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Preventing Financial Fraud in the Public Sector: A Structural Approach Using the FAST™ Framework

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Abstract
The evolving complexity of public finance systems presents significant challenges in preventing financial fraud, ensuring compliance, and maintaining operational transparency. With cloud ERP adoption on the rise—especially SAP S/4HANA Public Cloud—there is an urgent need for structured, strategy-led frameworks that embed control, visibility, and audit readiness into financial architecture. This article introduces the FAST™ Framework as a structural model to enable fraud-resistant digital finance systems. By aligning architecture, governance, and intelligent automation, FAST™ empowers public sector organizations to proactively mitigate fraud and build scalable, secure finance operations.

Keywords: SAP S/4HANA, Financial Fraud, Public Sector, ERP Transformation, Digital Finance, Compliance, FAST Framework, Finance Architecture, SAP BTP, Governance

1. Introduction

As governments continue their digital transformation journeys, cloud-based ERP systems, such as SAP S/4HANA Public Cloud, are becoming foundational in public sector finance modernization efforts [1, 2]. However, fraud in public sector finance remains a systemic risk with global implications. From invoice manipulation to vendor fraud and misallocation of budget, the public sector often grapples with legacy processes, poor controls, and limited visibility. These inefficiencies not only weaken internal accountability but also erode public trust and delay the delivery of critical services [3, 4].

Public sector organizations worldwide face mounting pressure to enhance financial transparency, reduce fraud, and demonstrate stronger governance. Yet, despite the adoption of modern ERP platforms, many government finance departments still operate with legacy thinking—where internal controls are applied too late, often as add-ons rather than design principles. The result is a finance function that may be digitally enabled, but not structurally secure [5, 6].

Financial fraud in government settings rarely stems from individual malice alone. More often, it is a consequence of weak processes, siloed systems, and the absence of embedded accountability mechanisms. Controls like segregation of duties, audit trails, and delegated approvals are inconsistently enforced, leaving room for manipulation. This is especially risky in regulated environments, where lapses in compliance can lead not only to financial loss but also to a loss of public trust [7, 8].

This paper introduces the FAST™ Framework—a purpose-built model that addresses these gaps by embedding fraud prevention and financial control directly into the architecture of public sector finance systems. FAST™ stands for Finance, Architecture, and Strategy, and Technology— four foundational

pillars that work together to ensure governance, compliance, and resilience are part of the system from the start, not bolted on later [9].

The goal of this study is to demonstrate how the FAST™ Framework can help public institutions design ERP-led finance functions that are secure, audit-ready, and fraud-resistant by default. By applying FAST™ within the context of SAP S/4HANA Public Cloud and similar digital platforms, this paper proposes a new path forward—one that treats structure and governance as integral to transformation, not optional features.

2. Research Objectives

This study is driven by the need to address persistent structural weaknesses in public sector finance systems that contribute to financial fraud, compliance failures, and inefficiencies. The introduction of the FAST™ Framework—comprising Finance, Architecture, Strategy, and Technology—provides a new approach to embedding fraud prevention and governance into the foundation of digital finance transformation initiatives.

The primary objective of this research is to:

Develop and evaluate a structural framework (FAST™) that embeds financial governance, compliance, and fraud prevention mechanisms into public sector ERP systems.

In support of this overall goal, the study pursues the following specific objectives:

1. To identify and analyze the common structural vulnerabilities in public sector finance operations that increase the risk of fraud, including weak segregation of duties, poor audit trails, and fragmented workflows.
2. To conceptualize and define the FAST™ Framework as a governance-first model that integrates internal controls, automation, and compliance enforcement into ERP design—specifically SAP S/4HANA Public Cloud.
3. To apply the FAST™ Framework to real-world fraud scenarios (e.g., ghost vendors, duplicate payments, unauthorized journal entries) and demonstrate how embedded controls can mitigate these risks.
4. To compare the FAST™ Framework with existing methodologies (such as SAP Activate and TOGAF) and assess its unique value in regulated environments and public institutions.
5. To assess the effectiveness of FAST™ through a conceptual application model and propose measurable performance indicators for finance transformation, such as audit readiness, fraud detection efficiency, and compliance adherence.

These objectives are designed to ensure that the research not only introduces a novel framework but also evaluates its practical relevance, adaptability, and potential to reshape the way public finance systems are architected and governed.

3. The Challenge: Structural Gaps in Public Finance

Public sector finance departments often rely on outdated financial systems, siloed data, and paper-based workflows. These legacy environments lack standardization and are inherently vulnerable to fraud. Specific pain points include:

- Disconnected legacy systems: Finance systems that operate independently from one another make it nearly impossible to have a unified view of public spending. This obscures audit trails and inhibits timely detection of anomalies.
- Manual workflows and approvals: Processes such as procurement, reimbursements, and journal entries are still paper-driven in many public entities. These manual interventions create opportunities for unauthorized modifications and error-prone execution.
- Weak enforcement of segregation of duties (SoD): Many systems allow users to initiate, approve, and post financial transactions with limited oversight. This lack of control over roles and responsibilities creates significant fraud exposure.
- Inconsistent data and audit trails: Data residing in isolated systems and maintained through manual reconciliation processes often lacks integrity. Inconsistencies across departments delay audits and hinder compliance reporting [10].

These structural deficiencies are compounded by additional systemic barriers:

- Budget constraints: Limited funding often leads to delayed upgrades or partial implementations that don't address foundational issues.
- Limited IT capabilities: A shortage of digital talent and enterprise architecture skills can prevent organizations from deploying modern ERP capabilities effectively.
- Cultural resistance to change: Public sector institutions may resist adopting new practices or frameworks, especially those that enforce stricter controls and transparency.

Without a comprehensive transformation strategy rooted in governance and structural alignment, these weaknesses often persist—even after ERP systems are adopted.

4. Conceptual Framework

This study is grounded in the belief that financial fraud in public institutions is not merely a result of individual misconduct but a structural issue rooted in weak systems, insufficient controls, and fragmented governance. To address this, the research introduces the FAST™ Framework as a conceptual model that integrates governance, compliance, and digital enablement directly into public finance system design.

The conceptual framework for this study draws from multiple theoretical foundations:

Agency Theory:

Agency theory explains the conflict of interest between principals (e.g., the public, regulators, elected officials) and agents (e.g., finance managers, ERP users). The FAST™ Framework addresses this conflict by enforcing clear delegated authorities, segregation of duties, and auditable decision trails, thereby reducing the agency risks common in public finance.

Control Theory:

Control theory posits that systems must have internal feedback mechanisms to self-regulate and prevent deviation. FAST™ incorporates real-time alerts, AI-based anomaly detection, and automated approval workflows, providing dynamic internal controls that proactively detect and prevent fraud.

Institutional Theory:

Institutional theory suggests that public sector entities adopt practices to conform with regulatory, cultural, and normative expectations. FAST™ ensures compliance with IFRS, IPSAS, SOX, and GDPR

through embedded policy enforcement and structured workflows, allowing organizations to maintain legitimacy in the eyes of oversight bodies and the public.

Enterprise Architecture Theory:

Enterprise architecture theory emphasizes the need for structured alignment between technology, business processes, and strategic objectives. The Architecture pillar of FAST™ advocates for clean core ERP principles, modular scalability, and reference model alignment, ensuring financial transformation is not only operationally sound but also technically sustainable.

Fraud Triangle Theory:

This criminological model posits that fraud occurs when opportunity, pressure, and rationalization converge. FAST™ directly eliminates opportunities for fraud by embedding structural controls—such as vendor onboarding governance, payment validation, and role-based access control—into the ERP system from the outset.

5. Design Science Research (DSR)

The FAST™ Framework is also positioned as a design artifact developed to address real-world problems. Consistent with the DSR methodology, this study follows an iterative process of framework design, demonstration (through SAP use cases), and evaluation based on practical risk-reduction and governance enhancement outcomes.

The FAST™ Framework: A Structural Blueprint for Finance Transformation in Regulated Environments

FAST™ Framework (Finance, Architecture, Strategy, Technology) was developed to address the persistent structural, governance, and operational challenges faced by finance functions in complex and regulated sectors—particularly within public sector institutions, healthcare systems, and government-affiliated organizations. Unlike generic transformation methodologies that focus narrowly on technology enablement or process digitization, FAST™ is a comprehensive blueprint that integrates control, compliance, and intelligence into the financial operating model from day one [14].

This framework is designed with a singular objective: to ensure resilient, auditable, and fraud-resistant finance transformation, especially in environments burdened by regulatory scrutiny, legacy infrastructure, and constrained resources.

F – Finance

At its core, the framework starts with the Finance pillar, which seeks to standardize critical financial processes, enforce controls, and embed accountability. Key focus areas include:

- Delegation of Authority (DoA): Establishing clearly defined levels of financial decision-making, aligned with organizational structure and accountability frameworks.
- Segregation of Duties (SoD): Ensuring that no single user has control over all critical steps in financial transactions—mitigating fraud and compliance risk.
- Auditability: Creating transparent, traceable, and system-driven audit trails across all financial events—from procurement to payment and from journal entries to financial consolidation.
- Process Standardization: Introducing global templates and harmonized workflows across entities to reduce variation and improve predictability [14].

This pillar ensures that finance transformation is not merely about digitization but also about embedding discipline and accountability into every transaction.

A – Architecture

The Architecture pillar provides the technical and design principles needed to support a sustainable transformation. It promotes:

- Clean Core ERP Design: Reducing customizations and embracing standard SAP or ERP functionality to ensure ease of upgrades, lower TCO (Total Cost of Ownership), and alignment with vendor roadmaps.
- Scalable Configuration: Designing reusable configuration templates that support both centralized and decentralized models—essential for governments and public agencies with federated operations.
- Integration Consistency: Ensuring that data flows seamlessly across systems with harmonized master data and real-time APIs, eliminating silos.
- Reference Model Alignment: Leveraging industry-standard reference models (e.g., SAP Model Company, UN Accounting Standards) to benchmark process maturity and compliance.

By grounding digital finance transformation in strong architectural principles, this pillar minimizes technical debt while maximizing adaptability [14].

S – Strategy

The Strategy pillar elevates transformation beyond technology by aligning it with organizational purpose, regulatory mandates, and risk mitigation goals. It defines:

- Transformation Governance Models: Establishing program leadership, stakeholder alignment, and reporting mechanisms that ensure transformation stays on course.
- Regulatory Compliance Alignment: Mapping system capabilities to statutory requirements (e.g., IFRS, GAAP, IPSAS, SOX, GDPR), ensuring every design choice supports compliance.
- Fraud Prevention Objectives: Integrating structural anti-fraud mechanisms such as multi-level approvals, user access analytics, and exception-based reporting.
- Change Management Strategy: Ensuring capacity building, communications, and user adoption plans are embedded into the transformation journey—not treated as an afterthought.

This pillar ensures the transformation journey is purposeful, compliant, and anchored in long-term public value creation.

T – Technology

The Technology pillar operationalizes automation, intelligence, and control into daily finance operations. It emphasizes:

- Real-Time Monitoring: Embedding event-driven monitoring mechanisms that flag deviations, delays, or exceptions as they happen—not during month-end reconciliations.
- AI-Driven Controls: Using machine learning models for anomaly detection in payments, approvals, or general ledger entries—learning from historical data to improve continuously.
- Intelligent Automation: Leveraging bots, workflows, and digital assistants to eliminate manual steps in invoice processing, budgeting, reconciliation, and reporting.
- Embedded Governance Tools: Integrating identity and access governance (e.g., SAP GRC, IAG) to automate role provisioning, SoD checks, and policy enforcement.

By focusing on intelligent integration rather than bolt-on technologies, this pillar ensures that technology becomes the nerve center of financial governance.

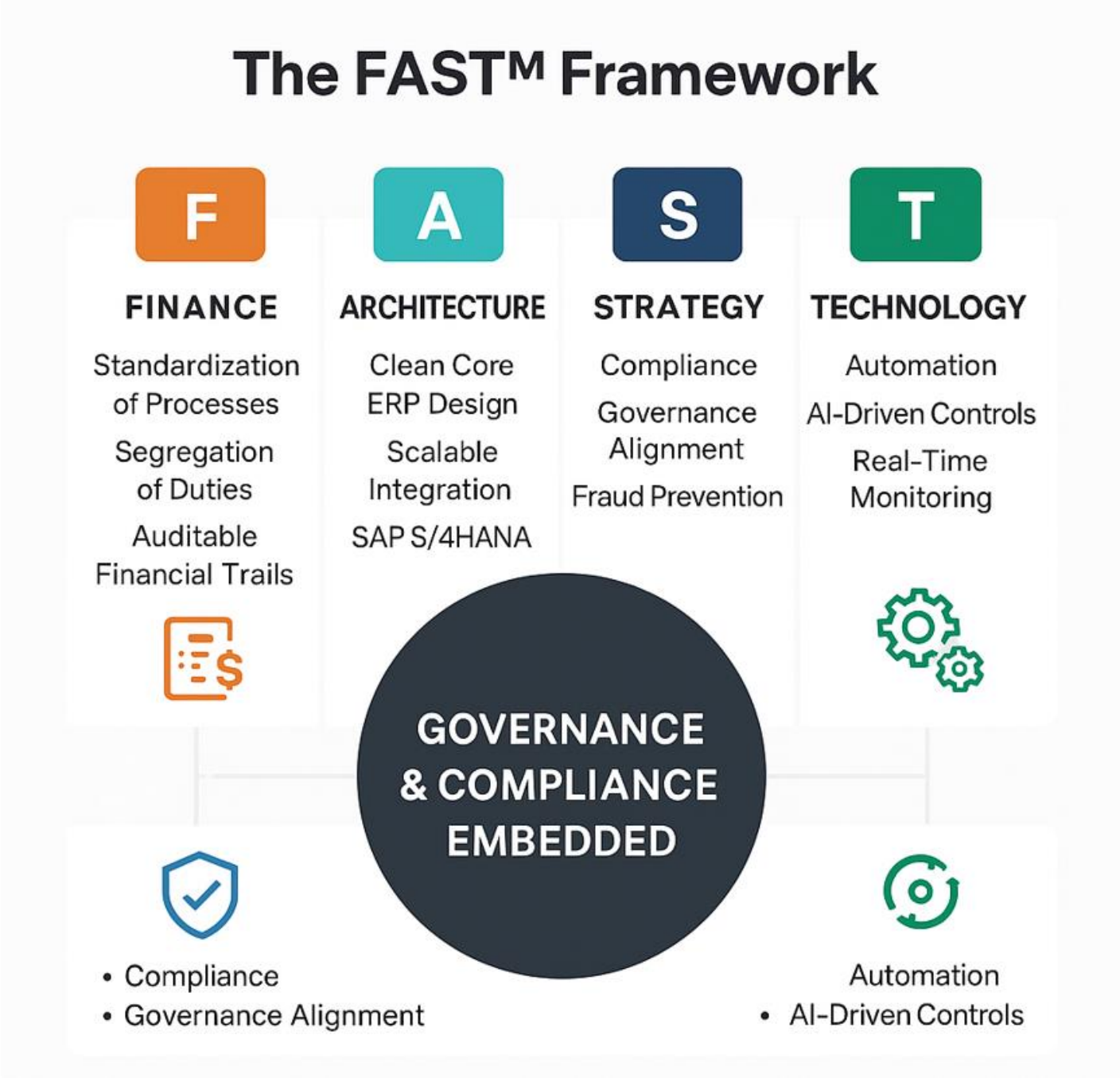

Figure 1: The FAST™ Framework

Why FAST™ is Unique

The FAST™ Framework stands apart because it was designed with the realities of regulated industries and public sector constraints in mind. While many digital transformation models begin with tools, software selection, or abstract principles, FAST™ begins with structural integrity, governance by design, and risk-awareness as a core principle—not an afterthought.

In traditional ERP transformations, compliance and internal controls are often bolted on during later stages, resulting in fragmented oversight, manual interventions, and increased exposure to fraud or regulatory penalties. FAST™, by contrast, ensures that compliance, control, and automation are foundational pillars—deeply woven into every financial process from day one. This guarantees that transformation initiatives are not just operationally successful but also legally defensible, auditable, and ethically sound.

What further differentiates FAST™ is its modular yet adaptable design, which enables it to:

- Align with SAP S/4HANA Public Cloud architectures, where clean core principles and fit-to-standard designs are critical.
- Support SAP Central Finance deployments, where harmonizing financial data across multiple entities requires governance, architecture, and process alignment.
- Enable AI-powered ERP transformations, where machine learning, intelligent workflows, and real-time controls must integrate seamlessly with financial operations.
- Adapt to multi-jurisdictional compliance landscapes, including IFRS, IPSAS, SOX, GDPR, and local tax laws, through embedded policy enforcement and structural segregation of duties.

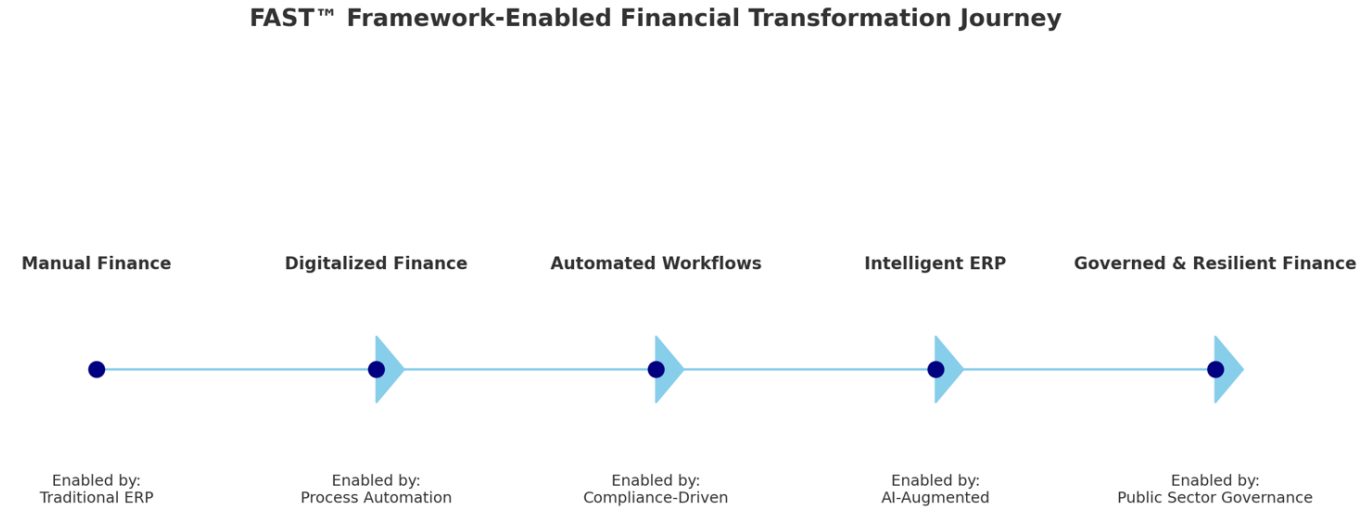

Figure 2: FAST™ Framework-Enabled Financial Transformation Journey

FAST™ is not just a framework—it is a philosophy of finance transformation that recognizes that in high-stakes environments, control failures are not optional, delays are costly, and visibility is non-negotiable.

By tailoring its four foundational pillars—Finance, Architecture, Strategy, and Technology—to the specific needs of public sector bodies, government agencies, and compliance-driven enterprises, FAST™ provides a future-proof, risk-conscious, and audit-ready path to transformation.

Applying FAST™ in SAP S/4HANA Public Cloud

While SAP S/4HANA Public Cloud provides a modern, scalable, and standardized ERP environment, the application of the FAST™ Framework enhances its effectiveness by embedding a structural layer of governance, control, and fraud prevention. FAST™ ensures that public sector organizations and regulated enterprises are not just digitizing finance—they are reinforcing its integrity [11, 12].

In traditional ERP implementations, fraud controls are often bolted on post-go-live or addressed reactively through audits. FAST™ flips this approach by embedding controls proactively—at the design level—so that financial risks are neutralized before they can materialize [13]. When combined with SAP S/4HANA Public Cloud's fit-to-standard capabilities and SAP BTP (Business Technology Platform), this approach becomes a powerful model for resilient finance operations.

6. Practical Examples of FAST™ Applied in SAP S/4HANA Public Cloud

1. Ghost Vendors
    - Challenge: Fraudulent or unverified vendors inserted into the system for illicit payments.
    - FAST™ Approach:
        - Use SAP's Business Partner master data governance (MDG) to enforce multi-step vendor onboarding and validation workflows.
        - Mandate tax registration, bank account validation, and segregation of initiator and approver roles.
        - Implement audit trails that record every vendor record change.
2. Duplicate Payments
    - Challenge: Overpayments or duplicate invoice processing due to manual oversight or manipulation.
    - FAST™ Approach:
        - Enable three-way matching (PO, GR, Invoice) with automated exception handling in Accounts Payable.
        - Configure duplicate invoice checks using key fields (invoice number, vendor code, amount).
        - Implement workflow-based approvals for payment batches with system-flagged exceptions.
3. Journal Tampering
    - Challenge: Unauthorized journal entries that bypass formal review, especially during period close.
    - FAST™ Approach:
        - Restrict access to sensitive GL accounts through role-based controls and approval hierarchies.
        - Enable workflow approvals for non-recurring journal entries, especially for entries above defined materiality thresholds.
        - Activate SAP Event Mesh or BTP alerts to notify controllers of unusual journal patterns (e.g., after hours, backdated, or repetitive entries).
4. Procurement Fraud
    - Challenge: Manipulated procurement flows such as false POs, inflated pricing, or collusion.
    - FAST™ Approach:
        - Enforce budget availability control at the line-item level using SAP's Budget Control System (BCS).

- Activate three-way matching and pricing validation for all procure-to-pay (P2P) processes.
- Leverage predictive analytics to identify pricing anomalies or sudden vendor dependency spikes.

5. Role Violations (Segregation of Duties)
    - Challenge: Users with excessive access rights leading to SoD violations (e.g., same user creating vendors and processing payments).
    - FAST™ Approach:
        - Use embedded identity access governance tools (e.g., SAP Cloud Identity Access Governance or GRC Access Control) to define and enforce SoD policies.
        - Implement real-time access monitoring and violation alerts.
        - Automate periodic access reviews and certification campaigns using SAP BTP.

7. Strategic Impact of FAST™ in SAP Cloud Environments

By applying FAST™ in SAP S/4HANA Public Cloud, organizations benefit from:

- Proactive fraud prevention rather than reactive correction
- Compliance-readiness through built-in controls aligned to regulations like SOX, IPSAS, and GDPR
- Streamlined operations via intelligent automation and policy-driven workflows
- Real-time transparency into financial transactions, roles, and data changes
- Stronger audit posture, reducing effort and cost of external audits

The synergy between SAP S/4HANA's modern cloud architecture and the FAST™ Framework's structural rigor delivers a finance function that is secure, compliant, and future-proof—essential for today's public sector and highly regulated environments.

Strategic Benefits for the Public Sector

The adoption of FAST™ within a cloud ERP environment offers the following tangible outcomes:

- Reduced fraud incidents through AI-powered exception handling and preventive controls
- Real-time audit readiness with embedded compliance dashboards and reporting
- Policy-to-system alignment by ensuring financial policies are implemented as system rules
- Operational transparency with unified data models and standardized processes
- Public trust and accountability supported by consistent, accurate, and timely reporting

Leadership Action Points

Public sector executives must lead transformation through strategy and structure, not just software procurement. Key actions include:

- Assess your ERP landscape: Evaluate system capabilities, compliance maturity, and AI readiness.
- Build your cloud roadmap: Define future-state ERP goals, select the appropriate cloud deployment model (public vs. private), and align with business needs.
- Define your architecture strategy: Embrace clean core design, utilize frameworks like FAST™ for transformation planning, and focus on outcomes over configurations.
- Invest in skills and partners: Build internal expertise and collaborate with partners who bring both domain knowledge and technological depth.

8. Conclusion

The risk of financial fraud in public institutions is rarely just the consequence of malicious intent. More often, it is the predictable outcome of legacy systems, disconnected processes, and a lack of embedded financial governance. These vulnerabilities persist not because institutions are unwilling to change, but because they lack a structured, risk-aware framework that places governance and accountability at the heart of digital transformation [15].

The FAST™ Framework addresses this challenge by providing public finance leaders with a systematic, principle-driven approach to transformation—one that doesn't treat fraud prevention, compliance, or control as afterthoughts. Instead, it integrates them directly into the architecture, workflows, and technologies of the modern finance function.

By aligning Finance, Architecture, Strategy, and Technology into a unified blueprint, FAST™ ensures that financial operations are not only efficient and automated, but also secure, transparent, and audit-ready. It guides organizations in redesigning their ERP environments to enforce segregation of duties, implement real-time monitoring, automate high-risk processes, and establish clear lines of accountability.

When deployed in conjunction with robust platforms like SAP S/4HANA Cloud, the FAST™ Framework becomes a powerful enabler of digital trust—turning the finance function into a strategic pillar of resilient, ethical, and high-performing government operations.

In an era of increasing regulatory scrutiny and public demand for accountability, FAST™ equips institutions not just to modernize [16], but to lead with confidence, transparency, and control. It is not just a framework—it is a commitment to structural integrity and lasting financial stewardship.

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