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Smart Village Masterplan in Samida Tourism Village, Garut District Using Ward and Peppard Framework Method

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Abstract

The Samida Tourism Village in Garut Regency has rich natural and cultural potential, including the creative bamboo crafts produced by local artisans, which include household items and accessories made from bamboo. It provides several educational tourist packages, including bamboo tourism, planting education, rice field plowing education, and fish farming education, along with lodging alternatives such as homestays, villas, camping sites, and glamping. Moreover, it includes swimming pool tourism, outbound activities, and cafés. Nonetheless, these resources have yet to be adequately optimized.

Comprehensive planning through a Smart Village Master Plan is essential to improve competitiveness and the quality of tourism services. This study will develop a Smart Village Master Plan for the Samida Tourism Village utilizing the Ward and Peppard Framework, which is recognized for its strategic planning in Information Systems and Information Technology (IS/IT). The Ward and Peppard Framework offers a structured methodology synthesizing business environment analysis, business strategy, and IT strategy to guarantee coherence between business goals and IT expenditures.

The implications of this research provide a strategic guide for designing and implementing a smart village masterplan that leverages natural and cultural potential, such as bamboo crafts and educational tourism packages. The application of the Ward and Peppard method is expected to create synergy between business objectives and IT expenditures, thereby enhancing the efficiency of tourism services.

Keywords : *Tourism Village, Smart Village, Masterplan, Ward and Peppard Framework*

INTRODUCTION

A Smart Village denotes a planning endeavor aimed at developing a village through utilizing Information and Communication Technology (ICT) to enhance the efficiency of services offered to the community. Developing a Smart Village is anticipated to improve the welfare of the village community. Implementing the Smart Village concept means innovating and establishing a proficient village. Implementing a Smart Village can foster economic growth, alleviate poverty, and decrease unemployment rates. An intelligent village can enhance its community by prioritizing infrastructure, encompassing tourism potential, culture, arts, village identity, local governance, education, transportation, and residential development, all critical elements of rural planning.

The digitalization of the tourism sector is a crucial step in adapting to a digitally oriented society in the village and meeting community tourism needs. One key initiative to achieve this digitalization involves the use of Information and Communication Technology (ICT). Digital tourism will provide a range of tourism services to guests, making it easier to reach marketing objectives. The digitalization of the tourism village can significantly reduce costs for both managers and tourists by providing easy access to information about tourism locations.

The researchers employed the Ward and Peppard approach to analyze the Smart Village Master Plan plan in Samida Village. The implemented plan is anticipated to provide a comprehensive Smart Village Master Plan for the Tourism Village, which will act as a benchmark for future policy guidance in Samida Village.

Basic Concept of Smart Village

Hadian and Tony Dwi Susanto identify eight fundamental components of a smart village: economy, ICT, human resources, governance, environment, tourism, agriculture, and energy resources (Hadian & Susanto, 2022).

Smart Village

Smart Local is an initiative to optimize local potential by systematically identifying and enhancing the efficiency of the village's resources and assets. This method identifies, develops, and constructs village assets for optimal and complete utilization. The government asserts that four main village programs can facilitate local autonomy. The four initiatives comprise (1) a program for the enhancement of exceptional rural products, (2) village-owned enterprises (BUMDes), (3) village reservoirs, and (4) sports facilities. Fadliliana Sari and colleagues, 2022

A smart village is a community that utilizes information and communication technology (ICT) to enhance the management and development of the village, hence enhancing the quality of life for its residents. The objective of a smart village is to ensure that the village community attains a quality of life comparable to that of urban communities while preserving local wisdom. A smart village employs ICT advancements to provide a range of services managed by local communities, enhancing the effectiveness and efficiency of various activities. This is achieved through four dimensions: smart resources, which optimize the use of local assets; smart technology, which leverages ICT for development; smart institutions, which empower local governance; and smart service chains, which ensure efficient service delivery.

Village Law

Article 1, Clause 1 of The Village Law of 2024 delineates a village as either a village or a customary village or by an alternative designation. A village is described as a legal community entity with specified territorial borders, possessing the capacity to manage and govern its affairs, community interests, and inherent rights. This concept is upheld within the governmental framework. It is founded on community initiatives, inherent rights, and customary rights that are acknowledged and esteemed in the governance structure of the Unitary State of the Republic of Indonesia.

Tourism Concept

Tourism entails the act of traveling by one or more individuals to a location beyond their place of residence. It centers on comfort and pleasure, as individuals are drawn to venues and events that provide possibilities for leisure and enjoyment. The world of tourism is a treasure trove of diverse attractions, from natural locales to cultural experiences, and even artificial attractions (situations and events devised by humans). Tourism generally involves engaging in recreational activities away from one's residence, offering a chance to explore and experience a different environment.

Tourism is characterized as a transient relocation from one's residence to an alternative destination, motivated by many objectives such as economic, social, cultural, political, religious, health-related, or other factors (Mustar et al., 2023).

Smart Tourism Concept

Smart tourism, as an emerging ecosystem, may foster and enhance the generation of innovations, especially concerning the utilization of technology and the advancement of intelligent travel experiences. The notion of smart tourism emerges from examining the interplay between technology and the tourism industry. Smart tourism represents the optimal strategy for navigating the problems posed by technical and informational evolution as the physical and governance aspects of tourism progress to a new level of digitalization, resulting in a modern generation congruent with current advancements.

Smart tourism seeks to improve visitor experiences, offer an intelligent platform for integrating and disseminating information within destinations, optimize resource allocation, and connect tourism suppliers at both macro and micro levels to ensure local community benefits. (Mustar Syamsuddin, Farid Yusuf Nur Achmad, 2023)

Tourism Area Law

Law No. 10 of 2009, Article 1, Clause 10 defines a tourism strategic area as a region primarily designated for tourism that significantly influences various aspects, including economic growth, social and cultural development, natural resource enhancement, environmental sustainability, and defense and security.

According to Law No. 10 of 2009, Samida Village is eligible to be designated as a tourist village in Indonesia, given its natural resource utilization, environmental sustainability, socio-cultural characteristics, and natural wealth that can be developed into tourist attractions to stimulate economic growth in the Samida region. However, it's crucial to remember that a tourism destination must fulfill specific criteria, including attractions, amenities, infrastructure, transportation, and hospitality services. These criteria are not to be taken lightly, as they are the backbone of a successful tourism destination.

Tourist Attractions

Tourist attractions are vital elements of tourism, as they significantly attract people to specific destinations. The factors that entice numerous travelers are the alluring attractions. Tourist attractions have interconnected elements referred to as the 4 A's: attractions, amenities, accessibility, and ancillary services. Anggraeni et al., 2022

Tourist attractions often pertain to natural and artificial resources that exhibit distinctive value and aesthetic appeal, inspiring and enticing travelers. Attractions may be divine creations, such as flora and fauna, or anthropogenic constructs, including museums, historical artifacts, cultural arts, and amusement facilities. In essence, any element capable of engaging the interest of prospective visitors is deemed an attraction. Andreani, 2022

Based on the background of the problem above, the objective of this research is to determine how the proposed masterplan can influence economic growth and improve the quality of life for the local community in Samida Tourism Village. Additionally, the research aims to assess the potential social changes that may arise from the implementation of the masterplan

and to evaluate the overall sustainability and long-term benefits for the local community. Through this study, we hope to provide valuable insights that can guide future developments in similar tourism villages.

METHOD

The Ward & Peppard method is a comprehensive methodology that presents several diagrams to help understand an organization more deeply before creating an IT strategy plan, thereby impacting plans. Ward and Peppard aim to enhance an organization's competitive advantage by maximizing the use of IT. Therefore, developing a strategic plan that leverages IT to improve competitive advantage is necessary. Strategic IT planning focuses not only on technology but also on business needs (Kurniasih, 2022).

The stages of the Ward & Peppard method are as, at this juncture, the external business environment pertains to the circumstances surrounding an organization, identifiable in various dimensions, including political and economic conditions, socio-cultural factors, legal considerations, technology pertinent to the organization's operations, and the prevailing market conditions; this study will analyze the external business environment using the PESTEL framework. In contrast, the internal business environment can be examined through SWOT Analysis and Value Chain Analysis, allowing for a comprehensive understanding of both external and internal factors affecting the organization.

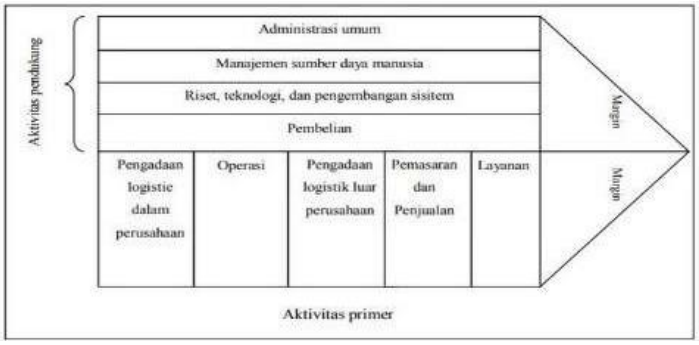

Figure 1. Value Chain Analysis

At this juncture, understanding the external business environment is crucial for organizations, as it encompasses various dimensions such as political and economic conditions, socio-cultural factors, legal considerations, and technology relevant to operations, as well as prevailing market conditions. This study will assess the external business environment utilizing the PESTEL framework to provide a comprehensive analysis. In parallel, the internal Information Systems (IS) and Information Technology (IT) environment is examined, focusing on the internal circumstances within these domains. This phase involves identifying the application portfolio as outlined by McFarlan's strategy, which delineates the distribution and positioning of current applications alongside those slated for development.

Moreover, the Strategic Business IS encompasses key components, including company business processes and perspectives regarding both external and internal environments. It also highlights the use of information technology within specific business areas and identifies the information systems required by the organization. The IS/IT management strategy plays a fundamental role, incorporating essential strategic elements such as organizational structure, investment policies for cost allocation in IS/IT strategy implementation, and guidelines for vendor selection based on financial criteria, technology, and contractual agreements.

Furthermore, the IT strategy addresses the resources and technology that support corporate strategies, which include network topology, information system flow, software, hardware, telecommunications equipment, and maintenance. Looking ahead, the Future Application Portfolio outlines the suggested applications intended for the research site's use, aiming to integrate each business unit and align technical advancements with the company's requirements. In contrast, the Existing Application Portfolio provides an analysis of the applications currently implemented by the organization, focusing on the benefits derived from their use and their contribution to the company's business activities and IT strategic planning in support of primary objectives. Together, these analyses create a holistic view of both the internal and external environments impacting the organization.

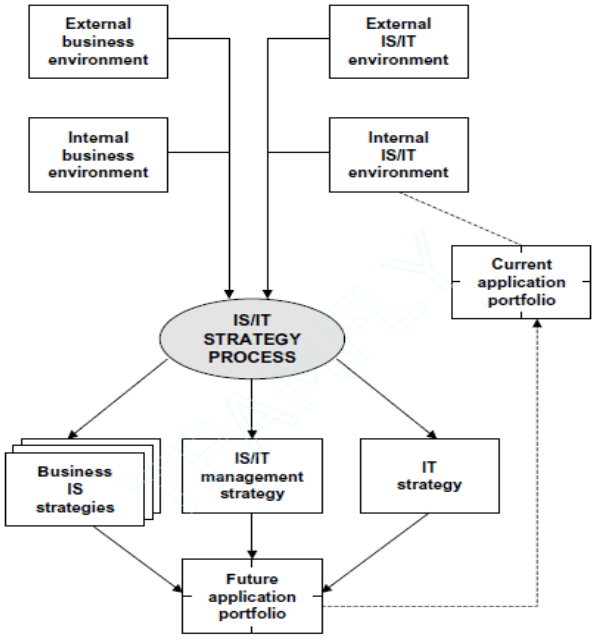

Figure 2. Ward and Peppard method

RESULTS AND DISCUSSION

The interview results can serve as a reference for academics developing a Smart Village concept. This is a data reduction table outlining the requirements for the Smart Village master plan in Samida Village.

Table 1. Data Reduction

Category	Reduction Results
Technology Infrastructure Challenges	To prepare for its transformation into a tourist village, substantial and expedited enhancement of technology infrastructure and internet connection is essential.
Low Human Resources	Consistent training programs are essential to educate the community about information technology, facilitating Samida Village's transition into a digital-based tourism destination and ultimately serving as a livelihood source for its residents.
Financial Limitations	Investors must collaborate to offer financial support for the development of tourist villages in addition to village allocation money and tourism earnings.
Marketing Difficulties	Training programs and an internet connection are essential for individuals to market their items online effectively. Furthermore, they might collaborate with influencers to market tourist villages.
Low Technology Education	Technological education must be enhanced to enable individuals to exploit current technology for diverse applications in tourist villages effectively.

Internal Business Environment

Analyzing the internal environment is a business procedure that elucidates the prevailing conditions concerning the actions performed by each interrelated department to tackle specific difficulties or generate goods or services. This examination will delineate essential factors for establishing information systems and technology strategies. The following is an examination of the internal business environment, encompassing SWOT and Value Chain, for Samida Village:

Table 2. SWOT Analysis

SWOT Analysis	
Strenghts	Samida community possesses significant tourism allure and potential, providing a robust basis for its evolution into an intelligent community. The tourism potential in Samida Village encompasses innovative bamboo products produced by local artists and home items and accessories, all sourced from bamboo. It provides educational tourist packages, including bamboo tours, planting tours, rice field plowing tours, fish farming tours, accommodations like homestays, villas, camping sites, glamping, swimming pool tourism, outbound activities, and cafés.
Weaknesses	The deficiency of trained labor in information technology and the passive engagement of human resources in tourism management, along with the migration of numerous young individuals to urban areas, exacerbate shortcomings in tourism management.
Opportunities	Implementing technologies seeks to improve efficiency and the tourism experience. Examples include establishing an information system and creating an application.
Threats	Economic uncertainty might impact finance and investment in constructing an intelligent tourism community.

Figure 3. Value Chain

External Business Environment

The subsequent outcomes of the external business environment, as determined by PESTEL analysis, are as follows:

Table 3. PESTEL Analysis

PESTEL Analysis	
Political	The robust and unwavering policies of the village government are crucial for the growth of the tourism village, from its inception to the present and into the future of Samida Village.
Economic	Current funding is derived from the village budget designated by Garut Regency, prioritized for institutional development. Provincial support of 1 billion annually, donations from the community, and revenue generated by the tourism village supplement this.
Social	Community engagement in the building of the tourism village is highly positive and proactive, with inhabitants directly participating in the development process.
Technological	The implementation of intelligent village technology in Samida Village will commence by incorporating information and communication technology bolstered by digital solutions to advance the development of the tourism village. This initiative will incorporate tourism information systems, a mobile tourism application, and the Internet of Things at tourist locations to promote the advancement of the tourism village in Samida.
Environmental	The environmental sustainability of the tourism village is commendable since the designated places for tourism do not disturb the biological balance in Samida Village, having implemented optimal techniques for environmental preservation. Consequently, they do not jeopardize the ecological preservation of Samida Village.

PESTEL Analysis	
Legal	The village authority has instituted laws and issued operational permissions for tourism activities. These include regulations pertaining to infrastructure and technology, permits for infrastructure development, agricultural regulations, natural resource management regulations, waste management regulations, community safety and comfort regulations, licensing procedures, and bureaucratic processes.

Information System Business Strategy Analysis

The Information Systems (IS) business strategy is designed to guarantee the efficacy of the information systems used in the village. The following is a study of the business strategy for information systems:

Table 4. Information System Strategy Analysis

Business Needs	Information System Needs	Information
The existence of a framework that facilitates the promotion of the tourism village guarantees greater recognition within the community.	The website and mobile application for the Samida Tourism Village information system.	Implementing the information system will enhance tourist attraction to the tourism hamlet.
A system that offers guidance to tourists throughout their trips.	The information system's website and mobile application can offer assistance to travelers.	Incorporating a guide will facilitate a smoother navigation experience for guests visiting the tourist town.

Information Technology Strategy Analysis

The IT infrastructure architecture in Samida tourism village is designed to guarantee sufficient IT resources for future needs and fulfill IT use objectives. The following is a study of the information technology strategy:

Table 5. Information Technology Analysis

Information Technology Needs	Information
Fiber Optic Cable	Fiber optic cables provide high-speed, low-latency connections, rendering them optimal for intense access to cloud servers.
Cloud Server	This technique utilizes the internet as a primary server for data management, facilitating easy access to data without storing it on media such as flash drives, hard disks, CDs, or DVDs.
Router	*A router is a networking apparatus that connects two distinct networks.*
Switch	Employing a switch enables each device to have the complete bandwidth designated for its specific port, hence diminishing network congestion.
Access Points	Access points must comply with the newest Wi-Fi standards, such as Wi-Fi 6, to enhance speed and capacity to offer Wi-Fi networks in public spaces such as lodging and tourism sites.

Information Technology Needs	Information
VPN Network	It is efficient to utilize a public internet connection to provide a secure and encrypted communication channel to the cloud server. A VPN is compatible with multiple internet connection types, such as fiber optic, broadband, Wi-Fi, and cellular networks.
Firewall	*A firewall is a network security mechanism that oversees and regulates incoming and outgoing traffic according to predefined security protocols.*

According to the information above technology requirements, the following diagram illustrates the VPN network to be established:

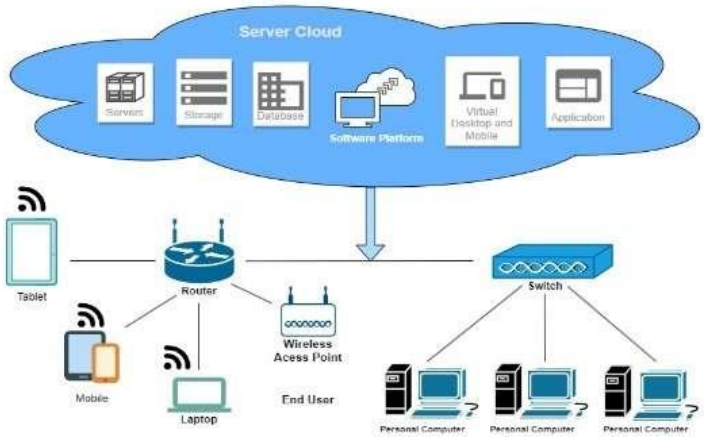

Figure 4. VPN network

IS/IT Management Strategy

Examining the information systems and technology management plan will delineate the administration and organization of information systems and technology in Samida Tourism Village for the future. The prerequisites for the organizational structure in managing information systems and technology are as follows:

Figure 5. IS/IT structure

The table below delineates the responsibilities and qualifications for IS/IT management:

Table 6. IS/IT Management

Position	Task	Qualification
Head of IS/IT Division	Develop long-term IS/IT strategies and policies.	Have extensive IT management capabilities
Network infrastructure and operations manager	Manage and maintain information technology infrastructure and networks	Have experience in network administration and IT infrastructure
IS/IT Project Manager	Planning, managing and supervising IT projects	Experienced as a project manager
Information Security Staff	Develop, implement information security policies and monitor networks	Experience in network security and threat protection
Information System Administration Staff	Manage servers and data storage systems, ensure availability and performance of IT systems.	Experience in operating system administration
Mobile, Web and IoT Application Development Staff	Develop and maintain applications and all systems both in mobile, web and IoT	Android, Python and web programming skills.
Digital Marketing and Communication Staff	Managing social media, promotions and digital marketing	Creative, active and innovative for content, both photos and videos for social media.

Future Application Portfolio

The analysis of the information above systems and technology needs mapping provides insights into the role of information systems and technology applications in Samida tourism village, the framework of smart tourism, and future application development. The upcoming application portfolio reveals four divisions for assessing the future application portfolio. The following includes the application portfolio, brilliant tourist architecture, and mockup of prospective applications:

Table 7. Application Portfolio

STRATEGIC	HIGH POTENTIAL
Online Reservation System Electronic Tickets Online Payment System Navigation System	360 virtual tour system AR Experience Smart lamp and smart temperature in the accommodation
KEY OPERASIONAL	**SUPPORT**
Technology infrastructure Android mobile application Website Social media	Real time information on the number of tourists Village and tourism information portal E-report system Smart lamp system for village protocol roads

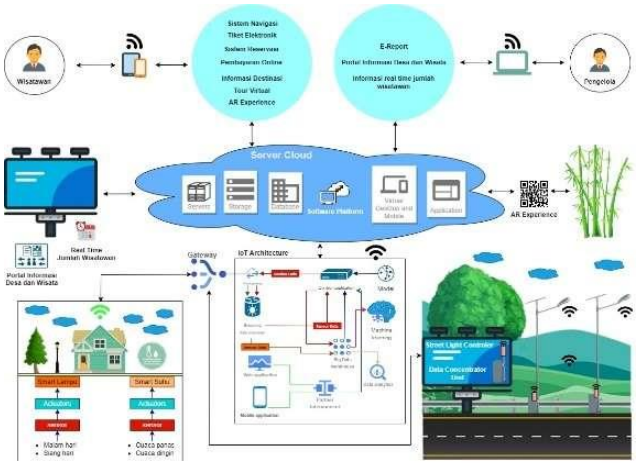

Figure 6. Smart Tourism Architecture

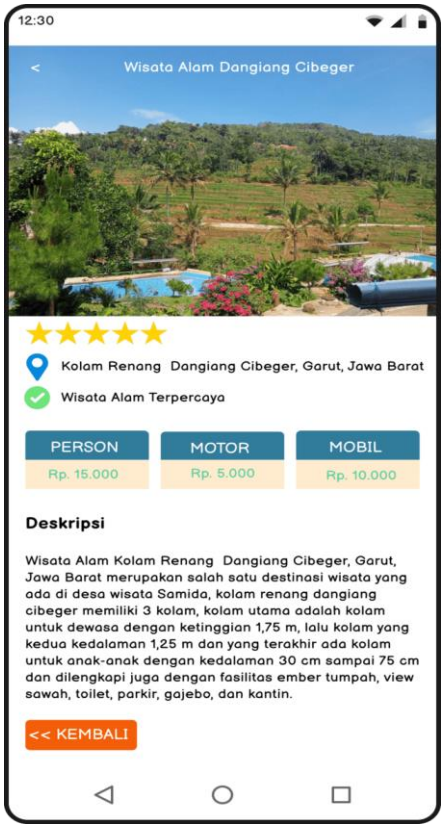

Figure 7. Tourist Destination Information Mockup

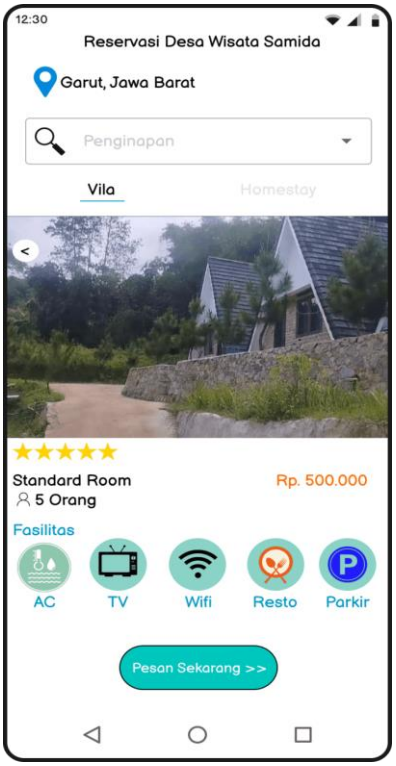

Figure 8. Reservation System Mockup

Figure 9. Online Payment Mockup

Figure 10. Electronic Ticket Mockup

CONCLUSION

The research findings indicate that the tourism potential management in Samida Village encompasses several attractions; however, it is not yet optimized. The primary limitations are insufficient promotion and poor supporting infrastructure. The fundamental infrastructure of Samida hamlet, including road access and public amenities, needs enhancement to facilitate the advancement of the tourism hamlet. The application of information technology in Samida Village remains constrained, especially for tourism management and digital marketing.

The potential for community empowerment in Samida Village is considerable; nevertheless, empowerment related to tourist management is inconsistent and requires improvement. Samida Village is in the preliminary phases of executing the Smart Village initiative. To improve tourism competitiveness, the administration of the tourism village necessitates cohesive planning in accordance with the Smart Village concept. Collaboration among the village government, the community, and external entities is essential for developing a sustainable, technology-driven tourism village.

The formulation of a Smart Village Master Plan for Samida Tourism Village, utilizing the Ward and Peppard Method and grounded in community attributes and local potential, culminates in a strategic framework encompassing infrastructure enhancement, human resource capacity building, and technology integration. This plan aims to empower the local community by engaging them in the administration and marketing of tourism while utilizing information technology to

improve the efficacy and efficiency of tourism village management.

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