

ENGINEUITY



New Features for 2021

ENGINEUITY is constantly evolving to keep it **relevant and appropriate** to meet the management training needs of today's construction professionals.

Some of the many new features for 2021 are outlined in the following slides.

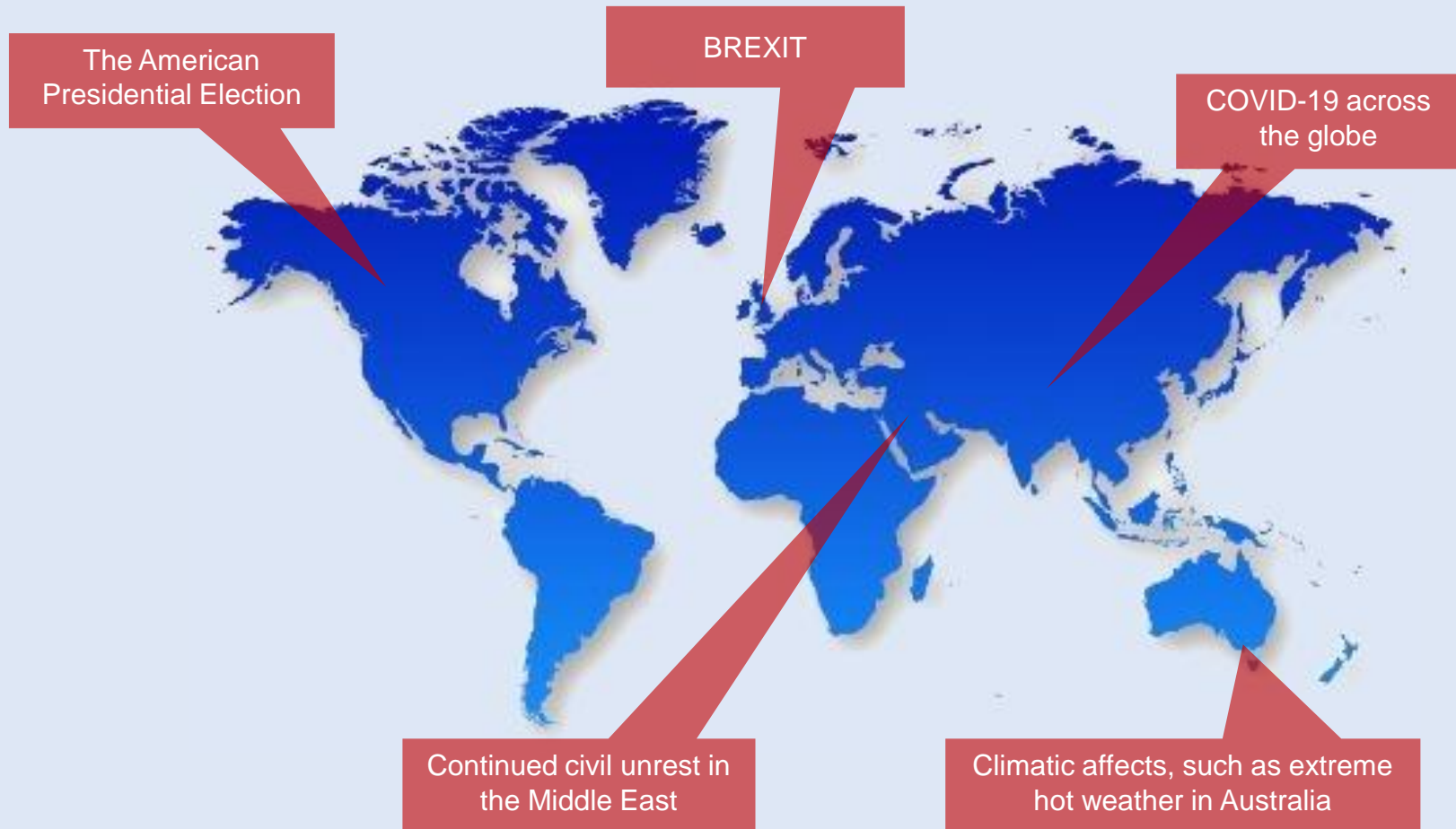


World Events



Construction companies do not operate in their own 'bubble', and are subject to 'real life' external economic, political and environmental world events, which can impact upon the running of the business.

Current and anticipated future world events are built into the Enginuity simulation, and add realism to the challenge.





Real-Life Construction Projects



The new work that can be identified and bid for is constantly being updated to include major construction projects across the globe.

The latest addition is the introduction of a new client, **"HS Rail Connection Group"**, to simulate HS2 in the UK, with new contracts that reflect the building work being undertaken in the next few years.





On-Line Help



The help screens within the software now **link directly to the on-line help guides** to enhance the learning experience.

MAKING Procurement decisions for period 9 in the Early Years

Change period Assessing performance Industry information **Help**

NUMBER OF JOBS IN PROGRESS
At the start of the period, the number of jobs in progress is: []
The number of jobs in progress after bidding cannot exceed: []
Hence, the maximum number of jobs that can be won is: []


WORK IN PROGRESS
The initial forward workload is: 18,633,900
The value of the capital base is: 4,055,922
The support forward workload of: 40,559,220
can be won cannot exceed: 21,925,320

Job	Country	Type	BIM	Size	App Value				Client
192	United Kingdom	BO	Yes	Medium	8,000,000				Sport England
193	United States	DB	No	Large	18,000,000				First Wind USA
194	Qatar	DB	Yes	Large	20,000,000	5	Construction of the Sports City stadium	Building & Commercial	Qatar 2022

Help Menu:
 Making procurement decisions
 The factors that determine if a job is secured
 The job cycle
 Job details
 The use of BIM (Building Information Modelling)
 Job risk
 Choosing a consultant designer for design build jobs
 Bidding cost
 Forming client relationships
 Forward Workload and margin

Enginuity Tutorial

ENGINUITY TUTORIAL



Making Procurement Decisions

Copyright Virtual Management Simulations

Making Procurement Decisions

Key Performance Indicators

When Assessing Performance it is now possible to **drill down on a Key Performance Indicator** column to see how the chosen KPI has been calculated. This will make it **far easier to determine** why improvements, or deteriorations, have been made in a particular period.

Key Performance Indicators

Show graphical analysis Help

CLICK ON A COLUMN TO SEE HOW THE CHOSEN KEY PERFORMANCE INDICATORS WERE CALCULATED

End of period	Status	Year/qtr	Turnover	Gross profit to Turnover	Operating Profit to Turnover	Company Value	Capital Employed	Contract Completion	Forward Workload	Forward Margin	Share Price	Client Satisfaction	Total
4	History	2019 (Q4)	40	170	120	170	130	80	70	100	70	50	1,000
5	Early Years	2020 (Q1)	63	113	47	163	172	97	100	139	65	80	1,039
6	Early Years	2020 (Q2)	86	85	18	157	198	102	83	116	54	99	998
7	Early Years	2020 (Q3)	102	102	65	172	210	113	62	79	57	120	1,082
8	Early Years	2020 (Q4)	102	106	54	168	220	121	102	123	55	143	1,194

How the Turnover KPI has been calculated

Further information

Turnover is the measured value across all jobs progressed, and a measure of how much work the company has done.

Per	Status	Year/qtr	Jobs progressed				Turnover in the period	Cumulative turnover to date	Average turnover each period	Average turnover each year	Benchmark	Multiple of the benchmark	KPI weighting
			Large	Medium	Small	Total							
1	History	2019 (Q1)	0	0	0	0	0	0	0				
2	History	2019 (Q2)	0	0	0	0	0	0	0				
3	History	2019 (Q3)	0	1	1	2	4,378,364	4,378,364	1,459,455				
4	History	2019 (Q4)	0	1	2	3	8,487,171	12,865,540	3,216,384	12,865,540	YES	40	
5	Early Years	2020 (Q1)	0	1	4	5	12,633,110	25,498,640	5,099,729	20,398,920		1.5855	
6	Early Years	2020 (Q2)	0	1	6	7	15,808,140	41,306,780	6,884,464	27,537,860		2.1404	
7	Early Years	2020 (Q3)	0	2	5	7	16,038,040	57,344,820	8,192,118	32,768,470		2.5470	
8	Early Years	2020 (Q4)	0	3	0	3	8,209,807	65,554,630	8,194,329	32,777,320		2.5477	

TERMINOLOGY

- Average turnover each period = (cumulative turnover to date / number of processed periods)
- Average turnover each year = (average turnover each period x 4)
- The position at the end of the history (period 4) is used as the benchmark for calculating the kpi values for period 5 onwards
- The multiple of the benchmark is the average turnover each year as a multiple of the position at the end of period 4

IMPROVING TURNOVER

The turnover of the company can be increased by growing the business. This involves identifying a larger share of the new work in the market, expanding the company's infrastructure (capital base) to support more work, competitive bidding to win more jobs, and then progressing and completing jobs as quickly as possible.



Bidding For New Work



All the **elements that make up a bid**, including the choice of design consultant, are now on one screen to simplify the bidding process.

Setting the Bid for Job 193 X

ESTIMATED COSTS

Design cost (% of build cost): 10 %

Build cost: 14,226,190

Site cost: 2,845,239

Total estimated costs: 18,494,050

KNOWN RIVAL BIDDERS

Denver Developments Based in United States

East State Enterprises

Houston Building Plc

Van Dyke Construction

DESIGN CONSULTANT

Design consultant allocated:

ONCOSTS

Project manager allowance: (for salary)

Risk register	Likelihood occurs	Impact cost	Risk Contingency
Personnel issues	High (70 to 80 % chance)	85,000	63750
Sickness on site	Medium (40 to 50 % chance)	78,000	35100
Construction defects	Medium (40 to 50 % chance)	100,000	45000
Structural defects	Medium (40 to 50 % chance)	174,000	78300
			222,150
Total oncost:			284,565

BIDDING HISTORY

Job	Period	Country	Sector	Markup

MARKUP

Markup: %

BID SUBMITTED

Bid submitted: 19,266,860

USEFUL INFORMATION

- The job is in the Building & Commercial sector
- The job is based in United States
- The planned duration of the job is 5 periods
- The annual salary for project managers ranges from 27,000 to 64,000

Denver Developments were formed only 2 years ago by a number of wealthy private investors, but have grown very quickly into a formidable Commercial and Real Estate business, and they have already completed a number of prestigious contracts across America.

Based out of Denver, in the last year the company have established a number of satellite offices, and their managing director, Kurt Rumpstein, commented at a recent shareholder meeting that the company are aiming to grow by a further 50% in the 2 years, by adopting an aggressive bidding strategy on the strength of investing in new technologies.

Choice Of Design Consultant

A bid is now be rejected by the client if a **poor design consultant** is chosen, regardless of price.

Procurement performance
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Management consultant report

PREVIOUS BIDS

RIVAL BIDS

Procurement Restrictions

NUMBER OF JOBS IN PROGRESS

At the start of the period, the number of jobs in progress is: 7 (job progression screen)

The number of jobs in progress after bidding cannot exceed: 10 jobs

Hence, the maximum number of jobs that can be won is: 3 jobs during bidding

VALUE OF WORK IN PROGRESS

The initial forward workload is: 18,633,900 (job progression screen)

The current value of the capital base is: 4,582,922 (financial decision screen)

The current capital base can support forward workload of: 45,829,220 (10 x capital base)

Hence, the value of work that can be won cannot exceed: 27,195,320 during bidding

🇪🇺 ▾ Full Tender Report

Job details							Bid details			
Period	Job	Country	Type	BIM	Sector	Client	Bid submitted	Won	Comment	Cumulative forward workload
9	193	United States	DB	No	Building & Commercial	First Wind USA	19,266,770	No	Consultant does not have enough expertise	18,633,900
9	194	Qatar	DB	Yes	Building & Commercial	Qatar 2022	20,588,230	Yes	Won on price	39,222,130
9	197	Qatar	BO	No	Transport	Qatar 2022	11,696,180	No	Capital base limits workload	39,222,130
9	218	United States	BO	No	Transport	Interstate Highways Agency	8,045,798	No	Capital base limits workload	39,222,130

Display details for job 193
 Tender report for job 193



Job Progression Screen



The **Job Progression screen has been split into two screen** to separate project manager and labour decisions.

Main Menu

Making decisions | Assessing performance | Industry information | Team details

- Financial decisions
- Overhead decisions
- Procurement decisions
- Job progression decisions (Project Managers)**
- Job progression decisions (Labour)**
- Reset decisions
- Export decisions
- Export information

Management structure: **STILL TO BE FORMED**

CURRENT STATUS

Timeframe: Making decisions for period 9 in the early years

Current KPI score: 1,165 points

BACKGROUND

Formed: The company was formed at the start of period 1, which was 2019 (Q1)

History: The previous management operated the company for 4 periods, known as the History year

Current management team: Took control at the beginning of period 5, which was 2020 (Q1)

Based in the: United Kingdom (UK)

Currency used: British pound (GBP)