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AI tools in Parliament: Analytical framework and empirical insights

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Legislatures worldwide are increasingly developing artificial intelligence (AI) tools, yet political scientists still lack a shared framework for systematically comparing them. This article proposes a 'Dual-Layer Model' for analysing parliamentary AI tools, distinguishing between what these tools do and the actors involved in their use, that is, where inputs originate and where outputs are directed. Building on this framework, we develop a classification that captures how AI tools support different institutional functions within parliament, based on configurations of information flow between actors. This approach shifts attention from technical functions to how AI-generated outputs are embedded in relationships among parliamentary actors and between parliament and the public and provides a basis for studying the institutional consequences of AI adoption, the distribution of informational resources and capacities, and the strategic choices guiding the development of specific tools. Drawing on evidence from eleven parliamentary chambers, we show that the adoption of AI tools is currently shaped by an efficiency-led logic. Most tools are used to support the work of parliamentary staff and offices, consistent with earlier patterns of internet diffusion in parliaments, while tools used by legislators or incorporating citizen input remain comparatively limited. At the same time, patterns of adoption do not converge towards a common portfolio of AI tools across legislatures.

Keywords: artificial intelligence (AI); parliamentary AI tools; dual-layer model; parliaments; AI governance.

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> 'All we hear from Government Members is ChatGPT-generated press releases—"I rise to speak," "I rise to speak," "I rise to speak." ChatGPT knows you are there. That is an Americanism that we do not use.'
>
> MP Tom Tugendhat, UK House of Commons debate, 9 September 2025[1]

Since the public launch of OpenAI's ChatGPT in late 2022, artificial intelligence (AI) has quickly become embedded in many aspects of modern life. AI tools use data-driven algorithms to transform human inputs into outputs that support workflows and decision-making. AI now shapes not only the everyday lives of citizens but also the operations of public administration (Zuiderwijk et al., 2021). Parliaments have not been strangers to this trend, with the Inter-Parliamentary Union (IPU) documenting at least 72 AI tools in use or under development in legislatures worldwide as of January 2025 (2025a). Evidence of AI use by MPs can also be found, for instance, in one of the world's oldest parliaments, Westminster, where elected members have been calling each other out for drafting speeches with ChatGPT. Notably, the expression 'I rise to speak,' an Americanism atypical of British parliamentary parlance, has tripled in frequency in 2025 compared to the 2020–2024 average.[2]

Parliamentary actors are beginning to reckon with AI both as a regulatory challenge and as an opportunity to modernize and strengthen democratic institutions. Within legislative studies, however, research on parliamentary AI remains at an embryonic stage. Existing work has focused primarily on ethical and regulatory issues (e.g. Fitsilis et al., 2025) and, when examining existing tools, has mostly compared them from a technical standpoint, based on the practical tasks they perform (e.g. chatbots, transcription systems, automated classification systems).

What remains missing is a shared interpretive framework for systematically comparing parliamentary AI tools that captures not only what these tools do, but also how they are embedded in relationships among parliamentary actors and between parliament and the public. In particular, we lack a classification capable of capturing how these tools support different institutional functions within parliament. Such a classification would help situate the study of parliamentary AI more clearly within a legislative studies agenda by enabling analysis of both the power implications of AI tools and the institutional dynamics behind their adoption. It would also make it possible to compare AI tools across parliamentary chambers not only in terms of their technical functions and associated risks, but also in terms of how they are used in practice, how they reshape power dynamics, and what current adoption patterns reveal about how parliamentary digitalization is evolving. More broadly, such a framework would lay the foundations for a more systematic

[1] House of Commons Official Report (Volume 772, No. 183). Available at: https://hansard.parliament.uk/commons/2025-09-09. Last accessed: 5 June 2026.
[2] UK House of Commons Hansard: https://hansard.parliament.uk/.

research agenda on AI in parliament, comparable to those already developed in public governance (Zuiderwijk et al., 2021), legal scholarship (Mittelstadt et al., 2016), and labour economics (Acemoglu and Restrepo 2019).

To address this gap, we introduce the 'Dual-Layer Model,' which approaches parliamentary AI tools holistically by distinguishing between what they do in practice (the 'what' dimension) and the actors involved in their use, that is, where inputs originate and where outputs are directed (the 'from/to whom' dimension). Building on this framework, we develop a classification based on configurations of information flow between actors, defined by different combinations of input providers, output recipients, and the direction of information flow. Each category captures a different way in which AI-generated outputs are embedded in relationships among parliamentary actors and between parliament and the public, and thus how AI tools support different institutional functions within parliament (transparency; public involvement; support MPs' representative legislative, and oversight activities; clerical efficiency; procedural efficiency).

Drawing on the IPU's 2025 report mapping existing parliamentary AI tools worldwide, we apply our framework to examine patterns of AI adoption and use across eleven parliamentary chambers in eight countries, as well as the European Parliament. We show how different approaches to analysing AI tools can support different research agendas. More specifically, the '*what*' dimension can help identify the economic and technological conditions facilitating the adoption of particular types of tools, as well as the ethical issues they raise (Floridi and Ascani 2025). Our classification, instead, can support the analysis of how AI adoption may reshape internal power relations (Saalfeld et al., 2022) and how the adoption of AI tools may reflect strategic institutional choices made by the parliamentary administration (Leston-Bandeira 2014). Our findings indicate that legislatures tend to prioritize AI technologies used to support the work of parliamentary staff and offices, while direct support for legislators' substantive activities and tools incorporating citizen input remain relatively limited. At the same time, patterns of adoption do not converge towards a common portfolio of AI tools across legislatures. Although based on a limited sample, our evidence suggests that European parliament's place greater emphasis on tools supporting administrative and internal workflows, whereas the South American congresses in our sample are more likely to invest in tools used by legislators or that facilitate exchanges with the public. We thus conclude that AI adoption often follows earlier trajectories of parliamentary digital development (Leston-Bandeira 2009; Serra-Silva 2022).

The article proceeds as follows. First, it reviews existing research on AI in parliament. Second, it introduces the Dual-Layer Model and develops a classification of parliamentary AI tools based on configurations of information flow between actors. Third, it examines patterns of AI adoption using the 'what' dimension and the actor-based classification, comparing the insights they generate. We conclude

with some final remarks and outline directions for future research. This work contributes to the growing literature on AI in representative institutions, as well as to the broader literature on parliamentary organization and behaviour, by introducing a flexible analytical framework and a classification of parliamentary AI tools based on configurations of information flow between actors, alongside comparative empirical evidence.

1. The state of research on artificial intelligence in parliament

One of the core principles of modern democracy is that legislatures function as elected, representative bodies independent of other branches of government. Historically, this autonomy has been secured and preserved through constitutional rules and the presence of internal administrative bodies that support the institution's principal functions by managing information, processing legislative materials, and coordinating day-to-day activities (Christiansen et al., 2023). Accordingly, parliaments have progressively developed digital infrastructures to improve internal functioning and efficiency (Konrath and Rathmair 2026). AI tools form part of this trajectory. Since 2019, legislatures have begun developing such tools in-house to reduce dependence on external providers, mitigate the risk of vendor lock-in, and limit the circulation of sensitive information beyond the institution (Fitsilis et al., 2025).

The need for new Information and Communication Technologies (ICTs) became particularly salient during the COVID-19 pandemic, when the pressure to make decisions under emergency conditions and to ensure institutional continuity through remote and hybrid working arrangements exposed the limitations of existing technological infrastructures (Mencarelli 2022). In response, many legislatures launched or expanded multi-year digital modernization initiatives (Inter-Parliamentary Union 2024). This trajectory continued from late 2022 onwards, as the use of AI became more widespread across society. Parliaments have since sought to adopt AI tools to modernize their internal processes and communication, as well as to avoid appearing disconnected from a rapidly evolving social and technological environment (Floridi and Ascani 2025). Consequently, wealthier and more digitally advanced legislatures, particularly those that had previously invested in open data infrastructures, began to develop and implement parliamentary AI tools (Koryzis et al., 2025).

Taking note of AI's rapid diffusion, early research turned to asking what might become of parliaments when legislators, parliamentary staff, and citizens employ tools 'capable of generating informational added value by leveraging large datasets and algorithmic processes' (Fitsilis and de Almeida 2024: 152). Scholars examined not only what such tools do, but also how they are developed and governed, with particular attention to risks such as inaccuracy, bias, opacity, and overreliance,

which may distort decision-making processes or gradually shift them towards more automated forms of decision-making (Tretter 2025; Mobilio et al., 2026).

These concerns are especially salient in representative democratic institutions, where decisions rely on accountability, deliberation, and political judgement. They are also reflected, for example, in recent initiatives such as the IPU's work on responsible AI (Inter-Parliamentary Union 2025b), which outlines alternative future scenarios ranging from an 'Augmented Assembly,' where AI supports parliamentary work while preserving democratic integrity, to more problematic ones in which parliaments become increasingly technocratic or fall behind the executive branch due to limited AI capacity.

Alongside this predominantly normative debate, existing research has also moved in a more classificatory direction. Parliamentary AI tools are particularly well-suited to conceptual mapping because, despite heterogeneity in design and implementation, they can be described in terms of a common set of features and are developed to support a common set of administrative, legislative, and participatory functions (Palmirani 2024). Considering these elements, early comparative studies have mainly sought to compare parliamentary AI tools based on what they do, that is, based on the technical functions they perform. The most systematic example is the IPU's Use Case Guide (2025a), which groups parliamentary AI tools into six categories based on technical functions: bill drafting and amendments; chatbots and user support; classification systems; cybersecurity and application development; public engagement and open parliament; and transcription and translation. Other sources, including Bússola Tech (2024), Palmirani et al.'s (2025) report, and the Polish Chancellery of the Sejm's (2025) survey, broadly converge on similar task-based categories, even if they differ in analytical granularity and emphasis. To illustrate these categories more clearly, the descriptors employed by the IPU are as follows:

1) *Bill drafting and amendments*: tools that support the drafting, editing, revision, and consistency checking of bills and amendments.
2) *Chatbots and user support*: tools that provide assistance for frequently asked questions, website navigation, and routine support requests.
3) *Classification systems*: tools that organize parliamentary documentation through automated tagging, routing, semantic search, and summarization.
4) *Cybersecurity and application development*: tools that support parliamentary IT functions, including threat detection, code assistance, and related application development tasks.
5) *Public engagement and open parliament*: tools that facilitate communication with external actors, gather public input, and make parliamentary information and debates more accessible to the public.

6) *Transcription and translation*: tools that convert parliamentary speech into text, provide captioning, and translate proceedings and related materials.

Existing parliamentary AI tools thus encompass a wide range of applications across legislatures. A large share of these tools focuses on documentation and information management. For instance, eleven parliamentary chambers included in the IPU sample have implemented AI systems for the automatic transcription of parliamentary proceedings and the generation of verbatim reports. Others support the organization and retrieval of legislative information, such as automated classification systems that tag parliamentary documents using controlled vocabularies, for example, EuroVoc in the European Parliament, or tools that generate summaries of bills and committee proceedings. Additional applications include tools supporting legislative drafting and amendment processes, such as AI-assisted drafting systems like the CAMINAR platform in Chile, as well as conversational interfaces such as chatbots that allow users to query parliamentary information in natural language.

These approaches are valuable because they provide a shared vocabulary for tracing general patterns of AI adoption across legislatures and for identifying which tools travel more easily across contexts and which remain more country-specific. In this sense, technical function-based approaches to studying parliamentary AI tools are especially useful for what Floridi and Ascani (2025) describe as a 'political economy' research agenda (p. 42), as they make it possible to examine how wealth, digital capacity, and other 'offline characteristics of parliamentary institutions' (Leston-Bandeira, 2007: 660) shape the adoption of different kinds of parliamentary AI tools across legislative settings. At the same time, however, labelling a tool by what it does from a technical standpoint is not sufficient to understand how it is used in practice within a legislative and representative context, where its role depends on how it is embedded in relationships between actors. From this perspective, tools with the same technical function may be used by different actors for different purposes. This is the case, for example, with chatbots and user-support tools, which may assist the public in navigating parliamentary information, support legislators in accessing procedural or legal guidance, or help parliamentary staff manage internal documentation. Considered solely from the perspective of their technical functions, some tools may appear similar, yet their implications within the parliamentary context differ depending on where their main inputs come from and where their outputs go.

As a result, function-based approaches should be complemented by a perspective that can identify the direction of information flow and the actors involved in the use of AI tools and thus how these tools support different institutional functions within parliament. Capturing these elements requires an analytical framework that considers not only what parliamentary AI tools do, but also

how they are embedded in relationships between actors. The 'Dual-Layer Model,' introduced in the next section, is designed to do exactly that.

2. The Dual-Layer Model

Considering the technical functions of AI tools and understanding how the underlying technology works are not, on their own, sufficient to fully assess the consequences these tools may generate within parliament. Keeping existing definitions of parliamentary AI tools in mind, the actors involved in providing inputs and using outputs should also be incorporated into the analysis, as they are expected to benefit most directly from their adoption (Fitsilis and de Almeida 2024: 152). As noted by the International Labour Organisation (2024), generative AI systems 'operate by taking user-provided inputs and producing new content [. . .] that is then used by humans in downstream tasks' (p. 4). It follows that a more complete understanding of parliamentary AI tools requires moving beyond the 'what' dimension and considering where inputs come from and where outputs go.

We refer to this framework as the 'Dual-Layer Model' because it brings together two analytically distinct but connected dimensions of parliamentary AI tools: their 'core function' (technical function) and the actors involved in their use. These correspond to what we call the 'what' dimension and the 'from/to whom' dimension, respectively. As shown in Fig. 1, the 'what' dimension occupies the central phase of the generative process, as it refers to the process through which inputs are transformed into outputs. By contrast, the 'from/to whom' dimension captures the actors involved at both the beginning and the end of this process, as they provide the input and receive the output. These two layers therefore correspond to different phases in how AI tools operate (Davis 2020). We break this process into three stages:

1. A user submits a request or prompt to a given AI tool (input provider)—*from whom* component;
2. The AI tool processes the request and generates an output (core function)—*what* component;
3. The output is received by its immediate recipient (output recipient)—*to whom* component.

Importantly, within the 'from/to whom' dimension, the output recipient does not necessarily coincide with the input provider. Parliamentary AI tools may, for instance, mediate between external actors and parliament by processing citizen input and returning it as output to intra-parliamentary actors (Silva et al., 2021). In such cases, citizens provide the input, while legislators or other parliamentary actors receive and use the output.

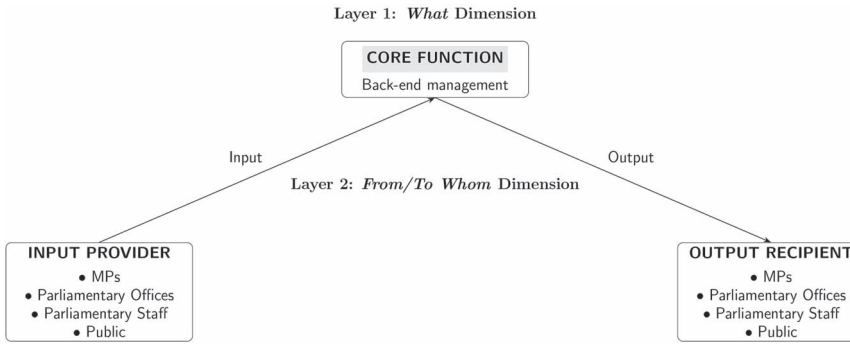

Figure 1. The Dual-Layer Model.

Considered separately, the 'what' dimension captures what the tool does from a technical standpoint. It includes the processes through which inputs are transformed into outputs and, more specifically, the data sources on which the tool relies, the procedures governing how those sources are accessed and processed, and the degree of transparency, verifiability, and oversight associated with its operation (Mittelstadt et al., 2016).[3] The 'from/to whom' dimension distinguishes between the actors who submit a request to the AI tool ('input provider') and those who are the immediate recipients of the generated output ('output recipient'). More specifically, this dimension considers four categories of actors: (1) MPs, (2) parliamentary offices, (3) parliamentary staff, and (4) the public. We treat parliamentary offices as analytically distinct from individual legislators because, although offices may include or be entirely composed of elected members, they perform organizational and procedural functions that differ from those carried out by MPs acting in their individual capacity as elected representatives.

Overall, the Dual-Layer Model provides a holistic framework for organizing the key informational components of parliamentary AI tools in a way that is comparable across cases. It makes it possible to describe how these tools operate in practice and to examine how they are embedded in relationships among parliamentary actors and between parliament and the public. The 'what' dimension captures the technical processes through which outputs are generated, while the 'from/to whom' dimension captures where inputs come from and where outputs go between actors. Taken together, these dimensions provide a basis for analysing both the functioning of parliamentary AI tools and their potential implications for the distribution of informational resources, capacities, and power dynamics within

[3]We do not treat back-end management as a separate analytical subdimension, but rather as a set of ethical, epistemological, privacy-, and national-security-related considerations that underpin the 'what' dimension. While these are important issues, they fall outside the scope of this study. We thus set aside back-end management considerations for future research and focus instead on core functions as a stable basis for comparative analysis.

parliament (Struić 2026). In what follows, we build on this framework to develop a classification of parliamentary AI tools based on configurations of information flow between actors.

2.1 Classification of parliamentary AI tools based on information flow between actors

In this section, we present our classification of parliamentary AI tools. While the classification is ultimately organized around configurations of input providers, output recipients, and the direction of information flow, it is the Dual-Layer Model as a whole that supplies the analytical structure and interpretive context necessary to identify these elements and understand how they combine. In particular, input providers and output recipients are directly derived from the 'from/to whom' dimension, while the direction of the information flow reflects the AI generative process underlying the Dual Layer Model, linking inputs to outputs across the two layers. The 'what' dimension helps understand how AI tools work in practice, providing guidance on which are the input providers and output recipients. Ultimately, our classification is centred on actors, as they are more directly tied to institutional dynamics within parliament and are therefore more stable across technological change than the specific technical tasks performed by AI tools. While the scope of technical capabilities may change rapidly, the ways in which tools are used by and between actors in the parliamentary context are arguably more enduring (Fitsilis and de Almeida 2024; Palmirani 2024).

We define our categories according to the direction of information exchange between the actors identified through the Dual-Layer Model. A flow is 'inbound' when the immediate output is directed to actors within parliament, whether MPs, parliamentary staff, or parliamentary offices, and 'outbound' when it is directed to actors outside parliament, namely the public. The resulting categories reflect the possible combinations of input providers, output recipients, and direction of inputs and outputs. Each category therefore corresponds to a distinct, finite set of configurations of actors and direction of information flow. Accordingly, we identify five recurring categories:

1) *Public input to parliament*: tools through which information, preferences, or comments originating outside parliament are processed and directed to actors within parliament.
2) *MP support*: tools used by MPs in their individual capacity as elected representatives, including in lawmaking and oversight activities.
3) *Staff support*: tools that support parliamentary staff in carrying out administrative and documentation work.
4) *Parliamentary office support*: tools that support parliamentary offices in the organization of parliamentary business and the management of proceedings.

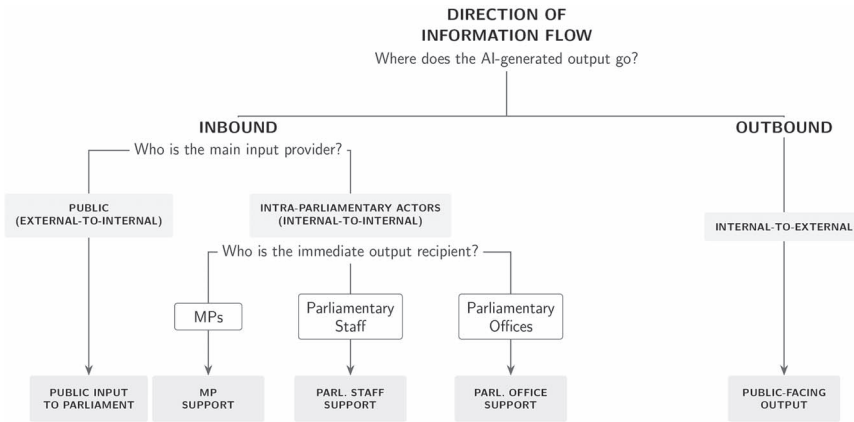

Figure 2. The classificatory process.

5) *Public-facing output*: tools through which outputs originating within parliament are directed to the public.

As shown in Fig. 2, each category is defined by a distinct, finite set of combinations of direction of information flow, input provider, and immediate output recipient. More specifically, public-facing output is defined as an outbound, internal-to-external flow, while public input to parliament is defined as an inbound, external-to-internal flow. The three remaining categories correspond to inbound, internal-to-internal flows, where inputs originate within parliament, and are distinguished by the identity of the immediate output recipient: MP support when outputs are used by MPs, staff support when they are used by parliamentary staff, and parliamentary office support when they are used by parliamentary offices. For completeness, all possible configurations are listed in Table A1 in the Appendix.

The categories we derived can be interpreted as serving different institutional functions, broadly aligning with the classic parliamentary functions highlighted by existing literature (e.g. Leston-Bandeira 2007; Norton 1990): public-facing output contributes to *transparency* by making parliamentary outputs available to the public; public input to parliament facilitates *public involvement* by processing inputs originating outside parliament for actors within parliament; MP support corresponds to outputs used to *support MPs' representative, legislative, and oversight activities*; staff support corresponds to outputs used by parliamentary staff to carry out administrative and documentation work, contributing to *clerical efficiency*; parliamentary office support corresponds to outputs used by parliamentary offices to organize parliamentary business and manage proceedings, contributing to *procedural efficiency*.

We applied this classificatory scheme to the 72 parliamentary AI tools surveyed by the IPU in 2025 to illustrate the gains from moving beyond a technical, function-based approach (Table A2 in the Appendix). In Fig. A1 in the Appendix, we contrast the IPU's technical (core) functions ('what' dimension) with the raw 'from/to whom dimension.' The figure illustrates that technical functions do not map uniquely onto specific parliamentary actors. The same type of AI tool may involve different input providers and output recipients, highlighting the limits of analysing parliamentary AI solely through its technical function. We also contrast the technical function with our classification that captures how AI tools support different institutional functions in Fig. A2 in the Appendix. In this regard, a paradigmatic example is tools labelled by the IPU as performing tasks related to 'bill drafting and amendments.' Considered solely through the 'what' dimension, these tools appear to belong to a single category based on technical function. In our classification, however, they may fall into different categories depending on the combination of input provider, output recipient, and direction of information flow. In other words, tools associated with the same technical function, such as 'bill drafting and amendments,' may be placed differently once the actors involved and the direction of information flow are taken into account, for example depending on whether they support parliamentary staff, offices, or MPs.

To see this more clearly, consider the example of an AI tool developed by the Italian Senate that automatically determines the voting order of proposed amendments. Although the IPU places it under bill drafting and amendments, the Dual-Layer Model shows that its role within parliament is more specific: a parliamentary office provides the input, and the same parliamentary office receives the output (internal-to-internal). The tool thus falls under parliamentary office support in our classification, as it contributes to procedural efficiency by supporting the management of amendment discussion and voting. Consider another example: a tool developed by the Chilean Chamber of Deputies that helps legislators manage their parliamentary allowances. The tool falls within the IPU's chatbots and user support category, based on its technical function. This descriptor, in itself, does not indicate which actors are involved in its use. One might even assume that a chatbot is primarily used by the public. However, once it is established that legislators are both input providers and immediate output recipients (internal-to-internal), it becomes clear that, moving from technical to institutional functions, such a tool is more accurately classified as MP support, as it assists MPs in their activities.

More generally, these examples indicate that the 'what' dimension, taken in isolation, is insufficient to identify how a given tool is used in the parliamentary context. This becomes analytically visible when it is considered alongside the configuration of actors involved and the direction of information flow. By making this relationship explicit, the classification developed in this section can also be extended to future parliamentary AI tools, regardless of technological

developments, as long as the actors involved and the direction of information flow can be identified. In this respect, the classification may allow the emerging literature on parliamentary AI to connect more directly with earlier research on the diffusion of ICTs in parliaments (Leston-Bandeira 2007), which has shown that technological innovations are not adopted exclusively for practical reasons but may also reflect broader institutional and strategic logics, as in the case of legislatures that developed internet technologies aimed at increasing transparency to strengthen their public legitimacy (Leston-Bandeira 2014).

From this perspective, parliamentary AI tools should not be treated simply as neutral technological devices, but also as instruments capable of reshaping the capacities and informational resources available to different actors and, in so doing, altering their relative positions and power dynamics within the parliamentary ecosystem (Struić 2026). Our classification can therefore support future research on the institutional consequences of AI adoption, the distribution of informational advantages and capacities within parliament, and the strategic choices guiding the development of specific tools. Still, we join the literature in emphasizing that a full assessment of these tools requires attention to their back-end management, including the data sources on which they rely, the degree of transparency in their operation, and the extent of human oversight (e.g. Mittelstadt et al., 2016).

In the next section, we present empirical evidence from both the IPU's (2025) classification by technical functions and our classification by configurations of information flow between actors, showing how the two approaches generate distinct but complementary insights into current patterns of diffusion of parliamentary AI tools.

3. AI use in legislatures worldwide: comparative findings

In the previous section, we laid out a theoretical framework for analysing parliamentary AI tools. We now turn to its empirical application, drawing on the IPU's mapping of AI tools in parliaments. Specifically, we use data from the IPU's 2025 survey on AI in parliament, to which eleven parliamentary chambers from eight countries, as well as the European Parliament, contributed. These assemblies represent a convenience sample of legislatures for which the IPU was able to collect sufficiently detailed information and are therefore not necessarily representative of all parliaments that may have adopted or are considering adopting AI tools.

The core argument of this section is that analysis based entirely on the 'what' dimension and analysis based on configurations of information flows between actors shed light on different aspects of parliamentary AI adoption and integration. We first explore patterns of AI adoption using the IPU's categories based on technical functions. We then examine the distribution of tools across our classification. In doing so, we consider a range of institutional and contextual factors that,

combined with the information captured by the Dual-Layer Model, help explain variation in our outcomes of interest. We consider contextual factors that may foster or deter the allocation of resources and investment in AI tools, such as the state of the economy and a country's level of technological development. We also consider institutional factors related to a legislature's structural characteristics. These broadly align with Leston-Bandeira's (2007) 'offline characteristics,' which include a parliament's internal organization and the extent to which, and the manner in which, MPs perform legislative, representative, and scrutiny functions.

Together, these empirical exercises underscore the complementary analytical value of the two perspectives. Comparing the insights they generate clarifies what each perspective captures and illustrates why both are useful for the comparative study of AI in parliamentary settings. We do not formulate explicit hypotheses for either subsection. As noted above, the IPU data rely solely on information from parliamentary administrations that responded to the survey and therefore do not constitute a comprehensive census of all AI tools currently in use or under development worldwide. Moreover, the purpose of this section is not to test causal expectations but to illustrate the analytical leverage of the two perspectives and the distinct insights they make possible. The findings presented here should therefore be understood as exploratory.

3.1 AI adoption patterns across core functions

We begin by focusing on the 'what' dimension of the Dual-Layer Model, namely the technical, 'core' function performed by each parliamentary AI tool. This dimension is analytically useful because it allows us to address a first question within a broader 'political economy' research agenda on parliamentary AI (Floridi and Ascani 2025: 42): are some types of AI tools more likely to be adopted than others once basic differences in economic, digital, and organizational capacity are taken into account? In other words, are parliaments more likely to invest in the development of specific sets of tools than others? To address this question, we estimate a logit model at the parliamentary chamber-core function dyad level. Each chamber contributes six observations, one for each core function, where each observation represents a potential opportunity for adoption. The dependent variable equals 1 if a chamber has adopted at least one AI tool within the relevant core function, and 0 otherwise.

The model includes dummy variables for the six core function categories, with transcription and translation as the omitted reference category. These are operationalized using the IPU's (2025a) descriptors referenced earlier: bill drafting and amendments; chatbots and user support; classification systems; cybersecurity and application development; public engagement and open parliament; and transcription and translation. We supplemented these data with a limited set of institutional and contextual covariates commonly associated with technological

Table 1. Logistic regression estimates

Digital Maturity Index	−0.771 (0.367)
Log(GDP per capita)	−1.071 (0.546)
Log(Assembly Size)	−0.222 (0.478)
Log(FTE Parliamentary Staff)	0.161 (0.293)
Core function (Reference category: transcription and translation)	
Bill drafting and amendments	−2.986** (1.239)
Chatbots and user support	−2.222 (1.502)
Classification systems	−2.603 (1.562)
Cybersecurity and application development	−4.415** (1.468)
Public engagement and open parliament	−3.848** (1.380)
Constant	12.434** (4.808)

Note: Entries are logit coefficients. Cluster-robust standard errors (in parentheses) use the bias-reduced linearization estimator (CR2) with Satterthwaite small-sample degrees-of-freedom adjustments. $N = 72$. $^{*}P < .10$, $^{**}P < .05$, $^{***}P < .01$.

development in parliaments: the IPU's digital maturity index, GDP per capita, assembly size, and full-time equivalent (FTE) parliamentary staff capacity, with the latter three log-transformed. For GDP per capita and the Digital Maturity Index, we used 2024 data. For the remaining variables, we use the most recent available data point. Further details on data sources, variable operationalization, and the empirical strategy are available in the Appendix (Section A1). The estimates should be interpreted with caution. Although the dyadic structure provides 72 observations, the analysis is based on only twelve parliamentary chambers included in the IPU documentation. These constitute a convenience sample rather than a representative sample of legislatures worldwide. Therefore, the model aims to illustrate the analytical value of the 'what' dimension rather than offer definitive evidence on the factors influencing parliamentary AI adoption.

Table 1 reports the full set of regression estimates. The continuous covariates do not show clear or robust associations with the probability of adopting a given type of AI tool once differences across core functions and the small number of clusters are accounted for. By contrast, the coefficients for the core functions reveal a more consistent pattern. Relative to transcription and translation, tools related to bill drafting and amendments, cybersecurity and application development, and public engagement and open parliament are significantly less likely to be adopted. Classification systems and chatbots and user support point in the same direction, although these differences do not reach conventional levels of statistical significance in our sample.

Figure 3 translates these estimates into predicted adoption probabilities, holding the continuous covariates at their mean values. A clear ranking emerges. Transcription and translation appears as the core function with the highest predicted probability of adoption, followed by chatbots and user support and classification

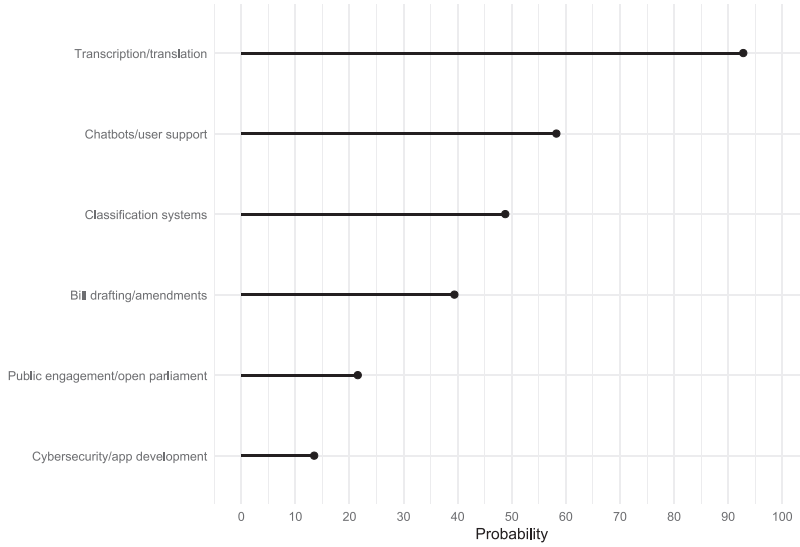

Figure 3. Predicted adoption probability of AI tools by core function.

systems. Bill drafting and amendments and public engagement and open parliament occupy a lower position, while cybersecurity and application development is the least likely to be adopted.

Figure 3 reflects patterns consistent with the earlier 'internet wave' literature on parliaments, which highlighted the importance of technologies related to the web-based publication and access to debates, as well as to information management through metadata, search functions, and web portals. In particular, the higher predicted adoption probabilities for the transcription and translation category, alongside classification systems and chatbots, point to the continued relevance of these documentation- and information-related functions. Furthermore, this pattern suggests that the tools most readily adoptable are those that extend earlier trajectories of parliamentary digitalization centred on documentation, information management, and internal support, rather than on more interactive, participatory channels directed at citizens (Serra-Silva 2022). Whether these functions are well established or newly emerging, the integration of AI may enable the development of tools capable of performing tasks with unprecedented speed, scale, and precision. For example, Bússola Tech (2024) speculates that new tools will be developed to handle constituents' requests, facilitate the translation of public preferences into legislative proposals, and streamline the processing of information provided by witnesses during committee hearings.

Finally, we note that the relevance of these findings extends beyond the narrow question of which tools are adopted first. Even seemingly 'low-level' functions such as transcription, translation, or summarization are not necessarily normatively

neutral. Because they shape the production, organization, and circulation of parliamentary information, they may influence the informational basis on which parliamentary actors work and make decisions (Mobilio et al., 2026). This is precisely where the broader analytical value of the 'what' dimension becomes clear. Information on the sources on which the tool relies, the ways in which outputs are generated and processed, and the degree of transparency, traceability, verifiability, and human oversight built into the system can help evaluate concerns related to error, opacity, and democratic accountability (Tretter 2025). While greater transparency and oversight may mitigate these risks, AI systems that remain opaque may still warrant caution, especially when their outputs feed into politically consequential decisions. For this reason, the 'what' dimension is useful not only for identifying the tools that are spreading more rapidly, but also for understanding under what conditions these developments may become problematic for democracy (Fitsilis and de Almeida 2024).

3.2 Patterns based on the classification of AI tools by information flow between actors

So far, we have examined patterns of AI-tool adoption across the legislatures in our sample by focusing on core functions. We now shift attention to how AI tools support different institutional functions within parliament and to the actors involved in their use. Drawing once again on the IPU's survey of parliamentary AI tools, we analyse the 72 mapped tools using our classification based on configurations of information flow between actors (see Section 2.1) and discuss how the resulting patterns relate to the main functions of parliament and to broader strategic patterns of AI adoption, following previous work on ICTs (e.g. Leston-Bandeira 2014).

In Table A3 in the Appendix, we break down the 72 parliamentary AI tools mapped by the IPU by input provider and immediate output recipient. We begin by noting that, in most cases, these tools are 'self-serving,' meaning that the input provider corresponds to the immediate output recipient, for example, when outputs solicited by legislators are returned to legislators (see also Fig. A1 in the Appendix). We identify only 5 out of 72 tools that involve different input providers and output recipients. One example is a tool developed by the Brazilian Chamber of Deputies that collects citizens' comments on bills and summarizes the main arguments for and against a proposal for legislators to review.

A second notable pattern is that the primary users of parliamentary AI tools are parliamentary staff, far more so than MPs, parliamentary offices, or the public. This finding suggests that the current wave of parliamentary AI adoption is primarily associated with strengthening legislatures' internal informational and administrative infrastructure. If this trajectory continues, AI is likely to contribute above all to making internal parliamentary processes faster, more manageable,

and more accessible. More broadly, the pattern aligns with wider trends across sectors, where AI has been adopted predominantly to automate repetitive, labour-intensive, and time-consuming tasks (Jin et al., 2025). In democratic terms, this result is consistent with research suggesting that contemporary legislatures often seek to reinforce their legitimacy through effective output and organizational performance as much as, or more than, through the expansion of participatory channels (Judge and Leston-Bandeira 2021; Bresciani 2025).

Our classification allows us to move beyond this aggregate pattern and examine whether distinct national profiles emerge by focusing on the actors involved in the use of AI tools and the institutional functions they support, rather than on the technical functions alone. In Fig. 4, we disaggregate the 72 tools by parliamentary chamber and category using our classification. The top panel presents the raw counts of AI tools introduced by each legislature, grouped by classification category, while the bottom panel shows the same distribution as a percentage of the total number of tools introduced by the legislatures in our sample.[4]

While the two panels confirm that staff support (clerical efficiency) is the dominant category in the current use of parliamentary AI, Fig. 4 also reveals some variation across the parliamentary chambers included in our sample.[5] This suggests, albeit cautiously, that parliamentary AI development may not be moving in the same direction everywhere. Within this limited set of cases, the clearest departures from the dominant efficiency-led pattern appear in the South American chambers. Whereas many of the European and other Western legislatures in the sample mainly rely on internal-to-internal tools, especially those used by parliamentary staff and for documentation and information management, the Chilean Chamber of Deputies and, in a different way, the Brazilian Congress appear to be using AI tools that support a wider range of institutional functions, extending beyond efficiency.

The clearest example is the Chilean Chamber of Deputies, which has introduced nine tools designed to support MPs' activities. These tools assist legislators in drafting proposals, formulating arguments for or against proposals under consideration, answering questions on parliamentary procedure or legal norms, and monitoring expenses and allowances. In this sense, Chile comes closest in our

[4] A hierarchical clustering (Ward.D2 linkage, Euclidean distance) of the parliamentary chamber by classification category-based class matrix confirms these patterns (see the heatmaps with dendrograms in Fig. A3 in the Appendix).

[5] In absolute terms, almost half of the mapped tools (35/72) fall in this category, with the Italian Parliament standing out most clearly (see also Citino 2025). These include tools for transcription and translation, summarization, comparison, and the cataloguing of records of parliamentary proceedings and related documents. This pattern also appears in relative terms across chambers: the Israeli Knesset and the Canadian House of Commons appear to focus exclusively on staff support and clerical efficiency, and in all parliamentary chambers except the Chilean Chamber of Deputies, the Brazilian Senate, and the Bahrain Council of Representatives, 50% or more of the tools fall into this category.

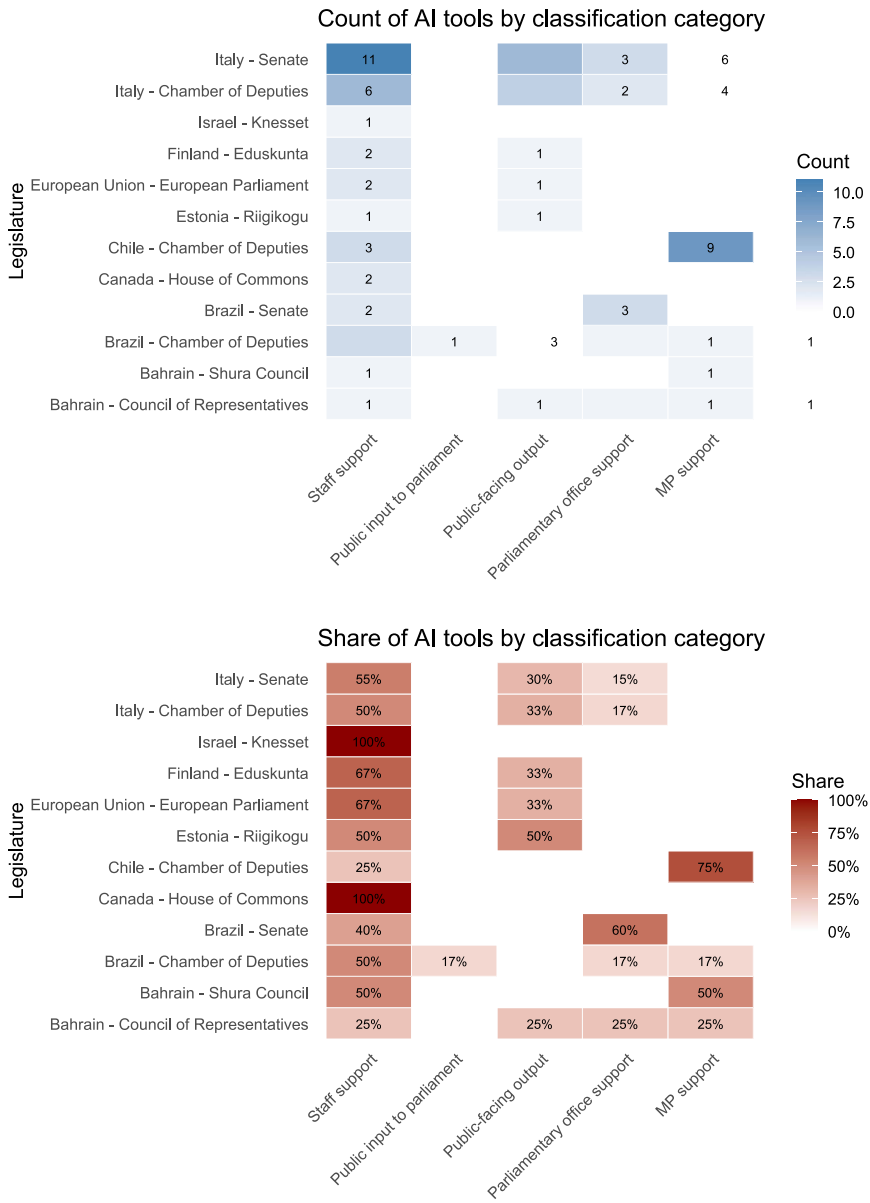

Figure 4. Heatmaps of AI tools by classification category and parliamentary chamber.

sample to a 'do-it-yourself parliament,' in which AI increasingly enables elected representatives to perform tasks that involve a lower degree of mediation by clerks or specialized staff. This is important because it shows that parliamentary AI is not confined to routine administration. It can also enter the politically salient sphere of

representative work and, in doing so, potentially alter the balance between elected representatives and the administrative apparatus on which they have traditionally relied (Saalfeld et al., 2022).

Public-input tools remain relatively rare. As mentioned earlier, the Brazilian Chamber of Deputies provides the clearest case, through a system that processes citizens' comments on bills and organizes them for legislators to review (da Silva et al., 2021; IPU 2022).[6] The uniqueness of this case is itself revealing. In principle, such a tool speaks directly to parliament's representative function, as it helps transform large volumes of citizen input into a form that can be used in legislative work. Yet its rarity suggests that these tools remain difficult to institutionalize: they require legislatures not only to process information but also to decide how public input is filtered, aggregated, and translated into usable output for parliamentary actors. This likely entails higher organizational and political costs, as well as greater risks related to moderation, bias, and increased digital divide among the population. In addition, parliamentary administrations may view public-facing or participatory AI tools as yielding less immediate or tangible returns than tools that reduce workloads, accelerate documentation and information processing, and improve internal efficiency. This interpretation is reinforced by emerging evidence on public attitudes, which suggests that, among citizens already sceptical about parliamentary AI, the mere adoption of such tools does not necessarily increase trust in representative institutions (Pickering et al., 2025).

Together, these findings reinforce two broader conclusions. First, they confirm that the current wave of parliamentary AI adoption is driven predominantly by internal efficiency gains, particularly through tools that accelerate documentation and information processing and support the management of parliamentary business (Jin et al., 2025). Second, they show that this general trend does not amount to convergence towards a common portfolio of parliamentary AI tools across legislatures. Even within an overall efficiency-led trajectory, different parliaments combine tools in different ways and prioritize different institutional functions. These differences are analytically important, as they may reflect distinct strategic logics in how parliaments seek to modernize themselves. Technological change appears to be filtered through pre-existing organizational priorities, institutional legacies, and political choices, rather than leading to the same pattern of development across legislatures.

[6] This innovation builds on Brazil's long-standing investment in digital participation platforms such as *e-Democracia* for the Chamber of Deputies, first developed in 2009, and *e-Cidadania* for the Senate, launched in 2012, through which large volumes of citizen input (sometimes reaching tens of thousands of comments per proposal) are processed using natural-language processing techniques to generate summaries for legislators. Brazil thus represents one of the most digitally mature parliaments worldwide, with a long-standing strategy of using digital tools to expand participation and openness, within which AI has been progressively integrated (Inter-Parliamentary Union 2022). This helps explain why Brazil stands out in our sample in terms of public-input tools.

4. Conclusion

This article has introduced the Dual-Layer Model as a framework for comparing parliamentary AI tools and applied it to the cases documented by the IPU. By distinguishing between the 'what' dimension, which captures a tool's technical function, and the 'from/to whom' dimension, which identifies where inputs come from and where outputs go, the article has shown how parliamentary AI tools can be systematically classified and analysed across parliamentary chambers and over time. Building on this framework, we developed a classification of AI tools that captures how they support different institutional functions within parliament, based on configurations of information flow between actors. We applied our framework to examine current patterns of adoption across eleven parliamentary chambers from eight countries, as well as the European Parliament. In this way, the article aims to provide both an analytical framework for future research and exploratory comparative evidence on how AI is currently being woven into the fabric of parliamentary institutions.

The value of understanding the adoption of AI in parliament as a layered process becomes especially apparent when we analyse the findings from both dimensions together. The 'what' dimension part indicates that technical functions are not adopted evenly across legislatures. For instance, tools designed for transcription and translation tend to be more likely to be adopted than those related to cybersecurity, legislative drafting, or public engagement. However, looking at this alone does not clarify how these technologies are integrated within parliamentary settings or say anything about which actors benefit the adoption of specific tools. The 'from/to whom' dimension, when combined with the direction of information flow, complements the 'what' dimension-related evidence. It adds to our understanding of AI technologies in parliament by illustrating that existing tools are aimed at different actors, although parliamentary staff are by far the most common users. Most existing tools therefore primarily support clerical tasks, enhancing clerical efficiency, rather than supporting MPs' substantive activities or promoting citizen engagement. Thus, while the two dimensions are analytically separate, they are also systematically interconnected: technical functions shape the range of potential applications, while the involvement of various actors highlights the institutional function that these technologies serve in the context of elected assemblies.

Considering the two layers together allows us to highlight cross-parliamentary variations more clearly, and it allows for the identification of meaningful nuances regarding the overall efficiency-led pattern. In this respect, our results are consistent with previous research on ICTs in parliament, which has shown that legislatures tend to prioritize technologies that strengthen legislative information, the management of parliamentary business, and internal administration over more participatory or citizen-facing innovations (Serra-Silva 2022). At the same time, the evidence does not point to convergence towards a common portfolio

of AI tools across legislatures. The Chilean Chamber of Deputies stands out for its emphasis on tools that directly support MPs' activities, while the Brazilian Chamber of Deputies provides a rare example of a tool that processes citizen input for legislators. Parliaments therefore appear to be assembling different portfolios of AI tools that may reflect distinct organizational priorities, institutional legacies, and strategic choices (e.g. Leston-Bandeira 2014). Cases such as Chile and Brazil are especially instructive in this regard, as they suggest that parliamentary AI may develop along paths that depart from the present dominant efficiency-led pattern.

Future research could build on these findings in at least two directions. One question that deserves closer investigation is whether the portfolios of AI tools adopted by different legislatures reflect broader strategic priorities, institutional constraints, contingent political pressures, or the extension of earlier trajectories of parliamentary digitalization. Qualitative and case-specific research would be especially useful for clarifying why some chambers, including the South American cases highlighted here, appear to prioritize sets of tools that differ from the dominant efficiency-led pattern. Future research should also examine whether the concentration of particular types of AI tools shapes the behaviour of parliamentary actors themselves. For instance, a wider diffusion of AI tools that directly support legislative activities may alter the balance between MPs, parties, and parliamentary staff, potentially increasing the informational autonomy of individual legislators and, in some cases, their capacity to act more independently of the party line.

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Supplementary data

Supplementary data is available at *Parliamentary Affairs* online.

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