

Chapter 18

Healthcare Resource Sustainability: Obtaining Information Access via Healthcare Space Modelling

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ABSTRACT

Health care provision is significantly impacted by the ability of health providers to engineer a viable healthcare space to support care stakeholders needs. In this chapter, the authors discuss and propose use of organisational semiotics as a set of methods to link stakeholders to systems, which allows them to capture data about clinician activity, information transfer, and building use, which in turn allows them to define the value of specific systems in the care environment to specific stakeholders and the dependence between systems in a care space. The authors suggest use of a semantically enhanced Building Information Model (BIM) to support the linking of clinician activity to the physical resource objects and space and facilitate the capture of quantifiable data over time or in relation to key stakeholders. Finally, the authors argue for the inclusion of appropriate stakeholder feedback and persuasive mechanisms to incentivise building user behaviour to support organisational level sustainability policy.

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1. INTRODUCTION

The built environment provides healthcare providers the physical infrastructure to support health interaction and care. Space provides the context within which health services are constructed; thus the built environment significantly impacts facilitation of user needs. Health spaces, however, are dependent upon, and or constrained by, the limitations of physical space and the defined policies of the organisation. Accordingly, appropriate appreciation of the physical space is crucial if a total health-care policy strategy is to support interaction and alignment between the built space, occupant activity, and quality care delivery.

Information is everywhere. It is created, updated and manipulated in ever increasing forms through information technology. Ubiquitous informatics implies that information is always accessible and available. Although in healthcare provision ubiquitous access to all information provides many advantages, it risks clinicians facing information overload, confusion and loss of efficiency and effectiveness due to problems in information quality, complexity and contexts; as clinicians struggle to identify, interpret, apply and communicate the information that is needed to save and improve patient lives.

‘Pervasive’ is an adjective of the root ‘per-vade’, which implies the spreading throughout. Pervasive informatics is the study of information in environments where information is, or can be, pervasive; and in context of this chapter is an interdisciplinary area of research focusing on how information about the building, and care information concerning health provision can be brought together to support sustainable care activity. Pervasive informatics relates to providing users with the right information, in the right place, at the right time, to enable them to undertake a specific task, function or process. Pervasive informatics is therefore about making lives simpler, by combining human activity and physical digital environments, to enable contextual

information delivery in context of need. In difference to ubiquitous informatics, by controlling the information flow, in context of the task, pervasive informatics minimises the flow of non-critical or non-contextual information. Although traditional Pervasive informatics research often focused on provision of intelligent spaces, pervasive informatics applies to any domain where contextual information is used, in context, to support physical tasks or activities.

In section 2 we consider building performance, with specific consideration of common building assessment methods; demonstrating how existing methods largely ignore health stakeholder and organisational activity. In section 3 we introduce the notion of Key Performance Indicators (KPIs), and benchmarking, in context of building energy management. In section 4 we expand the concept of pervasive informatics, and introduce the concept of intelligent space. In section 5 we show how semiotic methods might be used to define critical health systems, and how stakeholder-focused KPI can be defined. In sections 6 and 7 we discuss how information can be provided back to users; briefly considering how a semantic building information model might be used to support persuasive feedback, motivation mechanisms and organisational policy change. In section 7 we conclude the chapter by discussing how inclusion of activity management is critical to the effective implementation of pervasive informatics, and the development of a health-care policy strategy.

2. SUSTAINABILITY AND BUILDING PERFORMANCE

2.1 Defining Sustainability.

Organisational durability is the ability to resist against change. Organisational sustainability is the ability to embrace change by engaging in renewal, maintenance, and managed sustenance. At a time when UK healthcare resource allocation

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