

RESEARCH REVIEW ON APPLICATION MANAGEMENT OF SPORTS INTELLIGENT SERVICE SYSTEM IN RESIDENTIAL PARKS IN HUNAN PROVINCE, CHINA

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ABSTRACT

With the transformation of market economy, reform of land system and development of real estate in China, the territorial environment of various urban communities (later called residential parks) is formed within a certain area, forming a regional park phenomenon in order to reflect the cultural environment characteristics of each residential park. This study uses the sociological perspective to analyze the application and management of the sports intelligent service system in the park from a multidisciplinary, multi-angle and multi-directional perspective.

The research mainly focuses on the conceptualization of the four major categories of literature review and related content, including park construction culture, park sports environment culture, physical fitness monitoring system, and fitness evaluation culture. Quantitative and qualitative research with a mixed-methodology design is adopted. The research process utilizes four research processes: research program design, research pathway preparation, research procedure combination, and research report evaluation.

The research aims to address the fitness needs of urban park residents. Restoring the value of park sports is a new requirement for development in the new era. The new concept of park sports gives it a new connotation and modern expression, forming practical application and management plans for park sports intelligent service systems. Implementing Park sports intelligent service channels can promote the creative development of park sports, significantly increase physical culture, and provide corresponding countermeasures for enhancing community public satisfaction in the field of public sports services and meeting public demand for sports.

Keywords: Hunan, China; Park sports; Intelligent service; Application management

INTRODUCTION

With the reform of the housing system in the 1990s, China's domestic market economy, land system reform and real estate development, various levels of commercialized housing residential park district (later known as residential parks), high-grade villa areas, luxury residential parks, affordable

housing and other different types of residential parks, the degree of marketization of the sudden increase in China's domestic according to incomplete statistics of the nearly 700,000 residential parks, nearly 20,000 residential parks in Hunan Province, the construction of urban parks across the country is developing rapidly. Therefore, China's domestic community research has gradually shifted to the study of residential parks, and the study of community sports and family sports has been relatively perfected and transformed into the study of modern urban residential park sports (neighborhoods). From the perspective of sports science and technology and market development research, from the park sports layout, planning, facilities to locate, should be from culture, environment, human relations and other aspects of the park from the theory to explore the content of sports, the park sports area to establish the phenomenon of categorization, stratification and subgroups to study the park sports exercise methods, is to improve the phenomenon of modern urban residential sports in China.

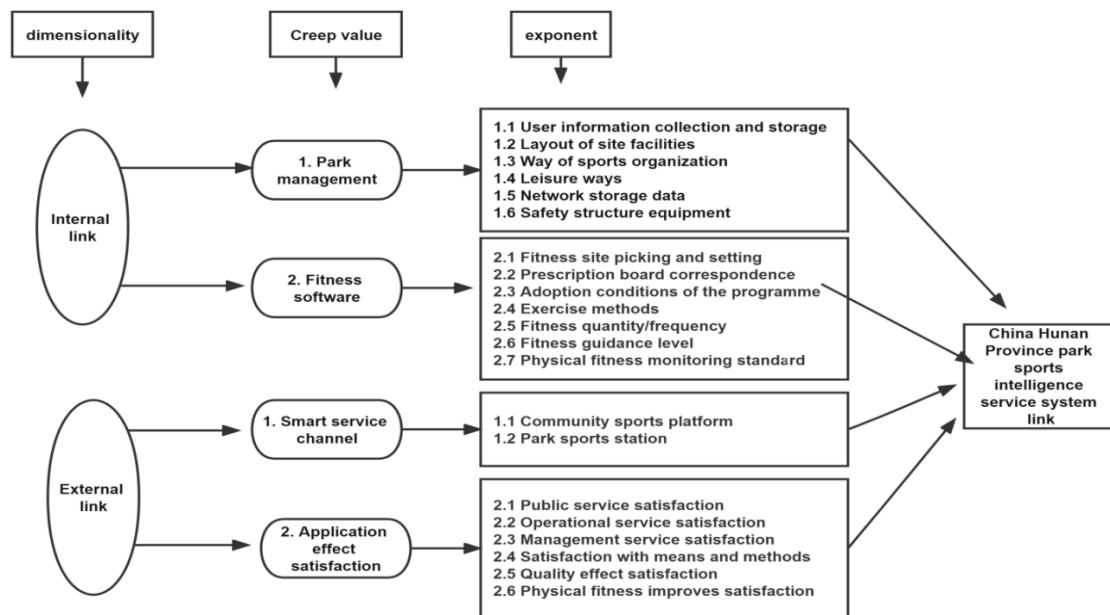
The relevant research on the intelligent service system of fitness in China refers to the attributes that things have with the support of technologies such as computer networks, big data, the Internet of Things, and artificial intelligence that can meet people's various needs. Exploring the application and management of park sports intelligent service systems from the perspectives of culture, environment, and human relations is to further improve the development of park sports under the Chinese modernization theme of promoting comprehensive human development and social progress through sports. This is the focus of this study.

The "Opinions on Strengthening Collaborative Governance of Urban Residential Communities" is a programmatic document at the central level in China that, for the first time, integrates community property management into the category of grassroots social governance for coordinated advancement. However, at the current stage, the practical implementation of sports in residential parks in Hunan Province is relatively weak, and theoretical research on residential parks (communities) is lagging behind. In view of this, this study intends to proceed from the perspective of sports environment development in the park, inherit and develop research on sports culture and the application and management of intelligent sports service systems in the park, so that park residents can understand that physical fitness is a good way to improve their physical health status. They can form valuable behaviors of sports fitness through skills, knowledge, and understanding related to sports.

OBJECTIVE

- 1 To current situation and existing problems of park sports in Hunan Province, China.
- 2 To analyze the key links in establishing the intelligent service system of park sports in Hunan Province, China.
- 3 To explore the application management approach of the intelligent service system of park sports in Hunan Province, China.
- 4 To evaluate the satisfaction of park residents with the intelligent system of park sports services in China.

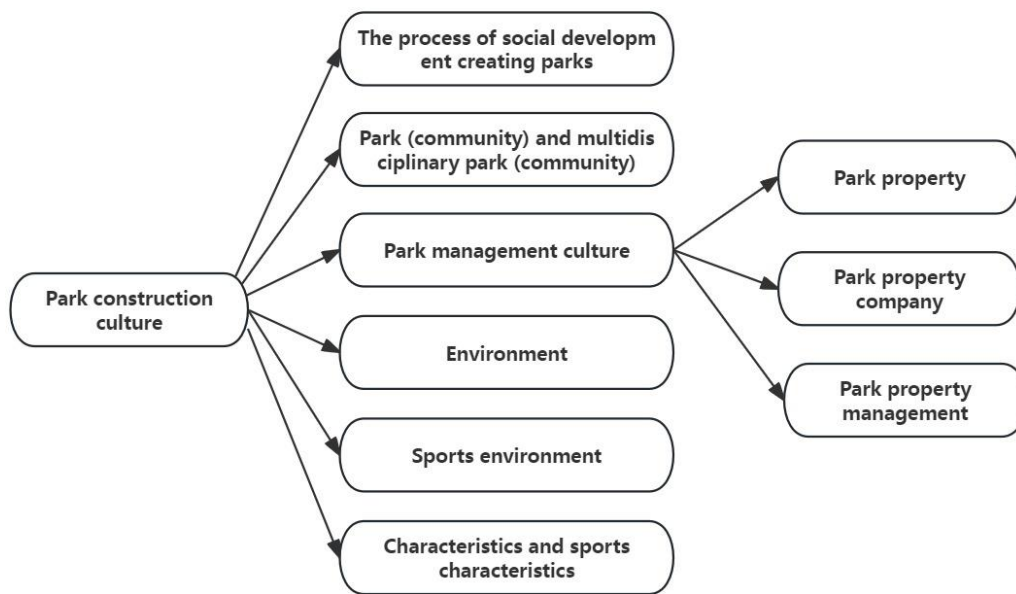
**Research Scope
(Figure 1)**



LITERATURE REVIEW

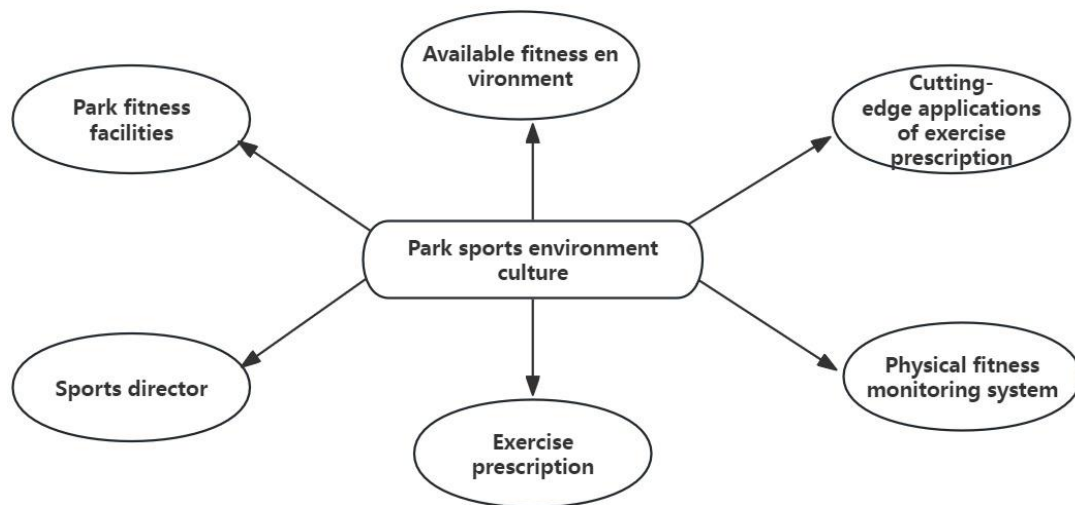
The literature review and related research mainly focus on four categories of documents: park construction culture, park sports environmental culture, physical monitoring systems, and resident fitness evaluation culture.

1 From the perspective of park construction culture, the process of social development and the emergence of parks, parks (neighborhoods) and multi-disciplinary parks (neighborhoods), environmental, sports environmental, characteristics and sports characteristics, park management culture (property, park property, park property management) and other related content definitions are analyzed. Starting from the process of urban residential development to park management culture, this paper demonstrates the following points through an overview and views of 36 institutions and main experts and scholars such as Jiang Chuan and Zhang Xiao from "Encyclopedia of Physical Education": 1) Guided by the theoretical and methodological system of Chinese modernization, the concept of "promoting the commercialization and socialization of housing" has been transformed into "ensuring that all people have adequate housing". 2) The definition of concepts mostly focuses on the fact that urban parks, as important vectors of regional economic development, have ushered in a critical period of historical development. 3) In terms of environmental concepts, they are the collections of surrounding factors that are relative to a central object and change with the changes of the central object. 4) Provide the best and optimal environment for the park to build a solid system of "strengthening body and mind". 5) Most domestic scholars define "property" according to the relevant research level of the "Regulations on Property Management".



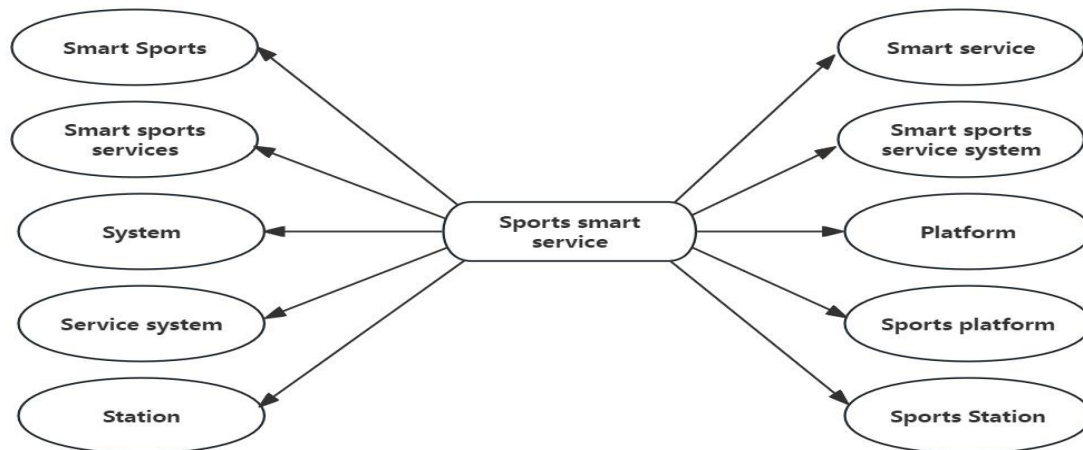
Concept and Definition of Cultural Overview of Park Construction (Figure 2)

2 From the perspective of park sports environmental culture, this paper analyzes the relevant content definitions of park fitness facilities, available fitness environment, exercise prescriptions, cutting-edge applications of exercise prescriptions, sports instructors, and physical monitoring systems. Starting from park fitness facilities to physical monitoring systems, this paper demonstrates the following points through an overview and views of 33 institutions and main experts and scholars such as Hu Lijun and Han Xiuying from the "National Physical Fitness Monitoring Work Regulations": 1) Most people believe that urban parks have become an indispensable and important area in cities. 2) Most people believe that the fitness facilities established in urban parks have become the first choice for residents when exercising outdoors. 3) The "exercise prescriptions" are mostly considered as an important carrier for the dissemination and application of exercise prescription knowledge, and it is necessary to strengthen the knowledge, belief, and behavior of exercise prescriptions. 4) Focusing on exercise prescriptions, the level of physical activity and recommended amount are important basis for formulating exercise prescriptions. 5) Sports instructors refer to personnel who engage in skills transmission, fitness guidance and management, organization of fitness activities, assistance in promoting scientific fitness, and other participation in national fitness services in mass sports activities. 6) The physical monitoring system refers to a system established by the state to systematically understand the physical fitness status of the national population.



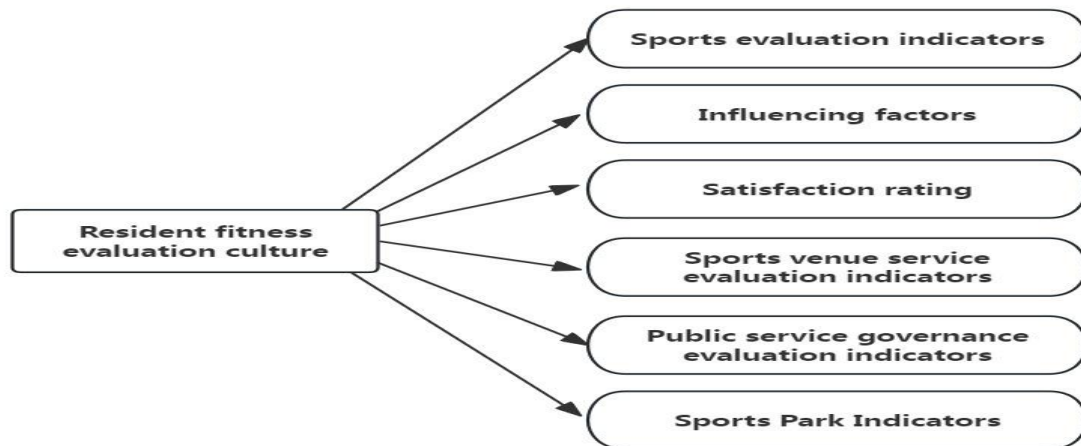
Overview of the Concept and Definition of Sports Environment and Culture in Industrial Parks (Figure 3)

3 From the perspective of the physical monitoring system, this paper analyzes the relevant content definitions of smart sports, smart sports services, systems, service systems, smart sports service systems, smart sports services, platforms, sports platforms, stations, and sports stations. Starting from smart sports to sports stations, this paper demonstrates the following points through an overview and views of 39 main experts and scholars such as Ye Qiang and Wei Ning from the "360 Encyclopedia": 1) High standards in various aspects such as various data, smart facilities, and network experience are based on users' various needs in the smart sports environment. 2) Smart sports services are mostly based on relevant policies, combined with practical or expert opinions to understand and discuss according to their research content. 3) Systems are understood and discussed according to relevant policies or combined with practical or expert opinions based on their research content. 4) Service systems are understood and discussed according to their research content. 5) Smart sports service systems are understood and discussed according to their research content. 6) Smart sports services are based on practical applications, connecting smart technology with citizens' needs, or discussing it with expert opinions based on personal understanding. 7) Platforms are considered as meta-organizations that can generate different organizational forms under different conditions. 8) Sports platforms are effective paths for improving the management efficiency of sports events by combining Internet technology with sports management to build intelligent sports event management. 9) Stations refer to the service areas of comprehensive management of street grids, which is a collaborative governance approach for community-led participation of multiple stakeholders in community management. 10) The essence of sports stations is to provide convenient public sports services, which have convenient functions that cannot be compared with sports venues or comprehensive sports service complexes.



A review of research on sports smart services: concepts and definitions (Figure 4)

3 From the perspective of residents' fitness evaluation culture, this paper analyzes the relevant content definitions of sports evaluation indicators, influencing factors, satisfaction evaluation, service evaluation indicators for sports venues, public service governance evaluation indicators, and sports park indicators. Starting from sports evaluation indicators to service evaluation indicators for sports venues, this paper demonstrates the following points through an overview and views of 37 main experts and scholars such as Ding Yunxia and Wang Peng: 1) Sports evaluation indicators are determined based on relevant research levels, including first-level indicators, second-level indicators, and third-level indicators. The weights of each indicator are determined through the analytic hierarchy process, and consistency testing is conducted. 2) Influencing factors include issues such as improving the ecological environment, identity recognition, leisure behavior, the number and distribution of fitness spaces, use and maintenance, as well as attention. 3) Satisfaction evaluation is an evaluation of the satisfaction of exercisers from different genders, ages, places of residence, and types of residential communities with the quantity and quality of fitness facilities, the layout and environment of fitness facilities, and meeting the needs of exercisers to form healthy lifestyles. 4) Service evaluation indicators for sports venues evaluate the service attributes of sports venues, including expectations for fitness activities, excitement for fitness services, and basic needs for engaging in fitness activities. 5) Public service governance evaluation indicators aim to build an innovative development model for public sports participation based on the driving mechanism of the urban public sports service security system. 6) The sports park indicators provide a multi-faceted approach combining functionality, landscape, and comfort, and propose a smart fitness service perception satisfaction evaluation system



**A review of the concept and definition of resident fitness evaluation culture
(Figure 5)**

Regarding the relevant research on the four types of documents, most domestic scholars have conducted arguments based on the overview and views of 145 institutions and main experts and scholars. With the goal of meeting the fitness needs of urban residents, they have provided research ideas combining functionality, landscape, and comfort for studying residential areas. They have also proposed corresponding countermeasures for improving community public satisfaction in the field of public sports services and meeting public sport needs.

METHODOLOGY

This study adopts a mixed methodological design, including quantitative and qualitative research. The research process includes four research processes: research program design, research approach development, research procedure combination, and research report evaluation. The research procedure consists of three steps:

Sub-Section 1:

Identify the research plan and key issues. This is mainly achieved through questionnaire surveys (Group A) and content analysis, exploring the sustainable strategic management of the sports intelligent service system in Hunan residential areas from relevant documents, materials, theories, etc.

Sub-Section 2

Conduct expert interviews (Group B) and in-depth interviews with 10 experts, administrators, and researchers who are familiar with the application of sports intelligent service systems. Discuss potential variables and factors that may affect the sustainable development of the application of sports intelligent service systems in Hunan residential areas and explore sustainable application channels for sports intelligent service channels.

Sub-Section 3

Based on the previous content analysis, identify the causes of influencing factors for evaluating the sports intelligent service system in Hunan residential areas, propose a systematic evaluation management plan, reasonably set relevant indicators, and invite experts to conduct argumentation and modification.

Research Design

Through literature review and content analysis of relevant studies, the management of the sports intelligent service system in Hunan residential areas was studied. The survey questionnaire (A) was developed to fully understand the cultural environment of the residential areas, the current status of sports development in the area, the challenges it faces, and its causes.

Through in-depth interviews with 12 experts, administrators, and researchers who are familiar with the application of sports intelligent service systems, as well as a questionnaire survey (Group B), factors that affect the application of fitness and exercise conditions in the sports intelligent service system and its variables for sustainable application were explored, and a model for sustainable application was constructed.

Through in-depth interviews with 12 experts, administrators, and researchers who are familiar with the application of sports intelligent service systems, as well as a questionnaire survey (Group B), variables and factors that affect the evaluation of the sports intelligent service system in Hunan residential areas were explored, and a model for sustainable evaluation was constructed. The variable settings in the questionnaire were mainly derived from literature research reference guides. The validity of the questionnaire was determined by IOC's inspection of each question, ranging from 0.60 to 1.00.

Population and Sample

A current status survey and analysis of the causes of the situation in Wangfu Garden in Changsha, Dexin Park in Jishou, and Wujiang Tianjiao in Xiangtan, Hunan Province. The survey includes 30 community administrators, 30 property management personnel, 150 residents, and 10 experts in sports sociology and social sports. There are also 60 graduate students in sports research and on-site sports experts in the park.

Through expert interviews, the heads of the departments of sports sociology and social sports, sports science, intelligent services, park services, and network operation management were interviewed. A total of 10 people were interviewed through structured in-depth interviews using a targeted sampling method.

Selected experts with more than five years of relevant work experience at the associate professor level or above were given comprehensive guidance as academic experts. The questionnaire is an example of a non-probability sampling method. A total of 50 community administrators, property managers, and park residents were surveyed, for a total of 300 people. Detailed surveys were conducted on the satisfaction of all parties with the current situation and their needs and suggestions for sustainability.

Instruments

Group A questionnaire survey: Conduct a questionnaire survey of 300 people using simple random sampling.

1. Drawing on literature reviews and relevant studies, sort out important data related to management through content analysis. Develop a mixed research approach to investigate the management of the sports intelligent service system in Hunan residential areas.

2. Develop the questionnaire under the guidance of management experts. Use the IOC (project goal consistency index) and the content validity check by sports experts, administrators, researchers, and park residents to ensure the effectiveness of the survey.

Group B in-depth interviews and questionnaire surveys: Identify key information from 10 in-depth interviewees. Develop an interview outline, questionnaire, and academic guidance for comprehensive guidance. Conduct targeted sampling through questionnaires and data analysis, and then conduct in-depth interviews to improve the questionnaire process.

1. Explore the feasibility of enhancing the application of the sports intelligent service system in Hunan residential areas.

2. During the interview, the researchers can obtain data needed to meet specific research goals by posing a set of questions during the interviews. When organizing structured interviews, researchers follow a one-on-one interview process, with a total of 10 people.

The research tool used was focus group discussions with experts to examine and confirm the validity, applicability, and feasibility of evaluating the sports intelligent service system in Hunan residential areas.

1. Literature analysis of Chinese sports intelligent service system evaluation materials, documents, concepts, theories, and research at home and abroad. Documents related to creating expert group discussion summaries.

2. Content analysis used as a framework for creating expert group discussion records.

Data collection

Through statistical analysis and comparison of relevant data from literature, books, papers, and government community and management industry data reports, the variables and their weights that affect the management of the sports intelligent service system in Hunan residential areas are identified. The standard sample differences in the management of the sports intelligent service system in Hunan residential areas are analyzed.

The sorting of written, audio, and video materials from in-depth interviews. The collection and sorting of survey questionnaire data.

The extraction and application of basic data from the previous two stages; the sorting of written, audio, and video materials from expert field seminars; the sorting of expert certification reports.

Data Analysis

The data analysis is based on literature analysis of theoretical concepts and relevant research papers; the sample interview data analysis adopts content analysis; and it sorts out the current situation of China's park development. The aim is to identify the development factors of the sports intelligent service system management in Hunan residential areas for further research.

Through content analysis, the data from in-depth interviews are analyzed to form a guide. The B group questionnaire is analyzed according to the mode, data collection, and standard sample

differences. In this study, statistical analysis is mainly completed through statistical analysis software such as SPSS data analysis and AMOS model structural equation analysis.

Based on the results of several steps of data analysis, combined with the opinions of experts at the expert certification meeting, the feasibility of the proposed evaluation scheme is analyzed. The system application management and indicator system are developed and revised according to the expert opinions obtained from the certification results.

RESULTS

Reshaping the value of park sports is a new requirement and concept in the development of the new era, which gives park sports a new era connotation and modern expression form.

Building a digital and information-based sports intelligent service system is a personal embodiment of fully utilizing the fitness value of oneself in the new era.

Forming a practical application management plan for the intelligent service system of park sports, which can solve more than 95% of fitness problems.

Fully utilizing and implementing the intelligent service channel of park sports can promote the creative development of park sports, and significantly increase sports and cultural life.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to Suan Sunandha Rajabhat University for invaluable help throughout this research.

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