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Abstract: The outcome of the present project will be a digital tool combining discrete-event simulation with optimization and visualization into an assumed powerful tool for hospital planners, architects and decision-makers for evaluation of different layouts with respect to long term efficiency and flexibility, i.e. cost, functionality and adaptability are incorporated into evaluation of different designs. For hospital design of the future tools are needed which can be used during the design process to answer questions like: How can the entire life-cycle of health facilities be taken into account at the initial design stage? How can hospitals be made more sustainable and adaptable to future changes? What is the impact of systematized models of care on hospital functioning? How can hospital be conceptually structured (as an entity responding to service needs) and as an actual building? Digital tools have already been developed dealing with these questions; however, the tools have mainly been used to analyse hospital systems with focus in two areas: (1) optimization and analysis of patient flow and (2) allocation of assets to improve the delivery of services. The objective of the present project is to develop a numerical tool for optimal hospital layout design where geometric, lean, evidence and cost constraints are taken into account.

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