POSITION PAPER

No Stakeholder Left Behind:

Designing Inclusive Digital Systems for Stakeholders with Unequal Technical Capabilities

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Abstract

Government digital transformation repeatedly fails when systems are designed for a mythical, technologically uniform ecosystem. In reality, public sector stakeholders range from institutions operating modern enterprise systems to organisations relying entirely on paper-based processes. This diversity creates a persistent digital divide that traditional implementation approaches have failed to resolve (Heeks, 2003; Syed et al., 2023).

This paper introduces the Capability Bridging Framework, a practical methodology developed during the architectural design of The Gambia's World Bank-funded Higher Education Management Information System (HEMIS). The framework provides four permanent integration pathways that accommodate stakeholder diversity without compromising system quality or data integrity. Validated across a national-scale readiness assessment covering 30 priority institutions across all institutional types in The Gambia's higher education ecosystem, the framework demonstrates that permanent inclusion is architecturally achievable, governable, and deliverable within real-world resource constraints.

> ***The Capability Bridging Framework demonstrates that the choice between excluding less-capable stakeholders and compromising system sophistication is a false one. A third path exists.***

The Problem: A False Choice

Public sector digital transformation initiatives consistently encounter the same fundamental challenge: the stakeholders they are designed to serve do not have uniform technical capabilities. Within a single national system, implementers routinely encounter organisations operating sophisticated cloud-based enterprise resource planning systems alongside organisations managing all data in Excel spreadsheets, and others with no digital infrastructure whatsoever.

Traditional implementation approaches respond to this diversity with one of two strategies, both of which are inadequate:

- **Build for the most capable.** Design the system to leverage the full technical potential of advanced stakeholders, accepting that less-capable stakeholders will be excluded or marginalised. This approach delivers sophisticated functionality but wastes public investment by failing to serve the majority.
- **Simplify for everyone.** Constrain the system to a capability level accessible to the least-resourced stakeholders, ensuring inclusion but compromising the system's ability to deliver value for more capable organisations. This approach achieves participation at the cost of utility.

Both strategies perpetuate digital inequality. The first excludes the less resourced. The second constrains the more capable. Neither treats stakeholder diversity as a design requirement rather than a problem to be managed.

The consequences are well-documented. Projects are abandoned because adoption is too low. National platforms produce unreliable data because only a fraction of stakeholders can contribute. Public investment is wasted on systems that serve a subset of the ecosystem they were designed for (Heeks, 2003).

> ***The assumption of uniform technical capability is not merely incorrect. It is a design flaw that has cost governments and development partners billions in failed digital transformation initiatives (Heeks & Stanforth, 2007; Syed et al., 2023).***

The Capability Bridging Framework

The Capability Bridging Framework is an open framework, freely available for any organisation working to design inclusive digital systems for stakeholders with unequal technical capabilities. It addresses this challenge through a structured set of permanent integration pathways that accommodate the full spectrum of stakeholder technical capability without compromising data quality, system integrity, or advancement opportunities.

The framework emerged from a concrete implementation challenge. During the design of The Gambia's HEMIS platform, a comprehensive readiness assessment revealed that the country's higher education ecosystem included institutions capable of real-time API integration alongside institutions with servers that had been non-operational for months. Both needed to contribute to the same national data platform. A single integration approach could not serve them all.

The framework defines four permanent integration pathways:

Level 1: Online Systems Pathway

- **Profile:** Organisations with internet-connected systems capable of real-time data exchange.
- **Integration mechanism:** API development enabling real-time, automated data synchronisation.
- **Key characteristic:** Continuous data flow with immediate validation and error handling.

Level 2: Local Network Systems Pathway

- **Profile:** Organisations operating ERP or database systems on local networks without public internet accessibility.
- **Integration mechanism:** Scheduled bulk data export and upload, or API development if the organisation chooses to migrate to cloud hosting.
- **Key characteristic:** Flexible approach accommodating institutional choice between local operation and cloud migration.

Level 3: Structured Data Pathway

- **Profile:** Organisations managing data primarily in spreadsheet applications or simple databases.

- **Integration mechanism:** Validated template-based bulk upload using standardised formats with built-in validation rules.
- **Key characteristic:** Accessible to organisations without dedicated IT capacity. The validation layer enforces identical data quality standards as higher pathways.

Level 4: Assisted Entry Pathway

- **Profile:** Organisations with minimal or no digital infrastructure, operating primarily on paper-based processes.
- **Integration mechanism:** User-friendly web portal for direct manual data entry, with bulk upload capability once paper records are digitised.
- **Key characteristic:** Full participation without prerequisite digital infrastructure. Designed for accessibility by non-technical staff.

Two principles distinguish the Capability Bridging Framework from conventional phased implementation approaches:

- **Permanent pathways, not temporary tiers.** Organisations are not expected or required to advance beyond their current pathway. The framework accommodates permanent diversity. Advancement is supported but never mandated.
- **Identical quality standards across all pathways.** The data quality requirements enforced at Level 1 are enforced equally at Level 4. What differs is the validation mechanism, not the standard. A manual entry portal enforces the same business rules as a real-time API.

Implementation Evidence: The Gambia HEMIS

The Capability Bridging Framework was developed and validated during the implementation of The Gambia's Higher Education Management Information System, a World Bank-funded, TOGAF 10-compliant national platform serving the country's entire higher education ecosystem.

Readiness Assessment

A comprehensive integration readiness assessment was conducted across 30 priority institutions between November and December 2025, covering all institutional types in The Gambia's higher education ecosystem: public universities, private universities, and tertiary institutes. The assessment mapped each institution across seven dimensions in two categories. Six capability dimensions determined pathway classification: systems infrastructure, system accessibility, digital literacy, data management practices, vendor relationships, and governance capacity. A seventh dimension, financial sustainability, provided an advisory indicator of each institution’s capacity to implement and maintain their pathway independently.

Assessment findings confirmed the framework's design premise. The ecosystem demonstrated significant diversity across all four pathways:

- 9 institutions (30%): Level 1 capable, with cloud or web-based ERP systems ready for API integration.
- 1 institution (3%): Level 2, operating a LAN-based ERP system requiring a specialised approach.
- 18 institutions (60%): Level 3, managing data primarily through Excel or Access-based systems.
- 2 institutions (7%): Level 4, requiring emergency intervention and capacity building before integration.

Critically, the assessment confirmed integration feasibility within the project timeline for all 30 assessed institutions across all four pathways. No institution was excluded. No institution was asked to delay while others caught up.

Implementation Lessons

Three lessons from the HEMIS implementation have material implications for future deployments of the framework:

- **Language determines reception.** Initial presentation of the framework using the term 'capability tiers' generated significant institutional resistance. Stakeholders perceived tier classification as a judgment on their adequacy. Reframing the levels as 'integration pathways' resolved this resistance. The same framework, described as offering choice and direction rather than hierarchy, achieved substantially higher institutional buy-in. This is not a superficial communications observation. It reflects a genuine principle of inclusive design: the framing must honour the dignity of every participant.

- **Governance is harder than integration.** The technical challenge of building four integration pathways was less complex than the governance challenge of maintaining a single authoritative source of truth when data arrives continuously from one stakeholder and monthly from another. The framework requires explicit governance rules: authoritative source designation for every data element, time-stamped versioning across all submission types, and documented conflict resolution protocols agreed with stakeholders before system launch.

- **Capability and choice are not the same thing.** Several institutions assessed as Level 1 capable chose to operate at Level 3 for economic reasons. API development and maintenance carries a cost that some organisations could not absorb within their budget cycles. The framework accommodated this without penalty. Pathway selection reflects an organisation's full operational reality, not only its technical capability, and the framework must respect that.

The Integration Readiness Assessment

The Capability Bridging Framework begins with a structured assessment before any integration design work commences. Designing integration pathways without first understanding the ecosystem they must serve is a primary cause of implementation failure.

Two audiences. One tool. Platform operators use it to design inclusive integration architecture. Individual institutions use it to understand their current digital capability and chart a path to improvement. The assessment covers seven dimensions across two categories. Six capability dimensions determine pathway classification:

- **Systems infrastructure.** What operational systems does the organisation currently run? What is the technology platform and how is it hosted?
- **System accessibility.** Is the primary system accessible over the public internet, confined to a local network, or operating on standalone devices? This dimension is the primary determinant of Level 1 versus Level 2 classification.
- **Digital literacy.** What is the operational digital capability of the organisation's staff? Can they independently operate digital systems, manage data, and troubleshoot common issues?
- **Data management practices.** How does the organisation currently collect, store, maintain, and share data? What formats are used and how consistently are standards applied?
- **Vendor and support relationships.** Who built or maintains the organisation's systems? Is support active? Is documentation available? Vendor dependency is a significant risk factor for integration sustainability.
- **Governance capacity.** Does the organisation have people, processes, and policies in place to maintain data quality? Are there designated data stewards? Are there documented procedures for data validation and quality control?
- **Financial sustainability (advisory).** Does the organisation have, or can it source, the funds required to set up and maintain its integration pathway independently? This dimension does not affect pathway classification. It appears as an advisory indicator in results, informing implementation planning and support decisions.

Assessment responses across these seven dimensions in two categories generate a pathway classification and a financial sustainability advisory indicator. The assessment is designed to be completed by any senior staff member with organisational knowledge, without requiring technical expertise. Questions are written in plain operational language, not technical terminology.

The integration readiness assessment tool is available free of charge at capabilitybridging.org. Organisations can assess themselves independently and receive an immediate pathway classification with recommended next steps.

Applicability Beyond Education

The Capability Bridging Framework was developed in a higher education context but addresses a universal challenge. Any national or cross-organisational system that must serve stakeholders with unequal technical capabilities faces the same design problem.

Sectors where the framework's applicability is immediate include:

- **Healthcare.** National health reporting systems that must connect tertiary hospitals, district clinics, and rural health posts operating across a wide spectrum of digital capability.
- **Agriculture.** Agricultural data collection platforms serving commercial farms with sophisticated management systems alongside smallholder farmers with no digital infrastructure.
- **Municipal and local government.** Service delivery reporting systems covering urban centres with enterprise platforms and remote communities with paper-based operations.
- **Tax and revenue administration.** Compliance reporting systems serving large corporations, small and medium enterprises, and informal sector operators.

The framework's transferability rests on a single principle that applies across all these contexts: if the stakeholders a system must serve do not have uniform technical capabilities, the system's architecture should not assume that they do.

Availability and Access

The Capability Bridging Framework is an open framework, freely available for any organisation working to design inclusive digital systems for stakeholders with unequal technical capabilities. Developed through direct implementation experience on a national-scale public sector platform, it provides a structured methodology, a practical assessment tool, and a governance approach that any ministry, development partner, or implementing organisation can adopt, adapt, and build upon without restriction. All framework documentation, the integration readiness assessment tool, and the HEMIS implementation case study are freely available.

- **Framework documentation.** Full methodology, pathway descriptions, governance templates, and implementation guidance.
- **Integration readiness assessment.** The working assessment tool, available online and as a downloadable instrument for facilitated organisational assessments.
- **HEMIS case study.** Detailed documentation of the framework's implementation in The Gambia, including assessment findings, architectural decisions, governance approaches, and implementation lessons.

All resources are available at:

capabilitybridging.org

About the Author

Olawale Fabiyi is a Strategic Technologist with 17+ years of experience leading digital transformation across Southeast Asia and West Africa. PRINCE2 Agile-certified, he specialises in large-scale project implementation and the application of TOGAF frameworks to design scalable, inclusive systems.

He currently serves as Technical Advisor for the HEMIS Project at The Gambia's Ministry of Higher Education, Research, Science and Technology, where he leads architecture, stakeholder alignment, and sustainable capacity building for a World Bank-funded national higher education management platform.

He is also an AI and deep learning researcher focused on safety optimisation and database performance, combining academic work with hands-on implementation to bridge policy, education, and technology.

The Capability Bridging Framework is his original contribution to the field of inclusive public sector digital transformation, developed through direct implementation experience and validated at national scale.

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