JUMP POINT

ISSUE: 07 05

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FROM THE COCKPIT

GREETINGS, CITIZENS!

The jump point has opened, something's coming through... and it looks like a whole fleet of ships! Specifically, we're taking a closer look at four different vehicles this month.

First in the launch tube is a new look at a couple of designs we've examined in the past which are, as we speak, receiving important updates. I'm talking about the famed Aegis ~~Bulldog~~... Vanguard deep space fighter and the snubs intended for different variants of the iconic RSI Constellation, the Merlin and the Archimedes. As *Star Citizen* progresses, it's important to go back to earlier designs and work in not just fan feedback but also the countless changes and improvements to the game and its mechanics made since they were launched. In this interview with some of the team responsible for these particular ships, you'll find out why we do it, how we do it, and what's coming soon. The Vanguard remains my favorite combat ship in the game to date and I was as eager as anyone to find out what's in store for its future.

Next, we're turning the ship around to take a look at the very latest ground vehicle, the Ranger bike from Tumbril. To be completely honest, I went into this one assuming it was going to be an easy story to tell. After all, what's a little one-man bike to the ship concept guys who have already built massive space carriers, deadly frigates, and infinitely complex colony ships? Well, it turns out a crazy amount of work went into making sure the Ranger bike was more than just, well, a bike. I learned that sometimes it's a lot easier to make something complex and familiar where you can get lost in the details than it is to make something small that has to use every inch of its design to tell a particular story. It's a true case of less is more! Read on to learn about the many paths the team went down to make sure they were creating a bike worthy and representative of both Tumbril and *Star Citizen*. Jumping 900-odd years ahead, our lore features look at the Tohil Regatta and Anvil Valkyrie. I don't want to spoil the Regatta, which is as much a gripping story as it is background on our universe, so I'll remind you that the Valkyrie was the Anvil landing craft that premiered last year at CitizenCon 2948. With the ability to carry a full complement of armored troops and a vehicle, it's going to be a major player in *Star Citizen*'s evolving ground combat scene!

Targets inbound. Here... we... go!

Ben

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REVISITING THE CLASSICS

As *Star Citizen's* development continues, the game's engineers and artists continue to improve the technology behind the game. Similarly, the overall universe becomes more complex with each new game mechanic completed. This means that ships released earlier often must be updated to adapt to the changing game. This is a normal part of any development cycle but one that's rarely seen by the public. *Star Citizen* Alpha 3.6 is scheduled to update several classic ships including the Vanguard deep space fighter and the Merlin parasite ship.

The Aegis Dynamics Vanguard is *Star Citizen*'s very first "deep space fighter," a term that refers to larger, more durable combat ships that trade some speed and maneuverability for longer range and more equipment. The Vanguard has had several variants developed and is now receiving an update to bring the design up the current *Star Citizen* standard. We spoke to the development team to learn more about what's in store...

BEGIN TRANSMISSION →

Jump Point (JP): *Hello! Please start by introducing yourself and letting us know what you work on.*

Joe Neville: Hey, I'm Joe and I'm the principal vehicle artist on *Star Citizen*. I've worked on most of the ships out of the UK studio, but I was responsible for building the Eclipse, Razor, and Dragonfly from start to finish and had my hands on the Gladius, Idris, Starfarer, and Freelancer. Most recently, I've worked on the Valkyrie and Vanguard.

Richard Towler: I'm Richard, the senior systems designer responsible for the design of ships and setup of flight balance in *Star Citizen*.

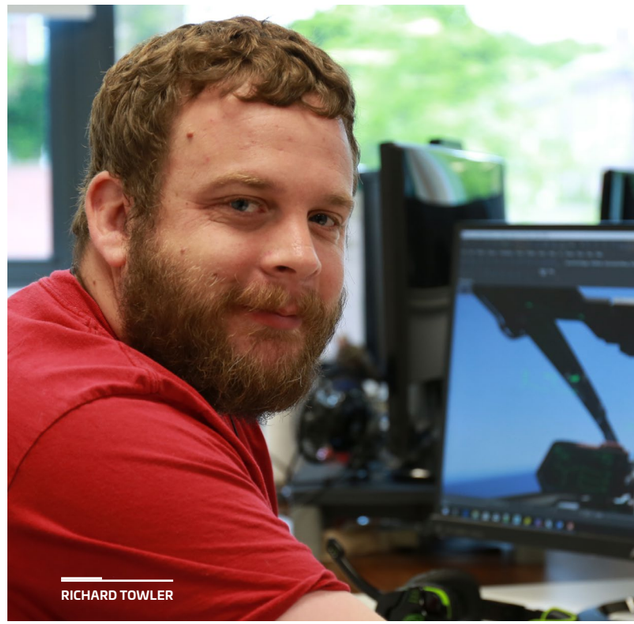
JP: *What do you see as the Vanguard's role in* Star Citizen's *ship roster? Where does it fall compared to fighters like the Hornet and larger multi-crew ships like the Constellation?*

RT: The Vanguard comes in heavier than the Hornet and is much more agile than the Constellation. It's designed to take you and your crew into battle and, while it may not be the most maneuverable ship in the universe, it packs a punch with heavy weaponry and armor.

JP: *What was the impetus for giving the Vanguard an update pass?*

JN: The Vanguard was due for a component pass (integrating the new ship items into the interior) but we realized that as the art standards improved, it had been left behind. Hopefully, this new facelift will give the fans the ship they were always after. I was responsible for the cockpit remake back in 2016, so the interior was a continuation of the quality pushed there. Previously, the Hoplite and Warden were two separate hulls. The rear ramp was wider on the Hoplite so we were maintaining two exteriors; all work done to one ship had to be re-done on the other, it

JOE NEVILLE



RICHARD TOWLER

was a huge time waste. So, now there is only one exterior, which will be modified for each variant and be a lot easier to maintain.

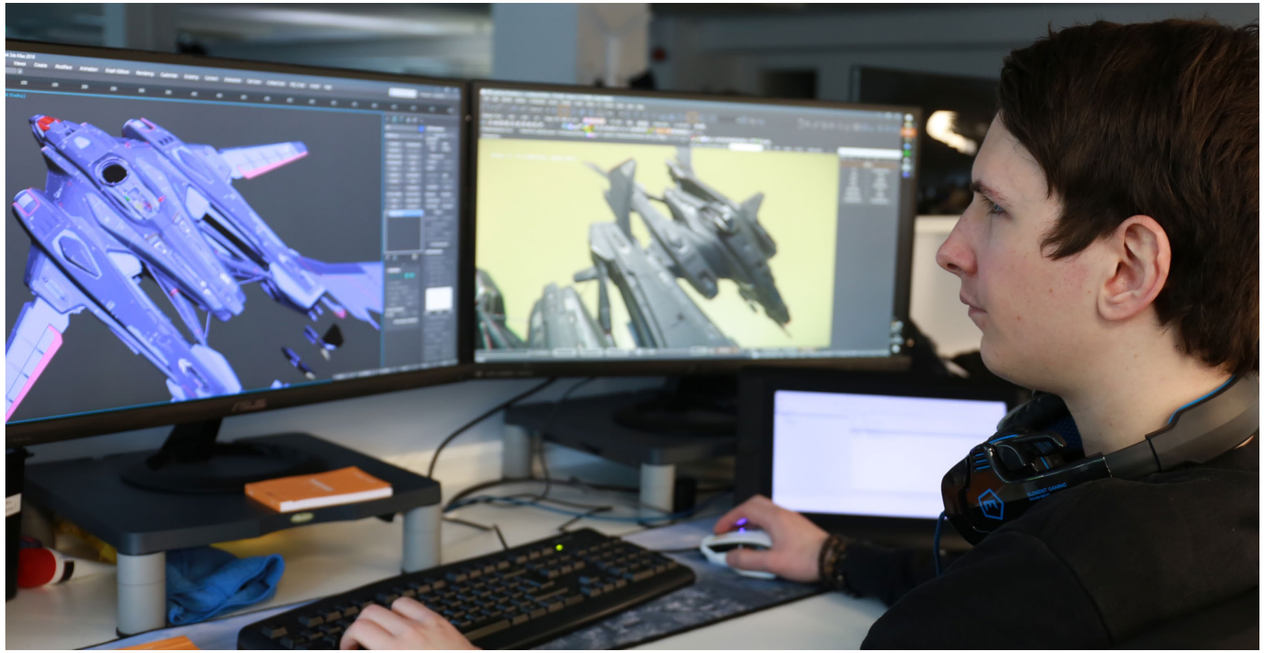
JP: *The Vanguard went live in* Star Citizen *Alpha 2.1 and a lot of mechanics have changed since then! Has any of that had a major impact on the Vanguard?*

RT: We had to design the ship for a few metrics that have been refined over time, but other than that it's mostly about acting on the lessons learned over the last years since the original concept.

JP: *Along the same lines, what has changed on the art side since 2016? Will the new Vanguard benefit from new processes or materials?*

JN: The interior was gutted and rebuilt from the ground up to properly integrate components, widen the habitation pod, better utilize space, and allow players to walk around the turret when it's inside the ship (so no more traffic jams). Parts of the exterior were stripped and rebuilt and some of the key features from the concept were reintroduced, like glowing intakes, tank treads, and rear struts. Textures will be unified with the Retaliator to keep the disparity amongst manufacturers to a minimum. No new processes were used in this rebuild as it was really just a case of taking time to polish the asset.

JP: *What is the creative process behind updating a ship? What disciplines do you work with?*



JN: The creative process generally involves getting every discipline into a room to discuss what was previously liked and disliked by the fans, what we thought did and didn't work from a design and art standpoint, and what we can do to improve it. Obviously, time is a factor in production art, so finding the most efficient ways to tackle problems is a must.

RT: Once art is complete, the ship heads to system design, where we start making the ship function as a working machine, from setting up the interaction points and cockpit to the flight balance. During this, we go back and forth with all the other departments refining the ship and solving any problems we encounter.

JP: *Are the Vanguard variants being updated at the same time? Will there be any unique changes?*

JN: The Warden and Hoplite are scheduled for Alpha 3.6, but the other two are also in the pipeline. Keep an eye out!

RT: Each variant has a specific purpose with a unique module. The Warden's interior has features that improve a player's quality of life, while the Hoplite forgets all those things and comes with the ability to carry as many passengers and weapons as possible.

JP: *Will there be significant changes to the Vanguard's appearance? If so, what kind?*

JN: There are significant changes to the interior, but the exterior is just being pushed more in line with the concept. The silhouette hasn't changed too much, but it's much more refined and polished.

JP: *There has been a lot of feedback about the Vanguard from the community since the concept launched in 2015. Do you track any of that for an update like this?*

JN: I definitely track the art feedback, particularly on Reddit. I've read most of the complaints and have tried to tackle everything I've seen, although some things are impossible to change without creating artistic disparities amongst the manufacturers or making things too unbelievable. Some things would also take too long to fix and would require a ground-up rebuild, which we haven't got time for. It's a balance between making new ships or focusing on one rework. And while I think the fans get the most from new content, we definitely try to ensure the quality of the assets made to date are brought up to the standards we expect.

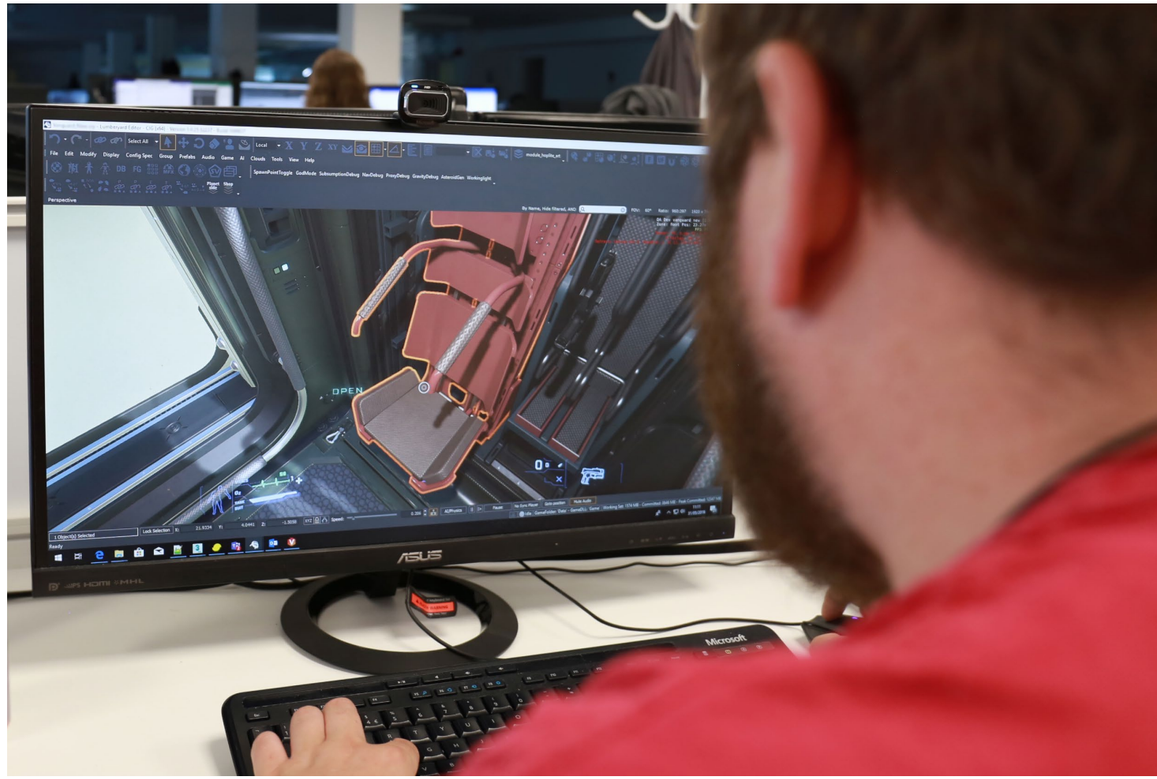
RT: We always listen to the community when it comes to the way we build ships and this plays a role in what areas we focus on when it comes to reworking a ship.

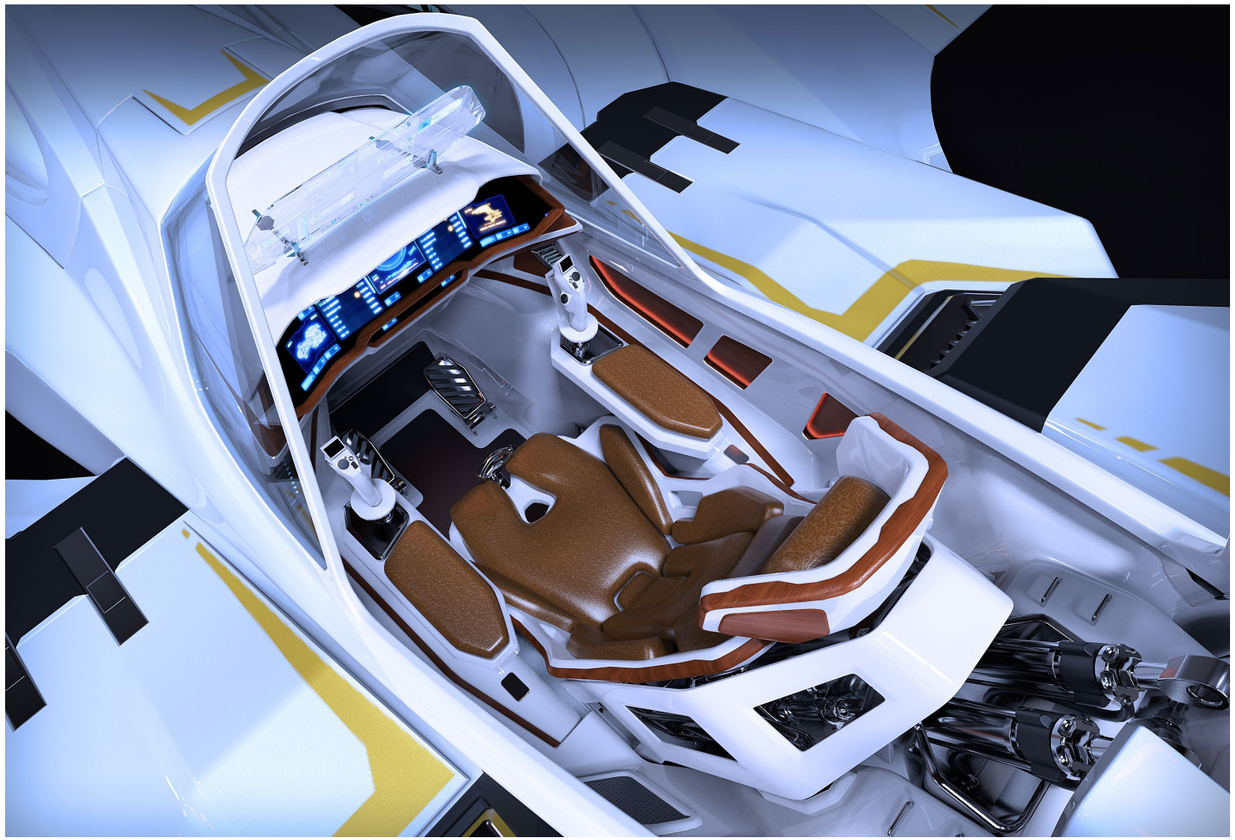
JP: *Do you have any messages for the community, especially all of the Vanguard pilots out there?*

RT: We hope you really enjoy the reworked Vanguard. It's one of my favorite ships and has only got better with this rework.

JN: I hope this is delivering a Vanguard that will have a wider appeal and has fixed some of the problems you've had with it. I know it's been a point of contention, so hopefully you'll see it for the ship it was advertised as. I've had a lot of fun with it and I hope you do too.

END TRANSMISSION ←





THE SNUB FIGHTERS

The Kruger Merlin and Archimedes are colloquially referred to as "snub fighters," as they're small parasite craft designed to be carried aboard a mothership. The Merlin was introduced during *Star Citizen*'s original campaign as a special addition for the Constellation concept. From the start, the Constellation was intended to be able to deploy and then recover a small escort fighter that could help it out during firefights. To learn more about the update, we spoke to the team working on updating both ships.

BEGIN TRANSMISSION →

JP: *Please start by introducing yourself!*

Mark Hong: I'm Mark Hong, producer for the US-based Vehicle Features Team, vehicle pipeline, & social gameplay. I've also produced for characters, global technical content, IT, DevOps, global engineering, and outsourcing.

Daniel Kamentsky: I'm Daniel Kamentsky. I'm a 3D vehicle artist working on the Merlin, Archimedes, and other LA-based ships.

Michael Sizemore: Hey everyone, my name is Michael Sizemore. I'm fairly new to Cloud Imperium and have been here for a little over half a year. Previously, I was a freelance game designer and Concierge backer. Since I've been here, I've been responsible for both the Merlin and Archimedes as well as the Origin 300 series rework.

JP: *What is being updated on the Merlin and Archimedes?*

MS: For the Merlin, we really wanted to keep the ship true to what it was while updating the art to current *Star Citizen* standards. As such, the characteristics and nature of the ship haven't changed. On the other hand, the Archimedes is a whole different beast in that, while it shares many art aspects with the Merlin, it truly is its own ship with a very specific flight profile, intention, and capabilities.

DK: On my end, the shaders on the Merlin are getting reworked with the new hard-surface shader. The entire ship has been given a visual update and should now better match the quality of other ships in our game. The variant parts for the Archimedes were also bult, which include a new seat, cockpit tub, wings, nose cover, and main thrusters.

JP: *Do any of the game's new mechanics have an impact on the snub fighters?*

MS: The New Flight Model has had the greatest positive impact on snubs as it's allowed us to truly make these feel like smaller, lighter craft, particularly in atmospheric situations.

JP: *The Archimedes is being updated with a focus on racing. What does that mean on the design side?*

MS: It means looking at the feel, purpose, and intention of the ship in this gameplay section and figuring out where it fits among the other racers. For example, I've pushed many tuning changes to the Archimedes to make it more competitive. Although it's a little ship, it has a similar power to weight ratio to many of the current racers, so it didn't make sense for it to be slower. At the same time, it was very important that it didn't lose its luxury feel. I like to compare it to the more luxurious supercars – it uses higher-quality materials but on track and in the hands of a good driver, it can hold its own.

JP: *The new Merlin looks incredible! What did you do to make such an improvement possible? Tell us about the new materials and processes that made it possible.*

DK: One of the big advances the Graphics Team made that enabled us to give the Merlin the look we wanted was the addition of a clear coat. This second layer of shading gives a specular highlight which helps realize the two-tone look of the paint, carbon fiber, and (on the Archimedes) polished wood.

JP: *What is the creative process behind updating a ship? What disciplines do you work with?*

MS: There is a lot of back and forth, mostly between Design and Art. Conversations happen constantly to keep the theming of the ship on track while honoring the artist's intention. However, not all additions are planned and some things come up on a whim. For example, the Merlin has an LED light strip in the interior that follows the inner cockpit seal. This was a product of Daniel having some art images open and me going by to check in, spotting something that looked like lighting along the dash and simply saying "that would look cool if we could do it." Lo and behold, we now have an LED strip inside.

DK: It's a lighter workload than starting a whole new ship but it comes with its own challenges. One thing we try to do is remain faithful to the original ship concept while improving the appearance, which constrains what we can and can't do to meet the quality level expected from our ships.

JP: *Is any special work being done to preapre for the docking mechanic that will allow these fighters to be carried aboard ships like the Constellation?*

MS: One of the biggest design flags on these two ships was to keep them within their original metrics so that they can still fit into the docking area of the Constellation. With that said, work is still being done to ship docking in general, which includes allowing the Merlin and Archimedes to finally be able to dock with their Connies.

JP: *Do you refer to community feedback at all on an update like this?*

MS: I often browse Spectrum to gauge player feedback and read suggestions on ships that I'm working on. Admittedly, some of this also comes instinctively from originally being a backer for many years now!

JP: *What is the feedback process like for updating the snub fighters? Do you present these changes to a larger team?*

MH: There isn't a formal feedback process like when we're designing a new ship. We don't present changes to the wider team for feedback as updates are directed to us from director level.

JP: *Is there anyone else we should credit for this update?*

MH: Definitely the Tech Art Team!

JP: *Do you have any messages for the community that will be enjoying these updated snubs?*

MS: It's been great having the chance to revisit the Merlin and design the Archimedes. I really hope the players enjoy the ships and I can't wait to see Archimedes pilots out there figuring out its performance and slugging it out in races with the bigger-brand racing ships.

DK: I hope you enjoy the new look and feel of these ships and I, as well as the rest of the LA Ship Art Team, appreciate your contributions and support.

END TRANSMISSION ←

WORK IN PROGRESS... TUMBRIL RANGER

TUMBRIL

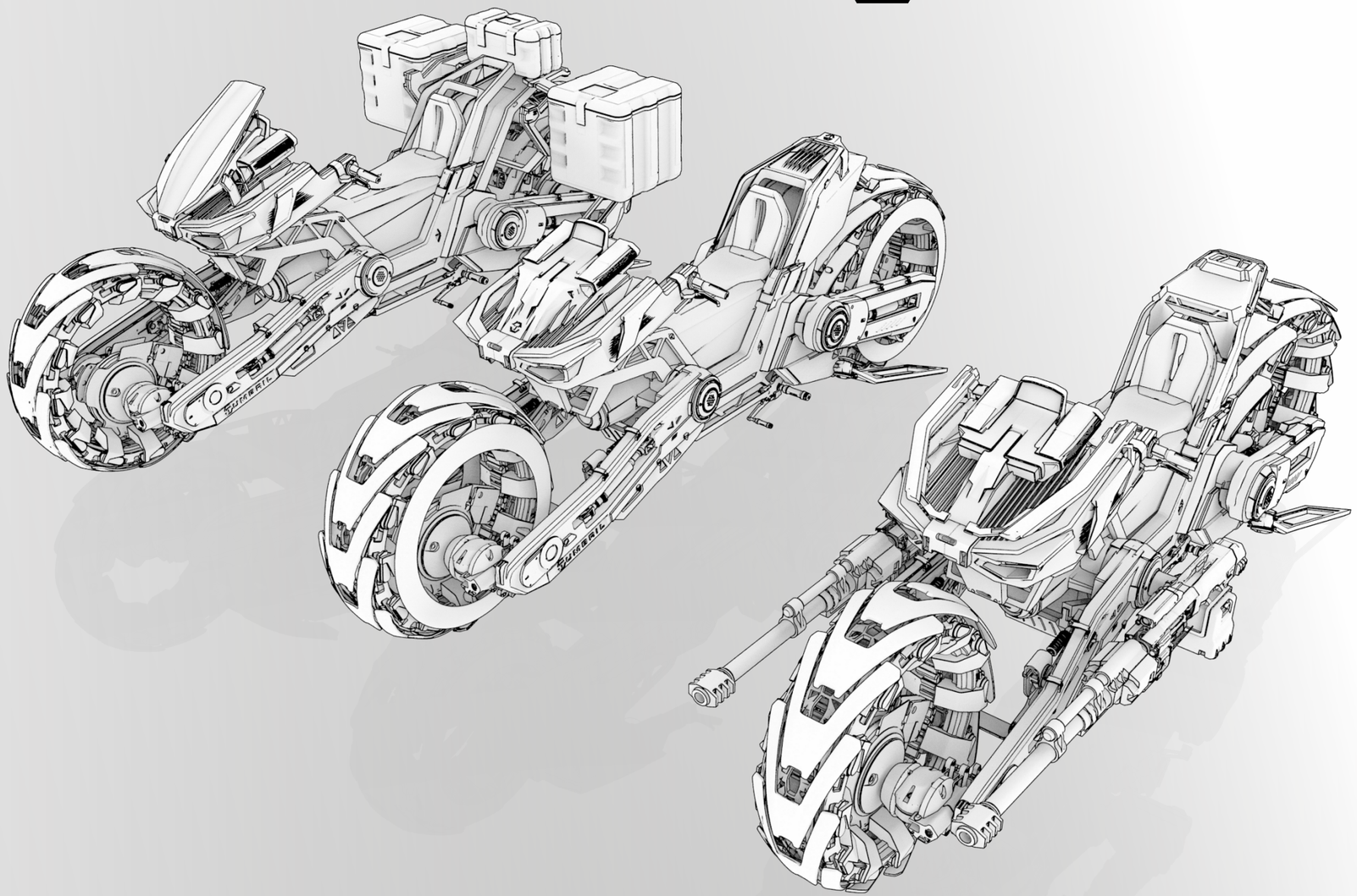
AIMS

- Two-wheeled personal transport vehicle with three versions to choose from.

AESTHETIC

- A "Judge Dredd-style" bike that is slightly bigger than a motorcycle. A no frills, inexpensive ground vehicle with a long front nose where variants can be swapped.

Length	3.75m
Width	2m
Height	2m
Mass	TBC
Speed	TBC
Max Riders	1
Variants	CV - Cargo (Touring) TR - Tactical Response (Combat) RC - Tuner (Racing)
Armor	Light
Computers	1x S0
Scanner	1x S0
Radar	1x S0
Coolers	1x S0
Power Plant	1x S0
Fuel Tanks	1x S0 2x S0 (CV Only)
Weapons	2x S1 Weapon (TR Only)
Cargo Capacity	3x 0.125 Mission Box (CV Only)



The vehicle depicted herein is undergoing concept and design as of the release of this publication. Specifications and appearance are subject to revision during development.

KEY CONTRIBUTORS :
LEAD DESIGNER: JOHN CREWE
CONCEPT ART: ANDRIAN LUCHIAN
ADDITIONAL CONCEPT: SARAH MCCULLOCH, ALEX AKSTINAS
ART DIRECTOR: PAUL JONES

TAKING IT TO THE STREETS

The wind in your hair, bugs splattering your windshield, nothing but the open road ahead of you, and nothing tying you down. There's no freedom like the open road. What are we rebelling against? What've you got? The motorcycle clichés could go on for a dozen pages, though each one speaks of exactly the kind of fun appropriate to *Star Citizen*'s endless planetary environments. To that end, *Star Citizen*'s designers were charged with adding a *motorcycle*, not a space bike, to the game in 2018.

The difference might seem insignificant, but here it was day and night. Where another space bike would follow existing metrics and utilize already-established mechanics, building an actual motorcycle would be blazing new trails. Following the same process used for destroyers and space freighters, John Crewe and the vehicle team drew up a set of specifications and pitched several variants for what would come to be called the Tumbril Ranger.

Their notes on the design read:

Fits into a small space allowing it to be transported on ships without taking up a lot of cargo space. Three variants:

- COMBAT: Comes with a custom gimbal to hold a custom size-one weapon on the front nose section. Cannot be swapped for a size-two weapon.
- TOURING: Features a small front "basket" or saddlebags for storage (preferably enough for a mission box), and a higher-capacity fuel tank for longer rides.
- TUNER: Streamlines the nose, adds exhausts and boost functionality.

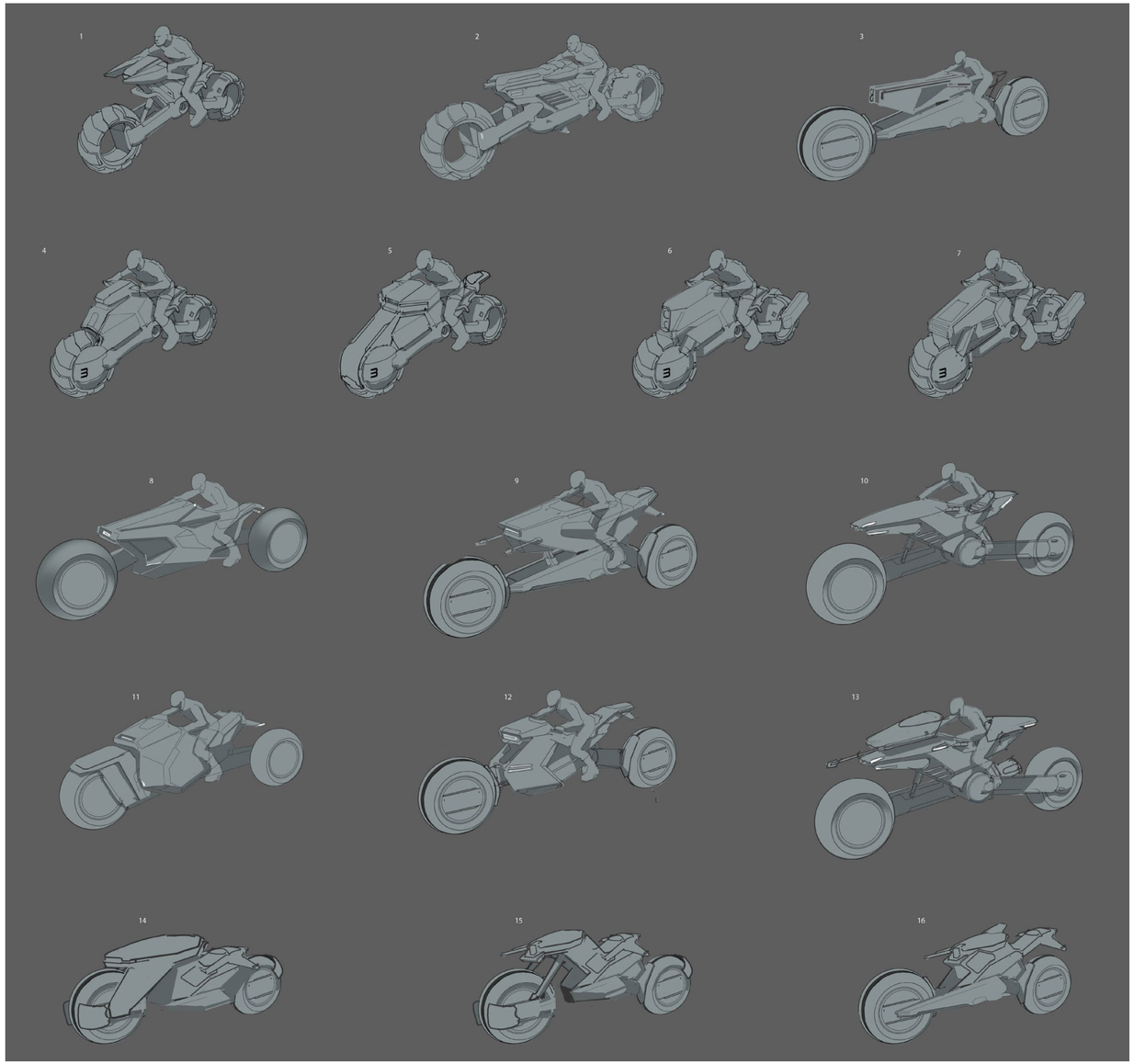
*NOTE: Tech risk - We do not currently support two-wheeled vehicles and this feature work is required.

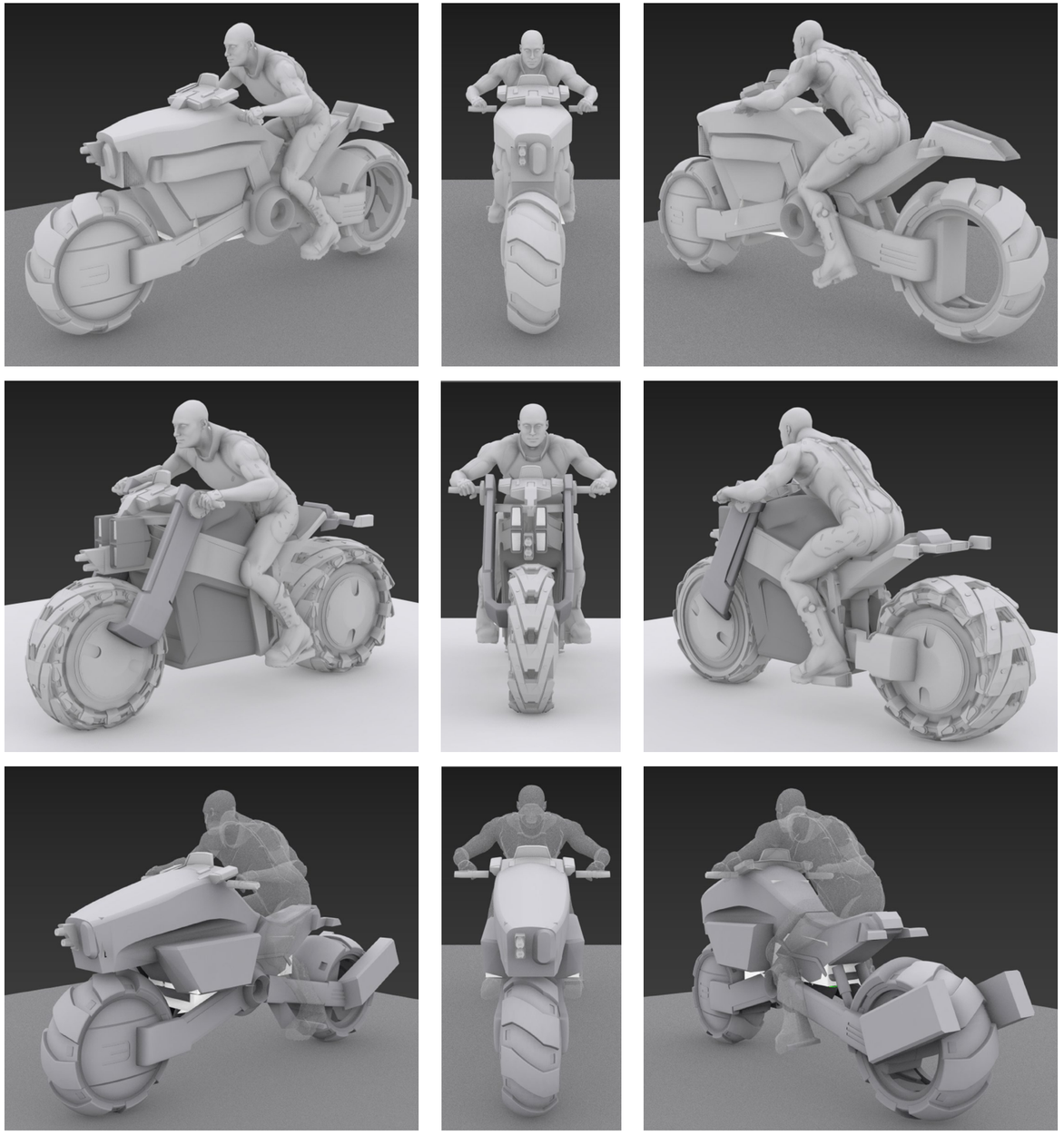
This last note was especially important and why making the Ranger bike would be no ride in the park. While a small two-wheeled vehicle might seem like the simplest thing in the world, it had no precedent in the game world and hadn't even been considered before. *Star Citizen* has mechanics for hovering space bikes and a huge variety of spaceships. The Greycat buggy introduced four-wheeled vehicles and further developments with Tumbril had greatly expanded that technology. The Tumbril Nova even guided development of tracked vehicles. But, there were no two-wheeled vehicles yet riding around the 'verse. It will come as no surprise to anyone who has ever sat atop one that operating a motorcycle safely requires a greater understanding of physics than a completely stable, four-on-the-floor car. Making a motorcycle work correctly in *Star Citizen*'s engine would take a similar amount of extra work and wouldn't be taken lightly,

ZEN AND THE ART OF MOTORCYCLE MAKING-NESS

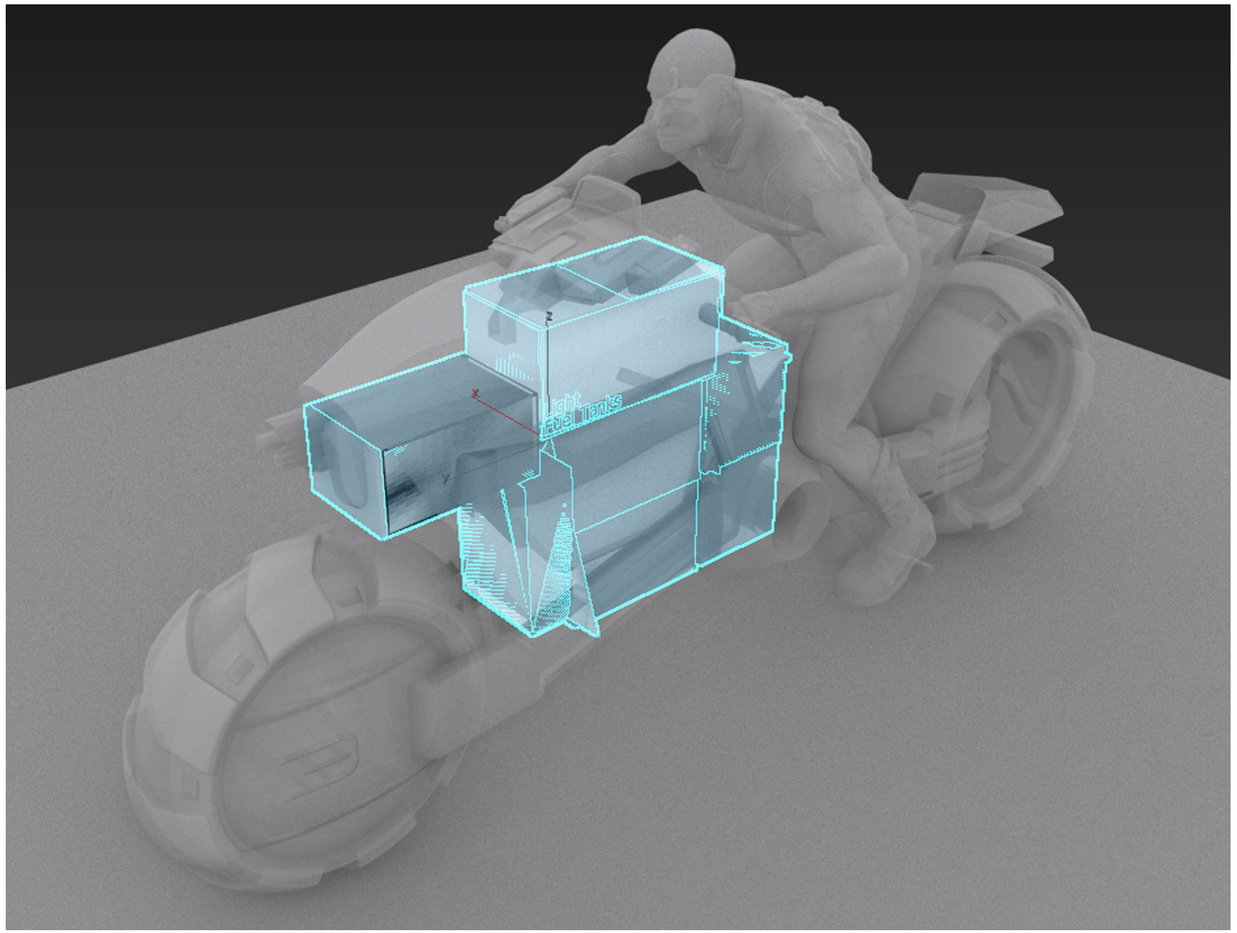
Art Director Paul Jones chose concept artist Andrian Luchian for the difficult task of breaking the look of the Ranger bike. Luchian is best known to *Star Citizen* fans as the artist behind the recent Origin 100, another situation where he was responsible for doing less with more by capturing the luxurious Origin feel on a lower-budget starter ship. However, the Ranger bike would prove an even bigger challenge! Since the mechanics for bikes were not yet implemented, the concept would be especially important as it would drive technical development during implementation. At the same time, it was a particular challenge to the Art Team because they were essentially working without a net; there were not yet rules for how a bike in *Star Citizen* is ridden, how it's maneuvered, or even how it stands up when not in use. Other unknown aspects, like the need to include weaponry and cargo previously scaled for enormous spacecraft on a small motorcycle would further add to the challenge.

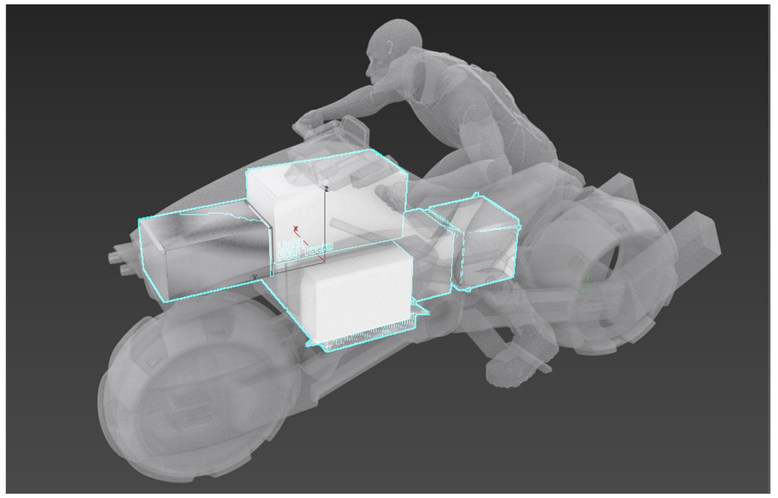
To guide Luchian, Jones provided a set of reference imagery that included a number of modern and conceptual motorcycles with a variety of wheel configurations - different sizes, widths, treads, and so on. Imagery of the Tumbril buggy and some of its breakdown components were also included to get across the look and feel that the Ranger would need to duplicate. Jones made special note of how the buggy was constructed on a series of frames, with the seats bolting to a framework which in turn bolts to a larger exposed frame. Everything else, including the armored plating, lights, wheels, mud covers, and more attach to that same central frame. Capturing the aesthetic would be the key to unlocking the Ranger. Finally, the Drake Dragonfly made an appearance. Although the Dragonfly doesn't use the same wheeled mechanics needed by the Ranger, it provided one especially valuable shortcut: the potential for sharing seated animations. If the Ranger could share the same set of "leaned forward" bike riding animations, implementation would be much faster. And while Jones didn't want to lock into simply creating a standard modern motorcycle, he did want to keep the format in consideration during development. He sketched out three potential shapes: one standard, one with wheels that split in two, and an up-center steering version that would ultimately form the basis for the final design.

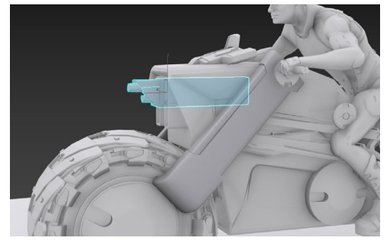


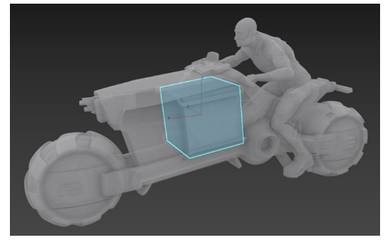


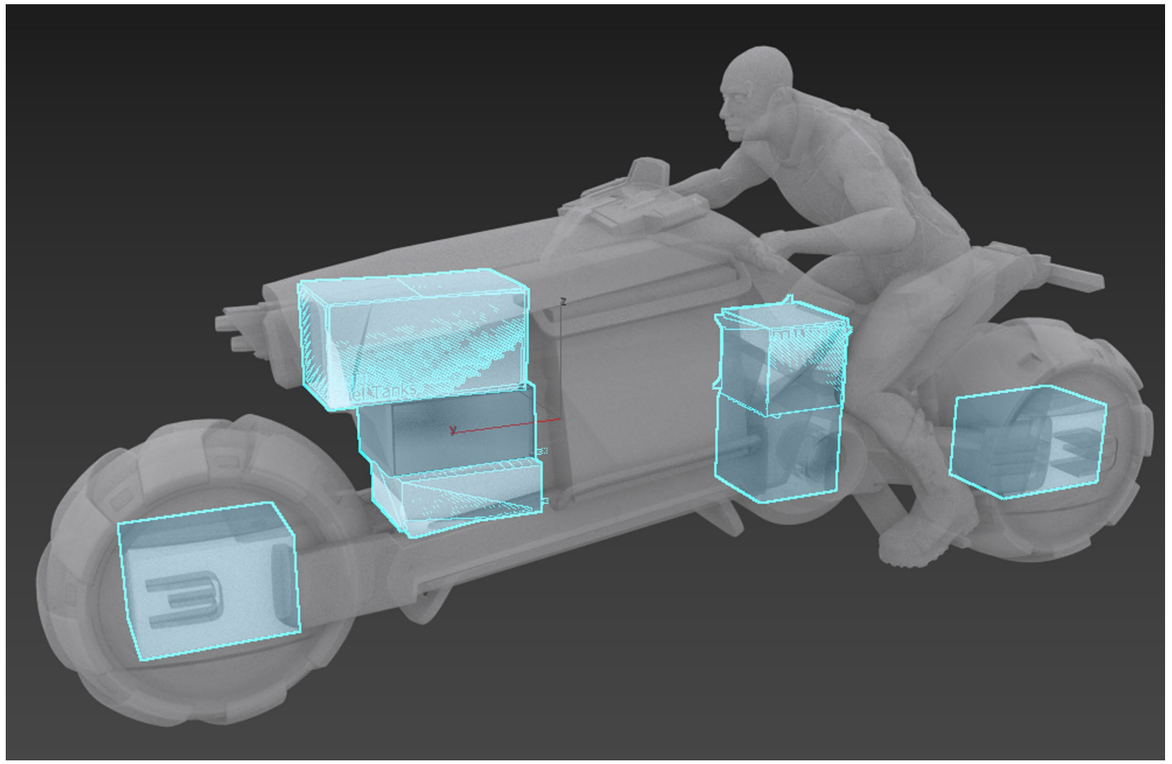
The first week in January, Luchian returned with his first pass of four 3D-modeled options showing potential directions for the bike. While many concept artists prefer to begin with sketches and kit-bashing, Luchian decided to go full 3D for the first pass. The first set of renders were impressive but didn't quite capture the Tumbril look. Jones requested a set of broader sketches. Luchian returned with sixteen rough options in a variety of configurations. Again, the feeling was that they didn't mesh with the look of the Tumbril buggy as they lacked the frame and distinctive wheels. Jones put together additional feedback and suggested using the wheels familiar to buggy drivers. In the process, he investigated possibilities to keep the wheels distinct by adding covers and other detailing that would set them apart from what had already been seen. The result was a much heavier bike that felt too industrial and almost like a tractor in places. Jones suggested reducing the rake of the forks and going more "traditional" in terms of the frame. He proposed a rear subframe and to focus on the bike's lower clearance to make it appear faster and sleeker.

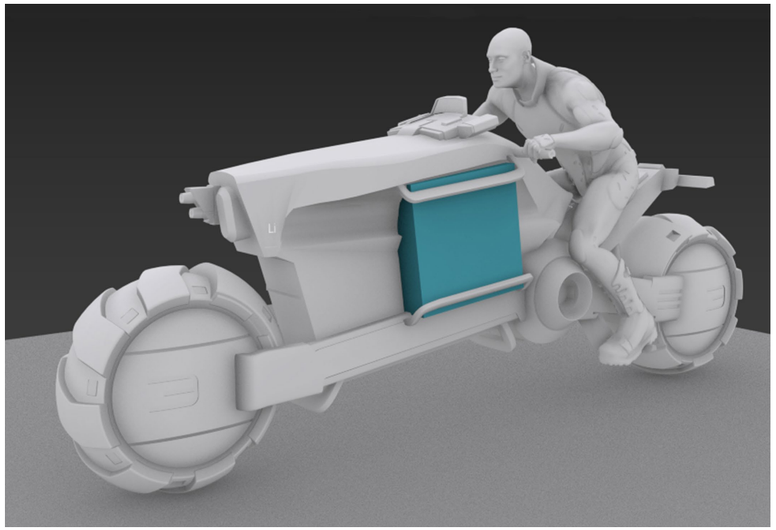


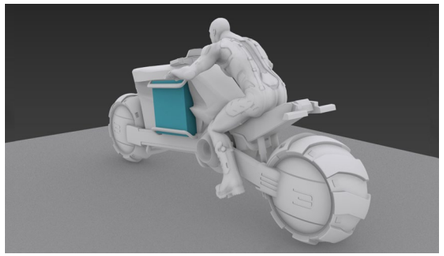


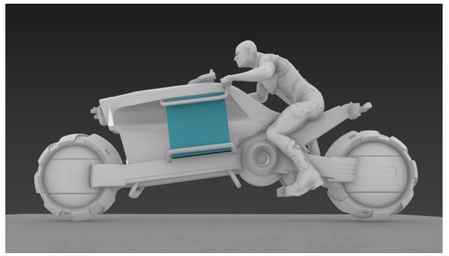




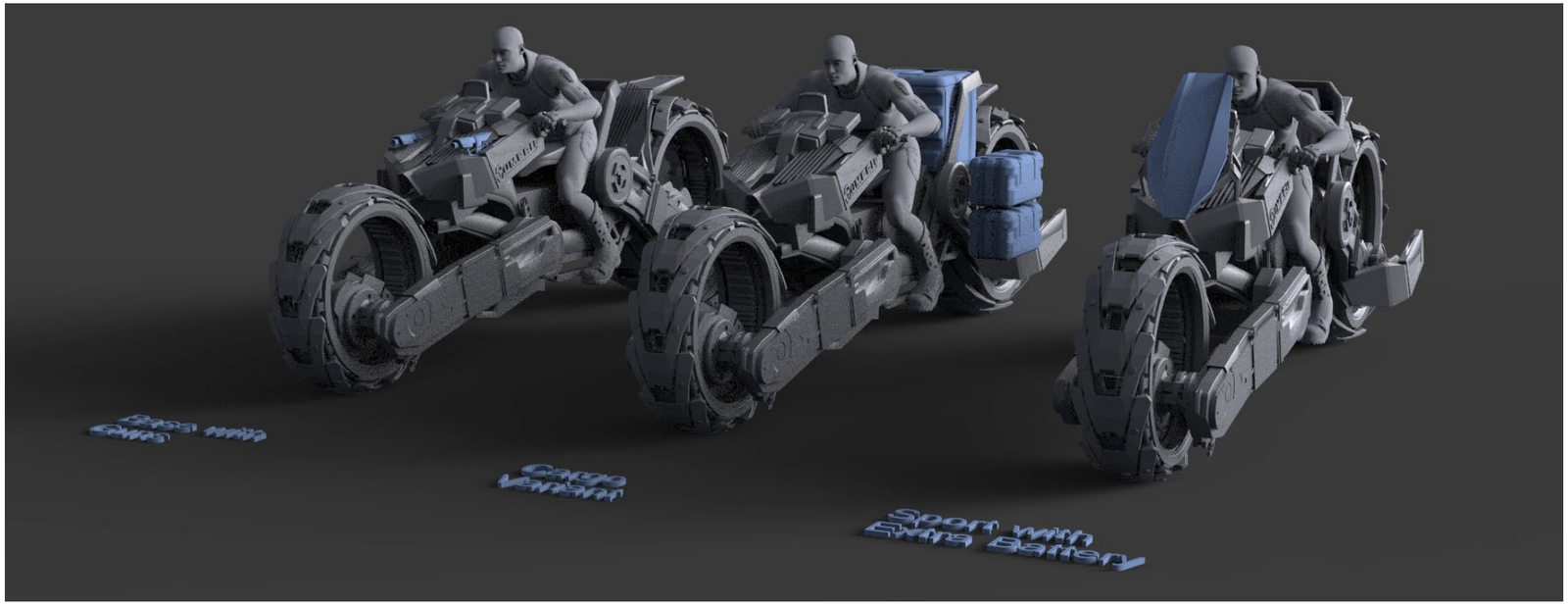


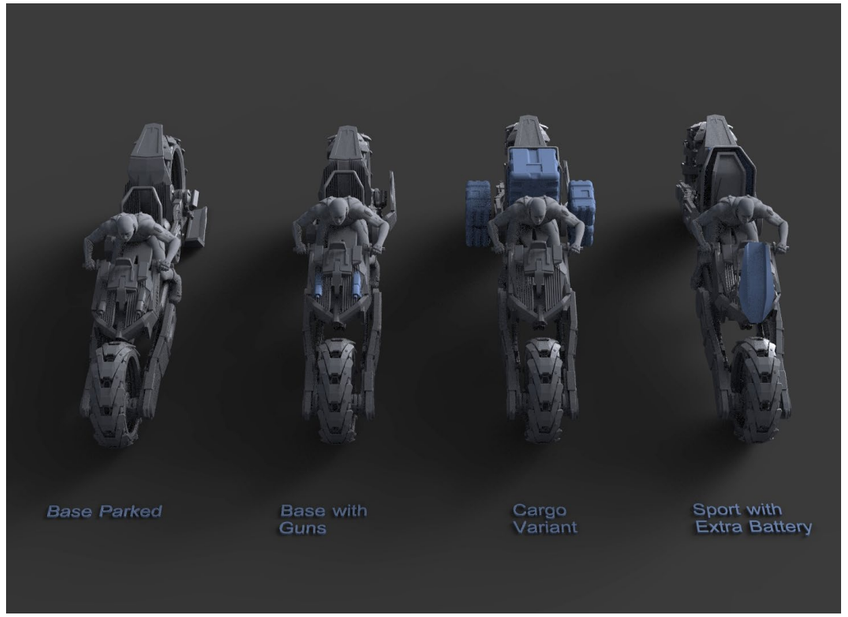


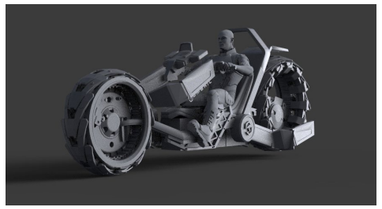


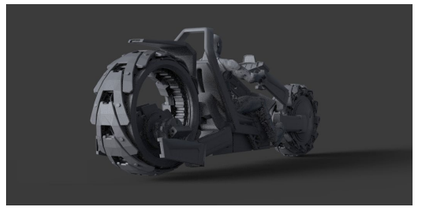


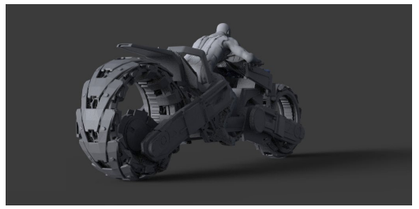
It quickly became clear that the components were going to be an issue. For the first pass, the team opted to keep the concept loose rather than dealing with the specific component accessibility and sizing developed for previous vehicles. The hope was to determine a good direction and build towards those specifics, though it quickly became clear it would take a great deal of effort. As Luchian developed different directions, he incorporated more of the necessary components which added to the bike's bulk. Adding a large battery threw off the balance and the lines. This would take some consideration! The weaponry required for the military version was also a concern. A size-one gun may be a small thing when attached to an Aurora or 300i, but it was enormous when compared to a bike not much larger than a human. Jones chose to use a custom gun at this point, hoping the value of building one specifically for the bike would be apparent at review.





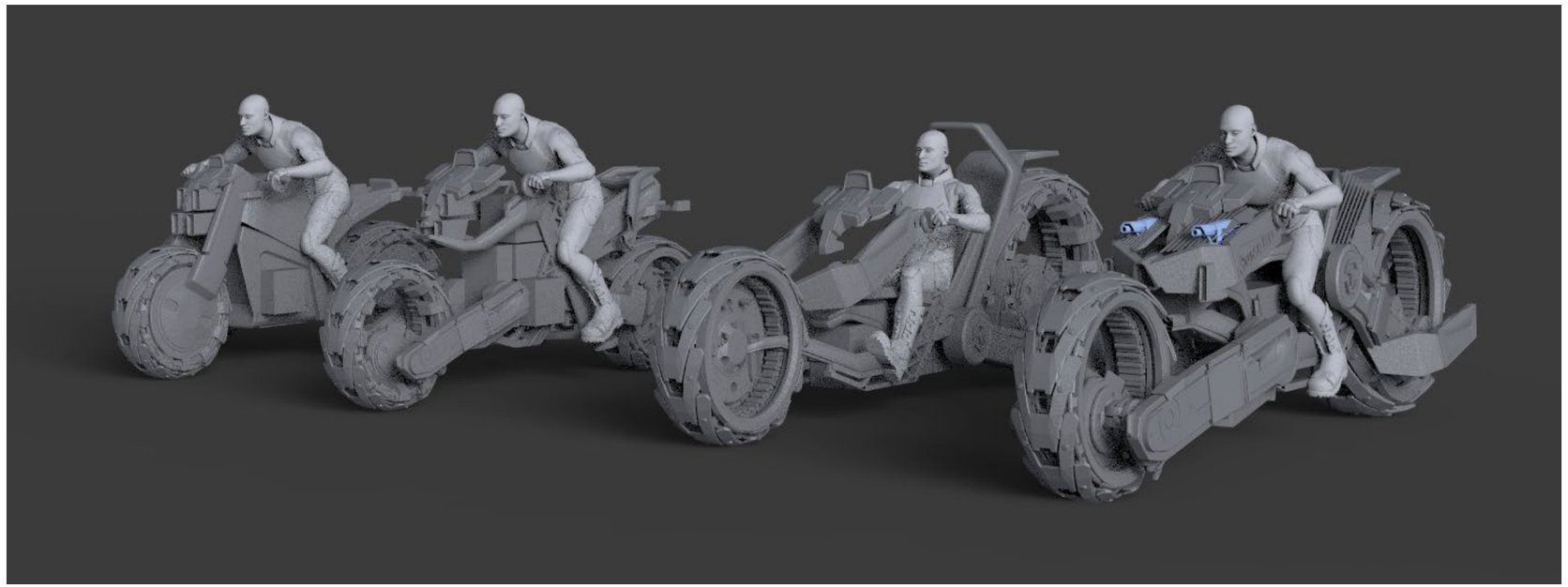


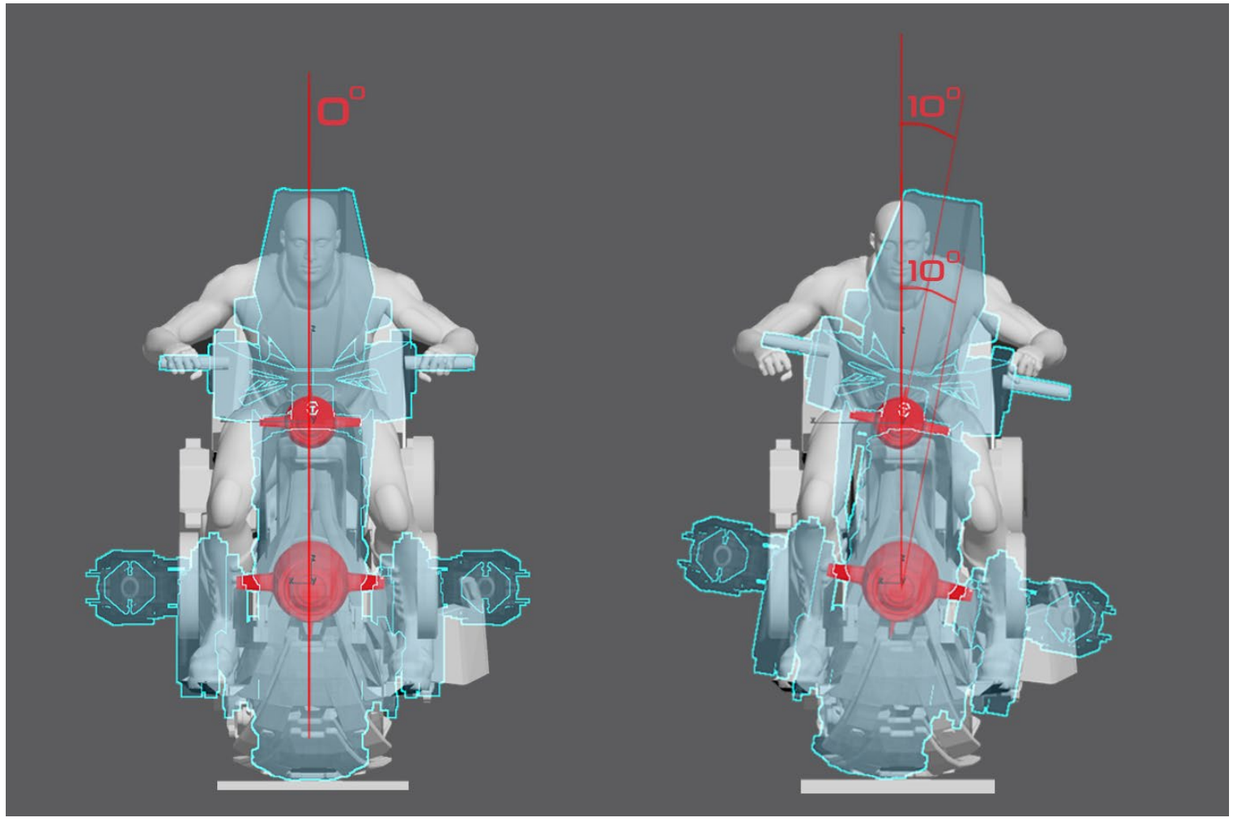


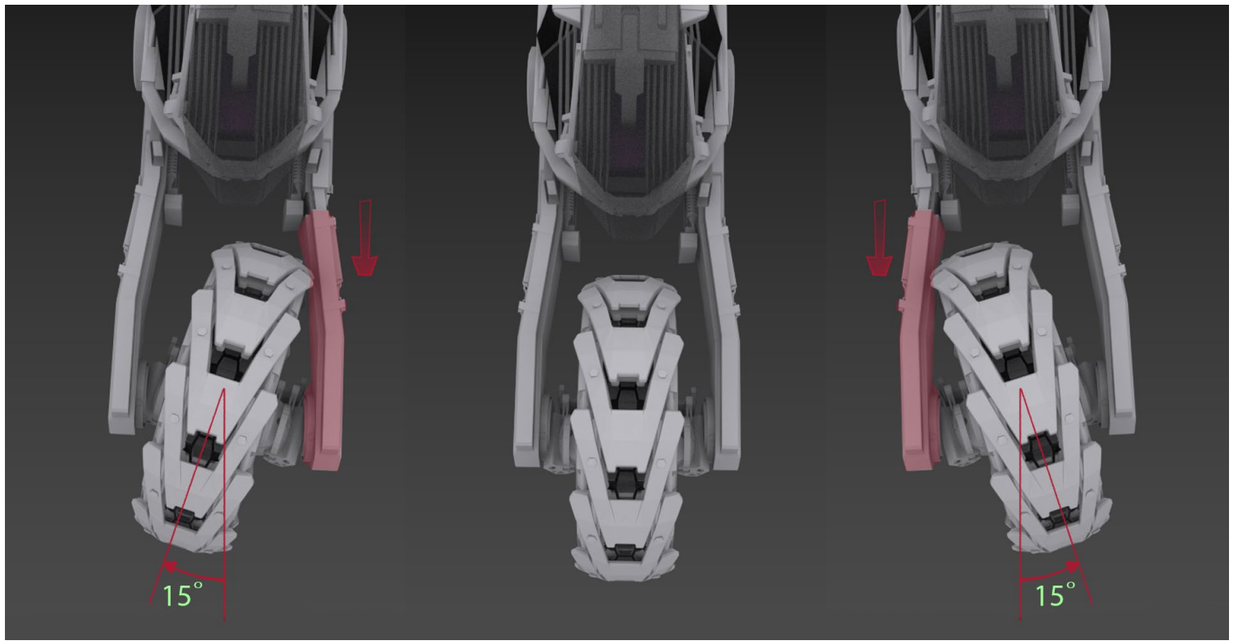


FULL THROTTLE

As the battle to sleekly integrate components continued, Jones suggested that Luchian look at the BMW boxer engine, which has cylinders perpendicular to the line of the bike, and to study real-world luggage and cargo racks. He crafted rough block-outs for a trellis frame and a more traditional rear swingarm and integrated the small gun. Continued development here made the bike longer but not more Tumbril-like, prompting a pause to reconsider some of the design aspects. Under normal circumstances, Jones likes to have an additional artist take a quick pass at a stuck design to try and get the inspiration flowing again. But with the rest of the team booked up, he stepped in and spent an afternoon working with the concept himself with a focus on incorporating Tumbril DNA in a way that wasn't overly utilitarian. Through this process he kit-bashed four potential directions: a classic 1940s motorcycle with sidecar straight out of The Great Escape, a modern-day adventure bike with racks for cargo, a "big wheel" low-riding version (which he described as "slightly Wacky Racers"), and finally a more traditional center steering design that made use of negative space like the Cyclone with a bigger wheel on the back than the front.

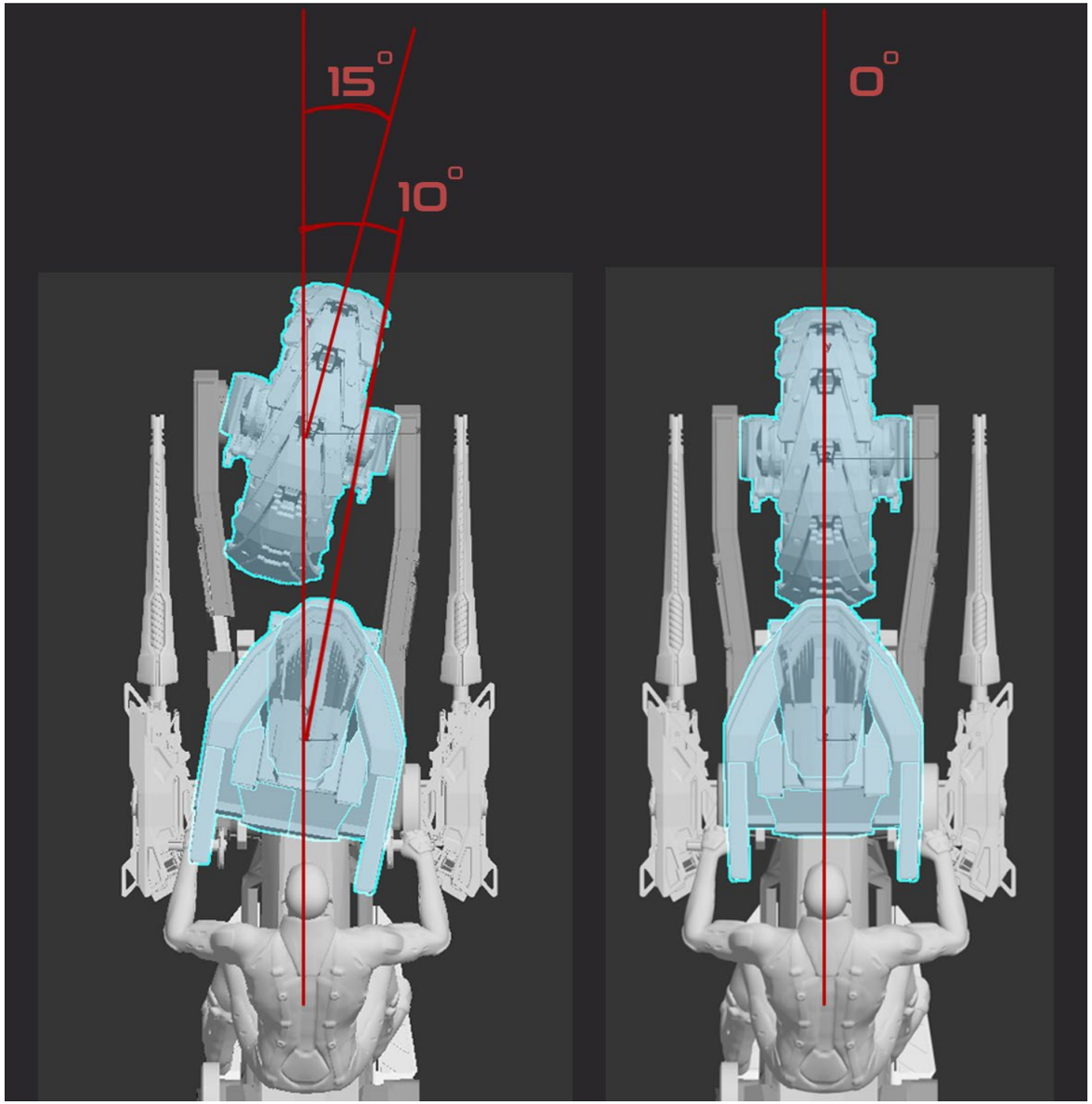


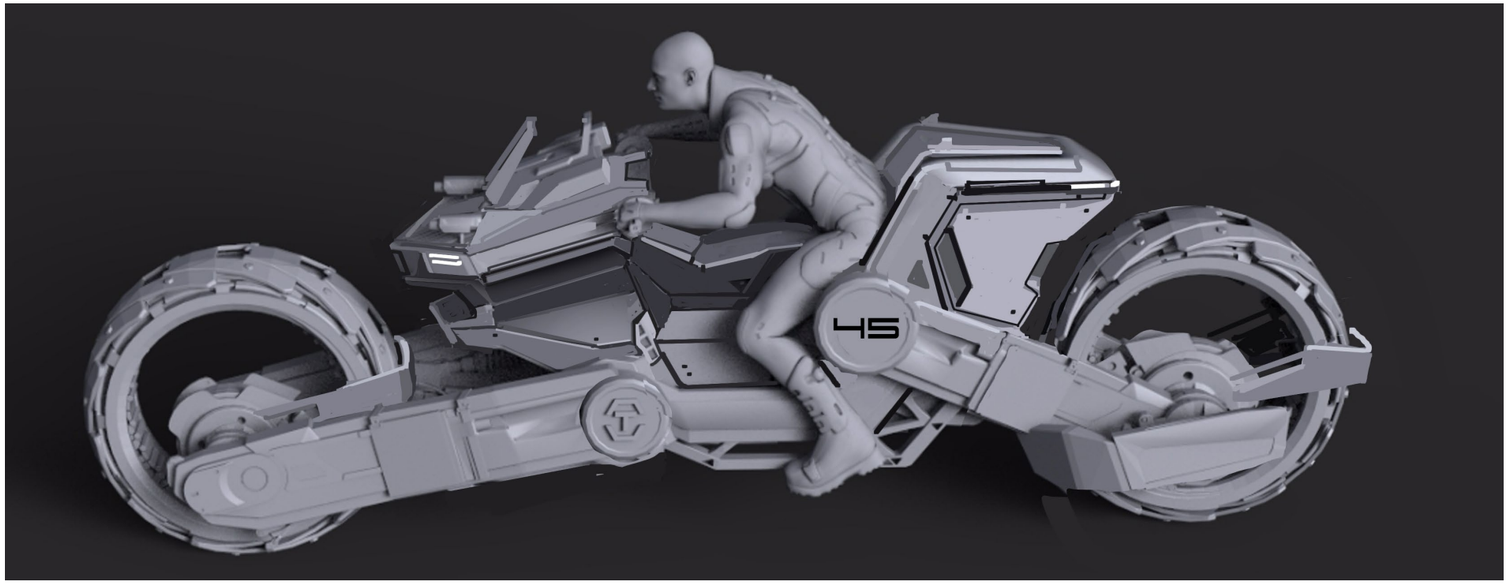


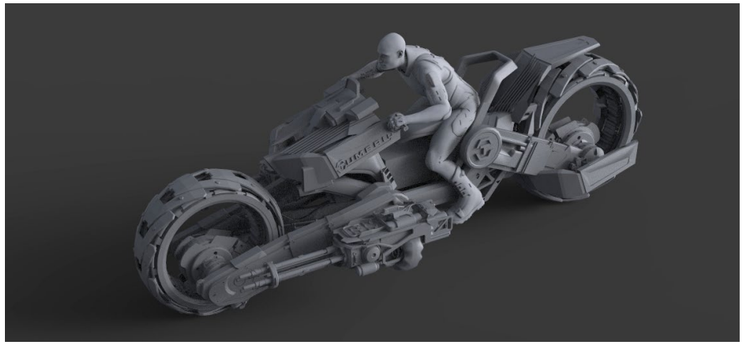


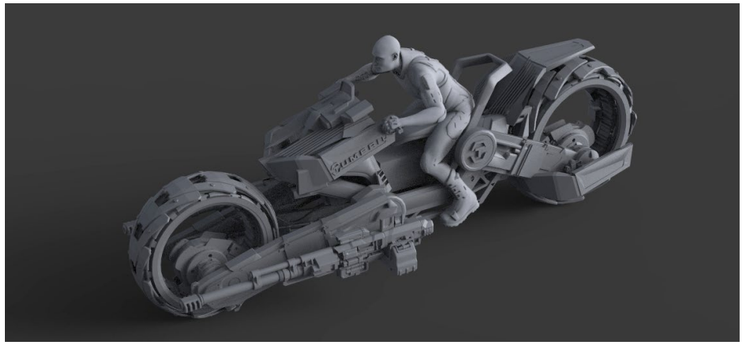
The next challenge was figuring out how a ground bike steers in the 30th century. With a traditional steering column and a much more limited plane of travel, the well-established metrics for spaceship thrusters would be no use here. Jones spent time determining how the player model physically operates the bike and how the design could have enough spacing around the wheels to change direction effectively. By looking at ways to increase the turning angles of the wheels, he impacted the overall spacing of the design, getting it much closer to its final form. He ultimately settled on a version with extended forks. Meanwhile, Luchian looked at potential cargo solutions that would fit the description of the saddlebag-equipped version. The first pass included a very large back section due to the number of cargo units the designers had requested it be able to carry. This rear section was a modular pod that could be swapped out and which left space for a number plate.

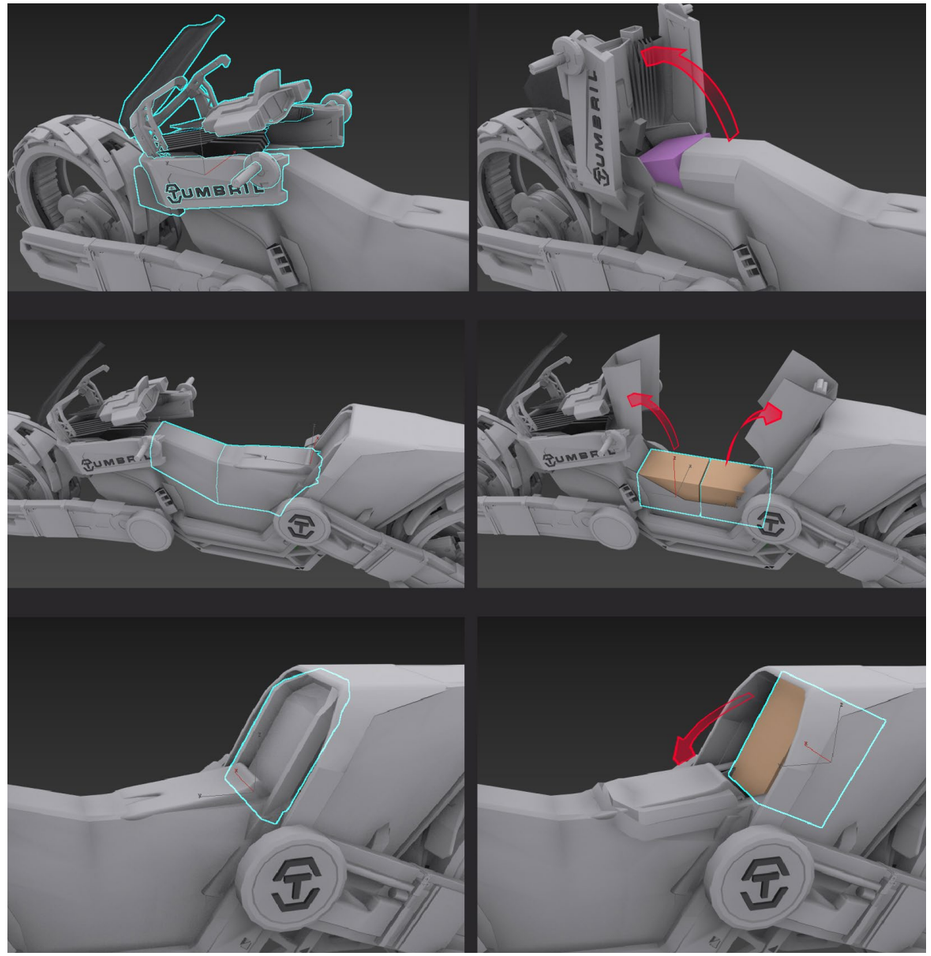
From here, the concept artist began looking at smaller details: cleaner forks, different back options, alternate heads, and different mudguards. Jones notes that there was a lot to think about at this stage because of how every line intersects with another on such a small design. One change, however necessary, could throw the whole thing out of balance… sort of like driving a real motorcycle!









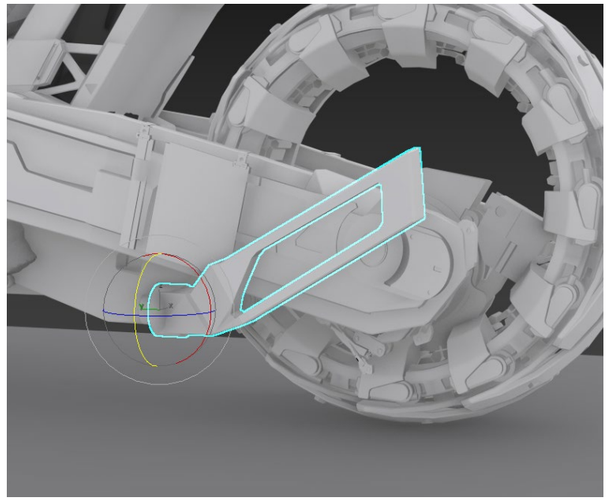


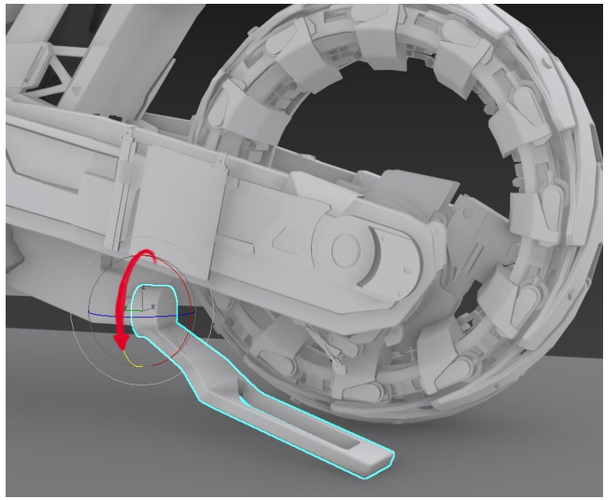
I WANT TO RIDE MY MOTORCYCLE

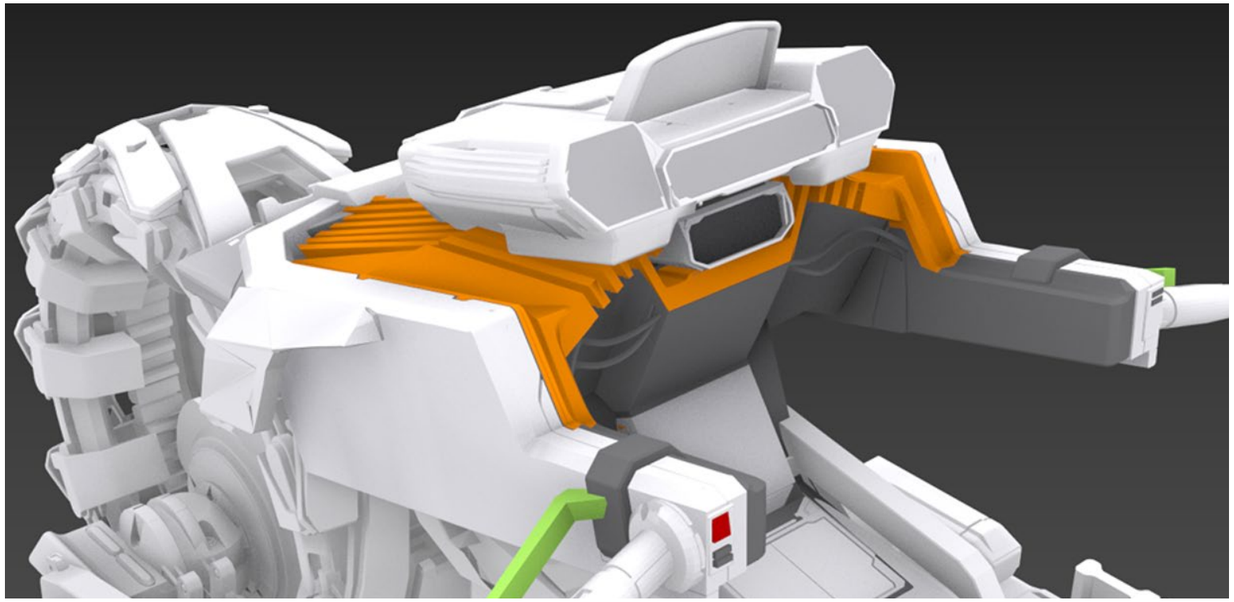
After about a month in concept, the current 3D versions were presented to Chris Roberts and the rest of the team for review. The hard work and time spent working on different directions had made the difference - Chris thought the 3D concepts were cool. Going back to an earlier question which had been sidestepped earlier, Jones decided to face the weaponry issue head-on by presenting Roberts with three possible options for the military variant's gun placement: one carrying a large gun, one flanked by two large guns, and one with two purpose-built miniguns. The purpose-built guns were not to be as Chris loved the two full-sized guns, so the bike would retain traditional size-one weaponry!

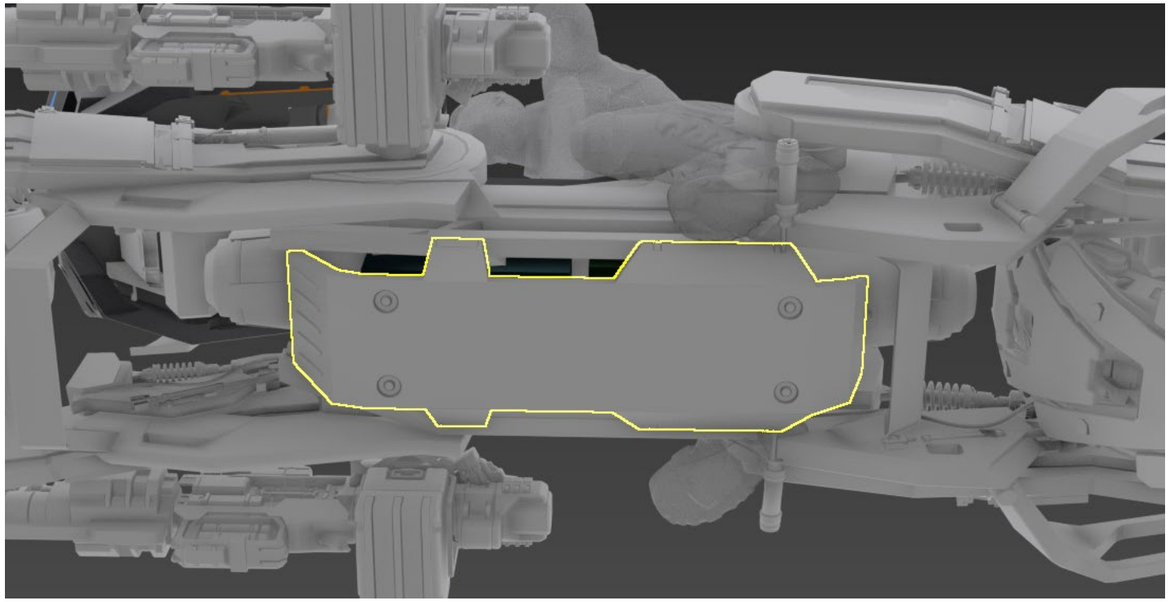
The first review complete and the overall direction established, the artists began drilling down to improve the concept wherever possible. Jones began further investigation into component access beyond the initial placement. How do you get to the components in the main body of the bike? For example, can you tilt the steering head up to access the scanner and computer? He looked at additional front-end ideas from reference, trying to connect them with a concept in his head which was frustratingly just out of reach. Slowly but surely, however, he made headway.

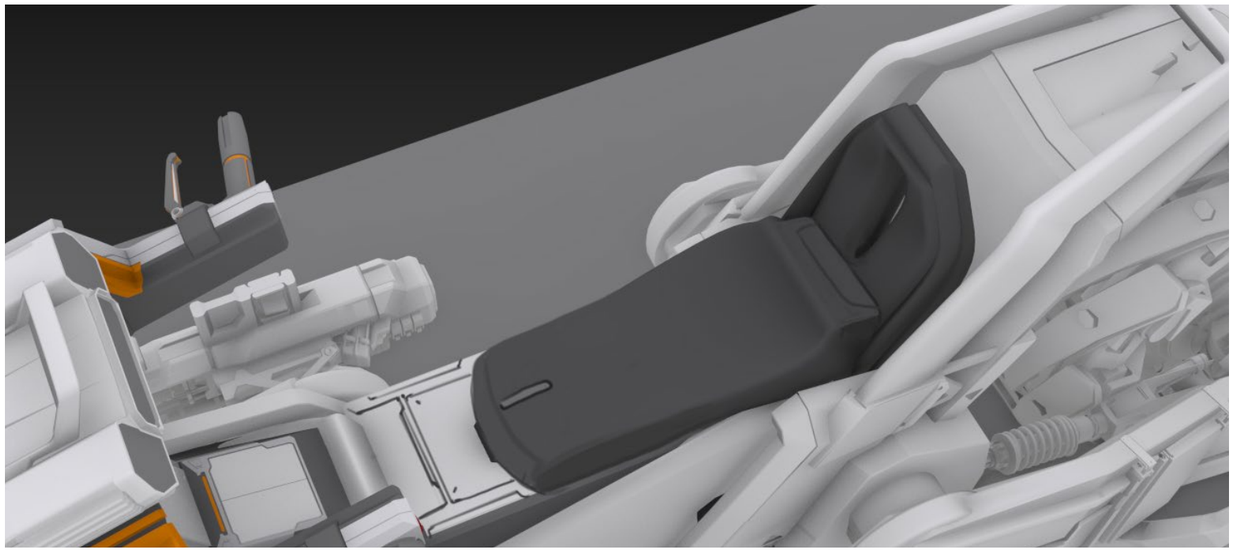
As smaller, interactive aspects of the bike came into being there was again the feeling that it was losing its Tumbril design. The team went back and forth to try to maintain the look while making the design game-ready. By the second review, Paul had worked out the rack system, steering, color schemes, line flow, and overall 'frame in a frame' exoskeleton that typified the Tumbril look. Work on the intake scoops and bolted-on headlights further perfected the look. The artists also paused to figure out the rear-wheel parking stabilizer, knowing that the finished bike would need to function realistically inside *Star Citizen*'s engine; if a bike could tip over easily in real life, it would likely do so in-game. Jones also realized that a key part of the bike's look was the rider. Many motorcycles look incomplete without one but form a coherent design when ridden. This was certainly found to be the case with the Ranger.

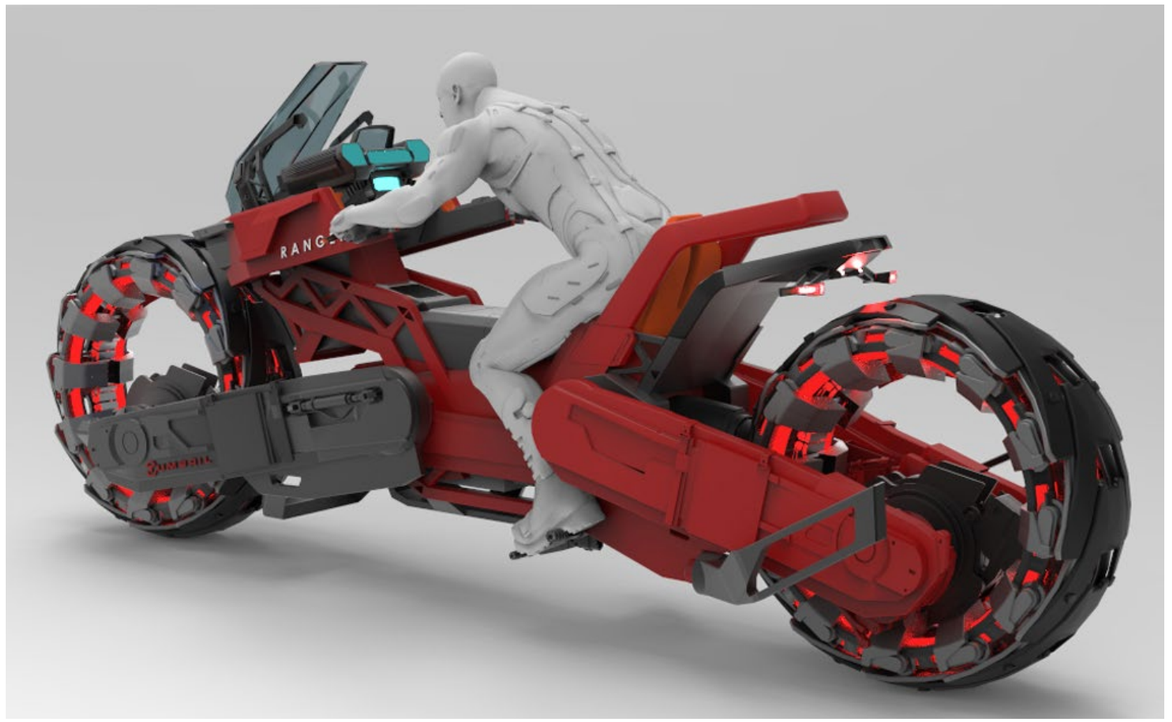


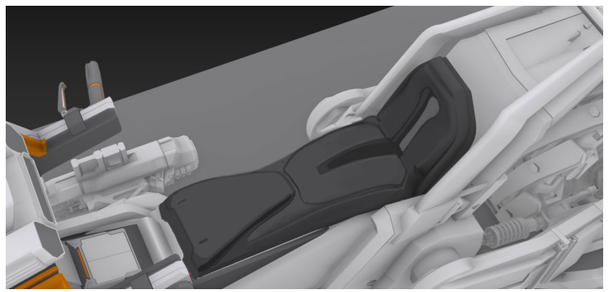


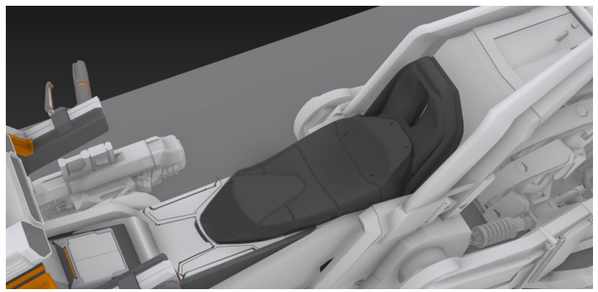












Luchian completed his role in the initial concept hitting notes, refining and tweaking shapes, and working out smaller unresolved issues. A mix of Cyclone and Dragonfly instrumentation was incorporated for the display, making the dashboard familiar-but-different. The final round of refinement added long vents, switchgear, bash plates, and looked more closely at the seating. This phase finished with a look at additional color options including a pass at Rangers with neon wheels. The neon looked extremely cool but, again, didn't speak to the Tumbril brand, And, there were reservations about filling the 'verse with glowing bikes!

SELL ON WHEELS

Next, the Ranger moved towards the promo stage. Jones assigned two concept artists to assist with the effort. Sarah McCullough was responsible for the final color schemes as well as detailing and developing the markings. She had a special focus on improving the overall balance of the color between the frame elements and with developing schemes that matched the more muted look of previous Tumbril designs. Alex Akstinas assisted with further development of the variants and the completed looks were presented to Chris Roberts for final review. Roberts was shown a cargo version with a special rack, a sport version with a screen, and a combat version with weapons. He liked the designs but felt the sport version didn't necessarily seem like a racing bike. Roberts suggested swapping in the screen from the combat version and suddenly the variants came together. Jones, McCullough, and Akstinas jumped on the variants to make the needed changes. McCullough took on the cargo version, adding the screen and an extra set of headlights. Akstinas took the combat bike and added additional framework to the front with some changes to the tail to make it stand out. Jones finished the sport version with changes to the rear section and added brake discs to the wheels. He colored this version red, a non-traditional color for a Tumbril design inspired by the RC version of the Cyclone currently available in-game.

To explain the purpose of the three bikes in *Star Citizen*'s world, the marketing department asked for additional promo artwork that would give each model its own distinct story. Each story required custom character poses and scenes with a great deal of setup, but the results spoke for themselves, with the adventure bikes battling a rough environment, the racing bike speeding through a neon city, and the combat bike blazing into combat. After weeks of concept work and many different paths of exploration, *Star Citizen*'s first ground bike was revealed!

TUMBRIL RANGER PAGE:

https://robertsspaceindustries.com/pledge/ships/tumbril-ranger/Ranger-CV

TUMBRIL RANGER CONCEPT PRESENTATION:

https://robertsspaceindustries.com/comm-link/transmission/17067-Tumbril-Ranger

BROCHURE:

https://media.robertsspaceindustries.com/itutd5kb3wpxl/source.pdf

Q & A:

https://robertsspaceindustries.com/comm-link/engineering/17088-Q-A-Tumbril-Ranger

SHIP SHAPE:

https://www.youtube.com/watch?v=_smPJZ63cGI

WHITLEY'S GUIDE

The following extract is from the 2948 Whitley's Guide to Spacecraft's Anvil Valkyrie Development History. Reprinted with permission. Whitley Guide is the property of Gallivan Publishing, 2860-2949, all rights reserved.

THE ANVIL VALKYRIE HEAVY DROPSHIP

In early spring 2802, a delegation of engineers, theoreticians, and computer scientists working for Anvil Aerospace booked three weeks of supercomputer array time at the Levindosk Institute on Terra. By this point, Anvil had long-secured its position as the go-to aerospace corporation for both military-contracted weaponry and private combat spacecraft. Equipped with a large war chest owed to the success of the civilian F7C Hornet launch, Anvil was ready and willing to invest in more speculative products rather than adapting further government contracts for domestic use. But before that could happen, the company's long-term planners were eager to answer a difficult question: what next? The team dispatched to Levindosk had an intriguing proposal for how to answer this question. They would conduct a large-scale wargaming simulation that would hopefully allow them to predict the United Empire of Earth's future vehicular needs rather than wait for future contracts to be offered.

Computer wargaming is by no means a radical invention; humans have been using advanced computers to attempt to predict future trends for the entire millennia and such devices have existed with varying degrees of success across generations. Indeed, the UEE military conducts electronic wargaming continually using even more powerful technology than those available to civilian researchers. However, it is exceedingly rare that such analyses are ever declassified and, when they are, they tend to concern past events of very little value to the civilian aerospace sector. Additionally, the rarely available UEE wargaming results are largely concerned with worst case scenarios and are offered to the public as propaganda. Anvil's executives were interested in a different approach, developing only those scenarios in which day-to-day business continues.

The Anvil team that arrived at Levindosk had been preparing for the moment for seven years, more time than it would ultimately take the engineering team to develop the resulting ship. The process involved massive data gathering and organization on a scale not previously attempted in the private sector. Decades of data that could help the supercomputers imagine the current state of the UEE had been collected and organized, ranging from simple census statistics to observed fleet movements and spectrum usage metrics. The engineering team worked tirelessly to create a statistical portrait of the UEE in 2802 to allow the supercomputers to process viable outcomes. The immediate result, which would take some thirty-eight months to properly examine, was thousands of different possible scenarios that might impact the need for armed spacecraft in five, ten, twenty, and thirty years. Next, the results were moved to an undisclosed location aboard a fleet of data runners protected

by corporate-owned Hornet escort fighters. The data in hand, a second team of expert analysts settled in for the long-haul of connecting these possibilities to future market trends.

As Anvil's analysts processed the results, they were quick to move past the obvious findings that the Vanduul conflict and future wars would require faster, more maneuverable, and more powerful frontline spacecraft. Instead, they focused on roles for support craft; what might be the next Crucible? Although most of the group's findings remain proprietary, interviews have since made it a matter of public record that their first realization was that every future scenario involving a Vanduul defeat would require a significant advancement in landing craft. For example, should the Empire move to retake systems like Orion and Virgil, an Anvil-designed troopship solution could easily lead the way. So, both the technology behind the ships and the ability to mass produce them for future large-scale amphibious operation were certainly worth investigating.

EARLY DEVELOPMENT

Prior to the introduction of the Valkyrie, Human amphibious assault craft were divided into two types: smaller, more expensive dropships intended to deploy individual squads for specialized operations and larger, more expendable spacecraft designed to deploy entire companies or mechanized artillery units. The Valkyrie's design team aimed to split the difference down the middle by creating a mass-produced spacecraft capable of transporting both a platoon of soldiers ***and*** an armored support vehicle. Anvil's supercomputer predictions suggested that future war planners would need to rethink the traditional amphibious assault process for future attacks on Vanduul-held worlds. While smaller strike units backed with the threat of orbital bombardment have typically been effective in recent centuries of warfare fought against Humans, mass attacks with additional firepower would be needed for the theoretical taking of a Vanduul planet.

To address this challenge, the team attempted to make up the difference between the Aegis Dynamics Redeemer used to insert special operations teams and the larger freighters/landing craft used for logistical support. The new armored landing craft, officially designated a heavy dropship, would carry both the sophisticated defenses of a Redeemer-style vehicle while still maintaining some of the size and deployment capabilities of a starlifter. An array of twenty sophisticated g-couches would keep individual soldiers harnessed during the ride to the surface (landing injuries being another problem with more disposable landing craft) and VTOL thrusters would allow the ship to land and quickly deploy troops and equipment on rough terrain no larger than the ship's own base (plus area to deploy a vehicle if needed). The spacecraft's name, Valkyrie, was chosen early on as a tribute to a UEEN pilot who flew under the same callsign who had recently been killed on a reconnaissance mission that identified a Vanduul destroyer (though Anvil's marketing team would eventually promote it as referring to the ship's ability to carry soldiers screaming into battle like the Valkyries of myth).

DEVELOPMENT HISTORY

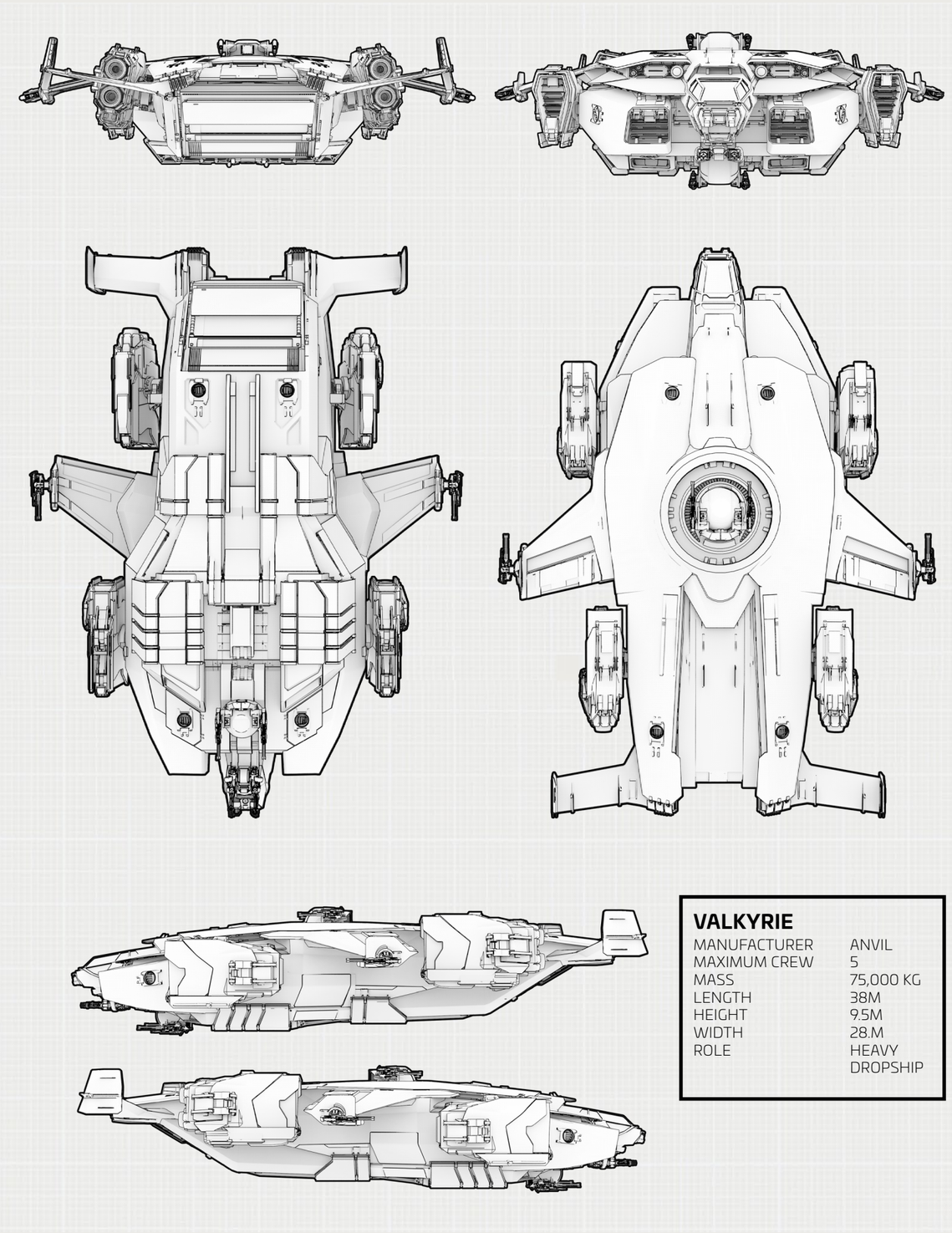
The design process quickly resulted in a prototype and then a production prototype, all before the idea was ever presented to the military. Anvil opted to keep the test program completely secret, leading to a series of leaked photographs that aerospace watchers incorrectly theorized might be proof that the company was developing another deep space fighter in the style of the Vanguard. It is impossible to know whether similar UEE analyses generated an identical future prediction or if Anvil happened upon an incredibly lucky coincidence, but in 2810 a joint request of the UEE Army and Navy requested a heavy dropship capable of deploying larger combat teams quickly. Anvil was able to present the Valkyrie with its testing complete, already flying, and ready for production. A modified no-bid contract quickly followed and Anvil's factories began turning out the first military model for active service in 2812.

CIVILIAN DEVELOPMENT

Although the Valkyrie has not yet been used for a mass invasion, the design has already repeatedly proven itself in combat in frontier regions. After-action reports specifically praise the ability to immediately deploy an armored vehicle, itself a great improvement over smaller gunships. The ship has become a favorite of UEEN ground pilots and is considered the "best way to travel" by soldiers deploying into hostile situations. Military orders from the design have increased each quarter and, if the long-term computer analysis is any indication, Anvil expects to almost double production of the Valkyrie each year for the foreseeable future. To this end, the company has made investments on no fewer than five worlds to add additional factory capacity for producing Valkyries in greater numbers. If a future massed planetary assault occurs, it will be even more of a windfall for Anvil stockholders.

In 2948, Anvil expanded the Valkyrie line with the not-unexpected addition of a civilian variant. Since the Valkyrie was not developed using government funds, the company was free to adapt it for the civilian market more quickly than previous designs like the Hornet. The civilian conversion team found the design process especially quick, with only limited fittings intended for specific UEEA equipment needing to be removed due to classification. The civilian Valkyrie is otherwise indistinguishable from the military equivalent and is even produced on the same factory floor. Civilian Valkyries are now operated by local militia and police units on frontier worlds where deploying heavier weapons across great distances is especially important. The design has also found unexpected favor with prospectors and other explorers who have found great use of the ship's ability to maintain and deploy a ground vehicle on rough terrain with a small footprint. Individual explorers can set down a Valkyrie at one claim site, dispatch a buggy or a small crew of workers and then jump ahead to another location. The process has greatly sped up mining surveys on some worlds by allowing a single work team to cover three to five sites at once. Anvil's forecasters are keen to see if further uses develop in the asteroid mining or the science-support disciplines.

SCHEMATICS



VALKYRIE

MANUFACTURER	ANVIL
MAXIMUM CREW	5
MASS	75,000 KG
LENGTH	38M
HEIGHT	9.5M
WIDTH	28.M
ROLE	HEAVY DROPSHIP

2847 TOHIL REGATTA

Jacinto turned back first. When Captain Iggy Decarlo heard the first distress call he didn't hesitate; he immediately ordered a course be set for Amidon Island. The command stunned his crew. Jacinto currently led the Tohil Regatta and abandoning the course would cripple their chance at winning the 2847 Courier Cup. Yet, as a native of Tohil, Captain Decarlo's allegiance to the system he loved outweighed his ambition to win the race to which he had dedicated his life.

Jacinto exited Tohil III's atmosphere and spooled its quantum drive. Moments later, the ship entered atmosphere on the other side of the planet and sped toward Amidon Island, the planet's most populous and developed landing zone. Having flown this approach countless times, Captain Decarlo quickly recognized that something was seriously wrong. Half of Amidon Island had sunk into the ocean.

It was a surreal sight for Captain Decarlo. Buildings that formerly formed a picturesque skyline were now partially underwater and vanishing fast. Massive smoke plumes rose from the water where fires had broken out, hampering visibility. People clung to the buildings still above the waterline and desperately waved flags, bed sheets, or whatever they could get their hands on to attract the attention of rescue ships.

Captain Decarlo immediately commed competitors in the Tohil Regatta to request assistance. Most of them had heard the initial distress calls, but either assumed it was a hoax meant to disrupt the race or an issue the locals could handle. Decarlo's comm made it clear that the situation was catastrophic and the island was in desperate need of their help.

Simply, there weren't enough ships to save everyone on Amidon, as most locals couldn't afford the exorbitant hangar costs on an island where space was at a premium. Making matters worse, it was also the height of tourist season and the island was filled with people enjoying its unique ecology while in-system for the regatta. Many of these visitors arrived on world via commercial transports and had no way off.

Amidon Island becoming submerged was shocking, but not completely unexpected. For years, people abstained from settling on Tohil III. While this ocean world lacked land mass, it did contain something close yet completely unique; massive floating botanical clusters. Legend claims that a damaged smuggling ship first landed on one out of sheer desperation. Surprised at its sturdiness, the smugglers began secretly using the floating biomasses dotting the world as hideouts and dead drops. Word slowly spread about this extraordinary flora, attracting scientists, ecotourists, and business looking to capitalize on the influx of credits.

Amidon Island quickly became the planet's primary landing zone thanks to its relatively large size and central location near the equator. Development remained minimal for years, only to expand as more people visited the system. Hardline environmentalists argued against larger settlements, but interest in the planet outweighed concerns for it. The ability of these floating islands to withstand the increased weight without any obvious negative side effects only encouraged further development.

In 2803, Darla Ibori, a local historian and ship enthusiast, organized a small event that toured many of the old smuggler routes. It proved extremely popular, attracting twice as many ships as expected. Ibori spun this success into an annual event called the Tohil Regatta, which included a multi-day race that involved ships ferrying marked crates between old hideouts and dead drops. The fastest ship to complete the course was awarded the Courier Cup.

The Tohil Regatta quickly gained a reputation for attracting ship enthusiasts of all ilk. Between legs of the race, veteran haulers flying aged Constellations drank and swapped stories with ultra-wealthy Origin owners. The usual class divides evaporated quickly and all that mattered was one's passion for the race.

Growing up on Amidon Island, Iggy Decarlo looked forward to the Tohil Regatta every year. He worked at a luxury ship repair shop and diligently saved credits to buy his own vessel. He first entered the regatta in 2826

and became a race fixture by entering it every year after. Despite his knowledge of the planet and the location of its biomasses, he always seemed to lose to those with newer ships or the latest and greatest components. In 2844, Captain Decarlo purchased a used Origin 600, which prior to the line's recent luxury revamp, was considered a mid-sized transport ship, and strategically modified the minted Jacinto with upgraded components. His dedication and attention to detail paid off. Prior to the 2847 regatta, Captain Decarlo had never held a lead this late in the race. Thus, his crew, competitors, and spectators were equally shocked and surprised when he voluntarily relinquished the position to respond to the distress comms coming from Amidon Island.

Once Captain Decarlo reported the severity of the situation, other regatta competitors and observers promptly followed Jacinto's lead. Amidst the chaos, organizers suspended the regatta to aid the rescue effort. Soon ships swarmed the sky above Amidon Island. The sight below shocked and stunned regatta pilots. Amidst the chaos and confusion, Captain Decarlo became the driving force behind the rescue effort. Once Jacinto was at capacity with evacuees, he directed other ships to buildings about to be submerged and designated flight paths for ships approaching the island and those leaving it. His familiarity with Amidon Island and its buildings proved invaluable to the rescue effort.

The disaster of Amidon Island would have been worse if not for the actions of Captain Decarlo and the ships from the regatta. The tragedy led to increased building regulations on Tohil III and, in an unfortunate twist of fate, effectively ended the Tohil Regatta, as organizers worried its success was partly responsible for the overdevelopment of Amidon Island.

Ship enthusiasts may lament that the Tohil Regatta no longer officially exists, but many still visit the system to informally fly the route. Regatta fans have even organized an ongoing movement to restore the tradition, so future generations can experience it for themselves. Whether that plan ever comes to fruition or not, the Tohil Regatta will forever be remembered as a truly unique event. One where its participants valiantly came to the planet's aid when it needed them the most.