Menu of AI Solutions for Governments

Use cases, methods & examples

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METHOD & USE CASE	WHAT IT DOES	GOVERNMENT EXAMPLES
Supervised ML **Prediction & Classification**	Trains on labelled historical data to predict a numeric outcome or assign inputs to a category. Can surface which factors matter most, supporting targeting, prioritisation, and resource allocation. **Methods:** *Regression · Classification · Risk scoring · Propensity models · Feature importance*	› Tax non-compliance risk scoring for audit prioritisation › Social program fraud and duplicate beneficiary detection › Credit risk scoring for lending programs › Student dropout risk identification for targeted intervention › Land use classification from satellite imagery
Unsupervised ML **Clustering & Segmentation**	Finds natural groupings in data without predefined labels. Useful for understanding population heterogeneity and segmenting beneficiaries for targeted policy without prior assumptions. **Methods:** *K-means & hierarchical clustering · Dimensionality reduction · Similarity matching · Segmentation*	› Citizen segmentation for differentiated service delivery › Grouping tax filers by behavioural profile without predefined categories › Identifying clusters of similar non-compliance patterns across districts
Unsupervised ML **Anomaly Detection**	Flags data points that deviate significantly from expected patterns without requiring labelled fraud cases. Particularly powerful for oversight and integrity work at scale. **Methods:** *Outlier detection · Isolation forests · Statistical deviation · Network anomaly analysis*	› Procurement spending outliers and suspicious award pattern detection › Payroll ghost worker identification › Unusual flows in public financial management systems › Meter reading anomalies in utility networks (e.g. electricity theft)
Time-series, Supervised ML **Time-series & Forecasting**	Models how indicators evolve over time to anticipate future values and support planning. Spans traditional statistical models, ML on temporal data, and deep learning. **Methods:** *ARIMA / statistical models · ML on lagged features · LSTMs · Physics-informed neural networks · Nowcasting · Scenario projections*	› Crop yield forecasting to inform food security decisions (imports, exports, grain reserves) › Electricity demand and loss forecasting for utility planning › Tax revenue projections for fiscal planning and debt management › Disease surveillance and outbreak nowcasting

LLM **Classifying Unstructured Text**	Uses large language models to assign free-text inputs to categories. Requires few labelled examples, handles messy or multilingual text, and can apply complex taxonomies that would overwhelm traditional classifiers. **Methods:** *Zero/few-shot classification · Fine-tuning · Chain-of-thought prompting · Structured output extraction*	› Coding open-ended survey responses to occupational taxonomies › Citizen complaint and petition categorisation and routing › Policy document tagging by topic, ministry, or sub-sector › Court ruling classification by outcome and legal domain
LLM **AI-Powered Search**	Turns a government's own documents into a searchable, queryable knowledge base. Ask questions in plain language and get answers grounded in official sources (regulations, policies, legal frameworks, past reports) rather than relying on memory or manual search. **Methods:** *Retrieval-augmented generation (RAG) · Semantic search · Vector embeddings · Citation-backed Q&A · Document indexing*	› Internal policy assistant for civil servants navigating complex regulations › Q&A over legal frameworks grounded in official documents › Institutional memory tool linking past decisions to current questions › Cross-ministry document search and consistency checking
LLM **Text Analysis & Generation**	Summarises, extracts structured information from, or drafts new content. Reduces analyst time on routine processing tasks. **Methods:** *Summarisation · Information extraction · Translation · Draft generation · Cross-language analysis*	› Summarisation of policy documents and parliamentary proceedings › Extraction of commitments and deadlines from government reports › First-draft policy brief generation from source materials › Cross-language document analysis
LLM **Chatbots**	Conversational interfaces that let citizens or civil servants interact with government services in natural language. Handle queries, route requests, and provide guidance at scale without proportional increases in staffing. **Methods:** *Conversational AI · Intent detection · Dialogue management · Escalation to human agents · Multilingual support*	› Citizen service chatbot handling tax, benefit, and permit queries › Internal HR and policy guidance assistant for civil servants › Multi-channel complaint intake (web, SMS, WhatsApp) › Agricultural chatbot providing advice to farmers
Computer Vision **Computer Vision**	Extracts structured information from satellite, aerial, or drone imagery at scale for area-wide monitoring at a fraction of the cost and time of field surveys. **Methods:** *Object detection · Image classification · Change detection · Segmentation · Remote sensing analysis*	› Building detection and change monitoring for property tax registers › Informal settlement mapping for urban planning › Crop health monitoring and stress detection › Road condition assessment

		› Post-disaster damage detection from aerial imagery
Optimization **Optimization & Decision Support**	Finds the best allocation of resources under constraints. The model generates options and trade-offs for humans to review and decide. Particularly useful where multiple competing objectives must be balanced. **Methods:** *Linear & integer programming · Simulation · Scenario modelling · Multi-objective optimization*	› Health worker and school inspector deployment scheduling › Service delivery route optimisation › Procurement lot design to maximise competition › Budget scenario modelling and fiscal planning › School and clinic placement under coverage constraints
Digitization **Records Digitization**	Converts paper-based records into structured digital data using OCR and extraction models. A foundational step that unlocks most other AI use cases. Often the highest-value intervention in data-poor environments. **Methods:** *OCR · Handwriting recognition · Form extraction*	› Land registry and property title digitisation › Handwritten census and administrative form extraction › Historical archive scanning, indexing, and search › Birth, death, and civil registration record structuring
Data Products **Dashboards & Monitoring**	Makes model outputs and administrative data accessible to decision-makers through visual interfaces. The bridge between technical systems and government action. Can combine live KPI tracking, drill-downs, and AI-generated summaries. **Methods:** *KPI tracking · Interactive visualisation · Automated reporting · AI-powered summarisation · Alert systems*	› Reform monitoring dashboards with KPI drill-downs and AI-scraped news summaries › Beneficiary tracking dashboards for social programs › Real-time energy and macroeconomic indicator hubs › Automated monthly statistical reporting for ministries
Agents **AI Agents**	AI systems that take sequences of actions autonomously (e.g. browsing, writing, calling APIs, executing code, routing tasks) to complete multi-step workflows with minimal human intervention. An emerging capability with significant potential for government back-office automation. **Methods:** *Agentic LLMs · Tool use & function calling · Multi-agent orchestration · Workflow automation*	› Automated report drafting pipelines that gather data, analyse, and produce outputs › Multi-step procurement compliance checks across systems › Data cleaning and linking workflows across fragmented administrative datasets › Intelligent routing of citizen requests across departments with automated triage

AI Solutions for Governments

Case studies from IGC programmes

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Selected cases from IGC research programmes and real-world government deployments.

01 Transforming Zambia's Labour Force Survey using AI

LLM Text Classification · Source: *IGC working paper, 2025*

CHALLENGE

ZamStats enumerators struggled to accurately assign four-digit ISCO and ISIC codes from survey responses. Codebooks exceed 300 pages and respondents often give insufficient detail, causing systematic errors in the Labour Force Survey.

APPROACH

The IGC Zambia Evidence Lab partnered with ZamStats to test LLMs on Labour Force Survey data, comparing model accuracy against human enumerator performance across occupation and industry codes.

OUTCOME & LESSONS

LLMs matched or outperformed human coders on several code digits. A user interface was developed for automatic coding of responses from uploaded files. Estimated savings: up to 130 working days annually.

02 Increasing revenue collection with computer vision in Pakistan

Computer Vision — Property Tax · Source: *IGC project page*

CHALLENGE

Punjab's property tax relied on a rental value survey from 2013-14. Rapid urbanisation left many properties off the register; manual assessment created corruption risk and horizontal inequity across similar-value properties.

APPROACH

A computer vision algorithm uses property images and tax data to predict valuations and improve assessment accuracy, replacing subjective inspector-based estimates with an objective, image-driven approach.

OUTCOME & LESSONS

Research ongoing. The project is evaluating the algorithm's impact on property tax revenue, citizen perceptions of fairness, and corruption reduction in Punjab.

03 Classifying court decisions on environmental justice in India

LLM Text Classification · Source: *IGC blog, 2024*

CHALLENGE

Researchers could not systematically analyse thousands of environmental court rulings. Inconsistent formats, large volumes, and language

APPROACH

GPT-4 and Claude used to classify 12,615 court rulings across three environmental acts; compared against human expert coding of 1,905 cases.

OUTCOME & LESSONS

GPT-4 was robust against human expert accuracy, allowing governments to identify enforcement patterns and gaps. AI models interpreted decisions

variation meant most studies relied on small samples.		more optimistically than humans considering real-world enforcement, showing the need for human oversight in high-stakes classification.

04 Monitoring dashboard for tax and power sectors

Dashboards & Monitoring, LLM Text Analysis & Generation

CHALLENGE	APPROACH	OUTCOME & LESSONS
Policymakers overseeing reforms lacked a consolidated view of progress. Key indicators were scattered with no link to current policy context.	Reform monitoring dashboard combining live KPI tracking (tax revenue, power losses) with drill-down visualisations and an AI component that scrapes and summarises recent relevant news.	Gives policymakers a shared, current picture of reform progress, reducing time spent on situation reports and enabling faster identification of where reforms are lagging.

05 Physics-informed neural networks for crop yield forecasting in Zambia

Time-series & Forecasting

CHALLENGE	APPROACH	OUTCOME & LESSONS
The current crop yield survey system is inaccurate and slow, leaving the Ministry of Agriculture and Ministry of Finance without reliable mid-season estimates for import, export, and grain reserve decisions.	Scoping physics-informed (process-constrained) neural networks for district-level maize yield forecasting. Crop growth physics embedded in the model architecture improves robustness under climate variability where labelled survey data is scarce.	Intended output: reliable mid-season yield forecasts replacing the survey system as the primary government input for food security planning, enabling earlier action on imports, exports, and reserves.

07 Computer Assisted Mass Appraisal for property tax in Rwanda

Computer Vision — Property Tax · Source: *IGC policy brief, 2022*

CHALLENGE	APPROACH	OUTCOME & LESSONS
Rwanda's 2019 property tax law aimed to increase municipal revenues and empower local government, but implementation depended on accurately identifying and valuing properties. This was a costly challenge without comprehensive digital records.	IGC and GOPA (funded by GIZ) built a prototype Computer Assisted Mass Appraisal (CAMA) model for Kigali, applying ML to remote sensing and GIS data. The model identifies which properties have buildings, flags missing declarations, and detects illegal exemption claims.	A simpler model proved more transparent, replicable, and accurate. Additional revenue from CAMA could greatly exceed its cost. The analysis also revealed inconsistencies in current land tax rates relative to property values, informing future reform.

08 Automating citizen services at scale in Zambia

Digitization & Automated Routing, LLM Classification

CHALLENGE	APPROACH	OUTCOME & LESSONS
Citizens could only reach the government through paper complaints or suggestion boxes. Manual sorting offered no performance tracking, no pattern detection, and slow response times.	IGC's Zambia Evidence Lab (ZEL) has optimised Smart Zambia's citizen complaint portal by integrating a multi-stage AI pipeline. Upon submission, the system immediately enriches each complaint with an automated title and priority level. Utilising GPT-5-chat with few-shot prompting, the AI classifies the case by Ministry, Department, and Service, triggering instant email notifications to the appropriate case handlers. To ensure long-term efficiency, the solution cross-references new cases with existing FAQs and automatically drafts new FAQ content once a trend of three similar complaints is identified.	Automated routing replaced manual sorting, cutting response times significantly. Previously it took on average four days for a complaint handler to assign it to the relevant respondent. Now cut to four seconds, the portal receives on average 200 complaints per month, saving 800 days of response waiting times for Zambia's citizens. The auto assignment and generation of alerts for high priority cases also ensures the most important cases are attended to first. This solution improves government service times, case prioritisation and reduces manual triage.

09 Targeting electricity losses and theft at ZESCO

Anomaly Detection & Dashboards

CHALLENGE	APPROACH	OUTCOME & LESSONS
Zambia's electricity utility ZESCO consistently misses technical and commercial loss targets set by the Energy Regulation Board, resulting in an estimated $13–15m in lost revenue each year. Operational and billing data are fragmented across systems and rarely analysed systematically.	IGC is developing a data dashboard to detect patterns of electricity loss and support targeted audits, combined with predictive models that identify high-risk areas and customers. The goal is to enable inspections to focus where losses are most likely.	Ongoing. Improved targeting of inspections and enforcement could reduce electricity losses by several percentage points, strengthening utility revenues and the financial sustainability of the power sector.

10 Mapping automation and skill gaps in Zambian firms

LLM Classification & Natural Language Processing · Source: *IGC project page, 2025*

CHALLENGE	APPROACH	OUTCOME & LESSONS
Policymakers and training institutions lack granular, forward-looking data on how automation is changing skill needs inside firms. Existing labour statistics capture occupations but provide little on the tasks and technologies driving emerging skill gaps.	An AI-enabled pipeline converts firm interviews into structured data using automated transcription and large language models to extract information on occupations, tasks, skills, and technologies in use. It links to international task and skill taxonomies using LLMs.	Generates firm-level measures of automation exposure, allowing government to identify emerging skill gaps before they become binding constraints, target vocational training, and align industrial policy with realistic workforce transitions.

11 Detecting customs fraud with machine learning in Paraguay

Supervised ML — Anomaly Detection

CHALLENGE	APPROACH	OUTCOME & LESSONS
Customs authorities lacked effective tools to identify fraudulent shipments, leading to lost tax revenue, unnecessary inspections, and opportunities for discretionary enforcement.	IGC researchers developed a machine learning model using customs records to identify high-risk shipments more accurately than existing risk systems. The model is now being piloted with the national customs authority.	Improved targeting allows inspections to focus on the highest-risk transactions, increasing revenue collection while reducing administrative burden and opportunities for discretionary enforcement.

12 AI-powered flood forecasting in Mozambique

Computer Vision & Time-series Forecasting

CHALLENGE	APPROACH	OUTCOME & LESSONS
Flood risks are increasing, but early-warning systems often provide limited local information and reach vulnerable communities too late to support effective response.	In partnership with Google's Flood Forecasting Initiative, IGC researchers are piloting an AI-based system combining satellite imagery and hydrological data to produce local flood forecasts and deliver alerts to at-risk areas.	Earlier and more accurate warnings allow governments and households to prepare for extreme weather events, reducing economic losses and risks to life from flooding.

13 Digitising and automating maize export permits in Zambia

Digitization & Optimization

CHALLENGE	APPROACH	OUTCOME & LESSONS
Maize export permits are processed through a slow, paper-based system, delaying farmers' access to regional	The Zambia Evidence Lab is working with partners to digitise the permit process, moving applications to an online system	A digitised, transparent system would reduce approval times and administrative burdens, allowing farmers to access export markets

markets and creating opportunities for discretionary decision-making.	and exploring AI tools to assess applications automatically against defined eligibility criteria.	faster while improving transparency and revenue collection.

14 AI-supported customs inspection targeting RCT evaluation

Supervised ML — Decision Support

CHALLENGE	APPROACH	OUTCOME & LESSONS
Customs authorities struggled to identify high-risk shipments efficiently. Existing risk-management systems rely on limited rules and historical indicators, with officers having little support interpreting risk signals during inspections.	IGC is piloting an AI-based risk assessment system and evaluating it through an RCT, comparing algorithm-based targeting with the existing system and testing whether AI-generated risk information improves officer decision-making.	Ongoing. The study will provide evidence on whether AI-supported targeting improves inspection decisions and revenue recovery, enabling the government to adopt tools based on measured performance rather than vendor claims.