JUMP POINT

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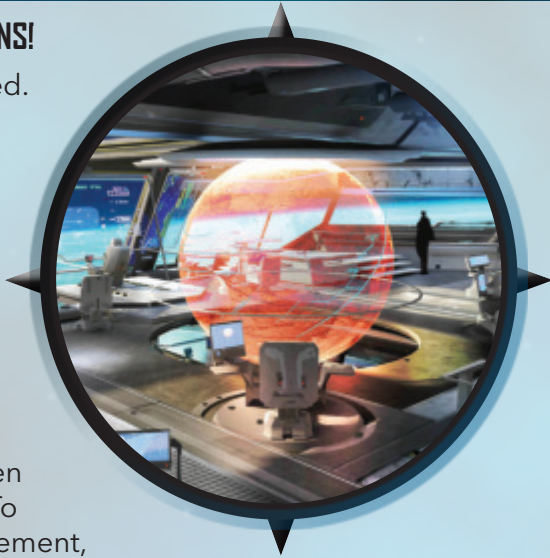
GREETINGS, CITIZENS!

I'm a little amazed. I'm sitting here looking at a mostly finished **Jump Point**, when three days ago all I had was the finished Chronicles fiction from Andy and the usual art from Ken (thanks, guys!). To add to my amazement, it's only 8:00 in the evening. (Yeah, that still counts as the evening in my world.)

Which means a whole lot of thanks are due. In page order, thanks to Elwin, for pulling together his notes on the final Merlin concepts (along with David Peng and Daniel Craig for their animation templates, and Ryan Archer, for grabbing the cover image and all the ships at the beginning of Behind the Scenes).

Thanks to Adam (with assists from Will Weissbaum and Dave Haddock) for the Portfolio and Galactic Guide articles, and for their close proofreading of the whole issue. As usual, any mistakes are my own, especially those I insisted on over their objections. :)

Which leaves Behind the Scenes, which merits its own set of acknowledgements. Thanks to Lisa Ohanion and Matthew for putting me in touch with the Ship Classification material. Thanks to Austin QA, especially Justin Binford, Andrew Hesse and Jeffrey Pease, for all the notes on the 1.1.5 update and for the stack of screenshots from Andrew. And I very much appreciate Anderson, Michel, Ken, Tom and Christine for going above and beyond in taking the time to share their day with us; I know just how busy every one of them is, especially with

FPS still to do, 1.1.5 right on top of us, and Gamescom preparation breathing down our necks.

Speaking of which, this month the Spotlight is on:

- *Anderson Bordim*, UX Designer and Information Architect, and *Michel Labelle*, Creative / Art Director, Turbulent, as they describe their foundational work on the Starmap (which we're all eagerly awaiting)
- *Ken Fairclough*, Associate Concept Artist, CIG Austin, describing the concept art for Delamar's market court, in Nyx
- *Tom Johnson*, Senior Project Manager, Foundry 42, listing all the many balls he keeps in the air as a producer
- *Christine Marsh*, Lead User Interface Designer, Behaviour, talking about her thought process in designing the chat interface we will all be using extensively

They fulfill very different roles, but it's all pointed toward completion of this grand endeavor of ours.

Anderson gives me my new term for the issue: **UX**, which stands for User Experience. As a UX Designer, he's creating the framework that we'll use in the Starmap.

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

David

David.Ladyman@cloudimperiumgames.com

P.S. I'm not saying it was aliens … but it was aliens. Or a Tal tale.

FROM THE COCKPIT

P-52 Merlin

As is true of most of our ships at this point, the P-52 Merlin — originally concepted as a runabout for the Constellation-class luxury line — has seen a great deal of development. Its original design was created by freelance concept artist **Ryan Church**, and we included his work on the Merlin in the May 2013 Constellation Work In Progress article (JP 01-06, for the curious).

Last August (JP 02-08), we ran a second Constellation WIP article, this time focussing on the variants. Included in that article was the new docking mechanism for the Merlin. Freelance concept artist **David Hobbins** and staff concept artist **Gurmukh Bhasin** did the concept work at that time; the images included here are by David.

At the risk of being slightly repetitious, we've gone back and repeated those Merlin concepts to give a beginning to this article, before continuing with the work that **Senior Spacecraft Modeler Elwin Bachiller** has done to bring the Merlin to its current hangar-ready status. Since the discussion during this most recent development was mostly face-to-face, we have included Elwin's commentary about the intent and direction of the design.
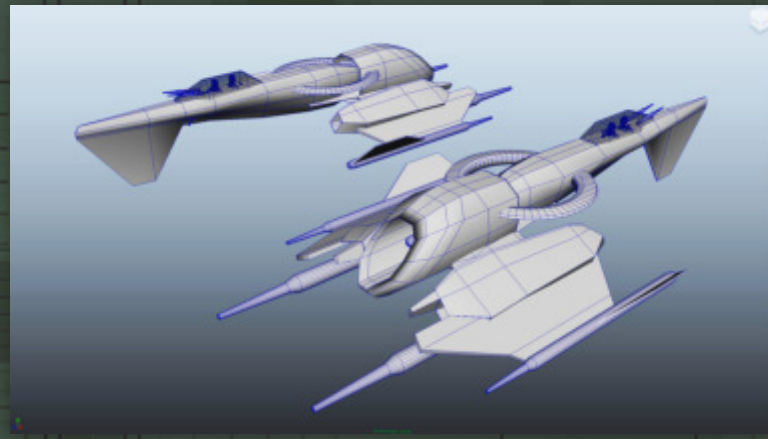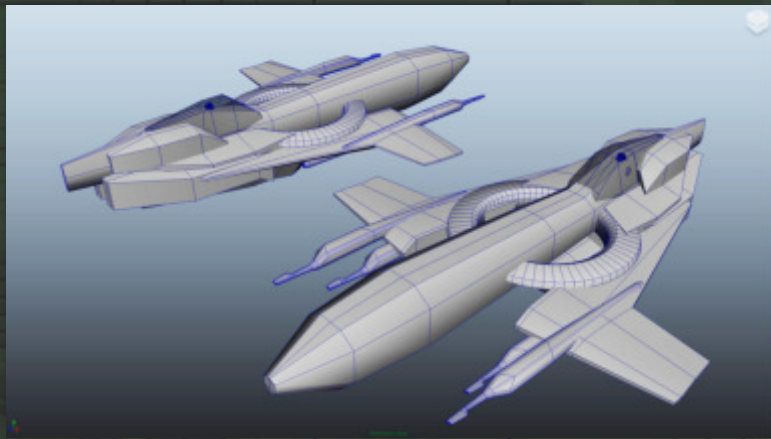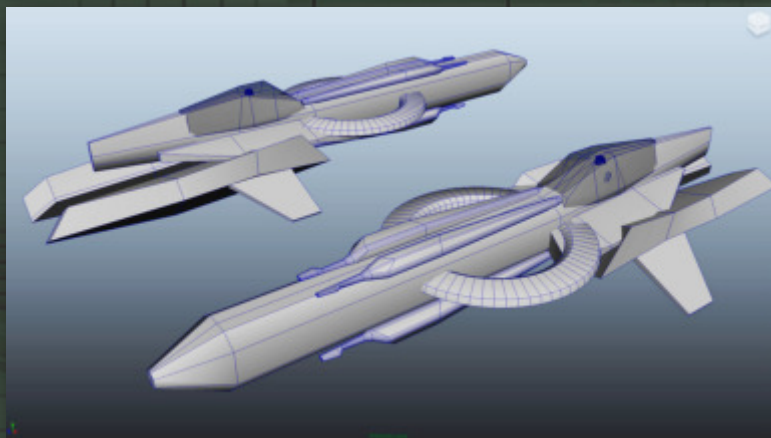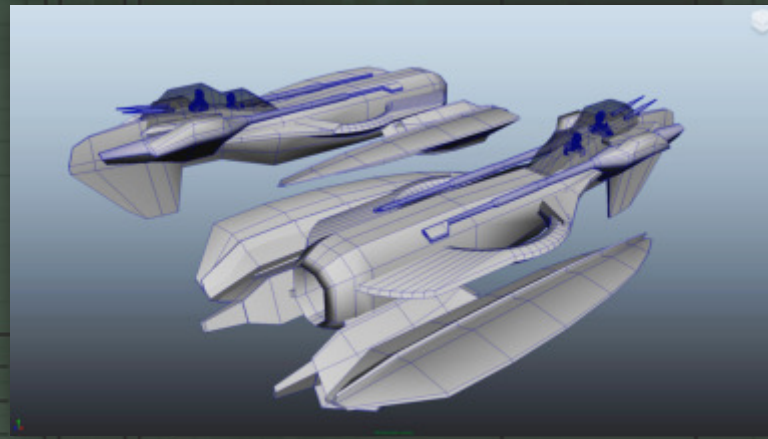
from May 2013 Jump Point

Ryan: Attached are quick studies for the fighter.

Chris R: The two left ones are my preferred ones – these should be single-man fighters.

Ryan: OK, sounds good. I'll proceed with those, adding detail, interior and functionality, including maneuvering thrusters.

4
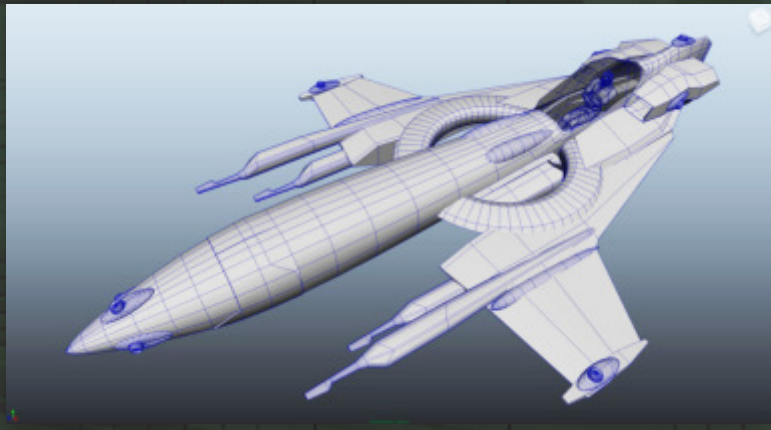
Ryan: I've also developed the fighter a bit; there are the maneuvering thrusters and refined shapes. I could make the thrusters more flush or exaggerated; let me know what you think.

Chris R: The fighter is the thing I'm digging the least. On the fighter I think you want to beef up the engines/rear part – it feels very small and underpowered, especially with such a long nose. Also, I like chunkier guns with nice muzzles/barrels that recoil – current ones feel a little fine. Maybe the main nose opens to reveal a bigger gun?

from August 2014 Jump Point

CONSTELLATION - MERLIN DOCKING BERTH

BERTH DOORS - HEAVY SHIELDING

MERLIN DOCKING POD

CONSTELLATION - MERLIN DOCKING BERTH
(LANDED - OPEN BERTH DOORS)

CREW WAITING FOR MERLIN
TRACTOR VEHICLE

WORK IN PROGRESS

CONSTELLATION - MERLIN DOCKING BERTH
(REAR VIEW / STEP 1)

DOCKING COLLAR -
FORMS AIRTIGHT SEAL FOR MERLIN PILOT EVA

DOCKING MECHANISM

BERTH DOORS - OPEN

CONSTELLATION - MERLIN DOCKING BERTH
(REAR VIEW / STEP 2)

MERLIN CRAFT DOCKED W/ CONSTELLATION

CONSTELLATION - MERLIN DOCKING BERTH
(REAR VIEW / STEP 3)

MERLIN THRUSTERS - OFF

BERTH DOORS - CLOSED

Perhaps the most significant change for the Andromeda in this update was to move the Merlin out of the cargo bay into its own berth.

CONSTELLATION - MERLIN DOCKING BERTH
(ORTHO/ CUTAWAY)
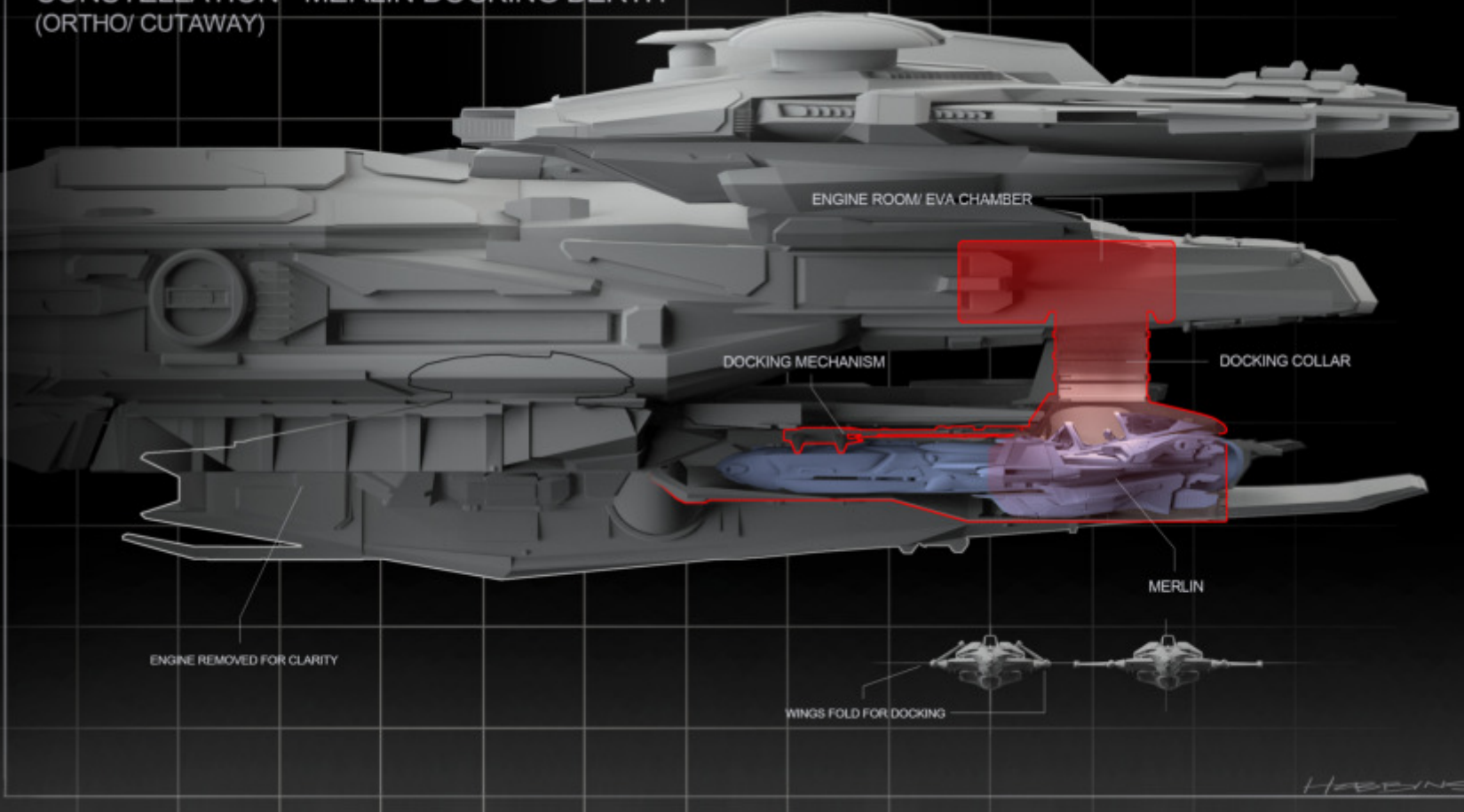
ENGINE ROOM/ EVA CHAMBER

DOCKING MECHANISM

DOCKING COLLAR

MERLIN

ENGINE REMOVED FOR CLARITY

WINGS FOLD FOR DOCKING

(All notes on pages 8-14 are from **Elwin**)

We wanted to take the Merlin in a bit more of an automotive direction, something like a BMW or AUDI with some classical Stingray and Mustang influences. We modeled in the light fixtures and made sure they made the ship look as though it meant business.

The new Merlin was contracted by RSI and designed by Kruger Intergalactic, which originated as a weapons manufacturer. Essentially they wanted to build a weapon that you could fly; as a result we made sure the design of the ship kept its very small profile and had just enough space to accommodate its loadout and nothing more. We placed components where they made the most sense without bloating the size of the ship. For example, you can see between the engines we have two sets of countermeasures built logically into the body, as well as the maneuvering thrusters.

MERLIN

We spent a lot of time redesigning the overall shape of the Merlin to give it a clear sense of direction and implicit motion that comes through even when it's sitting quietly in the hangar. We wanted it to look fast and deadly, which is exactly what it needs to be to defend the Constellation.

One of the more exciting parts of working on the Merlin was that we finally had an opportunity to build a ship with almost every gameplay mechanic the ship would support fully represented. We modeled out all the internal compartments that will house the components that run the ship – things like power plants, avionics, coolers, radars, shield generators, engines and countermeasures all have a real location in the ship. This means that in the future when we can fully flesh out the repair or other interaction mechanics, we may be able to leverage all this cool detail to allow you to pop open these hatches and inspect your loadout. Regardless of the final implementation though, it was very satisfying to build out the internals knowing that the ship really did take into account its parts, and that its shape was influenced by its function.

Here you can see how the muscle-car influences really help shape the personality of this ship. The cockpit borrows it shape from classic Mustangs, giving it a much more angry look, which is perfect for when you deploy off of a Constellation to take out the pirates trying to board your ship. You can also see that the ship comes equipped with fully functional ailerons and flaps for navigating through atmosphere.

MERLIN
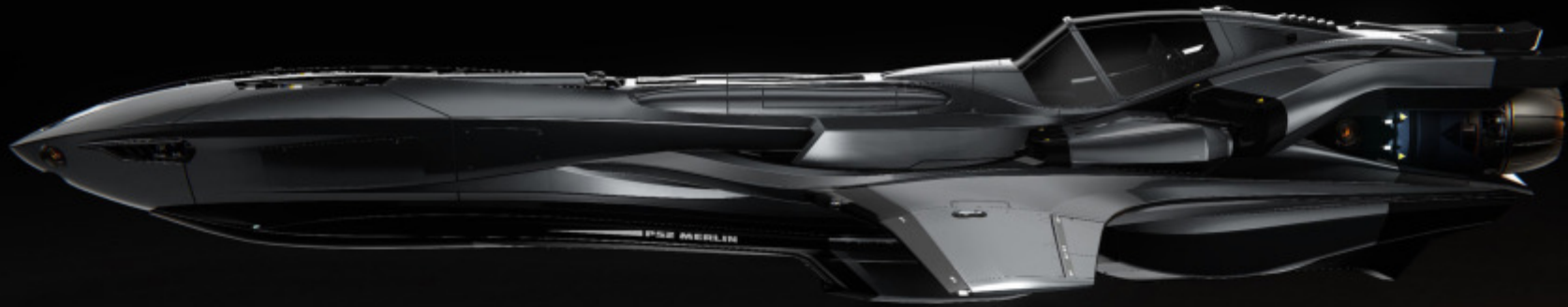
In keeping with the clean style of the exterior, the interior was made to match. We have a lot of clean smooth surfaces that allow you to get all the information you need without all the clutter. The dashboard has a sun-shade above it and the controls are entirely digital. *The UI in this image is **not** final.*
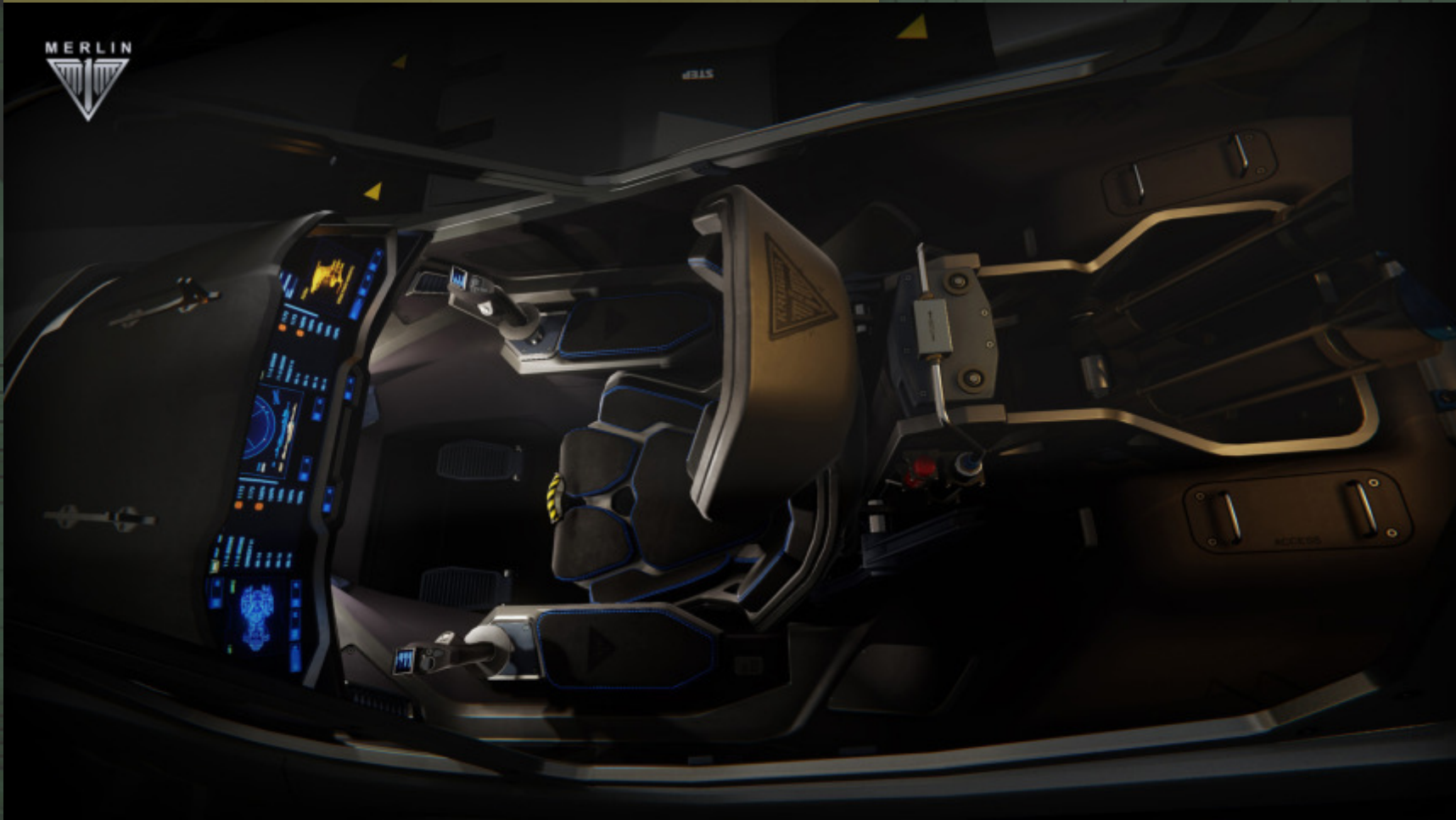
The cockpit as a whole is extremely tight, as you might expect, and part of the redesign required us to give the pilot a little more space to prevent feet and arms from clipping though to the exterior.

Template Fitting:
RSI P-52 Merlin Pilot Seat

The next 7 pages contain a cross-over between this issue's WIP on the Merlin and the Behind the Scenes article on the new ship process. It includes ship analysis and templates intended for use with all ships, moving forward. Notes and images on pages 15-19 are from **Senior Animator David Peng**, while those on pages 20-21 are from **Animator Daniel Craig**, both at CIG Austin.
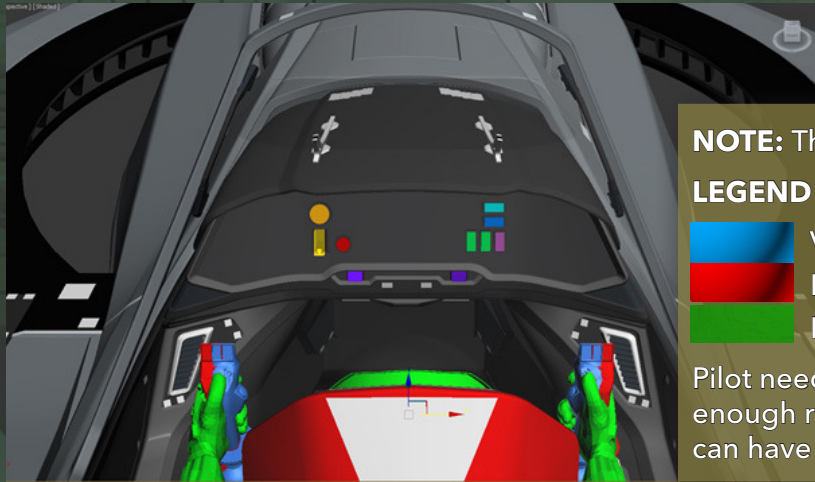
NOTE: The pilot uses a Dual Stick Control Configuration.

LEGEND

🟦	Visual Target (asset from template dropped in to compare)
🟥	Flagged (something that needs to be moved or rebuilt)
🟩	Pilot (Color to help separate pilot from grey ship geo)

Pilot needs to be able to grip the flight stick exactly the same, and have enough room for required range of motions. The look of the flight sticks can have variety as long as they don't break animation.

NEEDED FITTING ADJUSTMENTS

10-button split configuration template
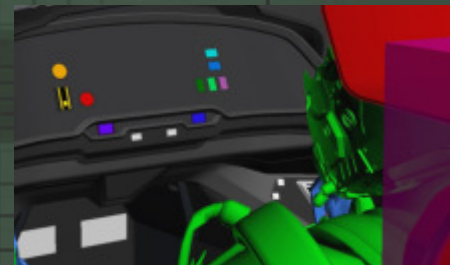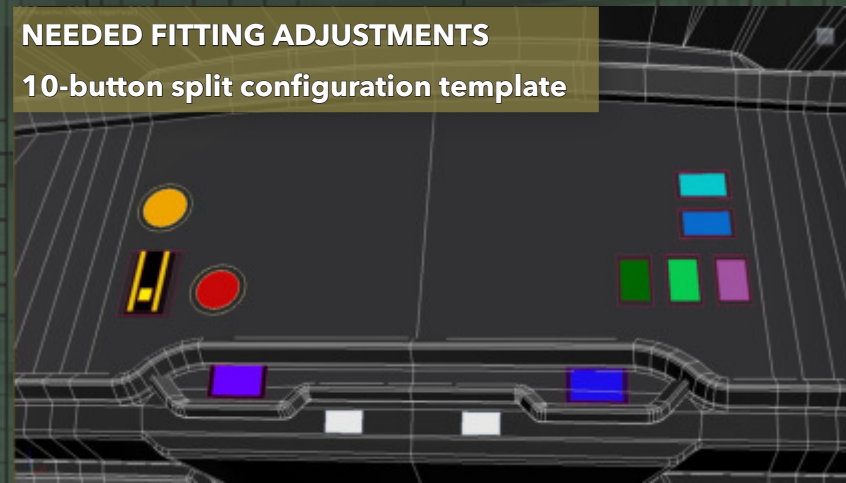
WORK IN PROGRESS

Seat back has been reclined.

- The new chair fits the character, but the seat back on the template was modified to a more reclined position.

- The Transparent Purple Wedge Area is the G-force gap. Please do not model in this area. We need this space to push or slam the character backwards into the seat. Model to the blue seat back proxy.

16
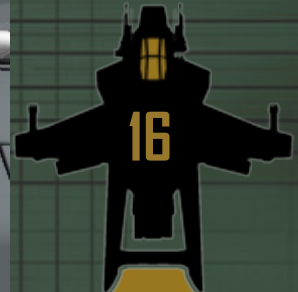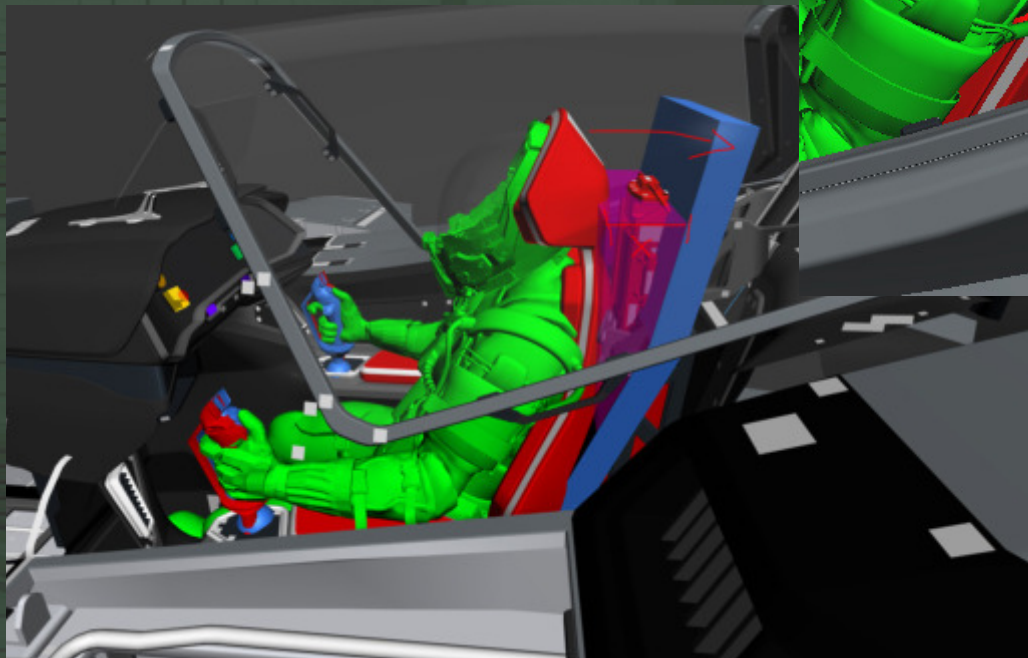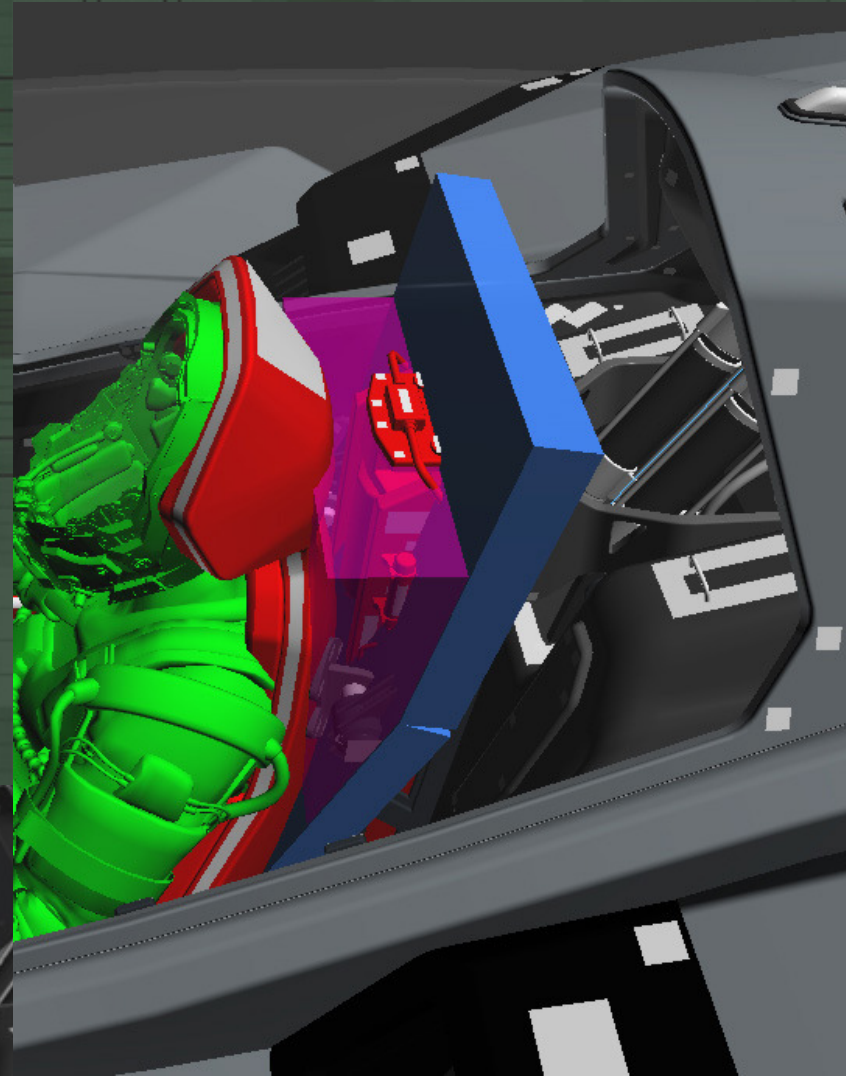
Lateral head support may change as Chris R wants right and left readable G-force pulls. Head rest may need to be remodeled.
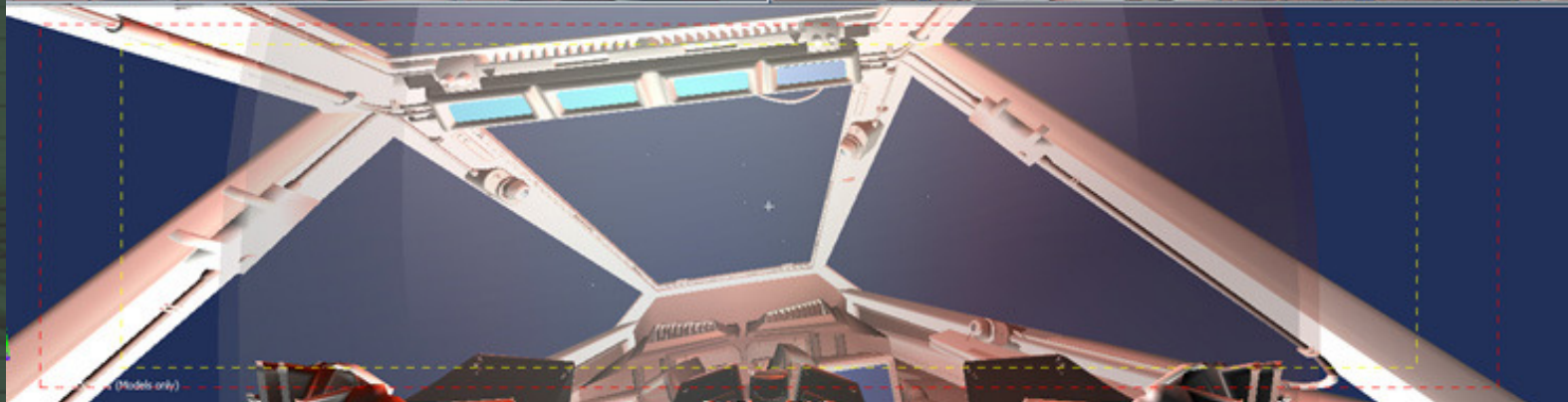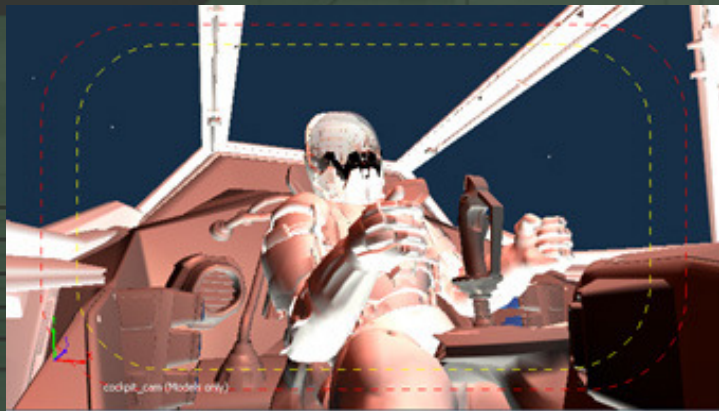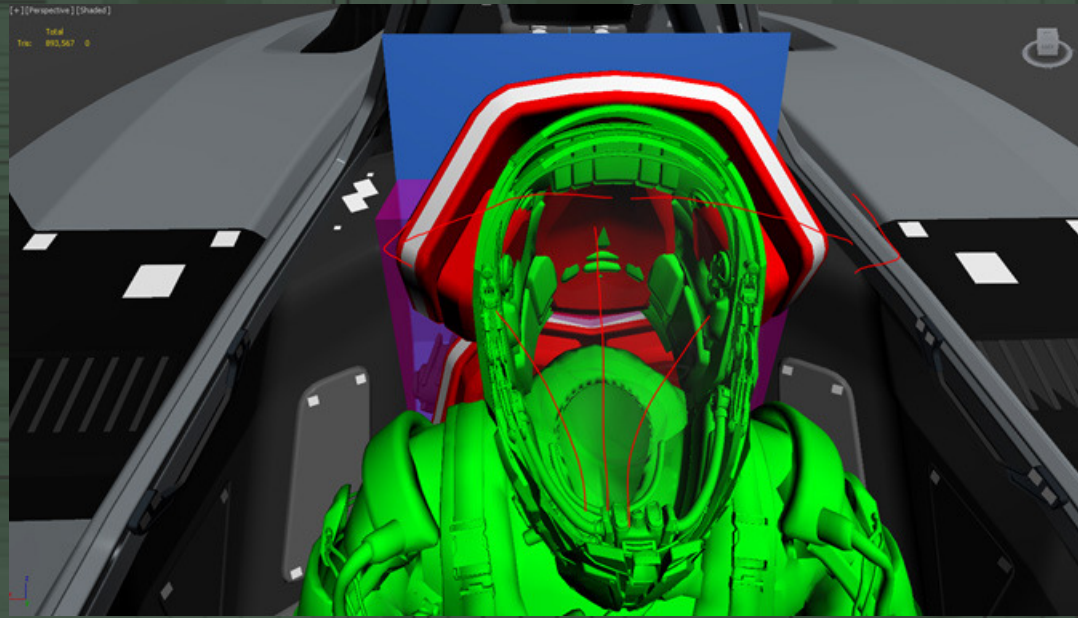
Rudder Pedals: Look Great!
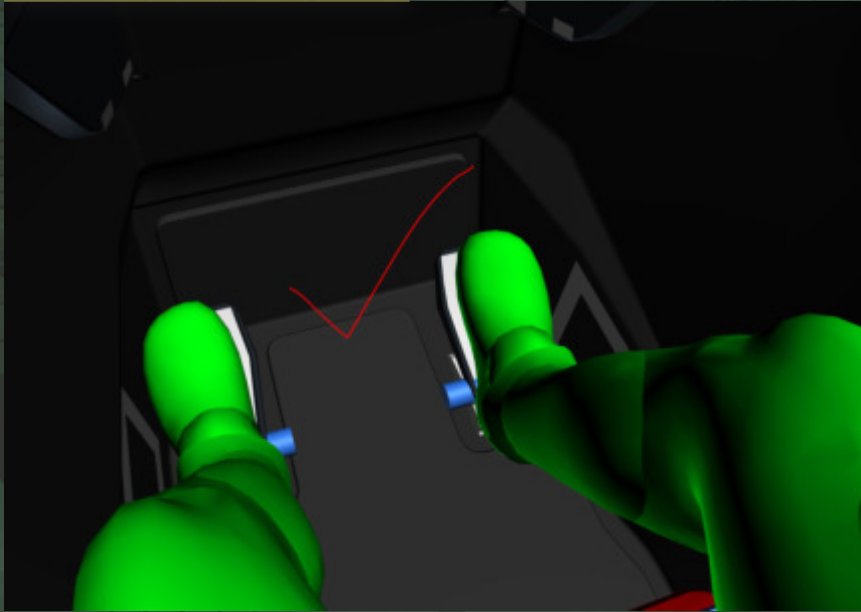
Ejection Handle: Looks Great!

Note: This handle is the official Dual Stick Ejection Handle
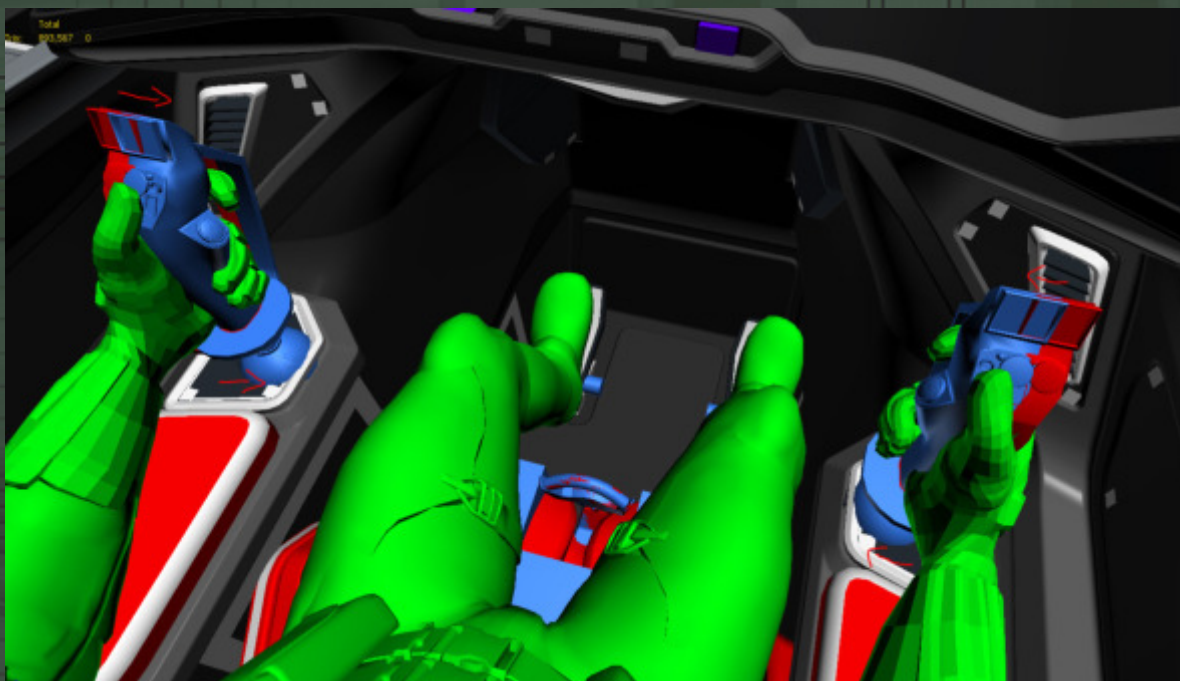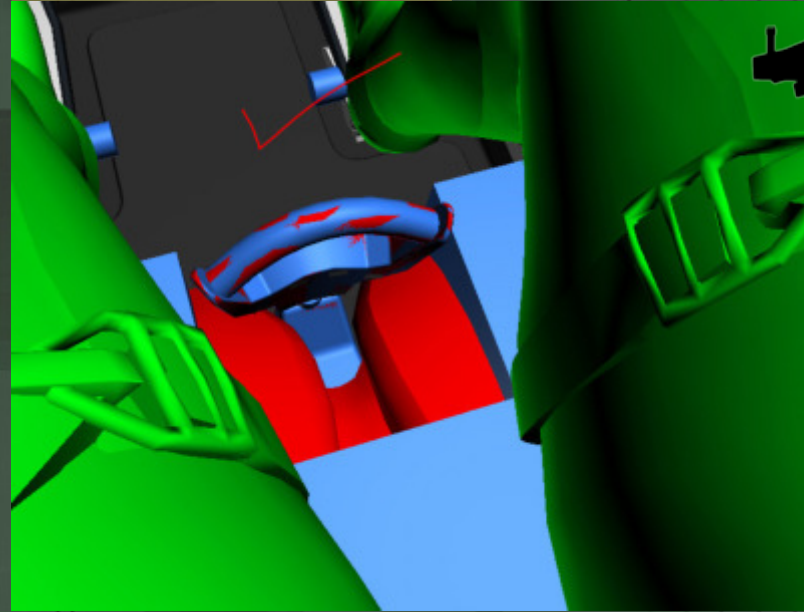
Dual Stick Controls will have to come in closer.

WORK IN PROGRESS

Flag Advisory on Cockpit Visibility

While the pilot visibility is ok at the current head height, the pilot can't see the horizon in the center of the gun sights … pilot can't see the pepper trail.

If you raise the pilot to the recommended height, you'll be able to shoot straight and still see the lasers. This would also maximize pilot visibility.

Disclaimer: Making this call is above my paygrade, I'm just giving the heads-up that this may be a problem.
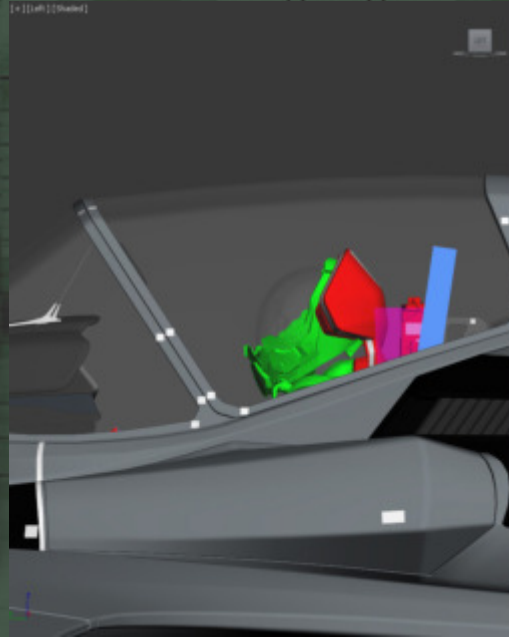
Current Eyesight Height

Laser shoots straight, but you can't see it.
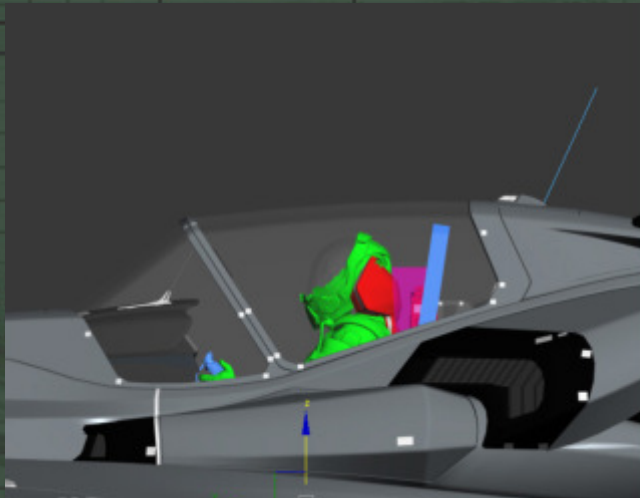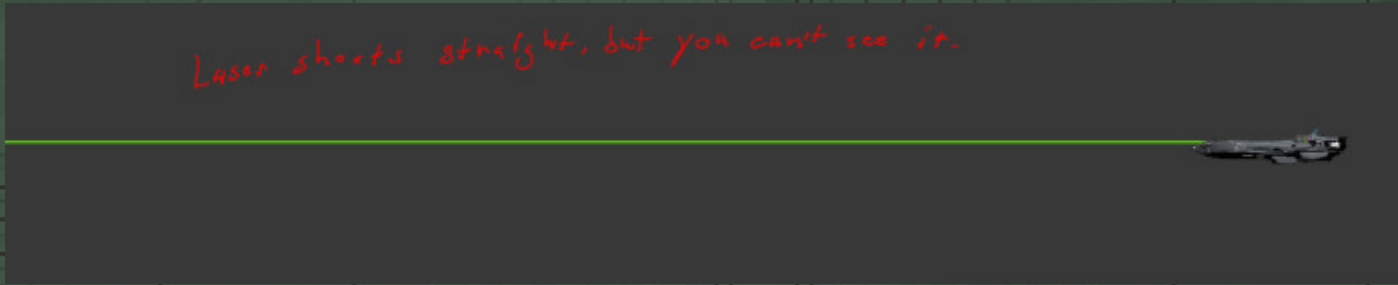
Recommended Eyesight Height

MERLIN COCKPIT
ENTER / EXIT MODELING TEMPLATE

Summary: This template includes the character animation to enter and exit the Merlin cockpit, as well as some crucial ship proxy geometry and the floor plane.

Description: When creating a new ship, this template can be used to guide the artist in creating cockpit geometry that can reuse the already existing Merlin character animation for the enter and exit.

■ Player Animation Enter / Exit
■ Ground Plane
■ Pieces of the model the player interacts with during the animation and can not be deviated from

hand rail

ladder steps
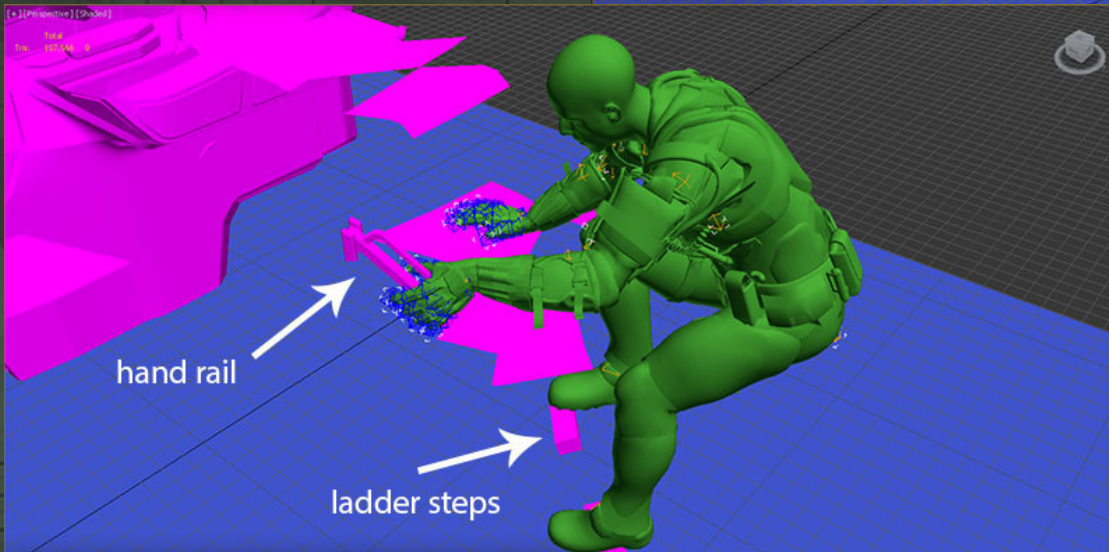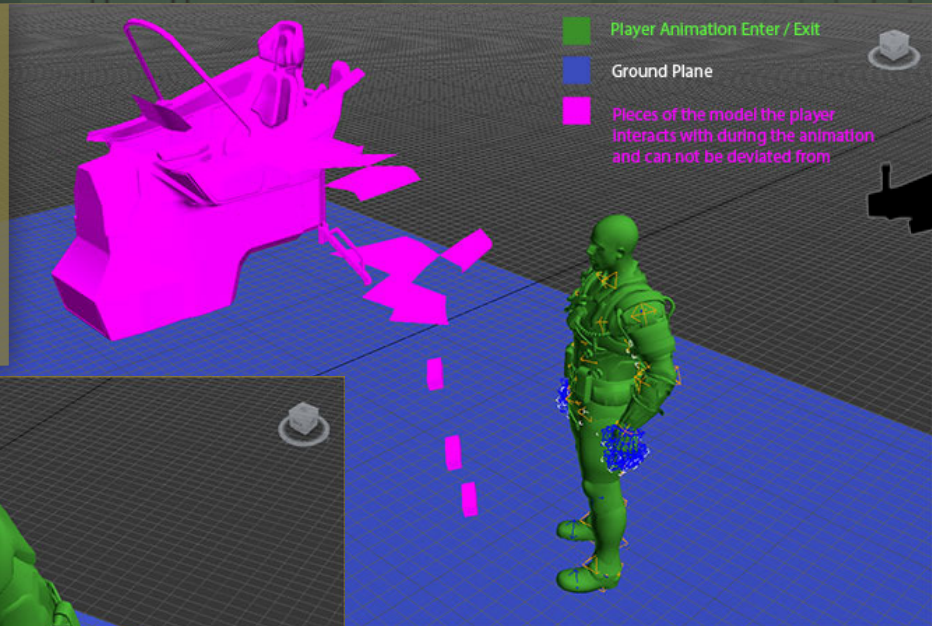
Breakdown: The pink geometry designates every spot the character animation interacts with physically or needs to avoid colliding with. This should give the artist the ability to create something visually new, while still being able to reuse the Merlin enter / exit animations.

The green character animation has been added to the template to help the artist verify that his new geometry will fit the already established animations.

The blue geometry identifies the ground plane.

master node to move whole scene

WORK IN PROGRESS

20
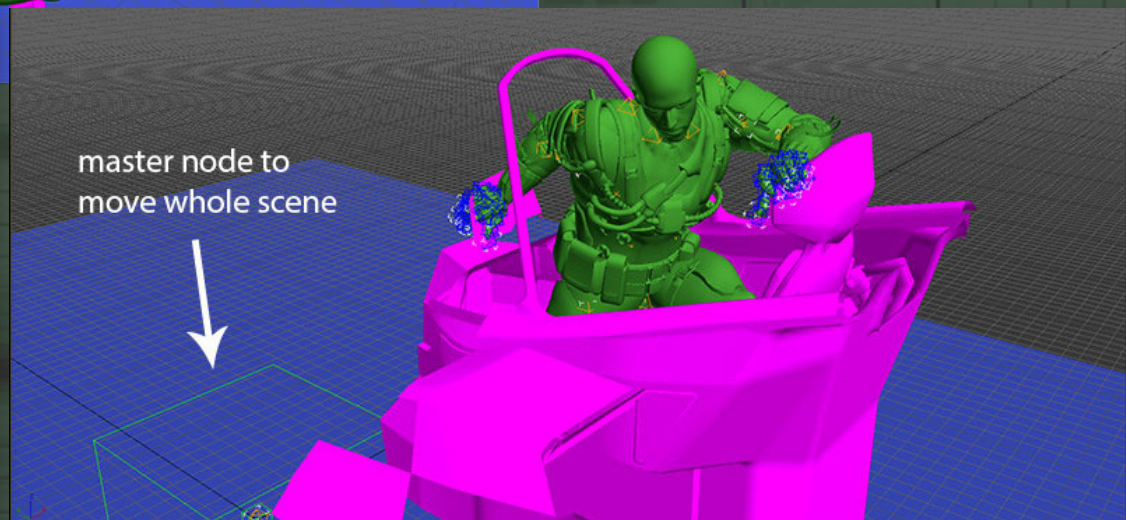
Frames from the current enter and exit animations.

As **Jump Point** is ready to be posted, the Merlin is undergoing final prep, and will be in the hangar, flyable, very shortly.

An Humble But Determined Start

"Perfection in every piece." Those words hung on the wall of a makeshift workshop in a rented hangar in Magnus; they would end up being the driving principle of the company that became Kruger Intergalaktische.

For all its success, few know this industry heavyweight's humble origins. In 2558, Ozell Kruger opened a workshop on her home planet of Borea in the Magnus System. To honor her family's heritage, Ozell called the company Kruger Intergalaktische. Her company's ability to deliver first-rate products on time and within budget quickly impressed customers. Still it was Ozell's good fortune to have opened her operation during the Borea boom that really helped her fledgling company thrive.

Building on that significant boost up, Kruger Intergalaktische (Intergalactic) has grown from those humble beginnings into a multi-billion Credit business. It specializes in expertly crafted, custom-machined parts and, more recently, creating full weapons and ships, including the popular Tigerstreik rotary cannon and the P-52 Merlin snub fighter.

Military Complex

As the Navy expanded, UPE money flooded the planet, which, for a while, was a major military hub and source of ship construction. At the time, Kruger was still a small operation and did not have the infrastructure or production pipeline to compete for government contracts, so it focused on landing deals to produce components for larger companies. Kruger's selling point was the ability to manufacture a wide variety of parts for anything from weapons to construction equipment to ships. With manufacturers scrambling to fill orders, and Kruger's sterling reputation spreading fast, its services were in high demand. It was during this period that Kruger began its longstanding relationship with Behring and RSI. From laser-cut firing pins on Behring's P8-AR to meticulously forged crucial capital ship components, Kruger-designed manufacturing parts quickly became essential for many items.

Luckily for Kruger, this confluence of events occurred before Magnus' military-industrial bubble burst. In 2751, the UEE moved their main shipbuilding yard to the Kilian System. As numerous companies closed or fled the system, Magnus' economy collapsed. Yet, Kruger did not just survive, it thrived. The company took advantage of the downturn to buy cheap real estate and abandoned equipment to expand its operations. At the time, Kruger's CEO, Artyom Chansiri, claimed that the company would stay loyal to the system and told numerous trade publications that its parts would always be "made in Magnus."

Unfortunately, Chansiri was not able to keep his word. As legitimate businesses left Magnus, residents were forced into illegal industries to survive. It was not long before Magnus had earned a reputation as a developed system with a frontier mentality. Each year, Kruger executives grew more concerned as additional Credits were spent protecting shipments.

Finally, in 2785, pirates raided a large convoy of Kruger-made RSI parts leaving the system. The disruption to RSI's supply chain put one of Kruger's key partnerships in jeopardy, so the company scrambled to find a solution. Years later, leaked corporate documents revealed that Chansiri personally guaranteed that Kruger would leave the Magnus System to keep RSI's business. It was only a matter of finding a suitable, and cost-effective, new home for its massive operation.

Eventually, Kruger found the ideal spot near Sherman on Castra II. The planet was originally a military base constructed during the cold war with the Xi'An. In 2789, relations with the Xi'An had improved enough for the system to be designated for Citizen and civilian use. With a significant amount of affordable space, solid infrastructure and, most importantly, safe and secure shipping routes, Sherman was an ideal destination. The moment the planet became open to non-military entities, Kruger moved in. Sherman has housed their headquarters ever since.

Kruger's shift to Sherman changed more than the company's location. It also affected its name. Castra II's President Leon Osborne held a ceremony to welcome Kruger to the planet. During his speech, President Osborne continually stumbled over the pronunciation of Intergalaktische. To save himself further embarrassment, he simply started saying Intergalactic instead. The two terms have been used interchangeably by the public ever since.

The Whole Picture

After centuries of success as a parts manufacturer, it was an offhand remark by an executive at a board meeting that the company "made all the parts for a gun, except for the gun itself" that would change Kruger's course forever. The seed was planted and it did not take long to sprout. The company's first entry into the weapons market was a line of ballistic Gatling guns named Tigerstreik. Their expert craftsmanship and straightforward design produced a slick and powerful weapon.

At first, sales were sluggish. With Kruger having previously only been known by industry insiders, the weapon buyers of the 'verse were not quite sure what to make of this 'new kid on the block.' Determined to show what it could do, Kruger cut a deal with Aegis. Kruger gave Aegis a discount on parts production in exchange for them changing the Avenger's stock weapon to the Tigerstreik. Soon, with both military and Advocacy personnel singing the gun's praises, its popularity rapidly rose. The success of the

Tigerstreik encouraged the company to continue developing other weapons.

Following its successful transition to full-scale weapons manufacture, Kruger set its sights on making ships. After the sluggish beginning of its weapons program, it knew this would pose a significantly higher financial risk, so it needed to figure out a way to enter the field without being fully exposed. For this endeavor, it once again leveraged its strengths and looked to a larger company for a leg up. Kruger won a contract to produce two short-range ships for RSI to package with their Constellation line. Of course those ships, the P-52 Merlin and P-72 Archimedes, heavily feature Kruger parts and weapons.

Ozell Kruger opened her original workshop intent on making quality parts. Few could have predicted just how far that initial dedication would take the company. Now the words that once graced her original shop, "Perfection in every piece," have become the motto of a company known and respected throughout the Empire.

Tigerstreik T-21 Ballistic Gatling
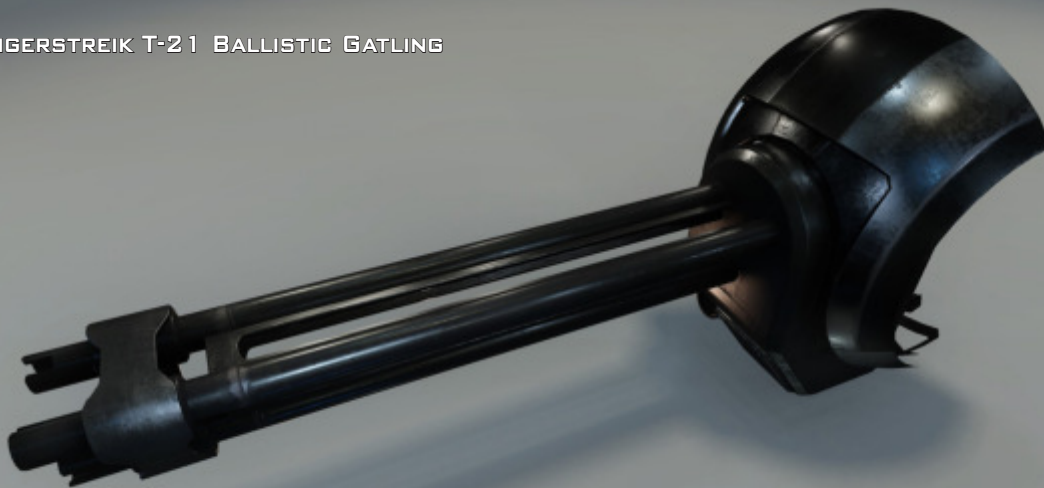
Ship & Internal Component Classifications

by Matt Sherman

This month our Behind the Scenes has three parts. As you can see from the big title above, we start with a design document from Technical Designer Matt Sherman, CIG LA, of our new ship and component classification. It looks solid, but as with all internal materials, it's Work In Progress, always subject to further development.

After that, we run down the major changes in Arena Commander Alpha 1.1.5, which will be at least a brief preview, since the update won't be out before tomorrow.

And finally, we have several more Spotlights, from four different Star Citizen studios. They're listed in the box to the right:

But first, let's see Matt's new classification system.

SPOTLIGHT!

As more ships, components and systems are coming on-line, some terminology may be misinterpreted or misunderstood across different disciplines and studios. To help maintain consistency, any important terms and concepts should be defined below for reference purposes.

This is not a final list, and should be updated as needed for any new or changing stances on these concepts.

Ship & Component Classes

Ships and components all fit into a loose set of classification that helps inform their functionality, potency and role. While these are not rigid definitions, they should be the guiding concepts when creating any new asset.

Light

Light-Class ships and components occupy the smallest scale in *Star Citizen*.

- Light Ships are typically single-seat vehicles and have the highest operational maneuverability, but generally will have shorter operational range.

- Light Components are (barely) man-portable items, usually with limited assistance, typically accessed for repair through EVA actions, but still require proper facilities for installation and replacement of components.

Medium

The most commonplace ships in *Star Citizen* are Medium-Class ships with Medium-Class components.

- Medium Ships are small-crew vehicles which could still be functional with a single operator, have the most efficient operational range for both in-system and jump-travel (at the cost of in-system maneuverability), and are the starting point for more role-specific baseline ships.

- Medium Components are man-sized objects requiring either multiple persons or specialized mechanical assistance to move, can be accessed through ship panels for repair, but require docking or a dedicated repair-ship to accomplish component replacement.

Heavy

Heavy-Class ships and components reflect more role-specific 'workhorse' ships in *Star Citizen*.

- Heavy Ships are typically purpose-built for their baseline, have large enough crew complements to need at least a few operators to run efficiently, and sacrifice maneuverability for operational range.

- Heavy Components are larger than a person and require a group with mechanical assistance to move the items, have on-component repair panels with diagnostic terminals attached, and require docking to replace components.

Capital

Capital-Class ships and components represent the largest scale of *Star Citizen*.

- Capital Ships are expansive multi-crew vehicles, can fulfill multiple roles at once, and serve as an all-aspect force multiplier, but at the cost of lower fuel efficiency for their size, and need orbital-docking services for refit and repair.

- Capital Components are large, room-sized fixtures of a ship, have in-room/on-component access paneling for repairs, and require substantial assistance to move while in storage.

- Installation and replacement of components require specialized facilities built to accommodate ships of this size.

Variant Considerations

A core feature of *Star Citizen* ships is the notion of variants, with many descriptions including the notions of Military-Spec and Civilian spec.

Variant

Ship Variants are unique versions of a ship's hull with distinct equipment differences from their baseline counterparts.

EXAMPLE: The Aurora would be reflected in 3 overall Variants of the hull. The Baseline which encompasses the Aurora ES/MR/LN, the Cargo variant where the Aurora CL falls, and the Combat variant with the Aurora LN.

- Variants must always offer some aspect that cannot be simply interchanged between other models of the ship, either in a specific component or hardpoint allotment.
- Variants should also serve to fulfill a specific gameplay role to the detriment of others.
- The cost of a Variant should be considered in its max-potential, and not simply sum-of-component costs.

Model

Ship Models are custom loadouts of a specific Hull Variant.

- Model components are fully interchangeable inside the same Variant of a ship.
- Model loadouts support a more focused aspect of the Variants planned gameplay role.
- The cost of a Model change should be in-line with other Models of the same Variant, with differences based on component costs.

Mustang Variants & Models

Mil-Spec

Military-Spec or Mil-Spec ships and components are more combat- and survivability-focused products.

- Mil-Spec Ships have stronger weapon-hardpoint allotments, often sacrifice cargo capacity for additional armor and armaments, and have more purpose-driven operational ranges.
- Mil-Spec components trend for higher-primary component output (weapons do more damage, shields have more health) and higher component health, but at the cost of increased wear-rate and higher costs of maintenance, along with reduced availability throughout the universe.

Civilian

Civilian grade ships and components are more utilitarian in their loadout and design.

- Civilian ships favor non-combat roles like Cargo, Exploration and Research, and have longer operational ranges to accommodate their role, but at the expense of reduced weapon-loadouts and durability.
- Civilian components focus on higher general efficiency and are much easier to find and buy. They have reduced wear-rate and cost of repair, but at the expense of lower component health and overall component Tolerance value.

Ship Role Classifications

A ship's role is strongly informed by the chassis of the ship used, along with the loadout and equipment installed. These general role classifications help inform any ship or variant's functional place within the 'verse. Naming for each role may vary inside the same class, based on ship-manufacture or the origin-race of the ship itself.

Fighter

Fighter craft are combat oriented vehicles that favor gun-mounts over heavy ordnance. Fighters are the most maneuverable type of ship in any class. They favor targeting of similar size-class or smaller craft to maximize the potential of their loadout.

Bomber

Bomber craft are combat vehicles favoring large ordnance over individual guns. Bombers have top speeds comparable to a Fighter, but with reduced acceleration and maneuverability. They favor targeting ships above their size-class, serving to help break down more defended targets.

Cargo

Cargo ships are utility-focused vehicles centered on moving cargo around the universe. Cargo ships have reduced maneuverability to compensate for their larger capacity. They want to avoid combat overall, with defenses in place to fend off comparable sized or smaller ships, and favor traveling in groups or with escorts.

Specialist

Specialist ships are role-specific vehicles centered on excelling at various tasks (depending on the specialty). Specialist ships often sacrifice capability of multiple roles to optimize performance in another specific role. They have comparable speed/maneuverability to Cargo ships of the same class. Specialist ships tend to be more combat-viable than Cargo craft, but outside of massive Capital-class ships, will lack the comparable firepower of a similar sized Fighter.
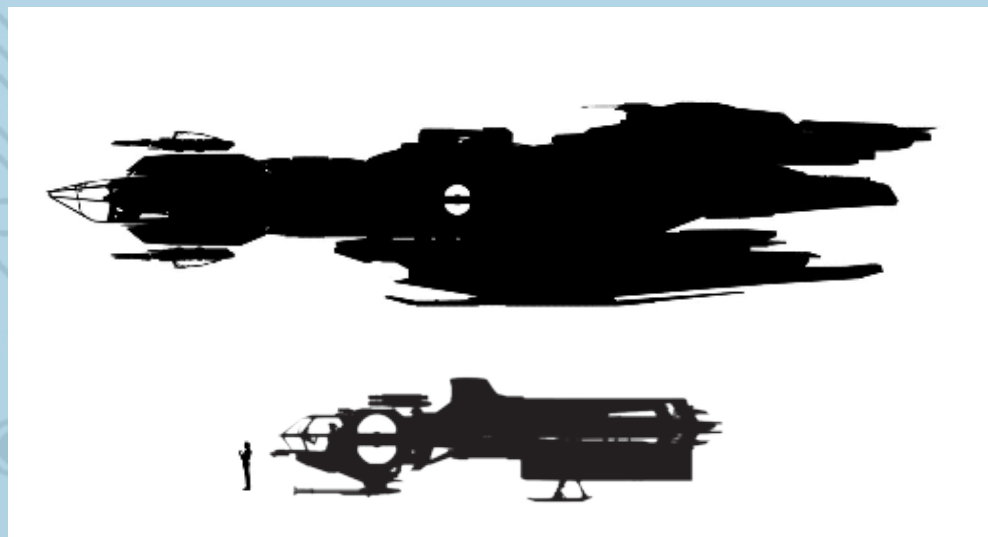
New Component Size System

To ensure high quality component art and flexible player-options for ship customization, we've had to re-evaluate the number of sizes used for internal ship components. The current system of 12 physical sizes per component type runs a high risk of becoming unwieldy from a content creation standpoint, where creating just 1 of each size for each component is already well over 100 unique assets. When also considering different manufactures and product lines, this number quickly inflates to impractical levels. To resolve this, a new 4-Size scale of components is being proposed.

Existing (old) 12-Size Scale

What are the new sizes?

Now, instead of Size 1-12 for internal components, we will have Light, Medium, Heavy and Capital Size components. These sizes scale up exponentially in size, with Medium being double the size of a Light, and a Heavy double the size of a Medium. This maintains a consistent scale for installation footprint across all component types.

What components does this new scale apply to?

The new scale will apply to all internal components for a ship:

- Power Plants
- Shield Generators
- Engines
- Thrusters
- Coolers
- Avionics
- Ammo Boxes
- Batteries
- Ballast

What does this new scale provide?

Using this 4-size system, instead of having single components inside of each ship, there will be more granular control. A Size 3 Powerplant in the old system would translate to 3 Light-Size Powerplants in the new system. And now, instead of a single point of failure or tuning for a component, there will be some inherent redundancy.
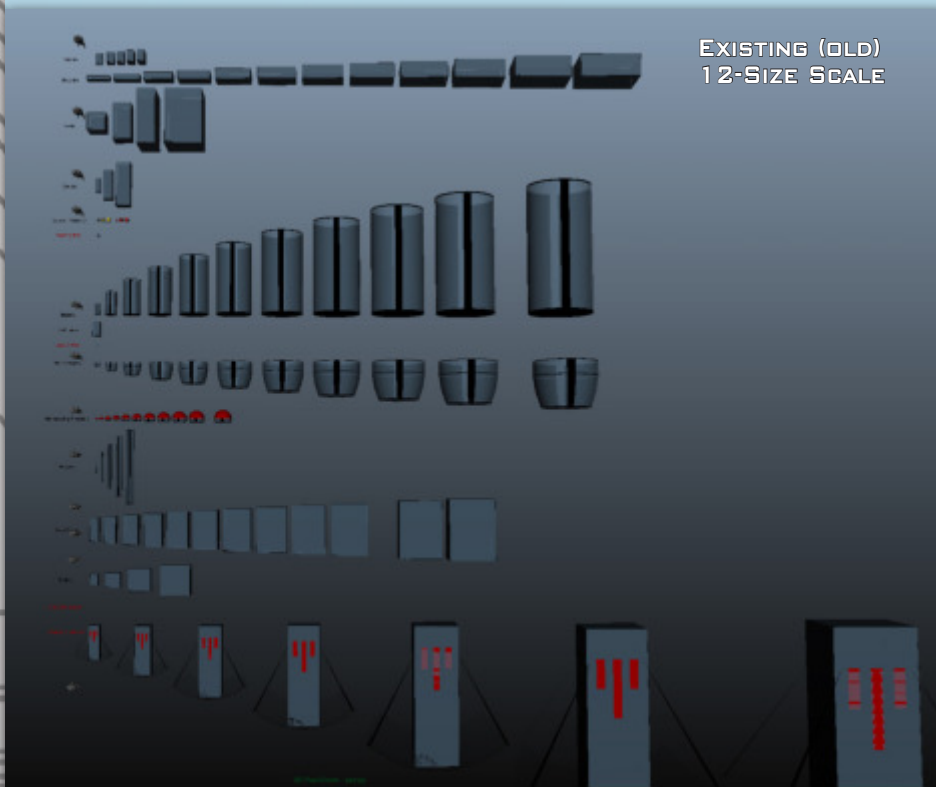
How will this new scale affect loadouts?

Along with this system, the interior component layouts can take on more unique and geometric patterns to their layout. Whereas currently, a Size 4 Powerplant would mean one explicit size, we can introduce the concepts of an In-Line 4 and a Box 4. An In-Line 4 would always be 4 Light-Size Powerplants, where the Box 4 would allow for the installation of either 4 Lights or a single Medium-Size Powerplant.

A Medium is actually 8 times the volume of a Light (doubling size in each of three dimensions). That means you can replace a Medium with 4 Lights, but not 4 Lights with a Medium (unless the space was originally planned to contain a Medium). However, the 4 Lights would have more tuning flexibility from running 4 units rather than 1.

On the other hand, there is economy of scale: a Medium actually produces 5x the power of a Light (that is, 25% more power than 4 Lights).

And you can't replace a Medium with 8 Lights – the physical connection ports will stop you. Since there's just the single connecting face, and you cannot daisy-chain or stack components on top of each other, the size of the plug is the hard limit on what can be installed.

How do the new and old scales compare?

A reference image for the existing 12-size scale is on the previous page, and one for the 4-Class scale is on this page. Overall, the new sizing system still is taking advantage of the work done to create the 12-size system by using the existing Sizes 1, 4, 7, and 10 as the reference volumes for the new 4 Size Classes.

Will this new scale affect anything else?

The new size scale would eventually be applied to all ships and components, but each will be considered uniquely from the Internal Components, to ensure the character and style are not lost in the change.
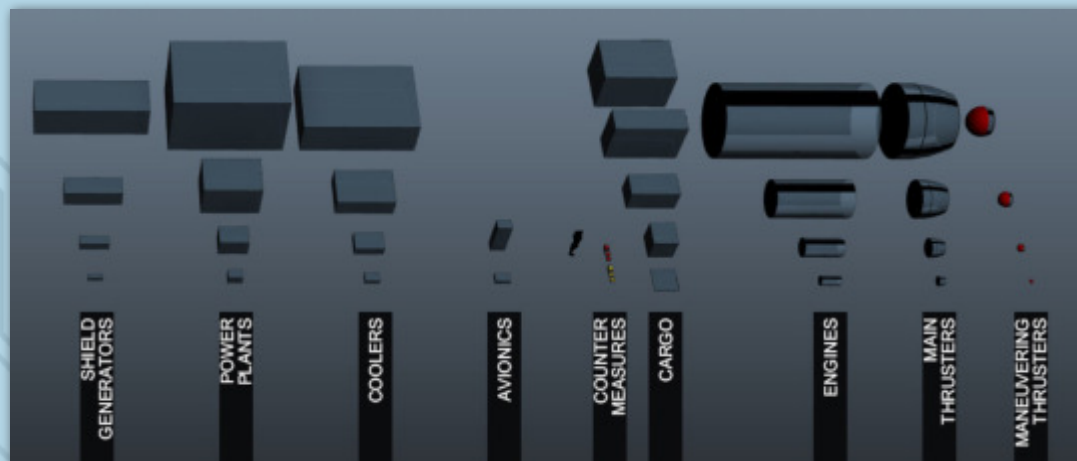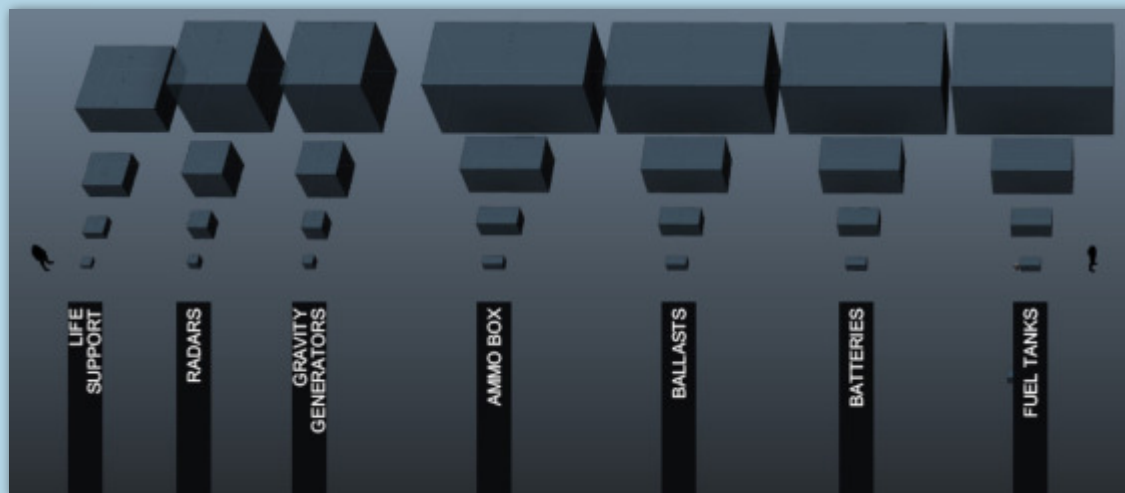
Arena Commander
Alpha 1.1.5 Preview

There are several primary objectives with the alpha 1.1.5 update due out any day:

- A balance pass on all ships
- Making the Merlin and Scythe flyable
- Multiplayer Ship Destruction/Respawn Network stall improvements
- Expanding some of the combat arenas' participation to 16 players
- Improved lobby system

Balance Pass

CIG keeps a close eye on all combat stats, and it has seemed as though ships are getting killed too quickly. (The technical term, I am informed, is TTK: Time to Kill. And the TTK has been shorter than we want.)

So perhaps the most general change you'll notice in the game once 1.1.5 is released is that your ships are sturdier, with:

- ship health increased
- shield health increased

- shield recharge rate decreased

- missile damage decreased

- weapon damage increased

- weapon cooling increased

Have we gone too far? Not far enough? Perhaps … which is why it's still in alpha. We're still adjusting and tweaking, till it all works.

In addition, Flares should no longer guarantee a missile evasion. Flaring too early, too late or while boosting will likely result in the flare failing to divert incoming missiles.

On the other hand, you can now fire Flares and Chaff two at a time.

Meanwhile, There is now a 20-second respawn penalty for players who eject/self-destruct with more than 85% of their ship's health. In general, this is done to either reload missiles or prevent another player from getting a kill, neither of which is fighting fair.

Scythe HUD,
in flux

Flyable Merlin & Scythe

The P-52 Merlin, first introduced as a stub ship for the Constellation, makes its maiden solo flight in the 1.1.5 update. There's plenty about the Merlin in this issue's Work In Progress, with a pic in the hangar on page 22.

Just as exciting, the Vanduul Scythe, long a bane of Swarm modes, is now available, even to fly against all those Vanduul-piloted ships. Even sitting in the hangar, it looks dangerous – a caged tiger is the image that comes to my mind.

Along with having to fly this ship stretched out on your chest and belly, the Scythe HUD is one of its more interesting features ... because it isn't completely set. It has been modified for Human use, and it mostly stays that way, but occasionally it will flash back to its Vanduul format, especially when taking damage.

In addition, the Scythe has very high acceleration, stronger shields and a weaker hull than most Human ships. It has two Size 5 weapons, which have a slow rate of fire but are very heavy-hitting. Enjoy!

Scythe tail

Ship Stall Improvements

Players can still expect to see stalls early in the match as new ships load into the game. However, once a ship variant has joined a match, it will remain cached until the match ends. New ships of the same type joining the match should no longer produce a stall.

For the same reason, the stall that is encountered when a ship is destroyed or respawns has either been eliminated or decreased to a micro-stutter.

Stalls may still be observed during the match if a new unique ship variant joins the match, but overall, once the match has gotten underway, stalls should be significantly reduced.

Expanded Combat Arenas

Between the improvements to the respawn stalls, and the increased TTK resulting in even less frequent stalls, we're going to increase player count on Multiplayer game modes to 16 players and evaluate the performance.

Therefore, the player cap is increased to 16 players in Battle Royale and Squadron Battle. We'll be adding more to this list as they get approved.

Improved Lobby System

We've made a lot of improvements on the backend – to the GIM (Generic Instance Manager) and elsewhere – which won't be obviously visible, but they will, we trust, make your lobby experience smoother. In particular, these improvements make the lobby better at handling information and avoiding bottlenecking at high population values. But it is also going to be a foundation for some of the backend services that we'll use for our instancing system in the PU.

Two Size-5 weapons

And one more screen, just because.

Spotlight: Anderson Bordim, UX Designer and Information Architect, and Michel Labelle, Creative / Art Director, Turbulent

The Web Starmap will be a browser-based 3D application that allows players to explore the Star Citizen universe, similar to the "Astrometrics" rooms in Star Trek starships. In this application, you'll be able to click on star systems and visit them in 3D space, as well as consult additional information on each of the celestial bodies in space (asteroids, anomalies, jump points, etc.). At Turbulent, Anderson and Michel are putting the Starmap together; here's a glimpse at what they're working on now.

Anderson: I'm working on the Starmap concept, particularly the information architecture, features and user flow.

Michel: I'm working on the different views, controls and information at the galactic, system and planetary levels. There will also be a link to the Galactapedia (it's like a Wikipedia for *everything* about *Star Citizen*) within the Starmap. We want to deliver a great experience – bringing to life the travel and other expectations of the *Star Citizen* gamer.

Anderson: For the graphic sense of the Starmap, I drew inspiration from various science fiction films. But for the user experience, I watched many documentaries about NASA and the exploration of the universe.

Michel: At the beginning, I asked myself, what is the purpose of the Starmap? It was important to understand that before looking for inspiration. In terms of style, we draw the basics from the RSI website branding, and we're adding some specific pieces for the 3D aspects of this tool.

I looked at recent sci-fi movies – for example, the Avengers series – and their motion design. All the details are important for me. I follow certain motion designers and directors, and research their past movies also.

Anderson: There are definitely challenges to what we're doing. First, we want the players to be exploring a believable, realistic universe. So we did a lot of research through scientific articles. Secondly, we offer a lot of information about each system and planet in the *Star Citizen* universe, which presents a huge challenge when designing the interface of the Starmap.

Michel: The look and feel of the Starmap is really important. We have to ensure that its purpose and style are in sync. Secondly, the Starmap must be specific to *Star Citizen*; it has to be unique, not just a copy of some other game.

Anderson: Although the Starmap is essentially a tool for exploration, we want players to discover the depth of the game world through it. In summary, we want the Starmap to serve as the backdrop for the adventures of all *Star Citizen* players.

Michel: My goal is to reach something unique in the way we are communicating the story of *Star Citizen* – the tool we create, the style we bring to it. We're inspired by what has already been created for the game, and we want this to be an inspiration for others.

Edern Talhouet is part of the creative team working on the Starmap

Spotlight: Ken Fairclough, Associate Concept Artist, CIG Austin

I was recently tasked with working on new designs for the Marketplace in the Nyx Delamar PU location. Design required new shop concepts to fill the space with specific requirements that had to be met. The shops needed to be mobile – they would have to appear to be able to be loaded and unloaded into the market space at the beginning and end of every day. This was to give the environment an overall feeling of a farmers' market.

Since the environment they would be going into has multiple levels and areas of interest, it was important for nothing to obstruct your view of the other player and NPC interactions going on in the market, especially when first entering the space from a higher level. Having the lights of neon advertisements and character interaction with one another as one of your first views when entering makes for greater impact and makes the environment come to life.
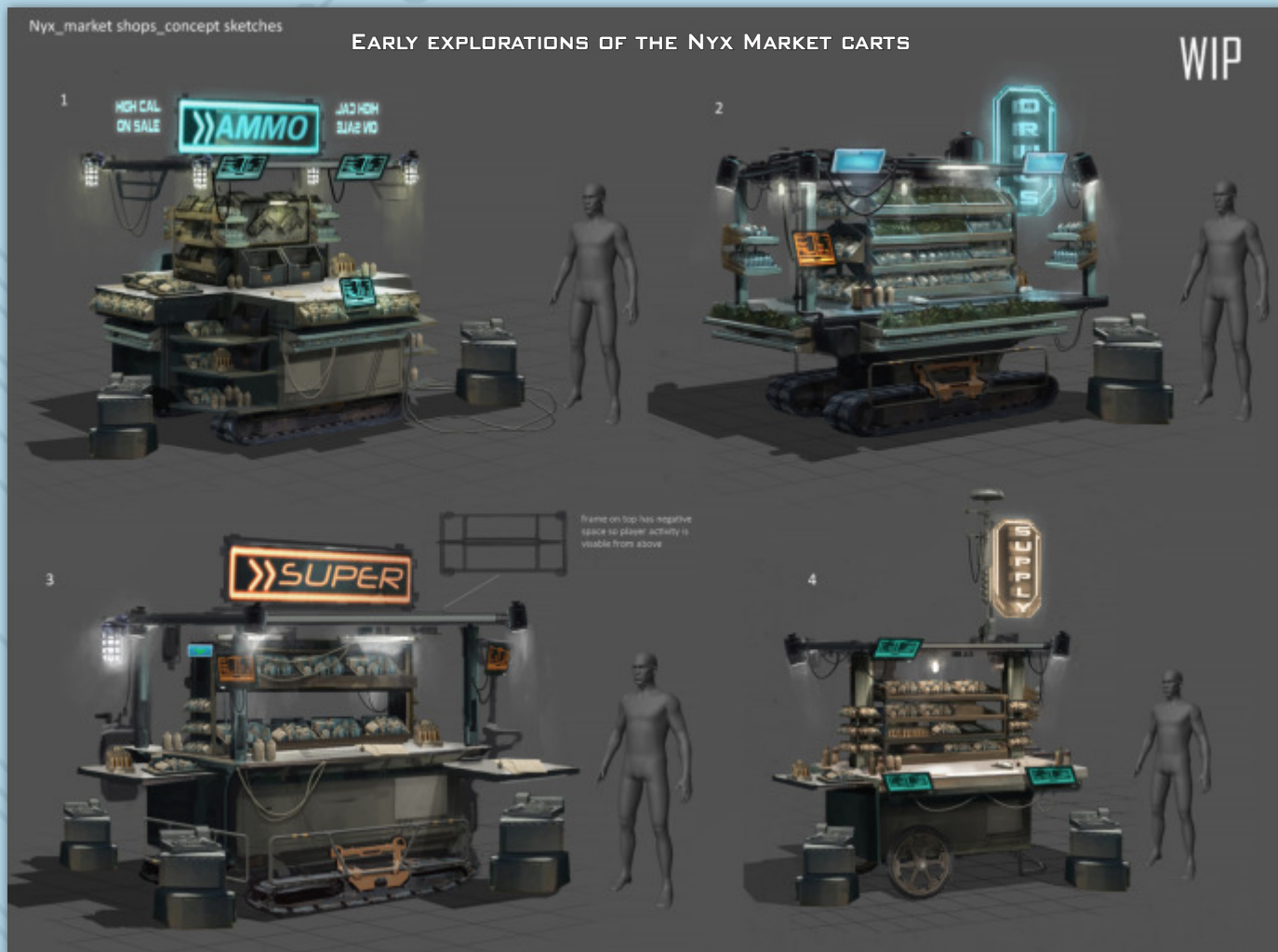
Early explorations of the Nyx Market carts

Spotlight: Tom Johnson, Senior Project Manager, Foundry 42

I report directly to the Global Head of Production, Erin Roberts, and I'm the longest serving CIG producer, having been here at Foundry 42 since the Manchester office opened in January 2014. I've now built a team of seven producers to whom I've delegated chunks of responsibility so that each part can have the proper focus and attention it needs and can help me manage and coordinate our ever-growing dev team, which is now over 100 people!

My day-to-day responsibilities are constantly evolving – in production we're always adapting to change in the project. As a baseline, I help with the office and personnel management, and my main development responsibilities are as lead producer on *Squadron 42*, but I've also had periods of *Arena Commander* production (for the first few public releases) and I'm currently getting back involved to help push out the latest live releases. I'm also line manager to the QA Manager and Assistant Manager because QA and Production have a very close bond in development.

To give you an idea of what my day-to-day tasks can be, here's a list of the various things I did recently (with some of the details necessarily blurred):

- Spent time with senior producers at the other studios on high-level communication and processes.

- Coached two new UK producers on what was expected from them, including some training in our tracking database.

- Attended meetings about Gamescom relating to both Dev and Sales.

- Reviewed current state of Gamescom development, made some enquiries and flagged a few issues.

- Spoke with the QA team to review state of play for an upcoming release.

- Spoke to individual dev members about specific issues.

- Chaired a meeting regarding feature development, and scheduled further meetings on similar matters.

- Mediated an internal personnel dispute.

- Checked with IT on their upcoming requirements for Gamescom.

- Reviewed and provided feedback on the release plans for the rest of 2015.

- Negotiate a deal for a new statement of work with a vendor regarding the character pipeline.

Machines being built for Gamescom

BEHIND THE SCENES

Seating Floor Plan for Upstairs Office

Seating Floor Plan for Downstairs Office

Key
- Audio
- Art Director and Leads
- 2D and Concept Art
- Engineering
- Ship Art
- Production
- VFX Art
- Environment Art
- Design
- Character Art
- Animation
- QA
- Customer Service
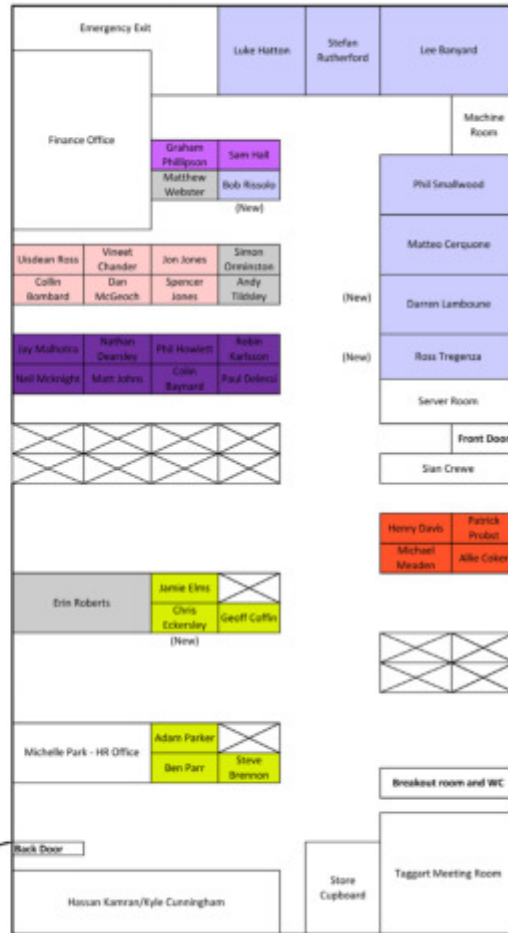
- Drafted yet another new seating plan to account for all of the new hires joining the studio and to foster the most beneficial links between the various departments and individuals.

- Began discussion on what the UK will present in our monthly Show and Tell for July.

- Began discussion on what we will present at Citizen-Con.

- Provided a contractor with some videos of *Squadron 42* to inspire their team working on the project.

- Cleaned up our database and made enquiries with other producers on ways to improve.

- Spoke with the Community team on how we can improve on communication with the fans on the forums.

- Arranged a meeting with IT and HR to review our new starter (new hire) process.

- Hosted a mid-point probation review for one of our new producers, and had a performance review with another producer.

- Reviewed current state of tools at CIG and assessed solutions to problems.

- Ensured particular members of the UK team were communicating some important matters effectively.

- Read and responded to many, many emails and Skype messages.

- Read and responded to many, many more emails and Skype messages.

Spotlight: Christine Marsh, Lead User Interface Designer, Behaviour

As a UI Team Lead on *Star Citizen*, I work on quite a mish-mash of things. Right now at Behaviour, the UI team is really focused on getting the social module ready for its eventual release. As such, I have been involved in quite a bit planning and design discussions about what tools/features players will need to be able to communicate with other players as well as interact with their environment, what kind of experience we want players to have, and how are we going to work to achieve that.

More specifically, I've spent the last few months working quite a bit on the chat system design. We wanted to build a communication system that was flexible and that would have everything players need in order to be able to communicate with others through the game efficiently.

Generally the chat system has some features that are pretty standard for an in-game chat, like tabs where you can filter out different types of messages or keyboard commands like /local and /help. I felt that it was important for players to have an interface that was somewhat familiar and intuitive to use, despite the context of the game being set 930 years in the future.

Another feature the chat system supports is private conversations: tabs with member permissions as well as a channel owner. This will allow players to have a more private and direct line of communication to other players of like-minded interests... You could have a private comm with other merchants in your section of the galaxy, with org members, or friends who also play *Star Citizen*.

One of the challenges that came up while working on the Chat design was trying to figure out how to keep chat easily accessible while keeping the interface in-fiction. One of the principle mandates for *Star Citizen* user interfaces is that they need to be as diegetic as possible (that is, immersive and "living" within the game). However, we don't want players to always have to stop and open mobiGlas (your principle user interface device planetside) just to type a message. We needed something that was faster to access, and that doesn't block player movement. So, like the design for mobiGlas AR mode, your communications system "lives" in your contact lens, communicating directly with the mobiGlas on your arm, allowing you to continue with your business in the 'verse unhindered.

UI design is all theory until you actually get a chance to play around with a feature as it was intended. Once you get your hands on a testable version, you realize stuff like, "Oh this works well" or "This just doesn't work, we'll need to try something else", etc. There's a lot iterating back and forth once a feature is first implemented.

And that's pretty much where we're at with the chat system: still under development, lots of iterating back and forth, but we are making great and steady progress. We have a version working in the engine, and we continue to iterate/polish the artwork as well as the design itself.

It's tough to sum up such a complex system with only a few paragraphs. All I can say is that I am really looking forward to getting this system into player hands to see if all our ideas and hard work meet needs and expectations, and to see how we can continue to improve it based on player feedback.

[chat draft mockup on next page]

Chat window Minimized

Chat window Maximized

15:58:4 [4: PGB] BuckarooBandit: Will be heading home VERY shortly to get ready!
15:59:49 [4: PGB] JohnnyNobrains: Better hurry up then, or you'll miss out.
16:01:03 [4: PGB] TrollFaceMcGee: I'm so awesome and you all suck.
16:02:09 [4: PGB] BuckarooBandit: Oh no, not that guy again.... >_<
[4: PGB] Plumonium : Time stamp should be an option to display/hide.
[YOUR ORG] Luneadge: Chat should auto hide /dim after a TBD amount of idle time.
** WWWWWWWWWWWWWWWWWWWW has invited you to a private conversation [ACCEPT]
This is a system message reserved for server downtime or other important global messages.
[4:PBG] Vlordak The Mighty: This is my typed message. Lorem ipsum dolor sit amet loolololololol!!!!!11!!

[1: LOCAL] Vlordak The Mighty: This is my typed message. Lorem ipsum dolor sit amet loolololololol!!!!!11!!

PBG ▶ Oh no, not TrollFaceMcGee... Hold on, let me create a private channel.
1 sec...

PBG ▶ Oh no, not TrollFaceMcGee... Hold on, let me create a private channel.
1 sec...

/Main
/1 * Unread message
/2   active tab
/3   non-active tab   ✕
/4   PBG
/5   YOUR ORG

Create Filtered Tab
Create Private Comm Tab
View Pending Invites
Options (contextual)
Help

Chat roll scroll bar

Chat roll

Tab ID number
Unread Message Indicator
Tab Scrollbar

Private Comm Invite

15:58:4 [4: PGB] BuckarooBandit: Will be heading home VERY shortly to get ready!
15:59:49 [4: PGB] JohnnyNobrains: Better hurry up then, or you'll miss out.
16:01:03 [4: PGB] TrollFaceMcGee: I'm so awesome and you all suck.
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[4: PGB] Plumonium : Time stamp should be an option to display/hide.
[YOUR ORG] Luneadge: Chat should auto hide /dim after a TBD amount of idle time.
** WWWWWWWWWWWWWWWWWWWW has invited you to a private conversation [ACCEPT]
This is a system message reserved for server downtime or other important global messages.
[4:PBG] Vlordak The Mighty: This is my typed message. Lorem ipsum dolor sit amet loolololololol!!!!!11!!

/Main
/1 * Unread message
/2   active tab
/3   non-active tab   ✕
/4   PBG
/5   YOUR ORG

Tab
Close tab button

Condensed / Expanded view toggle icon

PBG ▶ Oh no, not TrollFaceMcGee... Hold on, let me create a private channel.
1 sec...

Chat window resize handle

Player text input
Icon (position changes based on length of channel name)
Active Channel Identifier

Commit Message

Chat draft: Work In Progress — Artist mockups

CASTRA SYSTEM
CASCOM

The history of the Castra System might be as close of a mirror to Humanity's relationship with the Xi'An as you can find. Discovered in 2544, only 14 years after our first encounter with the Xi'An, Castra was terraformed for military use. As tensions with the Xi'An relaxed, so did the military's presence in the system. Today, Castra is primarily a trading hub, though certain areas have stayed under military control and ready for action at a moment's notice.

Castra is a simple system containing two planets orbiting a stunning blue-white star. It was discovered by UPE military pathfinders probing the Perry Line for undiscovered jump points. After the initial exploration, early reports noted the system as "unremarkable" from an astronomical perspective, yet the military brass immediately grasped its strategic importance as a staging post for the brewing Xi'An conflict. The system was named Castra, after the

ancient Roman term for land used by the military as a defensive position, and terraforming of its second planet began immediately.

Decades later, when a jump point from Castra into Xi'An territory was discovered, the system was thrust into the front lines of the conflict. As government funding flooded the system to improve its defensive fortifications and military infrastructure, it quickly changed from a mere staging post into a focal point of the Xi'An cold war. A large orbital platform was even built to support capital ships and long-range bombers, which were ever ready to attack Xi'An space should the order be given.

When the Messer regime fell, the UEE tried to ease tensions with the Xi'An. In 2789, in a show of good faith, the UEE reduced their military footprint and, for the first time after two centuries of strict control, permitted the public to move into

the system. The decision was, and still is for some, a controversial one. A hawkish minority of military bureaucrats and political elites believe the system best serves the Empire as a dedicated (and solitary) military outpost.

Upon Castra's conversion, businesses arrived in droves to take advantage of the system's exceptional infrastructure and affordable real estate. At this point, that makes Castra a prime destination for haulers looking to offload raw materials and leave with goods. Recently, Castra's government has pushed to increase tourism to the system in an attempt to diversify their industries.

Castra I

Castra's first planet lacks an atmosphere or any raw materials worth mining. Still, Humans realized that Castra I was good for one thing — target practice. Designated "Bulls-eye" by the UEE Navy, this dead world was used for bombing runs during the cold war. Today, the way the system's star reflects off Castra I's pockmarked surface is probably the most interesting thing about it.

Castra II (Cascom)

Only Castra II is suitable for habitation. The UEE military designated the planet as Castra Command, which was shortened to Cascom — an unofficial name that has stuck, much to the dismay of some current politicians. The military terraformed the planet as fast as possible. Some scientist today even say possibly too fast, suggesting that the escalated speed at which Cascom was made ready is to blame for its pronounced cloud layer.

The military wanted to construct an ideal defensive position, so they dug in to the top of Mount Ulysses to build the city of Sherman, making it both superbly secure and breathtakingly beautiful. This fortress city, situated above the clouds, has earned the nickname "Island in the Sky." Upon seeing Sherman for the first time, Admiral Kumasi Klein famously said, "It's the city of my dreams. Picturesque and protected by big guns."

Since Sherman was under government control for centuries, it remains a sterling example of state-sponsored architecture. The oldest government buildings in Sherman reflect the austere Hennowism style that was prominent during the city's initial construction. When Monumentalism was championed by Imperator Messer III, Sherman's skyline was updated to reflect the style. Today, Sherman's historic architecture remains as one of the primary reasons to visit the city.

Ever since the military opened the system to Citizens and civilians, Sherman has searched to define its cultural identity. For centuries, living on Castra II was an assignment, not a choice. People from every corner of the Empire spent time there, but few put down roots. When the system opened up, industry became the planet's most obvious new resident. Although companies like Kruger Intergalactic injected new life into the planet, they did little to give it a new identity among the masses of other imperial worlds.

That changed in 2833 when the planet elected Andre Novoselov president. President Novoselov worked closely with the business community to attract more residents to Sherman. For years, businesses had struggled to find enough employees to fill available positions. Together, they launched pro-Sherman promotional campaigns on planets around the Empire. One of those campaigns resurrected the "Island in the Sky" motif and featured the iconic image of the mountaintop city sitting above cloud cover sparkling from the light pollution of cities below. For the first time, the Empire saw Sherman as more than a military outpost or industrial park. It was President Novoselov's hopes that he would see Castra II earn representation in his lifetime, but sadly his transition from President to planetary Governor never came to pass, and the planet has yet to earn its senatorial seat.

President Novoselov's push to populate the planet worked. As more people arrived, so did a wide variety of service industries to meet the increasing demand. Sherman became
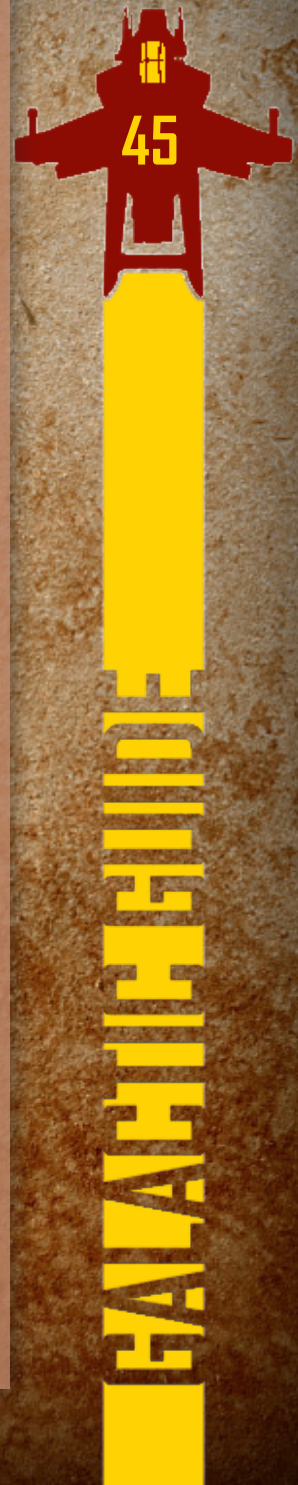
a melting pot of high-end stores, restaurants and hotels, intermixed with businesses geared toward middle-class and blue-collar workers. In many parts of the city, people in designer suits and those in graphene-toed boots shop, dine and live in the same part of town.

Recently, Cascom's cheap real estate and scenic views have become a popular home for retirees. In an effort to attract a younger crowd, Sherman has promoted its beautiful, mountaintop location as the 'verse's premiere extreme sports destination. For a while, paragliding above the clouds was extremely popular until numerous amateur paragliders landed on military installations and forced the city to impose a ban on the practice. Even if paragliding has been prohibited around Mount Ulysses, there is more than enough awe and adventure awaiting anyone who visits Castra II.

Heard in the Wind

"The Xi'An conflict, when it does occur — and note I say when, not if — will ultimately be determined by our strength in one system alone, Castra. I implore all of you to appropriate funds swiftly and accordingly."

– Admiral Connelly Reeves,
*excerpt from a speech given to High-Command, 2716*

"The strength of the lines and the unforgiving audacity of the edifice as it pierces the firmament leaves no doubt to what the intent of the structure was, nor any room to debate that the establishment of Sherman embodied the spirit of the era as much as it helped define it."

– Reggie Chapolt, Brick by Brick: Truth in Hennowism, *2880*
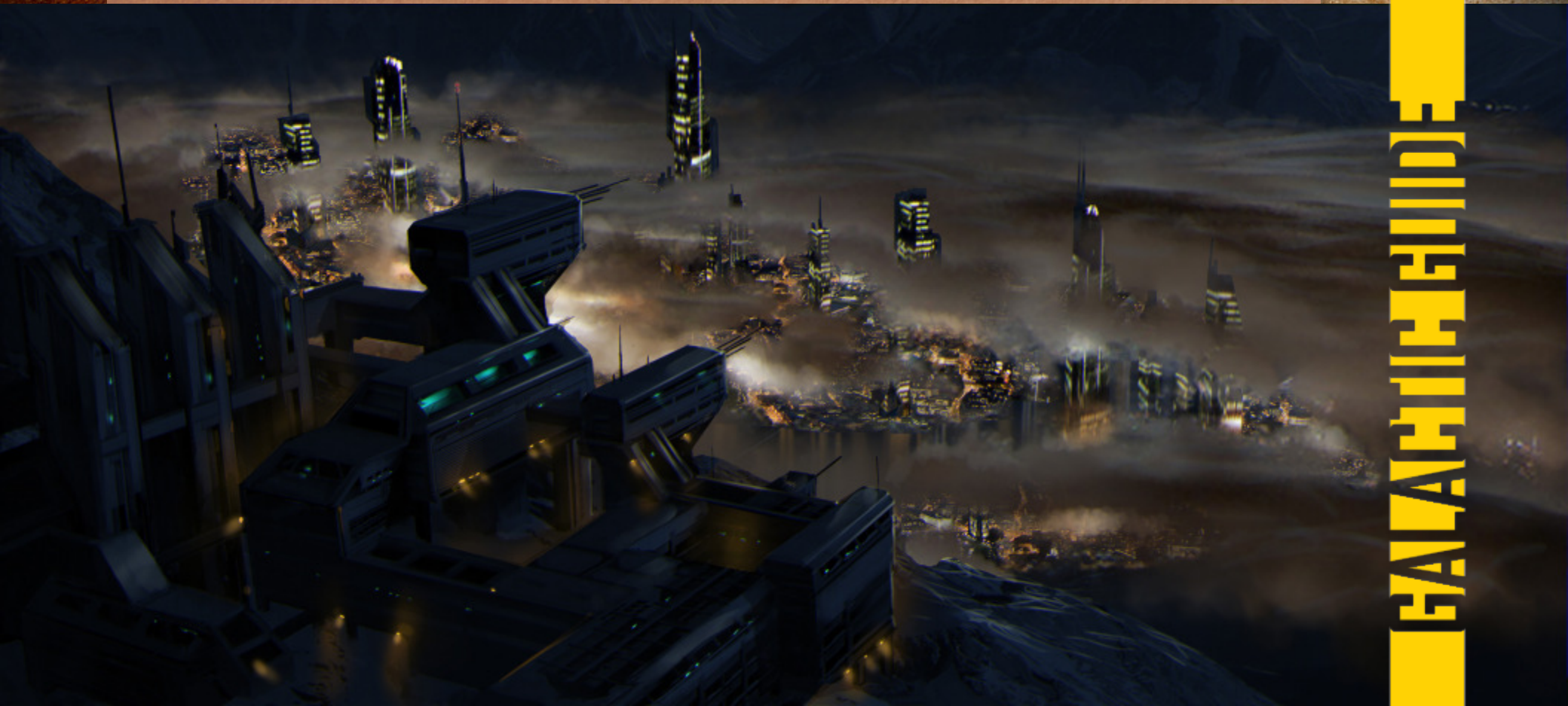
Brothers in Arms

by Andy Rogers

Part 3

Rhedd Alert got hit two more times over the next several escort missions between Min and Charon. The first was an overly zealous and unfortunately solo pirate who had camped himself just outside the jump gate from Min. The memory of the Hornet attack was still fresh and had Gavin and the team on edge.

The hapless pirate attacked as soon as the first Rhedd Alert ship entered Charon space. There wasn't a thruster on the market that could turn him fast enough once the gate spat out six angry Rhedd Alert fighters and their transport.

They recovered the unconscious pirate in hopes of a bounty. There wasn't much left of his ship to salvage.

The next incident occurred inside the Tyrol System near the rendezvous at Haven. As they neared Tyrol V, the trio of ramshackle Hornets struck again. Walt was the first to see them coming.

"Gav, we've got incoming from behind the planet."

Gavin's team was a cluster of green icons on his HUD. Snuggled protectively within their perimeter was the UEE *Cassiopeia* carrying a fresh batch of researchers. He zoomed the display out and saw a trio of red marks hurtling around the planet toward their position.

"Is that . . .?"

"You have *got* to be kidding me."

"How the hell did they find us?"

Gavin silenced his team with a curt word and considered a headlong race to Tyrol V. Haven was a reasonably large settlement for an otherwise underdeveloped system. Tyrol V didn't have any planetary defenses, though. The entire system was subject to the inevitable and imminent super-nova of its expanding red giant. Haven warranted both UEE and private investment in support of the unique research possibilities provided by the impending supernova. How-ever, since the entire system was ultimately waiting to evaporate, there wasn't much sense in dumping money into defense systems.

Gavin started crossing options off their list. Tyrol offered them no protection. If they fled the system, they could lead the Hornets on a merry chase, but prolonging the risk to the *Cassiopeia* and its staff on board seemed a poor gamble.

On the other hand, their first head-to-head confrontation hadn't gone so well. After seeing the marauders' team-work in Charon, Gavin was reluctant to take another tilt at them. Plus, he could already imagine Walt's reaction to willfully engaging them head on.

Perhaps something a bit more diplomatic than fight or flight would yield better results.

Gavin tripped his comm link to broadcast on all local fre-quencies. "Hornet privateers above Tyrol V, this is Rhedd Alert One with a team of fighters and UEE transport vessel. We are moving little of value other than civilian lives. Please reconsider your approach."

"Huh," Walt made what sounded like an appreciative sniff into his mic, "you think that'll work?"

"Can't hurt to try."

Moments passed with no response and no change to the marauders' course. "Well maybe something more ominous will get their attention." Gavin triggered the open broad-cast again. "Hornet brigands above Tyrol V, this is Rhedd Alert One with a team of fighters and UEE transport vessel. We have little of value other than our ammunition, which we will happily deliver directly to your ships if you do not reconsider your approach."

"Well that's definitely not going to work." Walt said. Gavin saw his brother's weapon systems go live.

Gavin left Boomer and Mei to guard the *Cassiopeia* and Rhedd Alert engaged four-on-three with neither side hold-ing the advantage of surprise. This time, Walt and Jazza were both on the front line. The ensuing dogfight was far less one-sided than their first encounter with the Hornets.

Rhedd Alert gave a good accounting of themselves. Con-trary to their ramshackle appearance, the marauders' ships were surprisingly quick, their weapon systems in good repair. Despite the ferocity of the fight, Rhedd Alert kept the marauders' away from the *Cassiopeia*. Walt seemed content to drive them off. Jazza gave chase.

"Let 'em go, Jazz," Walt said.

"Like hell," she said. "I'm gonna swat me a Hornet."

"No, you're not," Walt snapped the order. "They're going to turn around just long enough to pound you into a fine red mist, and we're going to have to sweep up whatever parts are left."

"Guys," Gavin said, "cool it. Rendezvous at the transport."

Jazza broke off pursuit and moved to rally with Boomer and the *Cassiopeia*. "I just don't like him giving me orders."

"Hmmm," Walt's temper was clearly under some strain, "let's see. I'm part owner of the company. You might wanna start associating my voice with imperative statements."

"Knock it off, both of you. Jazz, fall in. The Navy is pay-ing us to escort staff, not fight a turf war with a hungry pack."

"You should have figured that out in Charon," Walt said. "You made it a grudge match when we turned to fight."

"Enough! If either of you have anything else to say, it can wait until we're back on Vista Landing. Got it?"

Both squads limped away with damaged fighters. Rahul took a hit to his legs and would need to visit the med techs at Haven before leaving the system. The job and the injured were Gavin's first priorities, but Walt's deteriorating attitude had to be addressed. Before starting Rhedd Alert, they had always been opportunistic aggressors. This job was all about holding ground, and Walt's reluctance was becoming a real problem.

*   *   *

Gavin was the first to arrive back at Vista Landing. Rahul was with him and woke when they touched down. Though the techs on Haven had done their work well, Dell insisted on taking him to get checked out at the station's med center.

The rest of the squad arrived soon after. Gavin left Jazza to secure the ships and asked Walt to help him with the After Action Report in the upstairs office. Judging by the hushed demeanor of the crew, no one was under any illusion that the brothers were going to discuss the report.

Walt stalked into their small, shared office. He brushed past a pair of secondhand chairs and was standing at the window behind the scarred metal desk when Gavin closed the door behind them.

Walt spoke to the Plexi without turning to face him, "If you're looking to fire off a lecture, I suggest aiming it at Jazza."

Gavin joined him at the window. The steel was cold where he rested his hands on the frame, the edges sharp. "No lecture. What I need is some answers. What the hell is going on with you, man?"

Walt was cold and quiet.

"You're fighting against me," Gavin tried to keep months of frustration from his voice. He was wrung out and tired, but not all of that could be laid at Walt's increasingly cold feet. "You're picking fights with the rest of the crew. Hell, you're fighting everyone but the bastards attacking our transport."

"I fought just as hard as anyone out there," Walt snapped.

"Like hell you did," Gavin voice sounded loud and harsh against the glass. "You're fighting just hard enough to save your ass."

"Well you tell me, then. How the hell am I supposed to fight? You want me chasing after trophies like Jazz?"

"If that's what gets the job done, yeah. We're not the robbers any more, man. We're the cops. We're a deterrent. And when we're out there, we need to make a statement."

Walt squinted, the laugh lines at the corners of his eyes creasing as he shook his head in what looked like exasperation or disbelief. "Can you hear yourself? Do you even know what you're saying?"

"Every time we bump into trouble out there, we need to jump on it with both feet. But I can't push you to do that. You don't like to be pushed." Gavin felt his brother stiffen beside him, but he pressed on. He had to know if Walt was in this for the long haul. "You never did. You're like Dad in that way. You'd rather cut and run than fight the tough fights."

Walt turned his head sharply and yelled, "We had a damn good life doing that."

The vehemence of it took Gavin by surprise, and he stepped away. After a quiet moment, he leaned against the window frame again. The metal was warmer now from where his hands had rested.

Walt and Gavin Rhedd stood shoulder to shoulder at the office window overlooking their small fleet of ships. They watched together for several minutes in silence until the last of the crew left the hangar. The lighting in the bay dimmed to a cool, cobalt blue, and Gavin's arms felt leaden. His feet hurt and he wanted desperately to sit, kick off his boots and drink himself into a stupor. But he'd be damned if he sat while Walt still stood.

"We could leave." The way Walt said it almost sounded like a question.

"You can't possibly mean that," Gavin pushed away from the window again.

"Seriously." Walt finally turned to face him. He was hunched forward in earnest appeal. It put them at eye-level and Walt's were round and imploring. "We could just go. This place is an anchor. Even if we turn a profit on this UEE job, what's next? Find more work? Hire more pilots and techs?"

"If all goes right, absolutely. We're creating something that we never had growing up, something bigger than just us. What exactly do you think we're working toward here?"

 "I don't know, man." Walt sounded equally drained. "I thought I did when we started, but it's just been one thing after the next. We've got too many mouths to feed, and it doesn't look like that's going to stop."

"It won't," Gavin said. "That's the responsibility we accepted when we started this place."

"But this isn't our kind of fight, Gav. We're not Advocacy agents. Hell, we're not even starmen."

"According to the company charter and the contract that you and I both signed, that's *exactly* what we are. Soldiers for hire."

"Come on. We're thugs, man. We've been flying all our lives, but we don't fight the fair fights. We pick on people who are either too dumb or too unfortunate to have profes-sional protection. Maybe that ain't noble or exciting, but that's what we do, and we used to do it well. But this?" Walt turned back toward the darkened bay, waving his hand inclusively at the ships and machinery below.

Gavin saw it then. He realized what had been eating at Walt all along. His brother wasn't worried about someone getting hurt in a fair fight. They'd been in dogfights for most of their lives. It was being responsible for the rest of the team that scared him.

"I know we can do this."

"How much risk are you willing to take to prove that?"

"This ain't about doing the easy thing, Walt. This game is all about trust. So you ask yourself . . . do you trust me?" He hated that his voice had a pleading quality to it. Couldn't Walt see that they were already succeeding?

Gavin didn't get an answer. His brother stared instead at the ships in the darkened bay.

"We need every pilot we've got," Gavin said. "And, let's face it, you're our best."

"This is going to blow up in your face, Gav. This will be just like when you tried to smuggle Osoians to the Xi'An."

"That would have worked, if you'd backed me up."

"They dumped you on an asteroid," Walt's voice rose in pitch and volume. "You lost Dad's Gladius with that deal. What's this one going to cost you?"

Gavin's gut tightened, and he became uncomfortably warm in his flight suit. He realized that Walt had made his decision.

He swallowed once before trusting himself to speak. "So this is it, huh? We're just starting to get our feet under us. We're just learning to work together as a legit team." He knew this was going to happen. It wasn't a surprise, so there was no reason to be angry about it. "Gods! And to think I actually hoped you'd stick it out with me."

"Don't make it sound like that," Walt said.

"Sound like what? You're just doing what you always do."

Walt didn't say anything for a while.

Gavin stared out at their ships.

"Will you tell the others?" Walt asked.

"Tell them what? Everyone who matters is probably surprised you lasted this long."

His lips drew tight into a hard line. His eyes burned a bit so he blinked them. He was tired and he needed a shower.

Gavin left Walt standing alone at the office window. When the rest of Rhedd Alert woke up the next morning, Walter Rhedd was gone.

*   *   *

The first few months without Walt went smoothly, without incident. Paychecks started to roll in, and Gavin chipped away at some of their outstanding bills. They scavenged parts where they could. Dell proved to be a wizard reviving damaged tech. What little money remained after the bill collectors were pacified went straight to reloads.

Losing Walt hurt. It showed Gavin just how much he had relied on his brother to keep the rest of the team sharp. The team's performance was obviously important, but even that paled when compared to the painful fact that Walt had actually abandoned him.

No one forgot their grudge match with the trio of mismatched marauders, and Rhedd Alert was ready when they met again. The Hornets hit them as they passed through the Teclis Band. Teclis was one of Min's few attractive qualities. From a distance, the band appeared to be a rippling wave of slowly pulsing lights. Closer, the wave resolved into a wall of tumbling asteroids.

Veteran members of Gavin's team were quite accustomed to clinging to the underside of an asteroid. It wasn't that long ago that they'd used the tactic to ambush transports themselves. So they weren't surprised to see attackers materialize from within the Teclis Band.

Gavin triggered his mic to address the squad. "All right, guys, we know these bastards fly like they're joined at the hip. I think we have the advantage in the band, but we can't let them pin the *Cassiopeia* inside. Boomer, you're babysitting. Get that transport through and clear. Everyone else, with me."

The fighting inside Teclis was fierce. Gavin was in his element darting through tight seams, anticipating erratic rolling movements and using terrain to force the Hornets to break their punishing formations. His newer pilots were good, but they hadn't spent hundreds of cockpit hours in crowded space like he and Jazza had. Still, they managed to keep the Hornets hemmed in while Boomer and the *Cassiopeia* moved through the tumbling asteroids. Uncharacteristically, one pirate broke from the group and powered through the belt toward the fleeing transport.

"We've got a runner," Jazza warned.

Gavin was already moving to pursue. "I see it. Hold the other two here. They're easier to manage when they're not grouped up."

He darted around blind corners of tumbling stone and managed to gain a few clicks on the faster ship. The Hornet rolled right and strafed around a jagged, monolithic spike of rock. Gavin thrust over it, gaining a little more ground.

The two ships shot from the treacherous confines of the Teclis Band, and Gavin landed a couple hits before the Hornet rolled away. Then it was an all-out race for the fleeing transport.

"*Cassiopeia*," Gavin called, "this is Red One, we have a hostile inbound to you."

"Copy, Red One. Shields are up and we are ready for contact."

"Boomer?"

"Got it, Gavin."

"Careful, old man. This one can really fly."

Gavin saw Boomer's Avenger rise and turn to face the charging ship. The Hornet rolled again. Boomer matched the oncoming ship, move for move. Both began firing, and their shields lit up like incandescent bulbs. The Hornet yawed starboard and Gavin missed with an out-of-range shot. Boomer's shield flickered and then fell.

"Boomer!"

Then a blinding shot from a neutron gun tore through Boomer's Avenger. Bits of hull flew off at odd angles as the Hornet sped past the wrecked ship and continued to close on the *Cassiopeia*.

The Avenger's cockpit detonated. Gavin pulled up to avoid hitting Boomer and prayed that the older pilot had managed to eject. The *Cassiopeia* loosed a barrage of missiles, but the Hornet had countermeasures.

The marauder's first pass took out the missile launcher. Gavin met the Hornet head-to-head as it swept around and fired on the transport again. He struck clean hits as they passed, scarring the mismatched armor plating along one side. He turned hard and his ship shook with strain, pressing him forward in his harness, vision dimming at the edges.

He righted the Cutlass in time to see the fleeing Hornet pause, hesitating over a small drifting shape. Gavin's targeting system identified the object. Boomer's PRB flashed red.

"No!" He had one hand pressed against the canopy. With successive blasts from the neutron gun, the pirate deliberately tore apart Boomer's drifting body. Then the Hornet pulled up and raced back toward the Teclis Band.

"My target just disengaged."

"They're running."

Gavin barely registered the shouts and cheers from his team.

Overkill.

Pilots call it getting OK'd. He didn't know for certain where the term was first coined, but OKing a pilot adrift was breaking one of the few unspoken and universal rules of engagement. Lose a fight, and you might lose your ship. Get beat badly, and you might come out of rehab missing a limb or with some sort of permanent scarring or nerve damage. But to fire on a pilot adrift with only the pressurized skin of a survival suit for protection? It was inhuman.

"Everyone," worry wrenched Gavin's gut and he couldn't keep it from his voice, "form up on the *Cassiopeia*. We have a pilot down."

Something in his voice quieted the line. His ships emerged from the Teclis Band and rallied to the transport.

Gods.

What was he going to say to Dell? Gavin swallowed hard, blinking fast and trying to think. He should do something. The transport had been hit. He might have other injured pilots. Maybe Walt had been right.

"Hold position until we recover Boomer." He switched channels to address the transport. "*Cassiopeia*, this is Red One. We're scrubbing the mission. Prepare for return to Nexus."

"Ah . . . Red One, damage is minimal and under control. We are able to proceed."

Gavin couldn't. He had to get Boomer back to Vista Landing.

Jazza's voice shook. "Gods. They OK'd him, didn't they?"

He didn't answer.

"Take him home, Gav. We'll tag his ship and tow it on the return trip."

He nodded, knowing she couldn't see, but not trusting himself to speak. What was he going to tell Dell?

"Get him there fast," Jazza said.

"I will."

*   *   *

Gavin's mobiGlas buzzed and he activated it. Anyone he actually cared to speak with knew to find him in the office if they needed to talk. Dell was in the med center. She'd made it abundantly clear that she did not want to see him. Jazza had returned with the team after the mission, but they were giving the family a wide berth. Anything getting past his message filters was probably important. And anything important was most likely bad news.

The incoming message was from Barry. Suspicion of bad news, confirmed. He connected the call.

"Gavin. Buddy. Listen, I've got some news. This is just a 'heads up' call, okay? Not a big deal. Is your brother there with you?"

"Walt left," even to his own ears, Gavin's voice sounded flat. "You can give your message to me."

"I got word from a buddy of mine in Contracting. They're issuing an FTP on the Tyrol contract. It'll probably go out in the next day or two. Sorry, Gavin."

"Don't be," Gavin wasn't angry with Barry. He really wasn't. But his words were coming out sharper than he meant them to. "Just tell me what the hell an FTP is."

"Sorry. FTP is a Failure To Perform notification."

He knew it had to be bad. Barry wouldn't have called if it wasn't. Damn it! What was next? Vanduul attacks? He'd gone over and over every report from Brock's files. Never — not in any file — was there evidence of such coordinated and vicious attacks.

Barry read his silence correctly. "Hey, these things get issued all the time, man. I'm just letting you know that it's coming so you don't freak out. A couple holes in a transport is nothing when you're going through a lawless system like Min. They won't pull your contract for that."

"What will they pull it for?"

"Well," Barry drew out the word, speaking slowly and choosing his words carefully. "You'd have to receive back-to-back FTPs. Or if you lost the transport or something, that'd obviously do it. But Major Greely is pulling for you guys. He's big on the UEE's plan to enfranchise local civilian contractors."

Just what he needed. More pressure. "Thanks, Barry."

"Keep your chin up, buddy. You guys are doing fine, okay? I mean, you should hear what goes on with other contracts. Seriously, this is nothing."

"Thanks again." Gavin disconnected the line. It certainly didn't *feel* like they were doing fine. The office door slid open, and Jazza stood silhouetted against the corridor lights.

"Jazz?" Gavin's stomach sank. He tried to swallow but his throat was tight. "What is it? Where's Dell?"

She took a step inside and the room's lights reflected in the wet corners of her brimming eyes. She held herself together, but the effort to do so was visible.

"It's Boomer," she said, "It was too much damage this time. He's . . . he's really gone."

To be continued