

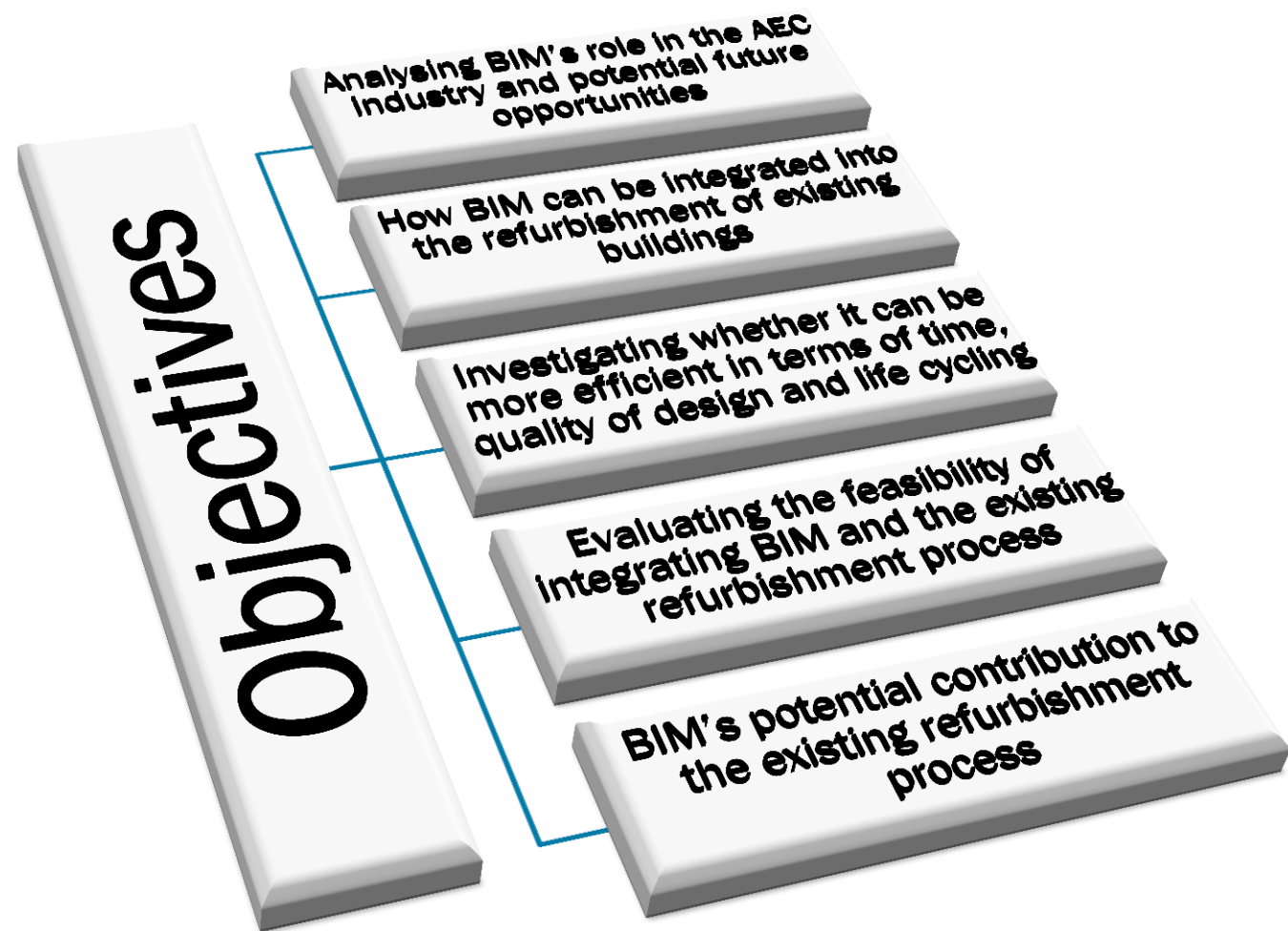
Exploring the challenges and future opportunities for Building Information Modelling (BIM) in the refurbishment process

Introduction

Based on a BIM report carried out by the NBS, 92% of people expect to be using BIM within 3 years (2015, p11). This is part of growing trend that suggests that most people believe that BIM will become the accepted standard as a design process in the future. The direction BIM is heading towards means it's inevitable that there will be an abundance of opportunities to implement BIM in the refurbishment process . Whilst BIM is becoming commonly used in large scale projects for new builds, it is still some way behind in being utilised for small refurbishment projects due to a variety of different drawbacks.

Aim

Investigate BIM's potential and the challenges involved in the refurbishment process.



Problem Statement

BIM is widely regarded as an important part of improving the way information is modelled and managed in the Architecture, Engineering, and Construction (AEC) industry. In terms of property development, however, it's utilisation has been limited by several detrimental factors such as time, cost and unsuitability. There is also a lack of people trained in BIM with a survey by the Royal Institute of Chartered Surveyors (RICS) (Patel, H. 2015) revealing that 26% of firms admitting that a lack of relevant skills was the reason they didn't adopt BIM.

Project Progress

The project has been progressing against the programme of work set out in the Gantt Chart. The questionnaire has been designed and is ready to run a pilot study before sending out to participants. The participants will be of a variety of occupational roles and experience, it is anticipated that the questionnaires will be sent out in early February. During the waiting period for the questionnaire responses, work on the remaining chapters can be completed in preparation for a first draft.

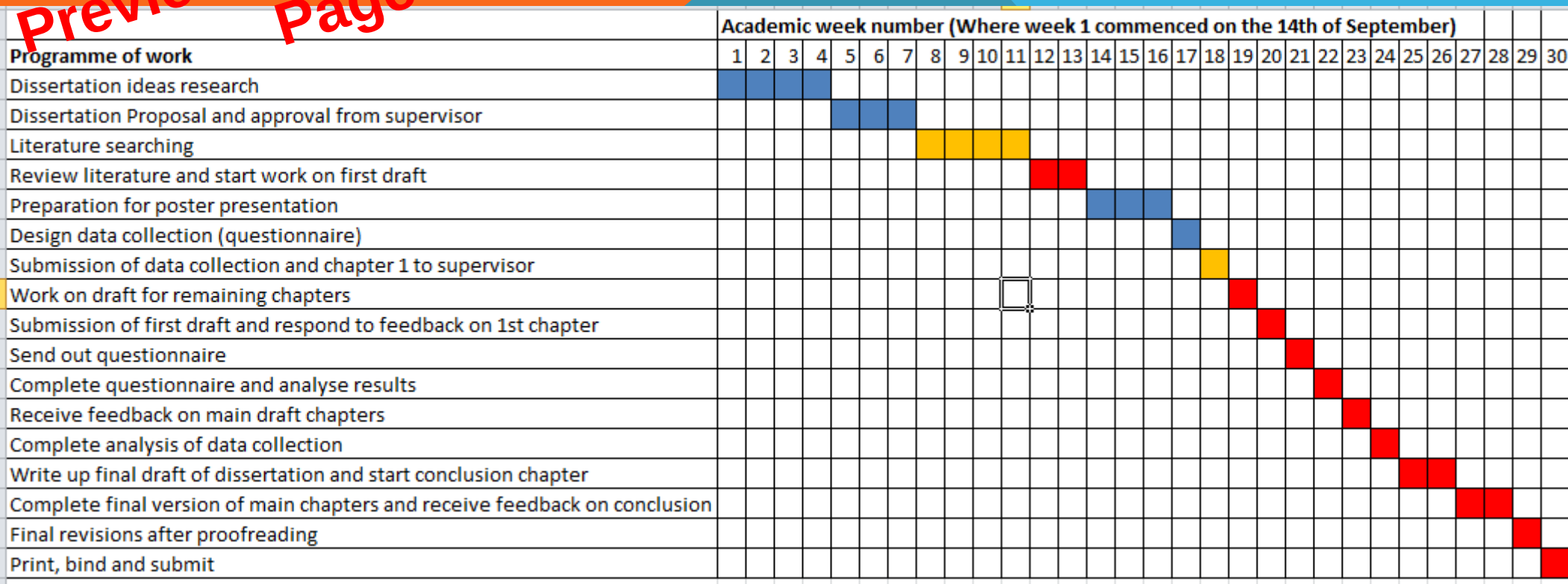


Figure 1 – Gantt Chart, blue means completes, amber is in progress, red yet to be started

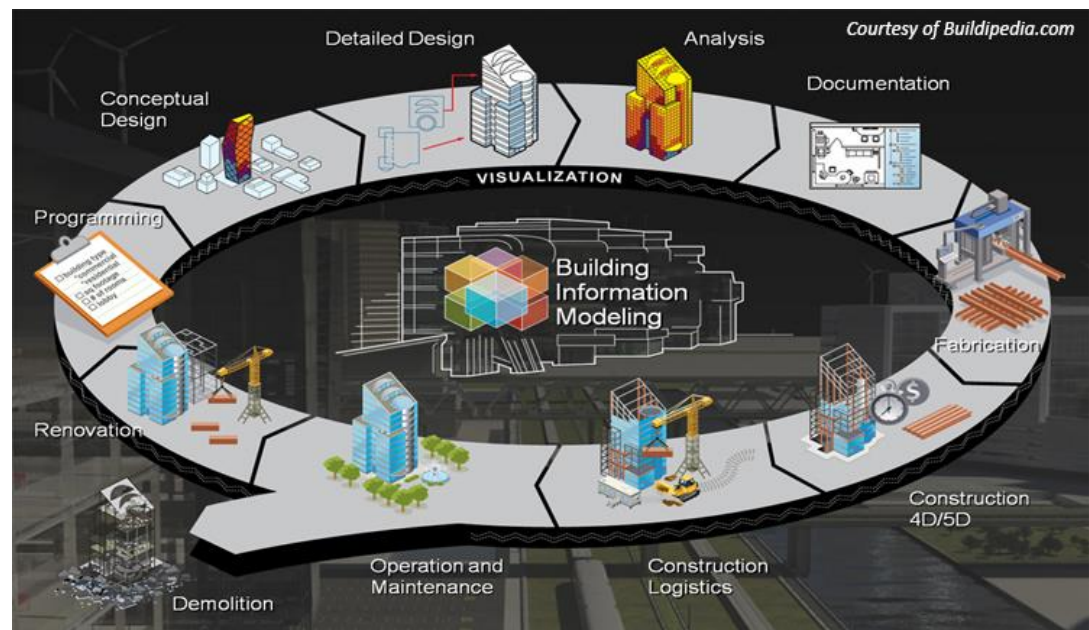


Figure 2 – BIM Lifecycle
Sourced from YMDboon



Figure 3 – BIM collaboration
Sourced from Architect.com

Figure 4 – Preview of Questionnaire

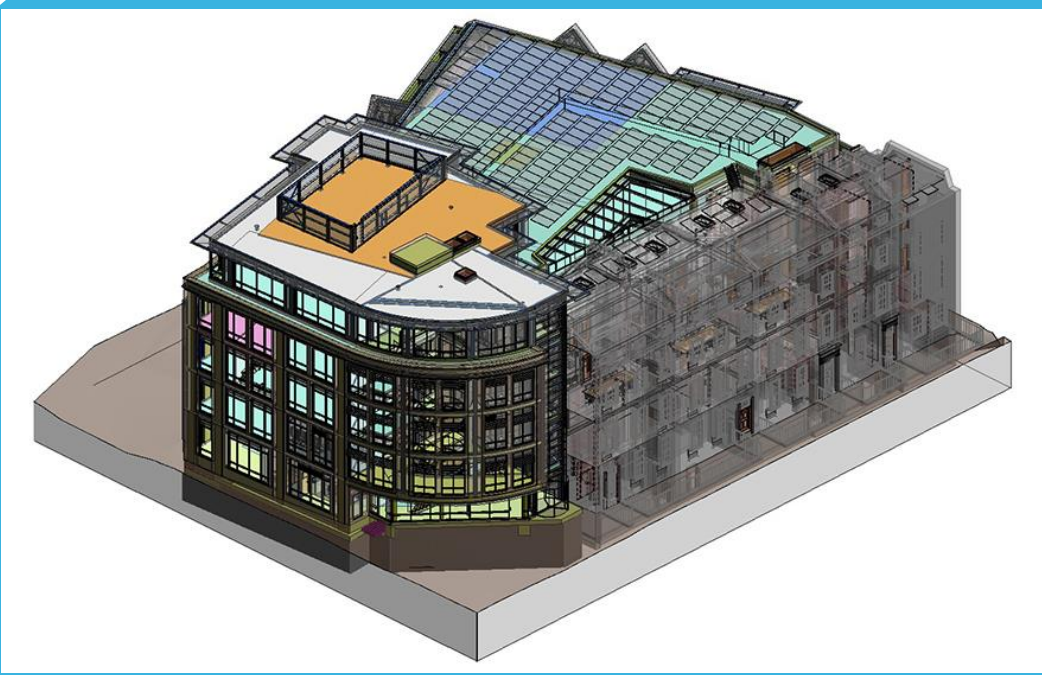


Figure 5 – BIM designed refurbishment of an 11 storey tower into a University campus
Sourced from BimPlus

Methodology

The study will be completed using descriptive and comparable research making use of relevant literature. The literature will provide a depth of knowledge that can be utilised to examine the projects objectives. A literature review can be a useful research tool to combine summarising and synthesising sources for a complex analysis. It's important to determine the correct research questions to avoid irrelevant research. By breaking the research down and focusing on one objective at a time it will be easier to collate the data and analyse it with a clear outcome in mind. The project will also include a questionnaire with a variety of professionals in the industry to provide an insight into responses from people in the work place. The questionnaire will provide primary data aimed at addressing objectives 1 & 4.

Questionnaire

The questionnaire is designed to address objectives 1 & 4. The questions are focused on analysing BIM in it's current use in refurbishments, it's future opportunities and investigating the drawbacks to using BIM for refurbishments.

Literature Review

The purpose of analysing literature is to establish what existing research has been conducted and utilising it to achieve the goals set out. The assessed literature will be based upon AEC research that has reviewed the implementation of refurbishing existing structures in BIM. There is an abundance of existing literature that can be used. For example (Volk et. al. 2014) asserted that "While BIM processes are established for new buildings, the majority of existing buildings is not maintained, refurbished, or deconstructed with BIM yet". It is important to use examples from different time periods to get an understanding of BIM's evolution through the years. This will help to establish where future opportunities may lie.

References

Patel, H. (2015) *AEC Firms aspiring to be a Fortune 500 company should Adopt BIM*. Retrieved from <http://archinect.com/firms/release/118849956/aec-firms-aspiring-to-be-a-fortune-500-company-should-adopt-bim/137915188>

Waterhouse, R. (2015) *NBS National BIM Report 2015*. Retrieved from <http://www.thenbs.com/>

Volk, R; Stengel, J; Schultmann, F. (2014) *Building Information Modelling for Existing Buildings – Literature review and future needs*. Retrieved from: [https://www.researchgate.net/publication/259518042_Building_Information_Modeling_\(BIM\)_for_existing_buildings_Literature_review_and_future_needs_Autom_Constr_38_\(March_2014\)_109127](https://www.researchgate.net/publication/259518042_Building_Information_Modeling_(BIM)_for_existing_buildings_Literature_review_and_future_needs_Autom_Constr_38_(March_2014)_109127)

Sampling Strategy

- The types of organisations chosen will be property development, construction management, engineering and architectural companies as they are all involved in the day to day use of BIM and will have a working understanding of the subject.
- The representatives from each organisation will be chosen based upon their job role and their involvement and experience of BIM.