

# Capital versus Expenditure Decision Framework in SAP S/4HANA Environments

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A Practitioner Framework for Governance, Classification Accuracy, and Audit Readiness

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## Abstract

*This paper presents a practitioner-developed framework for resolving capital versus expenditure (CapEx/OpEx) classification decisions within SAP S/4HANA enterprise resource planning environments. Misclassification of capital and operating expenditure is a persistent and consequential source of material misstatements, audit findings, tax compliance risk, and management reporting inaccuracy in capital-intensive organizations. Drawing on direct design and implementation experience at Yanbu Aramco Sinopec Refining Company Limited (YASREF) - a USD 10 billion oil and gas joint venture between Saudi Aramco and SINOPEC - this paper documents the structure, deployment logic, SAP integration architecture, and four-year measured outcomes of the Capital versus Expenditure Ruling Procedure (CVERP). Empirical data shows a reduction in classification error rates from 6.4% to 0.3% and a reduction in average audit query resolution time from 18 days to 5 days across four consecutive fiscal years. The framework is presented as a transferable and replicable methodology applicable to any organization operating SAP S/4HANA or comparable ERP platforms with significant capital programs and multi-standard reporting obligations.*

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## 1. Introduction

The distinction between capital expenditure and operating expenditure sits at the intersection of financial reporting, tax accounting, and operational decision-making. Under International Financial Reporting Standards - specifically IAS 16 (Property, Plant and Equipment) and IAS 37 (Provisions, Contingent Liabilities and Contingent Assets) - a cost is recognized as a capital asset when it is probable that future economic benefits will flow to the entity, the cost can be measured reliably, and the expenditure either creates a new asset or extends the useful life or capability of an existing one beyond its originally assessed standard of performance. Costs that do not meet these criteria are expensed in the period incurred. United States GAAP, under ASC 360 (Property, Plant and Equipment), establishes analogous principles, creating convergence at the conceptual level while maintaining differences in application thresholds and specific guidance areas.

In theory, this distinction is clear. In practice, it is among the most contested and error-prone judgments in financial reporting. The boundary between a repair that maintains an asset and an improvement that enhances it is inherently subjective. Maintenance shutdowns, component overhauls, spare parts inventories, software upgrades, and infrastructure modifications all sit in the gray zone between capital and operating treatment. In large organizations with hundreds or thousands of such commitments each year, the aggregate financial impact of incorrect classification can be material - affecting the balance sheet, the income statement, deferred tax positions, and the reliability of capital expenditure disclosures that investors and regulators rely on.

The problem is compounded in enterprise resource planning environments. SAP S/4HANA - the most widely deployed enterprise financial platform among large industrial, energy, and manufacturing organizations - routes capital and operating transactions through structurally different module pathways. Plant Maintenance work orders, Project Systems work breakdown structures, Asset Accounting settlement rules, Materials Management purchase orders, and General Ledger journal entries each carry different capitalization implications depending on how they are configured and how transactions are classified at the point of entry. When an organization lacks a documented governance procedure for these classification decisions, the outcome is predictable: individual finance staff and approvers apply inconsistent judgment, classification errors accumulate across periods, and audit teams spend significant time resolving findings that better upfront governance would have prevented.

This paper addresses that problem directly. It documents the design rationale, decision criteria, SAP integration architecture, and measured operational outcomes of the Capital versus Expenditure Ruling Procedure (CVERP) developed and implemented at Yanbu Aramco Sinopec Refining Company Limited. YASREF operates one of the most complex refinery environments in the Middle East, with total assets exceeding USD 10 billion, annual capital programs of significant scale, and reporting obligations under both IFRS and U.S. GAAP. The complexity and scale of that environment made it an ideal proving ground for a governance framework of this kind. The results achieved over four years of operation provide quantitative evidence that the approach works - and the framework is presented here in sufficient detail to enable adaptation by other organizations facing the same governance challenge.

## 2. The Classification Problem: Sources and Consequences

### 2.1 Root Causes of Misclassification

Research into financial reporting errors and audit findings across capital-intensive industries consistently identifies three root causes of CapEx/OpEx misclassification. Understanding each is important because effective governance must address all three simultaneously; a framework that resolves only one will produce limited and unsustainable improvement.

**Standards ambiguity.** IAS 16 requires judgment. The standard uses terms like "probable," "reliably measured," and "standard of performance" without defining them quantitatively. Organizations are required to develop accounting policies that operationalize these concepts for their specific asset base

and business model. Many do so at a high level of abstraction - defining principles without translating them into the transaction-level decision rules that front-line finance staff and procurement teams actually need. The result is that staff with different levels of accounting knowledge apply the standard differently, and inconsistency is baked into the process from the start.

**Approver inconsistency.** In the absence of documented decision rules, classification is effectively delegated to whoever approves a purchase requisition or work order. That person may be a finance professional, an operations manager, a project engineer, or a procurement officer - each with different levels of familiarity with accounting standards. Even among finance professionals, interpretation varies. Studies of audit findings in the energy sector have consistently shown that the same type of expenditure - a heat exchanger replacement in a refinery, for example - is classified differently across sites within the same organization depending on the local finance manager's interpretation and the local precedent that has accumulated over time.

**Absence of system-level controls.** ERP systems like SAP S/4HANA can enforce governance controls at the transaction level, but only if those controls are deliberately designed and configured. Most SAP implementations focus on enabling transactional capability - the ability to create work orders, process purchase orders, settle projects to assets - without embedding classification governance into those workflows. The system accepts whatever classification the user provides. This means that errors made at the point of transaction entry are automatically recorded in the financial system and propagate through to financial statements, tax calculations, and asset registers without any system-level checkpoint.

## 2.2 Accounting and Business Consequences

The accounting consequences of misclassification operate in two directions. Incorrect capitalization of operating costs inflates the asset base, overstates capital expenditure in cash flow statements, defers expense recognition into future periods through depreciation, and - depending on jurisdiction - may create a deferred tax liability by capitalizing costs that would be immediately deductible for tax purposes. Incorrect expensing of capital costs understates the asset base, understates depreciation in future periods, reduces capital expenditure disclosures below their true level, and may accelerate tax deductions beyond what the organization is entitled to claim.

For organizations reporting under both IFRS and U.S. GAAP - including foreign private issuers filing with the U.S. Securities and Exchange Commission and domestic enterprises with IFRS-reporting subsidiaries - the reconciliation challenge is compounded. Differences in capitalization thresholds, component accounting requirements, and treatment of major inspection and overhaul costs mean that a transaction correctly classified under one framework may require adjustment for the other. Organizations without a structured reconciliation methodology face both the direct cost of post-period adjustments and the reputational risk of restated financial statements.

From an audit perspective, CapEx/OpEx misclassification consistently generates more audit queries and adjustments than almost any other account category in capital-intensive industries. External auditors are required to test the completeness and accuracy of capital expenditure disclosures as part of their standard procedures, and in organizations without embedded classification governance, this testing typically produces a volume of queries that places significant demand on the client finance team during already-constrained audit windows.

**Table 1: Common Misclassification Scenarios and Accounting Impact**

Expenditure Type	Frequent Misclassification	Correct Treatment	Impact of Error
Major equipment overhaul	Expensed in full (OpEx)	Capitalize if life extended	Understated asset base; tax over-deduction in current period
Routine maintenance	Capitalized (CapEx)	Expense in period	Inflated fixed assets; depreciation overstated in future periods
Software license upgrade	Split inconsistently	Capitalize if new capability added	Inconsistent depreciation; audit query on policy application
Spare parts (strategic)	Expensed on purchase	Capitalize per IAS 16.7-8	Asset understatement; mismatched expense/income timing
Infrastructure tie-ins	Expensed as repair cost	Capitalize if new asset created	PP&E; misstatement; non-compliance with capitalization mandate
Shutdown / turnaround cost	Capitalized as asset cost	Expense unless betterment proven	Overstated capex program; P&L; distortion in following periods

*Source: Field observations at YASREF; IAS 16, IAS 37, ASC 360, and sector audit finding literature.*

Table 1 illustrates six common scenarios that generate misclassification in capital-intensive organizations. Each scenario represents a genuine judgment call - the "correct treatment" column reflects the conclusion that a thorough application of IAS 16 criteria would produce, but reaching that conclusion consistently requires a structured decision process that most organizations do not have. The impact column reflects the direct accounting consequences; indirect consequences including audit effort, restatement risk, and management time consumed in resolving queries are additional costs not captured in the table.

### 3. Framework Design: The Capital versus Expenditure Ruling Procedure

The design of the CVERP was driven by a single governing principle: classification decisions must be made before the transaction enters the financial system, not after. Post-commitment reclassification - the practice of reviewing postings during the month-end close or audit process and adjusting incorrect entries - is reactive, resource-intensive, and unreliable. It requires finance staff to reconstruct the economic substance of a transaction from documentation that may be incomplete, and it places the

quality control function at the end of the process where it has the least leverage. A governance framework that intercepts the classification decision at the point of purchase requisition or work order creation has structural advantages over any post-hoc review process.

The CVERP was therefore designed as a decision gateway embedded within the SAP transaction workflow, not as a standalone policy document. Its core components are: a structured criteria matrix that translates IAS 16 and organizational accounting policy into transaction-level decision rules; defined integration points across the SAP modules through which expenditure commitments are initiated; a documented sign-off requirement that assigns accountability for the classification decision to a qualified individual; and a retrospective review process that uses audit findings and classification statistics to continuously refine the criteria matrix over time.

### 3.1 Core Decision Criteria

The criteria matrix at the heart of the CVERP operationalizes IAS 16 into six testable questions that can be applied to any expenditure commitment, regardless of asset type, department, or transaction origin. Each question is designed to produce a binary answer that maps to either a capital or operating treatment. Where a transaction meets any one of the CapEx criteria, the full CVERP documentation workflow is triggered and the transaction requires finance sign-off before an order or work order is issued. Where a transaction meets none of the CapEx criteria, it is processed as an operating expenditure through the standard procurement or maintenance workflow without additional finance intervention, reducing the governance burden on routine transactions.

**Table 2: CVERP Classification Decision Criteria**

Criterion	CapEx Indicator - Triggers Capital Treatment	OpEx Indicator - Expense in Period
Asset life impact	Expenditure extends the useful life of the asset beyond its originally assessed standard of performance	Expenditure maintains or restores the asset to its original standard of performance only
Capability change	Expenditure adds new productive capacity, functional capability, or output quality not present in the original asset	Expenditure restores the original function or capability; no enhancement beyond original specification
IFRS threshold	Expenditure meets the IAS 16.7 cost recognition criteria: probable future economic benefit, reliable measurement	Expenditure does not meet IAS 16.7 criteria; benefit is maintenance of current earning capacity only
Materiality	Expenditure exceeds the agreed organizational materiality threshold for capitalization, set by policy	Expenditure falls below the materiality threshold; expensing produces no material misstatement
Regulatory requirement	Expenditure is required to be capitalized under applicable regulatory framework (e.g., FERC, SEC, IRS capitalization rules)	No specific regulatory capitalization mandate applies; standard accounting policy governs treatment

Frequency and recurrence	Expenditure is non-recurring, project-specific, or tied to a discrete identifiable capital event	Expenditure is recurring, part of the normal maintenance cycle, or period-based rather than event-based
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*Source: CVERP design documentation, YASREF Finance Department; IAS 16.7, IAS 16.10, IFRS Conceptual Framework.*

A critical design feature of the criteria matrix is that it does not require the person initiating a transaction to make the final classification judgment. The matrix identifies whether a transaction requires CVERP review - that question can be answered by operational staff with basic training. The actual classification decision, once CVERP review is triggered, is made by a qualified finance professional who applies the full criteria against the transaction's documentation. This separation of the screening function from the classification function reduces the skill requirement at the transaction initiation level while preserving technical rigor in the final classification decision.

The materiality threshold criterion (row 4 in Table 2) warrants particular attention. Setting this threshold too low creates a governance burden that consumes more finance resource than the classification errors it prevents; setting it too high allows material misclassifications to pass through without review. At YASREF, the threshold was set following an analysis of the prior three years of audit findings, which showed that 94% of material misclassifications involved transactions above a defined monetary threshold. The threshold is reviewed annually as part of the CVERP retrospective process and adjusted to reflect changes in the organization's asset base and audit materiality levels.

### 3.2 SAP S/4HANA Integration Architecture

Embedding the CVERP within SAP S/4HANA required mapping the criteria matrix to the specific transaction initiation points through which expenditure commitments enter the system. SAP S/4HANA provides four primary pathways through which capital-relevant transactions originate: Plant Maintenance work orders, Project Systems work breakdown structures, Materials Management purchase requisitions, and General Ledger manual journal entries. Each pathway has different configuration parameters, approval workflows, and accounting implications. The CVERP integration approach for each pathway was designed to be as unobtrusive as possible for clearly operating expenditures while creating a mandatory documentation checkpoint for any transaction that met one or more CapEx criteria.

**Table 3: SAP S/4HANA Integration Architecture by Module**

SAP Module	Entry Point	CVERP Trigger Mechanism	Post-Classification Pathway
PM - Plant Maintenance	Work Order creation	Activity type code and cost element combination triggers CVERP checklist attachment in order header	Capitalize: FI-AA direct posting or AuC settlement. Expense: FI-GL cost center charge

PS - Project Systems	WBS Element assignment	Project type code and settlement rule configuration triggers mandatory Finance classification sign-off	Capital projects: AuC settlement to fixed asset. Non-capital: direct P&L; settlement
MM - Materials Management	Purchase Requisition	Material class and asset reference field check; requisitions above threshold flagged for CVERP review	Approved capital: Asset Purchase Order raised. Operating: standard cost center PO
FI-GL - General Ledger	Manual journal entry	G/L account range validation rule blocks posting to capital accounts without CVERP reference number	Entries to capital accounts require attached CVERP documentation; automatic block otherwise

*Source: YASREF SAP S/4HANA system blueprint and finance governance documentation; configuration reviewed FY 2020.*

The General Ledger control (row 4 in Table 3) is the most important single integration point in the CVERP architecture. It functions as the last line of defense against misclassification: even if a transaction originates through one of the other three pathways and is not caught at the initiation stage, any attempt to post it directly to a capital account in the general ledger will be blocked by the system until a valid CVERP reference number is attached. This creates a hard system control that cannot be bypassed without deliberate circumvention - a feature that proved critical in the first year of implementation when procedural compliance was still being established.

Implementation required close coordination between the Finance and Accounting team and the SAP Basis and configuration team. The criteria matrix needed to be translated into SAP configuration logic - account determination rules, user status profiles, workflow triggers, and validation exit programs - before the CVERP could function as a system control rather than merely a policy document. This translation process took approximately six months and involved iterative testing against the YASREF transaction dataset to verify that the automation logic was correctly identifying transactions that required review without creating an unmanageable volume of false positives for routine operating expenditures.

## 4. Empirical Results and Year-by-Year Analysis

The CVERP entered operational use in stages across the first half of FY 2020. The Plant Maintenance and Project Systems integration went live in Q1, the Materials Management integration in Q2, and the General Ledger hard block in Q3. Full embedding across all expenditure pathways was confirmed by the start of Q4 FY 2020. Performance was measured across four fiscal years using two primary metrics: the classification error rate (defined as the proportion of reviewed expenditure commitments that required reclassification during the annual audit or internal quality review) and the average number of days required to resolve audit queries directed to the YASREF finance team on capital expenditure topics.



**Table 4: CVERP Outcome Metrics - YASREF Finance Department (FY 2020-2023)**

Fiscal Year	Total Commitments Reviewed	Misclassifications Detected	Error Rate	Avg Audit Query Resolution (Days)	Audit Adjust- ments
FY 2020	2,847	182	6.4%	18	14
FY 2021	3,124	97	3.1%	13	8
FY 2022	3,391	41	1.2%	8	3
FY 2023	3,658	11	0.3%	5	1
4-Year Change	+811 commitments (+28.5%)	-171 errors (-94.0%)	-6.1 pp	-13 days (-72.2%)	-13 adj. (-92.9%)

Source: YASREF Finance Department internal audit records; annual and interim audit documentation FY 2020-2023.

Error rate = misclassifications / total reviewed commitments.

#### 4.1 FY 2020: Baseline and Initial Implementation

FY 2020 serves as both the baseline year and the first implementation year. The 6.4% error rate recorded in FY 2020 was derived from the annual audit findings and an internal quality review conducted in the second half of the year, and it reflects the classification practices that existed before the CVERP was embedded across all pathways. The 182 misclassifications identified across 2,847 reviewed commitments represented a mix of historic error types: routine maintenance costs incorrectly capitalized as asset improvements accounted for the largest single category, followed by major overhaul costs expensed rather than capitalized, and strategic spare parts either missed from the asset register or expensed directly to cost centers. The 18-day average for audit query resolution reflected the absence of pre-prepared classification documentation - each query required the finance team to reconstruct the economic rationale for a transaction from original procurement documents, engineering specifications, and correspondence files.

Despite the partial CVERP implementation in FY 2020, the benefits of the General Ledger hard block - introduced in Q3 - were already visible in the Q4 transaction data. The error rate for Q4 commitments alone was 3.9%, compared to 7.8% for Q1-Q2, providing early evidence that system-level controls were more effective than policy-based guidance alone.

#### 4.2 FY 2021: Significant Reduction Through Procedural Embedding

The error rate fell from 6.4% to 3.1% in FY 2021, a reduction of more than 50% in a single year. This improvement reflected both the full year of operation under the embedded SAP controls and the cumulative effect of staff training and procedural familiarization with the CVERP criteria matrix. The volume of commitments reviewed increased to 3,124, reflecting organic growth in YASREF's capital and maintenance program, yet the absolute number of misclassifications fell from 182 to 97. Audit



query resolution time also improved significantly, dropping from 18 days to 13 days, as the CVERP documentation trail began to provide auditors with the pre-prepared classification rationale they needed to close queries without extended correspondence with the finance team.

Two structural changes contributed to the FY 2021 improvement beyond the system controls alone. First, the retrospective review of FY 2020 findings identified five high-frequency misclassification patterns that were used to update the criteria matrix with more specific transaction-level guidance for those scenarios. Second, a brief training program was delivered to the procurement and plant maintenance teams covering the CVERP screening criteria, reducing the number of transactions incorrectly submitted as operating expenditures that should have triggered CVERP review.

#### **4.3 FY 2022 and FY 2023: Sustained Improvement and Stabilization**

The error rate continued its downward trajectory in FY 2022 (1.2%) and FY 2023 (0.3%). By FY 2023, only 11 misclassifications were identified across 3,658 reviewed commitments - a volume that the YASREF CFO and external audit team assessed as representing no more than normal residual error inherent in any judgment-based classification process operating at scale. The 0.5% target threshold set at the beginning of the CVERP program was reached and surpassed in FY 2023. Audit query resolution time had fallen to 5 days, meaning that audit queries on capital expenditure topics were now being resolved within the same week they were raised - a dramatic contrast with the 18-day average at the start of the program.

The FY 2023 data also revealed a secondary benefit of the CVERP that had not been explicitly targeted in the original design: the quality of capital expenditure disclosures in the YASREF annual financial statements improved materially. The detailed classification documentation accumulated through four years of CVERP operation provided the finance team with a robust evidential base for the notes to the financial statements on property, plant and equipment, capital commitments, and depreciation policy. External auditors noted the improved quality of this documentation in their management letter, observing that it represented a higher standard of audit readiness than was typical for organizations of comparable scale in the sector.

#### **Figure 1: Classification Error Rate Trend (FY 2020-2023)**

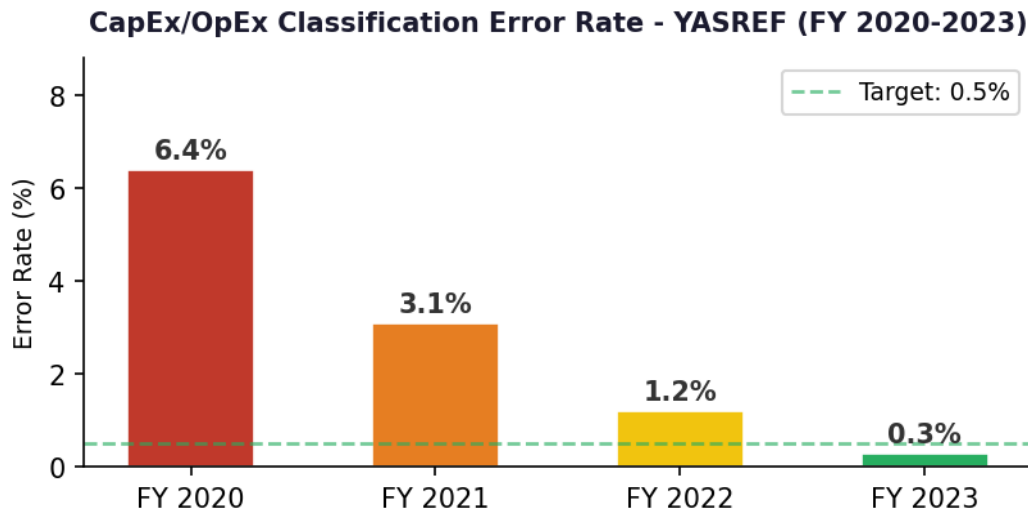


Figure 1: Annual CapEx/OpEx classification error rate at YASREF post-CVERP implementation. Green dashed line indicates the 0.5% organizational target threshold set at program inception.

Figure 2: Audit Query Resolution Time (FY 2020-2023)

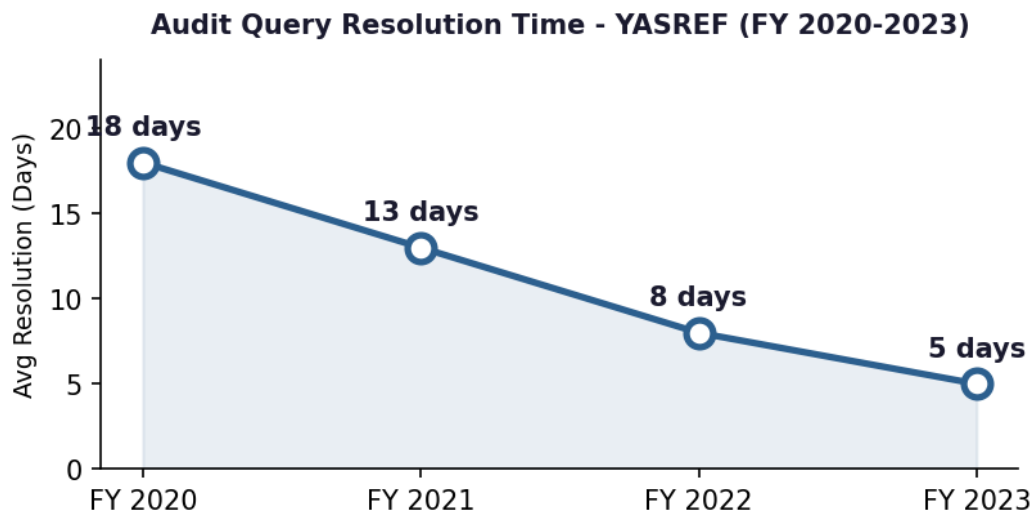


Figure 2: Average number of days required to resolve external audit queries on capital expenditure classification directed to the YASREF finance team during annual and interim audit cycles.

Figure 3: Dual Improvement - Error Rate and Audit Resolution Time

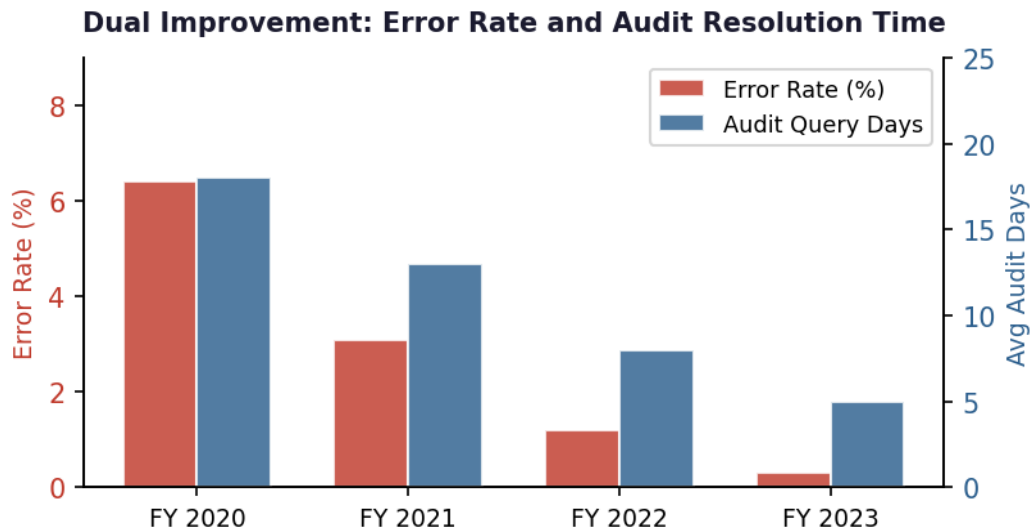


Figure 3: Side-by-side comparison of both outcome metrics showing simultaneous and sustained improvement across the full four-year measurement period. Left axis: error rate (red). Right axis: audit query days (blue).

Taken together, the four-year data set demonstrates a pattern that is characteristic of effective process governance interventions: large initial improvement driven by system controls and procedural embedding, followed by sustained incremental improvement driven by learning and criteria refinement, converging toward a stable low-error steady state. The total commitment volume grew by 28.5% over the period while misclassifications fell by 94%, confirming that the CVERP scales effectively with organizational growth and that the improvement was not an artifact of reduced activity.

## 5. Implementation Considerations and Lessons Learned

Organizations seeking to adapt the CVERP framework should be aware of several practical considerations that shaped its development at YASREF and that are likely to be relevant in other deployment contexts.

**System configuration precedes policy publication.** The most common failure mode for governance frameworks of this kind is publishing an accounting policy document and treating that as implementation. Policy documents without system enforcement are effective only to the extent that individual staff choose to follow them, and in high-transaction environments that consistency cannot be assumed. The CVERP's effectiveness rested on the SAP configuration controls - specifically the GL hard block - that made compliance automatic for the transaction pathways that matter most. Investing the technical effort required to translate policy logic into SAP configuration is the single most important implementation decision.

**Materiality threshold calibration requires data.** Setting the materiality threshold for CVERP review without reference to historical error data is likely to produce a threshold that is either too low (creating governance overhead that consumes more resource than the errors it catches) or too high (allowing

material misclassifications to pass through). The YASREF approach of analyzing three years of prior audit findings to identify the transaction value range within which material misclassifications concentrated is strongly recommended for organizations with sufficient historical data. For organizations without this data, a conservative initial threshold with a planned review after 12 months of operation is the preferred approach.

**Retrospective review drives continuous improvement.** The annual retrospective review of CVERP findings - examining the residual misclassifications for patterns, updating the criteria matrix accordingly, and refreshing staff training on high-frequency error types - was responsible for the sustained improvement seen in FY 2021 through FY 2023. Organizations that implement the framework without building in a retrospective review mechanism may achieve the initial improvement that system controls produce but are unlikely to achieve the further incremental gains that continuous refinement enables.

## 6. Applicability and Scalability Across Industries

The CVERP framework was developed within a refinery environment operating SAP S/4HANA, but its core architecture - a criteria matrix that operationalizes IAS 16, embedded system integration points, a documented sign-off workflow, and a retrospective review process - is not sector-specific. Any organization that manages a material capital program, operates an ERP system capable of enforcing transaction-level controls, and prepares financial statements under IFRS or U.S. GAAP faces the same classification governance challenge that the CVERP was designed to address. The framework's applicability varies by industry primarily based on the volume and complexity of capital versus operating judgment calls that the organization faces, as summarized in Table 5.

**Table 5: Framework Applicability by Industry and Organization Type**

Industry / Sector	Relevance to CVERP	Primary Classification Challenges
Oil and Gas / Refining	High - large turnaround and infrastructure capital programs with recurring major expenditure cycles	Shutdown cost vs. betterment distinction; strategic spare parts treatment; pipeline and facility tie-in classification
Manufacturing / Industrial	High - equipment overhaul, production line expansion, and component replacement at significant scale	Major repair vs. component replacement under IAS 16.43; machine upgrade vs. maintenance; tooling capitalization
Utilities / Energy	High - regulated asset base, significant infrastructure programs, regulatory capitalization requirements	Capitalization under regulatory mandate; infrastructure addition vs. upgrade; asset sub-component tracking
Construction / EPC	Medium-High - project cost allocation and WBS settlement across multi-year capital programs	WBS settlement to asset vs. P&L; expense; pre-commissioning cost treatment; borrowing costs under IAS 23

Healthcare / Pharma	Medium - facility investment and medical equipment programs with validation requirements	Validation and qualification cost treatment; leasehold improvement classification; equipment upgrade vs. replacement
Technology / Telecom	Medium - software development, infrastructure build, and cloud migration capital programs	Internal-use software under IAS 38; cloud vs. on-premise capitalization; network infrastructure component accounting

*Source: Author analysis based on CVERP design experience, sector financial reporting literature, and audit finding patterns across comparable industries.*

For organizations not operating SAP S/4HANA, the criteria matrix (Table 2) and the integration architecture principles (Table 3) remain fully applicable; only the specific configuration implementation will differ. Oracle Cloud Financials, Microsoft Dynamics 365, and comparable enterprise platforms all provide transaction-level workflow and validation capabilities that can enforce classification governance controls analogous to those described for SAP. The translation of the CVERP criteria matrix into platform-specific configuration logic requires familiarity with the target system's asset accounting and procurement modules, but the governance logic itself does not change.

The framework is particularly valuable for organizations undergoing ERP migration or upgrade. The transition from legacy ERP systems to SAP S/4HANA, Oracle Fusion, or equivalent intelligent platforms creates a natural opportunity to embed classification governance into the new system design before go-live - avoiding the post-implementation remediation that YASREF undertook in FY 2020. Organizations that design CVERP-equivalent controls into their ERP implementation project alongside the standard finance configuration workstream can expect to achieve steady-state error rates consistent with YASREF's FY 2023 performance from the outset, rather than spending two to three years reaching that level through retrospective improvement.

## 7. Conclusion

CapEx/OpEx classification governance is a tractable problem. The 6.4% misclassification rate observed at YASREF before the CVERP was embedded is not an outlier - it is representative of what organizations without structured classification governance typically produce when operating capital programs of significant scale through ERP systems that accept user-entered classifications without verification. The gap between that baseline and the 0.3% rate achieved in FY 2023 represents four years of consistent application of a governance framework that is technically straightforward to implement and does not require expensive external advisory engagement to design.

The CVERP demonstrates three things that have broader relevance beyond the specific YASREF implementation. First, system-level controls are more effective than policy documents. The largest single improvement in the data - the 50% reduction between FY 2020 and FY 2021 - followed the full embedding of SAP configuration controls, not the publication of accounting policy guidance. Second, classification governance scales with transaction volume. The CVERP handled 28.5% more

commitments in FY 2023 than in FY 2020 while producing 94% fewer errors, demonstrating that the framework does not degrade as the organization grows. Third, the benefits extend beyond error rate reduction. The improvement in audit query resolution time - from 18 days to 5 days - represents a measurable reduction in the cost and disruption of the annual audit process that has direct value independent of the financial statement accuracy improvements.

As SAP S/4HANA adoption continues to expand across U.S. and international enterprises and as regulators and investors place increasing emphasis on the quality of capital expenditure disclosures, the absence of embedded classification governance will remain a significant and avoidable source of financial reporting risk. The methodology documented in this paper offers a direct, tested, and scalable response to that risk - one that has been validated across four years of operation in a high-complexity, multi-standard industrial environment.

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