



ENERGY MODELING + BIM, INTEGRATED AT LAST

Real-time operational energy and cost analysis
throughout design and construction

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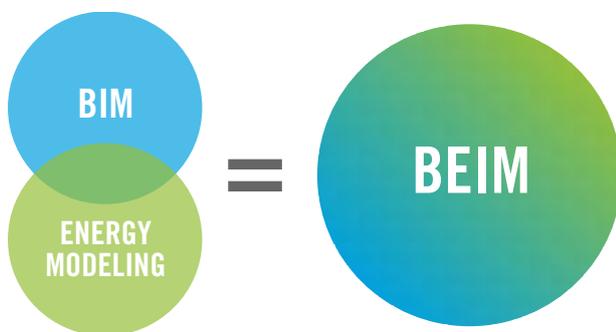
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INTRODUCTION

As the world moves rapidly towards a more sustainable future, the design and construction of high-performance buildings has become the aspiration of developers on a global scale. In order to bring high-performance design to life, developers and designers alike need to adopt novel processes and abandon timeworn and out of date practices.

Building Energy & Information Modeling (BEIM) is a service that provides developers, designers, and construction teams with an effective tool to analyze, evaluate and advise on decisions that promote high-performance and cost-effective design.¹ By engaging Alpin's integrated modeling process from the conceptual stages of a project, a team will be able to develop an effective platform for the ongoing exchange of critical information. This will aid the team in analyzing design aspects of the project, allowing them compare their own work to industry standards at each stage. They will also be able to weigh out the pros and cons associated with different variables involved in the design process.



BEIM is an integration of two already existing Alpin services: BIM and Energy Modeling. The advantage of bringing these services together is two-fold: first, the design team is able to work collaboratively throughout the entire process, and second, the combination of services at the start allows for a streamlined analysis of all project variables.

The unification of the two services is also effective in eliminating double work and inconsistency in design parameters.² It operates in compliance with green building rating systems that award points for integrated processes (such as ESTIDAMA IDP-R1).

The Autodesk Revit and Integrated Environmental Solutions Virtual Environment (IES VE) are the core components of Alpin's BEIM. The two applications were originally intended for integration with BIM protocol, but have been used separately in projects due to lack of an integrated process.

Revit is a high-end Building Information Modeling software used to develop an information model that highlights the finest details in a building. The VE is a powerful tool used to track and analyze building performance and operation. By following an integrated process through the employment of Alpin's BEIM, a unified platform of data analysis, presentation, verification, and evaluation is created for the project.³

The data exchange between the Architectural design model and EM authored models was a challenge that led either to the isolation of the energy performance simulation, or a complete bypass of the process in the earlier BIM protocol. This is no longer an issue, as the latest Design BIM models are more receptive to the information exchange between the BIM (REVIT) and EM (IES) software as a result of the availability of many neutral platforms. For the project to benefit from the advantages of BIM model integration with EM, the Alpin Limited's BEIM's process should be applied by the design team in the development stage.

The purpose of this white paper is to provide our clients with an overview of our process, and to explain the benefits of adopting this service into their future projects.

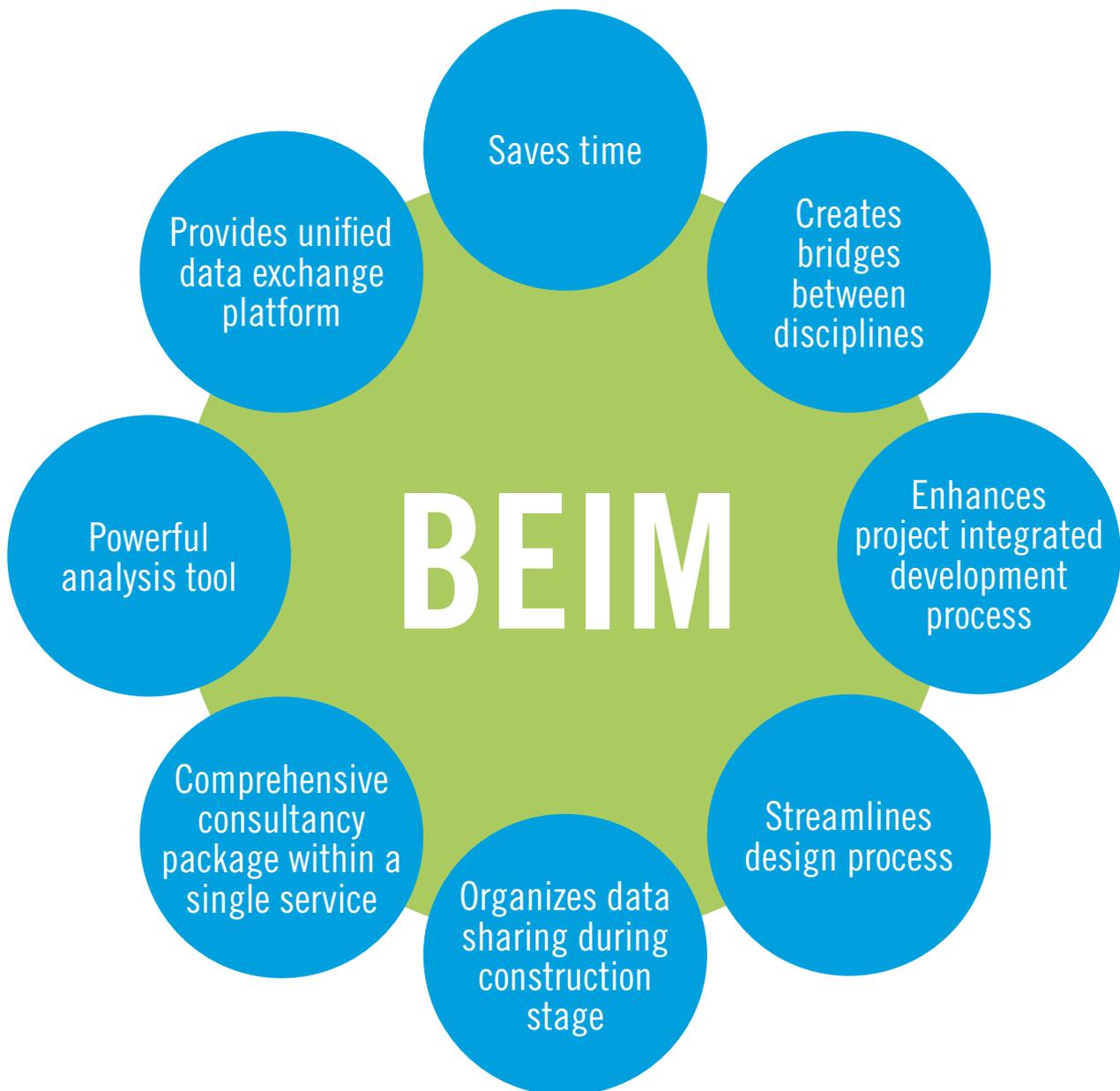
Alpin's BEIM can be employed at all stages of a project, from early conceptual development all the way through to execution and operation. During early design stages is when it is most useful, however, as it can be a powerful tool to inform subsequent design decisions. An iterative process that transfers data between Revit and VE for analysis and simulation allows project leaders to optimize the numerous variables involved right from the beginning. This adds a "growth" element to the integrated model, allowing it to mature with

the design's progress and ultimately provide the client the energy impact and performance metrics of the building in near real time. During construction, it can also be used to provide support for the construction team in selecting optimal materials, reassessing the design, and complying with authority regulations.

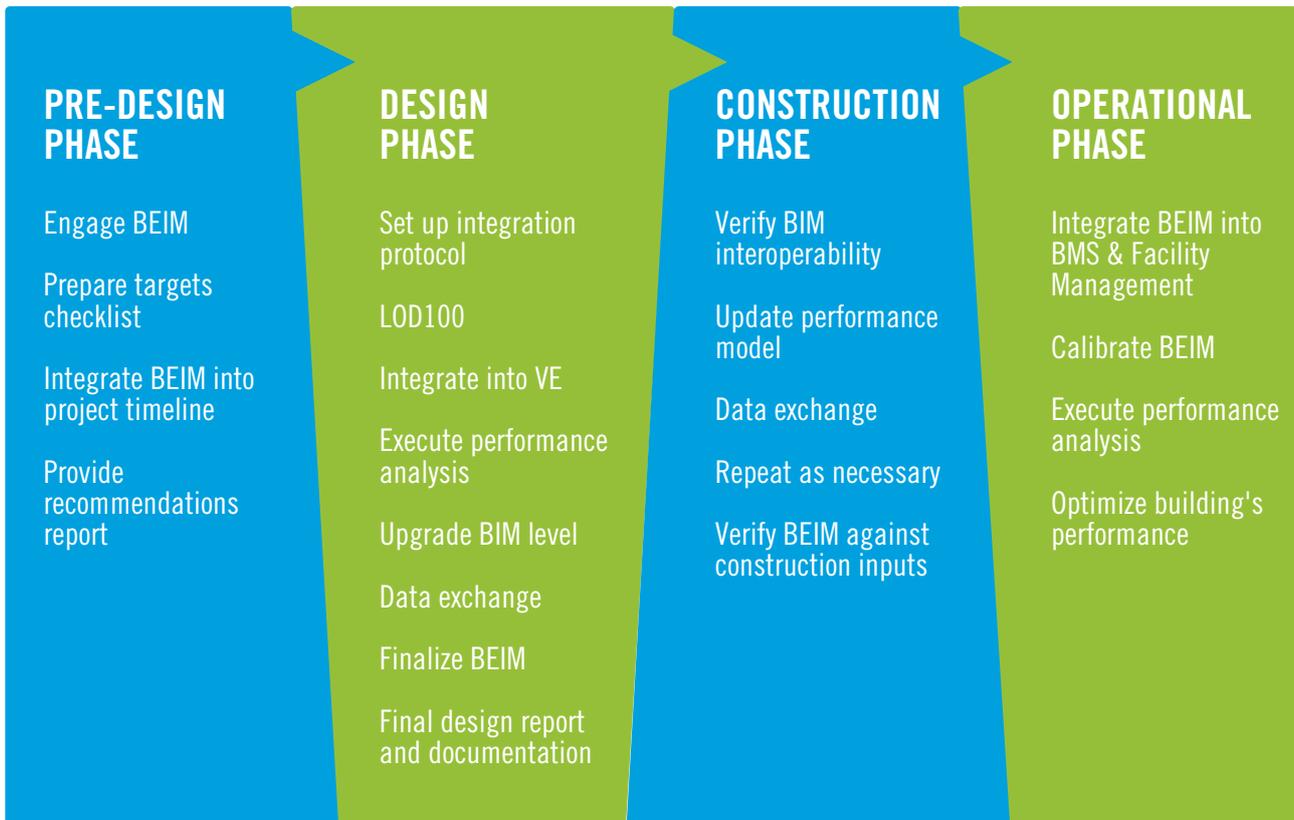
BENEFITS OF BEIM

Typically, when the BIM and energy modeling services are not well integrated, a considerable amount of time is spent in developing several

independent yet isolated models that serve different purposes. Integrating both services creates several advantages for the project:⁴

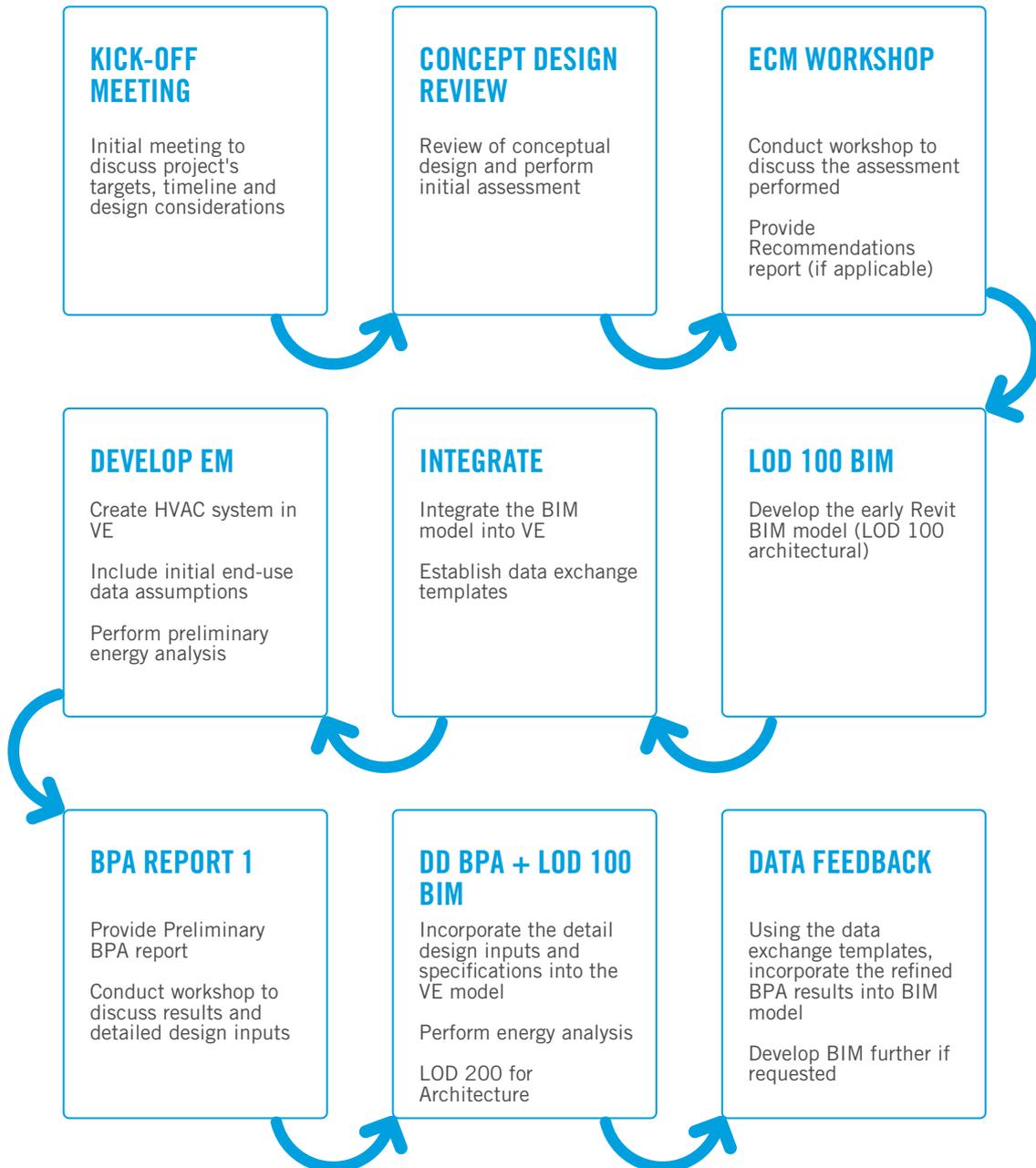


BEIM PROCESS CHART



The above process chart is the ideal scenario that would unfold by adapting BEIM into a project. But an undeniable advantage of BEIM is its versatility, and flexibility to use it at any point. While most useful if employed from the project's beginning, it is possible to benefit from this service at any stage.⁵

WORKFLOW



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