

## Smart tools on campus

### a literature study connecting real estate management objectives and positioning technologies

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## **Smart tools on campus: a literature study connecting real estate management objectives and positioning technologies**

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One of the long-standing issues in the field of corporate real estate management is the alignment of an organisation's real estate to its corporate strategy. Despite extensive research, existing approaches have not had much uptake in practice and fall short in a number of aspects (H 2011). The hypothesis in this paper is that indoor positioning technology enables us to accurately observe users and measure their behaviour real-time, which improves alignment in two ways: firstly, by improving the current match between supply and demand by giving end users access to this information to help them find vacant work places or their colleagues, and secondly by improving decision-making for the future match by delivering more accurate insight into space use. Reports suggest that significant improvements in space utilization are possible. In the UK, the average utilization for educational space is 27% (SMG 2006); the report suggests that an improvement of 3% (from 27% to 30%) can lead to 10% savings in costs and m<sup>2</sup>.

The objective of this paper is to provide a framework in which existing research in indoor positioning is positioned in relation to the objectives in CREM. To the best of the authors' knowledge such an overview does not exist. In the studied papers on positioning techniques the added value for real estate management is just briefly touched upon. Concepts such as better supporting user activities or reducing energy costs are shortly

described as potential benefits of the technologies demonstrated in the papers, and almost never are these benefits quantified.

In the literature five measurement objectives can be distinguished: measuring frequency, occupancy, location, movement and behaviour. Measuring frequency is the simplest, after which each subsequent objective becomes more complex. The first findings suggest a clear relationship between these measurement objectives and (1) the measurement method, such as Wi-Fi or Occupancy sensors and (2) the objectives in real estate management, such as supporting user activities and reducing m2 footprint.

The framework presented in the paper provides a useful tool for both practitioners and researchers. For researchers, REM objectives that are not or only slightly touch upon provide a starting point for future research and applications. For practitioners, the framework provides useful information that can help them match their organisation's objectives and priorities to the prevalent measurement methods.

**Keywords:** corporate real estate management, alignment, indoor positioning, management information, decision-making

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