ENGINUITY TUTORIAL



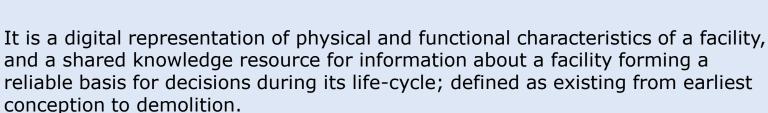
BIM (Building Information Modelling)



OVERVIEW OF BIM

BIM is an acronym for Building Information Modelling.

It describes the process of designing a building collaboratively using one coherent system of computer models rather than as separate sets of drawings, which is the traditional method.



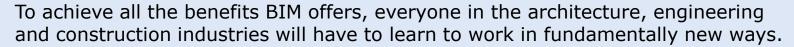
At the technical core of BIM is the software that enables 3D modelling and information management. Extensive use of the software eventually leads to a more complete understanding of the technical core.





BENEFITS

BIM offers enormous gains in saving in cost and time, much greater accuracy in estimation, and the avoidance of error, alterations and rework due to information loss.





We will now take a look at how BIM is used within Enginuity.





The **BIM status column** indicates if a job is using a BIM model.

KEY POINTS

Both Build Only (BO) and Design & Build jobs (DB) can use a BIM model .

OF WORK IN PROGRESS

The initial forward workload is: irrent value of the capital base is: can support forward workload of:

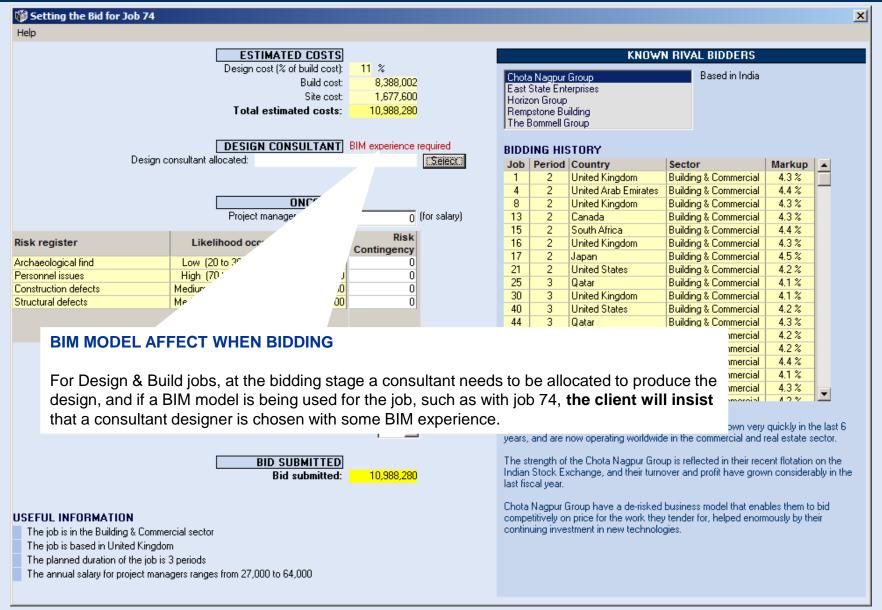
Hence, the value of work that can be won cannot exceed:

20,791,350 (job progression screen) 4,238,978 (financial decision screen) 42,389,780 (10 x capital base) 21,598,430 during bidding

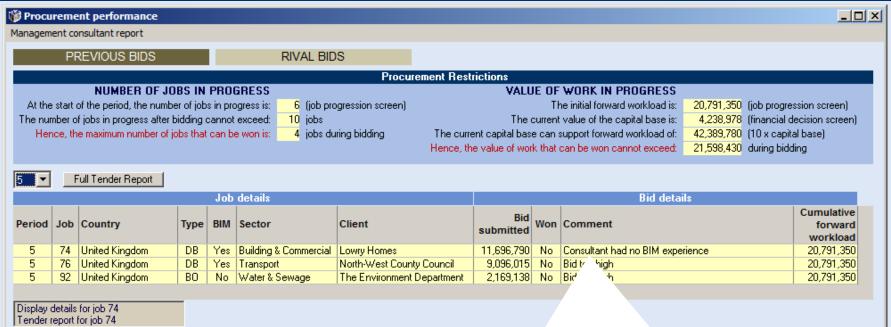
Job	Country	Туре	BIM	Size	App Value	Duration	Description	Sector	Client	Job	Bid	Bid value
74	United Kingdom	DB	Yes	Medium	11,000,000	3	Social housing development	Building & Commercial	Lowry Homes	74	No	0
76	United Kingdom	DB	Yes	Medium	9,000,000	3	Construction of new bridge	Transport	North-West County Council	76	No	0
80	United Kingdom	DB	Yes	Small	2,000,000	3	Construction of library storeroom	Building & Commercial	Fenlands County Council	80	No	0
92	United Kingdom	BO	No	Small	2,000,000	3	Scheme to upgrade tidal defences	Water & Sewage	The Environment Department	92	No	0
93	United Kingdom	BO	Yes	Small	3,000,000	3	New state of art aviation museum	Building & Commercial	The Defence Agency	93	No	0
100	Qatar	BO	No	Small	2,000,000	3	Upgrade to a marina	Transport	Qatar 2022	100	No	0

Display details for job 74 Yes



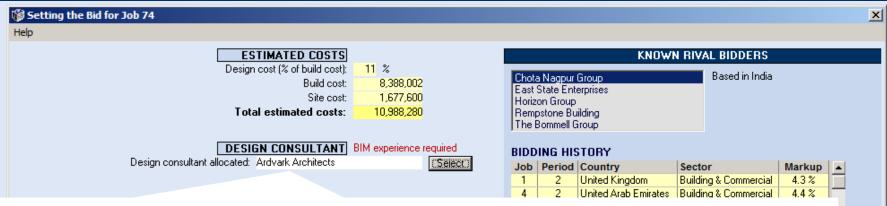






If a consultant is allocated to a Design & Build job using a BIM model who does not have any BIM experience, the client will reject the bid due to "Consultant had no BIM experience", as shown.





For Design and Build (DB) jobs using a BIM model, the consultant's **BIM experience can have a major affect** on the quality of the BIM model produced, which can then impact upon the build costs when the job is progressed.

For job 74, a Building and Commercial contract, **Ardvark Architects** have been chosen due to their expertise in the Building and Commercial sector, and since the job is using BIM, their **significant BIM experience**.

ARDVARK ARCHITECTS

After meeting at a BIM conference 3 years ago a small group of design consultants established Ardvark Architects to take advantage of the emergence of Building Information Modelling in the construction process.



Since being established Ardvark Architects has undertaken a number of prestigious project designs within the building and commercial field, and their skills are becoming increasingly in demand as their reputation spreads.

The company have invested heavily in technology, and particularly in BIM training for their staff, to enable them to compete for new work against even their rivals.

USEFUL INFORMATION

- The job is in the Building & Commercial sector
- The job is based in United Kingdom
- The planned duration of the job is 3 periods
- The annual salary for project managers ranges from 27,000 to 64,000

chotal Magpur Group have a defisited business moder that enables them to bid competitively on price for the work they tender for, helped enormously by their continuing investment in new technologies.



Consultant History

BIM (Building Information Modelling)

Navigate to "Main menu/Assessing performance/Consultant history" Gradings Job details Factors affecting build costs BIM being % change Base Job Country Expertise in sector Name Status Sector BIM experience Location used so far Ardvark Architects 74 United Kingdom 1st period | Building & Commercial Yes noticeably reduces significantly reduces has no affect on The PW Partnership UK 19 United Kingdom Completed Energy -0.71 % Yes noticeably reduces noticea² reduces has no affect on Completed Building & Commercial -0.69 % 30 | United Kingdom Yes noticeably reduces notice reduces has no affect on 76 United Kingdom 1st period | Transport noticeably reduces has no affect on Yes notic educes

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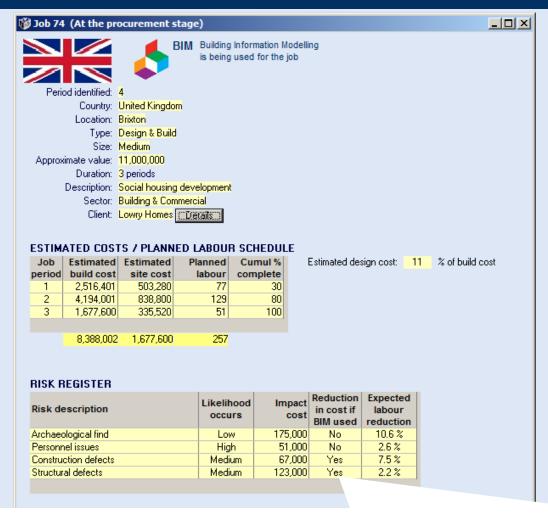




If job 74 is secured, and then progressed, we can use the **Consultant history** option to determine if our choice of Ardvark Architects is justified.

Clearly we made the right choice as Ardvark Architect's BIM experience significantly reduces build costs.



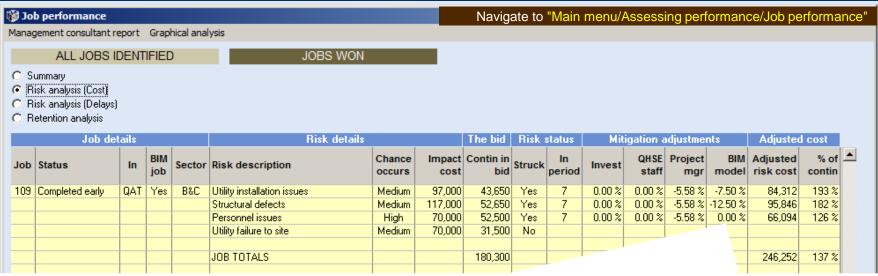


BIM MODEL AFFECTS ON RISK COSTS

If the job is using BIM (Building Information Modelling), there may be an opportunity to reduce the impact cost if the risk occurs.

For example, for job 74 there is the risk of both 'construction defects' and 'structural defects', which may be identified in the BIM model, and the threat mitigated.





The risk cost reductions due to the use of the BIM model are graded depending upon the particular risk.

In the example shown on Job 109, 3 risks struck in period 7 but the use of the BIM Model had different affects:-

- For the risk 'Utility installations issues' the use of the BIM model reduced the impact cost by 7.5%, a decent cost saving.
- For the risk 'Structural defects' the use of the BIM model reduced the impact cost by 12.5%, an even greater cost saving.
- For the risk 'Personnel issues' the use of the BIM model had no affect.

					Personnel issues	High	73,000	54,750	Yes	8	0.00 %	0.00%	-9.19 %	0.00%	66,291	121 %
					JOB TOTALS			159,600							129,858	81 %
174	In progress	US	No	TRA	Personnel issues	High	16,000	12,000	No							
					Planning delays	Low	34,000	8,500								
					JOB TOTALS			20,500							0	0%
178	In progress	QAT	No	B&C	Personnel issues	High	53,000	39,750	No							
	p.og.oo	<u> </u>	.,,		Structural defects	Medium		35 100								