

FS2020 Virtual Cost & Manufacturing event
Guidance Notes

Dear Teams

Unfortunately, 2020 hasn't really worked out as we have planned. Nevertheless, we will adapt and overcome as all good Engineers should.

As we move Formula Student online and virtual, I wanted to write to you to bring you up to speed with what we will be asking you to do for the Cost & Manufacturing element of this event.

Firstly, I would like to brief you on why we feel like the virtual event is still valuable to our students. Formula Student at its core is an educational event. Primarily, it's not about building and racing cars. Its core purpose is to develop your skills as advanced Engineers and give you the most basic taste of the fundamentals you will need at the start of and throughout your future careers.

Just because we can't build these amazing cars at the moment, you still need to get exposure to these core skills that I have just spoken about so that you can be a) a better team for next year and b) a more complete Engineer in industry.

Fortunately, we can still achieve this without the physical presence of the vehicles. Trust me, I would much rather be working with you at Silverstone and reviewing what you have made but we must put that on ice until 2021, adapt to the current circumstances and make the best use of what we can do.

As for the specific goals of Cost for 2020, at the end of this we hope that you will have been exposed to all of the following:

- 1) A detailed understanding of how to model the cost profile of your project in the new cost tool. We will use your unbuilt car as a baseline, but the methodology is the same for any project you will undertake in the future in your careers.
- 2) You will understand how to present a Cost Explanation file that is also used to generate and justify the cost make up of a project using a number of contributing elements.
- 3) How to build a portfolio of component and car drawings to give an overview of your project and transfer an understanding of how your car is manufactured.
- 4) Learn how to justify and defend your decisions in real time when challenged by industry leaders and experts.
- 5) Receive verbal feedback and constructive criticism on how to excel at Cost & Manufacturing in 2021 and beyond. Taking part in this event will no doubt springboard your performance in later events.
- 6) Be part of the development of the Cost event. We want your feedback on the cost tool so we can develop it further for 2021. As you will be part of this you will be on the frontline to understand the changes and take advantage of the knowledge you gain and apply it in 2021.
- 7) Get written feedback on your performance and pointers to excel in Cost and Manufacturing in future years.

Having considered all the above, for the 2020 Virtual Cost and Manufacturing event we would like you to create:

- 1) A CBOM for the Frame and Body of your proposed 2020 car.
 - a. No other BOMs (DBOMs or CBOMs) for any other part or section of your car are required for this event.
- 2) A "Cost Explanation" file for your Frame and Body (only).
- 3) A "Supporting Documents" file for the Frame and Body (only).
- 4) SPECIAL TASK: Produce a 7-slide, free-format presentation (10 minutes max duration) on your solution to the following:

"You are a successful race team that also manufactures bespoke race cars for exclusive clients and you have been approached by your country's / region's government in a time of crisis to support the European effort to overcome a virus pandemic. Please make a proposal for how you will ramp down vehicle manufacture and ramp up production of PPE and ventilator parts to help with the pan-European efforts".

At the end of this event we want to make sure you have solid understanding of how to build a CBOM. This is the opportunity to get your thinking and methodology aligned for future years and also use this as an opportunity to have a proper dialog with the judges using real data from your designs. Plus, it is a great way to understand how to set out any cost profiling for any type of project you will do in the future.

The Cost Explanation File is key to making sure your costs flow through to the CBOM correctly. The time spent debriefing with the judges will give you feedback to the expectations that we would be expecting to see in the full event in 2021, as well as forming part of your score for this event.

Think about how you would compile your unit cost for your labour rate. What is that made up of and how would you justify these elements in the 'real' world? Don't forget, we have modified the rules slightly this year to allow you to include capital cost for plant and machinery, if you want to. Past guidance and LTW has drilled into this subject before so please have a look at past advice to better understand this element.

The Supporting Information File needs to give us an overview of your car in drawing form. It is always useful to see an isometric view and maybe exploded view to orientate your documents to your cost modelling. For this year only please include drawings that are relevant to the Frame and Body only.

For both of these documents you need to consider the following generic points:

1. Make them look professional.
2. Follow the format and naming convention rules set out in the rules.
3. Ask yourselves, could an uninformed reader pick up your documents and understand the cost make up and why you have done something. Would they back you or give you an order as a result?
4. Make sure they have enough information in the documents but conversely don't make the documents too long. There is a 'sweet spot' that gives the reader the perfect amount of information in a concise and easy to understand way. It's your job to find that sweet spot.
5. Get the branding right, double and triple check for mistakes and/or omissions.

Finally, this year for the virtual event there is the welcome return of the Special Task. Your brief is a simple but very real one that many of the judges (including myself) are living through as I write this.

As a result of this, we have very recent real-world examples we can compare too, so you need to give your answers real thought to try and tie into and be comparable to these too.

Therefore, we ask you to provide us with a presentation covering off the following topic:

You are a successful race team that also manufactures bespoke race cars for exclusive clients, and you have been approached by your country's / region's government in a time of crisis to support the European effort to overcome a virus Pandemic. Please make a proposal for how you will ramp down vehicle manufacture and ramp up production of PPE and ventilator parts to help with the pan European efforts.

In terms of the topic think about the following:

1. What resources do you have now (both physical and labour wise)?
2. What will you need to do this task and how will you correct the gap?
3. What materials will you need, where will you get them from?
4. What do you expect the supply chain to be like during lockdown and how will you mitigate this?
5. How will you manufacture the parts (don't focus on the Design, remember we are interested in Cost and Manufacturing knowledge)?
6. How will you guarantee quality?
7. What type of quantities are you expecting to produce?
8. How much will you charge and what profits would you expect to make?

You only have 7 slides to 'sell' this idea to us. We will review your presentation prior to the 10-minute element where you will present it. Think hard about how you are best using this time. Just repeating your presentation will not likely add value. Summarising the highlights adding pertinent details to expand the judges understanding will. Make sure you allow a good portion of this 10-minute slot for judges' questions to ensure when they leave having no ambiguity on the topic.

If you need any further clarifications on what you should or shouldn't be doing, please feed these via the FSQD.

Therefore, what we are asking in summary:

- 1. CBOM for Frame and Body only.**
- 2. Cost Explanation File detailing how you get to the cost for the Frame and Body.**
- 3. Supporting Information File with details for just the Frame and Body.**
- 4. 7 slide presentation answering the special task brief.**

On the day of judging there will be a 10-minute conversation on your Cost documentation (which will have been reviewed and pre-marked already) and a 10-minute conversation on your special task. This will include all questions and answers too.

Hopefully this will answer all the questions you have about cost in 2020 and I can't wait to see you all again in person in 2021.

Kind regards,

John X Dangerfield

Head Cost Judge, Formula Student