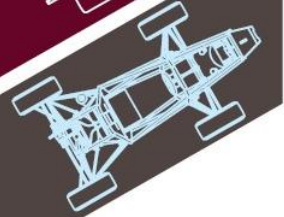
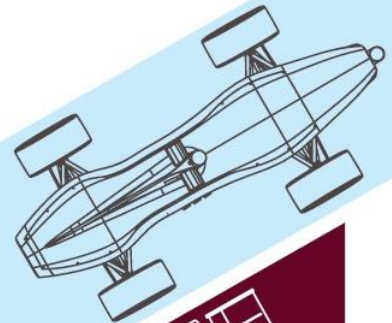


# FORMULA STUDENT

Institution of  
**MECHANICAL  
ENGINEERS**

**Cost Tool Workshop**  
Oliver Plucknett



# Introduction

## Formula Student Competitor 2017 – 2020

3<sup>rd</sup> Place Class 1 2020

1<sup>st</sup> Place Class 2 2019

Cost and Manufacturing Winner 2019 & 2020

Cost and Manufacturing Runner up 2018



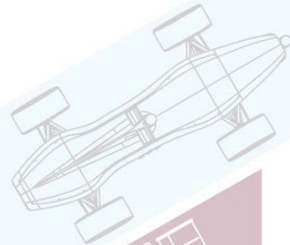
## Project Manager / Data Engineer

Management of a £30 million project

Raced 24 Hours of Le Mans

Freelance Project Work (Hydrogen)

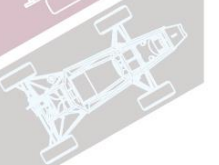
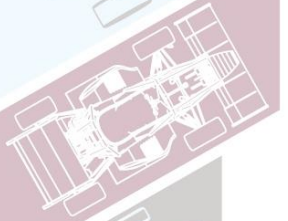
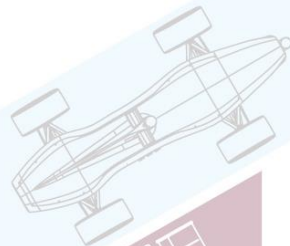
Senior Cost Judge



# Cost tool Work Shop Session

## In the Session we will discuss.

- **What is cost?**
- **Recourses available to you.**
- **2023 Submissions.**
- **How to use and structure you cost tool.**
- **Q&A...**

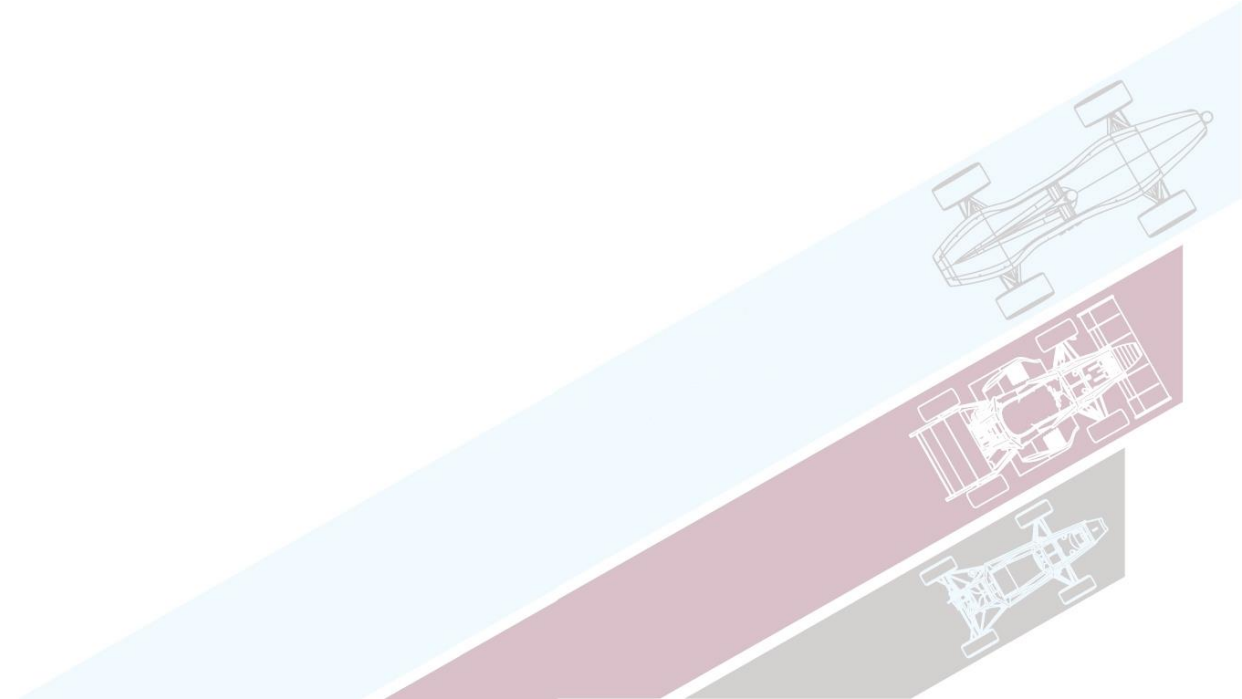
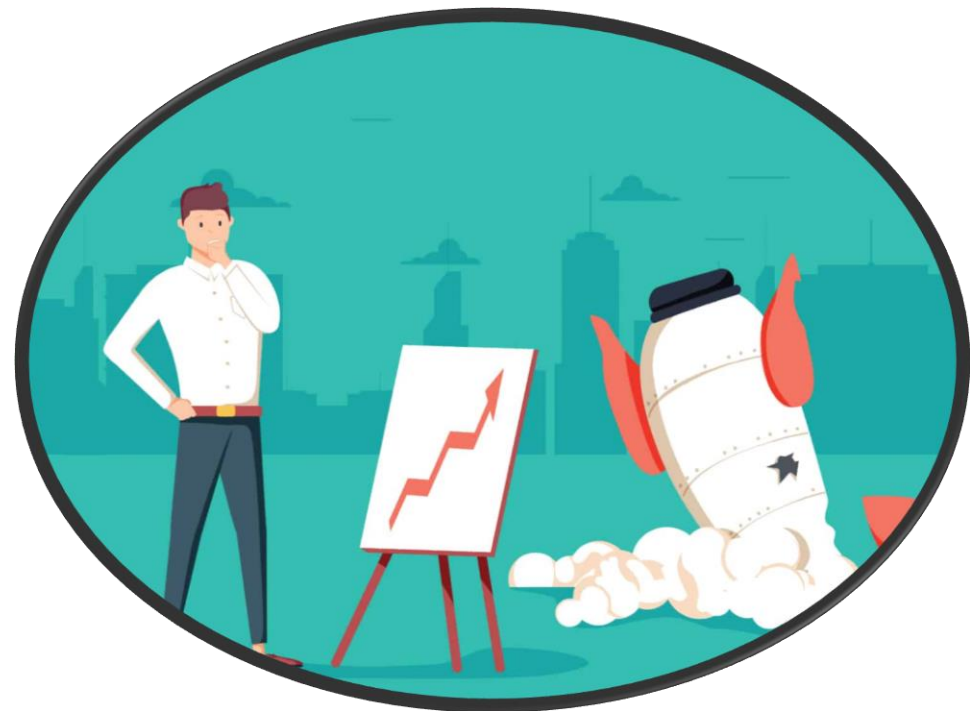


# What is Cost and why should I Care...

In Formula Student terms Cost is to show your understanding of how the real world works.

*You can have the best design in the world, if you can't make the business case stack up then you've failed... this all comes from the ability to cost and then analyse the data accordingly*

A true understanding of Cost can only make you a better Engineer or Business person.

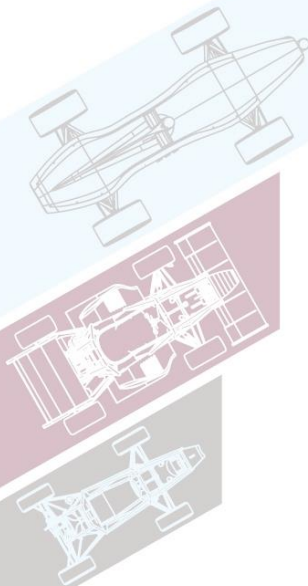


# Enough Waffling! Why are you here?



Because you're going against this horrible lot, to convince them you not only understand cost and manufacturing but you've implemented it into the running of the Team.

**Better Question – How are you going to do this?**



# WATCH THE VIDEOS

**YouTube - Formula Student UK (Cost & Manufacturing Guidance)**

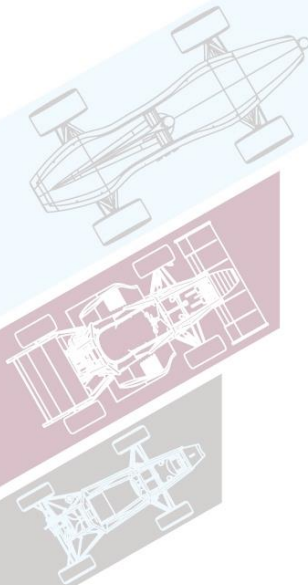
<https://www.youtube.com/user/fsimeche/videos>

DID YOU  
WATCH THE  
VIDEO'S !!



I hope there's lunch  
after this...

There is vital information in the videos that will help you in the event and how to structure your submissions.



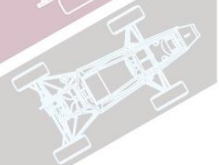
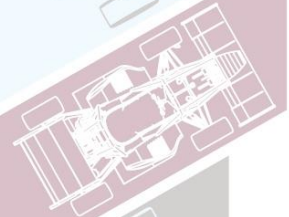
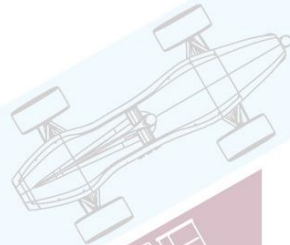
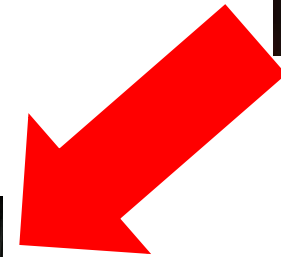
# Submissions

## Required Submissions: FS Class

- DBOM (Full Car)
- CBOM (2 sections only)
- Supporting Material
- Explanation File

## Required Submissions: CC Class

- CBOM (Sections TBD)
- Supporting Material
- Explanation File

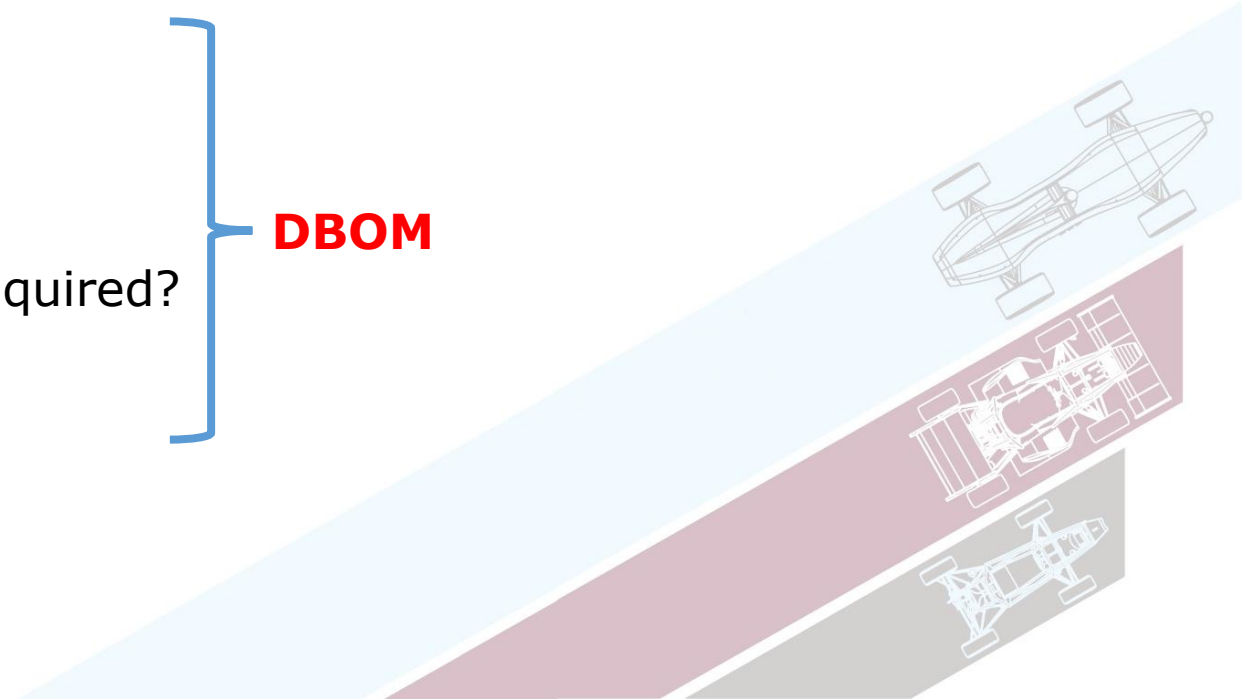
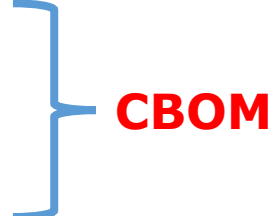
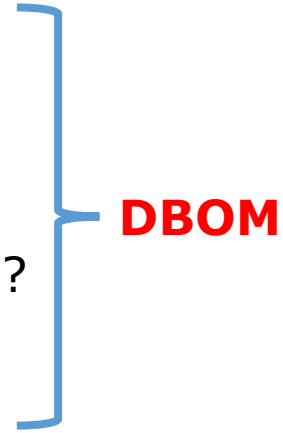


# DBOM / CBOM ?

FR	Pedals				54.17		
		Pedal Body	m	Drawing Number - UPR-E-02-PB-303-19	2		FR-0061-100
	m = € 24.57			M Steel	50x20x2 HSS Steel	1.00	24.57 Price per Length 500mm FR-0061-100-0303
	T = 108min			T Load Blank	Clamp Work Piece Into Machine	1.00	0.27 Based on Hourly Rate (1 minute) FR-0061-100-0304
	W = € 29.60			P Load G-Code	Load Program to Machine	1.00	0.27 Based on Hourly Rate (1 Minute) FR-0061-100-0305
				P Machining	10mm 4f Endmill - Profile Milling	1.00	5.40 Based on Hourly Rate (20 Minutes) FR-0061-100-0306
				P Drilled hole	10mm Drill Bit	1.00	2.70 Based on Hourly Rate (10 Minutes) FR-0061-100-0307
				P Drilled hole	8mm Drill Bit	2.00	0.54 Based on Hourly Rate (2 Minutes) FR-0061-100-0308
				P Drilled hole	4mm Drill Bit	1.00	0.54 Based on Hourly Rate (2 Minutes) FR-0061-100-0309
				P Countersink	Countersink 8mm Holes	2.00	0.54 Based on Hourly Rate (2 Minutes) FR-0061-100-0310
				P Hand Finish	Deburr Sharpe Edges	4.00	0.27 Based on Hourly Rate (1 Minute) FR-0061-100-0311
	Total = € 54.17						

## What goes into a part?

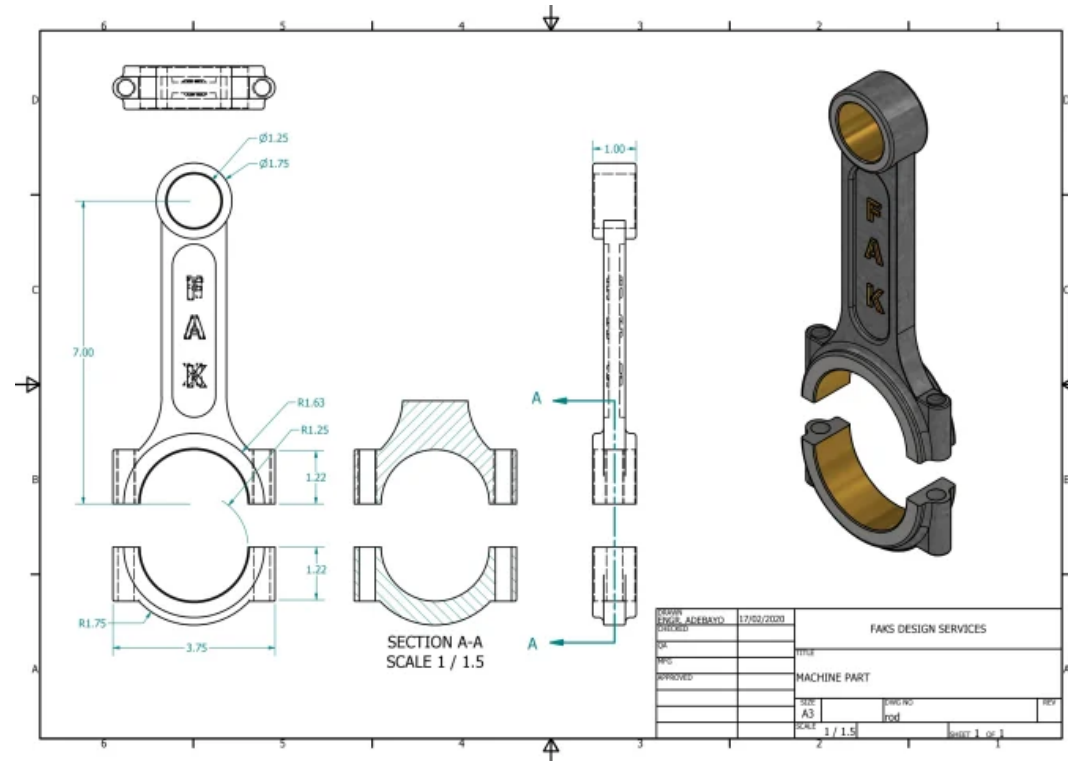
- **Materials** – What's it made of?
- **Tooling** - Does it need specific tooling?
- **Processes** – What manufacturing processes are required?
- **Fasteners** – How is it held together?
- **Time** – How long will it take?
- **Costs** – What will it cost?



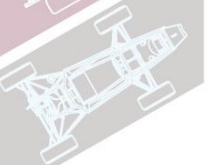
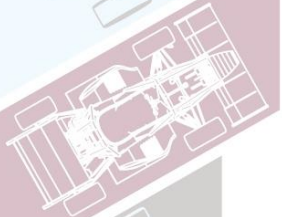
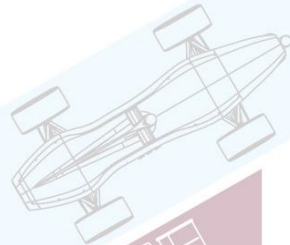


# Supporting Material

Drawing pack for all parts shown in the DBOM

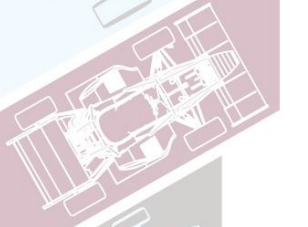
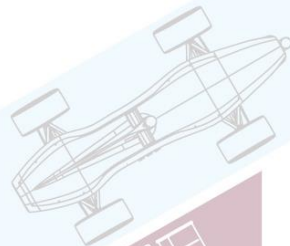


**Single PDF A4 Submission**










# Explanation File

Example Topics	Description
<b>Hourly Rates</b>	Direct / In-direct (absorption rates)
<b>Staffing</b>	Skill Matrix, Capacity Planning
<b>Time Calculations</b>	BOM / Routing considerations
<b>CAPEX / OPEX</b>	Cost of investment over cost of sales
<b>Budget Planning</b>	What do you have and what do you need?
<b>Cost Tools</b>	How did you manage your budget
<b>Procurement Planning</b>	How are you planning on Purchasing items
<b>Contingency Planning</b>	What if something goes wrong
<b>Sustainability</b>	What is the cost to the environment
<b>Manufacturing requirements</b>	In-house or Sub Con
<b>Process Planning</b>	Manufacture planning / Gantt charts
<b>Capturing Costs</b>	How are you going track what you've spent
<b>Quality considerations</b>	What is the cost of Quality?



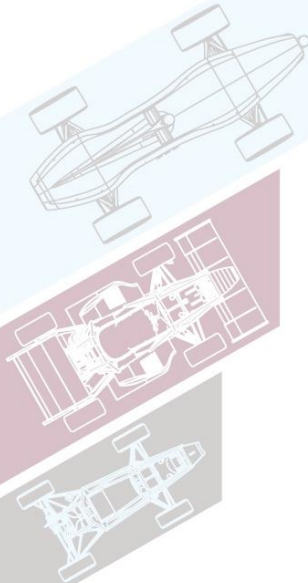
# In-depth look at the CBOM

Topic	Publication
Introduction	 Adobe Acrobat Document
Documentation	 Adobe Acrobat Document
Cost Tool CBOM/DBOM	 Adobe Acrobat Document
Cost Explanation	 Adobe Acrobat Document
Supporting Material	 Adobe Acrobat Document
FS / CC Differences	 Adobe Acrobat Document
On the Day	 Adobe Acrobat Document

 **Cost Tool Work Shop**

**And Many More....**

<https://www.imeche.org/events/formula-student/team-information/cost-event-guidance>



# Thank you for listening

**Any questions I will be around all day.  
Please come and ask.**

**&**

**Please use the FSQD if you have any  
questions thought-out the year.**

**Link to all Supporting  
material**

