

JUMP POINT

A ROBERTS SPACE INDUSTRIES PUBLICATION ISSUE 04.04

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Gavin Rothery & others*
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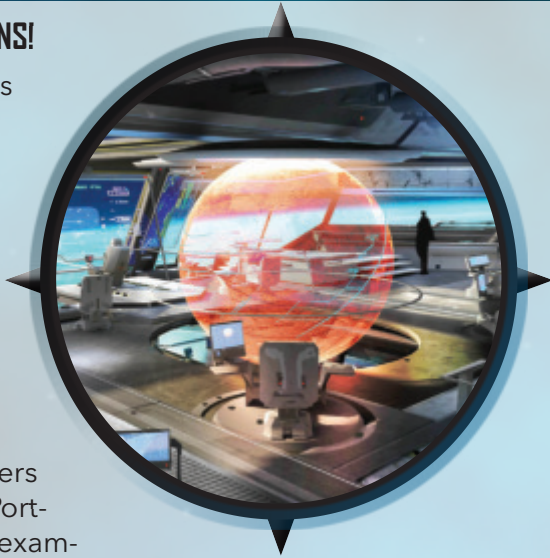


GREETINGS, CITIZENS!

This issue's title is "Reaching the Stars," and that applies to the entire issue. The Work in Progress is the Starfarer, a refueling ship that travels among the stars and enables others to, as well. Our Portfolio this month examines the creation and development of Tarsus jump drives, along with their scanning and nav equipment, all of which enable explorers to reach new stars, time after time. I will confess a slight pun in the connection to our interview Behind the Scenes: we talk with the Performance-Capture team who have been working with plenty of stars over the last several months. The Galactic Guide explores Nemo, and a key element in that system's story (as is true with all star systems) is how the first explorer reached it. And finally, we follow Sorri as she completes her second major run and works out her own way to reach the stars.

In fact, "Reaching the Stars" is also an appropriate title for myself over the last few months. I won't promote the Kickstarter I just completed (that is so last month), but I do want to thank everyone in the *Star Citizen* community who helped push us over the top.

In most industries, at most companies, if I wanted to launch something like a Kickstarter, I would be told, "well, ok, just as long as you keep it low-profile and it doesn't interfere with your work here." That's not how Cloud Imperium responded; they know something about reaching for the stars and they went all in to help me reach my own stars.



Chris, Ben and Sandi have gone above and beyond in supporting me, in advice, encouragement and action. (I could not have survived the final week marathon without Ben!) I cannot thank them enough. Other folks at RSI supported the Kickstarter campaign financially, through social media, and with many encouraging words.

But what is truly amazing to anyone who hasn't gotten to know you over the last three years is how the backers of *Star Citizen* rallied to help. You pledged, even some of you who don't play board games. (Try it some day when the power is out – you might like it!) You were there at the gaming conventions, you were there at the launch parties, and you were there in the forums with all sorts of encouragement. (Special shout out to Miku for hosting the final hours of the Kickstarter online.) You took a leap of faith in me.

You were there. And I am grateful. Thank you.

May you, when you pursue your crazy dream (whatever it may be) be surrounded by good people as I have been.

Hold on, it's gonna be a wild ride!

David

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COVER: NATHAN DEARSLEY
PAGE 50-59: PHOTOS, HANNES APPELL
PAGE 60: FORREST STEPHAN



FROM THE HICKPOT

Starfarer



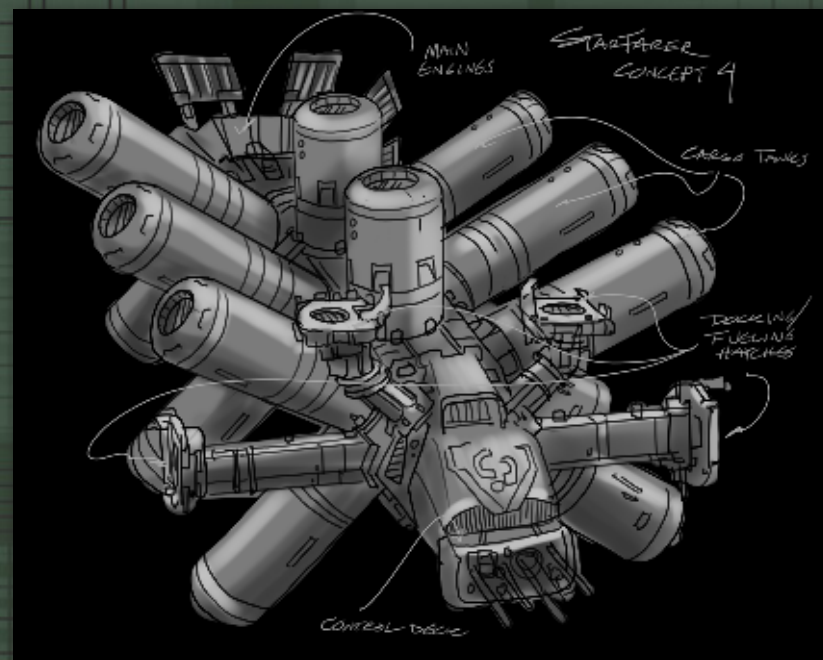
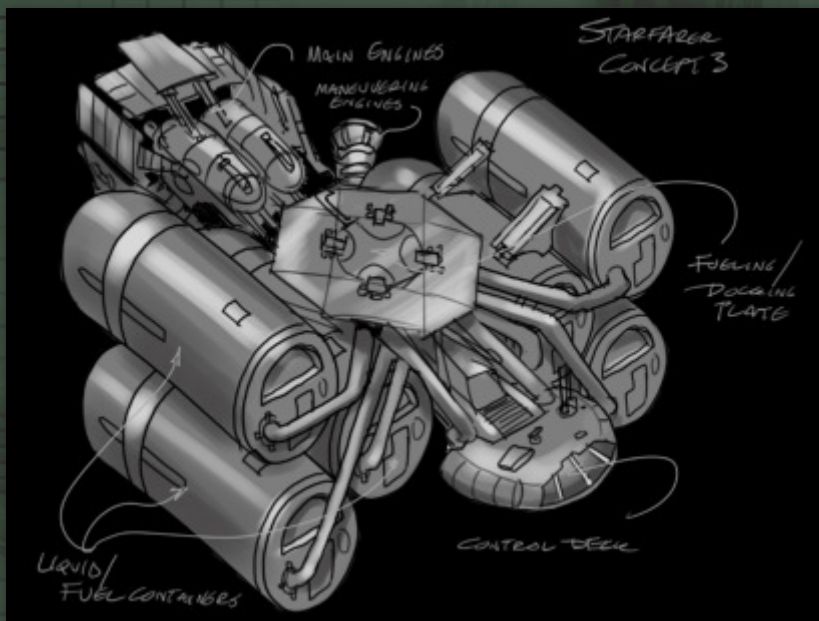
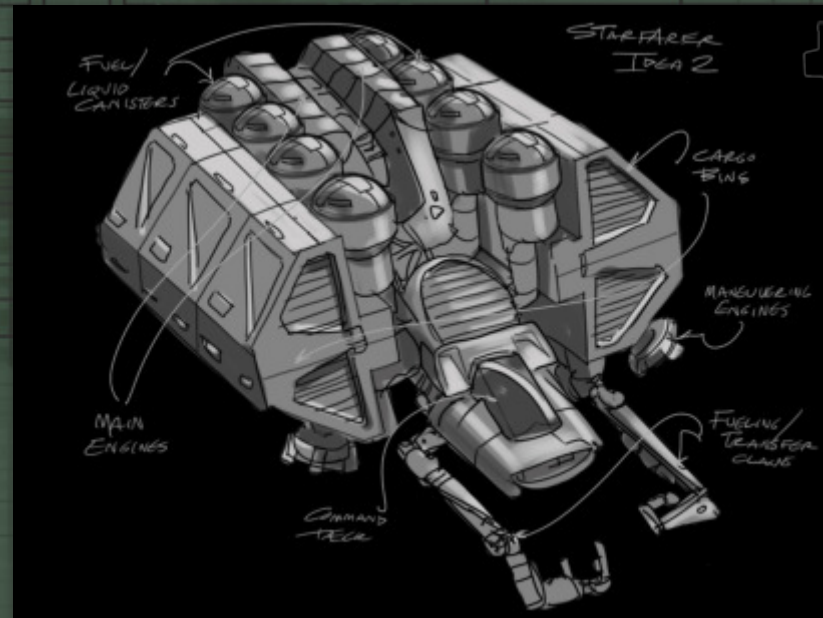
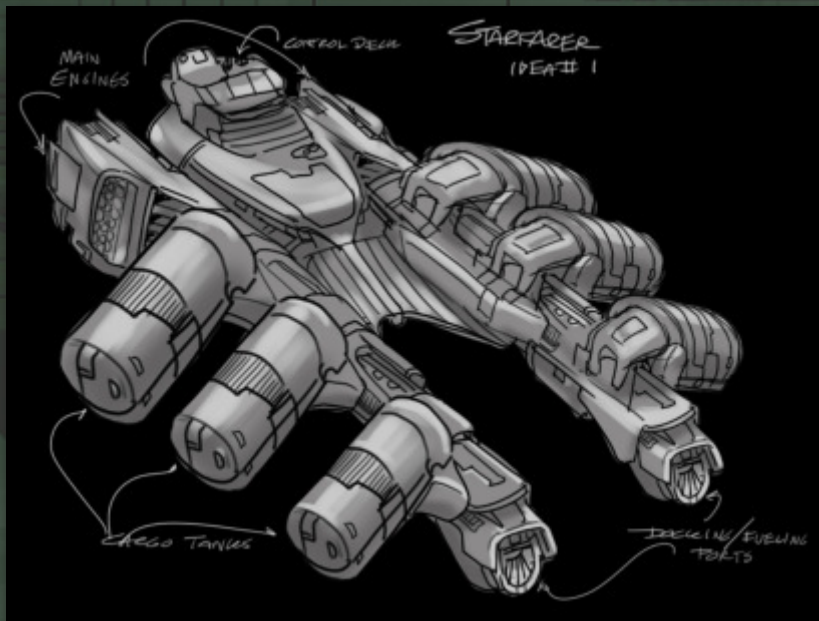
WORK IN PROGRESS

Daren's final concept

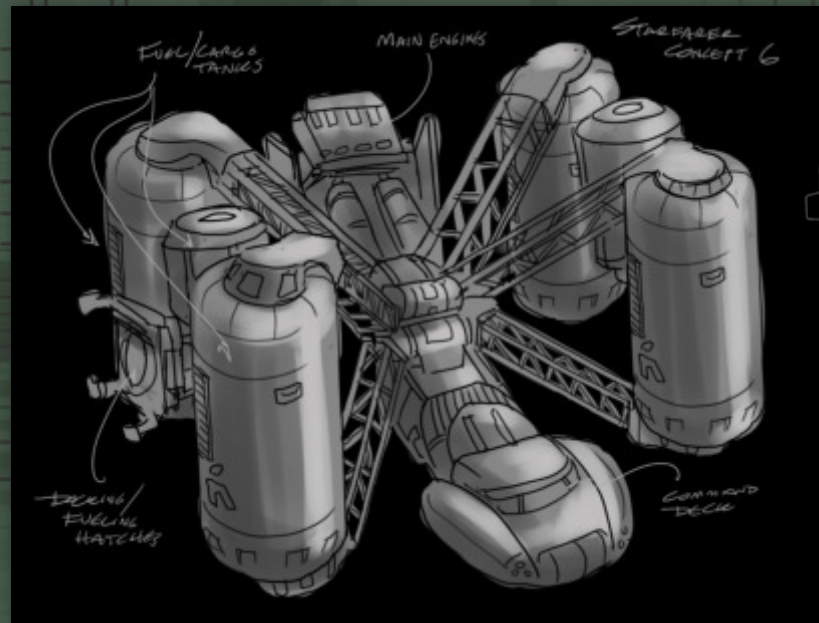
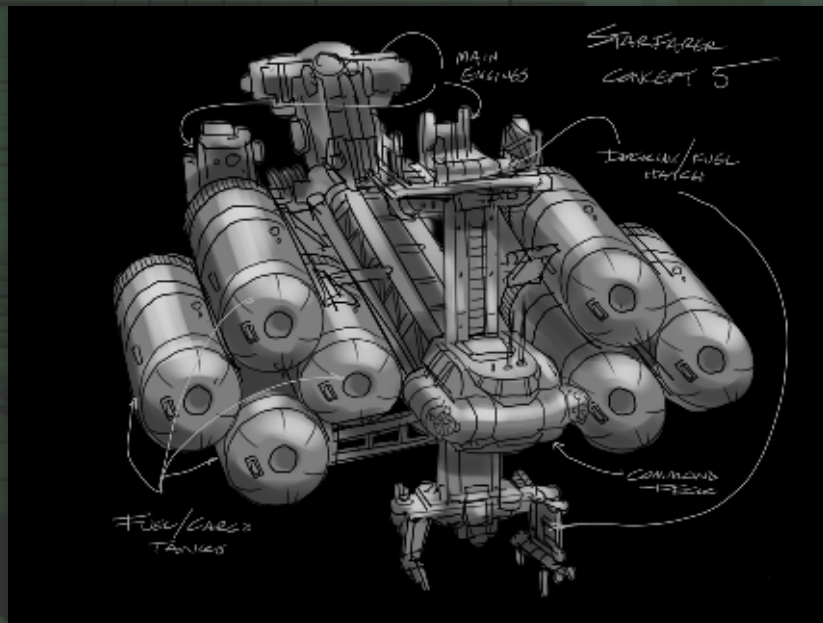
"The MISC Starfarer is the galaxy's standard fuel transporter. Starfarers are ubiquitous on both sides of the fueling process: their massive tanks allow for both the collection of spaceborne fuel from gas giants and extrasolar sources and the transport of active fuel from refinery stations to the primary market."

The Starfarer is a big ship, and it's taken several designers to develop it from initial sketches to final concept. Daren Dochterman began the process, followed by Ted Bargeon, Gavin Rothery and (finally) the UK ship design team. We begin with Daren's initial sketches.

Daren Dochterman, freelance concept artist: Initial thumbs [this page and next]



WORKING DRAFTS



WORKING IN PROGRESS

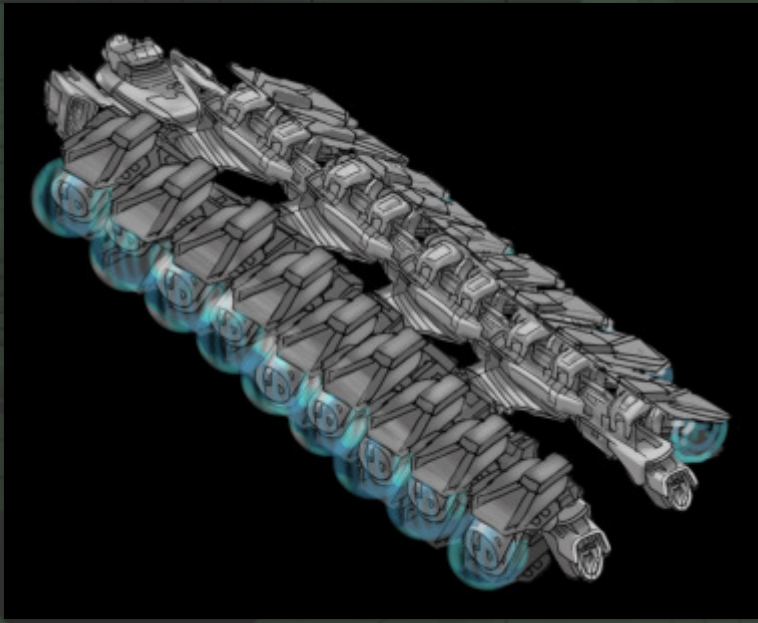
Harry Jarvis, Art Producer: Thank you for the great initial pass! Here are our notes on the thumbs:

- Overall, the Starfarer should feel more like an enclosed vehicle with the fuel protected by an outer shell.
- We would like to have you explore some added defensive capabilities on the ship, such as protective plating or perhaps energy shielding.
- The ship should look like it could protect itself, with some armor and gun turrets, but not necessarily look like a full-on battlecruiser.

This would help make the ship less of an easy-to-kill explosive target.

- One potential direction to explore is that the tanks could rise up into a spine / frame from below the ship, possibly with large bay doors that close.

Please let me know if you have any questions, and we can't wait to see the next round!



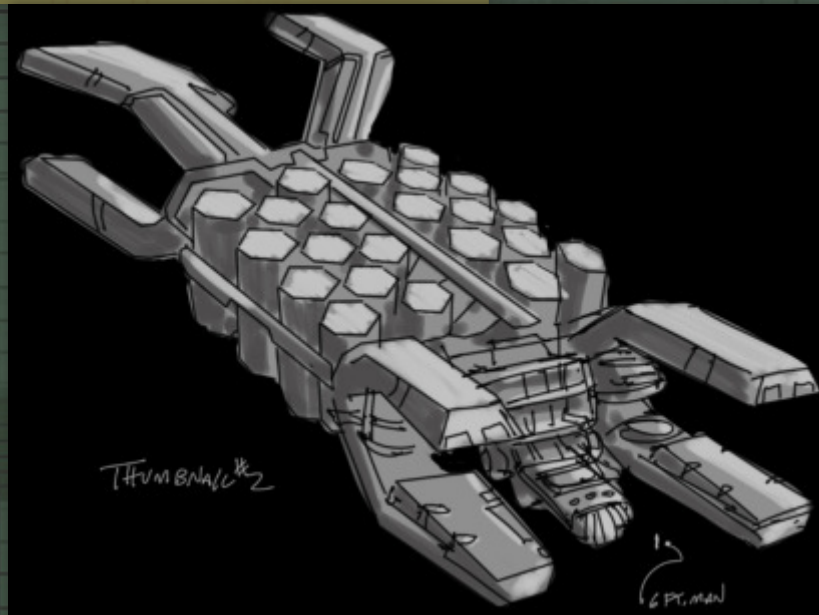
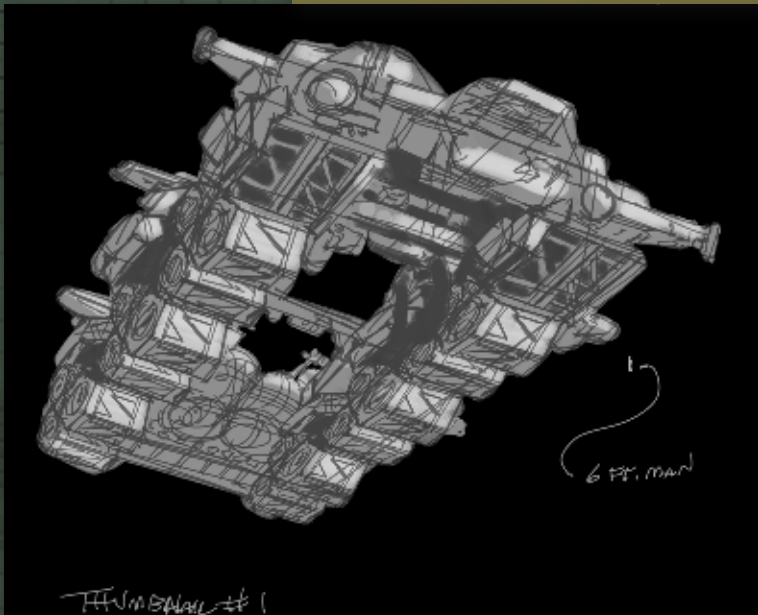
Harry J: Thanks for the latest post for the Starfarer! My apologies for any misdirection in the previous round, but we would like to get another set of thumbs exploring a wide variety of designs and different directions, as opposed to focusing on one direction just yet.

We liked some of the elements of the first thumb, however, it felt too separated and vulnerable. In general, we would like for it to feel more like a reinforced space 18-wheeler, along with defensive plating or shielding, and weapons. Some of the elements we like are:

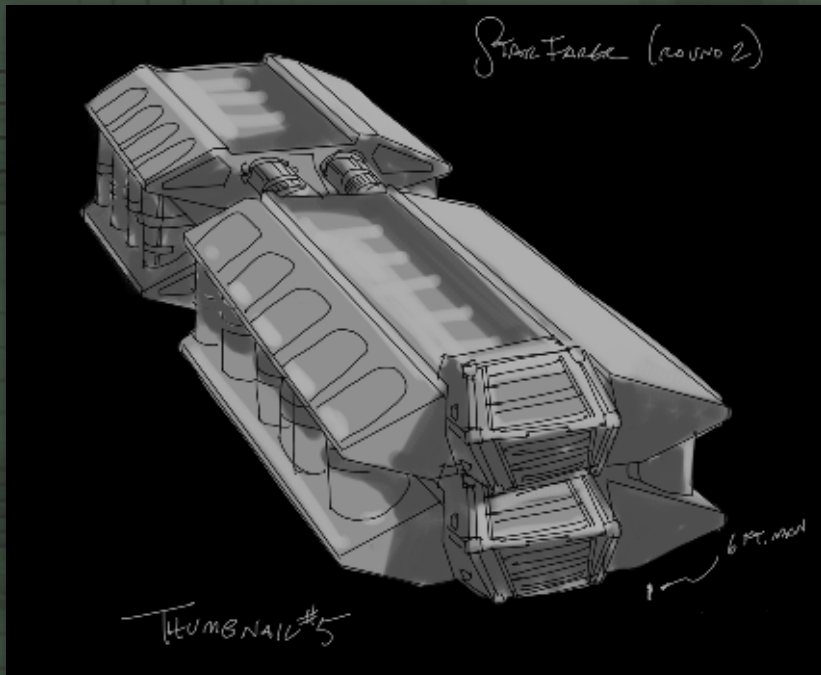
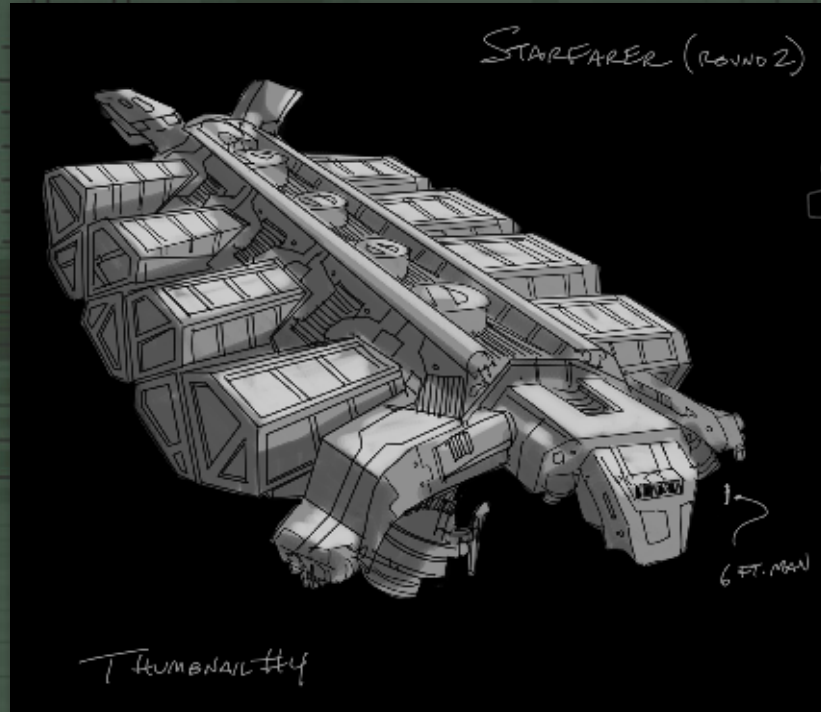
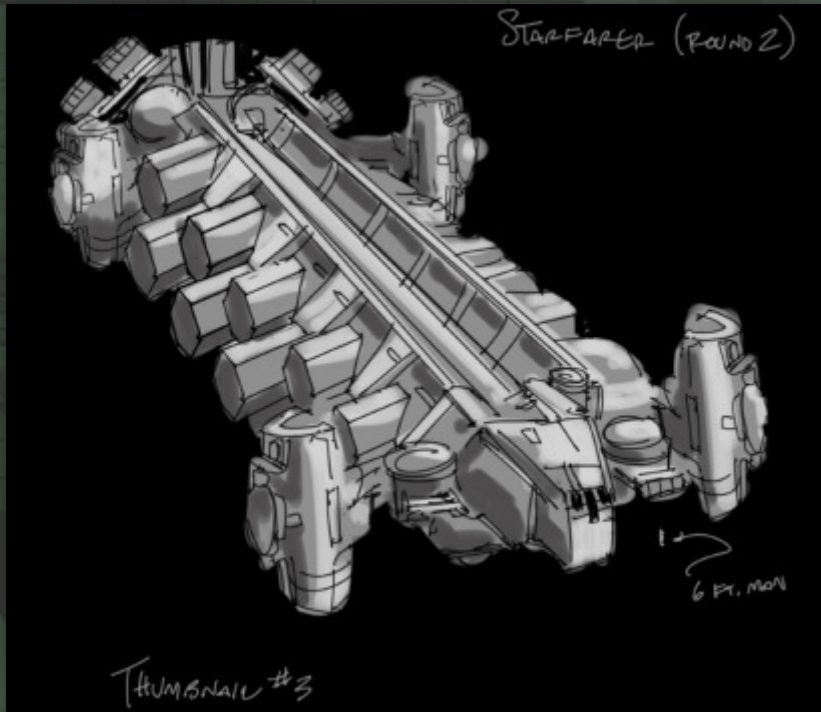
- Longer, solid, contained forms, that feel reminiscent of tankers, 18-wheelers, and freight trains
- Fuel tanks that feel as though they're loaded and contained in solid, plated cargo holds.

Additionally, could you please provide a human figure as a scale reference for the ship? Our standard figure is 6' tall, and that will help us evaluate the size. For reference, based on the ship specs, the Starfarer's mass is 125,000 kg, while the Constellation is 75,000 kg. So the Starfarer would be approximately 1½ times as large as the Constellation at its max.

Daren D: Thumbnails Round 2. These are generally for shape and layout, not for specific details, of course. I've added the 6-ft. man into the thumbnails to give an idea of the size of the ship. *[this page and next]*



WORKING DRAFTS



Harry J: Please continue to explore #1, particularly from different angles to get a better idea of the overall form.

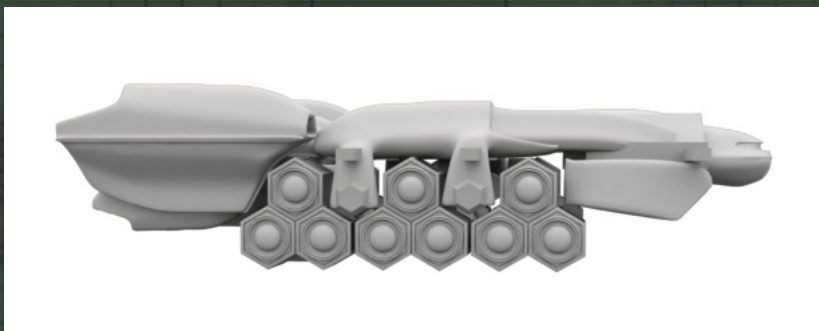
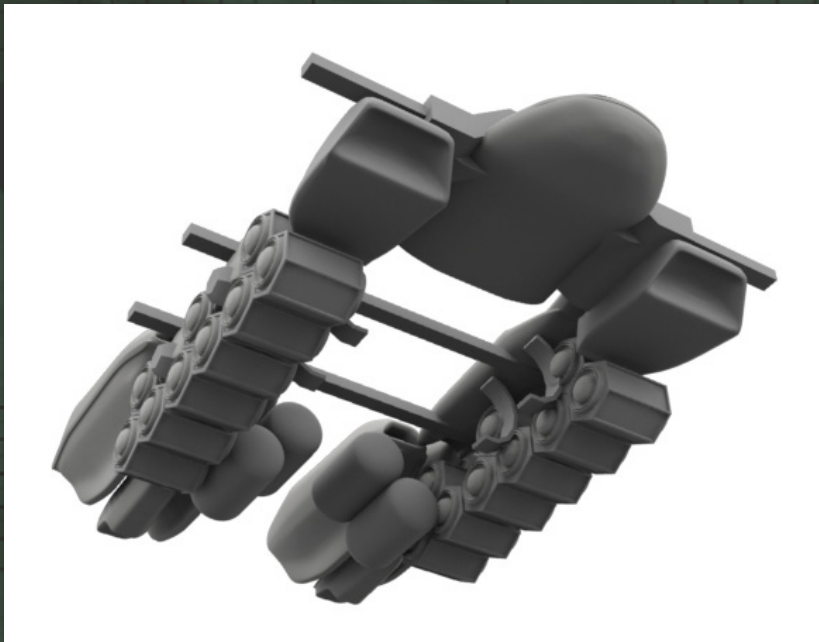
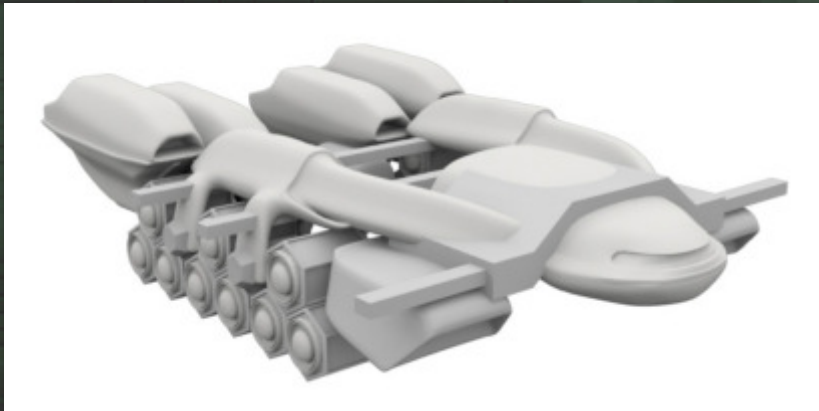
As you continue to refine the direction, please add in some of the design elements of the Freelancer to push the feeling that it was built by MISC.

- More streamlined, organic curves in the forms
- More layered, contoured paneling

Thanks again for the great work and quick turnaround! Please let me know if you have any questions.



WORKING PRIORITIES



Daren D: ROUGH 3D pass on this configuration of the Starfarer. [this page and next]

Harry J: This is showing a lot of promise, and overall heading in the right direction! We like how it's pulling in style elements from the Freelancer, and starting to feel like it was made by the same manufacturer.

- There are a few changes we would like to see made to help it coincide with the stats, as there are some that might not be explicitly clear in the kick-off info, particularly about the thruster types (my apologies!):

We would like for there to be two main engines in the back, as opposed to four.

Similarly, we like having the negative space in the middle, but feel the ship could be narrower overall. Please reduce a chunk of the negative space in the middle.

Losing two of the main engine nozzles will help.

Also, the ship will need 8 maneuvering thrusters on the body, to control pitch, yaw, and maneuverability.

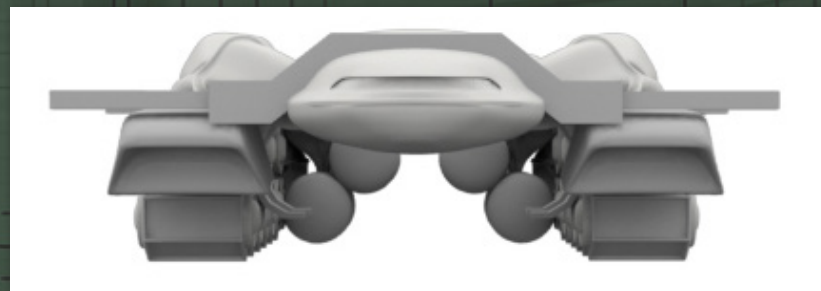
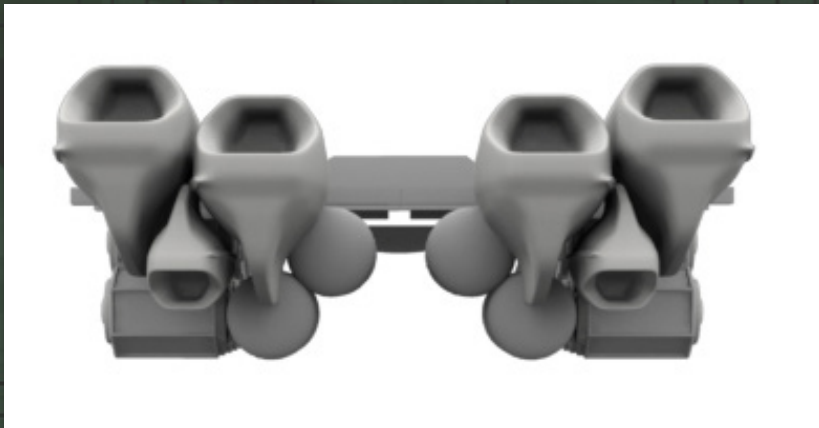
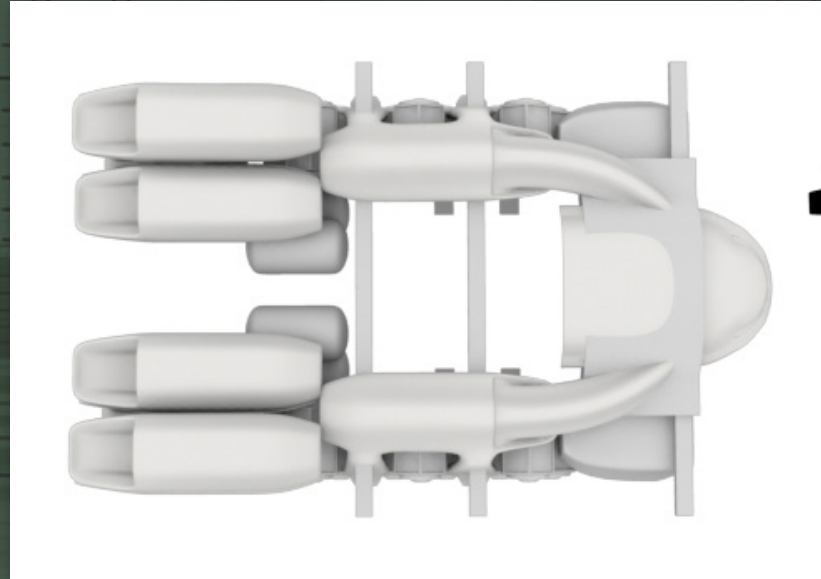
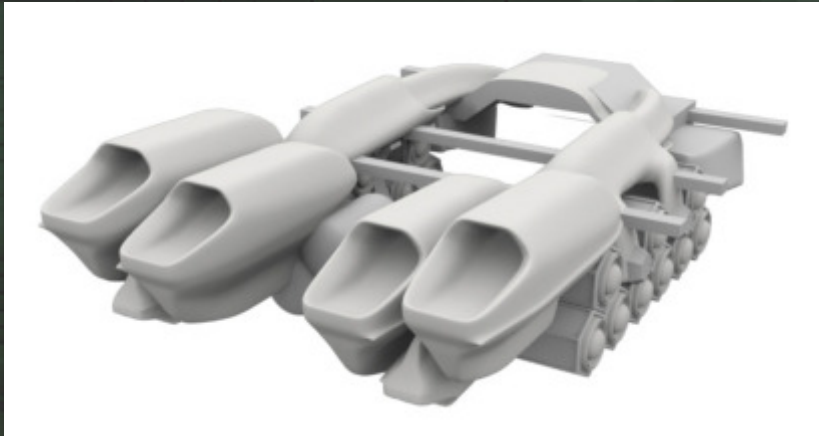
Regarding the weapons, we would like to see two articulated guns and one mounted turret.

- For the next round, we would like for you to explore two different types of cargo containers – one for liquids, the other for heavy cargo.
- Similarly, where do you think the power plant (essentially the heart / energy core) of the ship would go? We would like to see some exploration of the visual differences for switching out the base power core with a larger one.
- We're also assuming that the two front scoops would be intended for skimming the atmosphere of gas giants (which is a really nice touch!), and would like to see some detail on them, and how they would open and close.
- Additionally, we would like to see some detailing of the in-flight refueling mechanics.

Thanks again for the great work! We can't wait to see the next round!

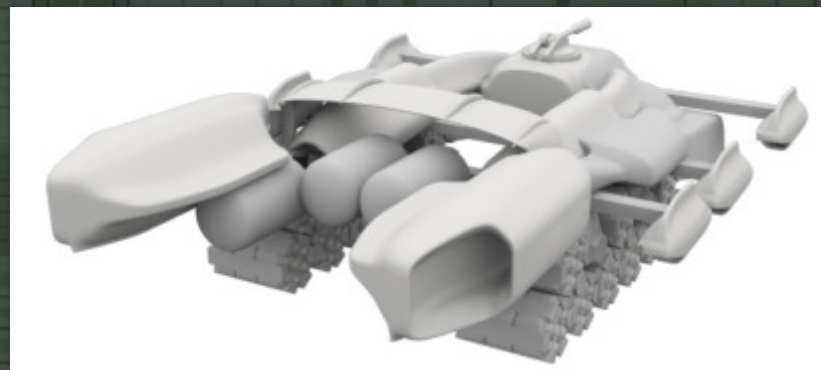


WORK IN PROGRESS

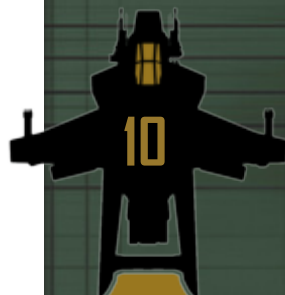
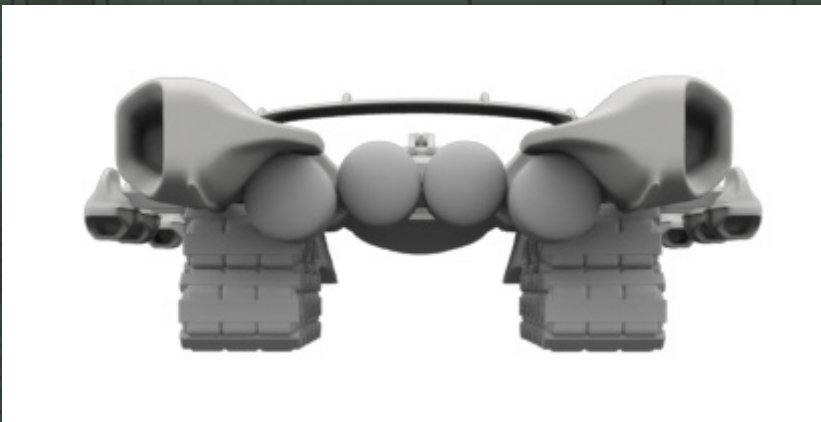
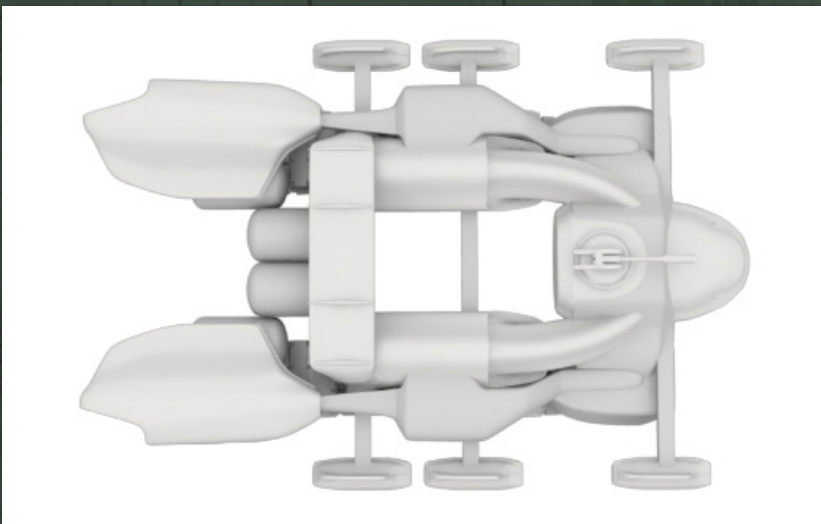
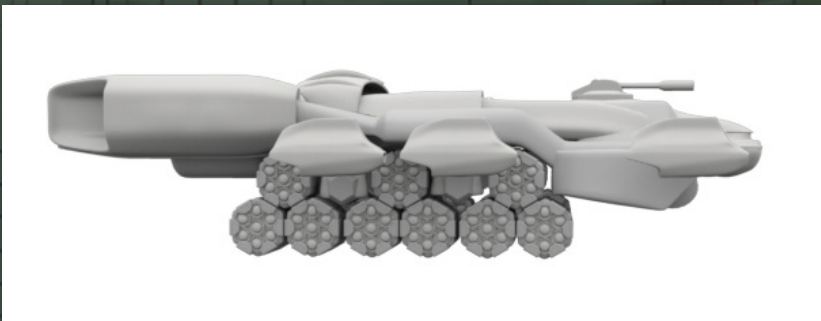
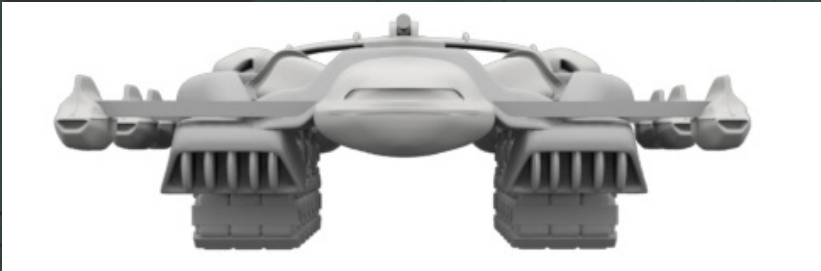
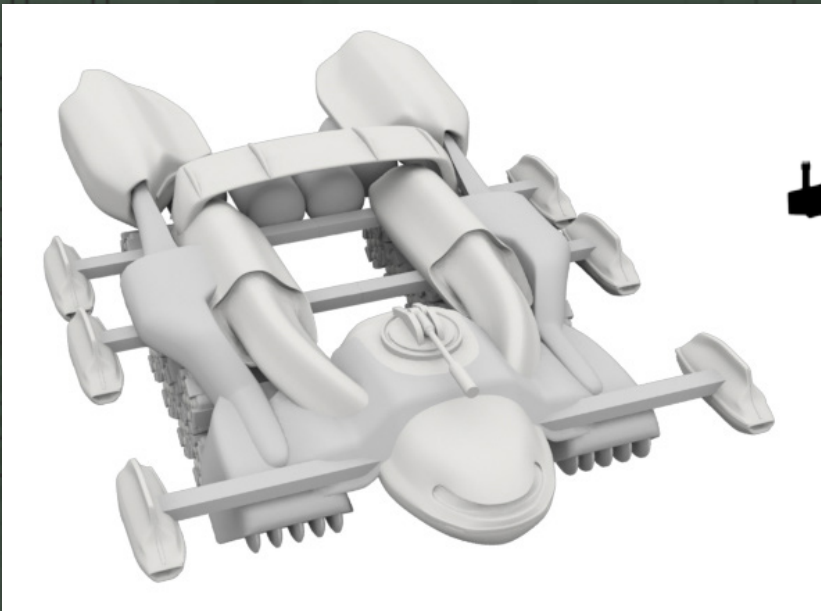
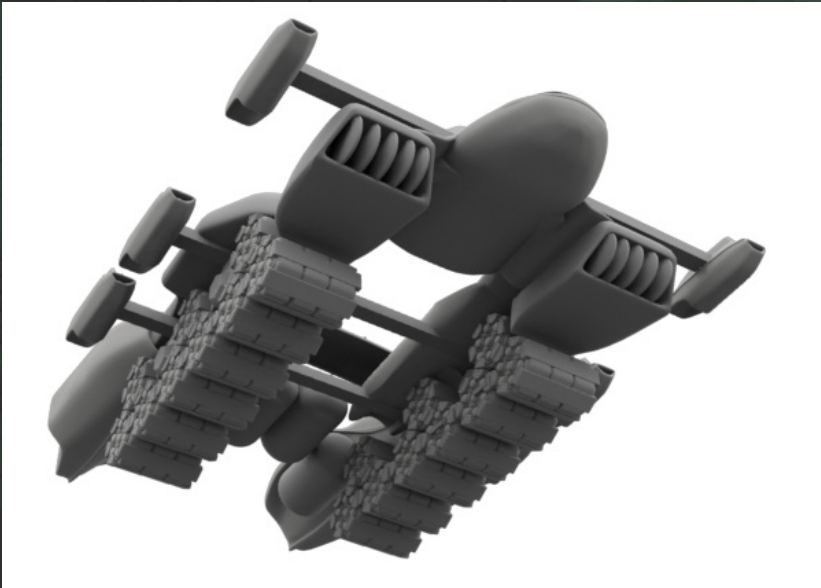


Daren D: Here is the next round on this. Still trying to figure out mechanics in the central section to load/unload cargo. This version is with alternate cargo containers. It also addresses placement of engines (there are 2 of the

smaller engines that haven't been placed yet). And I added the fixed gun to the top. Also see enhancements to the gas intake structures. *[this page and next]*

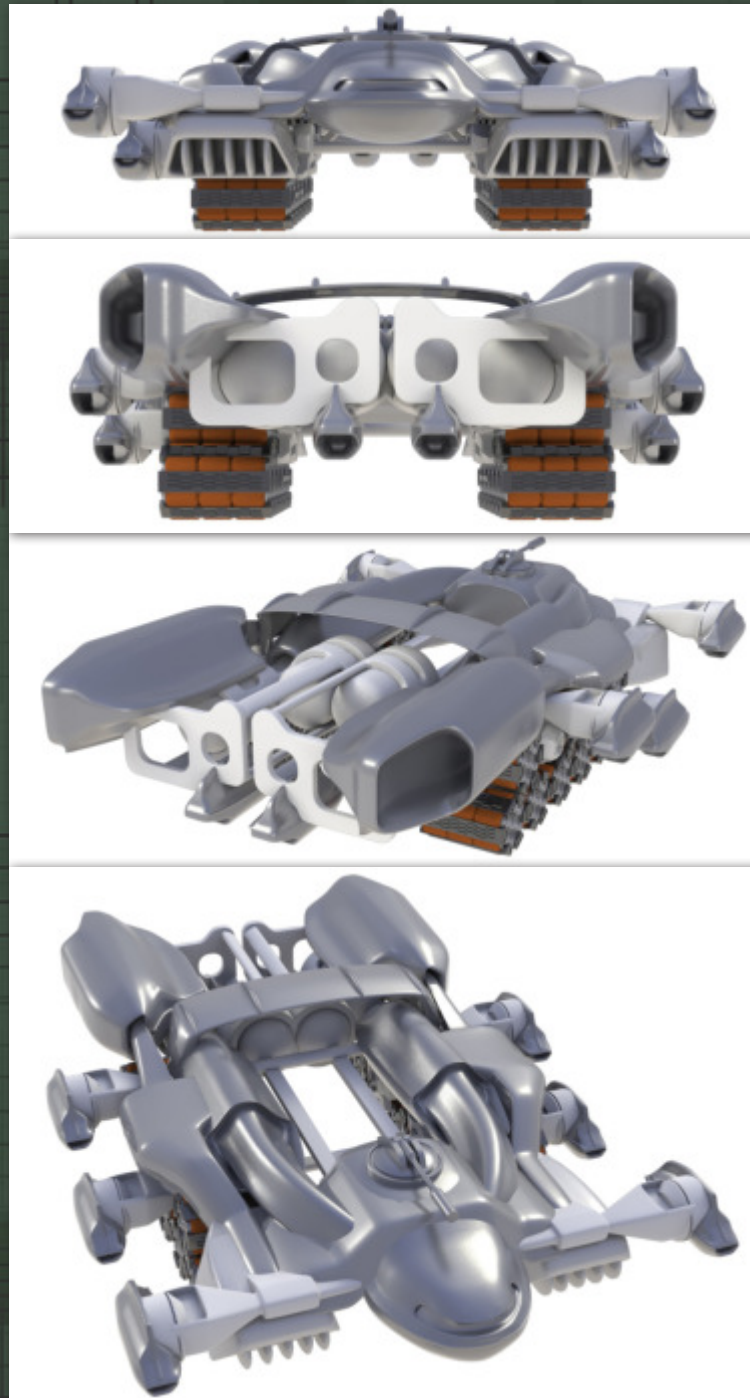
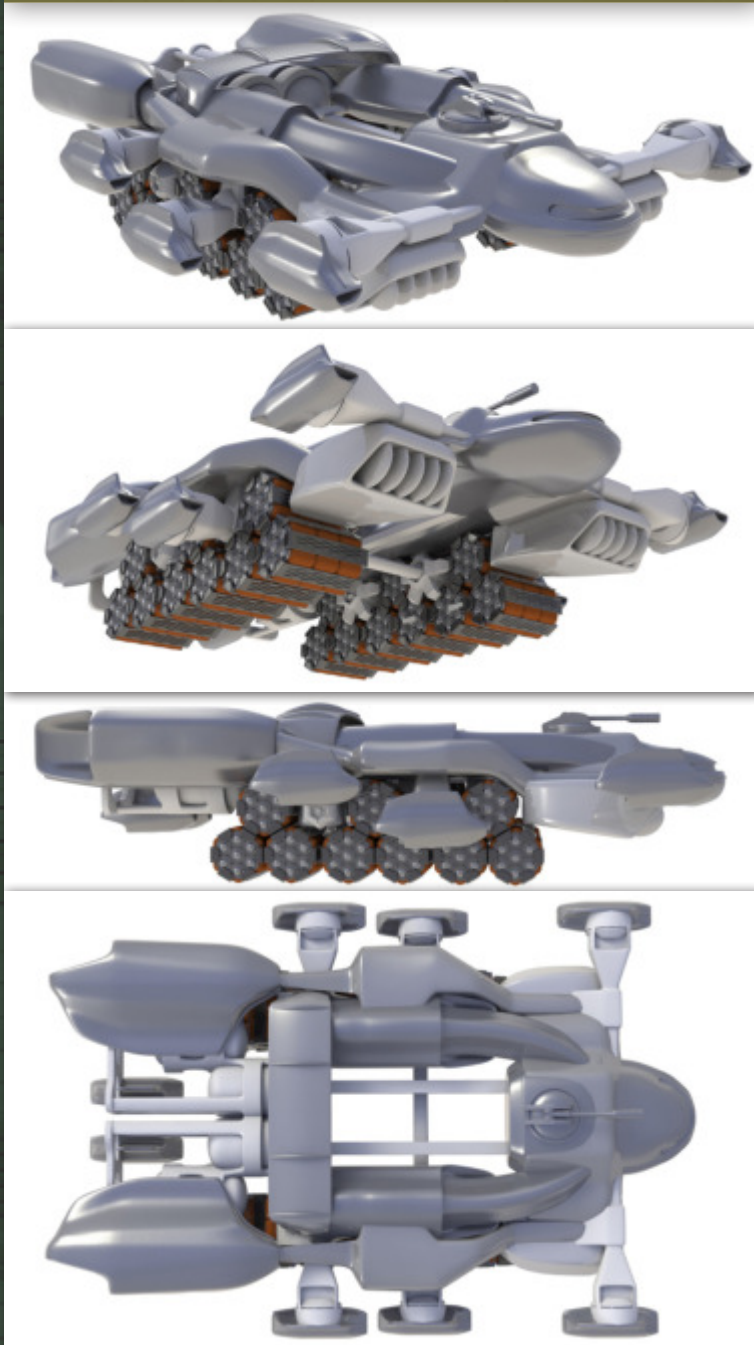


WORKING IN PROGRESS



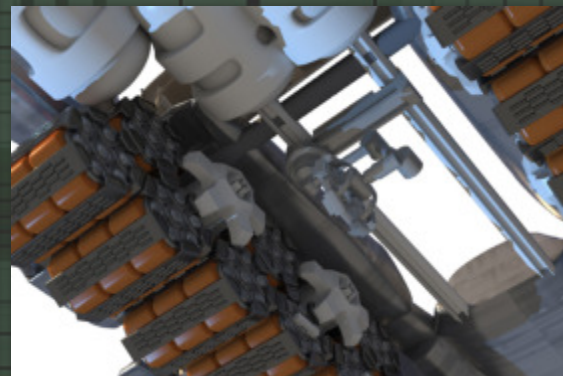
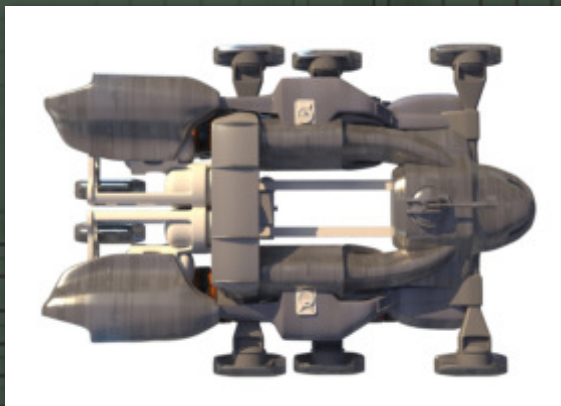
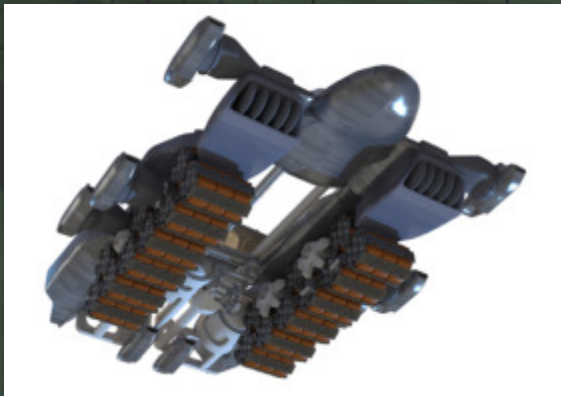
WORKING PROGRESS

Daren D: A little more refinements on overall structure/configuration and just the first ideas of coloring.



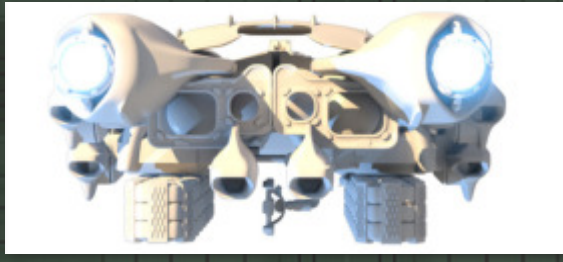
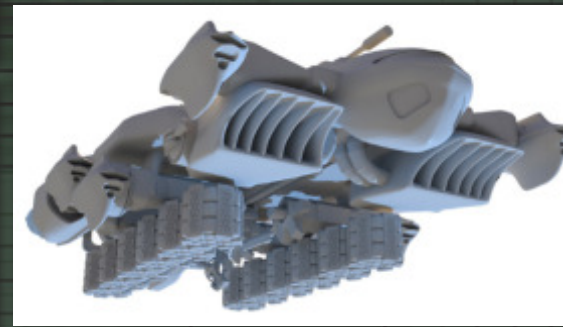
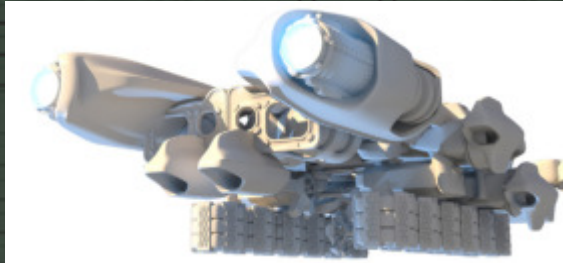
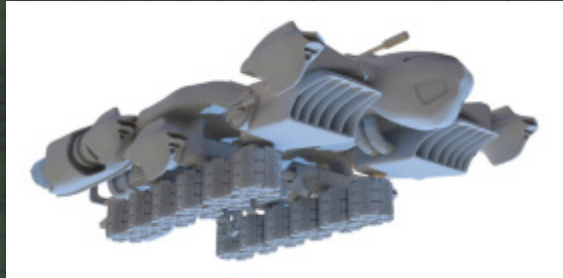
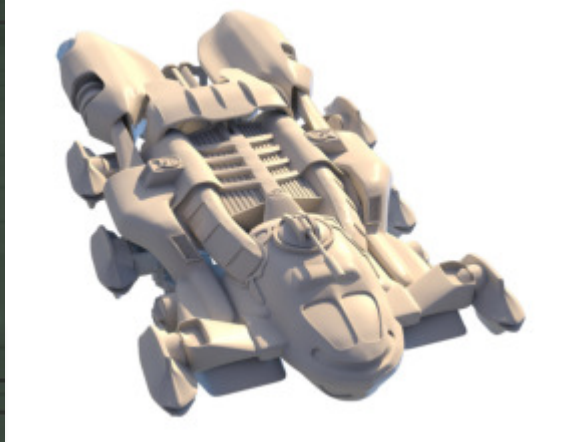
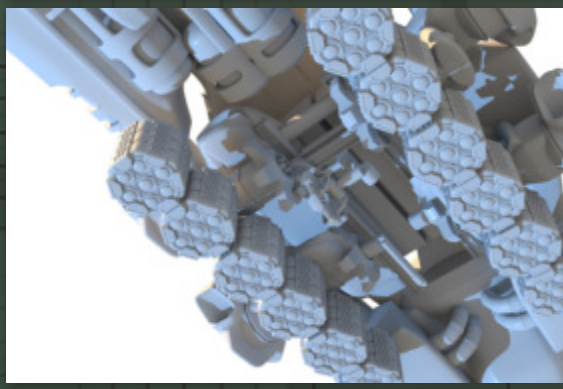
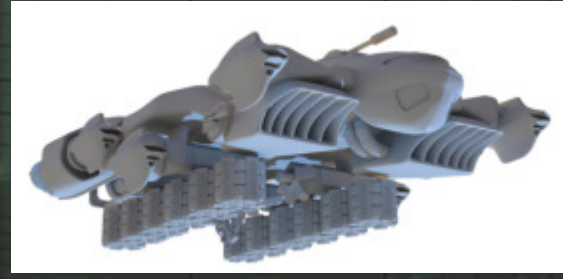
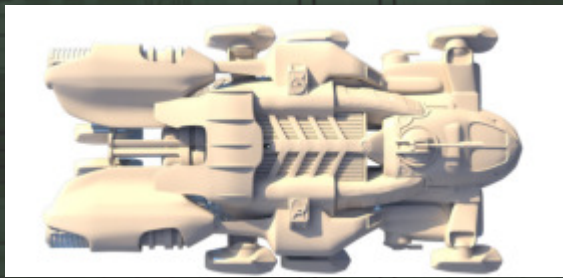
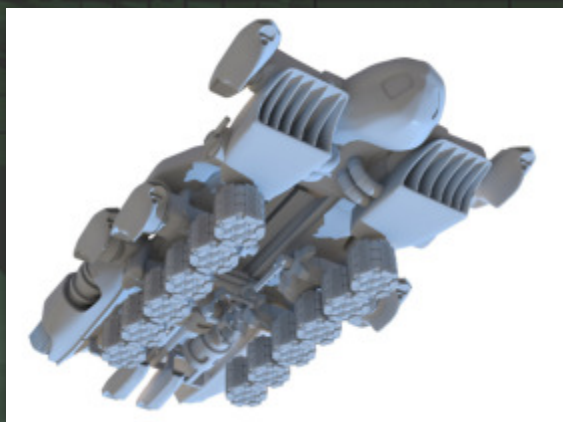
WORKING PROGRESS

Daren D: Latest refinements.



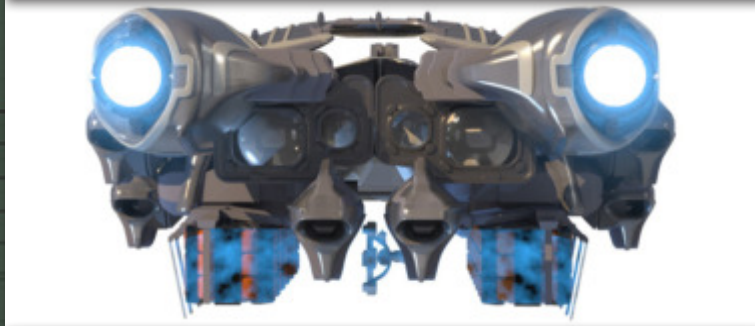
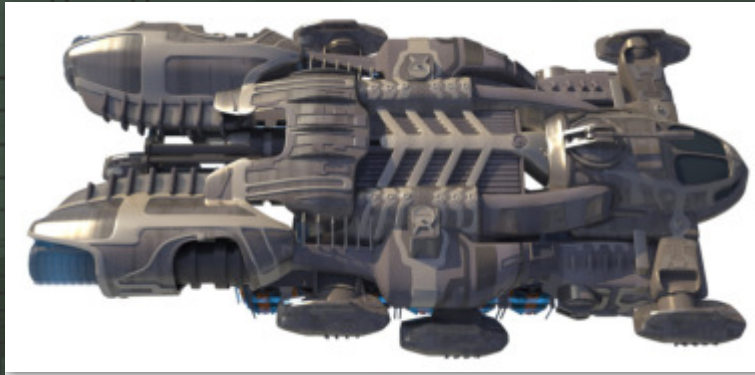
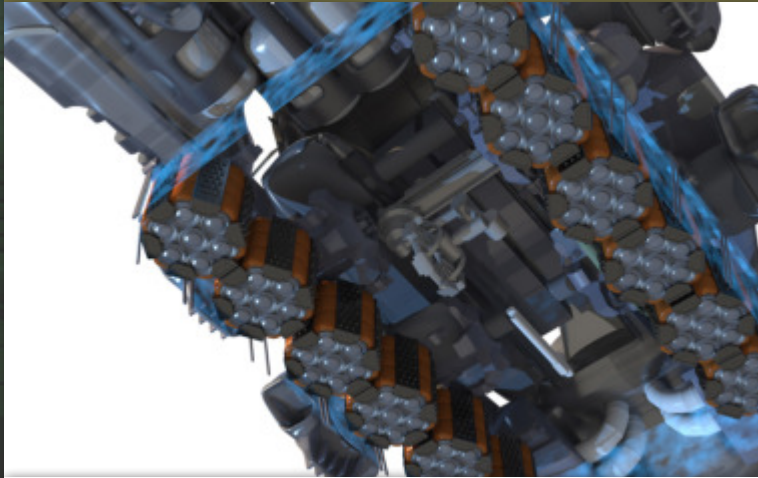
WORK IN PROGRESS

Daren D: Updates based on paint-overs.

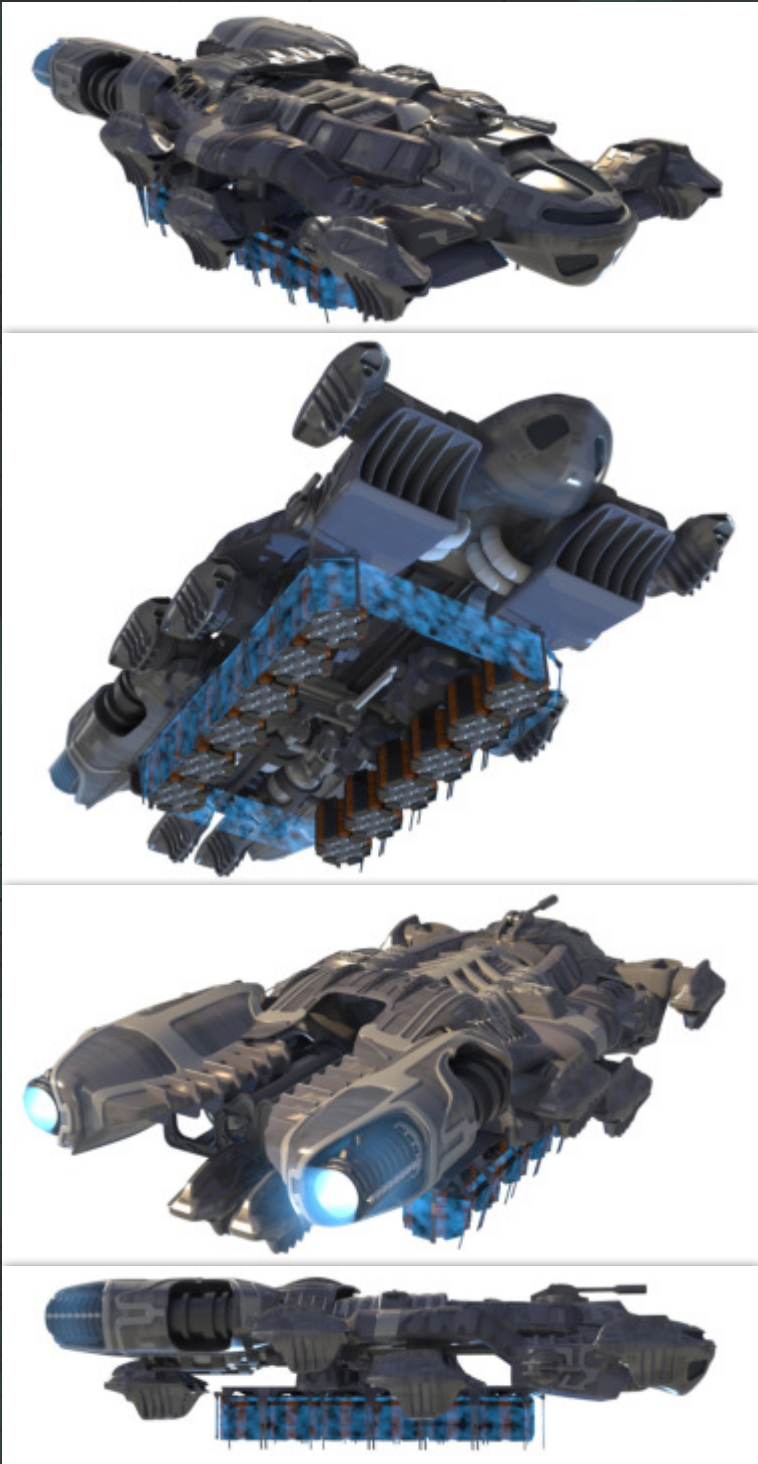


WORK IN PROGRESS

Daren D: Latest Starfarer detail pass.
[this page and next]



WORK IN PROGRESS



WORKING PRIORITIES

At this point, Ted took over.

Ted Bargeon, Concept Artist: If this design flies I'll start refining the shapes to bring some of the MISC/Freelancer flavor and after that tons of detail.

Chris Roberts: I think this has potential, but the Starfarer needs to be much bigger than the Freelancer. It's like the C17 to the Freelancer's C130. Currently the two designs don't feel that different in size.



STARFLIGHT
WORK IN PROGRESS

Starfarer

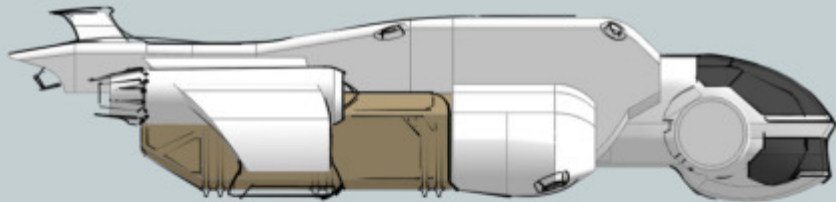
Builder: MISC (Musashi Industrial & Starflight Concern)
Crew (max): 2
Mass (empty): 125,000 KG
Focus: Tanker / Refueler

The MISC Starfarer is the galaxy's standard fuel transporter. Starfarers are ubiquitous on both sides of the fueling process: their massive tanks allow for both the collection of space borne fuel from gas giants and extrasolar sources as well as the transport of active fuel from refinery stations to the primary market. Though the stock model lacks refinery equipment, the Starfarer does have docking mechanisms allowing it to conduct in-flight refueling operations with most spacecraft classes.

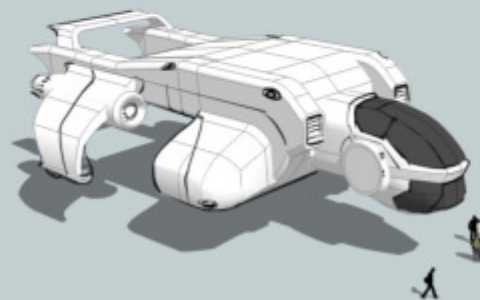
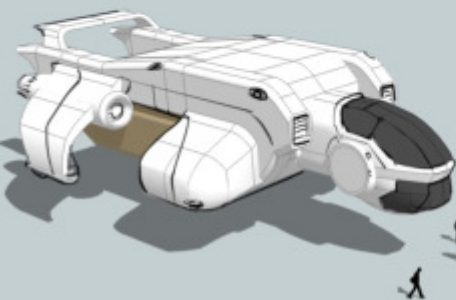
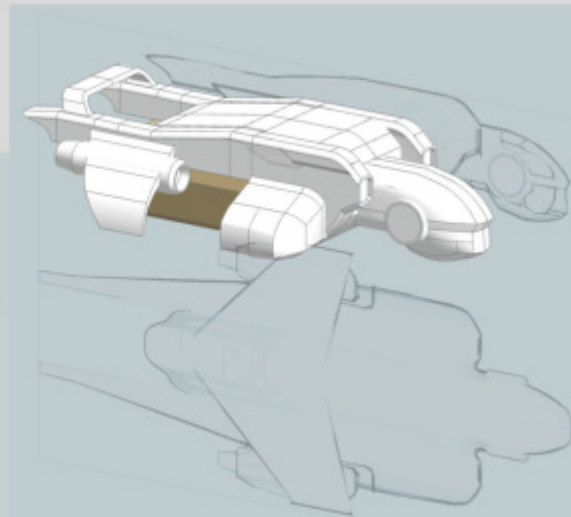
The most common Starfarer modification ships liquid foodstuffs in the same tanking system. A visually distinct long-haul bulk goods version mated to an alternate cargo chassis also exists, although it has proven far less popular than the more rugged Freelancer lineup. An armored tactical variant, the Starfarer Gemini ("Star-G") is produced under contract by Aegis for use by the UEE military.

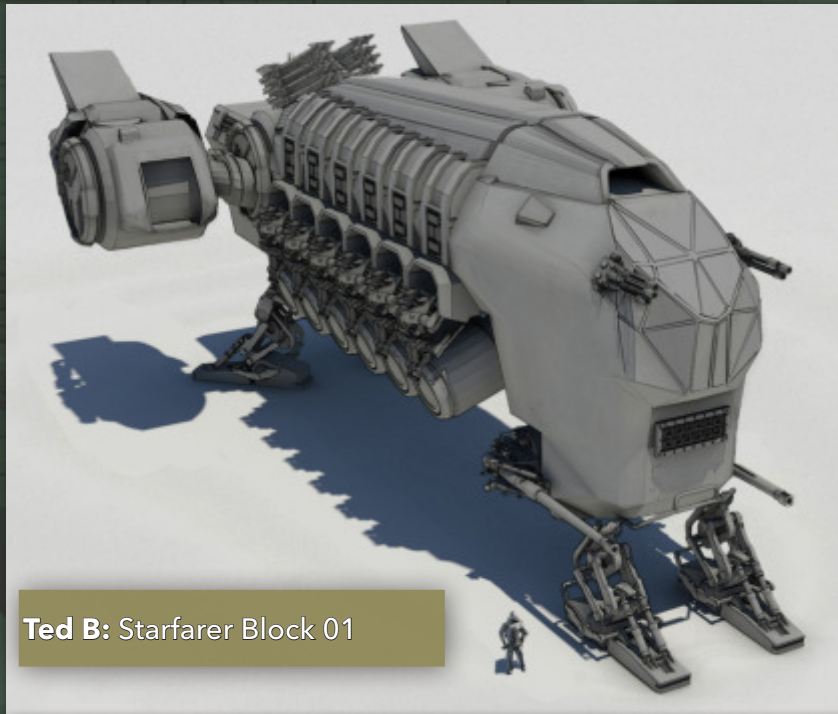
Upgrade Capacity: 8
Cargo Capacity: 75 tonnes
Engine-Modifiers: 4
Max. Class: Anti-Matter
Thrusters: 2x TR4, 8 x TR2
Hardpoints:
2 x Class 2: Equipped 2 x Behring M3A Laser Cannon
1 x Class 3: Equipped 1 x Talon Stalker Image Recognition missiles
1 x Class 4: Equipped 1x KP M2A Laser Cannon (turret)

Similar to... Diligent, Clydesdale



Starfarer Exploration





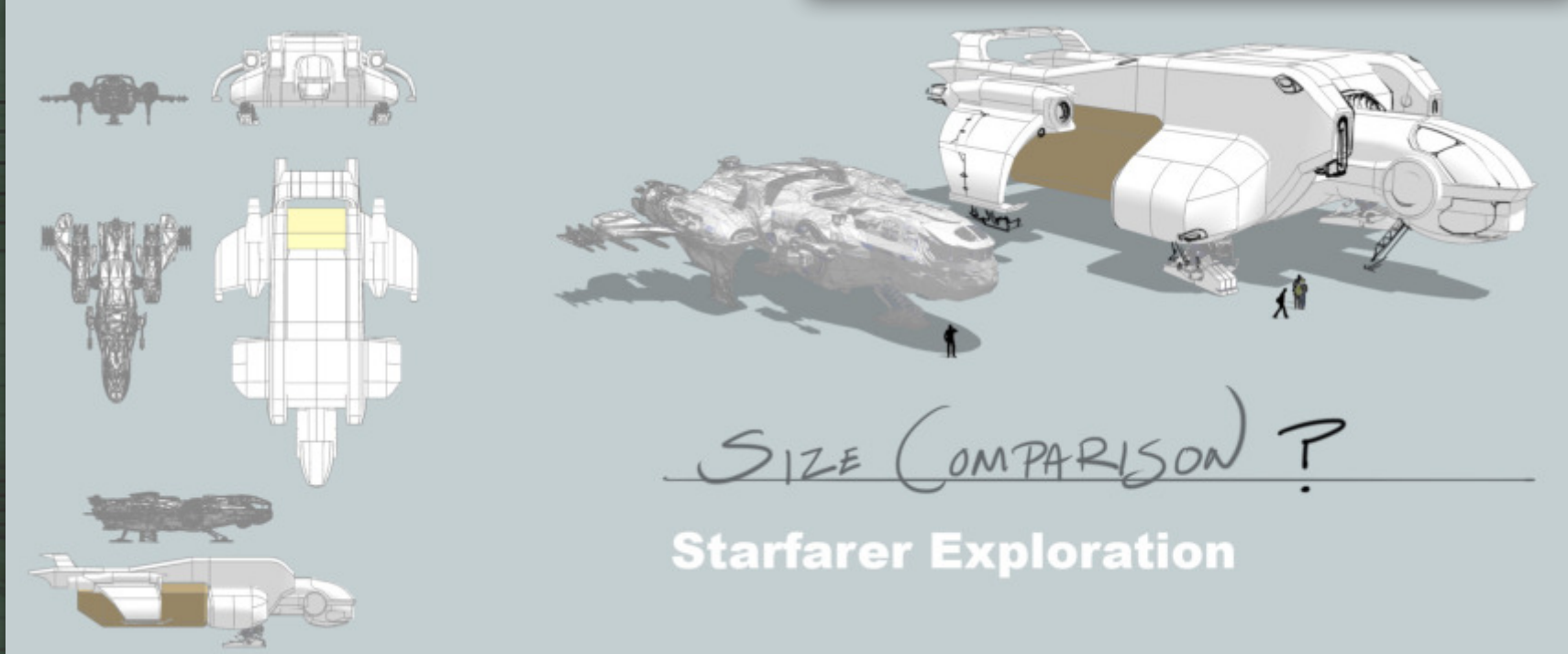
Ted B: Starfarer Block 01

Ted B: Starfarer Scale Comparison: Scaled it up and brought the Freelancer in for a side-by-side comparison.

Make the Starfarer a little longer and also show it with liquid tanks (would these be two tanks side by side or one big oval-shaped cylinder?)

Feels like it needs heavier duty engines to push / lift all this weight. Current ones feel the same or smaller than the Freelancer ones.

How does it match up to the stats?



Ted B: Starfarer, continued: Added length, a third engine and fuel tank variations. The Freelancer is included again for side-by-side comparison. (Currently: Freelancer is 90' and Starfarer 187')



WORK IN PROGRESS

Starfarer

Builder: MISC (Musashi Industrial & Starflight Concern)
 Crew (max): 2
 Mass (empty): 125,000 KG
 Focus: Tanker / Refueler

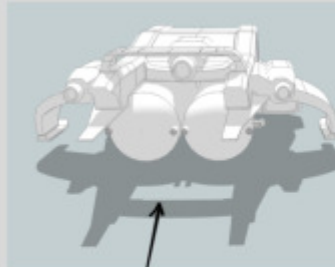
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- Upgrade Capacity: 8
- Cargo Capacity: 75 tonnes
- Engines:
- Modifiers: 4
- Max. Class: Anti-Matter
- Thrusters: 1x TR6, 2x TR5, 8 x TR2
- Hardpoints:
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- 1 x Class 3: Equipped 1 x Talon Stalker Insigni Recognition missiles
- 1 x Class 4: Equipped 1x KP M2A Laser Cannon (turret)

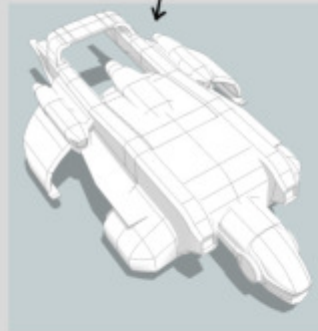
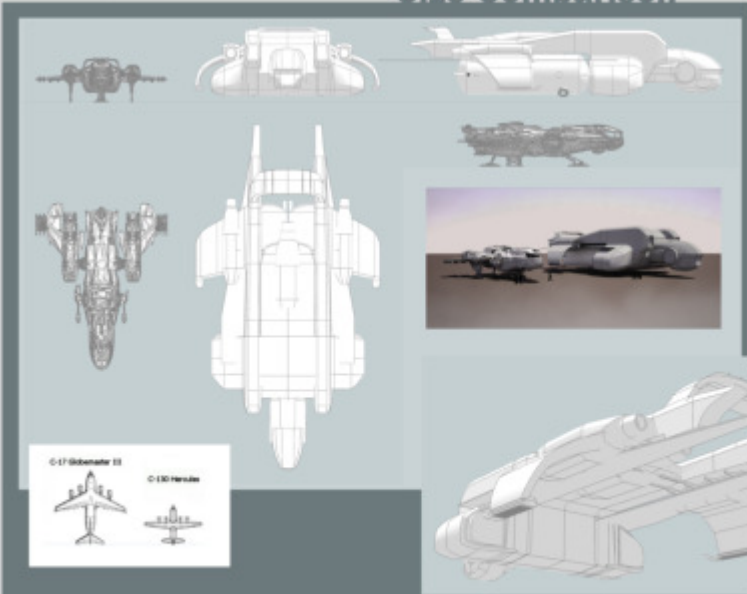
Similar to... Diligent, Clydeedale

Starfarer Exploration

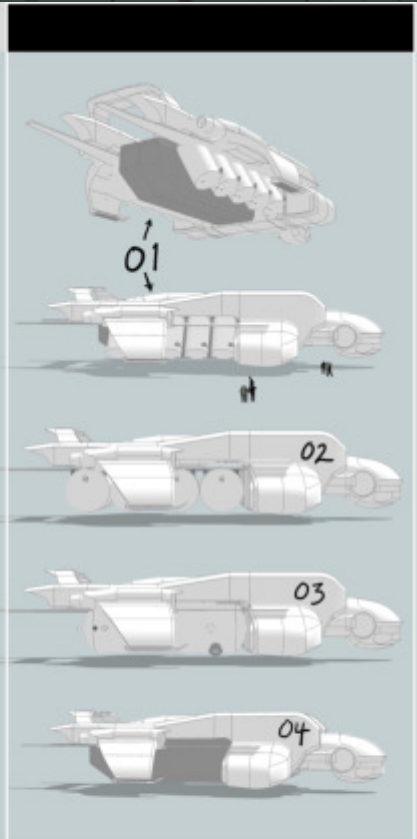


ENGINES
 1x TR6
 2x TR5

Size Comparison



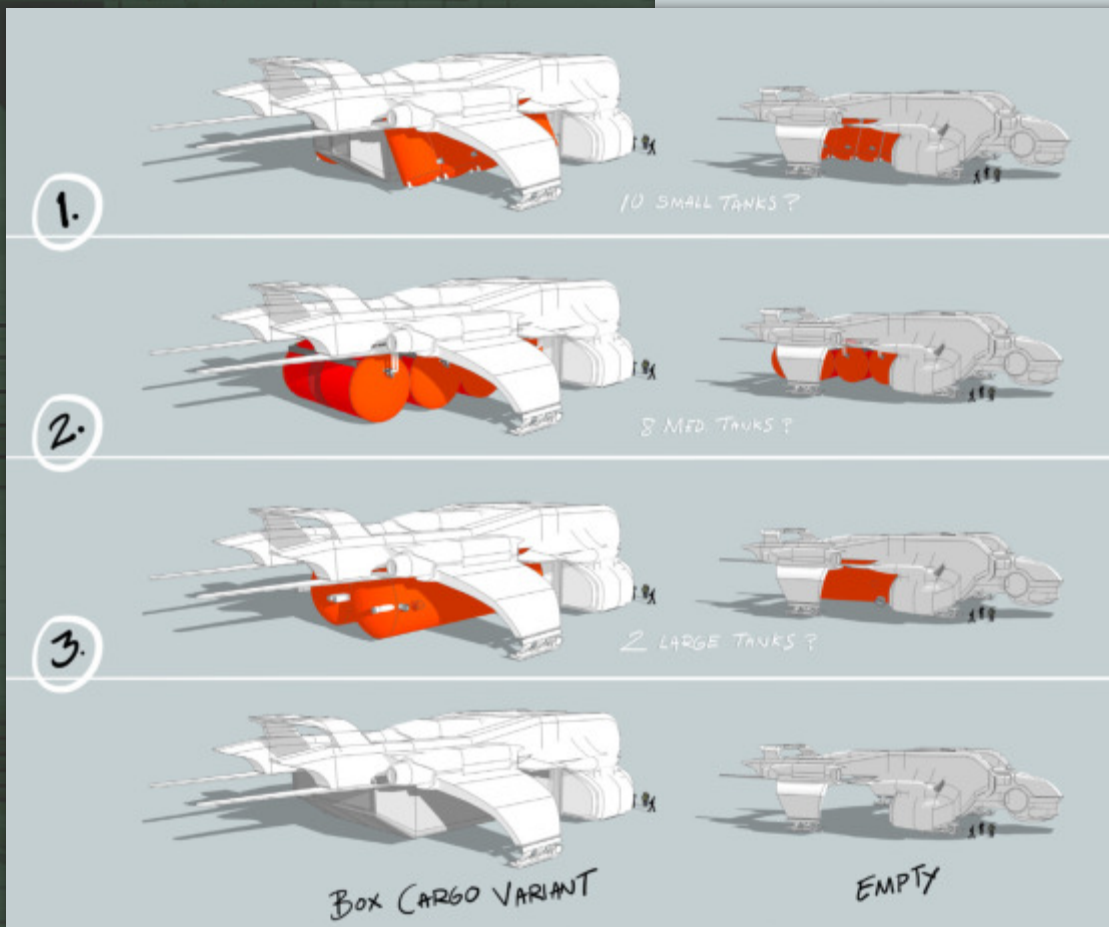
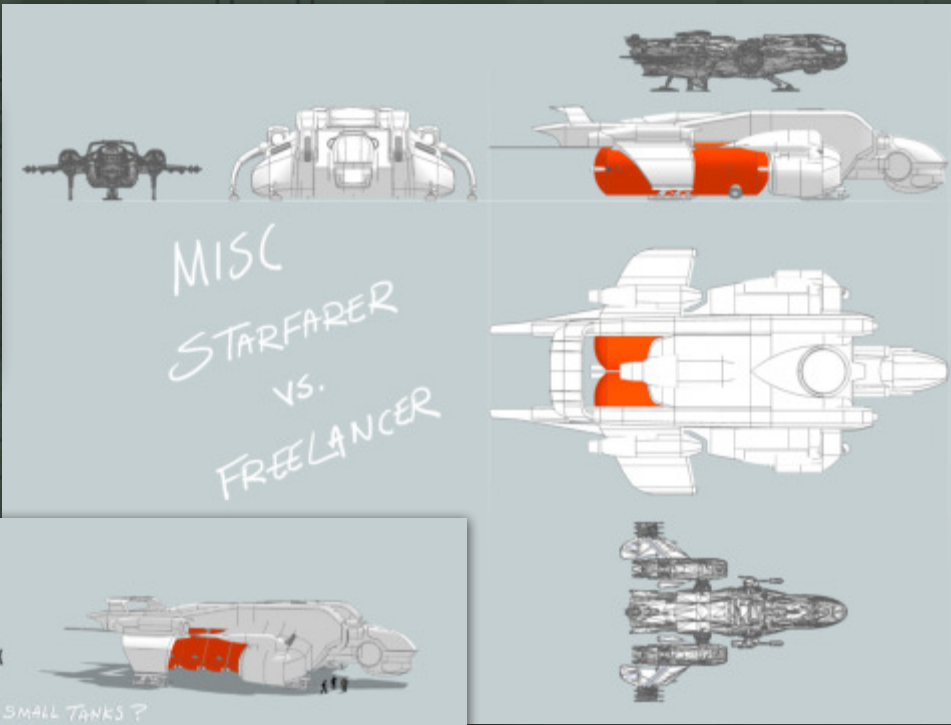
UNDERBELLY
 FUEL TANKS
 JETTISONED



Fuel Tank Variations

Ted B: Starfarer/Freelancer size comparison. Big enough?

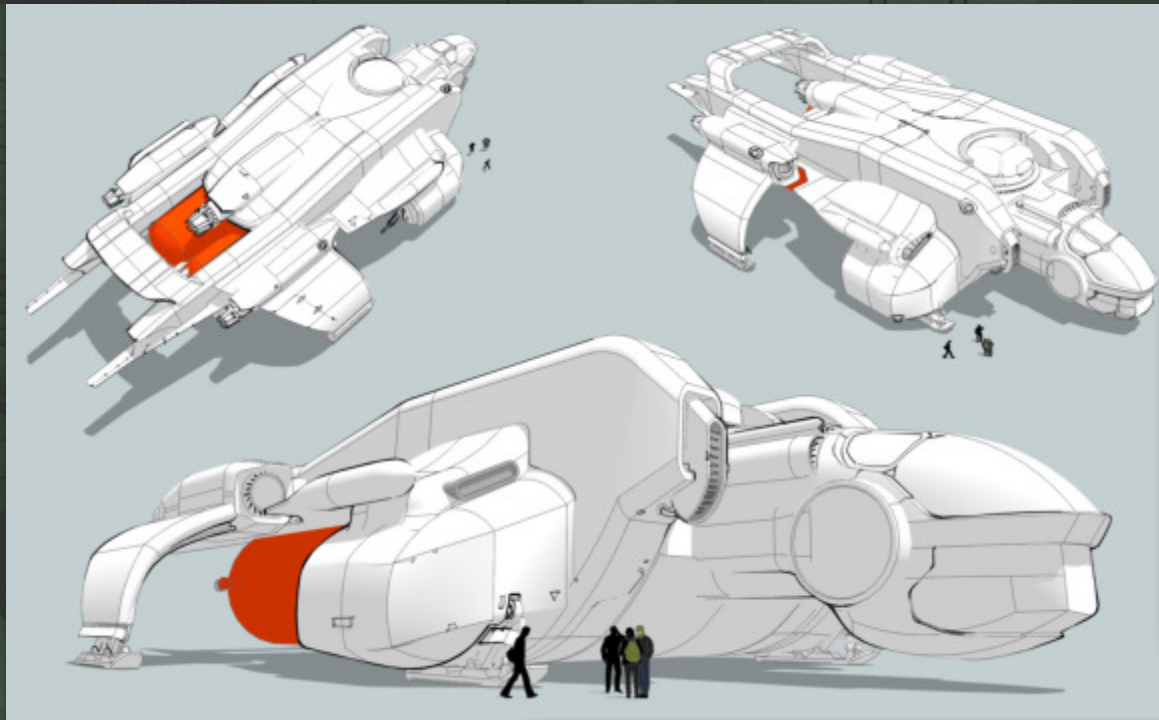
Chris R: I think so – have you done a quick volume compare? It's not much longer but much wider so I think it would be accurate to say it can haul almost 4x the amount of cargo.



Ted B: Starfarer fuel tank variants. Any of these do the trick?

Chris R: I think I like #2 the best, followed by #3.



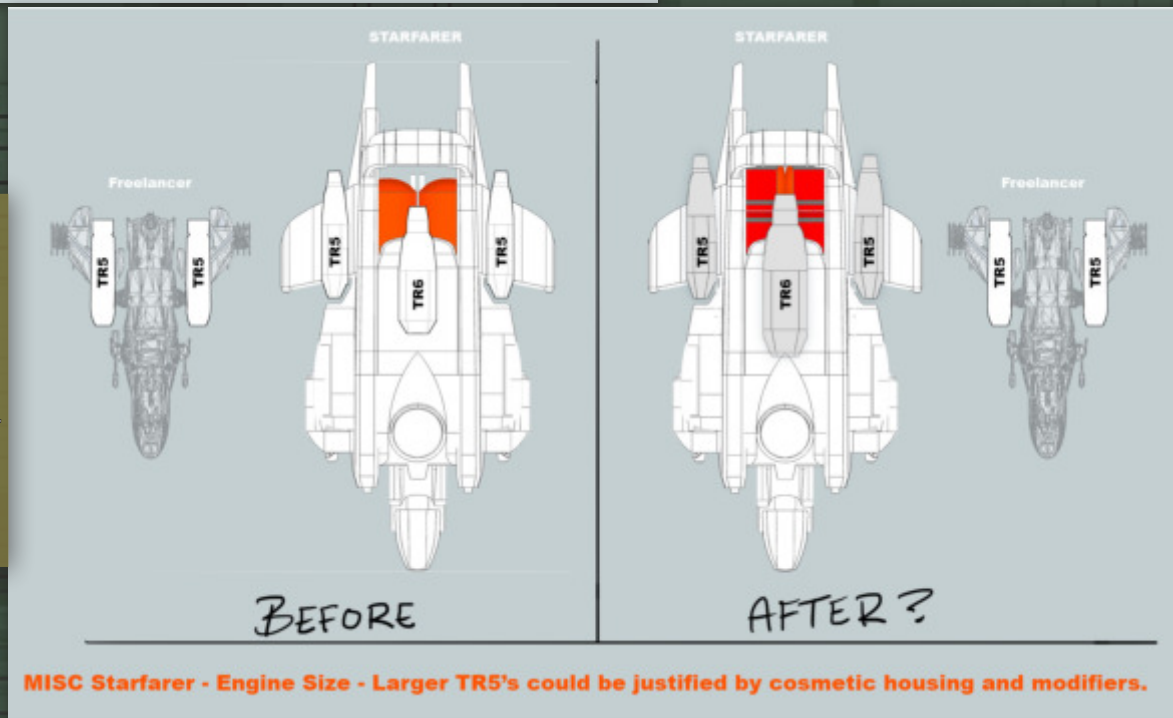


Ted B: Adding more MISC-themed shapes based on the Freelancer reference. Hardpoints, landing gear. Started thinking about a refueling boom.

Chris R: Looking good, other than the engines need to be bigger as right now it looks very underpowered! Also, we should think about where the power plant and such go.

Ted B: Starfarer Engine Size. Engines: before & after shot with MISC Freelancer included as scale ref.

Chris R: "After" is good. Also remember all TR5 thrusters are not the same size or even thrust rating. The thruster classifications are for general sizes, so a TR6 would be an engine for a small cap ship or big freighter for instance.

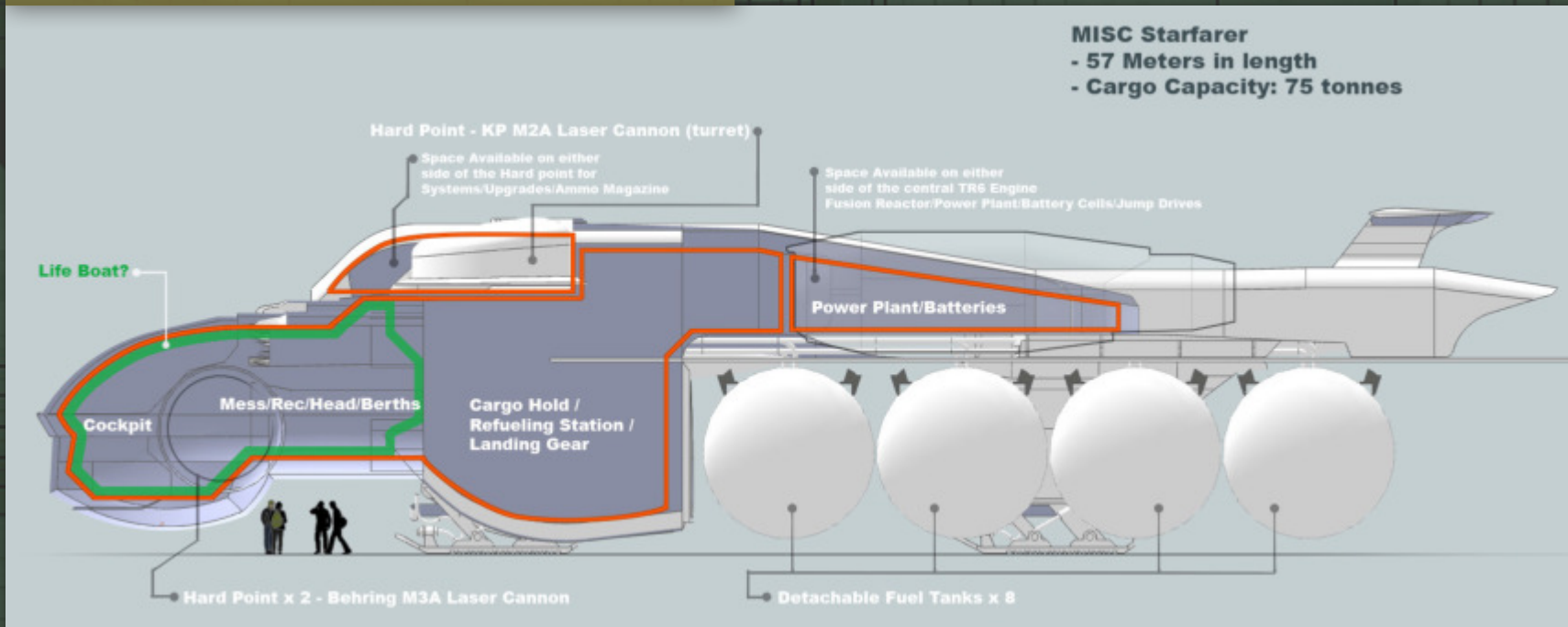


WORK IN PROGRESS



Ted B: Starting to work out the interior, hardpoints etc.

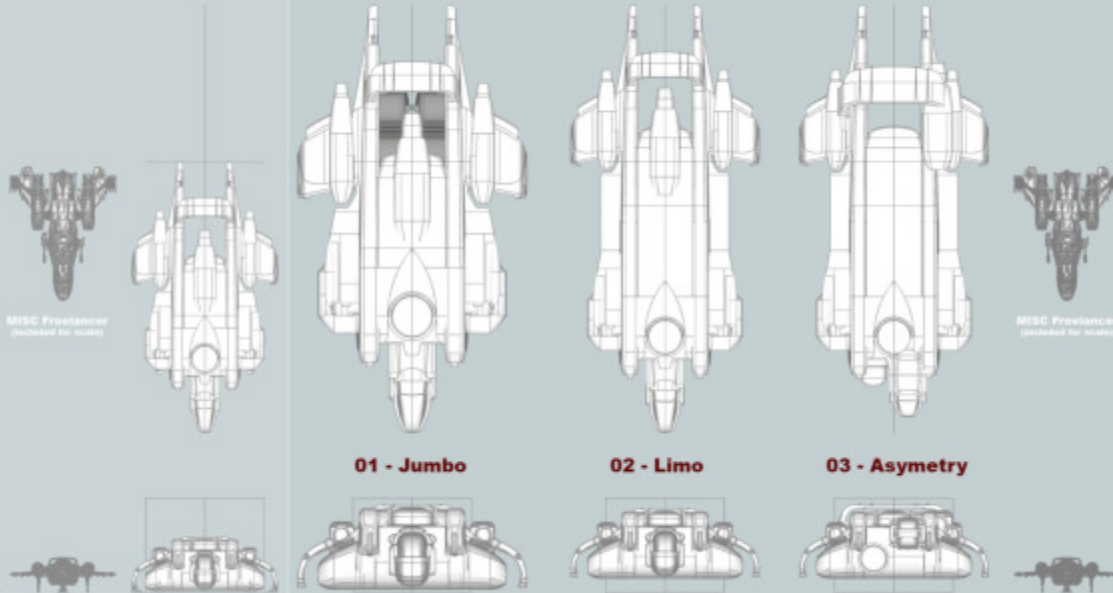
Chris R: Looks good to me. Nice stuff, Ted!



WORK IN PROGRESS

BEFORE - 57m

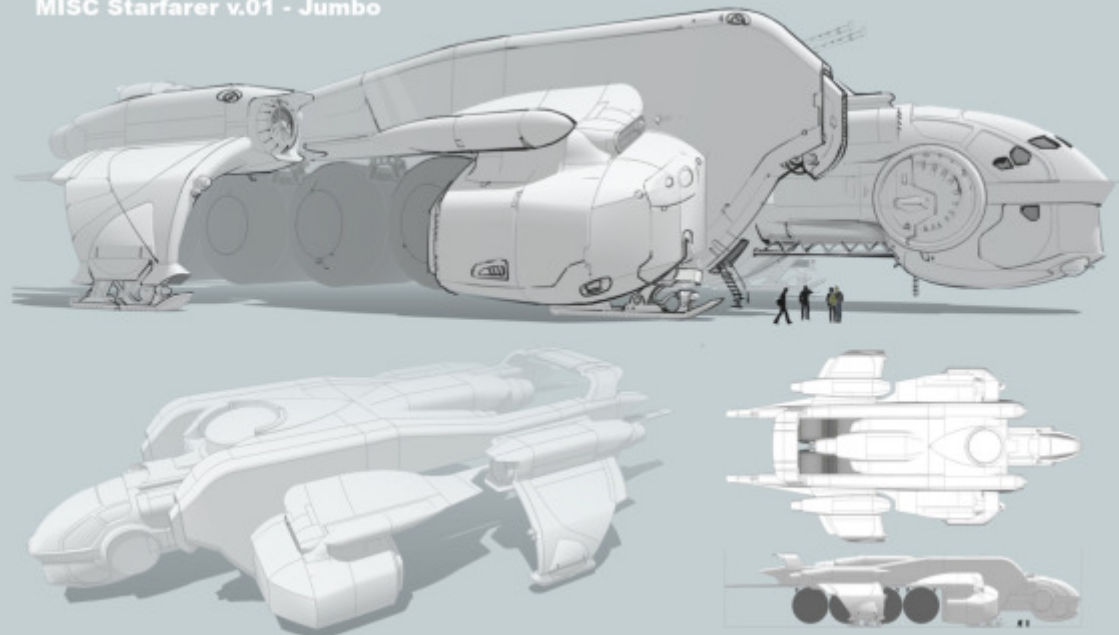
AFTER - 90m



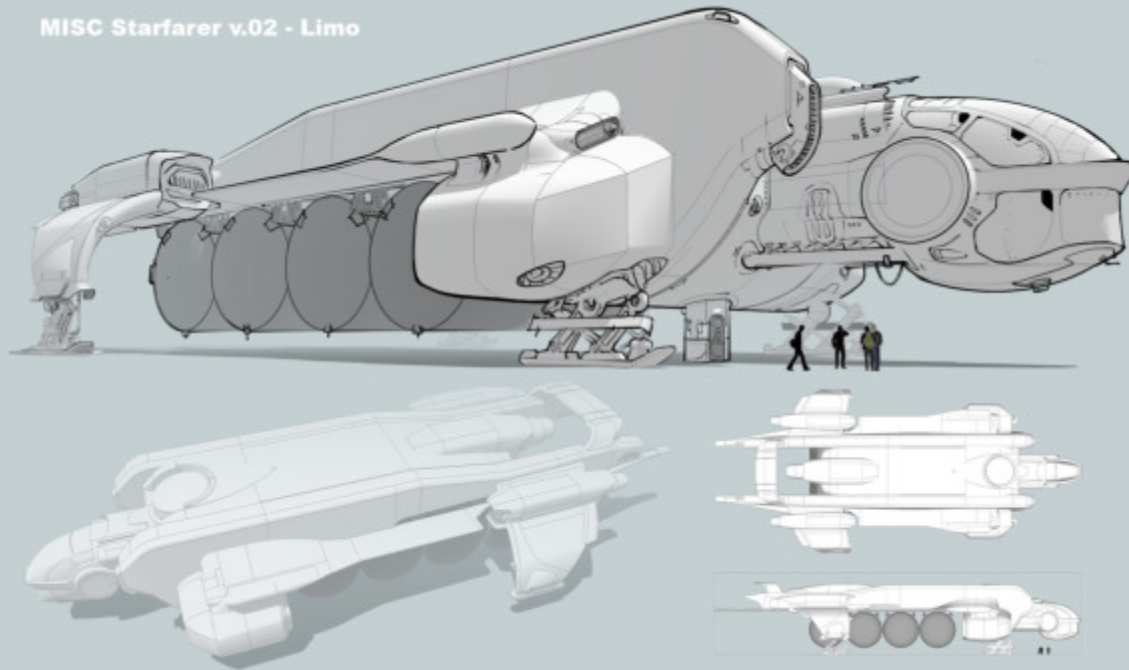
Ted B: Upsized to 90m in length.
3 suggested solutions:

- 01-Jumbo is just scaled up.
- 02-Limo is scaled up a bit and stretched in the midsection.
- 03-Asymetry is scaled up a bit, stretched in the midsection and has the crew compartment and TR6 engine shifted to one side. If this route is chosen might be fun to push the asymmetry a bit more. *[this page and next]*

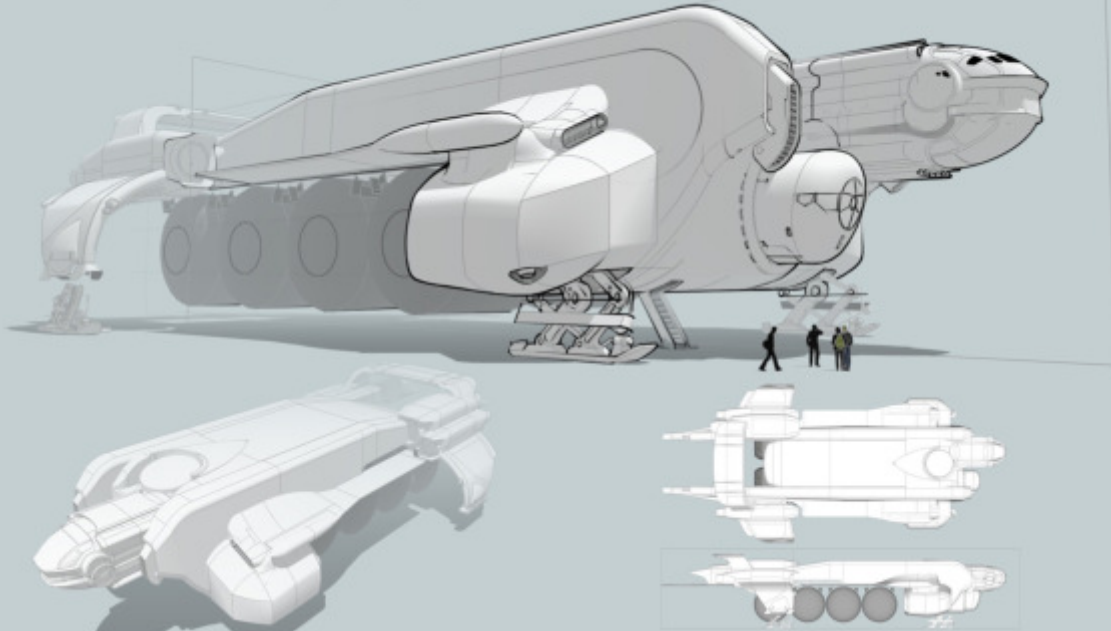
MISC Starfarer v.01 - Jumbo



MISC Starfarer v.02 - Limo



MISC Starfarer v.03 - Asymetry

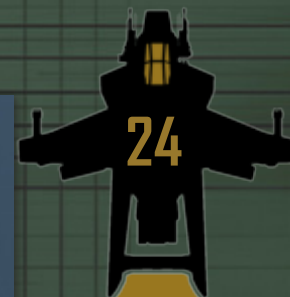
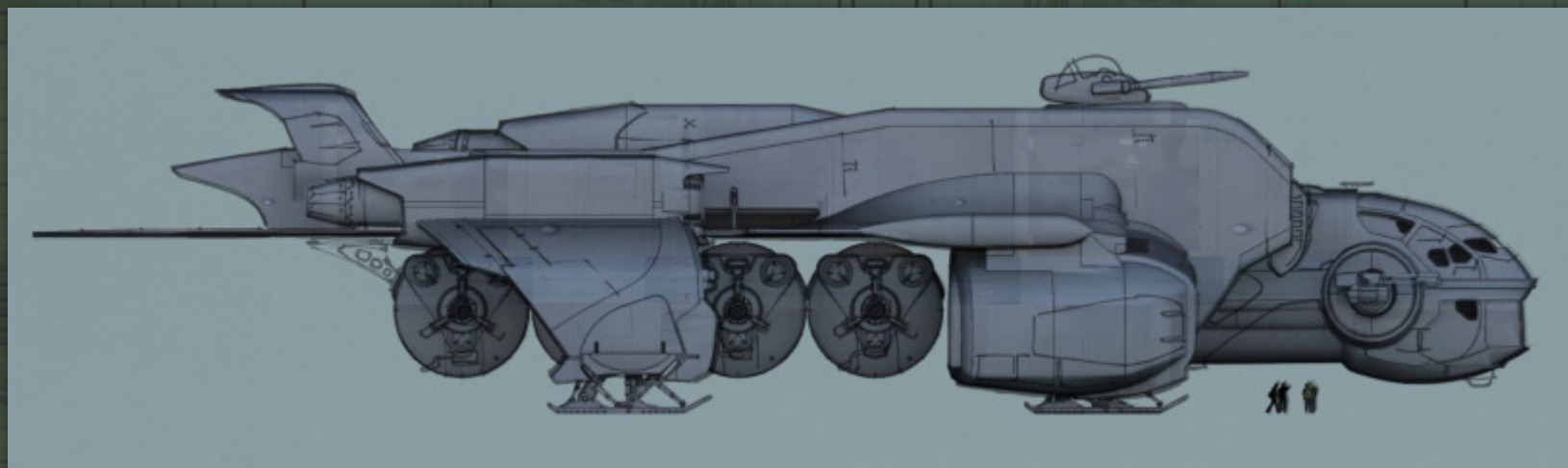


Chris Olivia, Chief Visual Officer:
I like 1 best, then 2. 3 not so much.



WORK IN PROGRESS

Ted B: Starfarer Update *[this page and next]*

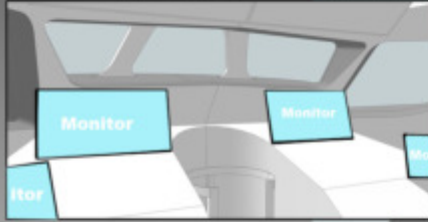


WORKING PRIORITIES



WORKING IN PROGRESS



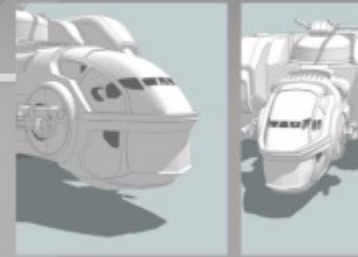


Visibility?

Is the lack of fighter levels of visibility an issue on a Tanker?
(What with all the automated proximity detection and avoidance systems and computer assisted VTOL)



Here's an example of the visibility as it is now.



Ted B: Visibility: The thinking was that due to the Tanker's character large windows with wide visibility would be unnecessary ... if need be, the crew compartment seats can be lifted and/or ports/windows added.

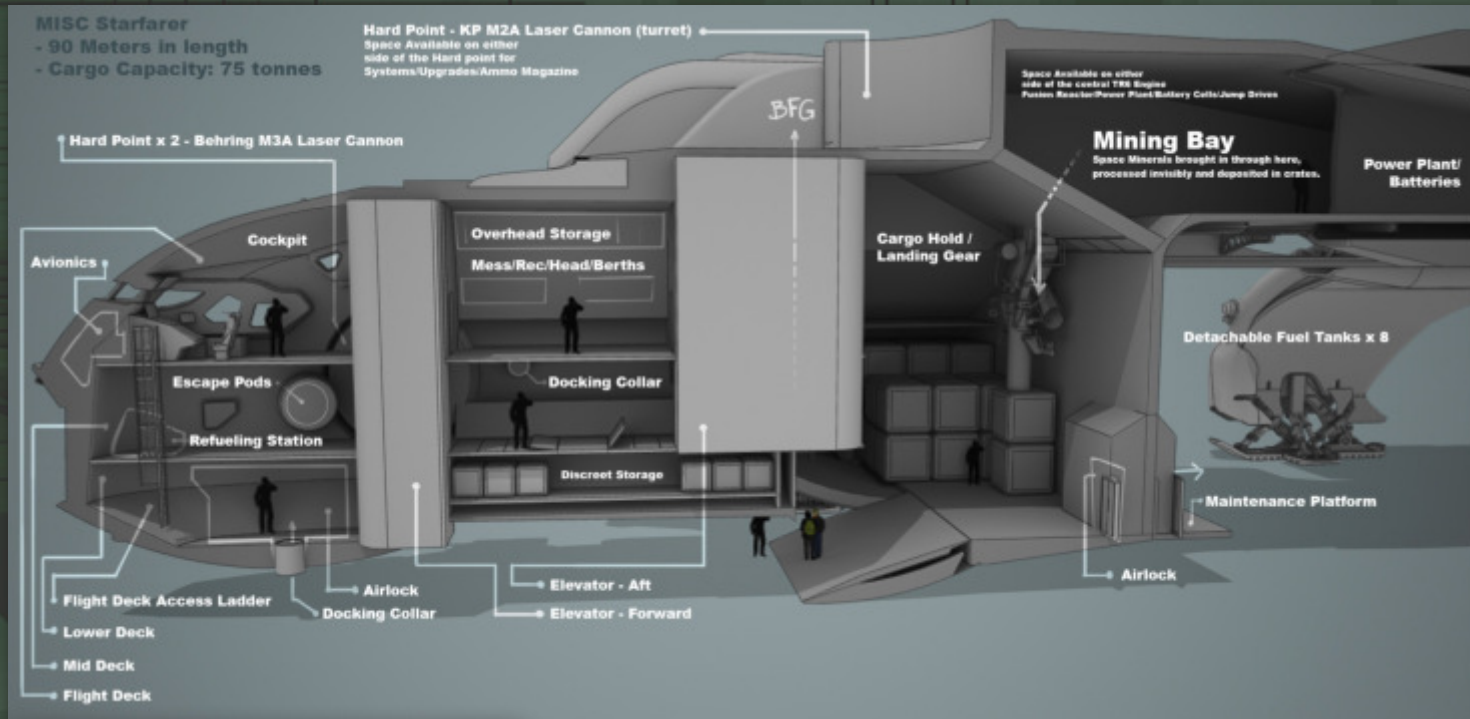
Harry J: Not my call, but a lot of present day trucker's cabs have seats that can be raised up or down significantly at driver's convenience

Chris O: Rob, CR? Any notes on interior?

Chris R: No major comments other than I see the Starfarer using ladders vs. elevators (which seem a bit of a luxury for a utilitarian cargo hauler). More space for cargo, bunks, etc. if you lose the elevators.

I'd like to see how the Starfarer could be converted into a miner / refiner ...



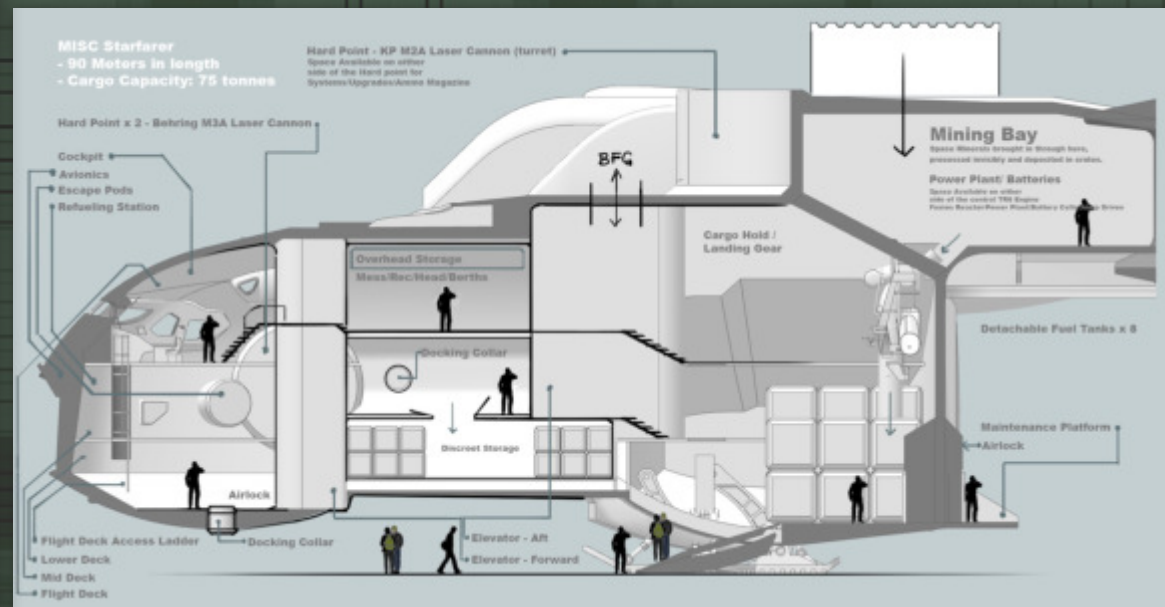


WORKING IN PROGRESS

Nate Blaisdell, Senior Technical Designer: It's already equipped with miner/refiner capabilities. The image to the right shows the exterior doors at the top, where the mined material goes in and gets refined. And the above image (sort of) better shows the refined material getting deposited into cargo containers.

Also, I don't really see a way to get from the cargo hold into the other walkable areas of the ship without going outside. Should we throw in a ladder?

Docking collar points look too small. And the one on the wall will need a ladder up to it if it's going to be that high off the floor.

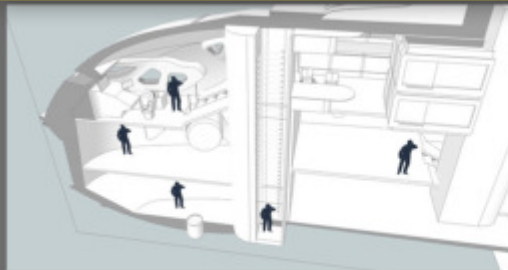


Ted B: Interior Blockouts, Landing Gear, Fuel Tanks
... Interior still needs further blocking out, detail and
some asymmetry. *[this page and next]*

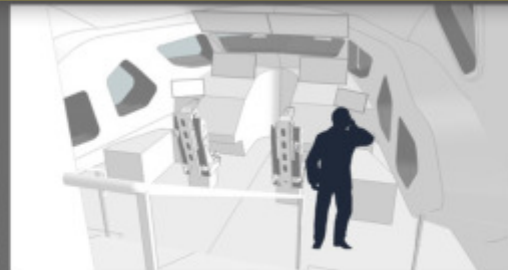
Chris O: This is where the Starfarer is at currently.

Chris Smith, Lead Vehicle Artist: Sick!

Ted B: Thanks! Are you going to model it? Yeah?



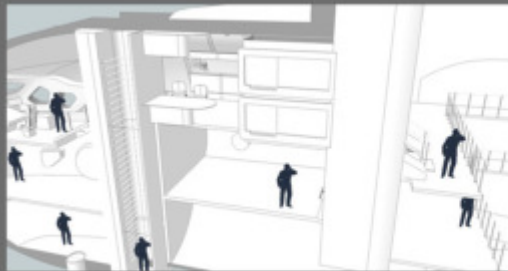
MISC Starfarer - Cross section - Interior Blockouts



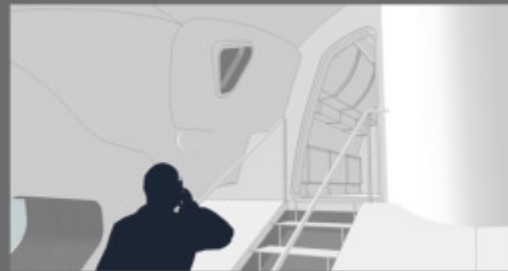
Cockpit Looking Fore



Racks? Bunks? Berth?



MISC Starfarer - Cross section - Interior Blockouts



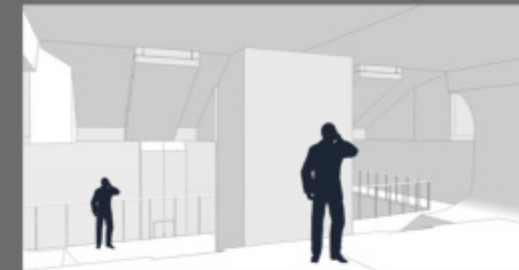
Cockpit Looking Aft



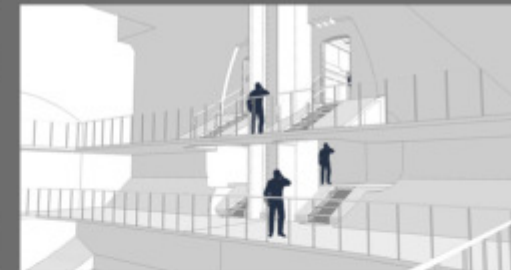
Visibility?



MISC Starfarer - Cross section - Interior Blockouts



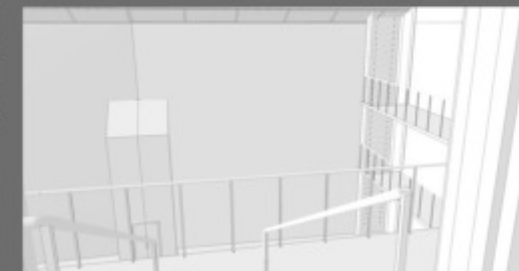
Cargo - Mid - Looking Aft



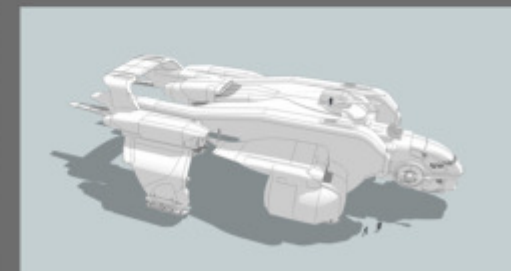
Cargo - Looking Fore



MISC Starfarer - Cross section - Interior Blockouts

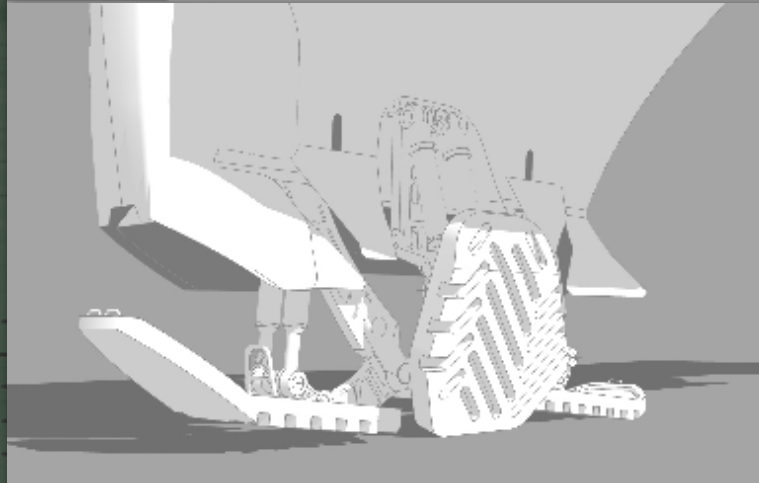
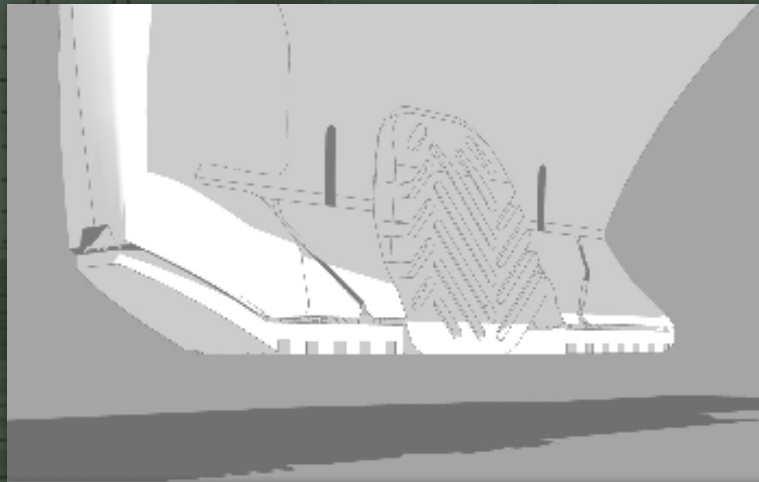
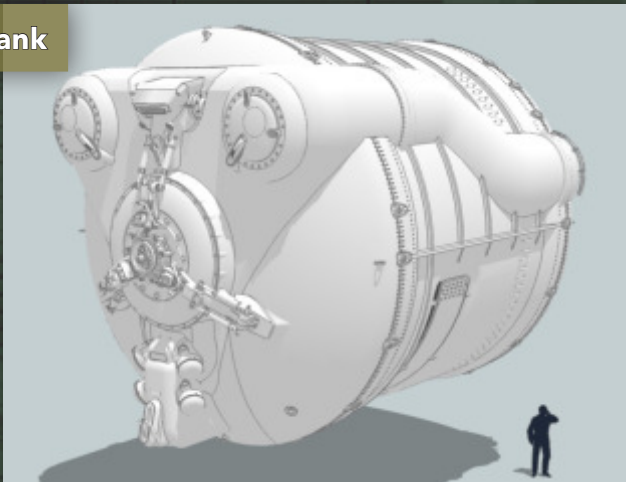


Cargo Bay

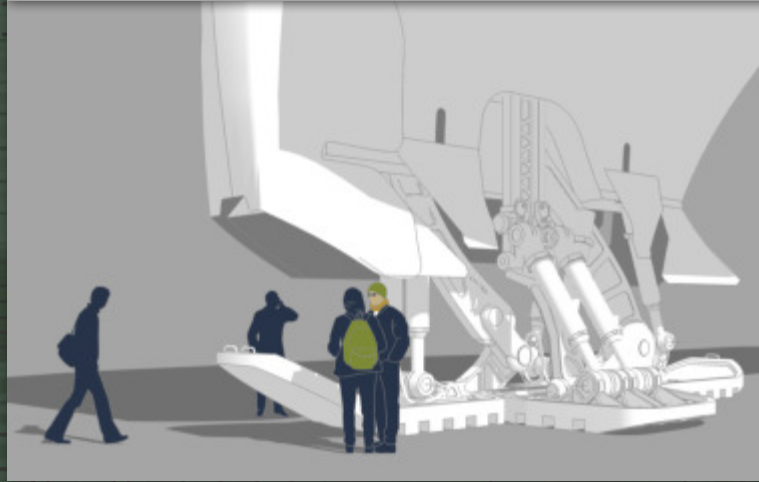
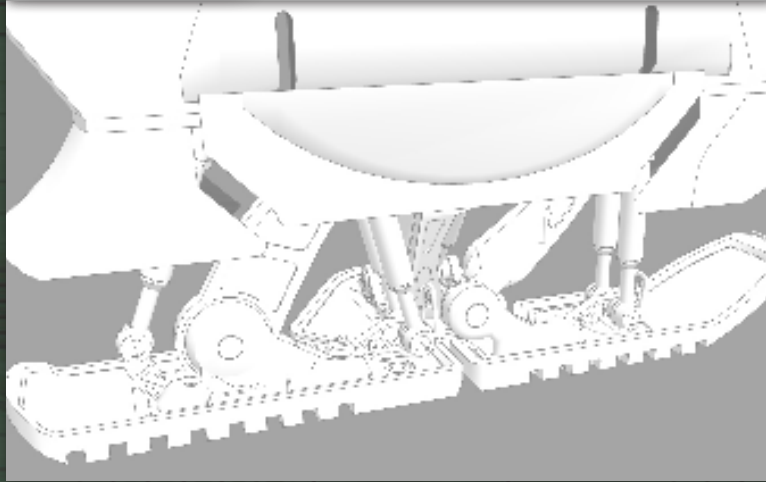
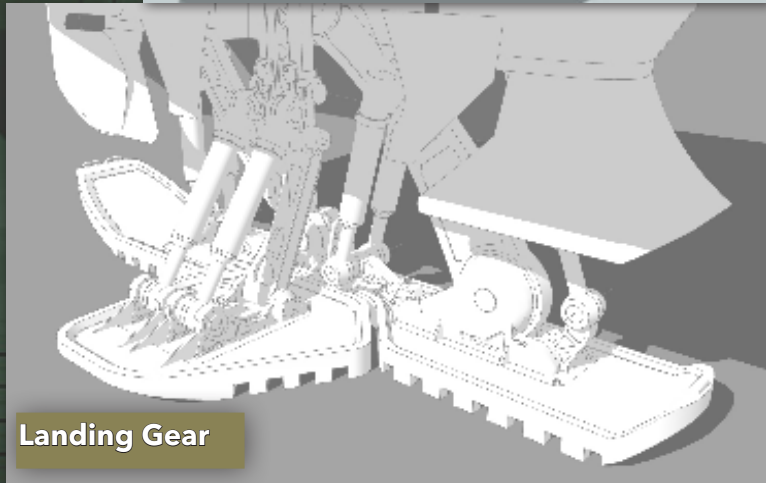


WORK IN PROGRESS

Fuel Tank



Landing Gear



WORK IN PROGRESS



And now over to UK Ship Dev and Gavin Rothery (freelance artist):

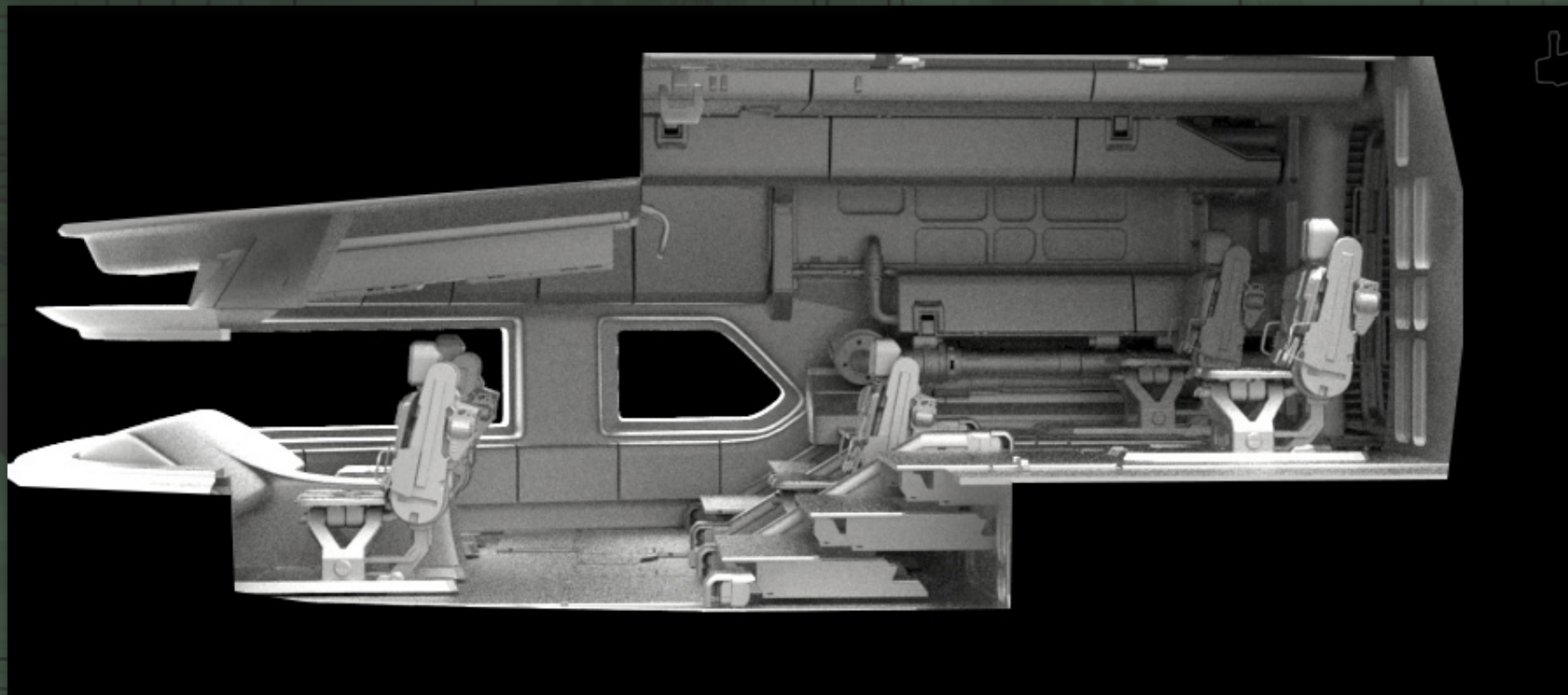
Paul Jones, F42 Art Director: We have taken on the whiteboxing and design of the Starfarer, starting with the corridor. This pretty much defines the ship in my book and from this we can derive all other rooms. Ted had plenty of helpful reference and we are continuing with the soft feel of the general architecture while maintaining a balance of functional fittings. Side view to follow showing modularity.

Paul J: Corridor cross section with bulkhead >

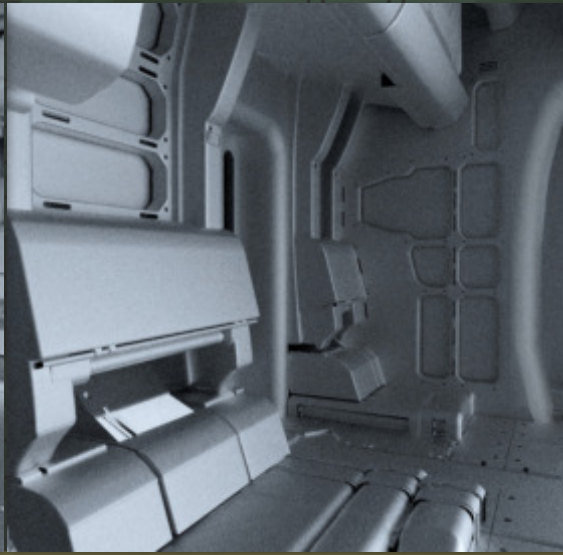
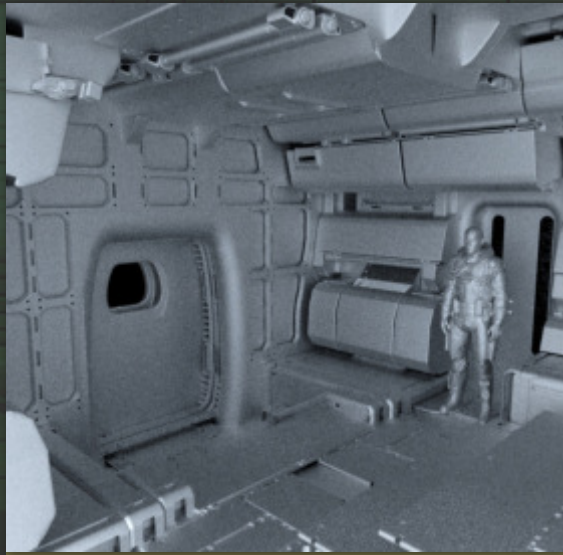


WORKING IN PROGRESS

Paul J: Latest on cockpit interior. Still a lot left unresolved; waiting on info for cockpit layout and functionality before progressing further. Chairs are temp.



WORKING DRAFTS



Paul J: Escape pod room directly behind the cockpit/bridge area.

Chris R: Is this for the in-game model or 3D concept?

Modeling looks really nice and clean.

Paul J: It's the concept model from Gavin Rothery.

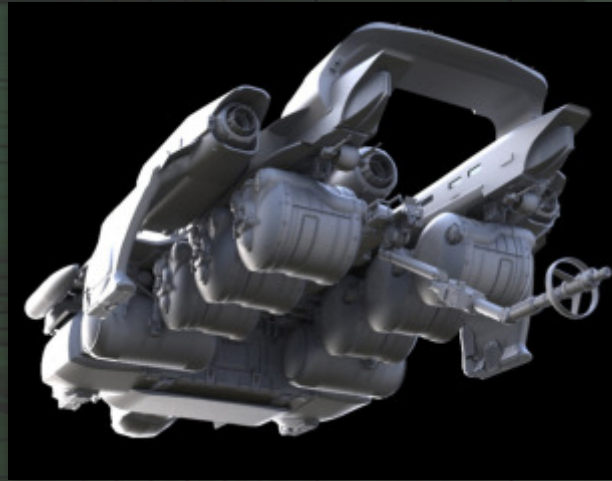
Paul J: Escape Pod room: colour update and decal pass.

Chris R: Should we consider a new pass on the interior of the Freelancer to mimic this MISC interior style?

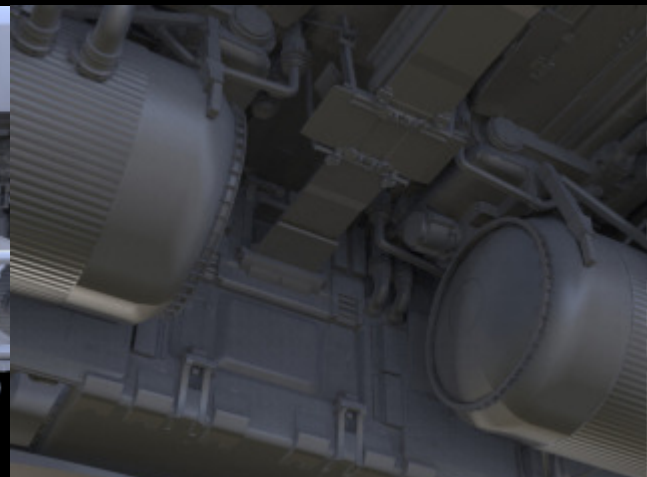
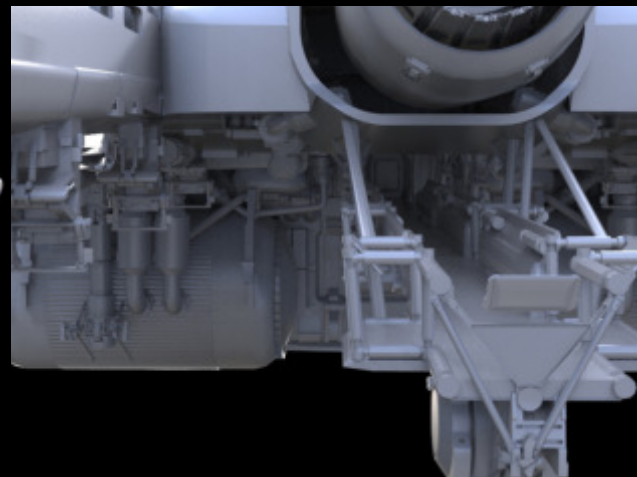
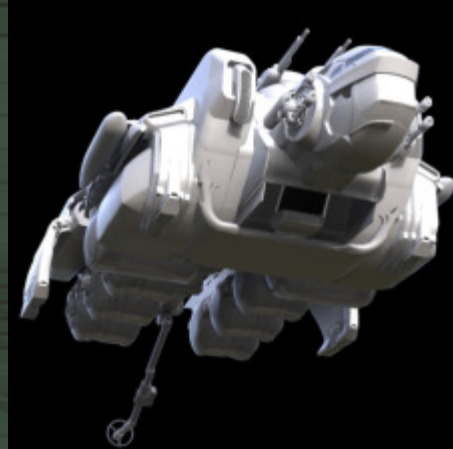
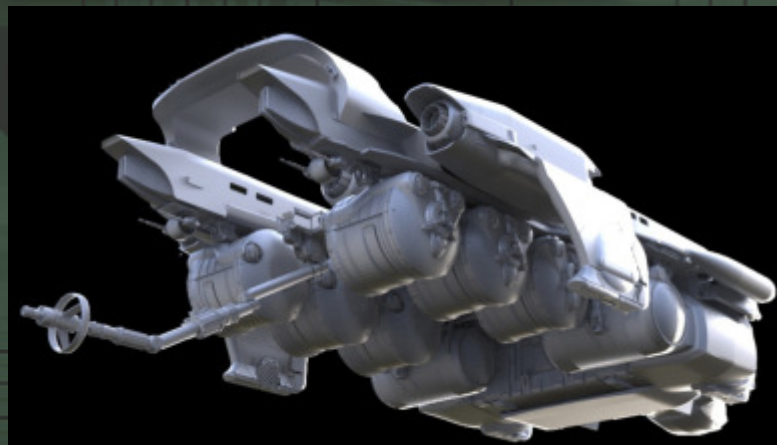
Paul J: That's up to you I guess, Chris. They both follow similar guidelines though – softly curving interior shell, overhead bins. The Starfarer is showing more pressed metal shapes though, and the doors/frame/window follow the soft shape too (not the escape pod doors though).



WORK IN PROGRESS



Paul J: Latest update from Gav. Work showing the optional fuel processing tanks. The ship can now carry the 8x8x12 storage pods easily and also shows the gantry and refueling arm. Some of the geometry on the body not as soft as it should be but will be fixed at the paint over stage.



WORK IN PROGRESS

Paul J: Starfarer cockpit update, not all 100% solved but we've got to leave something for the artists to do. :P

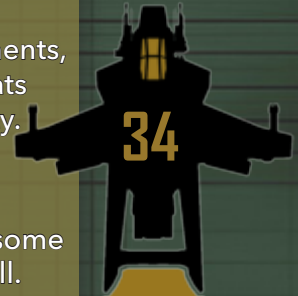
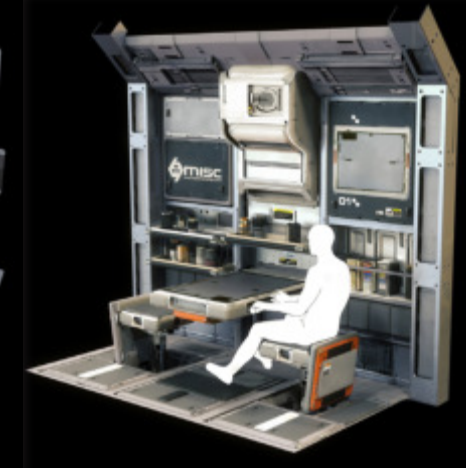
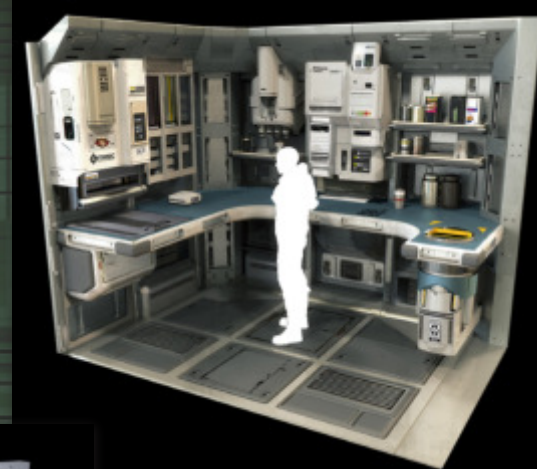
Chris R: This works for me.



Paul J: Starfarer modular wall piece for crew mess room. Wall panels can be configured for different uses, so can have more padding, more compartments, tall, small, etc. Table can fold into the wall and seats can be stowed away in the floor for extra flexibility. Also (2nd pic): Starfarer Modular Mess Room/ Kitchenette concept.

Chris R: It's cool! Let's make sure we are getting some of this form language inside the Freelancer as well.

Bjorn Seinstra, Senior Artist: Yes, all concepts are forwarded to Elwin! [Elwin Bachiller, Senior Spacecraft Modeller]



WORKING DRAFTS

Paul J: Modular front adaptation – one for gas cloud refueling (right) and another as a weapons pod (below).

Chris O: Perty. Is this general surface look approved? I'm gonna go ahead and follow it closely unless otherwise told.



[next page]

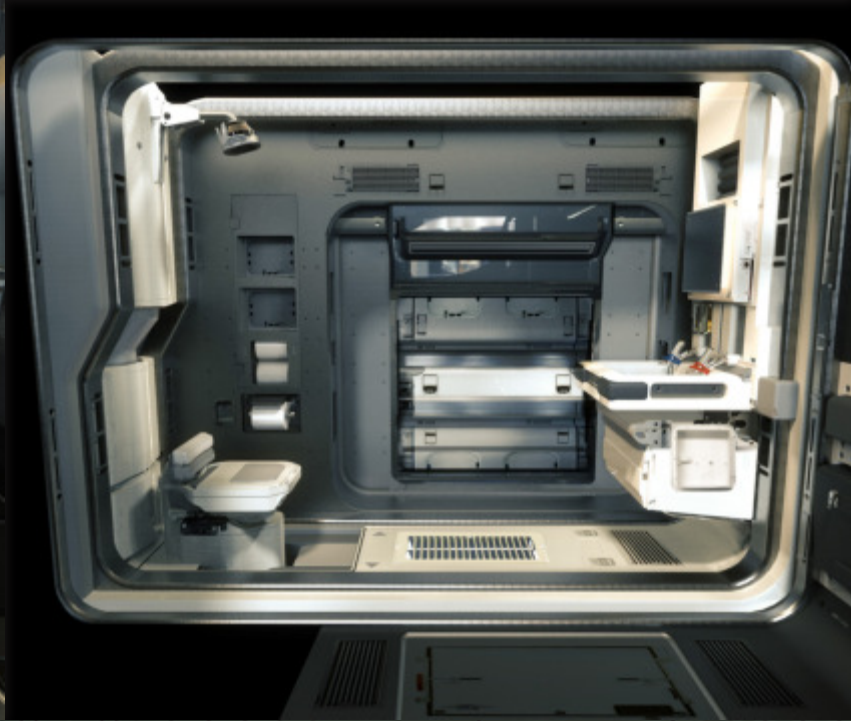
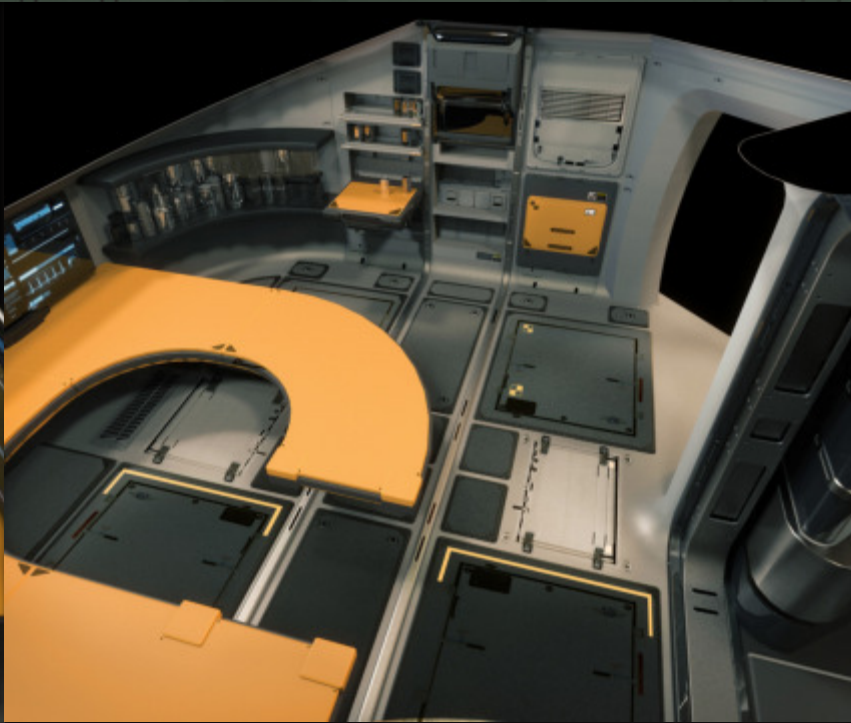
Paul J: Captain's Quarters. We'll derive a modular system from this for the crew too. Toilet drops down and shower floor plate appears. Fishtank not required but is there to show this area modular and could be swapped out to whatever player wants? :D

Chris R: Great detail. Let's make sure this feel also gets into the interior of the Starfarer.

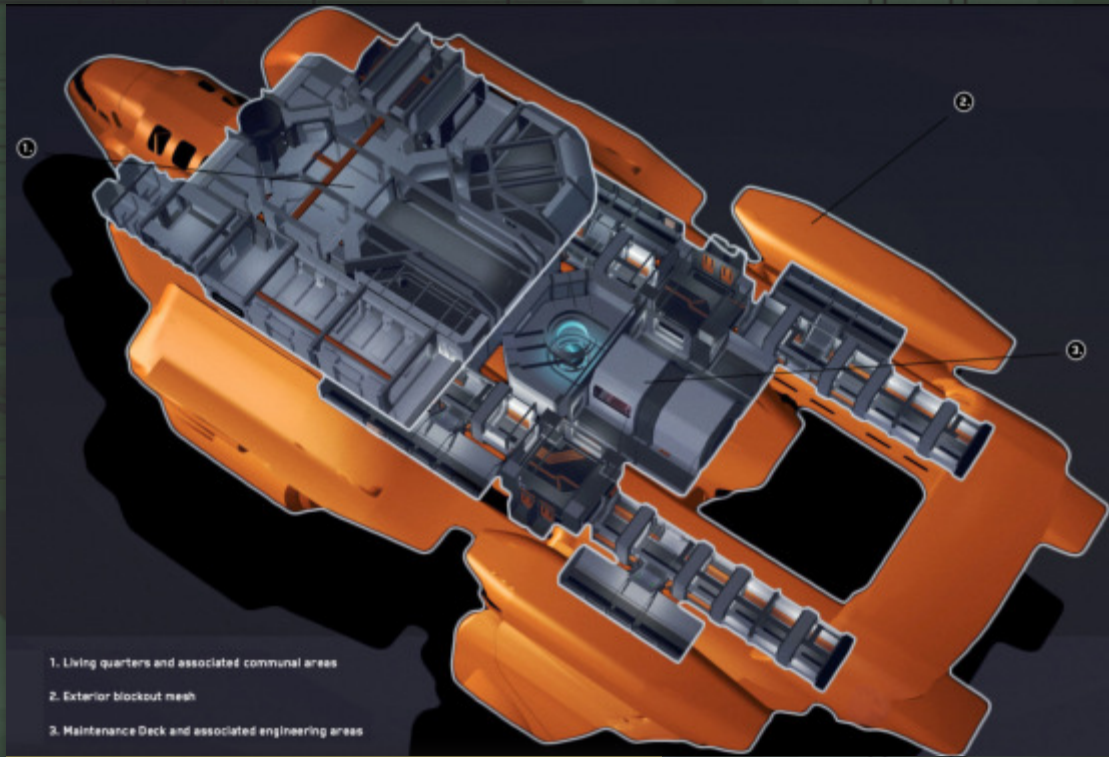
Omar Aweidah, Associate Concept Artist: This looks awesome!



WORK IN PROGRESS

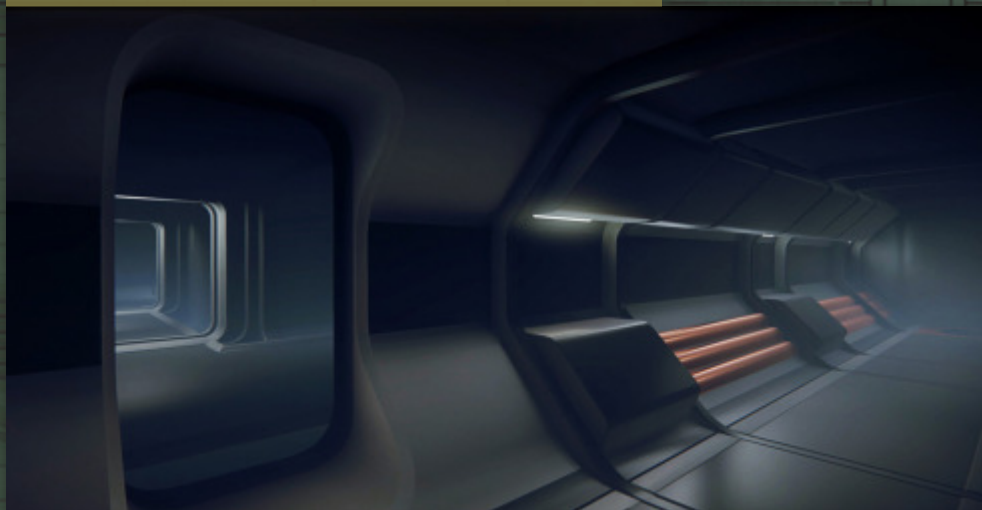


WORK IN PROGRESS



- 1. Living quarters and associated communal areas
- 2. Exterior blockout mesh
- 3. Maintenance Deck and associated engineering areas

Paul J: Whitebox layout of interior, a complex little beast! (When did 90m become little?!) Plus a hint at the basic interior, more to follow as we push closer to the concepts.



Paul J: Airlock concept. Kinda cool, pretty exploratory until we know about this area; yellow will probably change. :D



WORK IN PROGRESS



Crew Quarters

Nathan Dearsley, Art Director, F42:
Shots as we approach final polish.



Captain's Quarters



Escape Pod/Bridge



Captain's Office



Engine Room

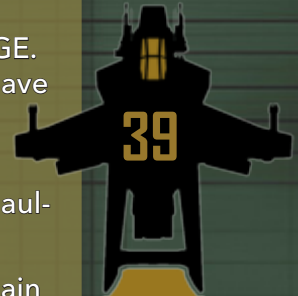
WORKING IN PROGRESS



< **Chris R:** That's not a moon! ... The Starfarer is HUGE. Going to be fun to set it up for flight and basically have a pretty large flying FPS level. Going to be interesting as the ship takes damage. :-)

Chris R: It's a beast! Can't wait to see these doing hauling runs in the 'verse!

Nick Elms, Creative Director, S42: That is the bargain of the century for that ship!!!

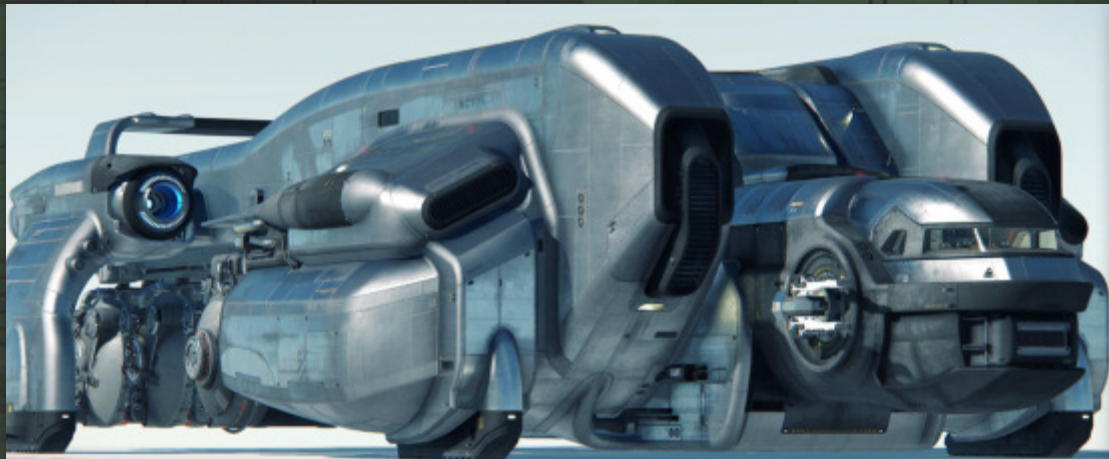


Evac Pods



Gravity Drive

WORKING PROGRESS



Matt Johns, Senior 3D Artist, S42: Weekly Update: further iterations to the exterior and interior of the Starfarer, including new MICS damage shaders.

Chris R: She's looking VERY NICE!

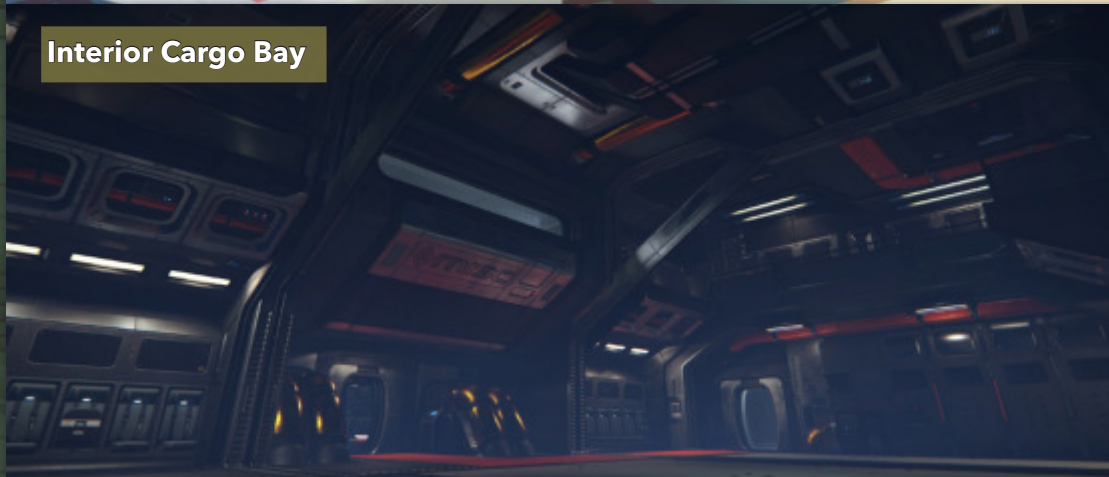
Guns on front seem a little small though. Are they are biggest? Guess it's time to upgrade! (What is the Starfarer meant to be packing?)

John Crewe, Senior Technical Designer: These are actually the same guns/mount combo that was on the Freelancer originally, a pair of S4 Ballistic Cannons.

Phil Meller, Lead Designer, S42: Yeah, definitely need bumping up, those pea shooters do it a disservice. Idris vs. Starfarer ... bring it on.



Exterior Damage Shader



Interior Cargo Bay



Exterior Damage Prototype



WORKING IN PROGRESS

Docking Room



Docking Corridor



Escape Pods



Crew Changing Room



Exterior Damage Prototype



Hub



WORKING IN PROGRESS

Exterior Access



Colin Baynard, Vehicle Artist: Exterior Access

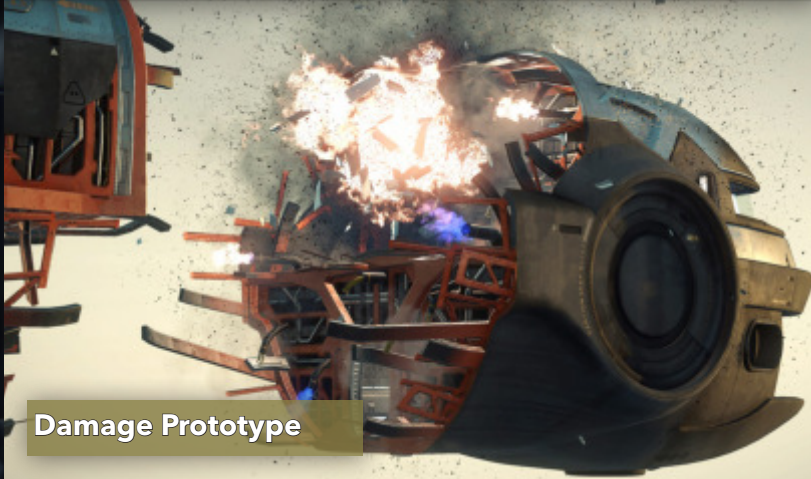
Paul J: Good lookin' room!

Matt J: Thanks, Paul, this is an airlock room that leads to the exterior walkway. :)

Mike Snowden, Lead VFX Artist, F42: [damage prototype] Interesting stuff. What specifically is being prototyped here? I'm curious for VFX reasons of course. :-)

Philip Howlett, Senior Vehicle Artist: This was just to see how the Starfarer would look when it breaks apart. The damage is difficult to test until Design have everything set up, so I mocked this up using VFX from the Connie.

Gunner Turret

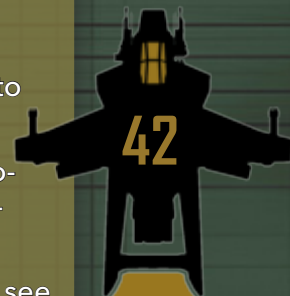


Damage Prototype

Companionway



Companionway



WORKING PROGRESS



Rear Window



Maintenance Corridor



LODs

Colin B: Starfarer WIP shots continuing through the interior spaces via kitbashing from our 3 hero areas. I made a decision to extend the rear windows to be one long section to complement the structures that already exist; no impact on performance and looks less 747-like, whilst being far more impressive from the interior. All exterior LODs hand-authored, even the lower LODs using an automated approach looked terrible, mostly due to the fact shiny metal isn't kind at hiding smoothing errors.

Chris R: The detail is mind-blowing!

We definitely need to do an in-game / in-engine video of the Starfarer flying where a player and copilot are piloting, walking around the corridors, looking out the windows, intercut with its escort ships and their view (looking over at the Starfarer to see a player at the window looking at them).

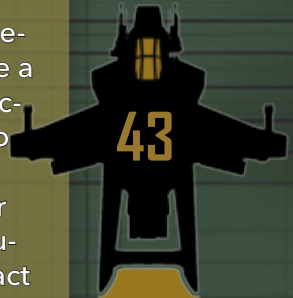
Chris R: Pretty brilliant LODs! We should create this kind of render / comparison for all ships!

Chris R: I would say kitbashing is working very well :-)

Matt J: Starfarer team are really glad you like it! :)



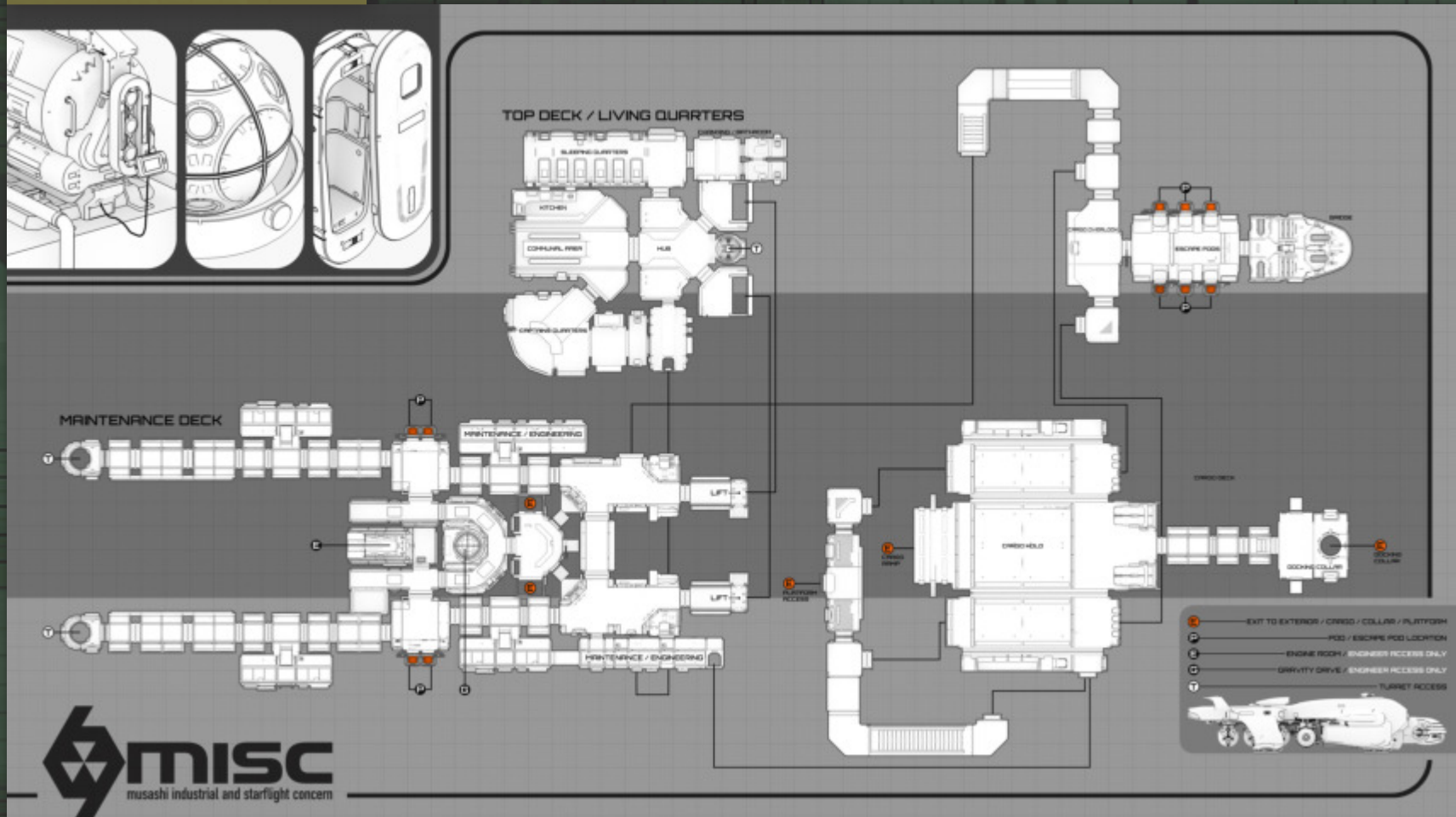
Cargo Corridor



WORK IN PROGRESS



Nathan D: Starfarer floorplan



WORKING IN PROGRESS

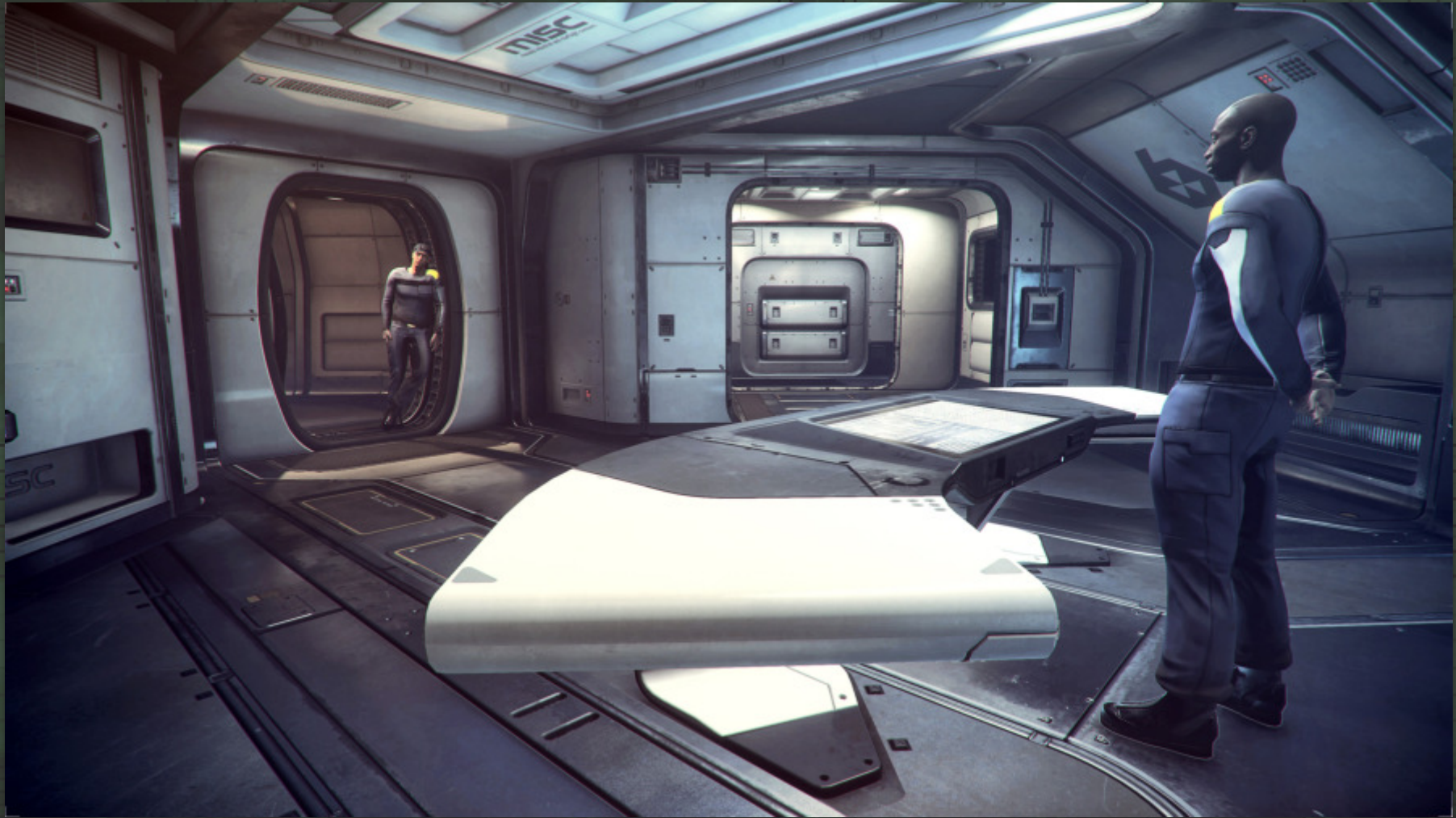
Nathan D: Final shots



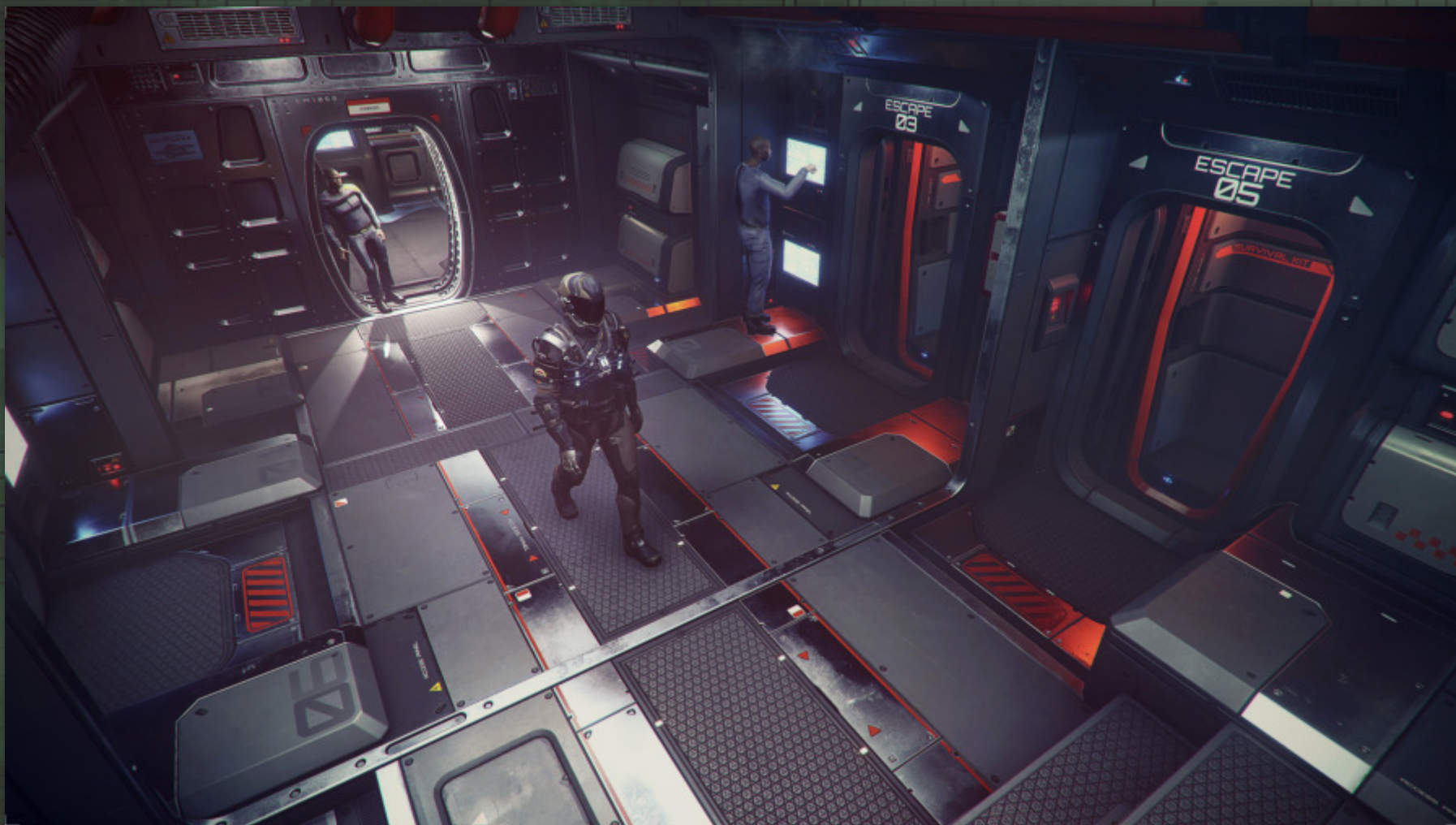
WORK IN PROGRESS



WORKING IN PROGRESS



WORKING PRIORITIES



WORKING IN PROGRESS



WORK IN PROGRESS



TARSUS



A Whole New World

On that fateful day in 2271 when Nick Croshaw folded space around his quantum drive for the first time and broke through the interspace barrier, Humanity changed forever. Suddenly, the potential for our expansion through the stars was limitless. The stars that hung brightly in Sol's sky were calling to explorers. They were now within reach, patiently waiting for us to discover their secrets.

Who better to help usher in this new age than the company who made space accessible in the first place, RSI. While the earliest brave souls who breached interspace did so with dangerous and risky tweaks to their ship's quantum drives, it was the labs at Robert Space Industries that took Croshaw's research and found a way to mass produce the results with manufactured regularity. Albeit expensive and in limited supply, RSI's QM-Core XII Jump Drive slowly allowed the governments of Earth and a select few adventurous pioneers to head out to the farthest reaches of known space, seeking new jump points and discovering new systems.

A Price to Pay

With the introduction of jump drives a new passion to explore sparked to life and the Age of Stellar Expansion began. A generation of children spent their youth pretending to be explorers and dreaming of how great it would be when they got to name the next star system themselves. While most grew out of the fantasy, to a select few it became a calling. What emerged was a tight knit community of amateur explorers who dubbed themselves 'Jumpers.' They knew the science, they followed the news, they studied every star chart they could lay their hands on, and they argued for hours the merits of a certain ship over another for traversing interspace. Sadly, the one thing that few of these amateurs ever got to do was actually go explore themselves.

The amount of capital it required to purchase one of RSI's jump drives was too exorbitant for most lay people to even come close to affording. Typically ships that were equipped with drives were owned by the government, research universities or the large corporations who moved people and cargo between the systems. There were a few billionaires who prided themselves on sponsoring private explorers in the hopes of having a system inherit their name, but for most people, owning a jump drive was completely out of reach. The irony that the same company that sought to make space travel commonplace was now, a few centuries later, ensuring the exclusivity of jump point travel was not lost on social commentators of the time. And though other companies were trying to do the research that would allow them to enter the jump drive market themselves, the status quo remained until two Jumpers, Tara Dilione and Alfonsus Carbrino, decided to take matters into their own hands.

Finding the Fix

The pair met working as mechanics in a small refuel station near the Croshaw-Sol jump point. Over the course of working late shifts, repairing busted thrusters and cracked fuel lines, they soon discovered their shared love of space exploration. Both had been trying to crew on explorer ships but had had little success. Each of them took the position at the station for the same reason: if they couldn't be on a jump ship, they might as well be working with them. It was there that they both got their first up-close look at an RSI jump drive.

Most owners would take their ships to an RSI-authorized repair shop when their jump drive needed any maintenance, unwilling to risk that new and expensive tech in the hands of just any old greasewrench who happened to be working that day. So while Tara and Alfon got to look at the drives and poke around a bit while making other repairs, they hadn't ever had an opportunity to work on one. It certainly wasn't for lack of knowledge – each had their own well notated copy of the operation manual that any real Jumper had read front to back at least a dozen times, but that wasn't the same as rolling up your sleeves and diving in hands first. Unluckily for the ship's owner, a transport ship's drive failed while it was fully loaded with high paying passengers; luckily for Tara and Alfon, their refueling station was the closest when the drive failed.

The owner had invested everything they had into running the transport, and the potential financial fallout ruled out the prospect of flying back to an RSI facility near Mars. Instead, the ship docked at the station and the owner reluctantly let the two mechanics take a look. It ended up being a simple wiring fix, but Tara and Alfon couldn't pass up the opportunity. They made up a complicated story for the owner and proceeded to spend the rest of the day inspecting every inch of that component. After their later



success, the pair stated that they ultimately apologized for their deception and make a general payment to that unfortunate ship owner for their inadvertent contribution to the development of Tarsus. For it was while inspecting that Jump Drive that they pair realized the jump drive was actually a 'nick.'

Named after Nick Croshaw's dangerous experimental methods, a nick was a term in Jumper circles for a modded quantum drive. Considered extreme even for the most hardcore of Jumpers, nicking your QD could get you into a jump tunnel just like Croshaw did originally, but it was so unreliable and unstable that chances were you'd never get back out. The risk all but rendered the technique unusable. Every Jumper could tell stories of people heading out with nicked drives, never to be heard from again, and after a dozen such cases, the practice had fallen off. When RSI had released their original jump drive and it was completely stable, the assumption was that they had made a technical leap in quantum science, but with the component spread open before them, the truth clicked into place. Even after inspecting the manual dozens of times, it wasn't until they saw it in real life that they realized that the quantum manipulation part of the jump drive, even though it was spread out and arranged differently, was technologically identical to the quantum drives everyone already had in their ships.

They immediately confirmed each other's conclusion: RSI hadn't reinvented the drive, they had just perfected the nick. It meant that it should be possible for them to convert their own ships to be jump capable without buying a full new drive. That night they wouldn't sleep at all as they discussed what they had learned.

One Small Jump

It took them 27 months, nearly all their money, and hours of extra "repair time" with any jump drives they could get their hands on at the station, but in the end they had designed a separate module that would convert any quantum drive into a jump drive ... at least if you had a ship big enough. The early versions took up most of the cargo hold. After running all the computer sims they could think of, the pair tested the 'Tarsus' on November 7th, 2292, a mere twenty-one years after Croshaw's first jump. In the spirit of the nick, they had named their device after a combination of their first names, saying it was the closest thing to a child either of them was ever likely to have. They settled all their worldly affairs, moved the ship into position, made sure their nav data was loaded, spun up their modded drive, and held their breath as they plunged into the jump point.

Thankfully, the pair emerged safely in Sol, their test successful. Word spread through the Jumper community quickly, and everyone demanded Tarsus modules of their own. Even though they had grand plans of exploring, Tara and Alfon figured they could use the extra funds and put their journey on hold to begin constructing jump modules for their friends. One Jumper, Selma Tontil, a lawyer by trade, realized what the Tarsus would mean when word of the invention broke publicly, and she hurriedly advised the pair to patent their plans. With her help, the Tarsus corporation was established.

Just in time too. Once word spread beyond the Jumper community, the demand was instant. At only a fraction of the cost of the RSI jump drive, ship owners could upgrade their existing quantum drives. RSI tried to sue the fledgling company, but Tontil was able to successfully defend their right to mod the drives. It was a mere six months before RSI began to offer their own jump module.



Scanning Ahead

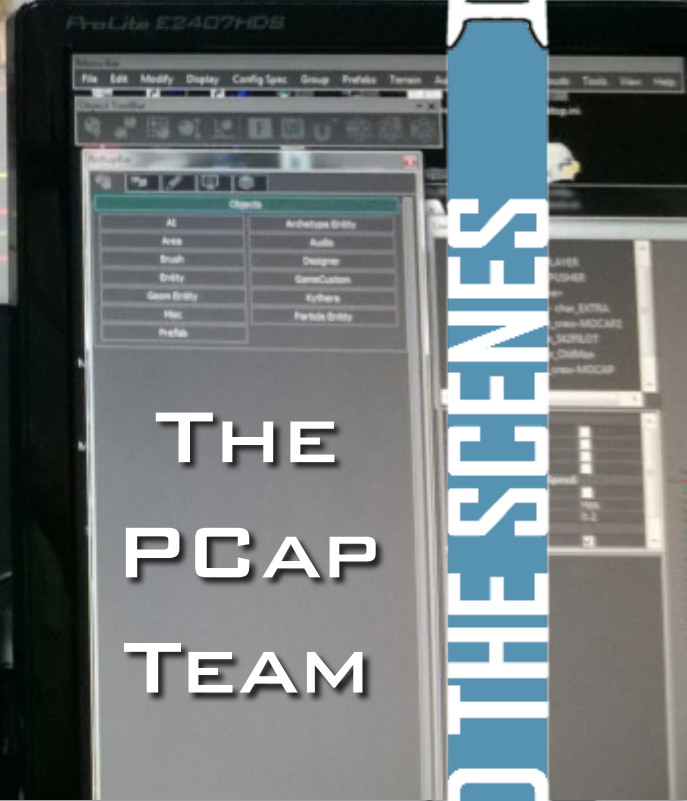
Tara and Alfon eventually did leave to explore the stars, but their company continued on under the watchful eye of CEO Tontil, who bought out the pair's controlling shares. Under her leadership, Tarsus moved from just producing jump modules to also producing a popular line of quantum drives.

Over the centuries Tarsus has continued to develop and grow, and though the populace at large enjoys their products, the Jumper mentality is never too far from their core. When Tarsus' testing division was frustrated with having to use off-the-shelf scanning devices and nav computers, they developed their own to better be able to see how their jump drives performed. The in-house versions become popular with the staff who installed them

on their own personal ships, and soon the ships of fellow exploring enthusiasts. It didn't take long before word got out, and now Tarsus is as well known for their equipment to help you find jump points as they are for helping you navigate through them.

As much as Nick Croshaw gets credit for expanding Humanity's reach, it is safe to say that our expansion would never had been as rapid or as vast if it hadn't been for Tara Dilione, Alfonsus Carbrino and their homegrown Tarsus mod. To quote Alfon, "The pieces had all been right there thanks to the hard work of so many others. Tara and I just happened to be the lucky ones who put it all together."





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Every day, Squadron 42 gets closer and closer to reality. One of the most significant tasks is getting the whole thing recorded, so that you can play alongside Mark Hamill, Gillian Anderson, and all the other superior actors involved in this great endeavor – and maybe even trade a few blows with Andy Serkis. This month, we discuss what it takes to make that possible.

JP: Let's start with the basics: What exactly is PCap, and what do each of you have to do with it?

John Schimmel, Head of Linear Content: Performance capture is a process by which we capture both body and facial "performance" information that we use to drive our in-game animations. I'm producing the shoot.

Actors wear body suits with markers attached and head-mounted cameras that record the motion of a set of markers painted onto the actors faces.

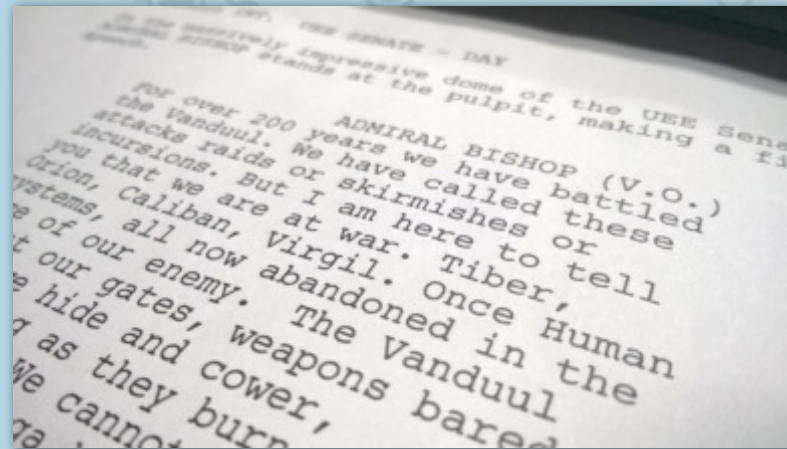
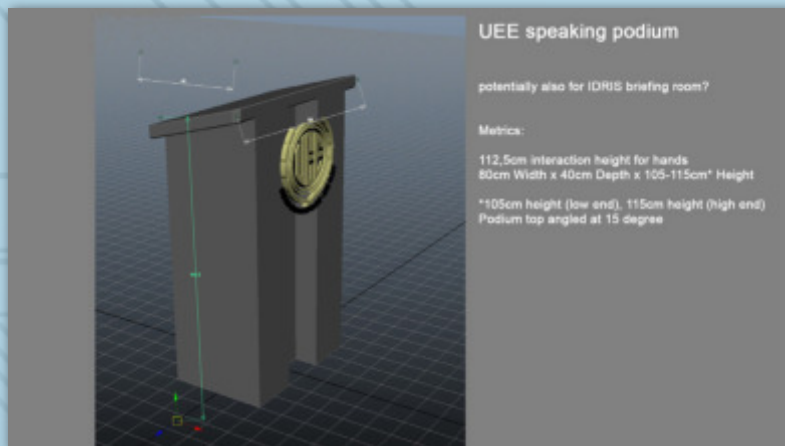
John S: We shoot at Andy Serkis' place called The Imaginarium. It has something like 50 cameras mounted around the room to capture the body data. Those cameras see nothing but the markers, so we also run reference video cameras to pick up the person.

JP: *In this context, what is involved in producing the shoot?*

John S: Scheduling each day's scenes. Hiring the crew. In collaboration with Chris and Dave Haddock and our casting director Gail Stevens, casting the roles.

Simon Ormiston, Associate Producer for Animation: For the first PCap shoot I was responsible for getting together props and making sure they were constructed for on-set use. Whilst at Imaginarium I dealt with tracking of data and communicating between Animation and Imaginarium.

Hannes Appell, Director of Cinematics: Basically I oversee PCap planning, prepare pre-vis for filmic scenes where needed, then co-direct with Chris on set where our roles are basically him as director and me as some kind of virtual DOP.



JP: "DOP"?

Dave Haddock, Lead Writer: Director of Photography.

Hannes A: I also lead the on-set in-engine setup and feedback, making sure we get what we need to pull off the scene as written and stay within the confines of the level architecture when framing our scenes.

After the shoot I'm responsible for leading the team that assembles the recorded performances both in body and face inside our levels and scenes.

That means virtual camera work, lighting, occasionally set building and dressing. Lots of meetings.

Simon O: That makes it seem so simple.

Andy Tildsley, Associate Producer: I'm responsible for producing the characters & facial development/ facial animation, all of which is used in SQ42 and the PU. During the shoot I was responsible for head scanning all of the actors and actresses. All of the scans were later sent across to 3lateral, an outsourcer responsible for building the head rigs.

I worked alongside Jon Jones, the Lead Facial Animator.



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Will Weissbaum, Senior Writer: I do a slightly less stressful version of what Dave does.

Dave H: But massage therapy can be very rewarding, Will.

Hannes A: PCap for us is basically the next evolutionary step and necessary step for videogames to step up to filmic narrative quality. Before 2009/10 pretty much all games captured performances in MoCap and face separately, often months apart or with different performers.

When Avatar opened the window on PCap in 2009, videogame productions like RYSE or Star Citizen quickly jumped onto that train too, because you get more natural performances as everything is done in one take.

Dave H: Plus, with the cast that we were able to get, you want to get the best fidelity possible to capture their subtleties and nuances.

JP: For a few minutes, let's break this down into three stages: before the shoot, the shoot, and after the shoot. What are you each doing before the shoot?

Hannes A: I think our game is pretty unique in that we try to capture A LOT of the secondary named characters with PCap too. We aim to get a lot of subtle performances in

our narrative corners of the world rather than just having everyone as "signposts" standing around or using a super simple motion set for gesturing during a scene.

Dave H: Pre-shoot, I was writing and drinking buckets of coffee.

Andy T: Head scan prep. Prior to the shoot we had to test the equipment. We have a large piece of equipment, that consists of 50+SLR cameras, triggers, etc., that was built primarily by the Character Lead prior to the shoot. We needed to rehearse the shoot and basically stress test the equipment.

Will W: Dave and I spent a lot of time with Chris going through the script, making sure that everything was doing what we wanted it to – that characters were reading well and tracking throughout the game, and that the emotional beats were resonating.

John S: Not much sleeping would be a better answer. There are a zillion moving pieces to the schedule, especially since all the coffee Dave and Will drink means they won't stop writing. A lot of what we're doing on the upcoming shoot is capturing all the background characters that will make our environments really come to life. So we have something like



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130 roles to cast and schedule. I'm working on that, plus building a budget and dealing with production logistics.

Fortunately in Philippa Naughten I have a spectacular unit production manager who makes the logistics a lot easier than they might otherwise be.

Simon O: Before the shoot I worked in QA, then moved over to helping out with organising the shoot for the props and environments (which was meant to be a one-day-a-week thing). It then turned out to be a lot more work and we spent a couple of weeks trying to make sure everyone was communicating, and holding meetings daily.

Dave H: The buildup to the shoot was pretty intense. We were still generating scripts, while John was putting together a schedule, UK was organizing and building locations and props while Hannes was pre-visualizing scenes. So, yes, it was a lot of meetings.

And trying to hit a moving target.

JP: *A moving target?*

John S: Moving target, as in design is continuing to develop levels, which implies new or changed scripts, and actor availability is always in flux.

Simon O: The buildup was crazy. When you know you're going to have the cast we had on set, there was a lot of panic about getting everything ready.

Will W: Since the Imaginarium crew was building a bunch of props for the actors to interact with, everything had to be constructed to match exact in-game metrics. One of my favorite shoot moments was when they built the cups, plates and trays for the dining room scenes to the sizes we gave them and they ended up being gigantic!

Simon O: Alice in Wonderland sized props was a problem.

Dave H: Yes, the mess hall cups.

JP: *Did the props have to be large to handle the motion capture dots, or was it just unintentionally oversized?*

Hannes A: You mean the mess hall drinking cups and terminals that looked like we had little children pretending to be UEE military?

Dave H: They were like Vikings, Hannes.

Hannes A: Often artists work from 1st person perspective only, checking their work against FOV60 in-game. That distorts reality a lot, though.



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Hannes A: So we made it a policy that you have to load an actual human up into your prop/environment to check it against that.

Simon O: Hannes, I remember you showing Gillian the pre-vis for some of the scenes with your voice overs.

Will W: Luckily Simon and the rest of the crew were on the ball so we got it fixed in time.

Hannes A: Good that this is a text chat only. My face color is about to get as red as a well known actress's hair color.

Hannes A: Before the shoot I will read the script pages from Dave and Will, then have a look at the environments and levels in which those scenes take place. I talk to the level designers and artists and work in conjunction with Simon and others to make sure "we know what we are doing" with "know" being quite flexible, depending on what type of scene it is.

If we are prepping a scene where we want to take control of the camera or frame a player POV nicely, this means thinking about staging of actors, moving of scenery to get the best possible "mise en scene."

Once that pre-vis process is underway, we have lots of



prep meetings with me pitching the staging and other details to Chris to see if he is in accord.

During the shoot: Both Chris and I are working with the actors to show them the scenes we have prepared, ease them into the environments, as they wear those ridiculous suits and heavy headsets for facial capture.

While Chris is focused on dialogue and delivery and subtlety, I look out for composition, staging, making sure we get a good looking performance that is compatible with the game environment.

Then load up relevant scenes, levels, environments into our live engine MoCap feed and manage that to preview cameras for Chris or the actors to see.

Simon, it was quite rewarding doing the pre-vis for the Senate or the Skydock in time for Gary to actually be able to see and feel his environment, though. All those overnight pre-vis bits paid off, I think.

John S: Brian Chambers was also hugely important in pulling the first shoot together.

Simon O: Ha! You just got a round of applause from everyone!



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Hannes A: A good thing about all the oversized prop shenanigans was that we dialed in a lot of our universe metrics right there and then. We finalized chairs, terminals, railings, interaction heights for standing/crouching, cover height, etc.

JP: *What was Brian's responsibility?*

John S: Part of what he and Simon needed to accomplish was to make sure our on-set props matched the in-engine dimensions. The props look simple because they need to avoid blocking the cameras, but they are built to very precise specs. Brian has a lot of PCap experience and so helped get us organized early on.

Hannes A: For example, Brian interfaced with the set builders and made sure they got the latest virtual props to build the physical representation for.

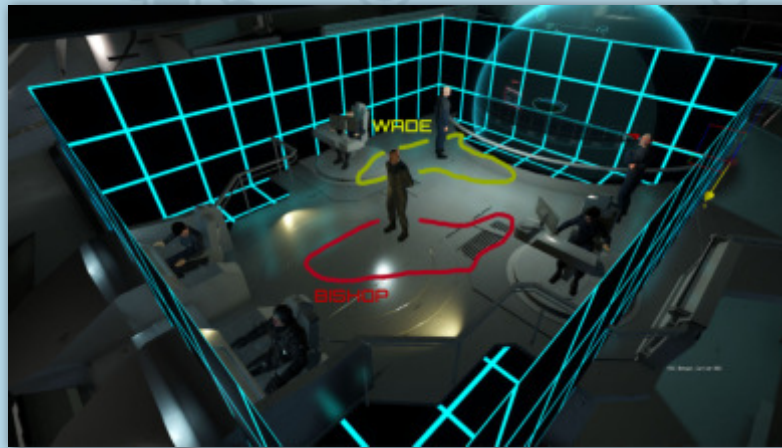
Simon O: Brian was my go-to whenever I was panicking about things. He's just calm about everything and doesn't get fazed by what may seem like the most catastrophic problem.

Hannes A: We actually built a pretty cool looking cockpit for Mark to sit in. The builders were also doing wonders in short time.

JP: *I realize that you don't shoot the entire game in one session, or even in one two-week period. About how long is a typical shoot? Approximately how many minutes of final gameplay comes from a typical day's shooting?*

John S: We try to limit the days to 8 hours. Those hours are very intense and, unlike a regular film shoot, we are all pretty much in one place for the day. So focus starts to evaporate after that.

Simon O: I don't think this was a typical shoot. I think it came to 49 days in total shooting.



John S: The number of minutes of game play we get in a day totally depends on the day.

Hannes A: We have yet to build final data on that, but I would not be surprised if it is similar to film stock ratios of somewhere between 6:1 to 10:1.

John S: 76 days total, Simon.

Simon O: I forgot to include the Motion Capture.

76 days.

76 is a long time.

Hannes A: But that would count only from when we say Action, not all the technical setup needed before that can happen. A PCap set, while looking basic in props and dressing, is a very complicated technical achievement to keep running at a steady pace.

John S: Motion capture, BTW, is performance capture without the facial data. Just body.

JP: *Perhaps I can ask this: After 76 days of shooting, what did you have? The first episode? The entire game?*

Hannes A: Our Episode 1 script is pretty much 500 pages and about that many scenes – right, Dave? A normal



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movie is 50-60 scenes. So we were definitely faster than a normal movie shoot. :)

John S: We had the basic building blocks for the entire game. We're going back in to add color and texture and pacing.

Simon O: That's the perfect way to put it.

Dave H: The story script was clocking in at around 480 pages.

Hannes A: The script is big because of branching in dialogue and choices but also because we have lots of named character interactions.

Dave H: But we didn't shoot all of the 480 pages, just the story-critical stuff with the bigger characters.

That wasn't including wild lines, which was another 200.

Hannes A: Ah, yes.

JP: *What's a wild line?*

Dave H: Wild lines are contingency lines basically to make a character feel more alive.

Since you are spending time aboard a living ship, you see these characters walking down a hall or working at something while you pass. There's no specific story scene attached to these moments, but you want them to react to you dynamically; otherwise they look like they've been taken over by body snatchers.

Wild lines would generally be greetings ("Hi, sir") that we would get variants on so they don't incessantly repeat the same line (for example, adding "hey, lieutenant").

Then once you start to account for reputation, a simple greeting becomes nine lines.

Then the madness starts.



JP: *It sounds like you got the core of the entire game, plus a lot of the extras that will make the game feel real rather than an adventure on rails.*

Hannes A: Another quite big part of the shoot was that once we were finished with an actor's/actress's scenes, we also captured motion sets for them for different walking speeds, turns, idle motions and even facial poses.

John S: Yes. Chris' ambition is to have the game feel as "living" and filmic as possible. So every moment, even the little encounters, need to feel real and alive.

Hannes A: So that is definitely like the raw iron from which to forge our game.

JP: *It would seem that not only do you have to write nine (or so) distinct lines, but each actor then has to deliver them in nine distinct ways.*

Dave H: Distinct within the boundaries of their character, and the context.

John S: And it's important to make another distinction – we capture lots of wild lines, but also conversations the player can overhear or join.



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Hannes A: I think we had most of the wild lines delivered at three different tones/moods, but had multiple similar ones for the same action, and also had different responses based on whether the player has a certain military reputation, so that multiplies things of course.

JP: *You're talking like there was just one shoot – I've had the impression that there were several shoots.*

Hannes A: It was basically done on the same stage from End of April to July last year. I think we had a couple of weekend breaks but the bulk of the material was shot there.

We had some secondary motion capture shoots before and after though, and we have another PCap shoot coming up.

John S: We are about to do a second series.

JP: *A second series of what? More of Squadron 42?*

John S: More for *Squadron 42*. The color and texture I mentioned earlier.

Dave H: there was also the Vanduul pickup in August.

Hannes A: Yes, but that was mainly because of actor availability.

John S: Right. We had a day with Andy Serkis creating alien motions for us.

JP: *Then after the shoot – what did each of you do?*

John S: Post production on these things is wildly complicated. The data and reference footage all goes to Michael Freedman, our editor, to start assembling the best takes. Chris and Dave and Michael then make their selects. The body data from those selects go back to Imaginarium to “solve,” or clean up for our animators. The facial data goes to a company called Cubic Motion to attach to our facial rigs. Simon and Andy have the monumental task of tracking all of that and helping to keep everything moving.

Will W: As designers hone and refine the missions, Dave and I can go in and start adding in the more specific gameplay dialogue. How do we let the player know what they need to do? How do we make their objectives as clear as possible?

Hannes A: After the shoot I was occasionally participating in selects but that was mainly Chris, Dave and Mike the editor doing that, which was a huge endeavor because of the amount of material.

My cinematic team while waiting for the first PCap body material to come back “solved,” was prepping the pipeline for import/export and other technical details.

Once we got back the first solved takes as body animations for our character skeletons, we were able to start in earnest in implementation. This is done in multiple stages, so first is a rough implementation where we put in the edited timeline of a scene for each character, then you add face motions and refine cameras for the best face moments (in the case of filmic scenes) and also put in lighting, VFX.



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Then this is reviewed and another pass is created where (ideally) the ship or environment in which the scene plays is final already.

Of course this is also a fluid production environment, so if a level changed in layout or architecture in a way that our actors come in contact with it, it's an ongoing process to keep environmental art/ship art and cinematic team in sync so we can keep our PCap intact.

Hannes A: Did we talk about face scanning yet? It was quite surreal having these actors come into our production house in the morning and being scanned.

Dave H: There was that.

Hannes A: like sitting there with your muesli and then ...

Dave H: So to provide an intro to this, Chris, Hannes, John and I shared a house, and the head scanning rig was set up in the living room.

JP: *Of course. :)*

Will W: The facial scanning rig is quite an elaborate set-up, so at the beginning of the shoot, there wasn't enough room for it on the stage. The living room at the house was donated to the cause.

Hannes A: It was quite convenient to scan members of the team that way.

Dave H: It was like a very tech-y Real World.

Will W: It was always great coming back after a full day of shooting to see what the facial team had captured. The poses you have to stretch your face into can be quite amusing.

Dave H: it was a whirlwind of work and stress, but I had a lot of fun on it. Everybody really pulled together to capture some awesome stuff.



John S: I think it's great to note how joyous this set was and how that spirit will infuse the game. We had an outstanding cast, but a lot of them were unfamiliar with the PCap process. It was not clear when we started that the bare-bones nature of the stage and body suits instead of costumes wouldn't throw people. In fact, the bareness and the democracy of the set – everyone wore the same thing – seemed to set the actors free to do their best work and to have a great time doing it. The relaxed tone was set by Chris, of course, and the crew at the Imaginarium and our production crew were a great combination of highly competent and big fun. It made for a wonderful atmosphere.

Will W: It was definitely humbling to have had the opportunity to write a scene and then see this huge effort on everyone's part to bring that scene to life.

Dave H: Also, since the camera work is virtual, everybody had to be engaged at all times. There was no 'off-camera' moment, so it ended up (from what I gather) feeling more like Theater in the Round.

Hannes A: That is actually a pretty good point. They don't play for the camera – it is more like role-playing in a theater environment that way.



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They had a look on our live-engine feed often times though, and Chris and I also made suggestions for better posing because we saw the virtual camera at all times.

JP: *I gotta ask, but don't say anything more than you should: what's left now to get S42 done?*

Simon O: A lot of work.

Will W: Right now we are seeing the captured footage appearing in game. It makes such a big difference to run through the levels and hear the real actors delivering the lines.

During the earlier design process it's all subtitles or text to speech. You don't really get a true sense of the tone of the scene till you have the real delivery.

We are starting to script out the last little bits for pick up – all the glue that is really going to stick together the big moments we shot earlier.

John S: The entire cast from the last shoot was remarkable. Gary Oldman, Mark Hamill, Mark Strong, Gillian Anderson, Harry Treadaway, Liam Cunningham, John Rhys-Davies, Andy Serkis ... also actors like Steve Bisland as Eugene Morrow and Gemma Whelan as Becca Farne-

way.

Will W: Both Steve and Gemma nailed their parts so well that we ended up writing additional content for them during the shoot because we wanted to spend more time with their characters.

Dave H: Yeah, the cast was incredible.

John S: There's an interesting thing about creating a game that feels like a film: Unlike a film script, Dave and Will are writing for a character – the Player – over whom they have minimal control in terms of reactions and emotions. So they need strong characters to attach to, so that the Players will really care about what happens to them. The writing is absolutely spectacular, but was of course greatly enhanced by the performances of this cast.

Hannes A: I have to say even though the shoot was long and, like any film shoot, pretty exhausting, it was also an absolutely fantastic experience.

Just being able to have people like Mark Hamill or Gillian Anderson play around in environments that I helped create was surreal. It was like my inner self was 10 again.



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NEMO SYSTEM ERGO



"Ergo, I Got Blubbered"

T-shirts with that phrase have become ubiquitous throughout the Empire. Everyone knows it refers to the Space Whale, a tourist trap located in the Nemo System. Yet, only those who have visited the attraction know the truth: describing it as a Space Whale would be a stretch of the imagination.

True, there is an oblong asteroid with one thick end tapering into a smaller one that orbits Ergo (Nemo III). There are even locals who will argue for hours about its strong resemblance to an Earth whale. Yet the main draw really seems to be the shops and attractions set up to entice the wayward tourist who happens to be lured there. Every Galactic Guide employee that has journeyed to the (in) famous landmark has returned to say basically the same thing, "Ergo, I got suckered."

ERGO I GOT BLUBBERED

While the Space Whale may not live up to its billing, it is somehow fitting for the Nemo System. From Ergo, an ocean planet with vast oil resources but no (remaining) native life, to a system name that most assume is a reference to aquatics (but is actually an acronym for Norman, Ellis, Mau, and Ochoa; surnames of the founding partners of NemoCo, the company credited with discovering the system), the Nemo System is a place where things are not always what they seem.

Even the system's discovery date has been called into question. Official records credit Dae-ho Ochoa, who was then a partner in NemoCo, with finding the system in 2364, but some believe he first visited the system in 2362, a discrepancy credited to corporate intrigue during Humanity's unregulated early terraforming era.

The controversy centered on Ochoa who, in 2362, was a security contractor for the Tadmor Terraforming Concern in the Fora System. One day, co-workers lost contact with Ochoa while he was on a routine patrol. As a search party mobilized, Ochoa surfaced and then promptly quit without an explanation or logging his last day's flight path. That last detail went unnoticed by Tadmor management, who were overwhelmed by issues surrounding their botched terraforming of Fora III. Exactly what Ochoa did that day eventually led to a lawsuit calling into question Nemo's discovery date.

In 2364, the nascent NemoCo purchased all Fora-based terraforming platforms from Tadmor at a steep discount. Tadmor was desperate for credits to address legal problems, and cut NemoCo a deal believing they would have to shoulder the cost of disassembling the massive platforms to get them to fit through the system's medium sized jump point. Yet, shortly after the purchase, NemoCo announced the discovery of an all-access jump from Fora to an entirely new system, which they promptly christened Nemo. An incredible stroke of luck, claimed NemoCo

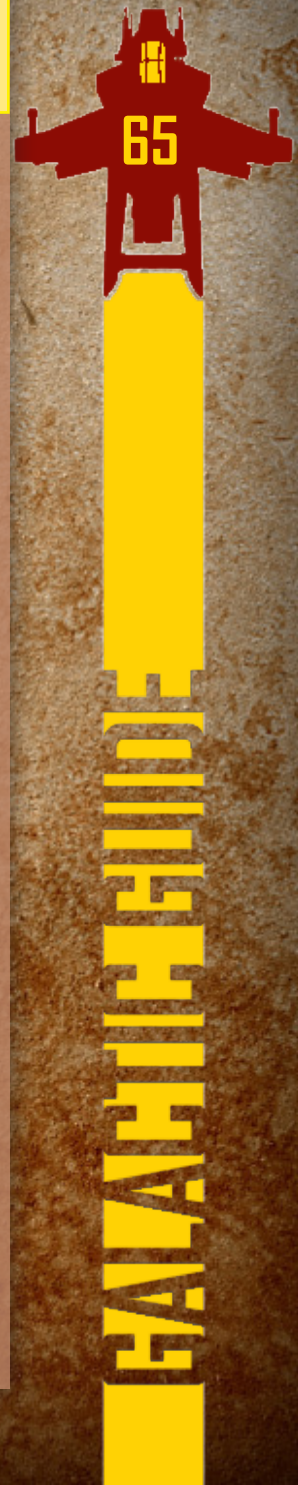
TRAVEL WARNING Don't forget to bring your sunscreen! Even cold, overcast days can take a toll on your skin with all the planet's water reflecting the sun's rays.

executives. For Tadmor, it was too big of a coincidence to ignore; particularly once they heard who found the new system.

Dae-ho Ochoa's discovery of Nemo sent Tadmor digging through his employment file, which prompted a review of his sudden and strange departure from the company. Eventually, Tadmor filed a lawsuit against NemoCo alleging Ochoa had discovered the jump to Nemo the day he quit, and they were entitled to a stake of NemoCo's operations. Despite some circumstantial evidence, what Tadmor really needed was Ochoa's nav computer. However, Ochoa had sold his old Aurora and had no idea where it was. Tadmor investigators searched the known universe but were unable to find it. Lacking the evidence to prove their claim, Tadmor's lawsuit was thrown out of court and the company subsequently dissolved.

Subsequently, the history of the Nemo System is entwined with NemoCo in more ways than name. Even the system's pivot from oil provider to tourist destination originated with NemoCo. They were the first to market the Space Whale to the universe, and convert Ergo's outdated oil rigs into tourist destinations – at a cost that eventually sank the company, but planted the seed for future entrepreneurs. Despite their incredible luck in Nemo, the company suffered from misguided leadership, and failing to establish a foothold anywhere else in the Empire, slowly faded away.

While NemoCo is no more, their namesake system is thriving. Much like the Space Whale, even though the system is not exactly what it seems, people continue to be intrigued by it.



NEMO I

The closest neighbor to the system's F-type, main sequence star is Nemo I. Today it is known as a protoplanet that lacks resources. Yet prospectors once thought it had potential, thanks to the MicroProbe. Selling itself as the next-gen in resource-detection technology, MicroProbe's

initial bounteous scans of Nemo I turned out to be horribly inaccurate when double-checked. Luckily, Microprobe's shoddy technology was exposed before prospectors wasted time excavating it the barrens of Nemo I.

NEMO II

Millennia of meteor strikes have sculpted a rugged surface on Nemo II. Besides creating a visually dynamic expanse, the meteors have also brought the planet precious

ores and minerals. Today numerous mining operations have staked a claim on Nemo II to search for those valuable resources.

NEMO III (ERGO)

Nemo III is a terraformed ocean world that has kept the Nemo System relevant to the Empire. NemoCo quickly established itself on Ergo when scans revealed significant oil reserves under the ocean. Once terraforming was completed, massive oil rigs, many made from the decommissioned terraforming platforms, were built to extract the underwater resources.

As pockets of oil were depleted, the rigs were converted into permanently habitable platforms with shops, restaurants and civil services to accommodate the high number of workers who wished to stay on planet after their contracts ended. In the late 27th century, a study conducted by the University of Mentor showed that on average Ergo's residents lived longer than residents of other worlds, and used words like "peaceful" and "tranquil" to describe the planet. This general perception of Nemo's idyllic and relaxing lifestyle spread throughout the Empire and led to a booming tourism industry. Over the centuries, ambitious developers have even built luxury platforms geared specifically for tourists.

Of course, the biggest mystery is how vast quantities of oil even got under Ergo's ocean. No native life existed on Ergo when Humanity arrived, and researchers are still searching for any fossil evidence of what life once existed there. While exactly what happened is unknown, the most widely accepted explanation is that millennia ago an extinction level event eradicated all native life. These unknown, and long gone, organic species are who we have to thank for Ergo's oil reserves.

HEARD IN THE WIND

"I can't exactly put my finger on it, but something about the sea stretching to the horizon in all directions was calming for me. After I finished my contract on the rig, I immediately told my boss I wanted to stay. Made no difference if she had made me a floorhand. I would've taken any assignment she had. Of course, I didn't tell her that second part."

- *Unidentified Male Subject*, *The Psychology of Ergo's Appeal*,
Clark & Meyer, 2697



ERGO

To this day, the misperception that Ergo's ocean has life still exists, probably amplified by its association with the Space Whale. In fact, Ergo's tourism ads and brochures go to great lengths to dispel this notion; even specifically telling tourists NOT to bring fishing gear on their vacation and highlighting how much safer it is swimming in water void of anything that can eat you.

HEARD IN THE WIND

"On the day in question, Mr. Ochoa was assigned to patrol the section that the Fora-Nemo jump point now occupies. Following his mysterious, and still unexplained disappearance, Ochoa's first contact with members of the search party desperately trying to find him was traced to a mere 75,000 kilometers away from the jump."

- Lynn Ahmed, Chief Legal Counsel for
Tadmor Terraforming Concern, 2364



SEE THE WHALE



Second Run

A SORRI LYRAX STORY

by Thomas K. Carpenter



CHRONICLES

Part 4: Sometimes You Just Lose

[18:06:18]

Vengeance Valkyrie headed towards the Helios-Tyrol jump point, while Captain Satchel and I stared in quiet desperation at the piles of orange pieces in his lap. He had the sorting virus, which he'd probably gotten from the fruit vendor, which meant I had it too.

Not making the delivery was the least of my worries. We were in mortal danger if we couldn't protect the ship from ourselves.

"How long ago did you purchase that fruit?" I asked.

He looked like he was visibly trying not to pick up his orange pieces. His jaw pulsed.

"About two hours ago," he said with considerable effort.

"That means we've got about two hours until I start showing signs, maybe less depending if body weight matters," I said, tapping my fingers against my chin.

Captain Satchel started to reach out towards the controls. I grabbed his arm.

“What are you doing?” he asked.

“That depends on what you’re doing,” I replied. “I watched some guy tip over a vending machine and start ripping out its guts. If you do that, we’re screwed.”

“Setting the quantum to get us to the jump point,” he said.

“Okay, set the course, then I’ll tie you up in the take-off chair,” I said, eyeing his movements carefully.

As he input our destination, he said, “There’s some straps in the back, in the side compartment under the emergency rations.”

I went into the secondary cabin and found some familiar looking black straps. “If we get through this, there’s a Sojourner I met who I think you’d like.”

Satchel finished setting coordinates and moved to the take-off chair. He put the straps around his broad chest and clicked in. I wrapped the rope around his arms, while he watched me with his brown-with-gold-flecked eyes.

“I know this is a serious situation, but I’ve got to say I’m sort of enjoying this part,” he said with a wink.

“Is this the part where I take advantage of you?” I asked, and before he could answer, I leaned down and gave him a deep kiss.

We stared at each other until I broke eye contact. “Never get distracted,” I said, shaking my head. “I’ve got to figure out what to do before the virus hits me.”

Satchel looked forlorn. He was twitching against his ropes. His fingers were picking at the seat leather. “Do you know how long this will last? If I keep having to notice how much my ship is a disgusting, disorganized mess, not sure if I’ll ever be comfortable aboard again.”

“I have no idea,” I said. “It could be hours or days. But maybe I can set the system to get us to Tyrol IV, so at least we can be moving while we do that.”

He was straining at the ropes. His face was hard with distress. He spoke through gritted teeth.

“That won’t work. You have to set the destination after a jump. That wonky space between throws off the coordinates. And the shield power light is blinking wrong,” he said.

“Wrong?” I turned to look in a panic.

“Wrong. It should be every half second. Its timing’s off. Should be blinking now . . . now . . . now! See! I have to fix it!”

I watched him struggle, realizing that we’d barely gotten him tied down before the virus really hit. Had we waited a few more minutes, he’d be ripping into the ship and I would have had a hard time trying to stop him since he was twice my size.

“Crite,” I said, back at the side panel, “there’s no more rope. Not that it matters. If I’m tied when we hit Tyrol, I won’t be able to reset the ship. But if I don’t tie myself up somehow, I’ll tear apart the ship and we’ll likely die.”

Satchel couldn’t speak. His neck strained like steel cords as he tried to get out of the chair.

I said, “We can’t ask for help from Tangaroa either, since we broke quarantine, and no one will want to touch us.”

I kicked the side panel and put my head in my hands. “Why this time? Why does it always have to be so hard? I struggle and struggle and do everything I can, and now, even if I can find a way to tie myself up, we won’t reach Tyrol IV in time. Which means after all the fees I’ve paid, I’ll be back at day zero at FTL. Everything I’ve done for the last year will have been for nothing. Maybe Betrix was right. My rules are stupid. All they’ve done is convinced me that I could make this happen. Never travel empty handed. Nothing illegal. Official routes are for suckers. Never get distracted! Never stop thinking. Act like you know. We’ll now I’m adding a seventh rule: *Sometimes you just lose.*”



It ached like there was a solar flare in my chest. It ached because it was true. Sometimes you *did* just lose. It was a lesson I'd learned playing cards with my father after hours in the bar. Sometimes it didn't matter how you played them or in what sequence. Sometimes the cards stacked up in a way that left you with no outs.

That's how I felt. A girl with no outs.

Poor Captain Satchel was frothing at the mouth. That was going to be me soon enough. I grabbed a rag and wiped his cheek. He thanked me with his eyes, though they were ringed with pain.

Since the captain couldn't speak anymore, I started searching the ship for something I could use as rope. In his cargo bay, I found netting, which I liberated with a slice of a knife. If I rolled it up, it would make do as a way to subdue me. But how does one tie up oneself?

I found the answer in a little metal box with a hook sticking out the end. It had a magnet base and was used for pulling things into the cargo bay.

I took my netting and auto-pulley back into the main cabin. I had planned on tying myself to the foldout bed, but I'd have no leverage with the pulley. I wanted to avoid the captain's chair, but had no choice since there were no other seats in the ship.

After an hour and a half of modification, I had everything set up and was sitting in the captain's chair with a long pole in my hand. The netting was loose around my body. I had to be careful that when it tightened that it didn't strangle me. Once I hit the auto-pulley, I'd have no way to stop it.

I gave the captain a wipe down before I returned to my seat. He looked drained from his efforts. I think a few times he'd gotten cramps from his muscles being so tight, but it was hard to hear the screaming through the clenched teeth.

Before I returned to the chair, I realized something about the captain. His arms were straining as if he were trying to lift a truck, but his legs were almost perfectly still.

While I still had my faculties, I modified my netting to give my right leg some motion and took off my boot and sock. Sitting in the chair, with the netting loose around my body, I leaned back and hit the button on the auto-pulley.

Immediately, the net started to collapse around me. I threw the pole away and carefully arranged my arms so they couldn't get loose. The strings pulled tight against my body, almost painfully so, and I worried that I'd set it up wrong, that I'd cut off the blood circulation like a tourniquet and would come out of this a quadriplegic. But then the motor stopped humming and the net was tight, but not overly painfully.

I checked the motion of my right leg. I had enough room to reach the controls. Once we hit Tyrol system, I could type in the new destination, assuming the captain was capable of speaking at that time. Or that I was for that matter.

[15:13:59]

As the minutes ticked by and the sorting virus symptoms I was expecting were nowhere in sight, I worried that I had tied myself up needlessly. Another minute rolled past. I sighed, releasing the tension I had been holding. We were going to be fine.

My hands began to work at the closest knot in the net. If I could maybe just free enough space, then I could reach the release. As I pulled at the nylon strands the distance between the knot I was working on and the next shrank, throwing the net's grid out alignment. I dropped my knot to try to even out the ones around it, but the imbalance just spread. I was making it worse.

I would have to take the whole net apart and retie the entire thing. It was the only way to ensure it was perfect. Then I could finally focus on putting the rest of the cabin to



CHRONICLES

order and place everything into their proper groups. Why hadn't we put them in their places before? The world was madness in this state! That anything existed so mixed up and confused threw my thoughts into disarray.

But when I couldn't get to them – tear into them with my hands, rip them apart and get them back to where they should be, I started to convulse. I'm not sure when the first spasms happened, but when they did I thought I would pass out. Wished I would pass out, since that would give me relief from the pain.

My whole upper body strained and pulled. I pushed at the netting, desiring with every bit of my being to use my hands to destroy the ship. Why was I being denied!

When I couldn't change the chaos around me, my mind began to focus in on itself. I saw the mess I had made out of my life. All the pieces that didn't fit. All the things I had done wrong. How my love of adventure had been replaced by a ruthless drive. I turned every decision I ever made over and over, the virus forcing me to dive deeper and deeper into myself.

The next minutes, hours, days? – I couldn't tell – went on as one rolling ball of misery. At some point, I realized *Vengeance Valkyrie* had passed into Tyrol space, but I could not find the focus to set the coordinates.

Some time later, I heard someone speaking to me, which was either Captain Satchel, or a hallucination. At other times, I thought I was back at the Golden Horde, or on the *Dodecahedron* with Senet Mehen, or on the *Night Stalker* with Burnett. Hundreds of ship names filled my mind, and I wanted to sort them too.

Eventually, I became aware that Captain Satchel was speaking to me in a hoarse voice.

"Sorri. Sorri. Are you awake?" he asked.

He sounded like he'd been gargling razors.

"Yeah," I said, though it came out as a whisper. Every muscle in my body ached. I still had the urge to sort, but it wasn't as strong as before. More like the itch of infection, rather than the madness of insanity.

"We've been sitting outside the Tyrol-Helios jump point for about eight hours," he said.

"Eight hours?" I repeated, and after a quick calculation, I figured there was still time to make it to Tyrol IV. Maybe. "Tell me what the coordinates are and I'll type them in with my foot."

[07:19:44]

After a brief back and forth, Satchel explained what to do, and the ship lurched into motion. We were moving again.

"That'll get us to Tyrol IV," he said.

I tried to relax, but I had a painful pressure on my bladder. "I have to pee."

"Go ahead," said Satchel.

"Oh. Is that . . . okay?" I asked.

"Well, it's a little cold now, but better than the alternative. Unless you can get us out of these bindings," he said.

"I'm not sure that's wise yet, even if I did know how," I said. "I'll just have to add peeing the captain's chair to the long list of horrible new experiences I've had on this run."

"What's so important about this delivery?" asked the captain.

"I have no idea. Just that it's not illegal," I said.

"Oh yeah, your rules. You talked about them a bit while you were out of it. I liked them. But I don't mean the case. I mean for you and Betrix?" he asked.

"Betrix," I said, in a half-laugh.

"You're not really partners are you?" he asked.



At this point, I didn't think it was fair to lie to him, especially after we'd gone through so much.

"No," I said. "Though I did offer to partner with her. She declined, of course."

"You still haven't explained why the delivery is so important," he said, asking me the same question I had asked Betrix what seemed like ages ago.

"Freedom. See the galaxy. Prove to my father that I can make it on my own," I said.

"All that from this delivery?" he asked.

"I want to buy a ship. This will get me a little closer," I said.

"Will it?" he asked, which took me aback.

"Don't you feel free with your own ship?" I asked.

Captain Satchel was quiet for a bit before he spoke. "Don't get me wrong. I wouldn't trade *Vengeance Valkyrie* for anything, but I still have problems with bills, fuel charges, customs fees, crazy deliveries that tie me up and make me pee myself," — we shared a laugh — "finding new work, dealing with maintenance. Sometimes, I miss the days when I was just a fresh-faced courier with only the delivery itself to worry about."

"You were a courier?" I asked.

"Yeah," he said. "I worked for a few different companies. FTL. United Couriers. Blue Streak Deliveries. Though they went belly-up about a decade ago, but I'd gotten my ship by then. Picked up some of the contracts they dropped, which helped me out of the gate."

"I still want my own ship," I said softly.

He said, "Just remember that you always trade up for problems, so don't forget to enjoy the ride while you're on it."

"Thanks," I said, but I didn't really mean it.

"So are we going to make it?" he asked.

"It's going to be tight," I said.

He chuckled. "Well, we can't let you miss it. I can squeeze some more speed out of this beast if you're willing to do some fancy footwork."

My chest filled with hope. "Instruct away!"

It didn't take long to make *Vengeance Valkyrie* increase her speed by twenty percent, which would get us to Tyrol IV with an hour to spare. The delivery was at the floating starport, which made getting it to its destination easier.

With another six hours of travel ahead of us, we spent the time talking about our experiences as couriers. Satchel did the majority of the talking, since he was older, but I impressed him with the tales of my first run.

We even figured out a way to get out of the bindings when we arrived at Tyrol IV. I typed in a message to the ship maintenance service on the station, requesting some in-cabin support once we arrived. We knew we'd get funny looks once they came through the airlock and found us tied up and soaking wet, but it was better than being stuck.

The final few hours were excruciating, until we neared enough that I was too busy running the ship with the big toe on my right foot to worry about if I was going to make it or not. Docking was tricky, but Satchel was an excellent instructor and he talked me through the procedure like a pro.

Once the maintenance team arrived and cut us out of the bindings, I was going to grab the case and sprint to the delivery point. I couldn't believe that I was going to make it.

[1:05:21]

As the airlock squealed open, I could barely hold myself together. I felt like a sprinter at the beginning of a race, waiting for the starting gun to fire.



CHRONICLES

I heard Satchel greet the maintenance team. “Hi, fellas. This might look a little weird but . . .”

When his voice trailed off to nothing, I knew something was wrong. I couldn’t turn my head enough, but when I saw the yellow reflection on the interior glass I knew what had happened.

A modulated voice came through a bio-suit, “We were notified of *Vengeance Valkyrie* breaking quarantine at Tanga-roa. We will be taking you into custody until the virus has run its course and the ship has been cleaned.”

“No! No! I can’t. I have a delivery to make. It’s right here in the station. It’s that case beneath the take-off chair,” I said.

“I’m sorry, ma’am. Nothing will leave this ship until it’s been cleaned. We have strict orders,” said the man in the bio-suit. “Please cooperate and you won’t face any additional punishments.”

It was finished. I’d lost. I was at the station, probably a few hundred feet from my goal, and I wouldn’t make it. I could conceive of no way to break this quarantine without risking the UEE’s wrath.

* * *

[00:00:00]

I don’t remember being taken off the ship in a bio-bubble, except that Satchel told me. The station didn’t have a bio-confinement area, so they cleared out a hangar and draped it in plastic. After they confirmed we weren’t carrying the virus any more, I imagine they put the plastic into an incinerator.

At least they’d let us keep our mobiGlas, as long as we promised not to cause trouble. We’d also been given light blue jumpsuits after they put us through an enviro-shower. My skin was still raw from the scrubbing.

Once we’d gotten settled, I contacted the delivery location in hopes that I could still make it, but they said the Banu trader that had been waiting for it had already left. I was to leave the case with them. During the waiting, Satchel contacted some old friends of his in FTL that had risen in the ranks after he left. He cashed in a few favors to get my jobs transferred so I wouldn’t get fired.

“Why did you do that?” I asked him after he told me what he’d done.

“I was rooting for you,” he said. “I really thought we’d get you to your delivery on time.”

“But this has been a huge inconvenience for you,” I said.

He raised an eyebrow. “I got paid a tidy sum for the job. And luckily I was able to persuade our yellow friends that the virus was to blame for us breaking quarantine, so they won’t be pressing charges.”

“Things could be worse,” I said, trying to convince myself.

“I have one question for you, Sorri. What should I do about Betrix?” he asked as he studied me closely.

“What do you mean?” I asked.

“Betrix is the one that hired me. It’s in the logs. If word got out to FTL that she was doing independent contracts, she’d probably lose her job,” he said.

A chill formed at the back of my neck. With a few simple words, I could remove a thorn from my side, banishing Betrix LaGrange from FTL and probably the courier ranks forever. I’d also be crushing her dreams.

“No,” I said, thinking of what Betrix had told me about why she wanted a ship of her own. “No. We’re rivals, not enemies. I don’t hate her.”

“Even after what she tried to do to you? I wouldn’t have offered if I didn’t think you deserved your revenge,” he said.



CHRONICLES

“No. I’m sure. She clearly has some issues, but I don’t want to do that to her,” I said. “Plus, there’s something not right about getting her fired for doing almost the same thing I am.”

He shrugged his shoulder. “Fair enough.”

After another day of waiting in the make-shift room, we were cleaned again and allowed to leave with an official warning. I counted myself lucky that was all they’d done.

I collected my things from *Vengeance Valkyrie*, including the troublesome case. Before I left, Satchel handed me a sealed envelope.

“What’s this?” I asked.

“Open it whenever you finally get your first ship,” he said with a wink.

I sighed. “That’s going to be a long time from now.”

“Probably,” he said. “But I’m sure you’ll figure out a way to make it happen sooner than you think. You got really unlucky on this delivery.”

Not one for long goodbyes, I left Satchel at his ship. Plus there was a small chance I might see him again in the near future. He’d promised to give me a deal on rides with him if I needed a ship for a freelance job. I knew it was unlikely, given the size of the galaxy, but it was a nice gesture.

Before I left Tyrol IV, I delivered the silvery case with the Banu symbols. I was awarded a pittance for my efforts, which barely paid for the ride back to Sol so I could deliver Maria Gorane’s divorce papers.

Relieved of my burden, I felt strangely at peace. The accelerated deadline had been a weight around my neck. Now that it was over, I felt a little weightless.

I picked up a few FTL jobs on the way back. I’d practically zeroed out my balance trying to get to Tyrol, so it was nice to be working in the positive direction again.

Sitting on a commercial transport heading through the Kilian system on my way to Davien jump point, I pressed my nose against the cool viewport. The brilliant swath of stars outside made me feel like I was looking at them for the first time again.

As I watched the tiny sun at the center of the system grow in the distance, I relived the journey of the past few days in my mind and the harsh truths I had seen while consumed by the sorting virus. The words of the Banu on the *Vita Perry* came back to me: *Journey within yourself and you will reach your destination.*

I didn’t understand what the Banu had meant then, but after the crazy delivery I had a little more understanding. As Satchel had said, you always trade up for problems. I was so busy trying to earn enough credits for my Aurora LX, that I’d forgotten why I’d become a courier in the first place – to see the galaxy.

If I kept going down that path, I’d end up like Senet Mehen, so focused on my goals that I missed the whole reason I was making the journey.

By the time I reached the Sol system, I’d become at peace with the setback. In retrospect, it had been an amazing, if harrowing, experience that was in some ways worth the lost credits.

Sometimes you just lose. That was the way of the Universe. But I wouldn’t let it hold me back. Despite the final verdict, I’d proved a lot to myself.

The delivery of the Gorane divorce papers in Sol was a little bittersweet. It wrapped up the journey. Once it was over, I pulled up my mobiGlas and toggled my availability into the ‘On’ position. I had a lot of credits to make up.

* * *

It wasn’t until a few months later after the botched Tyrol IV delivery that things finally and truly wrapped up. I had



just landed on Ferron when I received a message from Alara Bonaire.

At first the name confused me until I realized it was the former wife of Abel Gorane, the cretin businessman I'd rescued her from.

Greetings Sorri,

I dearly hope things are well for you. I can never truly repay you for what you did. Had Abel gotten Maria into the ship, I would have never seen her again.

My life before divorce was very complicated, so I'm glad to be rid of my husband. I'm trying to simplify, which in turn, made me think of you and your generosity. I've decided to bequeath you Abel's old ship Black Queen. He said he named it after me, but I hope she treats you better than he ever treated me. She's pretty worn down, but can still tread the deep skies. You'll find the entry codes at the bottom of this message, along with the hangar number. Be well and good luck.

Warmest regards,

*Alara Bonaire
Maria Bonaire*

* * *

Hangar Fifteen. The whole way I was certain that it was a dream and that I would wake up, covered in a cold sweat.

But then it was there, the hangar. It was a sealed bay, so I went through the airlock. Sitting at number fifteen was an early model Aurora ES. It had heavy burn marks on the nose, pitting along the sides, and the color was faded.

It wasn't a ship, but a flying ball of fixer's tape. But if the letter I'd just received was true, then it was mine.

I let out a whoop and went running for *Black Queen*. There were a few workers in red jumpsuits doing maintenance on a Caterpillar on the other side of the hangar. They glanced up at my sprint across the hard flooring. I heard a few chuckles when I hugged the nose section.

My fingers trembled as I punched in the access codes. When the door whooshed open, I could barely stand still.

The inside was a wreck. There was barely enough room to stand. The pilot's chair was bare metal. Some of the controls were chipped and the guts of something important were hanging from the ceiling.

I touched each and every surface of *Black Queen*, inside and out, trying to prove to myself that it was real. I mean, getting it flight worthy was going to take some serious credits, but nothing like what a new ship would cost. I couldn't believe it. I wanted to send a message to my father and tell him that I finally had my own ship. He wouldn't believe it.

But then I remembered the note that Captain Satchel had left me. I went running back outside to grab my knapsack. The letter was jammed into the bottom, the corner practically ripped off.

The paper inside was thick. You could see the chunks from when it was made. It was a glimpse into the soul of Captain Satchel. He'd written my name on the front using an antique pen. I could tell by the way the thickness of the letters changed with the stroke.

I was about to read the letter when I decided the proper location was in the captain's chair. My first note, captain to captain.

I flipped it open, admiring the way the paper scraped against itself. Then I read his message out loud, into the sanctity of my own ship: *Black Queen*.



CHRONICLES

Captain Sorri Lyrax.

Congratulations! I hope this day is sooner rather than later but either way it's here. Just remember that before you can claim this ship as yours, you must christen it in the only way you know how.

*Your friend,
Satchel*

I didn't catch his meaning until I remembered what had happened on *Vengeance Valkyrie* when we'd had the sorting virus and were trapped in our chairs. I laughed for a full minute before I tucked the folded note into a crack between the instrument panels.

It struck me again what it would take to get *Black Queen* into flying shape. Thankfully I'd been working hard the last few months and had almost enough to pay for the repairs. Soon enough I'd be able to take the jobs I wanted, since I wouldn't be tied to ship schedules and predetermined courier routes.

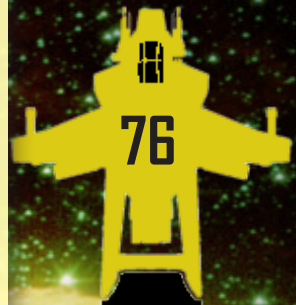
A stab of regret hit me in the gut as I thought about it. While I'd be in my own ship, I'd no longer be traveling through the populated star ports and floating stations. Instead, I'd be locked in a steel can, just like Senet Mehen. I mean, wasn't that the reason that I'd become a courier in the first place? To meet people?

Suddenly, *Black Queen* seemed like a lonely place. What the heck was I thinking? This is what I had worked so hard for and now I was full of doubt?

I sat for a half hour considering my options before I finally came up with a solution that solved a couple of problems at once. A quick tap on my mobi brought up the message link.

Dear Betrix, I started typing, I realize this offer might seem rather strange, but I have my own ship now. Certain aspects of the operation would run smoother with a second person. Are you interesting in being my First Mate?

The End



CHRONICLES