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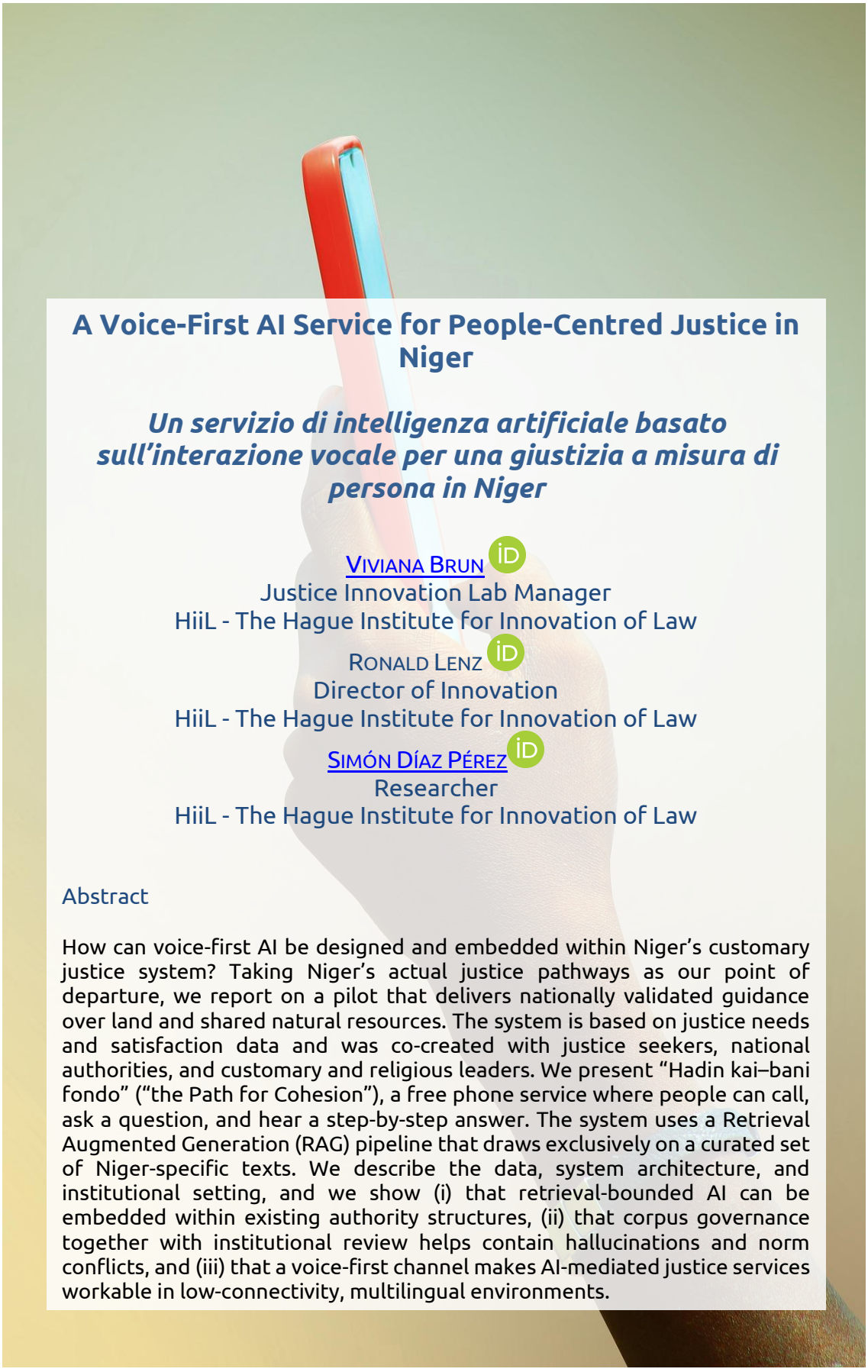

A Voice-First AI Service for People-Centred Justice in Niger

Un servizio di intelligenza artificiale basato sull'interazione vocale per una giustizia a misura di persona in Niger

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Abstract

How can voice-first AI be designed and embedded within Niger's customary justice system? Taking Niger's actual justice pathways as our point of departure, we report on a pilot that delivers nationally validated guidance over land and shared natural resources. The system is based on justice needs and satisfaction data and was co-created with justice seekers, national authorities, and customary and religious leaders. We present "Hadin kai–bani fondo" ("the Path for Cohesion"), a free phone service where people can call, ask a question, and hear a step-by-step answer. The system uses a Retrieval Augmented Generation (RAG) pipeline that draws exclusively on a curated set of Niger-specific texts. We describe the data, system architecture, and institutional setting, and we show (i) that retrieval-bounded AI can be embedded within existing authority structures, (ii) that corpus governance together with institutional review helps contain hallucinations and norm conflicts, and (iii) that a voice-first channel makes AI-mediated justice services workable in low-connectivity, multilingual environments.

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Summary

Abstract
Come si può progettare e integrare un'intelligenza artificiale "voice-first" nel sistema di giustizia consuetudinaria del Niger? Partendo dai percorsi giudiziari effettivamente seguiti in Niger, presentiamo un progetto pilota che fornisce orientamenti convalidati a livello nazionale in materia di terreni e risorse naturali condivise. Il sistema si basa sui dati relativi alle esigenze e alla soddisfazione in ambito giudiziario ed è stato co-creato con le persone in cerca di giustizia, le autorità nazionali e le autorità tradizionali e relegiose. Presentiamo "Hadin kai–bani fondo" ("the Path for Cohesion"), un servizio telefonico gratuito dove le persone possono chiamare, porre una domanda e ascoltare una risposta dettagliata. Il sistema utilizza una pipeline di Retrieval Augmented Generation (RAG) che attinge esclusivamente a un insieme curato di testi specifici relativi al Niger. Descriviamo i dati, l'architettura del sistema e il contesto istituzionale, e dimostriamo (i) che l'IA a recupero limitato può essere integrata all'interno delle strutture autoritarie esistenti, (ii) che la governance del corpus, insieme alla revisione istituzionale, aiuta a contenere le allucinazioni e i conflitti normativi, e (iii) che un canale "voice-first" rende i servizi di giustizia mediati dall'IA funzionanti in ambienti multilingue a bassa connettività.

Keywords: access to justice; people-centred justice; generative AI; retrieval-augmented generation (RAG); interactive voice response (IVR); customary justice; legal pluralism; Niger

Summary: 1. Introduction. – 2. Research questions. – 3. Key concepts and terminology. – 4. Background and conceptual work. – 5. Justice needs and satisfaction in Niger. – 6. National legal framework. – 7. People-centred justice and the centrality of customary and informal justice. – 8. AI for access to justice. – 9. Method. – 10. Designing the solution: Hadin kai–bani fondo. – 11. Technical architecture of the vocal companion. – 12. User experience. – 13. What the pilot data show. – 14. Conclusion.

1. Introduction.

Discussions on AI for access to justice (AI4A2J) tend to focus on formal courts and procedures. Yet, as the OECD's people-centred justice approach notes, in many countries the real bottleneck appears earlier: at the first point of contact with the justice system, when someone with a land, family, or neighbour problem turns to whoever is actually reachable, a village or canton chief, a religious leader, a local administrator, a paralegal, or a community-based organisation. When this frontline actor cannot offer clear, legitimate and context-appropriate guidance, the justice journey begins to deteriorate, regardless of what follows.[1]

Recent justice-gap evidence reinforces this diagnosis. In low- and middle-income, legally plural settings, people do seek help, but the assistance they receive is often uneven, fragmented or not actionable. The World Justice

[1] OECD, *OECD Framework and Good Practice Principles for People-Centred Justice* (OECD 2021) <https://www.oecd.org/content/dam/oecd/en/publications/reports/2021/12/oecd-framework-and-good-practice-principles-for-people-centred-justice_aa5031db/cdc3bde7-en.pdf> accessed 1 December 2025.

Project shows that many people experience legal problems but relatively few achieve satisfactory resolutions, indicating a weak supply of accessible services.[2]

HiiL's Justice Needs and Satisfaction (JNS) surveys in African countries reveal a similar pattern: people turn to family, community and traditional leaders for land and shared-resource issues, but the information and follow-up they obtain varies widely. The problem lies less in demand than in the capacity and consistency of response at local, customary and administrative levels, which are thinly resourced and only partly formalised. This is precisely where AI, if carefully constrained and restricted to nationally validated content, can raise the floor of information and procedure available to justice seekers and intermediaries.[3]

Niger illustrates this dynamic clearly. JNS data from 2024 show that land and shared-resource disputes are frequent and harmful, and that people's first reaction is to approach customary and locally recognised authorities whose role is formally acknowledged in legislation and rural-land governance instruments.[4] This creates a two-sided design task. Many of these authorities work orally, in low-connectivity environments and with uneven access to recent, nationally consistent guidance; at the same time, citizens already regard them as legitimate entry points. Improvements in the quality, consistency and transmissibility of guidance at this level can therefore generate system-wide effects.

The project presented here, "Hadin kai–bani fondo" ("the Path for Cohesion"), targets this gap by providing reliable, context-specific guidance on land and shared-resource disputes through the customary leaders whom justice users already consult. It is delivered as a voice-first, free-to-call service that reaches rural and low-digital populations via ordinary mobile phones. A retrieval-bounded, corpus-governed architecture differentiates it from generic legal chatbots and confines outputs to content validated by Nigerien legal experts, land and customary authorities. Framed as mediation-supportive rather than substitutional, the service is designed to strengthen, not bypass, the customary and administrative actors who currently resolve most land disputes. Under this framing, the contribution to AI4A2J is clear: the paper shows that generative and retrieval technologies, when coupled with voice delivery and nationally governed content, can be made both usable and legitimate within a legally plural, low-connectivity justice ecosystem.

[2] World Justice Project, Global Insights on Access to Justice: Findings from the World Justice Project General Population Poll in 101 Countries (*World Justice Project*, 2019) <https://worldjusticeproject.org/our-work/research-and-data/global-insights-accessjustice-2019> accessed 1 December 2025.

[3] The Hague Institute for Innovation of Law, 'Justice Needs and Satisfaction in Niger' (*Hiil*, 2022-2024) <https://www.hiil.org/research/justice-needsand-satisfaction-in-niger/> accessed 1 December 2025.

[4] The Hague Institute for Innovation of Law (n 3).

2. Research questions.

This paper is guided by the following overarching research question: how can voice-first AI be designed and embedded within Niger's customary justice system?

We explore it through three sub-questions:

- What justice needs and satisfaction gaps exist regarding land conflict resolution in Niger, and what is the entry point of the resolution process?
- How can voice-first GenAI technology be designed and implemented to address these justice needs in a context characterised by limited literacy, infrastructure constraints, and legal pluralism?
- What does pilot evidence suggest about the feasibility, use, and user satisfaction of the service, and what are the opportunities for deploying similar AI technologies in comparable contexts?

3. Key concepts and terminology.

To clarify how the study connects access-to-justice research and applied AI design, we outline the main concepts guiding our analysis:

- Justice needs and satisfaction gaps, proxied by HiiL JNS surveys indicators on problem prevalence, seriousness, action rate, and satisfaction with outcomes, inform our problem focus (land/shared natural resources) and target users (customary actors).[5]
- The resolution process describes the sequence people follow to address such problems.
- People-centred justice (PCJ) is a form of justice that is accessible, affordable, and easy to understand, prioritising people and the outcomes they need, rather than institutions and existing procedures. In this case, it works as a design principle.
- Access to justice (A2J) is defined here as the ability of individuals to obtain fair and actionable guidance and outcomes, rather than merely the formal availability of legal mechanisms.
- Voice-first design refers to interaction through basic mobile phones or interactive voice response (IVR) systems, which lowers literacy and connectivity barriers.
- Retrieval-bounded AI refers to an architecture in which generation is constrained by a vetted corpus of local legal and procedural material. This can substantially reduce invention and speculation, but it does not eliminate error: retrieval quality, source selection, versioning, translation and prompt design still influence the answer, and unsupported or misleading outputs remain possible.[6]

[5] The Hague Institute for Innovation of Law (n 3).

[6] A Walsh and F de Klerk Wolters, *Artificial Intelligence and Access to Justice in Fragile and Conflict-Affected Situations* (DCAF 2026) 4-5, 57, 70-71. <https://www.dcaf.ch/sites/default/files/publications/documents/DCAF_Ai-and-FCS-Justice_EN.pdf> accessed 17 July 2026; K Dhru, *Promoting Justice in the Age of AI: Balancing Technological Advancement with People-Centredness in Development* (GIZ 2026) 20-26.

We use these definitions to (i) frame the research questions, (ii) guide the analysis of Niger's justice landscape, and (iii) interpret the pilot results as indicators of feasibility rather than causal impact.

4. Background and conceptual work.

The effective design of AI for access to justice in Niger must start from two key observations about how people actually resolve disputes.

First, the three HiiL Justice Needs and Satisfaction (JNS) surveys (2022–2024) show that land related problems are highly prevalent and particularly harmful, and that people already tend to turn to customary authorities to address them. A significant share of everyday justice demands is therefore already being channelled through socially recognised, non-state authorities.[7]

Second, from a people-centred justice perspective as outlined by the International Development Law Organisation (IDLO), in contexts of legal pluralism justice outcomes improve when the forums people actually use are supported and upgraded, rather than replaced by parallel, exclusively state based mechanisms. Customary and informal justice mechanisms can deliver accessible and legitimate outcomes, and their value increases when their processes are more consistent, their decision-making is better informed, and their outcomes can converge into administrative or judicial channels.[8]

Read together, the JNS data and the IDLO framework highlight a procedural gap in Niger: there is no clear, widely used pathway that both supports conciliation carried out by customary and informal leaders and reliably converts its outcomes into decisions usable by administrative services or, where necessary, by the courts. The digital, voice-first solution currently being piloted is a first step towards closing that gap by giving customary and informal leaders better access to reliable, standardised information, thereby improving the quality, consistency and formal usability of the conciliation they already conduct.

Recent HiiL evidence on Niger and Burkina Faso reinforces this institutional dimension. Customary authorities are important providers, but hybrid journeys between customary and formal systems remain uncommon and depend on clear rules governing competence, referral, recognition and appeal. The digital service should therefore be evaluated not only by the consistency of its answers, but also by whether it directs users to the appropriate forum and strengthens cooperation between justice pathways without enlarging customary actors' mandates beyond their resources or legal competence. [9]

<https://www.bmz-digital.global/wp-content/uploads/2026/04/Promoting-Justice-in-the-Age-of-AI.pdf> accessed 17 July 2026.

[7] The Hague Institute for Innovation of Law (n 3).

[8] International Development Law Organization, *Diverse Pathways to People-Centred Justice* (IDLO 2023) <https://www.idlo.int/publications/diverse-pathways-people-centred-justice> accessed 15 January 2026.

[9] R Nunez Donoso and S Díaz Pérez, 'Navigating Justice: Optimising People's Engagement with Customary and Formal Justice Systems in Niger and Burkina Faso' (HiiL) 23-25.

5. Justice needs and satisfaction in Niger.

In villages across Niger, land is rarely just land. It is food for the year, a son's inheritance, a widow's only security, the grazing passage a herder has always used. When people report a "justice problem," it is often a fragile land-related arrangement: a shifted boundary, an animal damaging a field, a relative asserting a claim, or an urban plot sold twice.

The HiiL JNS surveys from 2022 to 2024 consistently show that land disputes are among the most frequently experienced and most serious problems. In 2024, 28% of all reported justice problems were land-related, placing land just behind crime as the second most common category. Land problems also score high on severity (around 7/10 in 2024), and about 33% of respondents who experienced a land problem reported knock-on effects such as lack of food, more than twice the rate for problems overall. The data also show that people do not stay passive. For land-related problems, in 2023 and 2024, 84% of respondents reported that they took action. Among those who remained inactive, 22% did not know what to do, 25% believed that their problem could not be brought before a customary authority, and 16% felt that their problem was not serious enough to warrant attempting resolution through customary justice. These figures point to informational and perceptual barriers rather than a simple absence of forums, and underline the importance of clear, trusted guidance on when and how land problems can be taken to customary actors.[10]

6. National legal framework.

Niger is among the Sahelian states that have explicitly recognised traditional chieftaincy. The key instrument is the Republic of Niger. Law No. 2015-01 of 13 January 2015 on the Status of Traditional Chieftaincy in the Republic of Niger.[11] This law:

- recognises and organises chieftaincy as a public institution, defining categories of chiefs, their appointment, and their position within local administration; and
- confirms their role in the conciliation of disputes governed by custom, which includes many civil and land-related transactions.

This recognition, however, does not automatically provide customary leaders with the necessary tools to settle land cases in a consistent and enforceable manner. National and international reviews of Niger's land governance, including OECD analyses, repeatedly point to capacity, staffing and resource gaps in the very local institutions that are supposed to apply the Rural Code.[12] Where Land Commissions (CoFo) have not yet been established or function with limited personnel and resources, the customary actors who

[10] The Hague Institute for Innovation of Law (n 3).
[11] Loi n° 2015-01 du 13 janvier 2015 portant statut de la chefferie traditionnelle en République du Niger (Assemblée nationale du Niger).
[12] Ordonnance n° 93-015 du 2 mars 1993 portant principes d'orientation du Code rural (Journal officiel de la République du Niger 1993).

rely on them cannot easily verify records or apply Rural Code procedures uniformly, resulting in local variations in outcomes. [13]

At the inaugural meeting of the Monitoring Committee for the National Strategy for people-centred justice in Niger,[14] stakeholders emphasised that although informal and customary mechanisms are widely used and often effective, they do not always guarantee equitable outcomes. Women and young people in particular face obstacles, and the lack of systematic oversight can lead to inconsistency or unfairness. At the same time, the formal justice system, under-resourced and concentrated in urban areas, struggles to offer a realistic alternative for most users.[15]

7. People-centred justice and the centrality of customary and informal justice.

Recent policy work, notably the UNDP/IDLO report on diverse pathways to people-centred justice, generalises that if the objective is to deliver on SDG 16.3 ("access to justice for all"), then customary and informal justice (CIJ) must be engaged, mapped, supported and connected, because formal systems alone cannot close the global justice gap. The report explicitly states that CIJ systems are heterogeneous and evolving, and that the appropriate strategy is not to bypass them, but to improve their practice with better information, clearer procedures, and stronger links to the rest of the justice ecosystem.[16] This is precisely what the Niger "*Hadin kai–bani fondo*" service is designed to do. It does not replace chiefs or ask users to bypass them. Instead, it offers, over a basic phone, a nationally validated mediation support for the kinds of disputes chiefs already hear. In doing so, it operationalises three design principles that follow directly from putting the JNS surveys findings next to people-centred justice guidance: [17]

- the channel must match reality. JNS data highlight low literacy and the centrality of radio/phone use. People-centred justice guidance emphasises "meeting people where they are". A voice/IVR channel satisfies both,
- content must be local and legitimate. JNS shows plural and overlapping justice forums; the people-centred justice literature warns against importing rules that do not match local norms. Retrieving answers from

[13] OECD, 'Natural Resource Governance and Fragility in the Sahel' (*OECD* 2022) <https://www.oecd.org/en/publications/natural-resource-governance-and-fragility-in-the-sahel_f95d6f2f-en.html> accessed 15 January 2026.

[14] Ministry of Justice body overseeing implementation of the National Strategy for People-Centred Justice in Niger; this paper draws on discussions from its inaugural meeting in Niamey on 29 July 2025.

[15] E Dajer and S Díaz Pérez, *Accès des femmes à la justice au Niger: perspectives issues de la triangulation des données* (HiiL) <https://www.hiil.org/wp-content/uploads/2022/05/HiiL_Acces-des-femmes-a-la-justice-au-Niger_digital.pdf> accessed 15 January 2026.

[16] UNDP and International Development Law Organization, *Diverse Pathways to People-Centred Justice: Report of the Working Group on Customary and Informal Justice and SDG16+* (UNDP and IDLO 2023) <https://www.undp.org/publications/diverse-pathways-people-centred-justice-report-working-group-customary-and-informal-justice-and-sdg16> accessed 1 December 2025.

[17] The Hague Institute for Innovation of Law (n 3).

a Niger-specific, nationally validated corpus keeps the AI within the locally accepted universe,
- customary actors must be augmented, not displaced. The JNS shows that chiefs and other customary figures are the key helpers; the global reports call for strengthening CIJ practice.[18]

8. AI for access to justice.

Artificial intelligence is often portrayed as a high-tech solution best suited to digitally literate and well-connected settings. The Niger case points in another direction: when AI is locally governed, trained on a finite national corpus, and delivered through channels that match prevailing communication practices, it can actually expand access to justice in environments marked by poor connectivity and low literacy. In such contexts, AI can function both as an accessible entry point for rural and non-literate users and as a support tool for customary, religious and other community-based justice actors.

However, there are certain risks inherent to the use of artificial intelligence that can have a dangerous impact on justice dispensation.[19] The 'immediate' nature of AI can cause justice practitioners to spend less time analysing cases, priotising speed over engagement, in particular for cases that are viewed as simple and easy. At the same time, AI can reproduce existing biases in the training data that can reinforce discriminatory rulings and deepen social, cultural, economic and racial divide. There is uncertainty as well regarding the constant changes and evolution of AI models – would using a new 'improved' model mean that the advice and decisions from the previous models are obsolete as well? These doubts also translate to how artificial intelligence interprets legal jargon, norms and facts, to how it may arrive at a certain advice or decision and, ultimately, to who is accountable for the results AI produces, specially when applied to jurisdictions and cultures outside of the countries where AI is more developed.[20]

The primary goal of an assistant tool based on AI is then to conceal the complexity from the user, without ignoring the potential risks. The technical components, speech-to-text, document retrieval, and checks on sensitive topics, run in the background; while the selection of the national corpus and the pre-approved texts are also done prior to the users interacting with the tool. What the user or intermediary experiences is simple: call a free number, ask a question and receive the answer. This matches how land and natural-

[18] The Hague Institute for Innovation of Law (n 3).
[19] R Ejjami,'AI-Driven Justice: Evaluating the Impact of Artificial Intelligence on Legal Systems'(2024) 6(3) IJFMR 13, 17. <https://www.researchgate.net/profile/Rachid-Ejjami/publication/381926291_AI-Driven_Justice_Evaluating_the_Impact_of_Artificial_Intelligence_on_Legal_Systems/links/66adeda051aa0775f264db66/AI-Driven-Justice-Evaluating-the-Impact-of-Artificial-Intelligence-on-Legal-Systems.pdf> accessed 20 July 2026.
[20] F Borgesano, A De Maio, P Laghi and R Musmano, 'Artificial intelligence and justice: a systematic literature review and future research perspectives on Justice 5.0' (2025) 28(11) EJIM 363, 366. <https://www.emerald.com/ejim/article-media/1302111/pdfviewer/10334745> accessed 20 July 2026.

resource disputes are actually managed in Niger: through oral exchanges and recognised figures, such as traditional chiefs. In this setup, AI adds value, and reduces risks, in several ways:

- it lowers literacy barriers. Voice/IVR access allows people to ask questions in their own words, without needing to know complex legal jargon or to read or navigate websites,
- it supports, rather than replaces, customary leaders. The tool provides chiefs and other community mediators with the correct, up-to-date steps and wording, enabling them to act more consistently and in line with national regulations. Authority stays with the human, AI supplies the guidance,
- it reduces, but does not eliminate, errors and "hallucinations". Restricting retrieval to content validated by Niger's institutions and using pre-approved text for sensitive issues narrows the model's scope. Reliability nevertheless depends on whether the corpus is complete, current and representative, whether the retrieved passages actually support the answer, and whether users can recognise and challenge an uncertain or incomplete response.[21]

The impact of the service must therefore be assessed beyond technical performance. A voice channel may reduce literacy, distance and connectivity barriers, while the same system may reproduce linguistic exclusion when speech recognition performs unevenly across languages, accents, genders or age groups. The selection of sources, the wording of spoken answers and the institutions authorised to correct them also redistribute practical authority over the interpretation of law and custom. Accessibility should consequently be assessed together with fairness, transparency, contestability, privacy and the quality of human oversight.[22] To ensure that the service does not falls through the common pitfalls of artificial intelligence, it is necessary that:

- it keeps humans in control. Interactions can be logged and reviewed, and the corpus can be updated. This allows public authorities to view the system's output and make adjustments as needed,
- its financial and operational sustainability be tested over the full lifecycle. Beyond initial development, recurring costs include telecommunications agreements, hosting and model services, security, corpus maintenance, monitoring, local-language development and human review. Public institutions also need the technical and contractual capacity to supervise providers.[23]

[21] Walsh and de Klerk Wolters (n 6).
[22] Walsh and de Klerk Wolters (n 6).
[23] UNDP, *Reading AI Readiness Backwards: What Country Experience Reveals Once AI Adoption Is Already Underway* (UNDP 2026) 12-13, 28-29; <https://www.undp.org/publications/reading-ai-readiness-backwards-country-insights-ai-adoption-and-implementation> accessed 17 July 2026; Walsh and de Klerk Wolters (n 6) 56-58.

9. Method.

This paper reports an exploratory, mixed-methods inquiry embedded in HiiL's Justice Innovation Lab for Niger. The Lab combined desk research and feasibility studies with rapid prototyping and partner feedback to design a voice-first, retrieval-bounded AI, known as the vocal companion service of "Hadin kai–bani fondo". How we generated evidence.

- Document and desk research: legal/administrative instruments (e.g., Rural Code, chieftaincy rules), prior Justice Needs and Satisfaction evidence, and service design artefacts from the Lab.
- Interviews: semi-structured discussions with the Ministry of Justice, ANAJJ, Rural Code Secretariat, Association of Traditional Chiefs, implementation partners, and selected chiefs/paralegals to map workflows, risks, and content needs.
- User feedback: short post-interaction prompts on usefulness, comprehension, and recommendation.
- Operational data (feasibility): IVR/RAG system logs (reached callers, questions asked, valid responses, duration, error codes) from 1 May to 1 August, 2025. Partner teams provided field returns (notes from trainings/demos and uptake observations) to contextualise the logs.

10. Designing the solution: "Hadin kai-bani fondo" ("The path to cohesion").

"Hadin kai–bani fondo" is a digital platform that strengthens, rather than replaces, Niger's existing methods for resolving land and natural resource disputes. Built to work both online (digital platform) and offline (vocal companion), it turns nationally agreed guidance into step-by-step, conversational journeys that local justice actors and community members can follow in the same way, wherever they are. That makes the country's own standards easier to apply in real-world cases, especially in rural areas, where most land conflicts occur.

The platform was co-created during Niger's 2023–2024 Justice Innovation Lab (JIL), a four-session design process in which traditional leaders, government institutions, farmers' organisations, local authorities, civil society and actual justice seekers worked together on one problem: how to prevent and resolve land disputes more consistently. Using HiiL's sequence (scoping, ideation, solution design, road map), the group arrived at a user-centred, nationally owned solution that supports customary mechanisms instead of sidelining them. A key strength of "Hadin kai–bani fondo" is its governance. In line with HiiL's principle of institutional anchoring, the Ministry of Justice leads the initiative. It steers a multi-actor committee comprising the National Legal Aid Agency (ANAJJ), the Rural Code, the Association of Traditional Chiefs of Niger, and relevant sectoral Ministries, such as Agriculture and Interior. This structure keeps the corpus national, reviewable and regularly updated. This creates a hybrid, human-in-the-loop model: AI accelerates and structures the interaction, but authoritative content and control over permissible outputs remain with national actors.

11. Technical architecture of the vocal companion.

The vocal companion is the AI-enabled access channel for “Hadin kai–bani fondo”. It follows the general pattern used by technical service providers for retrieval-based services, but with two explicit constraints from HiiL and the Niger authorities: (i) the corpus is closed, curated and versioned; and (ii) answers on sensitive topics are non-generative and drawn from pre-approved text.

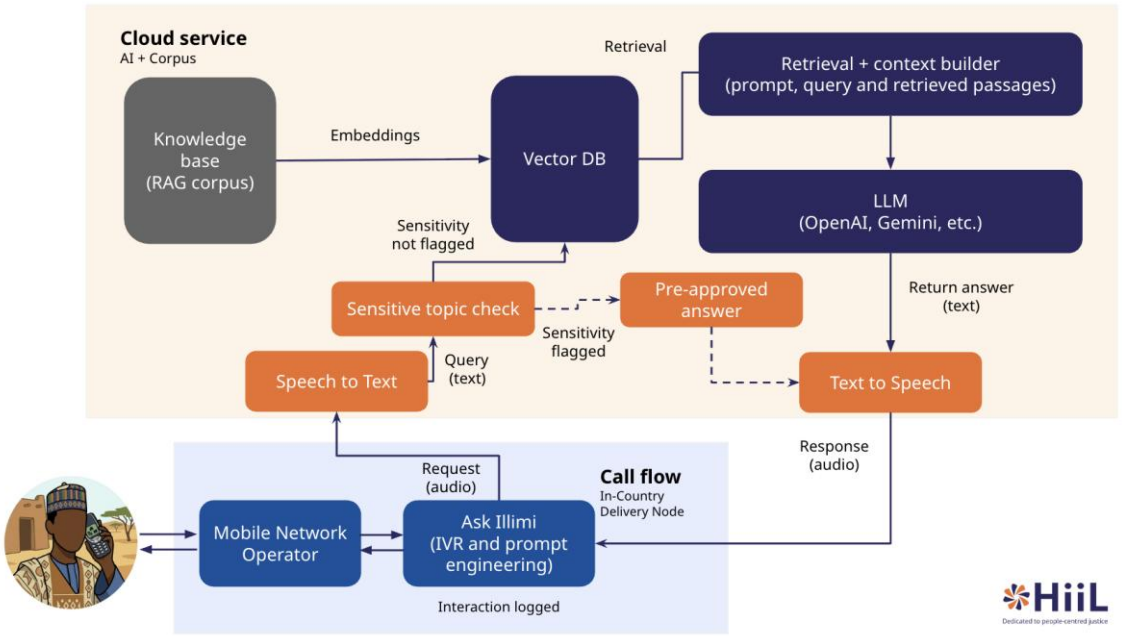

Fig. 1: Representative scheme of the AI service workflow.

The architecture can be read in five layers:

1) Access and delivery layer (Interactive Voice Response (IVR) tree flow). A user calls a free short code. The call lands on a delivery node running a predefined flow (welcome, scope of the service, prompt to ask a question, error handling). This layer is anchored in mobile-network infrastructure and works on basic phones without data, a deliberate “channel realism” choice.
2) Speech interface layer. For voice calls, the spoken question is sent to a speech-to-text (STT) service. The output is normalised (language, diacritics, filler words) and passed forward as a query.
3) Retrieval-augmented layer (core AI). The query enters a retrieval pipeline. A sensitive topic check runs first: the query is matched against Niger-specific, sensitive topics (e.g. politics). If matched, the pipeline bypasses generation and returns the pre-approved answer authored by the national content committee. Otherwise, the query is sent to a vector database that stores embeddings of validated content. These passages, together with the original query and a strict system prompt (e.g. “answer only from these sources; do not invent rules; keep it oral and short; name the appropriate local actor”), are sent to a LargeLanguage Model (LLM) whose task is surface realisation only, stitching, ordering and register

adaptation, and which is explicitly prevented from creating new legal propositions.

4) Response rendering layer. The generated answer is passed to text-to-speech (TTS) and sent back to the user through the delivery node. The IVR then offers a follow-up, suggesting keeping the interaction conversational.
5) Monitoring, governance and improvement layer. Each interaction (original question, retrieved sources, final answer, flags) is logged for monthly human review. This review adjusts the sensitive-topic list and updates the corpus.

Taken together, these layers create a chain of social and institutional effects. The IVR layer determines who can reach the service and whether network outages or call conditions become new barriers. Speech-to-text determines whose voice is recognised. Retrieval determines which legal and customary sources become visible. Text-to-speech affects comprehension and may make a short answer sound more authoritative than its legal basis warrants. Logging enables correction and learning, but also creates sensitive justice data. Monitoring should therefore include disaggregated error analysis where feasible, source traceability, data minimisation, clear retention and access rules, escalation for out-of-scope questions, and periodic review by actors with legal, technical, privacy and equality expertise. [24]

12. User experience.

From the user's perspective, the interaction remains straightforward. A chief, land intermediary or citizen dials the toll-free number, hears a short, pre-approved welcome message and is invited to state a question. The speech is transcribed and classified; an answer is assembled from the Niger justice corpus; and the voice channel reads it back, ending with an invitation to ask a follow-up. Because the service runs on Mobile Network Operator (MNO) anchored Interactive Voice Response (IVR), it is available on basic phones at any time, and without requiring data usage.

Pilot use reveals two typical user journeys. First, the "procedural confirmation" journey. Canton chiefs and land intermediaries already know the broad steps of a conciliation but use the companion to check exact wording or sequence (e.g. who must be present, how to document consensus, when to refer to the CoFo). In these calls, the tool serves as a just-in-time checklist: users often ask short, targeted questions and terminate the call immediately after receiving confirmation.

Second, the "orientation" journey. Village chiefs, paralegals or justice seekers call with more open formulations (e.g. "my neighbour has extended his field into mine; what should I do?"). The companion responds with a simple, stepwise pathway (clarify the facts, attempt dialogue, approach the village chief, conditions for escalation), naming the relevant local actors and documents. Follow-up questions in these sessions frequently concern what to

[24] Dhru (n 6) especially the recommendations on human oversight, contestability, traceability, auditability, data protection and locally rooted governance.

do when the other party refuses to appear or when a previous agreement has not been respected.

13. What the pilot data show.

The service is, at the time of writing, in a pilot phase in two regions, Dosso and Tillabéri, which allows us to observe real usage patterns in rural, low-connectivity settings before scaling nationally.

For this analysis, we define the population of interest as callers who reached the digital assistant (baseline = 376). Within this group, over the period from 1 May to 1 August 2025, 162 individuals asked at least one question (43%), and 145 received at least one valid response (39% of the baseline; approximately 89.5% completion among those who asked). Sessions were short and task-oriented, averaging 1 question per caller and an average call duration of 1 minute. The system recorded a low technical error rate of 2.4%. Taken together, these figures indicate that once users initiate a query, the retrieval-bounded pipeline consistently delivers valid answers. At the same time, the principal drop-off occurs at the transition from reaching the assistant to posing a question. User feedback collected during the same period supports the technical feasibility but points to areas for improvement. Among respondents, 42.6% reported that the information helped them address their land issue, and 34.8% stated they would recommend the service. These responses suggest perceived usefulness alongside opportunities to enhance clarity, comprehension, and engagement. Clearer “ask your question now” prompts, fewer IVR layers, slower pacing, and improved audio quality are expected to increase active questioning without altering the retrieval bounded design.

In contextual terms, the pilot operated in the Dosso and Tillabéri regions in Niger, which together include approximately 1,200 traditional authorities, of whom around 50 are canton chiefs and the remainder are village or neighbourhood chiefs who fall under their supervision. Canton chiefs are generally fluent in French and serve as intermediaries between local chiefs and administrative authorities. Because the voice companion currently operates only in French, the main early users have been these canton-level leaders. The same actors customarily provide procedural guidance to the chiefs under their jurisdiction. This pattern is both encouraging and instructive: it confirms institutional uptake at the top tier of the customary system while revealing the language barrier that limits direct access for the broader base of village chiefs and community members.

14. Conclusion.

This paper has explored “Hadin kai–bani fondo”, as an example of how generative and retrieval-bounded AI can be aligned with people-centred justice in low-connectivity, legally plural environments. Starting from actual justice-seeking behaviour, in which people bring land and shared-resource disputes to customary and locally recognised authorities, the pilot shows that AI does not

have to replace these actors to add value. When it is fed with nationally validated content, delivered over a channel that users already trust (a toll-free IVR line), and embedded in an institutional governance arrangement, AI can make everyday dispute handling more consistent, more legible to the state, and easier to navigate for rural users.

The Niger case contributes three concrete insights.

- First, retrieval-bounded, corpus-governed AI is a promising risk-reduction approach for introducing automation into dispute resolution. It can substantially narrow the scope for hallucinated or normatively inconsistent answers, but its reliability remains dependent on corpus quality, retrieval performance, source currency, governance and effective human review.[25] These limitations also affect the interpretation of the pilot's current indicators. Completion rates, technical validity and user recommendation are evidence of feasibility and perceived usefulness, not evidence that the tool improves the fairness or legal quality of outcomes. Future evaluation should examine distributional effects, including who is able to use the system, whose speech is correctly understood, whether users follow the guidance, whether referrals are appropriate, and whether the tool changes power relations inside conciliation processes.[26]
- Second, a voice-first channel is not just an accessibility feature but a precondition for uptake where literacy, bandwidth and device ownership are uneven.
- Third, positioning AI as a procedural aide to chiefs, mediators and land intermediaries preserves local legitimacy while raising the quality of advice.

These insights directly answer the research questions guiding the study. On justice needs and satisfaction gaps, the combination of JNS data and pilot logs confirms that land and shared-resource disputes are both frequent and harmful, and that people already rely on customary authorities as their primary point of entry. The vocal companion responds to this reality by equipping those authorities, and the people who consult them, with a shared, nationally validated pathway for conciliation. Regarding the design and implementation of voice-first GenAI, the Niger experience shows that a tightly constrained RAG architecture, delivered via basic IVR and governed by a multi-actor committee, is technically feasible and institutionally acceptable, even in low-connectivity settings. Finally, the pilot evidence on usage and satisfaction suggests that such a service can be integrated into everyday dispute-handling practices, while also identifying clear levers (call-flow clarity, multilingual support) for increasing reach and equity.

At the same time, the pilot highlights important limitations and open questions. We do not yet know how AI-supported guidance affects the substance and perceived fairness of mediated outcomes, nor how it shapes power relations within customary fora, for example, whether women and younger disputants feel more or less able to voice claims when chiefs draw on AI-generated steps. Likewise, the skew towards French-speaking canton chiefs

[25] Walsh and de Klerk Wolters (n 6) 4-5, 70-71; Dhru (n 6).
[26] Walsh and de Klerk Wolters (n 6) 70-71.

in early usage necessitates deliberate strategies to reach village-level authorities and community members in their native languages. Addressing these questions will require longitudinal and comparative research, including direct observation of conciliation sessions with and without AI support.

This perspective also sharpens the evaluation question. Because CIJ systems can reproduce unequal power relations while remaining important and legitimate justice pathways, impact cannot be inferred from greater consistency or uptake alone. Evaluation should examine whose interpretation of custom is encoded, who can participate in corpus revision, whether women and younger users can contest or bypass guidance, and whether the service facilitates referral to another provider when the customary forum is inappropriate or unsafe.[27]

Looking ahead, the pilot opens several directions for further development:

- Comparative and experimental evaluation. To make the access-to-justice claim more robust, future work could run controlled comparisons of mediation sessions with and without AI assistance, measuring not just speed and user satisfaction but also fairness, gender sensitivity and downstream usability of agreements.
- Deeper multilingual support. Expanding ASR/TTS and corpus authoring to additional local languages would lower barriers for women, older users and groups with weaker French proficiency.
- Broader subject-matter coverage. The current corpus focuses on land and shared natural resources disputes because they are frequent, harmful, and already handled by customary authorities. A logical next step is to extend the same voice-first, corpus-governed approach to adjacent problems that people also bring to chiefs, such as family maintenance, inheritance, and small commercial disputes, while maintaining the same governance safeguards.
- Stronger two-way integration with state systems. Today, the tool primarily delivers guidance outward. A next phase could let authorised local actors report structured outcomes (e.g. a mediated agreement) to administrative or land services, creating a clearer pipeline from customary conciliation to durable, state-recognised records.
- Analytics for policy feedback. Because queries and retrieved sources are already logged, anonymised dashboards could help ministries identify emerging land tensions, information gaps, or regional variations in real-time, turning the service into an early-warning and policy-adjustment tool.
- Regional replication. Finally, because many Sahelian countries share low connectivity conditions, recognised chieftaincy, and plural land regimes, the Niger model could be templated for neighbouring jurisdictions, reusing the architecture but rebuilding the corpus and governance locally.

In sum, the Niger pilot makes a practical contribution to the emerging field of AI for access to justice (A2J). It demonstrates that when AI is retrieval-bounded, nationally governed and delivered through channels that match

[27] UNDP and International Development Law Organization (n 16).

people's actual behaviour, it can raise the floor of information and procedure available in customary justice systems. The challenge for the next phase is to turn this proof of feasibility into proven, equitable gains in justice outcomes, without diluting the central design principle that AI should augment, not displace, the human authorities whom people already trust.