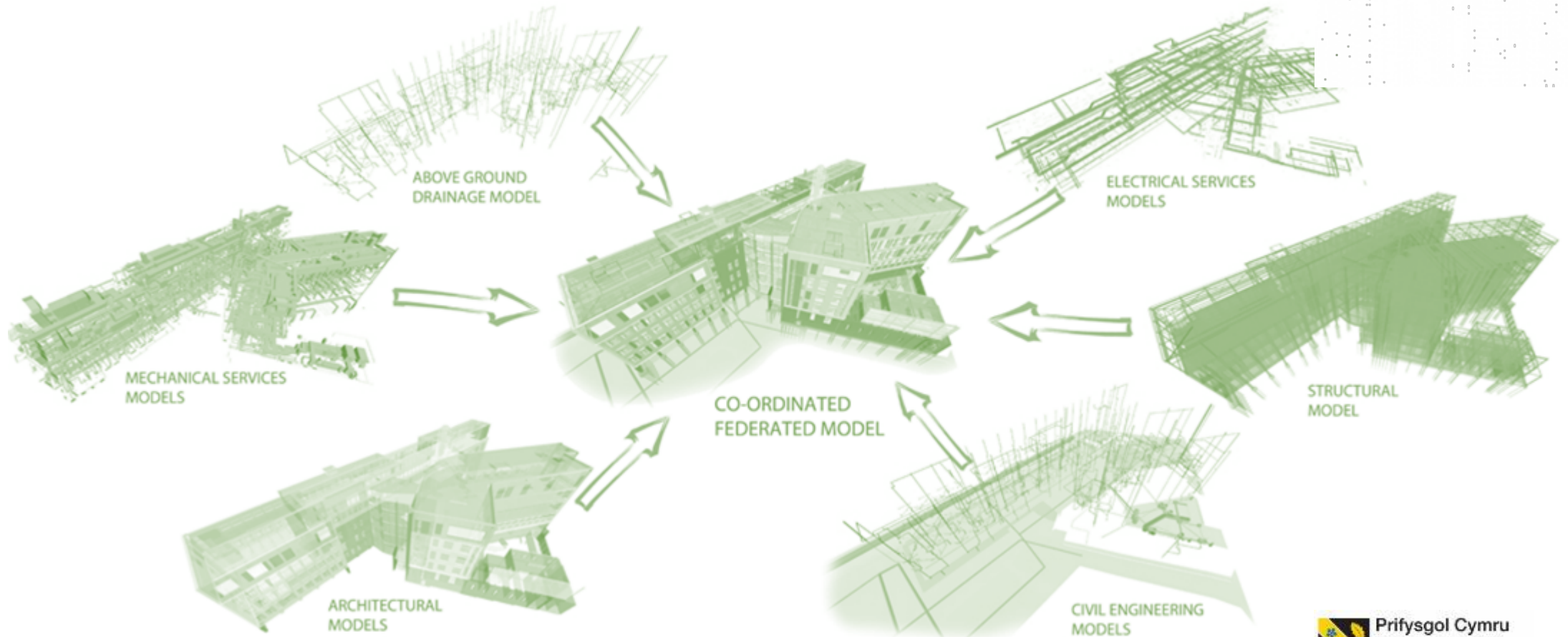


Building Information Modelling



www.onecreativeenvironment.com

NEW

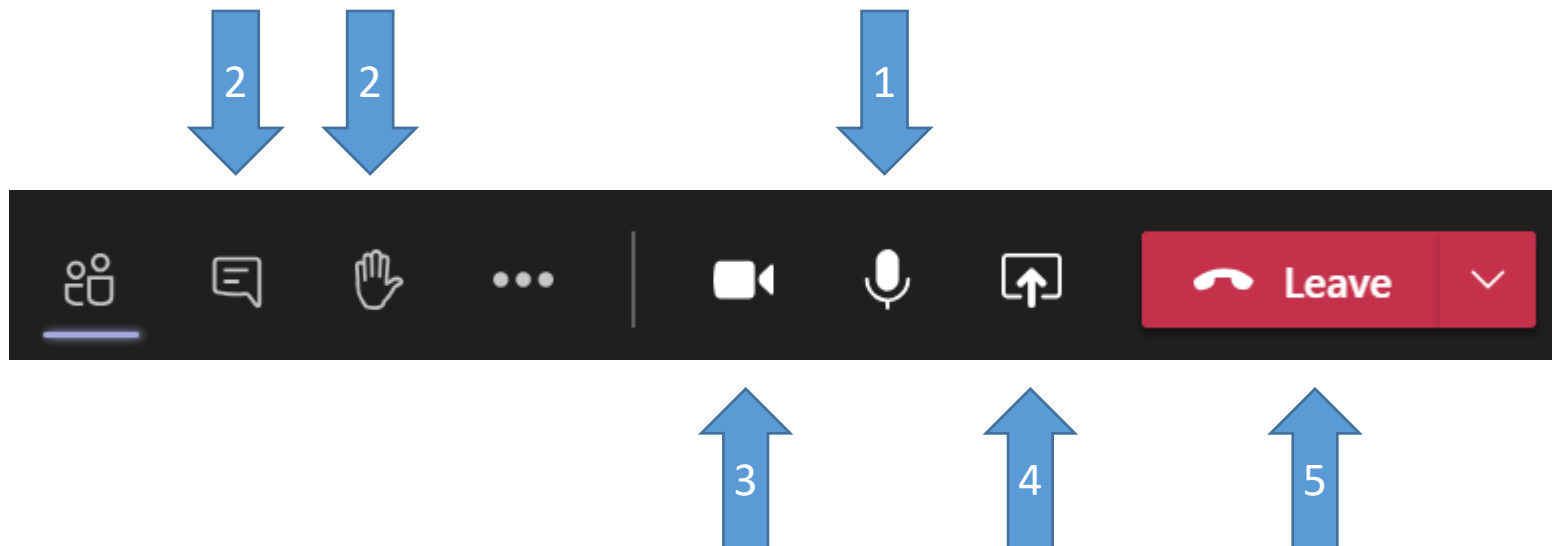
Week 1:

- Introduction to Module
- Introduction to BIM
- Revit Basics +



MS TEAMS HOUSEKEEPING

1. Mute your Microphone
2. Use Chat to Ask Questions or Put your hand Up
3. If you have a poor connection switch off Camera
4. I may ask you to share your screen.
5. When the lecture ends please hang up



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ACBA 5010 BIM 2020-21_GRP

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General

Wk 01

Wk 02

Wk 03

Wk 04

Wk 05

Wk 06

Wk 07

Wk 08

Wk 09



General

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Files

Class Notebook

Assignments

Grades

+

+ New

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🔗 Copy link

🔗 Open in SharePoint

General > Class Materials

 Name	Modified	Modified By
 Assignments	A few seconds ago	Gavin Traylor
 L4 Revision Videos	January 12	Gavin Traylor
  Lecture Notes	A few seconds ago	Gavin Traylor

Moodle - Reading List

← → ↺ 🔒 https://moodle.uwtsd.ac.uk/course/view.php?id=8122

Home My Modules Moodle Archives English (en)

BIM (ACBA5010)

Home My modules ACBA5010

Announcements

ExLibris Leganto Online Resource List

☐ Open all ☒ Close all

Instructions: Clicking on the section name will show / hide the section.

1



Module

W ACBA5010

2



Assessment Briefs 2020/2021

3



Turnitin Submission Links 2020/21

BIM (ACBA 5010)
DRAFT ACBA5010 (2020-20) 12 items in 2 sections

LIST SENT NEW SECTION ADD ITEMS +

Essential reading (8)

Material which is an essential part of the course and students are expected to draw on as a core part of their learning. Must be available from the library and should be available online.

BOOK **BIM handbook : a guide to building information modeling for owners, managers designers, engineers, and contractors**
Eastman, Charles M., 2nd ed., Chichester; Hoboken, N.J. : Wiley, 2011., Total Pages xiv, 626 p. :
Essential
Complete Available at Y Fforwm Main Collection : 690.028 BIM

WEBSITE **Little Book of BIM 2020**
BSI, BSI, 2020
British Standard Institution - Guide to BIM documentation. Essential for all students
Essential
Complete Check availability >

WEBSITE **NBS BIM Library**
NBS, NBS, NA
NBS BIM Library of BIM Objects
Essential
Sent Check availability >

BOOK **Building information modeling for dummies**
Mordue, Stefan., Philp, David.; Swaddle, Paul., Chichester, England : John Wiley & Sons Ltd, 2016., Total Pages 1 online resource (356 p.)
Essential
Complete Check availability >

BOOK **BIM and construction management : proven tools, methods, and workflows**
Mordue, Stefan., Philp, David.; Swaddle, Paul., Chichester, England : John Wiley & Sons Ltd, 2016., Total Pages 1 online resource (356 p.)
Essential
Complete Check availability >

Suggested Reading List

Francis Ching (2015) *Architectural Graphics*

BSi (2019) *The Little Book of BIM*

BSi (2019) *Introduction to the New International Standard ISO 19650*

Eastman C, Teicholz P, Sacks R and Liston K (2011)
BIM Handbook: A Guide to BIM for Owners, Managers, Designers, Engineers & Contractors. Hoboken: John Wiley & Sons Inc.

Mordue S Swaddle P and Philp D (2015). *Building Information Modelling for Dummies*. Chichester: John Wiley & Sons Ltd.

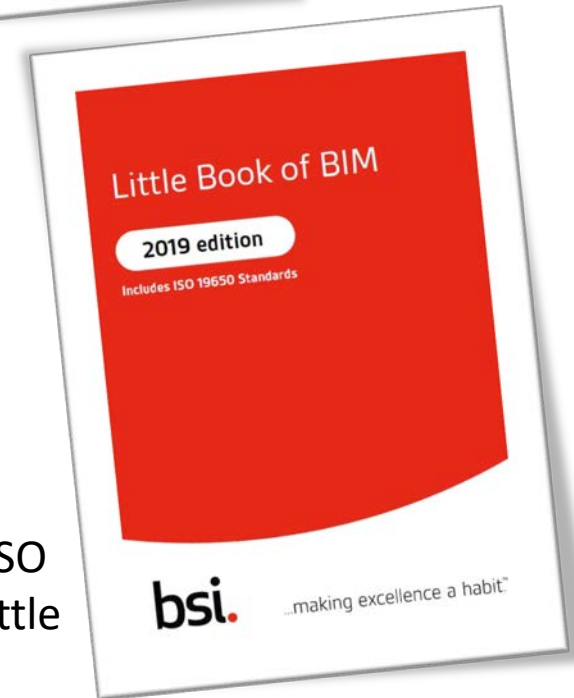
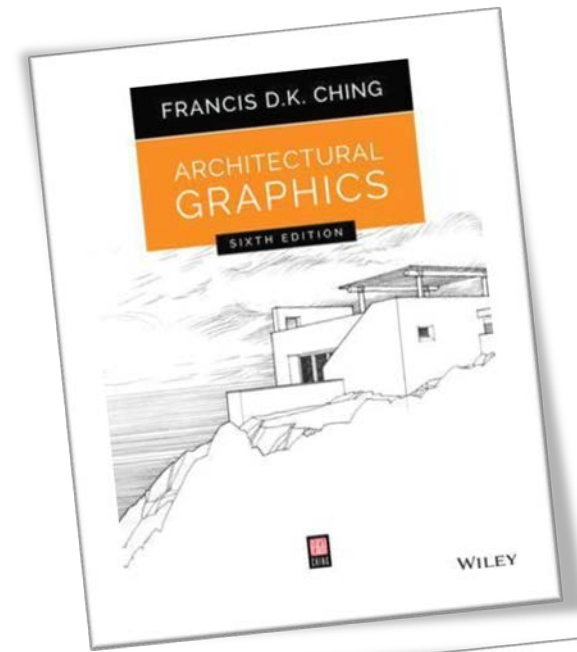
NBS National BIM Library

The BIM HUB: BIM Journal

<https://academy.autodesk.com/>

Revit Tutorials - Youtube.

<https://bimblog.house/> Dan Rossiter (BSi)



Key BIM Standards, ISO and PAS – refer to 'Little Book of BIM' guide

ACBA 5010 Building Information Modelling (BIM)

AIM

- To provide learners with the skills needed to analyse, classify and produce two and three-dimensional drawings using industry-standard computer-aided design (CAD) software, as well as evaluating and applying knowledge of the information delivery cycle in Building Information Modelling (BIM) and its influence upon project efficiency.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to:

- Demonstrate an ability to analyse, classify and produce 2D and 3D drawings using industry-standard CAD software applications.
- Demonstrate an ability to render drawings to various scales and media and export drawings to different formats.
- Comprehend and apply the functions and processes needed to manage the life cycle of a built structure in a Building Information Modelling environment and subsequently to produce digital data.



ACBA 5010 Building Information Modelling (BIM)

- Some of you will have no experience at L4 (QS group).
- Some of you are new to the university.
- Some of you have further skills acquired in industry.
- Some of you will have completed L4 Module Working with Digital Tech and BIM.
- Some of you will have completed L4 Module Working with Digital Tech and BIM and have completely blanked it from your memory. (hopefully not!)

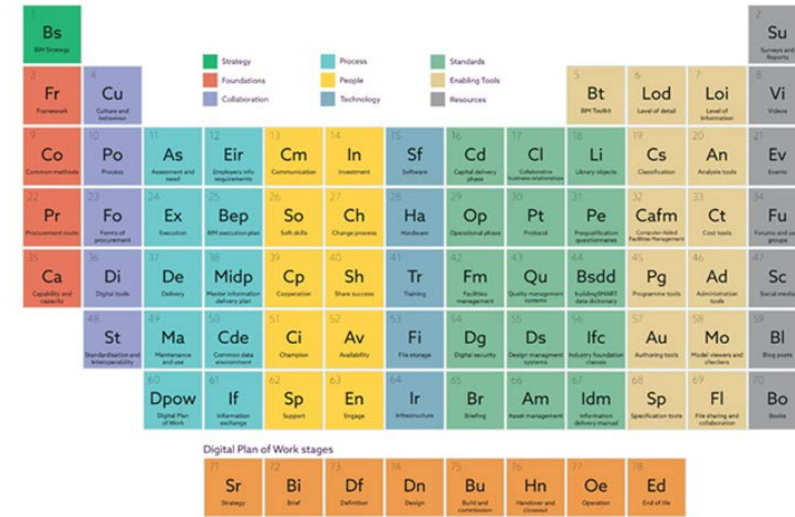


**DON'T
PANIC**

ACBA 5010 Building Information Modelling (BIM)

Module Overview.

- Review the BIM Process
- Formatting and naming conventions and standards.
- Produce BIM documentation
- Create data rich models
- Evaluate using collaborative software
- Visualise using VR techniques.



ACBA 5010 Building Information Modelling (BIM)

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<https://www.uwtsd.ac.uk/onlinelearning/>

Remote PC Frequently Asked Questions

⊕ How do I connect using Remote PC?

If your lecturer has instructed you to connect to an online lecture, or you'd like to connect to our Open Access computers, the below guides explain how to connect.

You're also able to use this process to connect to Open Access computers if you need access to software not installed on your personal device.

You'll need to setup Multi-Factor Authentication (MFA) before you're able to use Remote PC. If you don't have MFA setup already, you'll need to set this up first.

- [Remote PC - Setup Multi-Factor Authentication](#)
- [Remote PC - Windows to Windows Connection Guide](#)
- [Remote PC - MacOS to Windows Connection Guide](#)

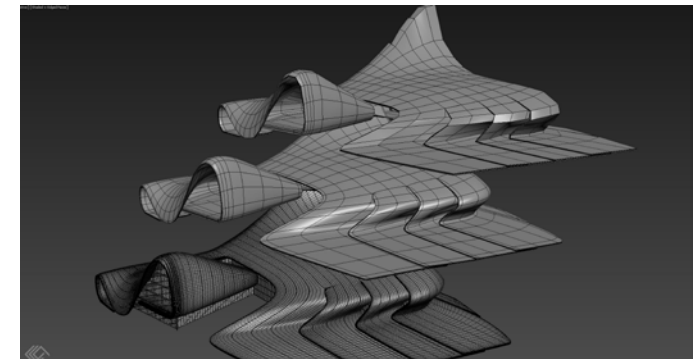
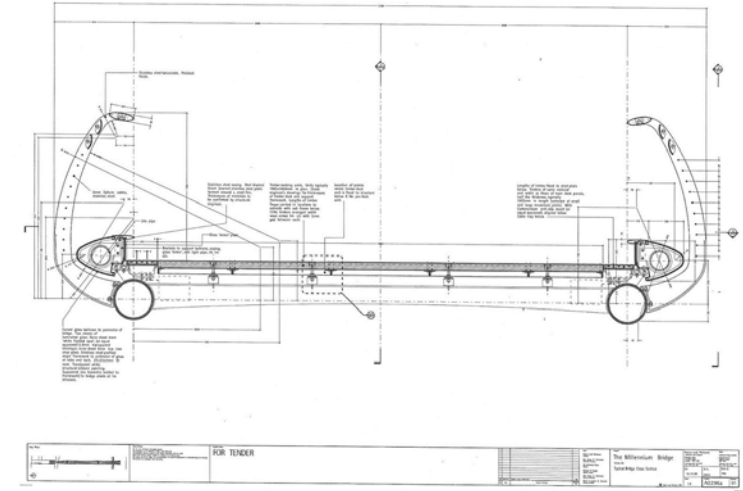
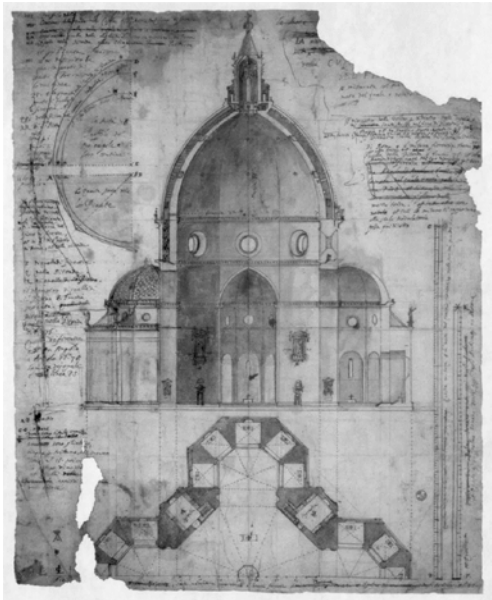
PREVIOUSLY ON L4

Working with Digital Technology and BIM

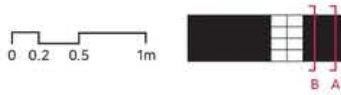
Why do we draw?

Cave Paintings Argentina



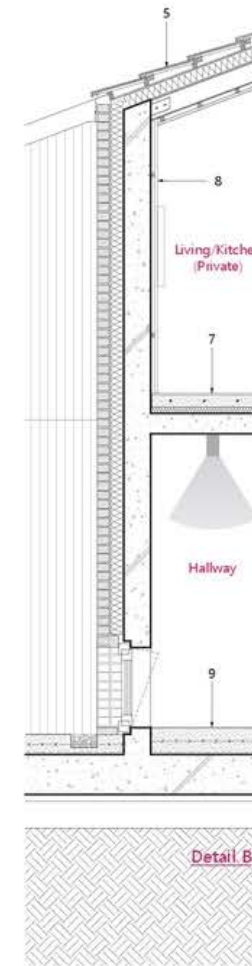
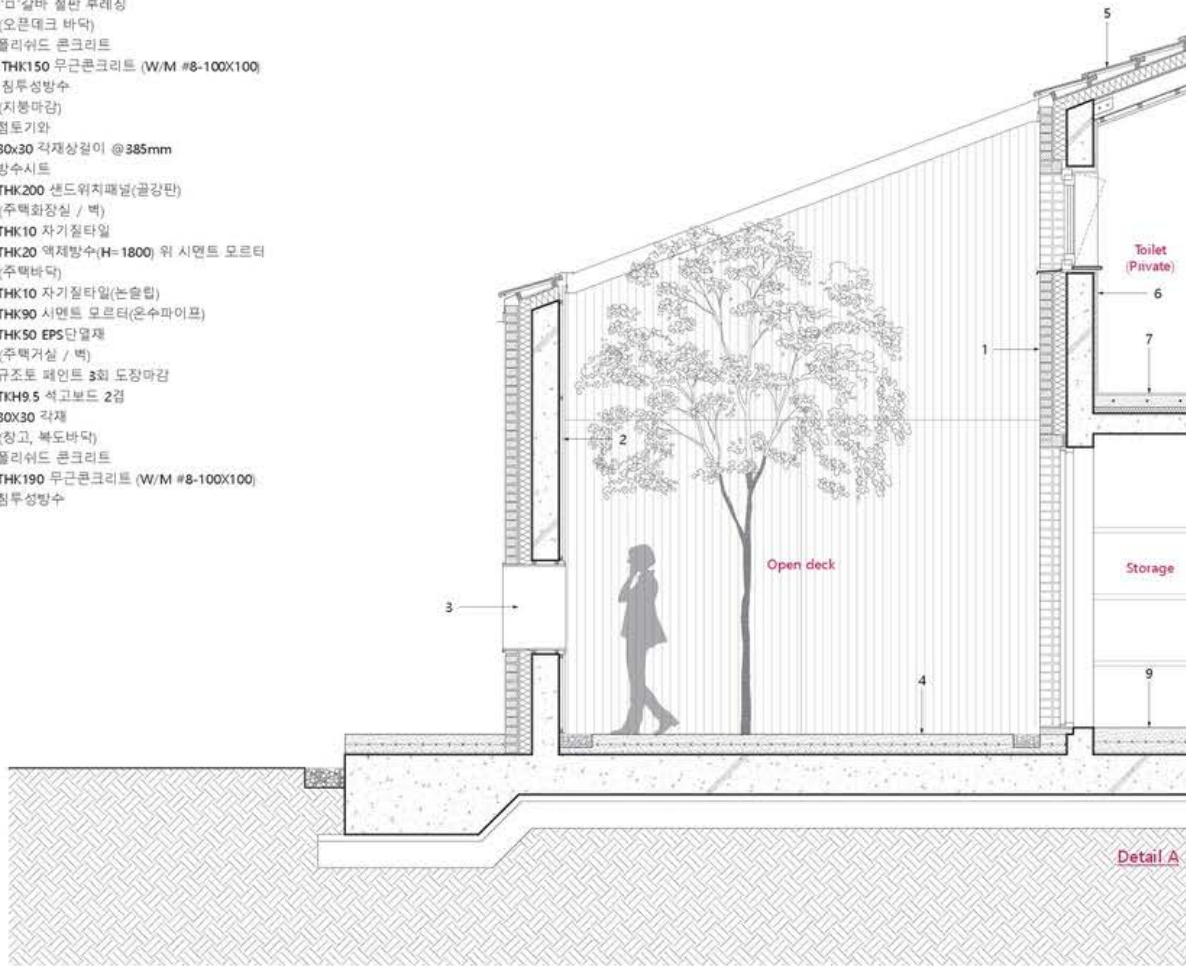
[illegible]

How do we draw within the Construction Industry?



detail A_B

- 1 (외장재)
57X90X230 전벽돌 0.5B쌓기
THK120 단열재
- 2 (오픈데크_벽)
열차우목재 마감
THK9.5 합판 1겹
30X30 각파이프 @600
- 3 (마감마감)
플소도장
·외·갈바 철판 후레싱
- 4 (오픈데크 바닥)
폴리우드 콘크리트
THK150 무근콘크리트 (W/M #8-100X100)
침투성방수
- 5 (지붕마감)
점토기와
30x30 각재상철이 @385mm
방수시트
THK200 샌드위치패널(골강판)
- 6 (주벽화장실 / 벽)
THK10 자기질타일
THK20 액체방수(H=1800) 위 시멘트 모르타
- 7 (주벽바닥)
THK10 자기질타일(눈솔림)
THK90 시멘트 모르타(운수파이프)
THK50 EPS단열재
- 8 (주벽거실 / 벽)
규조토 패인트 3회 도장마감
THK9.5 석고보드 2겹
30X30 각재
- 9 (창고, 복도바닥)
폴리우드 콘크리트
THK190 무근콘크리트 (W/M #8-100X100)
침투성방수



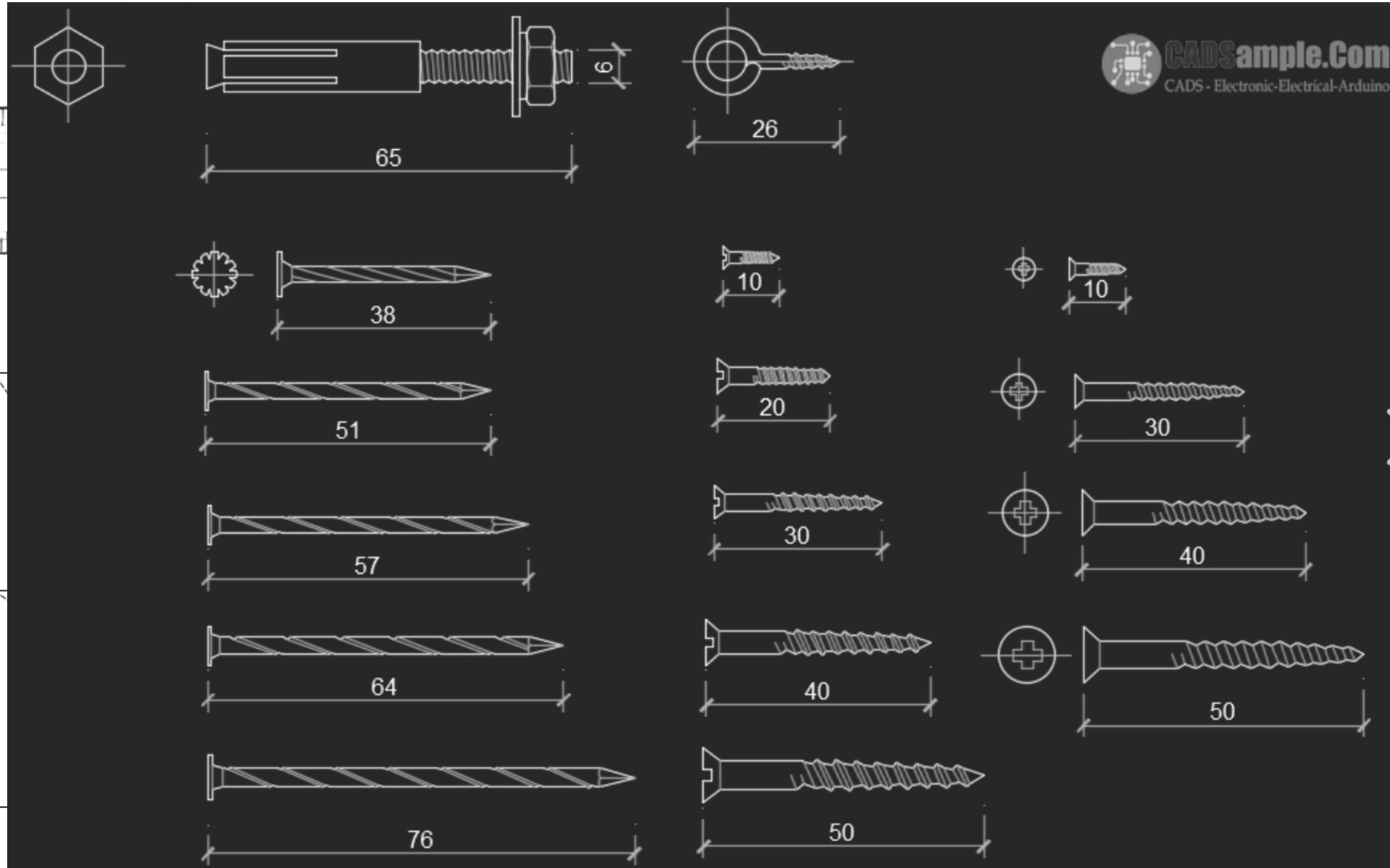
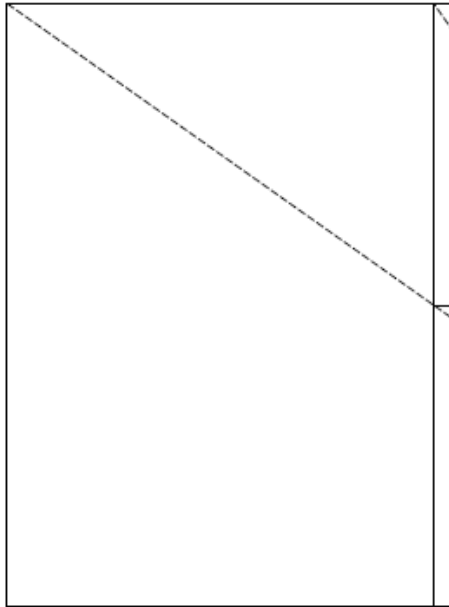
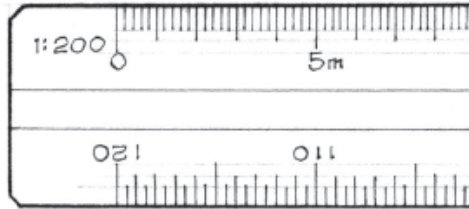
Drawings prepared in the Construction Industry

Must:

- Convey a message
- Read with understanding
- Demonstrate Knowledge
- Convey Ideas
- Explain a Narrative / Story

Industry conventions assist in the legibility of drawn information.

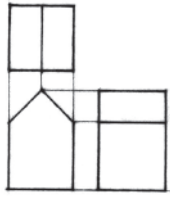
Appropriate Scale Drawings



Conventions

Projection Systems

Orthographic Projection



When we study how each projection system represents the same subject, we can see how different pictorial effects result. We categorize these pictorial systems into multiview drawings, paraline drawings, and perspective drawings.

Pictorial Systems

Multiview Drawings

- Multiview drawings consist of plans, sections, and elevations.
- The principal face in each view is oriented parallel to the picture plane.

Paraline Drawings

Isometrics: The three major axes make equal angles with the picture plane.

Dimetrics: Two of the three major axes make equal angles with the picture plane.

Trimetrics: All three major axes make different angles with the picture plane.

Axometric Projection

Oblique Projection

Elevation obliques: A principal vertical face is oriented parallel to the picture plane.

Plan obliques: A principal horizontal face is oriented parallel to the picture plane.

Perspective Projection

Perspective Drawings

1-point perspectives: One horizontal axis is perpendicular to the picture plane while the other horizontal axis and the vertical axis are parallel with the picture plane.

2-point perspectives: Both horizontal axes are oblique to the picture plane and the vertical axis remains parallel with the picture plane.

3-point perspectives: Both horizontal axes as well as the vertical axis are oblique to the picture plane.

These pictorial views are available in most 3D CAD and modeling programs. The terminology, however, may differ from what is presented here.

Orthographic Projection

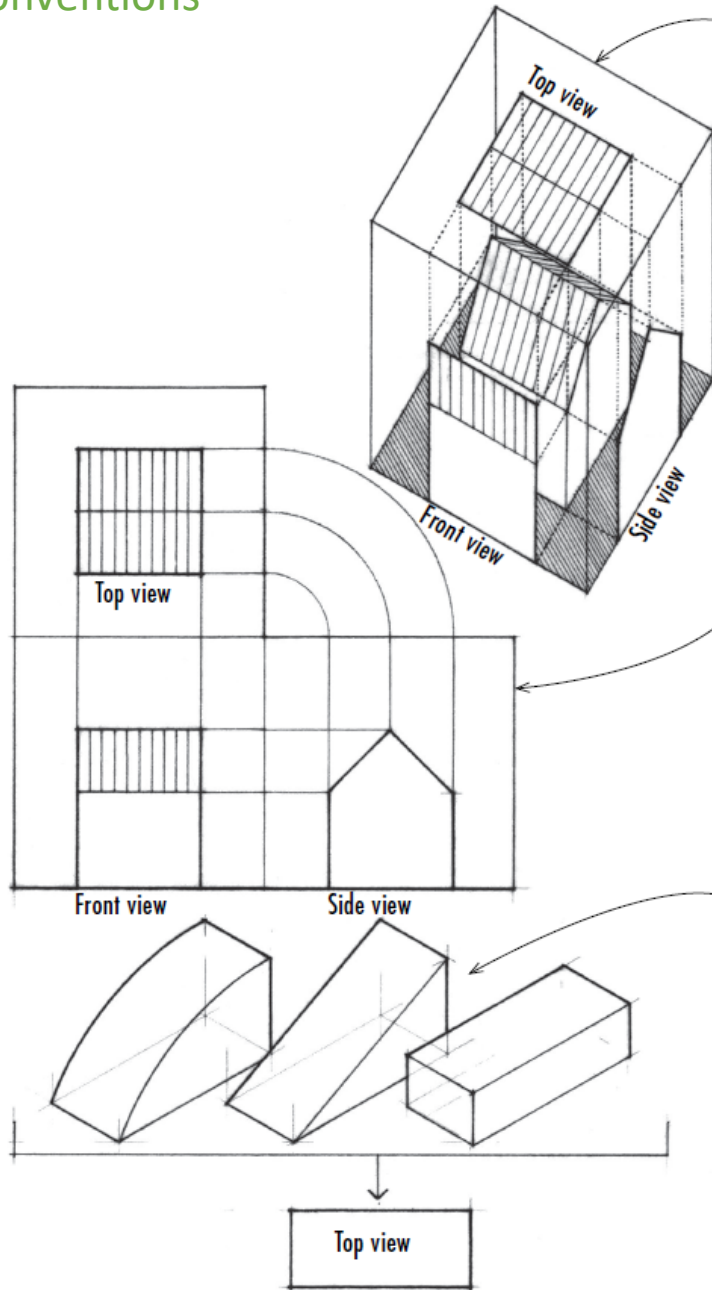
Drawings that can be prepared through orthographic projection to produce WHAT?:

PLANS

SECTIONS

ELEVATIONS

Conventions



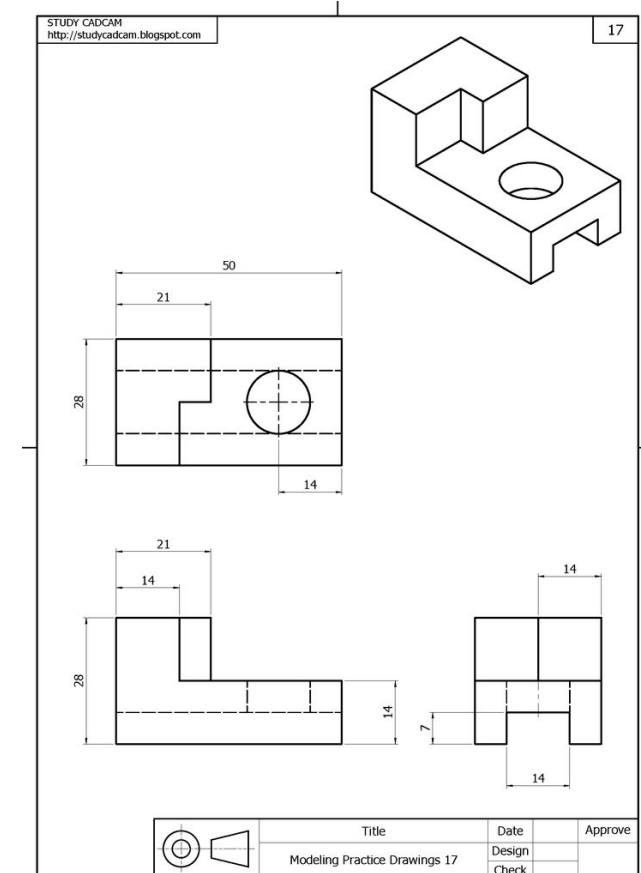
- If we enclose an object within a transparent picture-plane box, we can name the images projected orthographically onto the principal picture planes.
- Top views are orthographic projections cast onto the horizontal picture plane. In architectural drawing, top views are called plans.
- Front and side views are orthographic projections cast onto the vertical picture planes. In architectural drawing, front and side views are called elevations.
- See Chapter 4 for floor plans and sections, which are orthographic projections of cuts made through a building.

- To make it easier to read and interpret how a series of orthographic projections describe a three-dimensional whole, we arrange the views in an orderly and logical fashion.
- The most common layout results when we unfold the transparent picture-plane box into a single plane represented by the drawing surface. The top or plan view revolves upward to a position directly above and vertically aligned with the front or elevation view, while the side view revolves to align horizontally with the front view. The result is a coherent set of related orthographic views.

- Although these three objects have different forms, their top views appear to be identical. Only by looking at related orthographic projections are we able to understand the three-dimensional form of each object. We should therefore study and represent three-dimensional forms and constructions through a series of related orthographic projections.
- The mind must be able to read and assemble a set of multiview drawings to fully understand the nature of the three-dimensional subject.

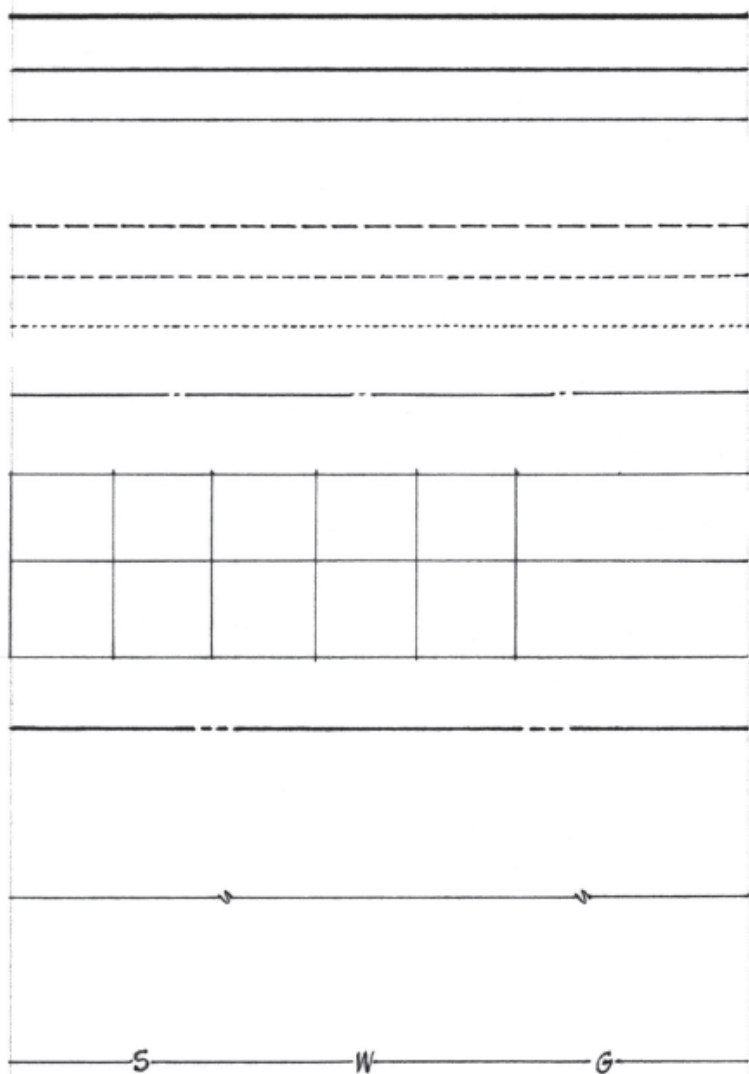
Orthographic Projection

CAD Packages can assist us to create multiple view of the same object through projection



<https://free-clipart-pictures.com/images/orthographic-drawing-mug-5.jpg>

Conventions - Lines



- Solid lines delineate the form of objects, such as the edge of a plane or the intersection of two planes. The relative weight of a solid line varies according to its role in conveying depth.
- Dashed lines, consisting of short, closely spaced strokes, indicate elements hidden or removed from our view.
- Centerlines, consisting of thin, relatively long segments separated by single dashes or dots, represent the axis of a symmetrical object or composition.
- Grid lines are a rectangular or radial system of light solid lines or centerlines for locating and regulating the elements of a plan.
- Property lines, consisting of relatively long segments separated by two dashes or dots, indicate the legally defined and recorded boundaries of a parcel of land.
- Break lines, consisting of relatively long segments joined by short zigzag strokes, are used to cut off a portion of a drawing.
- Utility lines consist of relatively long segments separated by a letter indicating the type of utility.

Line type conventions assist in the legibility of drawn information. The quality, thickness, scale and type of line can help communicate the importance of the line.

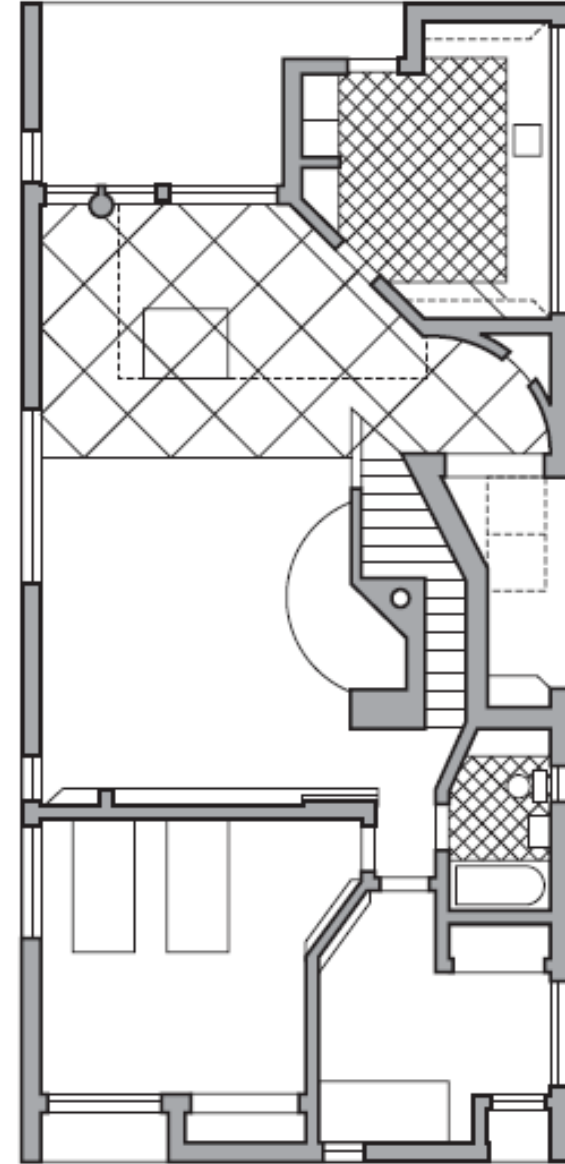
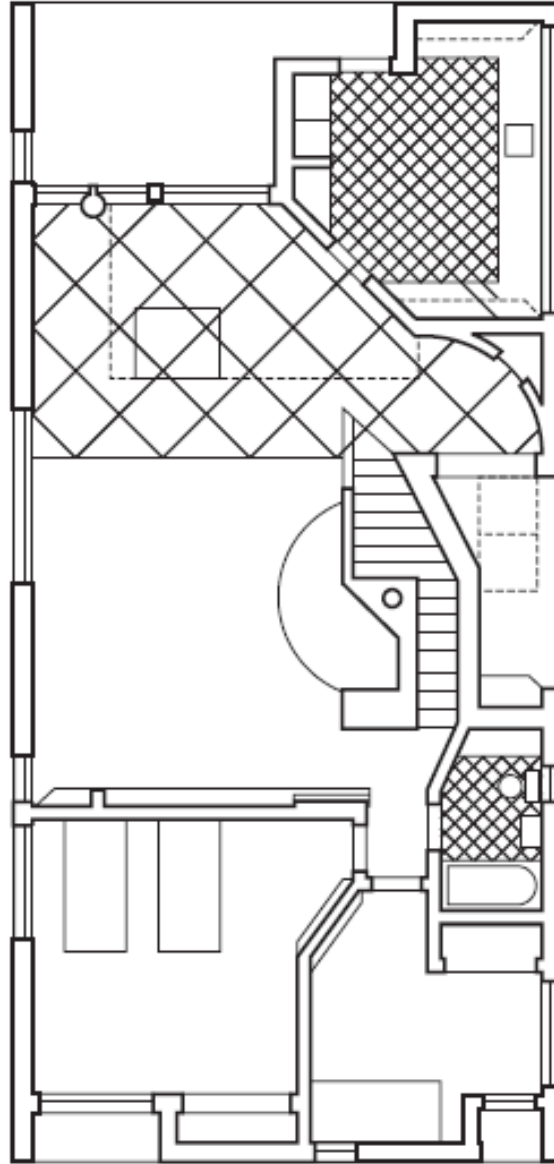
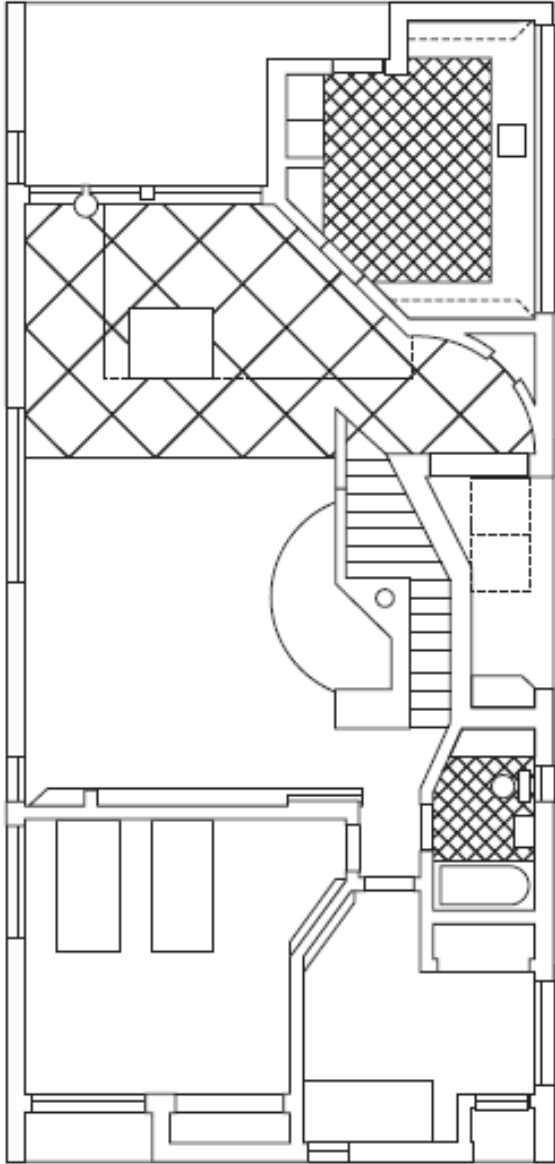
E.G

Thick Solid line depicting a section cut.

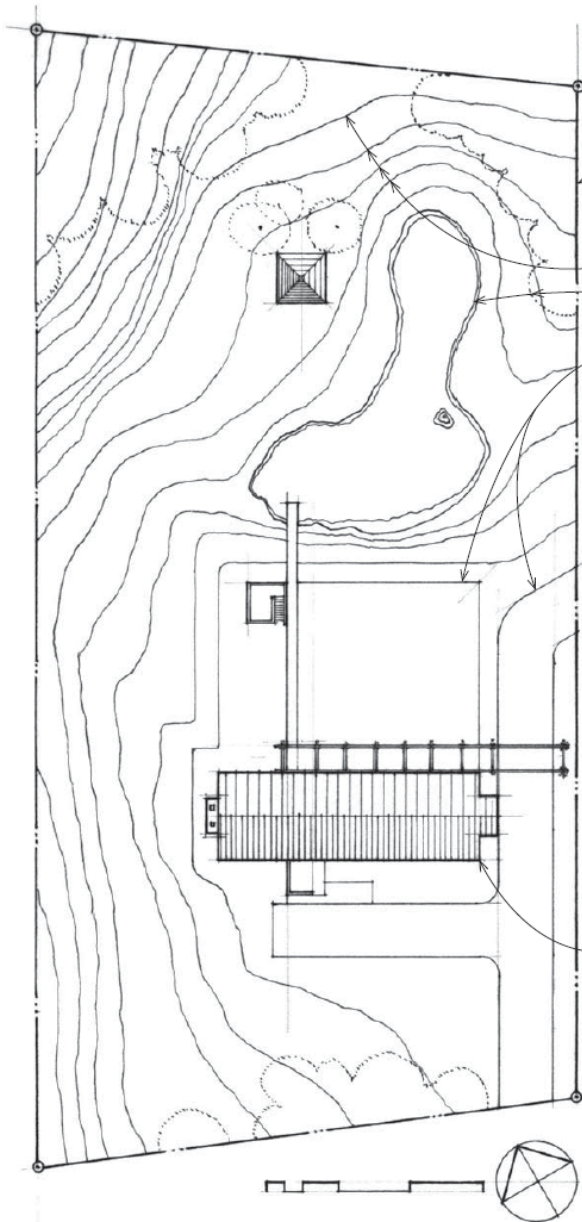
Dashed lines depicting something hidden from view.

Centre lines through steelwork allowing accuracy between column positions.

Conventions - Lines



Conventions - Plans



A site plan describes the location and orientation of a building or building complex on a plot of land and in relation to its context. Whether this environment is urban or rural, the site plan should describe the following:

- Legally recorded boundaries of the site, indicated by a broken line consisting of relatively long segments separated by two short dashes or dots
- Physical topography of the terrain with contour lines
- Natural site features, such as trees, landscaping, and watercourses
- Existing or proposed site constructions, such as walks, courts, and roadways
- Architectural structures in the immediate setting that impact the proposed building

In addition, a site plan may include:

- Legal constraints, such as zoning setbacks and rights-of-way
- Existing or proposed site utilities
- Pedestrian and vehicular entry points and paths
- Significant environmental forces and features

Roof Plans

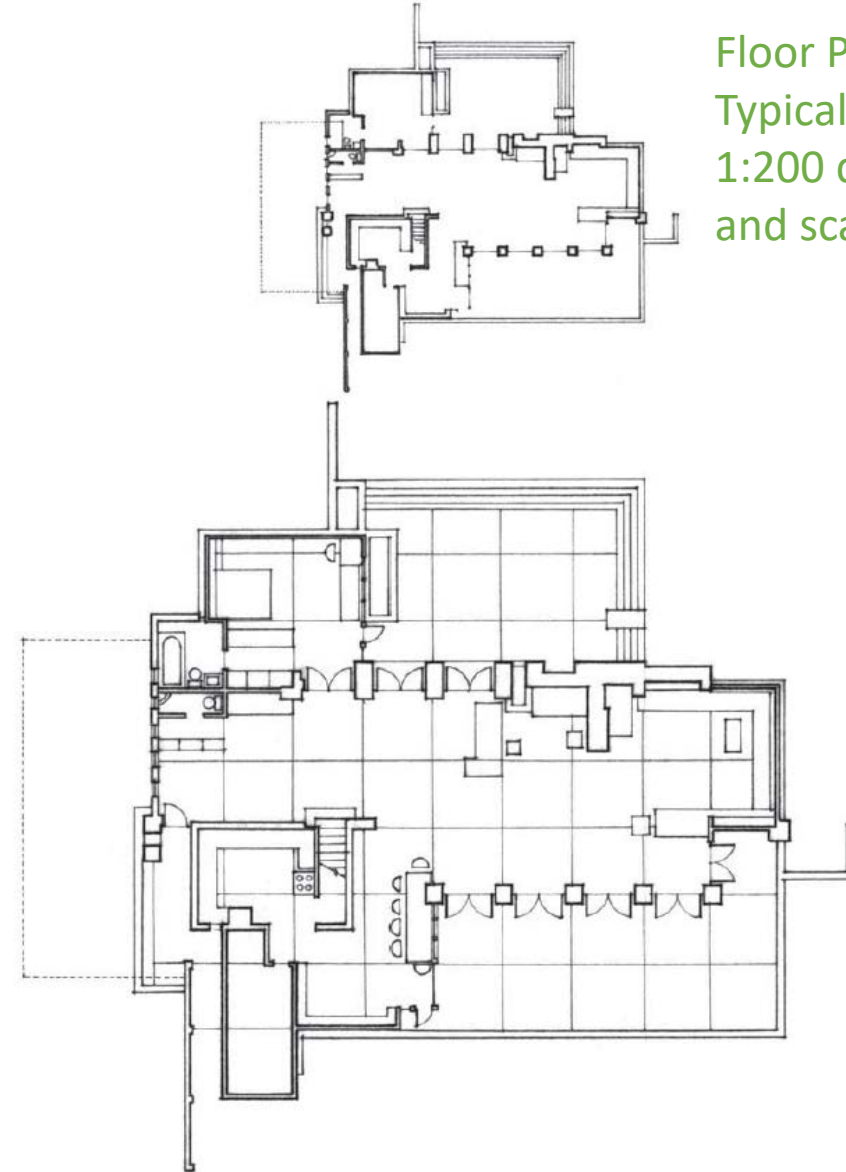
A roof plan is a top view describing the form, massing, and material of a roof or the layout of such rooftop features as skylights, decks, and mechanical housings.

- Roof plans are typically included in the site plan for a proposed building or building complex.

Site Plans

Typical scale 1:1250 / 1:500

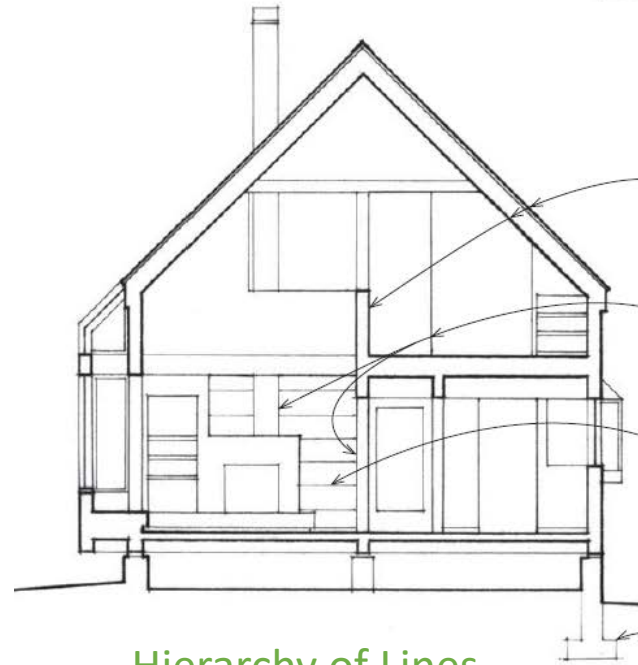
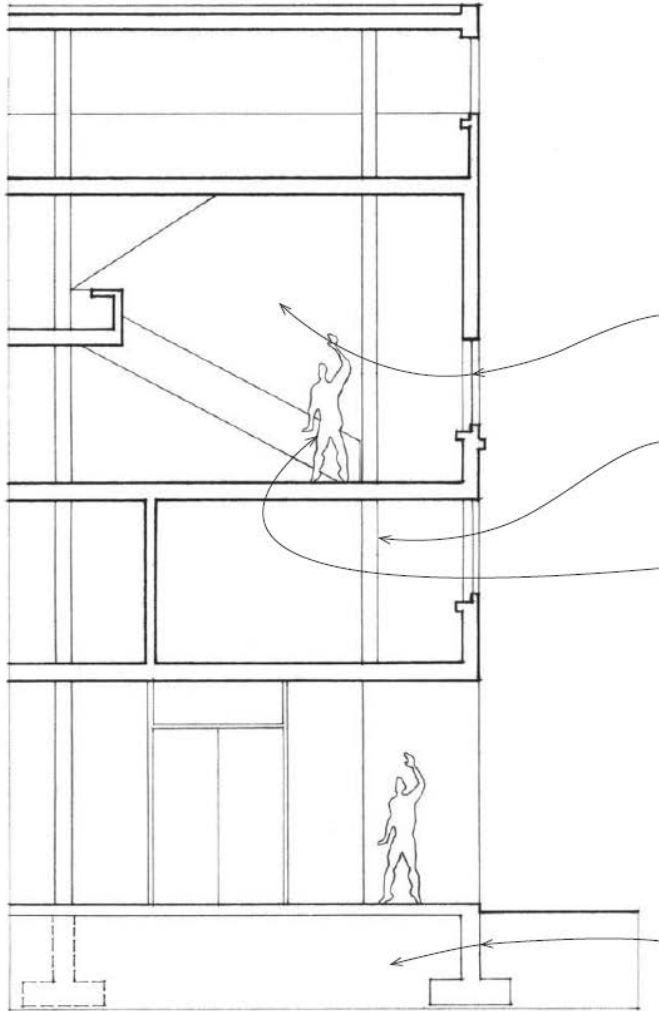
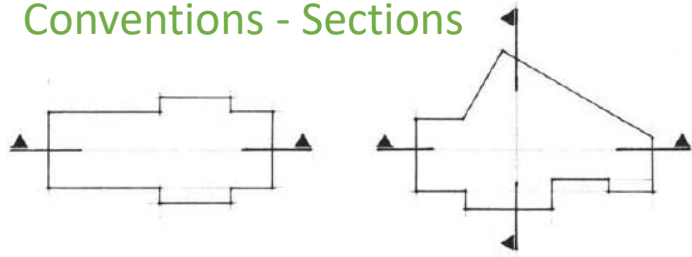
- Graphic scale designates the scale of the site plan and a north arrow indicates the orientation of the site.



Floor Plans

Typical scales 1:100 / 1:200 depending on size and scale of the building.

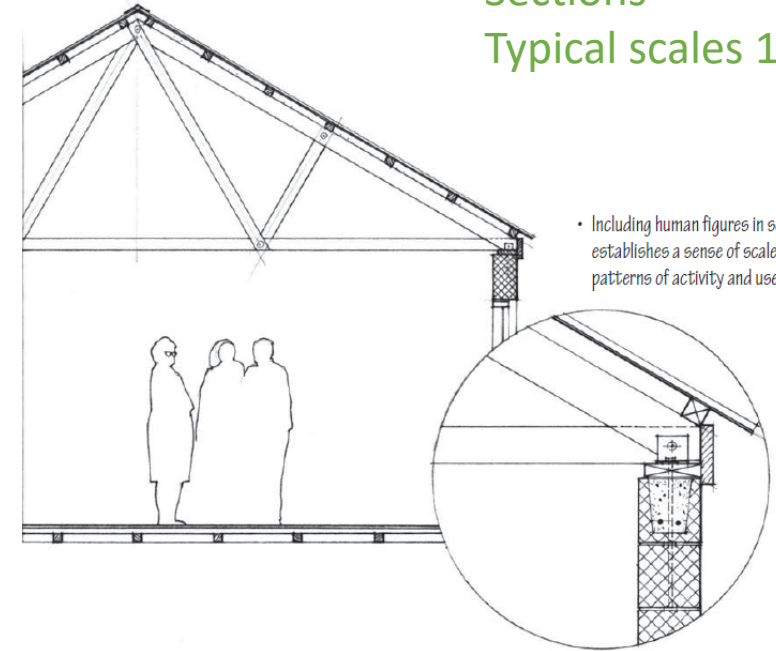
Conventions - Sections



Hierarchy of Lines

Sections

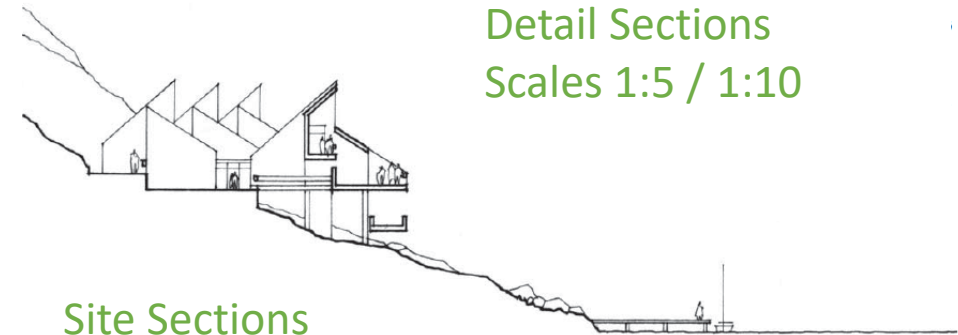
Typical scales 1:20 / 1:50



- Including human figures in section drawings establishes a sense of scale and reminds us of patterns of activity and use.

Detail Sections

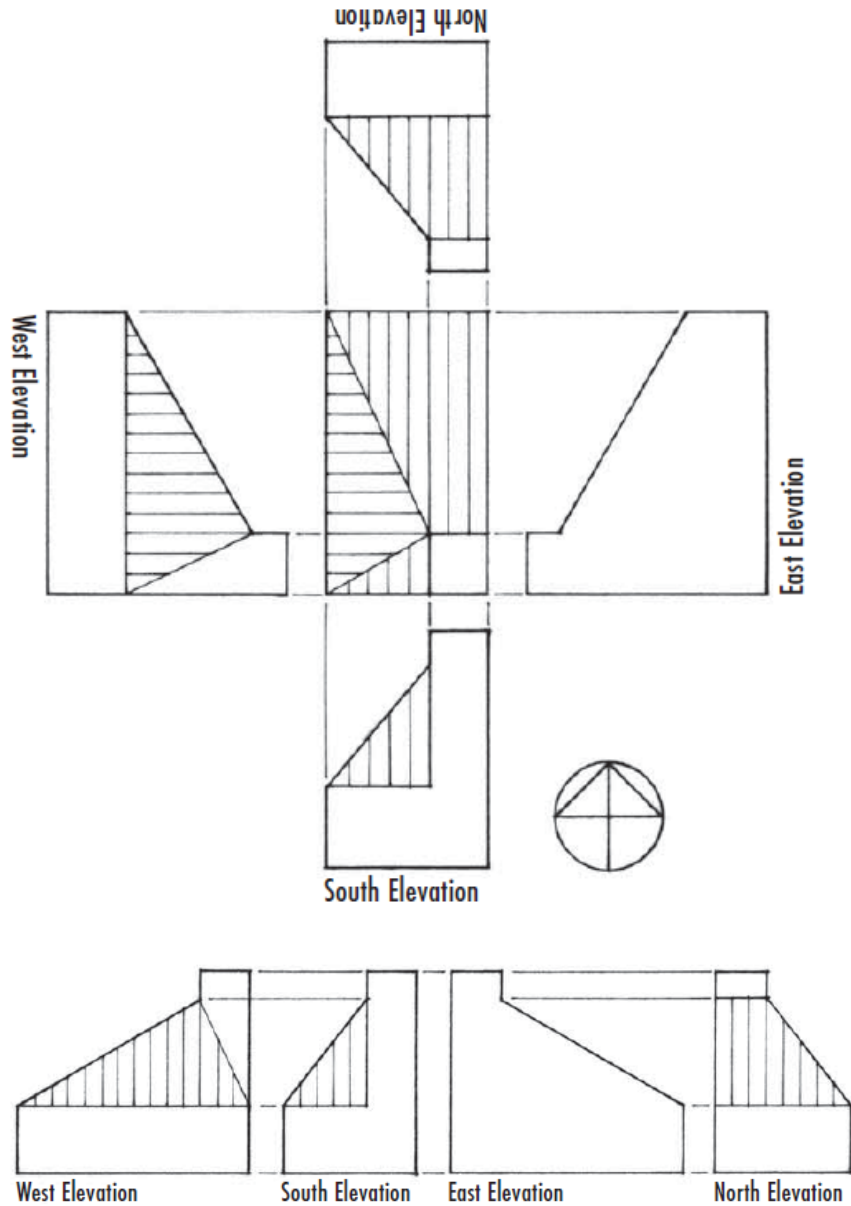
Scales 1:5 / 1:10



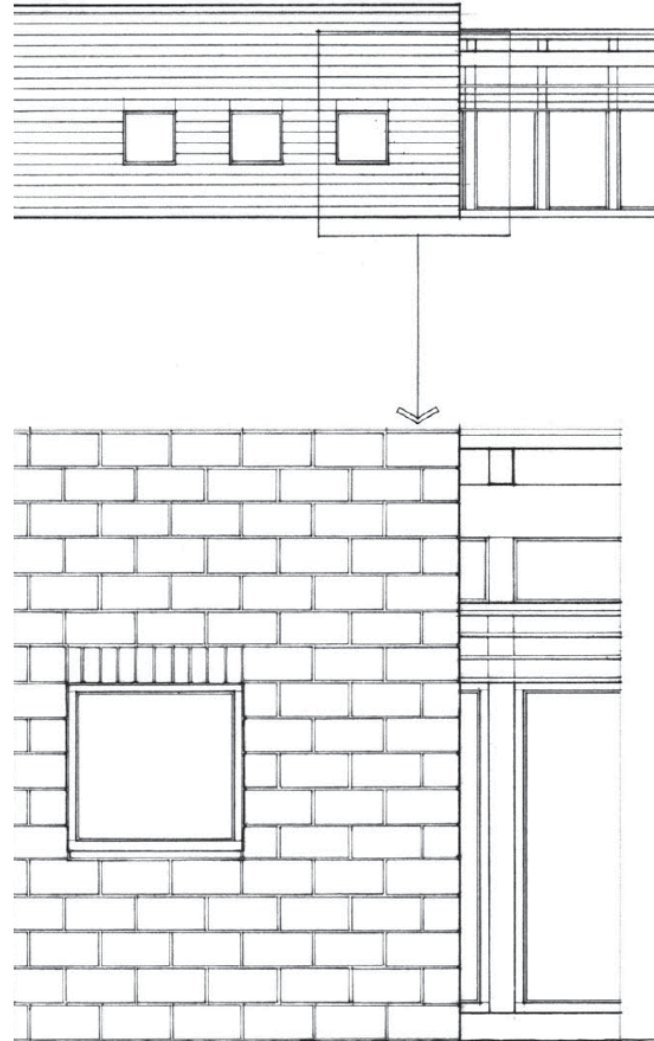
Site Sections

Scale 1:200 / 1:500

Conventions - Elevations



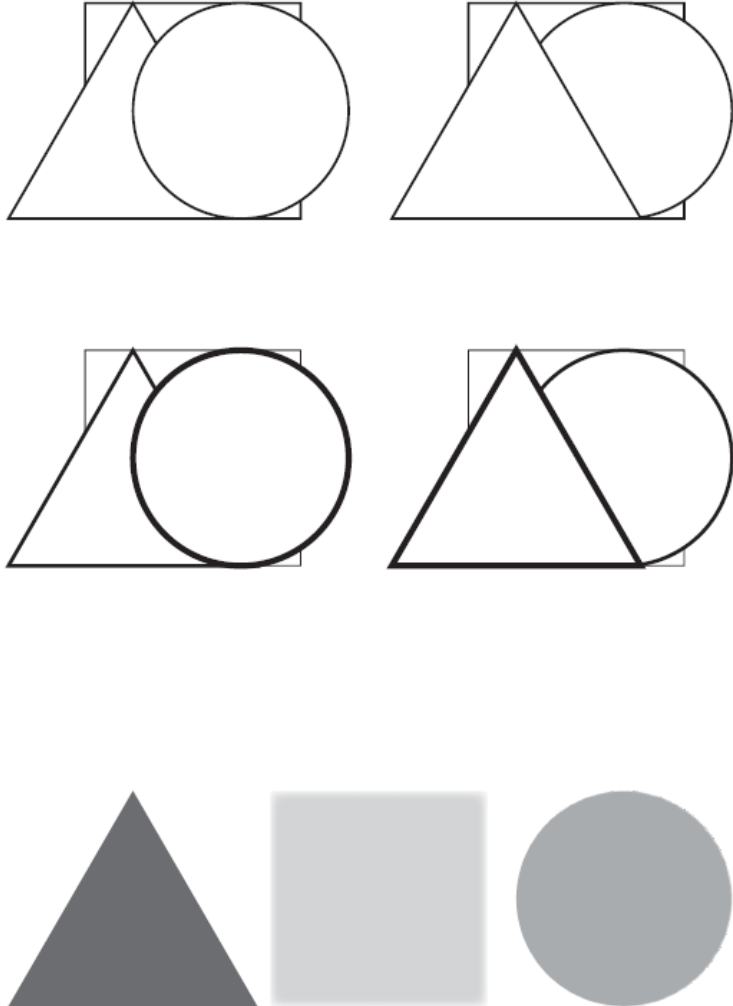
Elevations are normally drawn in a scale relative to the floor plans. 1:100
Further detail can be emphasised at a larger scale. (1:50)



Hierarchy of Lines, showing depth in elevation



Conventions - Depth

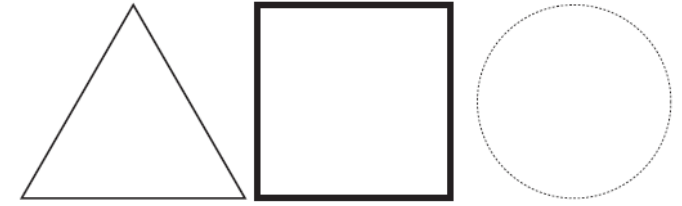


Spatial Depth Cues

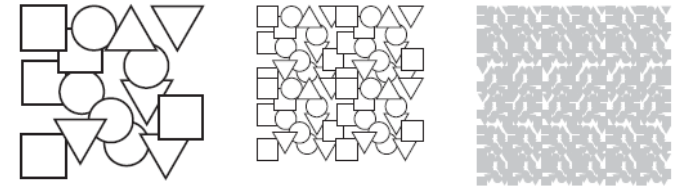
The examples on the previous two pages illustrate the use of varying line weights and detail to convey a sense of spatial depth in the drawing of building elevations. This series of drawings illustrates in a more discrete and abstract way how visual cues can enhance the sense of depth in any orthographic projection.

- **Continuity of Outline:** We tend to perceive a shape as being in front of another when it has continuity of outline and disrupts the profile of the other shape. Since this visual phenomenon relies on nearer objects overlaying or projecting in front of objects farther away, we often refer to this depth cue simply as overlap.
- By itself, overlap tends to create relatively shallow intervals of space. However, we can achieve a greater sense of intervening space and depth if we combine overlap with other depth cues, such as by varying the line weights of a pure-line drawing. Darker and thicker profile or contour lines tend to advance and appear to be in front of lighter and thinner outlines.
- **Atmospheric Perspective:** A progressive muting of hues, tonal values, and contrast occurs with increasing distance from the observer. Objects seen up close in the foreground of our visual field typically possess more saturated colors and sharply defined contrasts in value. As they move farther away, their colors become lighter in value and more subdued, and their tonal contrasts more diffuse. In the background, we see mainly shapes of grayed tones and muted hues.

- **Perspective of Blur:** This depth cue reflects the fact that we normally associate clarity of vision with nearness and blurring of outlines with farness. The graphic equivalent of perspective blur is a diminishing or diffusion of the edges and contours of more distant objects. We can use either a lightly drawn line or a broken or dotted line to delineate these edges of shapes and contours of forms that exist beyond the focus of a drawing.



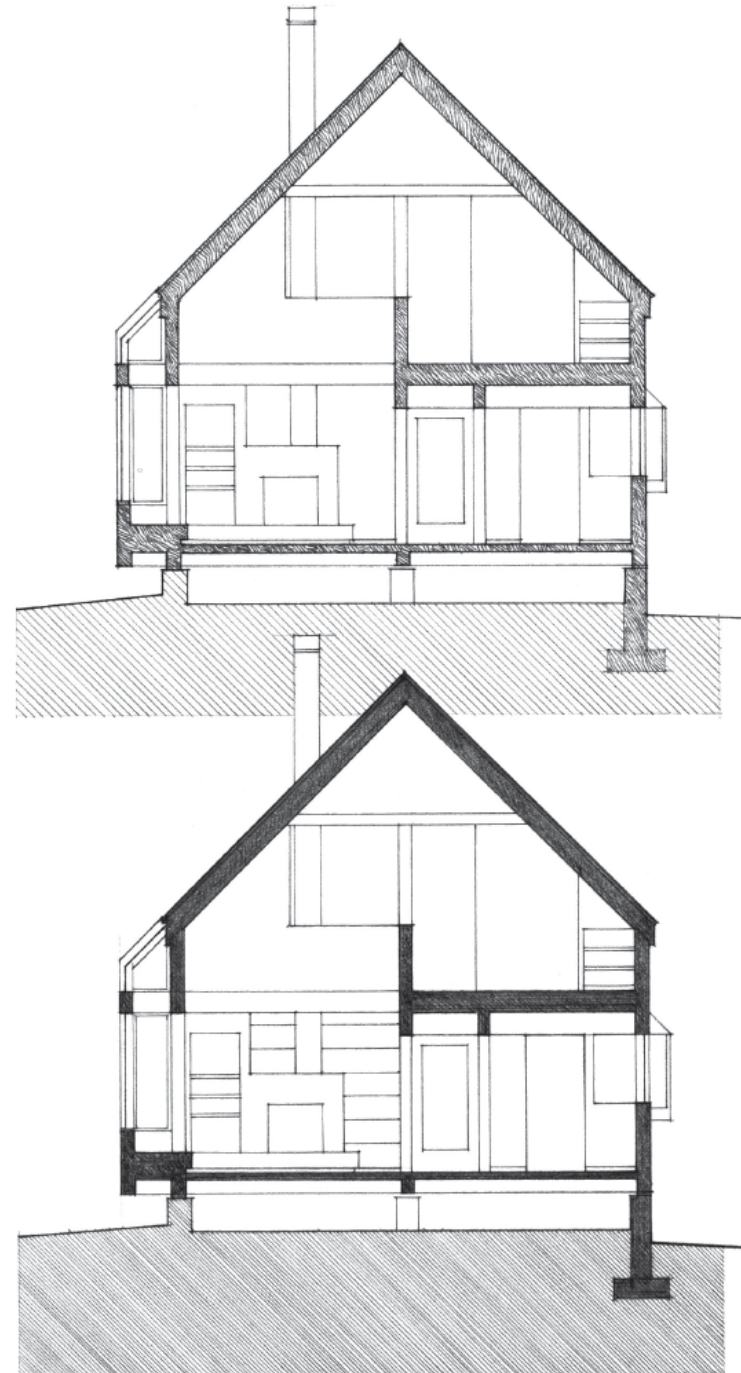
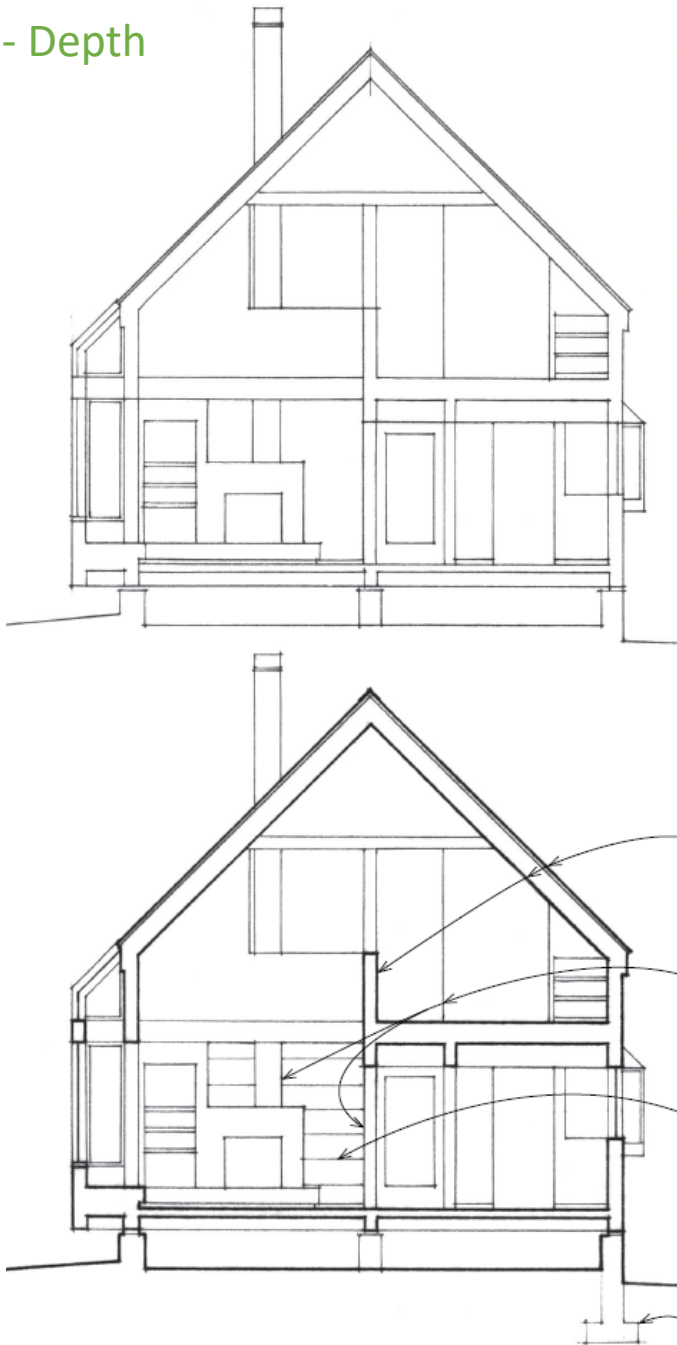
- **Texture Perspective:** The density of the texture of a surface gradually increases as it recedes into the distance. The graphic technique for depicting the visual phenomenon of texture perspective involves gradually diminishing the size and spacing of the graphic elements used to portray a surface texture or pattern, whether they be dots, lines, or tonal shapes. Proceed from identifying units in the foreground to delineating a textured pattern in the middleground and finally to rendering a tonal value in the background.



- **Light and Shade:** Any abrupt shift in brightness stimulates the perception of a spatial edge or profile separated from a background surface by some intervening space. This depth cue implies the existence of overlapping shapes and the use of contrasting tonal values in a drawing. See Chapter 7 for more information on the use of tonal values in architectural graphics.



Conventions - Depth



CAD Packages can assist in demonstrating spatial depth through hatching.

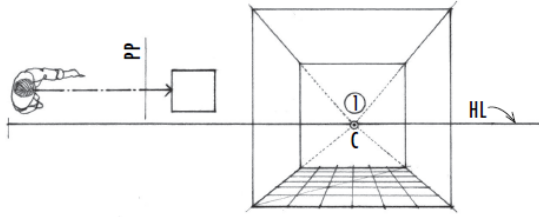
Other Drawing Types

TYPES OF PERSPECTIVE

In any rectilinear object, such as a cube, each of the three principal sets of parallel lines has its own vanishing point. Based on these three major sets of lines, there are three types of linear perspective: one-, two-, and three-point perspectives. What distinguishes each type is simply the observer's angle of view relative to the subject. The subject does not change, only our view of it, but the change of view affects how the sets of parallel lines appear to converge in linear perspective.

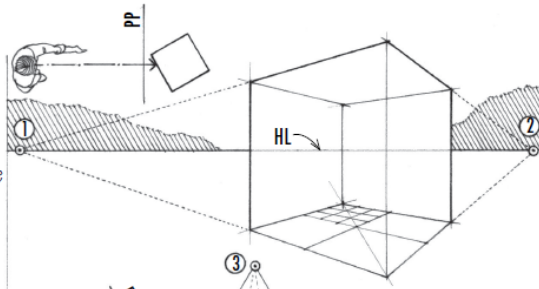
One-Point Perspective

If we view a cube with our central axis of vision (CAV) perpendicular to one of its faces, all of the cube's vertical lines are parallel with the picture plane (PP) and remain vertical. The horizontal lines that are parallel with PP and perpendicular to CAV also remain horizontal. The lines that are parallel with CAV, however, will appear to converge at the center of vision (C). This is the one point referred to in one-point perspective.



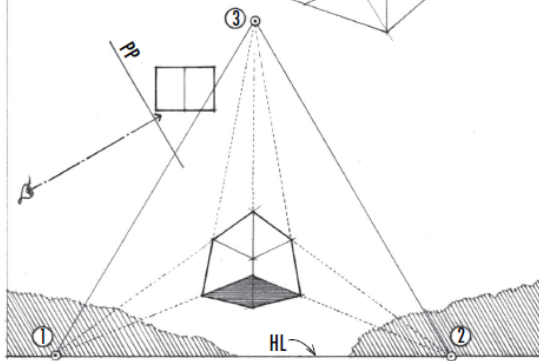
Two-Point Perspective

If we shift our point of view so that we view the same cube obliquely, but keep our central axis of vision (CAV) horizontal, then the cube's vertical lines will remain vertical. The two sets of horizontal lines, however, are now oblique to the picture plane (PP) and will appear to converge, one set to the left and the other to the right. These are the two points referred to in two-point perspective.

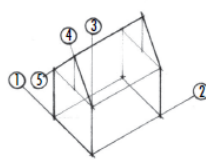


Three-Point Perspective

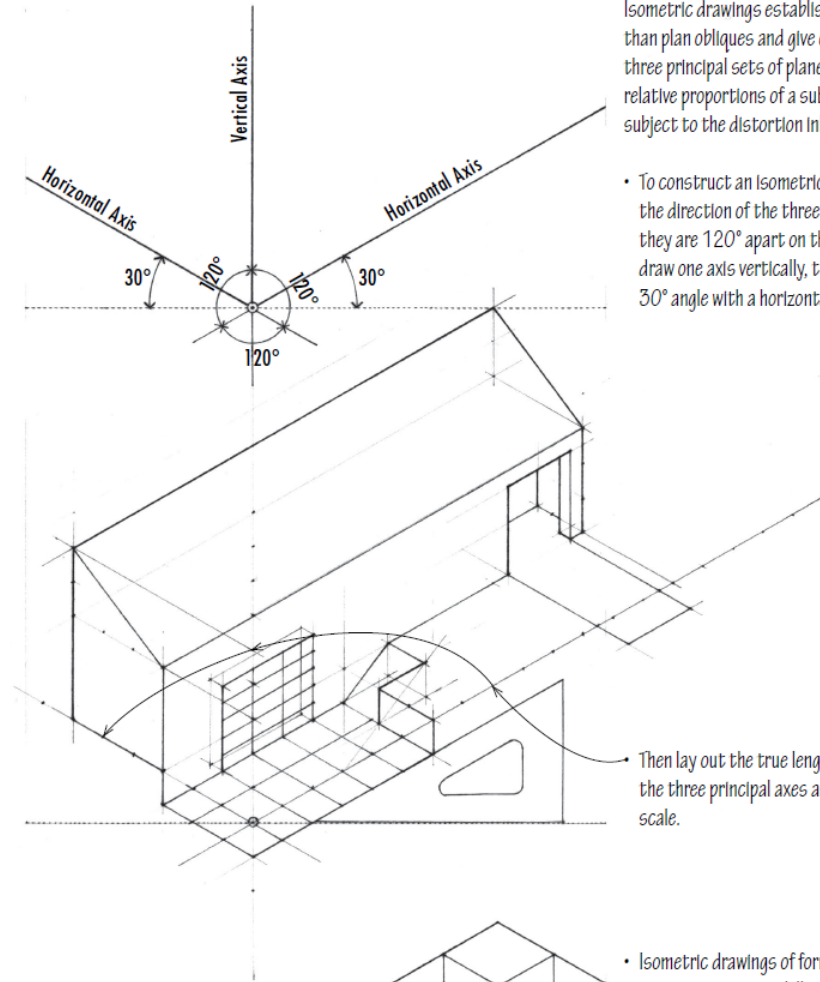
If we lift one corner of the cube off the ground plane (GP), or if we tilt our central axis of vision (CAV) to look down or up at the cube, then all three sets of parallel lines will be oblique to the picture plane (PP) and will appear to converge at three different vanishing points. These are the three points referred to in three-point perspective.



Note that each type of perspective does not imply that there are only one, two, or three vanishing points in a perspective. The actual number of vanishing points will depend on our point of view and how many sets of parallel lines there are in the subject being viewed. For example, if we look at a simple gable-roofed form, we can see that there are potentially five vanishing points, since we have one set of vertical lines, two sets of horizontal lines, and two sets of inclined lines.



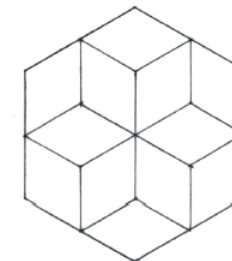
ISOMETRIC DRAWINGS



Isometric drawings establish a lower angle of view than plan obliques and give equal emphasis to the three principal sets of planes. They preserve the relative proportions of a subject or scene and are not subject to the distortion inherent in oblique views.

- To construct an isometric drawing, first establish the direction of the three principal axes. Because they are 120° apart on the picture plane, if we draw one axis vertically, the other two axes make a 30° angle with a horizontal on the drawing surface.

Then lay out the true lengths of all lines parallel to the three principal axes and draw them to the same scale.



- Isometric drawings of forms based on the square can create an optical illusion and be subject to multiple interpretations. This ambiguity results from the alignment of lines in the foreground with those in the background. In such cases, a plan oblique might be a better choice.

CAD packages can assist in preparing views through snap grids and dynamic 3D modelling.

Typical CAD packages



AUTODESK
AUTOCAD
2020



VECTORWORKS®
A NEMETSCHEK COMPANY

GRAPHISOFT®
ARCHICAD



Rhinoceros®



AUTODESK
CIVIL3D



SketchUp



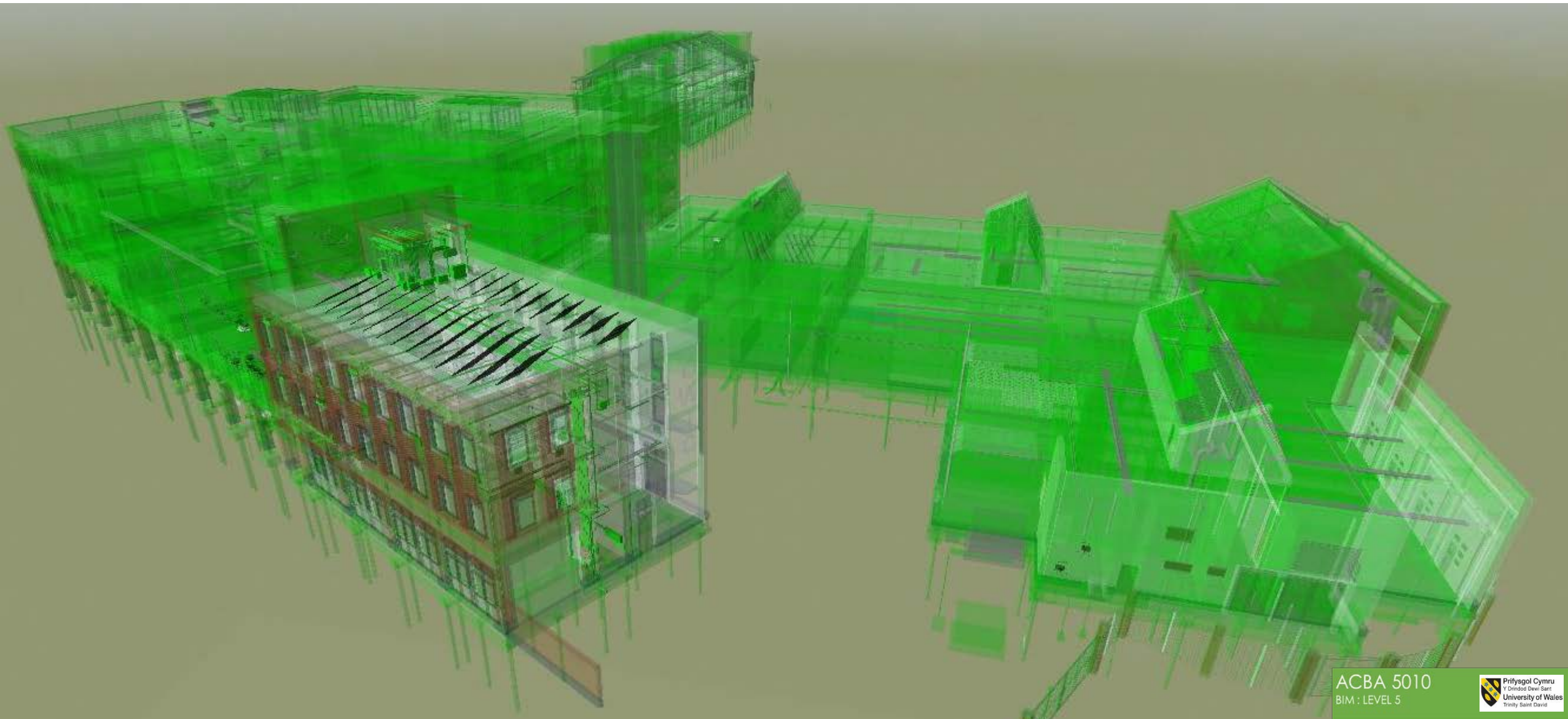
AUTODESK®
REVIT®

Is this enough?

How can we improve the way
we communicate?

BIM?

An Introduction to BIM



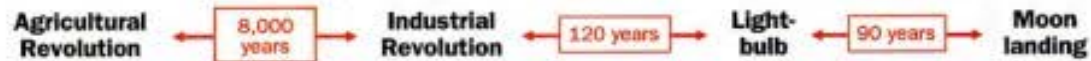
What is your understanding of BIM?



BIM is a Process NOT Software

1 Bs BIM Strategy																	2 Su Surveys and Reports									
3 Fr Framework	4 Cu Culture and behaviour																	5 Bt BIM Toolkit	6 Lod Level of detail	7 Loi Level of Information	8 Vi Videos					
9 Co Common methods	10 Po Process	11 As Assessment and need	12 Eir Employers info requirements	13 Cm Communication	14 In Investment	15 Sf Software	16 Cd Capital delivery phase	17 Cl Collaborative business relationships	18 Li Library objects	19 Cs Classification	20 An Analysis tools	21 Ev Events														
22 Pr Procurement route	23 Fo Forms of procurement	24 Ex Execution	25 Bep BIM execution plan	26 So Soft skills	27 Ch Change process	28 Ha Hardware	29 Op Operational phase	30 Pt Protocol	31 Pe Prequalification questionnaires	32 Cafm Computer-aided Facilities Management	33 Ct Cost tools	34 Fu Forums and user groups														
35 Ca Capability and capacity	36 Di Digital tools	37 De Delivery	38 Midp Master information delivery plan	39 Cp Cooperation	40 Sh Share success	41 Tr Training	42 Fm Facilities management	43 Qu Quality management systems	44 Bsdd buildingSMART data dictionary	45 Pg Programme tools	46 Ad Administration tools	47 Sc Social media														
		48 St Standardisation and interoperability	49 Ma Maintenance and use	50 Cde Common data environment	51 Ci Champion	52 Av Availability	53 Fi File storage	54 Dg Digital security	55 Ds Design management systems	56 Ifc Industry foundation classes	57 Au Authoring tools	58 Mo Model viewers and checkers	59 Bl Blog posts													
			60 Dpow Digital Plan of Work	61 If Information exchange	62 Sp Support	63 En Engage	64 Ir Infrastructure	65 Br Briefing	66 Am Asset management	67 Idm Information delivery manual	68 Sp Specification tools	69 Fl File sharing and collaboration	70 Bo Books													
Digital Plan of Work stages																										
71 Sr Strategy	72 Bi Brief	73 Df Definition	74 Dn Design	75 Bu Build and commission	76 Hn Handover and closeout	77 Oe Operation	78 Ed End of life																			

1 The accelerating pace of change ...



2 ... and exponential growth in computing power ...

Computer technology, shown here climbing dramatically by powers of 10, is now progressing more each hour than it did in its entire first 90 years

COMPUTER RANKINGS

By calculations per second per \$1,000



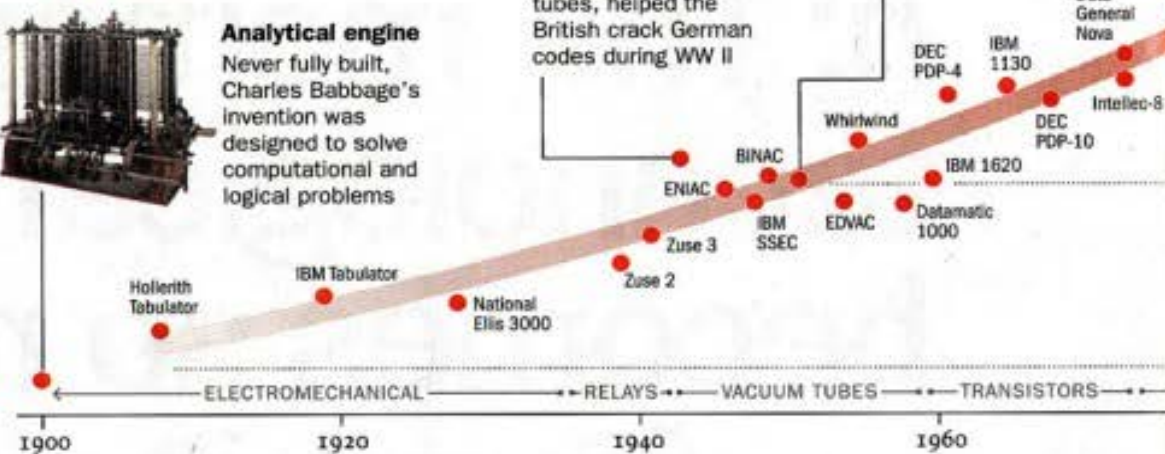
Analytical engine
Never fully built, Charles Babbage's invention was designed to solve computational and logical problems



Colossus
The electronic computer, with 1,500 vacuum tubes, helped the British crack German codes during WW II



UNIVAC I
The first commercially marketed computer, used to tabulate the U.S. Census, occupied 943 cu. ft.



3 ... will lead to the Singularity



Apple II
At a price of \$1,298, the compact machine was one of the first massively popular personal computers



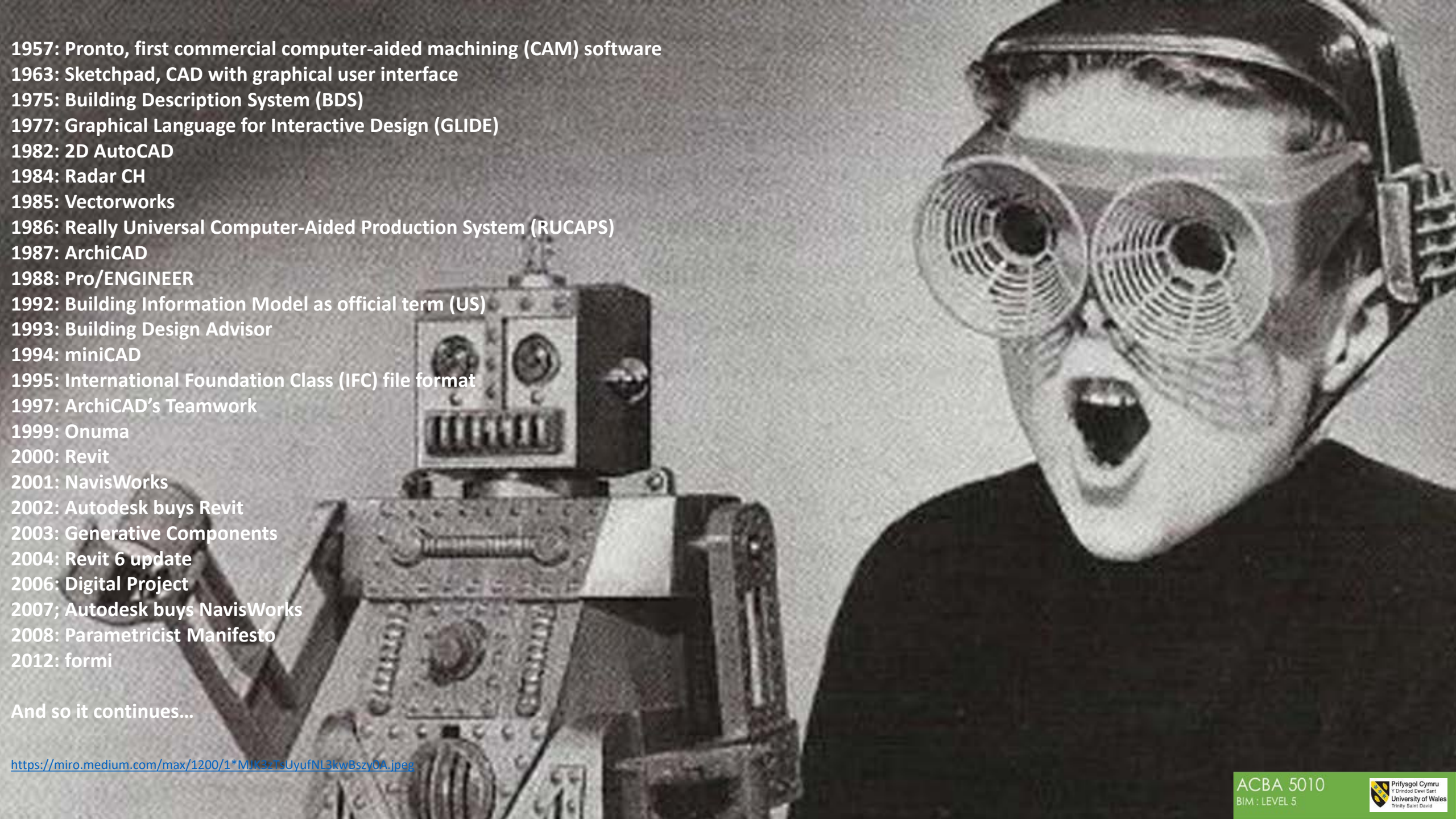
Power Mac G4
The first personal computer to deliver more than 1 billion floating-point operations per second

2045
Surpasses brainpower equivalent to that of all human brains combined

Surpasses brainpower of human in 2023



Surpasses brainpower of mouse in 2015

A composite image featuring a man on the right with a shocked expression, wearing large, circular, fan-like glasses and a head-mounted display. On the left, a woman is shown from the chest up, wearing a complex mechanical suit with various gears, pipes, and a small antenna on her head.

1957: Pronto, first commercial computer-aided machining (CAM) software
1963: Sketchpad, CAD with graphical user interface
1975: Building Description System (BDS)
1977: Graphical Language for Interactive Design (GLIDE)
1982: 2D AutoCAD
1984: Radar CH
1985: Vectorworks
1986: Really Universal Computer-Aided Production System (RUCAPS)
1987: ArchiCAD
1988: Pro/ENGINEER
1992: Building Information Model as official term (US)
1993: Building Design Advisor
1994: miniCAD
1995: International Foundation Class (IFC) file format
1997: ArchiCAD's Teamwork
1999: Onuma
2000: Revit
2001: NavisWorks
2002: Autodesk buys Revit
2003: Generative Components
2004: Revit 6 update
2006: Digital Project
2007; Autodesk buys NavisWorks
2008: Parametricist Manifesto
2012: formi

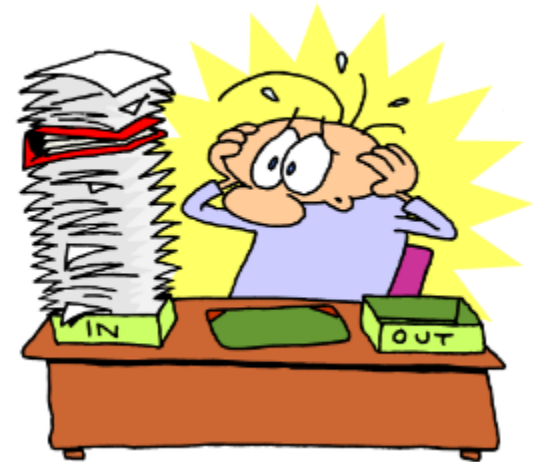
And so it continues...

https://miro.medium.com/max/1200/1*MK3zTsUyufNL3kwBszy0A.jpeg

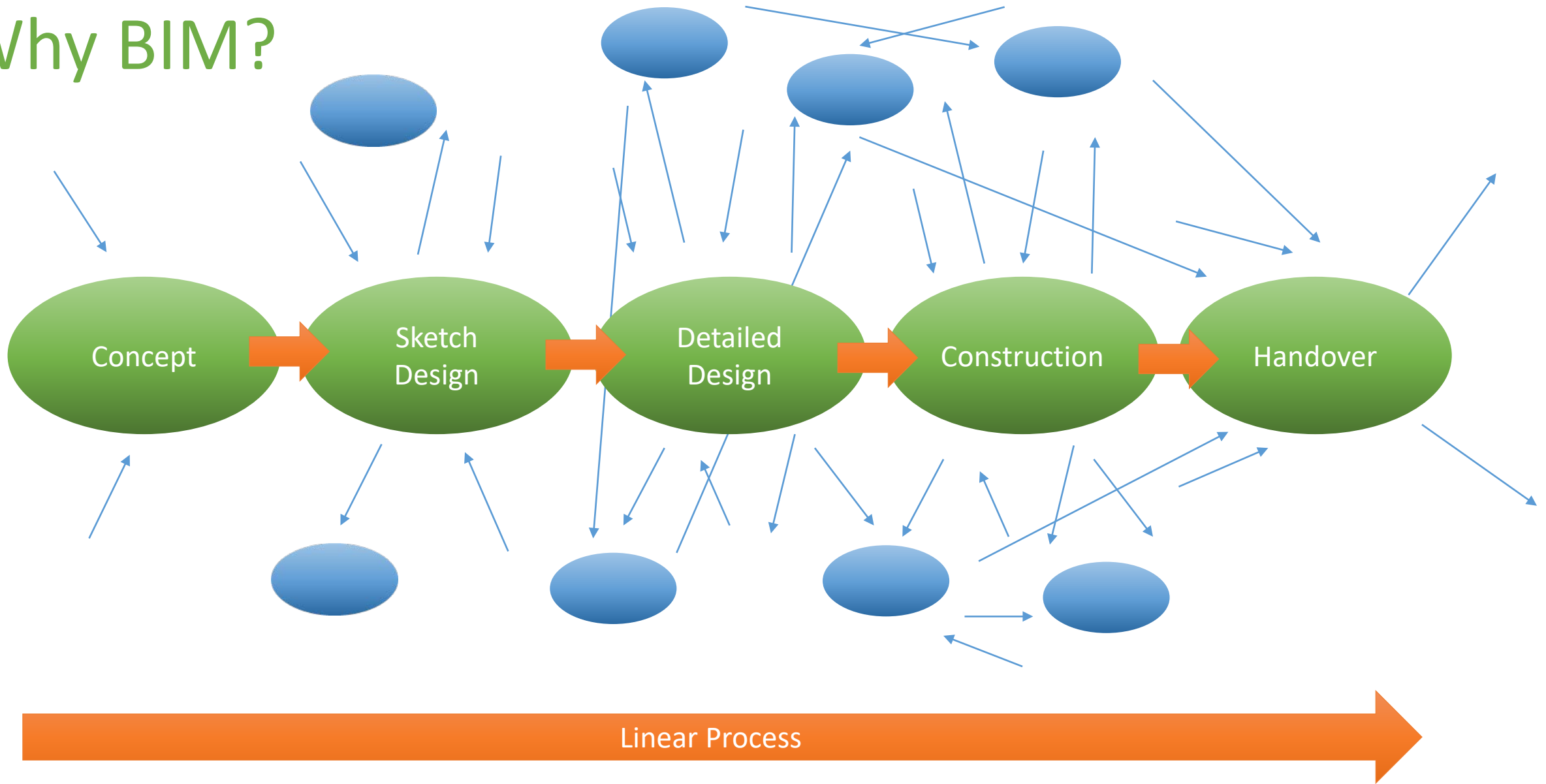
Building Information Modelling

What it really means is a PROCESS of.....

Better Information Management



Why BIM?



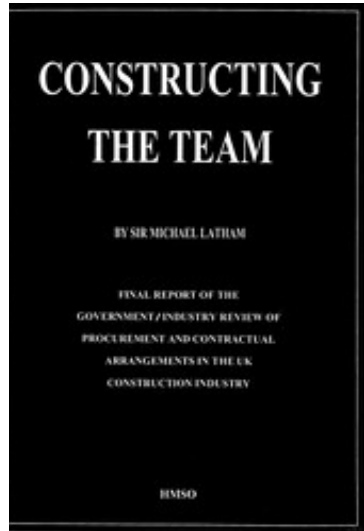
Why BIM?



Origins in UK



Latham
Report



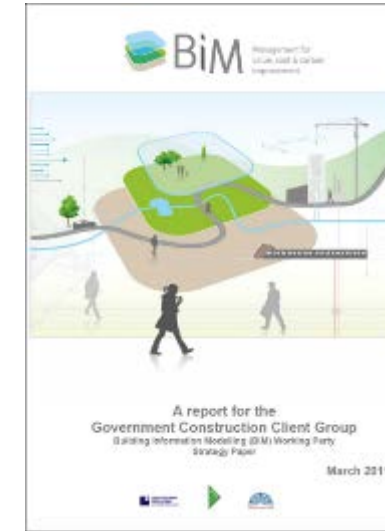
Egan Report

Accelerating
Change



Never
Waste A
Good Crisis

BIS BIM
Strategy



Government
Construction
Strategy

1994

1998

2002

2009

2011

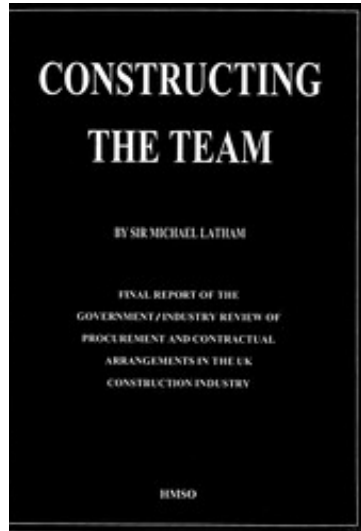
2011

Sir Michael **Latham** described as 'ineffective', 'adversarial', 'fragmented' and 'incapable of delivering for its customers'.

Origins in UK



Latham
Report



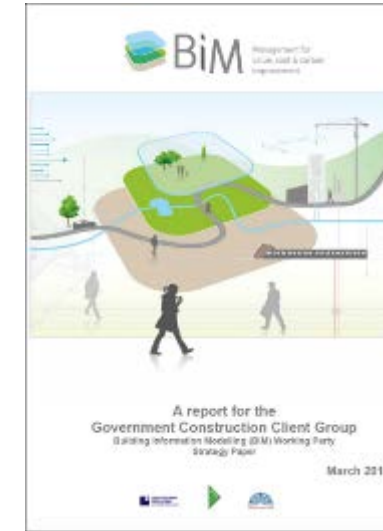
Egan Report

Accelerating
Change



Never
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BIS BIM
Strategy



Government
Construction
Strategy

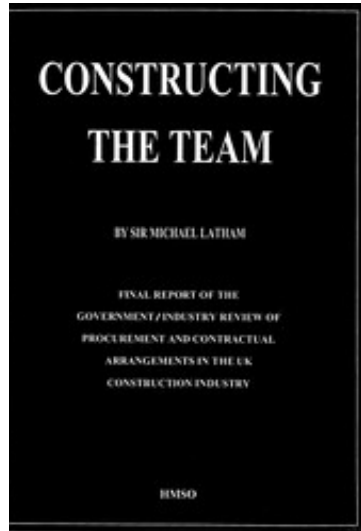


Rethinking Construction through 'demonstration projects', and regional 'cluster groups' or best practice clubs.

Origins in UK



Latham
Report



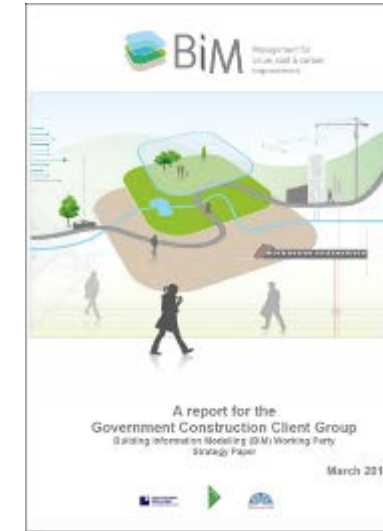
Egan Report

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BIS BIM
Strategy



Government
Construction
Strategy

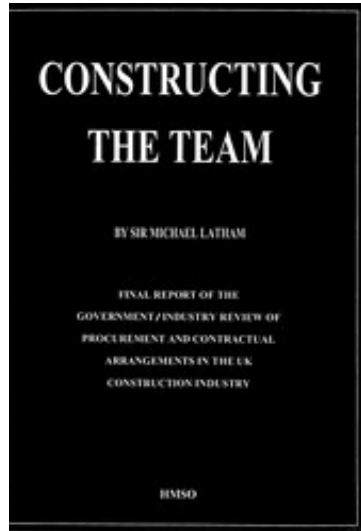


By the end of 2004 20% of construction projects by value should be undertaken by integrated teams and supply chains; and, 20% of client activity by value should embrace the principles of the Clients' Charter.

Origins in UK



Latham
Report



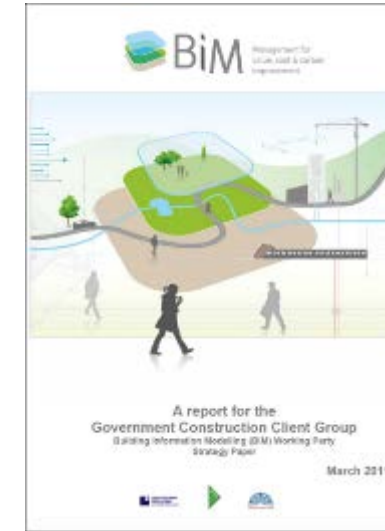
Egan Report

Accelerating
Change



Never
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Good Crisis

BIS BIM
Strategy



Government
Construction
Strategy

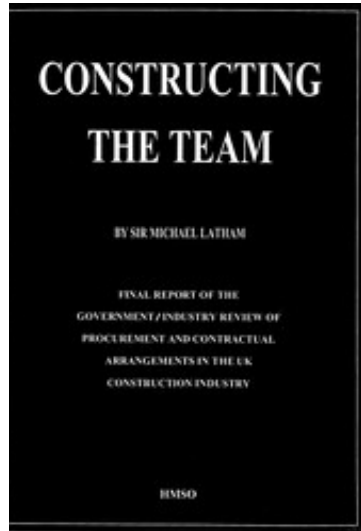


Wolstenholme stated that some progress had been made against Egan's targets, but that the industry's performance fell considerably short in several categories and that compliance with some of Egan's targets was only accomplished in a superficial manner.

Origins in UK



Latham
Report



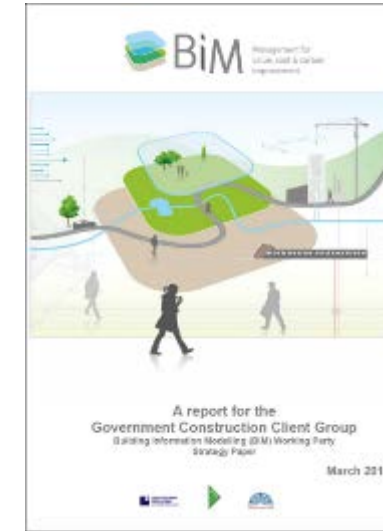
Egan Report

Accelerating
Change



Never
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Good Crisis

BIS BIM
Strategy



Government
Construction
Strategy

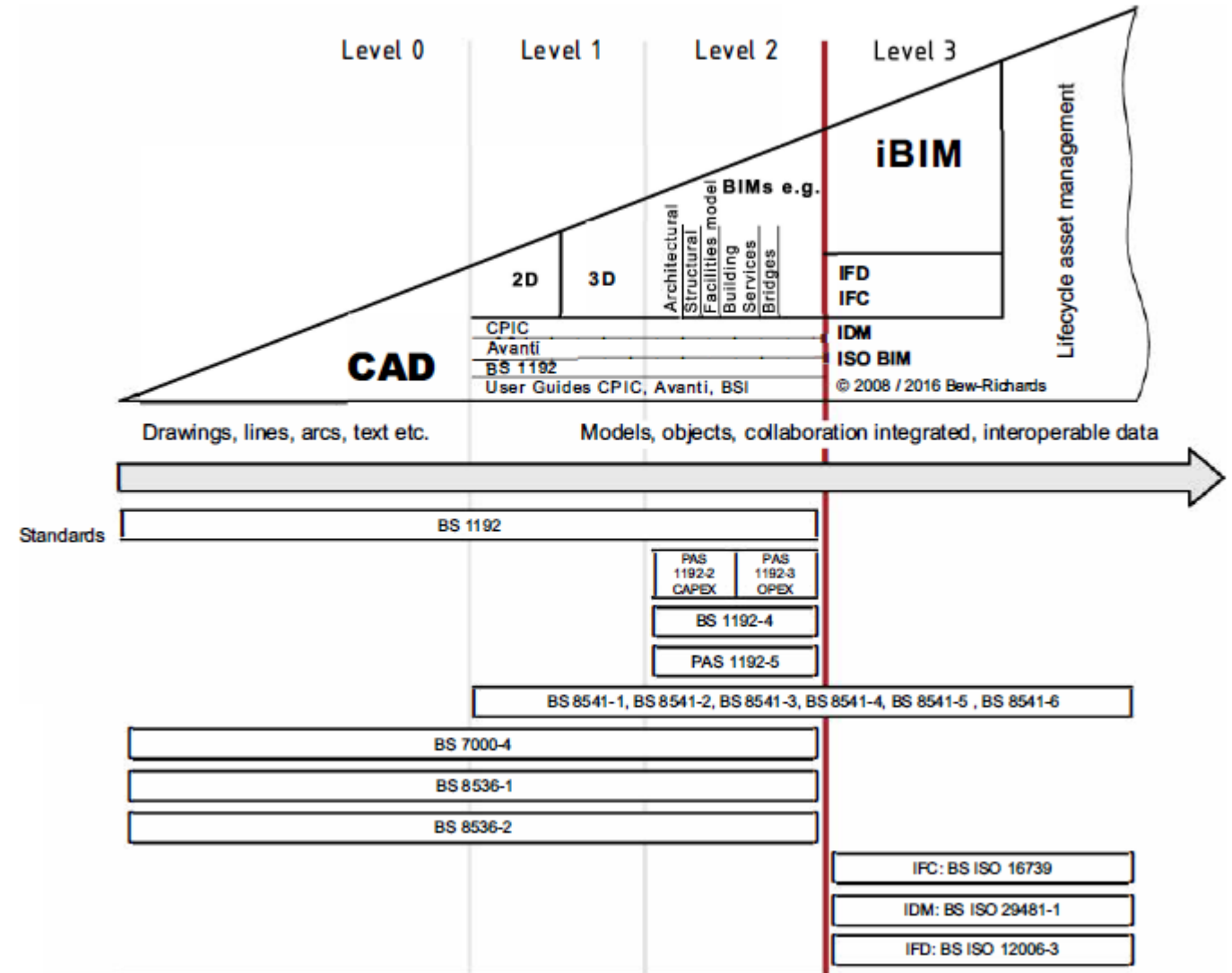


The BIM working group looked at the construction and post-occupancy benefits of BIM for use in the UK building and infrastructure markets. Highlighting recommendations of the working group for a strategy to deliver a structured Government/Sector capability to increase BIM take-up over a five year horizon.

Maturity



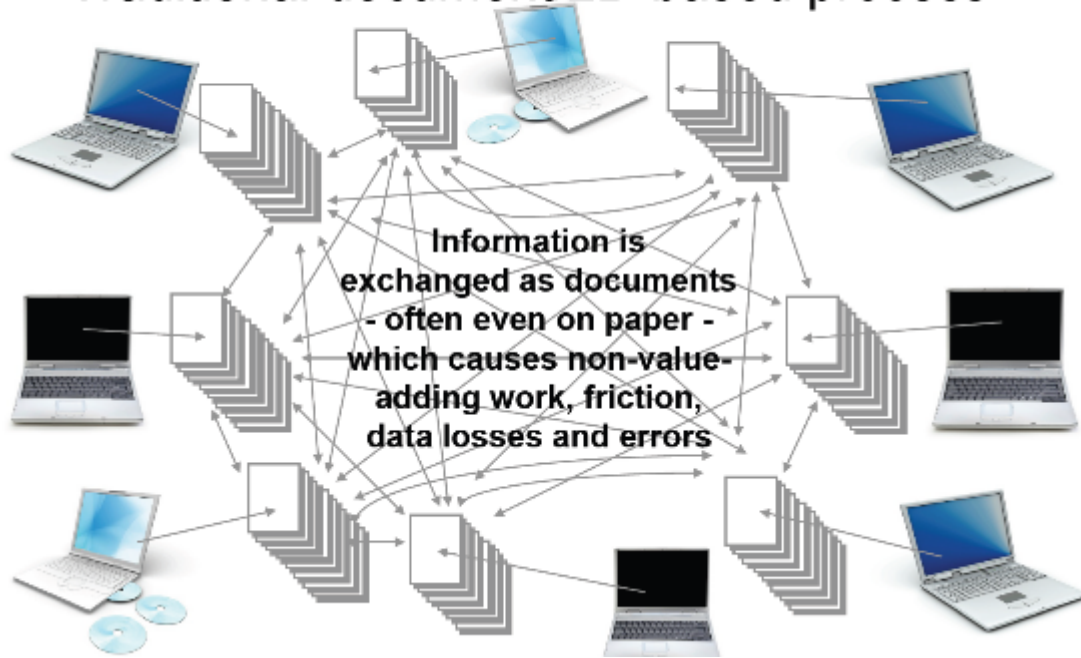
The Construction Strategy aimed at reducing the cost of public sector assets by up to 20% by 2016. To achieve this strategy, the government mandated that construction suppliers tendering for centrally-procured government projects to be working at BIM Level 2.



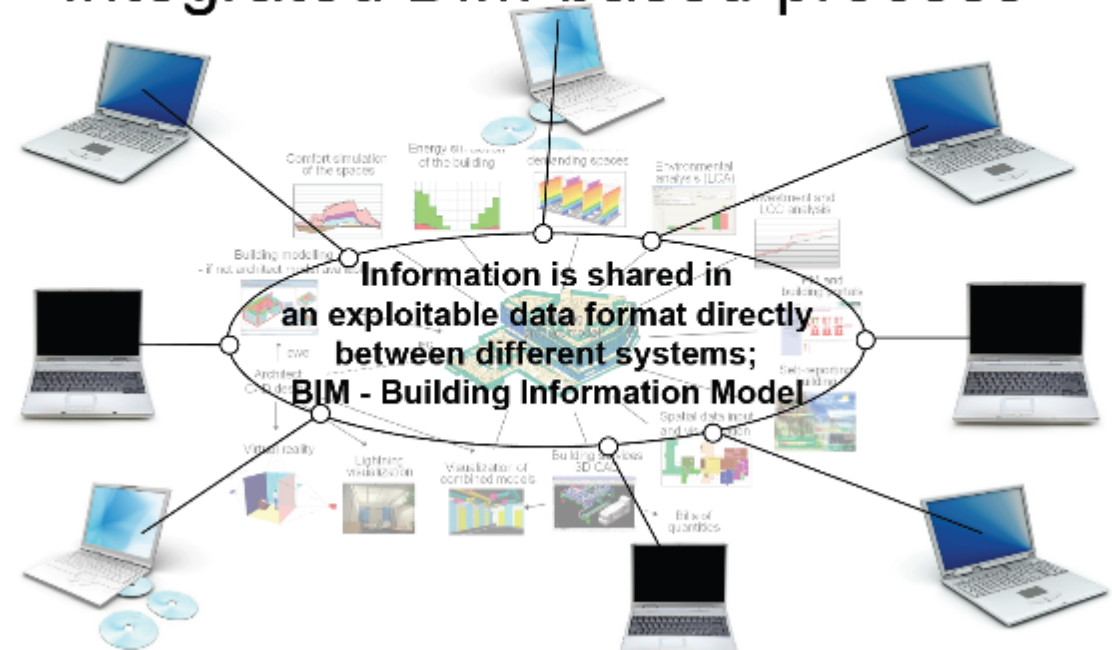
Bew Richards Wedge

Benefits

Traditional document/2D-based process



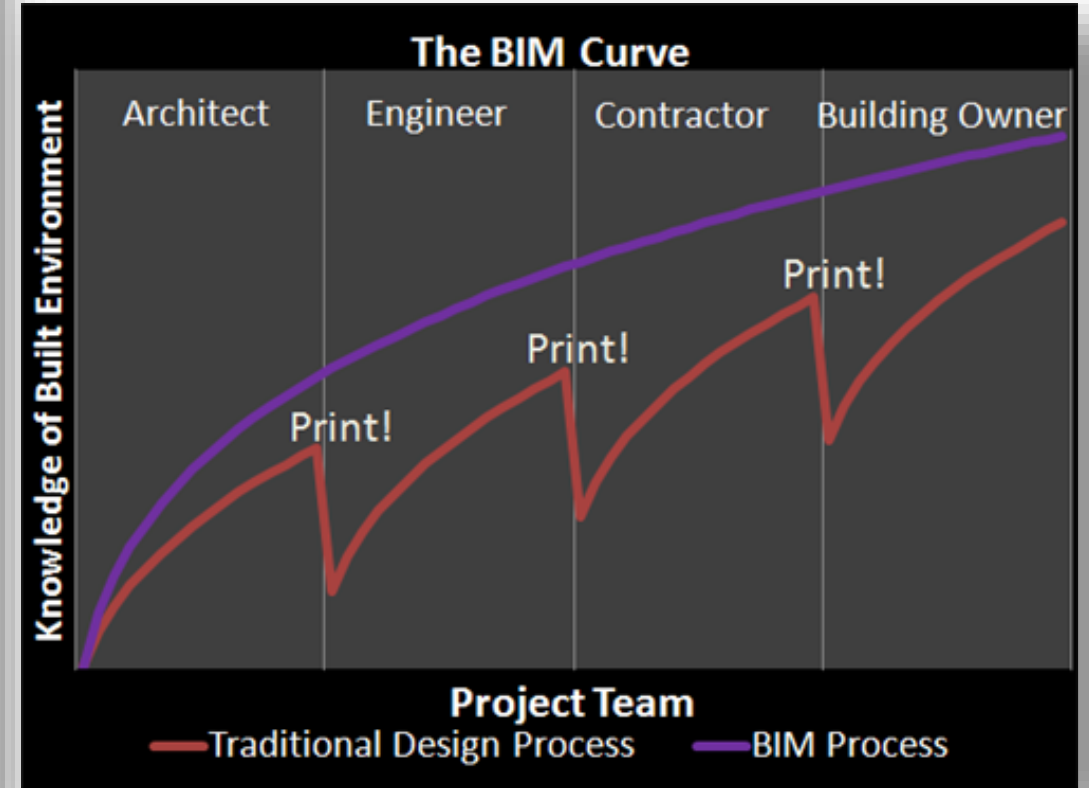
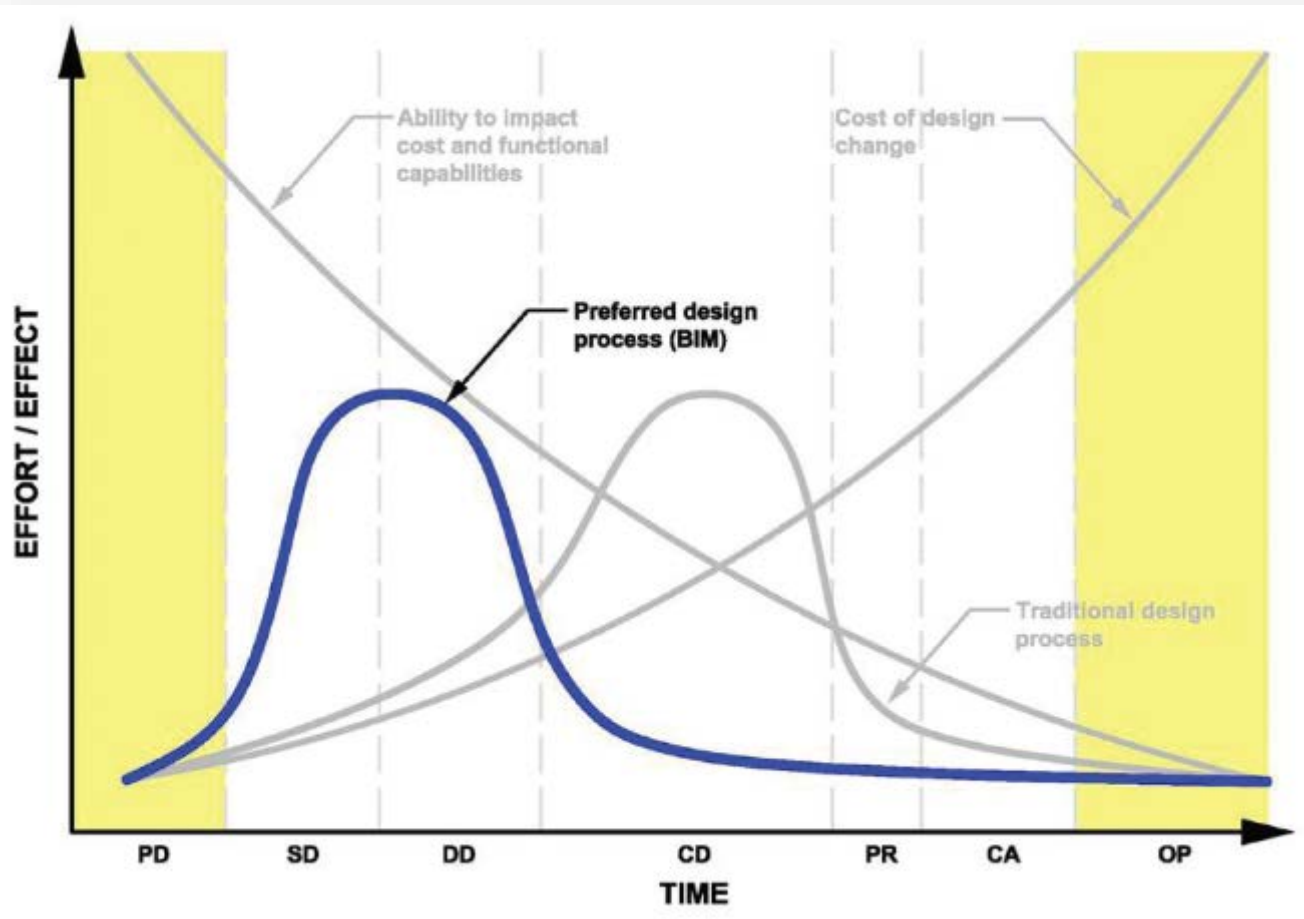
Integrated BIM-based process



BIM Advanced, CE Wales, 16/01/2013

Design, Construct, Operate and Maintain. **One Truth!**

Change Management

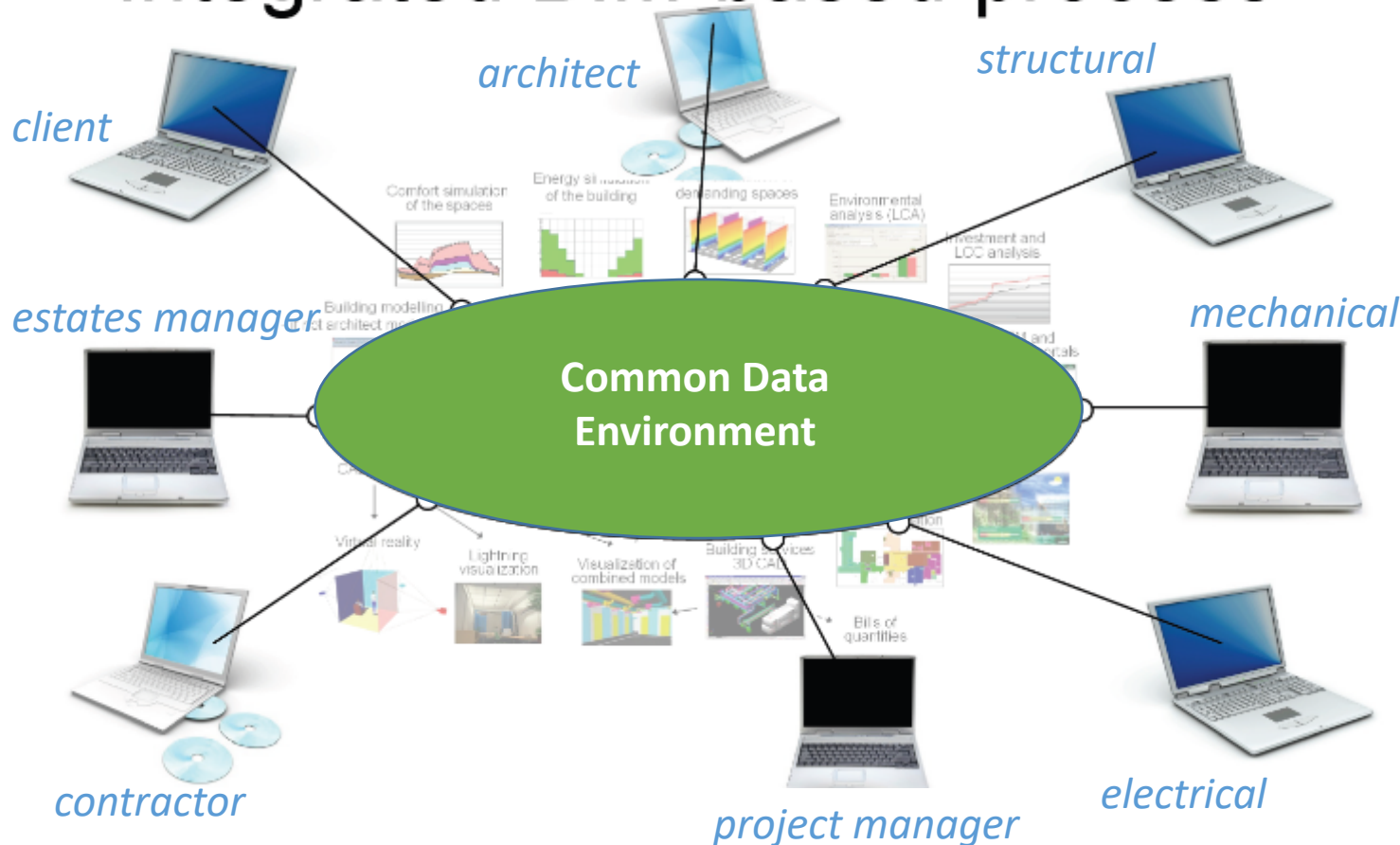


Clash Detection



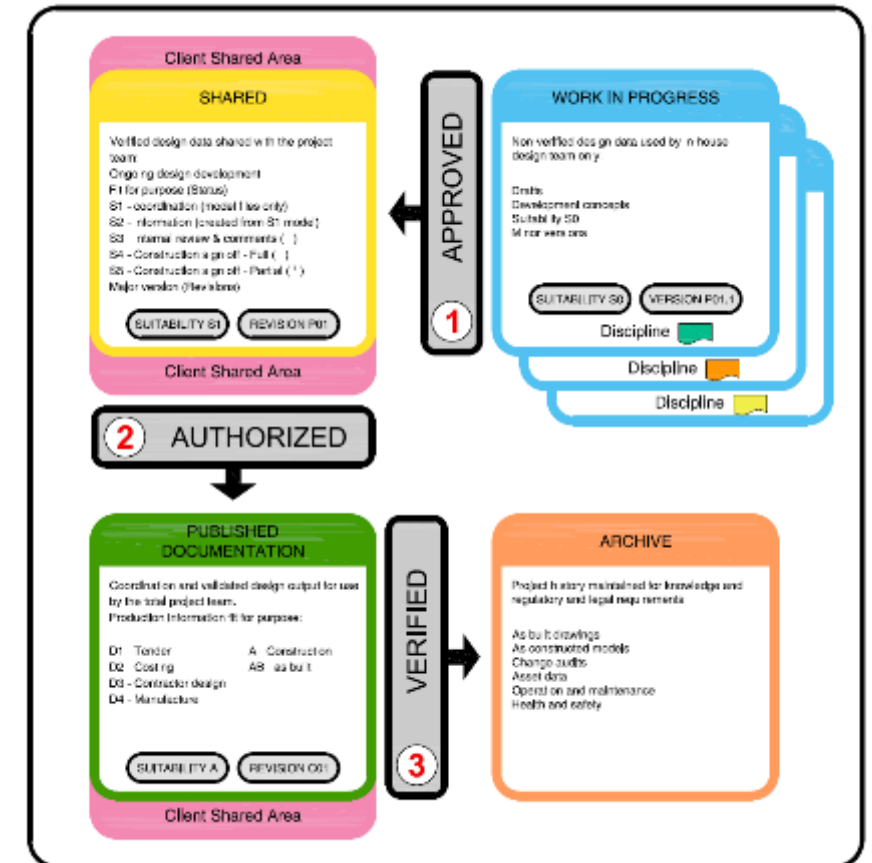
Application

Integrated BIM-based process

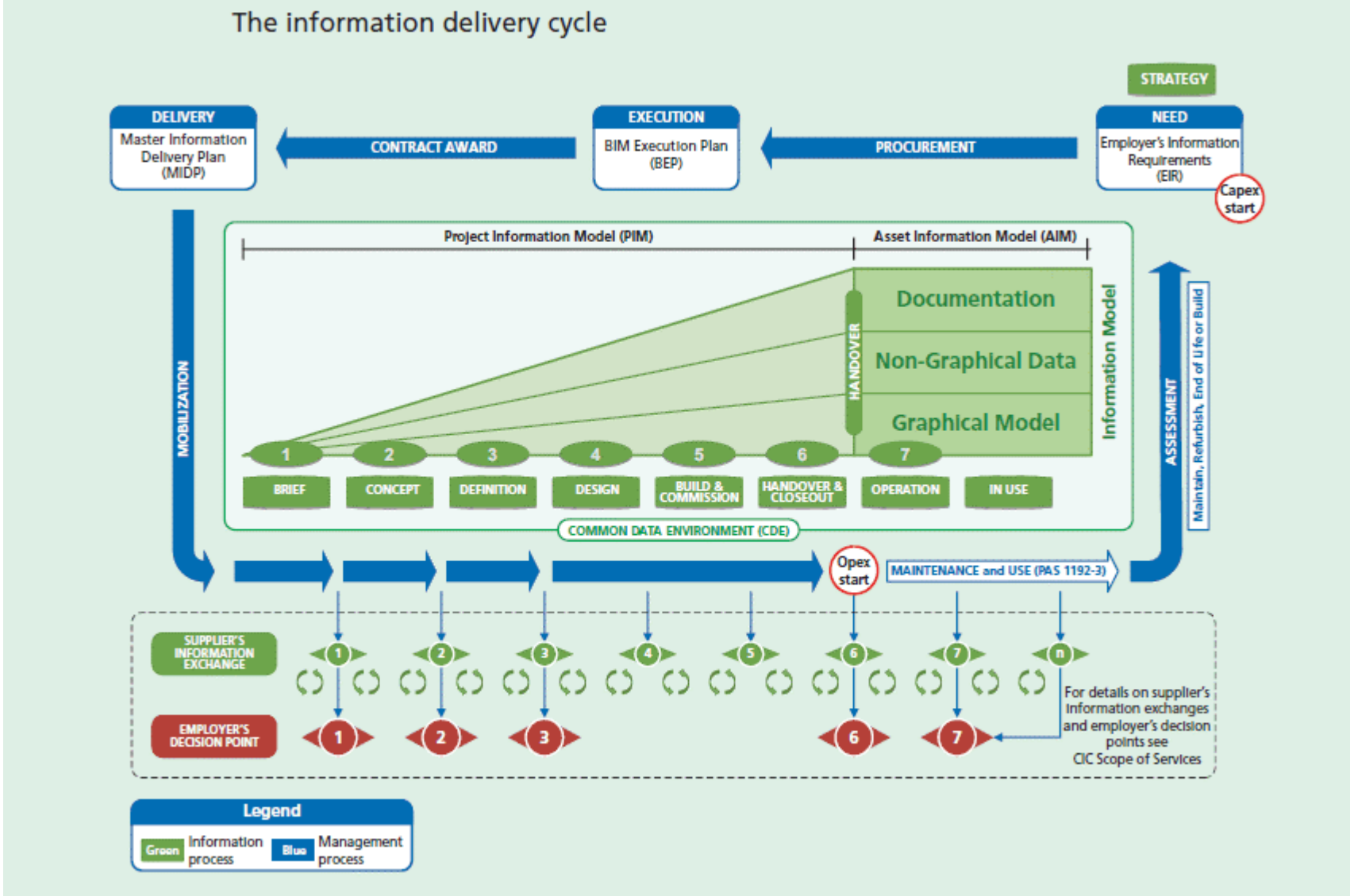


The structured use of a Common Data Environment (CDE) requires strict discipline by all members of a design team in terms of adherence to agreed approaches and procedures, compared with a more traditional approach. The benefits can only be realized with a commitment to operate in a disciplined and consistent manner throughout a project.

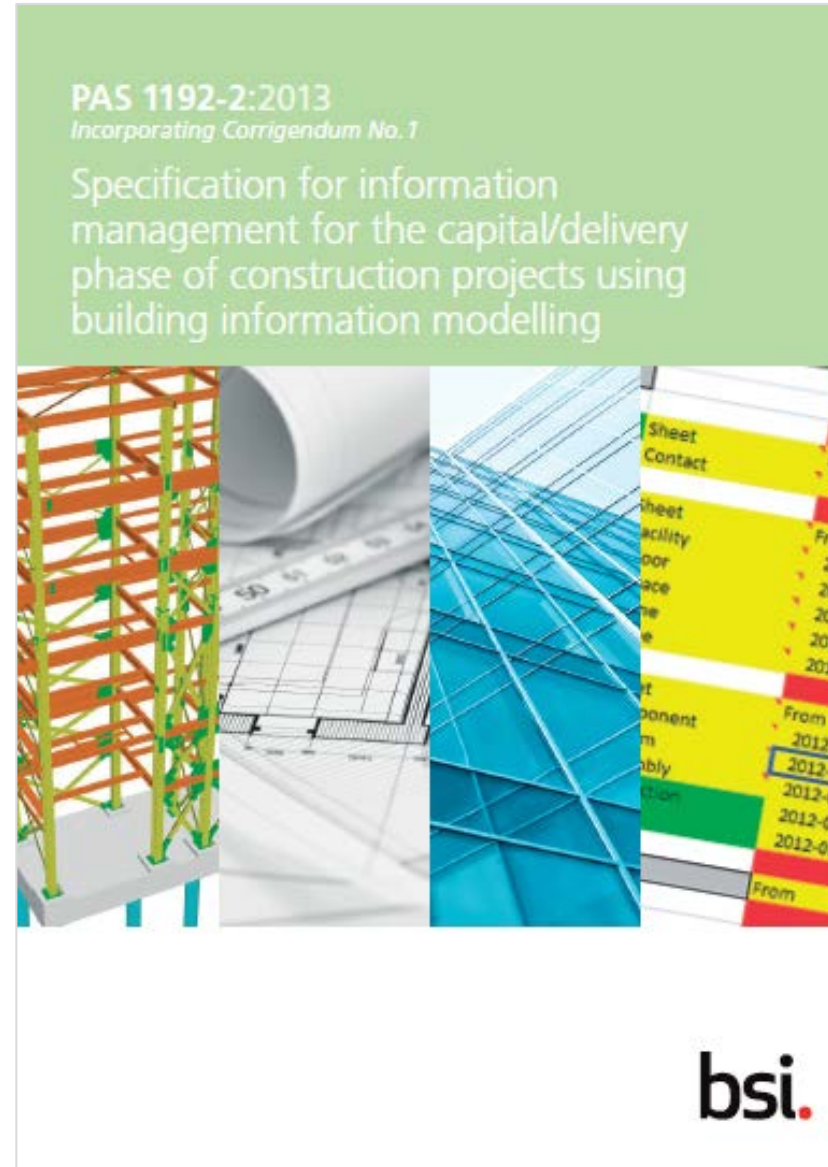
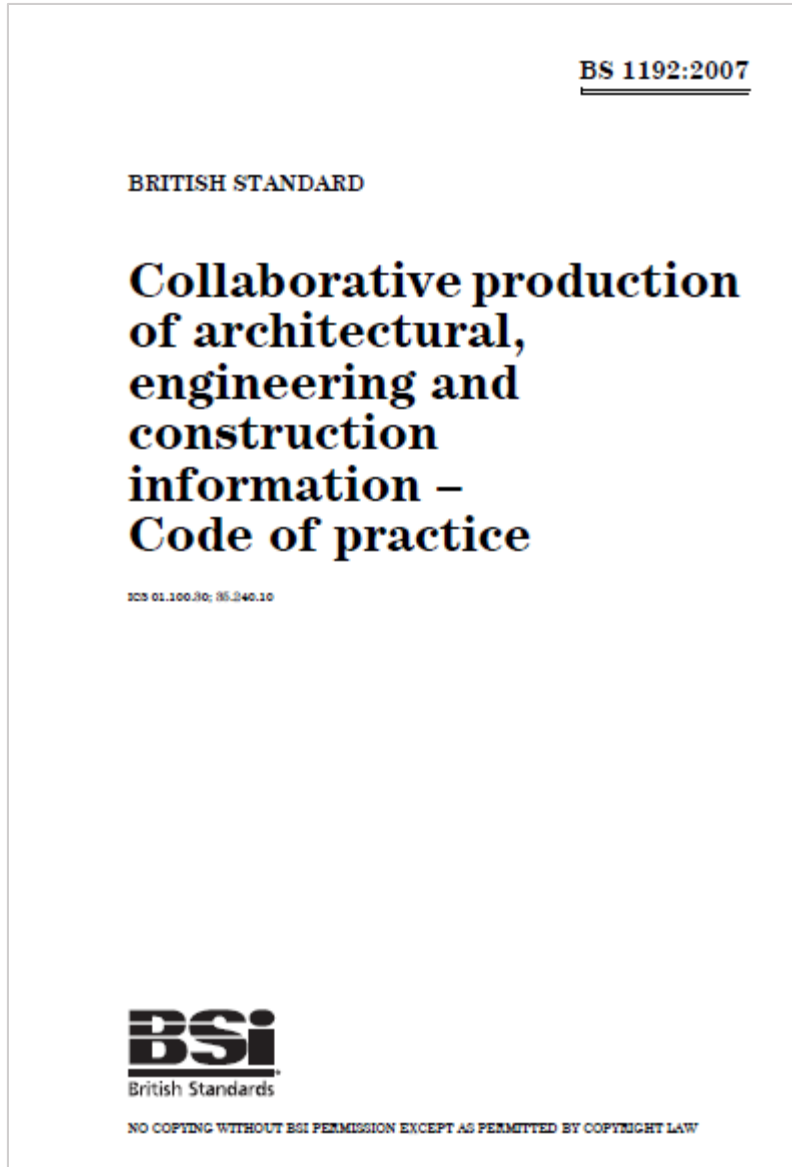
PAS 1192-2:2013



BIM Process Diagram

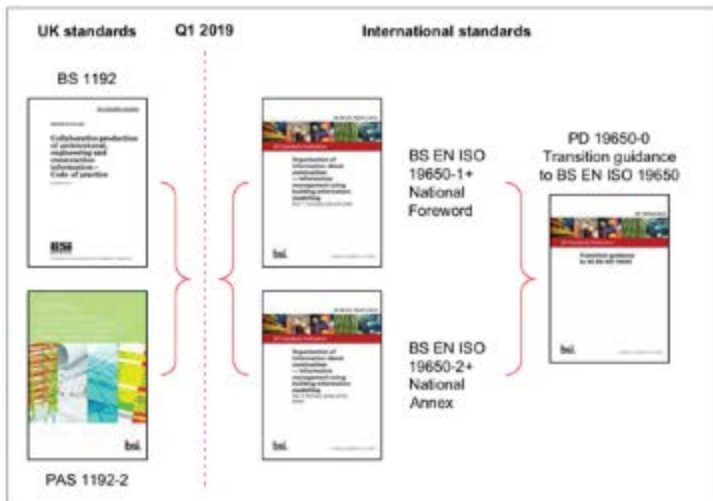


Key Standards



New
Guidance
came into
place
January
2019...

New Standards Q1 2019



BS EN ISO 19650-1:2018



BSI Standards Publication

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling

Part 1: Concepts and principles

bsi.

BS EN ISO 19650-2:2018



BSI Standards Publication

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling

Part 2: Delivery phase of the assets

bsi.



Introducing the new international standard for BIM, ISO 19650

Embedding digital innovation and
accelerating global adoption

bsi.

...making excellence a habit™



What does the ISO 19650 suite consist of?

BS 1192:2007+A2:2016 on principles, and **PAS 1192-2** on the capital delivery phase are superseded by the following standards which are available on the BSI Shop:

- **BS EN ISO 19650-1:** Organization and digitization of information about buildings and civil engineering works, including building information modelling -- Information management using building information modelling: Concepts and principles
- **BS EN ISO 19650-2:** Organization and digitization of information about buildings and civil engineering works, including building information modelling -- Information management using building information modelling: Delivery phase of the assets

Also available on the BSI Shop the following document is published alongside these standards:

- **PD 19650-0 - UK Transition Guidance**, which will along with the UK National Forewords and National Annex aid implementation of the ISO standards in the UK and within the ISO framework

It's anticipated that **PAS 1192-3** and **PAS 1192-5** (the information management of assets and security-minded standards for BIM) will be superseded by the following standards in 2020:

- **BS EN ISO 19650-3** Organization and digitization of information about buildings and civil engineering works, including building information modelling -- Information management using building information modelling -- Part 3: Operational phase of assets
- **BS EN ISO 19650-5** Organization and digitization of information about buildings and civil engineering works, including building information modelling -- Information management using building information modelling -- Part 5: Security-minded approach to information management

	UK Standards		International Standards
2019	BS 1192:2007+A2:2016 PAS 1192-2		BS EN ISO 19650-1 + National Foreword BS EN ISO 19650-2 + National Annex
			PD 19650-0 + Guide to BS EN ISO 19650
2020	PAS 1192-3 PAS 1192-5		BS EN ISO 19650-3 BS EN ISO 19650-5

Moving from the UK 1192 series to the ISO 19650 series

The good news is that the differences between the ISO standards and the UK standards are not major as the approach to BIM is very similar with the main differences relating to the terms and definitions. This milestone publication creates a fantastic opportunity to achieve even greater improvements in collaboration and customer satisfaction using BIM.

BSI clients currently holding BIM certification or verification, including the BSI Kitemark, will have the opportunity to transition their system to reflect the new ISO. To help you

upgrade we will be producing lots of supporting materials and services including webinars, training courses developed by experts, and informative whitepapers and articles.

If you are new to BIM, there's no better time to take advantage of the benefits this can mean for your organization.

Little Book of BIM

2019 edition

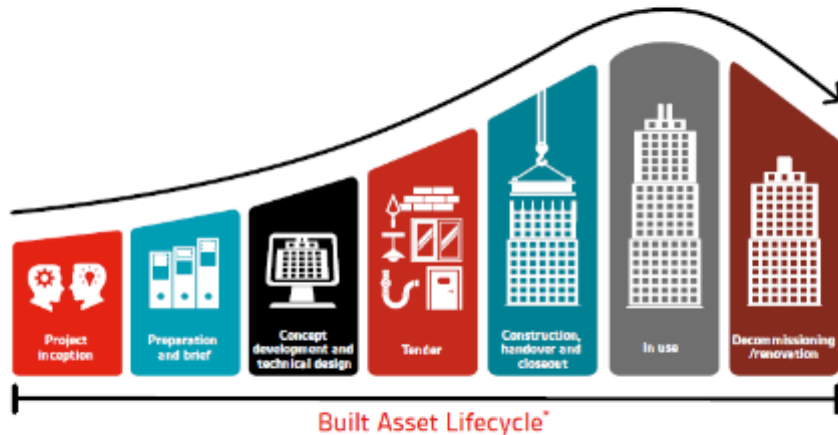
Includes ISO 19650 Standards

bsi.

...making excellence a habit.™

BIM Definition

Building Information Modelling (BIM) is a collaborative way of working underpinned by digital technologies, which allow for more efficient methods of designing, delivering and maintaining physical built assets throughout their entire lifecycle. Greater efficiencies can be realized due to significant pre-planning during the design and construction phases, providing comprehensive information at handover stage.



* This asset lifecycle concept is based on the RIBA Plan of Work 2013

Key Standards for BIM

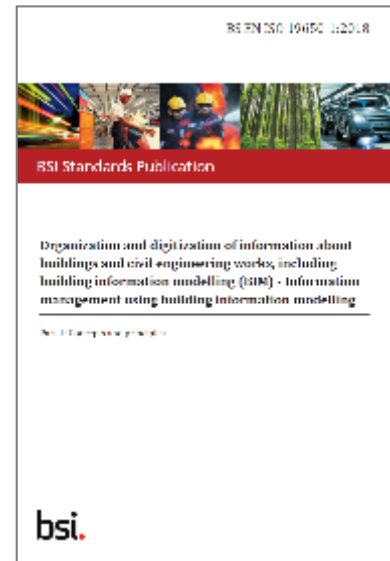
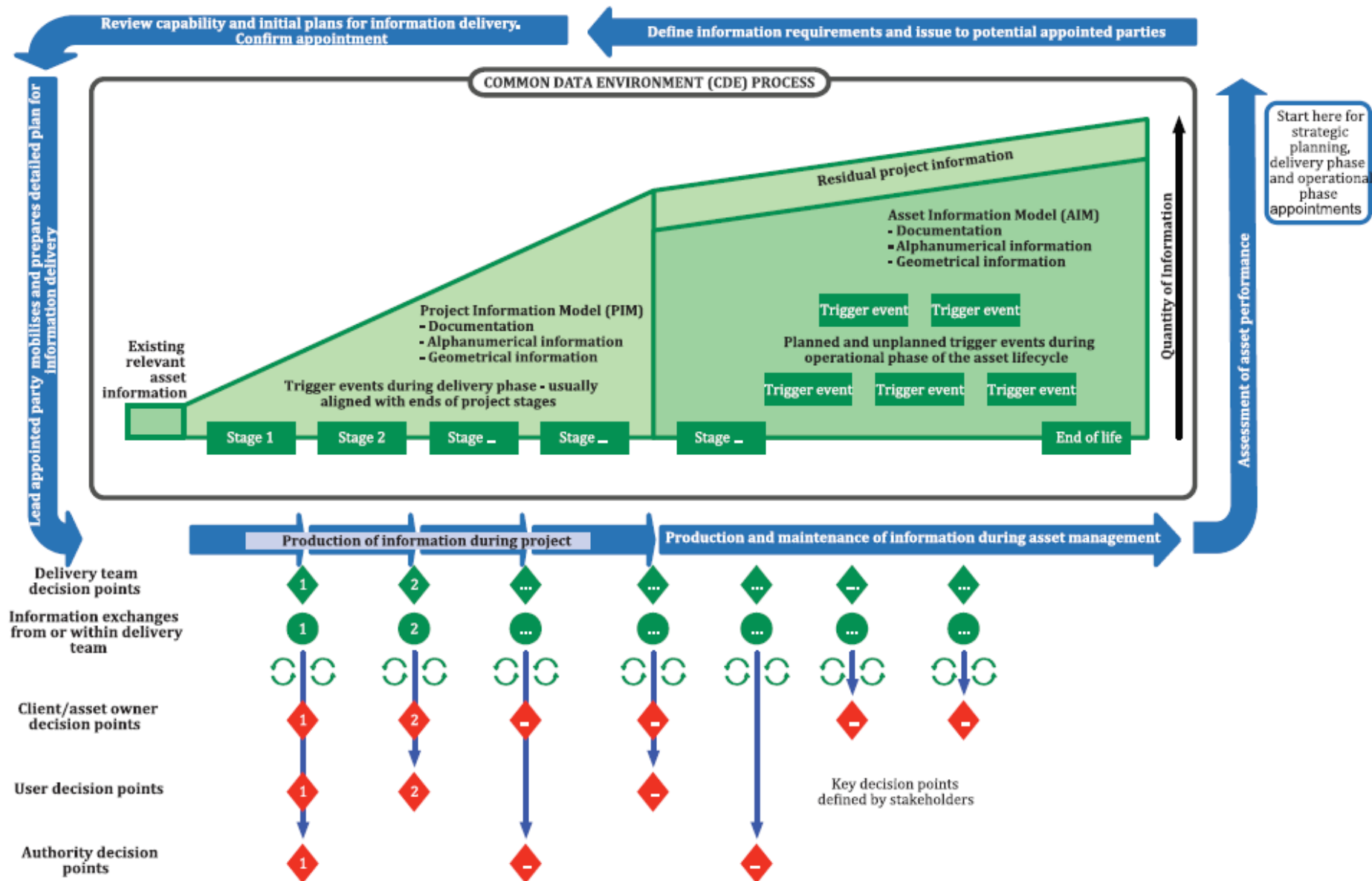
BS EN ISO 19650-1:2018 – Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – Information management using building information modelling. Concepts and principles. This will supersede BS 1192:2007+A2:2016.

BS EN ISO 19650-2:2018 – Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – Information management using building information modelling. Delivery phase of the assets. This will supersede PAS 1192-2:2013.

PD 19650-0:2019 – Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM). Guide to BS EN ISO 19650:2018

PAS 1192-3:2014 – Specification for information management for the operational phase of assets using building information modelling.

BIM Process Diagram



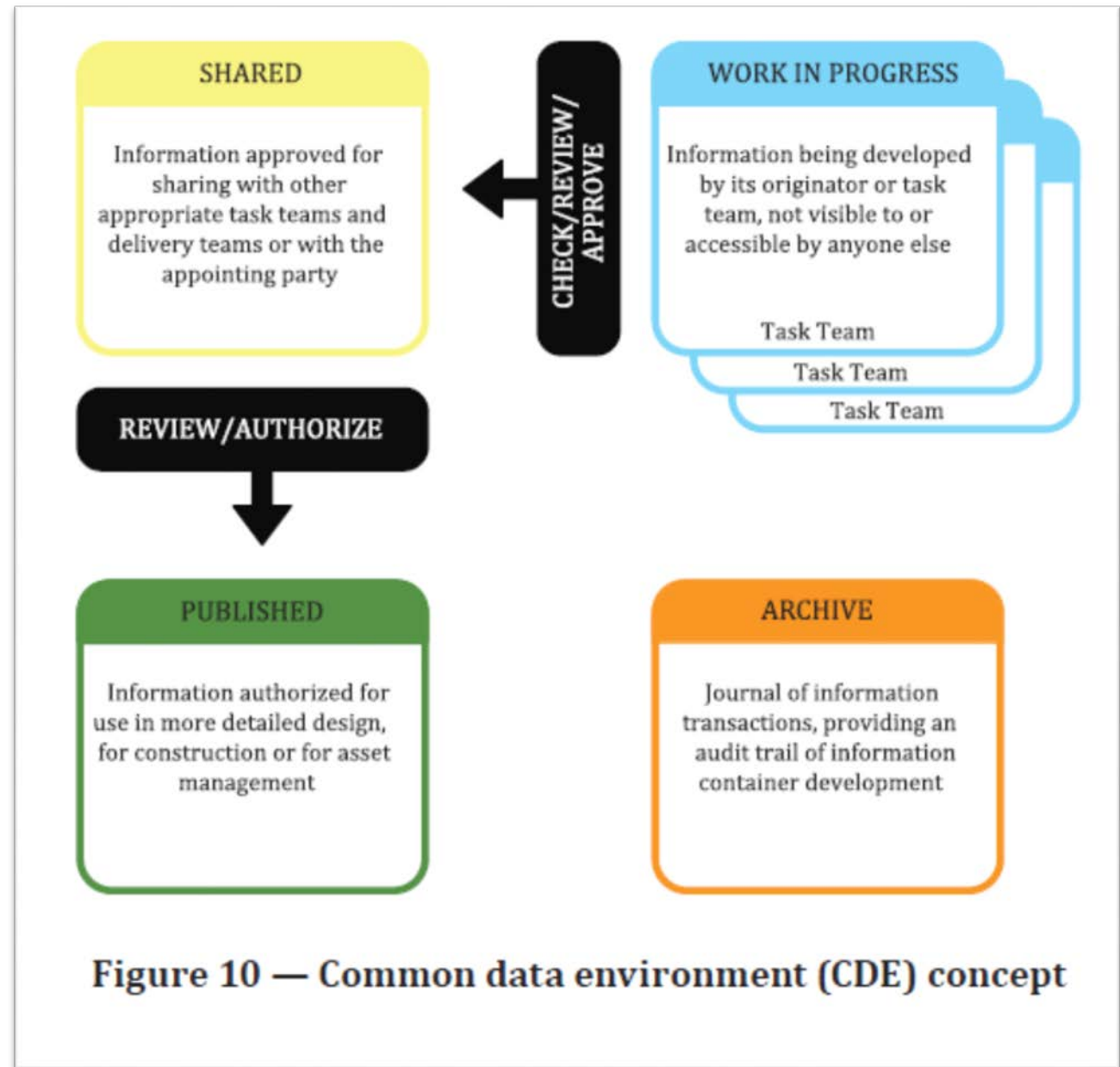
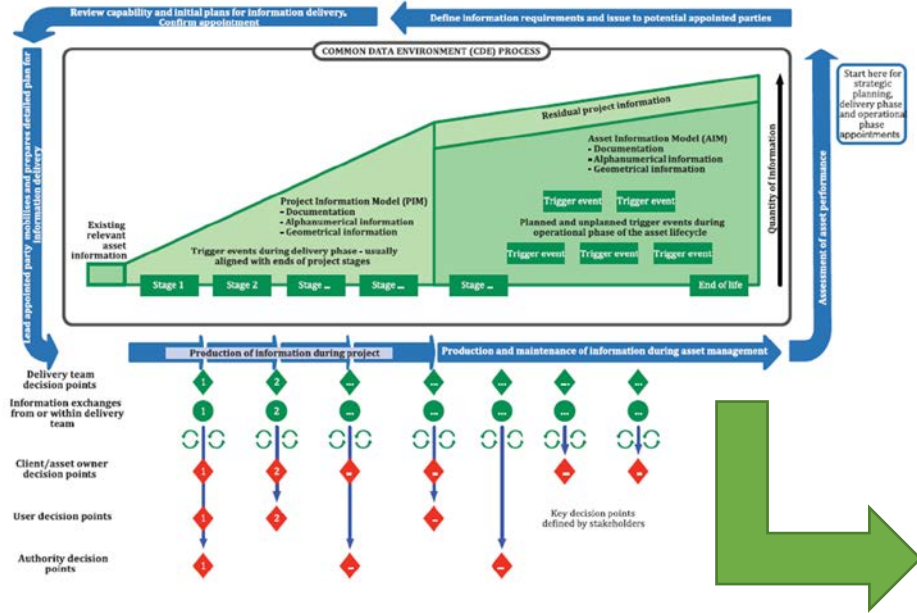


Figure 10 — Common data environment (CDE) concept

Conventions

UNIVERSITY OF WALES TRINITY SAINT DAVID

BIM NAMING CONVENTION GUIDE: All files: Models, Drawings & Documents

THE CODE	Project	Originator	Zone	Level	Type	Role	Number	Description*	Suitability*	Revision*
CODE LENGTH	2-6 Characters	3 - 6 Characters	1-2 Characters	2 Characters	2 Characters	1 Character Only	4 Characters	6-8 Characters	2 Characters	Single Character
DESCRIPTION	A single common project identifier that is recognizably distinct from any individual organization's internal job number.	The company that produced the data.	Use XX as the default. Only use Zones if project requires. This is then defined by the chosen Model segregation. There should be at least one 'zone' per role. EG. Arch Model, Mech Model, Struct Model, etc.	The level the data refers to: ZZ – Multi Level XX – No Level GF - Ground Flr 01 – First Flr 02 – Second Flr Etc. Mezzanines M1 M2 Etc. All levels below ground floor prefix 'B' B1 B2 Etc.	This is simply the type or form of data eg: For Files: AF Animation File CM Combined Model DR 2D Drawing M2 2D model M3 3D model MR Model rendering VS Visualization For Documents: BQ Bill of Quants CA Calculations CO Correspondence CP Cost Plan DB Database FN File Note HS Health & Safety IE Information Exchange MI Minutes / Action Notes	A Architect / Architectural B Building Surveyor C Civil Engineer D Drainage Engineer E Electrical Engineer F Facilities Manager G Geographical Surveyor H Heating & Ventilation Designer I Interior Designer K Client L Landscape Architect M Mechanical Engineer P Public Health Engineer Q Quantity Surveyor S Structural Engineer T Planner W Contractor X Subcontractor Y Specialist Designer Z General	This is a 4 digit code denoting drawing grouping and number. It consists of a 1 digit Drawing Group plus the 3 digit individual drawing no: Eg. 1001 Where 1 at the beginning is the drawing group and the 3 latter digits are sequential numbers.	Drawing / Model description ie. GAPLAN SITE GEO MOD SECTION SCHEMAT BREEAM FINISHES etc.	This is for the 2 digit suitability code that indicates and governs the development stages of information and documents throughout the BIM process.	The revision number of the drawing. eg: A, B, C etc
NOTES	Use the 4 digit Company project numerics here - NB. NUMBER ONLY For Student Projects MODULE CODE ie 4005	NB. A specific unique identifier for each organisation should be defined upon them joining the project ie. Use company initials	NB. A more complex project may need to be divided into several diff zones. If so the Zone Strategy should be agreed at beginning of project	IE. Roof plan would be multi level.	MS Method Statement PP Presentation PR Programme RD Room Data Sheet RI Request for Information RP Report SA Schedule of Accommodation SH Schedule SN Snagging List SP Specification SU Survey		Drawings Groups are as follows: 0 - General 1 - Substructure 2 - Superstructure 3 - Openings 4 - Finishes 5 - Piped & ducted services 6 - Electrical 7 - Fixtures & Fittings (Fixed) 8 - Loose Furniture 9 - External Works	There is no specific standard for description but avoid long, unweildy descriptions as this will affect your ability to file in Windows	Please refer to opposite tabled from BS1192:2007 issue sheet for the appropriate suitability status codes.	
EXAMPLE	4005	UWSTD	XX	ZZ	DR	A	1001	GEO MOD	S1	A
* = Optional add ons within schema that we as UWTSD have chosen to include. NB. There are other optional fields in the schema that we have opted to leave out ie: Classification (uniclass codes) Guide authored by G Traylor, UWTSD, October 2019. Based on BS 1192:2007 + A2:2016 & BS 1192-2:2013										

UNIVERSITY OF WALES TRINITY SAINT DAVID									
BIM NAMING CONVENTION GUIDE: All files: Models, Drawings & Documents									
THE CODE	Project	Originator	Zone	Level	Type	Role	Number	Description*	Suitability*
CODE LENGTH DESCRIPTION	2-6 Characters A single common project identifier that is recognizably distinct from any individual organization's internal job number.	3-6 Characters The company that produced the data.	2-3 Characters Use XX as the default. Only use Zones if project requires. This is then defined by the chosen Model Segregation. There should be at least one "zone" per role. (E.g. Arch Model, Mech Model, Struct Model, etc.	2 Characters The level the data refers to: ZZ - Multi Level XX - No Level GF - Ground Flr 01 - First Flr 02 - Second Flr Etc. Mezzanines M1 M2 Etc. All levels below ground floor prefix 'B' B1 B2 Etc. IE - Roof plan would be multi level.	2 Characters This is simply the type or form of data eg: For Files: AF Animation File CM Combined Model DR 2D Drawing M2 2D model M3 3D model MR Model rendering VS Visualization For Documents: BQ Bill of Materials CA Calculations CO Correspondence CP Cost Plan DB Database FN File Note HS Health & Safety IE Information Exchange MI Minutes / Action Notes MS Method Statement PP Presentation PR Programme RD Room Data Sheet RI Request for Information RP Report SA Schedule of Accommodation SH Schedule SN Snagging List SP Specification SU Survey	3 Character Only A Architect / Architectural B Building Surveyor C Civil Engineer D Drainage Engineer E Electrical Engineer F Facilities Manager G Geographical Surveyor H Heating & Ventilation Designer I Interior Designer K Client L Landscape Architect M Mechanical Engineer P Public Health Engineer Q Quantity Surveyor S Structural Engineer T Planner W Contractor X Subcontractor Y Specialist Designer Z General	4 Characters This is a 4 digit code denoting drawing grouping and number. It consists of a 1 digit Drawing Group plus the 3 digit individual drawing no: Eg: 1001 Where 1 at the beginning is the drawing group and the 3 latter digits are sequential numbers.	6-8 Characters Drawing / Model description ie. GARLAN SITE GEO MOD SECTION SCHEMAT BREAM FINISHES etc.	2 Characters This is for the 2 digit suitability code that indicates and governs the development stages of information and documents throughout the BIM process.
NOTES	Use the 4 digit Company project numerics here - NB. NUMBER ONLY for Student Projects MODULE CODE ie 4005	NB. A specific unique identifier for each organisation should be defined upon them joining the project ie. Use company initials	NB. A more complex project may need to be divided into several diff zones. If so the Zone Strategy should be agreed at beginning of project						
EXAMPLE	4005	UWSTD	XX	ZZ	DR	A	1001	GEO MOD	A
* Optional add ons within schema that we as UWTSD have chosen to include. NB. There are other optional fields in the schema that we have opted to leave out ie. Classification (uniclass codes)									
Guide authored by S. Taylor, UWTSD, October 2018. Based on BS 1192 2007 + A2 2016 & BS 1192-2:2013									

Status	Description
Work in Progress	
S0	Initial status or WIP Master document index of file identifiers uploaded into the extranet.
Shared (Non-Contractual)	
S1	Suitable for Co-ordination The file is available to be „shared“ and used by other disciplines as a background for their information.
S2	Suitable for Information
S3	Suitable for Internal Review & Comment
S4	Suitable for Construction Approval
S5	Suitable for Manufacture
S6	Suitable for PIM Authorization (Information Exchanges 1-3)
S7	Suitable for AIM Authorization (Information Exchange 6)
D1	Suitable for Costing
D2	Suitable for Tender
D3	Suitable for Contractor Design
D4	Suitable for Manufacture/Procurement
AM	As Maintained
Published Documentation (Contractual)	
A	Suitable for Construction
B	Partially signed-off: For Construction with minor comments from the Client. All minor comments should be indicated by the insertion of a cloud and a statement of “in abeyance” until the comment is resolved, then resubmitted for full authorization.
AB	As-Built Handover documentation, PDF, native models, COBie etc.

Conventions:
Working in a Common
Data Environment CDE

UWTSD Title Block / Template File CAD

General		Architectural		Electrical		Interior Design		Landscape		Mechanical		Structural	

UNIVERSITY OF WALES TRINITY SAINT DAVID										
BIM MAPPING DOCUMENT GUIDE: All new Models, Drawings & Documents										
SYMBOLS										
THE CODE	Project	Originator	Zone	Level	Type	Role	Number	Description	Suitability	Revision
CODE LETTERS REVISION	1-10 letters Project identifier 11-15 letters Project name 16-20 letters Project location 21-25 letters Project description	1-10 letters Originator 11-15 letters Originator name 16-20 letters Originator address 21-25 letters Originator contact details	1-10 letters Zone 11-15 letters Zone name 16-20 letters Zone description 21-25 letters Zone location	1-10 letters Level 11-15 letters Level name 16-20 letters Level description 21-25 letters Level location	1-10 letters Type 11-15 letters Type name 16-20 letters Type description 21-25 letters Type location	1-10 letters Role 11-15 letters Role name 16-20 letters Role description 21-25 letters Role location	1-10 letters Number 11-15 letters Number name 16-20 letters Number description 21-25 letters Number location	1-10 letters Description 11-15 letters Description name 16-20 letters Description description 21-25 letters Description location	1-10 letters Suitability 11-15 letters Suitability name 16-20 letters Suitability description 21-25 letters Suitability location	1-10 letters Revision 11-15 letters Revision name 16-20 letters Revision description 21-25 letters Revision location
NOTE	1-10 letters Note identifier 11-15 letters Note name 16-20 letters Note description 21-25 letters Note location	1-10 letters Note originator 11-15 letters Note originator name 16-20 letters Note originator address 21-25 letters Note originator contact details	1-10 letters Note zone 11-15 letters Note zone name 16-20 letters Note zone description 21-25 letters Note zone location	1-10 letters Note level 11-15 letters Note level name 16-20 letters Note level description 21-25 letters Note level location	1-10 letters Note type 11-15 letters Note type name 16-20 letters Note type description 21-25 letters Note type location	1-10 letters Note role 11-15 letters Note role name 16-20 letters Note role description 21-25 letters Note role location	1-10 letters Note number 11-15 letters Note number name 16-20 letters Note number description 21-25 letters Note number location	1-10 letters Note description 11-15 letters Note description name 16-20 letters Note description description 21-25 letters Note description location	1-10 letters Note suitability 11-15 letters Note suitability name 16-20 letters Note suitability description 21-25 letters Note suitability location	1-10 letters Note revision 11-15 letters Note revision name 16-20 letters Note revision description 21-25 letters Note revision location
SAMPLE	1-10 letters Sample identifier 11-15 letters Sample name 16-20 letters Sample description 21-25 letters Sample location	1-10 letters Sample originator 11-15 letters Sample originator name 16-20 letters Sample originator address 21-25 letters Sample originator contact details	1-10 letters Sample zone 11-15 letters Sample zone name 16-20 letters Sample zone description 21-25 letters Sample zone location	1-10 letters Sample level 11-15 letters Sample level name 16-20 letters Sample level description 21-25 letters Sample level location	1-10 letters Sample type 11-15 letters Sample type name 16-20 letters Sample type description 21-25 letters Sample type location	1-10 letters Sample role 11-15 letters Sample role name 16-20 letters Sample role description 21-25 letters Sample role location	1-10 letters Sample number 11-15 letters Sample number name 16-20 letters Sample number description 21-25 letters Sample number location	1-10 letters Sample description 11-15 letters Sample description name 16-20 letters Sample description description 21-25 letters Sample description location	1-10 letters Sample suitability 11-15 letters Sample suitability name 16-20 letters Sample suitability description 21-25 letters Sample suitability location	1-10 letters Sample revision 11-15 letters Sample revision name 16-20 letters Sample revision description 21-25 letters Sample revision location

Metadata status codes from PAS1192-2	
Status	Description
Work In Progress	
10	Initial status or WP
11	Master document index of file identifiers uploaded into the intranet
Shared (Non Contractual)	
12	Suitable for Co-ordination
13	This file is suitable to be „shared“ and various other disciplines as a background for their information.
14	Suitable for Information
15	Suitable for Internal Review & Comment
16	Suitable for Construction Approval
17	Suitable for Manufacture
18	Suitable for PIM/Authorisation (Information Exchange 1 & 2)
19	Suitable for AIM/Authorisation (Information Exchange 3)
20	Suitable for Cladding
21	Suitable for Transfer
22	Suitable for Contract for Design
23	Suitable for Contract for Manufacture
24	Suitable for Manufacture/Procurement
AM	As Maintained
Published Documentation (Contractual)	
A	Suitable for Construction
	Partially signed off:
B	Re Construction with minor comments from the Client. All minor comments should be indicated by the insertion of a cloud and a statement of "in alignment" until the comment is resolved, the contractual full authorisation.
AB	As Built/As-shown documentation, PDF, native models, COBie etc.

Property Name	Unnamed	UPRN - UWT SD - 0001	Prifysgol Cymru University of Wales	(S0) UNCONTROLLED ISSUE NOT TO BE USED AS A REFERENCE DOCUMENT CHECK STATUS BEFORE QUOTING
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Layering conventions to British Standards. Within AutoCAD

Numbering to Building Information Modelling standards.

UWTSD Title Block & Splash Page REVIT

										Project Name: Project Name UPRN Code: 0001 Originator Code: Role Code: Designer Drawn By: Author Checked By: Checker Date: 01/28/21 Project Status: Project Status Prifysgol Cymru Y Ddodol Dewi Sant University of Wales Trinity Saint David ACBA 5010 BIM : LEVEL 5																																																																					
Property Title Project Name										Owner Unnamed										<table><thead><tr><th>Property</th><th>Originator</th><th>Zone</th><th>Level</th><th>Type</th><th>Role</th><th>Number</th><th>Description</th><th>Subsidiary</th><th>Revision</th></tr></thead><tbody><tr><td>0001</td><td>-</td><td>-</td><td>XX</td><td>-</td><td>-</td><td>DesignerA100</td><td>-</td><td>Unnamed</td><td>-</td></tr><tr><td colspan="7"></td><td>Project</td><td colspan="2">Status</td></tr></tbody></table> File Path: 01/28/21										Property	Originator	Zone	Level	Type	Role	Number	Description	Subsidiary	Revision	0001	-	-	XX	-	-	DesignerA100	-	Unnamed	-								Project	Status		Author Checker										Prifysgol Cymru Y Ddodol Dewi Sant University of Wales Trinity Saint David (S0) UNCONTROLLED Not to be used as a reference document Check Status Before Quoting									
Property	Originator	Zone	Level	Type	Role	Number	Description	Subsidiary	Revision																																																																						
0001	-	-	XX	-	-	DesignerA100	-	Unnamed	-																																																																						
							Project	Status																																																																							

Conventions

4005 _UWTSD _XX _01_DR _A _0001 _GenArr _AB

An 'As Built' First Floor, General Arrangement plan drawing produced by the architect.

4005 _UWTSD _XX _XX_CP _QS _0001 _CPlan _A _A

A Cost Plan suitable for construction, produced by the QS – revision A

Tools

Drawing, Modelling and Specifications



VECTORWORKS®
A NEMETSCHEK COMPANY



Clash Detection, Virtual Build



Collaboration and CDE Platforms



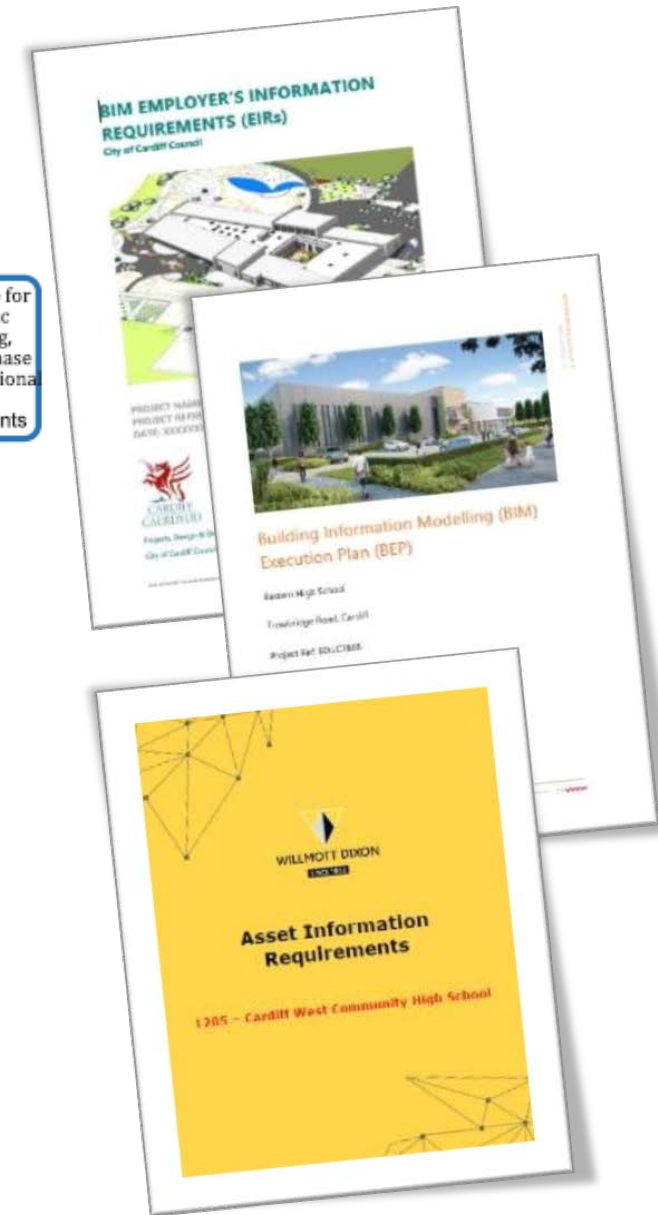
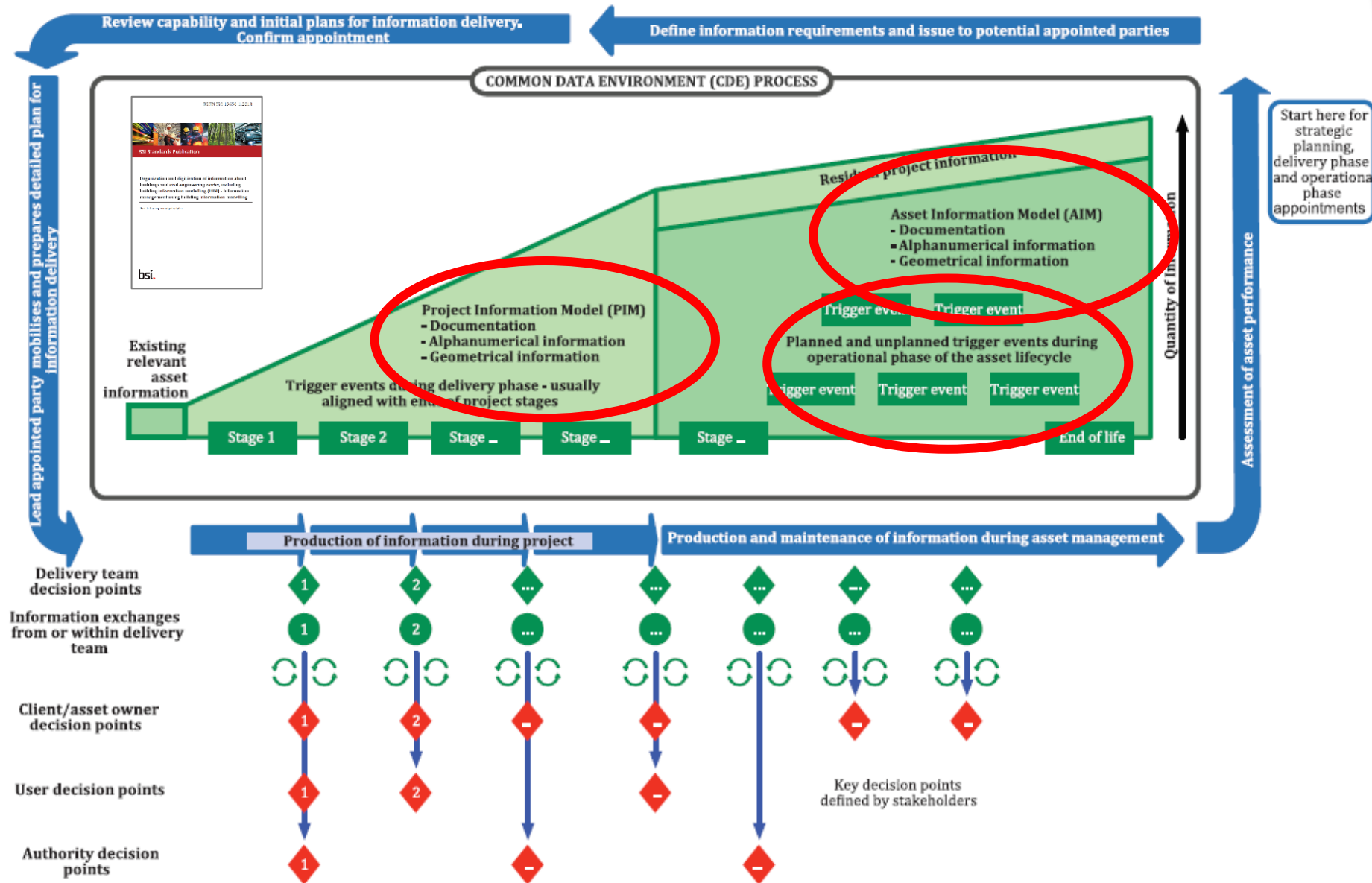
revizto™

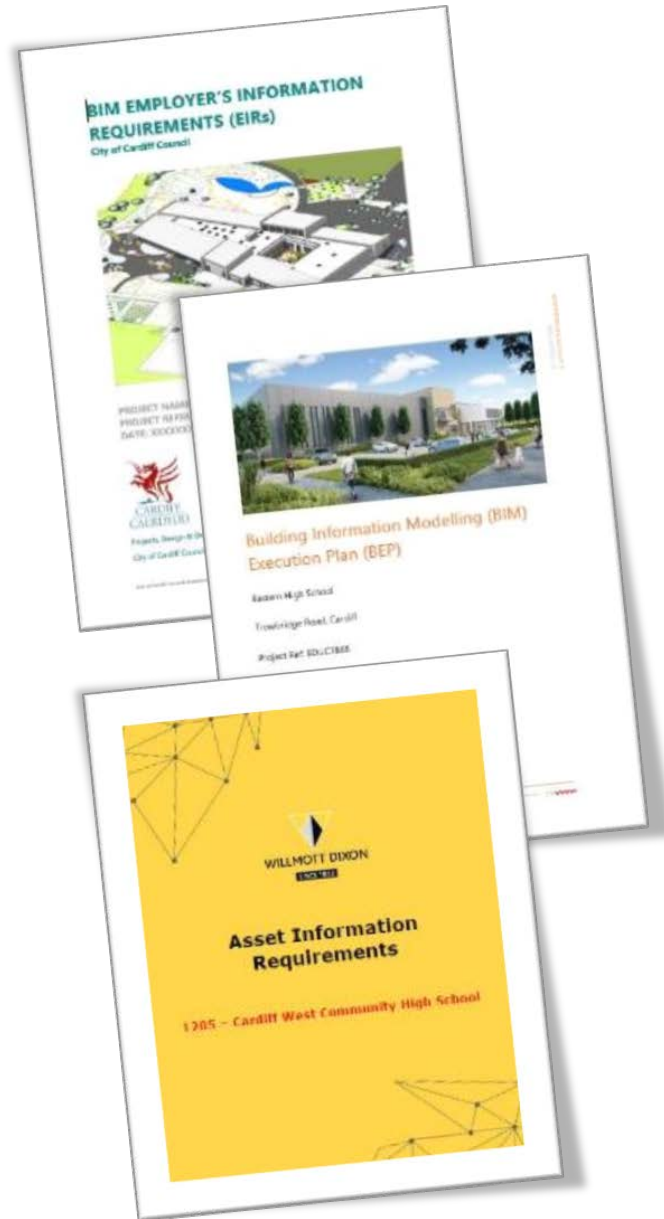


CAFM and CObie Outputs

The image is a screenshot of a software interface displaying a table of data. The table has multiple columns and rows, with some cells highlighted in yellow. The data appears to be related to project management or construction, with columns for various attributes and rows for individual items or tasks.

BIM Process Diagram





EIR

Exchange Information Requirements

BEP

BIM Execution Plan

AIR

Asset Information Requirements

BIM Handover Package



01-Documentation

02-Models

03-COBie

Construction Operations Building
Information Exchange

How can we collaborate?

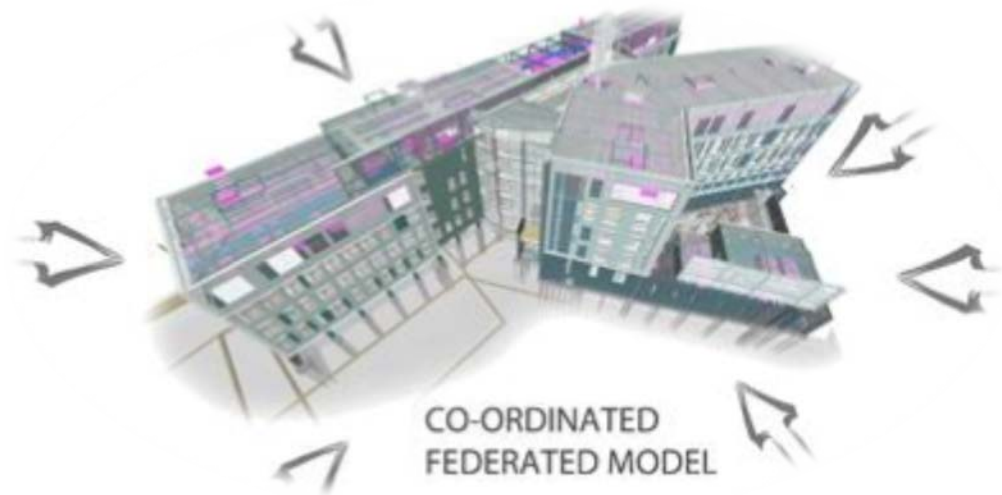
Tools such as Revizto enable a collaborative process using
2D and 3D Modelling with Intelligent Data



revizto™

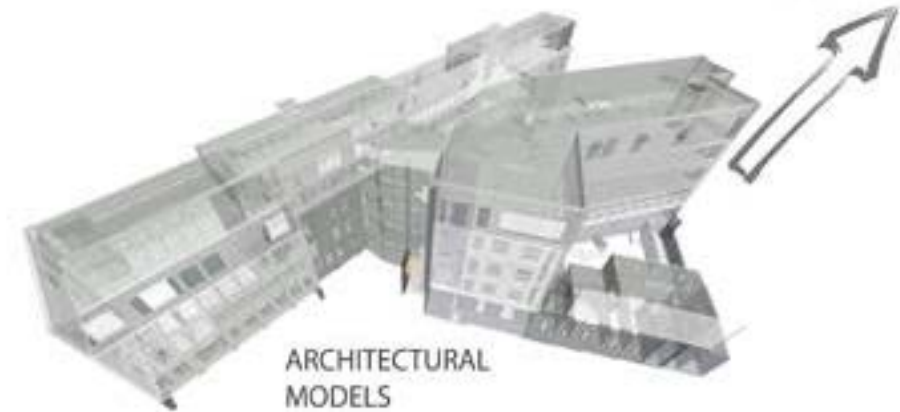
<https://revizto.com/en/>

<https://youtu.be/OnG3-0NqLr4>



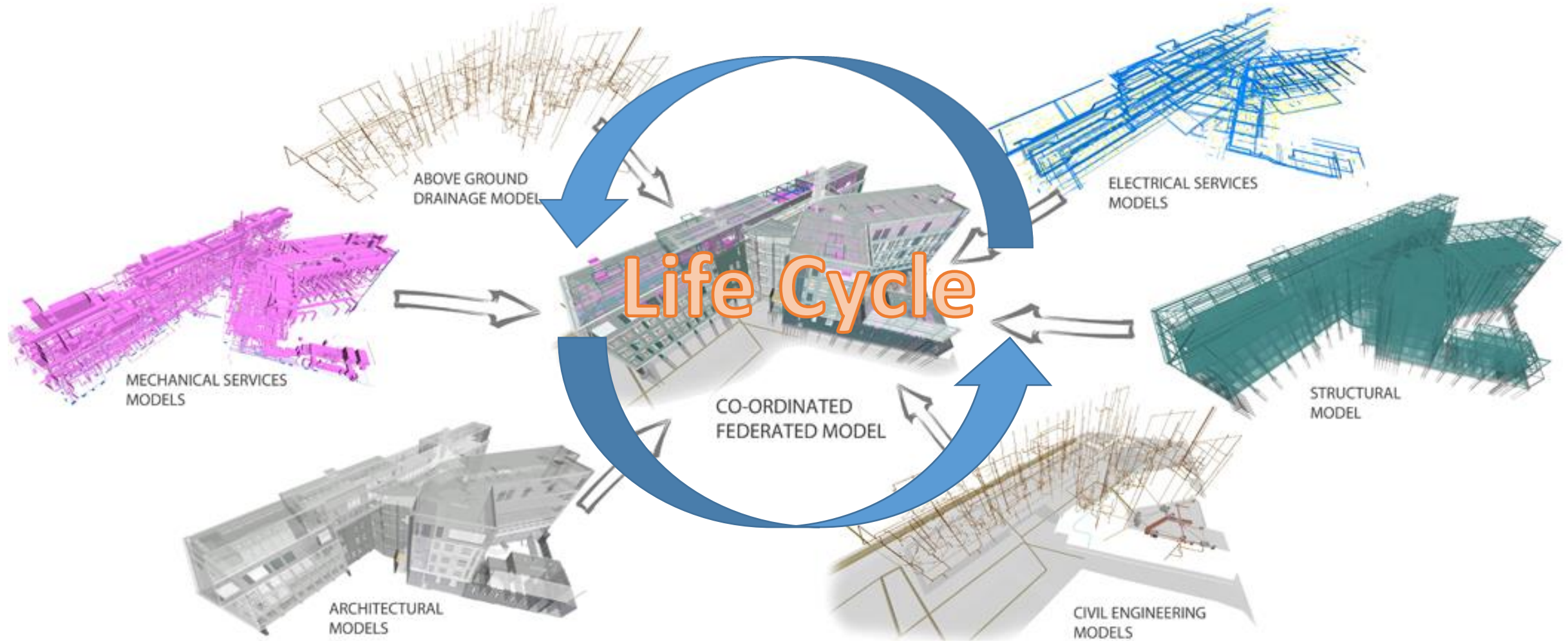
How can we create data rich intelligent models?

Tools such as Revit enable intelligent 3D Modelling that can be linked into a BIM Process.



Remember a Revit Model alone is not BIM

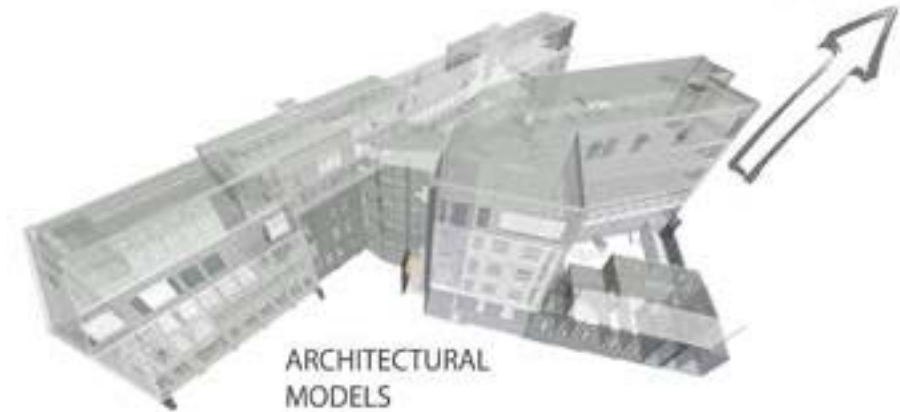
Building Information Modelling





How can we create data rich intelligent models?

Tools such as Revit enable intelligent 3D Modelling that can be linked into a BIM Process.



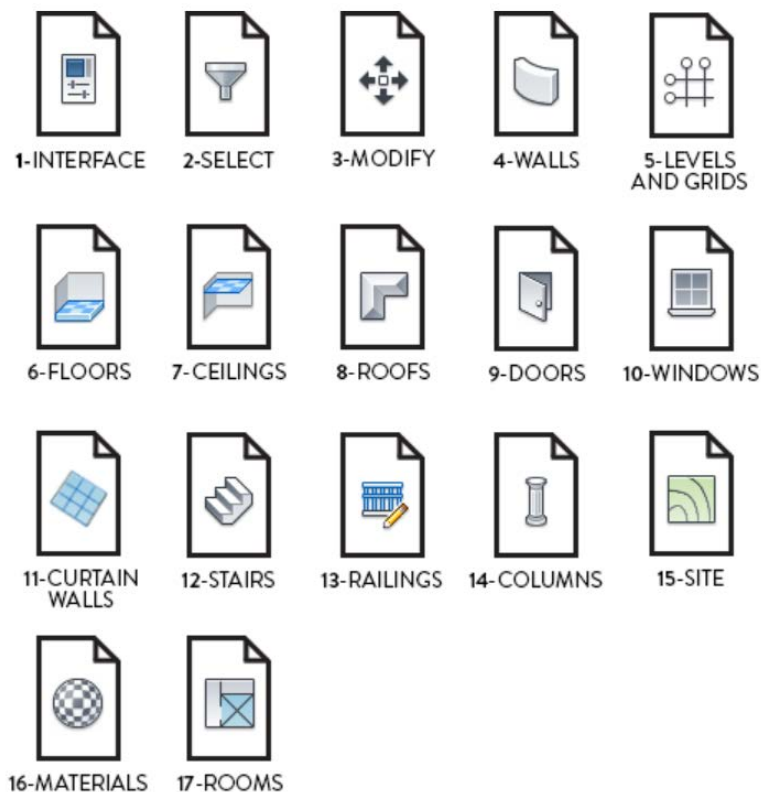
Remember a Revit Model alone is not BIM



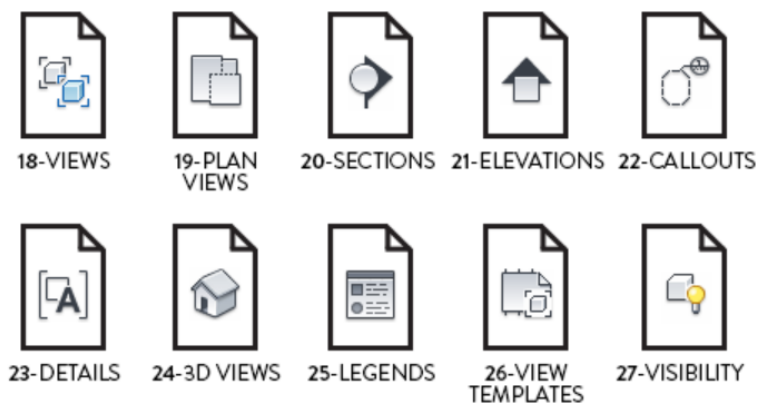
https://www.autodesk.com/education/edu-software/overview?_ga=2.119678017.834319708.1600961686-1615692111.1593105833&sorting=featured&page=1

AUTODESK® REVIT® the basics +

PART 1: MODEL



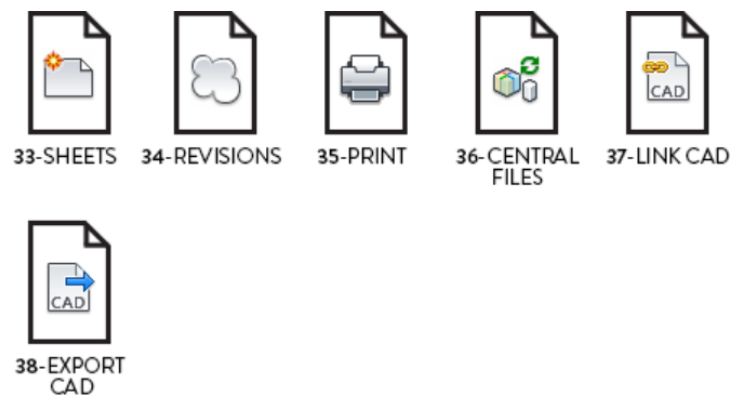
PART 2: VIEWS



PART 3: ANNOTATE



PART 4: PUBLISH AND COLLABORATE



PART 5: ADVANCED TOOLS



<https://revitpure.com/basics>

<https://academy.autodesk.com/>

PART 5: ADVANCED TOOLS



39-SCHEDULES



40-PHASES



41-WORKSETS



42-GROUPS



43-MODEL
IN-PLACE



44-FAMILIES



45-DESIGN
OPTIONS

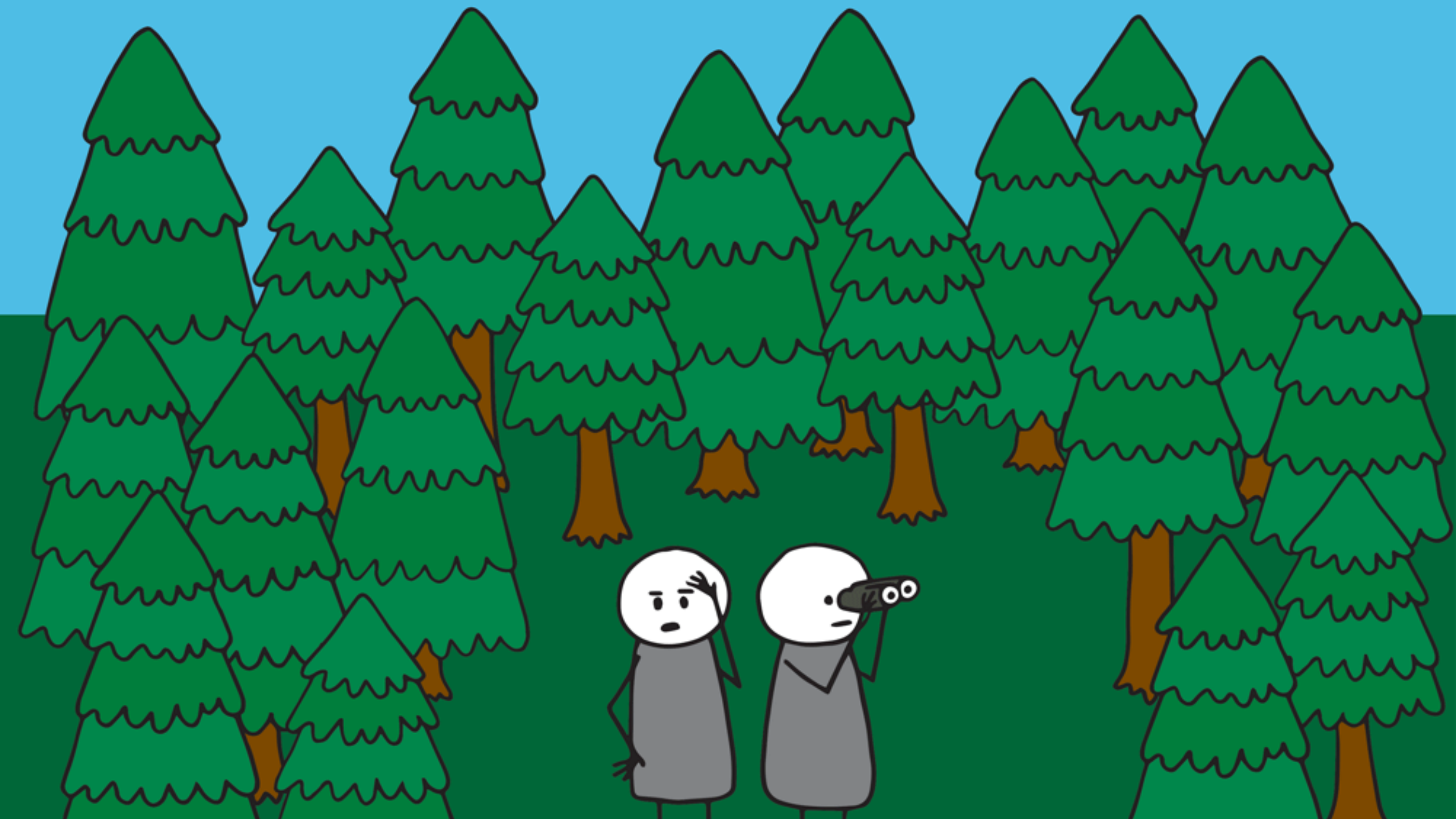


- Creating Schedules for pricing
- Phased Works
- Central Models / Worksets / Federated Models
- Families
- Advanced Modelling:
Sweeps Reveals and Model In Place
- *Collaboration and interoperability*
- *VR Visualisation*

Wow!

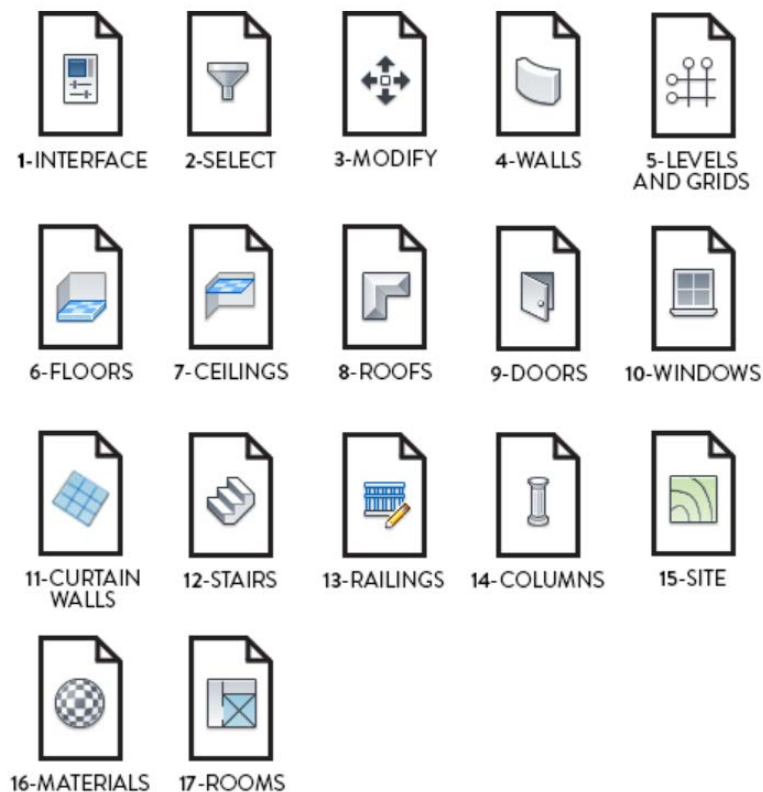
Hang on a Minute!

Confused.com?

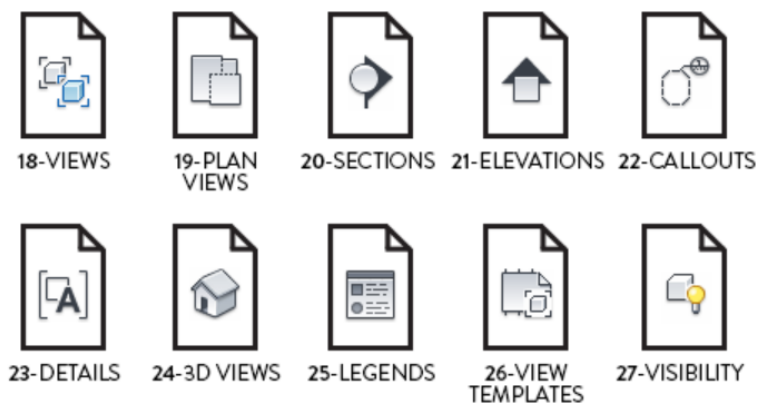


AUTODESK® REVIT® the basics +

PART 1: MODEL



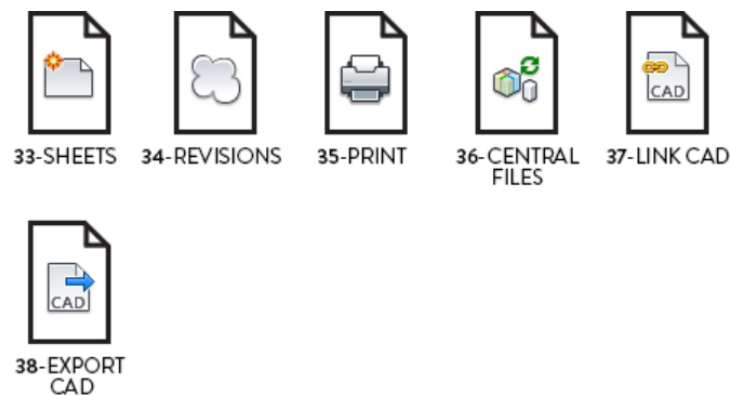
PART 2: VIEWS



PART 3: ANNOTATE



PART 4: PUBLISH AND COLLABORATE

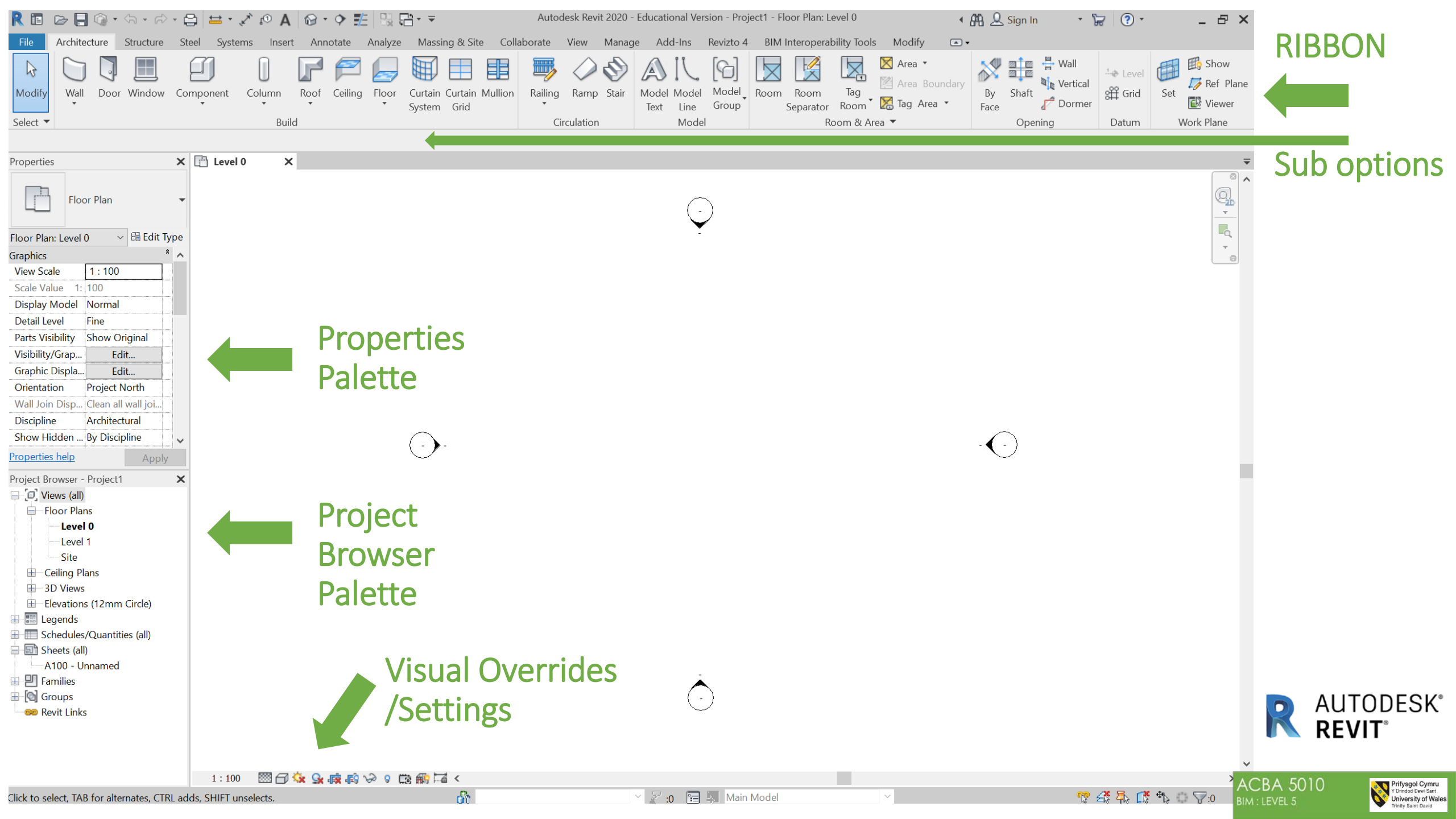


PART 5: ADVANCED TOOLS



<https://revitpure.com/basics>

<https://academy.autodesk.com/>



RIBBON

Sub options

Properties
Palette

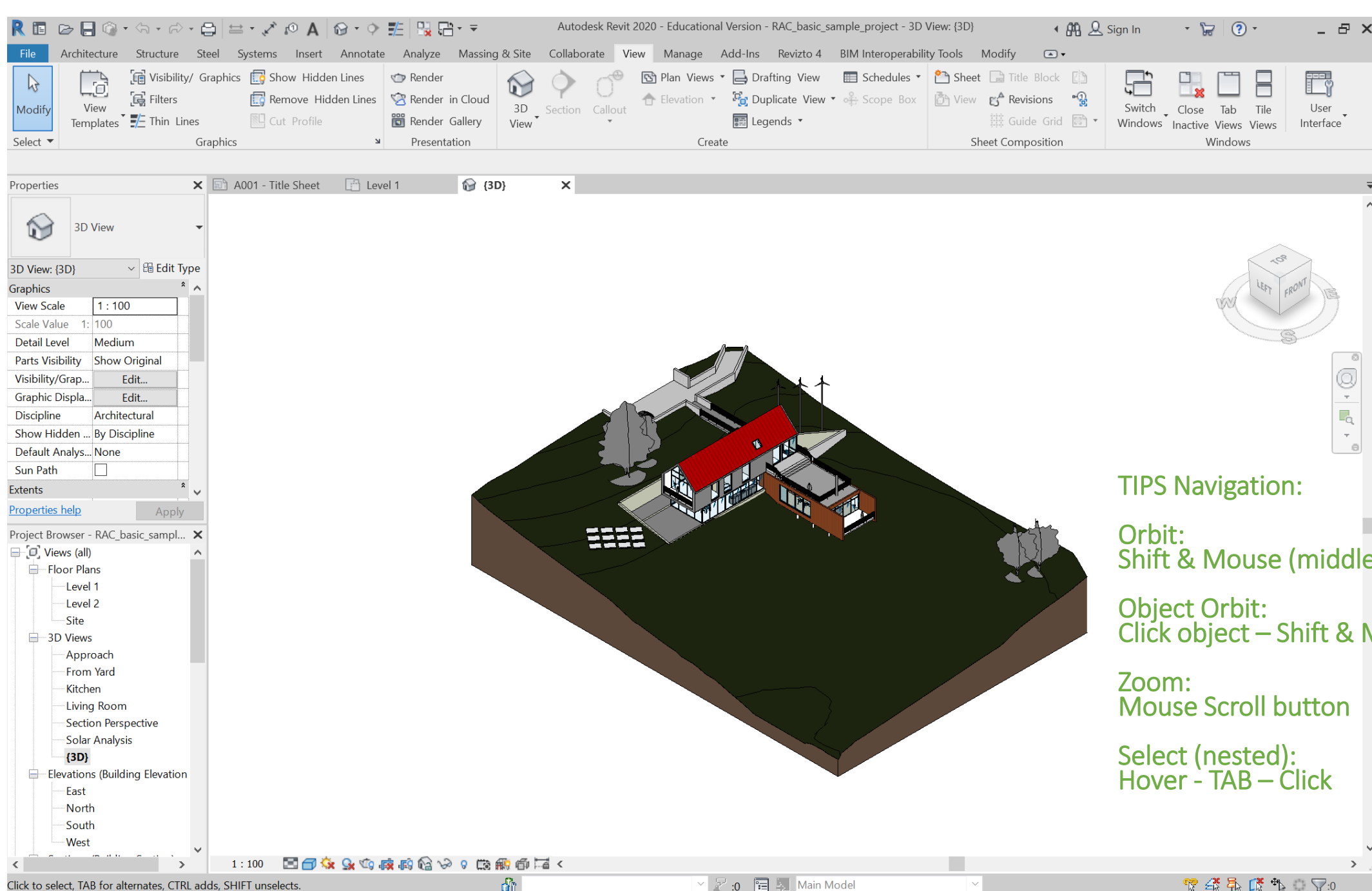
Project
Browser
Palette

Visual Overrides
/Settings

AUTODESK
REVIT®

ACBA 5010
BIM : LEVEL 5

Prifysgol Cymru
University of Wales
Trinity Saint David



1-INTERFACE



2-SELECT



3-MODIFY

TIPS Navigation:

Orbit:
Shift & Mouse (middle button)

Object Orbit:
Click object – Shift & Mouse (middle button)

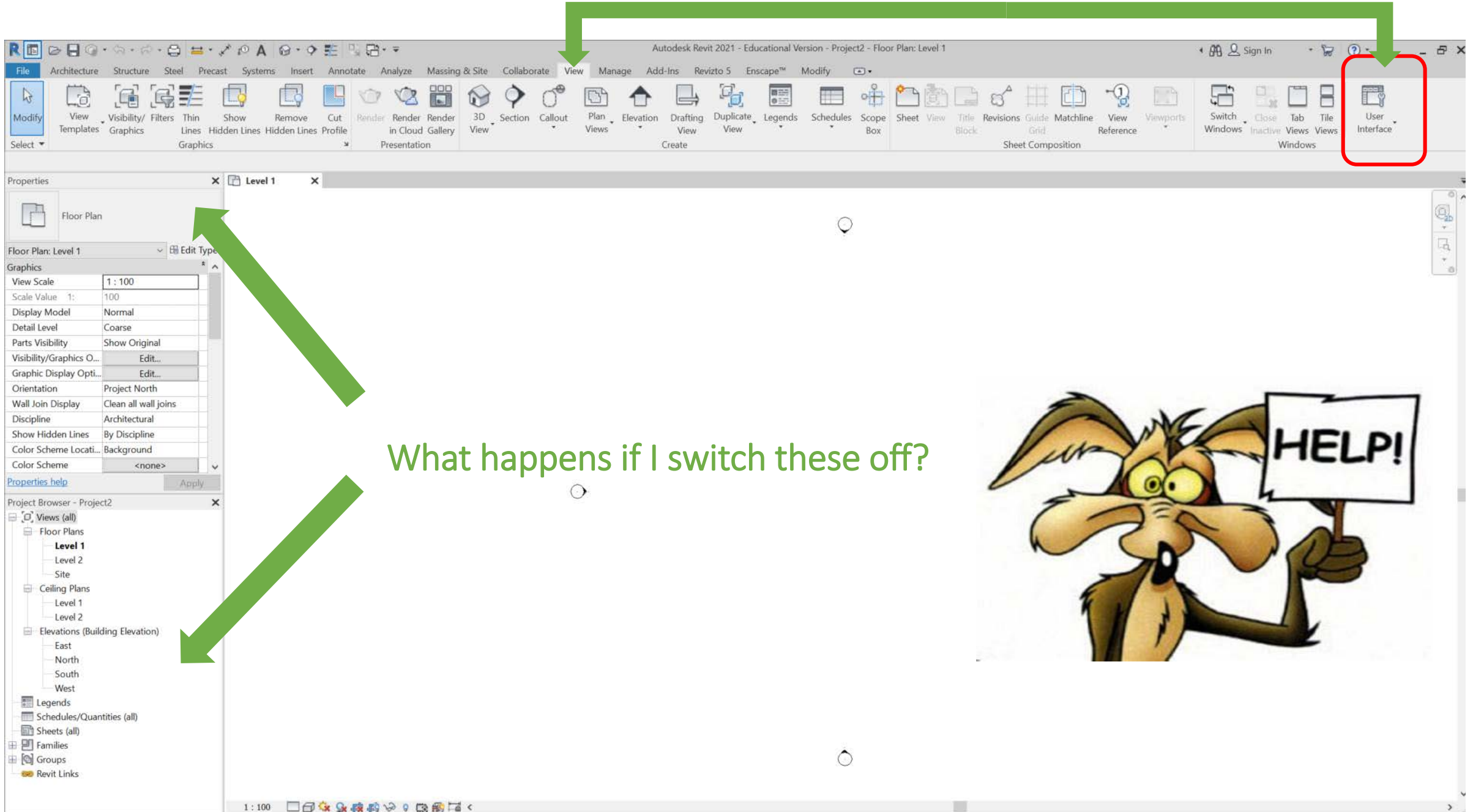
Zoom:
Mouse Scroll button

Select (nested):
Hover - TAB – Click

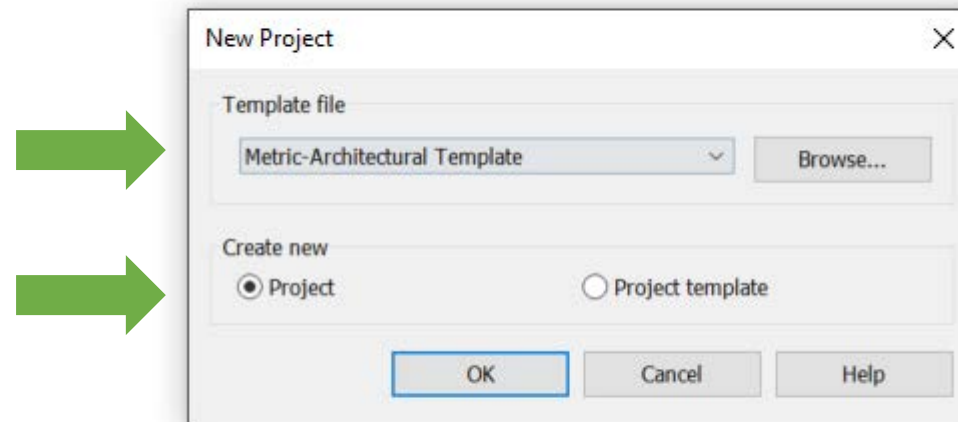
AUTODESK®
REVIT®

ACBA 5010
BIM : LEVEL 5

Prifysgol Cymru
University of Wales
Trinity Saint David



File > New > Project



Autodesk Revit 2021 - Educational Version - Project2 - Floor Plan: Level 1

File Architecture Structure Steel Precast Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Revit 5 Enscape™ Modify

Modify View Templates Visibility/ Graphics Filters Thin Lines Show Hidden Lines Remove Hidden Lines Cut Profile Render Render in Cloud Gallery 3D View Section Callout Plan Views Elevation Drafting View Duplicate View Legends Schedules Scope Box Sheet View Title Block Revisions Guide Matchline Viewports Viewports Reference Switch Windows Close Inactive Views Views User Interface

Properties

Floor Plan

Floor Plan: Level 1 Edit Type

Graphics

View Scale	1 : 100	
Scale Value	1:	100
Display Model	Normal	
Detail Level	Coarse	
Parts Visibility	Show Original	
Visibility/Graphics O...	Edit...	
Graphic Display Opti...	Edit...	
Orientation	Project North	
Wall Join Display	Clean all wall joins	
Discipline	Architectural	
Show Hidden Lines	By Discipline	
Color Scheme Locati...	Background	
Color Scheme	<none>	

Properties help Apply

Project Browser - Project2

- Views (all)
 - Floor Plans
 - Level 1**
 - Level 2
 - Site
 - Ceiling Plans
 - Level 1
 - Level 2
 - Elevations (Building Elevation)
 - East
 - North
 - South
 - West
 - Legends
 - Schedules/Quantities (all)
 - Sheets (all)
 - Families
 - Groups
 - Revit Links

4-WALLS

5-LEVELS AND GRIDS

6-FLOORS

7-CEILINGS

8-ROOFS

9-DOORS

10-WINDOWS

1 : 100

Main Model

Set up Levels

Exercise 1

Workshop in REVIT.

Set up your levels in Elevation view.

Distance between levels of 2500mm

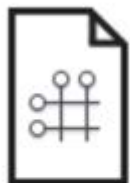
EASY?

Assume the following:

- High to Apex of roof is 5m
- Floor to ceiling height is 2.5m
- Floor slab is 300mm,
- Roof is 300mm thick
- Cill heights are 900mm
- Add Grid Lines



4-WALLS



5-LEVELS
AND GRIDS



6-FLOORS



7-CEILINGS



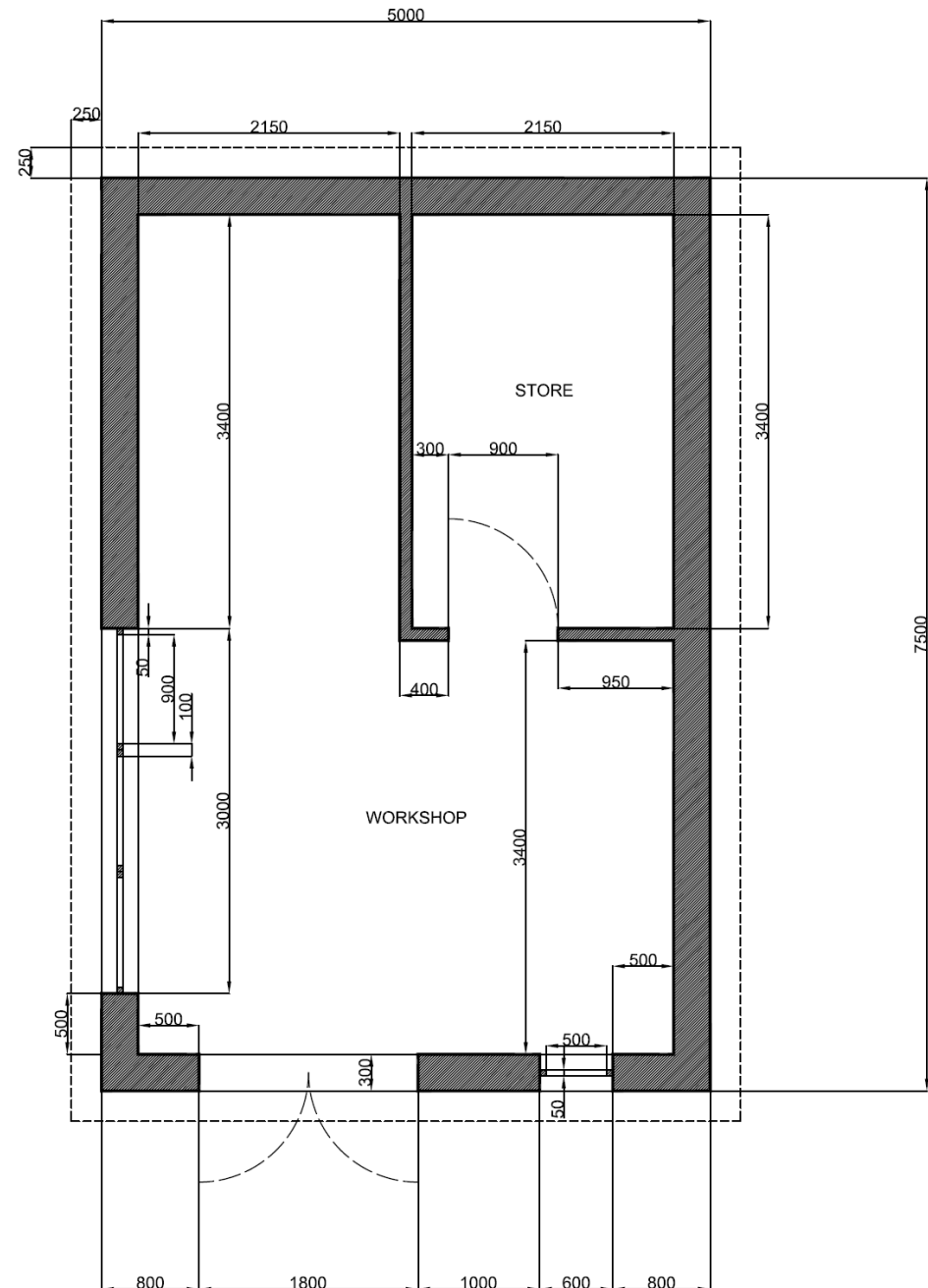
8-ROOFS



9-DOORS



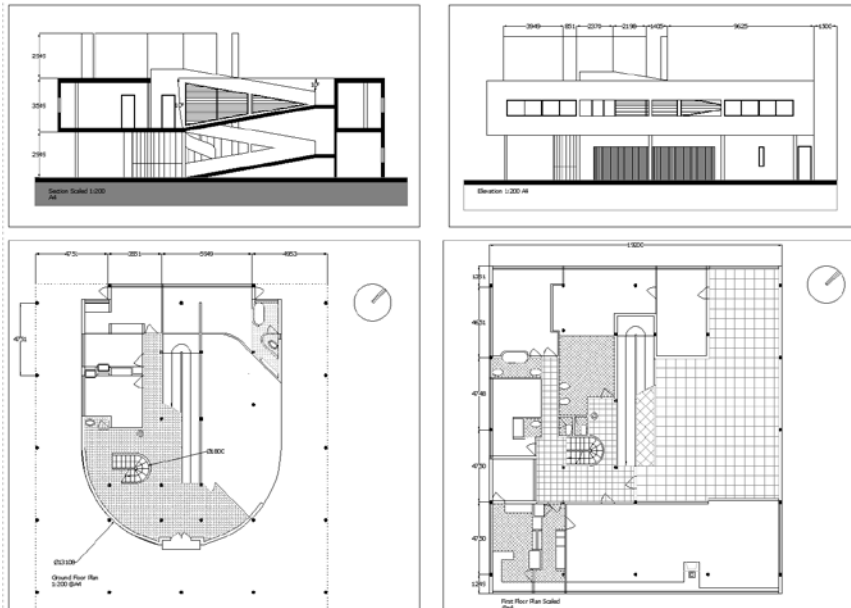
10-WINDOWS



Exercise 2

Villa Savoye – Poissy, Paris. Le Corbusier

Draw up the Revit Model from CAD files provided.



<https://youtu.be/PM5B2I2U6Ek>

Creating /Editing



4-WALLS



6-FLOORS



8-ROOFS



9-DOORS



10-WINDOWS



Type Properties

Family: System Family: Basic Wall

Type: Wall-Ext_102Bwk-75Ins-100LBlk-12P

LOAD...
Duplicate...

Type Parameters

Parameter	Value
Construction	
Structure	Edit...
Wrapping at Inserts	Both
Wrapping at Ends	None
Width	290.0
Function	Exterior
Graphics	
Coarse Scale Fill Pattern	<Solid fill>
Coarse Scale Fill Color	RGB 192-192-192
Materials and Finishes	
Structural Material	Concrete Masonry Units_Low Density
Analytical Properties	
Heat Transfer Coefficient (U)	0.2359 W/(m²·K)
Thermal Resistance (R)	4.2386 (m²·K)/W
Thermal mass	27.90 kJ/K
Absorptance	0.700000

[What do these properties do?](#)

<< Preview OK Cancel Apply

Properties

Basic Wall
Wall-Ext_102Bwk-75Ins-100LBlk-12P

Walls (1) Edit Type

Constraints

Location Line	Wall Centerline
Base Constraint	Level 0
Base Offset	0.0
Base is Attached	☐
Base Extension Distance	0.0
Top Constraint	Unconnected
Unconnected Height	8000.0
Top Offset	0.0
Top is Attached	☐
Top Extension Distance	0.0
Room Bounding	☒
Related to Mass	☐

Structural

Structural	☐
Enable Analytical Model	☐
Structural Usage	Non-bearing

Dimensions

Length	13700.0
--------	---------

[Properties help](#) Apply

It is the same process for all fabric objects.
Select an object you want to edit.
In the properties click 'Edit Type'
In the 'Type Properties' Window click 'Duplicate'
Click Edit.. tab

Family: Basic Wall
Type: Wall-Ext_102Bwk-75Ins-100LBk-12P 2
Total thickness: 290.0
Resistance (R): 4.2386 (m²·K)/W
Thermal Mass: 27.90 kJ/K

Editable
Properties

Sample Height: 6096.0



EXTERIOR SIDE					
	Function	Material	Thickness	Wraps	Structural Material
1	Finish 1 [4]	Brick, Common	102.5	☒	☐
2	Thermal/Air Layer [3]	Fiberglass Batt	75.0	☒	☐
3	Core Boundary	Layers Above Wrap	0.0		
4	Structure [1]	Concrete Masonry Uni	100.0	☐	☒
5	Core Boundary	Layers Below Wrap	0.0		
6	Finish 2 [5]	Plaster	12.5	☒	☐

INTERIOR SIDE

Insert

Delete

Up

Down

Default Wrapping

At Inserts:

Both

At Ends:

None

Modify Vertical Structure (Section Preview only)

Modify

Merge Regions

Sweeps

Assign Layers

Split Region

Reveals

OK

Cancel

Help

Click the preview Tab to
show what the object make
up in plan and section.

Click 'OK' and
'Apply' in the
Type Window

View: Floor Plan: Modify typ

Preview >>