Autodesk Revit Architecture 2012

Housing & Property Service – Design Section

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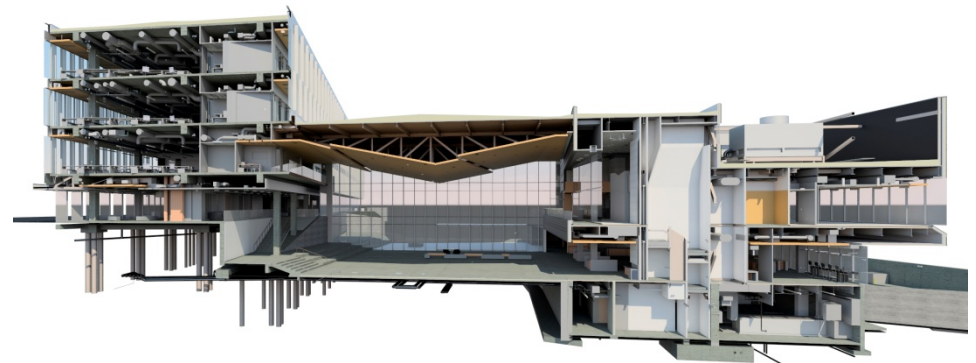
Agenda…

- What is **BIM**

- Timescale for roll out

- Why **Revit**

- The Highland Councils **Revit Pilot Group**

- Examples of **Pilot Group** Training

- Projects – Wick High School

- What are the benefits

- **Summary**

What is BIM…

BIM stands for '**Building Information Modelling**' or a '**Building Information Model**'. It is a rich digital model of a physical building. That model can be used by the design team to design the building, the construction team to model the construction of the building, and then by the building owner to manage the facility, throughout its life.
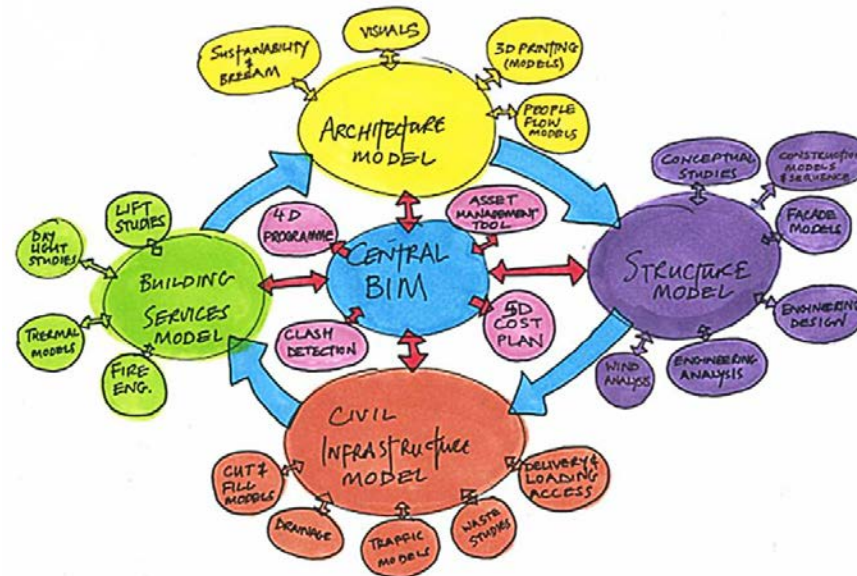

BIM integrates 3D models with rich information. **BIM** objects combine performance, time, scheduling, acoustics, fire rating, and many other parameters, with physical geometric attributes, in digital form. Enabling easier collaboration among construction professionals, **BIM** can streamline numerous project functions, from cradle to grave.

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Timescale for roll out…

This diagram is important as the maturity levels (level 0, 1, 2 and 3) are widely referred to in the industry to the extent that the Government's phased implementation is based on these levels: from summer 2012 projects will be required to implement level 2 **BIM**, with the Government's aspirations being to have fully collaborative **BIM** with all project and asset information, documentation and data being electronic as a minimum by 2016.
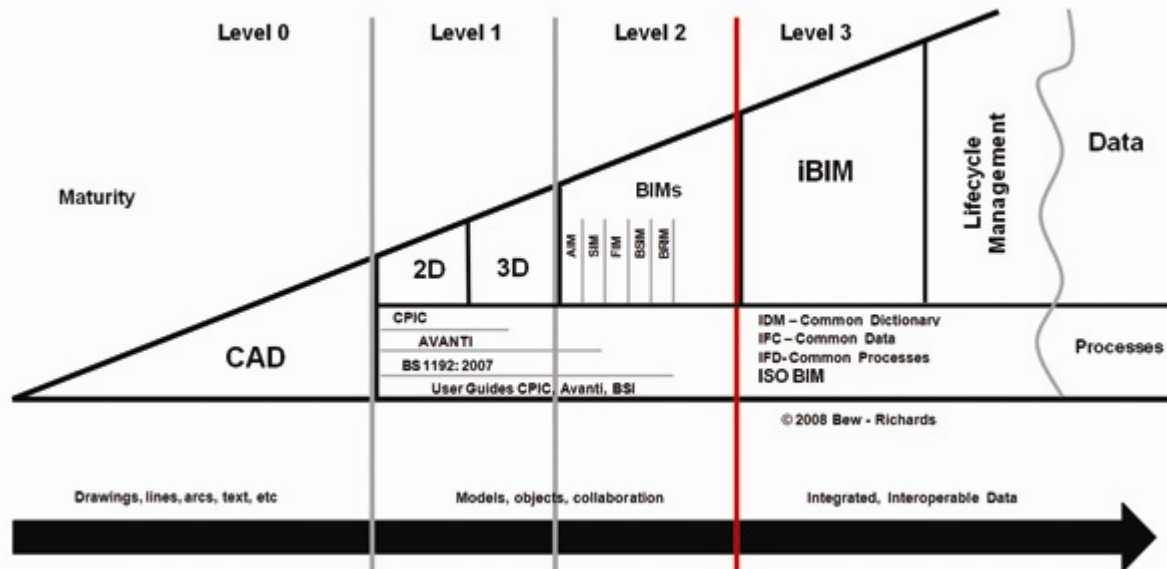
Importantly, the diagram acknowledges the impact that both data and process management have on **BIM**. A brief summary of each **BIM** level is listed over the following four slides.

Timescale for roll out…

Level 0

Level 0 **BIM**, as defined by this diagram, is the use of 2D CAD files for production information: a process that the majority of design practices has used for many years. The important point to be derived from the diagram (from the horizontal line separating data and process management which does not commence until level 1 **BIM**) is that common standards and processes in relation to the use of CAD failed to gain traction as the use of CAD developed.

Level 1

Level 1 **BIM** acknowledges the increased use of both 2D and 3D information on projects. For architects, 3D software has increasingly been used as a conceptual design tool during the early project stages (typically RIBA stages C & D) and for visualisation of the finished project for presentation to the client. This form of **BIM** where only one party utilises the benefits of the model is frequently referred to as 'Lonely **BIM**' – the **BIM** model is not used collaboratively between team members. The use of 3D tools beyond this stage has commonly been limited to large infrastructure projects. On such projects, the use of 3D models by trade contractors is also becoming more commonplace. The larger M&E contractors have embraced **BIM** to assist their design processes using supplementary checks undertaken with proprietary software to ensure that co-ordination issues are resolved during the design phase rather than on site. This is a significant step forward towards the aim of minimising waste and inefficiencies in current design and construction processes. In terms of processes, level 1 embraces the need for management processes to sit alongside design processes.

The work of CPIC and Avanti commenced concurrent with early level 1 **BIM** projects and set out new processes for managing information which are now embedded in BS 1192:2007, Collaborative production of architectural, engineering and construction information – Code of practice. Further work is currently

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Timescale for roll out…

being undertaken to develop and improve these standards in order to standardise certain aspects of the design process and create consistency in the way the industry works from project to project.

Level 2
Level 2 **BIM** requires the production of 3D information models by all key members of the Integrated Team. However, these models need not co-exist in a single model. By understanding and utilising BS 1192:2007, designers can ensure that each designer's model progresses in a logical manner before it is used by another designer or a designing subcontractor. It is not anticipated that the legal, contractual or insurance issues currently utilised by the industry will change for level 2 but it is fair to say that level 2 **BIM** does expose some of the deficiencies of current contractual documentation. For example, the role of the Model Manager needs to be considered and the roles and responsibilities of the various designers and contracting parties need to be clearer, particularly in relation to Performance Specified Work. The outputs required at each stage will also require greater definition, and in

Level 3
The greatest **BIM** challenges arise when moving from level 2 **BIM** to level 3 **BIM** and the perceived 'holy grail' of the single project model. With level 2 resolving the methodology of all the designers working in 3D, the challenge with the single model will not be the collaborative use of the information: it will be harnessing the information in the model so that it is of greater use. For the information to have more value, software Interoperability will be required and the **BIM** Maturity Diagram acknowledges this (see box under i**BIM**). With level 3 **BIM** it will be possible for:
• early 'rough and ready' design analysis on environmental performance minimising iterative design time;
• cost models to be quickly derived from the model using new costing interfaces;

Timescale for roll out…

• health and safety aspects associated with the construction and maintenance of the building to be analysed parallel with the design; and
• asset management, KPI, and other feedback information to be aligned with intelligent briefing, enabling information in the model to develop during design and to be used as part of a Soft Landings approach, and to inform and improve future projects.

Design processes will need to be developed to their next level of refinement so that there are clear and established methods setting out how many parties can work in the same model environment at the same time. These processes aligned with better scope of service and responsibility documents will allay the fears of some legal or insurance observers, but it has to be acknowledged that the implications and legal issues associated with copyright, responsibilities and scope of services need to be identified and considered further if level 3 **BIM** is to be successful

Why Revit…

AutoCAD has been around since the early to mid 1980's and has dominated the industry. Many a **CAD** program have come and gone, but **AutoCAD** has maintained the course and is better than ever. Now, when **Autodesk** makes the claim that **Revit** will replace **AutoCAD** for architectural applications within ten years, you have to take them seriously.

AutoCAD is an excellent **CAD** program, but **Revit** is the next generation in Architectural Design and production documents. One of the new "buzz" words that is making it way into the work place is "**BIM**". (Building Information Mananagement) is going to be the way of the future. And, **Revit** is the program that will be the program of choice for architectural applications.

Revit is smarter than a regular **CAD** program, developed with the entire building life-cycle in mind, it allows all parts to come together with less clashes and errors on site.

<u>**Top reasons to use Revit**</u>

- Preview the building in 3D during the design development
- Quick changes to design, no repetitive tasks
- Vast library of parametric building components
- High quality construction documents
- Accurate estimation of quantities and cost
- Improved coordination
- High level of flexibility

Autodesk® **Revit®** Architecture 2012

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The Highland Councils Revit Pilot Group...

There are always a number of things you need to consider when implementing changes which are fundamental to the way a drawing office operates. We were mindful that introducing **Revit** throughout **The Highland Council** drawing offices in one go could be a huge risk in terms of reducing production output, so opted for a staged **roll-out** beginning with a small **pilot group**. The intention would be that the **pilot group** over time would develop office standards and user manual.   The pilot group would also be responsible for reporting back to the **IT working group** with any suggestions, concerns or issues with the use of **Revit**. To facilitate the adoption, a bespoke training programme was developed aimed at assisting the **pilot group** to commence working with **Revit**.
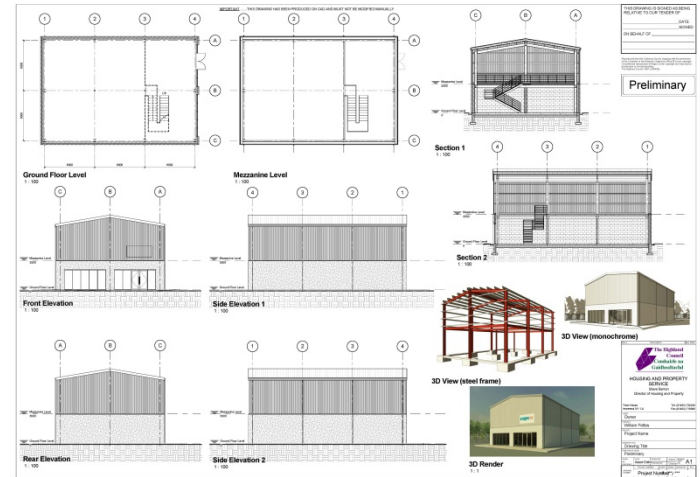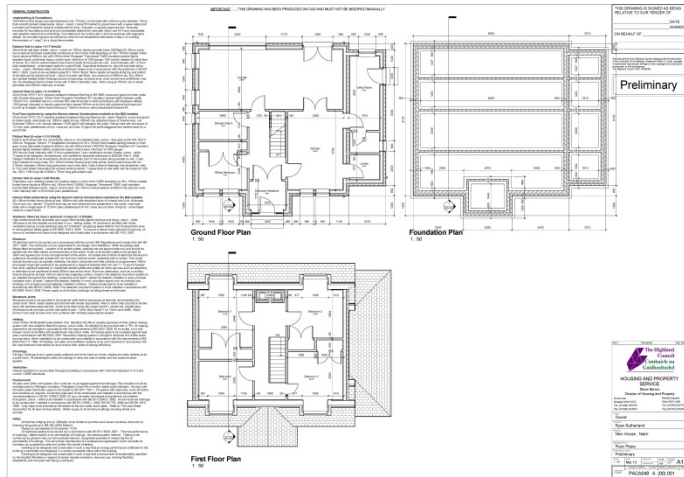

"Profits are down, competition is up, and someone is sticking gum under the chairs!"

The Revit Pilot Group members are:

- William Fettes – Revit Coordinator
- Jaclyn Petrie
- Ian Flett
- Ryan Sutherland
- Iain Robertson
- Ian Campbell
- Martin Bell

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Examples of Pilot Group Training...

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Projects – Wick High School...

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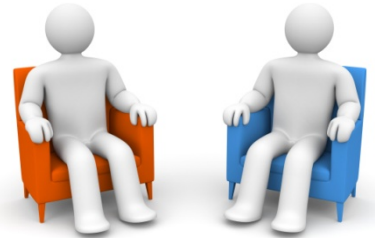Comhairle na
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Projects – Wick High School...

What are the benefits…

For the client...
- An excellent interactive visual engagement tool
- Provides intelligent data for facility and asset management
- Lower costs and shorter programmes – improved design efficiency, planning and supply chain integration

For the designer...
- An excellent client visual engagement tool
- Reduces administrative work, allowing focus on design
- Easier and quicker co-ordination and integration of all disciplines
- Reduced design re-work and improved design sign-off process with the end users

For the contractor...
- More competitive prices and presence – by reducing risk and time; and demonstrating a solid understanding of projects
- Precise response to proposed changes – increased safety, fewer defects and snags
- Easy rehearsal and demonstration of sequencing, logistics, site setup and traffic routes
- A full collaborative supply chain approach – including clash detection and easier co-ordination

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Summary…

It is clear that the digital revolution is influencing our everyday lives, whether movies, books and music or searching to buy a house or a car. This technology and process change is now also revolutionising construction.
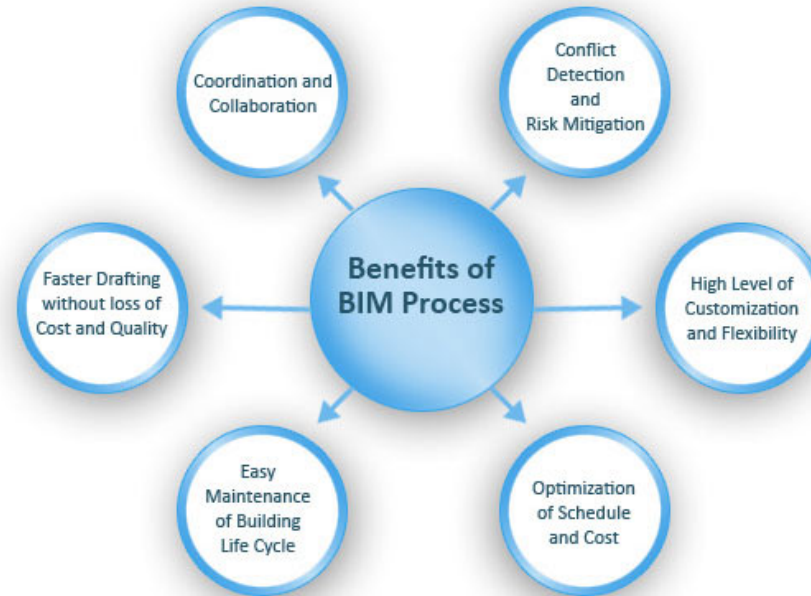
When considering **BIM**, there are big advantages to be gained – generating drawings from a single model, to clash detection, to the creation of visualisations. Information is at the heart of **BIM** and standardised, well-structured information will enable enormous efficiencies in the construction industry.

BIM IS NOT A FAD - BIM IS HERE TO STAY...