

JUMP POINT

ISSUE: 09 12



IN THIS ISSUE →→→

- 03** — **DEVELOPER INTERVIEW:**
Health System & Clinics
- 15** — **BEHIND THE SCENES:**
Making the MISC Odyssey
- 29** — **WHITLEY'S GUIDE:**
GreyCat Industrial ROC
- 31** — **PORTFOLIO:**
Stegman's Clothing & Uniforms

FROM THE COCKPIT

GREETINGS, CITIZENS!

Happy holidays, Subscribers! If my calculations are correct, you should be reading this note on or about the very last day of 2021/2951, and I think I can join everyone in saying... good riddance to the former (the latter was pretty neat)! December always reminds me of that crazy rush back in 2012 to make good on our promise to have the very first issue of **Jump Point** out... and here we are going into year ten (year one was just one issue, but it's still quite a run). Here's hoping you're all happy and safe right now and hopefully getting some time to explore what the *Star Citizen* team has added to the game this last year.

First out of the launch tubes this month we have the promised interview covering the making of *Star Citizen* Alpha 3.15's significantly expanded health systems. This one was particularly interesting for me because we got to talk to a whole bunch of developers we rarely hear from, the steadily increasing number of artists and designers who are creating new environments for the game day in and day out. The work they put into the new hospital locations (and the related systems) is excellent and it's very interesting learning how much thought and effort had to go into it all.

Then we have a special look at a brand-new ship concept that has absolutely stolen my heart, the Odyssey explorer. I suspect this one would have won me over regardless because it looks so much like my beloved Endeavor science platform... but beyond that it's a heck of a concept that's chock full of interesting things that are especially well thought out. The Design and Concept art teams knocked this one out of the park (and into the unexplored regions of the universe). And as for the ongoing Odyssey versus Carrack meta that's being fought on Spectrum and elsewhere, I will say... absolutely nothing, I ain't touching that!

By the way, this article and many of the other ship features we've had over the past few years owe their existence to Paul Jones, the man in charge of *Star Citizen's* Ship Concept team. I'm happy to report that Paul has just released a brand-new book and I thought it was the least I could do to mention it here. It's called *Game Artist* and while I'll warn you straight off that it's not about *Star Citizen*, it does teach you to do the kind of work that Paul and other concept artists do day in and day out. If you're interested in the ins and outs of the industry that folks on the outside rarely understand, then I encourage you to check it out! If you're interested, you can find it wherever books are sold (you know, the internet).

Over on the lore side of the **Jump Point** (do we ever mix metaphors here!) we've got a brand-new Whitley's Guide that covers the Greycat ROC ore collector. I wanted to end the year writing about something other than a spaceship and the ROC and ROC DS fit the bill exactly! (We considered the original PTV but it's—stop me if you've heard this one before—a little buggy). Then we've got another new Portfolio that covers Stegman's Clothing and Uniforms, which pairs nicely with last month's Manufacturers Guide! You've probably seen Stegman's pants and jackets in the 'verse already and now you know the rest of the story.

That's it for another year of **Jump Point**. As we look forward to 2952 I'd be happy to hear what you're interested in seeing more of... so let us know on Spectrum! I'll see you next year, through the **Jump Point** (see?).

Ben

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DEVELOPER INTERVIEW

HEALTH SYSTEM & CLINICS

“First, do no harm” isn’t necessarily the first thing you associate with a game that puts you in charge of interstellar battlecruisers, but Star Citizen’s health system, recently significantly expanded in Alpha 3.15, has been in the works since the first ‘Death of a Spaceman’ design at the start of the project. We spoke to some of the artists and designers who worked on building both the new hospital environments and the overall health system design and found that there’s out there’s a LOT going on behind the scenes!

BEGIN TRANSMISSION →

JUMP POINT: Please start by giving us your title and letting us know what you’ve worked on for Star Citizen.

RAINER RICO: I’m a senior environment artist. So far, since I’ve joined Turbulent, I’ve worked on the Brentworth Hospital in New Babbage and the clinics found in the space stations.

NEMANJA PANIC: Level designer – Grim HEX’s hospital, New Babbage’s hospital, Lorville’s hospital, derelicts, and other unannounced thingys!

SIMON PICHETTE: I’m a senior environment artist and most recently worked on Grim HEX’s hospital.

SAM GIAMPIETRO: I’m a junior environment artist and have had the opportunity to work on New Babbage’s hospital and the space clinics.

JASON TONKS: Jason Tonks, Senior Environment Artist, Space Clinics.

CIAN KEARNEY: Senior gameplay programmer - Actor Status system, stamina, food and drink, original Personal Inventory.

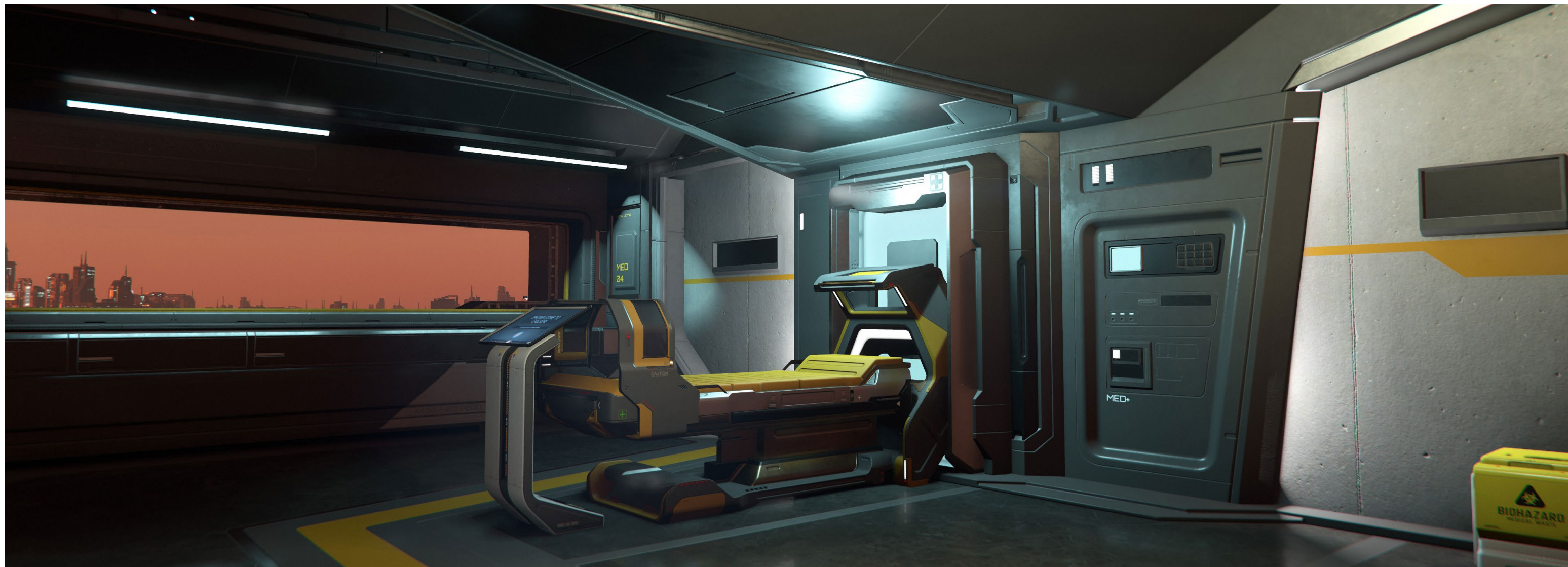
JP: *The clinics look great! What was the high-level goal in adding them to the game?*

NP: The main goal was to introduce new gameplay elements and add consequences to dying.

JT: And improve the general player experience.

JP: *What is the difference between the space clinics and the Grim HEX clinic? Why build two different environments for this patch?*

RR: The clinics are in two locations that each have their own visual identity. It was important that the clinics fit with the theme of the location they’re in to set them apart. In the case of the space clinics, they have a more modular and generic look since they’re located in the space stations that also have that modular appearance; they needed to look like they were built from kits brought in from cargo ships as there are no manufacturing facilities on the space stations. So, we couldn’t have large-looking pieces as everything had to look like it was assembled in place with smaller pieces. So while the layout may be different from one space clinic to another, they are all built from the



same building kits manufactured elsewhere. Also having the space clinics look like the one from Grim HEX would simply just look out of place and vice versa.

SG: Grim HEX's clinics are not modular, which means variety, essentially. When you enter a space clinic on one station, it won't be the same layout as another. This was the intent from the beginning.

JT: It also gives us one for pirates and one for everyday, ordinary Joes; it didn't make sense to revive prisoners with non-prisoners.

JP: *What other disciplines did you work with to make this environment happen? How did you ensure the environment matched the healing system that was in development at the same time?*

NP: We worked with many other departments: Game Design, Level Design, Lighting, Audio, VFX, Programming, QA, AI, Concept Art, and I am probably forgetting a few other ones. Unfortunately, the healing system was constantly in development since we started working on the hospital locations, so it was definitely a challenge to create a map while the system was being fleshed out, and while we were trying to

determine the role of landing pads, emergency elevators, gurneys, reservation systems, etc. There was a lot of back and forth and having to redo parts of our work as the design of healing was evolving. I think we definitely managed to ship it in a state where it's working well, and it's a good base to build on top.

SG: As with every environment we work on, we want to make sure the player knows where they're going (it's especially key in a medical facility). We have to bring out our graphic-design hats and make those signs readable for the direction you enter or leave.

CK: We had a weekly meeting with all the relevant people from the other teams that helped coordinate it all. We also had a central chat for the feature that had around 80 people in it, which just shows how big this feature was and how many people were involved.

JP: *How closely did the artists and designers working on the space clinics work with those of you working on Grim HEX?*

RR: The artists working on the space clinics and Grim HEX didn't work much together, though we did meet on a weekly basis to show our progress and exchange ideas.



We take real-life examples of where sitting arrangements would be and how many seats there are.

JT: Most of the designing was done in the concept artist pod, with the help of art direction, medical references, and general *Star Citizen* reference.

JP: We've seen how ships are developed by concept artists outside the engine and then implemented in the game by dedicated teams. How does that process work for environments like this? Do you start with concept art or do you go right to prototyping in the game engine?

RR: The concept artists do the first pass, usually working with the level designers to identify the space and layout to see what they need to work with. Once the level design blockout is complete and approved (the greybox phase), we come in and start replacing the greyboxes with the whiteboxes using the concept art as the source.

SP: Yes exactly, we start with concept art and from that we start the whitebox phase: basic shapes, no textures, only white color.

SG: Projects are like snowflakes as each one is unique, but the development process is the same. We never have all our problems solved for us from the start even with concept art, and occasionally we won't have concepts for every aspect of the level. This is a great challenge because it's an opportunity to be creative. We always have a whitebox phase from the start (which means large, boxed shapes and simple geometry). We then get our large shapes and the feel of the space, and just keep defining and defining from there.

JT: The level designers define a rough size. The concept artists paint over the screenshots of that layout. The environment artists try and follow the design as closely as possible while making sure it's technically efficient.

JP: And once you're in the engine, what is the process of building an environment?

NP: The communication between the artists in the Montreal studio is great; we try to keep each other posted on our progress in daily meetings between the concept artists, level artists, and designers. It's a lot of back and forth, brainstorming, and testing out different options before picking the right one and bringing it to the next level of polish and, even then, sometimes we hit walls that force us to change the layout because of unforeseen issues. However, we are usually pretty quick to address these.

SP: We work pretty close because we have to give or receive an update each time someone changes something.

SG: From my perspective, we always discuss between teams on projects. We never feel separate, which causes us to talk about designs often.

JT: We often do art reviews together and share tips and tricks.

JP: What sort of references go into designing a futuristic hospital? Did the designers need to study existing medical procedures and did the artists have particular visuals they worked from?

RR: The concept artists created concept art that we used as a reference for the overall look of the clinics. We also used some real-world references to help with a few details. As for the futuristic look, we used the art guidelines already established in *Star Citizen*. Although the clinics are found in space stations that have a utilitarian look to them, the clinics themselves have a high-tech feel; something closer to what you would see on Orison or New Babbage since the clinics have a higher budget than other parts of the station. The high-tech look also sells the idea that it's easier to keep clean, which is something you would expect in anything medical.

NP: I drew my inspiration for the layout from a lot of different media; movies, books, comics, art station, and real-life examples. The education is one of my favorite parts of the production, you put on some music and start lurking in other people's work. I love it because it sparks a lot of creativity and you get to explore a ton of different concepts, most of which will fail, some will work, and others are stored to the side for future use.

SG: I would say the biggest thing we take from a real-life clinic or hospital would be the interior design, or how information is displayed.





as many existing animations as possible. Do you go through the same process? What kinds of animations needed to be created for the clinic?

SP: The only existing animations that we reused were the doors, elevators, and some for the hospital beds.

SG: With animation and movement, an environment artist will create simple actions, such as a door opening or a logo moving across a screen. I would say the majority of movement I try to create is putting placeholder VFX early on, such as leaking water, sparks from a cable, or steam in a pipe.

JT: We always go through our existing library of assets to see what we can reuse or adapt to save time. We then make the rest from scratch.

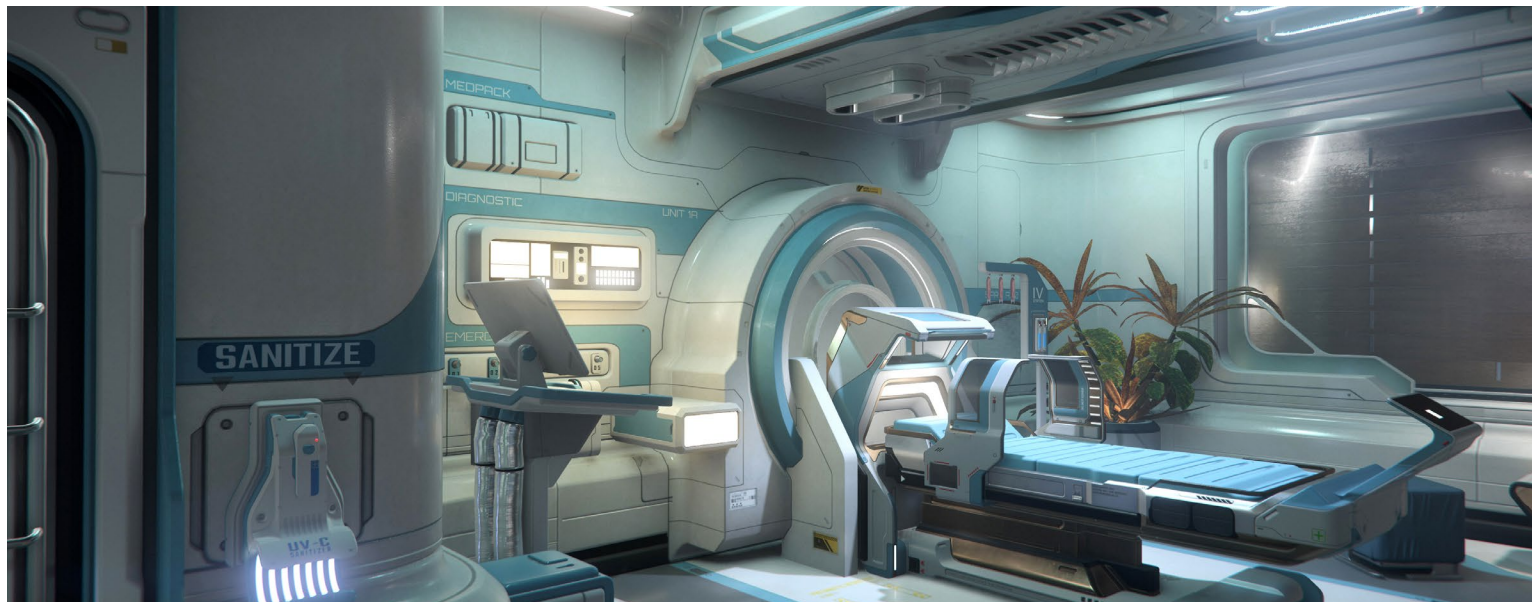
JP: How much prototyping happens to get to the system we know today? Did you go down any paths that didn't work out as intended with regards to things like the medical tools or what's available in different medical-related environments?

CK: There is always an element of prototyping when it comes to features like this but, in this case, it was slightly different. There was a very clear design from the outset and it was built on top of the already established Actor Status system. There were definitely elements we tried that we didn't like/didn't work though. For example, the original design had five injury tiers instead of the three that we ended up with.

JP: Broad concepts for healing go all the way back to the original *Death of a Spaceman* but this is the first time it's truly felt like a system that works in the game. Did you reference that early work as you put together this update?

CK: *Death of a Spaceman* was one of the first things mentioned when we were initially discussing work on the feature.

JP: Along the same lines, what is the testing process like for such a major system? Is it all done internally?

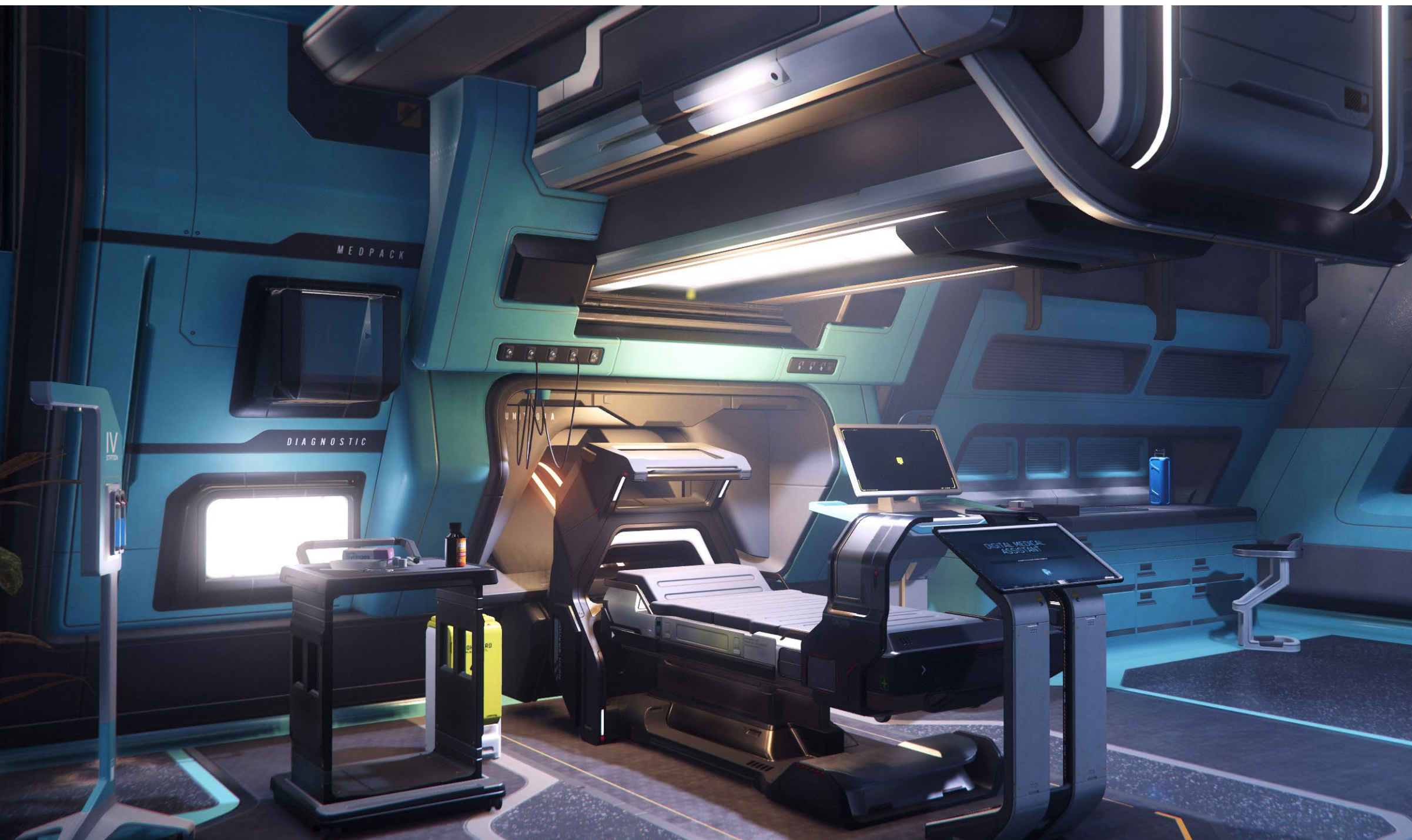


RR: We start by replacing the greyboxes that the level designers used to lay out the map with early versions of our assets, which is known as the whitebox phase. The whitebox assets are early versions of our meshes with blank materials and basic shapes to test out the composition, get the volumes, and get a solid foundation before we start adding details. This phase allows us to identify the size of the assets, identify what pieces will be needed to flesh the map out, and find out what assets are going to be unique or modular. In the engine, we sometimes use designer blocks (primitive shapes that can be created within the editor) to play around with the composition rapidly and get the feel of them from a player's perspective. Once they're approved, we are able to export these shapes into 3Ds Max as a source so we have a matching whitebox version to work with. This helps us avoid going back and forth to finetune volumes, angles, etc. Finally, when we're done with the whitebox phase and it gets approved, we start adding the materials and more detail until polish, and then we ship it!

NP: Using the Grim HEX facility as an example, we started whiteboxing the medical rooms and the pharmacy based on the concept art, got feedback, and then updated the layout a few times. Once we were happy with the layout, we stitched the hospital with the medical rooms and the pharmacy together. Then we added room systems to manage the air pressure and gravity, populated the pharmacy with inventory, added the insurance consoles and pharmacy and reception interactable screens, placed navmesh and navmesh exclusion zones, and linked all the proper zones together so that the AI can navigate them. We then added the AI, set up the elevator with the proper interaction points, added navigation splines, set up areas for future spawning closets, added usables for AI to interact with throughout the area, made sure the check-in consoles and reservation systems worked, and completed general debugging after the QA pass.

JP: In the past, we've learned how ships are conceived to try and reuse





CK: Yeah, all the testing is done internally, starting with the developer before they submit their work. Design will also generally take a look to ensure it matches their expectations. We also have QA embedded on the team and they are continuously testing the feature as it's in development. When the feature is a bit closer to completion it then goes to the wider QA group. With this feature, we also had meetings a couple of times a week involving some of the Core Feature team where we played through the full flow and called out any issues that were found. This was really good for keeping focused on the main issues that would affect players.

JP: Was there anything you were working on that didn't quite work out? Any material that had to be cut that you can talk about?

RR: It probably happened but nothing major comes to mind. I think it's also why the whitebox phase is an important one since it helps build a solid foundation and allows us to figure out what we need and what needs to be cut early on, so we don't invest too much time working on something that ends up getting cut.

SP: Yeah, it happens often when we have to rework the material or the asset. For example, I did transparent plastic tube modules for biohazard stuff but it was cut because there isn't a 'biohazard' style in the Grim HEX hospital.

SG: I think for every environment, each artist wishes they could do more to juice things up some more. But a big saying we always have is, if we have extra time in the end, then we get to do that sort of 'juicing' because normally we plan what we are building quite early on. However, on New Babbage hospital, on the upper floors, we had several extra corridors with large glass windows on the rear side. The player could see the hangers and spaceport off in the distance. I was quite excited about the view. However, due to time and workload, we had to cut them out and move on.

JT: We planned to add more variations and different layouts, but we pushed it down the road a little to make sure that we deliver the level of quality players expect from us.

JP: What are you especially proud of in the finished clinics? Any Easter eggs players should look out for?

RR: The time that it took us to create the clinics is probably what we're most proud of; the amount of reuse since it was very modular really helped speed things up. There aren't any unique landmarks in the clinics, which is usually why other locations require more time,





but that was the whole idea, and it makes sense considering where they're located. As for easter eggs, maybe some initials in the serial numbers?

SP: I'm really proud of the final look with the finished lighting and the mood that we wanted.

SG: I'm proud of the work of the whole team on space clinics. It's not an easy task to coordinate multiple people's work and have it all work so well together. And no, there aren't any Easter eggs... or are there?

JT: It's a nice small area where the player can go in and out quickly. As a player myself, I want to get back into the action fast when I'm wounded or injured.

JP: Do you see this as the final form of the clinics and the health system or are there plans to continue updating them?

RR: I think, as a whole, it's in its final form. However, maybe in the future, some update or new feature will require us to return and iterate or add something.

NP: We will add spawn closets at some point that is for sure. Once that is done, we might add a few things here and there for which we already have designated areas. It's just a matter of when the new gameplay loops are finished, then we will revisit the area if needed.

CK: We have identified elements that could be pushed to a later tier. For example, there were big things like additional consequences for death that would have been cool but there were also smaller things like a little rework of the bleed system that I would like to have gotten to.

JP: Do you have any messages for the players who are now beginning to explore your work?

RR: I hope you have as much fun discovering the area as we did making it!

SP: Enjoy the tour and have fun!

SG: I really do hope each citizen feels more immersed in the game with each update we put out. I really get excited to see people wandering around something I helped make.

CK: I'm just proud that we managed to get such a game-changing system with so many moving parts together and released, and that players are enjoying it.

JP: Finally, please let us know who else was involved in this event for our credits section.

RR: The other environment artists involved in the space clinics were Jason Tonks and Sean Giampietro. Concept art was by Fred Dupere, and the level designer was Cyril Bignone.

SP: For the Grim HEX clinic, we were three on the environment art side: Clément Dieu, Camille Loison, and me.

SG: For space clinics, we had a small team of about three people, Rainer Ricq, Jason Tonks, and myself. Our wonderful lighting artist Lar Hofrichter, talented level designer Cyril Bignone, and finally our great lead Nicolas Painchaud.

END TRANSMISSION





KEY CONTRIBUTORS :

ART DIRECTOR - PAUL JONES
CONCEPT ARTIST - GAVIN ROTHERY
VEHICLE DIRECTOR - JOHN CREWE
DESIGNER - MARK GIBSON

Specifications and appearance are subject to revision during development.

MAKING THE MISC ODYSSEY

INTRODUCTION

During the early days of *Star Citizen's* development, the community was repeatedly polled about its interests and hopes for the game, both formally and informally. As early supporters imagined what their characters might someday do, one thing became very clear again and again: the idea of exploring strange new worlds was at least as important to players as the fantasy of dogfighting with pirates or racing through star systems. Players, it seemed, were interested in the process of expanding the frontiers of their world themselves, and so *Star Citizen's* ultimate form would need systems that would allow that to happen. And with those systems, ships to allow the fantasy of crewing an exploratory starship. The first of these introduced

were variants of existing ships like the Origin 315p and the Freelancer DUR, which were later followed by the Anvil Carrack, a role-specific ship fiercely beloved by its supporters. But the Carrack was very specifically a toughened military ship, the sort used by the government... how would *Star Citizen's* civilian aerospace industry respond to the need for such a ship?

DESIGN - WAYFARER ART THOU?

In early 2021, *Star Citizen's* Vehicle team looked forward to the annual Intergalactic Aerospace Expo scheduled for November. Along with the ships scheduled to go live with Alpha 3.15, the team would also be responsible for a major concept ship that would speak to *Star Citizen's*

future. Their answer was the MISC Wayfarer, named in the tradition of the Freelancer and Starfarer, a large explorer-class ship that would host a complex interior capable of interacting with a number of the game's different systems. The top line description read:

"A large explorer ship, MISC's answer to the Carrack. It comes with everything you will need to explore the far reaches of space. A ship designed to be able to cope with anything that might happen."

To distinguish the new ship from the Carrack and other explorers, the team imagined a major feature as the ability to carry a micro-refinery to allow for long-duration exploration missions. The brief explained:

"As MISC are pioneers in the fuel technology field, they felt the most important feature of an explorer was its ability to keep exploring. The Wayfarer comes with its own micro refinery which allows it to generate its own hydrogen fuel and quantum fuel, making it unique in the fact it can generate fuel to keep going into the furthest reaches of space."

Director John Crewe assigned Designer Mark Gibson to develop out the details needed for the new ship. As the overall process of concept development has been perfected, concept artists have found that working more directly with the designer in charge of a particular ship is more beneficial than the earlier process of simply handing off a brief. In 2021, the early design work no longer ends with the brief and



instead continues alongside the artist as important details of the ship (especially gameplay-relevant ones like the interior layout) can evolve with the thoughts of two disciplines instead of one. In the case of the Wayfarer, later renamed the Odyssey, one major focus of this work was developing out increased specifics defining the ship's interior. The brief grew to plot out the interior deck by deck:

The ship will be split across two floors with stair access to the second floor toward the front and a lift to the rear.

First Floor:

- Medical Room - Features a single medical bed same level as 890
- Garage & Cargo-bay - Can be used to store salvage, spare parts, or cargo. Cargo will be stored around the side of the bay with space in the middle for a ground vehicle. Similar to the Carrack, the forward ramp will be used to allow the vehicle to unload onto the surface but also where people will enter the ship
- Cartography/Radar Room - Allows it to map jump points
- Armory with spare suit lockers and weapon racks for specialized equipment to be able to explore any environment

Second Floor:

- Six individual crew quarters that have a single bed and basic comforts (table, chair, locker, bathroom) similar to that of the crew hubs on the 890/600i Touring
- Communal mess/recreation area attached directly to the crew quarters
- Six escape pods
- Bridge with pilot seat and co-pilot seat
- Engineering based at the rear of the ship spanning both floors. Has an engineering station and two remote turret stations covering the left, right, and lower parts of the ship
- Hangar capable of storing a single ship. Air shield can be used to save on additional internal airlocks to the hangar

In addition to this, Gibson filled out the rest of the standard brief regarding metrics and components and also imagined the series of remote turrets and missile hardpoints that would protect the ship. As usual, the Concept team would benefit from all this work, as well as the increased communication with the Design team that would eventually help the Odyssey hit the implementation process running.

PHASE ONE - ODYSSEY CAN YOU SEE?

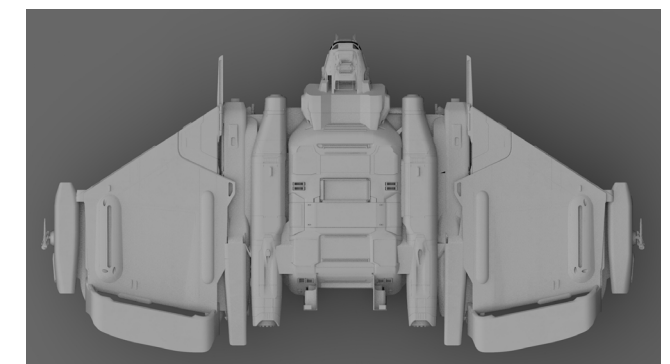
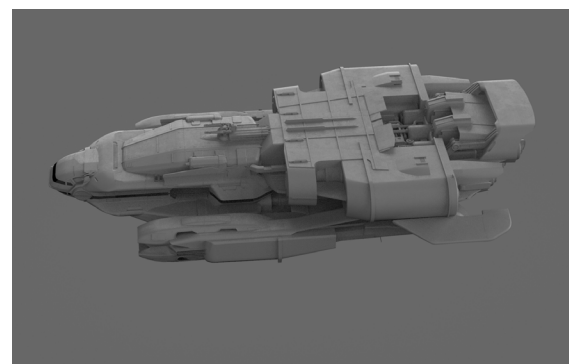
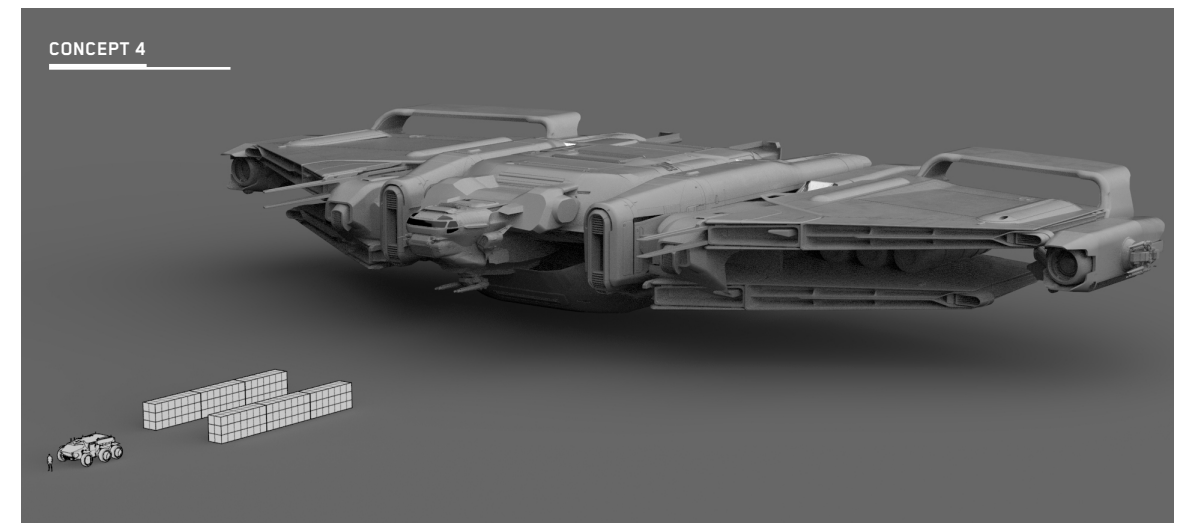
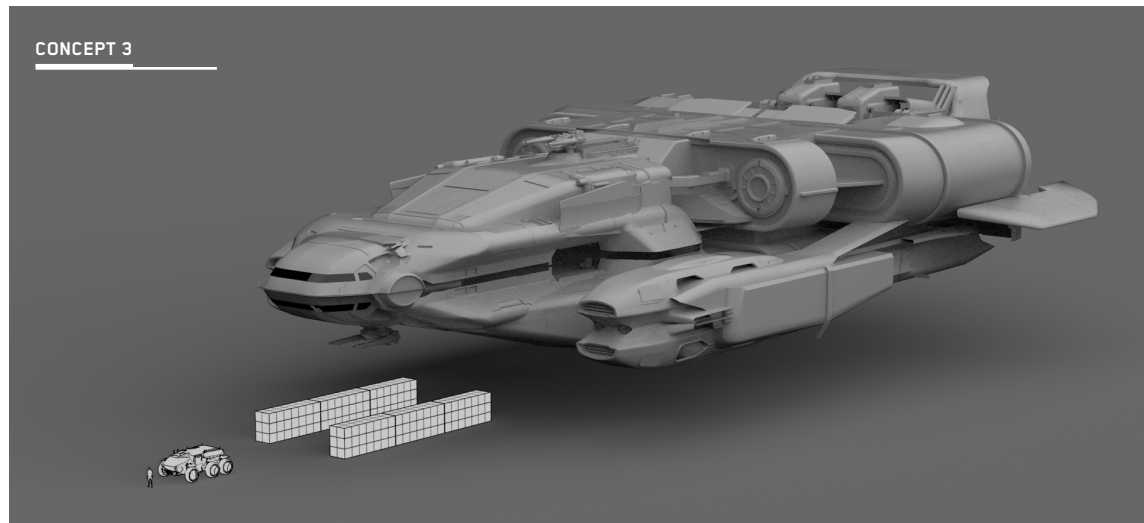
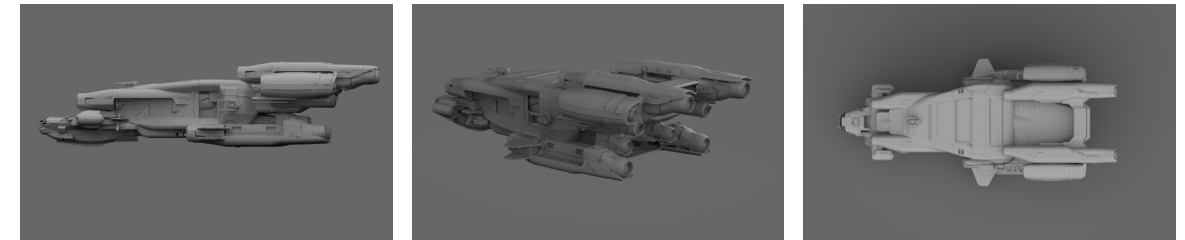
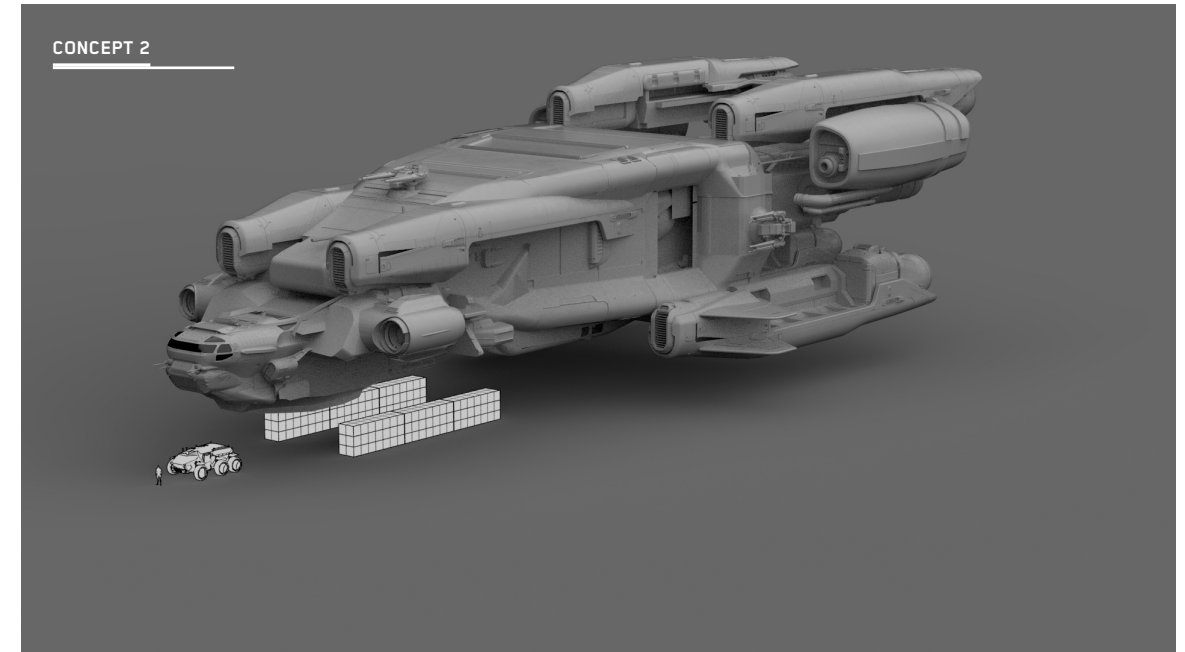
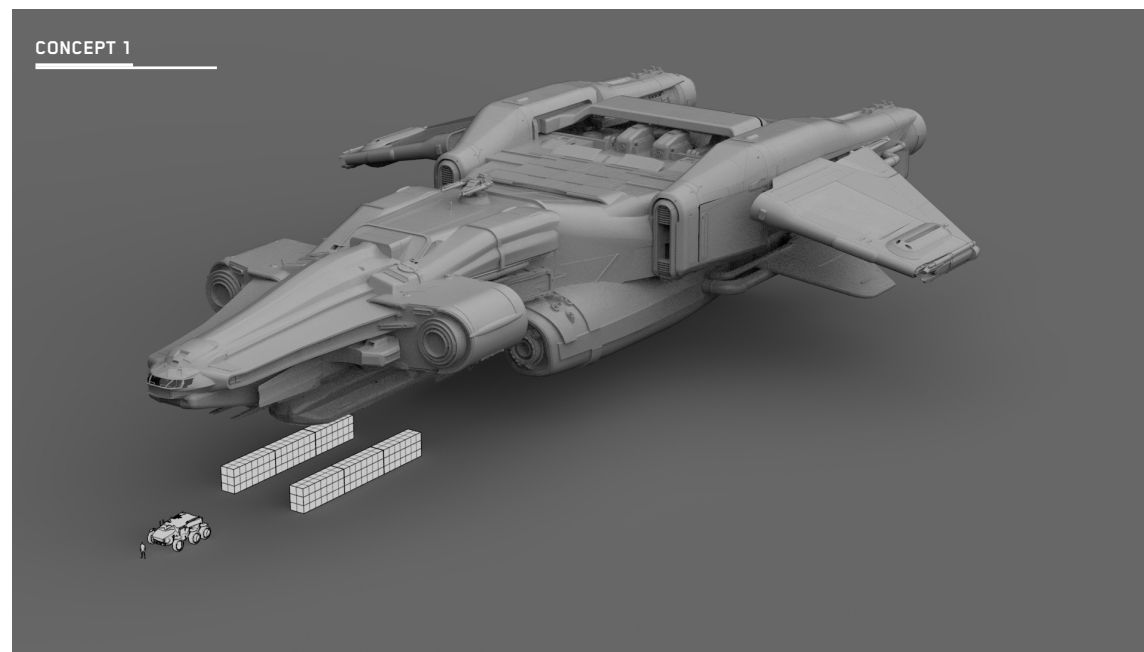
The first design decision a concept artist needs to know is who, in the 'verse, builds it. The Odyssey would be from Musashi Industrial and Starflight Concern (MISC). One of the first companies imagined by *Star Citizen's* loremakers, MISC was responsible for the original Freelancer cargo ship. Where RSI makes accessible vehicles for the people and Origin builds high-end luxury ships, MISC was imagined as a sort of in-between with a totally distinctive design style that mixed vintage spaceflight with ultra-high-tech Xi'an components; a mixture of 1970's Russian aerospace with sci-fi streamlining. By 2021, MISC had developed a wide range of ships from the Freelancer to the Reliant flying wing, to the massive Starfarer tanker and the Endeavor science ship (still to be implemented).

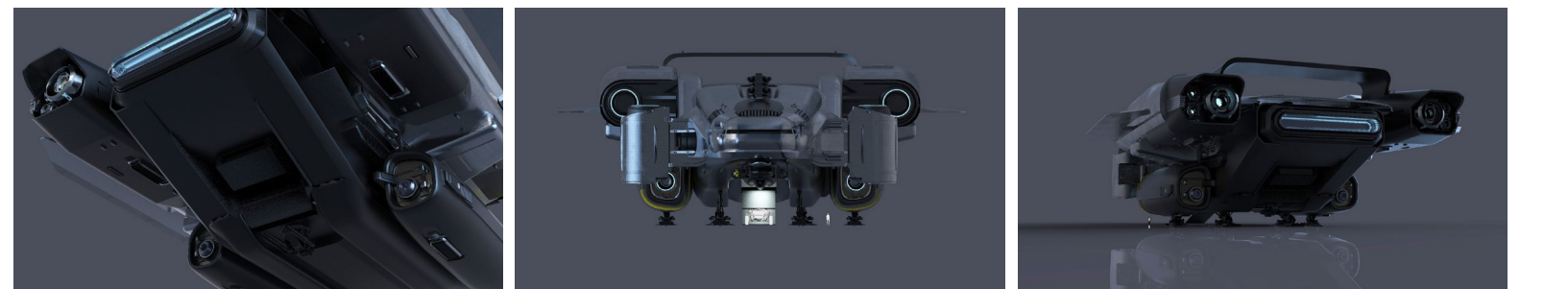
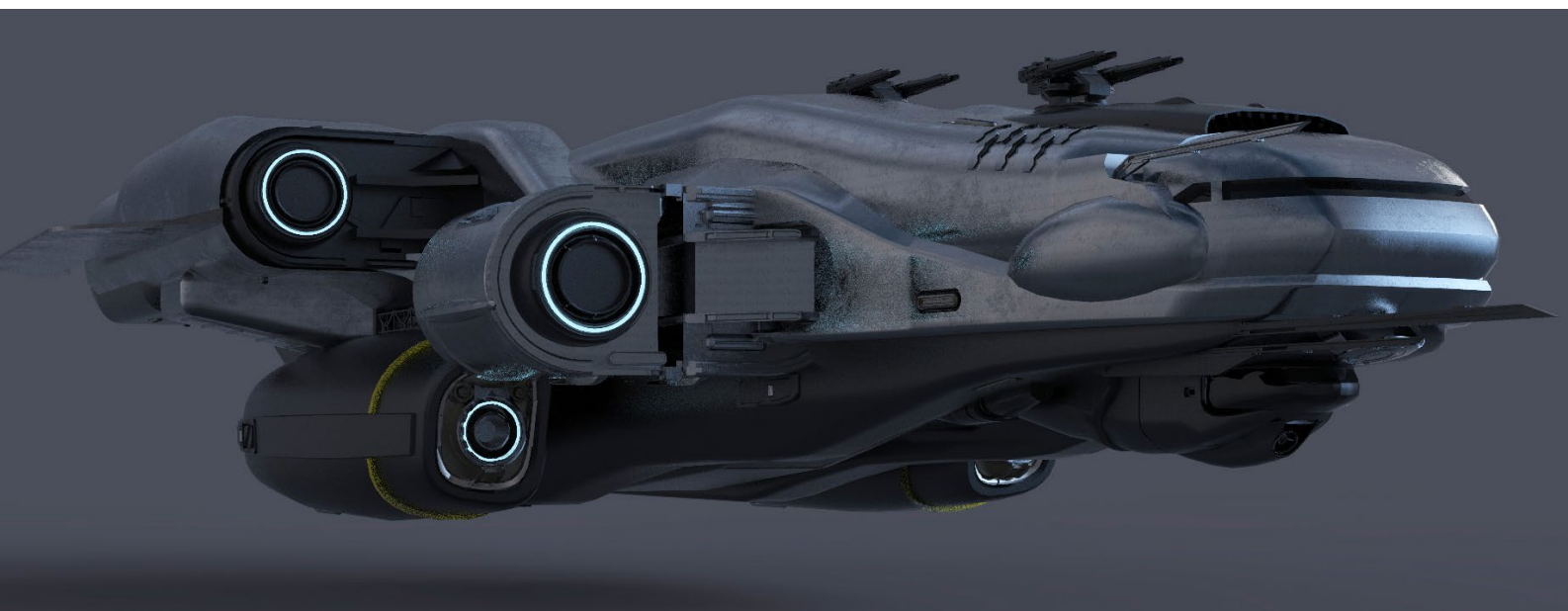
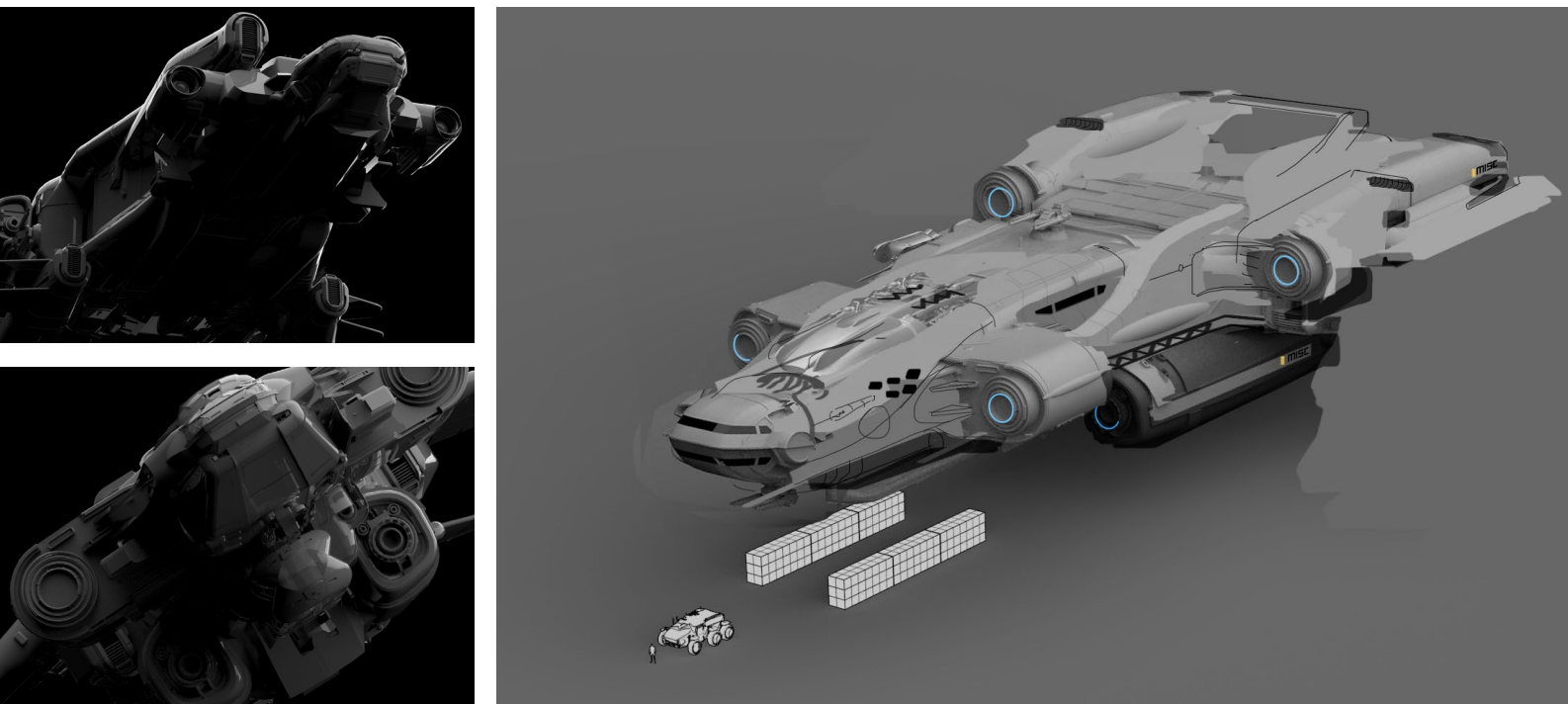
"It takes a little while to find a visual hook with MISC stuff," Art Director Paul Jones notes, "but you eventually fall in love with them." The Odyssey was first presented to him as a six-man exploration ship with the chance to improve on the work done for the Carrack. Knowing the importance of both the job and the competitor to the community, Jones selected one of *Star Citizen's* most experienced outsource artists for the job, Gavin Rothery, the talent behind ships such as the Terrapin, Valkyrie, Talon, and Kraken. Jones collected the whole of MISC's extant fleet with a special focus on the Hull series and the Endeavor (the largest MISC ship in the fleet) to advise Rothery's first pass.

The job began in mid-April 2021, with six weeks scheduled for the first pass phase split evenly between the exterior and interior. Rothery began work in 3D, a process that allowed him to gain traction more quickly by using a kit of existing MISC parts. This, plus his extensive experience in *Star Citizen*, would allow the initial exterior concept phase to go quickly and smoothly.

The result of his initial work was four highly distinct concepts: a winged ship inspired by the Freelancer, a more compact vertical ship inspired by the Starfarer, an Endeavor-inspired ship with underslung nacelles, and a horizontal ship inspired by MISC's Reliant. The variety of designs was especially impressive because each one had to be built around the ship's internal hangar that had a very specific (and very square) look to it. It was clear from the start that building around the hangar would be the most difficult challenge of the design.

Jones thought that the wings on the first concept didn't fit MISC's other ships and that the second version had too much vertical weight for an explorer. He asked Rothery to work from the third concept but to repropotion the cockpit to better express the scale of the ship. With the addition of another version featuring large thrusters and the overall MISC look, Jones forwarded three versions to Chris Roberts to see if they were on the right track. Roberts liked two of them and proposed using the top of one and the bottom of another. Jones took the two models, rendered them at the same angle and performed a quick "cut and shut" to imagine them together. He made an additional 2D pass to add features he knew Roberts would want and other lines that needed to be present. Noting that it is sometimes easier to get ideas right with a quick 2D pass like this, Jones added a hint of the Prospector's equipment, a Starfarer-styled intake, and the refinery technology to



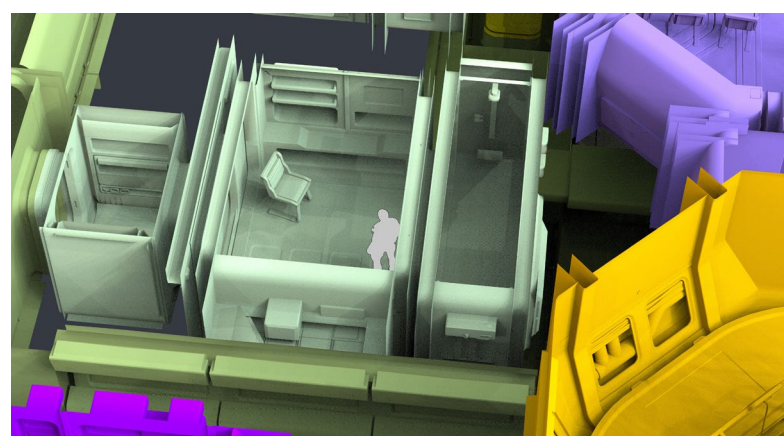
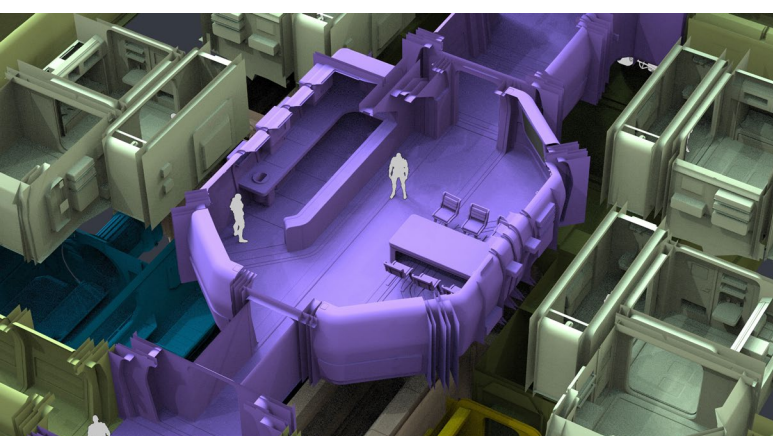
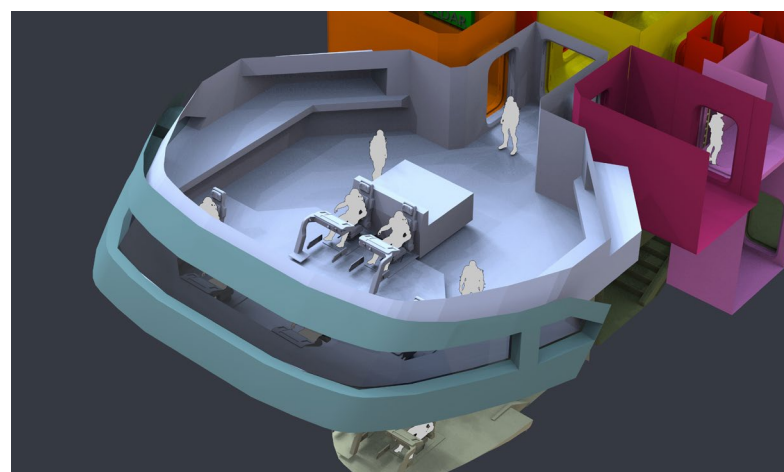
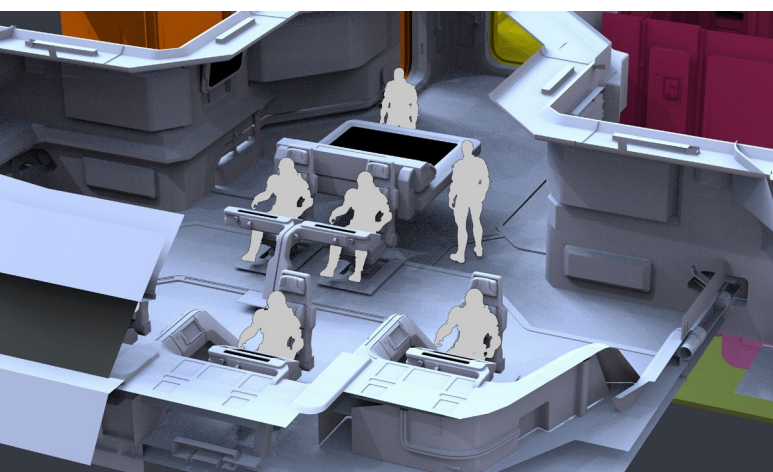
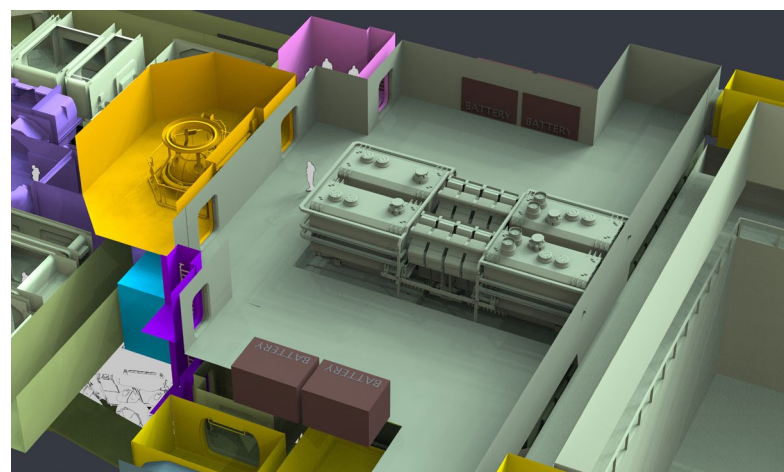
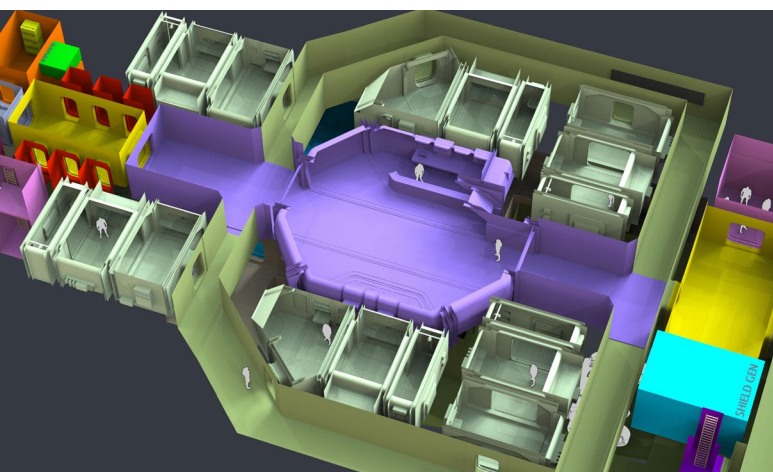
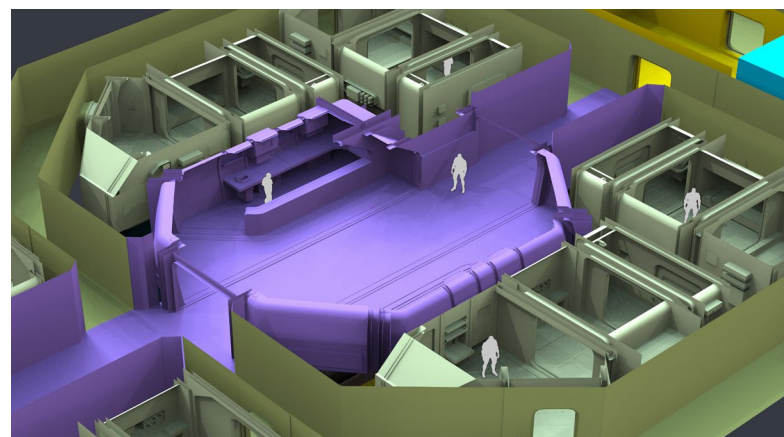
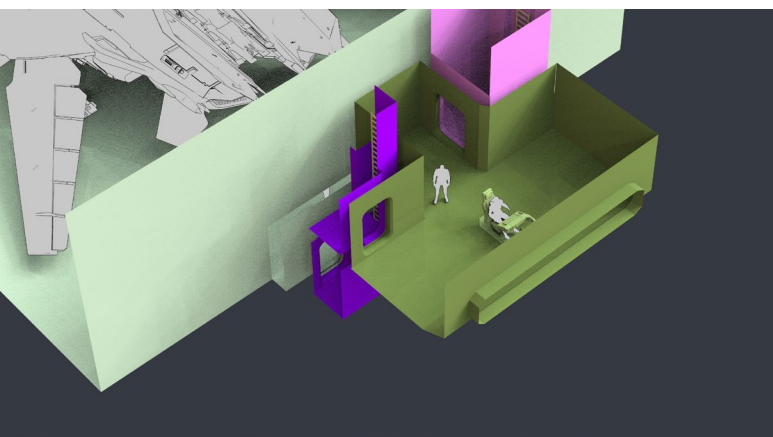


the top to better sell the industrial aspect. He also created an option without the tech, offering a smoother-hulled alternative. Jones passed his chimera to Rothery who understood the job immediately and pieced it all together in 3D.

At this stage, the concept's main thrusters were much more distinctive, sometimes contained in their own separate pod. Jones noted that they were very dominant and that he already knew they would need to be altered as the project progressed. Reviewing the new model, Roberts liked the direction but noted that he needed to see more Xi'an technology to represent the "lend-lease agreement" that MISC has with the alien species. Jones spent additional time trying to decide what "more Xi'an" should mean, experimenting with more blue circles and stylistic venting. The process would come to a head later in development as he finally hit

on the perfect Xi'an element: rotating thrusters stored inside casings that create a unique animation during landing.

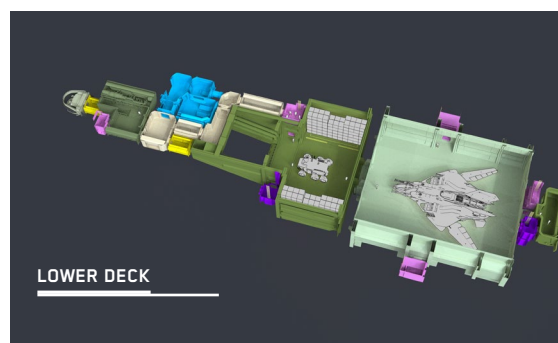
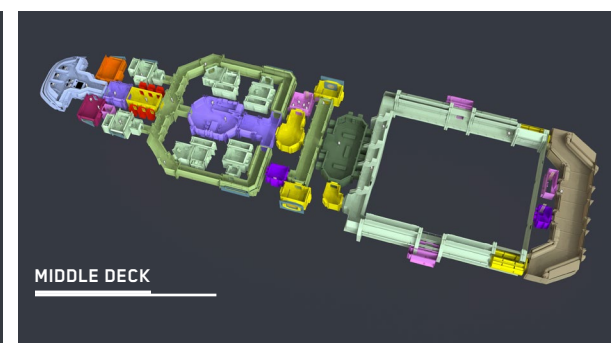
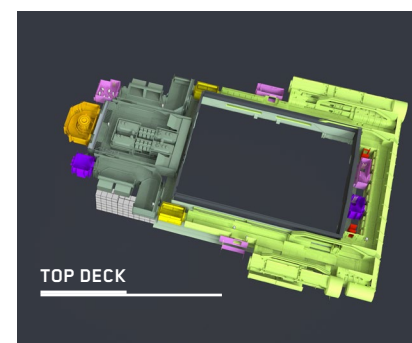
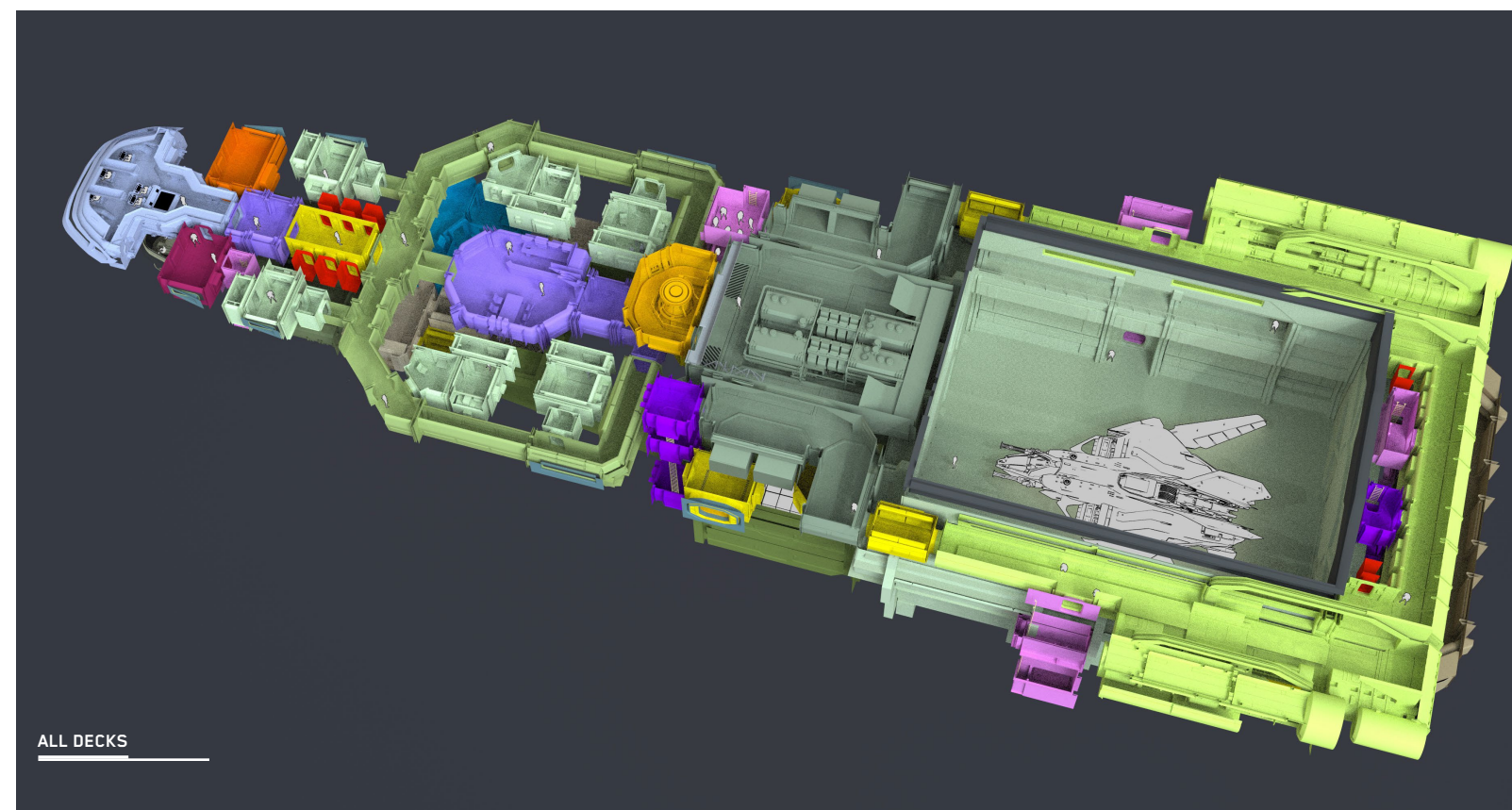
Tackling the large hangar in the rear of the ship was the next challenge as it continued to present a visually dominant rectangle. Jones wanted the focus taken away from it to make the overall ship more interesting. But how? Rothery started by placing two of the turrets on either side of the landing area, though this ultimately left the underside of the ship undefended, prompting a move to the ship's front. Next, they attempted missile launchers, but here again they felt dwarfed by the ship's engines and engineering area. Rothery hit on the idea to add a large rear window to the ship, which would survive to the final concept and hopefully will someday give players a spectacular panoramic view of the unknown space they are charting.



Next, the artists worked with designer Mark Gibson to develop out the proposed interior. The first pass split everything across three decks, with a 3D layout from Rothery. The top and bottom decks would stay largely the same from this first pass, but the middle deck would get a massive rework. Working from Rothery's first version, Jones provided feedback for a more interesting layout that would replace the single flow from the original. He wanted players to have different routes from place to place aboard the ship that would eventually make for much more exciting boarding actions. With so much space on the Odyssey, there were plenty of opportunities to look for loops that would make things more interesting during real gameplay while avoiding pinch points. Jones went on to add lifts and generally improve navigation midship. The next layout would feature updated crew quarters and circular halls around them to improve navigation, as well as a larger space for the suit locker and storage. A walkway was added around the hangar allowing

players to observe their stored ships while the Odyssey is flying. Work to the bottom deck added airlocks and revised the medbay and tech room in the chin that would include the tractor beam.

Pass after pass at the interior added more and more complexity. The medbay grew from a simple room of beds to a series of smaller rooms that included a private patient area and even an office for the doctor. Larger rooms like the suit locker were pared down into smaller areas and made more functional, while areas like the mess hall gained a food prep area and other important details. The bridge was also solidified, with a larger "starship" style layout featuring the distinctive MISC letterbox-style window and more distinct seating positions. Component rooms were added nearby. Crew quarters were built out based heavily on the Starfarer kit, with the concept becoming more and more layered as the ship came together.



PHASE TWO - MISCELLANEOUS

During the second phase of the concept, which would take the Odyssey through August and very close to its concept reveal, the focus returned to refining the exterior.

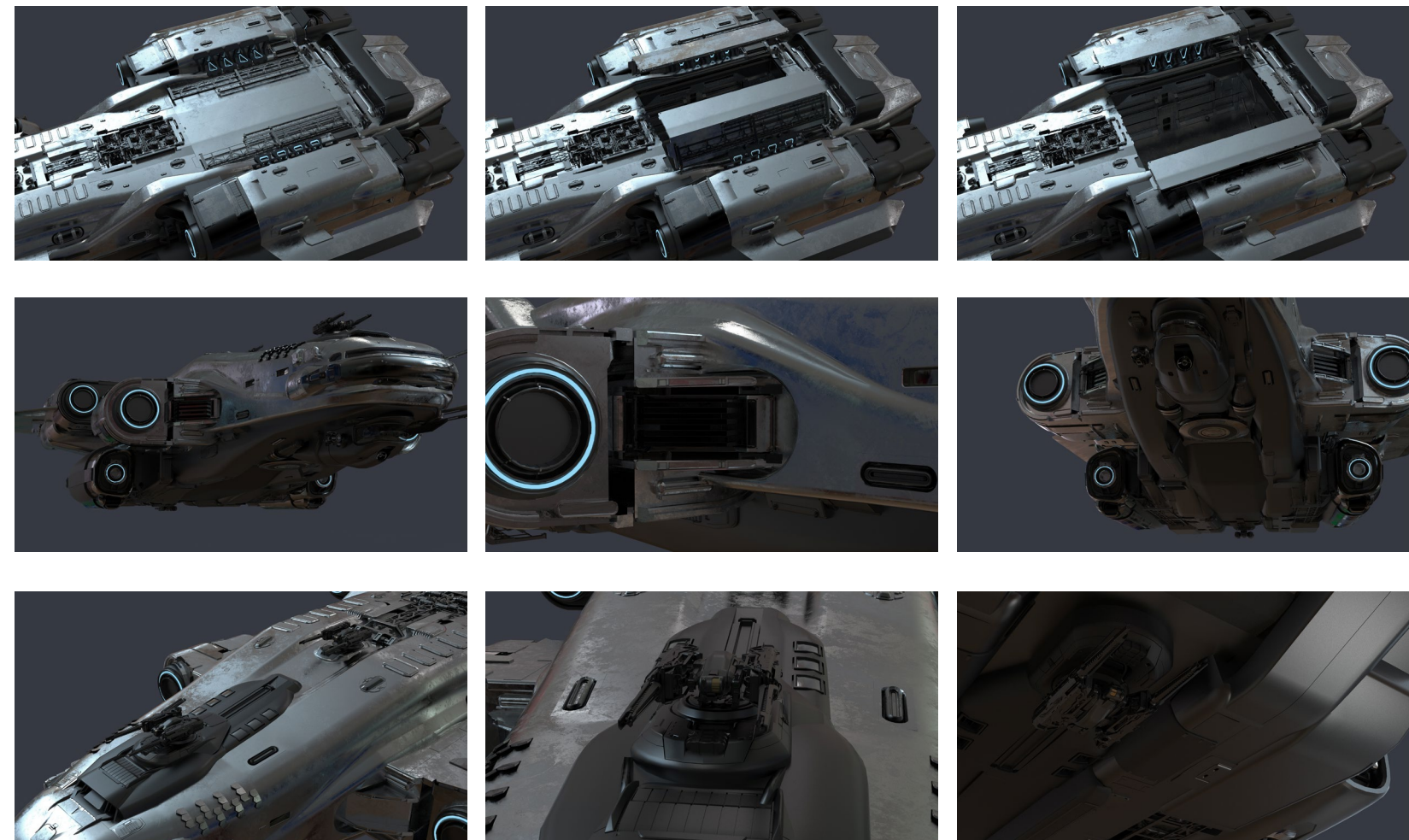
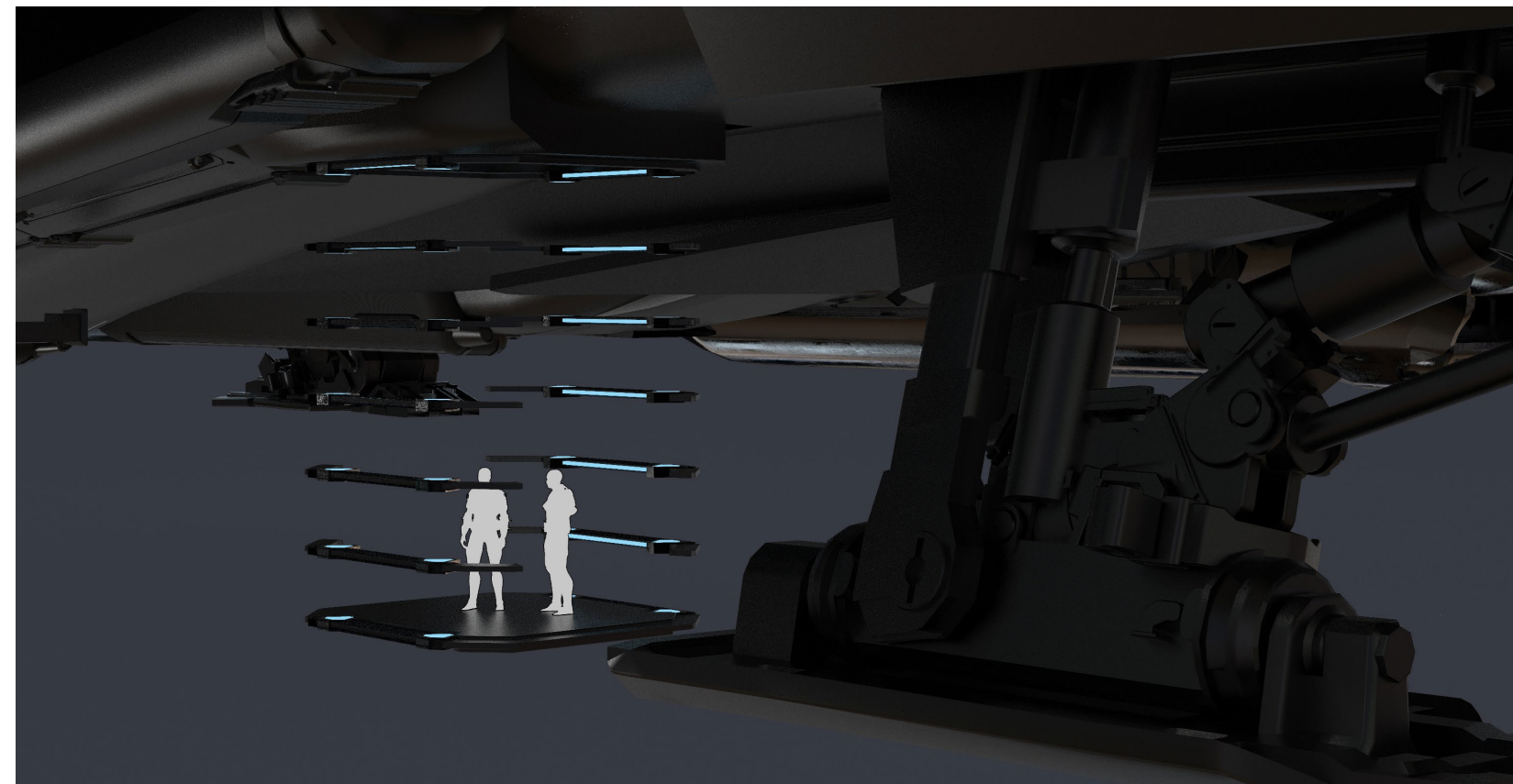
The artists proportioned the top of the ship to make it feel less rear heavy. Additional details were also added to the bottom of the hull, especially tech points and a network of trellises. Jones wanted to reduce the overall visual volume of the ship but knew there was no single magic bullet; instead, a thousand minor changes would have the overall desired impact. Countless tiny tweaks converted the ship to a less bulky design: reducing the sizes of pods, changing the body line shape, reducing the volumes of individual surfaces, and generally breaking things up. Another pass restyled the turrets to appear softer and more civilian. Here, Jones hit on another element of Xi'an styling -

a sort of linked-array grav tech that would appear on the top of the ship. The shape was based on an undeveloped Xi'an idea from years earlier and was extended to a special Xi'an crew lift that would give players a unique way to board the ship. Color was also a major consideration here. Jones notes that people don't often notice the color of a ship but that it can make a major impact on the overall look. Bands of color can fix visual problems and send the eye where the artist desires, reducing weight and directing attention to the right places.

The Xi'an-style VTOL animations mentioned earlier were also developed at this stage, blending seamlessly with the hull. Jones made one final change to reduce the weight of the hangar, removing the harsh front edge that appeared nearly across the entire ship to break up the shape and soften the edge. With one final move of the turret to protect the ship's escape pods, the team was happy with the state of the Odyssey and ready to move it to the promotional stage.

FORWARD FLIGHT

RECONFIGURED FOR VTOL



Jones created the ship overview that would direct the promotional images created for the IAE event: what does it look like in space, how does it look rendered, and so on. Here he made sure to show all its possible forms and all the animations that would be needed. He also developed a series of different skins for the ship that could be offered as options, ranging from one inspired by a panel van to a white variant with glowing lines on the side and even one inspired by a sneaker! From here, over two-dozen promotional images were created to explain visually how the Odyssey would function in the final game, delivered just in time for the event in November. Everyone involved waited eagerly to find out how the community would respond to a new take on the Carrack's job... would the Odyssey become *Star Citizen's* newest flagship explorer?



MISC ODYSSEY SHIP PAGE

<https://robertsspaceindustries.com/pledge/ships/odyssey/Odyssey>

SHIP PRESENTATION

<https://robertsspaceindustries.com/comm-link/transmission/18438-Introducing-The-MISC-Odyssey>

Q&A

<https://robertsspaceindustries.com/comm-link/engineering/18470-Q-A-MISC-Odyssey>

THE
**GREYCAT INDUSTRIAL
REMOTE ORE COLLECTOR (ROC)
SERIES**

DEVELOPMENT HISTORY



DEVELOPMENT HISTORY



The company that would become Greycat Industrial was founded in 2337. For roughly the first three centuries of Greycat's existence, the corporation was responsible for the design and mass manufacture of industrial tools. These ranged from widely adopted general-use multi tools and mining components to more complex, specialized production runs of equipment sponsored by other industrial concerns. In particular, Greycat manufactured a line of handheld and suit-mounted mining equipment that became the standard for smaller, specialized material extraction jobs. In 2654, after a lengthy period of corporate instability, Greycat's output was reorganized around its first mass-production vehicle, the ubiquitous Personal Transport Vehicle (PTV).

The unprecedented success of the PTV (the low-cost vehicles quickly filled hangars and urban streets across the Empire) led to the rapid expansion of Greycat. In under a decade, the company had acquired or converted twelve factories to produce PTVs dwarfing the entirety of its personal equipment lines and leading to a near total abandonment of its smaller corporate partnership efforts. From the start, internal efforts were developed to follow up on the PTV with more specialized or more capable vehicles. Proposals ranged from sixty-person grav buses to seven-vehicle combined suites of dedicated construction equipment. Of these, it seemed a safe bet that at least one would end up being aimed

at connecting Greycat's lengthy history with the mining industry to its apparent future in ground-vehicle manufacturing.

One benefit of Greycat's still-active ties to mining was that its early access to industry sales data allowed the company to quickly identify a major shift in mining that began to occur in the late 27th century. Prior to this point, the most significant mining processes were aimed at the extraction of metals in as high quantities as possible. Such metals could be easily refined using mobile equipment and then applied directly to the development of frontier settlements, while more complex equipment requiring more delicate raw materials was typically manufactured on more developed worlds and sold as constructed to newly settled areas. What Greycat, and soon the rest of the Empire, discovered was that a major shift was now in progress: improved miniaturization and simplified construction techniques were beginning to allow the manufacture of highly complex electronics and other components in more remote places. This, in turn, drove a major need for specialized raw materials that would need to be collected more carefully than traditional churn-and-burn ore extractors were capable of.

To meet this need, Greycat's growing development teams proposed almost a dozen different solutions ranging from complex, modular

walking platforms to a PTV variant with an extended rear component storage area. Executives opted to drop support for these extremes and select a middle path: a two-person wheeled mining platform then called the ROCK (Remote Ore Collecting Kit). At this stage, the decision carried major risks: Mining efforts had been run by large corporations for hundreds of years and there was much debate as to whether or not the new influx of smaller owner operators was anything more than a fad. Still, Greycat's executive team felt strongly that the new vehicle represented what they believed mining could look like in 2700 and beyond.

The ROCK, quickly renamed the ROC after corporate deemed the K "too cute," proved to be a significantly more complex development process than the PTV. First and foremost was the initial requirement that the vehicle include a fully enclosed cabin capable of offering life support for both a driver and a mining tool operator. As the ROC was intended to be operated in all terrain (most contemporary mining was performed in zero gravity on planetoids and large asteroids), development needed to follow the significantly harsher and more complex standards of spacecraft design that never had to be considered on the PTV. Designing the cabin proved extremely difficult, with the prototype's final form including tandem, unconnected pods; one per crew member, each with their own fully isolated life-support system.

The difficulty in developing the main cabin was significantly compounded by another overwhelming technical effort: the suspension system that would be needed to allow the ROC to traverse a very uncompromising type of undeveloped terrain. The decision was made early on in development to stick with traditional wheels instead of crab legs or thrusters, which meant that Greycat needed to spin up an entire team dedicated to developing a new type of suspension. While the PTV was technically certified as being capable of off-road driving, its suspension system was simple and easily overloaded when removed from its comfort zone. Developing the ROC's balanced carriage took four years and resulted in six distinct patents. The work was done simultaneously with the similarly challenging cockpit design process, though the two teams were largely disconnected throughout.

With a hard reveal and sales campaign planned for the 2704 Terra Agriculture and Mining Exposition, the two halves of the physical project finally came together to produce a working prototype with just eighteen months to go. Unfortunately, the lack of communication had proved severely damaging to the process: despite countless attempts, the elaborately designed suspension system could not accommodate the bulky double cockpit. With designers working around the clock, it seemed Greycat was on the verge of a failure as enormous as the PTV had been



successful. With just six months to go, the project's lead designer made the shocking decision to abandon the original specifications in favor of preparing a prototype that could go into production on the original schedule.

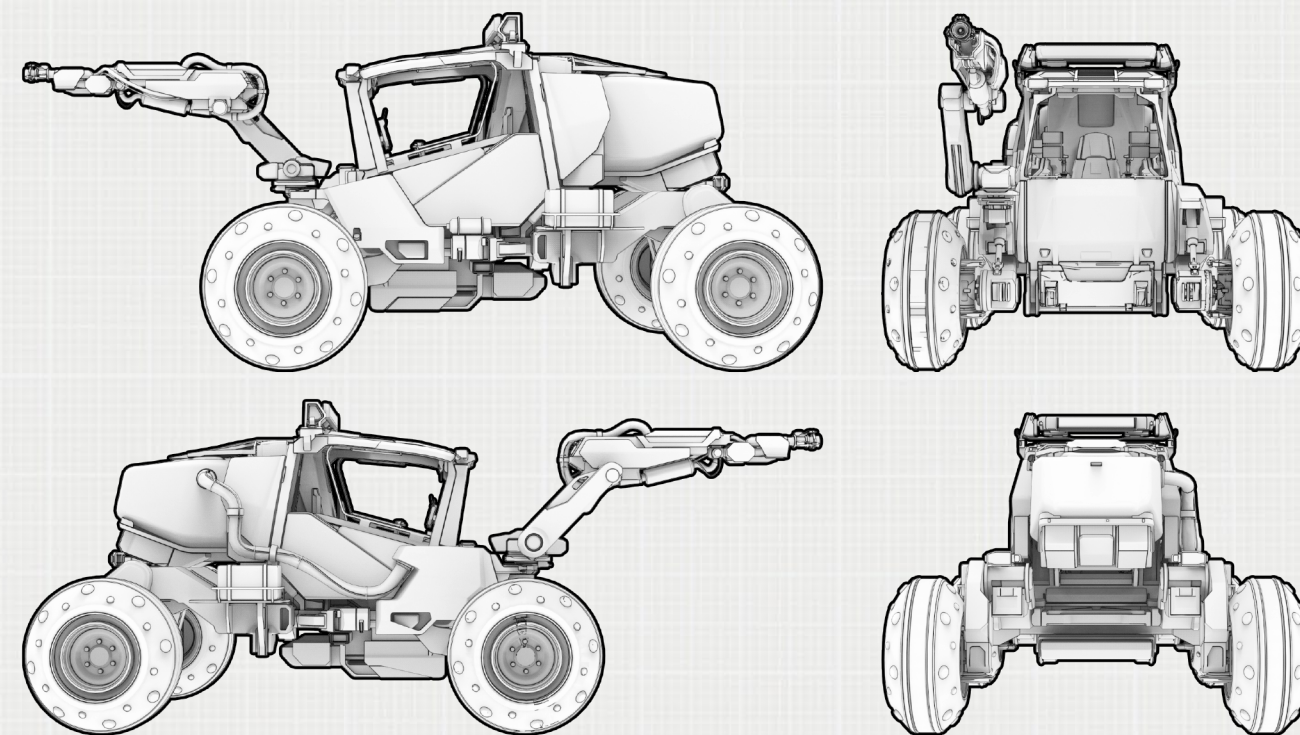
With that, work was divided into two projects: the ROC, a rush effort to save the investment by producing a working mining vehicle, and the ROC-DS, a longer-gestating effort to complete the original two-person design. The ROC favored the original suspension design and opted to drop the life-support requirement entirely; instead of a closed cabin where a crew would work in shirtsleeves, there would be a single-person open cockpit large enough to allow a miner to sit in full survival gear. With its target audience now single-proprietor miners and a significantly reduced tech payload, the Greycat ROC would have a fighting chance at widespread adoption.

Luckily, the ROC found an audience very quickly, as the small mining vehicle was unlike anything audiences used to large refinery-style setups had ever seen. The first wave sold through immediately and within months thousands of production model ROCs were rolling off a converted PTV factory line for shipment to developing worlds around the Empire. Individual operators outnumbered corporate fleet purchasers ten to one, marking a noticeable swing in the demographic of miners that would lead to a host of ship manufacturers taking increased interest in the field in the coming decades.

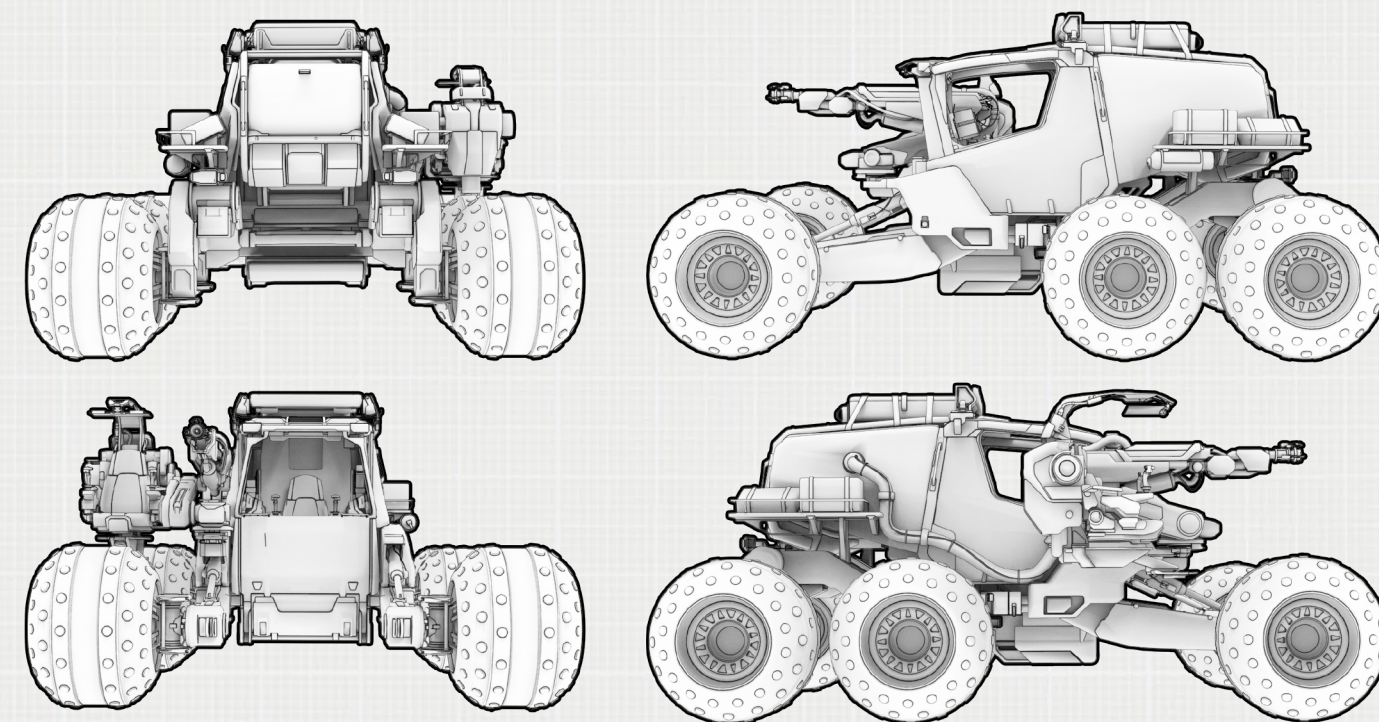
Development of the original model, now the ROC-DS, continued slowly

but surely as Greycat knew that there was a similar but separate audience for a more capable but more highly crewed mining vehicle. Try as they might, the tandem cockpit design could not be made to work with the resources available and a half solution was eventually approved: the updated model would feature a fully enclosed cabin for the pilot but an external seat for the mining equipment itself. This choice of design alteration proved smarter than it may have seemed on paper: veteran miners actually preferred the increased visibility over the moderate protection of a cabin that further separated them from their work.

There have been very few changes to the ROC's superstructure since its inception. While wheel materials are sourced differently today, they are visually identical and the complexity of the suspension design has led to both operators and the company treating it as a 'hands-off' system. The most significantly updated aspect of the ROC in the past two-hundred years has been the mining rig itself. The modern ROC and ROC-DS use the now-standard laser aperture, while models built before 2850 used an earlier tool that separated crystalline structures from junk ores through the use of superheated chemicals. These chemicals proved particularly damaging to the environment and doubled the time needed for refinery facilities to purify the recovered materials, a value proposition that prompted the entire industry to invest heavily in replacement technologies. Greycat appears to be happy to continue manufacturing the ROC and ROC-DS with little alteration, although rumors persist that a three-person "Big ROC" or a fully automated ROC drone are at some stage in development (a claim Greycat roundly denies).



ROC & ROC DS			
MANUFACTURER	GREYCAT INDUSTRIAL	HEIGHT	ROC 3.1M, ROC DS 3.3M
ROLE	MINING	WIDTH	ROC 3.8M, ROC DS 5M
MAXIMUM CREW	ROC 1, ROC DS 2	CARGO	ROC 1 SCU, ROC DS 4SCU
MASS	2,000KG	UTILITY ITEM (ROC ONLY)	MINING LASER
LENGTH	ROC 5.1M, ROC DS 6.6M	TURRET (ROC DS ONLY)	MINING LASER





STEGMAN'S

"Tough, durable, and comfortable." Greg Stegman muttered those three words before his voice grew so quiet everyone in the packed board room leaned forward. A large man with a small voice, Greg was famously shy and socially awkward. Yet with his company, aptly named Stegman's Clothing and Uniforms, rapidly expanding, CEO Ahanti Riordan convinced him to address department heads and elaborate on his vision for its clothes and future. Following those three legible words, Greg mumbled a few more half-heard sentences than sat down.

As always, Ahanti took the reins and implemented what became "TDC" tests; phases in both the design and production pipeline that expressly considered how tough, durable, and comfortable that item was. Thanks to Greg's fine eye for industrial-yet-comfortable clothing and Ahanti's strategic vision and passion, Stegman's Clothing and Uniforms became a manufacturing empire beloved by blue-collar workers that remains in family hands to this day.

TUNNEL VISION

Born in 2615 to young parents, Greg Stegman grew up in the underground tunnels of Urial (Oberon system). His family clan was

relatively small and politically weak, which relegated them to the coldest tunnels. Darien, his father, hand delivered crates while Bess, his mother, worked in tunnel maintenance. One day she slipped and slid down a small gravel embankment on her knees. Her cheap pants with built-in knee pads shredded in seconds. Greg helped treat her nasty wounds then tried to patch what remained of her threadbare pants. Though he wasn't able to salvage the clothes, his mother encouraged him to keep trying. Instead of playing, he preferred to check the family clothes for wear and tear and fix what we could.

After recovering from the accident, Greg's mother hopped a cargo ship to find better fortunes for the family. She crewed haulers, sent a steady stream of meager remittances, and passed through Urial as often as she could. For his birthday one year, Greg's mother surprised him by bringing him along on a run to Locke (Idris system). She not only wanted him to see that a wider universe existed but see if he took to hauling. Instead, he fell in love with Tany's, Locke's beautiful capital city experiencing an economic boom fueled by Aegis factories fat on government contracts. With blue-collar jobs plentiful and wages considerably higher than Urial, Greg convinced his mother he could do more good for the family there. Months later, Greg moved into a



small place in Tanys and landed a factory job. His mom helped get him situated then hopped a hauler, leaving him on his own. Greg had just turned seventeen.

LOCKED IN

Ahanti Riordan came from a family who helped colonize Locke and then survived the devastating orbital bombardment during the First Tevarin War. After the war, her family built a restaurant on the Lost Quad, Tanys' central plaza. It became immensely popular and allowed her family to open multiple franchises and expand their business interests into real estate. Ahanti was managing that very restaurant in 2633 when she noticed a young man spending a lot of time in the plaza. He'd eat the same meager meal and sew patches into clothes while watching people pass. Supremely curious, she introduced herself and treated Greg to dinner at the restaurant. Greg explained his journey to Tanys and how he patched the clothes of co-workers to make extra credits to send to his family. Touched, Ahanti offered him a free daily meal, which Greg accepted but insisted he repay by doing upkeep on the outfits of the

restaurant staff. Once Ahanti saw his sewing skills, she knew his talents were being wasted in a factory. She convinced him to quit his job then hired him to make uniforms for her restaurant.

Ahanti set him up in a small storefront her family owned. There he created the uniforms for her business and several others while also doing repair jobs for factory workers. His talent and competitive pricing, only possible due to Ahanti not charging him rent, quickly turned the shop into a success. Greg soon earned enough to move his parents to Tanys to work for him. While Greg was content working out of the small shop, Ahanti pushed him to focus his talents on designing clothes rather than simply repairing them. The two had grown close over the years and fell in love. They would remain partners in life, love, and business for the rest of their lives.

In 2643, the operation moved to a massive factory to focus on manufacturing and became officially named Stegman's Clothing and Uniforms. By then Ahanti was CEO and used her deep connections to Locke's business community to land uniform contracts. Steady growth

continued until 2650 when Aegis came knocking with a contract that sent Stegman's into the stratosphere. This allowed Ahanti to scale the business again, open their first factories outside of Idris, and begin their pivot to selling the consumers. By the early 2700s, Stegman's items would be a staple on job sites across the Empire and the brand an industrial clothing empire.

INDUSTRIAL DYNASTY

Greg and Ahanti retired in 2704 to focus on her declining health. While building a manufacturing empire, the couple also raised six kids and trained them to take the reins. The quality, comfort, and durability of the clothes kept Stegman's strong for decades but growth eventually stagnated then declined. In the 2840's Nasiah Finney, CEO and great-granddaughter of Greg and Ahanti, attempted to revitalize the company by expanding into industrial armor. After a lengthy and expensive R&D process, focus groups hated the armor, calling it "clunky" and "uncomfortable." Knowing the armor would need a significant rework, Nasiah shuttered the division instead of sinking more capital into it. Though the endeavor brought Stegman's to the brink of bankruptcy,

Nasiah's decision to stop then probably saved them from it.

Nasiah consulted the wider family for ideas and ultimately decided to refocus the company on what got it there. After years of subtly tweaking their products, Nasiah reverted several of their best-known products back to Greg's original designs. Called the Generations Collections, the company also launched a famous marketing campaign that featured modern workers wearing one of the pieces next to a photo of a family member wearing the same items decades or even centuries earlier. This return to basics, alongside market forces that saw several competitors consolidate or shutter, led to a rebound for the brand and their fortunes.

Centuries after its founding, you'd be hard pressed to find a work site where someone wasn't wearing Stegman's. Yet the company's impact extends beyond the industrial sector. While the company made its name with hardhats, safety glasses, uniforms, and more, the comfort, durability and rugged aesthetic of their clothing has also made it popular for everyday wear. Whether at a landing zone, jobsite, or aboard a ship, there's always a chance some nearby will be wearing Stegman's.



PRECIOUS CARGO

Whether searching deep space for scrap or hunting hostile landscapes for resources, pilots across the 'verse use their industrial ships to collect valuable items. Now's your chance to show how much you treasure your hardworking vessel with the all new Gemstones liveries. Inspired by the colors of precious stones coveted across the empire, this stunning series is exclusively available for the MOLE, Prospector, ROC Series, and Reclaimer.



ARGO MOLE



MISC PROSPECTOR



AEGIS RECLAIMER



GREYCAT ROC SERIES

