JUMP POINT

IN THIS ISSUE

GREETINGS, CITIZENS!

Remember back when I complained that I had to get a brochure done on the same day that **Jump Point** was due? I didn't know when I had it easy. In the last sixteen hours, I've signed off two brochures (Gladius and Redeemer — get 'em while they're hot!), an update of the *Arena Commander* manual and this beloved publication. (Of course, I had help — an awful lot of help.)

And now I'm staring at the page, in part because I'm sleep deprived, and in part because I'm not sure how to phrase the next couple of bits.

Let's start by approaching them positively. We don't get a lot of feedback on the **JP** fiction, either pro or con. Last month it was gratifying to find out that so many people do read the stories at the end of each issue. I'm not looking for an argument, and I'm not feeling an urge to contradict or slap down the folks who didn't like the voice in last month's Chronicles. However, I should probably mention a few things and acknowledge a few things. First, the voice in the story was difficult to comprehend. Perhaps on a level with James Joyce, but I can't say for sure because I haven't read much James Joyce because I found him hard to understand. I could understand this voice, and I believed (and still believe) that it's a valid way to tell a story. (In particular, I believe it established the alienation of the protagonist from "normal" society.) That protagonist continues to narrate the story this month, and will for the next couple of months, but with a voice that is increasingly blended into the mainstream. I recognize that it was

a difficult episode to read, particularly for those of us who are not native English speakers, and I appreciate Roger Wilceaux's "translation" — thank you. I also appreciate DeclanH's (and everyone else's) thoughts on the subject. And I think you can reliably expect not to have another story with that particular mode of speech anytime in the next, say, twenty years or so ...

And I'll just touch briefly on the main topic in last month's letter from the Cockpit, which generated far more comment than I anticipated (which speaks more to my cluelessness than anything else). I sometimes sense an expectation that software development schedules, while having their stops and starts, continue to press upward to completion. That is not the case. The actual model that appears in my mind is Chutes and Ladders, where the software generally progresses upwards, but with plenty of unexpected backliding as well. I don't like it when I find out that an eagerly awaited game just went back into development and will take another X months, and I don't want to be the one who has to tell anyone that their favorite ship, which was about three months from completion last month, is now, say, a year from being done.

Which is a major reason why you get the Cutlass variants this month — there isn't another ship ready for a WIP article. But even if you aren't interested in the Cutlass variants, check out the first few pages of the article — there's some interesting material there on the very beginning of *Star Citizen* ship development.

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

David
David.Ladyman@cloudimperiumgames.com

Cutlass Variants

The Cutlass can trace its roots all the way back to the inception of Star Citizen itself. In tracking down correspondence that he has, Ben Lesnick found this thread. In a conversation among Ben, Chris, Dave and Sandi, we find a lot of the original lore that is still in the game. We'll start with a reminder from Sandi as the Kickstarter date approaches.

Sandi Gardiner, VP of Marketing: <among a list of action items> We need spaceship names.

Chris Roberts: Dave, have you come up ship names for me to review?

Dave Haddock, Lead Writer: Honestly, I'm not sure, but here's a first pass at a list of name/types:

FIGHTERS:

Javelin	Hornet	Intercepter	Viper
Tomahawk	Razor	Falcon	Glaive

HEAVY SHIPS:

Reaper	Exeter	Whirlwind	Lighthammer
Thunder	Olympus	Berserker	Crimson
Claymore	Longspear	Morningstar	

Chris: I think we want to also consider other types of names, as the ships we're selling for the open world part are more civilian than military ... You know, like Zeus VII ...

I think we should have a basic ship name that's kind of like a Prius or Escort of ships, then maybe a mid-level one that's like a nice sedan, then at the high end have one ship that is more military focused for WC-style players and one that's more trading/exploration focused for Privateer/Freelancer-style players (depends on which pledge package they choose).

Any more name ideas considering this? Ben, you got any ideas?

Ben Lesnick, Senior Community Manager: Here's a quick pitch for how we could work ship names:

We've already introduced Roberts Space Industries, so I'm thinking ships should work like real life car and aircraft manufacturers: we have maybe half a dozen different companies and each one has its own line of spacecraft that are stylistically similar ... and each has their own particular way of naming the ships. We'll ultimately encourage players to debate which company makes the best ships/encourage 'brand loyalty' where they stick with the a particular corporation's designs.

I can also imagine ships working like cars/phones/etc. in that we can roll out new iterations each year. So you're going to need to keep earning money (or buying credits) if you want to upgrade to the 2013 Aurora when Chairman Roberts announces it ...

Roberts Space Industries ships are kind of the baseline "exploration" spacecraft. The names all have an awe-of-space bent: "Aurora," "Galaxy," "Constellation," "Nova," "Nebula" etc.

Origin Jumpworks GmbH is the BWM of our universe; craft are more expensive and sleeker looking... status symbols, maybe moreso than they're worth? They get numbers instead of names: "Origin 300i," "Origin 890 Jump," "Origin M50 Turbo," etc.

Musashi Industrial and Starflight Concern (MISC) mass produces very efficient, modular middle-of-the-road ships, mostly transports of different sizes. They're favored by traders and larger corporations. Their names are sort of calculated-friendly/inoffensive (think the Drayman in Wing Commander/Privateer): "Hauler," "Explorer," "Longhorn" and so on.

Drake Interplanetary is ostensibly a legitimate company, but it's an open secret that they manufacture cheap, well armed craft favored by pirates, to the point that they're named in that vein: "Cutlass," "Buccaneer," "Privateer," "Bandit," "Marauder," etc.

Anvil Aerospace produces more pure dogfighters, but with less of the pirate stigma. These ships are more expensive, less spit-and-glue. Possible name theme: "Hurricane," "Typhoon," "Cyclone."

As in real life, the military uses these same manufacturers but gives their craft their own more war-like names. I'm thinking Roman-inspired stuff here: "Phalanx," "Gladius," "Javelin," "Ballista," "Centurion." Instead of borrowing the standard "{Class}-{Number}" (i.e., F-16, B-2, etc.) for the designation that everyone uses, let's steal the United States Navy system from World War II to play up the manufacturing aspect... so players will know that the "F4R Phalanx" was produced for the military by Roberts Industries.

... and then for alien fighters, I'd like to see us use a variation of the NATO reporting system (or the allied system for Japanese aircraft in World War II) where we have categorized code names instead of meaningless alien terms. (It always bugged me that Confed pilots were talking about "Drakhri" in Wing Commander II, because what does that word mean? So give them alien names in the fiction, but also a system like real life where they all have simple code words.)

*   *   *

Does any of this sound familiar? You know the first result of that initial conversation: the RSI Aurora and Constellation, the Anvil Hornet, the Origin 300i and … the Drake Cutlass. Let's jump forward a year and half, to early this past spring:

Ben: Travis asked me to propose variants for the Cutlass, with the requirement that we only wanted two new versions at the most. Here's my first pass:

Cutlass Black. Our standard pirate-oriented Cutlass. It would be good to show it off with one of our pirate skins.

Cutlass Red. Search & Rescue variant of the Cutlass. Externally, the Cutlass Red mounts a more advanced transponder system, high quality docking collar and more advanced scanners (visible antennae, etc.). It trades the class 2 gun for an additional tractor beam. Internally, there are limited medical facilities for treating rescued pilots (perhaps a Niven-style autodoc). Let's come up with a legally distinct equivalent to the Red Cross and use that as the roundel on this variant's wings.

Cutlass Blue. The deluxe Cutlass. Advertised as being a "police" ship for outerworlds militia, the Cutlass Blue generally (and unsurprisingly) makes its way into the hands of the more well equipped pirates. The Cutlass Blue is sleeker, with a more tapered nose, and meaner, with double the missile loadout (I'm picturing rocket pods on either side of the fuselage). Internally, the cargo area is modified to serve as a short-range brig for prisoners … or a slave pen.

Dave: Cool. I like the space ambulance. That could be a lot of fun.

Rob Irving, Lead Designer: My only question on the Red is what value players will get out of the second tractor beam. The rear-facing one is good for picking things up and pulling them into the cargo bay, but front-mounted tractors don't have that value. A searchlight might be cool, though …
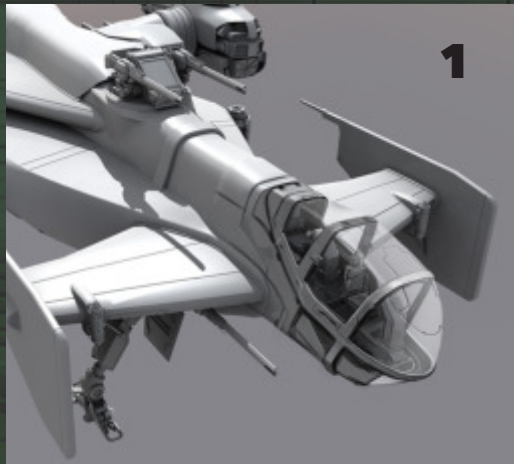
*   *   *

Those specs got passed on to ship concept artist Jim Martin, who began by working on revising the Cutlass canopy.

Jim Martin, Concept Artist: Cutlass front end upgrades. Do you want sleeker canopy or more interesting canopy? Is there a version in this pass that I can refine and take to finish? [sketches on this page, models on next]
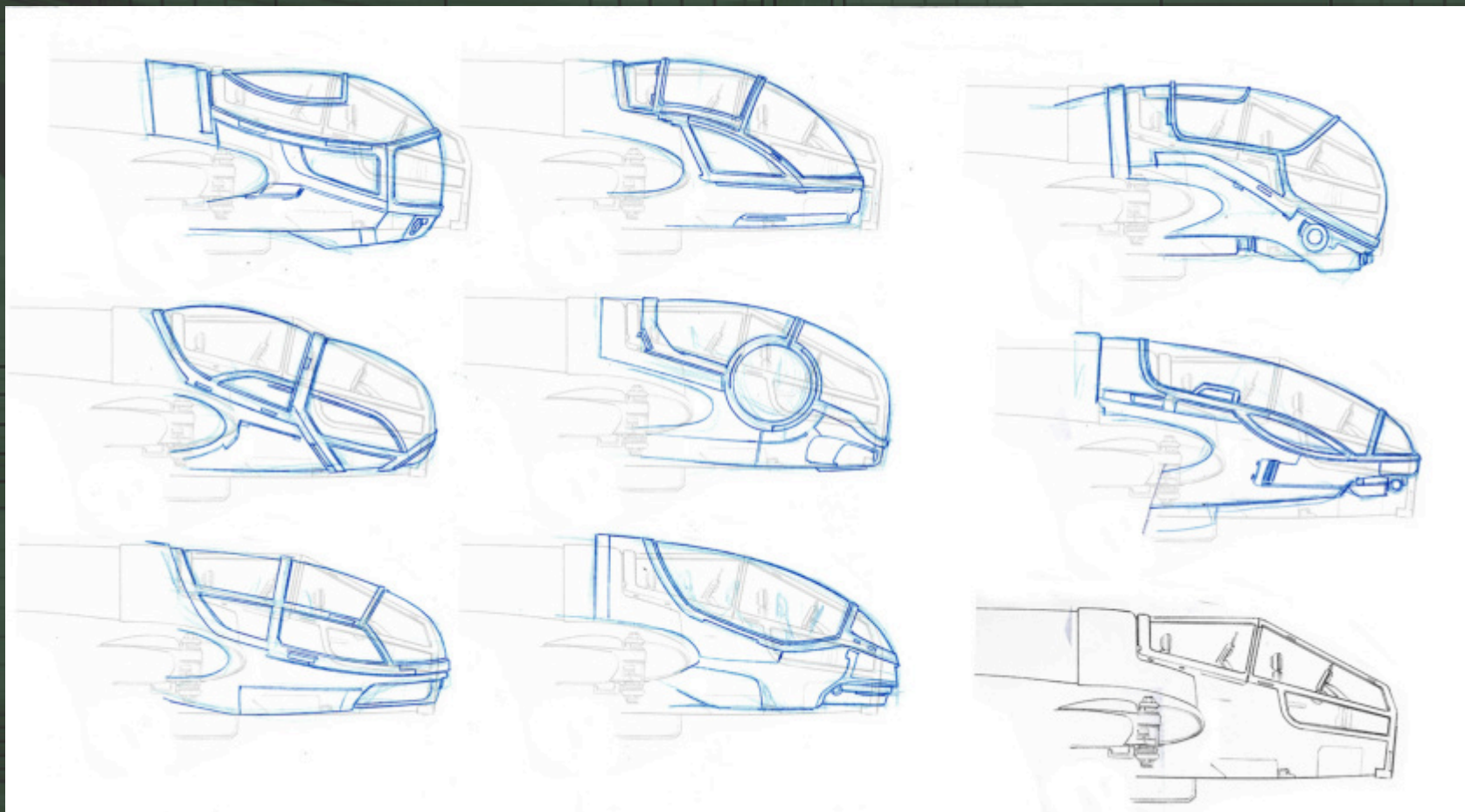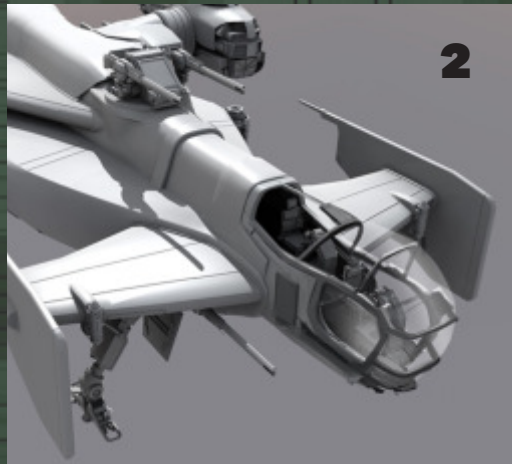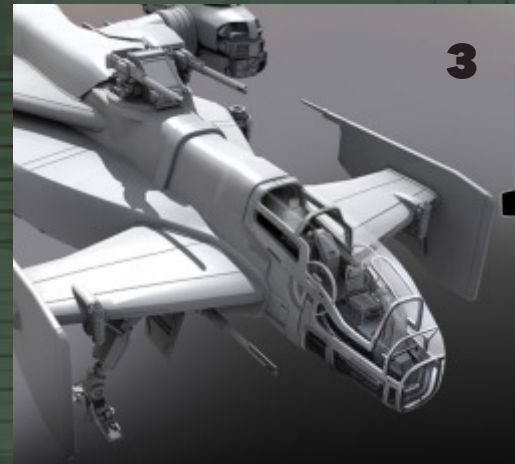
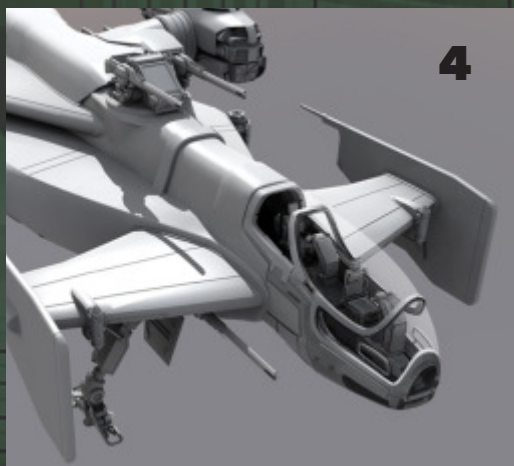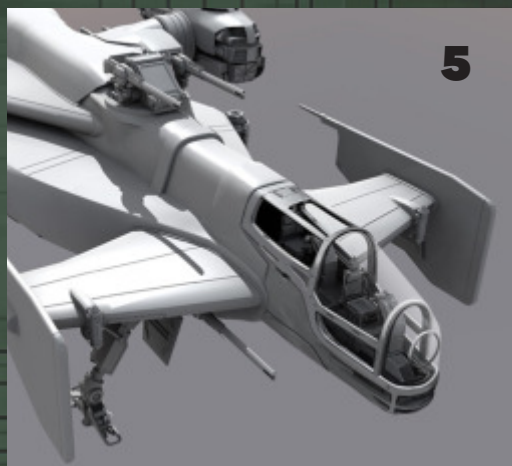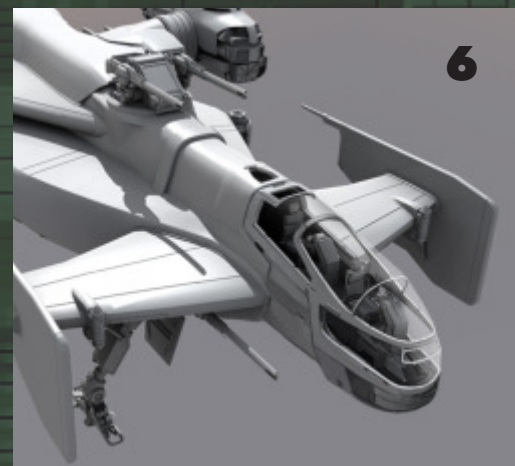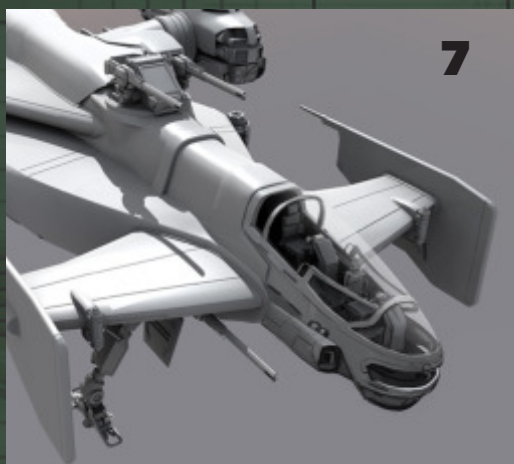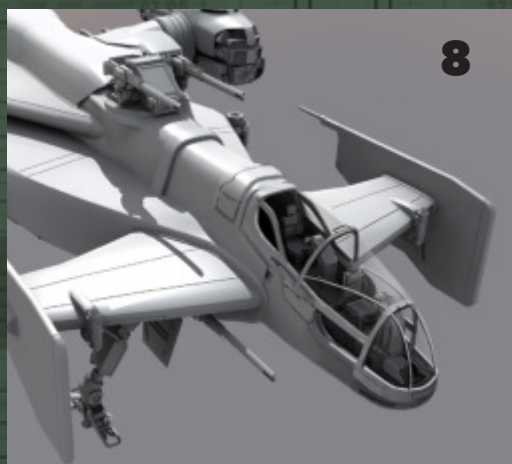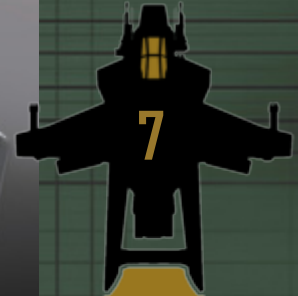**Chris:** 06: I like this one a lot!

02: I think this is my #2 choice because it has better visibility (not as pretty though).

04: #3 choice (I'd like to see POV though; I'm worried that the front mullion would block the view.)

ORIGINAL CULTASS
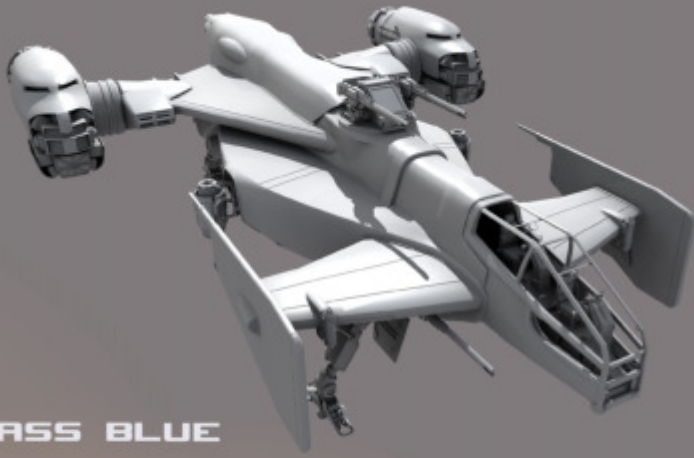
CUTLASS BLUE

Jim: Following up on Cutlass canopy 6, here's a body idea for the Cutlass Blue. It's thicker, a little larger, with more weapons systems and a bigger interior based on the increased size of the belly module. I'm doing an interior cutaway, but of course I will change course based on how this design goes over. I can push stuff further, trying to depart more from the original. To me, this version feels like a more expensive Cutlass.

Chris: I like this! Missile in the back wing are cool, and I like the extra body detail.

On the front: is that center line on the body or just on the right wing?

Jim: I'll break down the added modules and components for you. I think it's center line is on the body. The missiles in the rear wing could have a second set inside the wing that rises when the first row is fired.

I need to send along an underside for clarity. I'm still wide open for notes from you and Chris Olivia and the design guys at home base. Cutaway is on the way, shooting for tomorrow.

Jim: Cutlass Blue underside details to follow up on the three-quarter down shot.

Mark Skelton, Lead Artist: Love the added paneling work.

Chris: Looks good to me!

Jim: Holding Cell module for the Cutlass Blue, with a look at the door open condition and the interior.

Jim: Cutlass emergency cargo evacuation doors for jettisoning your cargo quickly. I'm not sure if this is still needed, but I did a quick look at a possibility. Maybe the whole bottom doesn't open, but there are two major doors that do. I can lay this out further if needed.

Chris: That looks good. I wonder if we have some kind of tractor beam inside and you fly over cargo and tractor it in and secure it? Also good for dumping cargo ...

Jim: Yes, that sounds cool! I can do a ceiling rig inside the bay that holds a tractor beam emitter. It would make for a fast dump when set to "purge bay."

Jim: Cutlass Red Version is the ambulance all-terrain version of the Cutlass, with a Rescue Rig that includes added lights, scanners and the ability to carry **cryopod**s externally as well as in the cargo med-bay. I'm going for a rescue-sport look. I'm trying an outer frame and an alternate cockpit frame for the distinguishing characteristics of this model. Not the best medical logo; I'm open for notes and directions. [below]

Cutlass Red canopy and frame. A closer view of the cockpit frame. [above]

AUTO-DOC MED TABLE

pull out
equipment and
drawers
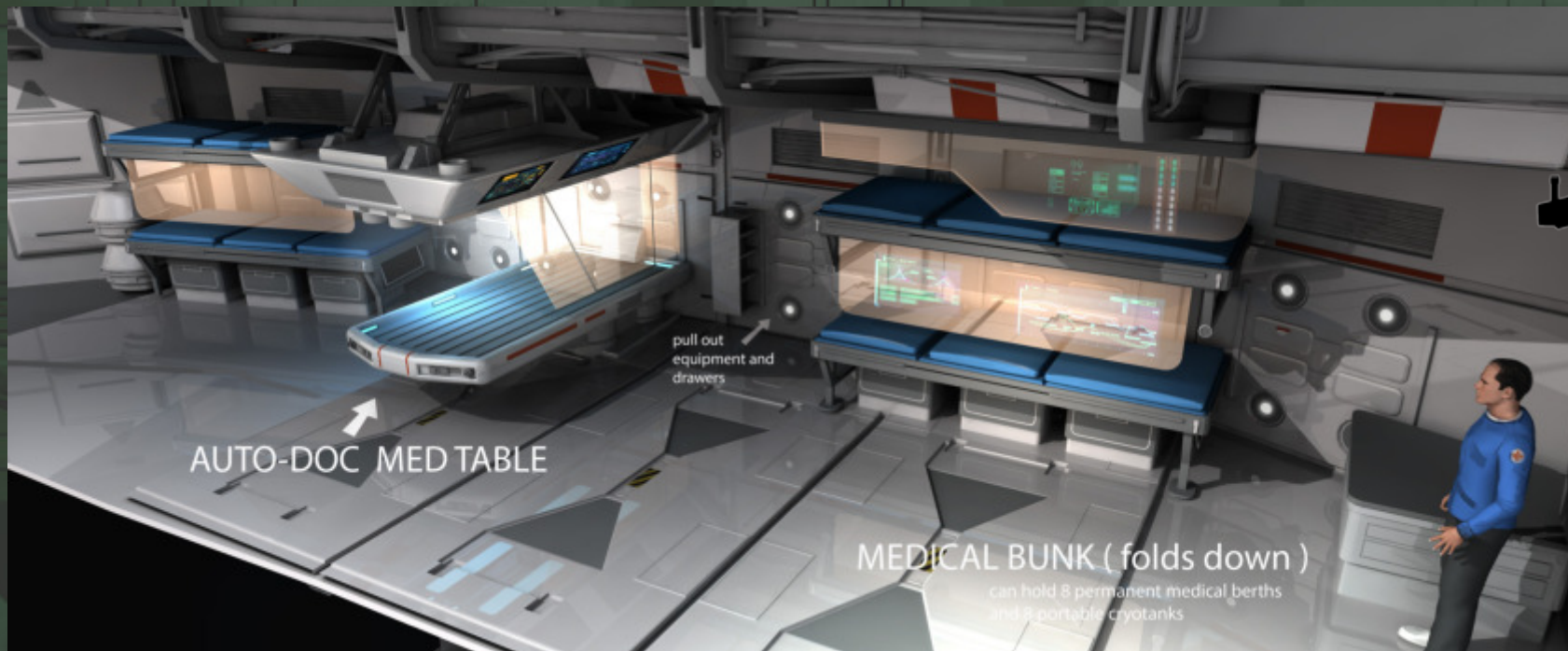
MEDICAL BUNK (folds down)
can hold 8 permanent medical berths
and 8 portable cryotanks

Jim: Cutlass Red medical interior, with auto-doc operating table and medical bunks. Not in yet are moveable cryopods that could be placed for set dressing. I like the readouts on plexi to give it some visual interest. I'm going for a cleaner look than Cutlass Blue.

and in a pinch the auto-doc can encroach on the other half of the bay since there's only one. I'd love to do a cryo-gurney that moves around inside. I know that time is short …

I'm glad you like it.

Chris: Looks great! Will all of this fit inside the Cutlass? Seems pretty big – or did we increase the main hold size for this?

Jim: I think that a version of this will fit. The one particular view I chose does make it look bigger than it really is, but it can all fit,

When Jim finished with the concept design, work transferred over to the Virtuos company for modeling. We start with an exchange between **Virtuos** *and* **Chris Smith, Lead Vehicle/Weapon Artist.**

Virtuos: Do you have any specific texture requirements for the interior? For instance, how many textures we should create, at what size, etc.

Chris S: Most of our textures will be tiled (2048x2048) textures, and you should be using our PBS texture reference list to create your textures and materials. For the main hull you can create a new tiled panel texture if desired.

We will also be using some unique bakes for smaller items and detail floaters, like small crevices and detail bolts. Basically anything that is smaller than a human (chest) can be baked.

Virtuos: Will you provide further concept and sketch models for the areas below? Or should we use our creativity to do those parts. :-)

Chris S: If there is anything that is too vague and you feel you can fill in the gaps, please do so and provide us will some images and updates.

Virtuos: Can the door of the cooler be opened?

Chris S: I would leave it closed for now.

Virtuos: How should this door be opened? If we open it from the side, it will have intersection on the top of the door.

Chris S: Maybe it can be split and the top part opens upwards while the rest goes to the side.

Virtuos: The position of the light is different from the concepts. Does it mean there are two lights here? Or if there is one light, could you please confirm its position?

Chris S: Looks like it's one long light in both?

Virtuos: I see. In this case, we will follow the position shown in the left concept since it's clearer. :-)

Virtuos: Should we create a separate texture for the glass wall of the holding cell? Or we should put it in the decal map?

Chris S: Yes, glass has it's own material. Refer to the 300i or Hornet on how the glass works.

Virtuos: We would like to double-check whether we need to make textures to adapt to the new concept? If so, could you provide guidance for a new panel of skin?

Chris S: Reuse existing textures if possible on all the changes.

Virtuos: Ok. We will adapt the model to the new concept and see if we need to add new textures.

Virtuos: Since we will have artists working on the ship simultaneously, for daily WIP deliveries, we would like to submit separate models for different sections of the ship. For instance: Cooler, Prisoner Galley, Holding Cell and Guard station. We will combine them later for final delivery. Will it work for you?

Chris S: That's fine for initial WIP renders and screenshots, but I would like to see them integrated with the rest of the ship (just clobbered together for a quick shot is fine) much sooner than final delivery.

Virtuos: Can we use tiling texture for the boxes? Creating textures for each box is not efficient. [image next page]

Chris S: Yes, absolutely. Unless a small thing has a lot of detail, tiling is the way to go.

Virtuos: Do you have any other views of the exterior concept? For instance, the side or back? It will help us to see the construction details on the parts marked out in red [image next page]. If not, we can use our own creativity for those details and send rough models to you for confirmation before we move forward.

Chris S: If not, yes, go ahead and fill in the blanks and show us what you came up with. Sean, do we have any more?

Sean Murphy, Art Outsource Manager: We don't have any more shots, so please feel free to fill in detail – just make sure we get a look at it immediately when you've started it so we can make corrections as necessary.
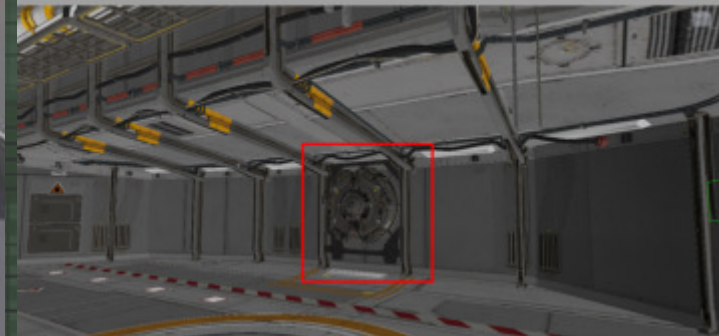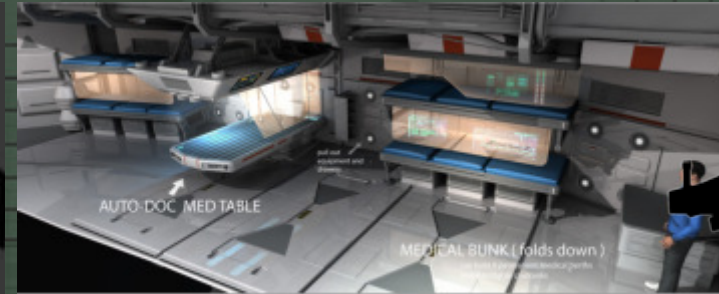
Virtuos: We have also reviewed Cutlass Red materials, and we have a few questions, below:

For the interior wall, should we follow the concept to recreate the model? Or do you prefer us to add details on the existing model (the Black)?

Sean: We should definitely plan to follow the concept.

Virtuos: On the original interior wall, there is one engine element that is later removed on the concept. Should we just simply delete it? We are a bit concerned whether it will affect the engine animation for the exterior part. Please check attached image for details.

Sean: We should be able to remove the rotating engine component from the wall, though if we could leave some kind of indication that there is something there, that might be good.

Virtuos: We notice the interior elements look pretty high tech. Should we still reuse the existing texture?

Sean: We should try to reuse materials as much as we possibly can, but it may be that we will require some new materials. But reuse as much as possible.

Virtuos: Should we create the display as it's off?

Sean: I'm not sure which display you're referring to – can you highlight that for me?

Virtuos: For the graphics on the touch screen, do we need to create the details on texture or should we just leave it as simple glass for VFX to create those graphics?

Sean: You don't need to create any display textures; we will do that on our end. We will want geometry for the display, but it can be blank for now.

Virtuos: Could you give us some instruction on the animation of the auto-doc med table?

Sean: We're not sure internally what animations we need on the autodoc table, so don't worry about those for now.

Also– we should definitely reuse any crates that we're creating for the Illfonic props for the galley area.

4

Display

14

WORK IN PROGRESS

Virtuos: Thanks for the answers. We have more questions:

1. From the concept, the new floor panel will cover the cargo door on the bottom. Should we remove it, but keep the exterior one?

2. Should we only add 3 panels shown on the concept? We just want to double-check — what about the left bunk?

3. We are not sure what you mean by portable cryotanks; could you mark them out on the concept?

4. I have attached the display we mentioned in the previous email. Please let us know if we should we create it, as it's off right now.

AUTO-DOC MED TABLE

MEDICAL BUNK (folds down)

1

AUTO-DOC MED TABLE

pull out equipment and drawers

2

3

2

1

MEDICAL BUNK (folds down)

3 can hold 8 permanent medical berths and 8 portable cryotanks

Permeate through

1

2

3

A   B

4

Virtuos: Blue Interior: the Cooler: The surface of the door needs more detail. The wall also needs more detail, especially the wires' penetration of the wall.

Holding cell: For the doors, we made simple screenshots to ON or OFF. We haven't completed it, since the door at the top of the mechanical part has not been made yet.

Virtuos: 2, 4. We noticed the cockpit of Cutlass Blue is less smooth in comparison with the concept, especially from frame A to B. Please check the cockpit image for details.

4. If we lower the frame at A and B, it might block the view of the pilot.

3. And for the fan hanging on the frame, it already has some penetration area. Since there are animations involved for the fan, we are thinking about lowering the supporting arm to fix this issue. Please let us know if you have any better suggestion.

Virtuos: We found that the proportion of some objects will have a problem, if we match the concept. It's obvious that the cooler door is small. Please double-check whether our work is on the right track.

We made the cutline to connect the holding cell with the base floor. At the same time we remove a couple of details on the base floor. Please let us know whether it works for you.

If we add the same cutline, it will intersect with the hatch. We are thinking about adding a different kind of cutline for the connection; do you have any suggestions?

Sean: Everything is looking pretty good; we just have a few things to point out and some answers:

1. Feel free to move the fan however you need to in order to accommodate the new shape of the cockpit!

2. The door looks good; the next step will be to see a rough animation of how it is supposed to work.

3. Yes, let's make the cooler door taller — feel free to move the bits above the door up and make the door taller.

4. The question of the bottom-ring door on the Cutlass is a big one — we have to get an answer from the Big Boss. Everyone here agrees that it makes sense to remove the floor-door, but we need to make sure that is what Chris Roberts want.
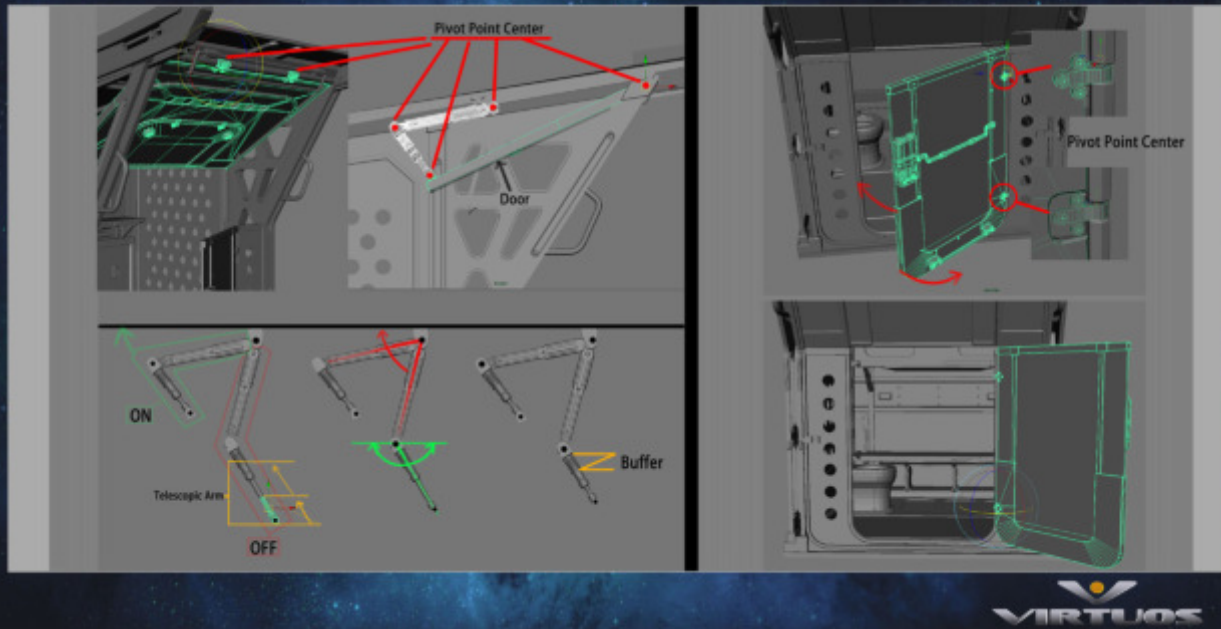
Sean: We'd like you to finish out the interior space. Once that's done, let's get block-in animations so we can load the mesh up in our editor and make sure everything works from player-movement perspective.

A few other general notes, just to reiterate:

• Make sure we're reusing tiling AND unique textures as much as possible.

• Make sure we're using vertex tinting/coloring for color breakup. (It's free in the engine!)

• Use floating detail wherever possible; we can use areas of textures for detail elements like bolts and recesses.

Virtuos: Blue Interior: Cooler: door fixed. Prison Galley: We made "L" shaped stents rather than vertical stents. Holding Cell: The top part of the door has been completed, and details improved on the door and walls.

Sean: It's looking good. A few notes:

1. We can lose the door on the floor. It should be removed internally and externally.

2. We are looking for animation roughs, especially for the cell doors - we would like to see how those will work.

3. We would like to shorten the bench that is under the folding seat near the front of the cell area. The seat should not fold down on top of the bench.

As far as meshes go, collapse/merge anything that does not animate or need to break off.

Virtuos: For the animation of the cell door, we have made an illustration to show how the door is opened and the moving track for mechanical parts (we made some minor adjustments).

Sean: This looks good – we'd like to see this in the Max file to make sure everything is working correctly, no clipping, etc.

Sean: After looking at this on Friday, we determined that the split door is just kind of awkward and would require more geometry and animation than we really need to have in a simple door.

We would like to make this revision to the concept: instead of having the door bent forward about 3/4 of the way up, we would like to have the door be just normal door-shaped and sized. So it should go straight up from the bottom of the lower part to the top of the top part, rather than bending. Then we would want to have an inset at the top where the top of the door separates from the face of the cell.

This is a terrible description! Look at my terrible drawing instead.

This will get rid of the need for a separate, animating top section for the door and will allow the door to operate as normal, traditional doors do.

Virtuos: Thanks a lot for your clear description, due to which we could understand it very easily.

And we have one question that we hope you could help us clarify: The door is a little too low compared with the Human body size. If we adjust the door to a suitable scale for the body, then we may need to discard some details, and the asset will be different from the concept. So we're wondering if can change the height of door.

Sean: Yes, let's raise the height of the door and lose the detail at the top.
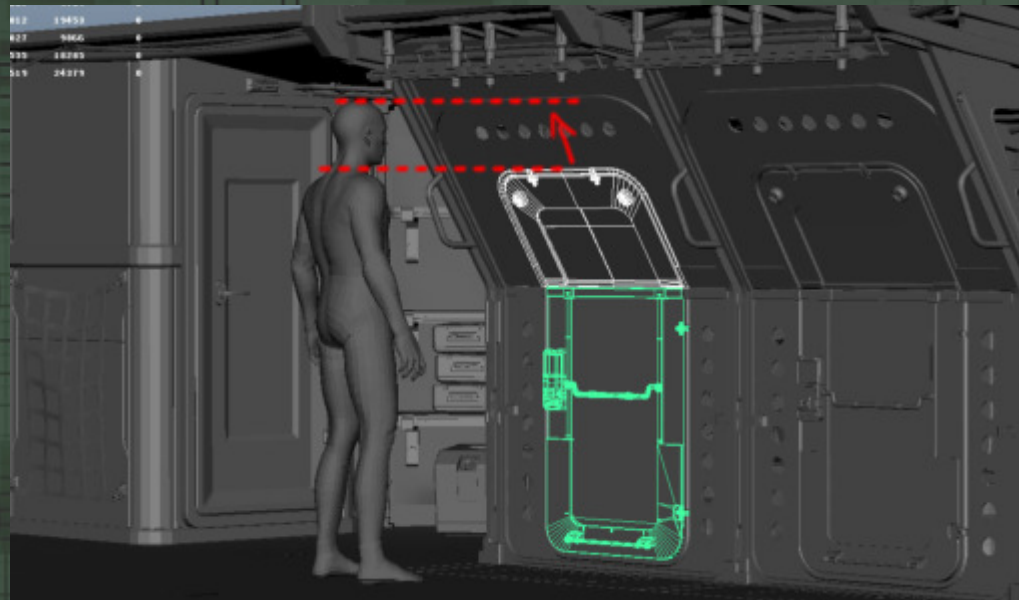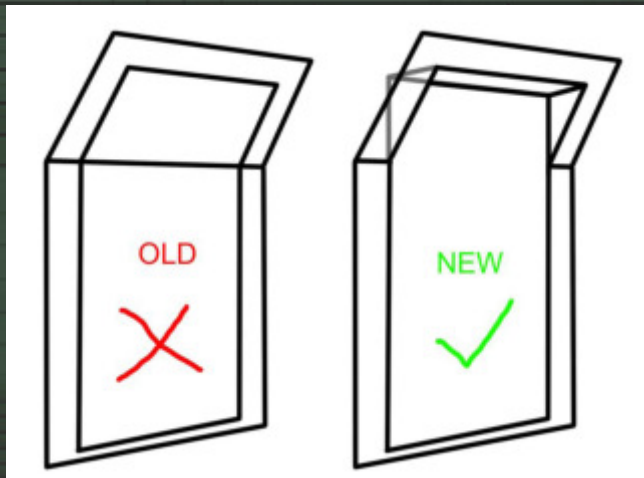
Virtuos: Thanks for the follow up for the Cutlass Blue. We will submit the finished interior space for you to check today so we can move forward.

Regarding the last question, we have made the cutline without modifying the bottom-ring door for now. Please check our delivery today for details.

Meanwhile, getting back to questions (and images) on page 14, for Cutlass Red:

1. From the concept, the new floor panel will cover the cargo door on the bottom. Should we remove it, but keep the exterior one?

2. Should we only add 3 panels shown on the concept? We just want to double-check – what about the left bunk?

3. We are not sure what you mean by portable cryotanks; could you mark them out on the concept?

Sean:

1. Remove the cargo door on the interior and the exterior.

2. The floor detail in the middle parts should be repeated all the way out; we should not have any totally smooth areas like in the concept.

3. This appears to be a concept artist having fun – it doesn't refer to anything that we need to consider.

Virtuos: Blue: We've removed the cabin door on the bottom side of the floor and replaced it with floor. Is this OK for you? Or should we create a new design for the cabin door that is different from the concept?

Sean: The Cutlass Blue work all looks good and the Cutlass Red looks like it's coming along well also. We thought there was a possible scale problem with the concept, but looking at the mesh file, it looks all good!

One note – you may be planning to get this done later, but be sure to have the exterior hatch on the floor removed from the outside as well, on both versions.

Virtuos: For the original red warning tape textures, do we need to change the color to blue? Should we modify it in texture or using vertex color?

Sean: That's a good idea, and everyone agrees that changing the tape to blue is the right way to go.

Virtuos: Currently, the missile seems to be floating [1]. We'd like to add a simple shelf or hooks; what do you think?

Sean: We should leave those off – they will be game objects, so they should not get built into the ship. Just remove them and we will add attach points later.

Virtuos: The structure of the left and right is different in areas near the cockpit [2]. We considered the animation on the left side door and amended the structure; please check whether it's ok for your needs.

Sean: Yes, we definitely want to keep the door on the left side, so what you showed is correct!

Sean: It all looks good – the interior on the Cutlass Blue is looking especially quite nice!

As for the Cutlass Red: most everything looks good from the aesthetic standpoint.

Right side

2

Left side
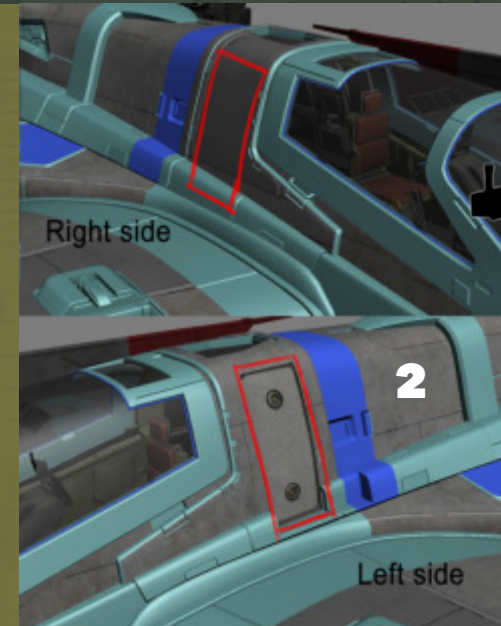
BASE STATISTICS	BLACK	BLUE	RED
Role	Militia	Police	Search & Rescue
Manufacturer	Drake Interplanetary	Drake Interplanetary	Drake Interplanetary
Max Crew	3	3	4
Mass (kg)	33,000	36,000	35,000
Cargo Capacity (freight units)	150	30	0
		(120 with cells removed)	(120 without beds)

DIMENSIONS

	BLACK	BLUE	RED
Vehicle Length / Beam / Height (m)	29 / 25 / 7	29 / 25 / 7	29 / 25 / 7

POWER PLANT, ENGINES, THRUSTERS & SHIELD

	BLACK	BLUE	RED
Factory Power Plant	Tyler D/Tech Soniclite A1220 (S3)	RAMP RAMPower AM-C (S4)	A&R LR-7 MAX OverDrive (S3)
Max Power Plant	Size 4	Size 4	Size 4
Factory Engines	2x OKB Voshkod Silent IV Advanced (TR4)	2x Hammer Propulsion HE 5.4 (TR4)	2x Hammer Propulsion HM 4.4 (TR4)
Max Engines (Primary Thrusters)	2x TR4	2x TR4	2x TR4
Maneuvering Thrusters	4x Drake Trireme S-3	4x Drake Trireme S-3	4x Drake Trireme S-3
	8x Drake Trireme S-1	8x Drake Trireme S-1	8x Drake Trireme S-1
Factory Shield	Gorgon Invincible X (S3)	Kruger K-4 Parma (S4)	Gorgon Invincible X (S3)
Max Shield	Size 4	Size 5	Size 4
Cooling System	Drake IceBlade Radiator	Drake IceBlade Radiator	Drake IceBlade Radiator

DEFENSES

	BLACK	BLUE	RED
Class 1 Hardpoints	2x Size 2 (wings)	2x Size 2 (wings)	2x Size 2 (wings)
Class 1 Equipment	2x Joker Suckerpunch distortion cannon (S1)	2x Joker Suckerpunch distortion cannon (S1)	2x Joker Suckerpunch distortion cannon (S1)
Class 2 Hardpoints	1x Size 3 (nose)	1x Size 3 (nose)	1x Size 3 (nose)
Class 2 Equipment	1x K&W CF-117 Badger (S2)	1x K&W CF-117 Badger (S2)	none equipped
Class 3 Hardpoints	2x 4x Size 2 (base of wings)	2x 4x Size 2 (base of wings)	—
Class 3 Launchers	none equipped	2x (4x Size 2) Nova ASIM-09/c Spider II	—
Class 5 Hardpoints	1x Size 2	1x Size 2	1x Size 2
Class 5 Equipment	MaxOx NN-13 Neutron Gun x2 (S1)	MaxOx NN-13 Neutron Gun x2 (S1)	none equipped

ADDITIONAL EQUIPMENT

	BLACK	BLUE	RED
	Nav-E7 Secure Docking Collar	Nav-E7 Secure Docking Collar	Nav-E7 Secure Plus Docking Collar
	Suregrip Tractor Turret	Suregrip Tractor Turret	Suregrip Tractor Turret
	(mounted inside, facing cargo door)	(mounted inside, facing cargo door)	(mounted inside, facing cargo door)
		Holding Cells in Cargo Bay	Medical Facilities (AutoDoc)
			Nav-E7 Long Range Scanner
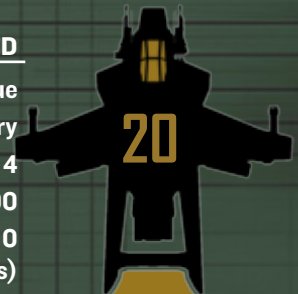
And then there were three. With the modelling work done, the Red and Blue could join the Black in the hangar. They're not flyable yet, but getting closer. Here's a picture by Chris Smith of all three.

SAKURA SUN

Soft drinks, high end kitchen equipment, children's toys? Sakura Sun. Rover platforms, terraforming solutions, bio-engineered livestock? Sakura Sun. High-tech wave cannons, starship powerplants, antimatter ordinance? Sakura Sun! While corporate conglomerates are not uncommon, it's rare for any company to advertise them all under the same banner. But at Sakura Sun, empire-building is in full effect: you'll find a little bit of everything branded with a distinctive purple sun-and-cherry-blossom logo, from plastic *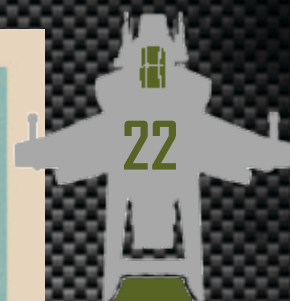Hi-Ho Flatcat* figurines to top-of-the-line multi-particle/wave cannons. Stranger still, Sakura Sun has successfully gained a reputation as a company that not only does a little bit of everything, but does it well.

Sakura Sun's excessive branding is only the first step in a carefully cultivated corporate image, ostensibly designed to mimic the Japanese megacorporations of bygone centuries. The outrageously colorful logo artwork, the unified outward product design and the public talk about a corporate culture of hard work and executive respect is always present at Sakura Sun's corporate headquarters in Tokyo, Earth, Sol.

A modest seventy-story skyscraper, each floor houses a distinct product group that functions independently from those above and below it. The modular design allows product groups to be transformed or eliminated quickly. However, when the building was first set up, the company spared no expense in having top artists paint murals reflecting each current product line … leading to no small number of confused visitors who find themselves looking down the gun barrels of the Hornet equipped with a Sakura Sun-designed turret painted at the entrance to what is now the candied fruits distribution office.

While the history behind Sakura Sun's distinctive frozen dinners or their beloved line of children's characters would fill a book, the specific portions of their extensive lineup that most appeal to spacecraft owners are the two dedicated to private starcraft modules.

Energy Weapons

The crowning glory of Sakura Sun's spacecraft weapons division is the proprietary multi-particle/wave cannon. Ostensibly the brainchild of Sakura Sun Space Sciences Division (affectionately "S4D"), the MP/WC is an example of carefully researched xenotech. In 2922, following the lead of MISC's ground-breaking interspecies trade deal, Sakura Sun made a billion-credit buyout of a burgeoning Xi'An research lab that granted them technology trading rights.

For a decade and a half, company scientists painstakingly worked alongside Xi'An researchers to develop alien tech compatible with Human systems. The research effort took a team of thousands and the overall cost approached a trillion credits … but at the end of the process, Sakura Sun had developed an incredibly effective weapon type that could not be reproduced (legally or technically) by other Human companies: the multi-particle/wave cannon.

The MP/WC is a fascinating piece of technology. In effect, the gun is a series of multiple miniaturized particle accelerators that fire sequentially. This results in a stream of bosons projected towards a target. The bosons occupy the same quantum state as a wave while in flight and then collapse into discrete particles with unique states upon impact. The result is massive damage to both shields and standard armor types. What's more, the weapon is fast: the multi-particle/wave cannon is the only energy gun capable of attaining the retire rate of a Gatling gun.

Sakura Sun was quick to bring the results of their research to market. Opting to pursue the civilian populace instead of licensing the technology to the military, an extensive lineup of twenty-five guns was put into production. The MP/WC line has five distinct types, which define overall size. In order, they are the Breezefire (Size 1), Windfire (Size 2), Stormfire (Size 3), Galefire (Size 4) and the enor-

mous Torrentfire (Size 5.) Each MP/WC size has five production models, that range in quality and price from basic to extreme luxury class. EX, DX, X and XT are the standard range, plus a fifth model that is produced in extremely limited numbers and given a "2x01" numerical designation (Breezefire 2101, Windfire 2201 and the like). These are extremely prized, and even older models sell for a significant amount on the secondary market.

If there were one downside to the MP/WC technology, it's that it is so advanced. Even though Sakura Sun produces a sturdy product, if it were to malfunction, self-repair is impossible in many cases. Some have speculated that this is why the weapon was not offered to the military, which typically needs a durable and easily field-repaired gun.

Shield Generators

In addition to their headline-grabbing (and profit-securing) gun lineup, Sakura Sun has recently added a new line of extremely respected shield generators, with the initial Light Blossom shield systems being offered for the 2943 financial year. It seems that by focusing on both the defensive and offensive markets, Sakura Sun hoped that their sales could flourish on either side of any conflict.

The Light Blossom shield class is a high-quality Helium-6 sonoluminescent bubble shield optimized for civilian combat encounters with an emphasis on low emission stealth roles. Designed to compete with Lightning Power's Powerbolt shield, the press release for the first units described the reactor as a "shadow in space." It goes on to say that the design intent was to create a high output shield generator that would still work to limit your energy signature.

Nine Light Blossom models are currently in production in three sizes. The range runs from the low-cost size 3 Light Blossom 6HE7A to the top-of-the-line 6HE9X. It is known that Sakura Sun's engineers are focusing on an even more efficient Helium-7 shield system and that they are likely to reveal this technology in the near future. Helium-7 shielding would theoretically allow an even greater output-to-signature-block ratio.

SAKURA SUN
LIGHT BLOSSOM
POWER PLANT

CItizenCon
Persistent Universe
Demo

At CitizenCon earlier this month, we ran a demo of a Constellation emerging from a jump point, cruising to ArcCorp (while the pilot walked through the ship), and then landing. The pilot stepped off the ship, cleared Customs, and ended up at Dumper's Depot. This was one seamless scene, including action within and outside the ship, on and off planet. All those pieces put together are the Persistent Universe (PU). We go behind the scenes this month to discuss the latest developments of the Persistent Universe, starting with Tony Zurovec, who is leading the PU effort.

Behaviour also contributed a great deal to the demo. We didn't include them in this discussion, but we will get them back into **Jump Point** soon!

The Plan

JP: What do you have to do with the Persistent Universe?

Tony: I'm directing the PU. That's a multi-faceted role, but one of the primary responsibilities involves continually estab-

lishing clear sets of objectives and then guiding the various development departments towards the achievement of those goals. It also entails a lot of very detailed design work and sometimes the construction of solutions to complicated problems.

JP: What have been your biggest challenges?

Tony: Any project pushing the boundaries as much as *Star Citizen* will always have a variety of challenges. When I arrived, there were some pretty significant issues with the art pipeline, but that was actually one of the easiest areas to address given the prodigious talent within both Cloud Imperium and the external contractor — Behaviour — that we're using. The company had grown so quickly that some inefficiencies had taken root and focus had been lost, but resolving that was pretty straightforward and really just boiled down to identifying the various problems, resetting priorities, establishing some clear objectives, adding more practicality and focus into the mix, standardizing some processes, and empowering the right people. I can't stress that last point enough — getting the right people into positions of authority and making sure that they've got the capability to actually effect change is absolutely critical to the successful execution of such a large and ambitious endeavor.

On the programming side, getting to the promised land is often a slower and more arduous journey because you aren't typically using nearly as large a percentage of standardized tools and technologies as in the realm of art — developing those things is actually a huge part of the solution. I think we've fundamentally turned the corner recently in some areas like the backend networking and AI, but there will be many months of difficult and time-consuming implementation before we reach a point where a lot of those changes are visible to players in any significant way.

I'd say that one of the largest challenges going forward will be the mission creation system. It would be pretty straightforward and simple to create something that just randomly pulled fixed possibilities from a database, but

WHAT IS YOUR NAME?

364 days of the year I go by the name of **Tony Zurovec**. On Halloween, I dress up as **the Dread Chris Roberts** and terrify all the little children that come asking for treats.

WHAT IS YOUR QUEST?

I've worked on a lot of games with very large, detailed worlds in the past — Ultimas, Crusaders, and the like. At the moment I'm heading up the Persistent Universe on Star Citizen, which is just an absolutely enormous undertaking given the prodigious scope. In the future, I'd like to take some of the assets that we're currently developing and focus on a more narrow slice of the Star Citizen universe — maybe some kind of an expansion that centers around bounty hunting, or possibly a persistent real-time strategy game.

WHAT IS YOUR FAVOURITE COLOUR?

Plaid's not a color, right? This is a tough one because I tend to like color transitions more than individual colors, and there are quite a few that I find really attractive. I'd probably lean towards a diffuse blue-to-black like you might find in a dark sapphire.

On the personal front, I just had my first kid: Phoenix Ashe Zurovec. It's pretty funny how he can go from smiles to frowns and back again a dozen times in the course of a minute, and weird to think that his feet are so soft because he's never actually used them to walk. I'm still doing some animal rescue work, and between that, Cloud Imperium and Phoenix, I've no hopes of free time.

Arrival in system

JP: What were the goals of the Citizen-Con demo? What were you trying to accomplish with it?

Tony: The primary goal of the CitizenCon demo was to give players a better sense of how the transition from space to a city down on a planet would function, and to give them their first detailed look at the level of quality we're aiming to achieve in regards to the landing zone visuals. It's always a bit painful to show something off that's still so far from where you want it; I'm definitely looking forward to subsequent demos where more of the pieces of the puzzle will be in place and we can give people an even better sense of just how detailed and interesting those landing zones are going to be.

With that introduction, let's hold our conversation with Tony and talk with some of the people who pulled the demo together. (Dave Jennison, Lead Character Artist, wasn't able to make it.)

as with almost everything on *Star Citizen*, we're aiming to do a lot more. The ultimate objective is a system that will allow us to fill the universe with a lot of unique and interesting content that's contextually accurate — that makes sense given what's happening in terms of things like the local economy and the state of conflict. I don't tend to like single-objective missions — they're too formulaic and repetitive, and I get bored by them pretty quickly — so the end goal will be the ability to algorithmically combine detailed mission components hand-scripted by designers in order to create larger, more compelling, and unique multi-objective mission threads. The development is structured so that some of the simpler features will arrive a lot sooner than the more complicated aspects, but this system is so critical to providing players with a reason to keep coming back that I think it's going to continue to grow and evolve for a long period of time.

Approaching ArcCorp

JP: We'll start with the facts: What are you working on for the PU?

Sean Tracy, Technical Director: Directing the CryEngine into a position where the PU needs are met.

JP: What do you mean: "Directing the CryEngine into a position …"?

Sean: Making changes and adjustments to core engine systems to allow us to do all the things we want them to do!

Cort Soest, Senior Technical Artist: This is really a lie, so take everything I say with a grain of salt ... but I am working on expanding the persistent universe toolset that will allow artists and designers to quickly and easily create the planetside content of the Persistent Universe.

Lee Amarakoon, Senior VFX Artist: I'm working on VFX, nebulas, space secrets and little glowy things you walk or

Final Inspection Before Landing

Nearing the Planet

fly past.

Rob Reininger, Senior Technical Designer: Being a technical designer, I focus more on the nuts and bolts of how the game, its systems and the gameplay areas are put together. I am working with Tony to help formulate a plan to implement a dynamic mission and "peaceful" AI system. (Although being a former AI programmer, Tony had a pretty clear idea of what he wanted on that front.)

JP: Mark, what are you working on for the PU?

Mark Skelton, Lead Artist: Currently?

JP: And in general.

Mark: I'm art directing Behaviour as well as the CIG internal group for the PU. This involves not only keeping things artistically coherent across the board, but also

Atmospheric Entry

JP: Patrick, what are you working on for the PU?

Patrick Thomas, Lead Artist (PU): I am presently working on the visual design of the PU space stations. Also the environment around the space stations. fyi satelites, nebulas, moons, etc.

Nathaniel Blaisdell, Senior Game Designer: I'm working on transitions to and from planets, and eventually overall flow of movement through star systems, etc.

Pete Mackay, Designer: Currently I am working on character attachments with Sean for the PAX demo, and with Patrick on space station scaling. On the PU demo I set up all of the ship AI: the Hornet formation flyby, and the ships taking off at the landing zone. I also laid out the city skirt and distant skyline buildings.

directing cinematic shots and overall flow of gameplay.

Jake Ross, Associate Producer: I poke and prod the people actually doing the work to make this game awesome.

Jason Cobb, Senior Audio Designer: I am presently working on the conversion of sounds from fmod to Wwise audio middleware. This entails reconstructing the sound event assets and re-implementing them into a new version of the game code. In addition I am helping engineering to answer their questions and plan the re-factoring audio implementation code.

I also have open bugs to tune the sound occlusion of materials for the PU environment prefab material surface types.

Sean: I am also working on characters and animations (including attachments) for integration into PU later this year.

Final Approach

JP: And what did you do for the PU demo?

Jake: I poked and prodded the people who did the work :)

And bought them dinner. A lot.

Pete: Jake also sang to the team. It was a special treat.

Cort: He has such a wonderful voice.

Lee: I was definately well fed — thanks, Jake! next time can we get sushi!?

JP: So did anyone else do anything?

Sean: I wrapped up all the hard work from the guys and plugged it in and flew the demo up on stage. I did the cinematics, too.

JP: The demo was live? It wasn't pre-recorded?

Sean: No, not at all. I ran that live on stage from a build tied right to our P4, so that's about as "latest" as the fans could ever see.

Cort: I helped the team fix technical issues that arose during the production of the PU demo. Whether they liked it or not, everyone got a little bit of love.

Lee: For the PU demo, I worked on the ships flying by, the landing sequence, scanning effects, and ambient VFX to add to the whole experience.

Bryan Brewer, Lead Animator: I did a lot of fine tuning of the basic movement animations for the player. We got code support from Illfonic to unlock parts of the code that stomped parts of the animations that caused the character to look stiff; we also switched out the old skeleton for a new skeleton with a muscle system.

Nate: I was working on cinematics, scripting and bug fixing.

WHAT IS YOUR NAME?
Jake Ross

WHAT IS YOUR QUEST?
Before I came to CIG I was a Client Producer at CGBot, acting as a liaison between clients and the art team for outsourcing work. Before that I was at the Viz Lab at Texas A&M University, getting my Master's degree. I did my Master's thesis on Companion Gaming, the concept of two games from the same franchise talking to each other back and forth to help increase player engagement in a product. It is these sorts of cool gaming experiences that I want to work on, and *Star Citizen* is definitely one of them. Currently I am an Associate Producer on the Persistent Universe. My job is poking and prodding the excellent developers in Austin, TX to make sure they keep to the schedule that is laid out, ensuring that they are working on the tasks they should be, and facilitating communication between them and our other studios.

WHAT IS YOUR FAVOURITE COLOUR?
My favorite color is maroon because it's the school color of my alma mater. Gig 'Em, Aggies! I'm a devout Christian, a Marvel comics fanatic, and have little to no self-control concerning sweets. In my spare time I enjoy reading science fiction and detective stories, participating in outdoor activities with my wife and dog here in Austin, and thrashing my friends at video games, especially Super Smash Bros!

Plenty of Traffic

Rob: I was asked to help organize everything that we needed for the vision that was presented at CitizenCon. Props, NPC variants, animations for the NPC's VO and audio needs, and assets for the planetside environment. Thankfully we are working with an all-star team from Behaviour, who really set a new bar for our visuals on the planetside environments. There were also many technical hurdles that we had to overcome to pull off such an ambitious plan. It was a huge amount of work that was done in a short amount of time, and in my opinion, everyone that was involved did a great job.

Jason: I worked on placing and scripting sounds, some sound design and the SFX mix for the interactive gameplay and cinematic sequences.

I also relied on sound design assistance and assets from the Foundry 42 sound team (Stefan Rutherford and Luke Hatton), from Bill Munyon and Evan Manning here in Austin, and from Ian Chuprun at Behaviour. In addition, big thanks to Pedro Camacho for his superb music score. Lastly voice production was provided by the Formosa sound team in Los Angeles.

Bryan: We also did a bunch of NPC animations that unfortunately didn't get hooked up because of the lack of code support.

Mark: A lot of what I did was feedback and layout of ArcCorp itself, also planning out space look and feel and working on cut scenes and cinematics with Sean.

Nate: Oh yeah, i helped out with the layout of ArcCorp Area18 as well.

Pete: And I laid out the city skirt and distant skyline buildings.

Cleared for Arrival

JP: *What was the worst problem in getting the demo ready?*

Rob: The biggest hurdle that we had to deal with for the demo was probable the fact that we were in the middle of a major skeleton change for our main character rig. Our FPS demo that is going to be shown at PAX Australia required us to re-target all of our existing animations to the new rig. The problem was, we didn't get this finalized until about a week before the demo was shown at CitizenCon, so getting everything put back in place without anything breaking was a mad rush and made the demo process a little more stressful than these things normally are. That said, the character riggers and the animation team worked quite a bit of overtime, along with our FPS outsourcing team at Illfonic, to ensure that everything came together for the demo. So hat's off to those guys, they really pulled through

Landing Zone in Sight

some long days/nights to hit the target.

Cort: As the demo was being wrapped up, it was looking and playing beautifully in the Editor. So we decided it was time to give it a run through in the client … oh man so many new problems sprang up. Like always we buckled down and knocked those problems out one by one.

Sean: The door at the end!!!

JP: *What was the problem with the door?*

Cort: Ah the door … We had a data disconnect between ATX and LA that caused our skeleton list file to be out of date. Because of that, the door at the end of Dumper's Depot was unable to play its animations. To add salt to the wound, the door was rotated 90 degrees in its base pose, so it not only didn't play the animations we wanted, but also looked like it was placed wrong in the game!

Touching Down

Post-Landing Checklist

That issue was fixed only moments before the demo was held live on stage. Honestly, I don't think we even believed it would play correctly. In the final play through, we just hoped and prayed.

Mark: Screw that thing! Sean had a dream about how to fix it on the way to the venue.

Cort: Haha, ya.

Jason: Some of the cinematics work unfortunately wrapped up on the day of the show, which is never ideal, but we still pulled it off. Also there were some items which had to be cut as we were not able to get them working efficiently in the client.

The many long hours required to make the demo great for the deadline kind of threw off my planning of tasks for this

month by a couple of weeks.

Cort: There was also Lee's tarps. That was fun ...

Mark: Yep ... tarp MIA. That was a bummer ... they looked epic.

Lee: It's ok, they didn't look ILM quality.

JP: *Tarps that refused to appear?*

Jason: They appeared, but tanked the framerate in Editor and would not play at all in Client.

Mark: they worked in the Editor but not in the Client. At all.

Cort: They refused to work in the Client no matter how much pressure was applied.

JP: *How did you figure out it was the tarps that were killing framerate?*

First Look

BEHIND THE SCENES

Mark: The Client didn't support mesh animation.

Nate: Another one: characters falling through the world. Has that been mentioned?

JP: *No, haven't heard about sinking characters ...*

Nate: Characters did not obey the same rules as other things that we were scripting to hide/unhide, so they would immediately fall through the ground when they appeared.

Mark: (laughs) Yeah, we couldn't figure out why the characters weren't showing up. Turns out they were showing up, they would just immediately fall through the floor at like 12 kilometers a second so we never saw them.

Cort: The NPCs were burning up in re-entry of the atmo-

Ready for Delivery

sphere. They gave Superman a run for his money.

Jason: here was another fun one: The missing interior physics grid in the Constellation also produced some nice blockers for a while. If you stood up from the pilot's seat while in flight, the player was immediately ejected through the hull of the ship to float in space.

Mark: And the Connie elevator was broken for a long time.

JP: *What useful lessons did you learn about the PU from working on the demo?*

Cort: How incredibly beautiful our planeside environments were going to be once completed. It is one thing to see concepts produced, and even while producing the individual assets you get a feel for what things are going to look like. But it is not until everything comes

Port of Entry

ArcCorp Customs

looking forward to all that extra space for the map layouts.

JP: *What is LargeWorld?*

Jason: It is changing CryEngine to use 64-bit coordinates, up from 32-bit coordinates, which increases the size of maps and the accuracy of locations toward the outer edges of those maps.

Nate: I agree with Jason. 64 bit can't come soon enough!

Pete: Space is really big and ships need to be fairly close to each other to see them without the assistance of radar.

Mark: I think the realization of how big these environments have to be set in.

Jason: I now have a much better idea of how all the components of this game will fit together, anchored around the PU experience and space flight.

together and a final polish pass has been made that you can sit back and say WOW … The PU experience is going to be so damn fun!

Jake: Get feedback way earlier. As early as possible.

Mark: I'm very proud of the whole team … Behaviour and Austin really came together to make something pretty amazing.

Patrick: How versatile this team truly is.

Sean: I absolutely totally agree.

Nate: My Trackview tool experience has increased dramatically. (Is that a lesson?)

JP: *What is Trackview?*

Nate: The tool for creating in-game cinematics.

Jason: We really need LargeWorld; I'm

Firearms Declaration

Lee: I learned what lightning looks like close up when it passed over the office when we were working here late.

Mark: Yeah, while we were working here in Austin a huge lightning storm came through. It was good reference for art.

Lee: I learned what the CryEngine 'can' and 'cannot' do, and that I have to think outside of the engine to solve some of these VFX-related tasks.

JP: *Is there anything you don't plan to repeat in further work on the PU?*

Mark: Like Sean was saying … going from high orbit to low orbit to entry to flying around through buildings then landing and examining something on a table was crazy daunting.

We need better previsualing planning. I think that part wasn't done early enough, which I plan to change.

Passport Control

Biometric Scan

Nate: Ideally, it would be nice to not have to use layer switching again … at least not on the scale it was used in the demo. Layer switching is the method we had to use for loading in content in lieu of not having large worlds and streaming ready.

JP: *So the demo used several layers, and we hope to reduce the number of layers in future iterations?*

Jason: All maps will use layers — we just had to use more of them and toggle which were visible or not in order to make the demo work in the available map space.

Mark: Optimizations were a huge issue towards the end. Lots of lag loading huge meshes / textures killed our frame rates at times.

Cort: Also, as the layer count increases,

Cleared to Enter

and the lines between which layers need to be loaded at any one point blurs, the technical management of the layer switching massively increases. That was the burden put at Nate and Rob's feet. And they knocked it outa the park.

JP: *How many total layers did the demo have? (that were used)*

Cort: 131.

JP: *That's a bunch.*

Sean: (laughs) Was it really 131?! Awesome!

Cort: Yep.

Jason: The layer switching combined with a couple of sound bugs related to the player and listener positions changing with trackview sequences meant I had to manually script all the environment sounds in a manner which would only work in the context of the demo.

To ship PU we must better coordinate the sound implementation and game systems to work properly in conjunc-tion, to change the environment sounds from shot to shot. It cannot be manually scripted every time.

JP: *What is most interesting to you about the PU?*

Jake: All the different roles that players will be able to choose from.

Cort: The scope of the whole thing. The scale of the entire persistent universe is daunting. Once complete, this will be one of the most interesting exploration spaces I have ever seen in a game.

Nate: The fact that there are so many different game systems and mechanics that will need to be working together, and how players will strategize and discover gameplay based on all those systems.

Patrick: This will be one the largest games to date. It will provide an incredible universe for exploration.

Lee: Things I'm excited about: exploring the galaxy, mining, and making money selling other people's stuff, like a true pirate.

Jason: Personally, I'm looking forward to helping with production of the alien languages and working on the soundscapes of the multitude of different planetside locations.

Rob: In my opinion, the three interesting features for the PU are the economic simulation that will procedurally govern the pricing and availability of resources/goods in the game; the peaceful AI system that will breed life and activity into the environments; and the dynamic mission system that will constantly keep fun and interesting content around the player.

JP: *Where do you go from here — what's next on your task list?*

Lee: I'm working on several areas with Behaviour.

JP: *What type of areas? Landing zones, orbitals, ship interiors?*

Lee: Shops, planets, space and so forth.

Cort: More PU tools to help speed up the art process!

Jason: My main task is to continue the Wwise content migration and re-implementation of sounds. I'll also help the effort to improve character sounds and tune the spaceship interior audio markup.

Patrick: What I'm working on next is laying down the style and look for the next space stations!

Pete: I'm working with Patrick on space stations. Got to make sure that theres plenty of parking space!

Jake: I'm working on mapping out the next 6 months of the PU.

Patrick: Building Space stuff is *hard*.

Bryan: Animation is going to start populating the PU with NPC animation sets, so you will be able to go into a bar or a shop and see an environment that feels alive. We will also continue to refine and polish all ship interactions and movement sets.

Rob: Next is planning and working towards the release of the PU Social Module that's scheduled for mid-March. We've got a very ambitious plan that will lay down the foundation for the entire persistent universe environment. If we can accomplish everything that we're talking about internally, we will be well on our way towards making something really cool for the PU fan base. (Who I should say thank you to for your undying support and patience. We're on the verge of making something really cool. Keep the faith — we won't disappoint you!)

Nate: Currently working on prototyping ships landing in hangars.

JP: *Thanks very much, everyone!*

First Stop, Dumper's Depot

And now to close, let's go back to Tony for a couple of final questions.

JP: *What's next for the PU?*

Tony: At the moment, we're ramping up on our second major city, while continuing work on several shops. We've started full production of the AI system that will make the landing zones and ships feel like they're really alive, and have really accelerated development on the backend networking technology. We're hoping to deliver the first Persistent Universe module around spring of 2015. The details will be forthcoming, but suffice to say that we're really pushing to try and reach a point at which players will finally be able to get a basic sense of how some of the disparate components of the game are coming together.

JP: *What is your master plan for the PU?*

Tony: That's a difficult question to answer since what's most appealing to me about *Star Citizen* is the enormous breadth of content and possibilities and the incredible level of detail. One of the more significant goals, though, is to support a wide variety of different play styles, and ensure that those different mechanics work well together so that players never feel constrained — never feel like they have to play the game in a certain way in order to succeed.

I think that a fair number of players will prefer first-person combat to space combat, and others will prefer exploration, transport or support activities rather than any type of combat. Some players will prefer to employ stealth, while others will be oriented towards brute force. Some will organize themselves into cohesive groups, while others will seek out solo opportunities. Some will live a life of piracy, and others

THE OFFENDING DOOR RISES IN THE BACKGROUND

will seek to help maintain law and order. Some will seek to exploit the ups and downs of the various economies, and plenty of others will prefer to engage in a bit of everything.

The point isn't that regardless of what you do that you'll necessarily be able to be just as financially successful as another player pursuing a different path, but rather to recognize that not every player cares about the financial reward, or is willing to take the same risks, or has the same level of patience, or a thousand other things, and each player should still be able to advance — to grow and prosper and have fun within the game.

The master plan, then, is to provide players with a universe that's filled with so much opportunity that there aren't any real barriers — that supports a wide variety of balanced play styles so that whether you directly interact with others or not, you will still be having an impact on the universe and therefore what other players are experiencing. In essence, we're aiming to deliver a universe teeming with potential, and it will be up to the players how they want to go about living virtual lives within it.

BEHIND THE SCENES

HADES SYSTEM

"I had put my ship on automatic, bearing for Hades III, and then climbed down to the middeck. As I stepped toward the hold, I caught sight of something in the darkness. I couldn't say it was even Human, but Humanoid at least. I had an immediate impression of a body with exposed musculature, covered in blue-hued veins. It turned to look right at me when my ship suddenly rocked. It was gone. It was a nanosecond of an encounter, but I was left with a terrible sense of presence. It was as though I'd seen something my mind couldn't understand. The feeling never passed. I sold the ship when I got home; it didn't feel like mine anymore." — Eli Thorn, Navjumper

Hades is a lawless system that is technically classified as abandoned by UEE stellar cartography. A blue-white B9 IV star, Hades produces too little heat for a viable green band; while several planets survive in orbit, none has the heat to support life. In broad stellar terms (and in seeming contradiction to the age of other stars in the stellar neighborhood), Hades seems to be nearing the end of its life cycle.

Hades was first identified in 2515 by the *Merry Crow*, a tramp freighter. The discovery was not formally cataloged because the ship was carrying several hundred freight units of stolen fusion drives. Nineteen years later, Jake Tapps, the *Crow's* navigator and sole surviving crew member, found himself penniless and planetbound. He sold the ships' extensive logbooks to finance a SLAM habit and the Hades System was subsequently charted and officially registered by the Dynamo Corporation.

Interest in the system skyrocketed once Dynamo's exploration ships conducted their initial survey. While the system was deemed still totally inappropriate for terraforming, they located significant evidence that all of the worlds were once home to an extinct spacefaring society. Decades of research have created an interesting picture of an advanced society that ultimately wiped itself out through internecine conflict. The majority of the surface of Hades' three inner planets is pock-marked with impact craters, while the final, former planet in the system has literally been split in half through as-of-yet identified means. It was this grandiose level of destruction that gave the system its name.

While there are no facilities for refueling or ship maintenance in the Hades system, it is still part of an active spacelane. However, very few alter their courses to explore the inner system.

Most of those who are willing to traverse on to the planets are xenoarchaeologists and tomb raiders. Despite the widespread devastation, thousands of structures have been identified on Hades' graveyard worlds, and many more are believed to exist underground. Countless artifacts are taken (or stolen) from these sites each year, and it is believed that there are a number of ongoing, formal 'outlaw' operations running to try to locate some of the technology that the Hadesians used to destroy themselves.

Hades I

The first planet in the system completely lacks any atmosphere. Scattered unnatural craters and ruins indicate that the Hadesians must have colonized **Hades I** in a limited capacity. Scientists have been unable to figure out whether it was always this way or whether the atmosphere was another victim of the war.

Hades II

Hades II retains something of an atmosphere, but it is a violent one. Environmental suits must be worn, and due to the amount of volcanic ash in what remains of the atmosphere, no one should ever be away from a breather. Sprawling Hadesian cities spider across the landscape, every single one of them dead and withering away in the unrelenting wind. The unstable nature of the ruins makes this surface a very precarious one to try and explore.

Deposits of Kherium, a mineral prized by the Xi'An for use in their armor plating, have been discovered on Hades II, although, due to the archaeological value of the system, no corporate mining campaign has ever been authorized.

Hades III

On the surface, **Hades III** matches I and II: it is a gruesome landscape of impact craters and shattered cities. The atmosphere is toxic, and only the best-equipped xenoarch teams should make landfall. Despite this, countless ruins have been documented over the years,

perpetuating the belief in certain circles that there is still much remaining to discover in Hades.

Death and destruction is not limited to the surface of Hades III. At a Lagrange point high above the planet a more recent graveyard sits in orbit. Back in 2901, a Xi'An junker, smuggling a cargo of Osoians bound for slaughter and rendering, suffered engine troubles. As the crew struggled to restore power to the ship, the captive Osoians, normally docile creatures, escaped and proceeded to slaughter the crew, the crew of a rescue ship and ultimately each other.

Hades IV

Hades IV is commonly considered a 'half planet,' leading to the somewhat confusing '3.5 worlds' listing in the formal UEE listing. While the entire planet still exists (and has not degenerated into a complete asteroid field) it does so in two distinct halves. It's impossible to wholly comprehend the absolute horror of a weapon capable of destroying an entire planet, but it is difficult not to marvel at the spectacle of this desolation.

The Hadesians

There are as many theories about the Hadesians' nature as there are stars in the sky. Every year, a fresh batch of university graduates descends on the system, hoping that they will be the ones to finally crack the mystery of this civilization, and every year, they go away in frustration. That doesn't mean that the Hadesian are a complete mystery. Scientists have managed to roughly determine their physical dimensions and that their civil war was fought roughly 300,000 years ago. Based on skeletal and architectural evidence, Hadesians were roundish creatures with a bulky central body. Multiple thin appendages (a number that apparently varies from Hadesian to Hadesian) and a pair of long arms complete the figure.

The Knowledge of Good and Evil

by Allen Russell

Part 2

"I know right. Debt 's debt." Eve' rat know that.

She stop cold. "You think that you are incurring a debt by staying here?"

"Ain' I? Wha' I'm suppose think? An I see one an' 'm null gon' jus' be here an' . . . null tha' . . . I won' be your slave!" Start lookin for way out tha hall ta secure.

I stop cause Mom Super raise her hand. Slow like. Like she do ta quiet tha meal hall 'fore meal. Hadn' expected her ta be calm like tha'.

"If I gave a way to repay your debt, would you stay?"

Mom Super got wha' she talk. Work got, 'nough ta pay debt. Off some, an' diff from Bazaar, lock tha'. Bes' deal 'm got ta stay with tha Sisters. Rules some, bu' null like Blues or Bazzar Bosses got. 'bout now 'm start figure tha Sisters weren' part tha Gov. If they's Gov them give H-kit, like tha Gov.

Problem that. Big got problem when rat got no Hygiene. H-kit got thing like razor. Razor ta shave my head with. Razor I need an don' have. Head gone ta fuzz a'ready. Tha' mean 'lot on streets. Mean rat got i' in 'em to go 'gainst rhyme an' honor. Mean might give up on tryin'. Creepers and slavers watch ta pounce on fuzz heads.

Walk out tha room an' rage some ta Mom Super ta get razor. Mom Super 'most yelled back. 'fore ran off back ta my room.

'magined her comin' through tha door an chokin' me. I seen creeper do tha' once.

Mom Super got ask me straight later, "What would you do with a razor young one? Why do you need it so?"

Sisters an' Mom Super don' have null clue. I'm hoarse from yelling an wound tight. A'most missed tha ask.

"Wha' 'm do?! Shave my damn head! Wha' tha hell else craz oldie? Wha' else i' good for do with? You know how tha creepers like 'em?"

"Your hair is a danger to you?" Mom Super ask.

"Hair too long an' you be gone. Don' sleep flat for creeps ta get at. Eat food paste or you waste. Know tha rhymes live long times. Stick ta'gether in bad weather. Hoardin' creds will get you dead."

Mom Super look 'round at tha other three Sisters in tha door ta my room. One them reach in bag an' pull out one sealed H-kit like tha kind I got from tha dispenser once month. Mom Super take i' an' hold i' out ta me.

Snatch i' null lookin' at her an' I head ta corner tha room an' reflec on tha wall. Big reflec but I don' need much an sit on floor. Back ta tha door but can see 'em in the reflec. Them watchin' as shave tha head fuzz quick like rats got do. Sisters standin' in tha door outbound one-an-one til only Mom Super left.

"It's a sad thing to see." Mom Super say soft. "Red hair is very rare."

Finish las' pull move a'fore her sayin' sunk in.

Turn an' look at her. "Is?"

"Yes. Very."

I don' know, but tha' look Mom Super got shake me cold for days.

*　*　*

Interestin' now tha' some Sisters would come an' ask me if could fix some for 'em. Each nex' got harder thin' ta fix. Sometime it some basic an' big. Sometime it some complex an' small. Air mover ta some bedrooms stopped. Solenoid switch on machine gone bad. Malfunct ligh' in tha hallway. Sometimes, Mobiglas like tha kind spacer use. Other time some buggy engine. Eve' time it got be some' I neve' seen or neve' fix b'fore. I think ta 'self tha' Sisters didn' know tha'. 'm learn them tech an' gear while 'm work.

Still ain' got lock on angle Sister play ta. Got think 'bout Bosses or creepers or slavers workin' on some rat like. 'magination come up with like wha' 'm hear on street 'round bazaar. Ain' EZ ta stay smart 'nough ta null trus' thin' tha' sound like street gossip. Eve comin' from me.

Got parts an' gear ta fix for days when Mom Super show up a my shop.

"Follow me." She say. Turnin' she lead me down tha hall an' back ta main floor and started headin' ta big door 'm null got through yet. "Your choice to remain here is a bold one, and you have proven good on your word and not tried to leave again. I believe we should make a gesture of good faith in return."

Reached tha door. Aft' she look ove' her shoulder a' me she press hand ta tha door release. Pressure seal door slide back an out. Sisters coat norm block view 'fore I got glint. This time Mom Super step back an' 'most push me in.

Light 'm step into blind me some.

Null tha' bright jus' more ligh' than tha hallway. 'm look a tha floor. Dark metal like tha hall but cleaner. Null dus'. None jus' cleaner eve' thin' clean. New? 'bout when 'm think tha' my eyes a'just ta light an' 'm look up.

'm couldn' breath.

Three high a stack rows tall. Leas' ten meters. Rows wide an' so long can' see 'tha end from tha door. Them got books like 'm in pics. Neve' see real 'fore. Oldie info that. VID term, an' storage media a more types than 'm know. Figures how some Sisters spend days in here.

Jump some when Mom Super say some an' break tha quiet.

"You can come in here at any time you'd like, young one. This Library is our most holy place, but the freedom to access knowledge is equally sacred to us. We have been remiss to keep this from you. We have all sorts of information here. What is kept in the Holy Vault is only for members of the Order under seal of the confessional, but all else is yours to explore. The door will now open for you and the Sisters are always willing to help if you need anything."

"Won' do much good ta me lady. Can' read none."

How come eve' time Mom Super smile ta me like that an' I say some she got cry?

She daz like got hit hard, "That's . . . I had assumed . . . with your skills, I mean. We will have to . . . um . . . How foolish of me."

Mom Super stared me like. Like 'm ghos' or some. She drop her head an' say some 'm null hear. When she look ta me 'gain got look like she ragin' 'hind her eyes. Lady move from tha door an' point ta hallway. She lead though 'm couldn' tell where we goin'.

Thought I know tha whole Hall by now bu' Mom Super stop fron' door I neve' been ta. She open i' an' make like 'm suppose ta go in. Small. Got desk an' VID screen on tha wall. Maybe half size my room.

Mom Super walk ta screen an' press button 'n tha side. Flash an' then i' come on. Aft' few boot screens, comp vid human walk from tha side like 'em come in ta room like real person do. Got see move top tha screen. Cam doin' sweep tha place. Done lock on us.

"I've brought you a new student." Mom Super say. 'most hide her anger.

"Wha' Lady got ta be rage 'bout?" 'm think. "Tha' her didn' know 'm null read?"

Vid screen Lady star' gabbin', "A student. One to be taught. Very good. Where shall I begin?

"The beginning." Mom Super say.

"Well and good. And you are the pupil?"

Cam move jus' 'nough ta know lock on jus' me now.

'm look ta Mom Super an' she jus' lookin back ta me. Wet eyes some. Figure tha' 'm got ta answer.

'm mos' cold ta bone. School dead danger ta street rat. Gov Schools free bu' you spend any ticks there an' wouldn' make 'nough. Some rats starve cause 'em null make deals.

Know 'nough ta got numbers. Know 'nough ta speak straight an' crook. Know 'nough ta fix gear. School learned? Like Up folk? Like my cot?

"Sure." All 'm think ta say.

Screen prog stat gab 'gain, "Please sit student, we are about to begin."

"The program will teach you if you choose to learn from it. It can go as fast or slow as you need. You may consider this part of your work for us as well."

Tha' las' from Mom Super an' she outbound.

Wha' got Mom Super raged? An' 'm got ta listen ta comp prog? Hell. Teach prog got ta work righ' then. Null got time ta think 'bout danger a learnin' too much. 'm got new work from tha lady. I neve' work like this in my life.

*   *   *

Found new kind of hunger in tha' room. Sit in tha' class-room for long stretches. Only leave ta eat or relieve my-self. I spend hours more a day there than had ta.

I realize I been starved for information when I'm given more than I can handle but not as much as I want. I'm addict ta it and the drug is free. Learning is no debt. Maybe that why the bosses on the street don't want rats ta get it. Teach program pushes me hard. It keep lessons comin' as fast as I complete 'em.

"High Impact Learning" what teach prog call it. Cumula-tive points, none percentages. Almost neve' have to hear lectures. Everything a conversation.

English, Grammar, Ancient Earth history, Math, Biology, Psychology, Sex Ed, Mechanics, Social Studies, Interstellar Commerce, and Physical Activities all covered. Standard Ed for UEE. Even know what the UEE is now.

80 to 90 hours a week I work on my school. Would spend more if I didn't need to eat an' sleep so much. An' Sisters still wan' me ta fix gear. Got hard time 'tween fix gear like 'm good at an' wan' ta learn book work. Book work start ta win that. I write essays, I listen ta books, I track my health for PE. I even start going to back into the library to read books for school.

So much time passes without my realizing.

Got back to the room one night and see myself in the mir-ror. I stare into it for almost an hour. I been missing the inches I'm growing up and hair I'm growing out. Shit.

It makes the girl looking back at me in the mirror even look like a girl. She looks like me, except with hair and tits. At first I'm scared to notice.

Tits are still small enough they'll be easy to hide, but I have hair. Does hair mean what the street says it means? Hell, if I can keep street learning from mixing with book learning now. The impulse to shave it off in haste and fear grips me hard. I almost do it. Almost.

Instead, I dare myself to leave it. That seems to work. I dig through my hygiene kit for the comb I never use. I watch fixated as I pull the comb through my hair and feel the tug against my scalp. I've been moving it out of my eyes for how long? Crap. I null know. Been dealing with it but always absentmindedly. Never looking in the mirror. I look in the H-kit again and see the razor. Still in its wrapping. Back in the mirror I catch someone that looks like I'm supposed to but different. She has red hair. Touching it is like touching danger itself. It's part of me. Maybe it's a warning to the world that I'm more dangerous now.

I fall asleep to the feeling of hair on my neck. It's warm. They never tell you about that part on the street. They don't tell you a lot.

Education Levels pass by. I start out at level 3. Don't even count the months. Day comes, night comes. Frus-tration and anger. Success and wonder. Don't care much about how long it takes, the information is what matters. By the time I get to level 10 work, I'm doing the good stuff like tech.

Days do get long though. The Sisters spend most of their time in the Library. If too many of them are in the Library at one time the halls start to feel dead. That pulls me there. The library is the only place in the Hall that feels alive sometimes. Once I started to read some, I started going there and found that books can be alive all on their own. Sometimes the books even have people in them. Some alive. Some dead. Some real, others not. I get to watch those characters live, play, fight and win. The second time I close a book hiding tears, Mom Super catches me.

"You should take a break from the tragedies for a while I think, young one. You might try these for a spell," She said leading me to a bookcase I hadn't randomly selected for raiding yet. "They are not as intense but may be to your interests."

She may be strange sometimes, but she can read me easy enough.

I look on the shelf she's led me to and only see some old storage drives. They look ancient. "I don't want to break them."

"You won't, dear, they are quite sturdy."

With Mom Super's blessing I take one down and over to the nearest terminal. Takes me a second to figure out the connectors and boot sequence for the thing. Old, like most things around here. I get it working and open the primary file. On it are technical manuals for COMM Tech and COMP Tech for a ship I've never heard of. Even ship drive schematics from only a hundred years ago. Tear down instructions, maintenance schedules, even revisioning logs from one version of a thing to the next explaining what changed and why.

Everything a spacer might want to know about her ship.

I'm still a gear rat, just with more skills now. It's not tech to take apart, but I've been creating universes in my head for the books I read. I know I can do the same for this tech. That and all the tech jobs for the Sisters. I know how to fix a dead VID terminal from a hundred years ago, and I know how to imagine an' make things real.

So I study. As I do, more technical data, notes wit helpful hints for using the terminal, even meals all start showing up at my new hermitage at the terminal in the Library. It's infuriating. Who? What do I owe them? It's touching. It's dangerous not to know who I owe what, but I accept it all the same because I have a plan now. Anything that helps is worth taking. When I get out of here, I wont be just a gear rat. I'll be a pilot.

On my own SHIP.

*　　*　　*

One day word comes that one of "our ships" has just entered the system and is returning. It takes me a second to remember that this isn't a plot from a novel.

"We have ships?" I ask the Sister . "And that word is plural. The Sisters have more than one ship?"

I don't get an answer, but she tells me that everyone is assembling in the entry hall. Normally, it's a common side hallway. I've never seen anyone enter or leave as long as I've been here. It barely registers that the door is there as I join the Sisters in waiting.

Standing among so many people all in one place starts making me uncomfortable. I realize that I'm more used to being alone now. We all stand with the foremost in a semicircle facing the door. I make my way to the front to be near Mom Super. The Sisters close around us making sure not to give me a straight path out the only exit to the place. The door opens inwardly like it did that night years ago. Years. I shiver thinking about it.

A lone figure is standing outlined by dust and setting sunlight in the shadow being cast by something tall outside. A full face helmet covers her head and the rest of her is covered by a space suit. A sleek, black, beautiful, and expensive suit. I immediately try to take inventory of the suit and its status lights. It's the gear rat in me still looking for something to fix and charge her for. Or maybe I just want one like it.

As my eyes try desperately to make out the suit better, I realize she's carrying two metal cases. Each about one meter long and half a meter tall. They aren't very thick, but they are obviously very important by the size of the locks on them.

She steps forward to meet Mom Super and puts down the cases beside herself as they come to a stop in front of one another. The door closes behind the newcomer and, once shut, she removes the helmet.

Long dark hair fall past the shoulders of a young looking woman with tired, teary eyes. As the normal dusk light settles in the hallway, she speaks.

"Mother Superior! I have returned in honor to my Oath, in honor to our order, and freely of my own choice. I bring the knowledge collected on my pilgrimage. Twice copied for us and again two more for our sisters of the other Hall. I return to my sisters the ship given me, the money given me plus a great sum more, and I return myself in hopes of peace and understanding among my sisters."

The last words echo off the high walls and fall silent. Mom Super just steps forward and hugs the woman. Others attend to the cases. One case heads toward the meal hall. The other, handed to a Sister who heads to the library. As it opens to allow her and the second case in, I see her turn and head toward the Holy Vault, but the door closes before I can see how she gets in.

Other Sisters in the hall start talking about the new woman and calling her the Returned.

The Returned and Mom Super walk toward the meal hall together. It's too early for dinner, but everyone is following them, so I do too. I catch more conversation about "the sacrament" as we fill the benches. The short table with five stools that normally sits empty next to the Mom Super now has the Returned at it with the case in front of her. She stands and bows slightly, first to Mom Super and then to the room of Sisters.

I think, "Since when do the Sisters bow?"

They're a religious order, sure, but they aren't like the Xeno Cults or Tech Worshipers. I always thought they used the religious angle so they'd be left alone.

The Returned unlocks the case with some sort of code, a key, and then a voice print. She opens it and reveals 20 blocks that look like data drives.

Mom Super Calls out, "The Holy Sacrament of New Knowledge."

The Sisters all reply as one, "Thanks be to God."

Each Sister produces a MobiGlas from their pocket and puts it on. I've seen some of these models before, worked on them. I haven't seen so much tech gear in one place in years. It's like watching flowers bloom as each one winks on.

Someone touches me. I jump.

I'm just on edge is all. This is a lot to take in. A Sister I don't recognize me had done it. Her newly revealed MobiGlas is running a boot sequence as she points to the front of the room. Mom Super, calling me over.

I approach Mom Super, and she begins to smile. Never a good sign. Things go craz when Lady does that. She reaches out a hand to me, "Take it young friend. We would not keep this moment from you."

"What?"

She laughs a little.

"We're going to share access to the information the Returned has brought us," she says. "You may search for whatever you like, however you like. We ask only that you share what you find interesting. Just follow the lead of the Sisters. It has been some time since we had a guest present for the sacrament, but it is allowed."

A weight falls into my outstretched hand. I know what I dream it to be, but what it can't be.

"This is yours, young one. A testament to your hard studies that have made even the Sisters envious of your diligence."

A slim black and blue case rests in my hands. Careful inspection shows no maker's mark or logos. I open it like the treasure chest I know it is.

A MobiGlas. Top of the line model with a blue crystal scrawl along the side. The world starts to go fuzzy.

None. That danger. No! 'm null cry! If I'm cry 'm weak an' tha 'thers will . . . I look around through my tears. I see smiling Sisters with whom I have always been safe. Will always be safe. I still can't let myself. I choke back the tears and look Mom Super in the face. Unable to meet her eyes fully.

"Uh, thanks," is all I get out past the tightness of my throat. I turn and bolt to my seat; desperately not wanting to be the center of attention anymore.

The same Sister who nudged me earlier whispers that they will wait till I'm ready.

Sheer panic.

I fumble with the MobiGlas and finally get it turned on. In a moment a green blinking cursor presents itself on the screen. Ready.

I look at Mom Super, out of breath. She nods.

Suddenly, I feel cold in the vastness of the information I have access to. So much; more than I could learn in a hundred lifetimes.

It takes hours listening to this or that thing a Sister finds or just pushing through one set of data or another. The hard wood benches normally don't bother me, but four hours of economic reports, social news and statistics is a bit long to just sit around with my legs falling asleep. Mom Super got up then and dismissed us. Before I duck out to my room with my new prize, she calls me over.

Mom Super sets her face hard. Formal. I get a knot in my stomach just recognizing the look of it. "The advent of the Returned brings with it an authority second only to my own. Upon this authority, a proposal of change may be brought to the Sisters."

Seems like Sister business. I stay out of that stuff. Old habit not to get tangled, that.

"It may not seem so in your situation, dear, but freedom is paramount to us. Free will and the right to choose are more important than choosing the right or moral thing." she explained. "The information we gather empowers the choices we make. We even share our knowledge or collect private information at times. We choose what we share and what we do very carefully."

"Even my speaking at your trial was a choice, young one."

My heart skips a beat at that. We've never discussed that day or why I'm here. It's an unspoken understanding. She doesn't give answers to the questions I pretend I don't have. Her eyes are holding back a sadness covered by a smile.

"I made my choice to interfere and bring you here. It upset many of the Sisters, but your being here has convinced the others of an ugly truth many of them do not want to learn."

I try to look casual as one of my legs threatens to fall asleep again. "What's that?" I ask, fearing the problem I know now I cause. Tha problem tha' I am.

"That we have failed the people of this and other planets. That we are called to teach as well as learn. That our Order must teach the children of the streets, advocating for them as they themselves cannot. We must use what we learn and are told to help empower our fellow Humans."

"Them can' be taught Mom Super! What I mean is— that street rats teach each other that knowing too much is bad and will get you killed. They're so scared, everyone believes the rhymes. Hell, there are even rhymes about not questioning the rhymes. And . . ."

She puts up her hand to stop me.

"Which is the sort of thing this Order does not know or understand fully, but you do."

She takes a deep breath.

"I never intended to make you the focus of this effort of mine to reform the Order, but you have such unique gifts . . ."

Old Lady stops and stares at me. Her sadness is gone and something more like power burns in her eyes now.

"Will you help us create schools for these children?"

Rage, anger, joy, fear, panic, scheming, dread, hope and shock run through me as I consider what Mom Super just dropped in my lap.

"The choice is sacred. We, I, will think nothing different of you no matter your answer."

Minutes pass and my mind races. Eventually two thoughts rise to the top of the internal chaos: Mom Super needs my help and that if the rats learn the power of information, the street won't own anymore. They will have power like I never did. Maybe even like I have now.

An anger and a determination like I've never known rises in me and my skin bristles. I can pay my debt to the street, my debt to the Sisters, and the debt of every rat from Bazaar to Backtrack.

'Unique gifts' is what she called them. Yeah, those I've got. A sly grin spreads across my face.

I look Mom Super in the eye and recognize what's in her eyes now because I feel it too.

"When do we start?"

*   *   *

I once thought getting to leave again would be a big deal to me, but it's not. I never felt trapped at the convent. Well, not after I learned to read, anyway. The world makes more sense now, but it isn't any different after reading about it.

Maybe that's what happened to the Sisters. They started living in the Library too much, and Mom Super is trying to get them back into the real world.

We work out when and where the first 'Street School' day will be. Two Sisters and I gather in the entry hall to take the rail to Bazaar Street. I wear one of the Habit coats to try my best to blend in with the Sisters. The area around the Convent isn't luxury, but it's not slums either. I see a Blue on the rail and flinch as he gives up his seat for one of the Sisters, like we're important or something. Strange feelings creep on me the rest of the rail ride. By the time we get there I want off the rail car so much I almost miss how the Bazaar has changed.

The Sisters look to me and I take the hint: I'm supposed to lead them. I start for Work Row. Rats gather in Work Row when they are on hard times or young and looking to become Gear Rats. It's just a bigger than normal alley, but it serves well enough. Lots of exits for it too. The way rats like it. The way looks different now that I'm taller, but I get us there without any wrong turns.

Seven or eight kids are sitting on ledges and crates. I turn to the Sisters and nod. They nod back, and we move to an area near the middle of the groups where one wall is mostly empty. One Sister pulls out a small projector and places it on the ground. The other moves next to her and connects her MobiGlas. Some of the rats move closer, curious about the tech. They scatter back as I move next to the projection on the wall and pull back my hood.

"We would like to teach you all whatever you want to know," I say and try to look at as many of them as possible.

One of the older ones speaks up. "Ja Lady? An' wha' make think you gots some us rats wan'? An' wha' i' cos' us? Fancy Up tech you got ain' free. Lock tha'. I Checked."

A joke and challenge. What will it cost? How do I say it won't cost them anything? Free translates to gullible. Why didn't I think about this before now? I have to answer fast or they might all spook and leave.

"Because . . . 'cause rat like you ain' got wha' we got teach. Know tha' lock 'cause 'm was rat an' Sisters taught me more than any rhyme. Null cos'. None debt. All i' takes is time." It's hard to try and force what used to come so naturally to me and what I say is a poor combination of the slang and proper speech, but it might work.

The children look around to each other. I think I caught them more off-guard by how I said it then what I said.

"Tha' craz. You some oldie rat?" A young one says next.

They're talking! Don't blow this.

"Oldie rat? Sure. Craz? None that. What you wan' a know small-y?"

The young one that spoke goes and comes back with someone else, another child that looked sickly. The sickly one showed a lump on his skin.

"Wha' tha' oldie?"

It looked like a cyst or rash maybe, but it could be cancer. Shit. "Tha' bad some. Gots go ta medics, but null do 't here. Bazaar Medics got ta pay off bosses. Ride rail three stop and go ta tha medic down the street ta left. Same like got here. Treat you free like medics here are s'pposed. Some-thin' obvious like this them got ta take in and go on it. Lock truth, that."

I try to give the sick one my rail pass. The other one shoves it away.

"We got creds 'nough ta ride rails. Sure them gots ta go on it if we shows up, eve' we rats?"

"Yes. Them gots ta work it. Lock sure."

The eyes of the whole group judge me and my words for what feels like eternity. Finally the two depart, and the rest of our class stare at them as they go.

The old one pipes up again,"Wha' else you got ta learn us rats Sister?"

Acceptance? At least for now. I paid our entry fee by help-ing those two. They'll let us try. I think it and choke back a memory as I wonder if I would have ever let the Sisters teach me if I'd still been on the street. We got some brave ones.

"Wha' you want ta know?" I say through a smile.

* * *

Now, I leave the Convent with a group of Sisters every week. Some street children, we don't call them rats, have even made it a part of their routine to show up to school. Not every time of course; being too predictable can get you killed on the street. Some never come back again. Each time that happens, I have nightmares until I see one that has been missing for weeks return again. Never show my relief for fear of scaring them off by singling them out. Street children don't use names, and even being recog-nizable is dangerous. Blending into the group protects everyone. I had to stop some Sisters who were develop-ing nicknames and assigning numbers to the kids to track lessons. It would ruin everything if the kids knew they were being tracked with a name or number.

"Is that why you don't have a name?" One of them asks me.

Direct dmg, that.

I try to recover but my shock was already apparent. I've never thought about that before.

"I don't know," is the best I can come up with. Then I change the topic back to School things.

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To call it school is a bit of a stretch. The Sisters and I meet in a wide alley with some street children. We tried to start with basic language skills, but these kids are too practical for that. The teaching program I used is too rigid for them. The Children want information they can apply right away. So we just teach them what they want to learn or what me think might interest them: their legal rights if they get arrested. The going price for a part on the legitimate market. How to get a free rail pass or medic check. The way to count change and write numbers. The sort of thing a street child can use right now or use to get ahead. It seems to be working. They seem to like it more and are bringing others with them if they come.

The rhymes are the biggest obstacle to our efforts. When I was on the street I couldn't go a day without one of them saving my life or helping me get by. All the street kids are going through the same sort of life that I had. Now an 'Oldie Rat' like me is asking them to forget what some of the rhymes say or even go against them? Sometimes, I hate myself, thinking it might get them hurt or killed.

Mom Super was right about needing my unique gifts too. Street slang is thick and almost incomprehensible to most of the Sisters. Sometimes I'm translating both directions. I've started teaching it to the more adventurous Sisters, but it's slow and frustrating.

I don't know how it happened, but one evening while working with a new child, teaching him about staying clean, I look up and all the other Sisters have left. We all tend to come as a group and leave as the day goes on. I'm one of the last most days, but I've never been alone. I'm didn' know why bu' that got me scared some.

When the lesson was finally done, I put the hood up on my coat and begin walking to the rail station. I've got this uneasy feeling, and I start to walk more quickly. I hear a sudden burst of noise to my left and turn my head to look at it, but the hood blocks my view. The verge of panic comes, and I move even faster. The train is there but as I approach the doors close and it pulls away. The next wont be for 20 minutes.

I gasp for breath as I lean against the ticket kiosk.

What the hell? What am I afraid of? Walking around alone? My mind is just clear enough now to be angry at myself. At least one Street child must have seen my panic and will ask about it next week. Maybe it will even scare some away for a while. Am I really this stupid?

That thought carries me through the next few minutes. The sun is setting, but I try to relax as I wait.

Then someone walks up to me.

"Oh, you 'lone, Sister? Ain' i' late?" the Man says.

Strangers don't just walk up to you in Bazaar Street.

"Or 'hapse you ain' Sister. Null tha'. is i' rat. Yeah. Gear rat. Street rat eve'." The man had taken another few steps towards me and stopped again when I backed away.

What did he say? All the panic of an minutes ago shoots back into my mind and stiffens my spine. I don' eve' got a slag.

I turn to look at the man for the first time. He's rough and poor looking, but better dressed than I'd expected. He is shaved but unremarkable. I see the shadow of a face I remember well.

Boss Dirk.

"Ya remember me? Got. I remember you, Rat. I remember that you owe me."

To be continued

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