Techno-Politics Series: 4

Smart Parliaments
Data-Driven Democracy

Edited by
Fotios Fitsilis
George Mikros

Series Editor
Antonios Nestoras

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Foreword

Antonios Nestoras, ELF Interim Executive Director

Digitalisation is transforming societies and the way in which they are organised. While new and forthcoming technologies influence how the world functions, the application of specific tools to handle democratic procedures will shape the way politics is done. It is not only a matter of e-voting from anywhere with a smartphone and connection to the internet, but rather a profound rethinking of how democracy is organised in its supreme form – democratically elected parliaments.

Social media and platforms influence different domains and the way ideas are communicated, making our times the era of 'like-ocracy'. Information has therefore become one of the key elements of policymaking, and modern technologies are used to analyse, quantify, and process information in the form of data. Implementing best practice and exploring new tools for using data in democratic procedures gives rise to endless applications. New tools can enhance the transparency of procedures, while Artificial Intelligence can ease the burden of traditional paperwork. Analytical tools can be implemented by policy advisors to determine how policy proposals are presented and perceived. Data-mining procedures lead to better understanding of the needs of specific regions or areas. Recommender systems help to actively promote campaigns or ideas, resulting in greater participation.

These are only few of the potential applications of the products of digitalisation, but the impact of new technologies applies not only on the practical side: the whole of society will benefit from the advancements of data-driven and tailored (or 'smart') policies. Digitalising democratic procedures will result in increased participation and offers a means of opposing extremism in political discussion.

To benefit from the digitalisation of our democratic procedures and achieve 'smart parliaments' a positive approach to new technologies is needed. At the same time, it is essential to experiment with new systems and methods in order to verify that every tool is implemented according to approved standards and our European values. To do so, this European Liberal Forum publication, edited by Fotios Fitsilis and George Mikros, explores the state of the art of a data-driven approach to parliamentarian procedures.

Parliaments are democracy's supreme representative institutions, but they rarely get the attention they deserve. This book places them where they belong: at the pinnacle of innovation. Parliaments need to be pillars of stability and trust amid a sea of ongoing crises, be they in the political, security, or health sectors, to name just a few. Strengthening the institution can be achieved by several means. For most, there is a common denominator: data. Parliamentary data must be trustworthy, accurate, timely, and validated. When processed, they become helpful information for efficient policy debates and substantive political discourse – the true stuff of democracies.

Smart Parliaments: Data-Driven Democracy highlights the role of data within both centuries-old and relatively novel institutional functions such as legislative work and parliamentary diplomacy. It is precisely this balanced focus on both tradition and innovation that makes this work stand out. Moreover, the book systematically avoids a purely scholarly character for the sake of a more practical and tangible approach to parliamentary evolution. It offers ideas instead of assumptions, solutions instead of missals, and presents a range of options instead of a single truth. In the following pages, the

name of the European Parliament is often encountered as an innovator and implementer of digital solutions, but the topics presented can be equally applied in any of the world's parliaments.

This is the power of data, which legislatures can harness to strengthen their institutional and representative character while fostering their relationships with society. The European Parliament will always be on the side of representative institutions around the globe: guiding and inspiring; leading and supporting; maintaining traditions while planning for the parliament of the future. This volume offers politicians the tools and outlines a path to enable them to design more efficient, inclusive, and resilient institutions that will stand the test of time. But will we dare to use them?

Editorial: Smart Parliaments, Data-Driven Democracy

Fotios Fitsilis, Hellenic Parliament, Athens, Greece

George Mikros, Hamad Bin Khalifa University, Doha, Qatar

WHY THIS AND WHY NOW?

The digital transformation of parliamentary institutions is essentially the result of the availability and production of open data.[1] While open data production can be streamlined to become a standardised process, this is work-intensive and puts additional pressure on parliamentary administrations owing to issues related, among others, to scarce parliamentary resources, internal resistance to change, and inappropriate or non-existent organisational structures. Moreover, the chronic lack of consistent open data does not allow for a comprehensive understanding of parliamentary discourse.

Further, existing digital tools and scientific methods do not always consider parliamentary data's specific attributes and characteristics, so the full range of analytic possibilities is not exploited. Ultimately, digital transformation needs to be linked to redesigning administrative and political processes to avoid a mere 'digitalisation of bureaucracy'.

This editorial does not intend to present a complete analysis of the research landscape in parliamentary science, or its evolution in time. For this, the reader may refer to the works of Norton (1990), Patzelt (2020), and Fitsilis, Koryzis, & Schefbeck (2022). The editors' aim is twofold: first, to set the stage and broadly frame the topic of digital transformation in legislatures while providing concise policy advice; and second, to outline the evolution of the underlying expert network that goes by the name of the Hellenic Optical Character Recognition (OCR) Team. This provided fertile ground for the accumulation of highly skilled and motivated professionals, thus enabling the research activities that are presented in this book.

The book investigates a wide range of functions and services of current legislatures. Yet practical reasons, such as the finite number of chapters and author availability, have forced the editors to select the content that eventually made it into the final publication. The remaining material will find its way into the parliamentary community through standard academic publishing procedures. Topics already covered by recent members' work are also excluded. This means that some critical issues are left out, including disinformation and ethical constraints in using advanced algorithms, such as in parliamentary expressions of artificial intelligence (AI) (Fitsilis, 2019; Fitsilis, 2021).

The importance of historical parliamentary texts cannot be neglected or underestimated, and an important area of parliamentary research is dedicated to the parliamentary history, with most scholars engaging in the study of the historical evolution of national legislatures (see, indicatively, Petrakakos, 1935–1944; Kluxen, 1983; Jones, 2012). Such studies are frequently conducted from a qualitative perspective, as structured, online access to parliamentary material continues to be a struggle for several researchers in national representative institutions.

The emergence of OCR technology, as well as the adoption of the data-first principle by several parliaments, has enabled the aggregation of large parliamentary corpora, as, for instance, in the case of ParlaCLARIN, a part of the European research infrastructure that contains digital language parliamentary resources and tools (de Jong et al., 2020). These can be studied using advanced algorithms and quantitative, analytical methods from the area of Natural Language Processing, thus contributing to the rapid development of a whole new academic sector of digital humanities (Schreibman, Siemens, & Unsworth, 2004; Luhmann and Burghardt, 2021). Such technology has the potential to advance our understanding of parliament, while also joining a

This book showcases the vast possibilities that expert networks can offer to the study of parliament

plethora of various digital tools and services that transform the parliamentary workspace and alter the way citizens perceive and interact with the institution (Leston-Bandeira, 2007; Dai and Norton, 2008).

Whether the technology has the potential to fundamentally alter the representative nature of legislatures, at least in the foreseeable future, is beyond the scope of this book. What has been observed, however, is that the institutional equilibrium, for instance, against the Executive, can be distorted, and it is argued here that it is possible to reinstate the institutional balance by adopting state-of-the-art working patterns and digital applications that generate and handle the twenty-first century's most valuable resource: data.

Overall, the book deals with the digitalisation of legislatures (transforming their business processes from analogue to digital) and the digitisation of their material (converting data to a digital format). It always needs to be kept in mind that these two notions need to go hand in hand when attempting to achieve the desired organisational transformation that is branded the 'parliament of the future'. As such, the digital transformation of parliament can be considered a relatively under-researched topic that, among other reasons, can be attributed to the fact that parliamentary studies are not a homogeneous field but rather a cross-sectoral, intra-disciplinary, and multi-stakeholder research area.

More than describing specific research activities within the Team, the book showcases some of the vast possibilities that expert networks can offer to the study of parliament. These indicative actions are complemented by ongoing research on rule-as-code for regulatory texts, crypto-tokens for 'reimbursing' citizens' engagement, the study of parliamentary actors in extraordinary procedures such as the motion of no confidence, and many more.

The following sections describe the nature and composition of the expert network behind this publication before providing an overview and a strategic discussion of its contents. Finally, an extrapolation for future research activities is attempted.

THE TEAM AND ITS DYNAMICS

The Hellenic OCR Team,[2] also referred to as 'the Team', is a unique crowdsourcing expert network for the processing and analysis of (not only) parliamentary data (Fitsilis and Mikros, 2021). The Team was established in 2017 as a voluntary, cross-sector, and decentralised platform. During the four years (at the time of writing) since its inception, the Team has experienced remarkable growth. Currently, the network links 50 members, 44 experts, and 6 organisations, and is spread across 13 countries and 4 continents. Its members create knowledge through carefully developed and acknowledged scientific methodologies, and this is disseminated to the parliamentary community and beyond through participation in conferences and the publication of peer-reviewed academic articles.

The Hellenic OCR Team originally focused on parliaments, but now develops more generic interoperability tools and services based on open standards and technologies, distributed as open-source software. Since its establishment, the Team has built up considerable expertise around parliaments. One of its main characteristics is that representative institutions are viewed from a holistic perspective, and this is achieved by setting up diverse and multi-disciplinary project groups. Moreover, the Team's approach is diverse and disruptive, which is supported by studying various parliamentary functions and competencies. For instance, in late 2021, several project groups were active, dedicated to studying AI, recommender systems, the automation of parliamentary processes, parliamentary diplomacy, cybersecurity, critical infrastructure, and much more.

The Hellenic OCR Team cannot think of a better way to celebrate its fifth anniversary (Autumn 2017–Autumn 2022) than the production of an edited volume on the Team's objectives, struggles, and successes, including visions of the future parliament. The topic of this volume is centred on the Team's main competency, the digital transformation of parliaments, with an emphasis on data-driven/evidence-based approaches.

Few know the whole story behind the inception of the Hellenic OCR Team. It was in early 2017 that Thomas Saalfeld from the University of Bamberg, Germany, reached out for parliamentary data to Fotios Fitsilis in the framework of the Pathways to

Power project. It quickly became apparent that the requested data from written parliamentary questions were neither fully nor openly – in the sense of Open Data – available. This deficiency sparked a round of discussions that led to a preliminary research study by the Hellenic Parliament's Scientific Service. This concluded that considerable resources but also procedural adjustments were necessary to migrate the existing data into an open format and, most importantly, as an initial move, the generation of open data for new parliamentary datasets. To overcome administrative inertia and build up expertise for this inevitable step in the lifecycle of the parliamentary institution, Fotios Fitsilis, a parliamentary researcher, teamed up with George Mikros, an academic with focused research on computational linguistics, and started developing a team of talented, like-minded individuals who wanted to contribute to science and to the greater common good: the Hellenic OCR Team.

Since its inception, this book has aimed to offer substantial added value to parliamentary science and institutional development at large. Edited by Hellenic OCR Team co-founders Fotios Fitsilis (Hellenic Parliament) and George Mikros (Hamad Bin Khalifa University), the volume constitutes a state-of-the-art presentation of the notion of smart parliament: a future-proof, inclusive institution that combines emerging digital technology with efficient processes to strengthen the work of Members of Parliament (MPs) and parliamentary administrators, thus promoting transparency and accountability, which constitute core features of democratic representation. As such, the future of parliamentary institutions will inevitably rely on data and their analysis. Hence, the different chapters highlight the process of data generation in parliaments as well as their processing and interpretation. Powerful technologies and sophisticated methods that will allow this are discussed. The book attempts to ignore the traditional functional separation in legislatures that has few exceptions, such as parliamentary oversight and diplomacy. This has been a conscious decision, intended to highlight the necessity to see beyond long-established parliamentary work patterns and theoretical boundaries and to focus on forthcoming trends and expected developments.

The book's chapters are authored by Hellenic OCR Team members, scholars, and practitioners with deep knowledge and hands-on experience of parliamentary matters. Though each chapter can be considered as a stand-alone contribution to a specific sector of parliamentary science, particular importance has been vested in horizontally highlighting three critical research questions:

- What is the role of the Hellenic OCR Team in current parliamentary research, and what are its future prospects?
- How do tools, methods, and approaches contribute to achieving European Union (EU) leadership in parliamentary science?
- At which parliamentary level (EU, intra-parliamentary, regional, global, etc.) are these approaches most useful?

Though every chapter tackles these questions to a different extent, they cumulatively clarify that highly motivated, well-trained, and adequately managed expert networks can constitute thriving communities of practice with significant academic and technological outcomes.

Before expanding to its current size, the Team studied several operational dimensions of the Hellenic Parliament as well as of other European legislatures (see, for example, Fitsilis, 2021; Fitsilis and Stavridis, 2021). In addition, EU-funded applications such as Legislation Editing Open Software (known as LEOS) were investigated, and their suitability and usefulness for parliaments were assessed (Leventis, Fitsilis, & Anastasiou, 2021). This not only led to a better understanding of these tools, but also to suggestions for their repurposing to provide added value to parliamentary institutions.

As it became established, the Team began interacting with other projects and initiatives such as the International Parliament Engagement Network,[3] the Inter Pares Parliaments in Partnership EU Project,[4] and Hansard at Huddersfield,[5] to strengthen the capacity of parliaments. The Team stands at the forefront of parliamentary innovation by participating in parliamentary events and projects, standalone or international research activities, and contributions to the academic literature.

The study of parliaments from different dimensions and perspectives reveals that, while every single institution is unique, there is common ground for their broader study and understanding. Hence the notion of inter-parliamentary cooperation within a dense and globalised parliamentary network, as presented in his chapter by Juan de Dios Cincunegui, gains particular importance. Furthermore, our researchers have worked with a basic core of parliamentary functions that can be identified in most representative institutions regardless of their level of governance (federal,

Existing digital tools and scientific methods do not always take into consideration the specific attributes and characteristics of parliamentary data, so the full range of analytic possibilities is not exploited

state, or regional) and institutional maturity. This conceptualisation opens up whole new possibilities for the study of parliaments as the research patterns and digital tools developed by the Team are not only to be directed to established Western-type democratic parliaments, but also to a wide range of the world's representative institutions.

OVERVIEW OF THE BOOK

The book's chapters cover most of the topics that the Hellenic OCR Team has dealt with during its first five years of operation. This editorial presents the motivation for this publication and provides a general overview of the book's content while summarising the most significant research and policy outcomes. The rest of the book consists of three thematic parts, each focusing on specific state-of-the-art data-driven approaches to parliamentary issues, as follows:

Part 1 Text-Mining Approaches to Parliamentary Discourse

Panagiotis G. Krimpas and Afroditi Giovani
Terminology Issues in Parliamentary Discourse

Maria Kamilaki
Parliamentary Discourse Analysis and Language Policymaking: The Role of Language Ideologies as Qualitative Evidence

Part 2 Advanced Tools and Methods for the Digital Transformation of Parliaments

Sotiris Leventis
Software Tools and Services for the Data-Driven Parliament

Leonidas Kallipolitis and Panagiotis Katrakazas
Traceability and Transparency in Parliamentary Scrutiny Processes via Evidence-Led Visualisations

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Xenia Ziouvelou, George Giannakopoulos, and Vassilis Giannakopoulos
Artificial Intelligence in the Parliamentary Context

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Luís Kimaid and Sarah Fernandes
The Evolution of the Digital Transformation in Parliaments and the Role of the Private Sector: An Overview

Thomas Saalfeld, Dmytro Lutsenko, and Marie-Madeleine Eklund
The Digital Transformation of Parliaments and Implications for Democratic Representation

Dimitris Koryzis and Dimitris Spiliotopoulos
Digital Strategy for Evidence-Based Policymaking in Parliament

This book's structure (three distinct parts that roughly resemble the Team's structure) presents the fundamental aspects of technology innovations as applied to modern parliaments and how these transform document pipelining and processing in the parliamentary context. A short summary of the chapters follows.

The chapter by Panagiotis G. Krimpas and Afroditi Giovani discusses the advantages of introducing textual analytics in processing documents

produced under various parliamentary tasks, including the functions of parliamentary questions. Basing their work on a previous study of computational analysis of the Greek Corpus of Parliamentary Questions, the authors highlight the advantages of using advanced natural language processing tools to discover hidden semantic relationships between terms that carry significant and sometimes sensitive information and can potentially influence political decisions or form public audience beliefs.

In her chapter, Maria Kamilaki explores how the language attitudes of MPs are transformed into decision-making actions. Using the discourse analysis theoretical framework and a rich selection of parliamentary minutes spanning over seven decades (1911–1976), she analyses the references related to the 'Greek language question'. She investigates how an ideologically loaded concept polarised the political discourse and profoundly impacted social and political evolutions in Greece.

Sotiris Leventis's chapter offers a comprehensive presentation of available tools and services focused on parliamentary institutions. He also defines a broader software development framework based on a decentralised software development team working on flexible integration platforms and exploiting open-source codebases. This kind of software development is highly appropriate to address the challenges of parliamentary data (volume, location, and diverse data format). It creates a standard that ensures interoperability, transparency, and versatility. The proposed framework has already started to be implemented as part of the Hellenic OCR Team's and its partners' software development, with a clear focus on creating a reliable, expandable, and robust platform of software services for most modern parliamentary processes.

The chapter by Leonidas Kallipolitis and Panagiotis Katrakazas presents a novel approach to traceability in the parliamentary debate context by using the Advanced Visualisation Toolkit (AVT), an open-source solution offering data exploration and storytelling capabilities via intuitive, advanced visualisations. AVT was used to analyse existing interactions between MPs, and through a diachronic analysis of Greek parliamentary questions, it revealed how topics of interest have changed and have been linked dynamically with socio-economic events during the 2010–2019 decade in Greece.

Iraklis Varlamis and Apostolos Dalas present the current state of the art in the area of recommender systems for parliamentary applications and evaluate the possibilities of their introduction in parliaments. They offer an overview of the available technologies used in developing modern recommender systems and describe a pilot approach focused on the needs of the Hellenic Parliament.

The chapter by Xenia Ziouvelou, George Giannakopoulos, and Vassilis Giannakopoulos discusses the potential applications of AI in the parliamentary domain. They present a novel ontology for AI-driven value creation that examines the possible usage of an AI system and the level of AI services at intra- and inter-parliamentary levels. The proposed framework has been validated in classifying existing AI applications used in EU parliaments and can be used for investigating opportunities and new application areas in this domain. The authors also discuss the ethical considerations of AI systems development with particular reference to the sensitive aspects of parliamentary applications.

Juan de Dios Cincunegui's chapter discusses the opportunities and challenges of parliamentary modernisation through adopting advanced technologies. The author argues that applying new technologies in the sensitive fields of foreign policy and international relations requires a new development model for government and a more comprehensive restructuring of existing parliamentary structures and processes.

Luís Kimaid and Sarah Fernandes, in their chapter, focus on the legislature and how collaboration with the private sector can accelerate digitalisation in parliaments. The authors also define what constitutes a digital transformation and argue that the involvement of the private sector is crucial for successful parliamentary engagement with technological innovations.

In the chapter by Thomas Saalfeld, Dmytro Lutsenko, and Marie-Madeleine Eklund, the latest developments in the digital transformation of parliamentary functions are discussed. From expanding parliamentary digital archives to using advanced data mining in social media, the landscape of political communication is changing rapidly and is increasingly driven by technological innovation. The authors draw examples from the German Bundestag and the British House of Commons, and discuss broader questions about the role of technology in the function of our democracies.

In their chapter, Dimitris Koryzis and Dimitris Spiliotopoulos reveal the importance of adopting technological innovations in the process of policy decisions. They present a universal digital strategy framework that parliaments could adopt alongside broader institutional transformation. Moreover, they

As an open initiative, the Hellenic OCR Team is well equipped to expand without moving away from its fundamental principles of voluntarism, public engagement, and dedication to the development of parliamentary institutions

contend that evidence-based policymaking should be assessed on strict quality criteria and be part of a holistic transformation of parliaments to knowledge creation and management institutions.

WHAT COMES NEXT?

The evolution of digital tools and related services is a dynamic development that impacts every facet of contemporary societies. In such a rapidly changing environment, it is to be expected that representative institutions will be affected too. The Hellenic OCR Team came into being to provide advice and digital solutions to parliaments with neither the resources nor the strategic insights to restructure their information systems and data policies in order to develop future-oriented, feasible migration plans that will eventually enable their transition into 'parliaments of the future'.

Beyond specific applications, the open-source nature of the software, and the broader research approaches that are presented in the following pages, the two editors, also the co-founders of this initiative, recognise that, more than anything else, the Team is its people. Therefore, the next big development will be the Team's transition into a genuinely global parliamentary expert network with a widespread geographic presence and multiple local and regional activities.

Moving the Team's centre of gravity outside Europe will enable the dissemination of European good practice across various representative systems. At the same time, the Team's unique composition and tangible outputs will inevitably receive further attention and possibly attract imitators. As an open initiative, the Hellenic OCR Team is, technically and academically, well equipped to expand without moving away from its fundamental principles of voluntarism, public engagement, and dedication to the development of parliamentary institutions. Therefore, the Team plans to strengthen the capacity-building activities of interested legislatures and parliamentary administrators in order to propagate its research outputs and to advance its peer institutions to the forefront of parliamentary innovation and practice.

Apart from its global presence and academic excellence, the Team's work has already justified its purpose, having passed the proof-of-concept level of specific digital solutions. Customised solutions that provide answers to real-life problems in legislatures now outline the Team's future development strategy, thus bridging the gap between academic research and parliamentary practice.

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Many thanks go to the publisher, the European Liberal Forum, especially to Dr Antonios Nestoras, Head of Policy and Research, and Francesco Cappelletti, Policy and Research Officer, who offered a tangible and realistic approach to the creation of this volume. Yet this book would not have been possible without the tireless dedication of our members, the valuable insights provided by our supporters, and the constant exchange and scrutiny of our work by the parliamentary community worldwide. The authors are indebted to all those who believed in this effort and strengthened it through their various roles.

The development of this volume was an early collective goal of the Hellenic OCR Team, and its chapters reflect the Team's different sectors of operation. They were respectively drafted by members or supporters with deep professional and academic knowledge of various subject areas. The editors feel grateful to be part of such a dynamic and multifaceted team, which has so much more to give to the parliamentary world and beyond.

This is a peer-reviewed publication. A single-blind peer-review process was considered to be sufficient to ensure the academic and methodological quality of the book's contributions. The pool of reviewers was formed by the book's editors and includes leading scholars, experienced professionals, and

entrepreneurs with a profound knowledge of parliamentary affairs. The editors would like to thank all reviewers for their valuable comments and suggestions, which decisively contributed to the volume's value: Prof. Nicola Lupo and Prof. Thomas Christiansen from LUISS Guido Carli in Rome; Prof. Olivier Rozenberg from Sciences Po in Paris; Prof. Ittai Bar-Siman-Tov from Bar-Ilan University in Ramat Gan, Israel; Franklin De Vrieze from the Westminster Foundation for Democracy in London; Jonathan Murphy from the Inter Pares program in Brussels; Mark Stodder from Xcential in Encinitas, California; Dr Günther Schefbeck from the Austrian Parliament in Vienna; Prof. Diane Fromage from Paris Lodron University Salzburg; Prof. Irene Theodoropoulou from Qatar University in Doha; and Andy Williamson from the Inter-Parliamentary Union in Geneva.

NOTES

1. In the academic literature, the terms 'parliament', 'legislature', and 'representative institution' have distinct meanings. For the sake of simplicity, in the present context they are used interchangeably. Exceptions to this rule will be stated clearly.
2. https://hellenicOCRteam.gr/.
3. https://ipen-network.org/.
4. https://www.inter-pares.eu/.
5. https://hansard.hud.ac.uk/.

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Part 1

Text-Mining Approaches to Parliamentary Discourse

Terminology Issues in Parliamentary Discourse

Panagiotis G. Krimpas and Afroditi Giovani

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ABSTRACT

Based on a previous case study, this chapter discusses the utilisation of the Corpus of Parliamentary Questions for the lexical profile retrieval of terms in order to understand their grammatical relations and lexical collocations and to identify their semantic prosody markers. It also explores the sentiment polarity of terminology use per party using an automatic textual sentiment analysis model that employs natural language processing tools such as Sketch Engine and Voyant Tools as well as specialised tools for mining textual information. The results confirm that ideological polarisation is reflected in the semantic load of terminology and demonstrate the usefulness of textual analytics in parliamentary operations and data-based policymaking.

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THE CASE OF THE DIGITAL TEXT CORPUS OF THE HELLENIC PARLIAMENT

Parliamentary control procedures in the Hellenic Republic remain a largely unexplored domain, which has only been systematically studied relatively recently (Fitsilis & Koryzis, 2016).[1] The Hellenic OCR Team has used innovative data mining and processing methods to create and analyse an original corpus of written questions (Fitsilis & Mikros, 2021).[2] Among the tools of parliamentary control, written questions are the most predominant, with more than 10,000 being raised annually. The digital corpus of the 16th Hellenic parliamentary term was the first to be created and studied, partly because of its short duration; it includes 4,499 valid questions comprising a total of 1,668,605 words. A first proof of concept analysis of this corpus confirmed the suitability of the underlying methodology, as well as the high quality of the corpus for studies similar to the one presented here (Fitsilis, Saalfeld, & Schwemmer, 2017).

The related methodology has been termed 'content reconstruction' as it utilises optical character recognition technology and advanced textual data validation techniques to fully reconstruct the original written questions that can be found in image format on the Hellenic Parliament website. In total, it is estimated that approximately 2.3 per cent (106 items) of the original 4,605 items in the 16th parliamentary term contain incomplete data. The final (validated) electronic corpus contains 4,499 items, therefore being equal to the number of valid parliamentary questions of that period used in this study. The terms eventually considered may fall into specific subject areas such as politics, law, economics, healthcare, and environmental issues. Given that a terminological approach involves the mononymy and monosemy of terms, as reflected in international

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standards (ISO 704, 2009: 35; ISO 10241-2, 2012: 21) and in the opinions of researchers (Ruhl, 1989: vi, xi; Béjoint, 1990: 19–22, 24; Fretheim, 2001: 83–84), a brief discussion is required at this point, since our method reveals that the assumed monosemy of terms, at least in a parliamentary context, is often contradicted by connotations arising from particular collocations.

TERMINOLOGY AND MONOSEMY

Within a given thematic area, each term is ideally intended to denote a single concept (monosemy), and each concept is ideally denoted by a single term (mononymy). However, this functions only to a certain extent, given the semantic variability of all words, including terms, in the context of actual language use. This observation is not unrelated to the fact that many kinds of institutional texts, such as legal or political texts, are distinguished by some kind of deliberate (we would argue) ambiguity and indeterminacy (Cao, 1997: 19), precisely because they seek to remain open to multiple interpretations. For example, terms such as 'consent' or 'legal act' are broadly defined by law, so that in particular cases or textual uses it is often necessary to determine whether an act or omission actually constitutes consent or a legal act, while terms such as 'loan' or 'embezzlement' are narrowly defined by law, so their distinct nature is readily recognisable in any given text or case.

This explains why legal concepts often require a broad, a narrow, or a teleological (rather than merely literal) interpretation by competent courts and/or legal theorists (Šarčević, 1997: 61–64). After all, language and communication are dynamic phenomena, this implying that the high expectations of mononymy and monosemy in special languages are in practice disproven (Faber Benítez, 2009: 111–113ff), whether unintentionally or intentionally. Every communication instance is different, and the knowledge, expectations, and aspirations of one or more interlocutors may overcome a term's resistance to conceptual change. Status differences between sender and receiver also play an important role in such conceptual and/or terminological shifts. In other words, even in domain-specific languages, the emergence of synonyms is a natural linguistic process (Temmerman, 2000: 125–154) that even the most standardised term can hardly escape, especially once it crosses the boundaries of special-purpose texts and starts to be used either by non-specialists or by specialists in general-purpose or mixed communicative settings (written and – especially – spoken). This is often exploited by parties, individuals, states, communities, or other agents to promote their own interests or those of their allies, even to the detriment of third parties.

In a recent publication (Giovanī et al., 2021) we examined as a case study the use of the Greek terms *metanastīs* 'immigrant', *lathrometanastīs* (with its synonym *paranomos metanastīs*) 'illegal immigrant' and *prosfygas* 'refugee', given that these terms have been used in many different ways by institutions, politicians, sociologists, international relations scholars, and journalists. We will now describe a more comprehensive methodology for examining the lexical profile and semantic prosody of terms contained in parliamentary questions. There will be no reference to specific terms, since this methodology can be applied to any term used in a similar communicative context, in any language.

RESEARCH METHODOLOGY

The methodological approach to this research is based on natural language processing through corpus linguistics tools that are used for the analysis of corpora. Two of the most sophisticated computational text analysis platforms were used: Sketch Engine and Voyant Tools. These can be used in parallel in order to perform a multilevel analysis of both the lexico-grammatical behaviour of terms at the level of linguistic analysis and their broader quantitative distribution in any given corpus. We present here the basic steps in our methodology, which may also serve as a general method for

quantitative computational analysis of parliamentary text corpora:

- To better capture the quantitative results of the corpus, the team first developed a subcorpus, consisting of questions containing the terms to be studied: only questions where at least one of these terms is explicitly mentioned are eligible. In this way, percentages and lexical representations assume their proper values.
- A new categorisation by party is then carried out in order to study, in the context of political discourse, the semantic prosody of the terms of interest for the research in question.
- Assessment is made of how many times each lemma appears in the corpus consisting of the specific questions contained in the corpus.[3]
- It is advisable to exclude questions that are repeated at all levels; that is, questions with the same text from the same Member of Parliament (MP) to the same minister, but to include identical questions asked by different individuals.
- Which parties mention each term the most are identified, and they are ranked in descending order.
- By building a lexico-grammatical framework for the lemma of interest, the percentage of findings in which the lemma is accompanied by another lemma that has a specific sentiment connotation is determined, thus creating a stable lexical cluster.[4]
- Taking such evidence into account and on the basis of valid definitions of the concepts designated by the terms under examination, researchers can infer the manner in which the context (pragmatic dimension) is reflected in the definitions used by MPs and the main factors that influence the preference of one term over one or more other terms in the same conceptual system (e.g., why the term *paranomos metanastīs* is preferred over the term *prosfygas*).
- By visualising the lexical clusters of the term, researchers can identify the strongest co-occurrence patterns in order to better understand the context in which the term is used.
- In general, it can be argued that the frequent co-occurrence of the two terms creates an informal relationship of semantic synonymy between them.
- By using Voyant Tools, researchers can visualise the distribution of two or more terms in a bubble chart, which captures the use of the terms on a per-party basis. The more frequently the terms are used, the larger the bubbles are. Thus, the distribution of the two terms reveals a clear ideological differentiation. Interesting observations also emerge from the comparative study of the frequencies of term use per party.

CONCLUSION

Research conducted using the methodology briefly described here confirms that the terms used in thematic areas in the social sciences and the humanities, such as politics and law, can be perceived differently depending on users, who may alter the concepts originally conveyed by given terms, a phenomenon that is sometimes related to emotional stances towards the concepts in question. For example, it may be that certain terms have a strongly negative semantic prosody, which suggests that, when they appear as interchangeable with other terms that do not have this negative semantic prosody, they can lead to social injustice, as the negatively charged terms drag down the relatively neutral semantic prosody of other terms. When this association is systematically repeated, it also produces an ingrained relationship between two concepts that in fact have different characteristics (i.e., distinctive features) and, as a result, may entail different legal treatment.

This discussion suggests that the methodology it presents can be useful to modern parliaments. In particular, inclusion of textual analytics in parliamentary documents can considerably improve the processing of political stances and promote a more just and socially sensitive approach of 'demanding' issues, given that it increases the government's and the opposition's awareness of the real meaning that is conveyed by various terms in parliamentary settings.

NOTES

1. https://www.hellenicparliament.gr/Koinovouleftikos-Elenchos/Mesa-Koinovouleutikou-Elegxou.
2. https://hellenicocrteam.gr.
3. We here use the Sketch Engine definition of lemma: https://www.sketchengine.eu/guide/glossary/?letter=L.
4. For example, in our research mentioned earlier, the lexical cluster *paranomos metanastīs* appears *sensu stricto* in almost two-thirds of all references to immigration. If we take into account that not all migrants are illegal/unauthorised or exclusively incoming, we understand that, with regard to migration issues in this parliamentary period, MPs focus their attention not on the migration of Greeks abroad, but on so-called mixed migration flows towards Greece.

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Parliamentary Discourse Analysis and Language Policymaking: The Role of Language Ideologies as Qualitative Evidence

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ABSTRACT

Evidence-based policymaking rests on the premise that policy decisions are better informed when they rely on evidence. The aim of this chapter is to explore the intricate interplay between language attitudes and language policies in parliamentary debates, in order to foreground the contribution of ideological beliefs as qualitative evidence for contextually sensitive language policy analysis. Two examples deriving from the Greek language question are discussed within the framework of the Discourse Historical Approach, using parliamentary minutes as a corpus, ultimately offering insight into the discursive nature of situated policymaking.

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INTRODUCTION

The 'Greek language question' has been one of the most heated issues in Greece's intellectual, socio-political, and policymaking history.[1] The term refers to the diverse and multilayered disputes that first appeared in the mid-eighteenth century, during the Greek Enlightenment, over which form of the Greek language was most suitable for educational and scholarly writing and, after the formation of the independent Greek state (1830), as the official language (Patrikiou, 2017: 102–103; cf. Horrocks, 1997: 344–365). The controversy was between the archaic *katharevousa* (literally 'of a pure form'), an early nineteenth-century construction, articulated by the scholar Adamantios Korais and based on the idea of a compromise between ancient Greek and the vernaculars spoken at the time, and the *demotic*, a form of spoken language derived from different dialects, thus exhibiting extensive variation.

Two milestones in the long diglossic past of the Greek language are the constitutional reform of 1911, when katharevousa was named as the official state language, and 1976, when the demotic was established as the language of public administration and education. What do these two chronologically distant occasions of parliamentary policymaking share? What intervened in the meantime to explain the diametrically opposed policy outcomes? And how can evidence-based policy shed light upon the whole issue? These are the questions we will attempt to tackle in this chapter.

EVIDENCE-BASED POLICY: TOWARDS A POST-POSITIVIST CRITICAL PARADIGM

Evidence-based policy (EBP) is an approach that 'helps people make well informed decisions about policies, programmes and projects by putting the best available evidence at the heart of policy development and implementation' (Davies, 2004: 3; cf. Cairney, 2016). Advocating that policy based on systematic and reliable evidence produces better outcomes and aiming at reducing the ideologically-driven and/or individual perspectives involved in opinion-based policy,[2] EBP implements a set of quantitative, qualitative and/or mixed methods in order to gather, critically appraise, and use high quality data that inform the policy process.

Although the need for evidence-based policymaking has gained political currency in EU Member States for many years now, it soon became evident that policy decisions based exclusively on scientific evidence remain to a large extent technocratic, since public policymaking, typically involving trade-offs between multiple, often competing, societal values is different from technical decision-making. As Bevir and Rhodes (2003: 3) point out, the weakness of positivist inquiries into policy dilemmas is that the former 'postulate given facts divorced from theoretical contexts as the basis of legitimate claims to knowledge'. The growing dissatisfaction with objectivist policy analysis and its 'antiseptic terminology', which facilitates 'detached thought and impersonal deliberation' (Tribe, 1972: 97–98; Wash, 2020), led a new generation of scholars to stress the role of meaning-making mechanisms such as principles, ideologies (Weiss, 1977), and values in public policy (Fischer & Forester, 1987), coupled with the pragmatics and contingencies of political life. This enlarged policy ecosystem, integrating policymakers, members of the scientific community, societal stakeholders, think tanks, pressure groups, media, and so on, ideally involves a combination of scientific knowledge, stemming from raw evidence, with pragmatic knowledge, incorporating contextual factors.

Within this interpretive turn (Carver, 2002), discourse analysis has become an increasingly important factor in policy sciences, outlining the crucial role of rhetoric and argumentation in the policy process. Majone notes (1989: 1): 'As politicians know only too well but social scientists too often forget, public policy is made of language.' The discovery of language marks the post-positivist position in policy studies, which is applied in different disciplines (see, e.g., Epstein, 2008; Slavin, 2020) and based primarily on constructivist and qualitative perspectives, which can be loosely grouped together under the terms 'discursive', 'interpretive', and 'critical'.[3]

SCOPE AND METHODOLOGY

Drawing on this discourse and analytical tradition, and considering parliamentary debates as par excellence nexuses of societal power relations and ideologies, expressed through the use of language alongside other forms of physical action (Ihalainen & Saarinen, 2019), the aim of this chapter is to focus on the aforementioned historical instances of language policymaking (i.e., 1911 and 1976), in order to outline the interplay between language attitudes of Members of Parliament (MPs) – that is, their evaluative reactions towards the two adversary linguistic norms as indices of widespread language ideologies (Dragojevic, 2017),[4] and the policy decisions made in the given socio-pragmatic contexts. Since the language question has become an integral part of the process of nationhood and statehood for Greece, each variety being associated with a distinct ideology about the nation and its historical destiny (Moschonas, 2004; Mackridge, 2009), it constitutes an ideal field of application in this case, foregrounding the symbolic value of language as a carrier of ideas and mentalities.

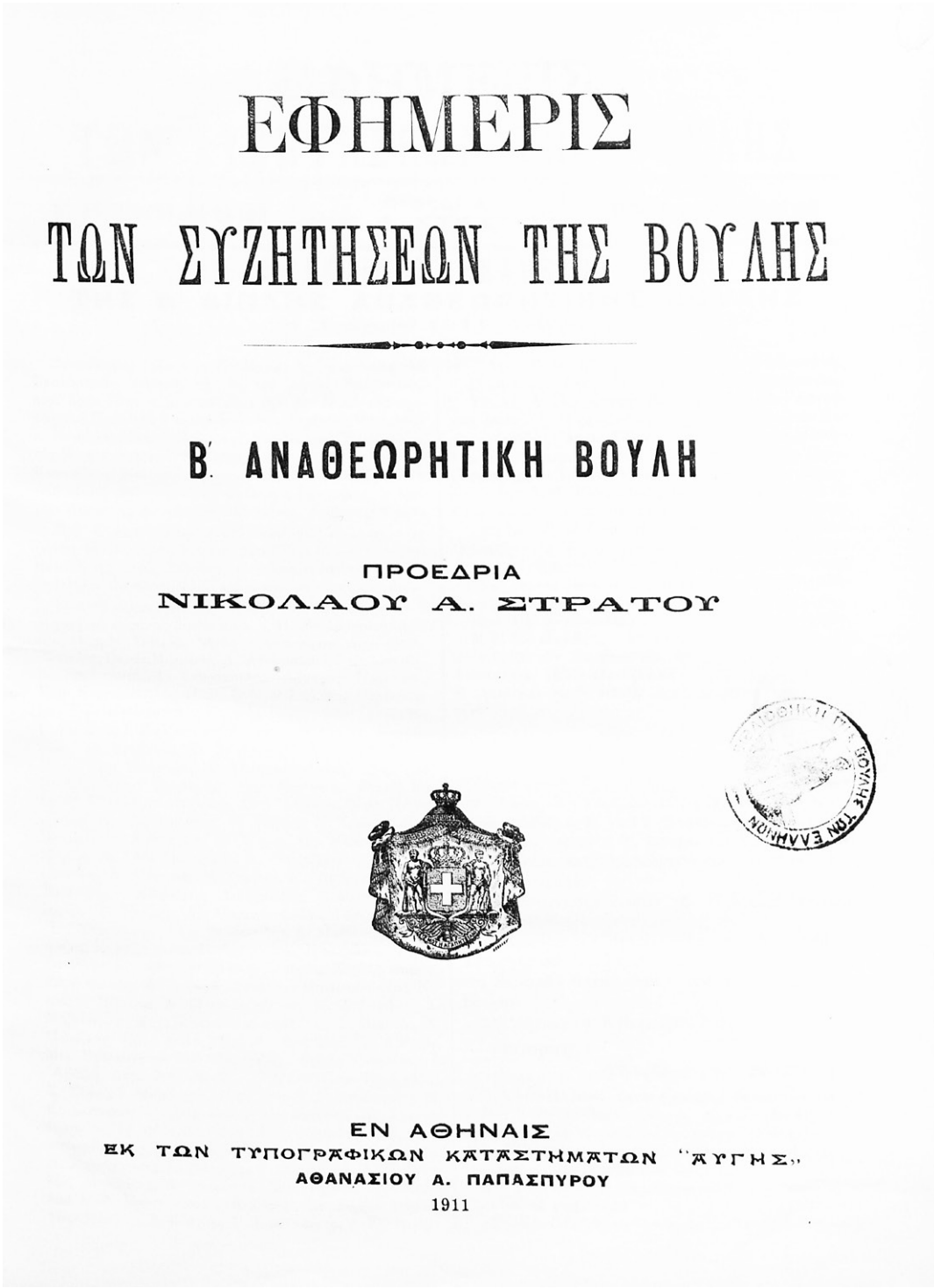
In order to pursue our research questions, a corpus of 308 pages (approximately 280,000 words) of parliamentary minutes has been compiled.[5] The parliamentary sessions of 1911 are drawn from the *Journal of Parliamentary Discussions* (JPD) (121 pages),[6] containing a full version of the (at that period) stenographed parliamentary minutes (see Figures 1 and 2), while the sessions of 1976 derive from the *Parliamentary Minutes* (PM) (187 pages).[7]

For data analysis, we use selected methodological tools from Wodak's *Discourse Historical Approach* (DHA; see Reisigl & Wodak, 2017), maintaining that language and social practice have a dialectical relationship in that they constitute one another; this approach explores the wider social, cultural, and historical contexts surrounding political dilemmas, taking them into consideration in the interpretation of discourse practices. The main analytical lens through which relevant data are filtered is Wodak's *argumentation strategies* for the justification and questioning of claims of truth and normative rightness (Reisigl & Wodak 2017: 95).

DATA ANALYSIS: FROM 1911 TO 1976

On 8 January 1911, the Second Revisory Parliament came into session, concluding its reformative work

FIGURE 1: **Cover page of the *Journal of Parliamentary Discussions* (1911)**


ΕΦΗΜΕΡΙΣ

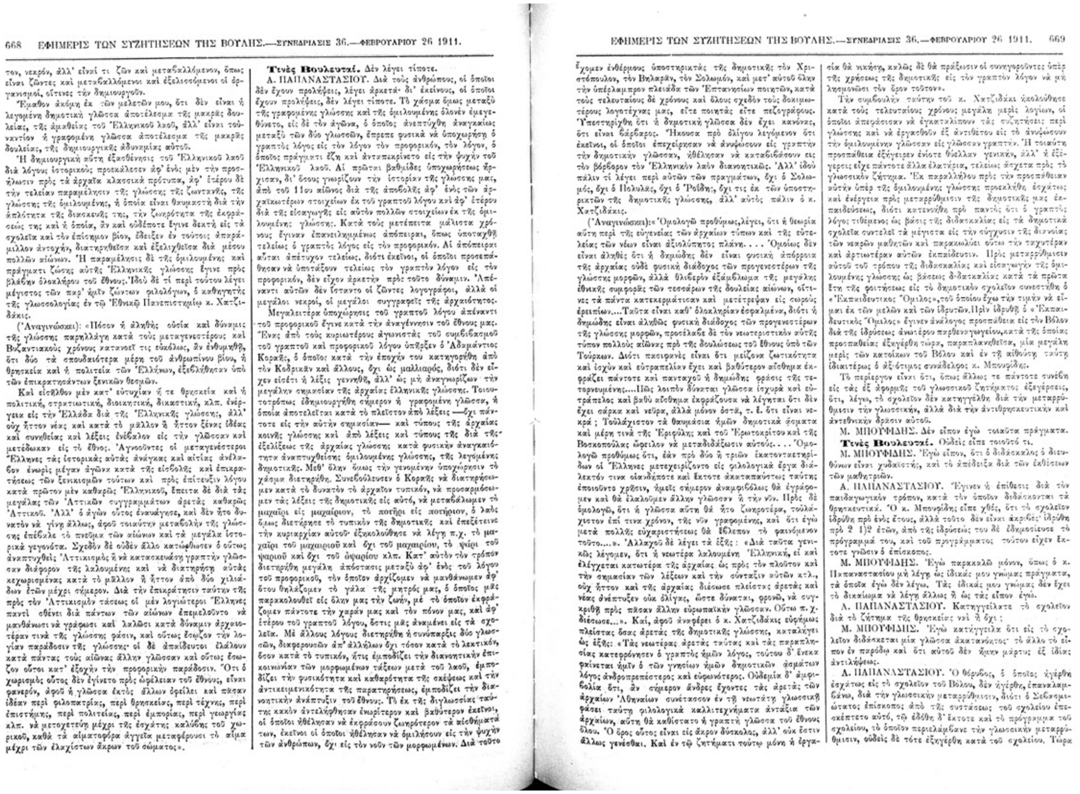
ΤΩΝ ΣΥΖΗΤΗΣΕΩΝ ΤΗΣ ΒΟΥΛΗΣ

Β΄ ΑΝΑΘΕΩΡΗΤΙΚΗ ΒΟΥΛΗ

ΠΡΟΕΔΡΙΑ
ΝΙΚΟΛΑΟΥ Α. ΣΤΡΑΤΟΥ

ΕΝ ΑΘΗΝΑΙΣ
ΕΚ ΤΩΝ ΤΥΠΟΓΡΑΦΙΚΩΝ ΚΑΤΑΣΤΗΜΑΤΩΝ "ΑΥΓΗΣ,,
ΑΘΑΝΑΣΙΟΥ Α. ΠΑΠΑΣΠΥΡΟΥ
1911

FIGURE 2: **Excerpt from the *Journal of Parliamentary Discussions* (1911)**


668 ΕΦΗΜΕΡΙΣ ΤΩΝ ΣΥΖΗΤΗΣΕΩΝ ΤΗΣ ΒΟΥΛΗΣ.—ΣΥΝΕΔΡΙΑΣΙΣ 36.—ΦΕΒΡΟΥΑΡΙΟΥ 26 1911.

ΕΦΗΜΕΡΙΣ ΤΩΝ ΣΥΖΗΤΗΣΕΩΝ ΤΗΣ ΒΟΥΛΗΣ.—ΣΥΝΕΔΡΙΑΣΙΣ 36.—ΦΕΒΡΟΥΑΡΙΟΥ 26 1911. 669

on 27 May when it voted on the new Constitution, reinforcing institutional modernisation and consolidating liberalism. Prime Minister Eleftherios Venizelos was the absolute sovereign of the parliament, with his Liberal Party occupying 307 out of 362 seats. Since 1910 he had assumed the role of a great social reformer, aspiring to implement the vision of the 'Great Idea' – to liberate the still unfree Greek populations.

The proponents of katharevousa viewed the formation of the Second Revisory Parliament as an opportunity to vote on an article in the Constitution that mandated katharevousa as the official state language. On the other hand, supporters of the demotic, among whom was Venizelos himself, considered the imposition of the spoken language as a precondition for economic growth, industrialisation, the rule of law, and the expansion of national borders (Frangoudaki, 2001: 31–32).

The parliamentary debate for the constitutional establishment of katharevousa lasted for three days (25, 26, and 28 February), during which one-fifth of MPs spoke (with more than 160 speeches and interventions); overall, 15 amendments were submitted concerning language. Given the fact that the Liberal Party was in a strong majority, one would expect the demotic to prevail. However, surprisingly enough, katharevousa was overtly supported by 23 MPs with 14 MPs taking the side of the demotic, while 11 remained neutral (Meletiades, 2010: 125). The parliamentary debate led to the voting of article 107, which implicitly established katharevousa as the official state language ('The official state language is that in which the constitution and the legislative texts are written; any intervention to corrode this language form is forbidden').[8]

How can this incongruity be interpreted?

First, we have to take into consideration the structure of the parliamentary system of the time: the political constellations were not stable, with MPs being elected on merit of their place of birth, rather than according to their partisan affiliation, the latter being subject to frequent change. It is worth mentioning that among those who defended the demotic were the MPs of the Ionian islands, where the demoticist tradition was

strong, along with members of the Sociologists of Alexander Papanastasiou, who had joined the Liberal Party while maintaining their autonomy (Stavridi-Patrikiou, 2011: 412). On the other hand, as Meletiades (2010: 128, 158–159) notes, many MPs belonging to the Liberal Party gradually started to endorse the conservative ideological processes, which ended up with the formation of the monarchic party during the National Schism of 1917. An initial indication of this shift can be traced in the stance of some MPs towards katharevousa in the parliamentary debate in question. Thus, affiliation to the Liberal Party did not necessarily entail sharing the period's progressive language attitudes.

Furthermore, the ideology of katharevousa was reinforced in the first decade of the twentieth century across the political spectrum, something that becomes evident in the argumentative strategies of its supporters that are reflected in the JPD, mainly relying on various topoi,[9] and fallacies,[10] which can be summarised as follows:

1. Katharevousa is the de facto variety used in the public sphere, in which official documents are written (topos of reality), as well as the language preferred by the majority of citizens (JPD, 1911: 638, 657, 673).[11]

2. Katharevousa is the high variety, capable of expressing demanding, abstract thought (657), as opposed to the demotic, which is considered as non-cultivated and inferior (topos of definition, reflecting the extra-linguistic properties attributed to the two varieties at the time).[12]

3. Katharevousa can function as a *Koine*,[13] since it avoids variation of the spoken language and its local varieties (648, 661) (a fallacy, given that katharevousa was also subject to internal variation, while its archaic character caused many literacy problems to speakers, making it a weak candidate for a *Koine*).

4. Katharevousa is the cohesive bond of national identity (661, 685–686), associated with the nation's soul; it is the immortal language of the glorious Greek ancestors (675), an invaluable patrimonial treasure (680–681), and an element of national life (687–688), which ensures linguistic continuity as a direct offspring stemming from the very body of the ancient Greek language (699) (topos of history).

5. With the same line of reasoning, this variety is interconnected with religion (647, 666–667, 674–676, 679), forming the triptych 'language–nation–orthodox creed' (697–698), that needs to be safeguarded at all costs (651) in order for the Greek nation to fulfil its great historical mission (again the topos of history).

6. Katharevousa is the guarantor of national peace and security (646, 731, 733), alluding to the bloody incidents of *Evangelika* (1901),[14] and *Orestiaka* (1903) (667),[15] the two darkest pages of the students' movement history, in which protests (where lives were lost) took place in defence of katharevousa (topos of threat).

In addition, MPs from this strand accuse ad hominen the adherents of the demotic of being *malliaroi* 'hairy' (JPD 1911: 638, 647, 656–657, 660–663, 678, 685, 694–695),[16] mentally deranged (637–638, 657, 660, 674, 678), immoral, vulgar, and irreverent (660–664, 666–667, 681, 694, 657–658), a true national menace (638, 678, 713). Accusations of bribery and national treason are also made (660, 688), implying the oversimplistic connection between the Demoticist Movement and the spread of the communist ideology ('fallacy of threat and urgency').

On the other side, supporters of the demotic foreground its functional role as an authentic, vivid language (JPD, 1911: 654, 668, 679–680, 682), as the mother tongue of all Greeks (683, 689, 695) (topos of reality), ensuring the true continuation of Greek through folk tradition (654, 668–669), following the inescapable law of language change (653–654, 667–668, 670, 680, 682) (topos of history). MPs of this strand also stress the unbreakable liaison of the demotic with national identity (664), reinforced by this variety's contribution to the linguistic and national assimilation of foreign populations in areas such as Macedonia (671, 682–684) (topos of reality). Another argument added to the demoticist agenda is that the constitutional establishment of katharevousa would constitute an impermissible act for a liberal country, where freedom of thought and expression rule (670–671, 682–683) (topos of threat). Finally, the demotic facilitates access to education and literacy for all children, ensuring the continuation between school and social life, as opposed to katharevousa, which causes exclusion and confusion (669, 696) ('topos of reality'), since it is a dead, fossilised language (665), as they claim.

On the whole, the ideological nature of most arguments cited on both sides is evident. With the exception of the demoticists' rational appeals, rooted in current reality (educational inclusion, liberalist considerations) and linguistically informed claims (linguistic evolution as a token of language history, priority of spoken discourse), there are ideologically

inspired overlaps between the argumentation of the two groups, mainly evoking diachronic continuity of the Greek language and connection with national identity, echoing the widespread romantic theories of the nineteenth century concerning nationhood, rather than the actual political stance or partisan affiliation of the MPs, most of whom belonged to the Liberal Party, as already mentioned. As Archakis observes (2020: 40):

> Katharevousa and the demotic seem more like internal opponents, i.e. contestants of the same Interior, of the same (linguistic) domain, which they both aim at homogenising. Their rivalry consists in different answers to the same language question. The answer provided by katharevousa ideologically emphasises on the historical beginning of the Greek language, while that of the Demotic to its synchronic crystallisation.

Finally, many allegations made by MPs who were proponents of katharevousa not only reproduce popular language myths that violate basic principles of contemporary linguistics (e.g., the narrative of the supremacy of the high variety over the low one, linguistic evolution as decay, katharevousa as 'the language of all Greeks', when it was actually an artificial construct of scholars), but also propagate irrational fallacies, rooted in extra-linguistic evaluative stances (e.g., accusations of impurity and vulgarity against supporters of the demotic).

Yet the government of Eleftherios Venizelos decided to vote for article 107, although he himself remained neutral during the parliamentary debate: while acknowledging the literary tradition and the aesthetic value of the cultivated katharevousa (JPD, 1911: 741), Venizelos considered the demotic as the immortal folk language (739, 743). He condemned the exaggerated behaviours of both sides (740–741), foreseeing the end of diglossia through the coincidence of spoken and written discourse in a future variety of educated people (743). However, he knew well that the circumstances were too premature for that; the explosive atmosphere in the Parliament House, as well as the protests that were taking place outside, with the pressure exerted by particular interest-groups (e.g., scholars such as the archaist Georgios Mistriotis, head of the Committee in Defense of the National Language, in which members of the Church, like the Patriarch of Constantinople, were honorary presidents) left him with no other viable alternative but to constitutionally establish katharevousa, but without overtly naming it in the Constitution as the language of education, as demanded by many archaists. Although Venizelos's decision largely disappointed the extra-parliamentary adherents of the Liberal Party, it was still a move of political pragmatism: in view of the forthcoming Balkan wars (1912–1913), which were meant to double the national territory of the Greek state, Venizelos realised that the only way to achieve national reconciliation was to avoid the tension of yet another linguistic 'war', therefore opting for a linguistic compromise that would ensure social calm and cohesion.

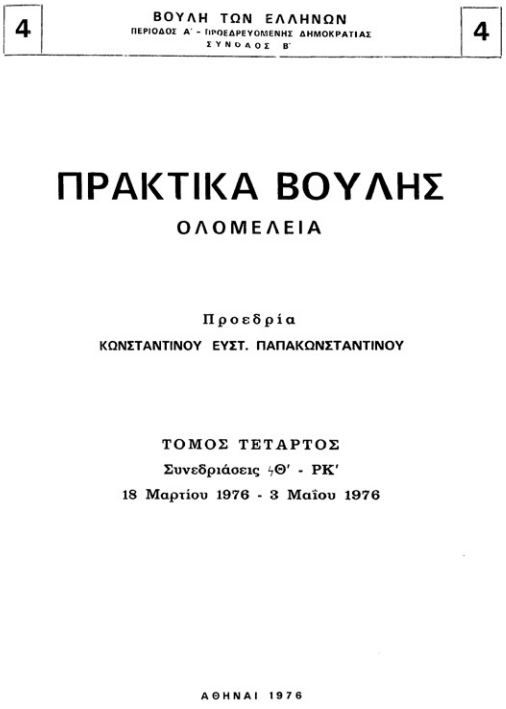
Let's now move forward 65 years, to the parliamentary debate on the linguistic reform of 1976, the last chapter in the long-standing history of the Greek language question. The momentum of convergence that Venizelos envisioned in 1911 had finally come: the victories of the Demoticist Movement in education and public life throughout the first 75 years of the twentieth century, coupled with the ideological devaluation of the katharevousa, subsequent to its overuse by the regime of the military Junta (1967–1974), paved the way for the prevalence of the demotic, within the more general need for change and restructuring pertaining to the period of the *Metapolitefsi* (i.e., the fall of the Colonels and the restoration of democracy in 1974) (Frangoudaki, 2001: 88–89).

During the parliamentary debate, which lasted for 6 days (5, 7, 8, 9, 12, 14 April 1976, see Figures 3 and 4), 41 MPs delivered speeches and interventions; the demotic was overtly supported by a majority of 38 MPS of all wings.

What is interesting in this case, which makes it comparable with the circumstance of 1911, is that again there was a discrepancy between language ideology and language policy: the establishment of the demotic was introduced and voted for by the right-wing party of the New Democracy, with Konstantinos Karamanlis as Prime Minister and Georgios Rallis as Minister of National Education & Religious Affairs, by means of the law 309/1976, erasing from the Constitution of 1974 the long-standing article 107, which had been introduced in 1911. Given that the traditionally 'conservative' right-wing parties, the 'offspring' of which was New Democracy, had long supported the katharevousa, this shift in policymaking was also rooted in the contingency of the situation at hand.

Again the choice was one of political pragmatism: owing to the Junta, the corrosion of the so-called *ethnikofrosyni* ('strong belief in nationhood') as an ideological system of the right-wing parties created

FIGURE 3: **Cover page of the *Parliamentary Minutes* (1976)**


4 ΒΟΥΛΗ ΤΩΝ ΕΛΛΗΝΩΝ 4
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Προεδρία
ΚΩΝΣΤΑΝΤΙΝΟΥ ΕΥΣΤ. ΠΑΠΑΚΩΝΣΤΑΝΤΙΝΟΥ

ΤΟΜΟΣ ΤΕΤΑΡΤΟΣ
Συνεδριάσεις ϡΘ΄ - ΡΚ΄
18 Μαρτίου 1976 - 3 Μαΐου 1976

ΑΘΗΝΑΙ 1976

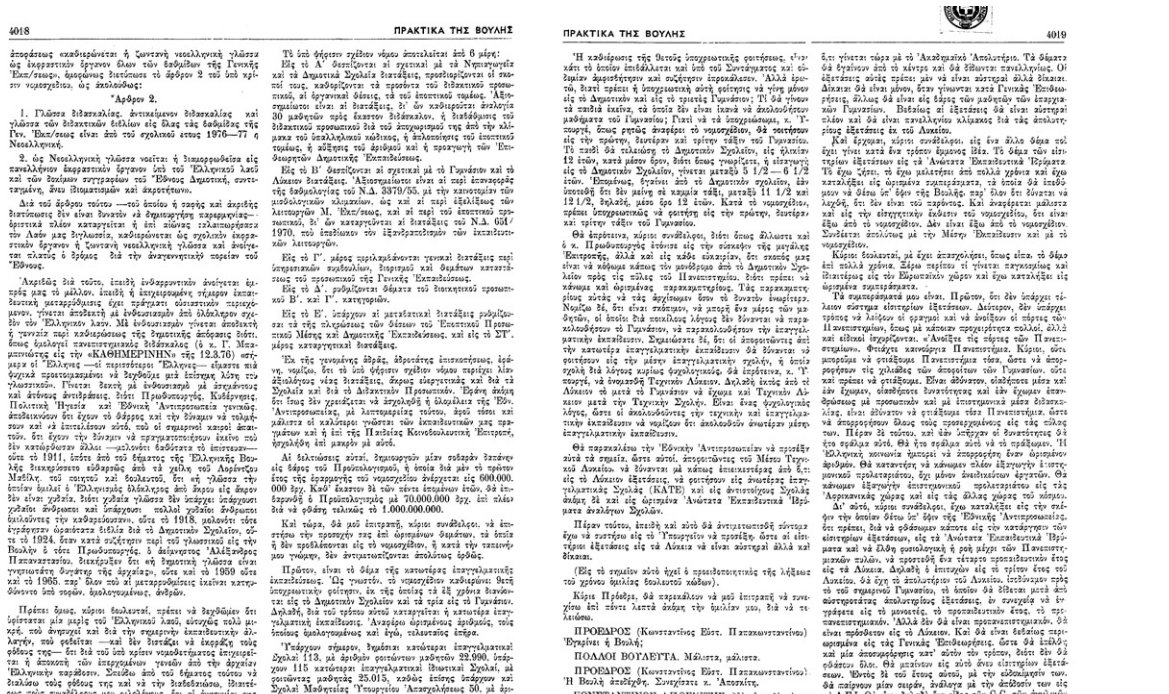
the impression that national ideology could be rebuilt, parting with all negative connotations of the extreme right-oriented past and ushering in modernisation of the Greek state in renewed terms; and the New Democracy Government recognised that language reform was a basic political tool in that direction, as became evident in the ideologically-driven arguments cited: the choice of the spoken variety assumed the status of a national programme (PM, 1976: 4022, 4112), which would foster the linguistic revival and the national self-knowledge of the Greeks (4129) (topos of reality), partaking the wisdom of the ancestors (4055) and developing religious consciousness (4050) (topos of history). It seems that for the MPs participating in the discussion the demotic had now incorporated the symbolic load of both varieties of the diglossic past.

However, language attitudes do not change overnight: among the 38 MPs who voted for the demotic, only 24 actually used it in their speech, most belonging to the centre and left-wing parties, while 14 used katharevousa (13 belonging to the party of the New Democracy). This divergence between political/voting stance and linguistic behaviour explains the sarcastic comment made by A. Kaklamanis, MP of the left-wing party of PASOK, that the Government voted for the demotic 'in fluent katharevousa' (PM, 1976: 4040).

Another aspect to comment upon is the preference of the term '*Neoellinikí*' (Modern Greek) in the text of law 309/1976, which in terms of *nomination* (Reisigl & Wodak, 2017: 95) signifies an intention to discursively do away with the extra-linguistic connotations that the term '*demotic*' had acquired within the polarisation of the Greek language question. The origins of *Modern Greek* as a unifying variety are dually defined by MPs: it is formed through spoken discourse coupled with the norm of literary scholars, who contributed to its enrichment. In the same spirit, the addition of the *predication* (Reisigl & Wodak, 2017) 'without idiomatisms and extremities' ensured that no further vernacularisation of the official language would take place henceforth.

On the whole, despite isolated objections during the parliamentary debate (e.g., by the rapporteur of the Opposition, I. Koutsoheras (PM, 1976: 4024),

FIGURE 4: **Excerpt from the *Parliamentary Minutes* (1976)**



who considered the choice of the term '*Neoelliniki*' instead of '*demotic*' as menacing, threatening to ultimately reintroduce katharevousa from the back door – the topos of threat), voting for the demotic took place in a triumphant atmosphere of national reconciliation, constituting a cross-party, historical moment of abolishing the 'pernicious diglossia' (4112).

CONCLUSION

Discourse analysis of the parliamentary debates cited here exemplifies the situated nature of the policymaking process: despite the different socio-political and sociolinguistic situations of 1911 and 1976, the impact of the ideological views of the MPs, attuned with the surrounding historical context, manifested policy discourses as continually (re)shaped through social interaction and as sensitive to political pragmatism: in both cases under discussion, the party affiliation of policy makers and their corresponding political views succumbed to pressures dictated by current reality, as interpreted in the light of the recent 'dangerous' past (e.g., 1911: Evangelika, Orestiaka; 1976: Junta) and/or the distant 'glorious' past (e.g., the inextricable link between the Greek language and nationhood, ever-present in the argumentative line of MPs in both historical instances).

This attempt to analyse the discursive processes that have given rise to differing views on major policy questions, such as the linguistic reforms of 1911 and 1976, constitutes a data-driven, interpretive perspective, highlighting the priority of qualitative/socio-pragmatic factors over quantitative/evidential ones for language policymaking, at least where the two case studies are concerned. This enlarged approach lies at the heart of the Hellenic OCR Team agenda, leading to methodological cross-fertilisation with domains such as political and intellectual history, and offering both empirical insights and helpful recommendations for future policymaking.

NOTES

1. This chapter stems from the author's postdoctoral research, entitled 'From Language Attitudes to Language Policies: Discussing the Greek Language Question at the Hellenic Parliament' (supervisor: Professor Eleni Karantzola, Department of Mediterranean Studies, University of the Aegean).
2. The breadth of what is considered as evidence is wide (Shaxson, 2005), including photographs, literary texts, official files and records, autobiographical material such as diaries and letters, newspaper files, and ethnographic accounts.
3. These approaches lack a single name in the relevant literature, in which one finds these cited terms being used interchangeably (Durnova & Zittoun 2013: 85, footnote 1).
4. Silverstein (1979: 193) defines language ideologies as 'sets of beliefs about language articulated by users as a rationalization or justification of perceived language structure and use'.
5. The available format (jpeg) of Parliamentary Minutes of the periods in question does not allow for word count or any other sort of automatic processing.
6. Digital Library, Hellenic Parliament Library, available at: https://digitallib.parliament.gr/display_doc.asp?item=48532.
7. Digital Library, Hellenic Parliament Library, available at: https://digitallib.parliament.gr/display_doc.asp?item=48093.
8. Available at: https://www.hellenicparliament.gr/UserFiles/f3c70a23-7696-49db-9148-f24dce6a27c8/syn14.pdf, p. 26.
9. Topoi are the formal or content-related warrants or 'conclusion rules', which connect the argument(s) with the conclusion/claim, justifying the transition from the argument(s) to the conclusion (see Reisigl & Wodak 2017: 102). For an indicative typology of topoi, see Wodak, 2009: 44.
10. Fallacies are unreasonable, fallacious argumentative schemes (Reisigl & Wodak, 2017).
11. Interestingly enough, the alleged citizens' preference of katharevousa is one of the rare occasions when factual evidence is provided in the corpus data to defend a claim: the MP of the Liberal Party M. Galanos (675) mentions that 10,000 copies of a theological short story written in Katharevousa by Professor Amvrazis were sold, while he himself as a theologist published the speeches of St John Chrysostom, selling 3,000 copies, 2,600 of which were bought by people belonging to different professional classes. It goes without saying that the argumentative validity of such limited data can be seriously questioned ('fallacy of reality').
12. 'Topos of definition' arbitrarily mandates that a person or thing that is designated X (e.g., the 'high variety') should carry the qualities/traits/attributes consistent with the meaning of X.
13. For a sociolinguistic definition of *Koine* (*koinè*), see Siegel 1985.
14. The Gospel riots, during which a protest took place against the publication in the newspaper *Acropolis* of a translation of the Gospel of Matthew into spoken Modern Greek by A. Pallis.
15. Staging at the National Theatre of Aeschylus' *Oresteia* in a prose translation by G. Sotiriades.
16. This adjective refers to the long hair of the first demoticist poets as a symbol of progressiveness, gradually being limited to adherents of the extreme end of the Demoticist Movement, associated with Yiannis Psycharis (1854–1929).

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Part 2

Advanced Tools and Methods for the Digital Transformation of Parliaments

Software Tools and Services for the Data-Driven Parliament

Sotiris Leventis

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ABSTRACT

Today's technology landscape offers the means to exploit a suite of technological tools that can be applied to the digital evolution of parliamentary institutions. The provision of end-to-end software solutions entails multidisciplinary fields and calls for a flexible technical platform combined with an expert network that consists of people with specialised knowledge in the appropriate domains. This endeavour is evolving into a digital ecosystem of apps and services through software-as-a-service model for parliamentary organisations. This chapter describes how the Hellenic OCR Team and its consortium of partners have been, and will be, working towards the implementation of such software solutions to provide long-term value for parliamentary institutions.

ABOUT THE AUTHOR

Sotiris Leventis has over 20 years of experience in the field of technology. He is the founder and managing director of Hypernetica, a software company that provides software solutions and promotes innovative scientific research, and the Head of Technology of the Hellenic OCR Team. Sotiris has published a series of scientific papers on the application of enterprise integration patterns in digital transformation use cases through the adoption of software agents.

INTRODUCTION

Today's technology landscape offers the means to build software solutions that can be applied to the digital evolution of parliamentary institutions. The Hellenic OCR Team and its consortium of partners have been working towards the implementation of such specialised software solutions to provide added and long-term value for parliamentary institutions. The overall goal is to cover all aspects of the modern parliamentary workspace with customisable, expendable, and scalable apps and services.

When trying to provide end-to-end software solutions, the establishment of a holistic approach to effectively fuse the appropriate technological advancements and the unique characteristics of such institutions comes with its own set of challenges. Such solutions entail multidisciplinary fields and call for a flexible technical platform combined with an expert network that consists of people with specialised knowledge in appropriate domains.

Therefore, through a set of available technologies and tools, a flexible integration platform can be formed that reflects the existing processes and assets already in place within the parliamentary workspace. This can be achieved by harnessing the technical skills of a decentralised software development team and channelling them towards mainstream software development processes. Jointly working with an international and cross- disciplinary scientific team provides the means towards the materialisation of the said platform.

Since its inception in 2017, the Hellenic OCR Team and its consortium has already developed a process, defined by Fitsilis and Mikros (2021), and several tools that have proved to be useful in practice. Focusing on open-source codebases to attract third party development, these tools need to be adapted to and enhanced for specific use cases.

Gradually, this endeavour is evolving into a digital ecosystem of apps, services, and specialised software agents for parliamentary organisations, which are able to choose the subsets of available features that match their specific needs. The overall architecture will inevitably be based on proven enterprise integration patterns to tackle volume, location, and diverse data format challenges when building distributed systems. A concept design has been outlined by Leventis, Anastasiou, & Fitsilis (2020), presenting the use of actor-based software connectors ('agents') that access specific data sources and systems.

This chapter presents the existing tools and processes as well as the architectural overview and solution design of a proposed integrated solution for the parliamentary workspace. It also provides an overview of the specificities of building such systems. In addition, focus will be given to planned activities and potential future endeavours through the prism of the Hellenic OCR Team and its consortium of partners, considering the evolving needs of parliamentary institutions and the advances in technological capabilities.

SOFTWARE DEVELOPMENT IN THE PARLIAMENTARY ENVIRONMENT

Parliamentary activities generate a large and increasing number of legal documents. The data contained therein have the potential to provide significant insights not only for the institutions themselves but also for the general public. One of the challenges related to data handling is inevitably the heterogeneity of formats and locations of datasets available for processing. Such situations are not new to the development of information systems and platforms. More specifically, although data processing could be further automated, manual review, cleaning, and interpretation of data remains a common scenario. This creates capacity issues for parliamentary administrators and resources, and these are compounded by the lack or absence of organisational structures (Berntzen et al., 2019).

Another factor that inhibits the ability to streamline data processing is the lack of availability of open data owing to property rights, proprietary formats, and limited access; this further limits the use of linguistic annotation tools, leading to restricted interpretability of targeted data (Beck et al., 2020).

These issues were a key motivation in the formation of the Hellenic OCR Team and its decision to evolve as a decentralised network across different sectors – public, private, and academic – and to focus on disciplines that tackle the annotation of corpora. Among other measures, a training scheme was established to ensure validation, uniformity, and reproducibility of resulting textual data, and, subsequently, the quality of the software solutions that seek to exploit them.

The technological aspect also had to be addressed. Integrated systems are eventually upgraded and datasets are restructured. Compounded by the challenges of repetitive work and the diversity of formats and sources, the suggested approach is an integration platform that is accompanied by apps and services that enhance automation, empower parliamentary administrators, and enable further insights from the processing of available data.

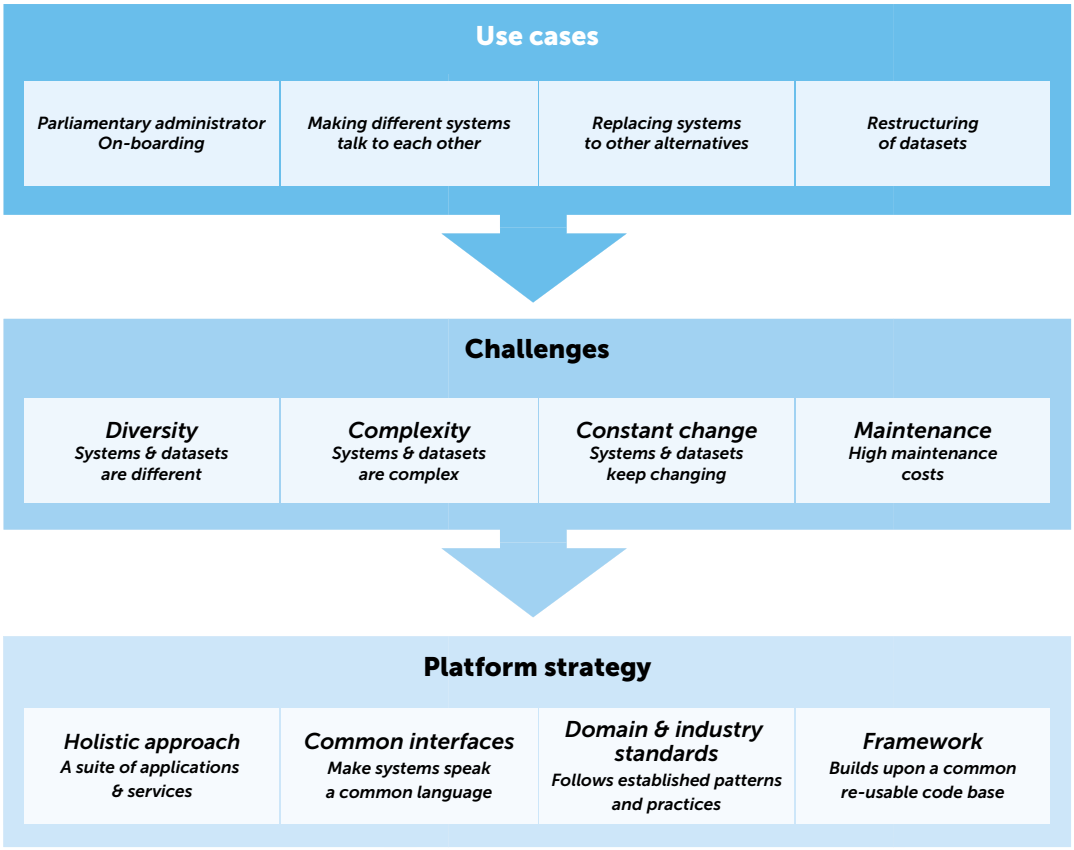
Figure 1 depicts an overview of the described use cases, their challenges, and what the platform must offer to address them. Factors that need to be considered include the need for a smooth onboarding of parliamentary administrators into using the set of features available and systems that are ever-changing, owing to their upgrades, replacement, and data updating. This entails addressing the challenges that use cases produce such as systems diversity, complexity and maintenance costs, and in effect the risks of disrupting smooth operation. The approach to building such a solution builds upon established patterns and practices that have proven to address such challenges and uses a common reusable code base that is battle-tested early in its development, thus providing solid groundwork for future implementations. A uniform interface is embedded to provide homogeneous integration between systems.

STATE OF PLAY

This section presents an overview of a selection of existing tools and technology stacks, and how they can be refactored or repurposed to align with the ongoing development of a platform.

In the years since its inception, the technology team has already developed several tools such as the Xtralingua application described later. These tools have been built mostly in open-source format to attract third party development; this can adapt and extend them to specific use cases and to enable external reviews for encouraging improvements in the tools' quality.[1] This will continue to be part of the Team's strategy as these evolve from separate codebases and underlying architecture towards a more unified platform, thus inspiring adoption by parliamentary institutions and the wider community of practice.

FIGURE 1: **Overview of the use cases, challenges, and platform strategy**



Some of the developments were initiated from internal initiatives and experience from demands in the field, as with the case of tools built for the retrieval and processing of parliamentary questions and answers, while others were triggered from workshops and other events, an example being the Xtralingua application that emerged from the Google Summer of Code programme.

The Hellenic OCR Team emerged in the context of the Hellenic Parliament. More specifically, the development team's area of attention was the written parliamentary questions that are stored in an internal document management system. These are accessible as image PDFs along with their respective metadata via a graphical user interface in a dedicated place on the parliament's website.[2] This use case showcases the common limitations of available data formats for efficient automated linguistic analysis and algorithmic processing, and also the system's suitability for proving the Team's unique approach to these challenges.

The process begins with data collection through crowdsourcing techniques. OCR software then converts the questions embedded in PDFs into documents in TXT format. A commercial application from ABBYY (Fine Reader) is utilised, but open-source solutions have also been used as a proof of concept (Tesseract). These text documents are then grouped into 'packages' and are assigned to Team members who process them by cleaning, reviewing, and structuring the body text of written questions. Quality control steps are performed and the validated datasets are stored in a database.

The process described here utilises a set of scripts to collect, process, and parse the data. A web scraper and an indexer are used to extract the documents and their metadata from the parliamentary website. The script parses the rendered web pages and extracts the questions based on the expected structure of the pages and the location of the questions within, including the links to the question

and answer files that are stored in a CSV file. These links are then used to download the linked question files.[3] Once parliamentary data is processed and structured, the way is paved for further analysis and consumption.

Another application that has been developed by the Team is Xtralingua, which extracts quantitative text profiles from multilingual corpora (Fitsilis et al., 2020). The primary aim was to develop a tool with an intuitive user experience that allows researchers with no specialised technical knowledge to quickly select texts to be analysed and produce complex quantitative text profiles. Xtralingua utilises existing open-source text analysis packages that are available in different programming languages. It supports a multitude of different quantitative text indices such as text readability, lexical diversity, and specialised measurements based on quantitative linguistics theory, and can be easily extended thanks to its open-source implementation. Its user interface follows the logic of a simple input–process–output workflow through respective tabs. Starting with an input screen, the user selects the text files to be processed, and the following processing screen allows selection of the quantitative text indices that will be used. Finally, in the result screen, the user can inspect the document-feature matrix and select several different export functions, including saving the results in CSV or JSON formats.

In addition to these activities, the Team has also engaged with Legislation Editing Open Software (LEOS), a legal informatics tool that features the drafting of legal documents using Akoma Ntoso-compatible schemes. Although the current scope of the tool focuses on cooperative legislative drafting, its potential to be repurposed for parliamentary control document drafting has been explored (Leventis, Fitsilis, & Anastasiou, 2021). A suggested solution would enable the tool to edit or generate written parliamentary questions based on standard templates. In this regard, LEOS's ability to integrate with other systems and data sources was evaluated.

Building further on these initial tools and the knowledge gained, the Team's next step is into the area of text analytics through the fusing of existing development and experience into an integrated solution that will be the basis for an upcoming platform and suite of supported apps and services. Potential projects could materialise during ongoing discussions with the community, such as the stakeholders of Joinup,[4] a collaborative platform that has been created by the European Union to develop a system that integrates with existing Joinup solutions.

PLATFORM STRATEGY AND ROADMAP

This section expands on the overall platform architectural approach, starting with the way in which data and systems can be accessed and integrated, followed by the way in which it can be delivered, presented, or consumed. Although the focus of the Hellenic OCR Team remains on the digital transformation and empowerment of parliamentary institutions, the approach presented here can be applied beyond the areas of parliamentary and legal domains. The Team acknowledges the necessity for a long-term strategy that embraces the needs of the public and the scientific community as well as commercial organisations. Therefore, the outlined solution will intentionally be shown in an industry- and field-agnostic manner that considers open/free implementations as well as possibilities for commercialisation.

The next phase of development targeted by the Team is to evolve towards a more unified set of apps and services. A framework of a multi-agent system is considered where software agents use proven enterprise integration patterns techniques in a manner that can be horizontally scaled to permit integration with other systems and the processing of diverse data sources and formats (Hohpe & Woolf, 2004).

An integration platform will be built with the encouragement and facilitation of interoperability at its core in the form of a distributed system for message-oriented communication and feature exchange. This distributed system will be realised through software agents, which will develop as specialised connectors for supported subsystems and serve as their interface to the rest of the systems. They will outline each system's unique characteristics by defining any heterogeneity that exists. Agents will therefore be required to feature a variety of common and reusable functionality such as logging, messaging, scheduling, polling mechanisms, communication protocols, and data accessing. Examples of such systems are those lacking an application programming interface (API) or those that need to be repeatedly polled for changes. Other systems might push notifications of changes in specific communication protocols or have other unique characteristics that need to be considered. These systems can be equipped with their own specialised agent-based software

connectors that will qualify them to connect with other respective agents.

Each agent can contain built-in components designed to tackle specific operations. A listener component receives messages from other agents through a configurable endpoint and stores messages in their designated queue. A message processor pulls a message from the queue and sends it through appropriate operations depending on its nature. These operations utilise the agent's adapter, which directly integrates with the system. At this point, any required messages are sent to other agents via the message dispatcher component. Composite agents may also be implemented as orchestrators or aggregators of other agents, forming workflows and automations, or their message processors might encapsulate one-off or recurring behaviours; these can include self-triggering sending of messages to other agents to initiate a business process.

A simplistic depiction that uses an example with an agent, tasked to be the connector for a set of data sources, communicating with another agent, acting as the connector of a separate system, is shown in Figure 2.

This integrated system can utilise datasets in a uniformed and aggregated fashion. Yet the real value comes when more systems need to access these datasets, since the agent exposing the datasets is already in place. The approach encourages future features, apps, and services that can utilise the platform as a basis for reducing implementation timeframes for production ready solutions, while avoiding boilerplate development. Indeed, the architecture will likewise harness existing technologies and available codebases developed by the Team or the greater parliamentary community. An overview of the platform components is depicted in Figure 3.

A set of applications such as desktop and mobile apps or web portals, and services in the form of connector agents, can use a core set of reusable features that are commonly required in implementations. These include data access for common data sources such as databases or file systems, messaging, and error handling and logging. These core features will be embedded within the applications and services. Services can use them to integrate with external systems and datasets.

FIGURE 2: **Agent high-level architecture**

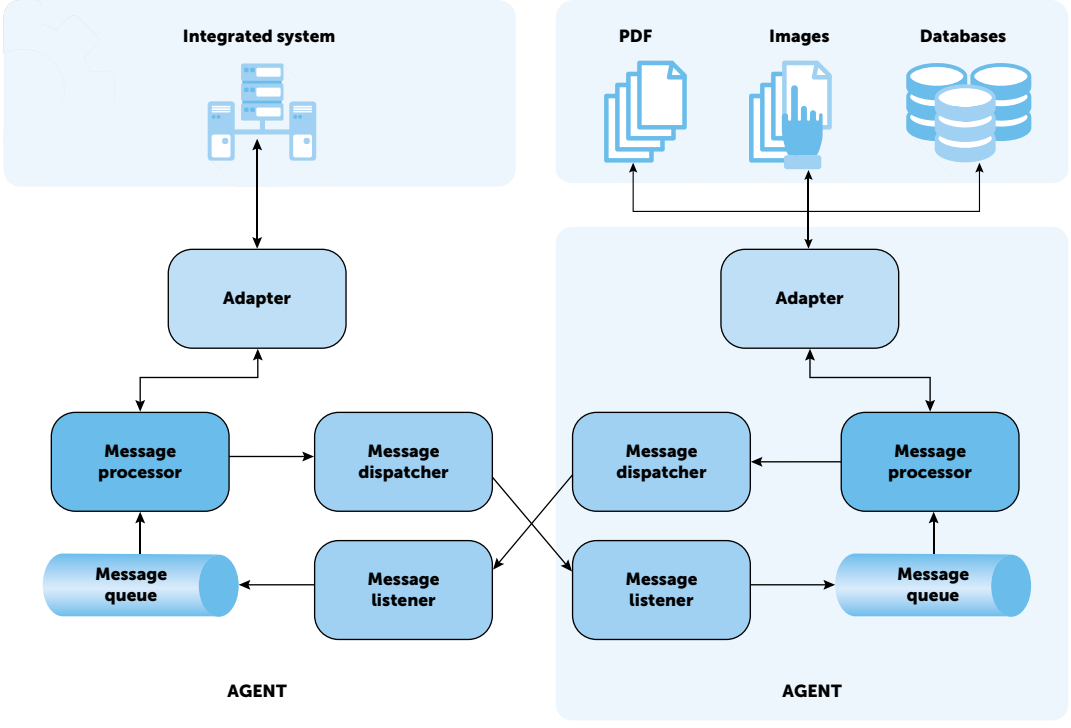
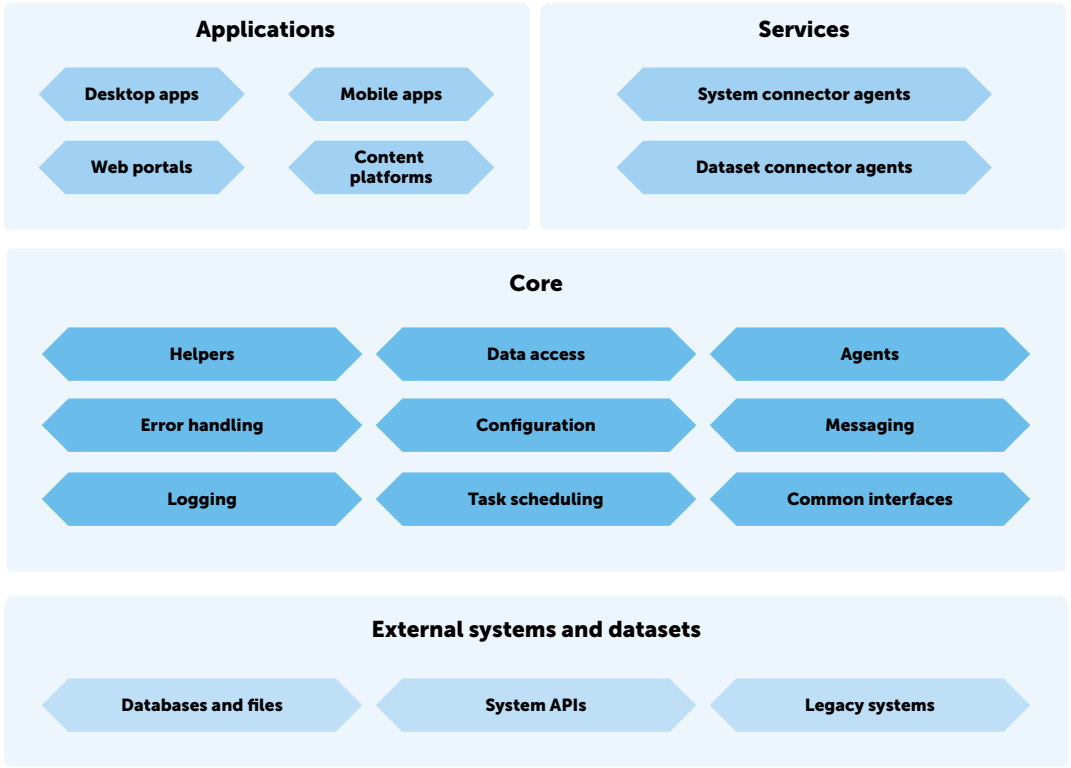


FIGURE 3: **Platform overview**



Subsequent versions of the platform may include a set of reusable components that encapsulate frequently required features, therefore reducing the effort and timeframe of agent development. Quickstart templates can be made available that consist of built-in functionality for common agent requirements such as interacting with specific data source formats or file systems, or even other platforms such as Zapier, ITTT, MuleSoft, or Apache Kafka.

Institutions can access open-sourced or free agents and clone or extend them by building their own customised agents for their specific needs. The private sector can use such agents to offer premium features and advanced customisation.

It is suggested that the platform can be made openly available via the software-as-a-service model, offering a low barrier of entry. This could encourage use in the parliamentary workspace, while offering incentives for commercial applications. Thus, free and/or open-source solutions and content should be available alongside commercial or premium offerings and independently from the delivery options available. Users and organisations should also be able to choose from the subsets of available features that match their needs. The consumption of the datasets can be via portals, desktops, mobile apps, or APIs, depending on the specific use cases and institutional requirements, or those of other interested parties.

Additional delivery models and distribution channels should also be considered, owing to technological advancements that enable alternatives that were previously not available and also owing to the ever-changing preferences of the public. This is key to encouraging and maintaining interest, engagement, and awareness of the community as it relates to the current legal and political situation, and evolution on the national and European level, and also for the sustainability of commercial organisations that need to stay relevant and up to date with market trends. Such cases of delivery should be considered for future versions owing to the challenges in implementing them from a software development standpoint.

PLATFORM EVOLUTION AND SUMMARY

As the platform evolves, future versions should enable and encourage an ecosystem of interested

parties and potentially a marketplace where additional agents and components can be incorporated. Resulting datasets could be consumed or acquired via alternative methods such as non-fungible tokens (NFTs). Such content could take the form of images (e.g., infographics), automatically generated audio using specialised text-to-speech software, or even videos of metahumans communicating the information. Thus, content could be presented through mainstream channels as audio (e.g., Spotify or other podcast platforms), videos (e.g., YouTube, TikTok), or, eventually, through metaverses.

Such channels already seek to attract the increasing number of younger users who are consuming content via short soundbites and videos. Commercial organisations are also exploring such forms of communication, as many did in the past when they used chatbots within their portals as these technologies started to evolve.

Moreover, software agents can be enhanced with artificial intelligence (AI) features and more autonomy or applications that look to utilise integration across already supported systems and datasets of the platform as a backend. Examples of such features are presented in more detail in subsequent chapters that cover recommender systems and other AI applications in parliaments. Although some of these scenarios will require considerable development, one must always look forward when designing a platform that will provide long-term value both to representative institutions and to the public.

The Hellenic OCR Team and its partners have developed tools and established methodologies for analysing, processing, and delivering data. This has brought the Team to its next set of goals, which is to proceed towards a prototype integrated platform that builds on achievements to date. In line with the philosophy of the platform as well as maintaining a realistic roadmap, existing solutions and technologies will be used wherever suitable. An iterative development approach can be applied to enable shorter feedback loops with potential users of the platform.

Wherever these exciting advancements take us, it is crucial that both academia and the parliamentary community should be encouraged to adopt and extend this platform, while also offering incentives for commercial partners to do so too. Looking into the future, the solutions of choice should avoid design limitations related to specific areas or industries, while the focus should remain on parliamentary institutions and the accommodation of their digital journey.

NOTES

1. https://github.com/hocrt.
2. https://www.hellenicparliament.gr/en/Koinovouleftikos-Elenchos/Mesa-Koinovouleutikou-Elegxou.
3. This method is transparent, user-friendly, and can be customised to extract data from a large variety of parliamentary websites.
4. https://joinup.ec.europa.eu.

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Traceability and Transparency in Parliamentary Scrutiny Processes via Evidence-Led Visualisations

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ABSTRACT

Since elected officials are obliged to effectively represent and ensure the rights of their constituents, parliamentary openness and accountability is essential. This chapter proposes a graph-driven visualisation framework to investigate parliamentary open data including voting, legislation, questions, and other reports. Specifically, it showcases the capabilities of a visualisation toolkit based on the existing corpus of Hellenic Parliament Questions during 2009–2019 developed by the Hellenic OCR Team. We thus offer a self-service, easy-to-use parliamentary information visualisation framework that fosters scrutiny and transparency.

ABOUT THE AUTHORS

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INTRODUCTION

Public access to information and transparency are fundamental principles of modern democratic systems. As included in various universal declarations and treaties, they guide governmental and parliamentary action, within a fully democratic system of governance, for the provision of public goods and services. Furthermore, they have been recognised as essential in the United Nations 2030 Agenda as part of the effort to achieve the Sustainable Development Goals, and more specifically the 16th Goal, to 'Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels.'

Such innovative parliamentary traceability and transparency demands critical progression from conventional data interfaces to evidence-led, visualisation-based working systems. At European Union (EU) level, the exchange of information between EU Member States should be transparent, all the while allowing the data to be available to the public (Benesch, Bütler, & Hofer, 2018). In this context, national parliaments can play an active role in drafting and controlling the measures taken by Member States in these areas using evidence-based approaches to parliamentary scrutiny.

A parliament's three main functions are to analyse and question the government's performance, to enact laws, and to enable government voting on financial supplies (e.g., authorising government expenditure) (Harris, 2013). Accountability and transparency are connected to scrutiny, but they are not the same thing. While scrutiny is a procedure, accountability is a legal relationship, whereas

transparency is a condition. While much examination is conducted without regard to accountability, certain types of scrutiny occur in the framework of formal accountability arrangements, in which specific individuals, institutions, or organisations might hold government officials (ministers and civil employees) responsible. This implies that an inquiry committee can officially or by agreement ask a state official to justify or explain their organisational or individual choices, conduct, and accomplishments in regard to the government's budget, management, or policies (Philp, 2009).

Parliamentary scrutiny entails the legislature participating actively in the development and implementation of governmental restrictions in these domains (Wagner, 2021). In addition to improving democratic oversight and reinstating constituent confidence, parliamentary information technologies involve accountability in parliamentary practices and among elected officials, continuously calling for inclusiveness following the gathering of information on legislation and expenses.

Parliament, as an entity that represents the people, is responsible for ensuring that the execution of policymaking represents and satisfies public demands. Along the same lines, a parliament is entitled to ensure that agreed-upon policies are effectively executed and communicated to target populations. This is where parliamentary supervision comes in, embodying three aspects:

1. The provision of information with the goal of advising citizens.
2. Technological transparency.
3. Legislative accountability as a way of empowering people. Parliamentary data visualisation offers a broad range of aspects that can be evaluated and described.

APPROACH AND METHODOLOGY

Access to parliamentary data is the foundation for delivering effective scrutiny processes as part of a broader data-driven administration; this is led by the Open Government Data movement (Ooijen et al., 2019). Data visualisation, as a key technological enabler, can provide specific entry points to engage stakeholders, making data accessible and understandable in ways that go beyond the realm of experts and increase engagement by citizens and other parties, thus enforcing trustworthiness and transparency.

Visualisations of relevant data can play a major role in this, especially in a scrutiny context, since they can greatly improve cognitive productivity, helping to formulate scenarios, interpret data trends, and identify patterns intuitively and quickly (Ware, 2021). Key advantages of visualisation include:

1. The ability to interpret large datasets.
2. The identification of correlations that are not anticipated without visual assistance, thus providing unique understanding.
3. Making data errors and inconsistencies apparent, hence representing quality assurance.
4. Facilitating the understanding of data features and the formulation of hypotheses about them.

These capabilities answer to legislative openness standards and witness to the necessity for parliamentary knowledge to be made available, specifically in the context of legislation and complex documents, via technologies that provide for parliamentary visual analytics. Data visualisation advocates responsiveness across a variety of attributes, including open-source software, user acceptance, and two-way engagement, as well as the ability to identify important features, which together sit within the government's agenda regarding parliamentary informatics. This is a major consideration that can be recognised as an advantage in the search for parliamentary information visualisation (Papaloi & Gouscos, 2013).

Providing novel interfaces and setting up filters and views of data via automated, guided processes as part of a successful visualisation framework can help users to discover insights and observe previously unnoticed or even hidden data relationships. Tools and modules that allow data exploration and the understanding of complex relationships and interconnections, while at the same time being capable of being adapted to both non-expert and expert users' needs, could boost the effectiveness of parliamentary information visualisation, and therefore strongly increase user engagement and connections with particular issues.

In this chapter, we showcase the use of such a framework to rapidly identify one of the basic parliamentary performance Key Performance Indicators (Aldons, 2001), namely the number of questions asked during parliamentary sessions. We ran this test case using the Advanced Visualisation Toolkit (AVT),[1] an open-source solution offering data exploration and storytelling capabilities via intuitive advanced visualisations. Exploiting its manual data-loading capabilities and its off-the-shelf visualisations of related variables for a given dataset, we have

analysed data from the Hellenic Parliament and specifically parliamentary control documents.[2] Based on work conducted by the Hellenic OCR Team (Fitsilis & Mikros, 2021), a set of parliamentary questions taken from the Corpus of Parliamentary Questions in the Hellenic Parliament open dataset has been used.[3] The dataset consists of parliamentary questions covering a period from October 2009 to June 2019, organised in four parliamentary periods, and the accompanying metadata files in CSV format. In this study, we have focused on specific metadata related to the questions, namely the submitters of the questions (Members of Parliament, MPs) and the ministry or ministries to which each question is addressed. This metadata is organised in CSV files per period.

EXTRACTING INSIGHTS FROM PARLIAMENTARY OPEN DATA

Loading data to the visualisation framework and producing interactive visualisations is a process involving a minimal number of steps requiring no significant expertise in data analytics or visualisation tools. First, the loading of CSV files, such as the ones in our dataset, is supported out of the box by AVT, which allows users to easily select the data relationships they wish to visualise. Such functionality provides users the option to quickly load and visualise data without the need for complex data preparation processes or configuration settings, other than selecting the desired data columns to be used. Figure 1 shows the two metadata fields (submitters and ministries) selected.

Upon selection of the data to be visualised, a new data case is created and made available to the user. This case creation step is repeated for all four periods of the datasets, resulting in four data cases (Figure 2).

The loaded datasets are immediately available for exploration through an interactive dashboard (see Figure 3). The main areas of the dashboard include the temporal representation (top part), the network graph representation (bottom part), and the actions bar (left sidebar). Both the timeline and the graph widgets are interconnected, meaning that filtering data to either of them causes the other to update as well. Filters include limiting according to the number of occurrences, the number of asked questions, or asking MPs.

The distribution of questions in time is immediately available to the user who, in conjunction with the detailed timeline widget, can see the overall picture of when most questions were asked. Moving back and forth in time gives the opportunity to see temporal correlations between the involved entities (i.e., questions, submitters, and ministries) and perform actions such as quickly monitoring questions asked to a specific ministry during time (by using the relevant filter) or using the moving slider control to see the evolution of the submitters–ministries network over time.

FIGURE 1: **Selection of data (submitters and ministries) to be visualised**

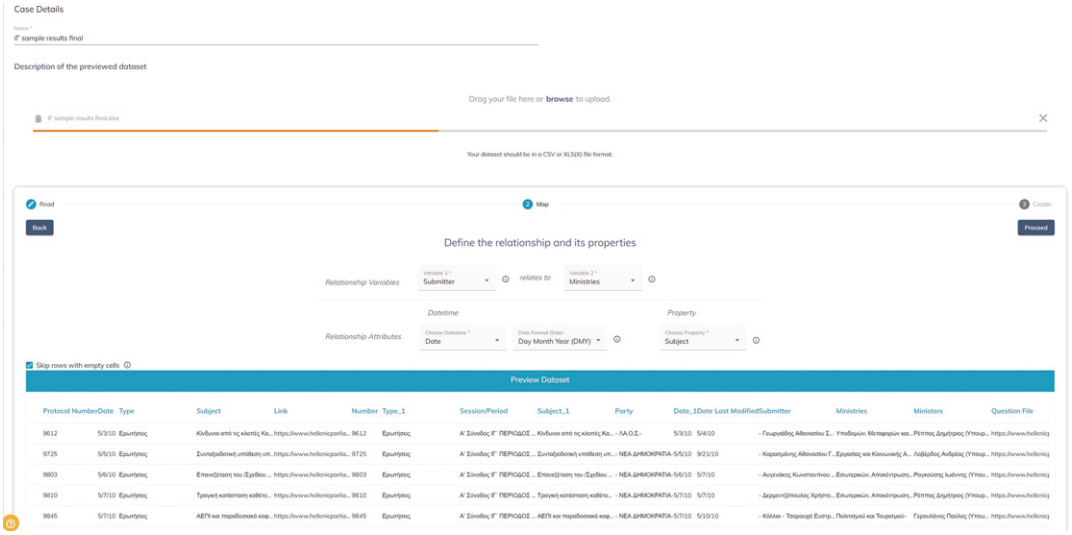
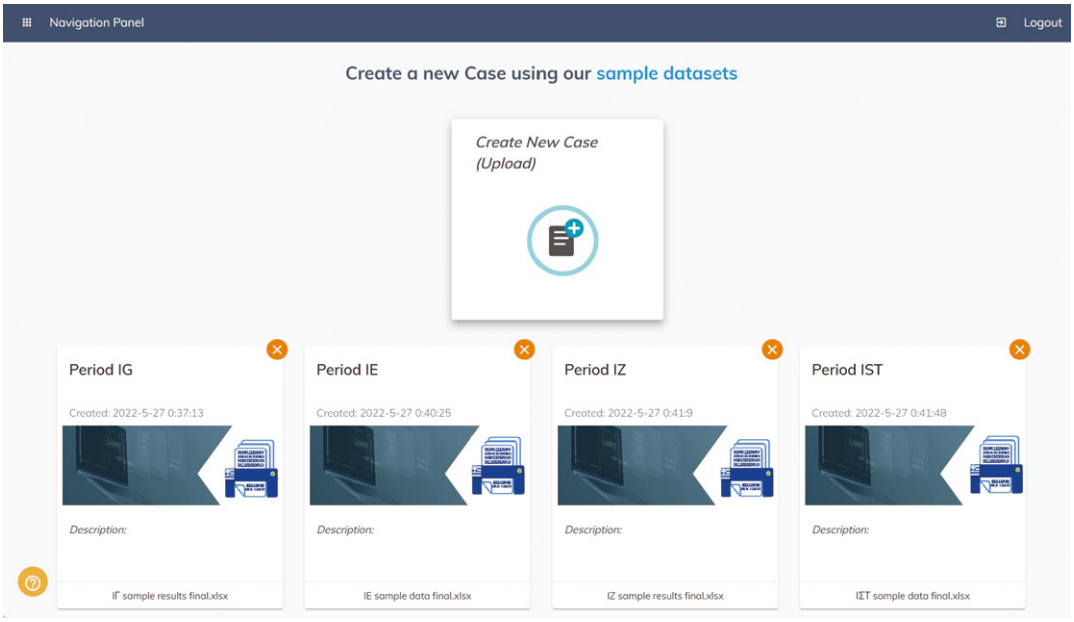


FIGURE 2: **Data cases of four parliamentary periods**



It is worth noting that during the experimentation, specificities of the dataset (e.g., long label names owing to multiple MPs asking a particular question) and feedback from the Hellenic OCR Team members were used to adapt the tool so as to create better visualisation results.

The graph-based visualisation reveals the derived network of submitters and ministries. Graph analytics have been previously used to visualise political relationships (Perer & Shneiderman, 2008; Steinbauer, Hiesmair, & Anderst-Kotsis, 2016), and relevant metrics such as centrality measures, closeness, and graph clustering can not only disclose hidden insights but can also be used in political science studies (Ward, Stovel, & Sacks, 2011). Examples of the visualisations may include graphs comparing questions received by ministries (e.g., left part of Figure 4, which shows questions addressed to ministries of Foreign Affairs, Health, and National Defence) or helping to examine a specific MP's activity over a certain period (e.g., right part of Figure 4 for three selected MPs).

For the purposes of our test case, we have used the built-in statistical functions of the tool; these perform basic statistical analysis, including, for example, the calculation of minimum and maximum occurrences of a variable (i.e., a data column). We have used this functionality to discover the MP who asked the highest number of questions during the examined period. We then selected ministries as our desired variable and discovered the ministry with the highest number of received questions. After repeating this process for all four periods, we ended up with the visual results of the most active PMs and ministries over the four parliamentary periods.

The produced visualisations may provide, for instance, a clear overview of the most active MP in terms of questions asked, including the ministries to which the questions were addressed and the distribution of the questions in time, thus allowing users to easily grasp the MP's activity and the subjects with which he or she was engaged. At the same time, similar information about the other aspect of the questions, the ministries, can be compiled in a single click, thereby offering a view of the ministry that is receiving the most questions. The most active ministry (the one that received the most questions) during the four periods was the Ministry of Education during 2009–2012 (period IΓ) and the Ministry of Economics during 2012–2015 (Periods IE and IZ), when the economic crisis was well established in Greece. Another interesting outcome was that the most active MP in the last three periods of the dataset (IE, IZ, IΣT) was the same person, who has evidently demonstrated consistent high performance in this aspect. Using the timeline component, we can see the distribution of the MP's questions over time (Figure 5).

FIGURE 3: **Interactive visualisation dashboard**

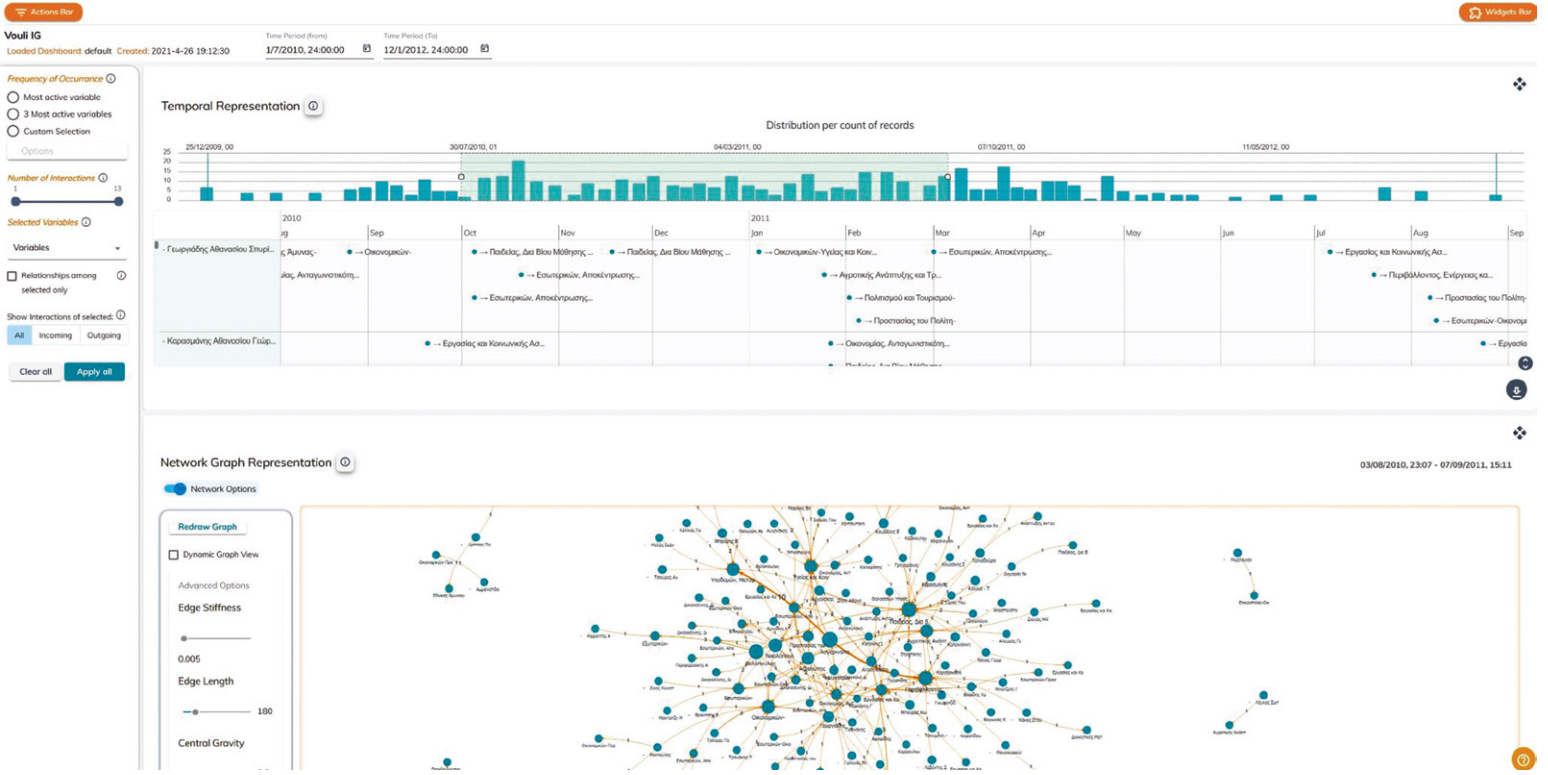


FIGURE 4: **Left: questions to ministries; right: questions by submitters**

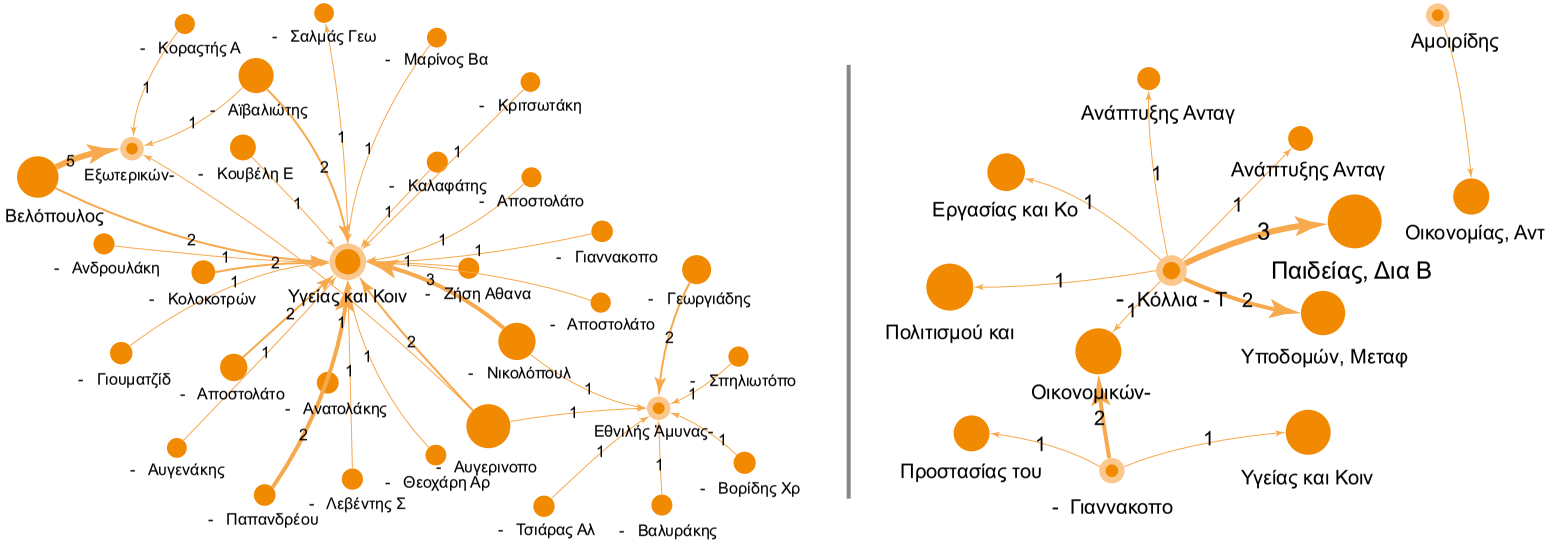
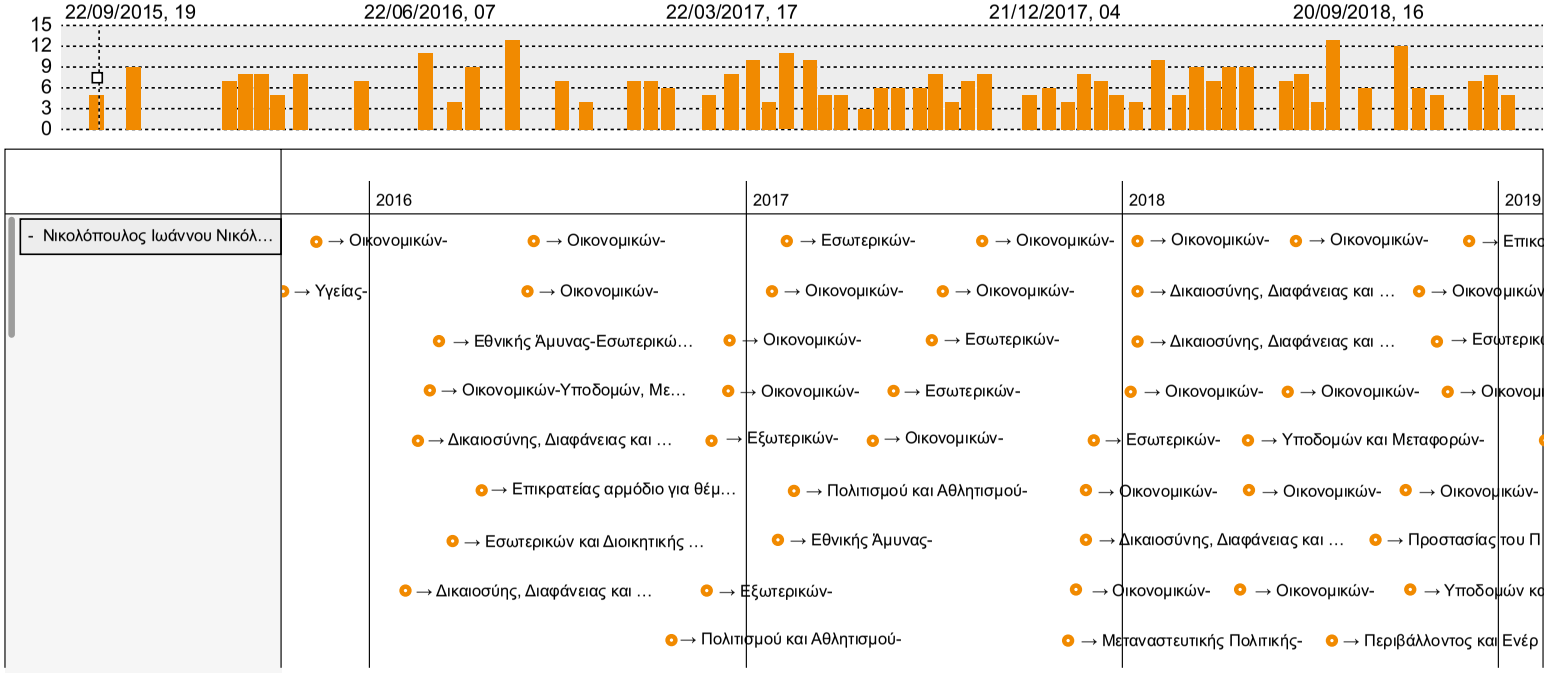


FIGURE 5: **Timeline of questions posed by the most active MP**



This test case has demonstrated that an intuitive visualisation creation tool can greatly reduce the time needed to calculate metrics based on available open parliamentary data. The authors collaborated with the Hellenic OCR team to identify interesting relationships among the data and plan to further exploit the visualisation toolkit and create new visualisations that will help reaching conclusions on parliamentary activity. The comprehensive representation of results in timelines and graphs could also appeal to different user groups – such as journalists as they seek to identify evidence to back up certain theories or explore alleged hypotheses concerning parliamentary activities (e.g., during an article authoring).

CONCLUSION

The work presented in this chapter advocates the importance of solid scrutiny processes in modern governmental administration and showcases how advanced evidence-led visualisation methods can be key technological enablers of such an effort. Using open data made available by the Hellenic Parliament and processed by the Hellenic OCR Team, visualisations that satisfy anticipated user needs and interests are presented to show the potential of employing such an approach for parliamentary control and analysis. The lack of a requirement for of code or design skills can involve a wider group of stakeholders who might have little or no information technology expertise. The effective management of big datasets, visualisation-aware data discovery, and machine-learning-based recommendations of data to be visualised as well as relevant visualisations are some of the additions that could be explored in the future. Usability evaluation and structured feedback from different stakeholder groups (e.g., MPs, journalists, citizens) comprise some of the steps that have already been planned in order to fine-tune the proposed visualisation methods.

The suggested approach explicitly focuses on the design and delivery of an informative web dashboard that includes intuitive visualisations that correlate metadata pertaining to Greek parliamentary questions but can be easily expanded to other relevant EU and worldwide approaches. By allowing rapid and meaningful visual representations, the framework can enable researchers and interested parties to play an active role in delivering a thorough analysis of the factors that influence the implementation of actions that address and form the EU parliamentary process landscape. Thus, it will ensure the provision of the necessary means to continuously enhance knowledge that is acquired, and provide the necessary interfaces that allow this knowledge to be transferred efficiently to researchers and authorities.

NOTES

1. https://avt.aegisresearch.eu/.
2. Greek parliamentary control means, https://www.hellenicparliament.gr/Koinovouleftikos-Elenchos/Mesa-Koinovouleutikou-Elegxou#Anazitisi_meson_koinovouleftikou_elegxou.
3. Corpus of Written Parliamentary Questions in the Hellenic Parliament, https://doi.org/10.5334/johd.45.

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Operational Design and Development of Parliamentary Recommender Systems: The Hellenic Parliament Case Study

Iraklis Varlamis and Apostolos Dalas

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ABSTRACT

Parliamentary information systems facilitate a wide range of operational activities within legislatures, with the potential to transform dedicated institutional functions. Recently, there is evidence of evolution in parliamentary technology, with the utilisation of emerging technologies such as deep learning and artificial intelligence in legal information management tasks, which result in novel and innovative applications in the transdisciplinary field of legal informatics. This chapter summarises the recent research in the area of recommender systems for parliamentary applications and assesses the possibilities of their introduction.

ABOUT THE AUTHORS

Iraklis Varlamis is an Associate Professor at the Department of Informatics and Telematics of Harokopio University of Athens in the area of Data Management. A prolific author, his research interests range from data-mining and recommender systems to social network analytics and knowledge extraction from social media and the news.

Apostolos Dalas is a Senior Product Manager at a multinational company. He holds an MSc degree in Electronic System Design with specialisation in Microprocessor and Software Engineering from Cranfield Institute of Technology, UK.

INTRODUCTION

Modern parliaments constitute not only supreme governing institutions but also significant data and information hubs. Depending on the level of digitalisation, a series of information and communications technology- (ICT-) based tools and services are applied to manage internal work and information flows (Fitsilis et al., 2017). An emerging concept that describes this transformation is parliamentary technology (ParlTech) (Koryzis et al., 2021). This term describes the set of technologies that support the digitalisation of parliamentary activities and, in particular, of the legislative function, and the technologies that are expected to transform the way in which parliaments operate. ParlTech is based on emerging technologies, which have the potential to automate parliamentary processes and introduce innovative ways of progressing legislative functions, through the addition of automation, ease of use, and transparency to processes and information management. Organising, filtering, and sharing information is one of the main tasks of parliamentary information systems, allowing the government to make informed decisions and to implement legislative policies (Marcella et al., 2007).

Recommender systems (RSs) are formally defined as information filtering systems, which assist users to quickly locate or discover information that may be of interest (Ricci, Rokach, & Shapira, 2011) and consequently help them to handle the abundance of information that is available. Despite the long history of information retrieval systems, the two decades during which RSs have existed, and the advances in the design of recommender algorithms, it is only recently that the related

technology has matured and researchers have created a more concrete framework of impact-oriented research on RSs and algorithms (Jannach, Shalom, & Konstan, 2019). The applicability of RSs in the parliamentary domain is still considered to be low, but the existing algorithms and solutions of RSs in other domains make their introduction look more promising.

Parliaments have evolved into multifaceted organisations that produce a variety of different types of information: items include laws, statutes, regulations, and parliamentary news, which can be further broken down into lower-level structural elements. Although parliaments and their members may also be interested in content that is externally available (e.g., in the news or social media), early work in the Parliament of Andalusia (de Campos et al, 2008) has demonstrated the applicability of personalisation and RSs in parliamentary settings, with the main focus being on documents and content. In principle, parliamentary RSs may be linked to two different user pools, extra-parliamentary and intra-parliamentary. In the former case, recommendations can facilitate stronger citizen engagement through more precise access to information, whereas in the latter, recommendations can support political or administrative processes. This work focuses on parliamentary RSs, examines the case of the Hellenic Parliament, and proposes a pilot implementation.

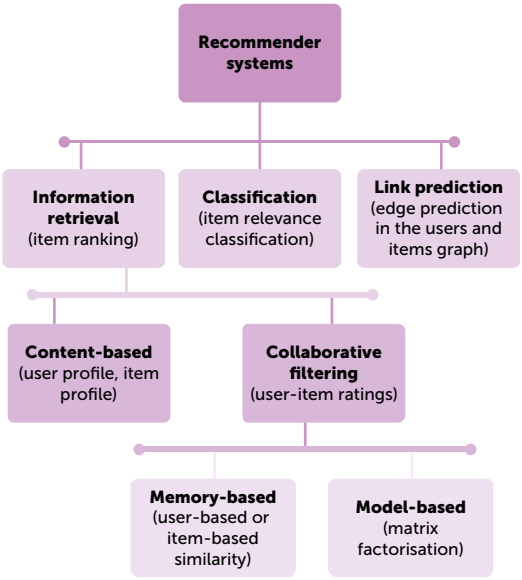
BACKGROUND AND RELATED WORK

The main objective of RSs is to guide users in their interaction with a large selection of options (items, activities, etc.), in a personalised way, to those that best match their needs and preferences, taking into account users' profile, recent history, and context, as well as the features of available options, and information about the choices made by other users (Ricci et al., 2011). Approaches in the literature examine the recommendation problem as follows (see Figure 1):

1. An information retrieval task, in which all the available options are rated and ranked, depending on their expected match to user interests or needs, and the recommended items are selected from the top-ranked options. These approaches are further divided to content based ones that are based on the similarity of content that describes the user (i.e., user profile) and the candidate items, and collaborative filtering approaches, which are based on the explicit or implicit preference of users for items, which are usually represented as ratings. The latter methods search for users with similar preferences to get more recommendation options for a user or for items with similar adopters to extend the base of candidate items. They either work on demand, seeking for preference similarities upon request, or train a model to predict the potential preference of a user for the items he/she has yet to rate.
2. A classification task, in which every option is considered as relevant to the user or not, and only the relevant ones are recommended.
3. An edge prediction task, which models the interactions between users and items using graphs (or networks) and consequently recommends items to a user when an edge is predicted between the two.

Early RS applications in the parliamentary context comprise the personalisation of search results for collections of structured documents (de Campos et al., 2008; Vicente-López et al., 2014). This type of personalisation is based on collecting user profile information (through search and browsing history and explicit user preferences) and content matching between profile and candidate content items. Vicente-López et al. (2014) take advantage of a pre-classified collection of parliamentary documents, where classes correspond to the committees representing the different areas of interest, in which

FIGURE 1: **RSs in the parliamentary context (not only in a web portal, but also in intranet collaboration systems, etc.)**



the future users could be interested in. More recent works (including de Campos, Fernández-Luna, & Huete, 2017) propose profile-based RSs that recommend to every citizen that has a request or complaint about a subject the most relevant Members of Parliament (MPs) to handle their case, or assigns incoming EU Parliament documents to the most relevant MPs (de Campos et al., 2018).

APPROACH AND METHODOLOGY

The parliamentary content comprises a wide variety of documents, such as legal and regulatory documents (e.g., legislation acts, bills, case laws, resolutions, decisions), administration-generated content (e.g., local communications, regulations), and citizen-generated relevant content (e.g., blogs, newsletters, social media posts, and news) concerning legal events (e.g., law publication, draft law deliberation, EU directive publication) (Virkar et al., 2018). Although the parliamentary content concept can be more narrowly defined to specific legislative/parliamentary processes, its resulting size and variety are still large. A search of such a large amount of content can benefit from content and document RSs that take advantage of user interests and behaviour in order to personalise delivery. Although the related technology is quite mature in other domains, it has only recently been employed in the legal (Dhanani, Mehta, & Rahni, 2021) and parliamentary context (de Campos et al., 2017).

Modern legal document standards and ontologies such as LegalDocML,[1] and Akoma Ntoso (AKN),[2] for describing the structure and semantics of legal documents, and LegalRuleML,[3] which is used for representing legal normative rules, have supported the creation of high value information services in the aforementioned domains. They have allowed the standardised description of legal and regulatory information items, which can further be organised, retrieved, and recommended to end-users depending on their needs. This information landscape makes parliamentary RSs a necessity, with the potential to cover the needs of multiple user groups and facilitate access to the increasing volume of parliamentary content.

Modern parliaments are responsible for representing the electorate, making laws, reviewing and approving the national budget, overseeing the government via hearings and inquiries, and continuously communicating with the public on critical national issues. This interaction generates a large amount of information (speeches, hearings, written and oral questions, bills, working papers, reports, amendments, etc.) that must be easily searchable. This material resides in parliamentary websites and is open to the public, usually through parliamentary archives and registries (e.g., UK parliamentary archives,[4] and Parliamentary Search,[5] European Parliament repository,[6] European Parliament Public Register of Documents,[7] the Hellenic Parliament repository of legislative work),[8] which offer advanced search capabilities.

Several parliaments, such as the UK's,[9] and Canada's,[10] provide detailed information about their members and search services for citizens to find their representatives. The search, though, is limited to geographical criteria, ignoring the domain of expertise of each MP or general profile information (de Campos et al., 2017). Other parliaments offer different search criteria, such as party affiliation, gender, committee membership (which can indicate domains of expertise), and so on. The advanced search capabilities offered by parliamentary search engines demonstrate the need for specialised and multifaceted searches over various content types, using multiple filters (time or session based, house based, etc.) and conditions for search terms (phrase search, word exclusion, etc.). The effort made to structure and annotate parliamentary proceedings (de Campos et al., 2008; Cantador & Sánchez, 2020) is further evidence of the need for an in depth search of parliamentary contents and for systems that proactively recommend content of interest to individual users.

A recent online polling in the context of the ReMeP2021 conference validated that researchers, lawmakers, and lawyers agree on the usefulness of RSs when they are searching for legal information,[11] and revealed that parliamentary RSs require further communication; they are expected to raise the productivity of parliamentary employees, researchers, and journalists who work in the parliamentary context, by decreasing the time needed to access data. By increasing the visibility of content that is of potential interest to users, it is expected that the openness and transparency of parliamentary activities will improve.

PARLIAMENTARY USE CASES FOR RS

All existing approaches to parliamentary RSs, as described earlier, examine the problem as an information retrieval task, in which text-matching algorithms are used to retrieve the most similar items for each user profile. They create a list of recommendations for users, this list comprising either documents (parliamentary interventions,

videos, etc.) or user profiles (e.g., MPs who may be of interest to the user). These information retrieval tasks are mainly tackled using content- (usually text-) matching algorithms that use the user profile and retrieve the most similar items for each user. Although related work in RSs provides several alternatives, in the context of the Hellenic Parliament the information retrieval approach seems most appropriate, and can lead to interesting content recommendations for the platform's registered users.

THE CASE OF THE HELLENIC PARLIAMENT

The rapid digitisation of the Greek public administration as planned in the Digital Transformation Strategy 2020–2025,[12] with the gov.gr portal for digital services,[13] the National Registry of Public Services,[14] and many more side projects, has paved the way for more advanced services at all levels. The Hellenic Parliament portal has become an early adopter of ICT advances and is gradually taking advantage of the progress in the interoperability of legal and legislative standards (Fitsilis & Kalogirou, 2021), and of the technologies that can help in transforming the parliamentary framework (Koryzis et al., 2021).

As far as it concerns the data available in the Hellenic Parliament context for developing recommendation services, we can highlight three major different datasets as follows:

1. Parliamentary control documents.[15] These comprise questions, interpellations, and other means of parliamentary control towards the members of the government about any public or private incident. A pre-processing and semantic annotation of these documents may lead to the creation of a useful linked open dataset for the parliamentary control activities. An RS should take into account this knowledge, analyse user searches, and recommend additional related documents.

2. Legislative work.[16] This collection provides information about laws and other legal documents (law drafts, contracts, international treaties, etc.). Well-structured references to laws and legal documents within the text are easily parseable and allow extracting links between the documents, which consequently can be used by the RS to recommend related legal documents when users browse a specific document.

3. Plenary minutes.[17] These include discussion minutes in an unstructured, raw form and may contain information about laws, means of parliamentary control, and other legal documents. Plenary minutes have many interested stakeholders, including citizens, journalists, and MPs. They are more difficult to process, since this requires pre-processing and annotation of the raw texts, but there is great potential. In the context of RSs, the plenary minutes, either annotated for entities or not, can be an ideal basis for developing a content recommender.

These datasets can be extended with data relating to parliamentary diplomacy (e.g., friendship groups), actions, political/educational data, cultural data, and so on. The Corpus of Parliamentary Questions in the Hellenic Parliament is another dataset provided by the Hellenic OCR Team that can be used for the development of a RS system.[18] The studied dataset by Fitsilis and Mikros (2021) contains a sample of 2,000 out of 100,000 written parliamentary questions posed during a decade of parliamentary control in the Hellenic Parliament (2009–2019).

A PROTOTYPE DESIGN FOR A PILOT SEARCH ENGINE POWERED BY AN RS

The Hellenic Parliament has a wide range of parliamentary content. This could be the basis for building a content RS that has the visitor's behaviour towards search engine results at the centre of its recommendation strategy. The RS will be an added dimension for the search engine and provide additional results, which either relate to the retrieved items or to past user preferences.

Starting with the data and metadata of all written parliamentary questions posed during the last decade, it is possible to develop a full text search engine and an RS that will further facilitate searches. This can be achieved by recommending additional items based on content similarity and user profile similarity. The user interface is composed of four main components, as depicted in Figure 2. There are four different areas visible: A is an area where the user provides query terms; B is an area for displaying the query results; C is an area where items (e.g. parliamentary questions) that do not contain the query terms but are very similar with the document selected by the user are displayed; and D is an area where items viewed by users with similar interests are displayed. Area B is used to display the selected question once the user clicks on a query result or on a recommended item.

The interaction between the user and the system is performed in four steps, as follows (see Figure 3):

FIGURE 2: **A mock-up of the user interface of the RS-powered search engine**

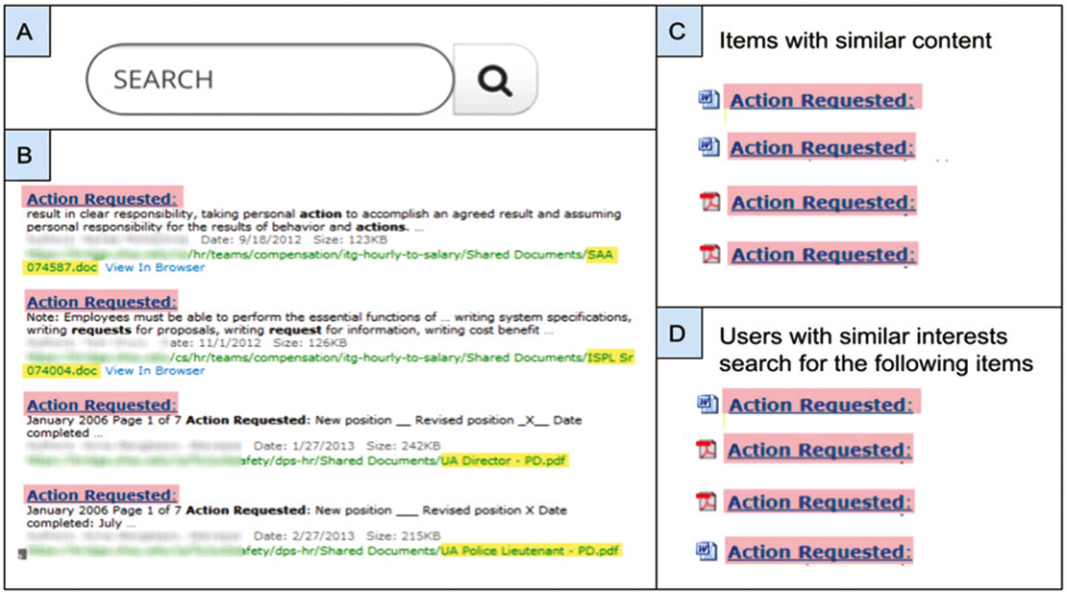
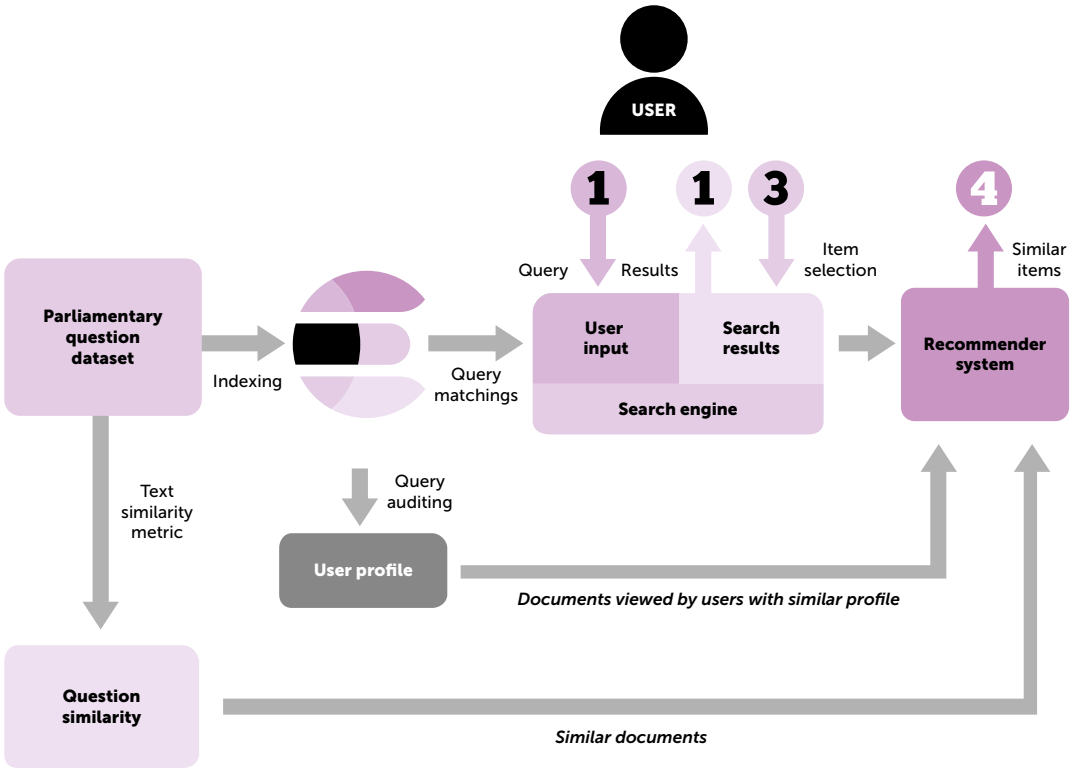


FIGURE 3: **The architecture and processing pipeline behind the search engine and the RS**



Modern parliaments constitute not only supreme governing institutions but also significant data and information hubs

1. The user enters the query terms.
2. A list of search results that match the query terms is displayed.
3. The user selects an item from the list of results.
4. Based on the user's choice, the RS retrieves similar items (questions) based on the pre-computed text similarities or user profile similarities.

The first step for supporting this setup is the indexing of the content in a document search engine. Indexing allows the quick execution of word-based queries and the retrieval of ranked results that match user search terms. A parallel task that is necessary for supporting the RS is the use of a text similarity metric and the computation of all pairwise similarities between the parliamentary questions of the collection. The wide range of solutions for this task,[19] from word frequency-based metrics to sentence and document embedding, allows the recommendation of more items (Figure 2, Area C) that are similar to the item selected by the user among the query results.

In order to recommend items based on a user profile, it is necessary to create that profile first. It can be composed by the queries made by a user, by user clicks, or implicit or explicit preference to certain documents, words, or topics. In the proposed pipeline, the user profile comprises all the queries made by the user, which can also be audited, and all the documents that the user clicked and read (weighted by the number of visits or the time spent on them). A text similarity metric can be used to measure the similarity of the user profile (e.g., history of query terms used) to that of all other users. The items mostly preferred (i.e., clicked, read) by the most similar users to a user profile will be displayed in the recommendation area (Figure 2, Area D).

This initial pipeline can be the basis for developing more advanced recommendation services, using collaborative filtering techniques that are based on user preferences for each item and gradually transform the RS-powered search engine to a proactive recommendation engine that will feed new parliamentary questions to potentially interested users, thus removing the need to search for information.

CONCLUSIONS

This chapter has presented an overview of the different types of RSs that can be applied in the parliamentary context, the different content types that can be recommended, and the different types of activities and user groups that can benefit. It has performed an analysis of the Hellenic Parliament case, focusing on the content that can be useful in an RS. Finally, a prototype design for a first pilot of a parliamentary RS for the Hellenic Parliament has been proposed; this takes advantage of a publicly available corpus of 2,000 parliamentary questions.

The proposed approach combines the merits of a full-text search engine with the benefits of an RS, and could become a showcase of the value of RSs for parliaments. Further steps could include the development and piloting of the proposed system within the parliamentary environment in order to gather feedback from end-users and improve its functionality. The Hellenic OCR Team offers a unique advantage with regard to implementing this pilot project within the context of the Hellenic Parliament.

The basic phases of a project, as per project management guidelines, are initiating, planning, executing, monitoring and controlling, and closing. The standard information technology project timeline allows 12 months until the start of the pilot operation. The success of the pilot implementation of a parliamentary RS within the Hellenic environment will reflect directly upon and provide added value for European institutions, and opens up the opportunity for additional pilot programmes within the European parliamentary ecosystem.

NOTES

1. https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=legaldocml.
2. http://www.akomantoso.org/.
3. https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=legalrulemll.
4. https://archives.parliament.uk/.
5. https://search-material.parliament.uk/.
6. https://www.europarl.europa.eu/committees/en/documents/search.

7. https://www.europarl.europa.eu/RegistreWeb/home/welcome.htm.
8. https://www.hellenicparliament.gr/en/Nomothetiko-Ergo/Anazitisi-Nomothetikou-Ergou.
9. https://members.parliament.uk/.
10. https://www.ourcommons.ca/members/en.
11. ReMeP2021 was held 5–7 September 2021 in Vienna; see https://remep.net.
12. https://digitalstrategy.gov.gr/.
13. https://www.gov.gr/.
14. https://mitos.gov.gr/.
15. https://www.hellenicparliament.gr/Koinovouleftikos-Elenchos/Mesa-Koinovouleutikou-Elegxou#Anazitisi_meson_koinovouleftikou_elegxou.
16. https://www.hellenicparliament.gr/Nomothetiko-Ergo/Anazitisi-Nomothetikou-Ergou.
17. https://www.hellenicparliament.gr/Praktika/Synedriaseis-Olomeleias.
18. https://zenodo.org/record/4748989.
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Artificial Intelligence in the Parliamentary Context

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ABSTRACT

This chapter outlines a number of potential applications of artificial intelligence (AI) in the parliamentary technology (ParlTech) domain under an AI democratisation perspective. We provide an overview of parliamentary functions that AI can support and we then provide a framework to record and classify uses for AI in parliaments, and conclude by designating challenges and potential opportunities of applications of AI as ParlTech, while suggesting steps for AI democratisation in parliaments.

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INTRODUCTION

Artificial intelligence (AI) is the science and technology that aims to create intelligent machines (Russell, 2010). AI has gathered increased interest owing to advancements that allow its wider use. This, in turn, has led to strong investment (Mou, 2019), but also to significant controversy surrounding its wider societal impact (Nowak, Lukowicz, & Horodecki, 2018).

As this socio-economic and technological phenomenon has emerged, policy-makers and legislators have been called upon to compose strategies (Schiff et al., 2020; van Noordt et al., 2020) and regulation (Veale & Borgesius, 2021; Middleton et al., 2022) related to AI and its application. Similarly, citizens have been called upon to contribute their opinions to public consultations, for example on the European Union (EU) policy and regulatory steps on AI (European Commission, 2020), while actions have been initiated to increase awareness in parliaments (Fitsilis, 2021).

This chapter opens the discussion about the applicability of AI within the data-driven parliament by mapping parliamentary functions; introducing AI with a functional perspective; providing and applying a framework to record and classify AI uses in parliaments; designating challenges and foreseen opportunities of AI application in parliamentary technology (ParlTech) (Koryzis et al., 2021), and finally offering an AI democratisation pathway suggestion.

In the following section, we outline the methodology used here.

METHODOLOGY

The study methodology for identifying the potential applications of AI in the parliamentary domain adopts an exploratory approach. Based on desk research, this approach enables us to investigate the

value-adding potential of AI in the ParlTech domain in a qualitative manner. This chapter presents an initial mapping of the parliamentary functions that can be supported by AI from a functional perspective. Anchored in this analysis, we present a classification framework for AI-driven value creation that examines both the potential usage of an AI system (i.e., core functions to solve existing problems and emerging AI-enabled parliamentary functions) as well as the potential level of AI services at an intra- and inter-parliamentary level. This framework has been validated by recording and classifying current AI uses in parliaments in Europe and across the world. The analysis enables us to map current AI adoption as well as the untapped potential of AI in the ParlTech domain. In addition, a number of challenges and opportunities for AI applications in this context are presented, aiming to stress the importance of adopting a responsible, ethical, trustworthy, and humancentric approach to the use of AI, and suggesting future research perspectives.

CORE/TRADITIONAL AND EMERGING PARLIAMENTARY FUNCTIONS

Representation, legislation, and scrutiny are considered to be the core parliamentary functions, as noted in Table 1 (Papaloi & Gouscos, 2011; Coghill et al., 2012).[1]

Other important functions (Hazell, 2001) that may vary by country are listed in Table 2 (see also DasGupta, n.d.). Although some of these could be included in core functions, their significance usually leads to their being considered separate (Coghill et al., 2012).

However, parliaments also perform emerging functions related to crucial civic engagement activities (Beetham, 2006; Papaloi & Gouscos, 2011) in five main directions (Inter-Parliamentary Union, 2022): information; education; communication; consultation; participation (Commonwealth Parliamentary Association, 2021).[2] These roles support the parliaments' main functions and connect elected representatives with the public they serve. Engagement activities ascertain and communicate that people are being listened to, countering rising public distrust and negativity. Transparent and accessible parliaments are the keystone of a healthy democracy.

Information activities run within traditional but also social media. *Educational* activities include youth parliaments, serious games, and collaboration with universities. *Communication* encompasses live-streaming, social media, and radio, for example, allowing for interaction. *Consultation* includes committee hearings, field hearings, calls for contributions, and e-consultation processes. *Participation* includes practices such as petitions (written requests for action) and citizens' assemblies (involving a group of representative community members). Managing the process and responses to the people who submit the petitions is crucial, but also a challenge owing to their volume and the effort required to address them. In addition, assemblies scrutinise evidence, call witnesses, debate topics, and make recommendations that are presented to official bodies.

The need to support parliamentary practices such as these through technological tools is increasingly evident (Inter-Parliamentary Union, 2022). In the following sections, we introduce the reader to AI functions, and then study and discuss the related potential and challenges of AI application.

MAPPING OF AI TECHNOLOGIES

AI is the science and technology that studies and creates machines able to mimic aspects of human behaviour, such as memory, applying

TABLE 1: **Core parliamentary functions**

Representation	Legislation	Oversight/Scrutiny
Members of Parliament (MPs) represent the public interest in decision-making. This includes representing groups of constituents, local and social groups, or a political party, communicating with special interest groups and lobbyists, and asking and responding to parliamentary questions (Smith & Webster, 2008).	Parliaments discuss, scrutinise, vote on, and approve new laws. Members of the parliament participate in debates, readings, votes, and committees to play their legislative role.	This 'involves monitoring executive activities for efficiency, probity, and fidelity' (Johnson & Nakamura, 1999). MPs scrutinise or defend government policy and proposals; they ask and respond to parliamentary questions; and participate in discussions and committees, seeking to influence the government and hold it accountable. This scrutiny can also extend beyond the government to national independent authorities that only answer/report to the parliament.

TABLE 2: **Other traditional parliamentary functions**

Other traditional parliamentary functions (not performed across all countries)							
Budget setting	**Constitutional**	**Making and breaking governments**	**Redress of grievances**	**The power to declare/veto wars or military actions**	**Judicial**	**Electoral**	**Deliberation**
Legislation regarding revenue collection and the allocation of expenditure of public funds.	The power of the parliament to change the constitution. Constitutional amendments often require special terms (e.g., approval by an increased majority) [1].	Parliaments vote for the formation of the government (after elections) or the breaking up of a government (e.g., after a vote of no confidence).	Usually expressed when MPs raise such matters in parliament seeking remedial action by the relevant minister.	This power greatly varies across countries.	The impeachment or removal of incapable or corrupt judicial officers.	The parliament elects certain office holders, such as the president (where there is one).	All communication activities of the MPs (reflection and interaction with other people and with their arguments), claims and reasoning. It may include all the communicative encounters of MPs (discussions, and the dynamics that are developed in these). [2]

[1] Both the budget-setting and constitutional functions can be considered as legislative processes, but their importance provides a strong argument for treating them as distinct functions.
[2] Although very important, deliberation is more of a process that is included in almost all the other parliamentary functions. Deliberation processes such as citizens' juries/assemblies are described in the civic engagement activities.

logic, inferring truths from data, planning, communication with peers, searching, and learning. Its methods may rely on either mathematical logic or statistics, and also on nature-inspired paradigms of calculation and optimisation. When dealing with the analysis of text and spoken language, AI is regarded as natural language processing (NLP) or speech analysis. When dealing with visual data, we face its computer vision aspect. When discovering interesting patterns, we mostly talk about text or data mining. When we ask an AI to classify observations or predict future values, we mostly talk about machine learning. AI is therefore not a single, unified method: it encompasses an amazing variety of methods and tools that observe and gather data, encode knowledge, utilise that knowledge, and achieve mimicking – even highly cognitive – human functions.

AI applications cover numerous problems and settings. They can help us to (a) encode and organise information and (human) knowledge; (b) query this knowledge to answer questions or validate claims; (c) discover connections (correlations) that are 'hidden' in data; (d) group and classify observations to better study the world these reflect and its underlying principles (laws or hidden phenomena); (e) index and retrieve resources to support efficient use of information; (f) simulate scenarios to better understand our physical and digital ecosystems; (g) discover parameters we can focus on to change the function of systems. Later, we provide examples of AI use, also referring to related important AI terms.

The concise and usable representation of knowledge is the object of knowledge engineering, which can, for example, encode legislation or terminology into a knowledge base (or an ontology). The semantic web itself and the totality of linked open data available can constitute such a machine-usable knowledge base. Such technical artefacts allow information exchange – be it legal, financial or other – across countries or systems in a meaningful manner (Bagby & Mullen, 2007; Casellas, 2011). They also support queries, asking the AI reasoning algorithms to validate whether specific claims are consistent with the encoded knowledge. A second use of reasoning allows AI to suggest courses of action when asked, as is the case for AI-powered justice (Re & Solow-Niederman, 2019; De Sanctis, 2021). We stress that in such sensitive settings a strong requirement for explainability may hold, despite technical challenges (Atkinson, Bench-Capon, & Bollegala, 2020).

Another type of AI use regards the organisation of existing resources, such as documents, video, and audio, but also of datasets useful for decision support (e.g., national statistics). Clustering algorithms can be utilised,. to group blog posts either to provide an overview of discussion topics or to identify trends, for example. The output clusters can be further analysed via natural language processing (NLP) to identify opinions and arguments at scale – essentially a semi-automatic implicit consultation. Clustering is one leg of the machine learning and data mining disciplines, with classification being a well-established other. Classification refers to algorithms that label resources with predefined categories, after being trained by humans (what we call supervised learning). An example of related application is that of automated incoming mail routing (which in turn is a case of what we call robotic process automation – RPA).

Data mining algorithms identify interesting, actionable patterns in the data. These algorithms can have uses ranging from discovering communities of users in an e-shop based on what they buy, to finding connections between a specific drug and allergies from medical literature. Time-series analysis, which detects trends and correlations over time, allows the study of the level of populist rhetoric present in social media in extremist versus mainstream political parties, for example, or predicting societal trends based on the price of gas over time.

The domain of information retrieval (IR) and indexing allows a specific document in a set of billions to be found almost instantaneously. Typical applications of IR are search engines but other uses may relate to chat bots, usable for easy organisational knowledge access, for example (Misargopoulos et al., 2022). Another related AI subdomain is information and relation extraction, the applications of which cover functions from the identification of important information (fields) in legal documents (Zadgaonkar & Agrawal, 2021) to medical document analysis, to criminology and fraud detection (Middleton et al., 2020).

We will close this section with an elaboration of NLP, which allows systems to analyse natural language, be it expressed in a written (text analysis/mining) or in an oral form (speech/audio analysis) or other format (e.g., video analysis, optical character recognition). This type of AI can empower applications ranging from typing support, to question answering, to ideation (Kim, Maher, & Siddiqui, 2021). Of course, NLP also directly points towards

automatic machine translation (MT), which facilitates seamless international interactions.

This list of AI terms and applications is by no means exhaustive, but is meant to provide a basic understanding of AI and its potential. This will facilitate understanding of the discussion that follows.

VALUE CREATION POTENTIAL OF AI IN A PARLIAMENTARY CONTEXT

A framework for AI-driven value creation in parliament

AI can create value across a wide variety of parliamentary activities, and it was the COVID-19 pandemic that stimulated parliaments to shift some operations online (e.g., the virtual e-parliament) and utilise related, supporting AI-tools and systems. According to the World e-Parliament Report 2020, 65 per cent of legislatures were holding virtual or hybrid committee meetings and 33 per cent plenary meetings (Inter-Parliamentary Union, 2021).[3]

On the other hand, the uptake of AI within parliamentary systems was found to be limited in 2020 (during the pandemic): only 10 per cent of parliaments have adopted AI technologies and 6 per cent systems related to legislative drafting (Figure 1). However, it seems that AI is becoming increasingly relevant for parliaments, as it is the most widely anticipated feature over the next two years (45 per cent of the parliaments are considering it).

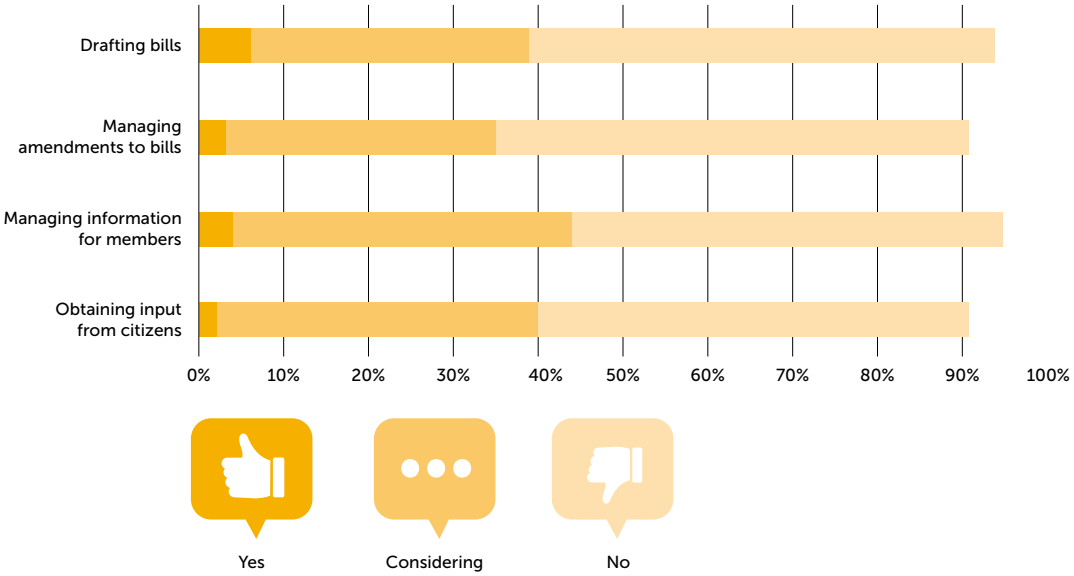
The emerging needs that the pandemic brought about, could be seen as a potential driver for making parliaments rethink the way technology can support their functions and most importantly how it can enable a strong interaction with those that the parliaments should represent, the people. From one perspective, the pandemic may have delayed the overall adoption of AI in parliaments mainly because parliamentary information and communications technology was diverted into developing and deploying remote functioning capabilities.

The value adding potential of AI for parliaments

Based on the mapping of parliamentary functions one can identify several indicative AI use cases in parliaments, which we describe through a classification framework for AI-driven value creation in the parliament (see Table 3), based on two parameters:

1. Usage of the AI system: either focus on the core parliamentary functions aiming to solve existing problems, such as legislative drafting as well as parliamentary reporting and editing, analysis of data, and/or to address emerging parliamentary

FIGURE 1: **Use of AI in parliaments (N=97)**



Source: Inter-Parliamentary Union, 2021.

TABLE 3: **Framework for AI-driven value creation in a parliament**

Level of AI Services		AI Systems Usage	
		AI to solve existing problems	**AI to enable new forms of value creation**
Intra-Parliamentary	**MPs**	**Potential uses** Parliamentary reporting and editing, analysis of data, legislative drafting, public submissions on a bill, etc. **Relevant AI technologies** NLP, speech recognition, information retrieval, OCR, data analytics, ontology engineering, summarisation	**Potential uses** Encourage new types of evidence-based analysis, reporting and regulation (including multimedia, video, etc.), foresight analysis, anticipatory regulatory activities, etc. Relevant AI technologies Machine learning, computer vision, time-series mining, AI-powered simulation, planning, summarisation
	Scientific and Administrative Personnel	**Potential uses** Parliamentary reporting and editing, analysis of data, legislative drafting, etc. **Relevant AI technologies** NLP, speech recognition, information retrieval, OCR, data analytics, ontology engineering, summarisation, RPA	**Potential uses** Support new types of evidence-based reporting and analysis, support preparatory activities and analysis, etc. **Relevant AI technologies** Machine learning, computer vision, time-series mining, AI-powered simulation, planning, summarisation, RPA
Inter-Parliamentary	**Collaboration with other Parliaments**	**Potential uses** Exchange of best practices, collaborative functions, data exchanges (legislative and financial data), discussion fora, etc. **Relevant AI technologies** Ontologies, knowledge bases, recommender systems, community detection algorithms, information retrieval, dialogue systems	**Potential uses** Co-creation activities, collaborative foresight, anticipatory regulatory activities, etc. **Relevant AI technologies** Knowledge bases, ontologies, recommender systems, NLP, summarisation, MT
	Citizens/Civil Society	**Potential Uses** chatbots for online conversations with citizens about parliament, etc. **Relevant AI technologies** NLP, speech recognition, recommender systems, information retrieval, dialogue systems, reasoning	**Potential Uses** Services to improve parliamentary transparency of decision-making for citizens, AI-moderated online conversations, personalised knowledge sharing, etc. **Relevant AI technologies** NLP, recommender systems and personalisation, text mining, dialogue systems, ontologies

functions that will enable new forms of services and associated value creation potential.

2. Level of AI services: at an intra-parliamentary level, aiming to provide assistance to MPs as well as the scientific and administrative personnel of the parliament. At an inter-parliamentary level, AI services can either be between parliaments and/or between parliaments and civil society.

In the context of this study, a detailed analysis of the use of AI in a parliamentary context has been conducted and is presented as an online supplement to this chapter, including detailed analysis and examples (i.e., as a living document),[4] with the aim to constitute a research reference point where all interested parties can contribute their input and help to monitor AI adoption in this area across time.

THE ROAD TO AI DEMOCRATISATION IN PARLIAMENT

From our analysis, it is possible to identify a variety of applications that are already active to some degree across various parliamentary functions. A first important comment is that not all the existing arsenal of AI methods is being used: argument mining (Lawrence & Reed, 2020; Petasis & Karkaletsis, 2016) (i.e., for the analysis and categorisation of public submissions on a bill) could

TABLE 4: **AI adoption in a parliamentary context**

Level of AI Services		**AI Systems Usage**	
		AI to solve existing problems	**AI to enable new forms of value creation**
Intra-Parliamentary	**MPs**	***Medium/Low***	***Limited/None***
	Scientific and administrative personnel	***Low***	***Limited/None***
Inter-Parliamentary	**Collaboration with other parliaments**	***Low***	***Limited/None***
	Citizens/civil society	***Medium/Low***	***Limited/None***

Note: The rating scale is a five level scale: High, High/Medium, Medium, Medium/Low, and Low adoption. The number of identified cases was considered to be the qualitative measure.

be invaluable for in-parliament use, but also for open consultations. Fact-checking (with its limitations) can also be of value (Graves, 2018; Lazarski, Al-Khassaweneh, & Howard, 2021) . Meeting transcription and summarisation (Li et al., 2019; Zhong et al., 2021) and translation could be invaluable for administrative personnel, preparing material for reuse or archiving, even though automatic speech recognition in low-resource languages (i.e., languages with few related datasets) can be challenging or minimally helpful.

AI and especially RPA can also support and speed up text editing (through NLP and language models fine-tuned on parliament texts), (semi-)automatic indexing, classification of documents, requests, e-mails, questions, and so on. Essentially, RPA enables intelligent automation to make repetitive and error prone tasks more effective.

Our analysis also enables us to understand the current usage and adoption of AI in the ParlTech domain, based on the mapping of AI adoption cases (as the qualitative measure) in the AI value creation framework (Table 4). Our findings highlight the domains of application that have reduced AI adoption owing to reasons such as barriers or reduced strategic/technological planning and needs analysis, AI readiness analysis, and network effects in the diffusion of innovation (Rogers, Singhal, & Quinlan, 2014) even within parliament. Thus, one could prioritise low-adoption segments initially in the core parliamentary functions and interparliamentary services, and then the medium/low adoption segments focusing on services for MPs and those targeting citizens as possible high value opportunities. Adoption related to emerging parliamentary functions appears limited, clearly indicating that core parliamentary functions offer an 'early adopter' setting. We expect that AI success stories in core parliamentary functions can motivate application to emerging functions, bringing higher value adding potential for parliaments and society at large. Further research in this area is clearly needed.

For AI adoption to be sustainable and responsibly deployed, it is important to consider it as a technological journey that will lead to AI democratisation internally at intra-parliamentary level and externally at inter-parliamentary level by empowering parliaments, enabling them, increasing related innovation, and transforming parliaments by sustaining AI democratisation (Ziouvelou et al., 2020). A key aspect of such adoption relates to AI enablers, such as data infrastructure and technological infrastructure components (including legal and regulatory aspects), AI culture within parliaments, and AI funding.

To move towards the AI democratisation vision, one needs to identify challenges and risks, some of which are enumerated in the following paragraphs.

A significant barrier to AI application is related to understanding what AI is about, its potential and limitations, the implicit investment required, the specific skill set required to support its application, the strategic planning when using it. Such barriers can be overcome through appropriate training and upskilling across disciplines and population strata.[5] Such actions contribute towards an informed society that can choose which AI it strives for through the interaction of AI and democracy (Annika Linck, et al., 2020).

Another set of AI aspects that gathers public interest relates to transparency, explainability, and accountability. Allowing users to understand how AI suggests courses of action for decision support is critical for a meaningful application, as is human accountability when an AI-suggested course of action leads to bad outcomes. This holds even more at a parliamentary level, where decisions impact whole countries or country associations. Thus,

current related research covers technical and also ethics, societal, financial, and legal topics, including how AI challenges current (international) legislation.

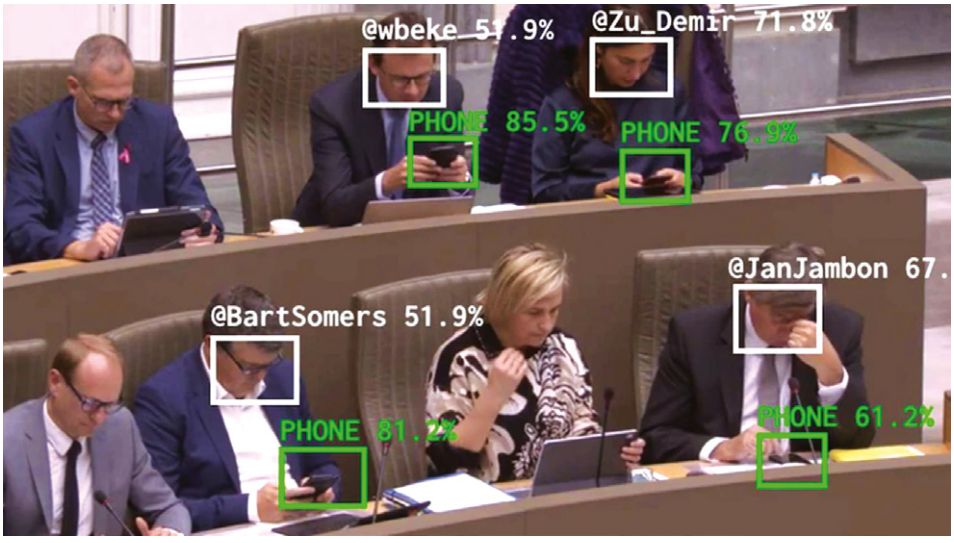
The controversy around AI and highlighted uses that are considered dubious at best (mostly related to privacy breaches and manipulation by governments and companies) have led to AI regulation frameworks. Recent publications across the EU (and beyond) have talked about ethical, trustworthy, and human-centric AI (European Commission, 2020). These texts have led to texts such as the EU AI Act (European Commission, 2021), which strives for an 'appropriate ethical and legal framework' and tries to build 'an ecosystem of trust' around (regulated) AI based on – subjective but intuitive – risk criteria (Middleton et al., 2022). The regulation aspect appears to have a long way to go, and we claim that this is one more case where democratic processes have to take a more active and iterative role towards meaningful measures for AI application. In order for AI to be used in parliaments, it must be trustworthy (lawful, ethically adherent, and technically robust), and aligned with the EU AI HLEG (High Level Expert Group) Guidelines.[6] This notion of trustworthiness implies algorithmic and model transparency (Aler Tubella et al., 2019), so that independent third parties can scrutinise the decisions suggested by AI. It also calls for explainability (Adadi & Berrada, 2018); that is, an interpretability of the decisions and the reasons behind them, so that a human can confirm their value.

We stress that the regulation requirements themselves stem from requirements for ethics in AI systems and ethics by design (d'Aquin et al., 2018). In turn, a number of AI application failures and incidents (McGregor, 2021) have dented the 'unbiased' pseudo-image of AI systems, as hypothesised in public dialogue. Bias appears to be inherent in AI systems, not unlike among their human users and creators, and demands specific measures to be tackled (Silberg & Manyika, 2019). Other ethical issues, especially related to parliaments, appear in the limits within which we wish AI to monitor (and control) human behaviour. The example of the art project by the Flemish Scrollers (Figure 2),[7] which uses AI to automatically tag distracted Belgian politicians when they use their phone during daily livestreams, aims to raise awareness on AI surveillance among parliamentarians and civil society, as well as on the limits of AI use.

A last indicative AI-related challenge is cybersecurity, as using AI for cybersecurity has been described as a 'double-edged sword' (Taddeo, McCutcheon, & Floridi, 2019: 1) it offers significant methods for cybersecurity support, and also brings into play a new set of cyber-threats that need to be examined and mitigated (Kaloudi & Li, 2020).

These challenges are not deterrents. They are indications of maturity when dealing with an innovative technology. They imply the societal need for understanding, planning, monitoring, and convergence,

FIGURE 2: **Flemish Scrollers, art project**



Source: Flemish Scrollers (2021–2022)

similar to all ground-breaking technologies in the past.

As parliaments try to become more agile in response to crises, they need to update their systems and procedural standards by integrating technological tools, including AI, which in turn makes wider discussion about the responsible use of AI essential. AI tools can contribute to various parliamentary activities, from core to emerging ones, considering the needs (current and emerging) and the value-creation potential of all types of users at an intra- and inter-parliamentary level. On the other hand, strong dependence on such tools brings into play the need for more security and robustness to ascertain flawless operation, in accordance with national (and international) security standards.

AI is present and actively being co-created throughout the EU, often through existing EU-funded projects such as the AI-on-demand platform AI4Copernicus (previously AI4EU),[8] or other initiatives – of which the AI in the Working World project is an example.[9] Such co-creation opportunities, coupled by attempts to foster appropriate data gathering and expert knowledge exchange (such as the Hellenic OCR initiative),[10] or citizen awareness (e.g., the 1000 Pioneers for AI in Greece initiative), allow for a multidisciplinary, multi-stakeholder approach to bring Europe to the forefront of world-wide, humane, ethical AI development, infusing EU-wide values into AI systems and practices. Parliaments need to play a pivotal role in this ecosystem. We expect that the presented framework and overview will function as a basis for further study of what can be achieved by using AI in and across European parliaments. We also expect that the tools outlined here will be applicable from intra-parliamentary to global level, since they build on fundamental aspects of parliamentary function and ParlTech, while urging for democratic co-development at all levels. Of course, such scaling implies a number of operational and technical alignment steps, to ascertain reusability, interoperability, and other standards to facilitate the adoption of related tools and methods with minimum effort.

NOTES

1. See also 'Agora: Portal for Parliamentary development': https://www.agora-parl.org/resources/aoe/parliamentary-function-lawmaking. A fourth one (legitimation) is also significant. It refers to the public recognition and acceptance of the right of parliament and the executive to act in some manner, and the corresponding obligation of citizens to abide by that action (Copeland & Patterson, 1994). Yet it mostly stems from society's perceptions of the parliament (social legitimacy) and the manner in which a parliament performs other functions to support its legitimacy (see Wang, 2005). What is more, recruitment, socialisation, and training functions are mentioned in literature (e.g., Garnett, 2021). Although significant, they are less relevant for this work.
2. https://learning.parliament.uk/en/.
3. Inter-Parliamentary Union (2021) is based on data from 116 parliaments and focus groups involving 49 parliaments. Estonia was considered to be the most efficient country in implementing e-parliament, along with countries, not only from the developed world as it would be expected, including Namibia and Brazil. See also e-Estonia (2019).
4. https://go.scify.gr/ai-in-parliaments.
5. See the Digital SkillUp EU Initiative (https://www.digitalskillup.eu/about/), the 1000 Pioneers for AI in Greece (https://ai-in-greece.scify.org/1000-pioneers-for-ai-in-greece-page/) initiative, and the AIIS project (https://aiis.usal.es/).
6. See https://digital-strategy.ec.europa.eu/en/policies/expert-group-ai.
7. https://driesdepoorter.be/theflemishscrollers/. The system uses machine learning to detect phones and facial recognition to identify politicians who are distracted, based on parliamentary meetings that are live streamed on YouTube. The system then posts videos of distracted politicians on Twitter and tags them.
8. See https://ai4copernicus-project.eu/.
9. See https://www.maastrichtuniversity.nl/news/ai-and-people-co-creating-future-work.
10. See https://hellenicocrteam.gr/.

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Part 3

Parliaments' Digital Transformation and Policy

Parliamentary Diplomacy and the International Relations of Parliaments: Challenges and Opportunities in the Face of Digital Transformation

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ABSTRACT

Parliaments, generally characterised by their attachment to history and traditions, face the challenge of modernising and adapting to new technologies. This chapter analyses the opportunity for parliaments and parliamentarians to adopt technological innovations in diplomacy, international relations, and cooperation. This involves interoperability between the legislative and executive branches and systemic interaction with science, technology, and innovation systems. It requires not only a considerable development of electronic government models but also the updating of parliamentary structures, processes, and particularly of information and communication systems. Moreover, it presupposes the political will of the authorities and the support of their administrative personnel.

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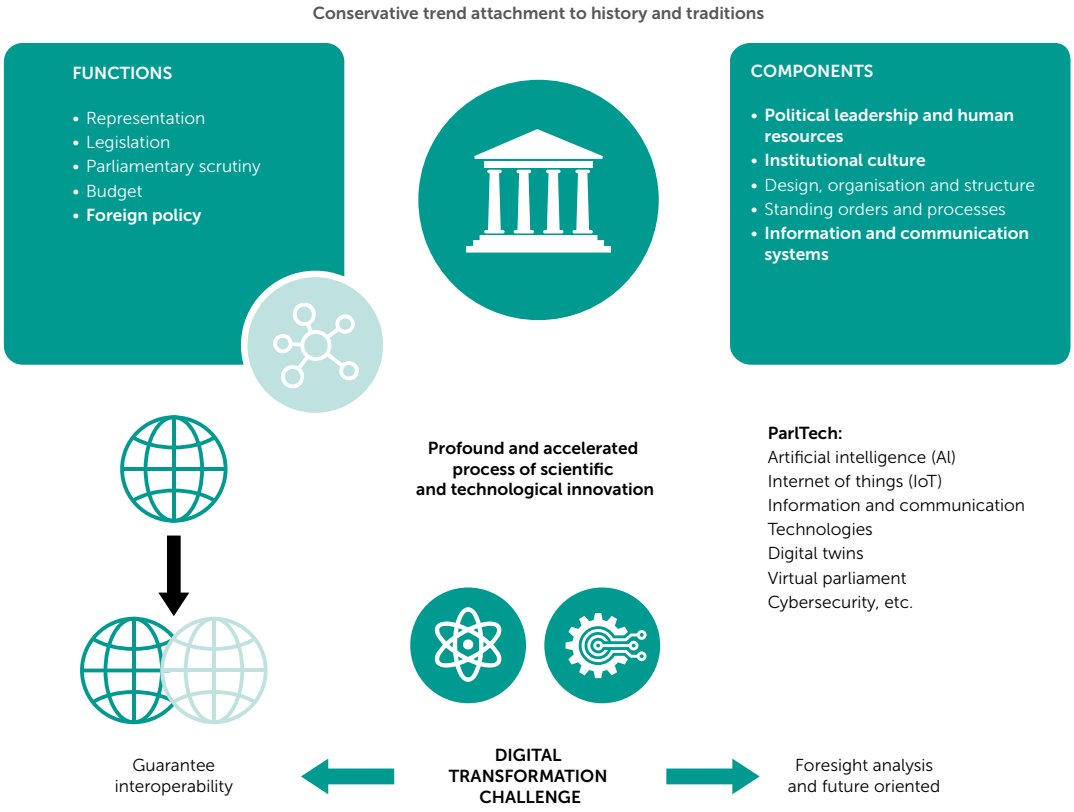
INTRODUCTION

The COVID-19 pandemic is a global phenomenon that has had an enormous impact, not only because of the effects on the physical and mental health of the population but also because of its consequences on political, social, economic, educational, cultural, environmental. Moreover, many other aspects of modern life, including scientific and technological innovation, were heavily influenced, especially regarding the use, adaptation, and development of information and communication technologies (ICT).

The classic division of governments into branches (executive, legislative, and judicial) assigns them different temporal perspectives, including the capacity for long-term impact by keeping the laws valid over long periods. However, their ability to anticipate potential future developments remains weak.

Furthermore, parliaments struggle to anticipate events and often adapt legislation belatedly to scientific and technological innovations. Laws, like public policies, tend to be reactive. In Figure 1, the traditional functions of parliaments are described on the right and the necessary components for their development on the left. The tendency of parliaments to adhere to their history and traditions is naturally opposed to digital transformation activities. Therefore, a series of innovative parliamentary technologies (ParlTech) are listed. At the same time, the importance of guaranteeing interoperability, having a vision of the future, and developing prospective analyses are highlighted.

FIGURE 1: **Parliamentary roles and components necessary to develop a digital modernisation strategy**



LOOKING TO THE FUTURE: SOMETHING RELATIVELY RECENT AND UNUSUAL

The formidable process of technological innovation in the second half of the twentieth century led in 1972 to the creation in the United States of the first parliamentary office that specialised in technology assessment: the Office of Technology Assessment (OTA)[1]; its development inspired the design of similar offices in other parts of the world.[2]

This allowed these new and sophisticated legislative scientific advisory services to carry out prospective studies and produce technical reports based on evidence adapted for consumption by parliamentarians and their teams. Both products are intended to strengthen the classic legislative functions that include: the representation of the citizens and different territorial constituencies; the construction of political agendas; the law-making; parliamentary control; the treatment and approval of the budget; and parliamentary diplomacy, which includes the power to approve or reject international agreements, among other relevant faculties.

In 1993, the Parliament of Finland created the world's first Committee of the Future to generate an institutional dialogue with the executive branch of government on the main challenges and opportunities that could lie ahead. Its example was followed by other parliaments at national[3] and subnational[4] levels, with the recent experience of the European Union (EU) standing out for its originality.[5]

Both models of evidence-informed legislation and parliaments with a vision of the future have different orientations, although they share foresight functions. The first is focused on the objective, neutral, impartial, and balanced study of current and future matters from the scientific and technological point of view. The second is focused on constructing an institutional vision based on anticipating what is predicted to happen in the future – that is, it responds to more strategic planning. Even though these platforms have existed for five and

three decades respectively and are considered "good parliamentary practices", they are still in their infancy and appear in just a tiny group of parliaments worldwide.[6]

THE WEIGHT OF PARLIAMENTARY COMPONENTS

Parliaments are complex organisations whose functioning responds to at least five assembled elements: the human factor, culture, structure, processes that regulate them, and information systems (Koryzis et al., 2021). Since the general organisation and the powers and functioning of parliaments are usually defined by constitutional norms, processes and modernisation and digital transformation must respect both the spirit and the letter of these norms, in the same way as has happened throughout history whether changes come from legal reforms, by way of interpretation, or are generated by custom.

The human factor includes parliamentarians and parliamentary officials, agents, and employees. A parliament's institutional culture stems from its history and traditions, practices and values, vision, mission, and role in society. That culture is collectively constructed and represented by its people and is part of the general culture of the community to which it belongs. A parliament's structure, processes, and information systems respond inexorably to its people and the culture with which the institution is imbued.

Democracy and its institutions have spread in the modern world owing to multiple factors, including globalisation and technological development. However, there is still a very high percentage of defective democracies, electoral autocracies, whose culture and people are less likely to empower parliaments and allow the existence of systems that guarantee public access to information and data, their processing, and the expansion of participation, not only internally, but also and fundamentally with actors who are external to the organisation.

The issue is central to studying any of those powers assigned to parliaments in the face of the challenges and opportunities arising from the digital transformation we are experiencing as a global society, including those linked to parliamentary diplomacy and international relations of parliaments.

Regarding the organisational design of parliaments, and beyond the classic divisions between the structures to which purely parliamentary powers are assigned and those who oversee administrative matters, more and more units, and teams are enjoying functional independence and a high level of specialisation, capable of keeping up with the depth and speed of change.

In the same sense, the old operating rules of parliaments, derived from written regulations (standing orders) and traditions, generally very long-standing, must be adapted to new technologies in every way that means an improvement in the fulfillment of their competencies. Resisting these changes constitutes malpractice.

The new intra- and inter-parliamentary information systems, aimed at enriching those functions in charge of parliaments and their normal operations, must also progress at the pace of technological innovation and their assimilation capacity by other branches of government, especially executives, science, technology, and innovation systems; and civil organisations, particularly those active in unregulated markets, as well as society itself, also considering the comparative experiences of peer parliamentary institutions in other parts of the world. In short, the level of nations' development and competitiveness directly correlates with the quality of democratic institutions, including parliaments, and their status of adaptation to change, primarily scientific and technological innovation.

EXAMPLES OF PARLIAMENTARY FUNCTIONS THAT REQUIRE EXPERT ADVICE AND THE USE OF ADVANCED TECHNOLOGIES

Before referring to parliamentary diplomacy and international relations, we will describe how parliaments operate regarding budget control. This is one of the most complex, sensitive, and high-impact factors for modern societies since it concerns the planning of income and expenses of funds from different sources and types. Moreover, it also relates to the allocation of investment or public spending in all areas in which the state intervenes, including the parliament itself, as a whole and in each field of intervention.

The competencies of parliaments in budgetary matters require specialised technical advice, structures, procedures, and systems that guarantee access to proprietary statistical information and big data, such as information systems managed and developed by other jurisdictions, especially by the executive branch of governments. For this reason, the parliaments of a small group of countries have *independent fiscal institutions* (IFIs) that provide an impartial analysis of the promoted economic and budgetary policies.[7] In 2014, the Organisation for Economic Co-operation and Development (OECD) adopted a series of recommendations that allow IFIs

to have full access to information promptly, including the methodology and assumptions adopted for budget preparation.[8]

Let us see what happens with parliamentary oversight. The greater the development of *e-government*, the more efficient and sophisticated the controls that parliaments develop should be. To that end, much remains to be done to achieve adequate levels of digital governance and interoperability among governance institutions. Not by chance, the best-ranked countries in the world in e-government are, in all cases, developed countries with the high gross domestic product per capita, although there are differences between them.[9]

PARLIAMENTARY DIPLOMACY AND INTERNATIONAL RELATIONS OF PARLIAMENTS

The same reflections expressed in the previous point apply to parliamentary diplomacy and international relations, a function that includes their powers in foreign policy matters (Trillo, 1997; Velázquez Flores & Marín Hernández, 2010; Giménez Martínez, 2013; Stavridis, 2019). Instead of citing a specific definition of parliamentary diplomacy, of which there are many, all with different scopes, I prefer to quote the following question from Stavridis (2019), and his answer: "do all international activities of parliaments represent parliamentary diplomacy?" Well, at least those which "[i]mpact an international or internal issue with international implications".

Parallel to the different meanings of the term *diplomacy* applied to the executive branch of governments (Berridge & James, 2003), in the case of parliaments, the term refers to:

1. The primary means of communication between parliaments and parliamentarians through instruments (missions, visits, friendship groups, interparliamentary commissions, political dialogue, etc.) and their platforms (meetings, organisations, summits, networks, etc.).
2. The use of tact by parliamentarians in dealing with their peers (diplomacy as a skill).
3. The intervention of parliaments and parliamentarians in promoting international initiatives or negotiations through dialogue to avoid using force and armed conflicts (*soft power*).
4. The exercise of constitutional powers by parliaments, associated with foreign policy (agreement for the appointment of diplomats; authorisation to declare war or peace; authorisation for the entry and exit of troops; ratification or rejection of signed treaties by the executive power; foreign trade and foreign investments, among others; depending on the particularities of each case).

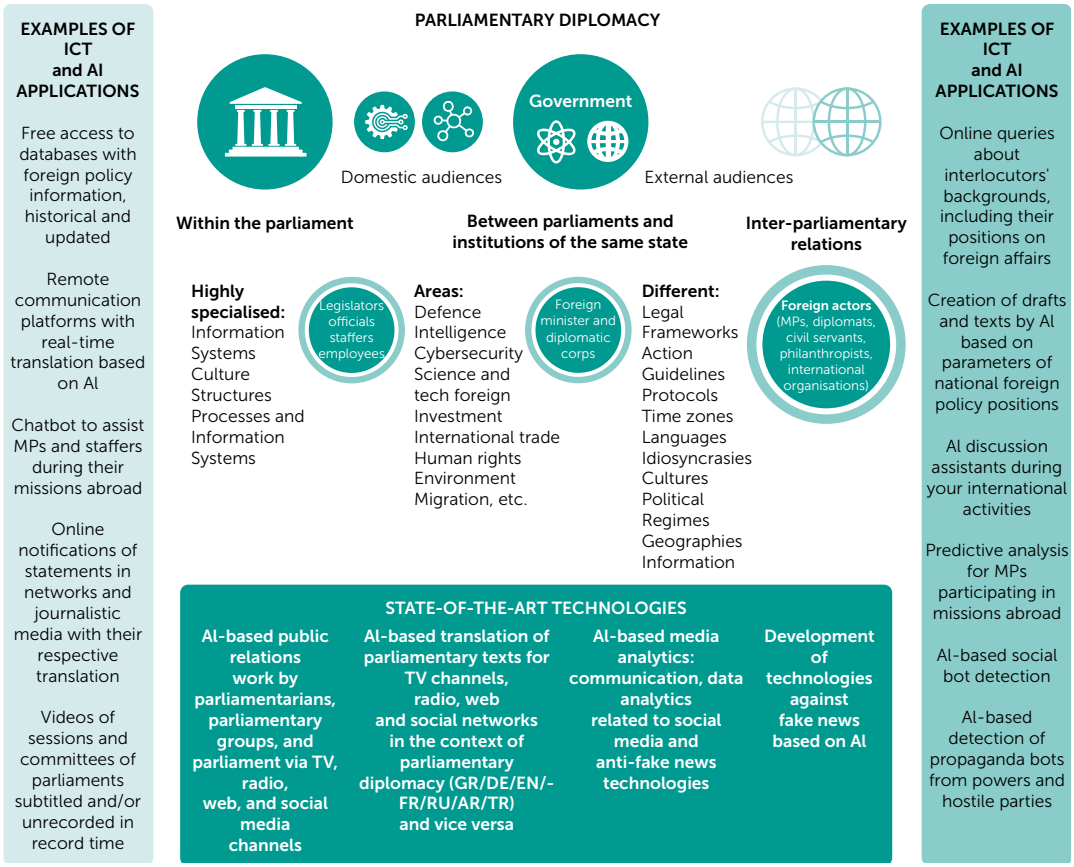
The concept of parliamentary diplomacy may include all these four meanings that a digital modernisation strategy needs to cover. The main characteristic and elements of parliamentary diplomacy are as follows:

1. The active subjects are parliaments and parliamentarians.
2. The object is public affairs.
3. The recipients are other parliaments, parliamentarians, and other subjects, including governments, international organisations, and the public.
4. The scope is multi-level (unilateral, bilateral, regional, multilateral, international, and global).
5. The means applied for parliamentary diplomacy are formal and informal.
6. How it is exercised is complementary to official diplomacy. Still, it usually adopts its own rules, depending on the level of independence of each parliament concerning the executive branch of government and if the matter corresponds to a *state* or *government policy*.
7. It represents for those who exercise it a combination of interests (of the country or region, of the parliament, of the political bloc to which the parliamentarians belong, of their constituency).
8. It preferably pursues the defence of national interests, the protection of human rights, and the promotion of peace and democratic values. It deals with global challenges and facilitates parliamentary management.
9. The context responds to an increasingly interdependent and hyper-connected world.

The question under study can be analysed from different points of view, but here we choose three: within the parliament, in the interaction between parliament and the institutions of the same state, and in the field of inter-parliamentary relations – that is, between peers. In Figure 2, these three dimensions are exposed, highlighting the need to have a high level of specialisation within the parliament, in addition to cutting-edge technologies that may apply to the different thematic areas of parliamentary diplomacy. Further, particularities are pointed out, and some examples of the application of new technologies are cited.

Within parliaments, parliamentary diplomacy, in the broadest sense, must have highly specialised

FIGURE 2: **Spheres of parliamentary diplomacy and digital management tools**



human resources, culture, structures, processes, and information systems. Unlike other fields of parliamentary action, foreign policy and international relations focus not only on domestic audiences but also on external ones. This leads to a series of peculiarities, including different legal frameworks, action guidelines, protocols, times zones, languages, idiosyncrasies, cultures, history, political regimes, geographies, and information about countries and regions other than the countries to which parliaments and their parliamentarians belong. Among its interlocutors, in addition to parliamentary peers (legislators, officials, and employees), are foreign ministries and diplomatic corps, both local and foreign; other government portfolios in practically all areas, especially defence and intelligence; investments and international trade; migrations; climate change; human rights; international organisations and institutions; foreign communities settled in the country and national ones distributed in different parts of the world; and corporations, institutions, and personalities of all kinds.

To correctly execute the functions associated with this competence, parliaments must have specialised advice of a legislative nature to guarantee independence from the government and the plurality that characterises them. In parallel, they must develop and maintain a relationship as articulated and coordinated as possible with their chancelleries (or other bodies), which assist the Head of State or Government in leading foreign policy. The incorporation of state-of-the-art technologies constitutes an essential aspect of successfully managing parliamentary diplomacy, which must deal with increasingly complex and sophisticated issues.

To cite just one example, the Panel for the Future of Science and Technology of the European Parliament issued a report in December 2021 focusing on the technological sovereignty of the EU. In this regard, *key enabling technologies* (advanced materials and

Big data technologies are essential not only for their ability to process large volumes of information and legal documentation, both domestic and foreign, parliamentary, and extra-parliamentary, but also for their ability to explore trends and discover indicators through information derived from the use of social networks

manufacturing, life science technologies, micro/nanoelectronics and photonics, artificial intelligence, and security and connectivity technologies) are considered crucial to ensure not just an interconnected, digitised, resilient, and healthier society, but also the EU's competitiveness and position in the world economy (European Parliamentary Research Service, 2021).

Instead of considering parliamentary diplomacy to be a threat, executive branches of government should try to develop, as good practice, management that integrates parliament and parliamentarians into foreign policy. This will benefit not only the building of better bilateral relations and the addressing of better global issues in multilateral settings but also matters of *public diplomacy*.[10]

Cooperation between the competencies, powers, and functions of parliaments and parliamentarians in matters of parliamentary diplomacy and international relations and the central role that governments play in foreign policy must correlate with the implementation of information and communication technologies (ICT) that are available and will be in the future, considering the possibility of achieving the most advanced interoperability that is possible. In addition, by its very nature, the field of *international relations* serves as a window for exchanging comparative experiences and good practices, especially in ICT matters.

Big data technologies are essential for their ability to process large volumes of information and legal documentation, both domestic and foreign, parliamentary and extra-parliamentary, but also for their ability to explore trends and discover indicators through information derived from the use of social networks, diplomatic channels, intelligence (declassified or not), and even current and historical newspapers and publications.[11]

In the executive – legislative relationship, the availability of information and exchanges between branches – preferably online – acquire relevance during the negotiations of international agreements of all kinds, especially trade agreements, since, by their nature, they require ratification and, on many occasions, the promulgation of internal laws for correct implementation. This would also contribute to closing the democratic gap that is increasingly evident in international relations. Moreover, it has generated a distortion that puts governance at risk by eroding the role of parliaments and the quality of democracy.

Finally, ICT can also play a highly relevant role in inter-parliamentary relations by facilitating exchanges between legislators from different countries and their teams, particularly in multilateral settings.[12] As in the case of a diplomat preparing to carry out a particular diplomatic mission, a legislator who assumes functions of parliamentary diplomacy must be provided with relevant information and specialised technical support to represent the country's interests effectively. Technologies, in this sense, constitute an essential tool.

The sporadic contacts of the era of the physical world are being replaced by more dynamic relationships of the current digital age, improving the chances of intermediation between diplomats and legislators and their peers elsewhere. However, none of the cases of specialised legislative advice addressed in this study involves conditioning the decision-making capacity of parliamentarians and their respective political forces. Instead, experience indicates that the proper functioning of parliaments results in a higher quality of laws, improvements in government control and auditing of government accounts, more fiscal discipline, transparency, and

greater consensus around foreign policy and articulation and interaction between official diplomacy and parliamentary diplomacy. It also improves levels of trust in parliament and the prestige of parliamentarians. In addition, with the capabilities added by new data technologies, these specialised legislative services help address agenda items without bias and in the most objective way possible.

COROLLARY

The big question to respond to the feasibility of building *smart parliaments* and *data-driven democracies* is to what extent the people and the culture of parliaments are willing to accept change. The main challenge of digital transformation projects, including the administration and management of extensive data systems, lies in going from words to deeds.

The COVID-19 pandemic has forced parliaments worldwide to rehearse urgent responses to the paralysis caused by measures taken to prevent contagion. Technology was vital in most cases to guarantee the continuity of work in commissions, sessions, parliamentary diplomacy activities, and others. However, these digital formats already existed, so their lack of earlier implementation was down to regulatory and cultural limitations.

Suppose parliaments focus on the future and face foresight processes that include an approach to their institutional role in society. If so, they will surely realise the challenges and opportunities that technologies bring, together with the risks of not adapting – and moving away from ordinary citizens, especially the younger generations.

One of the solutions is to take advantage of new technologies to expand the channels of participation and dialogue between parliaments and their communities while demanding greater involvement of parliaments and parliamentarians in the international arena to facilitate the construction of consensus. This is increasingly difficult to achieve and one of the most critical shortcomings of modern societies.

NOTES

1. Created by the Technology Assessment Law, L. No. 92-484, on 13 October 1972, 86 Stat. 787, 2 U.S.C. & 471 (1976), the OTA was an office intended to provide the US Congress with early indications about the probable impact, beneficial or adverse, that technology applications could have on society. In 1995, more than two decades later, it stopped working. In just under 24 years, the OTA published over 750 technical reports, receiving all kinds of praise.
2. In 1983, the French National Assembly created the OPCEST; in 1987, the European Parliament the STOA; in 1989, the British Parliament the POST; and in 1990, the Bundestag the TAB.
3. Germany created the Parliamentary Advisory Council on Sustainable Development of the Bundestag in 2004; Brazil and Chile created Future Commissions in their respective Senates in 2011; and the Korea National Assembly and Uruguay the *Institutes of the Future* in 2017.
4. Scotland created the Scotland Futures Forum in 2005.
5. https://futureu.europa.eu/?locale=en
6. The European Parliamentary Technology Assessment Network has only 13 full members, 11 corresponding to national parliaments, one subnational (Catalonia) and one supranational (European Parliament), while another 12 are associate members, ten national, one subnational (Wallonia) and one regional (the Council of Europe).
7. Institutions of the type are recorded in Belgium (1936), the Netherlands (1945), Denmark (1962), Austria (1970), and the USA (1974). Currently, 34 of 38 OECD member countries have an IFI.
8. Called *principles*, they were developed by the Network of Parliamentary Budget Officials and Independent Fiscal Institutions, the Working Group on Senior Budget Officials, and the Committee on Global Governance of the OECD. In addition, they had the support of the European Commission, the International Monetary Fund, and the World Bank.
9. According to the latest United Nations survey on electronic government (2020), which includes its 193 member countries, the list of the most advanced countries in the world is led by Denmark, Korea, and Estonia, followed by Finland, Australia, Sweden, the United Kingdom, New Zealand, USA, Netherlands, Singapore, Iceland, Norway, and Japan.
10. For example, Canadian diplomacy has the custom that parliamentary delegations travelling abroad produce very detailed reports on previously reported topics of national interest, which helps to build a perception of the opinion of the audience of the country that is visited through responses and comments from their representatives in parliament.
11. Toine Pieters (2013) describes the use of data technologies to determine the influence of American culture in the Netherlands through processing publications over a long period. See also Fitsilis and Stavridis (2021). They investigated which digital tools were utilised to defend and promote Greece´s stance related to the November 2019 Turkey–Libya Memorandum of Understanding on maritime boundaries in the Mediterranean Sea.
12. The COVID-19 pandemic brought a great debate regarding so-called *digital diplomacy*.

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The Evolution of the Digital Transformation in Parliaments and the Role of the Private Sector: An Overview

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ABSTRACT

Legislative institutions represent the bedrock of democracy in their jurisdictions, and their buildings are easily recognisable as public offices, even though their institutional roles are not understood. The legislature is responsible for damping political tensions and finding minimum consensus in legislation and in internal practices, such as the lawmaking process and more effective administrative processes. This chapter looks at how partnerships and outsourced solutions with the private sector can positively influence parliaments' digital transformation processes. It also defines digital transformation in the legislative process.

ABOUT THE AUTHORS

Luís Kimaid is founder and CEO of Bússola Tech, where he leads legislative modernisation and digital transformation in national and subnational legislatures globally. In 2018, he created Bússola Eleitoral – an innovative digital platform to help voters find their legislative candidates. He has also led digital transformation projects in the public sector in Brazil.

Sarah Fernandes is Bússola Tech's COO. She studied public and business management and ICTs at Fluminense Federal University, Brazil, and now leads initiatives highlighting women's leadership in digital transformation projects and promotes good practice in open data.

DIGITAL TRANSFORMATION AND ITS APPLICATIONS IN LEGISLATIVE HOUSES

Digitalisation is defined as the socio-technical process of applying digitising techniques to social and institutional contexts to render digital technologies infrastructural (Tilson, Lyytinen, & Sørensen, 2010). The term digitalisation can simply refer to a document in digital format (Graham & Stoll, 2018). Digital transformation is an evolutionary process that leverages digital capabilities and technologies to enable organisational models, operational processes, and user experiences to create value, and aggregates many benefits for its users and implementers (Morakanyane, Grace, & O'Reilly, 2017).

To be effective, the digitalisation process must be aligned with the digital transformation strategy of an organisation and can be categorised as access, preservation, reduction of costs, and sharing possibilities without borders (Schumacher, Sihn, & Erol, 2016). It is worth remembering that smartphones and gadgets have also played an important role in this integration and the solutions that have been developed or adapted (Cherepnalkoski, 2015; Beland & Murphy, 2016).

In considering the technological dimension, we should keep in mind that institutions such as parliaments are the sum of specific elements, such as process, people, structure, culture, and information systems. This is strongly related to the fact that digital transformation processes should respect a parliament's traditions and consider its consensus-building nature (Koryzis et al., 2021).

The impacts of digital transformation can be categorised as either customer/user-focused or

Digital transformation in the legislative branch is not just about technology per se

organisation-focused. The use of technology solutions in the legislative branch is not an end in itself (Morakanyane, Grace, & O'Reilly, 2017).

Legislatures around the world use a broad range of digital transformation tools, such as online search records for all proceedings; procedural matters involving drafting and recording bills for divisions online; online searching for committee reports; staff development; the transformation of speech to text and vice versa (e.g., for committees).

Considering the three main dimensions of the legislative process (deliberation, representation, and oversight), the journey for digital legislative transformation goes beyond the simple application of digital solutions in activities that are related to the legislative process. Characteristic examples are the digital resources to assist committees, the use of technology for public information and transparency, communication and engagement via parliamentary-based websites, networking and studies development based on information and communications technology (ICT), and the development of databases and intranets for monitoring executive activities (UNDP, 2006).

Digital transformation in the legislative branch is not just about technology per se (Koryzis et al., 2021). It is recommended that an institution develops an overview of necessary digital and organisational enablers, including elements such as strong leadership, team management, digital skills, and potential benefits for internal and external users.

Legislatures are complex representative institutions that can benefit from ongoing digitalisation, especially through the use of emerging technologies. As previously mentioned, these benefits help streamline document management, storage, analysis, and the work results of staff and parliamentarians (Koryzis et al., 2021).

This study seeks to draw on what has been produced globally regarding digital transformation in legislatures. Above all, it attempts to understand the private sector's contributions with regard to digital transformation in parliaments. In particular, we note the importance of cross-area networks such as the Hellenic OCR Team, whose members can produce and exchange knowledge, promote discussions, and disseminate academic findings in the community, thereby contributing to the growth of publications in this fundamental field.

As practitioners, who have conducted 72 interviews and 8 global conferences, we can confirm that the digital transformation field offers new possibilities for parliaments. This finding is supported by different studies. As an example, Judge and Leston-Bandeira affirm that the possibility of remote working, including remote voting, offers parliaments a new tool to be used in emergencies, which could contribute to the progressive virtualisation of parliamentary work (Judge & Leston-Bandeira, 2021).

LEGISLATIVE INSTITUTIONS

The legislature is responsible for the deliberation and regulation of life in society, the oversight of the executive's actions, and plural political representation. Legislative institutions are social constructs that are based on historical, cultural, and religious elements, developing as national or regional identity was created.

Accordingly, there is a great variety worldwide in the complexity of the internal structure of parliamentary assemblies. These differences can be explained by the different processes associated with each parliament and the political conditions in which they developed (Bobbio, 1998). This means that social elements present in society are also present in the parliamentary institution's culture and its internal processes, even though they sometimes work against effective governance.

This brief context shows the basic difference between digital transformation in a legislative body and other arenas. Developing a digital transformation strategy for a legislative institution involves having profound knowledge of existing processes, and rather than digitally replicating them, bringing about a true transformation that works towards the desired benefits for the institution, its internal actors, and society at large.

While the focus of executive power is on creating efficient processes, the legislature considers social constructs, together with the institutional division of political and administrative leadership roles; this division occurs because multiple democratically elected members can influence the decision-making process. The process of change

and the best delivery of services (either internally, to elected members and staff, or externally, to citizens, the private sector, and civil society organisations) have to be considered through these overlapping lenses.

In many cases, certain traditions are inseparable from legislative processes because they are understood as the raison d'être of the institution or part of its identity. This doesn't mean that legislatures are averse to digital transformation, but it does mean that these characteristics have to be understood before an effective strategy can be developed.

The importance of organisations such as the Hellenic OCR Team has to be emphasised. This organisation has built a unique crowdsourcing expert network for the processing and analysis of parliamentary and other data. Its cross-sector and decentralised platform allows it to bring together academics and practitioners who are studying new applications of technologies in the legislature. With the growth of this network, research into new concepts and the legislature's modernisation and digital transformation are able to take place, with experiences being collated from different jurisdictions around the world. The Hellenic OCR Team is working quickly, providing much peer-reviewed content. While this team is building up an academic knowledge base, Bússola Tech, a non-service provider organisation to the legislature, is building up and strengthening a global legislative community of practitioners. It is based on national and subnational legislatures who are working towards digital transformation through the peer-to-peer exchange of practical expertise.

In this chapter, we consider two objectives regarding digital transformation: ensuring institutional resilience and security through continuity, and bringing about more efficient and effective internal processes.

Notwithstanding the ever-growing need for legislative activities to rely on digital tools and video conferences, especially during COVID-19, cybersecurity can become a problem. Although legislatures have been able to develop robust continuity plans involving remote capabilities, these have heightened cyber threats.

Since 2020, legislatures have been required to respond quickly to maintain basic levels of democratic governance, using simple solutions that ensured members of the legislative houses were still able to deliberate (OECD, 2020).

DIGITAL TRANSFORMATION IN THE LEGISLATIVE BRANCH

In some cases, legislatures have been able to adopt existing internal applications that allow and compute voting, integrating them with video conferencing tools. In contrast, in others, voting and debating took place via generally available video conferencing applications. Recently, a growing number of legislatures have developed or procured applications that interface with parliamentarians in a friendlier manner. At the same time, remote and hybrid deliberation systems allow compliance with procedural rules, and in some countries, these systems have provided a secure and certifiable way for computing votes (Câmara dos Deputados do Brasil, 2022).

Although these initiatives cannot be considered digital transformation per se, they have enabled expansion to other key areas of the legislative process. In this way actions that were previously performed in person can now be undertaken from anywhere and at any time, allowing the legislative system to function fully remotely, if required.

We have identified that integrated modular applications have helped legislatures in this process, allowing a smooth transition. Amongst such applications are the digital submission and certification of legislative proposals, allowing Members of Parliament to propose new legislation without having to physically submit it. This has enabled parliamentarians to fulfil one of their institutional duties. The solutions vary greatly, from email addresses to which parliamentarians can submit their legislative proposals, to internal digital platforms that validate the user's identity and certify document submission in a user-friendly manner. (Bússola Tech, 2021a).

Additionally, legislatures could also digitalise committees to complete the digital legislative process and ensure continuity. Committees are the heart of the legislative process, allowing members to collaboratively build legislative drafts and proposals, enabling public participation, and allowing consensus-building between different political leaderships (Bússola Tech, 2021b). This stage in the digitalisation process is certainly one of the most challenging steps because of the numerous processes that need to be fully digitalised and integrated for it to take place. Some of these tasks include the digitalisation of a document management system for legislative proposals and other relevant legal documents, the specialised solutions for amending legislative drafts (Bússola Tech, 2021a), comparing versions and providing tools that make

The private sector can play a crucial role in reducing legislatures' political and financial cost by prototyping new digital solutions

the most of citizens' participation according to the rules of each legislature, and computing the votes of committee members.

In addition to activities directly linked to the management of the legislative process, a legislature's digital transformation strategy should also refer to its supporting activities, such as managing document archives – including legislative bills, drafts, and laws, as well as reports, transcripts, and other documents. Even though not directly linked to the digital processing of a legislative proposal, these activities are essential for modernising an institution, as it allows for better integration of data from different areas and insights into the decision-making process for parliamentarians and staff. It also provides building blocks for a policy of increased transparency for internal and external users, allowing for a more robust communication strategy.

The administrative management of the legislature is the cornerstone for the proper functioning of its activities, and a key target for a digital transformation strategy. This area is not directly linked to the institution's core activities, but rather to its supporting infrastructure since it represents human resources management, payroll, and basic organisation. It is the closest in its operation to similar departments in the executive and the judiciary, since it is involved in the functioning of a public organisation, rather than its core activities.

Parliamentary staff members tend to have more advanced ICT skills than other parliamentary actors. This creates an opportunity for staff to make a smooth transition for parliamentarians, increasing their familiarity with user interfaces and decreasing the likelihood that they will refuse to work with new platforms (UNDP, 2006).

Information technology (IT) teams are responsible for centralising demands from various legislative teams and considering opportunities for improvement, either internally developed or outsourced. They are also responsible for shaping these demands in a way that integrates different legislative systems and datasets. If this integration does not occur, dysfunctions may occur that will hinder the effective provision of services.

The legislative bodies that require these services – such as the Clerk's or Secretary General's Office, the Drafting Office, Hansard, and the Communications Area – are the process owners, as they deeply understand the activities in their particular area. They have a unique perspective on the design of new processes, the actors involved, and the reasoning behind possible inefficiencies that could be considered to be flawed by an outside observer.

The Clerk's Office and the Secretary General's Office have an additional responsibility – to be the bridge between other parliamentary offices and the technical staff in IT departments, owing to their unique political sensibility and deep knowledge of the institution.

PRIVATE ACTORS INVOLVED IN DIGITAL TRANSFORMATION IN LEGISLATURES

The private sector can play a crucial role in reducing legislatures' political and financial cost by prototyping new digital solutions. As practitioners promoting increased peer-to-peer collaboration, we have been able to investigate 72 interviews from 2021 and 2022 with parliamentary technical staff. These show that the private sector absorbs a significant part of the burden of developing robust solutions. However, it is important to understand the different characteristics of private companies that work with legislatures and differentiate their solutions, sales and implementation strategies, and strategic objectives.

Three different categories of companies that support legislatures in their modernisation and digital transformation were identified from our interview findings: companies that specialise in providing solutions with the legislative body as their main client, the so-called LegisTechs; general-purpose companies that provide solutions to governments, other companies, civil society and other social organisations, as well as citizens; and companies that specialise in providing IT human resources for the general public, including legislatures.

LegisTech companies, a term used for companies that digitally transform the legislative branch, have become highly specialised in answering the digital needs of legislatures. It may be observed

that they have an in-depth understanding of legislative activities and develop solutions that help solve specific problems many legislatures face. It is important to note that LegisTech companies can be divided into those that focus on specific modules for digital transformation, and those that implement end-to-end packages, which cover all steps in the legislative process. These private organisations build different solutions with the needs of a parliament in mind, such as collaborative drafting and bill amendment, agenda management, and remote deliberation.

We found that the main actors in this sector were founded at the end of the 1990s and the beginning of the 2000s, which brings us to hypothesise that the demand for digital transformation in the legislature is not recent. It is important to highlight that the LegisTech companies are usually rooted in specific places, either in particular regions of a country or in a global region.

At Bússola Tech, a global organisation that acts as a community builder, strengthening peer-to-peer collaboration in legislatures and parliamentary organisations, we found that companies with highly specialised modules for digital transformation more easily accessed legislatures from other regions. This is due to two main factors: the ability to outpace local competitors with more sophisticated module solutions, and the ability to more easily integrate a specialised module in the suite of solutions offered by local LegisTech companies.

While these companies offer specialised and tailored solutions for legislatures, other application providers play an important role in providing essential services. Characteristic examples include cloud storage, processing services and related applications, suites comprising email and videoconference tools for internal management purposes, streaming, and social media platforms. Many legislatures outsource some of their IT staffing needs to private companies. This allows IT teams in legislatures to reallocate their staff to positions that require their specific knowledge and expertise about the institution, something not necessarily required of the staff provided by outsourcing.

CONCLUSION

Digital transformation strategies for legislatures should focus on showing the institution and its actors the benefits of modernisation. Moreover, we recommend that legislatures should pay attention to other layers than the technology itself, such as change management and usability characteristics – and how these solutions connect with institutional traditions.

This chapter covers just one of the pieces of the puzzle. Legislatures have to clearly understand their needs, similarities, and regional characteristics of technological development. This chapter identifies that there is still much to be studied. We can conclude that private sector providers can play an important role as allies of legislative institutions, helping them to reduce the risk attached to digital transformation, and improve internal and external user experiences – even helping to develop solutions quickly, and allowing IT teams to be reallocated to positions that specifically require their expertise. We believe the private sector has a crucial role to play.

The key finding here is that private institutions can act as fundamental stakeholders and partners of parliaments, supporting technology-based solutions for legislative activity. This chapter shows that digital transformation in this arena requires collaboration between peers in legislative institutions, but that this also encompasses the private sector, academia, and civil society organisations. Without this collaboration and the free flow of technical and political expertise, the promotion of digital transformation could be severely impaired, at great political, social, and economic cost.

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The Digital Transformation of Parliaments and Implications for Democratic Representation

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ABSTRACT

Using examples from the German Bundestag and the British House of Commons, this chapter charts some of the developments being adopted by parliaments in their digital transformation. It also assess some of the broader normative implications for democratic representation, including questions of executive accountability vis-à-vis the legislature and explores more individualised styles of representation that have challenged the virtual monopoly of political parties in organising voter communication.

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INTRODUCTION

The digital transformation of parliaments has improved the working conditions for legislators and their support staff on the one hand and citizens' access to parliamentary records on the other. Parliaments have opened digital channels for citizens to submit electronic petitions. The COVID-19 pandemic has forced parliaments, which have had a strong culture of personal meetings, to employ 'digital and technological alternatives to the traditional physical-presence and paper-based legislative process' (Bar-Siman-Tov, 2020a: 17). The longer-term effects of these adjustments to a crisis remain to be seen. Yet the digital transformation has gone beyond parliaments as formal institutions: parties and candidates for legislative elections have increasingly relied on digital forms of communication. Social media have become far more important in structuring legislators' communication with constituents, voters, and their parties' grassroots. This chapter charts some of these developments, with illustrations mainly from the German Bundestag and the British House of Commons. We assess some of the broader normative implications for democratic representation, including questions of executive accountability vis-à-vis the legislature. In this context, we also argue that more individualised styles of representation have challenged the virtual monopoly of political parties in organising voter communication, and that established parties have lost some of their organisational advantages over new parties.

DEMOCRATIC REPRESENTATION AS CHAIN OF DELEGATION AND ACCOUNTABILITY

Digital transformation has affected many actors around legislatures and the entire process of

The quality of representation depends on the availability and control of information at every link of the chain

democratic representation. This includes parliamentary members, but also parliamentary party groups, governments, legislative staff, journalists, interest and advocacy groups, professional consultancies and lobby firms, the providers of digital services, and, not least, citizens.

Advocates of principal–agent models in the study of democratic government have modelled representation as chains of delegation and accountability where the voters are the ultimate principals who delegate policymaking powers to legislators in the chamber as their agents. Simultaneously, legislators are agents of their extra-parliamentary parties and the leaderships of their parliamentary party groups in the chamber. Carey (2007) speaks of 'competing principals' in this context. Not only do Members of Parliament (MPs) serve as their constituents' and grassroot organisations' agents to represent the (possibly competing) interests of these groups, but parliamentarians in parliamentary systems of government are simultaneously principals of the government as they elect (or select) a head of government as the agent of the parliamentary majority. In a further link of the chain, the head of government is simultaneously agent of the parliamentary majority and the principal of the members of his or her cabinet. In the final link of the chain, the cabinet members are agents of the head of government and principals of officials in their ministries and executive agencies where policies are both prepared and implemented. The focus of principal–agent models is on the information principals have about agents who may communicate strategically, if their own interests differ from the principals' preferences.

One reason for the important role of information is the normative notion of the chain of delegation sketched here being mirrored by a chain of accountability, which runs backwards from the bureaucracy, via ministers, the head of government, and legislature back to the voters (Strøm, 2000). The extent to which democratic principals in this chain can ensure agent accountability depends on their ability to tackle two informational problems, namely the risks of delegation – adverse selection (selecting an unsuitable agent) and moral hazard (opportunistic behaviour of the agent against the interests of the principal). Institutions such as the procedures for candidate selection may offer principals certain controls before delegation (e.g., institutionalised screening of agents or contract design) or after it (e.g., through monitoring) (Kiewiet & McCubbins, 1991; Saalfeld, 2000). The risk of adverse selection based on incomplete information on a candidate's suitability is, for example, reduced through the competitive rules of intra-party candidate selection (e.g., in primaries or more representative procedures) and electoral campaigns in which candidates must prove their abilities in full public view and are exposed to intense media scrutiny. The risk of moral hazard can be reduced through legislative rules of procedure where law-making, debates about the record of legislators in government, and about any alternative policy proposals offered by the opposition are exposed to citizens.

This model obviously constitutes a strong oversimplification but illuminates some of the key issues of agency theory: interaction between different actors pursuing their own interests where agents tend to have informational advantages over their principals. This informational asymmetry may be so strong that agents are relatively unconstrained to pursue their own preferred policies, even if those policies conflict with the principal's preferences. If agents are free to do so at any link of the chain, their democratic accountability is in jeopardy. In fact, accountability depends on the informational asymmetry at the weakest link in the entire chain (wherever it may be located; see Strøm, Müller, & Bergman, 2003).

The quality of representation depends on the availability and control of information at every link of the chain. Access to, use of, and control of digital information may affect both the ability of agents to hold principals to account. There has been a considerable amount of scholarly discussion about whether the expansion of digital information increases the informational gap in the agents' favour (e.g., the informational advantages of ministers vis-à-vis members of the legislature, especially those not belonging to a government party) or whether it has reduced the gap and empowered democratic principals.

This includes studies of the use of modern information technology in legislatures (Zittel, 2004; Theiner, Schwanholz, & Busch, 2017), the potential for more efficiency in parliamentary procedures and processes (Voermans, Fokkema, & Van Wijk, 2012), the transformation of political parties (Cunha & Voerman, 2007), the modernisation of parliaments in new democracies (Gostojić, Ledeničan, & Gršić, 2020), the opportunities to expand democratic participation and deliberation (Hilbert, 2009), and the risks of excluding citizens from access to government and public services (Ranchordas, 2020).

HOW DIGITALISATION HAS IMPROVED PARLIAMENTARY INFORMATION

Digitalisation has improved both citizens' ability to access information on legislators and legislative proceedings (i.e., reducing the informational gap between citizens as the ultimate democratic principals and their elected representatives). It has also improved the support the legislatures' research services were able to make available to legislators. This, in turn, may have helped to reduce the informational disadvantage of legislators vis-à-vis their agents in government.

Turning first to the link between citizens and legislators, television has been the main medium offering public information on legislatures and legislative proceedings in most liberal democracies since the 1950s. Nevertheless, television footage has not necessarily improved public understanding of how legislatures work. For example, the focus of media coverage in the German Bundestag is on clashes between, or rows within, the parties, or on empty seats in plenary sessions, rather than the day-to-day work legislators carry out in parliamentary committees or in their constituencies. Not least for this reason, parliaments have increasingly expanded television coverage of their proceedings. In the British House of Commons, televising parliamentary procedures was proposed for the first time in 1964, but it was not until 1989 that the first plenary debate was televised in the Commons, after the House of Lords had started televising its debates in 1985 (UK Parliament, n.d.).[1] Many parliaments established their own parliamentary television channels (e.g., Parliament TV in the UK or Parlamentsfernsehen in Germany). The footage is offered free of charge to public and private television stations and has increasingly been used by private news channels and legislators themselves (e.g., Feldkamp & Ströbel, 2005: 795–796).

In addition, parliaments have vastly enhanced their internet-based information to the public covering both history, rules of procedure and current developments. Their administrations have generally sought to make the pages more accessible to people with special needs and non-native speakers.[2] Not least, they have made available numerous legislative databases through their websites providing online access to important documents (e.g., parliamentary debates, questions, information on votes, information on the progress of bills in the chambers and other reports). Increasingly, legislatures have improved access to their databases further through open-data interfaces such as the Open Data page of the Bundestag in Germany.[3] In some cases, independent actors have sought to enhance these services, including the British platform 'TheyWorkForYou',[4] which in its words 'takes open data from the UK Parliament, and presents it in a way that's easy to follow – for everyone'. Many legislatures also maintain their own channels on YouTube, producing a record of individual speeches that legislators themselves can link to in their individual social media outlets or on their personal web pages.[5]

The open data provided by legislatures have also been utilised by non-governmental organisations to present them so that citizens can follow the activities of their representatives, including their speeches and voting in the chamber.[6] Other services have specialised to make party finance, lobbying activities or donations more transparent, and provide citizens with a channel to send questions to their representatives.[7]

While the digitalisation of parliamentary records and services has opened legislatures to citizens and thus enhanced accountability, it has also improved the information that legislators receive about the grievances of citizens. For example, Article 17 of the German Basic Law grants the country's residents the right to address petitions to executives and parliamentary chambers at federal and state levels. Petitions are written 'requests' or 'complaints' requesting legislation, administrative action, or the redress of particular grievances. If identical petitions are submitted or signed by more than one person, they are generally referred to as 'mass petitions'. With the introduction of e-petitions in 2005, it became possible to submit such petitions digitally. In this context, we can distinguish two types of e-petition: 'individual' (*Einzelpetition*) and 'public petitions' (*öffentliche Petition*). The former are submitted by individuals and are dealt with individually

The digitalisation of legislative information has helped individual legislators and their parliamentary party groups to hold the government to account

without being publishing online. The latter are made public, revealing the original petitioner's identity. They can be signed online by further persons and often allow a public debate in an internet forum. Requests for public petitions are pre-checked by the clerks of the committee, ensuring that the issue is of sufficiently general interest and suitable for publication (Lindner & Riehm, 2009: 504).

According to Article 45c of the Basic Law, citizens' complaints and proposals are to be processed and, if considered necessary, followed up by the Bundestag's Committee on Petitions. Except for issues of national security, the federal government and the federation's administrative agencies are obliged to grant the Committee on Petitions access to all documents, information, and their premises. The Committee has the power to call witnesses and experts, including members of the federal government and the complainants. It can investigate a complaint directly in the relevant agency and at the appropriate level. It is obliged to inform the minister about its investigation, but does not need the minister's approval. It cannot, however, investigate matters that were not explicitly referred to it in a specific complaint.

Secondly, the digitalisation of legislative information has helped individual legislators and their parliamentary party groups to hold the government to account. Not only are legislative information systems available to legislators, but also to their research staff, the parliamentary party groups' staff, and the legislatures' research services. In the German case, the Bundestag's research services (*Wissenschaftlicher Dienst*) draw heavily on digital information and databases to retrieve and present independent information to the research staff of individual legislators and of the parliamentary groups. The Bundestag's research services have been an important driver of the digital transformation of the Bundestag in recent years.

An important driver of accelerated digitalisation was the COVID-19 pandemic that affected legislatures globally (Bar-Siman-Tov, 2020a, 2020b; Cormacain, 2020). Not only did it strengthen the executive (Griglio, 2020; Petrov, 2020), but it also forced legislators to rely more strongly on digital communication, including the use of digital messenger services. In the case of the German Bundestag, for example, staff members report that the messenger application Signal has become the most widely used communication tool among legislators and their administrative and research staff, who own various groups to exchange information and coordinate their work more quickly and efficiently than in the past.

Nevertheless, one aspect that has held back digital communication within legislatures and between legislators and public agencies is concern about cybersecurity. The German Bundestag, for example, has been the target of several attacks infecting the systems with malware or spying software since 2015. These have included the chamber's internal computer network (Parlacom). Therefore, the legislature passed additional measures to protect critical information technology infrastructure in general, including the Bundestag's networks. Nevertheless, there is a widespread view among legislators that digital communication may introduce risks as well as opportunities.

DIGITALISATION, INDIVIDUALISATION, AND THE PERMANENT ELECTORAL CAMPAIGN

Empirical work on the motivations and behaviour of legislators has tended to emphasise their desire to get re-elected as a crucial variable to build theoretical models. The 'electoral connection' has been shown to drive legislators' individual behaviour in the US Congress (Mayhew, 1974) as much as the legislative behaviour of political parties in less candidate-centred systems (Strøm, 1990). Therefore, individual and partisan behaviour in legislative chambers can be seen as part of 'a continuous election campaign' as Crick (1964: 246) pointed out in his much-cited phrase. The main idea is that elected representatives tend to use their time in the legislature to maintain or enhance their chances of getting re-elected (Blumenthal, 1982).

In classical Westminster systems, the two-party system, supported by the first-past-the-post

electoral system, single-party majorities and high levels of party unity tend to result in a highly competitive relationship between the government majority and oppositional minority. The minority has little direct influence on public policy (e.g., through policy work in committees). Rather, the system favours an adversarial relationship between government and opposition with the minority publicly challenging the government's record in office, aiming to defeat the government at the next general election. While this competitive relationship between government and opposition has traditionally been seen as a 'continuous election campaign' between parties in parliamentary systems of government (King, 1976; Russell & Cowley, 2018), some scholars have observed a growing individualisation of representation as a result of technological change (the digitalisation of political communication, which triggered changes in the way representatives communicate with their electorates) (Zittel & Gschwend, 2008; Zittel, Nyhuis & Baumann, 2019). This may be the result of growing competition for reselection *within* political parties where candidate selection has become more inclusive and competitive in many extra-parliamentary party organisations. Incumbents still have advantages in most political parties, but in many liberal democracies local grassroots have become more assertive and more critical as far as their representatives' activities in the legislature are concerned.

The growing availability of digital information on legislators' attendance, activities, voting behaviour, links to interest groups, financial activities, and professional conduct in the chamber has enhanced representatives' accountability not only vis-à-vis voters but also in relation to the 'selectorates', that is, the bodies controlling candidate selection within political parties. As a result, political parties and candidates rely on professional and strategically planned communication with voters throughout the entire period of their term in office (Tenscher, 2013). Efficient communication becomes an everyday necessity. Although a significant part of this communication is still conducted through traditional media and party organisations, digital information has become far more important, especially for smaller parties and individual representatives and candidates (Zittel, 2009b).

The growing role of digital communication has changed the way various organisational elements interact in political parties and how the parties campaign. In the past 25–30 years, political communication has developed rapidly. The first phase of this development involved the creation of websites used for the unidirectional transmission of political messages and for collecting donations (Jungherr & Schoen, 2013). Political parties and individual legislators and candidates created their websites including blogs designed to share their views on current issues and inform the represented about their latest activities. Individual representatives were able to reduce their dependence on their party organisations and the goodwill of the news media in this new form of unidirectional political communication (Zittel, 2009b).

In a subsequent phase, the expansion of social networks allowed politicians to respond even more easily to relevant events and obtain direct feedback from the interested public. The effect of these developments was ambivalent. On the one hand, social networks provided representatives and candidates with free online space for communication that allowed them to interact directly with voters and party grassroots. On the other hand, they began to feel the stress caused by antagonistic, offensive, and even threatening responses. In the most recent phase, digitalisation has led to further developments in campaigning, which has mainly benefited candidates with considerable financial resources and political parties: Data-driven political campaigning has allowed the application of sophisticated targeting methods used to mobilise voters in critical phases of campaigns. This can be observed particularly extensively in the USA where such data are used systematically to send narrowly targeted messages to voters both online and offline (Hersh, 2015).

In other liberal democracies, however, the institutional conditions were not suited to follow the lead of strongly data-driven electoral campaigns observed in the USA since the early 2010s. One explanation for the lack of micro-targeting in some European democracies such as Germany are the laws on data protection in the European Union that render the collection of data for campaigning purposes problematic (Kruschinski & Haller, 2017). Political parties in such legally constrained environments have had only direct mails and telephone banks at their disposal, which they have applied since the 1980s (Gibson & Römmele, 2009). In general, they have relied more heavily on door-to-door campaigning as their main source of data collection. Nevertheless, certain effects of digitalisation can be seen in such constrained environments as well. In 2013 and 2017, for example, apps were used successfully in German electoral campaigns to support

Digital channels have improved the information accessible to citizens, legislators, and parliamentary parties; they have enabled new forms of communication and linkage

volunteers in contacting voters directly (Jungherr, 2013, 2017).

The increased emphasis on online communication inside and around legislatures was further fostered by the COVID-19 pandemic when restrictions on public assembly drastically reduced the possibility for public rallies. As a result, politicians began to utilise social networks more systematically. Germany may serve as an example once again. Although German online campaigns had displayed developments towards a more extensive and qualitatively enhanced application of digital tools to communicate with voters since 2005, the 2021 Bundestag election – fought during the pandemic – appears to have been a watershed. Parties and candidates prepared extensive online campaigns systematically as traditional forms of campaigning were impossible to plan under the conditions of the pandemic.

Yet it has to be noted that the digitalisation of political campaigning has been Janus-faced. On the one hand, it has removed some of the disadvantages that smaller and new parties have in competing against larger and more established parties with better access to public media, superior financial resources, and a larger base of volunteers. This was, for example, reflected in the successful online campaigns of the German right-wing populist Alternative for Germany (AfD) and the Left party (Die Linke) during the 2017 general election. They conducted the most successful online campaigns on Facebook in terms of likes per day, shares, and engagements, being able to broadcast their messages to more voters on social networks than their mainstream rivals (Haller, 2017). From the perspective of theories of democracy, these changes in the technology of political communication have removed some barriers for small and new parties. At the same time, populist and polarising parties have been particularly successful in using these tools. Apart from the examples mentioned above, this has included the campaigns of Donald Trump (Schneiker, 2019) or the Brexit campaign in the UK.

Not only has the digitalisation of political communication had profound effects on political parties and their organisations (e.g., Saalfeld & Lutsenko, 2022), it has also affected individual legislators. In his comparative study based on data from the early 2000s, Zittel (2010) found significant cross-national and inter-individual differences in the way legislators used digital tools in their political communication. In comparison to the USA and Sweden, German Members of the Bundestag were late adopters. Zittel also demonstrated that the mere availability of digital means of communication does not mean that all legislators adopt them to the same extent. Although Facebook, Twitter, Instagram, and TikTok have become generally more important for individualised communication, variations in the adoption of such tools are not merely idiosyncratic or related to the age of candidates (younger candidates being more likely to employ social media in their personal campaigns than older ones). Zittel (2009a, 2009b, 2015) found that both Germany's electoral 'personalised system of proportional representation' (Saalfeld, 2005) and the strategic calculus of candidates had a significant impact: all else being equal, candidates seeking to get elected in single-member district races and candidates with high levels of electoral vulnerability were more likely to exploit the entire range of digital communication than candidates seeking election via their parties' regional lists or candidates whose re-election is relatively certain, because they run in 'safe seats' or had relatively safe positions on their parties' lists.

DISCUSSION

The digitalisation of political communication has begun to affect democratic representation and accountability profoundly. Adopting a principal–agent framework to model the different stages of democratic representation in liberal democracies, we have argued that the digitalisation of political information and communication has affected both the direct links between (a) voters and legislators and (b) legislators and executives. In addition, it has affected the role of intermediary actors in the

process of delegation and accountability, especially political parties (selecting candidates for legislative office and controlling individual behaviour in the legislature) and the mass media (traditionally being gatekeepers in the communication between elected politicians and citizens).

Studies of parliamentary bureaucracies have highlighted their role as '"silent" organisations playing a fundamentally serving function', and offering 'a crucial contribution to the well-functioning of representative assemblies' (Christiansen, Griglio, & Lupo, 2021: 477). Using the British and German parliaments as examples, we have shown how parliamentary bureaucracies have exploited the opportunities of digitalisation to enhance the information required for democratic accountability to work in legislatures. The digital channels have improved the information accessible to citizens, legislators, and parliamentary parties; they have enabled new forms of communication and linkage. This process has been further accelerated during the COVID-19 pandemic when the possibility for in-person meetings was severely restricted in many legislatures.

We have also argued how political parties, individual candidates, and representatives have actively used digital tools to advance their chances of getting re-elected. While research has established some idiosyncratic patterns and established generational differences, empirical studies have also shown that institutions (e.g., laws on data protection or electoral laws) and electoral strategies have been effective predictors of variations in the adoption of digital tools. This is particularly observable in analyses of electoral campaigning.

While the digitalisation of political communication has reduced the traditional function of mass media as gatekeepers, it has strengthened the role of some independently funded non-governmental organisations (such as the British 'TheyWorkForYou' or the German 'abgeordnetenwatch.de') providing information and enhancing the accountability not only of governments, but also of individual legislators vis-à-vis their voters. The availability of technology has empowered citizens' initiatives such as the crowd-funded Hellenic OCR Team to provide digital access to parliamentary records.[8] Open data strategies pursued by legislatures themselves have also allowed data journalists to analyse legislative behaviour more systematically than ever before. Similarly, academic institutions have provided digitally generated information on the political biographies of legislators to an academic audience (Göbel & Munzert, 2022).

There is limited research on the effect these developments have had on individual parliamentary behaviour. Evidence from the House of Commons suggests that some MPs responded strategically to digital monitoring, increasing the quantity of certain visible activities on the floor of the chamber, including speeches and parliamentary questions. In some cases, however, this increased quantity of activities has been symbolic and not always added to the quality of representation. Summarising anecdotal evidence, Korthagen and Dorst (2020: 155) noted that in many cases these MPs 'did not speak of anything of substance, and this therefore skewed the totals for individual MPs and compromised the integrity of the information being provided to citizens'.

Not only has the availability of more and more sophisticated means of political communication and data collection on potential voters contributed to a trend towards more individualised representation in party democracies, but it has also improved the chances for smaller and emerging political parties to compete in the electoral arena. It remains to be seen whether this has reduced the tendency towards 'cartel parties' in many advanced liberal democracies (Katz & Mair, 1995). While this effect has the potential for improving the electoral accountability of incumbent parties and legislators, it has also demonstrated the potential of digital platforms to become catalysts of political polarisation, undermining representative institutions in liberal democracies. Beyond the signs of growing polarisation in many liberal democracies, individual candidates and legislators have also had to deal with adverse effects such as emotionalised, offensive, and threatening feedback from citizens active on social media. Not least, the growing reliance on the processing and exchange of digital data has increased legislatures' and legislators' vulnerability to external attacks on the legislature's digital infrastructure. While there is little evidence that digitalisation has compromised the confidentiality of formal parliamentary meetings, the leaking of exchanges on digital messengers or running commentaries via Twitter on difficult parliamentary negotiations have a potential to undermine trust and communication, as may have been the case in the German coalition negotiations in 2017 (Siefken, 2018). In short, the digitalisation of political communication around legislatures is a multifaceted phenomenon that entails threats as well as opportunities for democratic accountability.

NOTES

1. https://www.parliament.uk/about/living-heritage/evolutionofparliament/parliamentwork/communicating/keydates/commonsproceedingstelevised/.
2. For example, https://www.bundestag.de/ and https://www.parliament.uk/.
3. https://www.bundestag.de/services/opendata. For example, the Bundestag makes the report on plenary sessions in available PDF, XML, and JSON formats.
4. https://www.theyworkforyou.com/.
5. https://www.youtube.com/c/bundestag/videos for the German Bundestag, and https://www.youtube.com/user/UKParliament/videos for the British House of Commons.
6. For example, https://www.theyworkforyou.com/.
7. For example, https://www.abgeordnetenwatch.de/.
8. https://hellenicocrteam.gr/.

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Digital Strategy for Evidence-Based Policymaking in Parliament

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ABSTRACT

In this digital era, public organisations, such as parliaments, are required to develop digital strategies to transform their operations. This strategy should use digital technologies that provide added value for parliamentary users involved in the policymaking process. Parliaments can support evidence-based policymaking (EBP) decisions in the adoption, formulation, and evaluation of public policies, using the knowledge acquired during parliamentary life cycles.

This chapter proposes the adoption of digital tools in all decision-making stages in parliament. A roadmap is given, set in the context of a user-centric digital transformation framework and its digital technologies. Aspects that are analysed include the boundary conditions for the creation of an EBP digital environment.

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INTRODUCTION

Modern democracies demand transparency, accountability (Dalton, Scarrow, & Cain, 2004), and commitment to policy measures that affect the daily lives of their citizens. Although barriers towards substantial transformation remain (Tangi et al., 2020), policy-makers, decision-makers, and administrators can overcome the unprecedented complexity involved in transformation through the use of advanced digital tools (Fitsilis, Koryzis, & Schefbeck, 2022).

However, making management decisions based on past experience and knowledge gained from operational policy formulation should be based on integrated strategic choices. For this reason, organisational knowledge acquired during the life cycle of a public organisation must be increasingly based on cognitively integrated digital data, set in the framework of a comprehensive digital strategy.

Until recently, traditional business strategy techniques have seemed to be incapable of capturing the complex bureaucratic nature of such organisations (Fitsilis, Koryzis, & Schefbeck, 2022) without involving all major users (policy-makers, stakeholders, citizens, actors, scientists, and communities) in the decision-making process, leaving the knowledge generated over a lifetime to a large extent unused. Making evidence-based policymaking (EBP) decisions accessible for all stakeholders involved in the policymaking process (mainly in the formulation of public operational policies) using the knowledge acquired during the life cycle of a public organisation should be increasingly based on cognitive integrated digital data.

Especially in the working environment of public organisations such as parliaments there is a discontinuity of plans and projects, a lack of integrated

The use of advanced digital technologies and e-legislation tools should go hand in hand with classic bureaucratic parliamentary organisational tasks

interconnection between business units, a diversity of internal processes, and a lack of understanding of organisational techniques (Campos, Miranda, & Rodrigues De Assis, 2016).

Making concerted efforts to change this will provide access to better services customised to the needs of policymaking actors and stakeholders (Fitsilis, Koryzis, & Schefbeck, 2022), allowing them to participate effectively in developing a unified, homogeneous, comprehensible strategy with an emphasis on the digital world.

The opportunities presented by digital technologies for policymaking fall into three broad categories: knowledge and people management, data analysis, and knowledge from the involvement of citizens in the whole process (Lloyd, 2020). Digital technology should support rather than hamper institutional memory, enable more collaborative ways of working, and help policymakers to draw more effectively on the experience and skills of civil servants across the government. The use of advanced digital technologies and e-legislation tools as part of this should go hand in hand with classic bureaucratic parliamentary organisational tasks. A knowledge pattern is thus required that addresses new values for all parliamentary procedures, people, and systems, affecting all parliamentary stakeholders and users. Parliamentary data as part of EBP in this new environment is clearly vital.

This chapter explores the implications of a digital strategy within a parliament as part of broader parliamentary strategy planning. The role of digital transformation in parliamentary procedures and functions and the need for organisational transformation are also investigated. The chapter endorses a set of applicable digital technologies for digital transformative parliaments and their role in EBP adoption. It aims to formulate a proposal that works towards synthesis in an operational parliamentary environment.

DIGITAL STRATEGY

In the digital era, social media is a challenge for modern governance (Schefbeck, Spiliotopoulos, & Risse, 2012; Spiliotopoulos, Schefbeck, & Koryzis, 2013). Most parliaments issue strategic plans or ad hoc operational plans, but only a few have come up with a digital strategy that fundamentally transforms parliamentary functions. The question remains whether users need additional applications, tools, and ad hoc services, and whether these would work better than non-digital alternatives. Social media allows the direct involvement of citizens in parliamentary functions, facilitating societal collaboration. As a result, qualitative research is required to evaluate which parliamentary tools, services, and applications are required and used (Theiner, Schefbeck, & Koryzis, 2018).

Engaging all users, actors, and stakeholders in the parliamentary decision-making processes is the aim of a digital strategy. Modern parliaments have the chance to become constitutional networks of collaboration through the use of digital technologies (Mencarelli, 2021). Mencarelli (2021) addresses the need for a digital strategy that works towards a balanced hybridisation of physical and virtual attendance of parliamentary users (Members of Parliament, scientific advisors, citizens, lobbyists, businesses, scientists, experts) in all parliamentary activities and tasks.

Koryzis et al. (2021) proposes an integrated parliamentary digital strategy, digitalisation of parliamentary operations, enabling digital transformation and the use of digital emerging technologies in the parliamentary context as the four main pillars of a parliamentary transformation framework. The digital strategy contains the organisation's vision, values, scope, and goals, with a clear definition of digitalisation in the parliamentary context (e.g., openness, transparency, accountability, and societal representation). However, only a few parliamentary strategic plans encapsulate a concrete digital strategy that takes in societal digitalisation already in progress (Koryzis et al., 2021). Parliamentary digital transformation of the legislative function could be seen as part of an overall strategy, with its main action plan closely dependent on parliamentary data. The aim should be

a fully digital approach, involving stakeholders in the main stages of the policymaking process (Koryzis et al., 2020), bringing together human activities and digital features in a hybrid environment. Parliamentary information and communications technology (ICT) systems could be updated, based on a digital strategy, with the digitalisation of parliamentary functions being part of an e-legislation roadmap that includes parliamentary business procedures. In this strategy, there is a need for the identification and planning of digitalisation actions with suitable digital technologies. This could be achieved by upgrading existing parliamentary technology systems and developing new ones, together with tools and applications that link bureaucratic activities and electronic/automated legislative processes.

The introduction of innovative ICT actions, digital tools, and approaches through the formulation of a digital strategy is often combined with a transformation of the whole organisation, resulting in improved operational performance (Hess et al., 2016).

DIGITAL TRANSFORMATION

The digital transformation of society has begun to transform the organisational culture of public organisations such as parliaments. This transformation is affected by changes in the way the global economy functions, the social inclusion challenges that governments face, and the way in which democracies operate. As a response to all these factors, governments have gained a new-found appreciation for the growing importance of the value of data (Ubaldi, Van Ooijen, & Welby, 2019).

Digital transformation is not just about introducing digital technologies and applications; it also requires a transformation of the organisational culture. This presents a challenge for parliaments, as there are barriers that hamper this change: culture, complexity, traditional ways of thinking, resources, leadership, and strategy (Tangi et al., 2020; Koryzis et al., 2021). Based on publicly available research results, it is apparent that government institutions and public authorities, such as parliaments, are trying to understand the fast-changing digital world, but most governmental organisations lack a strategy to achieve digital transformation (Eggers & Bellman, 2015) owing to the barriers already mentioned. As Theiner, Schefbeck and Koryzis (2018) note, parliaments in Western Europe and the Baltic states are active in the adoption of digital technologies, but this is less the case in the UK. The countries of Eastern and Southern Europe are least engaged with citizens online, with the exceptions of Malta, Slovenia, and Croatia.

It is clear that digitalisation mostly transforms organisational processes relating to people, data, and systems. Nevertheless, there is still a limited consensus on how digital transformation tools, trends, and technologies can be used efficiently and effectively in parliaments. It is evident that by creating new organisational values, integrating digital technologies and organisational operations (Matt, Hess, & Benlian, 2015), a digital transformation strategy affects the entire organisation for which it is designed. Digital transformation depends on continuous organisational change and disruption (Vial, 2019).

EVIDENCE-BASED POLICYMAKING

Public sector organisations often fail to handle their Business Intelligence (BI) systems and the knowledge derived from their activities efficiently and effectively, so there is clearly a need to improve evidence-based management in governance (Sapp, Mazzuchi, & Sarkani, 2014). Literature relating to public-sector reform focuses on EBP (Sanderson, 2002; Marston & Watts, 2003; Curry, 2014; Head, 2016), but very few scholars link digital strategy with EBP.

The term 'evidence' has many applications, and is mostly used to relate to random control trials and 'natural experiments' as observational studies that assess the impacts of policies. Findings can be used in policy formulation and policy evaluation or in transferable lessons. They can be synthesised in a broader framework that includes terms such as 'informed decision-making', 'learning from the mistakes of others', and the more recent 'qualitative feedback' from citizens, which open the way both to policy change and the 'collaborative co-design' of services (Rutter, 2012). Collaboration, cooperation, and co-design can also help to find solutions to complex problems, using participatory design, design thinking, and public sector innovation (Blomkamp, 2018).

Head (2016) distinguishes between phrases such as 'problem definition or agenda setting', 'data analysis', 'policy design or policy formulation', 'policy adoption', 'policy implementation', and 'programme review or policy evaluation', in all of which digital tools may be used by users/stakeholders.

The core assumption of EBP is that policy action by government or parliament is based on 'sound evidence' garnered through social research and evaluation, extracted from users, actors, and stakeholders in the policymaking cycle (Sanderson, 2002),

addressing real-life problems based on data evidence (Majcen, 2017), and including rational analysis (Sutcliffe & Court, 2005) and the manner in which evidence is included in bureaucratic organisations and their functions (Blaser Mapitsa, Ali, & Khumalo, 2020).

Evidence can be gathered successfully if all actors are involved in the EBP processes. This engagement requires pragmatism, combining scientific evidence with policymaking principles, and the translation of complex evidence into simple stories, something that is common in legal processes (Cairney & Oliver, 2017) – although parliamentarians may be more focused on political argumentation that is not based on sound scientific evidence. There is also backup from other stakeholders (e.g., scientific advisors, political analysts), especially in terms of engagement in media-framed debates (Head, 2016). There have been surprisingly few studies of how such information is utilised in policymaking (Hemsley-Brown, 2004).

Based on these comments and on related literature (Cairney & Oliver, 2017), the following challenges can be formulated:

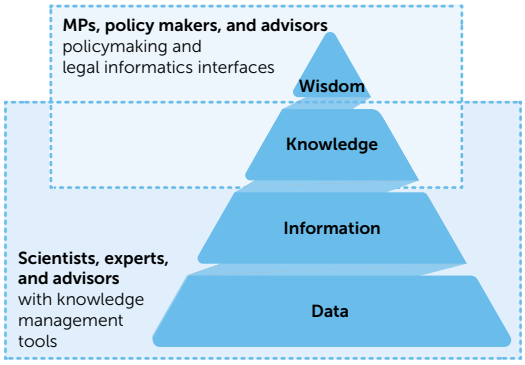
- Considerable data analysis is required to create useful scientific proof for policy-maker utilisation and policy agenda influence.
- The proper use of *ex ante* and *ex post* implication and impact assessment studies are needed during the policymaking stages.
- Scientific results and data have to be credible, as policy solutions and scenarios are based on them.

A representative example of EBP is the European Commission's reliance on statistical information to contribute to decision-making, with accurate information or data at its heart. This assists in the development of effective policies, but overall, there is a lack of reliable data owing to the absence of strategies, frameworks, and tools for data collection (Mair et al., 2019). The Knowledge for Policy (K4P) pyramid shown in Figure 1 with links between data, information, knowledge and wisdom, and respective users with their policymaking tools and applications, could be used as best practice.

It is also clear from the literature (Sutcliffe, 2005) that:

- A wide spectrum of evidence is needed to support policy, not just research.
- Quality, credibility, relevance, and policy cost key factors.

FIGURE 1: **K4P linked knowledge pyramid**



- Evidence is required for several stages of the policy cycle.
- Time constraints may affect the mechanisms available to mobilise evidence, since urgent issues require different approaches than those related to strategic policy directions.

According to recent research for the UK Parliament (Rose et al., 2020), four factors control the use of evidence-based research: credibility, timing, accessibility, and relevance.

To sum up, it is crucial to use evidence in legislative policymaking, but is not yet clear how this affects all the policymaking stages in the parliamentary cycle (Crewe, 2017; Nutley et al., 2019; Rose et al., 2020), although the efficient use of parliamentary information – after data acquisition, integration, and exploitation – could be transformed into a knowledge depot for parliamentary stakeholders (Granickas, 2013). There are several difficulties encountered when using evidence-based information (Munyoro, 2019). In some cases, the information given cannot be understood, whether this is caused by jargon, unsuitable data, outdated information, complicated legal wording, or puzzling statistics (Fitsilis, Koryzis, & Schefbeck, 2022). This may be the result of a lack of resources or researchers with relevant experience in the parliamentary research department.

Based on this, a digital strategy for parliamentary digital transformation could be the driver for the adoption of evidence-based policies, as presented in Figure 2.

CONCLUSION

Parliaments could adopt digital transformation strategies as part of a broader strategic plan,

FIGURE 2: **Digital strategy for evidence-based policymaking**

incorporating novel digital technologies into their working procedures and improving their outdated bureaucratic parliamentary organisational tasks. Parliaments need a digital strategy with concrete actions in order to create digital parliaments with organisational functions that set them on a digital transformation path, addressing new values for all parliamentary procedures, people, and systems. Using the K4P model, the role of parliamentary data as an integral part of the EBP process is crucial. The use of BI for policymaking should be the ultimate goal of a strategy that aims to transform data into parliamentary knowledge.

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Parliaments are democracy's supreme representative institutions, but they rarely get the attention they deserve. This book places them where they belong: at the pinnacle of innovation. Strengthening the institution can be achieved by several means and for most there is a common denominator: data.

Smart Parliaments: Data-Driven Democracy, edited by Fotios Fitsilis and George Mikros, highlights the role of data within both centuries-old and relatively novel institutional functions such as legislative work and parliamentary diplomacy. With a focus on both tradition and innovation, this book takes a practical and tangible approach to parliamentary evolution. It offers ideas instead of assumptions, solutions instead of missals, and presents a range of options instead of a single truth. Although the European Parliament is often mentioned here as an innovator and implementer of digital solutions, the topics presented can be equally applied in any of the world's parliaments.

The power of data is immense. This volume offers politicians the tools to harness this power and outlines a path to enable them to design more efficient, inclusive, and resilient institutions that will stand the test of time. But will we dare to use them?

Antonios Nestoras, ELF Interim Executive Director

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