DIGI4FED

Digital Revolution in Belgian Federal Government: An Open Governance Ecosystem for Big Data, Artificial Intelligence, and Blockchain

DURATION
15/12/2019 – 15/03/2022

BUDGET
786 591 €

PROJECT DESCRIPTION

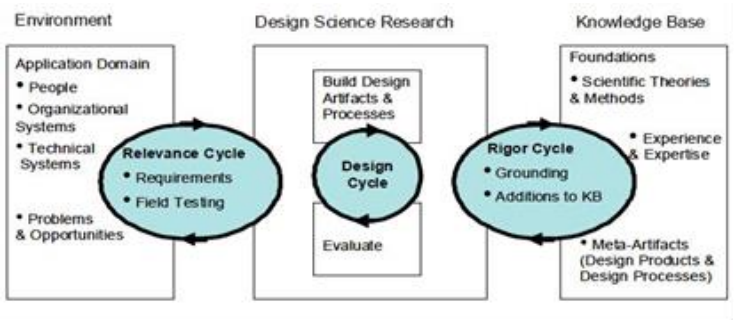
Context:
Three contextual factors define the context by which DIGI4FED is influenced. The first factor is the growing attention for the potential impact of Big Data (BD) and Artificial Intelligence (AI) on traditional government information processes. The second factor is the growing expectation of society 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 (EC, 2013). 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.

General Objectives and underlying research questions:
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 (BCT)?'. 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 provisions without undermining accountability, moral values (e.g. ethics and equity to the public) and internal human competencies?

Methodology:
DIGI4FED will be based on three methodological building blocks in its research design.
The first building block is Hevner's 'three *cycle view* of design science research' methodology (Hevner, 2007).

Figure 1: Hevner's three cycle view of design science research (Hevner, 2007)



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The *three-cycle view* identifies three interrelated cycles of activities in the design science research. The *Relevance Cycle* inputs requirements from the contextual environment into the research and introduces the research artefacts into the environmental field-testing. This cycle ensures the connection between the design artefacts and the application domain. The *Rigor Cycle* provides grounding theories and methods along with domain experience and expertise from the foundations' knowledge base into the research. This cycle adds the new knowledge generated by the research to the growing knowledge base of the project. The *Design Cycle* supports the research activity for the construction and evaluation of design artefacts and processes. Figure 1 illustrates the interactions and interrelations of each research cycle.

The second building block is the Living Lab approach (LL). LL is based on a systematic user co-creation approach to explore, experiment and evaluate innovative ideas, scenarios, concepts and related technological artefacts in real-life use cases.
The third building block is the 'Open Government Data (OGD) Ecosystem' (Reggi & Dawes, 2016). OGD research focuses on two streams (1) data publication and re-use for purposes of innovation, and (2) data publication as a stimulus for civic participation and government accountability. The OGD Ecosystem provides a fitting and reliable model to develop the governance design and policy basis for the federal level to address the gap between innovation through BD and ensuring the transparency and trust, as well as citizen's control on data.

Potential impact:

- Identification of technical, moral, legal and organisational barriers and contextual conditions that influence the current and future use of BD for the federal government. (Level of impact: Policy, Science)
- Understanding the conditions under which decision-making based on BD is trusted by citizens and other public and private actors with whom administrations collaborate. (Level of Impact: Society, Policy)
- Contributing to the theories of trust in the public sector by researching the impact of digital technologies. (Level of Impact: Science)
- Explaining how the exploitation of BD, through the use of AI and BCT, affects the external transparency of decision-making processes at the federal level (Level of Impact: Policy, Society)
- Developing a new open governance model for the management of BD in Belgian federal administrations through the technologies of AI and BCT to improve the effectiveness of public provisions without undermining accountability, moral values and internal human competencies (Level of Impact: Policy)

Description of the expected final research results and valorisation plan:
The research will focus on the development of a proof of concept (PoC) of a governance design in two specific federal areas: social security infringements and tax frauds. The outcomes of this project will (1) offer an improved insight in how the Belgian federal administration can adopt these new technologies to effectively govern its internal and external administrative processes, (2) offer an improved insight in how the technical and ethical rules that should frame the administrative policies, and (3) provide a basis for the establishment of policy guidelines for collection and usage of the BD in the Federal State. The findings of this project are also expected to enhance on-going collaborations through other BELSPO projects and to lead to form new national and international collaborations on the effective design and applications of BD, AI and BCT strategies in public governance processes.

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