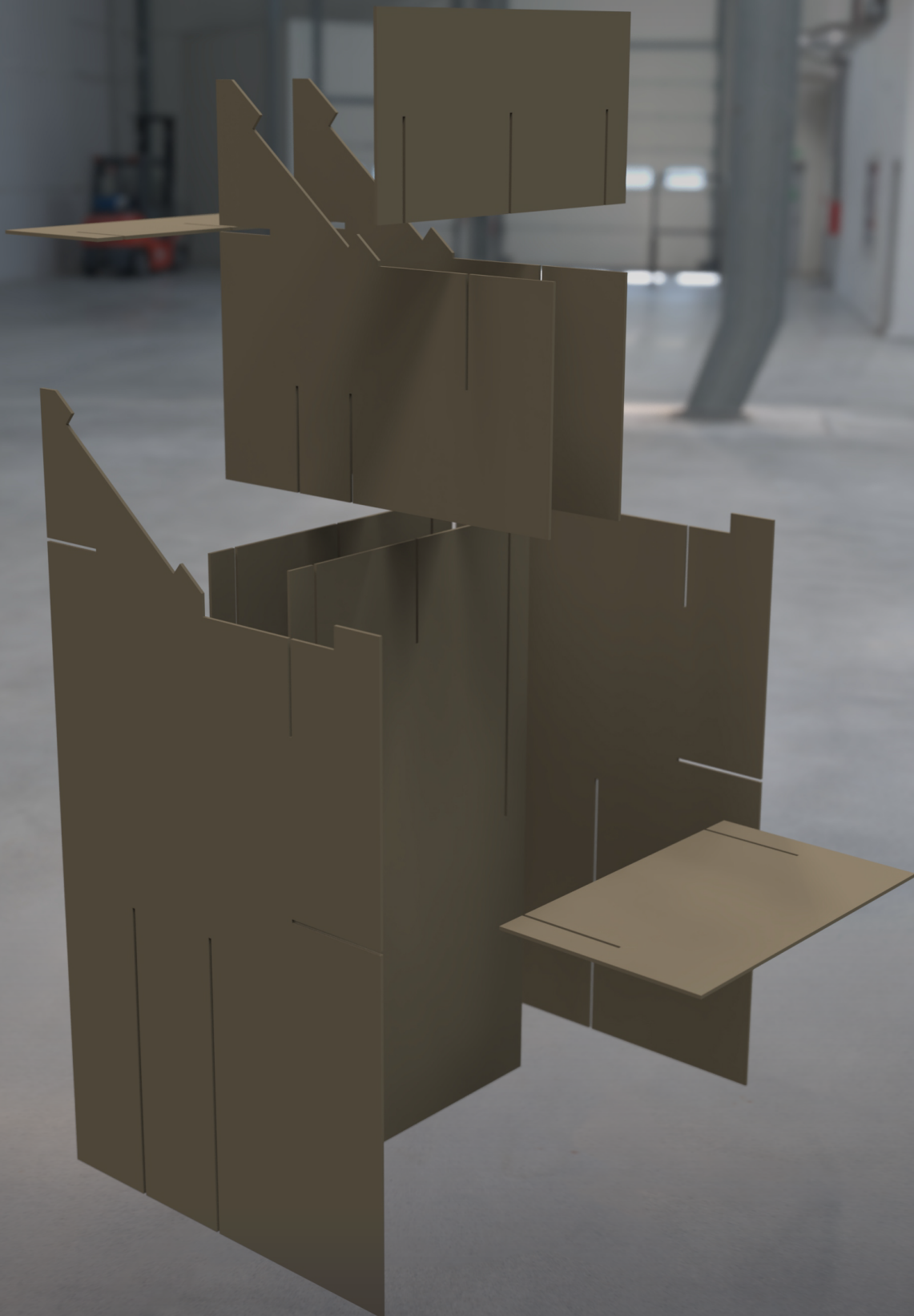


TRADE DISPLAY BOOKLET

» 2024 NATIONAL FINALS



Avium



DESIGN REFLECTION

After reflecting on our performance at the 2023 Nationals and States, we went back to our scorecards to be able to identify our strengths and weaknesses in order to compete successfully at the 2024 National finals. Through observing the best trade displays, we were able to conclude several aspects from our trade display:

- » A simplistic and minimalistic trade display was aesthetically better than a cluttered one.
- » The impact of interactive ICT displays hugely contributed to the success of an engaging booth.
- » The main product that the trade display should be showcasing is the team's car, whilst other products should be putting emphasis on the car.
- » Sustainability should be deeply considered when designing and constructing a trade display. This helps with being able to use resources carefully and put heavy consideration into it, while gaining marks for the criteria. Sustainability should not only include the trade display itself, but also the marketing products and posters.

DESIGN ACTIONS

With these aspects laid out to aid us in designing an optimal trade display to obtain the most marks within the scorecards, we developed our action plan based around it:

- » Hardcopies of portfolios will be kept to a minimum. This reduces the cluttering on the tables, giving the trade display a clean and minimal look, where the viewers can engage more on the screens, car and posters. Portfolios are accessible to the public through our display screens only.

» On the screens, four of the most relevant pages from each portfolio are clearly displayed. The displaying of individual portfolios are customisable by the viewer, where they are able to scan a QR code to choose what to read.

» The purpose of this year's trade display was to showcase the team's journey, hence each generation of the team's car is on display. This shows the progression the team has made on their car.

» With the partnership with Visyboard, we were able to construct a fully recyclable cardboard trade display, unlike last competition's aluminium tubing structure. One of the advantages of using cardboard was how easy it was to pack and to transport to venues.

OUTLINING REGULATIONS

Last year, during the 2023 National finals, our team unfortunately was penalised 20 points due to breaching the packaging regulations where 'all staged items must be brought into the event venue wholly contained within sealed or closed boxes, cartons, containers, cases or tubes'. This regulation cost us 2nd place, and missed out qualifying for the 2023 World Finals.

By manufacturing our trade display fully out of cardboard, we are able to flat-pack our items much more easily, allowing us to meet the packaging regulation. Additionally, cardboard is flexible, which allows us to fold over outer skin layers to fit into the maximum dimensions of 1200mm by 600mm by 600mm.

Another advantage of utilising cardboard as part of our final design is that it requires little tools and assembly processes to construct. Based on our experience with cardboard last year, it took around an hour to fully construct our trade display, saving 50% of the 2 hour time limit.

TEAM EVOLVEGB

The idea of a fully cardboard trade display came about when we stumbled upon the 2019 world champion's trade display from Great Britain, Team EvolveGB. They posted their development process of their trade display on Instagram, which provided a great insight on what our team could adapt and improve whilst being sustainable.



» **Evaluation:** Based from EvolveGB's Instagram, it gave us a basic idea of what could be achieved with the design of cardboard. Their structural design would be carried over to our final iteration of the trade display.

TEAM CONSTELLATION

Throughout the recent 2023 World Finals, there were a few display designs which stood out being professional looking. One of these displays belonged to Constellation, who focused on not only utilising cardboard, but also to replicate the pit-walls seen in real F1. Some ideas which were inspired by them were using headphones as part of our display, having a dominant white colour scheme, and noticeable usage of ICTs.

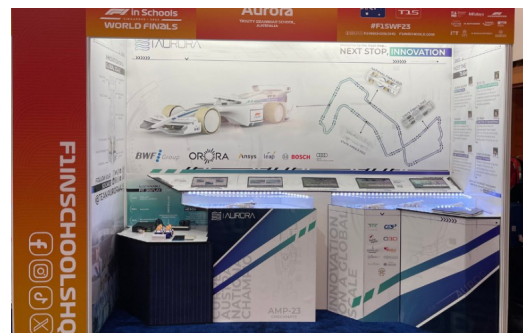


» **Evaluation:** Although Constellation's trade display was built based on the World finals regulations, several key aspects that were strong can still be applied to ours, such as the minimalism and absence of promotional products on the display.

TEAM AURORA

Team Aurora was another team competing in the 2023 World Finals in Singapore alongside Constellation. Similarly, Aurora's trade display was not only aesthetically pleasing to look at, but also focused on using cardboard as it's main structural design showcased on their Instagram.

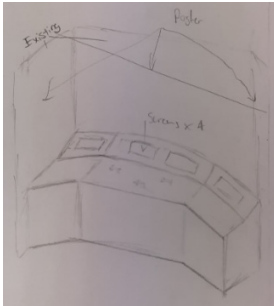
Unlike Constellation, Aurora's trade display has a noticeable balance between their colour scheme, whilst Constellation's is mainly white. Additionally, the angling of the screens was one of the few features that would be incorporated into our final design, allowing for optimal screen angles for the audience.



» **Evaluation:** Being one of the most 'clean' trade displays at the World Finals, we ensured that our final design also adopted this effect through making sure that our graphics on posters and cardboard did not feel overwhelming. Furthermore, our final design would ensure to focus on the central attraction, our nationals' car.

PROTOTYPE ONE

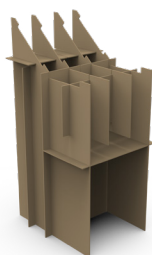
Although using cardboard to construct the trade display gave many sustainable advantages, it also presented some downsides, such as making curvature structures much more difficult. The first prototypes of the trade display with cardboard consisted of angled structures which was feasible to create but presented another challenge, being able to comply with criteria **'C8.4.1.5 Maximum Size of Items'**, where all items must be under 1200mm by 600mm by 600mm.



PROTOTYPE TWO

Prototype 2 was made to address the previous issue with criteria C8.4.1.5, where the idea of angled structures were ditched. Instead the structure would be a rectangular board, which gives several advantages:

- » Can easily be kept under the maximum size of items.
- » Graphics which are printed on the outside skin of the cardboard can be printed out clearly on a flat surface.
- » Meets the team's trade display scope of being simple and minimalistic.



PROTOTYPE THREE

Prototype 3 of the trade display was focused on adjusting dimensions and errors which were apparent in prototype 2. Some adjustments that were made during this final prototype were:

- » Securing flaps and connection points on the structure.
- » Ensure that the structure was stable enough to hold booklets and laptop screens.



PROTOTYPE FOUR

As the previous prototypes focused on having a modular system where it can be assembled in parts, the last iteration of the trade display allowed for an extra modular piece, also known as the 'add-on piece'. Because we planned to integrate headphones to our display, we needed more table room, thus the introduction of this add-on. The benefits of having modular system were:

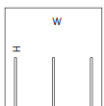
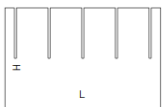
- » More room for portfolios, and marketing products.
- » Can easily connect in with existing trade display due to modular system.
- » Still made from cardboard, allowing for efficient flat-packaging.

FEFCO GUIDE

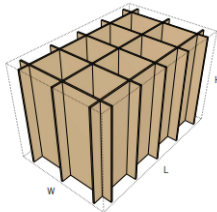
After the design process through modelling and sketching in Inventor, we teamed up with Visyboard who offered manufacturing and tutoring help. Each Tuesday, we met up with Rhycea Clifton who would support us in the process of our fully cardboard trade display where we discussed the final sketch.

During the first 3 weeks, we analysed the European Federation of Corrugated Board Manufacturers (FEFCO) packaging guide, which outlined several designs which were available for us to adapt. From the FEFCO guide, it was finalised what the structure would look like.

0934 M



Number of cells defined by user.



FURTHER IMPROVEMENTS

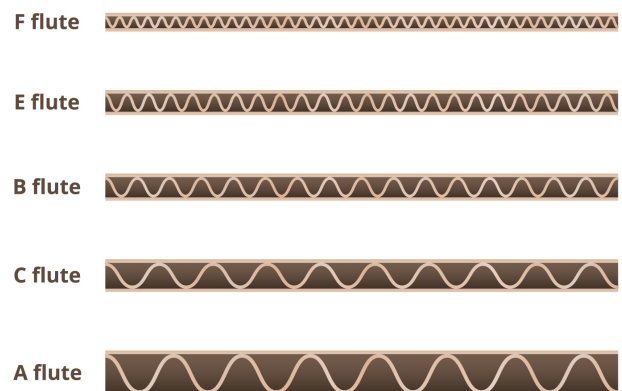
When manufacturing, we encountered many opportunities where improvements could be made. One of these opportunities were presented when fitting our screens on the trade display holder.

We realised that we had given much more tolerance than needed. This not only impacted the appearance of the trade display but also the tightness and structure design of the screen display holders. Thus, it was decided to reduce the tolerances down to fix these issues, resulting in a much more aesthetic trade display.

CUTTING BOARD

Through Visyboard, we learnt the basics around the packaging industry program, ArtiosCad which allowed us to create 3D designs of packaging and displays, helping to visualise and refine our ideas. Additionally we experimented with different grades of cardboard flute in order to determine the most beneficial one to utilise in our trade display. With discussions with Rhycea, it came to a conclusion for us to use the B flute as it is known for its balance between strength and thickness. It provides decent durability and is often chosen for displays due to its ability to hold its shape while being cost-effective.

FLUTES



BOX PACKAGING

In the past, many teams, including us, have used either plastic boxes or freight crates to transport their trade display materials to the venue. The issue with using these materials as box packaging is that they tend to be unsustainable. This prompted us to design an alternative solution out of cardboard.



DIGITAL WEBSITE

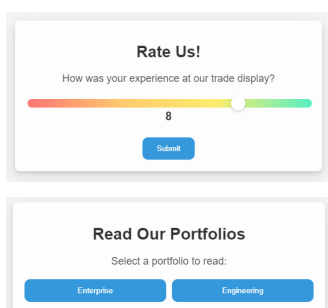
In this competition, the approach adopted by us is the integration of a range of functionalities in our website; with one unique feature enabling users to remotely control the content showcased on our trade display screens.

This concept is justified through the transformation of viewers into participants. An increased level of interactivity boosts engagement levels. Visitors can customise their experience and align their interests with individual components of our dynamic display. Our display can showcase different angles of the car, our folios, and more.

QR CODES

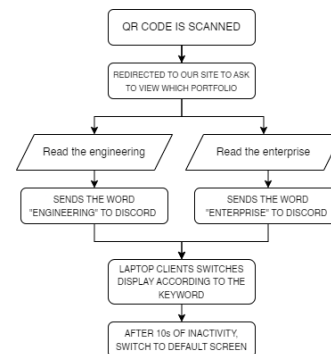
In the previous years, our team had utilised the idea of QR codes to increase our marketing engagement and share our socials to the people interacting with our trade display. Although this proved effective, giving ease of sharing information with attendees, we saw potential to further adapt this idea into something more innovative.

The idea was to make it so that once a QR code is scanned, it would communicate with the laptops and essentially make the QR code take control of the screens. This was originally planned to use NFC tags which would be able to communicate with each other, but later discussed that QR codes provided the same benefit and was much more convenient to implement.



DISCORD CNC

In order to create our idea of QR codes communicating with the laptop displays, we needed a command and control system, also known as C2 or C&C. As Discord was already a team's preference for communicating, and also provided developer's documents to use their API's, it was used for the process.



ARTIFICIAL INTELLIGENCE

One of our biggest and revolutionary innovations coming into the 2024 Nationals finals is implementing artificial intelligence (AI) into our marketing deliverables, specifically in our social media and trade display.

With the combination of Duc's skills within Python, and the partnership with ElevenLab and TrackIntel, we worked on our national's AI chatbot, Avium's Virtual Assistant (AVA), with the purpose of allowing competitors to interpret regulations, whilst also allowing an interactive learning experience for the general public.

AVA works by training off public portfolios from Off The Track, REA, various other websites, and updated competition and technical regulations to provide users accurate information about the program.

