

Enterprise Content Management System Consolidation: Technical Architecture and Implementation Frameworks Across Public and Private Sector Environments

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Abstract

Content platforms within financial services organisations are typically fragmented. They are created from systems introduced through a range of means, including mergers and acquisitions (M&A), departmental initiatives, and advances in technology. When these siloed systems are consolidated into integrated Digital Experience Platform (DXP) architectures, advanced scenarios beyond content management can be implemented with migration of legacy J2EE applications, enterprise .NET applications and Software-as-a-Service (SaaS) point solutions, in particular marketing automation, personalized content delivery and cross-channel orchestrated customer journeys. Enterprise architecture frameworks such as The Open Group Architecture Framework (TOGAF), Zachman Framework, Method for an Integrated Knowledge Environment (MIKE2.0) propose architectural blueprints that have respective strengths for different types of organization. Migration strategy selection, e.g. between batch Extract-Transform-Load (ETL) processing or real-time Application Programming Interface (API) synchronization, can also determine implementation complexity and risk. This integration of marketing technologies is increasingly focused on consolidating to build capabilities like personalization engines, journey orchestration, and Digital Asset Management (DAM), all of which rely upon unified content. Financial services implementations from 2021-2023 can add important value, but involve considerable risk which requires good planning, strong executive sponsorship and contingency plans to reduce.

Keywords: Digital Experience Platform, Marketing Technology, Enterprise Content Management, Customer Journey Orchestration, Digital Asset Management, Legacy System Migration

I. Introduction

A. Digital Experience Imperatives in Financial Services

Consumer expectations set by major technology and retail brands have become the baseline for digital interaction in the financial services industry. Banking customers expect a consistent, smooth experience across a mobile app, online, branch, and service centre. Wealth management clients expect investment recommendations based on their portfolio and risk profile. Corporate and institutional clients expect tailored reporting provided via secure digital channels and specifically integrated with their internal data systems.

Global content services platform markets are expected to continue to grow as organizations invest in digital transformation efforts [1]. A content platform-based business model has disrupted customary content distribution strategies and captured an important share of the market. Marketing organisations in financial services have found that delivering personalized campaigns is becoming impossible unless they move towards coordinated content across departments, channels and customer touchpoints.

Knowledge workers are reported to spend 20-30% of their productive working time in fragmented information ecologies looking for information [1]. Providing better access to information has thus a potential high impact on productivity. From the marketing perspective, campaign materials, brand standards, and customer communication templates are often confined to department silos with minimal coordination across departments.

B. Content Fragmentation in Banking Environments

Furthermore, the architecture of a content platform can impact how financial services operate across various domains. In customer-facing digital content, for instance, online banking platforms might display current account balances alongside a history of transactions, while simultaneously offering personalized product recommendations to an user. Mobile

banking apps include alerts, e-statements, and promotional notifications that are tailored for mobile devices. Investment services apps include market analysis, portfolio performance, and research, which are tailored for individual client segments.

Regulatory and compliance content refers to regulatory-required disclosure for offering investment products, version control of consumer-facing content, and uniformity of privacy disclosures, service agreements, and pricing schedules across customer-access points for regulatory updates. Marketing and campaigns must support the coordinated and consistent promotion of product launches across digital, mobile, email and retail branch channels while scaling the ability to target customer segments with creative variations. Brand identity assets like visual design and messaging templates need governance to protect against misappropriation.

Industry surveys suggest that most firms have multiple siloed information repositories with ten or more such repositories on average, but in financial services, firms tend to have more due to acquisition activity and regulatory compartmentalisation of information.

C. Research Contribution and Structure

There are three capability gaps defining consolidation requirements for financial services organisations: technical integration across marketing, compliance, and operational content systems, which differ in data structures. Content must be available and managed consistently across the delivery channel and organizational unit to provide a consistent customer experience. Governance standardization may reduce compliance exposure through consistent retention and access policies.

Financial services implementations have demonstrated the frameworks addressing these capability gaps, verifying their effectiveness through analysis. Section II explores enterprise architecture planning approaches. Section III discusses migration strategy options. Section IV discusses marketing technology integration requirements. Section V introduces implementation in relation to governance and compliance frameworks and section VI presents implementation case study findings and challenges. Section VII discusses limitations to the framework and section VIII presents conclusions and recommendations.

II. Enterprise Architecture Frameworks for Consolidation Planning

A. Framework Comparison: TOGAF, Zachman, and MIKE2.0

The selection of an enterprise architecture methodology affects the consolidation planning as well as the outcome of the consolidation. Three established methodologies are characterized by different strengths and weaknesses.

TOGAF (The Open Group Architecture Framework, Version 10.0, 2022) proposes controlled development using eight ADM phases for the Architecture Development Method, from architecture vision to implementation governance. Stakeholder engagement and iteration are two of its main features. Generic enterprise scope needs to be adapted to address content aggregation concerns. After early implementations of the framework, a lengthy architecture development stage typically occurs.

The Zachman Framework (1987, most recently 2011) provides a holistic framework of organisation structures and building blocks (the six questions) rather than a sequence (process). Excellent cataloguing capabilities for audit/compliance requirements are also provided. The implementation guidance is somewhat limited, and other planning frameworks are often required.

MIKE2.0 (Method for an Integrated Knowledge Environment, Version 2.0, 2008) is first and foremost targeted at information management projects addressing the migration, metadata and governance challenges of consolidating content from multiple sources. As an open-source tool kit, it requires less configuration than generic enterprise frameworks. Narrower focus limits potential for broader transformation programmes.

MIKE2.0 provides guidance for project-focused content consolidation and information governance. In contrast, TOGAF provides guidance for consolidation as part of broader enterprise-wide business transformation with cross-functional alignment across the organization. Zachman also meets the needs of documents-heavy businesses through exhaustive architecture repositories to meet regulatory scrutiny. A summary is in Table I.

Framework	Architectural Guidance	Migration Methodology	Content-Specific Patterns	Best Suited For
TOGAF 10.0	Comprehensive ADM phases with iterative governance	Generic transformation guidance requiring customisation	Requires 300+ hours customisation for ECM contexts	Enterprise-wide transformation programmes
Zachman	Classification taxonomy across 6x6 matrix	No prescriptive methodology provided	Documentation structure only, no migration patterns	Audit and compliance documentation
MIKE2.0	Information lifecycle focus, predates cloud-native	Phased implementation approach with templates	Data governance frameworks, content-specific guidance	Focused content consolidation initiatives

Table I: Enterprise Architecture Framework Comparison for Content Platform Consolidation [3, 4].

B. Legacy System Assessment Methodologies

Legacy content systems can pose migration issues and should be assessed before consolidation. Established content systems may not be documented very well, and the original developers of the content systems may not be available. The average content system is 15 to 25 years old [4]. Integration dependencies are found only during migration activities.

Legacy maintenance consumes most technology budgets, leaving little to no room for modernisation [4]. Survey respondents from most enterprise organizations report that legacy system constraints are the main barrier to digital transformation. Content platforms can have legacy challenges due to business users customizing templates, workflow configuration, and metadata definitions outside of a formal change management process.

A thorough assessment establishes the base and target volumes and growth rates that inform migration capacity. The metadata structure assessment describes the complexity of the transformation and the quality remediation required. Use integration dependency mapping to identify upstream data suppliers and downstream content consumers, who may determine the sequence of migrations. Conduct user population analysis to inform training design and adoption support. Compliance requirement documentation shapes the governance framework during the design of the content landscape in the target environment, which is a hybrid deployment environment with on-premises infrastructure and cloud services [3]. Planning for migration may need to incorporate hybrid operating modes, rejecting the assumption that a complete shift to the cloud is always preferred.

C. Target Architecture Selection Criteria

Digital experience platforms go beyond a content repository and include content management, digital asset management, embedded analytics and a personalization engine to power the digital experience ecosystem. Examples of DXP include: Adobe Experience Manager (AEM), Sitecore Experience Platform and Contentful. Microservice decomposition patterns increasingly influence enterprise system designs to decouple functional components delivering operation flexibility for scaling, deployment and more [3]. Modern platform architectures have moved towards headless content delivery, API first architecture and composable capability assembly.

Financial services software typically stresses support for regulatory requirements such as audit logging, retention policies, system access certification workflows, and this is related to the need for integration with legacy systems and use of APIs. Effective support for advanced personalization and segmented targeting is critical to the success of marketing programs. Multi-channel features address customers' increasing demand for consistency across delivery via web, mobile, email and newer channels. Vendor organizational stability and partner ecosystem breadth are also indicators of platform longevity.

Experience in practice shows that many organisations struggle to define proper service boundaries to use during architecture modernisation activities [4]. Actual architecture evolution takes place over many development iterations and over extended timeframes. That is, the target architecture designs must account for such evolutionary requirements.

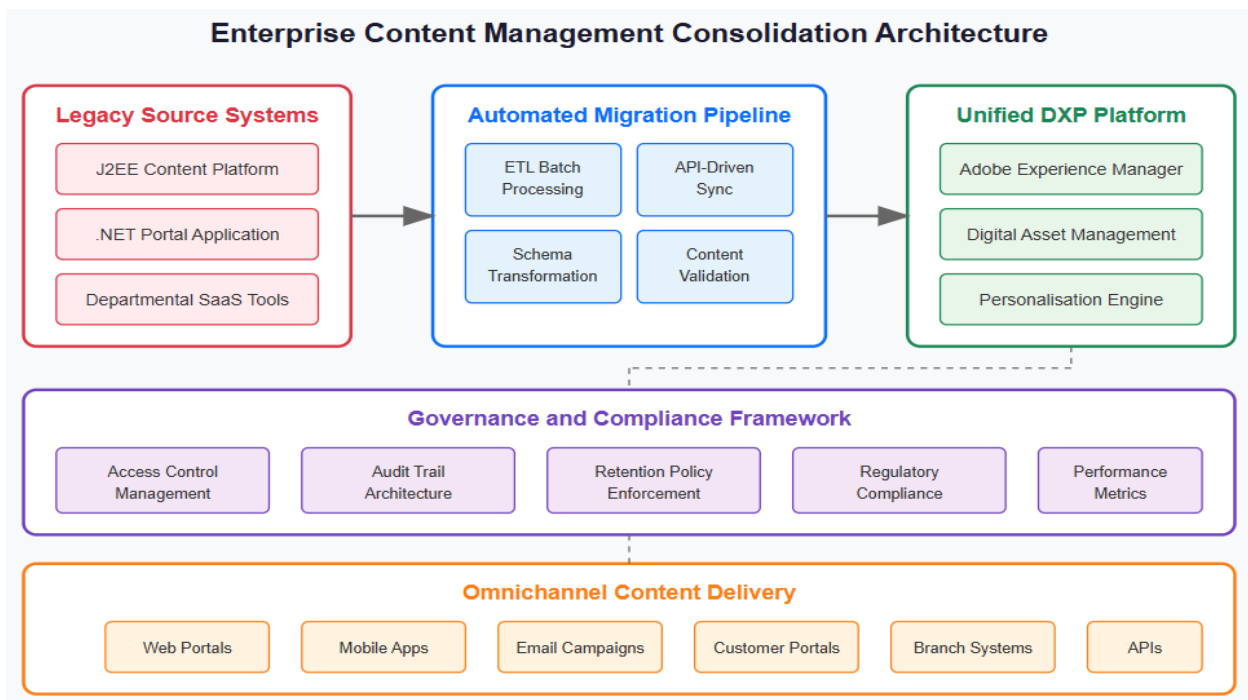


Fig 1. Enterprise Content Management Consolidation Architecture [3, 4].

[Note: Fig. 1 Shows full consolidation architecture spanning legacy source systems, an automated migration pipeline, a unified digital experience platform, governance framework and omnichannel delivery.]

III. Migration Strategy and Implementation Approaches

A. ETL Versus API-Driven Migration Decision Framework

The choice of migration approach is dependent on the resource implications, cost and risk to implement the approach. Two generic approaches address content migration requirements in different ways to suit different organizational contexts.

Extract-Transform-Load (ETL) batch processing extracts content from source systems, applies transformation logic to prepare it for the destination systems, and loads it into those systems. This is a good option for high-volume migrations and when processing must be done in bulk. Batch processing supports complex transformation patterns between widely different metadata structures; direct database extraction is useful for limited source system API exposure. Migration windows can allow selective processing of batches. In the case of a single migration event, no such active synchronization is needed.

If continuous or near-continuous interface calls are made between the source and target platforms on an API-driven migration, content is in sync during those extended periods when both platforms are running. Source system API capabilities and moderate content volumes help avoid the need for custom development and to keep API transaction costs within acceptable limits. For incremental migrations with bidirectional updates, APIs on the target platform can enable efficient content ingestion from the source.

In financial services scenarios, a hybrid approach is sometimes used whereby the ETL bulk migration is complemented by active synchronization via APIs. In these scenarios, there are typically large data quantities, long periods of parallelism, and more complex transformations. Migration approach decision criteria are shown in Table II.

Decision Factor	ETL-Based Favoured	API-Based Favoured
Content Volume	>100 TB repositories requiring bulk processing	<100 TB repositories with moderate throughput needs
Synchronisation Needs	Single migration event, batch-tolerant operations	Continuous sync during extended parallel operation
Source System APIs	Limited/legacy APIs requiring direct data access	Mature REST/CMIS endpoints available
Transformation Complexity	High schema complexity requiring staged processing	Moderate mapping with real-time validation
Budget Profile	Higher initial investment, lower ongoing cost	Lower initial cost, higher operational overhead

Table II. Migration Approach Decision Criteria [5, 6].

B. Parallel Operation Versus Big-Bang Cutover

Cutover strategies involve a trade-off between risk and justification of cost and complexity, and each approach has strengths and weaknesses that vary based on a given organization or project's risk tolerance and limitations.

Big-bang cutover is a complete simultaneous transfer of all content and users at specific switchover points to benefit from shortest possible project time and cost, no parallel systems, clean architectural boundaries and avoidance of synchronization issues. Concentration of risk may disrupt operations post-transition while providing few rollback options. In addition, users may have a relatively short period to adapt to changes, straining training and support resources.

Parallel operation keeps both legacy and target systems alive during the transition, with gradual migration of users and synchronization of content. This distribution of risk over time minimizes the consequences of a catastrophic failure. User transition is gradual. Rollback undoes changes that cause problems. However, long timescales could delay deliverables and increase costs. Synchronization complexity requires advanced architecture. The cost of duplicate operation adds overhead to the transition.

Experience in industry has shown that staged migration approaches are more likely to succeed than simultaneous cutover approaches [5]. In financial services, the regulatory environment typically mandates parallel operation capability in customer-facing systems. That means that the synchronization architecture has to support bidirectional content updates, and conflict resolution.

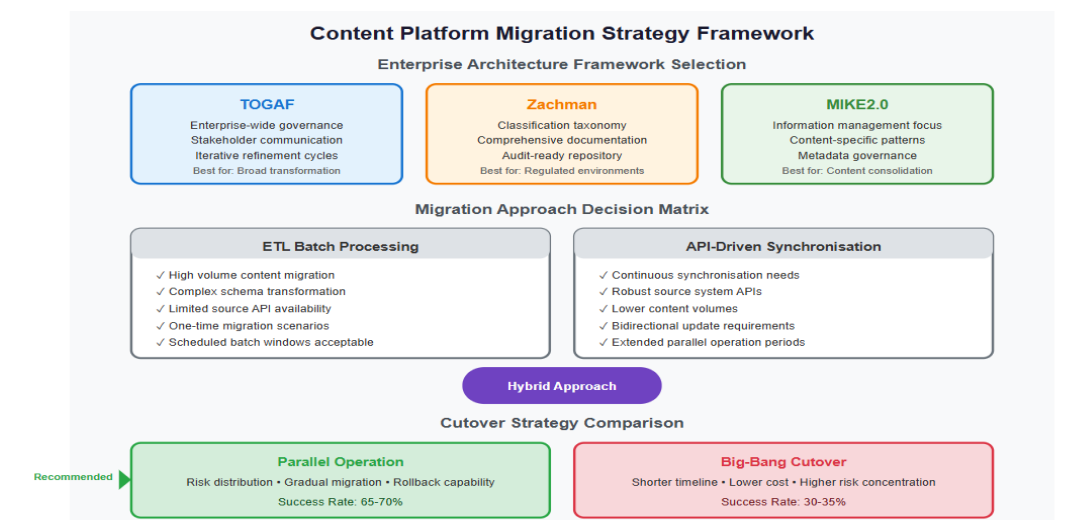


Fig 2. Content Platform Migration Strategy Framework [5, 6].

[Note: Content platform migration strategy framework presenting enterprise architecture selection criteria, migration approach decision matrix, and cutover strategy comparison with associated success rates.]

C. Automated Migration Pipeline Architecture

The documentation of system reengineering patterns can be seen as the provision of a design pattern language for managing migration efforts [5][10][11]. Examples for such patterns include incremental component migration and data structure first which both allow migrating the system without downtime. More recent frameworks look at the integration of cloud-native DevOps and modernizing systems into the enterprise [10][11].

Components involved in an automated pipeline are responsible for different parts of the migration workflow. Extraction connectors communicate with the source systems using the available APIs, direct database access or file system access. Transformation engines apply rules to transform the metadata structures from source to target schema, while enforcing data quality rules. Validation frameworks validate the data's accuracy and relationships before populating the target system. Loading mechanisms that respect target platform rate limits and transaction boundaries are created. Reconciliation reporting helps identify discrepancies to be addressed.

With pipeline automation, large amounts of content can be ingested. Quality controls and checkpoints can be established to ensure proper transformation of the data. Error handling can be implemented to isolate problematic material that deserves human action without blocking other content from migration.

IV. Marketing Technology Integration and Customer Experience

A. Digital Experience Platform Capabilities

Adobe Experience Manager is a modern Digital Experience Platform that combines content management with marketing technology. Unlike content repository systems that focus on document storage and records management, digital experience platforms focus on delivering customer experiences across the full lifecycle of marketing programs. Alternatives such as Sitecore Experience Platform, Contentful, and Optimizely provide similar capabilities with different architectures.

Structured modeling is at the core of the content management approach which supports component-based authoring and cross-channel reuse. Content fragment architecture supports omnichannel delivery via headless API access. Template frameworks allow for brand consistency with greater marketing agility through campaign-specific variations.

Digital asset management (DAM) uses centralized creative repositories to restrict creative image duplication in department-specific systems and metadata tagging to improve asset findability and re-use and creative production workflows. Rights management tracks licensing requirements and expirations to prevent violations. Dynamic media capabilities provide assets tailored to device characteristics and qualities and internet connection speeds to optimize the experience in different scenarios.

Personalisation engines provide contextualized experiences segmented by customer profiles and behavior. They track customer interactions and provide real-time content selection, testing frameworks for optimizing conversion through statistical experiments and machine learning models for predicting relevance based on customer traits to deliver proactive content personalisation. Table III summarizes the digital experience platform features.

Capability Domain	Function	Business Value
Content Management Foundation	Structured content modelling, component-based authoring, and headless API delivery	Reusable content across channels, reduced duplication, faster publishing
Digital Asset Management	Centralised creative repository, metadata tagging, rights management, dynamic media	Brand consistency, licensing compliance, optimised delivery across devices
Personalisation Engine	Customer segment targeting, behavioural tracking, A/B testing, and machine learning models	Contextualised experiences, improved conversion, data-driven optimisation

Campaign Management Integration	Marketing calendar coordination, approval workflows, multi-channel orchestration	Regulatory compliance, consistent messaging, coordinated campaign execution
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Table III: Digital Experience Platform Core Capabilities for Financial Services [7, 8].

B. Customer Journey Orchestration

A fragmented content infrastructure may lead to discontinuous orchestration of customer-journeys across all interaction touchpoints. Banking customers use multiple engagement channels where context-driven experiences are expected throughout the relationship lifecycle. This internet-linked account should be connected to the mobile application, the visit to the branch, and the various customer service centers, which content fragmentation can disrupt, causing a loss of interest amongst customers.

Journey orchestration requires joined-up profiles to collate information about users' interactions with the various existing channels, and content repositories to provide consistent messaging across channels without contradictions. Real-time decisioning selects content that is relevant to the customer's own moment in time in relation to the stages of the relationship. Cross-channel orchestration also sequences communications to avoid contradicting messages that weaken brand equity.

Journey orchestration frameworks can be based on business process management (BPM) and typically yield process cycle time improvements and operational variance reductions [6]. Organizations adopting a structured BPM will benefit from cost efficiencies when optimizing special-purpose processes and will find even greater efficiencies in customer journey processes covering multiple touchpoints and content delivery channels.

C. Marketing Analytics and Attribution

Consolidated platforms allow measuring marketing performance that is not possible in fragmented system environments, and content engagement analytics that show which content spurs customer action, to take evidence-based content investment decisions. Attribution modeling links exposure to content with conversion outcomes to quantify marketing's impact on business results.

Model-driven engineering approaches enable the construction of analytics-enabled content systems [7], while domain-specific modeling provides reductions in development effort and closer alignment between business requirements and implementation. Each reduction in effort compresses the delivery cycle of analytics capabilities such as performance measurement of content, engagement and conversion measurement of individual content assets and campaigns, asset consumption by customer segment analysis, channel attribution of the contribution of one or more content assets towards multiple engagement touch points, and predictive modeling of high-value content investments.

V. Governance, Compliance, and Operational Excellence

A. Regulatory Requirements for Financial Content

Financial services differs in that it is subject to regulation: United States Securities and Exchange Commission (SEC) Rule 17a-4 requires broker-dealers to retain communications and records for specific periods. FINRA Rule 2210 requires broker-dealers to maintain policies and procedures to ensure that the content of all retail communications is approved, reviewed, and kept in the firm's records. Similar requirements exist under the European Union Markets in Financial Instruments Directive (MiFID II) and the United Kingdom Financial Conduct Authority (FCA) regulations.

A regulatory examination may evaluate the supervisory review of controls over content management, such as the workflow for approving content before publication. Version control builds governance by showing how content has changed over time. Controlling who can edit content prevents unauthorized change. Retention compliance requirements, ensuring preservation of content to meet legal obligations and audit trail completeness documenting lifecycle events to respond to examination.

Consolidated platforms can enforce compliance standards a fragmented system cannot. Industry surveys find that most organisations do not consistently enforce retention across content systems [1]. Unified governance can eliminate inconsistency by centralizing policy definition and automation through enforcement.

B. Access Control and Audit Architecture

Enterprise content platforms also need role-based access controls (RBAC) modeled on the organization's responsibility structures. For example, marketing teams need authoring and publishing privileges for campaign content for a creative workflow. Compliance personnel must have full authority to review and approve compliance documentation, and the legal department must have a litigation hold capability to retain content for legal and regulatory review.

Standard audit trail architecture requires the recording of the creation, modification, and deletion of content to keep track of the content's life cycle. Additionally, user and timestamp of the action must be recorded. Workflow progresses and decision documentation detail governance process execution. Access event log records for sensitive materials support security monitoring and compliance verification. Documented system configuration changes support change management and audit requirements.

Centralized compliance systems have faster audit preparation time and reduced risk of penalties for compliance violations, because their policies are uniform, not fragmented like decentralized systems. Efficiency savings justify consolidation investments through reduced operational compliance burden.

C. Performance Measurement and Cost Methodology

Such operational metrics can quantify the value of the consolidation or show how there remain opportunities for further efficiencies. Balanced scorecard frameworks apply both financial and non-financial performance perspectives [9]. If organizations use balanced measurement approaches, they are more likely to be strategically aligned than if they use financial-metric-only approaches.

These include efficiency measures (such as publishing cycle time, number of authors, asset reuse rate, search success rate) and quality measures (such as post-publishing error correction rate, compliance rejection rate, and user experience problems reported by channels). Performance measures other than these include publishing cycle time for workflow efficiency, author productivity for platform usability and process efficiency, asset reuse rate for asset repository effectiveness and asset metadata quality, and search success rate. Cost measures include platform licensing and infrastructure, labor costs for content operations, compliance costs for preparing and remediating audits, and opportunity costs from delays in making content available.

The cost methodology establishes baseline measurements prior to consolidation enabling valid comparisons. Using the same methodology in both legacy and target environments preserves comparability. Problems of metric validity during transition periods must be identified and resolved in order to avoid erroneous conclusions.

VI. Case Study: Financial Services Digital Experience Platform Consolidation

A. Implementation Context and Business Drivers

A financial services content consolidation project across retail banking, wealth management, and institutional services divisions validated the empirical framework. The project timeline spanned Q2 2021 through Q4 2023. Business drivers included a lack of consistent user experience across the digital properties harming brand perception and customer satisfaction, and limited capability to use targeted digital marketing because digital content was split across multiple departmental systems. Compliance leadership was concerned about gaps in content governance which would create regulatory exposure.

The source environment included systems developed organically and through M&A over 17 years (2004-2021). J2EE-based content management for legacy web properties had limited API capabilities. A .NET application served a set of portals for customers with directory-based authentication. Three more departmental SaaS solutions for marketing, compliance and customer communications were adopted in 2016, 2017 and 2019. Network shares containing ungoverned marketing assets created additional governance issues.

Over two million objects were inventoried across these systems for migration to be prioritized. The digital properties received tens of millions of monthly visitors across eleven customer-facing applications. The fragmentation of content across the seven channels meant that marketing teams could not successfully run campaigns.

B. Architecture Decisions and Migration Approach

Adobe Experience Manager (AEM) was selected as a single digital experience platform for Target, and other platforms considered were Sitecore and Contentful. The key selection criteria included a strong regulatory and compliance capability across financial services operations, and the sophistication of its personalization options to meet marketing demands to target customer segments using existing investments in analytics and campaign management.

The enterprise architecture methodology employed TOGAF for stakeholder governance. MIKE2.0 implementation patterns provided content-specific migration guidelines [2]. It took four months to define the architecture, compared to the planned period of two months, because of the challenge of gaining stakeholder consensus in the context of conflicting business units.

The hybrid ETL and API migration strategy was based on content quantities and synchronization requirements [5]. The initial bulk migration was performed using ETL pipelines. During parallel operation, API driven bi-directional on-line synchronization was used to ensure consistency. The original schedule of 18 months extended to 30 months due to the problems below.

When comparing an automated migration pipeline against the pilot phase that utilized manual transformation approaches, the new pipeline achieved an 85% reduction in human labor, with 97% accuracy in content object processing. The remaining 3% exceptions required manual remediation representing content objects requiring additional attention by content specialists.

C. Challenges, Setbacks, and Remediation

Adoption was problematic and required important change management and direct involvement by executives. A candid account of these challenges may benefit similar efforts.

Integration proved to be 60% more complex. A detailed examination of legacy system documentation revealed that necessary legacy system APIs for data extractions were available [4, 10]. Undocumented API limitations prevented extracting certain content types in bulk. Differences in data quality between sources caused some transformations to fail and so required custom handling logic. Lack of relationship metadata required manual content linkages. Custom extractions added six month timeline, and pushed integration budget 40% beyond original estimates.

Reconciling the different metadata schemas poses difficulties, as the source systems may use incompatible taxonomy structures that reflect their different views on the business. For example, wealth management content was organized by product taxonomy, grouping content by the type of investment, while retail banking content was organized by customer segment. All this work required wide-ranging business stakeholder workshops and took four months of calendar time. There was legacy governance overhead as business units hashed out taxonomy ownership and change processes.

Resistance to user adoption was also common, as marketing teams were used to departmental tools with workflows they had adapted to, rather than a centralized platform. Challenges to the implementation included insufficient initial training where complex workflows required more practice and reinforcement, wide-ranging training using hands-on workshops rather than reading or viewing content, dedicated support resources during the implementation phase to answer users' questions in a timely fashion, and simplified workflows with fewer steps and lower adoption thresholds.

Performance degradation issues were discovered after production deployment. These performance issues were not surfaced in the testing environment for resolution. Page rendering times slowed by 40% compared to previous versions, frustrating users and possibly impacting the customer experience. An emergency performance fix took an engineering team eight weeks to analyze the bottlenecks and resolve. Implementation challenges and solutions are summarized in Table IV. The infrastructure improvements addressed the remaining performance gaps.

Challenge Category	Root Cause	Impact	Remediation Action
Integration Complexity	Undocumented API limitations, inconsistent source data quality, and missing relationship	Timeline extension, budget increase for custom development	Custom extraction connector development, data quality remediation scripts

	metadata		
Metadata Schema Reconciliation	Incompatible taxonomy structures across business units, product-centric versus customer-centric classification	Extended stakeholder workshops, ongoing governance overhead	Cross-functional taxonomy alignment sessions, unified governance committee establishment
User Adoption Resistance	Workflow disruption concerns, insufficient initial training, and a learning curve for complex features	Delayed productivity gains, support resource demands	An extended hands-on training programme, dedicated transition support, and workflow simplification
Performance Degradation	Inadequate load testing, production patterns not replicated in test environments	Customer experience impact, emergency engineering effort	Performance optimisation sprint, infrastructure upgrades, enhanced testing protocols

Table IV: Implementation Challenges and Remediation Actions in Financial Services Consolidation [9, 10]

D. Outcomes and Lessons Learned

Despite these challenges, consolidation did provide business benefits once the remediation work was completed and the system had stabilized. For instance, content publishing became 65% faster from creation to deployment [6]. Operational costs fell by 35% when redundant licenses and infrastructure on the different platforms were removed. The companies shortened the length of marketing campaigns from six weeks to ten days. Centralizing governance, with a single audit trail, halved the time needed to prepare for a compliance audit [8]. In post-implementation user surveys there was a 25% increase in consistency of customer experience in content delivery.

Identified success factors from the experience in implementation include executive sponsorship of projects to help resolve unit conflicts and provide additional funding when the project exceeded plan. Engaging the business units at the project's initiation allowed for migration priorities to be based on operational rather than technical criteria. Setting realistic timelines helps to manage enterprise complexity and sets stakeholder expectations when two or three months' estimates are overly optimistic. A 30-40% contingency budget allocation reflects actual variance and could inform future plans. A phased approach allowed course correction and minimized risk if issues were discovered.

Among the lessons learned: better planning and execution of efforts, and understanding old systems requires more than digging through documentation. It requires API testing and data quality profiling [4, 10]. 8-12 weeks of discovery might be needed, to avoid wishful thinking about the project. Metadata governance, to avoid rework and conflicting implementations, is an essential pre-migration task; investment in user adoption extends well beyond training. Continuing support for users requires important investment over 6-12 months. A realistic peak load pattern for working hours and realistic user behavior simulation should be designed for performance testing. As the quality of the vendor partnership was critical to the implementation's success, the vendor's responsiveness to support should be evaluated before signing the contract.

VII. Framework Limitations and Applicability Constraints

Results and implications: A number of limitations that affect the applicability and generalisability of the models and findings are presented, in particular that a single financial services implementation is the basis for empirical validation. Although a case study provides detail and context, further validation across other organisations and implementation contexts may be required to improve the generalisability of the framework.

Industry specificity: this research is conducted in the financial services context, analyzing financial services specific regulatory requirements, risk and threat landscape and organizational models. Transferability of the results to other regulated industries (e.g. healthcare, pharmaceuticals) or non-regulated industries (e.g. retail, technology) has not been validated yet. Such strict follow-up on compliance may not be appropriate for organizations subject to different compliance demands.

Platform specifics: Implementation was based on the CMS Adobe Experience Manager. Further research is needed to ascertain the applicability of the framework to other platforms such as Sitecore, Contentful, Optimizely, or new composable DXPs. Adoption may depend on platform capabilities and limitations.

All patterns and frameworks discussed were implemented between 2021 and 2023, and are valid snapshots of evolving technology landscapes. HCI must account for the emergence of artificial intelligence, composable architecture patterns, and changes in the vendor landscape.

Organizational change management: Although organizational change management is an extremely important critical success factor our frameworks only partially address the issue. Technical architecture and migration methodology need to be accompanied by enterprise wide change governance frameworks such as Prosci ADKAR or Kotter's 8-Step Change model, especially for large consolidation projects.

Conclusion and Future Work

Consolidated digital experience platforms provide planned capability advantages beyond merely modernizing the underlying infrastructure, as financial services organisations with holistic content capabilities have a competitive advantage thanks to more engaging and personalized omnichannel customer interactions. Fragmented systems obstruct marketing teams trying to launch campaigns. Unified platforms remove barriers and build a governance structure that meets regulatory scrutiny.

Choosing a transformational framework to use can also affect a digital migration program. TOGAF addresses transformation programs in general while MIKE2.0 specifically addresses content migration patterns. ETL batch processing or API driven synchronization may be more appropriate depending on the volume of content to be transferred, the source system capabilities and business continuity needs. Parallel operation is desirable to bring risk down but comes with higher complexity and costs.

Modern consolidation is distinct because it involves marketing technology capabilities such as personalisation engines, customer journey orchestration, and digital asset management that are dependent on consolidated content: Marketers are empowered to improve campaign performance by accessing unified repositories with consistent metadata.

The difficulty of implementation, even with well-done design work, may make contingency planning necessary. For example, integration effort may be underestimated by 40-60%. Metadata reconciliation requires stakeholder engagement and takes calendar time. User adoption takes time and financial investment beyond the initial training phase. Performance validation must reflect production usage, and executive sponsorship is needed to secure resources when problems or challenges arise.

Future studies may further evaluate using artificial intelligence for categorization, metadata enrichment, and personalization in aggregated DXP environments or compare and contrast composable with monolithic DXPs. Replication of the framework in other industries may increase its generalizability beyond the financial services sector. Longitudinal studies of consolidation results over time may help assess the realization of value and the need for active optimization.

Organisations who are on a consolidation journey should consider these challenges and the journey to business value realization. The frameworks presented provide a structured approach to managing complexity, and the case study findings present the challenges and benefits of a consolidation strategy.

Conflict Of Interest

The author declares no conflict of interest.

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