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CAD as an Interface for Integrated Collaborative Design

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Introduction

In the traditional approach to building design, the designer (usually the architect) produces a design (often quite detailed) in blueprint before handing this to the next member of the design team (engineer) to superimpose the structure, services etc. Often this proves so impractical that the initial proposal has to be referred back to the architect for revision, and the process repeated - and this cycle may be repeated many times. Such routines arise in building design because designers find collaboration among themselves difficult to control, the task of design integration ultimately falling upon the construction manager or the contractor. This is the most common cause of problems arising during the execution of the project on site, causing a delays in the construction process, and building failures which might only be detected after occupancy.

As a test-bed for addressing this problem, a system of coordinated files is proposed for use by design-students (with a working knowledge of AutoCAD) during a design project. The aim is to related data (CAD information) across all students working on the same project but developing different aspects. Participating students will be drawn from a range of design specialisms. Each member accessing the same information while developing different aspects (e.g. structure, services, and cost modelling). This goes beyond the conventional use of 'XREF' (cross-referenced drawings) and involves each member accessing and working with the same dataset - e.g. using different layers, co-ordination is easier and the data better integrated - there is thereby a reduction of the amount of repetition as the need to redraw information is eliminated. References or an initial data-set is set up by the tutor and available for reference at any stage of design project. The technological aspects to support collaborative work (and in particular the interaction process in design) is the main thrust of the undergraduate degree in Building Design Engineering at the University of Strathclyde.

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