# Future Challenges for European Leadership in the Global Data Economy and Data-Driven Society: Input to Framework Programme 9

**BDVA**

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## Introduction

A strong data economy is emerging in Europe with large companies and SMEs seeing the fundamental value of Big Data to cause disruptive change in markets and business models. According to IDC[1] in 2016 the European data market was second in value only to the US and was growing almost as fast. Data-intensive initiatives are gaining momentum with Open Data, Internet of Things, i-Spaces, Innovation Hubs, and data platforms providing broad access to data from the public sector, business and science.

The Big Data Value cPPP is supporting an open innovation data ecosystem with Large Industry working together with SMEs and research organisations in a critical mix needed to deliver both economic and societal impact to Europe in areas including mobility, manufacturing, bio-economy, health, energy, smart cities and infrastructures, food, finance, and farming. The Big Data Value cPPP is playing a key role in enabling the digital transformation of our society and economy, and in implementing the Digital Single Market Strategy where it supports areas that include data technologies and infrastructures, data platforms, data-driven business (models) and innovation, data standardisation, and skills.

## The Need for Partnership

The Big Data Value Association (BDVA), the private counterpart of the cPPP, sees clear evidence that the contractual Public-Private Partnership (cPPP) on Big Data Value is working to mobilise key stakeholders and private investment in the European Data Economy. The cPPP provides a focal point to bring together Industry from across Europe to tackle a common challenge in a systematic and structured programme of R&D&I. In the next framework programme, this mechanism must continue its mission to further develop the European Data Ecosystem as part of the Digital Single Market (DSM) strategy. In fact, BDVA believes that the impact of the cPPP approach can be further strengthened with the following refinements:

- Partnership: Stronger collaboration is needed between the private side and the EC to maximise success. The PPP should partner with multiple relevant DGs and units to create a holistic, coherent mission-oriented partnership focused on Big Data and AI research and innovation.
- Stronger involvement of Member States and regions (e.g. a stronger mandate) would help to develop synergies between European Commission and Member States activities on Big Data an AI. A close alignment of National and European roadmaps and activities

[1] IDC et al., European Data Market, SMART 2013/0063, D9 – Final Report, 1 February 2017, http://datalandscape.eu/study-reports

can support a systematic approach to the implementation of a European Strategic Research and Innovation Agenda on Data and AI.

- Big Data and AI innovations are driving changes in nearly every sector of industry and society. The BDVA expect that this will dramatically increase beyond 2020. FP9 needs a mechanism to coordinate Big Data as well as AI horizontal activities with vertical activities where calls are designed to avoid duplication of work, create broader impacts, and drive synergies. We believe international associations, such as BDVA, should play a substantial role in this endeavour to strengthen the impact of European technologies globally.
- Closer collaboration with the European Innovation Council to maximise the scale-up potential of novel combinations of Big Data and AI technologies and business models that can drive the disruptive transformation of European society.

## Key Challenges in Our Data-Driven Future

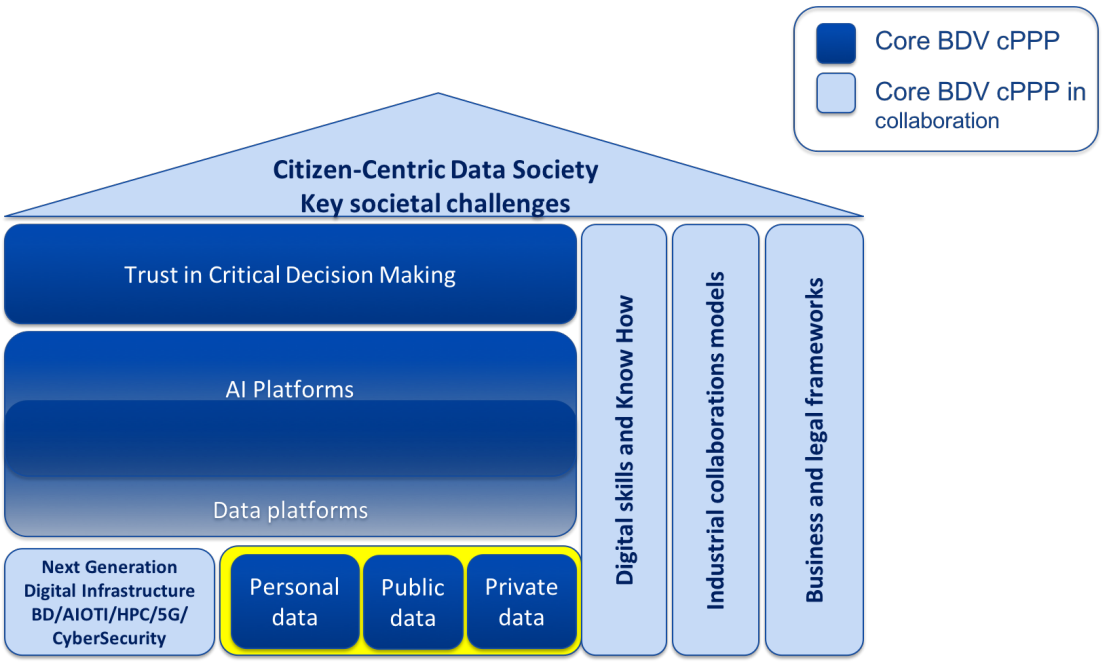


Figure 1. BDVA Vision for Post 2020

Data are considered to be the "oil" of the 21st century. The European data market is a rapidly growing multi-billion Euro business with compound annual growth rate (CAGR) projected over the period 2016–2020 as high as 15.7% under the most favourable scenario[2]. The BDVA believes the relevance of the Data Economy to European society will increase significantly between 2020 and 2030 as Europe will operate in a new data-driven socio-economic model. This trend is likely to increase through on-going initiatives such as the Digitising of European Industry. The future of Europe's economic prosperity is dependant on its citizens and organisations to successfully establish and maintain a leadership position in the global data

[2] IDC et al., European Data Market, SMART 2013/0063, D9 – Final Report, 1 February 2017, http://datalandscape.eu/study-reports

economy. Public interventions are needed in the form of horizontal cross-sectorial actions in data value and Artificial intelligence technologies to ensure European leadership in the Digital Transformation of both business and society. Strategic interventions are required to address economic challenges in industrial sectors (including skills and business models), critical societal challenges of high-importance to European citizens (migration, mobility, water, energy, climate, food, etc.), which are in a manner that preserves fundamental European values.

**Extract Value from Next Generation Digital Infrastructure (5G, HPC, Cloud, IoT, Big Data, Edge Computing and AI):** The future competitive position of Europe will be based in the capability of regions, public administrations, research organisations, and Large and Small Industry (and in particular Start-ups) to extract data insight from next-generation digital infrastructure. In 2018 we are at the beginning of a great wave of enabling technologies from IoT, 5G, HPC, Edge Computing to Big Data and AI across all domains. The focus beyond 2020 will need to be on the knowledge and fusion technologies necessary to extract valid and accurate insight that can be used to make useful and meaningful decisions for business and society. With many of these decisions taken in near to real time.

**Next-Generation Data and Artificial Intelligence Platforms:** Data platforms will be one of the critical infrastructures that feed value extraction technologies (including AI, Deep Learning platform) to deliver a return on investment for significant public and private investments in digital infrastructure. Building on the foundation of the early data platforms established in 2018-2020 as part of the Digitising European Industry initiative, Europe needs to ensure it obtains a leadership position in the development of next-generation data platforms. Leadership in advanced data management techniques can provide a strategic advantage in the global data economy and help to enable the, vision of a common European data space,.

**Trust in Data-Driven Critical Decision Making:** In 2020 to 2030 data will be used to make critical decisions in our every day lives from the course of treatment for a critical illness to safely driving a car. Next generation Artificial Intelligence powered data-driven decision support platforms will need to provide guarantees for the decisions they recommend. Research is needed to give trust in algorithms and data, in the trusted co-evolution between humans and AI-based systems, and in the legal and ethical issues associated with making data-driven critical decisions.

**Scaling Industrial Cooperation Models in the Data Economy:** At the beginning of 2020, the European Data Economy will still need to be developed and nurtured to capture the full potential value of big data. In particular, the development of data-driven business models across value chains and beyond organisational boundaries will significantly maximise the impact of the Data Economy. In this context, mechanisms that overcome the lack of data interoperability and foster data sharing and exchange are key success factors to deliver a common European data space. By relying on data-sharing platforms, data innovation spaces, and digital innovation hubs, industrial collaborations between large and small players (at the technical, business model and ecosystem levels) can be supported, while at the same time ensuring data and technology access for SMEs and Start-Ups. To complement technical and legal infrastructures for the free and controlled flow of industrial data, the building and nurturing of industrial ecosystems

fostering data-driven industrial cooperation across value chains and networks will have a critical impact.

**Data Skills and Know-How:** As members of the Digital Skills and Jobs Coalition BDVA is taking action to tackle the lack of digital skills in Europe. Data skills will be required everywhere; according to an IDC high-growth scenario[3] in 2020 there will be over 2.8 million unfilled data worker positions. The BDVA believes the global competition for talent will only further intensify beyond 2020. Europe will need to ensure it continues to develop its data workforce and it must work to retain its best people.

As traditional industry sectors undergo a digital transformation, so too must their workforces. The specialisation required by data engineers (technical specialist in data management) and data scientists (develop data analytics solutions) will deepen as the sophistication of the leading-edge tools and algorithms increases. The skills for data workers (working with data constitutes a significant part of the job) will become broader with increased fluency needed in numeracy and statistics, and the ability to judge bias in both data and algorithms. Domain understanding and the knowledge to know the right questions to answer will necessitate transdisciplinary training for the knowledge worker of 2025.

Finally, Europe needs to ensure it retains the best educators and academic delivering educational offerings to the next generation of data scientists, data engineers, and data workers. However, talented computer scientists are being lured from academia by the private sector with negative consequences for future teaching and research. Europe needs to work to reverse the AI brain drain from academia by supporting academic/industrial mobility and driving new forms of academic and industrial research and educational partnerships.

## About BDVA

The Big Data Value Association (BDVA) is an industry-driven international non–for-profit organisation with over 180 members all over Europe and a well-balanced composition of large, small, and medium-sized industries as well as research and user organizations. BDVA is the private counterpart to the EU Commission to implement the Big Data Value PPP program. BDVA and the Big Data Value PPP pursue a common shared vision of positioning Europe as the world-leader in the creation of Big Data Value.

The mission of the BDVA is to develop the Innovation Ecosystem that will enable the data-driven digital transformation in Europe delivering maximum economic and societal benefit, and, achieving and sustaining Europe's leadership on Big Data Value creation and Artificial Intelligence.

BDVA enables existing regional multi-partner cooperation, to collaborate at European level through the provision of tools and knowhow to support the co-creation, development and experimentation of pan-European data-driven applications and services, and knowhow exchange.

For further information: www.bdva.eu / info@core.bdva.eu /@BDVA_PPP

[3] IDC et al., European Data Market, SMART 2013/0063, D9 – Final Report, 1 February 2017, http://datalandscape.eu/study-reports