BDVA's input to the Digitising European Industry Working Group 2 "Strengthening leadership in digital technologies and in digital industrial platforms across value chains in all sectors of the economy" Follow up to the workshop on October 21st, 2016

Subgroup Industrial Data Platforms

November 2016

The Big Data Value Association, representative of the Big Data Value (BDV) PPP, was invited to participate in the Digitising European Industry Working Group 2 workshop that took place in Brussels on October 21st, 2016. Three representatives of our Industry-led association joined the workshop and contributed in the different subgroups. This document is the BDVA response to the requested input by the European Commission to the questions addressed during the workshop, and in particular to the subgroup "**Industrial Data Platforms**". BDVA has also submitted input for the Digital transformation of health and care" and the "connected smart factories" subgroups through different and independent documents.

The sources of input to provide this document are the **BDVA Strategic Research and Innovation Agenda (SRIA)** [1] and details of information developed through our monitoring reports as **evidence of implementation progress and impact**. This **document directly includes text from the BDVA SRIA**), as we think our SRIA already provide an answer to most of the questions raised in the context of the Industrial Data Spaces subgroup. The BDVA SRIA is built upon inputs and analysis from SMEs and Large Enterprises, public organisations, and research and academic institutions. Stakeholders include suppliers and service providers, data owners, and early adopters of Big Data in many sectors, with approximately 200 organisations and other relevant stakeholders physically participating and contributing.

What is the current landscape of activities in Europe (national initiatives, EU funded activities, other)?

Big Data Value PPP and Big Data Value Association (BDVA) leverages in existing National programmes where Big Data already plays an important role, such as the German initiative "Smart Service Welt" (Smart Service World), a programme with a 50 million Euro budget; and the Austrian one "IKT der Zukunft" (ICT of the Future).

To shape the Big Data Value i-Spaces concept an analysis of already existing national and European initiatives was conducted. BDVA members are directly involved with national and cross-border big data initiatives linked to the i-Spaces concept: The Smart Data Innovation Lab [2] (SDIL) in Germany,

[1] http://bdva.eu/sites/default/files/EuropeanBigDataValuePartnership_SRIA__v2.pdf
[2] See www.sdil.de

TERALAB[3] in France, and Digital Catapult – Data Catalyser4 in the U.K. are three examples of these initiatives promoted by BDVA members.

Some examples of identified initiatives with BDVA members involved are provided here (non-exhaustive list):

- **Spain**: Big Data Initiative within the PLANETIC Technology Platform + of vertical national technology platforms.
- **UK**: identified some key initiatives such us Digital Copyright Exchange, miData, Data Strategy Board and Public Data Group
- **Germany**: SDIL (Smart Data Innovation Lab), Open Data Research Portal, Open.NRW Opden Data Portal of Northrine-Westphalia. Datenwirken.de -- German Open-Data-Showcase-Website, initiated by Open Knowledge Foundation Germany and SNV, Berlin an where BDVA is listed as one of the supporters of this activity (http://datenwirken.de/supporters.html). Labs Network Industrie 4.0 – a non-profit organization to help esp. SME`s to get access to test labs and standardization bodies and of course iSpaces are relevant. (LNI4.0 is a "spin-off" of the Plattform Industrie 4.0). **Industrial Data Space** (IDS), having as one of the main driving forces Fraunhofer, BDVA member, is envisioned as a virtual data space using standards and common governance models to facilitate the secure exchange and easy linkage of data in business ecosystems.This initiative started as a nationally-funded project (Germany) with the manufacturing industry as its main target (aligned with the Germany 'Industry 4.0' vision), but swiftly developed into an association composed of several large members from industry as well as R&D entities. The initiative is the only one advocating a standard data platform (or space) of its kind, across industries, world-wide. The white paper on an 'Industrial Data Space' [5] reflects the vision from this extended viewpoint.
- **Sweden**: Some initiatives by the research/innovation agency www.vinnova.se
- **The Netherlands**: The ICT Breakthrough Project Big Data (www.doorbraakmetbigdata.nl) is a government initiated PPS aimed at adopting Big Data in especially SME, The Big Data Value Centre (bdvc.nl), An extensive multi-year PPS research program, called COMMIT2DATA
- **Austria**: Big Data Camps within Big Data Europe Project organized by Teradata and Semantic Web
- **Italy**: BDVA member Engineering joined the public initiative promoted by Emilia Romagna region: "From Volume to Value" (open to private companies, starting at the end of 2015 and officially launched in February 2016.
- **Finland**: BDVA member VTT participates in several Big Data national activities. Together with the ministries like Ministry of Communication, we participated in the planning and implementation of national spearhead programs in Digitalization, which is a central part of the Finnish Government´s program

Relevant partners in some of the National initiatives are also BDVA members. This has helped BDVA to establish more concrete collaboration plans with some of them (Smart Data Forum in Germany, Emilia Romagna Big Data Community in Italy, Austrian Programme on Data Innovation, Swedish initiative on data centres, Big data initiative in Spain under the PLANETIC platform and the Service Platform Initiative in Denmark; some of them were referenced above).

[3] See www.teralab-datascience.fr
[4] www.digitalcatapultcentre.org.uk/introducing-the-data-catalyser/
[5] https://www.fraunhofer.de/content/dam/zv/en/fields-of-research/industrial-data-space/whitepaper-industrial-data-space-eng.pdf

Where do we want to go?

- ## What kinds of next-generation platforms are needed (if any)?

Big Data PPP strategy does not aim to the development of a platform as such **but the development of an interoperable data-driven ecosystems as a source for new businesses and innovations using Big Data**. To achieve the BDV SRIA has defined four implementation mechanisms.

- **I-Spaces** are cross-organisation cross-sector interdisciplinary Innovation Spaces to anchor targeted research and innovation projects. They offer secure accelerator-style environments for experiments for private data and open data, bringing technology and application development together. I-Spaces will act as incubators for new businesses and the development of skills, competence and best practices.
- **Lighthouse projects** are large-scale data-driven innovation and demonstration projects that will create superior visibility, awareness and impact.
- **Technical projects:** These will take up specific Big Data issues addressing targeted aspects of the technical priorities.
- **Cooperation & coordination projects:** To foster cooperation for efficient information exchange and coordination of activities

The strategic and specific goals are supported by key specific **technical and non-technical priorities**.

Five technical priority areas have been identified for research and innovation in Big Data Value:

- Data analytics to improve data understanding;
- Optimized architectures for analytics of data-at-rest and data-in-motion;
- Mechanisms ensuring data protection and anonymisation, to enable the vast amounts of data which are not open data (and never can be open data) to be part of the Data Value Chain;
- Advanced visualization and user experience;
- Data management engineering.

The complementary **non-technical priorities** are skills development, business models and ecosystems; policy, regulation and standardization; and social perceptions and societal implications.

- ## **What kinds of large-scale federating initiatives are needed** (if any)? And **what concrete gaps/problems could be addressed through** platform development and **large-scale initiatives at EU level**?

Lighthouse projects:

Lighthouse projects are Innovation projects, **running large-scale data- driven demonstrations** whose main objectives will be to create high-level impact, and broadcast visibility and awareness driving towards faster uptake of Big Data Value applications and solutions.

Lighthouse projects shall lead to explicit business growth and job creation and thus, all projects will be required to define clear indicators and success factors that can be measured and assessed in both qualitative and quantitative terms against those goals

Lighthouse projects will operate primarily in a vertical domain, where a meaningful group of EU industries from the same sector will jointly provide a safe environment in which they will make available a proportion

of their data (or data streams) and demonstrate, in a large scale, the impact of big data technologies. It is expected that projects use data sources other than the ones of the specific sector addressed, therefore contributing to break silos. In all cases projects are supposed to have access to appropriately large, complex and realistic data sets.

One of the expected outcomes of this approach is data interoperability. Solutions at EU level (i.e. going beyond national boundaries) and that avoid vendor lock-in will be especially desired in an attempt to reach economies of scale.

i-Spaces:

European cross-organisational and cross-sectorial environments, which rely and build upon existing national and European initiatives, will play a central role in a European Big Data ecosystem. I-Spaces are the main elements to assure that research on Big Data Value technologies and novel BDV application will be quickly tested, piloted and thus exploited in a context with maximum involvement of all stakeholders of BDV ecosystems. As such, i- Spaces will enable stakeholders to develop new businesses facilitated by advanced BDV technologies, applications, and business models. They contribute to the building of a community and catalyse this community engagement. That act as incubators and accelerators of Data-Driven Innovation.

The particular European value-add of i-Spaces is that they will federate, complement and leverage activities of similar national incubators/environments, existing PPPs and other national or European initiatives. With the aim of not duplicating existing efforts, complementary activities considered for inclusion will have to stand the test of expected economic development: new data assets and technologies will be considered for inclusion to the extent that they can be expected to open new economic opportunities when added to and interfaced with the assets maintained by regional or national data incubators or existing PPPs.

How do we bridge the gap between what we have and what we want to achieve?

Developing a strong Big Data Ecosystem

The main issues that Europe must tackle for creating and sustaining a strong Big Data ecosystem concern the following dimensions:

- **Data**: Availability of data and the access to data sources is paramount. There is a broad range of data types and data sources: structured and unstructured data, multi-lingual data sources, data generated from machines and sensors, data-at-rest and data-in-motion. Value is created by acquiring data, combining data from different sources, and providing access to it with low latency while ensuring data integrity and preserving privacy. Pre-processing, validating, augmenting data

and ensuring data integrity and accuracy add value.

- **Skills**: In order to leverage the potential of Big Data Value, a key challenge for Europe is to ensure the availability of highly and rightly skilled people who have an excellent grasp of the best practices and technologies for delivering Big Data Value within applications and solutions. There will be the need for data scientists and engineers who have expertise in analytics, statistics, machine learning, data mining and data management. These experts will need to be combined with other experts having strong domain knowledge and the ability to apply this know-how within organisations for value creation.
- **Legal:** The increased importance of data will intensify the debate on data ownership and usage, data protection and privacy, security, liability, cybercrime, Intellectual Property Rights (IPR) and the impact of insolvencies on data rights. These issues have to be resolved in order to remove the adoption barriers. Favourable European regulatory environments are needed to facilitate the development of a genuine pan-European Big Data market.
- **Technical:** Key aspects such as real-time analytics, low latency and scalability in processing data, new and rich user interfaces, interacting with and linking data, information and content, all have to be advanced to open up new opportunities and to sustain or develop competitive advantages. Interoperability of data sets and data-driven solutions as well as agreed approaches is essential for a wide adoption within and across sectors.
- **Application:** Business and market ready applications should be the target. Novel applications and solutions must be developed and validated in ecosystems providing the basis for Europe to become the world-leader in the creation of Big Data Value.
- **Business:** A more efficient use of Big Data, and understanding data as an economic asset, carries great potential for the EU economy and society. The setup of Big Data Value ecosystems and the development of appropriate business models on top of a strong Big Data Value chain must be supported in order to generate the desired impact on the economy and employment.
- **Societal:** Big Data will provide solutions for major societal challenges in Europe, such as improved efficiency in healthcare information processing or reduced CO_2 emissions through climate impact analysis. In parallel, it is critical for an accelerated adoption of Big Data to increase awareness of the benefits and the Value that Big Data can create for business, the public sector, and the citizen. Creating a favourable **ecosystem** for Big Data and pushing for its accelerated adoption requires an interdisciplinary approach addressing all of the aforementioned dimensions of Big Data Value.

• What concrete platform building initiatives and large-scale pilots can be expected/supported/promoted?

BDV PPP lighthouse initiatives (large-scale pilots) will start implementation beginning of 2016 in particular in the vertical domains of the Bio Data (in full alignment with the Smart Agriculture vertical subgroup) and in Transport and logistics. Other large-scale pilots in different vertical domains will be launched in the upcoming years (health, media, manufacturing, etc) will group EU industries and stakeholders from the same sector to jointly provide a safe environment in which they will make available a proportion of their data and demonstrate, in a large scale, the impact of big data technologies.

We believe **DEI WG2 Industrial data platforms should rely on the BDV PPP specific lighthouse**

projects, with the complementary input from other large scale pilots such as IoT.

In addition to this BDVA has launched the process of labelling i-Spaces at European level, leveraging in existing strong national and cross-border initiatives, to identify those innovation environments that offer the required i-Space elements as defined by the BDVA SRIA.

We believe DEI WG2 Industrial Data Platforms should rely on BDVA i-Space labelling, supporting and promoting labelled i-Spaces.

How to combine large-scale demonstrators across the EU and across Member States, taking into account already ongoing national developments?

BDVA's reply to questions 1 and 2 provide concrete answer to this questions: combining large-scale implementation instruments that rely on already existing national developments (BDV PPP lighthouse and i-Spaces instrument), with a strong community of industry-led players with strong influence in those national initiatives (BDVA).

Who are the main stakeholders to be involved?

- ### How can PPPs contribute to building platforms?

BDV PPP contributes to develop an interoperable data-driven ecosystems as a source for new businesses and innovations using Big Data. Our response to the subgroups Connected Smart Factories and Health will provide more information about specific vertical platforms.

BDVA's reply to questions 1 and 2 provide enough input to show how BDV PPP is contributing to the development of such an ecosystem.

- ### How can existing/planned MS initiatives contribute to building platforms?

Reply to question 1 provides evidence about how national initiatives combined with PPPs contribute to develop European ecosystems.

- ### What are the complementarities/synergies/needs for coordination between EU (PPPs) and MS levels? How to avoid overlaps and strengthen synergies?

PPP's such as BDV PPP build upon strong collaboration, complementarities and synergies with other PPPs, technological platforms and Strategic European initiatives. Besides the information already provide in Question 1 and 2, and as a concrete example BDVA is strongly collaborating with HPC PPP synchronising SRIAs to maximize synergies between both roadmaps, defining supporting interactions for both stakeholder communities including joint events, workshops, and conferences, and defining cross-collaboration e.g in Extreme-Scale demonstrators and Centre of Excellence in Computing Applications). Similar level of interaction with AIOTI and the IoT large scale pilots was highlighted during the workshops as a need in the context of the DEI WG2.

About BDVA

The Big Data Value Association AISBL (BDVA) is a fully self-financed non–for-profit organisation under Belgian law. The Big Data Value Association (BDVA) is the private counterpart to the EU Commission to implement the BDV PPP programme (Big Data Value PPP). BDVA has over 150 members all over Europe with a well-balanced composition of large and small and medium-sized industries as well as research organizations.
The BDV PPP was launched in 2014, but its operationalization has been especially pushed forward with the launch of the LEIT work programme 2016/2017
The objectives of the Association) are to **boost European Big Data Value research, development and innovation and to foster a positive perception of Big Data Value**. In particular, BDVA aims at:

- strengthening competitiveness and ensuring industrial leadership of providers and end users of Big Data Value technology-based systems and services;
- promoting the widest and best uptake of Big Data Value technologies and services for professional and private use;
- establishing the excellence of the science base of creation of value from BIG DATA.

About the Author

Ana Garcia Robles, BDVA Secretary General. The document includes textual parts of BDVA SRIA and monitoring report developed by the community as reflective consensus document (SRIA) and monitoring reports (as input from surveys from members)