Adaptable healthcare facilities through modular solutions

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Healthcare is changing rapidly: facilities become outdated quickly
• health technology, care processes

Executing changes in hospital environments is difficult: evacuation and thorough retrofit projects
• Patient safety, high-tech spaces, compact layout design

Projects are unique, complex and long with questionable lifecycle value due to continuous change
Background

Part of Aalto University’s research project Healing and Modular Healthcare Facilities

Focus on retrofits of existing Finnish and Swedish hospital facilities

Researched problems and solutions similar elsewhere: an extrapolated and practical approach
Methodology

Employing the pragmatic philosophy of the Constructive Research Approach: general and scalable solutions

Literature review focused on open building, adaptability, modularity

28 semi-structured interviews with architects, property managers, project managers, design coordinators in Finland and Sweden

- Interview themes incl.: hospital retrofit projects; the state of existing hospital facilities in general; adaptability (what, why and how?); means to improve the quality of projects
Adaptability is the most important design strategy

Operational efficiency may be maintained throughout the lifecycle using different adaptability strategies.

Vague or non-existent definitions of adaptability obstruct its utilization.
Connections between adaptability categories and open building system levels

Primary system (100 yrs)
- Elasticity (expandability)
  - Preparation for extensions
  - Extra capacity
  - Soft space

Secondary system (20 yrs)
- Flexibility (convertibility)
  - Empty chair
  - Site conversions
  - Interstitial floor
  - Isolation

Tertiary system (5-10 yrs)
- Generality
  - Extra capacity
  - Multi-functional use
  - Room conversion
  - Acuity-adaptable rooms
Conclusions and recommendations

Initial investment costs in hospital construction, are secondary to operational efficiency, therefore focus should be on lifecycle costing.

Investments in adaptability, especially towards the secondary system of open building, are worthwhile.
Suggestions for future research

The cost of hospital operation: direct and indirect costs
• Comparing the cost of disturbance in operations vs. construction costs

A process for analysing the probability of change needs and potential in different spaces
• Service for creating a roadmap for adaptability
Thank you for your time!