

# Digital Construction Session

---

Craig C Ferrans MCIAT – HBF Technical Director

# Agenda

---

- Introductions
- What is BIM (Building Information Modelling)?
- House Builders Journey
- Supply Chain Support
- Deliverables
- Benefits of Digital Construction
- HBF response
- Q&A Session

# Housekeeping

---



# What is Building Information Modelling?

---

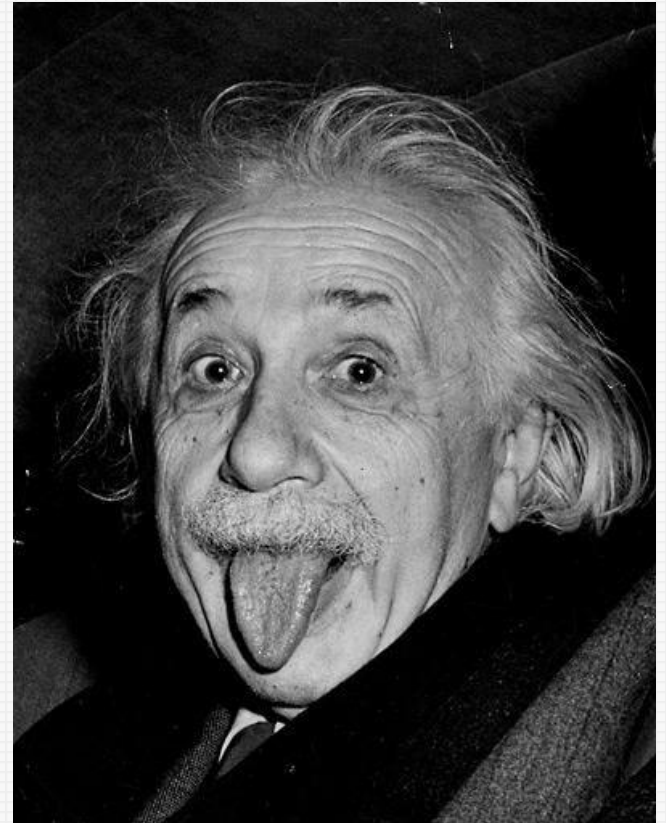
“An integrated digital process providing coordinated, reliable, shareable data throughout all project phases, from design through construction and into operation”



# Fact Finding

---

- Software demonstration
- Change in vocabulary
- Components fully parametric
- Automated scheduling
- Work with Worksets
- Tap into visualisation
- Supply chain involvement
- Drive standardisation



# IT Hardware and Infrastructure

---





# Taking the Plunge

---





# Getting Started

---

- 2011 Software was installed
- Only Central Team used Revit
- All BIM content was created by Miller homes
- Incredibly steep learning curve
- Internal service levels maintained
- All standard house types drawn in native Revit software
- Original working drawing packs replicated

# Live Views

Autodesk Revit 2014 - 307 Darwin.rvt

Architecture Structure Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Modify | Windows

Modify | Windows

Elevation: 4011 Front Elevation - WD - 307 Darwin.rvt

Section: 1 - 307 Darwin.rvt

Schedule: Window Sc... <Window Schedule>

A	B	C
Mark	Width	Height
W1	1248	1350
W2	1248	1050
W3	460	1050
W4	1248	1200
W5	685	1050
W6	1248	1200
W7	1248	1200
W8	1248	1200
W9	685	1050

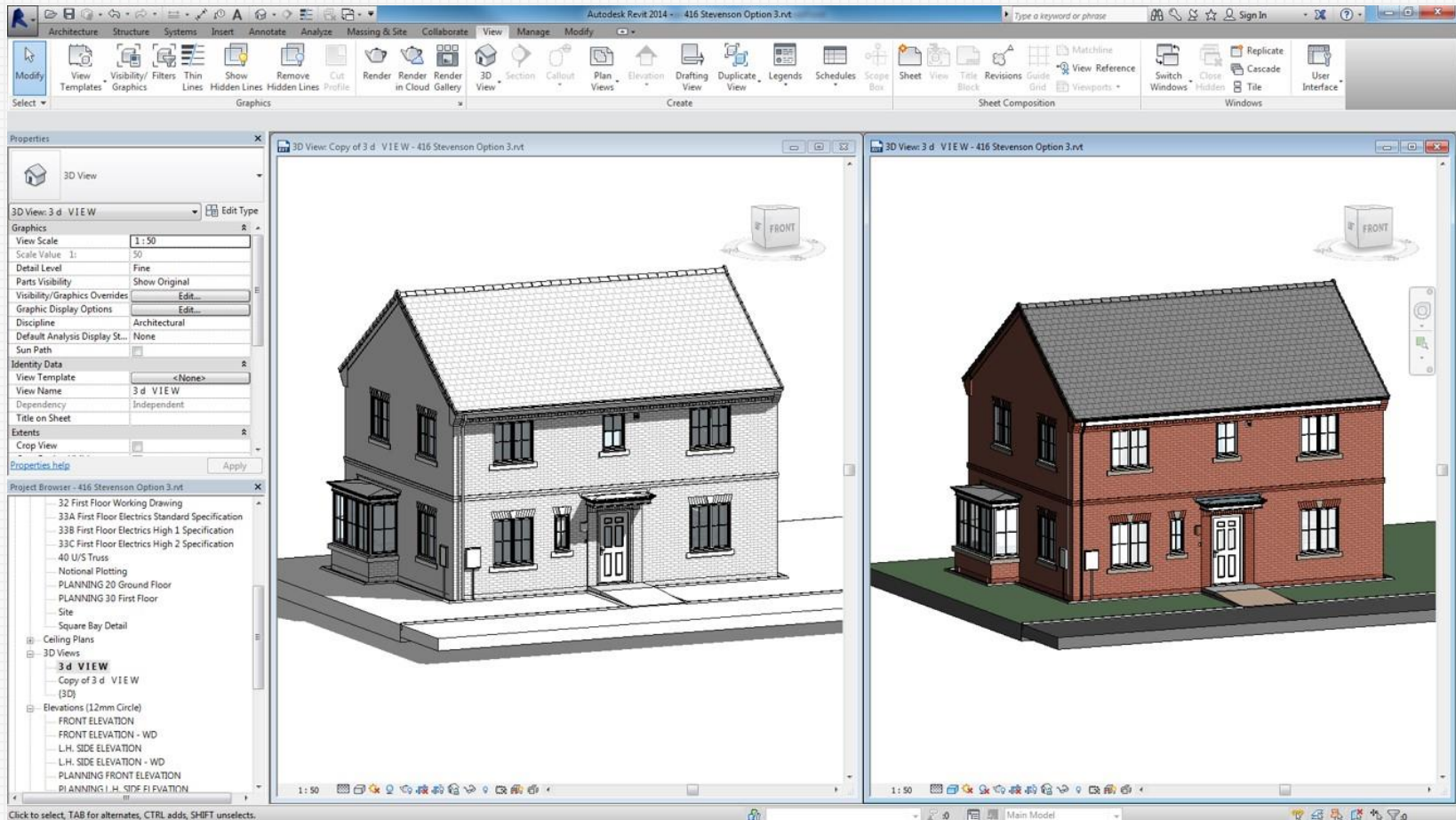
Floor Plan: 201 Ground Floor - WD - 307 Darwin.rvt

3D View: (3D) - 307 Darwin.rvt

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

Main Model

# Working Drawing Information



# Internal Design

---





# Visualisation

---



# Family Creation

The screenshot displays the Autodesk Revit 2014 interface in the Family Editor. The main window shows a 3D view of a window family instance on a wall. The 'Family Types' dialog is open, showing the following parameters:

Parameter	Value	Formula	Lock
<b>Construction</b>			
Wall Closure	By host	=	<input checked="" type="checkbox"/>
Construction Type		=	<input type="checkbox"/>
<b>Text</b>			
TOUGHENED SAFET	NO	=	<input type="checkbox"/>
STONE CILL	NO	=	<input type="checkbox"/>
RESTRICTOR	NO	=	<input type="checkbox"/>
NON OPENING CAS	DIRECT GLAZED	=	<input type="checkbox"/>
GLAZING STYLE	PLAIN	=	<input type="checkbox"/>
CASEMENT CONFIG	SIDE HUNG	=	<input type="checkbox"/>
BRICK CILL	YES	=	<input type="checkbox"/>
<b>Materials and Finishes</b>			
Material Glazing	Glass	=	<input type="checkbox"/>
Material Frame	Plastic - White	=	<input type="checkbox"/>
<b>Dimensions</b>			
Window Board Proje	25.0	=	<input checked="" type="checkbox"/>
Window Board Exten	25.0	=	<input type="checkbox"/>
Plasterboard Thickn	25.0	=	<input type="checkbox"/>
Height	1350.0	=	<input checked="" type="checkbox"/>
EXT CILL OVERHAN	35.0	=	<input type="checkbox"/>
Width	1247.5	=	<input type="checkbox"/>
Cavity Width	90.0	=	<input type="checkbox"/>
Rough Width		=	<input checked="" type="checkbox"/>
Rough Height		=	<input checked="" type="checkbox"/>
<b>IFC Parameters</b>			
Operation		=	<input type="checkbox"/>
<b>Analytical Properties</b>			
Analytic Constructio	<None>	=	<input type="checkbox"/>
Visual Light Transmi		=	<input type="checkbox"/>
Solar Heat Gain Coef		=	<input type="checkbox"/>
Thermal Resistance (		=	<input type="checkbox"/>
Heat Transfer Coeffi		=	<input type="checkbox"/>
<b>Other</b>			
Default Sill Height	800.0	=	<input type="checkbox"/>
<b>Identity Data</b>			

The 'Family Types' dialog also includes buttons for 'New...', 'Rename...', 'Delete', 'Add...', 'Modify...', 'Remove', and 'Manage...'. The 3D view shows a window family instance on a wall, with a 'BACK LEFT' button in the top right corner.



# Asset Data Examples

---

- Product details
- Maintenance schedules
- Contractual & guarantee information
- Thermal Details
- Travel distances
- Installation instructions
- Quantities
- Costs
- Storage
- Delivery times
- Health and Safety
- Recycling & disposal suggestions
- URL's

# Schedules

Autodesk Revit 2014 - 509 Chichester.rvt - Schedule: MILLER STANDARD WINDOW SCHEDULE

Modify Schedule/Quantities

Columns Rows Titles & Headers Appearance Element

<MILLER STANDARD WINDOW SCHEDULE>												
A	B	C	D	E	F	G	H	I	J	K	L	M
REF.	PRODUCT CODE	LOCATION	WIDTH (mm)	HEIGHT (mm)	CASEMENT CONFIGURATION	NON-OPENING CASEMENTS	GLAZING STYLE	GLAZING PATTERN	EGRESS WINDOW	TOUGHENED SAFETY GLASS	RESTRICTOR	CILL TYPE
W1	FMTWDS1812	LOUNGE	1810	1200	SIDE HUNG	DUMMY SASH	FULL MID TRANSOM	CLEAR LOW - E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STONE
W2	FMTWDS1812	STUDY	1810	1200	SIDE HUNG	DUMMY SASH	FULL MID TRANSOM	CLEAR LOW - E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STONE
W3	PCW1810	KITCHEN	1810	1050	SIDE HUNG	DIRECT GLAZED	PLAIN	CLEAR LOW - E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BRICK
W4	PCW9110	FAMILY / BRE	910	1050	SIDE HUNG	DIRECT GLAZED	PLAIN	CLEAR LOW - E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BRICK
W5	PCW9110	FAMILY / BRE	910	1050	SIDE HUNG	DIRECT GLAZED	PLAIN	CLEAR LOW - E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BRICK
W6	FMTWDS1812	BED 3	1810	1200	SIDE HUNG	DUMMY SASH	FULL MID TRANSOM	CLEAR LOW - E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STONE
W7	FMTWDS1212	BED 4	1248	1200	SIDE HUNG	DUMMY SASH	FULL MID TRANSOM	CLEAR LOW - E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STONE
W8	FMTWDS1812	BED 1	1810	1200	SIDE HUNG	DUMMY SASH	FULL MID TRANSOM	CLEAR LOW - E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	STONE
W9	PWC6810	E/S	685	1050	SIDE HUNG	N/A	PLAIN	OBSCURE LOW - E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BRICK
W10	PCW1212	BED 5	1248	1200	SIDE HUNG	DIRECT GLAZED	PLAIN	CLEAR LOW - E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BRICK
W11	PCW1212	BED 2	1248	1200	SIDE HUNG	DIRECT GLAZED	PLAIN	CLEAR LOW - E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BRICK
W12	PWC6810	E/S 2	685	1050	SIDE HUNG	N/A	PLAIN	OBSCURE LOW - E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BRICK
W13	PWC6810	BATH	685	1050	SIDE HUNG	N/A	PLAIN	OBSCURE LOW - E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BRICK

# Exporting Information

MILLER STANDARD WINDOW SCHEDULE - PROCUREMENT.txt - Microsoft E

File Home Insert Page Layout Formulas Data Review View Acrobat

Clipboard Font Alignment Number Styles

	A	B	C	D	E	F	G	H
1	MILLER STANDARD WINDOW SCHEDULE - PROCUREMENT							
2	REF.	PRODUCT CODE	LOCATION	WIDTH (mm)	HEIGHT (mm)	CASEMENT CONFIGURATION	NON-OPENING CASEMENTS	GLAZING STYLE
3	W1	FMTWDS1812	LOUNGE	1810	1200	SIDE HUNG	DUMMY SASH	FULL MID TRAN
4	W2	FMTWDS1812	STUDY	1810	1200	SIDE HUNG	DUMMY SASH	FULL MID TRAN
5	W3	PCW1810	KITCHEN	1810	1050	SIDE HUNG	DIRECT GLAZED	PLAIN
6	W4	PCW9110	FAMILY / BREAKFAST	910	1050	SIDE HUNG	DIRECT GLAZED	PLAIN
7	W5	PCW9110	FAMILY / BREAKFAST	910	1050	SIDE HUNG	DIRECT GLAZED	PLAIN
8	W6	FMTWDS1812	BED 3	1810	1200	SIDE HUNG	DUMMY SASH	FULL MID TRAN
9	W7	FMTWDS1212	BED 4	1248	1200	SIDE HUNG	DUMMY SASH	FULL MID TRAN
10	W8	FMTWDS1812	BED 1	1810	1200	SIDE HUNG	DUMMY SASH	FULL MID TRAN
11	W9	PWC6810	E/S	685	1050	SIDE HUNG	N/A	PLAIN
12	W10	PCW1212	BED 5	1248	1200	SIDE HUNG	DIRECT GLAZED	PLAIN
13	W11	PCW1212	BED 2	1248	1200	SIDE HUNG	DIRECT GLAZED	PLAIN
14	W12	PWC6810	E/S 2	685	1050	SIDE HUNG	N/A	PLAIN
15	W13	PWC6810	BATH	685	1050	SIDE HUNG	N/A	PLAIN
16	W22		HALL	382	2100			
17	W33		HALL	382	2100			
18								
19								
20								

# Tail Chasing

---



# Supply Chain Support

---



# Supply Chain

---

- Contribute in different ways
  - Provide BIM content
  - Collaborate directly within the model
  - Schedule information & drawings



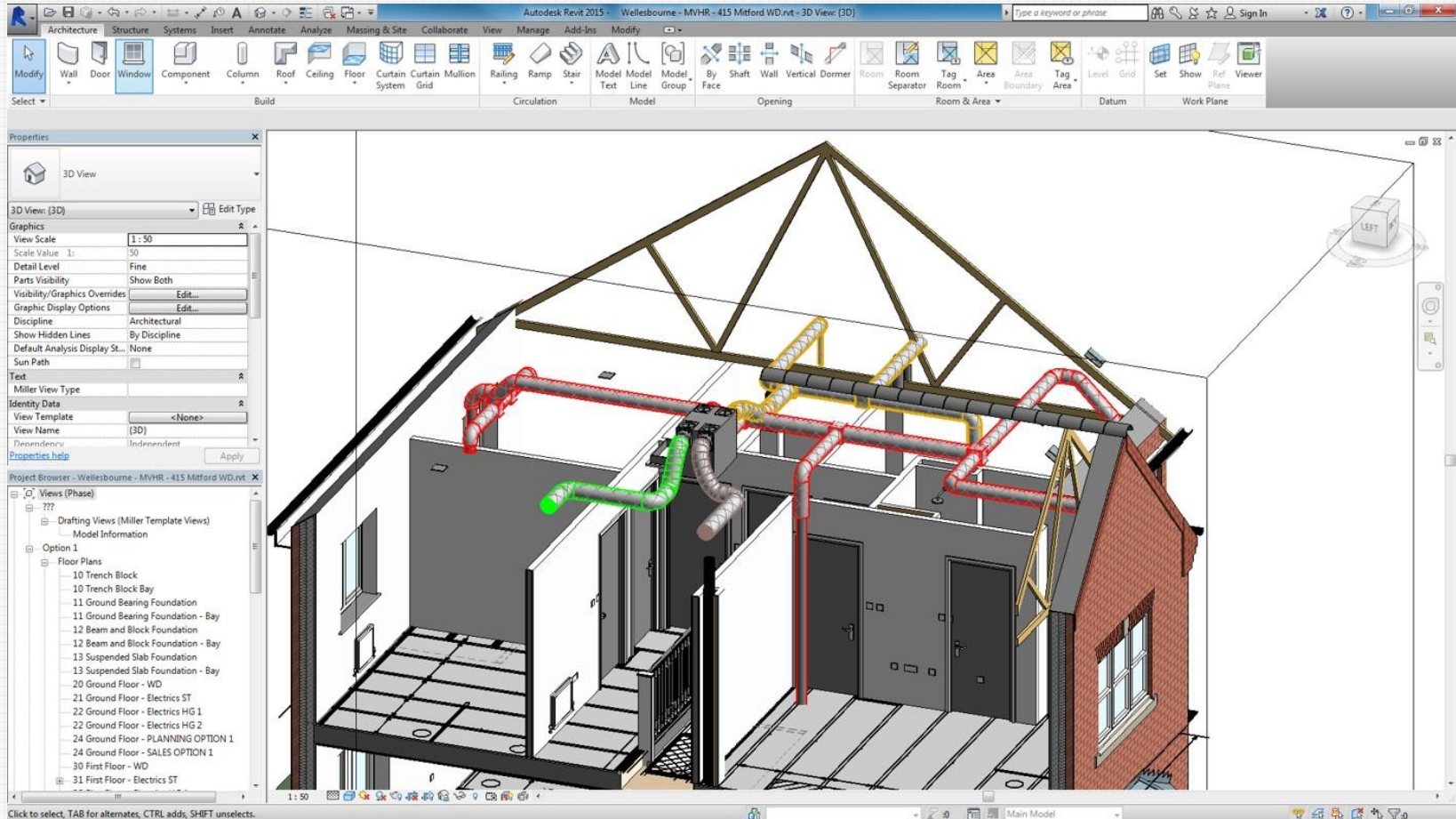


# Supply Chain

---

- Potential to align BIM schedules with build programme
  - Delivery dates & requirements
  - JIT deliveries?
- Better stock management
  - Focused stock levels
  - Right product & right time
  - Visibility of forecasted requirement

# Collaboration



# Street Scenes

---



# Site Layout Design

---





# Site Layout Design

---



# Solar Studies





# Practical Workshop – Draw a House

---



# Practical Workshop – Build a House!

---



# Process Not Just Technology

“BIM is about people and process as much as it is about software”



# Silo Mentality

---



# Benefits

---

- Standard process to improve quality and reduce waste
- Communicate more effectively to reduce risk and uncertainty
- Gain early insight into quality and health & safety
- Measure and report on site activities and productivity
- Reducing handover issues to improve home owner satisfaction
- Provides invaluable data sets and cost analysis
- Links with other compliance tools
- Supports beyond the sale of the home

# Quality and Customer Satisfaction

---





# HBF Digital Construction Group

---

- Promotes Digital Construction
- Support network for House Builders
- Share best practice
- Removes ambiguity
- Enhance communication with key stakeholders
- Reports back to the wider housebuilding community
- Seeks to push boundaries and innovate

# Perseverance

---



# Q & A Session

---





*The voice of the  
home building  
industry*

