

## Human-Centred Data Analysis Method for Future Design of Residential Spaces: Coliving Case Study

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**Abstract :** This article presents a method to analyze the use of indoor spaces based on data analytics obtained from inbuilt digital devices. The study uses the data generated by the in-place devices, such as smart locks, Wi-Fi routers, and electrical sensors, to gain additional insights on space occupancy, user behaviour, and comfort. Those devices, originally installed to facilitate remote operations, report data through the internet that the research uses to analyze information on human real-time use of spaces. Using an in-place Internet of Things (IoT) network enables a faster, more affordable, seamless, and scalable solution to analyze building interior spaces without incorporating external data collection systems such as sensors. The methodology is applied to a real case study of coliving, a residential building of 3000m<sup>2</sup>, 7 floors, and 80 users in the centre of Madrid. The case study applies the method to classify IoT devices, assess, clean, and analyze collected data based on the analysis framework. The information is collected remotely, through the different platforms devices' platforms; the first step is to curate the data, understand what insights can be provided from each device according to the objectives of the study, this generates an analysis framework to be escalated for future building assessment even beyond the residential sector. The method will adjust the parameters to be analyzed tailored to the dataset available in the IoT of each building. The research demonstrates how human-centered data analytics can improve the future spatial design of indoor spaces.

**Keywords :** in-place devices, IoT, human-centred data-analytics, spatial design

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