate the interaction of NMCAs information with all other data.

Disruptive technologies will allow a wider stakeholder community, such as volunteers, to cooperate on updating data. This will shorten the update process between the data capture and its availability to the users. For example, we could see a push-button mapping process but this will also require adapting mechanisms for greater flexibility as well as changing workflows.

Structure and business

Acceptance of disruptive technologies is important, not only for public administrations, but also for citizens/users. Whilst it can be very beneficial, it can also disrupt the existing landscape of public services and legal procedures, and replace present solutions and processes.

Existing job titles and roles are potentially threatened by digital disruption but how realistic is it to replace human employees with automated systems? Will it simply create new jobs as automated systems require maintenance security and development?

A long-term strategy for NMCAs is not practical due to the speed of change in a Volatile, Uncertain, Complex and Ambiguous (VUCA) World which makes it difficult to know what future products and services are required. Instead, the need is to develop a strategy which addresses these challenges defining their role in the society.

To succeed NMCAs have to provide an experience rather than products, and decide if their focus is on delivering value through a business case or public benefit underpinned by trust, liability and relevance. The latter provides more opportunities for future-proofing as it can be achieved irrespective of technology and organisational structure.

4 Final remarks

The perspective of authoritative data continues to evolve along with the way in which it is delivered. The role of NMCAs is more important than ever. Authoritative data remains their unique selling point and should be form the basis of a strategy to ensure future relevance. For example, governments undergoing rapid change, value the ability of public authorities to respond quickly and accurately to their demands.

EuroGeographics has a strong, well-established, supportive Knowledge Exchange Network which enables members to share and learn from one another's experiences. Some of our members are engaged in the smart cities and connected cars projects, some have introduced blockchain or drones; all are willing to exchange knowledge through this existing network.

As concluded at the workshop, at this stage there is no need for a new knowledge exchange network or focus group.

Disruptive technology remains high on the agenda for EU bodies with a number of funding success stories that will be continued through the Horizon Europe programme. EuroGeographics will closely

monitor these processes and report back to members to helping them develop pathways for raising awareness of disruptive technologies.

It will also establish a tracking record on regulation for disruptive technologies which will be accessible via our members only web pages.

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