

JUMP POINT

ISSUE: 06 07



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FROM THE COCKPIT

GREETINGS, CITIZENS!

Firstly, I'd like to thank everyone for the warm welcome you gave me last month. As I've said elsewhere, I'm excited about continuing the **Jump Point** legacy and making this YOUR magazine. So, keep the cards and letters (err, e-mails and tweets) coming and together we'll give you a magazine to be proud of. I've already received a lot of great feedback and suggestions for what you want to see going forward; keep watching this space as we try to make some of it a reality!

This month, we were lucky enough to spend time with *Star Citizen's* combat AI team. Combat AI is a broad term for how *Star Citizen's* NPCs behave when they're hostile to you. In short, how does the computer react to the player? Should enemies duck for cover, go in with guns blazing, toss a grenade, or run like hell? Getting it right is an important step towards building a truly immersive universe... and I think that after reading this interview you'll agree that we've found just the team for the job. Some of our top programmers, artists, and designers have been hard at work on the system that you'll be seeing in a future patch and it was exciting to get a first-hand look at what they've been putting together.

Then, we have an in-depth look at the making of the Drake Vulture, the new entry-level salvage ship that premiered as a concept last month. The Vulture is exciting for many reasons, but a very big one is that it means that development of the salvage mechanic

we touched on in last month's interview has reached an important milestone. Work on 'starter' level ships for a particular task is always a good harbinger and the Vulture is no exception. The article is also a good reminder of why we put so much effort into the first stages of conceiving... as you'll learn, the Vulture went in some wildly different directions early on before we settled on the design you know today. But I won't spoil the story - read on to learn more!

I'd like to end by adding a hearty 'willkommen' to everyone reading this month's **Jump Point** courtesy of the recent GameStar Black *Star Citizen* special magazine promotion, which provided a month to test out what Subscriber access offers. We're happy to be able to put out a magazine like this every month and I encourage you to check out the **Jump Point** archives - there's a book or four worth of reading material to catch up on, and plenty more to come! Subscriptions help make *Star Citizen* a better game and allow us put out extra content like this that helps tell the *Star Citizen* story in different ways.

With that said, I'm going to hop into Alpha 3.2 and try my hand at the mining we learned about in June. As always, thank you to all the Subscribers for your continued support. Keep an eye out and I'll see you... in the 'verse!

Ben

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DEVELOPER INTERVIEW

COMBAT AI

Compared to giant spacecraft, procedurally generated planets, and new interstellar careers, AI work might not seem like the most exciting feature... but getting it right is one of the most important tasks the *Star Citizen* development team is currently managing.

Combat AI is something of a bedrock feature. It's something that you won't necessarily think about, but it impacts pretty much every aspect of how you play the game. There's an old truism in game development that the challenge isn't programming an AI that can always win, it's creating one that feels authentic and provides fun and challenging gameplay.

This month, we were lucky enough to be joined by three members of the combat AI development team who have been working on how *Star Citizen*'s NPCs are going to fight you.

BEGIN TRANSMISSION →

JUMP POINT: Hello and welcome to our discussion of *Star Citizen*'s combat AI development. Thank you all for participating and, of course, for the incredible work you do every day to make the game a reality. Please start by introducing yourself and telling us what kind of work you do on *Star Citizen*.

DAN WHITING: I'm Dan Whiting, Senior Character Animator in the UK. I'm currently working on animation for FPS - Combat AI.

SERGIO DELGADO: Hello, I am Sergio Delgado, Senior Gameplay Programmer. I recently joined the Combat AI team to help with combat and perception reactions.

MARIUS AIRINEI: I'm Marius Airinei, AI Programmer in the Frankfurt office. I'm working on FPS Combat AI, from behaviors to core AI systems related to Actor AI.

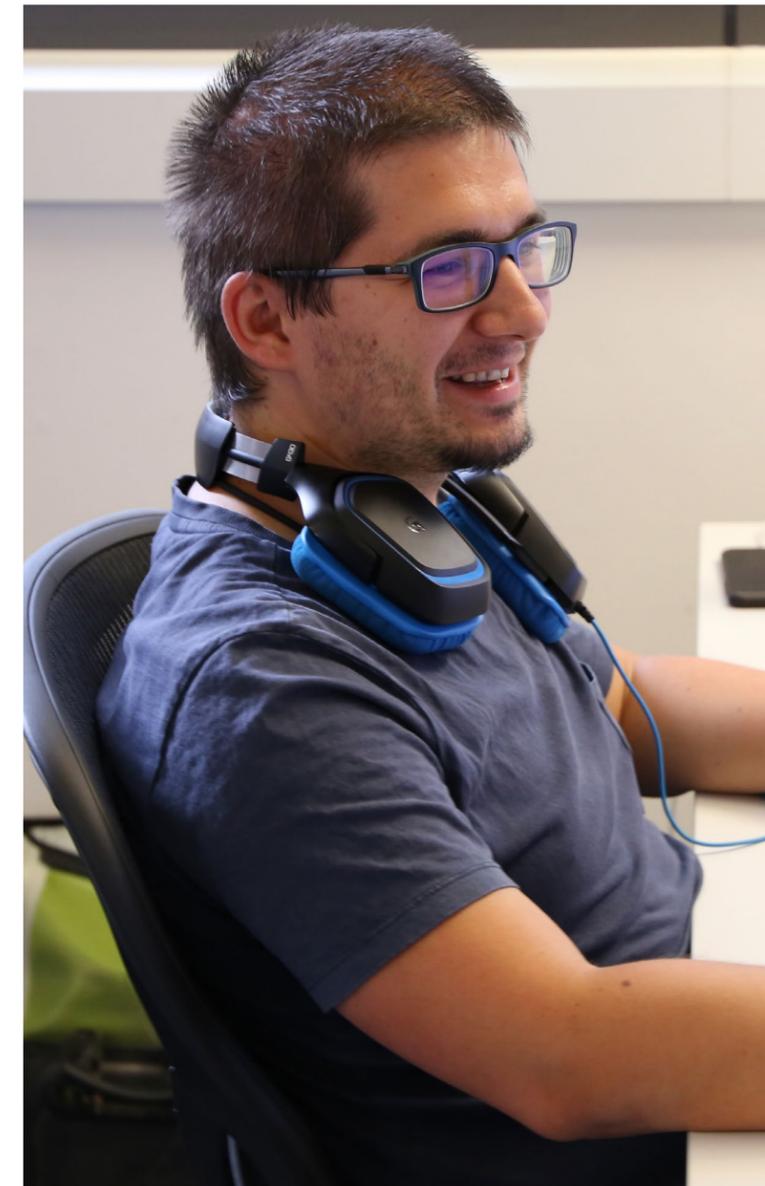
JP: Now this will sound like a stupid question, but can you tell us what combat AI is? What areas of your work do the players interact with?



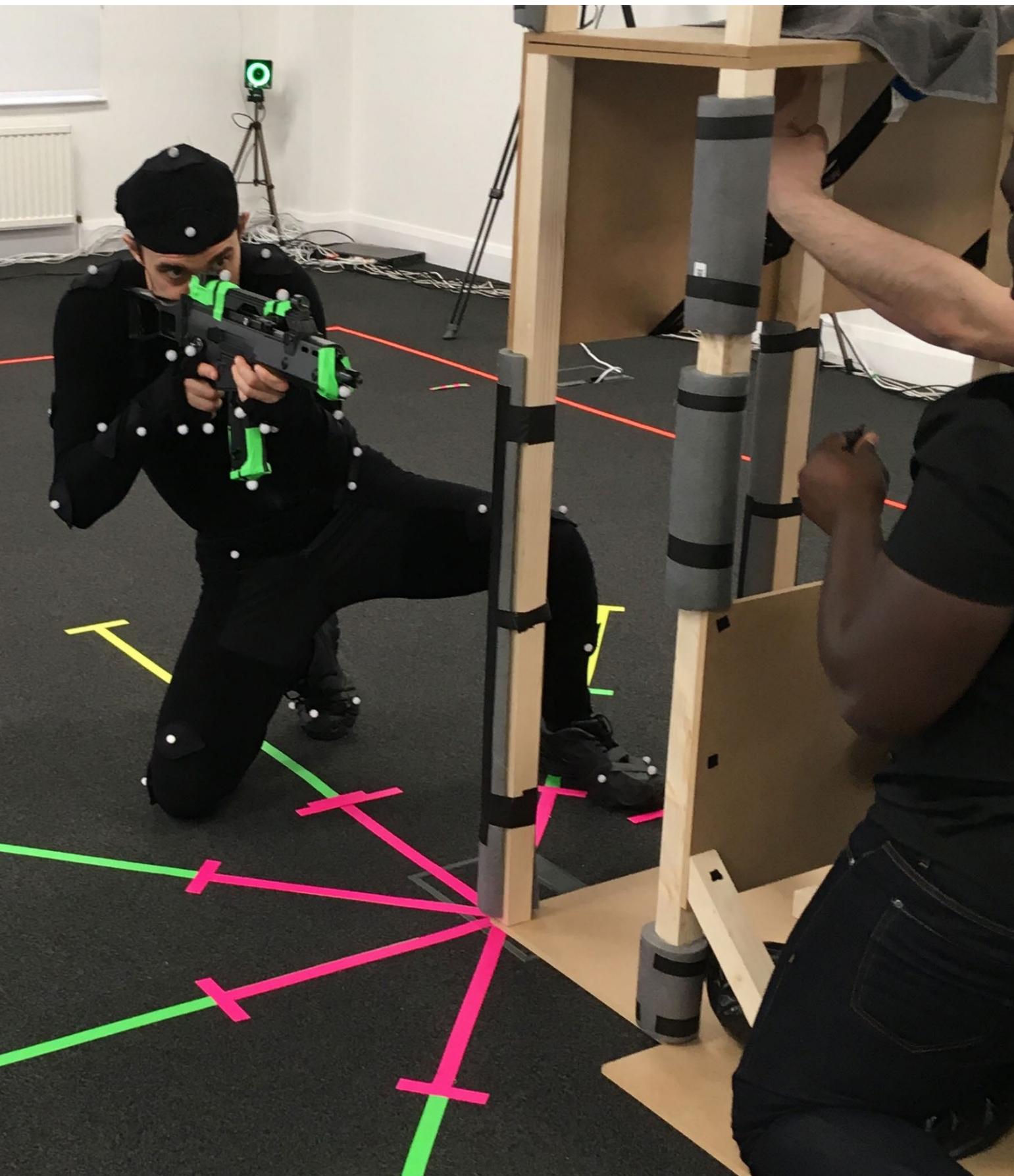
DAN WHITING



SERGIO DELGADO



MARIUS AIRINEI



DAN: We deal with enemy combatants on the ground, so this isn't related to space battles. We're concerned with the behaviors and actions of the NPCs around you, especially as they become hostile.

SERGIO: We are responsible for the behaviors, actions, tactics, and animations that NPCs have when they are involved in a fight; our goal is to make them believable, challenging, and fun to play against.

JP: *How do you determine what animations are needed? How does your work on what we see tie back to what's under the hood?*

DAN: We've developed a whole system of movements and actions for the NPCs that should reflect all their behaviors and responses, which is based on the environment and the NPC's level of combat experience. This means there are hundreds of individual files created to allow NPCs to operate in a way that conveys that goal. They have to have an awareness of their environment, they need to assess the nature of potential threats (from a suspicious sound they heard, to bullets whizzing overhead), and they need to find and get to cover positions with varying levels of urgency depending on the nature of those threats. Once there, the NPC must make further assessments as to whether they are in a good cover position and whether to return fire or call in for support. As the nature of the threat is determined, the NPCs

can decide to launch a counter-attack or move to a new location and take up defensive positions.

Different NPCs with varying levels of combat experience will handle these situations differently. The players should soon be able to recognize whether they're up against a few weekend warriors or whether they've stirred up a hornet's nest of highly-skilled special operatives.

A lot of our animations are therefore derived from combat training videos and combat advisors. We can break these down into individual animation pieces to satisfy the dozens of scenarios the NPCs could find themselves faced with. I work closely with the other guys here to make sure the right files are used in the right situations. Their feedback tells me what modifications we need to make to balance realism with fun gameplay.

JP: *How do you program an AI? I remember games in the early 90s having a very simple flowchart - if the player does this, respond with a 30% chance of this, and so on. I imagine it's a lot more complex today. What's going on in a Star Citizen NPC's head?*

SERGIO: Well, things have indeed changed a bit since the early days, but fundamentally the idea is still the same: an NPC has to look intelligent and has to provide a challenge when fighting against players. In *Star Citizen*, NPCs basically have two 'modes' in which they



the communication system, targeting systems, the tactical system for choosing a good place to attack, the movement system, and the interaction systems for using different objects in the universe. So, the work has increased a lot (compared with the old games) as there are so many systems and giving the ability to AI to use all of those.

JP: *What's on the table at the moment, and will you be adding AI updates on an ongoing basis?*

SERGIO: We are currently pushing hard to get the first versions of combat AI out for the community to play - we really want them to experience combat and we want to see them having fun with it. Once real players experience it, it will be a matter of iterating on the known features and adding new ones to make it a real and fun challenge. As the game grows and new features are added, NPCs will naturally need to react to them in a believable manner.

AI is one of those game features that is never truly finished; there is always something extra we could do, some particular case we could handle better, some balance that needs tweaking. We will be making the behaviors more complex, real and fun.

JP: *Dan, where does animation fit into the pipeline?*

DAN: We sometimes work on a different schedule than the other departments, depending on what features have been designed and what motion-capture data is ready for us to work with. So, there may be times I'm animating grenade throws long before other departments are ready to test them. But that doesn't mean no progress is being made or that it's chaotic. It gives us a chance to test various behaviors before sending them down the assembly line. This usually helps us avoid speed bumps along the way.

Since our goal is to have NPCs of varying levels of combat experience, it means each character class must have a full working set of data; every file that conveys a poorly-trained fighter has its counterpart in a highly-skilled fighter. Once the Directors and Designers have given us a good idea of how we differentiate between those styles, 'progress' for animation is creating those hundreds of assets. Sometimes, I can hand off chunks of data to programming, other times they'll have to wait until we have an entire feature set completed before they can plug it in.

Once a feature set is complete, we can often add variations. We've



operate, non-combat and combat:

In a non-combat situation, they follow a schedule that tells them, based on the game time, what they are supposed to be doing: eating, sleeping, guard duty, etc. That way, when players encounter them, they appear to have a life outside of the player's immediate reality. Missions and game events can alter their schedule but, in essence, that is the core idea.

In combat, NPCs react to stimuli in the environment: seeing a hostile, a dead comrade, hearing an explosion. Then they follow a reaction strategy which is, hopefully, the best one to cope with that stimulus. During the combat core they decide their squad state, if they should try to get into cover to stay alive, throw a grenade, or shoot to provide help to a team member, etc. The challenge is not making them unbeatable or superhuman, but to make them fun to play against!

JP: *You mentioned a squad state - do the NPCs work together like players might? Will different types of NPCs have different reactions to the same stimuli?*

SERGIO: There are different types of enemies the players will encounter and we want each type to have different personalities. For example, certain types will treat their allies like friends and care deeply for them, whereas others are just there for the money and only care about their own survivability. We want players to get to know the enemies they will encounter and to experience different fight flavors in the game.

JP: *As we develop the game, it's very clear to the end user how some parts are evolving. The planets get new types of environments, the ships get new systems and features as we continue to patch... what does progress mean for combat AI?*

MARIUS: When creating behaviors for NPCs (peaceful and in combat), we are using the Subsumption system. This is used to describe, at a higher level, the way they should behave based on their daily schedule or from assignments they received from the player, mission, or combat.

Besides creating this high-level system for representing behavior, we also have some lower level systems like the one for perception,



all seen games where an NPC reacts the same way to something every time it happens. But once that underlying system is in place and working, adding variations based on multiple factors is relatively pain-free. We're fortunate in that it's relatively hard to 'break' a game by adding more animation data alongside pre-existing data.

JP: *Very interesting! It's easy to forget that this kind of work is some of the most important for the game. And when you do your jobs right, it all feels natural! Does this kind of work on Star Citizen differ from projects you might have worked on in the past, or is this generally how AI is developed now?*

DAN: From an animation standpoint, there are a lot of similarities.

You always want characters to move in a convincing fashion. You generally don't want the player distracted by odd-looking behavior or animations. How you achieve that is another story. I do like that I'm afforded the time and resources to present the best data I can to the other guys on the team.

SERGIO: Yeah, when things go nice and smoothly players forget about us! Although different games might use different techniques, a lot of the requirements for the AI in any shooter game remain pretty much the same: perception of the environment, pathfinding, planning, decision making, communication, targeting, online synchronization, etc.

MARIUS: The work done in *Star Citizen* is not too different from other

projects. The good part here is that we have so many challenges with this big universe that we want to create and this means keeping up to date with the newest technologies in game development while also trying to improve on some of the existing systems.

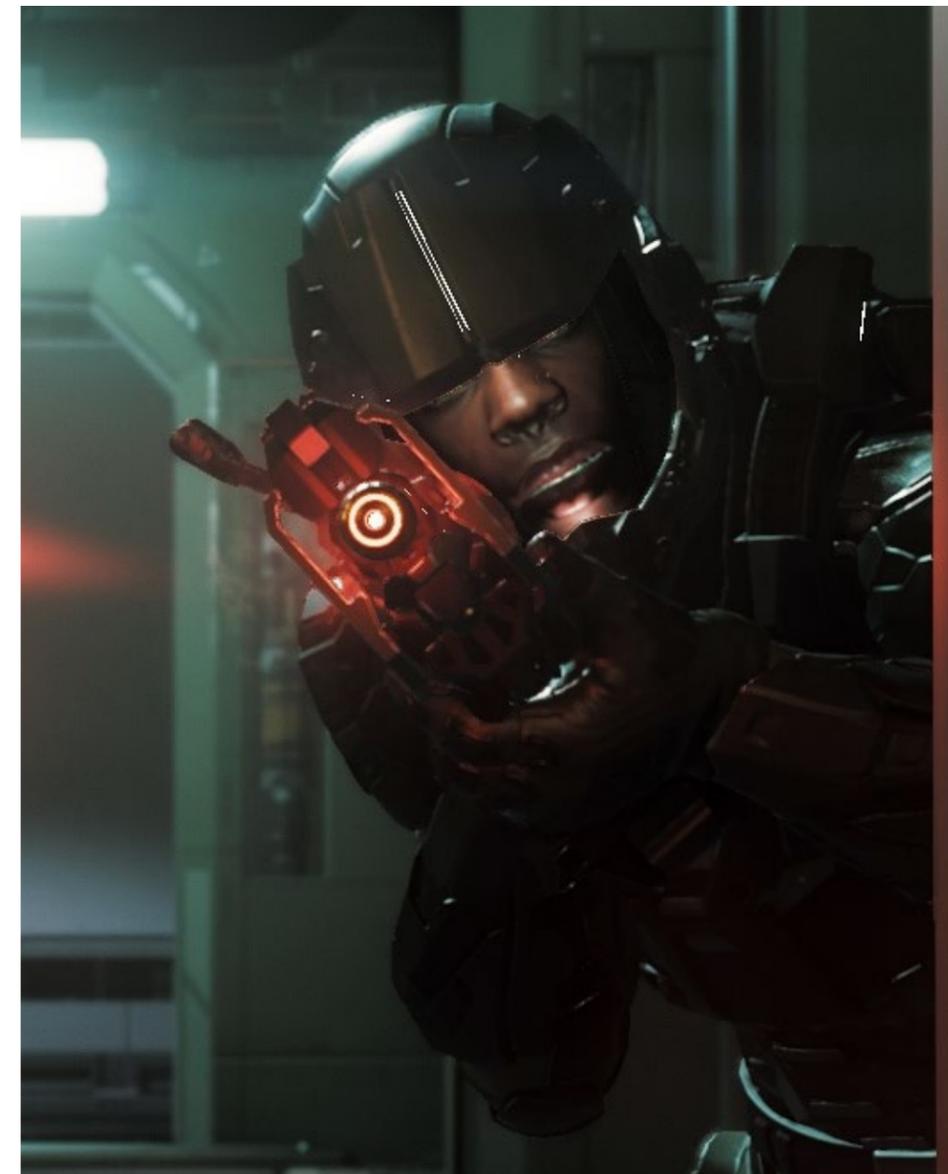
JP: *You mentioned grenades, but how does animation react to different weapons? Do we build pistols, rifles, etc. in a standard shape to reduce the number of animations needed, or is there more work every time the game adds a new gun?*

DAN: There is some standardization across weapon classes. For example, I believe all the pistol grips are very similar in size and shape. This allows us to reuse certain hand movements, which makes it

possible to add things like trigger discipline to distinguish between those trained and untrained combatants. But there is simply no way to take an animated file of a guy holding a pistol and quickly change it to a guy holding a shotgun. It always requires a new motion set. But that's typical for most games, and so it's built into our schedule.

JP: *As more of your work rolls out in future patches, is there anything special you'd like players to look out for?*

DAN: Not necessarily. If anything, I want to see it working smoothly and convincingly. I don't have a particular animation file that I think is really cool, and that I want to see played multiple times, like a celebration animation in a sports game. Eventually though, I want the



player to feel like 'Damn! That was a bad-ass firefight. Oh... and nice trigger discipline on the dude that shot me'.

JP: How do you test this kind of work before it has rolled out to the live audience? What kind of feedback is valuable to you?

MARIUS: We usually do a lot of playthroughs and receive feedback from the team and directors. Of course, we have a lot of help from the QA team.

SERGIO: Well, each of us are constantly testing our own changes. In order to commit some change in code/data to the game, you first need to make sure it does what it should and that it does not break anything else. Then, there we have designers testing the features, directors reviewing them and, of course, the heroes in QA who need to test everything in the game and make sure no bug remains hidden!

Pretty much any feedback is useful. Regarding bugs, what we need the most is information relevant to the reproducibility of the issue - anything that can help us find the problem faster is useful. Feedback for features is super useful too, as it helps us identify the parts and features



of the game players enjoy the most, and the ones that they want changed. At the end of the day, we are trying to get players to have fun, so we need to know what's fun and what isn't.

DAN: First, I test just to make sure it isn't broken. We animate in Maya and Motion Builder, but it doesn't matter if it looks good there as it needs to work properly in-engine. So, the first place I test is right there in a level to see if everything was exported correctly. As an animator, I'm not concerned with lights and shaders, so generally I can test my work in a very simplified level. If it's been designed properly, it should fit in well with what the programming teams are expecting. There's a lot of back and forth at that point with various team members, leads, and directors to playtest the various behaviors. From there we make improvements, or sometimes even re-design small parts of the system to improve performance.

JP: Do you have any 'dream' features for the combat AI that aren't scheduled but you'd like to see someday?

SERGIO: To be honest, combat AI has been my dream feature for quite some time. I have worked on gameplay and AI for a while, but never

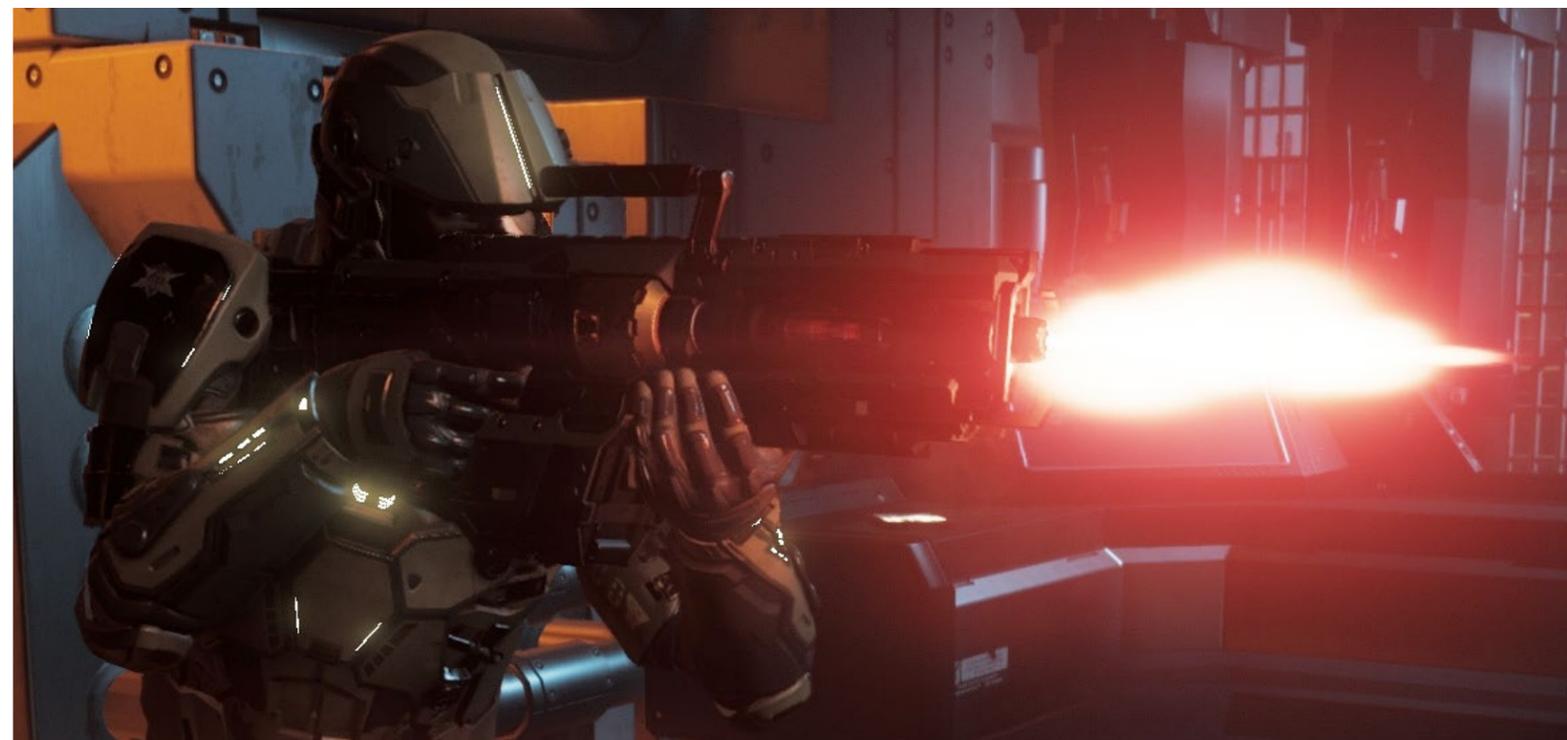
ever had the chance to get my hands into the gritty parts of combat before - it's super exciting as it is!

DAN: I think most of what we want to have has at least been discussed and cataloged, if not given a fully marked up schedule. Small platoons of NPCs, working in a coordinated and intelligent ground attack formation will be cool to see. 'Fighting against the bad guys' is arguably one of the most exciting parts of making the game.

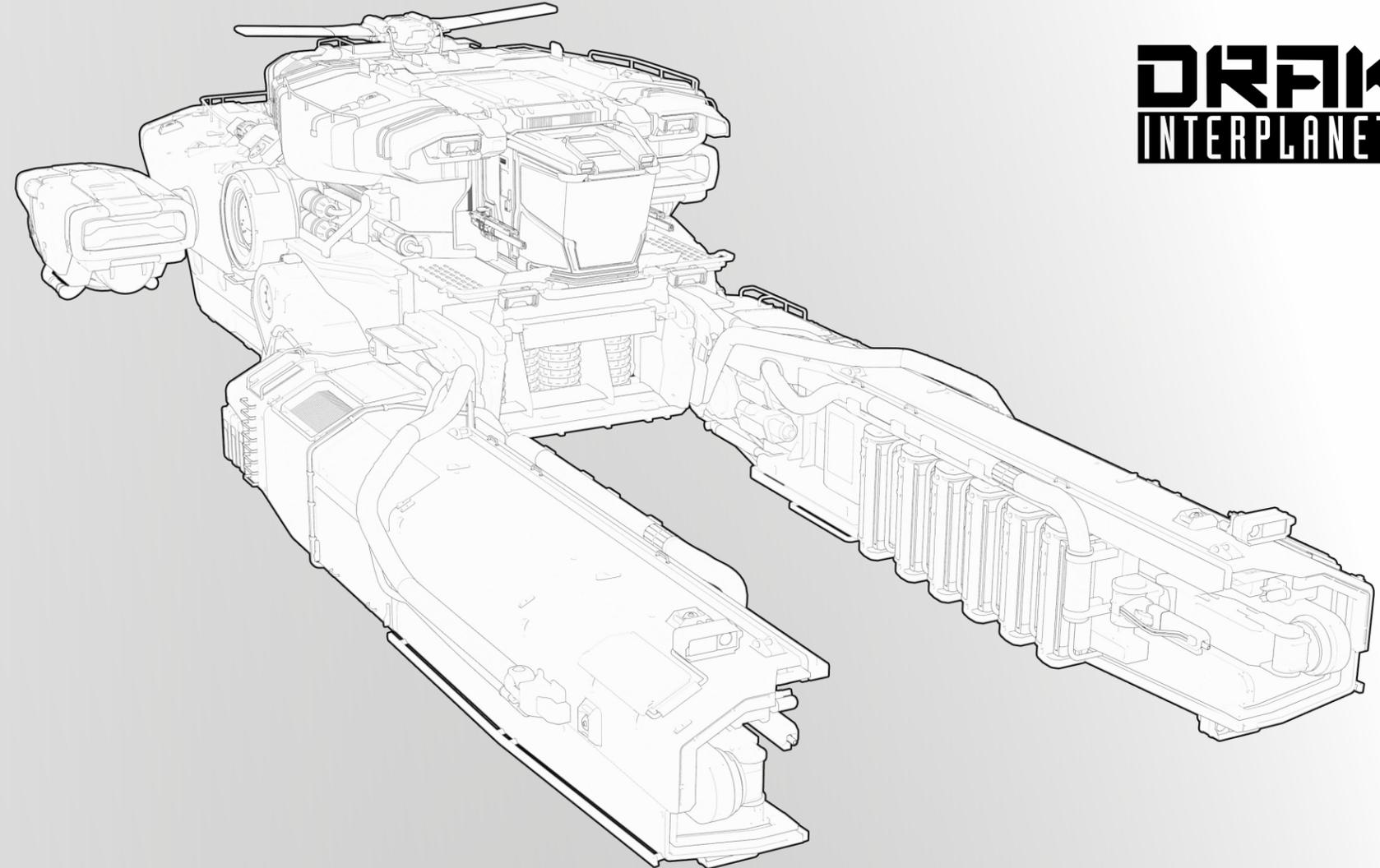
JP: I think I have everything I need! Thank you so much for taking the time to speak with us. If you have any last words for the Star Citizen community that's looking forward to your work (whether they know it or not!) feel free to add them here.

DAN: I really appreciate the enthusiasm and interest we get from the SC community. I like seeing the jokes about trigger discipline in the forums. I like their attention to detail. They want this game to be as cool as we do, and we're excited to make the best experience we can.

END TRANSMISSION ←



WORK IN PROGRESS... DRAKE VULTURE



AIMS

- Starter Salvage Ship – The one-man entry into the salvage career. Designed for small scale personal salvage via EVA and external processing rather than using the ship to salvage. Single utility mount on the front of the ship that houses the “scraper” laser which strips the surface of ships into a resource. Uses MultiTool and Salvage charges to break up wrecks and take individual components and loot rather than processing chunks of ship.
- Player can live long term on board with the basic accommodation, when finding wreckage they take their hand held Salvage tools from their internal storage to go recover valuable assets, these can be stored in the rear cargo hold, like a space pickup truck.

AESTHETIC

- Similar shape/styling to the other Drake ships, rough and ready Soviet-era style.

Length	33m
Width	16m
Height	9m
Mass	114,591kg
Speed	165 m/s
Crew	1
Powerplants	1 x Small
Shield	2 x Small

Armour	Large
Weapons	2 x
Thrusters	2 x Small 2 x VTOL
Utility Items	Scraper Beam Tractor Beam
Cargo Capacity	12 SCU

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

KEY CONTRIBUTORS :
 LEAD DESIGNER: JOHN CREWE
 SHIP DESIGNER: TOBY LEWIN & ALEX AKSTINAS
 ART DIRECTOR: PAUL JONES

DRAKE AND BAKE

There have been volumes written about Drake Interplanetary, much of it contradictory. Is the Cutlass a fearsome heavy fighter or is it a cheap, disposable getaway vehicle? Are Drake ships hard-working industrial vehicles being abused by pirates, or are they built with piracy in mind? The great Drake dichotomy has been with *Star Citizen* since the start of the project when the company was assigned the pirate Cutlass fighter and the industrial Caterpillar transport. Drake would end up making ships in two different directions: ugly-but-fearsome armed 'haulage' ships and industrial support ships patterned after modern-day construction equipment. Each additional ship would adhere to that original divide,

forcing the designers of ships like the Dragonfly, Buccaneer, and Herald to slot them appropriately into Drake's twin-tailed legacy.

In 2018, another Drake ship selected by backers would join the armada... and as it was developed it would take aim directly at that divide.

SALVAGE AHEAD

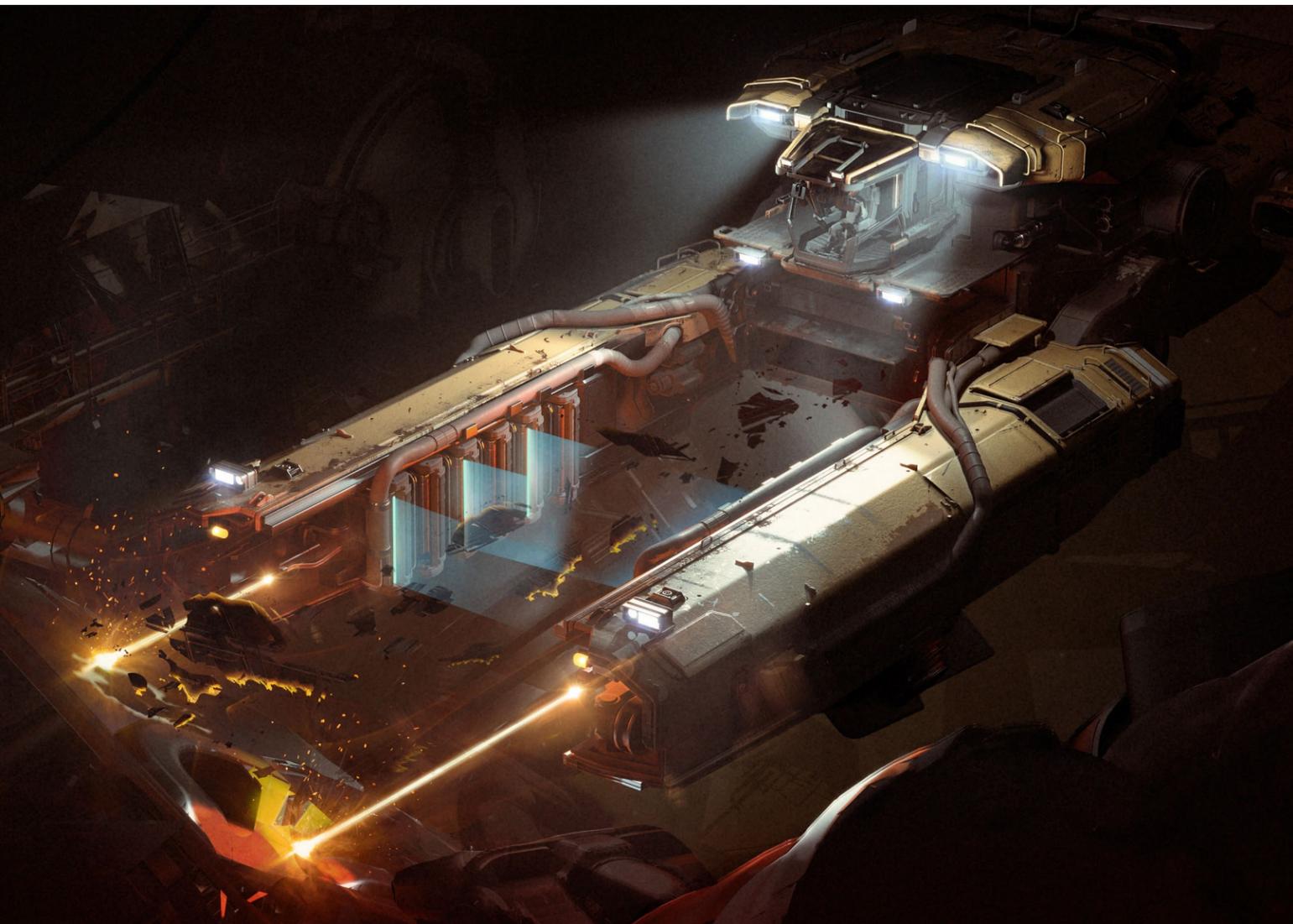
When *Star Citizen* first polled backers in 2014 on careers they would like to see added to the game, salvage was among the most popular choices. This

lead to the early development of the Reclaimer platform, a massive vehicle that was equal parts salvage machine, cargo hauler, and spaceborne factory. Like the Orion miner, Hull E transport, or Javelin destroyer, the Reclaimer represented a potential end-of-the-line ship for future salvage crews. It was the largest possible dedicated craft that could do everything in the realm of salvage and would represent a major goal for those working their way to prosperity by collecting and refining abandoned hulls.

By late 2017, a working salvage mechanic was no longer the realm of design theory; it was fast approaching. The team planned to introduce

the long-awaited mining mechanic in Alpha 3.2 in the first half of 2018, with salvaging following in a patch later in the year. What was once a broad concept for 'what do we need to include?' was now becoming a reality. And just as the Orion needed the Prospector, the Hull E the Hull A, and the Javelin the Polaris, the Reclaimer would need to be bookended with a starter-level salvage ship - one that would introduce players to the new mechanics and also let designers and testers better experiment with their works in progress. The as-yet untitled 2018 entry-level salvage ship would be the vehicle to start future Reclaimer crews on their career paths. But who would build it?





own small carrier capable of holding several smaller pledge ships and tying the idea to Drake seemed like a clear winner. Who could turn down the opportunity to command a small home base servicing Dragonflies, Buccaneers, and Cutlasses? As it turned out, quite a few people. The lure of the Vulture salvage concept proved too great and it managed to beat out the Kraken 44% to 37%. Suddenly, a Drake salvage ship was on the schedule!

Designer, John Crewe, put together the overall concept pitch for the now-officially-named Vulture, which he described as being “*designed for small-scale personal salvage via EVA and external processing rather than using the ship to salvage*”. A ‘scraper’ laser at the front of the ship would strip

the surface of resources, while a handheld multi-tool and salvage charges would break up wrecks into individual components that could be resold rather than processed into raw material. Where the Reclaimer would break up entire hulls into ore, the Vulture could be used more surgically. However, it would lack the massive cargo hold of the larger ship, meaning players would need to choose between carefully collecting components one at a time or working on an industrial scale. The expectation was that salvage operations would be lengthy affairs that would take captains to the edge of civilized space, so the design featured basic accommodation for the player, including a bed and toilet based on the similarly-scaled Prospector miner. For the look, The Design Team emphasized Drake’s ‘Soviet-era’ style, putting function far ahead of form.



A DARK HORSE CANDIDATE

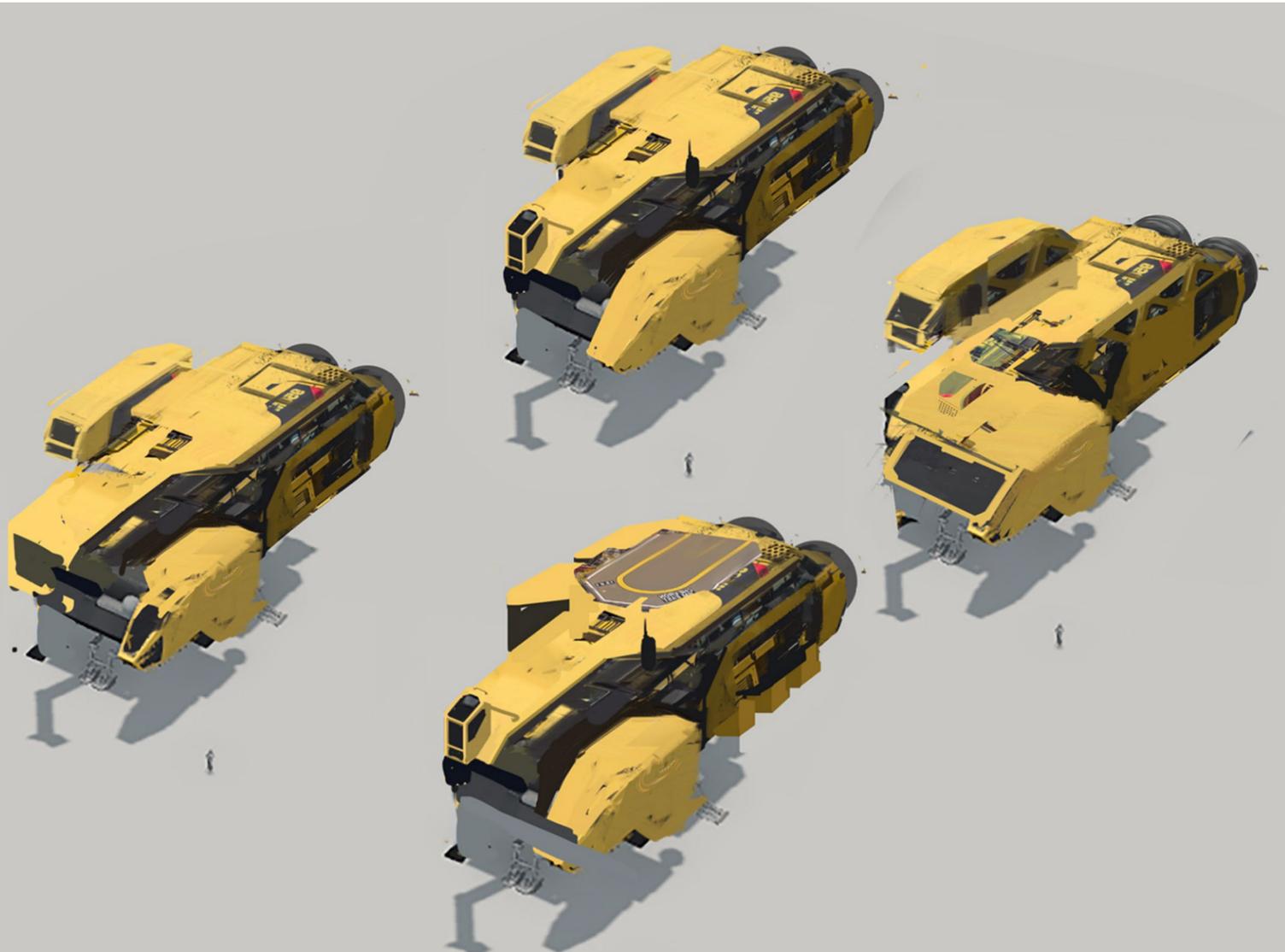
The need for an entry-level ship to take advantage of the burgeoning salvage mechanic work didn’t necessarily mean adding to the Drake fleet. In fact, as 2017 wrapped up, the general thought was that the small salvage assignment would go to one of the other companies... that was until a vote surprised everyone. As part of the 2017 end-of-year anniversary celebration, the Ship Team decided to ask the *Star Citizen* community which Drake ship they would like to see developed next. The poll offered short descriptions of three possible ships that were being discussed internally:

A. ENTRY-LEVEL DRAKE SALVAGE SHIP (CODE NAME: VULTURE)
A single-pilot salvage starter ship, no drones, but plenty of onboard storage to help with EVA salvage operations (space for cutters, charges, etc.) and space in a separate area to store/process the recovered salvage. Mostly designed for the player to EVA out and do the salvage, rather than sit inside and do it with tractor beams/lasers. Small enough to sneak into hostile areas unnoticed to recover fresh salvage.

B. MULTI-CREW DRAKE EXPLORER (CODE NAME: CORSAIR)
Drake’s competitor to the Constellation, a rough and ready multi-crew explorer. Differs from the 600i by its crude basic construction and from the Constellation by its lower missile count, but with a third turret to make up for it. Able to transport a vehicle and cargo (think extended/up-scaled Cutlass rear area). Faster and more nimble than the others, but like all Drake ships, pretty paper-thin.

C. DRAKE SCOUT CARRIER (CODE NAME: KRAKEN)
Drake’s capital ship entry, space to park and store a few medium ships (up to Freelancer-sized) and transport them around the ‘verse. Serves as a mobile truck stop in function with a small hub of stores (some less than legit) to help restock.

As the poll was launched, the assumption on the team was that there was an obvious winner: the long-discussed pocket carrier, the Kraken. Pilots around the ‘verse had long demanded the ability to have their



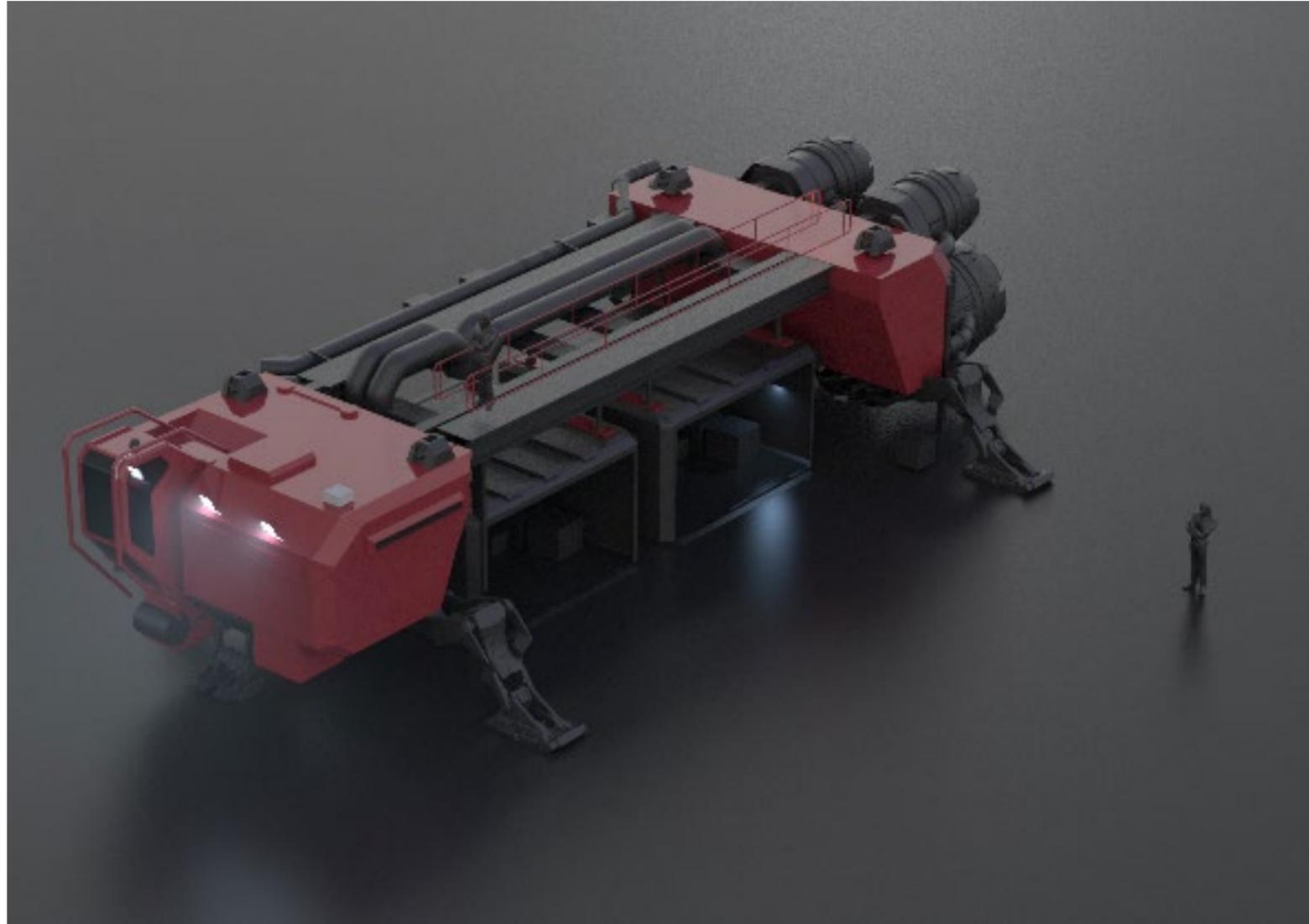
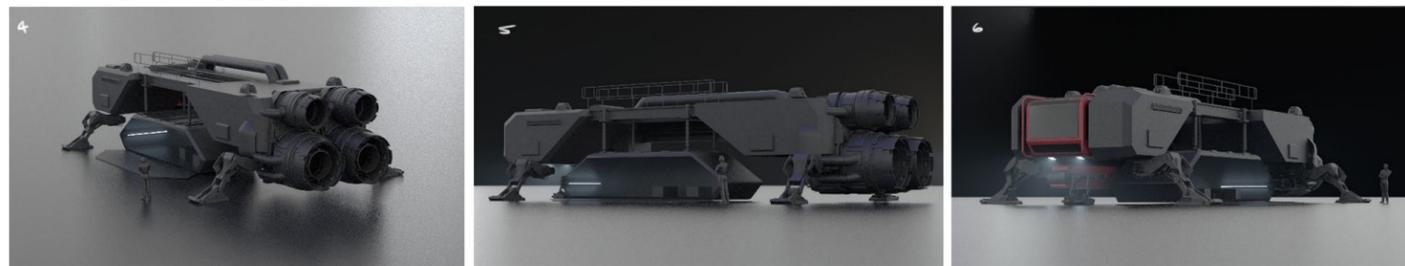
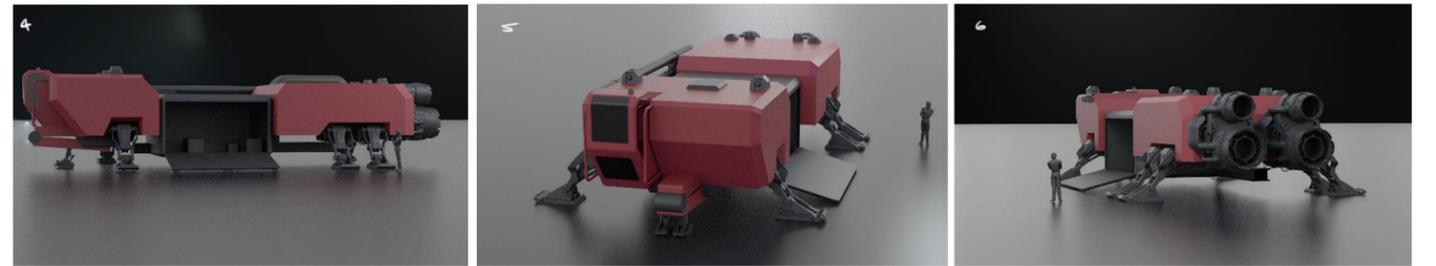
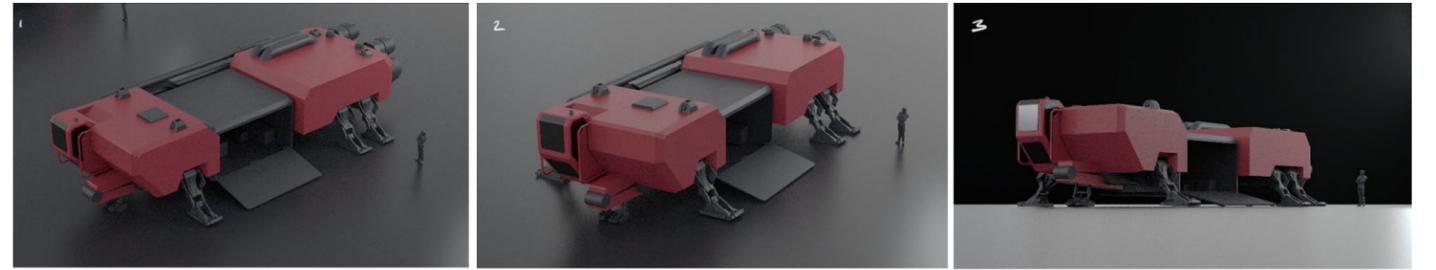
FIRST TIME AROUND

Development of the Vulture concept art began in earnest in January when the team at Foundry 42 returned from their holiday break. Art Director Paul Jones chose concept artist Toby Lewin for the task of capturing a Drake salvage vehicle. Toby is best known to *Star Citizen* fans for his work with Nathan Dearsley on marketing promo images. His first concept vehicle was the Tumbriel Nova tank, coincidentally revealed around the same time the Vulture won the fan vote (though the tank itself had been conceived earlier in the year). At this point, developing the Vulture seemed like a simple task. "We already know what Drake is", Paul noted. Indeed, Drake already had a complete library of designs to choose from and there was already an accepted brand aesthetic. Toby's task was to take that body of work, plus the newly developed salvage gameplay design, and merge them with Paul's take on the specific

Vulture concept design description. As concept ship assignments go, it seemed like an easy translation compared to building whole colony ships or heavily armored battlecruisers.

Drilling down from the design brief, Paul likened the Vulture to a Transit van - comparatively small, imminently functional, but not at all pretty. Toby began his first pass by generating twenty-two industrial-inspired silhouettes. The designs were largely asymmetrical and featured bulging containers and tanks, with some referencing the Cutlass in overall layout. Paul chose two to develop further, which became the first art pass with four different 3D concept takes on the Vulture idea. These were done in construction equipment yellow to emphasize the working nature of the design and they featured familiar cabs and shifting modules to take





care of the salvage work. Paul reviewed the models and made several important notes:

- Think about function more: what it means to be solving? What are the problems it may encounter?
- Look at maybe adding extra little thrusters to create a knobbly mechanical beast, rugged.
- The salvage arm could be folded up at the front or enclosed in a unit so doors have to open to reveal it.

Paul went on to say that the design should be kept asymmetrical, but that there should be special attention paid to the cab as the operator would need a clear view and the ability to see 'the unit' (as the salvage section was then known internally). For additional visual reference, he

suggested looking at a number of working vehicles, including a modular dumpster carrier, low-and-long airport gate movers and, of course, the ship's carrion-eating namesake.

The result of this feedback was a new take that looked a bit like a cross between an Argo shuttle and an insect. Toby rendered a host of shots of the updated design with a red industrial livery and passed them on to Paul for the first team review. Unfortunately, the consensus was that the concept focused too heavily on sheer functionality. The ship was supposed to be ugly, but the current version was deemed far too utilitarian. At this juncture, Paul faced a serious problem: he was leaning towards a complete restart of the concept and Toby was scheduled to move on to another task. Toby agreed to provide as much additional concept work as he could, but to finish the ship, the Drake Vulture was going to need another prime contractor.

CHANGING VULTURES IN MIDSTREAM

With that, Art Director Paul Jones made the difficult decision to call a full restart on the Vulture concept... but there wasn't a clear choice for an artist yet. He first liaised with the design team to provide additional details as to just how the Vulture would 'work' in the finished game. From these discussions, he provided the art team several 'must haves' and several optional bullet points about the Vulture's functionality:

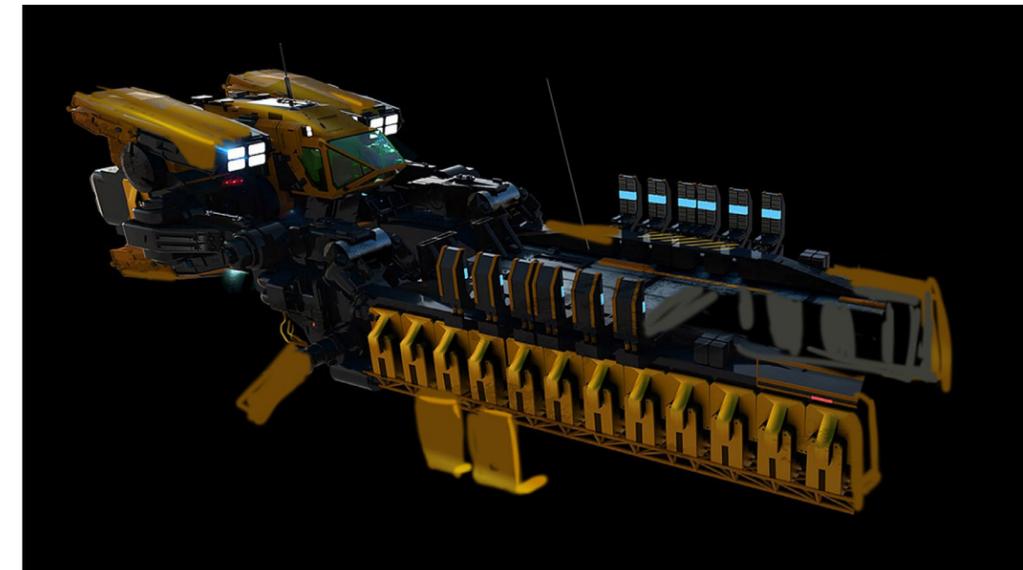
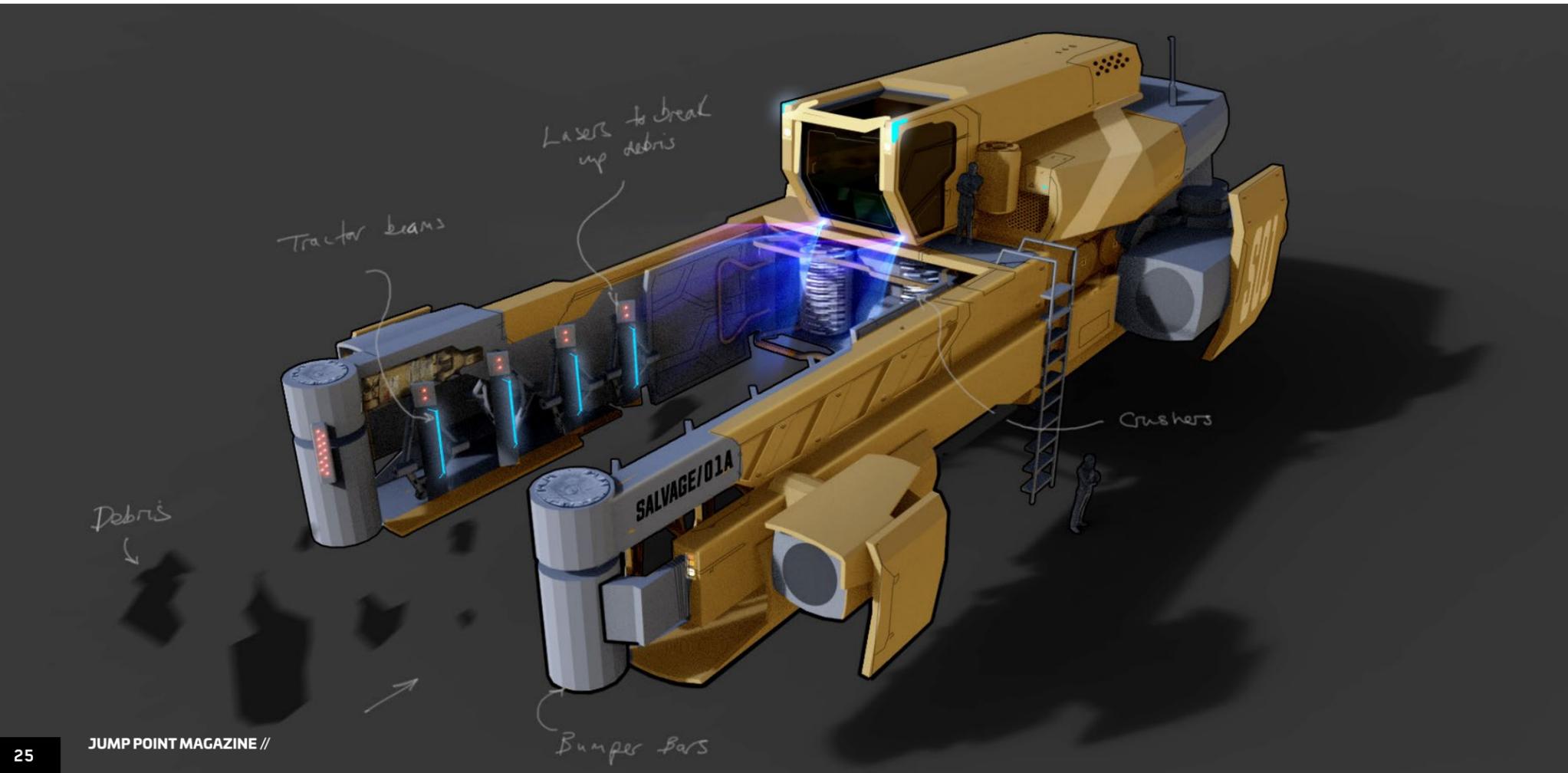
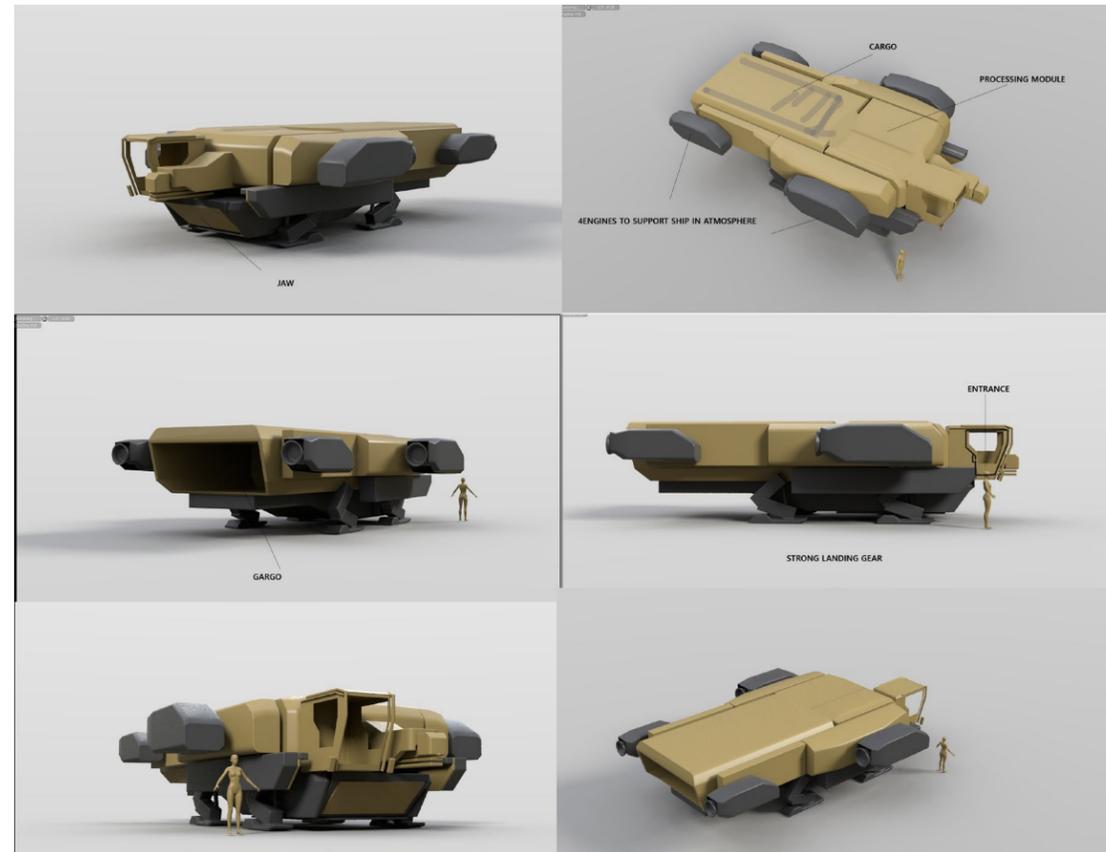
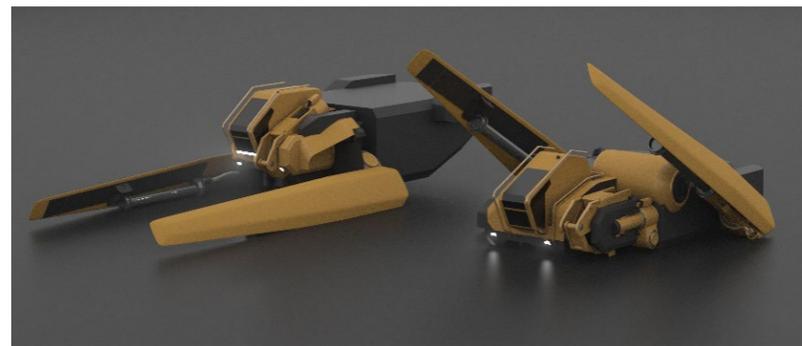
REQUIRED

- You can use a laser scraper to take off the surface metal to reveal the substructure of the ship.
- The material is tracted into a tube and put in the back.
- You can fire explosive charges at key points into a hull which then break the ship into smaller parts.

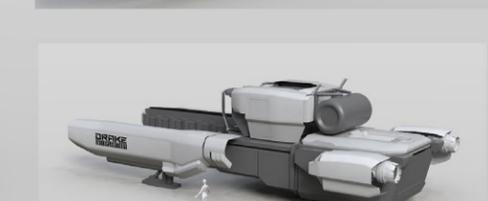
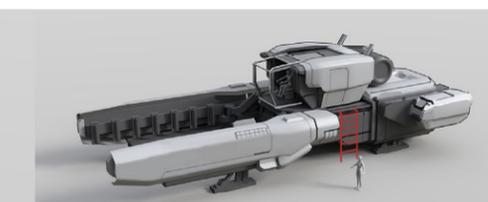
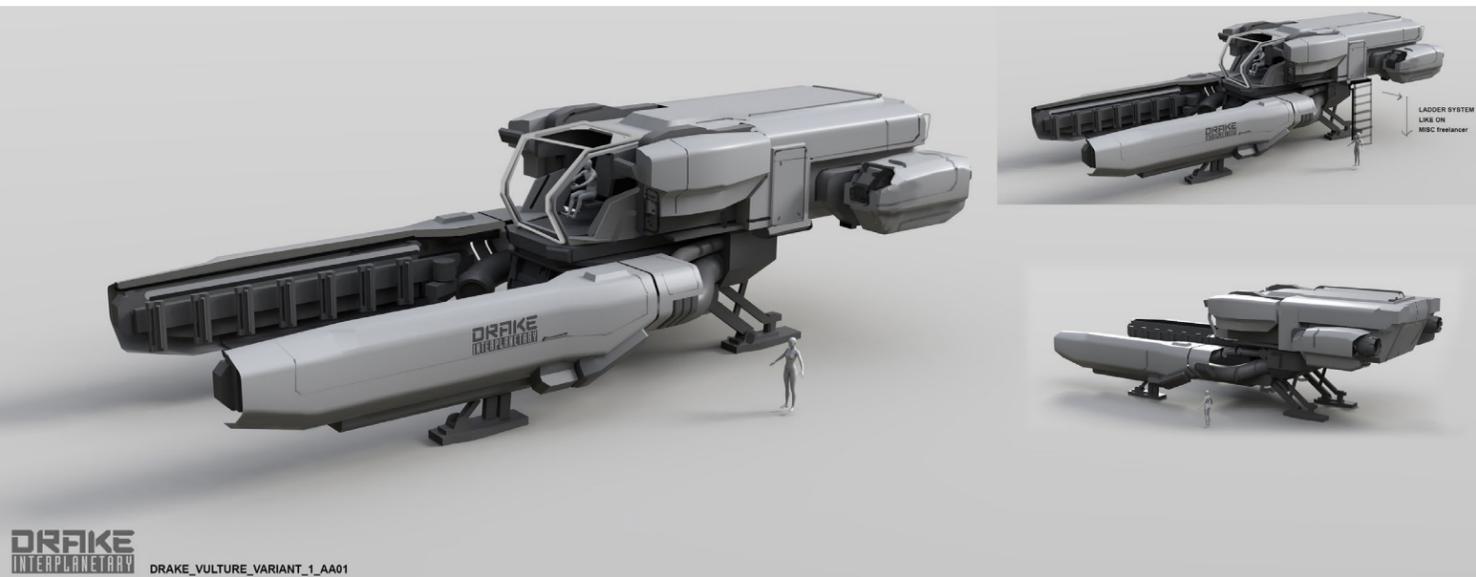
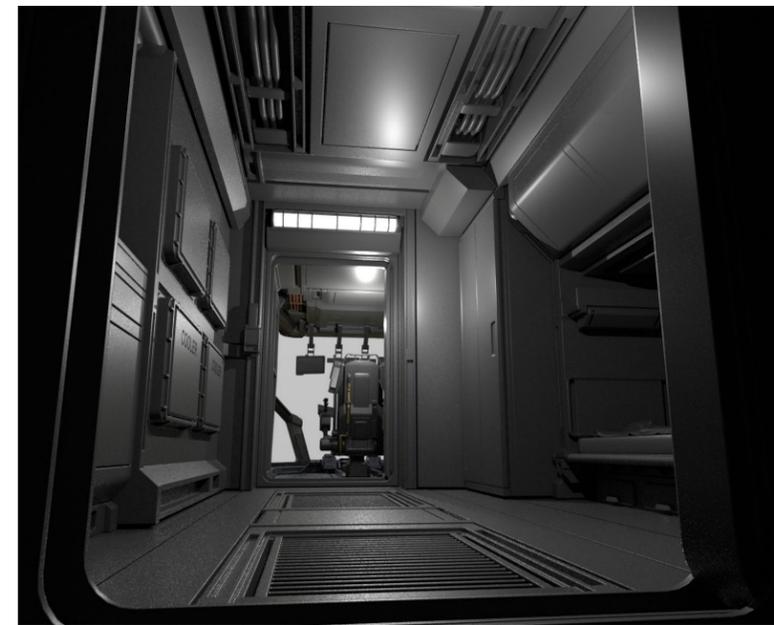
- Smaller parts can then be tracted into an opening that leads to a mulcher (as in the Reclaimer).
- Parts are then broken up and a box is finally deposited when filled into the hold.
- ALSO the player can hand scavenge parts (ship items like shield generators) and place them in the hold.

OPTIONAL

- Players can move the ship around to scoop up parts [without going EVA].
- Players can use an arm and maneuvering thrusters [to collect parts].
- Explosive charges could be fired by a 'gun' mounted either to the ship or to the arm.



With a full rework and change of direction on the cards, Paul gathered the team for a concept jam to get fresh eyes on the design and hopefully take the project in a new direction. Amidst the rabble of ideas and concepts, one voice stood out above the rest as Concept Artist, Alex Akstinas, presented something he'd been quietly working on under the radar. The team loved the fresh approach and no one wanted to pass up the opportunity to get the project firmly back on track, so Paul made the easy decision to hand the design over to Alex. Despite having worked on several ships in a supporting role, Drake's first salvage ship would be Alex's first full ship, period.

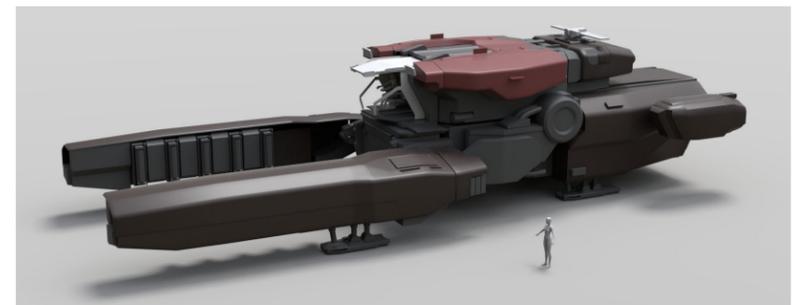
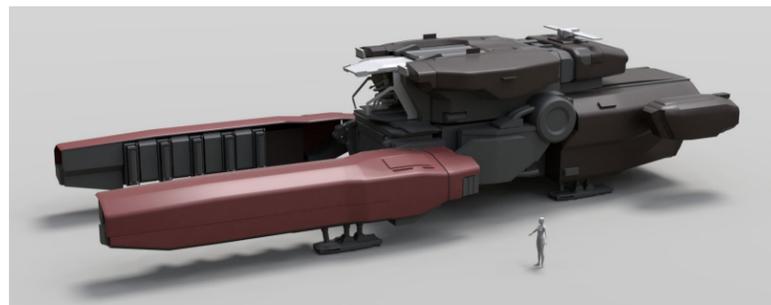
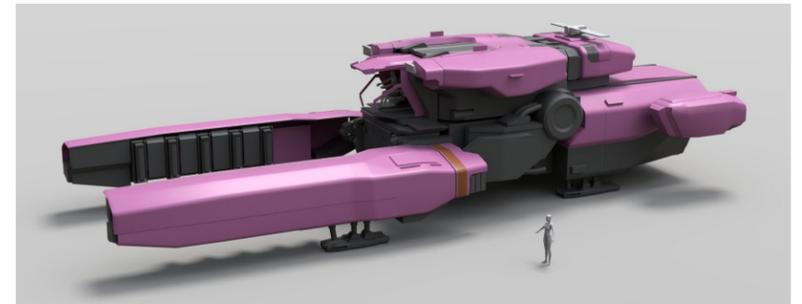
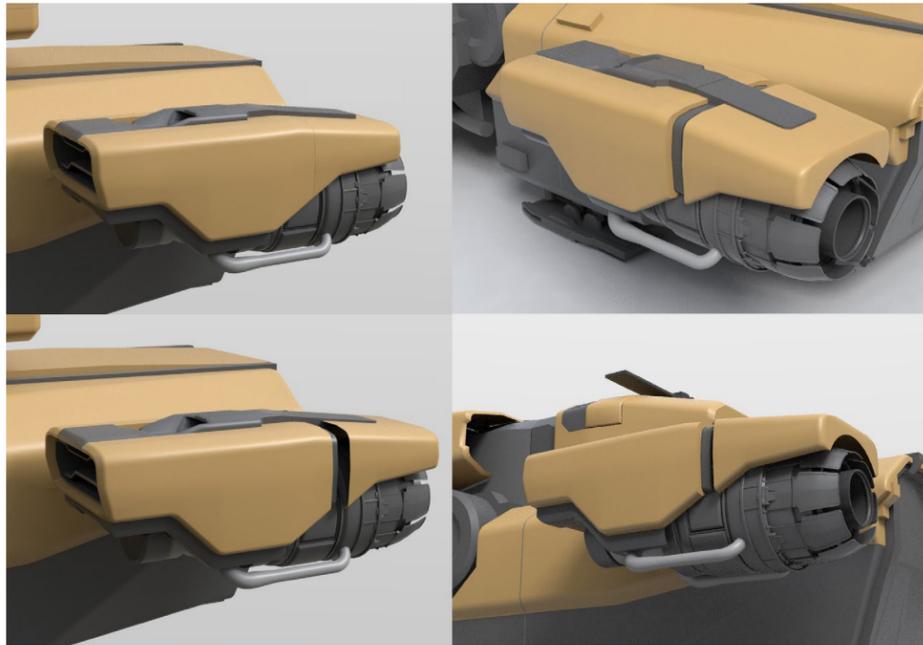


Alex began developing the final Vulture, launching from Paul's L-shaped twin-boom 'insect' version. He saw the challenge of the Drake dichotomy right away, to design a ship that feels industrial but still looks like it would be a lot of fun to fly; going too far in either direction was a failing proposition. He intentionally referenced the smaller Dragonfly

space bike at this point, an unexpected choice compared to the Cutlass shapes used in the first pitches. He also focused on what the 'lived in' interior should look like, generating a great deal of reference material on the subject. The initial design brief hadn't been overly specific about the interior, allowing the artists freedom to take it in different directions.

Late in the process, he added the distinctive 'dog leg' visible on the final ship from one of Gary's sketches. He also investigated different landed modes, but decided that having the ship significantly shift shape was too quirky. Design, now actively prototyping the upcoming features and interfaces for salvage,

worked closely with Art at this point making sure the ever-sharpening functionality was present. Alex offered several options for skins, including everyone's favorite, Star Kitty pink. Chris Roberts chose to stick with the original industrial yellow from the first concept version.



REVIEW STAGE

The second major review was, understandably, somewhat nerve-racking. At the very first Vulture review, the ship had needed a major rework and, while Paul and the team had found a way to keep the Vulture on schedule, if it were to happen again it would certainly have an impact on the concept schedule. You can imagine the relief when the word came back that the ship was good... almost too good! Chris Roberts thought the design was excellent, but that this time around it needed to be made uglier. He specified:

“Needs a Drakeification pass with more additional tech added, external hinges, stuff welded on, a bit more gritty and less well designed. [Suggestions include] access panels are separate objects bolted on, wires on the tractor beams, some areas with drilled holes for venting, floor plates near the cabless custom, more basic. Cab frame should be a little less slick in design so more multi-layered seals showing, bolts inside and out.”

The Drake Vulture had gone from too ugly to too pretty... a pretty good showing for a first-time artist!





MARKETING

Paul Jones referred to the marketing phase of the Vulture as a “voyage of discovery” for artist Alex Akstinas, his first time working on this type of promotional artwork after previously doing more mechanical imagery. With the look of the ship finally approved, the team moved on to turning Alex’s designs into living, breathing spacecraft. This meant first adding wear and tear to the design to give the ship a lived-in feel, with special focus on the materials to make sure that promotional shots didn’t have a ‘factory fresh’ feel to them.

Paul tasked Alex and the team with five main concept images to show the Vulture at work:

- Landed in a scrap/junkyard. Large cranes, small ship and small hab pod. Mixed cubes of metal and unprocessed metal. Ship hooked up to fuel supply lines.
- Ship scrapping and processing debris on the surface of a ship, maybe a broken Starfarer?
- Guy floating back after retrieving a component, rear view hatch open. Massive circular engine in front.
- Lone explorer - needs to convey the lonesome nature and the vastness of exploration, man vs world.
- Pilot at controls, space debris all around.

With that completed, the team produced the standard blueprints and holoviewer models needed for release and closed the longer-than-expected book on the Vulture, content in the knowledge that designing ships for *Star Citizen* means taking extra time and resources to get them just right instead of just finished.



REFERENCES:

SHIP PAGE

<https://robertsspaceindustries.com/pledge/ships/drake-vulture/Vulture>

CONCEPT PRESENTATION

<https://robertsspaceindustries.com/comm-link//16618-Your-Ship-Your-Sky>

Q&A

<https://robertsspaceindustries.com/comm-link/engineering/16647-Q-A-Drake-Vulture>

SHIP SHAPE

<https://robertsspaceindustries.com/comm-link/transmission/16622-Around-The-Verse>

DRAKE CONCEPT VOTE

<https://robertsspaceindustries.com/comm-link/citizens/16303-YOU-Pick-The-Next-Drake-Ship>

GALACTAPEDIA

VASLI FRAGMENT STONE

The Vasli Fragment is the only known remnant of a stone stele theorized to have been created on Terra (Terra III) around 43,000 SEY ago. A script that has yet to be deciphered is engraved upon it on one side. It was most likely sculpted by the original inhabitants of Terra, who disappeared under unknown circumstances millennia before human colonization. In the years since it was discovered in 2832, the fragment has been the focus of debate among archaeologists, linguists, and the scientific community.

DESCRIPTION

The Vasli Fragment is a large granodiorite stone bearing an inscription on the face. The stone is dark grey in tint, with yellow crystalline streaks and swirls. The front surface is polished with an archaic script deeply incised upon it. A splash of silver and spots of polished yellow agate coat the left-side of the fragment, obscuring some of the text. The sides of the stone are smoothed from water erosion and show evidence of having been attached to a larger monument at some point, although no other fragments have ever been discovered.

DISCOVERY

In the Summer of 2832, the University of Earth at Australia (UEA) conducted an archaeological expedition to Zaffre Bay (Prime, Terra, Terra System). The fragment was discovered around 150 km from Prime, amid a haul of otherwise unremarkable debris. The leader of the expedition, Dr. Kleina Vasli, identified the markings on the stone as an inscription in an unknown language that she later named 'Terran A'.

The fragment was taken to the Quasi Institute for Xenological Studies (QIXS) for analysis. Dr. Vasli and the linguists at QIXS connected the script to markers found at the Quasi ruins. This was the first time

substantial writing samples had been discovered from the civilization that once inhabited Terra (nicknamed 'Atlanteans' in popular culture). Over the next two years, linguists attempted to decipher the script but were unable to crack it.

FROM EARTH TO TERRAN POSSESSION

In 2834, Dr. Vasli brought the fragment back with her to the UEA for further study. This decision was lambasted by the Terran academic community; many Terrans felt that the stone should remain where it was discovered. Upon Dr. Vasli's retirement in 2859, the UEA donated the stone to the Museum of Earth (MOE). It remained on display there for 75 years while the Terran government continually submitted requests for its repatriation.

The Vasli Fragment was finally returned in 2934. To commemorate this event, the Puglisi Collection commissioned Dr. Amelia Kesh, head chair of the Prime Linguistics Institute, and master sculptor Shinji Torusa to construct an exact copy of the Fragment. Replicas were made available for public sale in 2945.

IN POPULAR CULTURE

While the purpose of the Vasli Fragment is still unclear, it has been adopted by several movements in popular culture: Terran separatists use it as a symbol of their desire to break away from the United Empire of Earth, while Transitionalists tout the fragment as evidence that Humanity has many more things left to discover. Fringe groups also claim that the Vasli Fragment details the so-called Atlantean's conscious decision to leave Terra and influence the growth of all known civilizations. As the Fragment has yet to be translated, their claim is spurious at best.

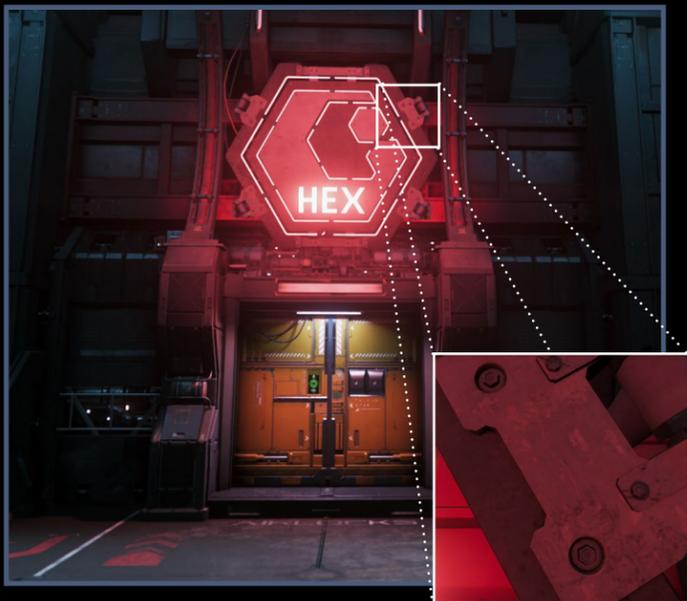


WHERE IN THE 'VERSE?

Every month, we post a close-up image of something in the universe.
All you need to do is tell us where you think it was taken.

Ben@cloudimperiumgames.com

We'll reveal the answer next month, and share some of the best responses we received.
This month's image is courtesy of Ray Warner, our Assistant QA Manager in the UK.
Where in the 'Verse did he find it?



Ray also gave us last month's image. But Where in the 'Verse did he find it?

Several Citizens knew, but the first to tell us was Daniel 'Sarge701' Braun. He told us:

BEGIN TRANSMISSION →

It's the GrimHEX logo!

← END TRANSMISSION

Congrats, Sarge701!

You get this month's coveted Jump Point no-prize.

We'd also like to give special credit to Brandon Dickey, who came in a close second. Thanks for playing!

Please remember to send us a screenshot of what you find, so that I can give partial credit if what you've found is close to the actual image.

ONE QUESTION

We asked the CIG staff to answer one question for us this month. Here's what they had to say.

WHAT IS YOUR FIRST STAR CITIZEN MEMORY?

DANIEL BAKER, DESIGNER

I was shown the original 2012 *Star Citizen* Kickstarter by a friend that I played a lot of space games with. Backed it (of course) and jumped at the opportunity to work on it when that came around.

PAUL REINDELL, DIRECTOR OF ENGINEERING, PERSISTENT UNIVERSE

Back in 2012. I was working at *Crytek* Frankfurt and one of our licensees was Chris Roberts. He was working on his prototype and he was quite active on our support forum. One day I helped to debug some issue for him and I asked for a build and a test level. When I opened the level I was pretty much blown away: It was a gorgeous space scene with a giant Bengal Carrier placed inside the map. I was so fascinated that I spent my free time on the following weekend to write a simple space combat AI. Unfortunately the build had a bug that limited the speed of the laser bolts, but it still produced a nice little video: <https://www.youtube.com/watch?v=5Y2cKSUNKVA>.

TOM SOLARU, SR. PRODUCER

Chris' visit during the first week of the UK studio opening in January 2014 and asking me if I was busy working on the schedule! Tom Solaru, Senior Producer. Very awkward viewing!!

https://www.youtube.com/watch?v=0T_oJIZ8pGI

STEVEN KAM, JUNIOR COUNSEL

A lucky guess. I found the *Star Citizen* teaser site prior to the original GDC reveal linked from the *Wing Commander* CIC fansite (hello, Ben!). At the time I think the teaser site didn't even disclose the name of the game (neither *Star Citizen* nor *Squadron 42*). There was a password for the teaser site. The site would give you a couple of hints if you needed help guessing it, and I think the password was also posted somewhere but I didn't find it at the time. On arrival, I just blinked, shrugged, and typed, "42"? It let me in right off the bat, and I thought maybe there wasn't any actual password requirement, like maybe it was just there for immersion. I didn't learn until months later that you had to get it right.

JEFFREY PEASE, DEV OPS, ENGINEER

I initially discovered *Star Citizen* when discussing games we played growing up with a coworker at the previous video game company that I was working at. Naturally since I had played the *Wing Commander* games when I was younger (a gift from my dad) the conversation took a turn towards him mentioning that the creator of *Wing Commander* was making a new game.

After looking into it, I pledged for an Aurora, as it was the only ship available at the time (my ship list has since expanded to include a few other support ships, as I prefer to play support roles).

BENJAMIN 'MAC' MCMONNIES - PRODUCTION ASSISTANT

I was looking around for something that would let me be more than just a ship flying through space, or a nameless soldier on a futuristic battlefield. I wanted something that reminded me of all the beloved sci-fi I had experienced in my life, and yet was unique in its own way. By sheer chance while desperately looking for something more intense than spreadsheets in space but more meaningful than every fps at the time, I came across videos about a game that was being worked

on by an old familiar name. It took a video from a man with a rather heavy accent that finally convinced me to really dig into things, and before I knew it, I was a backer too.

JON HAYTER, SR. UI DESIGNER

I've been a science fiction fan my whole life. It probably started while watching old TOS reruns with my dad when I was a little kid in the 80's, then *ST:TNG* showed up in the early 90's, and I lived and breathed that show until it concluded. There. Are. Four. Lights. Around that time, I was also introduced to my first genre-fiction novels, and consumed them with zeal. By the early 90's, I was logging on to local BBSes, and killing time in *Tradewars2020* and *Total Recall*. I plodded my way through *Planetfall*, and *Stationfall*, and other progenitor sci-fi games. From that point, I consumed any good-quality science fiction I could get my hands on (and plenty of crappy stuff too). Books, TV, Movies and, of course, games.

By the time the *Star Citizen* Kickstarter appeared, I was ready with my wallet.

My first memory of *Star Citizen* was probably when I first got into my original Aurora (long since upgraded), and was floored by the nested physics grid. I inverted my little ship, and stood upright on the deck, and saw everything else whirling around me (the ship had picked up a bit of a spin). It was something I hadn't experienced in a game before, and the concept really stuck with me as something important. Many, many, many expressions of science fiction in games, mass media, and even some books can fall into the same bad habit. They utilize "science-fiction" as a setting. As a theme. As a backdrop to a fairly typical form of content.

From what I can see, *Star Citizen* has been envisioned – from stem to stern – as a believable environment for speculative sci-fi. There is very little hand-waving. If a ship maneuvers a certain way, it's because of appropriately placed RCS. If a UI pops up on the inside of your helmet visor, there's a fictional company somewhere that designed it. It feels more tangible, more real, and more authentic. The game embraces sci-fi as more than a theme, and instead treats it like it should be – a way to experience what a potential future might be like, and how Humanity might fit within it. Good science fiction has always helped write the future. I think *Star Citizen* is going to be a part of that, and I hope to be too.

ARAN ANDERSON, VFX ARTIST

My earliest memory was the 2016 CitizenCon, where the immense detail of the Proc Planets V2 Demo was presented. The camera panning around the planet and passing through the biomes, greeted by that "Hello CitizenCon!" guy on top of the mountain peak. Also who couldn't forget that sandstorm and sandworm!

HANNES APPELL, DIRECTOR OF CINEMATICS FOR SC & S42

Creating the very first Oct 2012 campaign S42 teaser trailer! Seeing that Ryan Church carrier concept for the Bengal for the first time, playing around with the very first Hornet and then a couple of weeks later staging scenes with the Hornet in said Bengal carrier!

Do you have one question you want to ask the staff?

Send it to Ben@cloudimperiumgames.com and we might choose your question for next issue.