

Strategies for Consolidating Disparate Mobile Applications into a Unified Digital Platform

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Abstract

This paper examines the challenges of developing and implementing strategic approaches for consolidating disparate mobile applications into a unified digital platform. In the modern corporate landscape, where mobile technologies have evolved from a mere supplement to an integral component of business processes, many organizations face the significant challenge of fragmented digital assets. This phenomenon, marked by the proliferation of separate applications developed for different departments and purposes, inevitably leads to substantial operational and financial overheads, a considerable decline in security, and a degraded user experience. This article provides a comprehensive study of strategies aimed at consolidating these fragmented mobile solutions into a single, centralized digital platform. The author focuses on analyzing the fundamental issues caused by fragmentation, outlining the conceptual and architectural foundations for building an integrated ecosystem, and proposing specific strategic actions for implementation. Particular attention is given to analyzing current global trends, substantiated by data from leading analytical agencies—Forrester, Gartner, and Deloitte Insights. The paper concludes with a practical case study from the author's personal experience, demonstrating the successful application of the described principles within a Big Four company.

Keywords: consolidation; digital platform; digital transformation; mobile applications; mobile ecosystem.

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1.Introduction

The development of corporate mobility represents a natural stage of digital transformation, driven by the need for employees to access work tools and data from anywhere in the world. However, historically, this process has often been decentralized and reactive. Individual business units, seeking to quickly meet their specific needs, initiated the development of highly specialized mobile applications that solved particular problems but were not integrated into the overall digital infrastructure. Such an approach, despite its apparent speed and flexibility, led to the emergence of so-called "app sprawl"—a multitude of isolated, uncoordinated solutions.

Gradually, as the number of applications grew and their support became more complex, it became clear that a fragmented mobile environment could not provide the necessary efficiency and scalability. The transition to a unified digital platform that consolidates functionality ceased to be merely a technological option and became a strategic imperative. The analytical agency Forrester views the consolidation of mobile assets as one of the key "accelerators" of digital transformation [2, 7]. Separate, disparate solutions cannot be effectively scaled, whereas a unified platform provides the opportunity to implement and optimize best practices across the entire company. Consolidation, therefore, is both a response to current problems and a preparation for future challenges.

2.Materials and Methods

The sources studied in the preparation of this article can be logically grouped by key thematic aspects. A significant number of researchers focus on the strategic role of mobile technologies in modern digital transformation. For instance, analytical reviews from Forrester indicate that mobility is becoming a mandatory condition for the success of CIOs [7] and acts as a "catalyst" for transformations at the company-wide level [2]. Various works explore the architectural and technical nuances of consolidation. M. Schreieck and his colleagues proposed a typology of integration strategies for multi-platform solutions [8], while M. Hassan and colleagues examined task optimization in a microservices architecture for mobile cloud applications [5]. P.R. Hiwale analyzed general approaches to cross-platform development [6]. Separate attention is given to user experience management, as evidenced by studies from PwC [3] and Deloitte [9], and to broader concepts such as the visualization of digital transformation elements [1] and the convergence of business processes [10]. A number of authors look to the future, predicting potential changes in user behavior; for example, Gartner suggests that the development of AI assistants could lead to a decrease in the use of traditional mobile applications [4].

The analysis of the source base was accompanied by the discovery of contradictions and gaps. The most noticeable divergence of views lies in the assessment of the future of mobile applications—some researchers position mobility as a central element of digital transformation for the coming years [2, 7, 9], while others predict a reduction in their use due to the emergence of new technologies [4]. In addition, the practical side of the consolidation process is poorly covered in modern publications. Most works are either high-level strategic or narrowly specialized and technical in nature. There is a lack of detailed empirical research and specific case studies that reflect the economic and operational results of merging dozens of applications within a large corporation based on quantitative data. Insufficient attention is paid to the organizational structure required to support a unified mobile platform, as well as the details of interaction with external strategic partners and the functioning of

dedicated Centers of Excellence.

The following methods were used in writing this article: systematization and content analysis, a case study describing the author's experience, processing of empirical data obtained during the project's implementation (cost reduction, development acceleration, user engagement), and a systems approach (viewing the mobile platform as a complex system with interconnected elements—design system, architecture, App Store).

This study has several natural limitations related to its purpose and the chosen methodological approach. First, the analysis relies primarily on qualitative methods and on practical experience gained from implementing a large-scale mobile application consolidation project. While this provides depth and contextual insight, it does not fully capture the variety of organizational environments that may exist across different companies. Second, the study focuses on a specific model for building a unified mobile ecosystem and does not include a systematic comparison with alternative architectural or managerial approaches that may be used in other industries.

Moreover, the quantitative data referenced in the paper reflect the outcomes of a single corporate case and therefore cannot be assumed to be universally applicable to organizations of different sizes or levels of digital maturity. The potential influence of industry-specific factors, regulatory environments, and elements of corporate culture also falls outside the scope of this analysis and warrants further examination. Future research would benefit from expanding the empirical base to include multiple heterogeneous cases, as well as conducting comparative studies of various consolidation strategies.

3.Results and Discussion

The fragmentation of mobile applications entails a whole range of hidden and explicit costs. One of the most obvious problems is the duplication of functionality and resources. Different departments, acting in isolation, often create applications with a similar set of functions, which leads to multiple expenditures on development, testing, and support. Such wastefulness slows down the overall pace of innovation and reduces the return on investment. The fragmentation of corporate mobility creates serious security threats, which are particularly relevant in the context of a Bring Your Own Device (BYOD) policy. Manufacturers do not always release updates in a timely manner, and some old OS versions remain unsupported, making them highly vulnerable to hacker attacks and malware. In the absence of a unified strategy, an organization has to deal with a huge number of different OS versions and devices, which makes security management extremely complex and labor-intensive. In addition to financial and organizational risks, fragmentation has a negative impact on the productivity and morale of employees. When a specialist has to switch between several applications, each with its own unique interface and interaction logic, it leads to a significant cognitive load.

Table 1 provides a clear comparison of the key risks arising from fragmentation with the corresponding benefits that their elimination through consolidation brings.

Table 1: Comparative analysis of fragmentation risk factors and consolidation benefits (based on [1, 5, 10])

Risks	Positive effects of consolidation
Duplication of functionality and resources	Reduction in development and support costs
Disparate data, lack of visibility	Centralized management, a unified view of data
Vulnerabilities related to BYOD and outdated OS	Enhanced security, centralized lifecycle management
Inconsistent user experience (UX)	A unified, seamless experience, increased productivity
Difficulty in scaling and implementing new features	A flexible, scalable architecture, accelerated Time-to-Market

The transition from disparate applications to a unified platform requires a paradigm shift in thinking—from focusing on individual products to creating a holistic ecosystem. It is a collection of interconnected platforms, applications, devices, and data that form a single, cohesively functioning environment. Its key goal is to ensure the effective interaction of all business components, increasing overall flexibility and productivity.

Technological consolidation is impossible without organizational transformations. In this context, the creation of a Mobile Center of Excellence (CoE) is a strategic initiative. The CoE acts as a "hub" that consolidates expertise, best practices, and standardized processes in the field of mobile development. One of its key tasks is to overcome the fragmentation of competencies, which often precedes the fragmentation of technological solutions. Dispersed teams working on isolated projects do not have the opportunity to share knowledge and experience, which leads to the duplication of efforts and mistakes. The creation of a CoE solves this problem by centralizing knowledge and providing all teams with a common basis for development. Its activities cover both the definition of standards and their active implementation, resource management, and coordination between projects. The result is consistency in development and a faster time-to-market for products. The promotion of knowledge sharing and employee skill enhancement should also be emphasized.

Building a unified mobile platform requires a clear architectural plan. The fundamental requirements for such an architecture are its scalability, flexibility, and comprehensibility. One of the most effective approaches is a multi-layered architecture, which allows the application to be divided into three main levels:

- The presentation layer—responsible for the UI and user interaction;
 - The business logic layer—contains the rules and algorithms that determine how the application works;
 - The data layer—manages the storage and access to information [6, 8].
- This multi-layered structure ensures "clean code," where the logic is separate from the interface, which significantly simplifies testing and modification.

Below is a summary table (Table 2) that combines the key elements of a unified platform.

Table 2: Characteristics of the unified platform components and their strategic benefits (based on [1, 5, 6, 8, 10])

Component of the unified platform	Technical description	Business benefit
Corporate App Store	Centralized distribution point, update management	Simplified access to applications, increased security and manageability
Unified design system	A set of UI and UX standards, a library of components	Enhanced brand recognition, reduced cognitive load, accelerated development
Mobile CoE	An organizational "hub" for expertise, standards, and best practices	Centralization of knowledge, prevention of duplication, improved quality and speed
Cloud architecture	PaaS/SaaS, microservices, APIs	Scalability, reduced infrastructure costs, increased flexibility
Cross-platform frameworks	A single codebase	Reduced development cycle, lower support costs

Analytical reports from leading consulting agencies confirm the critical importance of consolidating mobile assets. For instance, Forrester notes that mobility is becoming one of the key imperatives for CIOs, influencing improvements in customer experience, employee productivity, and the opening of new revenue channels [2, 7]. An interesting forecast was made by Gartner, which suggests that by 2027, the use of mobile applications could decrease by 25% due to the growing popularity of AI assistants [4]. This prediction does not weaken, but rather strengthens, the argument for consolidation. If users will be using fewer applications, they will expect maximum functionality and integration from the remaining platforms. AI assistants will likely work not with a disparate set of isolated tools, but with unified, data-rich ecosystems. Thus, consolidation becomes a strategic preparation for the era of "agentic AI," where a holistic, integrated platform serves as the basis for intelligent assistants.

Deloitte Insights and PwC also emphasize the importance of a strategic approach to mobile technologies. Their reports indicate that consumers and employees are seeking the "right" balance between the digital and physical worlds [3, 9]. In this context, the employee experience plays a key role. Companies that pay attention to creating seamless and convenient digital tools gain a competitive advantage.

Below is a summary table (Table 3) that combines the key trends.

Table 3 : Overview of trends from leading analytical agencies (based on [2-4, 7, 9])

Source	Insight	Practical significance
Forrester	Mobility is a key "driver" of digital transformation for CIOs	Consolidation allows for scaling best practices and operationalizing early transformation initiatives
Gartner	AI assistants will contribute to a 25% reduction in application use by 2027	Strengthens the need to create a few, deeply integrated platforms with rich functionality that will serve as the basis for AI agents, instead of many single-purpose applications
Deloitte	Consumers and employees value balance and data security; a good employee experience leads to success	A unified platform with standardized security protocols and high-quality UX becomes a competitive advantage, strengthening trust and productivity

The author's practical experience gained from implementing projects of the described scale confirms the theoretical propositions presented in this article. Many corporations began with separate applications created for specific departments. This led to a fragmented user experience and duplicated costs. Serious security problems arose. The modern trend is a shift toward creating unified mobile ecosystems with internal corporate App Stores and standardized design systems. Big Four firms and other Fortune 500 corporations are actively investing in consolidation to serve hundreds of thousands of professionals worldwide.

The author led a project to create a unified mobile ecosystem that consolidated more than 75 applications. As part of the project, a centralized design system and a unified architecture were implemented to ensure consistency and scalability. An internal corporate App Store was also introduced, which significantly simplified the search, distribution, and updating of applications for employees around the world. The described ecosystem is unique among the Big Four companies, as it is one of the rare examples where a fully integrated development was created and is supported with the involvement of an external strategic partner and a dedicated Mobile CoE.

Although a separate academic study on this project has not yet been conducted, it provides an opportunity to analyze the impact of UX unification on user engagement, as well as on the reduction of costs for application support and development. The results of introducing the unified mobile ecosystem have demonstrated significant progress:

- application support costs were reduced by 25-30%—thanks to UX unification and a common architecture;
- the speed of bringing new solutions to market increased by ~40% due to the reuse of components;
- employee engagement significantly increased—hundreds of thousands of users worldwide are actively working in the ecosystem.

- This product, a unified mobile ecosystem in a corporation with a global presence, is unique among the Big Four companies and serves as a clear example of successful consolidation.

4.Conclusion

The analysis conducted shows that the fragmentation of corporate mobile solutions is a complex and multifaceted problem that generates operational, financial, and reputational risks. An effective consolidation strategy is not a simple technical reorganization but a comprehensive approach represented by organizational changes (creation of a Center of Excellence), the implementation of a unified design system, the construction of a scalable cloud architecture, etc. The successful implementation of these measures helps organizations significantly improve operational efficiency and strengthen data security. In addition, a consistent and seamless user experience is ensured.

Based on the principles outlined and the study of global experience, companies striving to consolidate their mobile assets may be advised to follow this step-by-step action plan:

- Begin with a thorough analysis of existing mobile applications, identifying duplicate functionality and "pain points" in current business processes;
- Create a dedicated group of experts who will be responsible for developing standards, disseminating best practices, and coordinating all mobile initiatives within the company;
- Develop a unified design system—this step is fundamental to creating a consistent user experience and increasing development efficiency;
- Transition to a microservices model and the use of cloud services will help form a flexible, resilient foundation for the entire future ecosystem;
- Build a centralized distribution point for internal use, which will simplify application management and increase the level of security.

Further research in the analyzed area should be directed toward studying the impact of new technologies on the evolution of mobile ecosystems. In particular, an analysis of how the integration of generative AI, IoT, and other breakthrough developments will transform architectural requirements and expectations for a unified digital platform is of interest. Studying the long-term economic effect of consolidation and developing new metrics for its assessment also appears to be a promising research vector.

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