

## **Contributor names and short CVs**

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Sven Rung: After completing his Bachelor's degree in economics at the European University Viadrina, Sven graduated at the Freie Universität Berlin with a Master's degree in economics. During his studies, he focused on incentive theory, statistics and empirical economic research. This led him to writing an empiric-based Bachelor thesis. Furthermore he used his skills for an internship at the statistical consultancy at the Freie Universität Berlin where he provided advice for student's writing empirical theses. Since 2012, Sven is employed as junior researcher (PhD student) at the Fraunhofer Institute for Systems and Innovation Research in Karlsruhe focusing on information and communications technologies (ICT). The emphasis of his work mainly lies in socio-economic and statistical analysis.

Dr. Daniel Bachlechner: Senior researcher at the Emerging Technologies department of the Fraunhofer Institute for Systems and Innovation Research in Karlsruhe, Germany since 2013. His work at Fraunhofer focuses on economic, societal and policy aspects of the development and utilisation of new ICT. Through his participation in several national and international research projects, he gained insight into many aspects of ICT. He has published articles in journals and conference proceedings on topics such as information security management, knowledge management and Semantic Web technologies and is currently coordinating the H2020 project "Modelling the European Data Economy" (EuDEco). From 2002 until 2013, he was affiliated with the University of Innsbruck, Austria. He first worked as assistant researcher at the Semantic Technologies Institute and since 2008 as pre-doctoral researcher and teaching fellow at the Information Systems, Production and Logistics Management department. Daniel studied International Economics and Business as well as Computer Science at the University of Innsbruck, Austria and the Wilfrid Laurier University, Canada. He received his doctoral degree from the University of Innsbruck with a thesis on the effects of higher permeability of organisational boundaries on the management of information security and compliance.

Dr. Michael Friedewald: Senior researcher and head of the ICT research group within the Competence Centre Emerging Technologies at the Fraunhofer Institute for Systems and Innovation Research in Karlsruhe. Currently he is coordinating the FP7 project "Privacy and security mirrors" (PRISMS). Previously, he was coordinator of the FP6 projects "Safeguards in a World of Ambient Intelligence" (SWAMI) and "Converging Technologies and their Implications for the Social Sciences and Humanities" (CONTECS) and the FP7 projects "Privacy and Emerging Sciences and Technologies" (PRESCIENT) and „Supporting fundamental rights, Privacy and Ethics in surveillance Technologies" (SAPIENT). He served as member of the European Commission's Internet of Things Expert Group and was an invited expert in COST actions IS0807 (Living in Surveillance Societies) and IC1206 (De-identification for privacy protection in multimedia content) as well as in an ENISA working group for assessing the risks and benefits of emerging life-logging applications. Michael holds a doctoral degree in Electrical and Computer Engineering (1999) and a diploma degree in economics (1995), both from RWTH Aachen University.

**Type of presentation proposed**

Impact contribution

**Title of the presentation**

Making the development of the data economy tangible: First steps on the road towards an observatory

**Summary of the presentation**

The data economy is characterised not only by the determination of success and failure through the ability to leverage data and analytics but also by participants sharing data and integrating business processes with partners and competitors alike. The development of the data economy is to some extent determined by legal, technological and socio-economic framework conditions. Both policy makers and business leaders could benefit from an observatory tracking the development of the data economy and allowing conclusions to be drawn on the relevance of framework conditions. Such an observatory is currently being developed within the scope of the H2020 project EuDEco.

## Extended abstract of the presentation

Data volumes are exploding and a slowdown is out of sight. Companies, government bodies, academic institutions and citizens have access to more data today than anyone would have imagined one or two decades ago. Traditional data sources such as company databases and applications are now complemented by non-traditional sources such as social media or sensors embedded in physical world devices including mobile devices, smart meters, cars and industrial machines. Simultaneously, an entirely new market of big data technologies and services has emerged over half a decade to help organizations capture and extract value from all the data. The revenue from big data technologies and services, however, is small compared to the value that is expected to result in sectors such as trade, manufacturing, finance and insurance, public administration, and health and social care that now have the tools at their disposal to make innovative use of data to drive high-value business and societal outcomes. Data and technology are simply enablers. It is how society puts data and technology to work that will drive value creation and define the data economy.

The data economy is the currently emerging economy in which participants succeed or fail based on their ability to leverage data and analytics to improve operational efficiencies, to make better tactical and strategic decisions, and to create innovative products and services that meet and exceed customer expectations. Additionally, the data economy is also a connected economy in which partners and competitors alike share data and integrate business processes where the expected benefits for the participants and their customers outweigh the risks of such collaboration. The data economy has already begun to take shape. Companies from the Web sector such as Google, Yahoo and Facebook were among the first to understand the potential benefits of harnessing big data technology and services but business leaders across sectors are finally buying into the transformative power of the connected and intelligent enterprise.

However, to realise the full potential inherent in the data economy, independent use cases and applications of big data must be part of a larger whole. Some expect that entire sectors will operate and markets function all through the intelligent use and sharing of data and that eventually enterprises in various sectors will orchestrate multiple applications to work intelligently together with the goal of optimizing entire operational environments. Without doubt, the data economy is not developing uniformly across the developed world. The development opportunities as well as the pace of development of the data economy are determined by the framework conditions given in a country or a group of countries characterised by harmonised framework conditions such as the European Union (EU). It is not yet fully understood why but in several respects the US data economy seems to have already reached a higher level of development than, for instance, the one of the EU.

According to H. James Harrington, *“Measurement is the first step that leads to control and eventually to improvement. If you can’t measure something, you can’t understand it. If you can’t understand it, you can’t control it. If you can’t control it, you can’t improve it.”* For two main reasons, this often cited quote is very relevant in the context of the data economy. First, there is very little solid knowledge about the data economy and its development across the globe. Second, policy makers do not know how they can control the data economy to make sure that the economic potential is realized in a socially acceptable

way. Framework conditions can be shaped by policy makers only to a limited extent and such reshaping may take a long time. Nevertheless they are the key control levers to shape the data economy and to adjust it to societal needs. Thus, it appears reasonable to focus on framework conditions when making first steps on the road towards an observatory of the data economy. However, for measuring the data economy in a way – or creating an observatory for tracking the development of the data economy – that is beneficial to both policy makers and business leaders, it is essential that the relationships between framework conditions that can be influenced and the indicators showing the level of development of the data economy become tangible.

Relevant framework conditions may be legal, technological or socio-economic in nature. From a legal perspective, a broad range of private and public laws and regulations need to be taken into account. Among the most relevant ones are laws and regulations focusing on privacy, national security, intellectual property, databases, labour and competition. From a technological perspective, the focus lies on the technologies available to participants in the data economy as well as on the technical infrastructure available. From a socio-economic perspective, aspects such as the macroeconomic environment, investments in research and development, the availability of capital and skilled labour as well as the size and efficiency of the data market need to be considered.

Such an observatory to track the development of a data economy is one of the key objectives of EuDEco (Modelling the European Data Economy), a Coordination & Support Action (CSA) receiving funding under the European Union's Horizon 2020 (H2020) programme. EuDEco develops its observatory with the help of a continuously refined model of the European data economy. When the European Data Forum 2015 is being held, an initial version of the model will have already been presented publicly. After two rounds of revisions, a final model will be available in summer 2017; the observatory itself will be available in winter 2017/2018.

The EuDEco model of the European data economy, however, will not only provide the basis for the development of an observatory but also for the development of practical solutions and recommendations to deal with key barriers and challenges faced in the context of the data economy. Emphasis is put on the analysis of aspects including legal possibility, social acceptability, economic viability and technical feasibility of use cases, business models and value networks. Thereby, EuDEco will hopefully provide useful insights and instrument for both policy makers, who set the framework conditions for the European data economy, and leaders of companies, government bodies and academic institutions participating in the data economy.

Within the scope of EuDEco, the Center for Law and Digital Technologies at Leiden University and Rooter Analysis SL focus on legal aspects. Sigma Orionis SA deals primarily with socio-economic and Ascora GmbH with technological aspects, both supported by the CSA's coordinator, which is the Fraunhofer Institute for Systems and Innovation Research ISI. EuDEco sees the European data economy as a complex adaptive system and strives intensively for the involvement of external stakeholders and experts in its activities.