

Title	公民館向け建物 OS における設備制御と資源最適化に関する研究
Author(s)	陳, 翔
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Description	Supervisor: 丹 康雄, 先端科学技術研究科, 修士(情報科学)

# Abstract

In modern building management, the role of Building Operating Systems (OS) is becoming increasingly crucial. A Building OS is a system that integrally controls the facilities and services within a building, aiming to enhance operational efficiency and safety. In Japan, Shimizu Corporation's DX-Core has been a pioneer in this field, establishing new standards in building operations and driving automation and efficiency in building management.

However, applying Building OS in community facilities like public halls presents unique challenges, differing from commercial and office buildings. Public halls, in particular, serve as regular community activity centers while also needing to function as emergency shelters during disasters. This dual role demands a Building OS capable of flexible and rapid response in both normal and emergency situations.

This research proposes a new Building OS, 'Multimode Kominkan Operating System (MKOS),' designed to meet these specific needs. MKOS encompasses various modes covering everyday operational management of public halls to functionalities needed for emergency shelters during disasters. This system achieves optimal facility control and resource optimization, addressing the varying environmental conditions and diverse user needs that traditional Building OS could not.

The core of MKOS is the 'Data Sharing Interpretation Module,' efficiently processing commands from multiple services and avoiding device control conflicts. This module allows MKOS to translate abstract user commands into specific facility operations, optimally managing the building's environment. Moreover, MKOS provides developers and programmers with clear, user-friendly APIs, ensuring the system's scalability and flexibility.

With these features, MKOS has the potential to become the new standard Building OS for community facilities like public halls. This research examines the design, implementation, and through simulated experiments, explores the effectiveness and potential of MKOS.