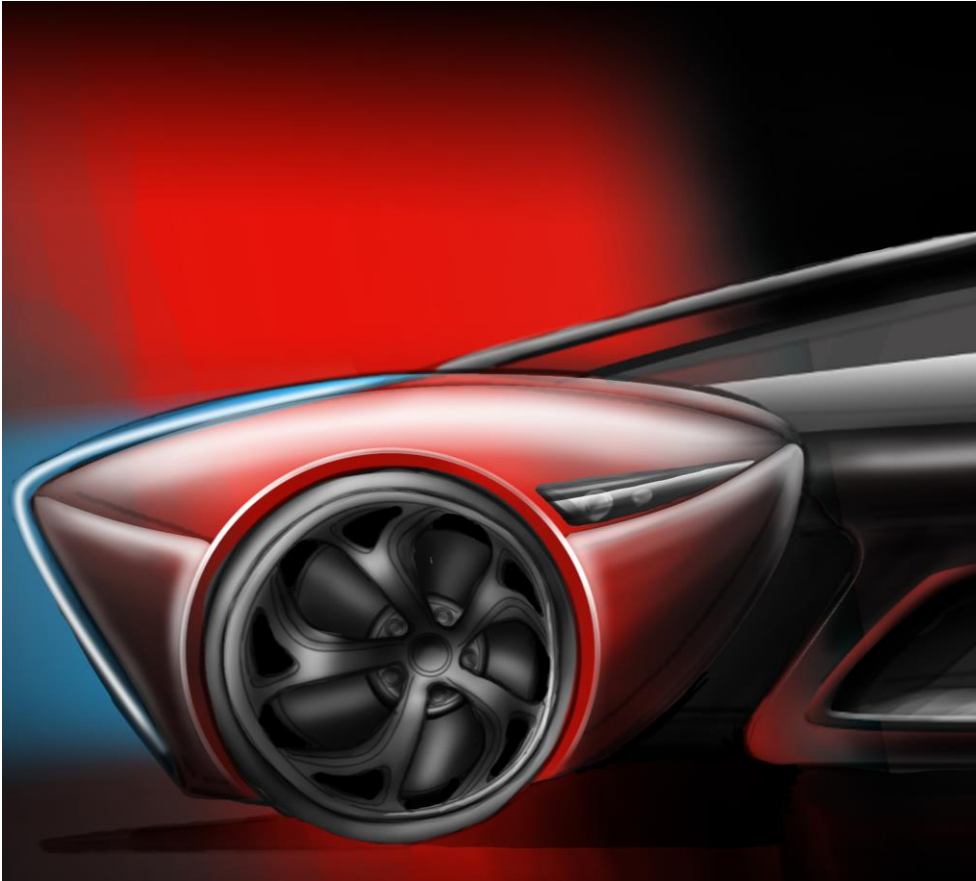




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CONFIRMATIVE PRAXIS:

REPORT - M7X02024

Autonomous Vehicles & Jaguar GT
Projects

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2. Abstract

The focus of this report is to investigate the substantiate of developing a range of Autonomous vehicles (like in Figure 1) which have been the influence for creating a unique supercar brief, known as the Jaguar GT. These projects explore the market appeal of something new that would offer new experiences of travelling.



Figure 1 Zook.inc Autonomous (AV) EV Robo-Taxi (Tech Blog 2020)

This study proves the purpose of a Family Supercar, as suggested in Figs. 2 and 3, this being that there is not enough room in the back seats of an Aston Martin DB11 as this is the case with most modern supercars with a 2+2 seating arrangement.



Figure 2 Paul Bond being a Chauffeur in an Aston Martin DB11 (Auto Trader, 2016).

Also, developing a range of autonomous vehicle (AV) concepts, utilising these technologies for an AV company; to demonstrate the potential of AVs for a fun way to travel from A – B.

These methods include a wooden spoon award project, experimenting with clay; gathering primary research from an online survey, and going to shows and museums whilst exploring an unconventional approach to developing an automotive proposal.



Figure 3 Aston Martin DB11 (Car Buzz, n.d.)

The final result was a family supercar backed by a 1:10 scale clay model, visuals and a presentation video of the proposal explaining the intention of the design. This could be taken further to produce a 3D Alias or VR model to showcase video footage of the project for showcasing and career opportunities.

3. Introduction



Figure 4 Jaguar Range of Cars 2022 (Solitaire, n.d.)

The modern car could be seen as bland and lacking in innovation (Kershner, 2017), a debate with automotive manufacturers opting for SUV's & CUVs (figs. 4 & 5) for this report. It appears that automakers want to capitalise on this sought-after range of vehicles to target families' needs and requirements.



Figure 5 Lamborghini Urus (Auto Express team, 2018)

Under Paul Morrow's tutorship, the aim was to research Jaguar's aspirations for luxury and how they envisage JLR as the heart of modern opulence (Jaguar Land Rover, n.d.).

An argument for the need of a new halo car to reflect Jaguar's new image, gave the case to explore Jaguar's range of vehicles.



Figure 6 Jaguar F-Type 2021 – 2-seater sports car (HD Car Wall Papers, n.d.)

Jaguar's product portfolio consists of 3 Sedans (Jaguar XE, XF & XJ), one two-seater sports car, (Jaguar F-Type, Figure 6) and a few SUV/CUV vehicles. In contrast to Aston Martin's DB11 and other branded sports cars of this calibre; Jaguar does not offer such a product in their portfolio (as seen in Figure 4). This report aims to investigate whether a Jaguar 2+2 GT vehicle would be ideal for JLR's new image.

4. Context

i) Concepts

Historical research of the GT name unveiled a link with a cultural fashion for organised tours of Europe in the C 18th and C 19th, for wealthy upper-class societies to improve their financial and cultural status and world awareness. (Google Arts & Culture, n.d.; Figure 7).

These excursions brought the gentry closer to their surroundings where they met and mingled with locals and diverse cultures. This idea was inspired by the Suite Shiki-Shima train (Figure 8) by offering passengers awe-inspiring views of Japan as it passed through the land of the rising sun at a steady pace (May, 2020).

ii) Parameters

A GT car has either 2 or 2+2 seating arrangement with two doors and is known to be an opulent and comfortable sports car; equipped with performance features for living life on the edge, both on the racetrack and the road (Figure 9) (CoPilot, n.d.; YOCAR, 2022). This exploration could give luxury a new meaning as Aston Martin offers a lifestyle experience to their privileged customers a taste of British regal culture as part of their “Art of Living” program (AML, n.d.).

Jaguar offers a driving experience (Jaguar, n.d.) which is also offered by most sports’ car brands, such as Aston Martin (Aston Martin, n.d.). However, Jaguar needs to target a different market, to entice their customers to broaden their horizons, by travelling from country to country as is the Jaguar GT’s unique selling point for jaguar customers. Unlike the Suite Shiki-Shima train (Jetset Magazine 2017, May 2020), passing through countries in a car welcomes interaction with people, countries, and cultures, re-invoking the grand tour. The true Jaguar experience allows people to value the little things in life from the comfort of a front row seat in a first-class vehicle.



Figure 7 Portrait of John Talbot, later the 1st Earl Talbot (Batoni, 1773)



Figure 9 Opulent Orient Express: Train Suite Shiki-shima, Jestset Magazine (Jestset Magazine, 2017)



Figure 8 1960 Ferrari 250 GT SWB Berlinetta Competizione (Mihalascu, 2022)

5. Processes/Methodology

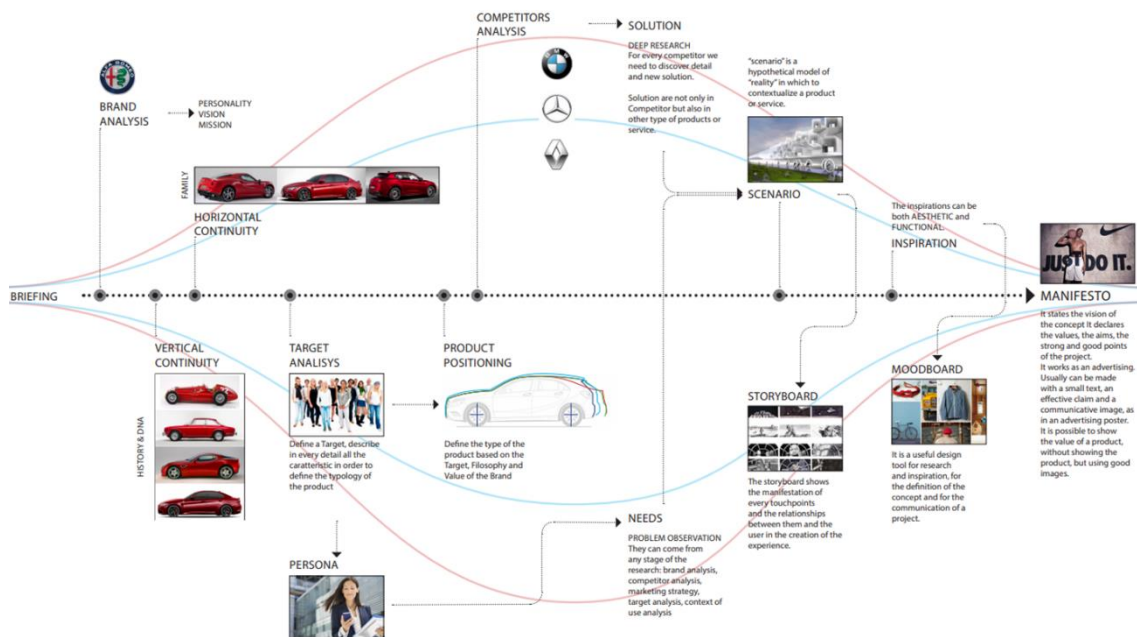


Figure 10 Concept Design Intro (Bevilacqua, 2019)



Figure 11 Wooden Spoon Award Project: Fencing Trophy- made of Wax Clay (Burton, Matthews, 2022)

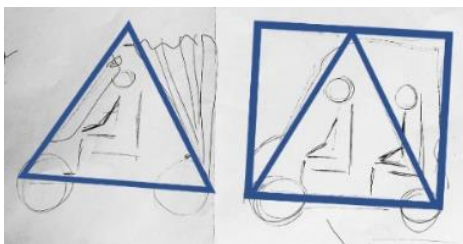


Figure 12 Quick Sketch concept of a modular Triangle-Square Autonomous Vehicle (Burton, Morrow, 2022)

The presentation delivered at SPD in 2019 by Professor Eric Bevilacqua (Figure 10), triggered a research exploration of how to create the Jaguar GT project. This was interrupted by the Wooden Spoon Award Project (see Appendix 1) because the focus was on creating a fencing award, sculptured out of wax clay which was valuable to gain experience in clay-modelling methods. This well-needed skillset was required for the creation of the Jaguar GT clay car model design, taking shape in a three-week schedule towards the completion of the Wooden Spoon Award (as seen in Figure 11) in preparation for the next project.

The AV brief that followed generated the idea of a modular platform of a triangular shape that morphs into a cube to accommodate more space and passengers (Figure 12). This simple form was the starting point for the Jaguar GT concept, to offer the driver the option to change the layout and function for a 2-seater or a 2+2-seater GT sports car.

However, to provide a strong basis for the AV project, physical models helped strengthen the project, an online survey was created to identify lifestyles within the general public, which had 13 responses (n=13). The main issue is that a minority have strong views against AVs; the purpose of the survey was to see if the majority can be convinced to travel by AVs (Figure 13). In response it was a mixed percentage, however, a majority stated they wanted human interaction. This influence was considered when developing the Jaguar GT.

Thinking of human qualities led to the idea of sketching the human anatomy which helped communicate and capture form on paper in a space of 20-30 mins (See Figure 15), organised by Delyth Lloyd-Evans in February 2022. Human engagement fuelled the idea to visit several car shows in Swansea for inspiration; seeing cars such as Jaguar XJ6 (Figure 14) evoke the desire for owning an opulent car. These cars represent their owners’ cherished memories derived from driving experiences.



Figure 14 Chalk Life Drawing Sketch - Completed in 35 Minutes (Burton, 2022).

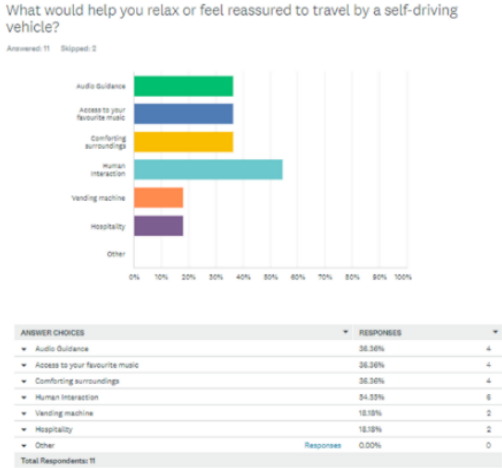


Figure 13 Data collection Table of "What would help reassure travel by a self-driving vehicle?" - collated by Survey Monkey (Burton, 2022).



Figure 15 Jaguar XJ6 at the Swansea Classic Car Show (2022).

The intention around the Jaguar GT was to turn it into a design icon; this led to a journey of exploration in how to create a good design from the legendary car designers of the 20th and 21st centuries.

6. Influences



Figure 16 Interview with Jacopo Villa (Villa, 2020)



Figure 17 Interview with Greg Voltolato (Voltolato, 2021.)

Revisiting past interviews Jacopo Villa in November 2020 (Figure 16) and Gregory Votolato in January 2021 (Figure 17); provided the context for the importance of transportation generically.

Transport revolutionised modern culture and became the backbone of society to travel from A-B and this formula, attending to the user market's needs, transforming customers' views towards these vehicles as less of an appliance and more of a workhorse/pet, like the Willies Jeep (Villa, 2020).

Finding out about the famous designers of sports cars such as Marchello Gandini, has a rich portfolio such as the Lamborghini Miura and Countach, amongst other great designs. A few years ago, he stated that modern "Car Design has lost the point, as it is difficult to find the link between the image of the car and its character... we are living with cars that feel constricted" (Delbò, 2019).

This view is supported by Frank Stevenson, the original designer of the BMW X5; who expresses his distaste for the New BMW XM (figure 18) (Stephenson, 2022), which was inspired by the BMW M1 (figure 19), and created by another famous automotive designer, Georgetto Giugiaro.



Figure 19 BMW XM Concept (BMW, 2021)



Figure 18 BMW M1 (Carscoops Staff, 2017)



Figure 20 Lamborghini Marzal (Curasy, 2021)

Considering Gandini, who backs his point with his creation of the Lamborghini Marzal (Figure 20) as he says “You feel free, yet you are no less protected than in a normal car” (Delbò, 2019). This strongly supports that designers can provide spacious good looking, innovative creations when given the freedom and not needing to appeal to the current trends that need to be followed such as SUVs and CUVs.

By researching “Gran Turismo” or “Grand Tour” (GT)(Oxford Dictionary, 2022), it influenced a range of high-end luxury sports cars for long-distance travel (Figure 21) (Preud'homme, 1774; Oxford Dictionary, 2022). These lavish trips could suggest the original name of the sports car connotation, implying nostalgia for the Grand Tour as these vehicles evoke (Figure 22) (Info Chaser, 2021; Villa, 2020).

This is the groundwork to emphasise the Jaguar GT’s modern tribute to both the Grand Tour and Jaguar’s rich heritage as portrayed in Figure 22; giving the popularity of European Sports cars.

Research showed that European sports cars (such as Figure 23) were sought after by the Americans at the end of WWII (Voltolato, 2021; Villa, 2020); as best described by Maserati’s Chief Designer: Klaus Busse; the GT sports cars have a history of 75-years (YOUCAR, 2022). This combined both comfort and high performance, as there were only two choices; either owning an opulent road car or a high-performance racing machine (YOUCAR, 2022; Villa, 2020).

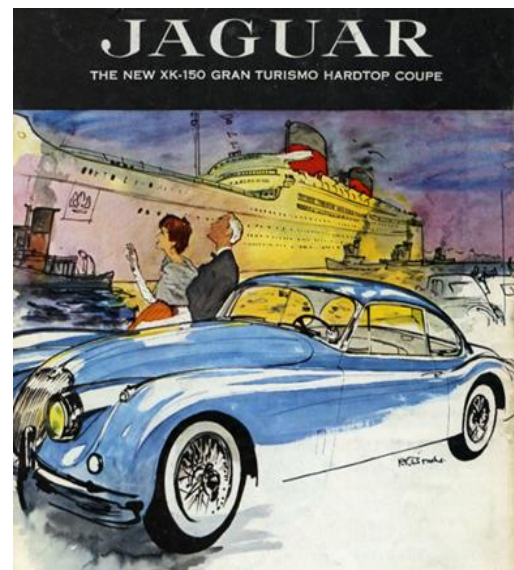


Figure 21 Jaguar XK150 – October 1957 (Blackwell, 2015)



Figure 22 1930 ALFA ROMEO 6C 1750 GT SERIES 4 ‘ZAGATO’ SPIDER (Bloomfield, n.d.)

This was supported by the mantra “win on Sunday, sell on Monday” coined by Ford Dealer: Bob Tasca (Mijatović, 2022); enforces the mentality of what the GIs and war veterans demanded as a unique selling point for sports cars (Figure 24) (Mijatović, 2022; Villa, 2020). These were heroes who would win the hearts of many TV and racing viewers who flocked to purchase these (Figure 24) (Mijatović, 2022; Voltolato, 2021). Using this mantra would emphasise Jaguar’s application of their FE technologies and racing influence incorporated into the Jaguar GT Package, like Jaguar’s previous road car models.



Figure 23 Ford Falcon FC – Group C Touring Car Race (Cady, n.d.)

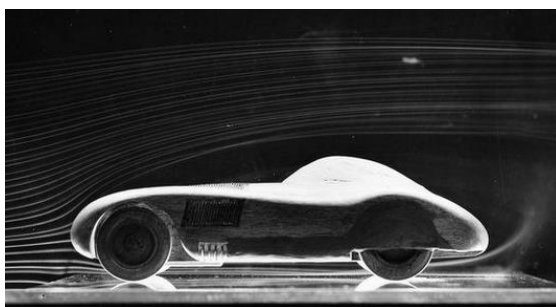


Figure 24 Wind Tunnel Test of XK120-C concept (Blackwell, 2015)

Examples of road-going race cars are the Jaguar XK120 (Figure 25) that were developed with the use of aerodynamics for the fastest production car during the '50s (Top Marques, n.d.; Jaguar, n.d.). Also, Jaguar’s C & D – Types (the first two cars at the front of figure 26), were created by an aircraft engineer, Malcolm Sayer (BBC, 2013).



Figure 25 Jaguar C, D & E – Type Cars (Jaguar Heritage, n.d.)

Sayer’s reputation with the D-Type gave him the opportunity of creating a road-going version to boost Jaguar’s sales figures, known as the E-Type (the car in the background in figure 26). This had been a large gamble, as Jaguar’s Co-Founder and Chief Designer Sir William Lyons, deemed the project to not be a success; however, it became a design Icon (BBC, 2013; Top Marques, n.d.; Jaguar Enthusiasts' Club, 2020).

Such a gamble is currently needed again for Jaguar, as it reported that Tata Motors have made a loss of \$1 billion in Jaguar (BBC News, 2021). This implies that action is needed to do something to save the company; giving a strong case for creating the Jaguar GT.

i) Key visual research

A sketch from the 1700s depicts a wealthy traveller arriving in Rome and explores the topic of ‘the Grand Tour’ (Figure 27). This inspired the idea of red-carpet treatment for occupants to receive when they arrived at their hotel or destination (Figure 28). The proposed Jaguar GT aims to give a First-Class style car, with front-row seats and its own tour of picturesque scenery, sights, and culture as the wealthy travel on their journey to their destination.

The Jaguar GT will be a first-class style car that gives the occupiers a front-row seat to witness picturesque scenery, sights and culture that are around them as they travel on their journey to their destination.

The Jaguar GT’s on-board navigation Storyboard (Fig. 28) depicts how a family can stop by Harrods on the way to the Eurotunnel and can find a suitable restaurant in the Swiss Alps for lunch as they travel from Paris to Milan.

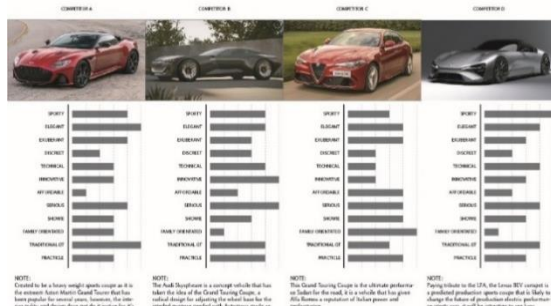


Figure 28 Competitors Analysis - Specification Analysis (Burton, 2022).

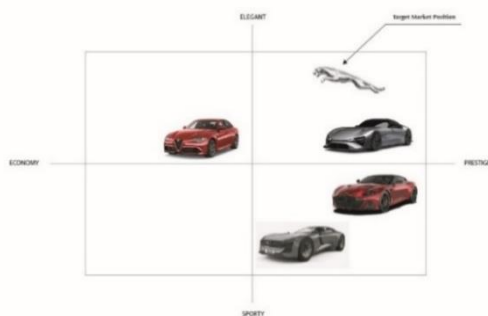


Figure 29 Competitors Crossed Axis Diagram (Burton, 2022).



Figure 26 The arrival of a young traveller and his suite during the Carnival, in Piazza de' Spagna, Rome (Allan, 1775)

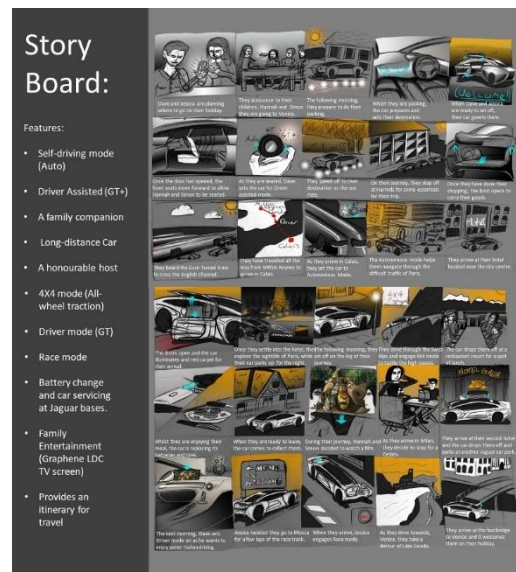


Figure 27 Story Board showcasing the function and purpose for the Jaguar GT (Burton, 2022).

To compare against the Jaguar GT for this extravagant lifestyle, a range of competitors were benchmarked for their market appeal that would be best suited; selected are the “Alfa Romeo Giulia Quadrifoglio”, the “Aston Martin DBS Superleggera”, the “Lexus LFA EV Concept” and the “Audi Sky Sphere concept”. These vehicles address the spectrum of the GT class of vehicles that appeal to different markets, prices, and appeals (see Figure 29).

The decision to place the Jaguar GT on the Competitors Cross Axis Diagram marked as a Jaguar (Figure 30), was chosen to be more superior than Audi, yet affordable than the Lexus and Aston Martin as this is what Jaguar is known for.



Figure 30 E-Type Series 1: 2-seater (Favcars, n.d.)

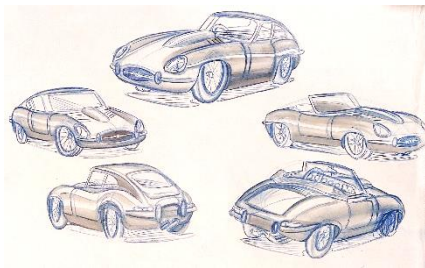


Figure 31 Jaguar E-Type Sketches (Burton, 2022)



Figure 32 Jaguar E-Type 2+2 Marker Render (Burton, 2022)



Figure 33 Jaguar XKSS - Marker Render (Burton, 2022)



Figure 35 Jaguar Formula E Series 3 Car - Marker Render (Burton, 2022)

The Jaguar GT's sex appeal was inspired by the Jaguar E-Type, as it is synonymous with Jaguar's heritage, brand DNA and worldwide reputation (Figure 29).

Enzo Ferrari stated, when he saw the E-Type; that it is **"the most beautiful motor car in the world"** (Rancati, Ferrari, 1977; Rancati, 1983; Dewis, 2017). The Series 1 E-type is regarded by Jaguar and classic motoring enthusiasts as beautiful (in particular the 2 seater convertible), however, the 1st generation 2+2 Coupe version (Figure 30) could be stated to lack in sex appeal due to the sloping Roofline (Top Marques, n.d.).

This was a challenge to consider when sketching and understanding the design of both first series E-Types'; to pay homage to the E-Type as well as starting point for the Jaguar DNA silouet; this needed to retain a 2+2 seating layout to accommodate a family of four. The Jaguar XKSS's (Figure 31) and Formula E car's (Figure 32) sporty, and slick aesthetics were explored for a unique persona influence on a production family supercar.

As a way of captivating viewers and potential customers, the Jaguar GT will offer an invigorating travel experience for a well-travelled family, who enjoys the spectacle of an awe-envoking performance vehicle blissfully accelerating through tranquil scenery toward their destination. These arousing and dramatic ideologies allow people to envisage themselves as James Bond on an unforgettable journey – see Figure 33 (CoPilot, n.d.).

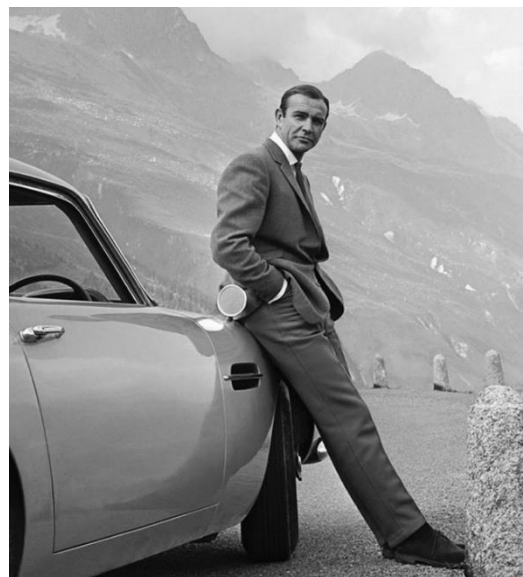


Figure 34 Sean Connery - James Bond with Aston Martin DB5 in the Alps, Goldfinger 1964 (Hess, 2020)

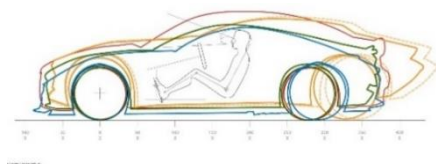


Figure 36 Competitors Platform Layout (Burton, 2022).

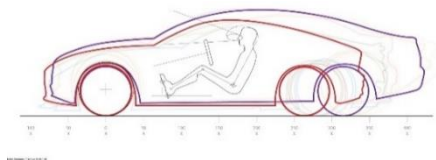


Figure 38 Jaguar F-Type & Jaguar XJ Layout (Burton, 2022).

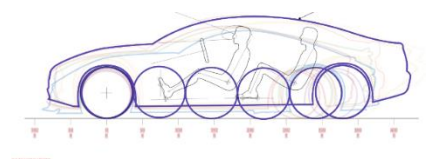


Figure 39 Proposed Layout for the Jaguar GT (Burton, 2022).

The next challenge after agreeing the GT layout, was to create the package appearance (Figure 39); the initial sketches' focused on the front wheels protruding out of the vehicle, giving the appearance of a Jaguar ready to pounce (Figure 37). This stance would radiate tension, personifying the aggressive nature of the Jaguar; as though it were about to destroy its' prey; symbolising the translation of "Jaguar" as originating in the native tongue, as "he who kills in one leap" (World Wildlife Fund. WWF, n.d.).

A modular platform would facilitate access to tight parking spaces and long-distance travel whilst retaining a spacious interior (Figure 40); the intended layout modes are a: 2-seater sports car and a family 2+2-seater. The first mode of a 2-seater sports car layout would be achieved by the 2 rear seats merging with the front row seats along with the rear cabin reclining in size, to attain a recreational sports car. The rear seats and cabin would expand in size as a family car when required. The initial Jaguar GT's styling and appearance did not seem aesthetically pleasing, and inspired a further developed proposal that would best reflect the design intention.

Creating the layout of the Jaguar GT, required benchmarking the competitors' sizes (page 17) (Figure 37); to depict a suitable size for the Jaguar GT. Looking at Jaguar's F-Type and XJ platforms for comparison; gave the idea of merging both layouts to accommodate more space for a unique package (Figure 38).

The challenge was to develop a unique vehicle layout to accommodate the EV powertrain, the use of the F-Type front overhang and XJ rear overhang into a single package for a spacious platform. Creating this layout generated a new market range for the Jaguar GT, coined (by the author) as the **'Family Supercar'**.



Figure 37 Diamond Jaguar Staling (Swarovski, n.d.)

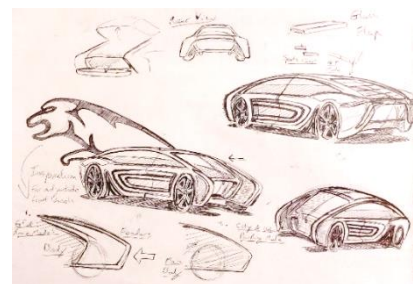


Figure 40 Initial Development with a Modula Platform (Burton, 2022).

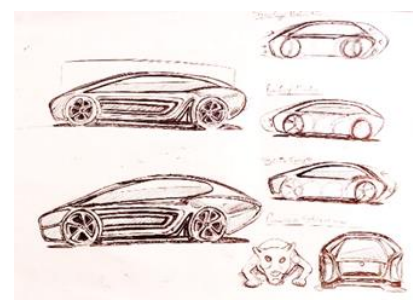


Figure 41 Further Initial Layout Development and Jaguar Stance influence (Burton, 2022). -

ii) Key methods

After reflecting on the initial sketches, further sketch studies were implemented around attractive vehicles. The literature recommendations of the book, “Beautiful Machines...” (Rong, Klanten, & Baedeker, 2019); became a starting point for studying of the most stunning cars in history such as the “BMW 507” and the “Citroën DS” (Figure 43 and Figure 44).

Sketching these cars helped identify the vehicles’ aesthetic appearance, such as the BMW 507s’ high ground clearance, suggesting a short skirt fantasy (100 Years of BMW, 2016). The surface of the Citroën DS evokes a pure feminine silhouette of a Goddess (See Figure 44); as intended for the “DS” name (Rong, Klanten, & Baedeker, 2019).

However, sketching lacks definition and depth due to the quick lines to outline the design (Figure 44); using problem-solving methods this was resolved with the use of markers in reflective methodologies used to research light, shadow, and reflections to communicate and provide an artistic representation (See Figure 46).



Figure 44 Inspiration Plasticine Models (Burton, 2022).



Figure 46 Studio Space Filled with Pencil, Pen & Marker Sketches and Models (Burton, 2022).

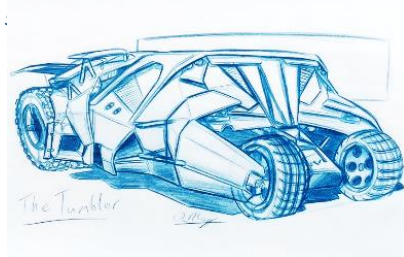


Figure 47 The Tumbler (Batmobile) - pencil sketch (Burton, 2022).

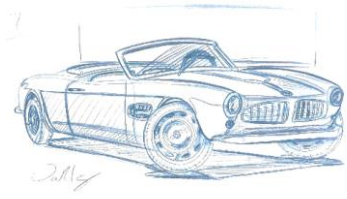


Figure 42 BMW 507 Pencil Sketch (Burton, 2022)



Figure 43 Fibre Castel Pencil Sketch of Citroen DS for Marker Rendering (Burton, 2022).



Figure 45 Completed Marker Pen Citroen DS, using Pro Markers (Burton, 2022).

For a strong 3D understanding of form, the experimentation with plasticine was suggested as a malleable medium to create sketch models for inspiration (See Figure 46). More sketches were created (Fig 47) and some fictional vehicles were explored such as the Tumbler from the Christopher Nolan Batman Trilogy (Figure 48).

The creation of the Tumbler (Figure 48) was an unorthodox approach to transportation design as the concept was created without the use of a typical automotive design process; this started as an initial plasticine model that then led to an iconic Batmobile, set in the real world (Roven, Goyer, 2005).

This approach encouraged the use of plasticine to create 3D forms as well as some free-form sketches to inspire the form and mood of the Jaguar GT.

A sketch model of the Jaguar GT was created with the use of blue foam (made of Polyurethane); an ideal material to make a prototype model to demonstrate the wheels expanding and contracting for a modular layout (See Figure 49).

When arranging to do the clay model of the Jaguar GT in October 2022, the design needed changing as “it looked static” (See Figure 50). This was resolved in 3 weeks with Tom Henwood’s support and approval (See Figure 51); however, this had delayed the start of the clay model process by 3 weeks.

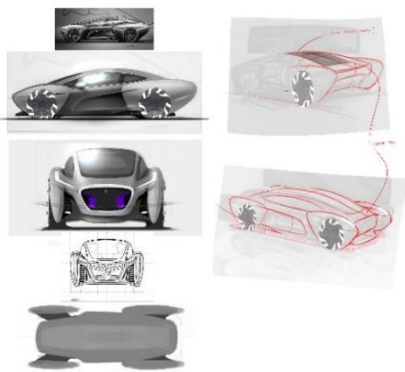


Figure 50 Thomas Henwood's Annotations of the Jaguar GT (Henwood, 2022)



Figure 48 Blue Foam Sketch Model of the modular layout (Burton, 2022).



Figure 49 Original Jaguar GT Concept (with a fixed layout) - Photoshop Render (Burton, 2022).

Once the Jaguar GT proposal was approved (See Figure 52), starting the body buck took longer than necessary; as it had to be created in Alex Building due to the workshops in IQ being closed. This was a difficult situation as it extended completion time by more than a week (See Figure 53).



Figure 51 Jaguar GT Concluded Concept - Photoshop Render (Burton, 2022)

Whilst adding the clay on, Thomas suggested using a sketch overlay process (see 2nd image on the left below, Figure 53), to visualise and communicate the intended form. The use of clay construction lines helped outline the Jaguar GT silhouette; the gaps were filled in to shape the clay to form a block model (Figure 53). The solution for the visual details was to apply graphic decals; however, without the assistance or guidance of Ian. It was completed in 2 days on the week of the show, with the background support of Adrien Dix (the last 2 images below, Figure 53).



Figure 52 Photos of the Jaguar GT Clay Model from Body Buck - adding Decals and Details (Burton, Matthews, Shelton, Henwood 2022)

iii) Inspiration/Key Text

The Significance of the Porsche

911 GT3:

Supporting the Image of the Jaguar GT, Bob Tasca's coined phrase "Win on Sunday, sell on Monday", is the unique selling point of most sports cars such as the Porsche 911 GT3 (Figure 54). Such a vehicle as the

911 GT3 evokes an emotional sensation amongst the Porsche and

the automotive enthusiast; this road-legal race car version of the Porsche 911, backs Tascas' quote as the unique selling point (Carverse Team, 2015). The performance features and high-revving naturally aspirated engine; are the key ingredients for a desirable sports car for driving enthusiasts who crave an experience they will never forget (Sargenti, Buck, Mader, Hendess, Raabe, 2018).

Sound Performance Jaguar Engines:

As mentioned as one of the key ingredients, the noise of the engine is a desirable quality in performance cars (such as the Porsche 911 GT3), which is supported in a report on for Jaguar's Sound Quality Engineering Process; as most customers stated that they felt Jaguar was trailing behind their competitors, which was addressed with a focus on refining the exhaust pitch, for a powerful presence, shown in Fig. 55 (Dunne, 2003).

Such a quality needs to be considered for the Jaguar GT, as manufacturers should resolve the loss of exhaust noise in EV sports cars; as this was resolved with the Abarth 500 E. By using a speaker to admit a captivating sound (Miller, 2022). This is a topic of debate for EVs, as pedestrians cannot hear EVs coming towards them, resulting in accidents (RNIB, 2021).

Formula E Power Train:

A desired quality of the Jaguar GT's powertrain unit, is a Jaguar FE powertrain; However the importance of radiators in an EV stressed the importance of cooling the key components such as the motor, batteries and water pump (Figure 56) (FIA FE, 2017). The use of air channels are needed to direct the airflow, to pass through the radiators; enabling the these components to be cooled; this was considered in the side walls of the Jaguar GT for aerodynamic performance (FIA FE, 2017).



Figure 53 2015 Porsche 911 GT3 RS Rocks the Nardo Test Track (Carverse Team, 2015)



Figure 54 Jaguar F-Type V8S exhaust overrun - Snap, Crackle and Pop (gam88a, 2013)



Figure 55 Formula E Engine Powertrain Unit (ABB Formula E, 2017)



Figure 56 Formula E 2 Motor Gear Box (ABB Formula E, 2016)



Figure 57 Formula 1 Car Cornering (Mercedes AMG F1, 2019)

Formula E Gear Box:

As a core element of the Jaguar GT's driver-focused, features was for a manual transmission, gear box powertrain; this feature enables for a seamless transition in power when approaching corners whilst maintaining velocity (ABB Formula E, 2016).

The use of Panasonic Jaguar's FE gearbox (Figure 57), with the support of two wheel motors for the front wheels would allow the Jaguar GT to operate between a recreational sports car (for rear wheel drive) or an all-wheel drive vehicle harsh weather conditions (Scott, 2016; *How Are Formula E Cars Different In Season 3?* 2016).

Mercedes AMG Formula 1 Axel and Suspension:

For the steering axel for Jaguar GT, the influence of a Formula 1 axel and suspension from Mercedes AMG F1 car is similar to a production car; as these features adapt to each wheels inclination (Mercedes AMG, 2019). However, it is a more sophisticated for an F1 car, as the wheels need to be wider apart for better handling for cornering at high speed (Mercedes AMG, 2019) (Figs 58 and 59).

These factors were considered and incorporated into the Jaguar GT, evoking a Formula E-style road car for the family; utilising the components for the ultimate driving experience.

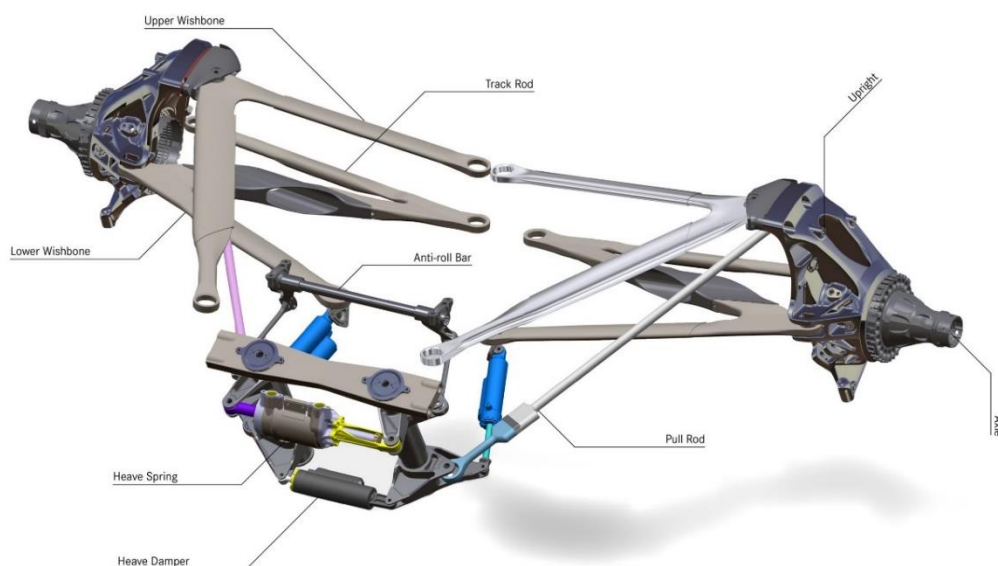


Figure 58 Rear Axle Perspective View (Mercedes AMG F1, 2019)

7. Critical analysis - Evaluation

Strengths

Focusing on the positives of the Jaguar GT project: the viewer's attention was drawn to both the Clay model booth (Figure 60) and the Design Process Booth (Figure 61) at the Syzygy degree show (unveiled on 16th December 2022). It seemed well-received as viewers were captivated by the clay model and an A1 poster of the final proposal.

The illuminated presentation boards (Figure 61) captured the attention of other viewers, along with watching a video presentation talking through the process of the Jaguar GT project. Once the viewers are in the visual booth, they would be drawn in to see a storyboard, sketch development boards, a Package layout spec sheet and photoshop visuals. The star of the Show was the Clay model in a separate booth, illuminated by a light box to showcase the Jaguar GT in its glory (Figure 60).



Figure 59 Jaguar GT 1:10 Scale Clay Model on display at the Degree Show (Burton, 2022).



Figure 60 Jaguar GT Proposals and Design Process show casing booth (Burton, 2022).

Weaknesses



Figure 61 Inspiration and Design Intention boards (Burton, 2022).

The imperfections were: the presentation video, the portfolio, and the “Inspiration and Design Intention boards” (Figure 62); this being printed last minute, there was not enough time to fix these little flaws.

These did not detract from the positives of the show, as the focus was on the presentation boards that caught the eyes of many viewers. The presentation video was a last-minute inclusion, due to the organisation of the show; the trust for the show's success was in the boards and the clay model.

The presentation video was an initial pitch that was given a few weeks before the show, that lasted 15 minutes and was well received by Thomas Henwood; for addressing the intention of the project, that was included for the background information of the project once everything was in place.

Opportunities/missed



Figure 62 Marker Render Sketch of refining the Jaguar GT (2022).

The opportunities gained were going to museums, attending car and motorbike shows along with learning technical skills to make the models; these skills strengthened the initial concepts made by marker pens, to communicate these artistic proposals in a captivating way (Figure 63).

However, the missed opportunities were to experiment with wind tunnel, with a 3D printed model for refining the Jaguar GT concept. This would have enriched the project, along with a well-developed interior and tape drawing; this would have been supported with the creation of a VR model realised with V-RED visuals for realism.

Threats/Risks

The risk to the project was the clay model, as it needed a lot of attention; the worry was if the clay model was not ready to present. These variables were stated by Ian that “the Clay model may not be completed to a high standard in the time frame...” of 6 weeks. Ian was used to completing 1:4 scale models in a space of 10 weeks minimum, however, he recommended doing a 1:10 scale. This was once agreed, and Ian needed guidance from Thomas Henwood on how to execute the design once the buck was completed (Figure 64).

On a high note, creating the model for the showcasing was an achievement in its self, to present a 3D physical representation to support the sketches and photoshop renderings of the Jaguar GT.



Figure 63 Photos of the Clay model from Start to Finish (Burton, Matthews, Shelton, 2022)

Discussion

Batman begins - the Tumbler

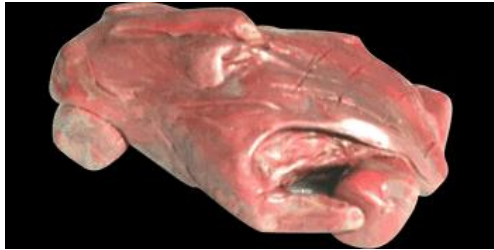


Figure 64 Playdough Batmobile Concept (Nolan, and Crowley, n.d.)



Figure 65 Batman Begins & The Dark Knight Batmobile: The Tumbler (Fangel, n.d.)

The inspiration of a playdough mock-up (Figure 65) by Christopher Nolan gave the idea to play around with 3D forms (Roven, Goyer, 2005; Snider, Glick, Kane, 2012). this became the starting point for the Jaguar GT process (Figure 66) (Roven, Goyer, 2005; Snider, Glick, Kane, 2012).

Ian Matthews recommended plasticine to experiment with shapes and forms, to explore different ways of doing a typical automotive design process which was taught by Eric Bevilacqua, Claudio Fassini and Michele Leonello at SPD. The unconventional way of producing the Tumbler and its appearance pushed for a radical way to think of how to create a Family Super Car by merging F1, and FE technologies with the influence of biomimicry into a family car.

Formula 1 and E Technologies (Pit Stop style EV batteries)

The unique selling point of utilising racing technology backs the mantra “Win on Sunday, sell on Monday” (Mijatović, 2022); which is seen in the Mercedes AMG Project 1 supercar as this car shares its engine with the Mercedes AMG F1 race car (figure 67).

Utilising such a sales pitch, the idea of a Formula One-style Pit Stop (figure 68), as where the car can seamlessly drive into a robotic battery swap station and swap the Car’s battery. Other components (such as tyres) can also be replaced along with the battery in 1 minute (like in figure 69). This would replace the empty battery in a very short space of time and incorporate a hassle-free racing feature for customers, rather than having to wait for the car to charge with in an hour (figure 70).



Figure 66 Mercedes AMG Project 1 and F1 Car (Aucock, 2019)



Figure 68 Nio EV Battery Swapping Station (Nio, n.d.). -



Figure 67 Ferrari F1 Pit-Stop (Ray-Ban, n.d.)



Figure 69 Man waiting for EV Car to finish Charging (bing, n.d.)

EV technologies

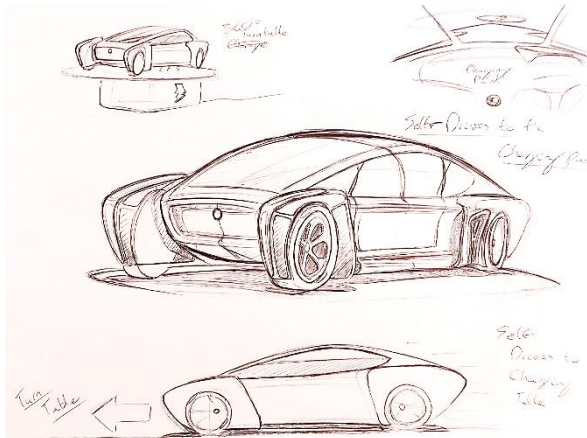


Figure 70 Ideation of Wireless charging the Jaguar GT on a Turn Table (Burton, 2022).



Figure 72 Volvo Wireless Charging production development (Moldrich, 2022)

Modular technologies (BMW Zip car)

The adjustable body structure to adapt to the requirements of the driver was inspired by AUDI's Sky Sphere concept for an adjustable layout; this was further explored with BMW's "Gina" concept (see Fig. 72), using a fabric body to experiment with a shape-shifting car that can transform its doors' appearance to appear like a swan's wings.

These were the ideas for exploration that the Jaguar GT (Fig. 74) was intended to embrace and evolve the understanding of how these ideas and technical developments can be the next revolution in automotive design for driving enthusiasts. This represents individuals who wish not to travel by public transport due to discomfort of modern transportation and after the complications of the spreading of viruses that caused an epidemic from 2020-22.

To maximise the EV battery, wireless charging permits owners to charge their cars' overnight on a Lazy Susan (turn table) on their driveway or wireless charging spot; this would fully charge their car without the need to manually plug a cable (figure 71 & 73).

The implications of EV products will allow the creation of a unique platform, due to a hollow layout which simplifies the structure to make lightweight vehicles, as it will rely on electric motors and less on mechanical systems. The use of LIDAR will allow autonomous features to take driving to the next level regarding driver-assisted technologies allowing occupants to relax on long drives and adjust to the driver's wants and needs for long-distance driving (Salvo Technologies Inc, 2022).



Figure 71 BMW Gina Shape Shifting Concept (kirsch, 2019)

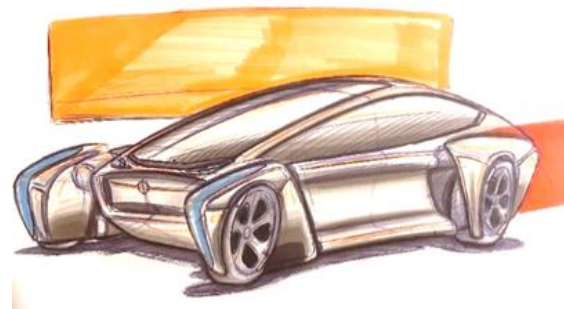


Figure 73 Initial Jaguar GT Modula Concept (in family mode) (Burton, 2022).

8. Conclusion

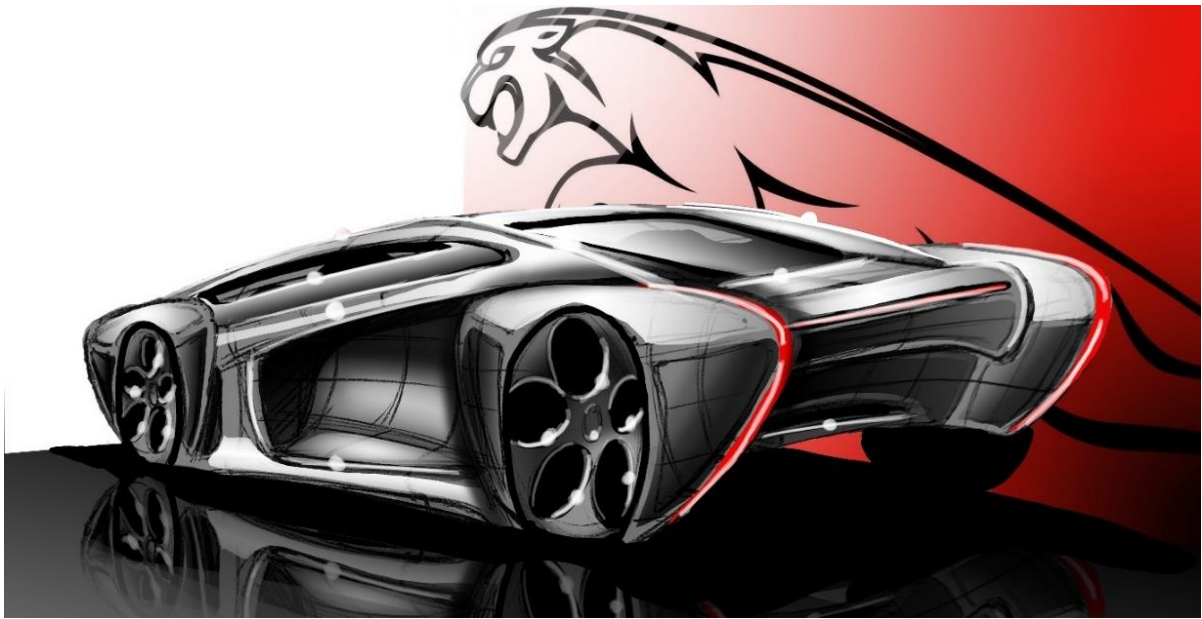


Figure 74 Photoshopped Initial Jaguar GT Concept (Burton, 2022).

Conclusion of the projects, the unconventional approach of sketch models, use of surveys and chatting with automotive enthusiasts helped refine the sketches to work towards implementing these experiments to justify a plausible outcome that is justified with an attractive appeal.

The approach was to convince a market demographic that is unsure and/or heavily defiant about the use of EVs, Autonomous Vehicles and sports cars, selling a unique lifestyle that will change the way they live and commute/travel; the feedback for the AV Project provided an invaluable basis to explore and develop a proficient way to travel, that would reassure their nerves and change the way they view AV travel.

From the feedback received from the Syzygy Degree Show, were that viewers were drawn to the Jaguar GT concept (Figure 75) due to the statement of a sporty and sleek vehicle, that set itself apart from automobiles as something to marvel at and arouse a driving thrill. A few things needed improving such as the Interior, however, the time frame of having 6 weeks to produce a clay model was consumed easily; which left very little time for organising the degree show, which was prepared in a space of 3 days.

The thought process was on how to develop the clay model with the use of the facilities and circumstances of having to communicate with Thomas Henwood through Microsoft teams (as he was based in Germany). The difficulties were being the middleman between Thomas and Ian Matthews on how to realise the clay model, from both a design and a clay model perspective, for an achievable approach.

Overall, it felt like a successful project that was achieved in a time frame from the 3rd of October 2022 till the Degree show of December 16th, 2022; as the showcasing was believed to be of a high standard in such a short time frame, including the obstacles to overcome whilst organising and preparing the show.

9. Recommendations/Further work



Figure 75 UWTSD Wind Tunnel at IQ Campus (Burton, 2022).



Figure 76 Jaguar GT Interior Marker Render (Burton, 2022).

If Paul Morrow was still overseeing the project, there would be more exploration of a morphing design proposal for the Jaguar GT.

The Autonomous Transportation brief would have been further developed and concluded with 2 design concepts: a 2-seater concept which can morph into a 4-seater vehicle and a single-seater quadricycle for drivers who want a fun way to travel to their destination (Figure 78). These would have been created in VR (like Figure 79) to justify a full-scale proposal with complete interiors so that viewers can walk around and engage with the fully developed proposals.

The Jaguar GT needed some more high-end “Photoshop Renders” accompanied by an Alias Model, with V-RED visuals and animations. A scaled 3D printed prototype would be created and tested in the wind tunnel (figure 76).

Further work for the project could include more time given to develop the interior (Figure 77) as there were only a few sketches to visualise and demonstrate the layout of the vehicle.

Once these have been achieved, the next step is receiving feedback from automotive designers and Jaguar enthusiasts about their views and opinions of the Jaguar GT. This would then be added to an online portfolio and YouTube site to showcase a fully developed project for all to see.

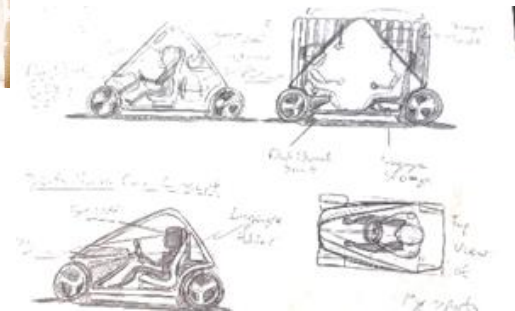


Figure 77 Three AV Defined Commuting Concepts (Burton, 2022).

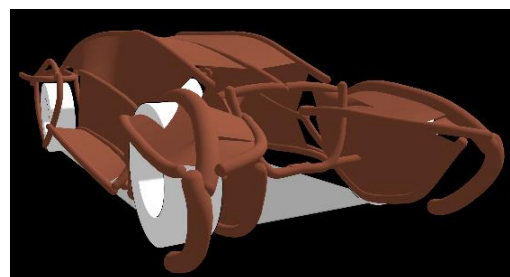


Figure 78 VR Gravity Sketch Model of the Jaguar GT (Burton, 2022).

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12. Appendix 1: Wooden Spoon Award

The first project brief delivered by Paul Morrow was to develop an award that can be modelled onto a wooden cooking spoon using wax clay; this was to develop experience and confidence to work with as clay modelling is an automotive design process.

The task was to create sketches of a fencer as the outcome was to understand the human anatomy and understand the proportion of the model, which was achieved in a space of a week, which can be seen on pages 29 – 31 (Figs. 81 – 85).

Once the sketches and blueprint were signed off by Paul, work started on making the model by applying the clay onto the wooden spoon structure as a base layer for the clay to stick to the structure (Figure 87).

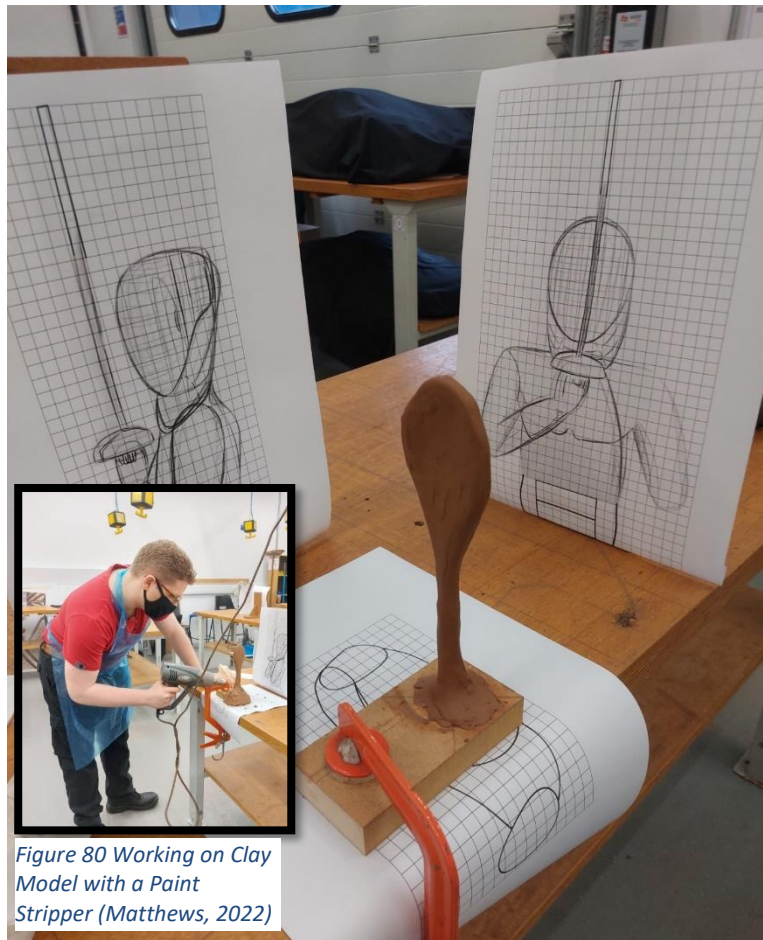


Figure 80 Working on Clay Model with a Paint Stripper (Matthews, 2022)

Figure 79 Starting stage of the Wooden Spoon Model (Burton, 2022)

The appeal of wax clay is that it does not need to be kept damp with the use of heat making the clay malleable which is ideal for modelling complex forms, as can be seen in Figure 86.



Figure 81 Photos of the evolving process of the Clay Model (Burton, Matthews, 2022)

Building up the clay, was a tiresome process as it is important to let the clay lock into the clay on the wooden spoon, as it reduces the risk of cracking; once the overall shape was achieved the use of slicks and scrapers were used to take off as much clay as needed (Figure 88).

Ian Matthews demonstrated how to do the mask of the fencing mask as a reference on how to refine the model to a professional standard before adding details as seen in bottom middle and right photos.

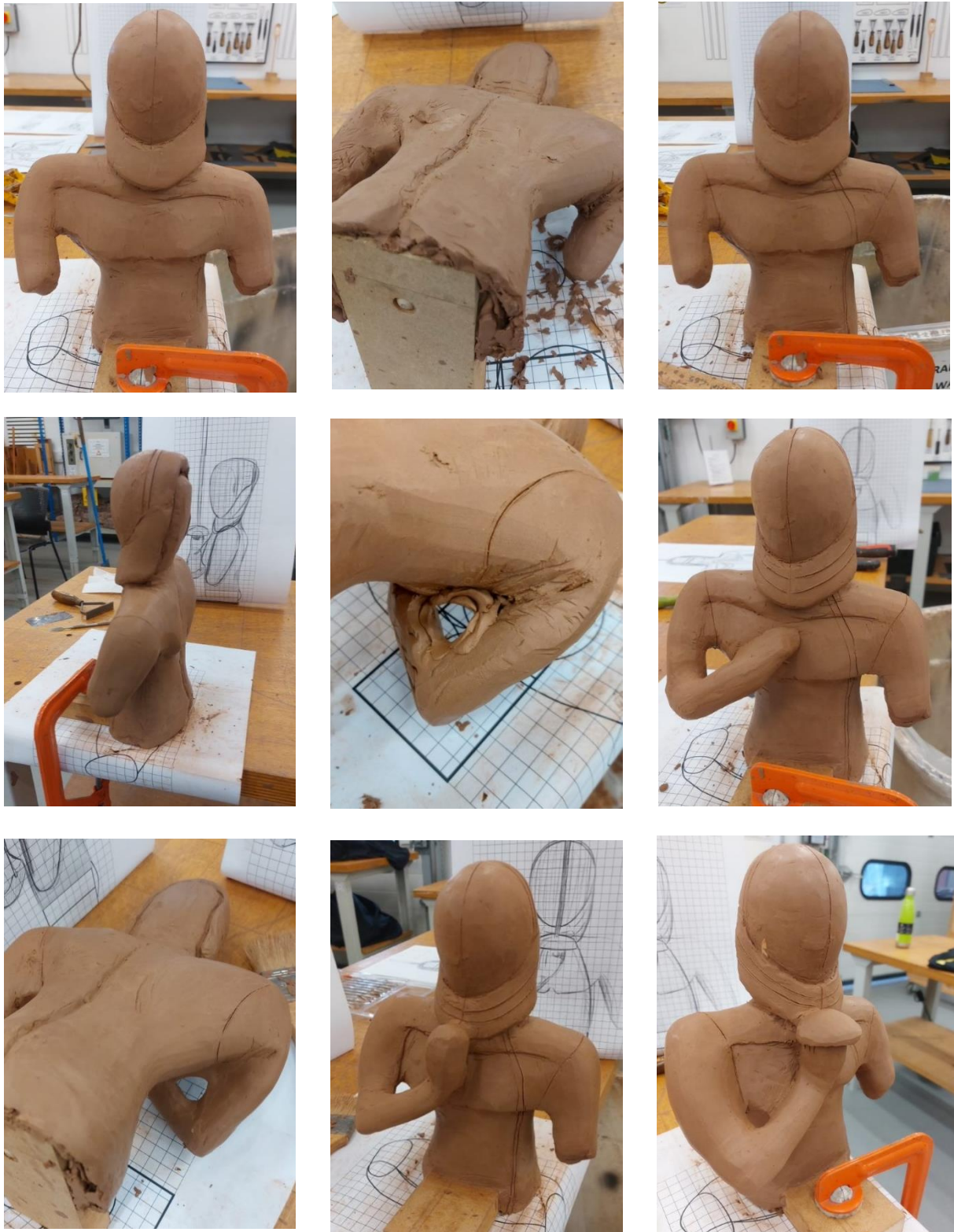


Figure 82 Photos of refining and sculpting the Clay Model (Burton, Matthews, 2022)

The procedure of cleaning up the model was from top to bottom which was difficult to achieve as it seemed quite tedious and having to keep analysing how well-defined a stage was before moving on to the next one (Figure 89); when the surfaces of the main body were smoothened, the next stage was to add the detail of the outstretched arm to secure it well to the body.



When working on the model, the difficulty was to produce the bib which was connected to the fencing mask as a key detail piece; however, the way to accomplish the bid was to take off as much clay and then shape it to resemble a neck before adding the clay to produce the bib (top photo, Figure 90).

After this was achieved it was hard to smoothen the rest of the surfaces as they were in tight proximity to the other areas of the model which would get nicked or slightly damaged (bottom photo, Figure 90).



To overcome this, it had to be done in a slow and very controlled motion to avoid damage to the well-defined surfaces.

Whilst working on the model, the use of a plastic apron was sufficient but did not protect the full body from clay sticking or the elements of the workshop (left photo, Figure 91).

Ian handed out Dust Coats which resolved the temporary apron issue and could allow the full use of not needing to worry about the damage caused to clothing or exposed areas of the body (right photo, Figure 91).

Figure 83 Shaping the Fencing Mask Bib (Burton, Matthews, 2022)



Figure 84 Photo of wearing a temporary apron and another photo of wearing the new Dust Coat (Burton, Matthews, 2022)

Having the dust coat helped with most of the carving of the clay model and adding the details with a knife to create the details with the lines etched in (Figure 92).

For finishing off the model, the use of black paint on the mask helped add contrast to the mask as it would have been too difficult to etch in or apply a surface texture graphic and was simpler to paint the mask areas (Top 3 photos, Figure 93).

After the paint was dried, the use of a kebab stick was used for the sword that was carefully twisted into the clay guard and through the clay hand; a foam cube was added on top as a safety cover for safety precautions (Bottom 3 photos, Figure 93).

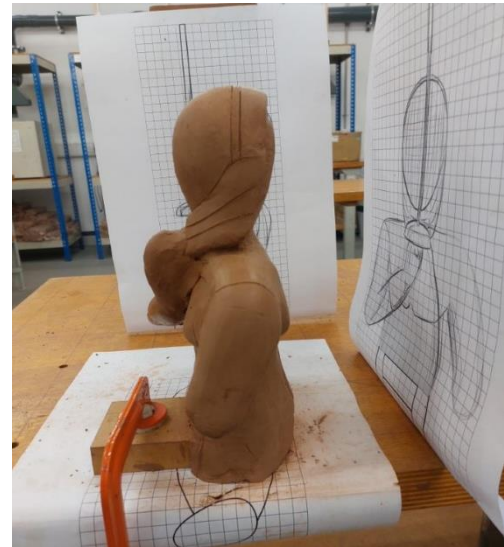


Figure 86 Etching the details with a Knife (Burton, 2022)

Finishing the clay model, was an informative project on obtaining the experience of using wax clay and gaining confidence when working on the clay model (Figure 94).

Paul felt it could have been improved as an art form or as an accurate representation of the human body, which was explored in life drawing, however, Paul had another project to task us with which took priority over this as the Wooden spoon project was only 3 weeks long.



Figure 85 Last details of Paint and a Kebab Stick for the Sword Blade (Burton, Matthews, 2022)

13. Appendix 2 – AV Project

When the Wooden Spoon Award was completed, Paul Morrow delivered us the brief to create autonomous vehicle/s to demon straight the penitential of autonomous technology products developed by an autonomous company that could incorporate these features. Unfortunately, this assignment was not continued as Paul Morrow left the course in May 2022, which left the project uncompleted as the initiative during the summer break was to develop the Jaguar GT.

However, the work produced as part of the Autonomous project came into use when developing the Jaguar GT as the “thinking of Simple forms” (Figure 95). A statement from Paul helped develop Modular Jaguar GT Concepts (See Forth Appendixes).

The primary research was conducted as a Survey which was created and collected on Survey Monkey (Pages 40 - 45) where the research to find out the preferences and interests to persuade those who are uncomfortable commuting by Autonomous Vehicles. This made a massive impact on the ideation as one of the questions asks “What do you do during a taxi journey?” 7 out of 11 stated they talk to the driver when they are on a journey (Figure 111).

Therefore, this was one of the driving factors to developing a range of vehicles for a range of vehicles as some liked being in control of their vehicle and did not like the idea of entrusting a self-driving vehicle to transport them to their destination. The use of platform development also encouraged the idea of delivery services for AVs as this would allow vehicles to deliver, goods, shopping, parcels/mail, takeaways, laundry and other such deliveries that can be sponsored by the likes of Uber eats, Deliver Roo, Royal Mail, Prime Delivery, and many other delivery services (Figure 96).

Utilizing a triangular 2 seater design that can morph into a 2+2 seating conferment allowed for experimentation of how to take these AV capsules long distances such as tube trains and Hyper bus systems that can transport these AV capsules at long distances at such a speed that would seem too long for these small Capsule AVs to travel with the use of their battery capacity (Figure 98).

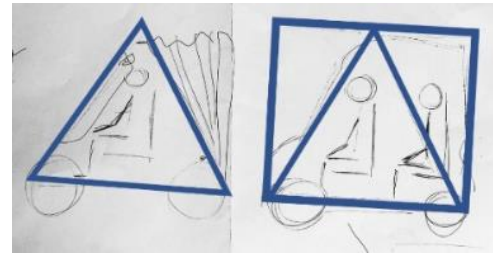


Figure 87 Quick Sketch concept of a modular Triangle-Square Autonomous Vehicle (2022).

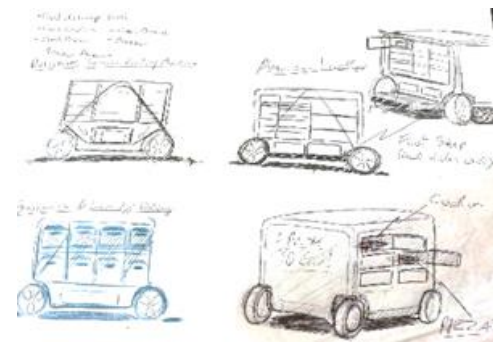


Figure 88 AV Service Delivery Concepts (2022)

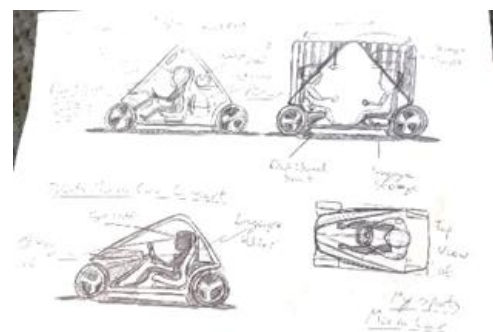


Figure 89 Three AV Defined Commuting Concepts (2022).

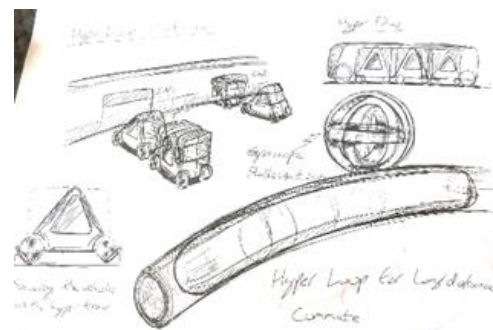


Figure 90 Long Range vehicle Concepts to Transport AV Capsules (2022)

The use of comfort was explored as the idea of a cocoon or an egg shape would give the feeling of being in the womb at birth, which would be supported by gyroscopes to allow passengers to feel relaxed and comforted when travelling back home (Figure 99).

This was an ever-expanding project as there were multiple needs (Figure 100) as AVs are in their infancy and is a topic that raises many uncertainties with little research on this, however, using the survey below taps into a small group of people who have many ideas for and against AVs.

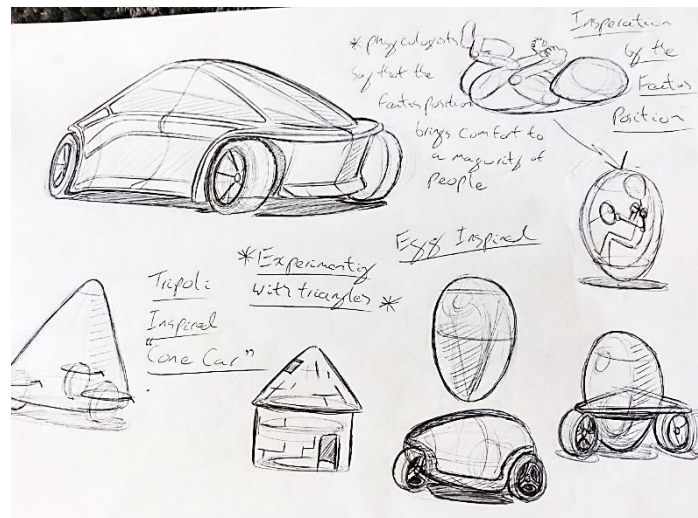


Figure 91 Experimenting with a Comfortable AV Design (Burton, 2022)

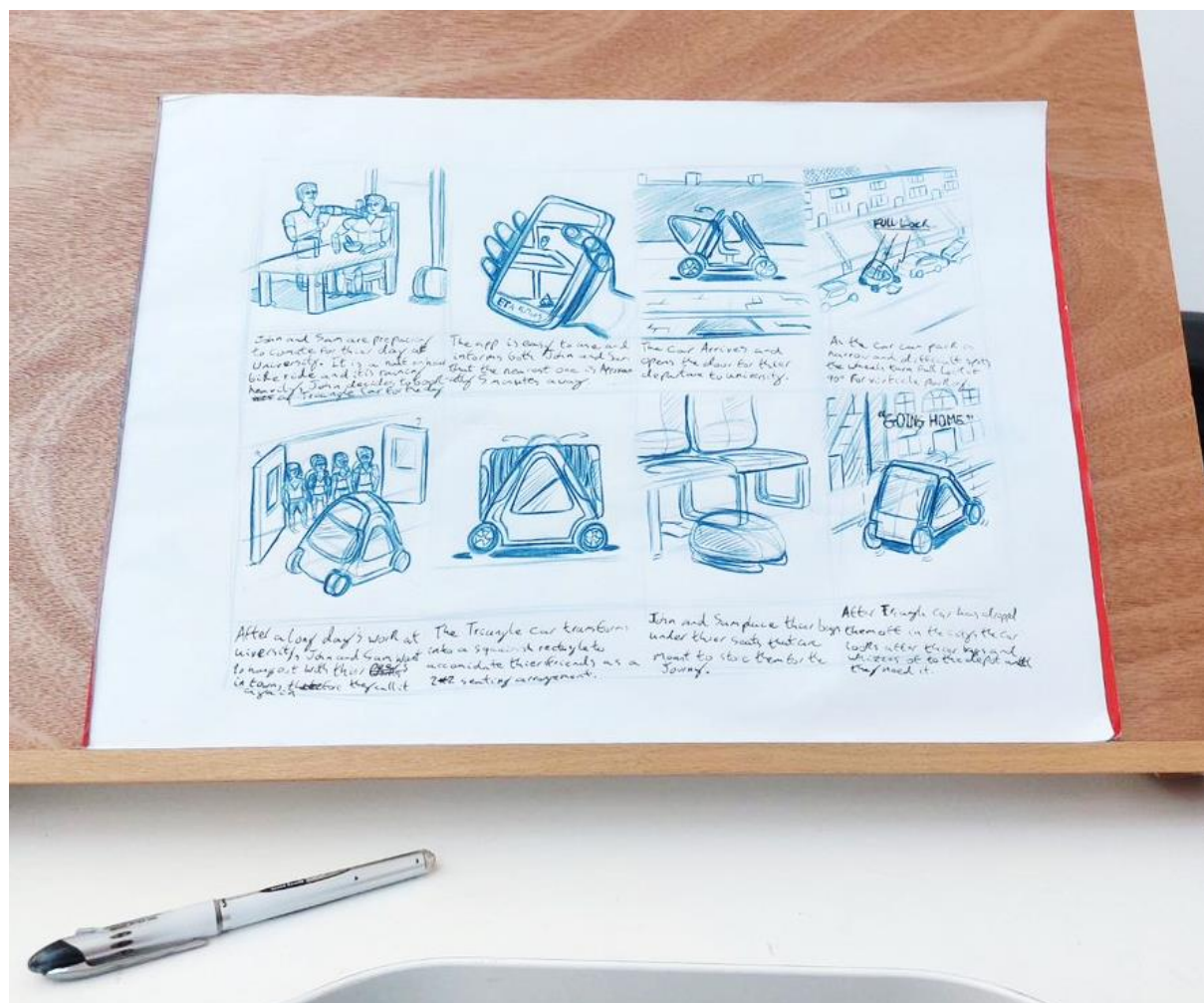


Figure 92 Sketched Story Board telling the story of some Students (in Swansea) travelling to University and going out into the City after lectures (Burton, 2022).

To provide a strong basis a physical model helped strengthen the project with the use of wire was experimented with however, this was flimsy and did not hold a ridged position (Figure 105); after reflection, plasticine proved to be a better creative medium (Figure 104).



Figure 96 Unsuccessful Wire Model of Triangular Autonomous Concept (Burton, 2022).



Figure 95 Plasticene Model Concept of Triangular Autonomous (Burton, 2022).

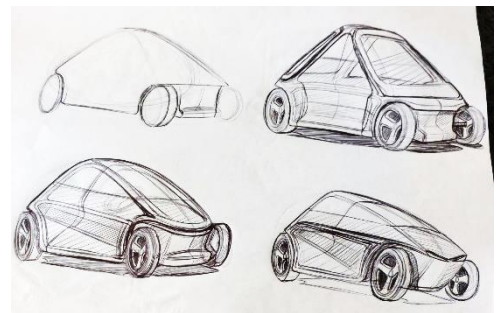


Figure 94 Sketch Concepts of The Modular Capsule and Driver Focused Concepts (Burton, 2022)

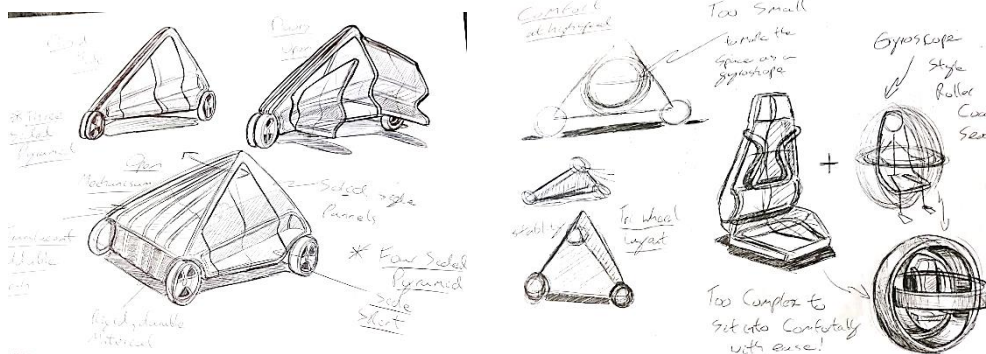


Figure 93 Initial Sketches of a Modular Layout exploring a gyroscope stability (Burton, 2022)

This Survey is still of use when working on future AV projects as this is data collected to provide primary research, on people's habits, insecurities and current knowledge of driverless vehicles which helps build the groundwork on producing AVs for the next evolution in public transportation.

However, with this project having to be left un-concluded the focus of the research was used to developing the Jaguar GT where these technologies would be considered into for the next generation in sports cars and commercial automobiles for the upcoming decade.

14. Appendix 3 - Shows Attended and Inspiration:



Figure 97 Paul Morrow's Jaguar XJS (Burton, 2022)

Whilst working on the AV project and working towards developing a futuristic sports car for Jaguar, Paul Morrow, a jaguar enthusiast drove to a tutorial session in his modified Jaguar XJS (Fig. 115), that was the inspiration for the Jaguar GT as it had a large sloping bonnet with a well-proportioned boot that gives a nod to the Jaguar E-Type convertible's low sloping boot (Figure 115).

This inspiration led to the idea of going to Classic car shows to find more inspiration that would evolve the Jaguar GT and speak to car enthusiasts and sports car owners of what drew them to their cars and the stories they must share about their motors and the memories of how they have restored and adventures they have been on in their motor car.

The first car show attended was the Swansea Classic Car Show, which was on 2nd May 2022.

Swansea Classic Car Show - 2022



Figure 98 Swansea Classic Car Show photos of Toyota Sera, Toyota MR2, Buick Le Sabre and MG sports car (Burton, 2022)

There was a large variety of classic cars across the 1900s from America and Japan such as the classic 1960's Buick Le Sabre (The white car, Figure 116) and Toyota Sera from the 90's (The blue car, Figure 116). According to the owner of the Toyota Sera, that the Swan wing doors were the inspiration for the McLaren F1 Sports car, which is the inspiration of McLaren's Road cars.



Figure 99 Photos of Ford Mustang, Austin Mini Convertible, Jaguar Mk 6 and boot of a classic car (Burton, 2022).

Chatting to the motoring enthusiasts, it was an incite of how their motors captivated them, across a wide range of vehicles and learning about the quirks and features such as the hidden latch push buttons hidden in the handles of the Ford Mustang (Bottom left photo, Figure 117) to the convertible classic Mini (Middle left and Top right photos, Figure 117).

Another show that was attended was one that was organised by Keith Geary as a networking and fun event to learn about the current trends in the Motorcycle market.

Bike Shed Moto Co. (BSMC) Show - Tobacco Docks London 2022



Figure 100 BSMC Photos of seat cover and variety of bike designs (Burton, 2022)

Being at the BSMC show (Figure 118) was an eye opener as meeting biking enthusiasts from all over the world and sharing their passion for customising bikes and riding them sparked a philosophic way of creating vehicles that don't just function but also conjure nostalgic taste which appeared to be more in demand than in the automotive industry.

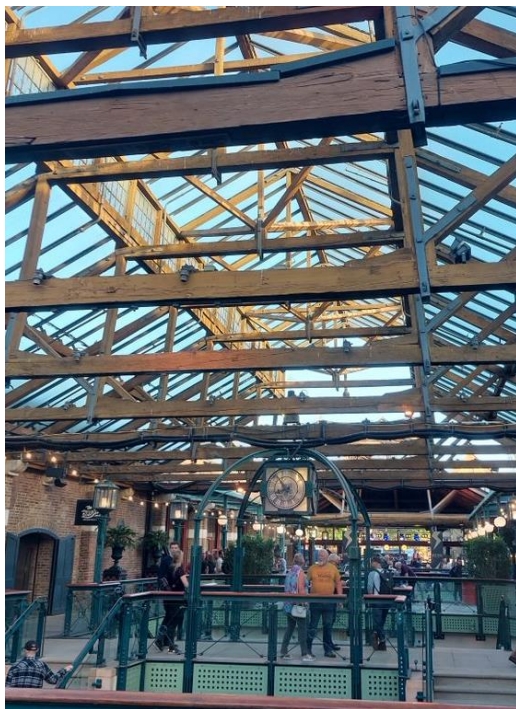


Figure 101 EV Photos of Maeving and NIU RQi-GT plus photos from the event (Burton, 2022)

However, there were start up brands on display such as Maeving, an EV single seater bike manufacture in England (Top left and right images , Figure 119) and a Chinese brand called NIU were also on display with the RQi-GT, a rough, rugged affordable bike (Right-middle photo, Figure 116).

It was a different event that reflected on how companies are testing out new technologies and approaches to vehicle design amongst a passionate crowd that brought around another car show in Swansea.

Swansea Centre Car Show - 2022



Figure 102 Swansea City Centre Car Show Photos (Burton, 2022)

With arriving back in Swansea, it was another car event that had some different cars from the Swansea classic car show such as the Jaguar E-Type along with a Bugatti Grand Prix car and VW Campervan (Figure 120).

Attending this show was in passing before going on a day trip to Bristol with Ethan Griffiths, where there was little information on what to expect and explore.

Day in Bristol



Figure 103 Photos from the M-Shed Museum and SS Great Britain Museum (Burton, 2022)

Arriving in Bristol, it was insightful to learn about the rich history of transporting goods by ships (Top left image, Figure 121).; as well as obtaining such an extensive archive of vehicles, such as the Sedan Chair (Bottom left image, Figure 121). The attractions such as the SS Great Britain (Top & Bottom right images, Figure 121); are one of the many things the Bristol was famous, as well as Concord and British Aerospace according to the curator of the M-Shed Museum as part of the Behind the Scenes Tour (Top & Bottom left image, Figure 121).

RAF Weekend



Figure 104 RAF Day – Swansea (Burton, 2022)

With the enlightened history of Bristol, the attendance of an RAF show (Figure 122). at Swansea was another event that could not be missed, which gave some influence for the Jaguar GT such as the Bi-Plane wings (bottom right image, Figure 122), for the Front Wheel pod structure and to add influence from my aeronautical research.

The influence for the Jaguar GT had arranged to attend an EV car event in Nottingham to learn about the EV products on offer from companies that would be good research.

EV day on Central Avenue - West Bridgford, Nottingham



Figure 105 EV Car Show - West Bridgford, Nottingham (Burton, 2022)

Attending the EV show (Figure 121), it was an insight to see the EVs from the car brands, in particular the Land Rover Velar interior was of interest of a sleek and premium design as for the Porsche Tycen (Middle right image, Figure 123). design proved for a family car design. These factors where the influence and idea to focus on developing the Jaguar GT project as this was a project that seemed plausible and to explore both Jaguar brand and sex appeal that is lacking in the Automotive industry.

15. Appendix 4 – The Jaguar GT

With moving onto the Jaguar GT project, the idea was for a modular sports car that could morph from a Family 2+2-seater (Figure 124) to a 2-seater race car (Figure 125) that is road worthy using a sliding track system on the side of the car to expand and contract the wheel axle layout.

This was inspired by the Audi Sky Sphere concept (Figure 126) from the extendable bonnet and front wheelbase for stability for long distance cruising sports car that can reduce its size to accommodate tight parking spaces and tight corners in the city centre (Audi skysphere concept, 2021).

With the circumstances that Paul Morrow left, the project had to be taken to a more fixed platform as it was getting more complex as it was too much to handle as a self-led project to justify and figure out a plausible modular package layout (Figure 127). There was 3 months after the summer break to resume access to the workshops and gain support and advice on this project before presenting on 16th December 2022.

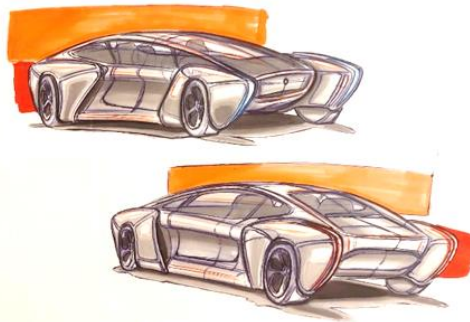


Figure 108 Jaguar GT front and Rear perspective proposals (Burton, 2022)



Figure 110 1:10 Scale Foam Sketch Model proposal of Jaguar GT (Burton, 2022)

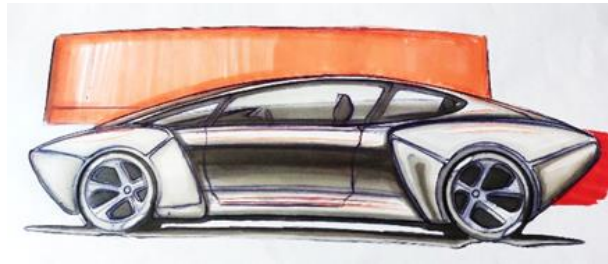


Figure 106 Original Initial Jaguar GT Marker Render (Burton, 2022).

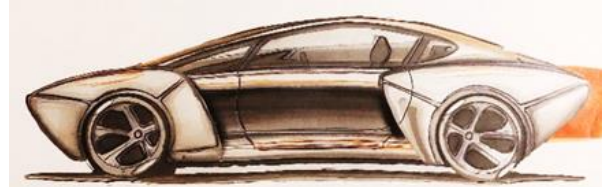


Figure 107 Photoshopped 2-Seater sports car layout version (Burton, 2022).



Figure 109 Audi skysphere Concept (Audi AG, 2021)

The proposal was changed and as the focus was to turn this design proposal to a design icon and how this can be a strong proposal for Jaguar's image that would be able to stand on its own merit of a desirable vehicle that evokes memories of the Jaguar E-Type for the current Era.

From reflecting from the current sketches and foam model, the influences from the book of *“Beautiful machines the era of the elegant sports car”* (Rong, Klanten, and Baedeker, 2019) which helped understand elegant design automotive icons and how this can influence an iconic design.

The foam model demonstrated the function and modular layout of the original design proposal (Figure 128); however, the rough mock-up was a bit blocky which lacked the design appeal which needed to be addressed with the new concept.

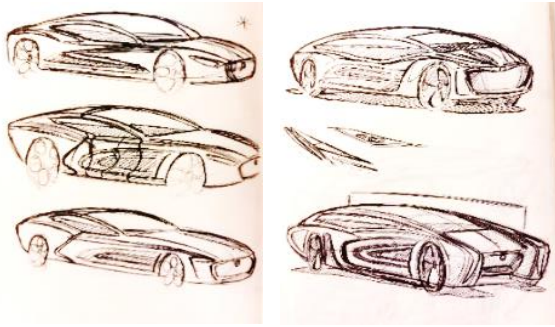


Figure 113 First Initial Sketches in a Notebook (Burton, 2022).

Using the outline of the initial sketches (Figure 129), the use of a power train helped concretize a practical design (Figure 130); this was implemented with the use of the Inspiration of Figs 131 – 135 for a strong design proposal.

One of the following re-design proposals was figure 117, however, it was lacking in sex appeal and needed to be more elegant using the details of the DLO and the side skirt design as they appeared to lack cohesion with the rest of the design style.



Figure 114 3D-Printed scan of Foam Model (Burton, 2022)



Figure 115 Tape Drawing of the Second revised design proposal (Burton, 2022)

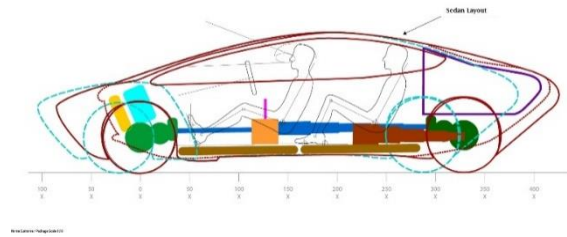


Figure 112 Original Jaguar GT EV Powertrain and Modular Layout (Burton, 2022).

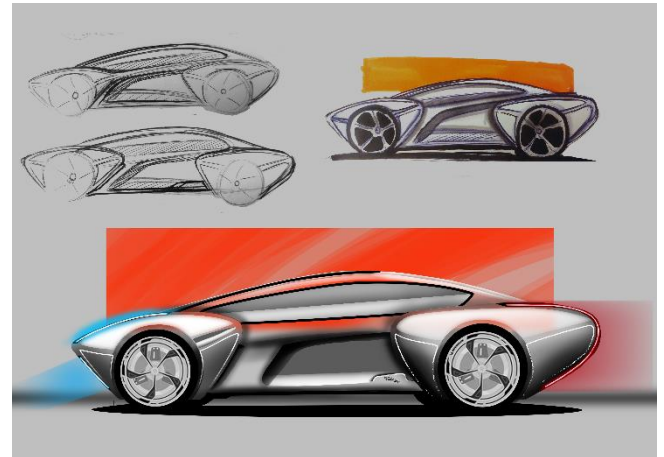


Figure 111 Design Modifications using Inspiration (Burton, 2022)

Considered for the redesign was a 3D Printed model for wind tunnel testing that was a scan of the Foam to a suitable size wind tunnel as the specifications were 200mm x 180mm x 180mm for wind tunnel testing (Figure 136). Unfortunately, this did not go ahead as the quality of the 3D print had imperfections in the quality of the print, which would impact the data readouts of the airflow making it not accurate.

The development of the redesign was to make the car less boxy and sleeker in appearance which went for a 3-curve design, one for the greenhouse and 2 for the wheel pods (Figure 137).

However, whilst developing the Tape Drawing, the design needed to be changed again as Thomas Henwood stated the design came across as static as the DLO and the Wheel pods were not tilted at an angle.



Figure 116 3rd Final Concluded Proposal (Burton, 2022)

This was revised with (Figure 138) for a dynamic appearance which was best reflected, was taken further into photoshop (Figure 139); however, the time to redesign the side render was consumingly long which was supported by two more less time-consuming renders of the front and rear-view perspectives such as Figure 140. The focus was on developing the blueprint and the Clay Model sections Diagram ready for the print room (Figure 141) as the model was the focus of the project as there was a 6-week time frame to prepare a well-defined clay model representation of the Jaguar GT intime for the Syzygy degree show.

Once the groundwork was in place, the Clay model took shape, however, it was a long process as it involved continuous revisiting and view from different angles and taking a step away from the model, with looking it with a fresh pair of eyes to notice any imperfections or lack of symmetry.



Figure 117 High-End Photoshop Render of the Final Proposal (Burton, 2022)



Figure 118 Quick render Proposal Front 3/4 perspective (Burton, 2022)

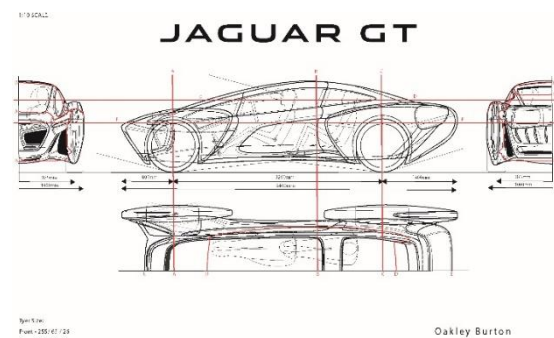


Figure 119 Clay Model Section Line Diagram (Burton, 2022)

Clay room timetable – Oakley Burton

Month	Day	Date	Task
Nov	Thurs	17	9am – 5pm Clay Room
	Fri	18	9am – 1pm Clay Room pm VR Demo
	Sat	19	
	Sun	20	
	Mon	21	9am – 5pm Clay Room
	Tues	22	9am – 5pm Clay Room
	Wed	23	9am – 5pm Clay Room
	Thurs	24	am Symposium tbc pm Clay Room
	Fri	25	am Symposium tbc pm Clay Room (till 4:00)
	Sat	26	
	Sun	27	
	Mon	28	9am – 5pm Clay Room
	Tues	29	9am – 5pm Clay Room
Dec	Wed	30	Christmas Trip
	Thurs	01	9am – 5pm Clay Room
	Fri	02	9am – 5pm Clay Room
	Sat	03	
	Sun	04	
	Mon	05	9am – 5pm Clay Room
	Tues	06	9am – 5pm Clay Room
	Wed	07	9am – 5pm Clay Room
	Thurs	08	9am – 5pm Clay Room
	Fri	09	9am – 5pm Clay Room
	Sat	10	
	Sun	11	
	Mon	12	9am – 1pm Clay Room Pm preparation for Show
	Tues	13	9am – 1pm Clay Room Pm preparation for Show
	Wed	14	9am – 1pm Clay Room Pm preparation for Show
	Thurs	15	9am – 1pm Clay Room pm Move model to Alex
	Fri	16	Main Unveiling
	Sat	18	
	Sun	19	
	Mon	20	
	Tues	21	
	Wed	22	
	Thurs	23	
	Fri	24	
	Sat	25	
	Sun	26	

Figure 120 Clay Room Timescale of the Show Deadline (Burton, Rees, 2022)

Before making a start on the Clay Model, Ian requested that a timetable was needed for his boss Adrien Dix which came in use when referring to the time scale of model progress which was very useful (Figure 142).

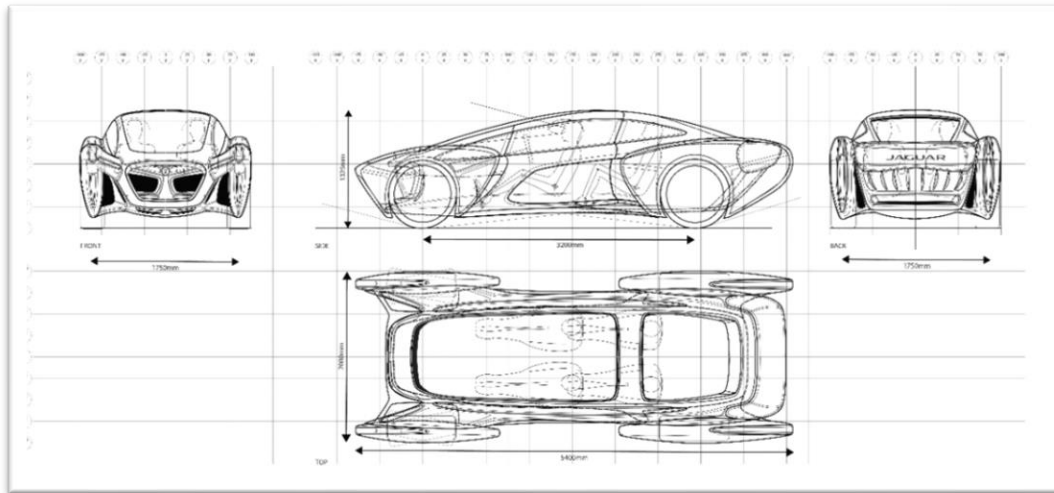


Figure 121 Full-scale Blueprint Dimensions (Burton, 2022)

Before working on the clay model, a blue print was worked on with Ian Matthews as a reference guide of how the model would appear in orthographic views, as a reference before making the model (Figure 143).

A mock up model with the key stages of applying the clay to the body buck structure; using an outline structure using the templates for the structure density as a guide of much clay needs to be filled in to be flush with the vehicles guides (Figure 144).

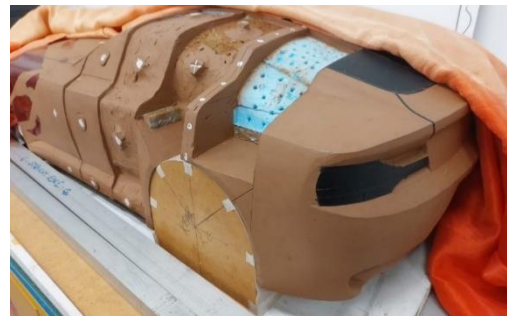


Figure 122 Demonstration Clay model of the initial stages to build the model (Burton, 2022)

Before Building onto the outline structure, white ink is marked onto the clay structure guide , for when the clay is filled in and build over the reference structure (Figure 145), that the use of a clay chamfer and a custom-built roof line scraper. This to take off as much clay as is needed until the white marks are revealed through the clay which is a sign that the excess clay has been taken off.



Figure 123 Outlining the clay structure of how much clay is needed (Burton, 2022)

Once the clay has reached the stage of the clay being added, the use of slicks smoothed the surfaces of the main volume of the body of the Jaguar (Figure 146), the to prepare it to a professional standard representation of a block volume that would demonstrate the core principle of the design intention.

This use of simple defined surfaces would use all over the vehicle as a simple defined block volume of the Jaguar GT to communicate and visualise the design proposal of what can be produced.



Figure 124 Sculpting the top DLO (Burton, 2022)

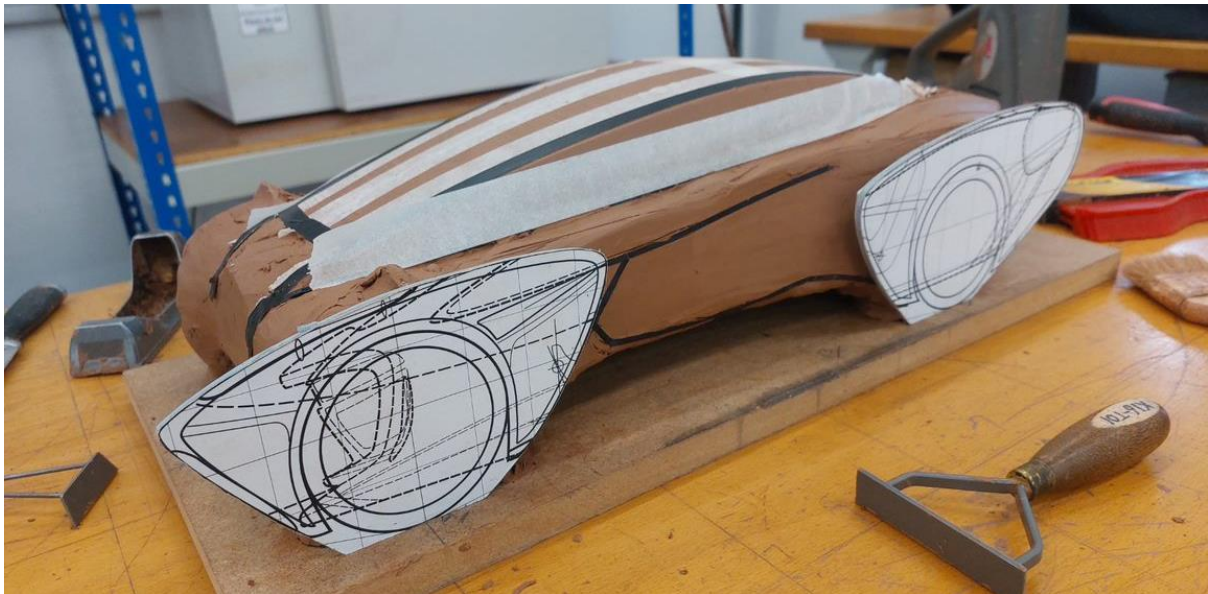


Figure 125 Adding plastic wheel pod guide templates to defined body (Burton, 2022)



Working towards the goal of a block volume, Ian worked on smoothening the Green House with the use of masking tape as a protective layer to prevent damage when using the slick and scrapers as this was a long and gradual process (Figure 148).



When this was completed, the use of black tape and plastic templates were created as a guid to give a visual idea of how the model would appear as a solid volume.

Before creating the wheel pods/fenders where created, use of a modifiable template guide to mirror one side to the other as a reference guide on how much clay to remove and apply to give a symmetrical appearance to the eye (top photo - Figure 147).



This technique was used almost all over the vehicle to make this process easy to define the main body as Ian knew that once the fenders where on; that being able to make changes or amendments to the main body would be very difficult to work around and it would be wise to leave the fenders last (middle photo - Figure 147).

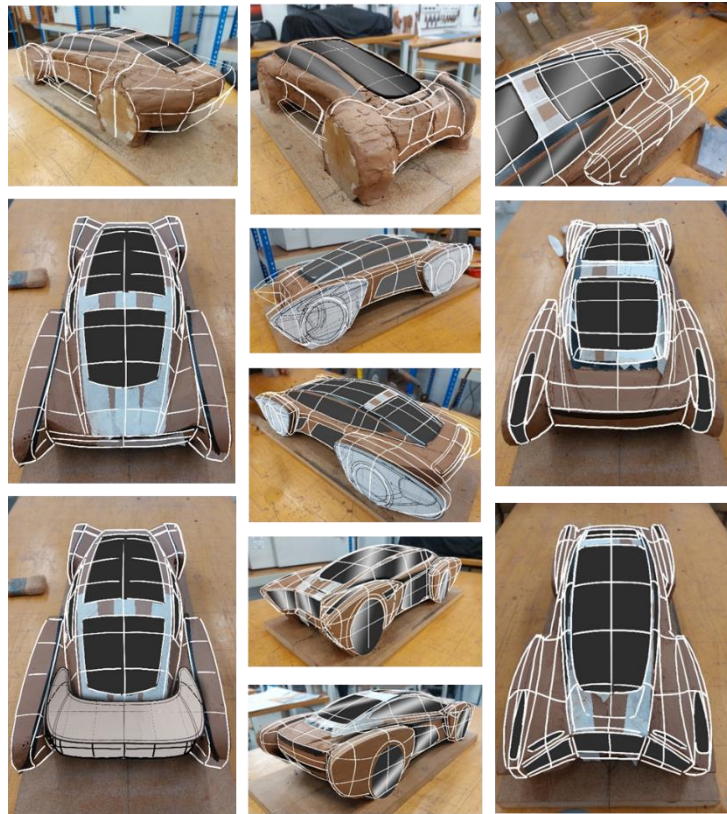
Once the main volume was completed, the wheel templates were attached with a drawing pin and the clay was filled in with clay, however Ian needed visuals to help understand the design intended for the model (bottom photo - Figure 147).

Figure 126 Defining the sides and body volume before defining the wheel pods (Burton, 2022)

Figure 127 Finishing the details with tape for the top windows and details (Burton, 2022)

Thomas Henwood's recommendation of Sketch overlays were helpful to provide Ian the necessary visuals for the Jaguar and help it take shape from the initial stages of working on the model.

This was an ongoing process from a clay blob to a well-defined form that resembles the Jaguar GT that was ready to present at the Syzygy Degree Show; this was a very helpful guid to stick with and communicate with Ian what was needed.



However, the worry of the project was that if the model should crack, or not be at a suitable stage to present at the show and the constant pressure of the deadline looming caused moments of anxiousness due to the limited knowledge of working with the wax clay on a symmetrical clay model.

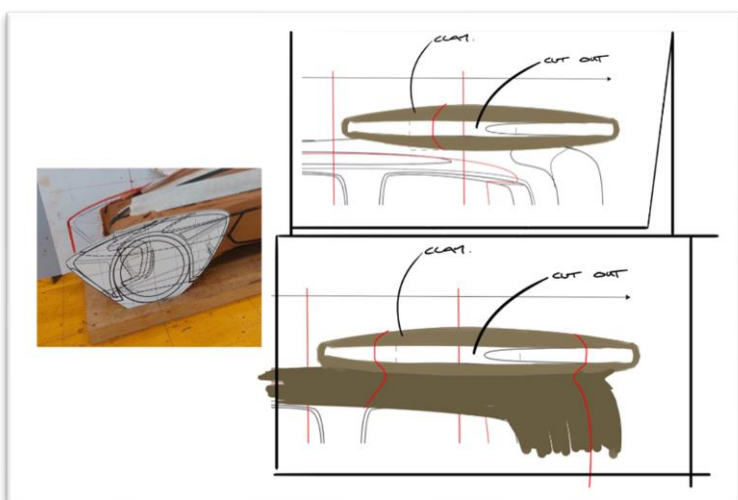


Figure 128 Advice for blocking out the Wheel Pod-fenders (Henwood,

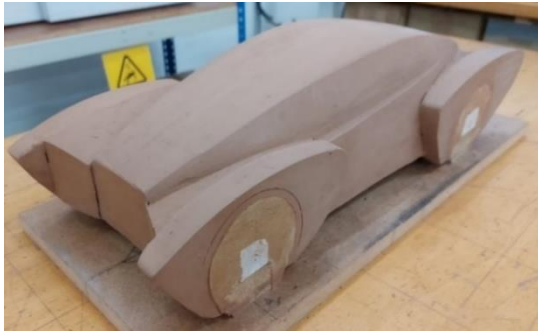


Figure 129 Finished Model at a well-defined stage (Burton, 2022)

Once the model was well defined, the use of masking tape on the model was used to define the size of the surfaces needed to create the decals for the model that would give life to the model as strong impression of the Jaguar GT.

The Decals were created in Photoshop and cut out to the size required to be placed on the model; as the transfers were cut out, the use of tape for the door seals helped mark out where to place the side DLOs. This then led to the model being moved into the spray booth to spray adhesive spray onto the decals to apply to the model.

As this was added, from the experience of using back paint onto the foam model; the idea from Ian, of using tape for the top surface DLO representation was applied as a less risky application.

A plastic spoiler was explored however this was rejected as it did not suit the model's well defined rear body; the spoiler was recreated in tape as an easier outline.

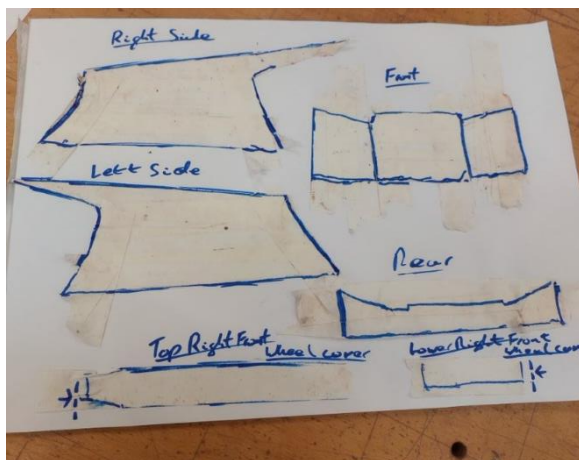


Figure 130 Masking tape outline for decals and applying details of tape and spoiler to my model (Burton, 2022)



Figure 131 Finishing the details with tape for the top windows and details (Burton, 2022)

For finishing off the model, the original boot line was more aesthetically pleasing than the revised spoiler design as it appeared to be too fussy, however, with the need to wrap up the model as it was being presented in 3 Days, it was left unchanged.

The Model felt worthy to present with the quality of a satisfactory level to present at the degree show along with the presentation boards of the Jaguar GT to show case the design proposal and conclude the project within the time frame given.

Story Board:

Features:

- Self-driving mode (Auto)
- Driver Assisted (GT+)
- A family companion
- Long-distance Car
- A honourable host
- 4X4 mode (All-wheel traction)
- Driver mode (GT)
- Race mode
- Battery change and car servicing at Jaguar bases.
- Family Entertainment (Graphene LDC TV screen)
- Provides an itinerary for travel



Figure 132 Storyboard Illustrating the features of the Jaguar GT (Burton, 2022)

Utilizing the a triangular 2 seater design that can morph into a 2+2 seating conferment allowed for experimentation of how to take these AV capsules long distance such as tube trains and a Hyper bus systems that can transport these AV capsules at long distances at such a speed that would seem too long for these small Capsule AVs to travel with the use of their battery capacity (Figure 155).

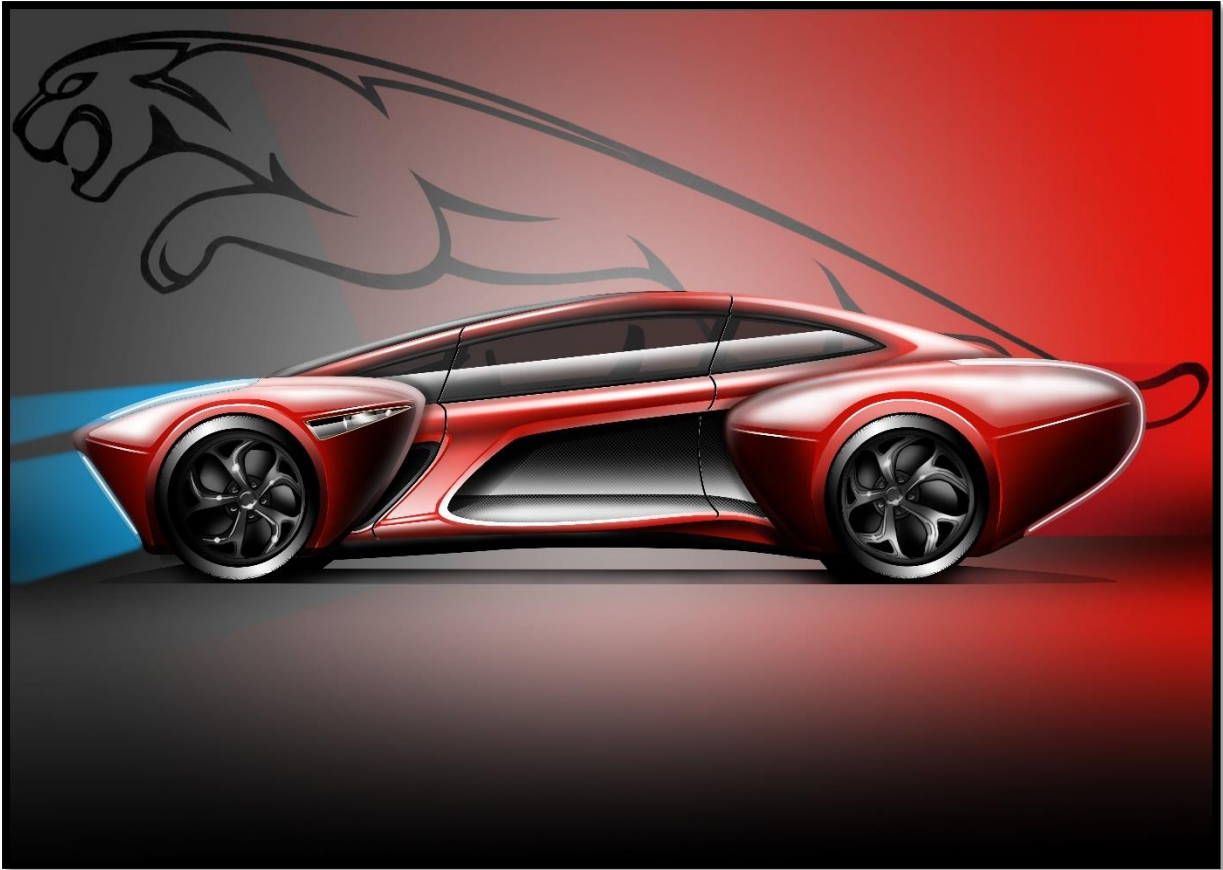


Figure 134 High-End Side View Proposal of the Jaguar GT (Burton, 2022)

With having completed the show, viewers gravitated to a large print, as seen in figure 163 and were surrounded by the design boards showcasing the design intention and how the design was concluded (Figure 162); this showcasing a strong concept for the Jaguar GT project and the intended purpose of such an opulent vehicle can be marketed.



Figure 133 Jaguar GT Visuals Display Booth at the Syzygy Show (Burton, 2022)

This work produced summarises and adds depth to the clay model (Figure 164) which gives it a certain aura for a specialised vehicle that needs the attention, which felt well reflected from viewers of viewing something spectacular.

The success of the model best justified the project, despite it being located separately from the work (Figure 162).

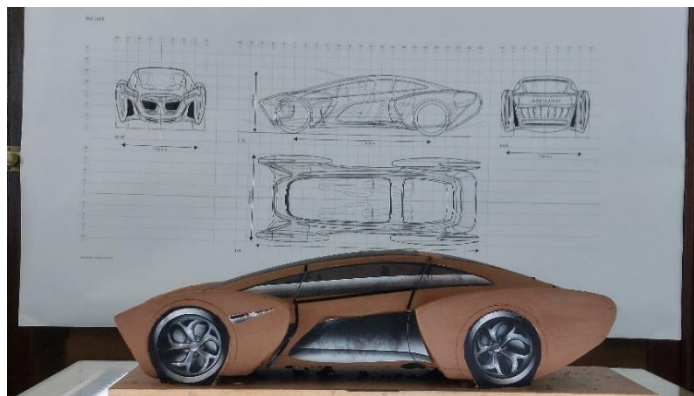


Figure 135 Clay Model with 1:10 Blueprint (Burton, 2022)

OAKLEY BURTON

Creative Automotive & Transportation Designer



Presents the...

JAGUAR GT

When Style Meets Performance



Figure 136 Front design of A5 Syzygy Leaflet (Burton, 2022)

OAKLEY BURTON

(MA Transportation Design)

The ever-growing market of Sports Utility Vehicles (SUVs) & Cross-Over Vehicles can be viewed as easy money for companies. This idea was to develop a daring, sporty, fun-to-drive vehicle within its own unique market demographic known as the "Family Super Car". Jaguar leans towards elegant, performance-based, practical, luxurious vehicles with a focus on electrification.

Jaguar's racing heritage and company values are the basis for the "Jaguar GT" project; (GT means "Gran Turismo") complementing the harmonious balance of a thoroughbred race car with luxurious, long-distance appeal supported by vehicle autonomy plus a combination of these attributes to create an opulent performance vehicle.



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Figure 137 Back design of A5 Syzygy Leaflet (Burton, 2022)

16. Glossary

2+2 Seating arrangement – 2 passenger seats behind the 2 front row seats

Alias Model – a 3D modelling software that uses surfaces to create models, in particular cars

Autonomous Vehicles – Self-Driving Vehicles

Autonomous Vehicles/Cars – Self-driving vehicles/cars

AVs - Autonomous Vehicles

Body Buck – An automotive design term of a model car's skeleton used to shape the body structure.

BSMC Show – Bike Shed Moto Co. Show

Clay Model Buck – Is the support structure needed to apply the Wax Clay on when making the Clay model.

Construction Lines – lines used to depict the overall volume of the sketched object to elude a 3D form.

Cross-Overs - an automotive vehicle that is like an SUV but built on a car chassis and is not used for Off-Roading purposes.

CUV – Cross Over (Welch, J.)

Decals/Transfers – a graphic representation that is stuck onto a surface of an object or model.

DLO – the window glass design of the vehicle

EV – Electric Vehicle

F1 – Formula One, considered the most popular motorsport on TV

FE – Formula E is, unique motorsport that started in 2015 and is growing into a popular sport.

Free Form Sketching – Creative sketches that have little to no resemblance to any object

Green House – The cars roof structure

I.C.E. Cars – Internal Combustion Engine Cars

JLR – Jaguar Land Rover

LIDAR - An Acronym for Light Detection and Ranging

OYCT Course – One Year Car Design Tools Course

RCA – Royal College of Art

Roof Line – the outline of a car’s roof

Sketch Overlay Process - A way to develop and communicate the intended appearance of the intended design using construction lines that are used on top of photographs of the clay model.

SPD – Scuola Polytechnic di Design, a specialised university in Milan

SUVs – Sports Utility Vehicles

Syzygy Degree Show – the Degree show deadline of UWTSD organised for 16th December 2022.

V&A – Victoria and Albert Museum

VR – Virtual Reality

V-RED – Digital 3D rendering software: to place 3D models in a real-life setting to make them look realistic.

Convertible/s’ - A vehicle that has a roof that can fold down or away which is desired for drivers who want a roofless car for summer journeys.

Swan Wing Doors – A description of unique car door opening style that opens the car door in an upward angular motion evoking a swan’s wing.

Tape Drawing – An Illustration of using White, 50% Grey and Black to illustrate the reflections and contrast of the Final Design.