



Brain-be

Belgian Research Action through Interdisciplinary Networks

POLICY BRIEF

Digital (R)evolution in Belgian Federal Government: An Open Governance Ecosystem for Big Data, Artificial Intelligence, and Blockchain (DIGI4FED)

DIGI4FED aims to understand how big data can be used in the Belgian federal administration system to enable better public service provision through new technologies such as artificial intelligence and blockchain. By focusing on the technical, moral, legal and organisational conditions within the internal and external federal decision-making processes, DIGI4FED aims to develop a governance design that serves the administrative and public service processes of the Belgian federal government and makes full use of the potential offered by big data and its application via artificial intelligence and blockchain technology.

Project partners: KU Leuven, UAntwerpen, ULiège, UNamur

Project timing: 2020 – 2022

Context

Three factors define the context by which DIGI4FED is influenced. The first factor is the growing attention for the potential impact of Big Data (BD) and Artificial Intelligence (AI) on traditional government information processes. The second factor is the growing expectation of society from public administrations, to adopt new technological means to advance efficient and effective governance and public service delivery whilst ensuring the core democratic and moral values are not lost out of sight. The third factor concerns the Belgian federal administration itself. Although in the past, several steps were taken towards the digital transformation of the Belgian federal state, challenges remain.

State-of-the-art

While the use of data in the public sector is not new, the potential and actual use of BD applications affects aspects of the decision-making, learning and process optimisation in the public sector both theoretically and practically ([Giest 2017](#)). The impact of BD is driven not only by the data revolution but also the accompanying development of new technologies (e.g. AI-driven technologies, blockchain, distributed ledger technology...etc.) and advanced analytics (e.g. machine learning algorithms). Many public administration organisations around the world have already started to deploy AI-powered interfaces for citizen response systems, legal adjudication processes, fraud detection, and infrastructure planning. [Lember et al. \(2019\)](#) argue that BD creates the opportunity to go from descriptive analysis to predictive and even prescriptive analysis and consequential policy development. Several other authors stated that better use of BD can result in benefits to the public sector ([Maciejewski, 2017](#); [Mergel, et al. 2016](#)).

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BRAIN-BE is a multiannual research framework program launched by BELSPO in 2012 which strengthens the scientific base for policy making and reinforces the strategy and potential of the Federal Scientific Institutions (FSI).

BRAIN-be supports single partner and network projects with a duration of 2 or 4 years. Project selection is based on scientific excellence and the fulfillment of national and international research priorities as well as Federal policy needs.

BRAIN-be covers a wide spectrum of thematics going from sciences systems over cultural heritage, through a number of societal challenges.

Nevertheless, when it comes to describing the actual applications and advantages, authors diverge considerably in their approach and conclusions ([Pencheva, et al. 2018](#)). As [Janssen and Kuk \(2016\)](#) underline, the design and training of the algorithms that exploit BD are not neutral, not free from human interferences and not free from biases. Ensuring transparency and accountability is according to the authors a critical success factor. Furthermore, [Klievink et al \(2017\)](#) found in the case of the Netherlands, that the public sector organisations may be technically capable of using BD, but that they will not significantly gain from BD if the applications do not fit their organisations and statutory tasks.

DIGI4FED provides an innovative response to these challenges, as it starts from those challenges and aims to develop a governance design that serves the internal administrative and public service processes of the Belgian federal government; a governance design that is embedded in the open governance ecosystem and makes full use of the potential offered by BD and its application via AI and blockchain technology (BCT).

Research Objectives

The main objective of DIGI4FED is to understand ‘how (big) data can be used in the Belgian federal administration system to enable better public provision through new technologies such as AI and blockchain?’ This main objective will be addressed by following sub-questions;

- RQ1: How do technical, moral, legal and organisational conditions within the federal ecosystem influence current and future strategic needs of (big) data for the Federal State?
- RQ2: What is the impact of (big) data, through the use of AI and BCT, on the internal administrative decision-making processes, the role and independence of the executive decision-makers in federal public organisations?
- RQ3: What is the impact of (big) data, through the use of AI and BCT, on the external transparency of federal decision-making processes and the stakeholders and citizens’ trust to the federal administrative system?
- RQ4: What technical and organisational modalities are required for the exploitation of (big) data within the federal administrative system to improve the effectiveness of public services without undermining accountability, moral values (e.g. ethics and equity to the public) and internal human competencies?

DIGI4FED will focus on the development of a proof of concept of a governance design in two specific federal areas: *social security infringements* and *tax fraud*. These policy areas concern two central policy domains of the federal administration, and they are relevant both for the executive and the judicial branches of the federal level, and for other stakeholders such as social security agencies, social partners and judiciary bodies.

The outcomes of this project will offer an improved insight in how the Belgian federal administration can adopt these new technologies to effectively govern its internal and external administrative processes, the technical, judicial and ethical rules that should frame the administrative policies, and a basis for the establishment of policy guidelines for collection and usage of the BD in the Federal State.

Coordination

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