JUMP POINT

ISSUE: 07 07

IN THIS ISSUE →→→

Editor: Ben Lesnick Copy Editor: Martin Driver
Layout: Graham Robinson

FROM THE COCKPIT

GREETINGS, CITIZENS!

We're starting this month's **Jump Point** talking about the recent update to *Star Citizen*'s space stations. The artists and designers working on the game have been hard at work creating new (and better!) components to enable them to construct even larger stations and help the game's world continue to expand. Space stations seem appropriate for this particular month as July 2019 marks a massive anniversary in space history - fifty years ago (give or take a week) man first walked on the moon following the successful landing of Apollo 11 at the Sea of Tranquility. It's safe to say that this stunning moment had a major impact on all of our dreams about space and that it surely plays a role in why we are so excited to build a universe that lets us have our own space adventures. The first real-world space stations too grew out of the effort to land a man on the moon. In the 1950s, scientists believed that constructing a space station would be an essential part of that process; it was only until lunar orbit rendezvous was perfected that plans for orbital supply stations were relegated to other projects. *Star Citizen* has followed that original trajectory - Port Olisar and then other early space stations began the construction of an entire solar system as they were followed by moons and planets. Now as we continue to build the universe, our space stations are becoming more complex with more to see and do!

Meanwhile, back on Earth, it's an exciting month for *Star Citizen* - Alpha 3.6 is here! The latest patch to date launched one week ago with a very special surprise - the combat-ready Anvil Ballista anti-aircraft vehicle. The team behind the Ballista worked hard to pull this off, getting it designed, developed, and into the game quickly and discreetly. To me, the Ballista surprise is a great reminder of why playing *Star Citizen* at this point is so exciting; you're experiencing the game in a way that no one else ever will by getting to be part of the ecosystem as it develops. Everyone involved has a vision in their head for how ground combat will work in the end and while each release moves us closer to that goal, they're also unique compared to the finished product. You have been there at the start and watched it happen in a way that future players will never be able to appreciate and seen and experienced things that no one else ever will. The Citizens who spend the next few months battling it out with Ballistas and other ground vehicles will be doing so in a way that makes the game better, but also very different than the one they'll eventually know. It's one heck of an adventure that I know we'll look back on fondly! To learn more about the Ballista, we spoke to the team that developed the Ballista to learn how it all came together without the traditional concept phase.

So that's massive space stations and mobile armored missile launchers... what else could you ask for? Well, we've also the usual assortment of great lore features including a brand new Galactapedia entry and a feature on Talon. Have fun exploring our little corner of the galaxy and we'll see you next month, just through the **Jump Point**!

Ben

JumpPoint@cloudimperiumgames.com

ALPHA 3.6 SPACE STATION KEEPING

***Star Citizen's* space stations are getting bigger and more complex. Alpha 3.6 includes a major update to space station components that allows the game's designers to construct even more spectacular locations than ever before. We talked to the team behind this latest update to find out what went into the process and what's coming in the future.**

BEGIN TRANSMISSION →

JUMP POINT: *Thank you for joining us! Let's get straight into it - why update* Star Citizen's *space stations now?*

EDDIE HILDITCH (EH): The original Rest Stops were just a first foray into what space stations could be and were made during the very early development stages of the procedural tool. While they went a certain way to achieving what we wanted, after having time to reflect on them, we decided we just weren't getting the scale or shape variety we had originally hoped for. So, we decided to diversify the core asset sets to enable us to make a much wider variety of stations at a more impressive scale.

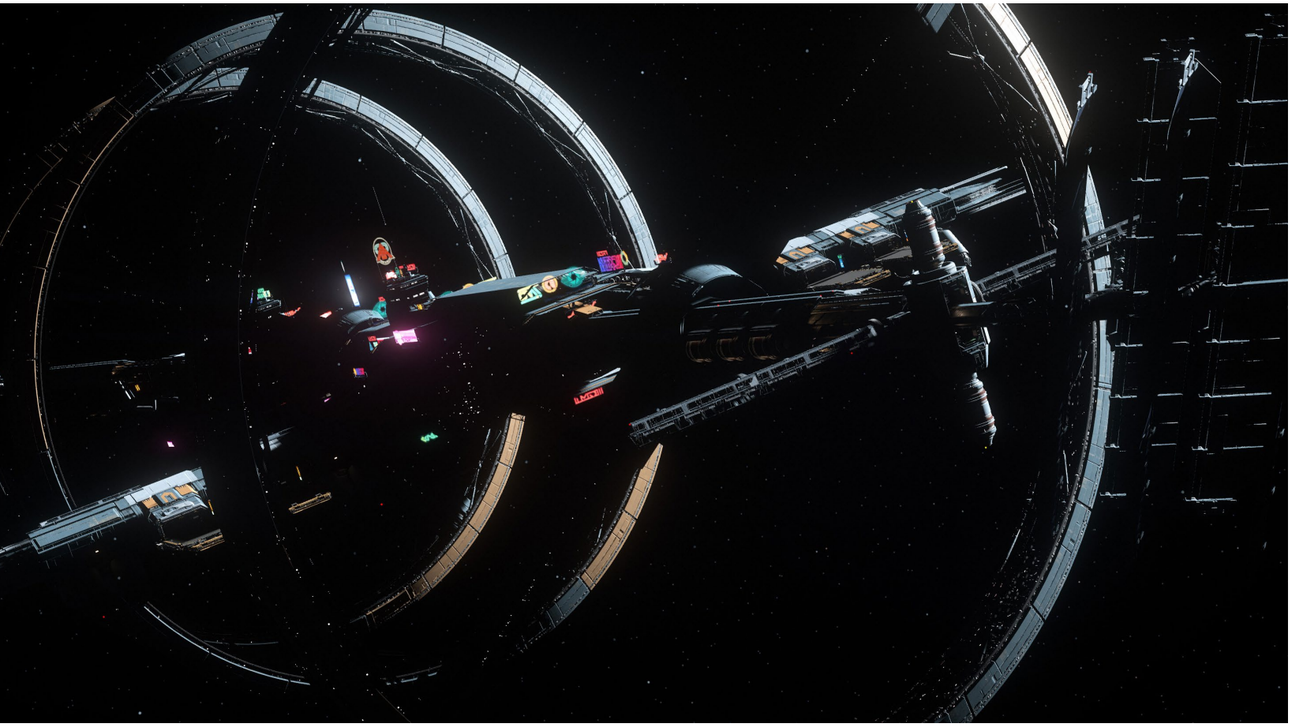
ANDREAS JOHANSSON (AJ): The initial Rest Stop (or Truck Stop as we called it back then) was really just a prototype for how we wanted to approach modularity in *Star Citizen*. I remember writing up the initial document on modularity around four years ago, but it was mostly theoretical with a few designer prototypes running. To enable us to progress, we needed to start testing in-game - the Rest Stops were our first testbed. We used them to help us define how we would put together the interiors and exteriors, how players would transit through them, and what components would go on the outside (solar panels, hatches, pads, hangars, antennas, etc.) and inside (power, gravity, atmosphere control, etc.). Eventually we knew exactly what building blocks were needed, but it became evident that the stations we had were just too small. To fit all the hangars and the interiors that we wanted, we needed to scale up.

JP: *How does this exterior work help with the upcoming update to the space station interiors?*

EH: The biggest thing we get with the new exteriors is much more internal space. This means internal layouts have much more room to breathe and can get bigger accordingly.


EDDIE HILDITCH


ANDREAS JOHANNSON

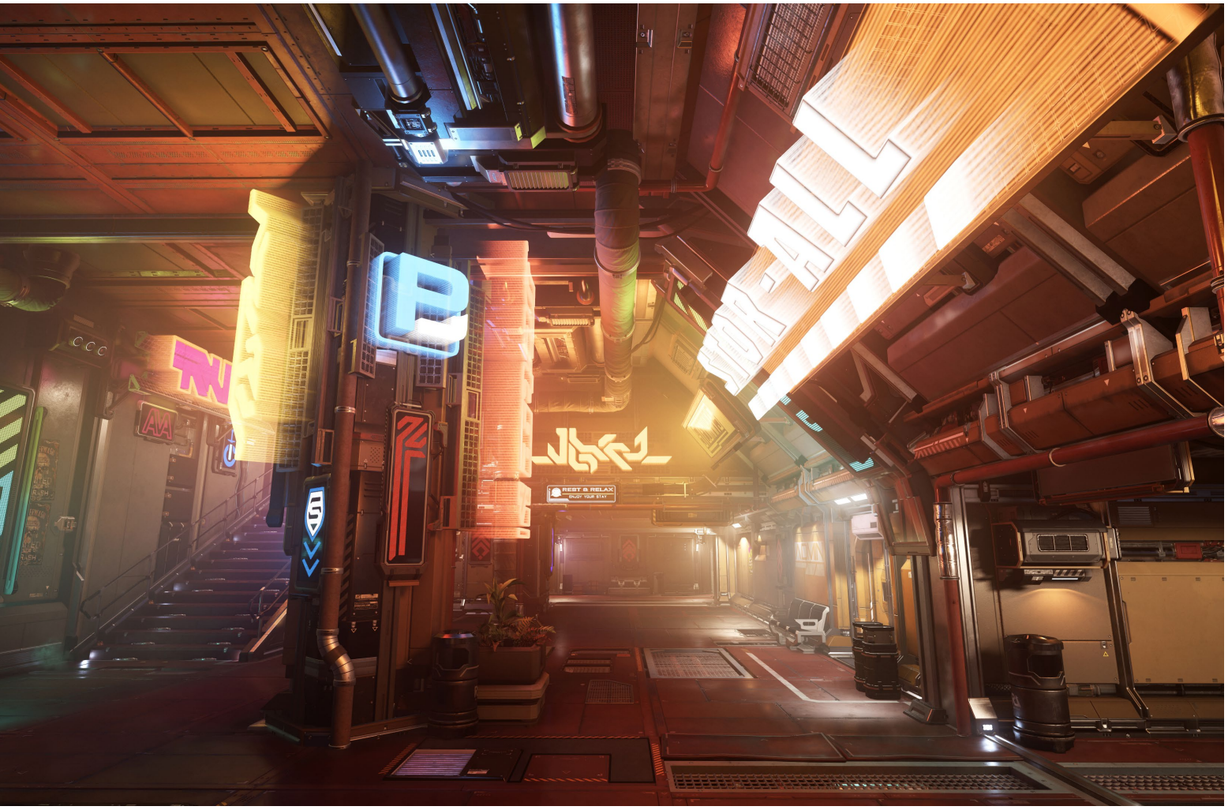


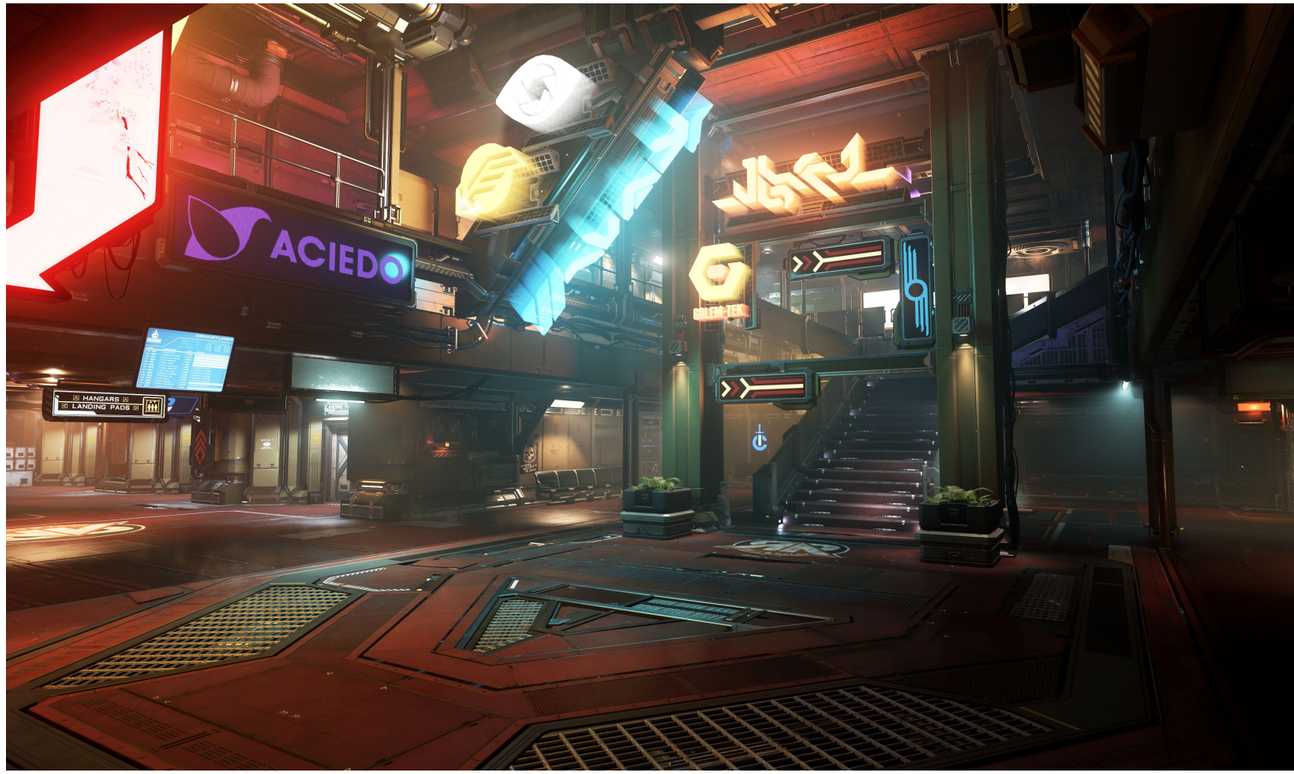
AJ: The new larger exteriors gives us more internal volume to fit the content that we require to build a believable station. There is much more to a station than the elevator room, hub, and the few shops we currently have. The long-term plan is to have functioning components on the station. For example, solar panels that generate power, maintenance hatches, vents for cooling, and so on. On top of that, the interiors themselves will grow - we will add worker's areas where the staff reside, lower decks for the machine rooms, and other space-consuming areas like player habitation. Larger exteriors also give us the ability to have more landing pads, docking tubes, and hangars. Those of you who have seen the size of our hangars know that they require quite a lot of space!

JP: *Do you look at any special references, real-world or fictional, for developing space station components?*

EH: There were two big artistic challenges to confront with the new stations. The first was figuring out how to achieve a believable sense of scale with the textures and geometry, the second was balancing the ratio of 'eye rest' to noisy detail on the surface of the exteriors. Real word reference is scarce for mega structures of this size, but things like oil tankers and oil rigs give a good idea of how wear and surfacing on a large scale look at a distance. Unsurprisingly, we drew a lot of reference from the work the *Squadron 42* team has done with some of their larger structures, as they've managed to hit some very sweet visuals that largely solve the issues mentioned. You might have noticed these kinds of scale cueing techniques on other very large ships in science fiction, such as the Mega-Class Star Dreadnought from The Last Jedi, which hits a very nice balance between greeble distribution (fine detail) and areas of eye rest.

AJ: From the level design side, we're mostly concerned with the function and gameplay aspects of the station. So, component wise, we want everything to make sense and there should be very little fluff - the things you see should appear to have a function. A lot of us are big sci-fi fans, so when it comes down to designing the function of interior and exterior components, we think about what sensibilities we find compelling (or not so compelling) from the genre at large. *Star Trek, Battlestar Galactica,* the *Ringworld* series by Larry Niven, the *Robot and Foundation* series by Asimov - all of these sources and many more inspire the broad strokes, but when it comes to breaking down the components into details and core functionality, we ultimately think about how they would or wouldn't work in the real world.





JP: *How does the pipeline for producing a space station differ from putting together spacecraft?*

EH: Because of performance constraints, we have to be careful and concentrate detail in the areas players are most likely to go. A space station has a similar poly and texture budget to that of a ship, but as it has to be distributed over a much larger area, we tend to validate the exteriors from a fifty-meter-plus range rather than first-person. The first-person levels of detail for exteriors are mostly concentrated around hangars and pads. Another big difference is the procedural nature and core function of our stations. Ships are bespoke assets built to work in a very specific way and have little in the way of customizability in their configuration. Stations are built as a kit of modular prefabs that can be put together in numerous ways, so naturally there are fundamental differences in how we approach developing them.

JP: *How many different space station components are available to designers today?*

EH: There's enough in the new exterior assets to keep us going for a while and we can create anything from a tiny outpost to a very large complex. The key thing with this push was to develop some new and interesting core shapes to act as a foundation that we can further develop in the future. Now it's comparatively simple to expand the assets with new thematic add-ons associated with different categories of station, such as 'cargo' or 'refinery'. I think of it with a recipe metaphor - we've developed a great-tasting base that we can gradually add ingredients to over time to develop complexity and fullness of flavor, slowly expanding the quality of the whole meal. I'm hungry now.

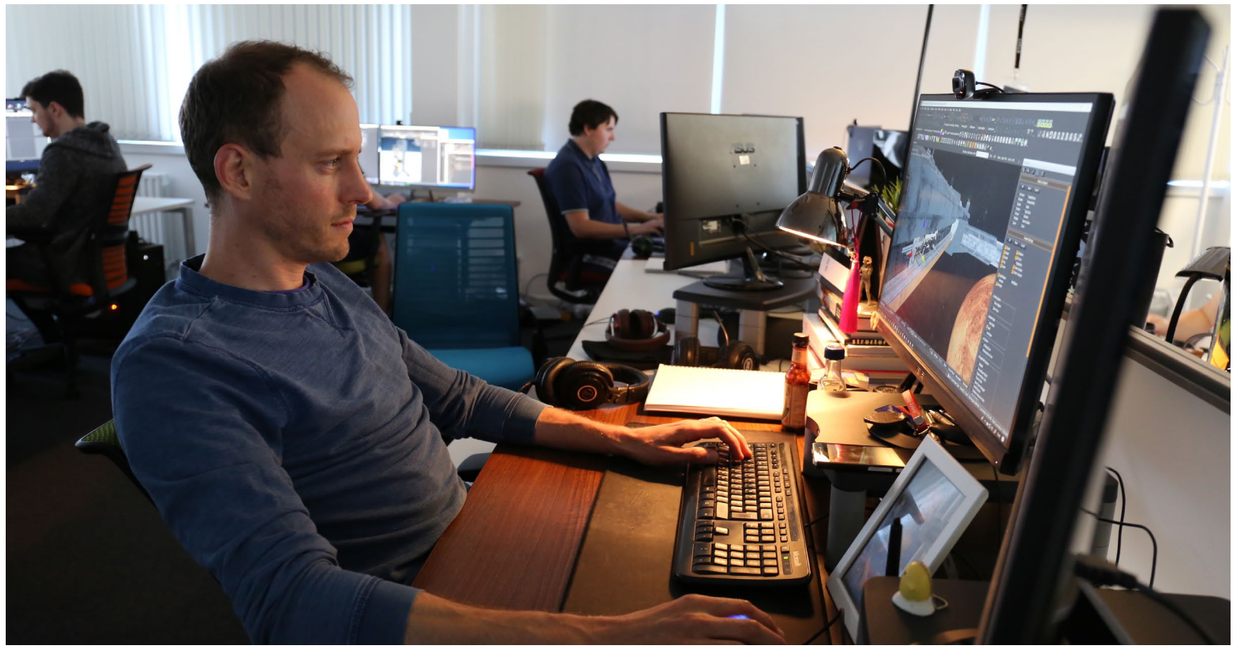
AJ: Our first goal was to get one function component of each type that we require in a station. That way, we can use them to generate a functioning prototype of a station with all the components that it requires. Once we have successfully achieved that, we can go deeper and add in more variation to our content libraries. That's also why, at the moment, many stations look similar. As we progress, we'll add in more room variants which will help diversify the appearance of the stations.

JP: *How does this process inform the upcoming work on interiors?*

EH: Scale. We're looking to 'up' the scale of the interior spaces to match the new imposing scale of exteriors. We're also hoping to have more than one interior space per station in the future, especially for the larger ones.

AJ: The current Rest Stops aren't necessarily representative of the amount of content we're aiming for. In the end, we want to add in more sections that require transit to access. These intricate interiors also make for interesting gameplay in abandoned or derelict stations with no power or gravity (zero-g exploration in the dark anyone?).

JP: *Are there any hard 'rules' for new space stations? Do they need a certain number of solar panels or a certain number of landing pads?*



EH: Hangars and pads certainly have hard rules. For example, we have to ensure there are enough pads and hangars of the right sizes to accommodate the number of players anticipated and to not bottleneck egress or ingress to the station. Things like solar panels are a little looser but will probably have some hard and fast rules on their number and use once the power gameplay system comes online for stations. Beyond that, there are definite visual rules we follow, such as assigned ratios of bulky structures to spindly arms or the distribution of detail across the station as a whole. The procedural system can't be too random or we'd end up scrapping 80% of the stations we generate for being oddly proportioned.

AJ: Giving players access to an appropriate number of hangars, landing pads, and docking tubes is essential, though different stations have different requirements. Having a functioning transit system that connects all the interior components is also a must. We also have to provide windows that can double as a second point of entry into a station if it's abandoned or without power to the internal transit network. The exterior components like solar panels, fuel tanks, vents, maintenance hatches, and so on will all serve a purpose in the future as well.

JP: *Has anyone done any back-of-the-envelope math to find out how many different space stations exteriors are possible?*

EH: Nope! We know it's a lot if you broke it down to pure numbers, but they don't actually mean that much other than sounding impressive. One variant might be almost the same as another barring a single advert being swapped out for a different one. Technically that's a different variation, but it's not going to provide a meaningful difference to the look and feel. Plus, I'm terrible at math!

JP: *Early space station modules included habs with windows. Could these return?*

EH: The trickiest part of providing windows in habs is how systemic they are. They function as spawn points and the number of them can be quite large across a single location. This is fine as an individual looking out, but it also means a single person looking into a lot of them at once can have pretty severe performance connotations. That, coupled with the procedural nature of stations and many varied interiors needing to be compatible with many varied exteriors, means matching things up can be a giant technical headache. However, open-windowed habs are much more achievable in our more bespoke landing zones, so watch out for them in future releases!

JP: *Can you describe the toolkit you use to create space stations from your components? Is it something you could ever see giving players access to?*

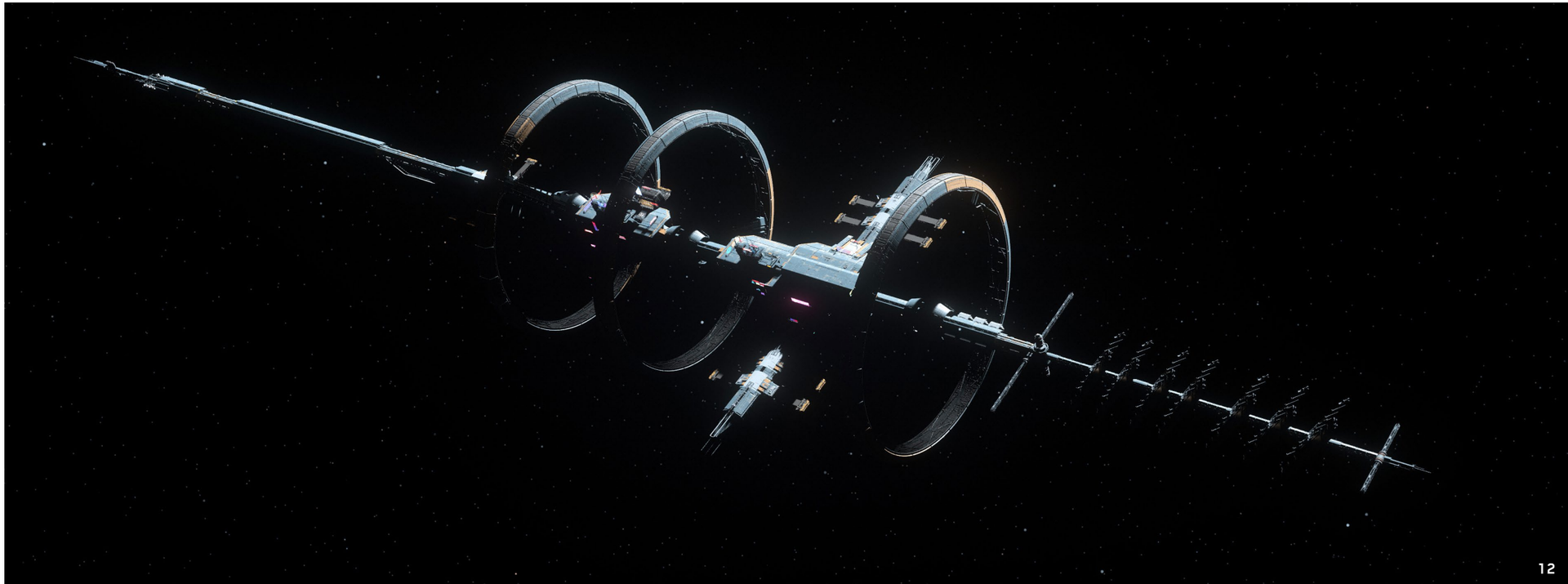
EH: We have various libraries of prefabs that are essentially building blocks, such as end caps, ring sections, or cross sections. Each prefab has connection points that only connect to other specific connection points that share the same tags. With a set of guidelines and filters, the tool can then snap these pieces together to generate a station semi-randomly. The hard part is figuring out the filters and guidelines

in the first place, which involves a lot of trial and error. Once you have the rules though, adding more variation to the kits becomes relatively easy. I'd love to see this in player's hands at some point, but it'd require much more refinement from a UX point of view and there's currently no plan to do this in the near or distant future. We'd also have to set limits on what could be built. Technically, we could generate a 4000 km long station, but I don't think the server would enjoy trying to run it!

JP: *Will updated space stations allow for docking larger spacecraft than those currently accessible at Port Olisar and similar bases?*

EH: Docking large ships is a whole mechanic that we have planned for, but it's currently waiting on a working prototype before implementation. As you can imagine, it involves numerous disciplines coming together to figure out how all our different ships work with a single docking structure, so it's not a particularly simple task. But it is coming and being considered by top men. Top. Men.

AJ: It depends on the type of station, as a Refinery or a Cargo Station could have more options for larger ships than a small Rest Stop. Of course, we want to provide the option for all players to use the stations, however, looking at real life, not all harbors have the capacity to support cruise ships for example. In this case, we have to look at other options, such as parking in space and providing access to the station via smaller shuttles or ships.



JP: *Do you have any unusual behind-the-scenes space station layouts?*

EH: So many. Picture an evil professor's laboratory filled with tanks of failed cloning experiments. Arms coming through faces, clusters of ears on knees, full Cronenberg. Now imagine that with space stations. Developing a procedural ruleset takes a lot of trial and error!

AJ: The stations generate from a graph that the designers build, so it tends to be pretty logical, but in the beginning it was pretty basic and we had probably one successful generation out of tens of thousands of attempts. I do remember one occurrence where I used the internal transit system to go from a hub to a workers area, after a 10-second elevator ride the doors opened all I could see were stars. The elevator had taken me a few million kilometers away from the station into the middle of the universe. I'm quite sure I broke the speed of light during that trip!

JP: *What lessons have you learned from the station designs that have been in-game that will inform the design of future stations?*

EH: Bigger is usually better. Concentrate on diversifying the large-scale forms and worry less about variation on a small scale. Good ratios of eye rest to noise are very important too.

AJ: To ensure that we give ourselves enough volume to build what we want in the interiors. You can never have enough space.

JP: *Looking ahead, when all is said and done, what do we want to accomplish with the update to Space Station exteriors and interiors? What should players look forward to?*

EH: We want to accomplish a greater diversity of station shapes and introduce a grander scale; make them feel much more impressive. In the future, expect more variation, more diversity, and more locations.

AJ: With the new and larger stations we will finally be able to add in all the components we need to make a station feel believable. The players should arrive at a station and feel that they're in a place that provides them with the services and options suitable to that category of station. Going to a station shouldn't just be a five-minute pitstop, the goal is that you land and spend a bit of time there. For example, while your ship is refueling in a hangar and receiving a much-needed maintenance pass after a five-day exploration trip, you might head to the restaurant to grab a bite to eat, check out the local vendors, work on relations with the local community, or take on a few missions.

JP: *Do you have any messages for our community of future space station inhabitants?*

AJ: Stay away from the special at the diner, I heard it can give you some unexpected stomach issues!

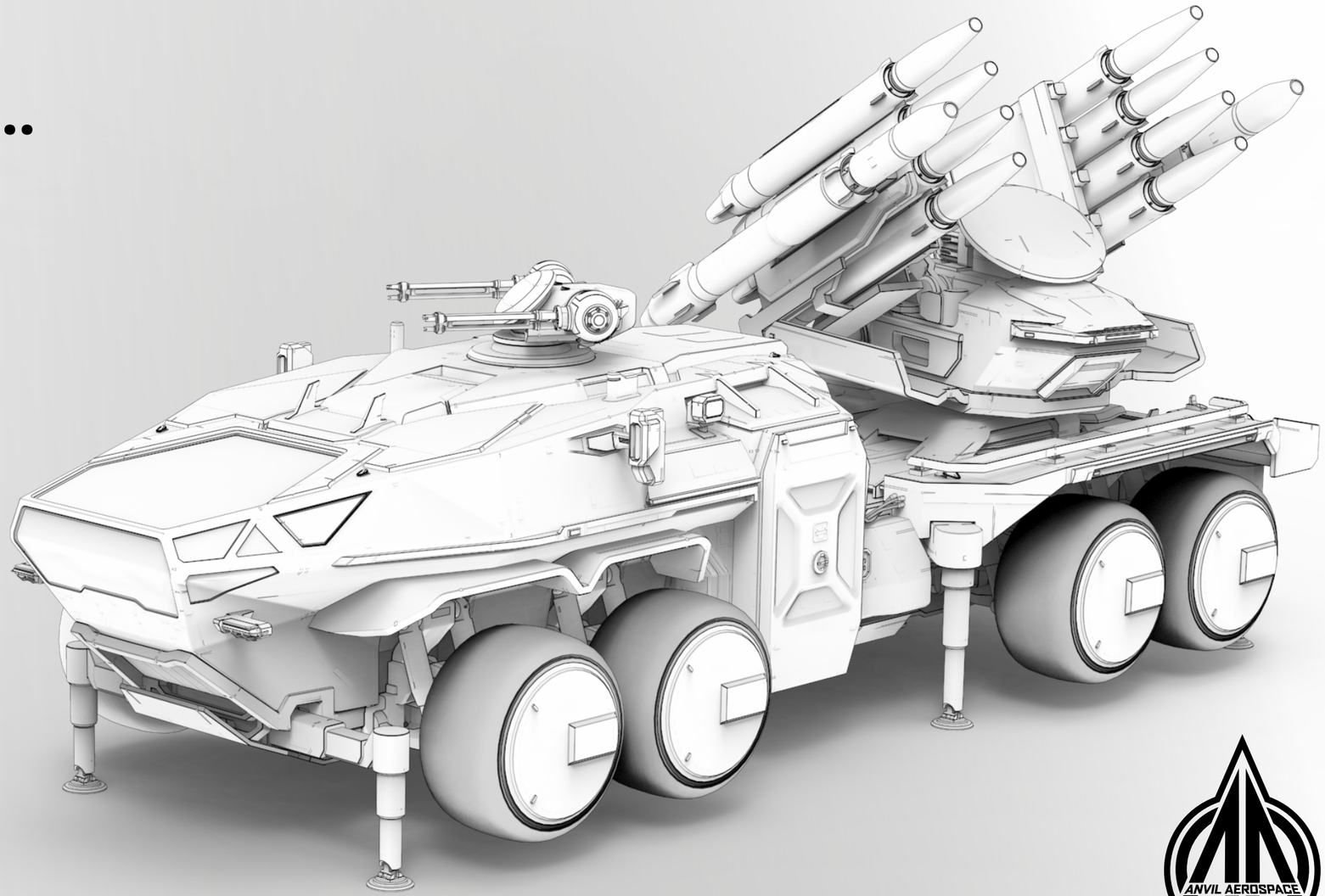
EH: Don't drink the beer in Checkers, they water it down. The cocktails are OK though.

JP: *Finally, for our roll of honor, let us know who else was involved in this update.*

EH: Wai-Hung Wan – *Champion of the Procedural Tool, Keeper of the Prefabs*. Joel Azzopardi – *Ring Core Set Wizard*. Jack Kirkham – *Lord of the Lateral Set*. Jake Dunlop – *Master of Arms*. Ben Boscher – *Addon Crusher*.

END TRANSMISSION ←

WORK IN PROGRESS...
ANVIL BALLISTA



AIMS

- Vehicle that can be deployed at a location and fire missiles (not torpedoes) at targets in atmosphere. The vehicle has a large for its size (small spaceship sized) radar. It also has a scanning suite to be used when it is deployed and readied for firing. Driver moves the vehicle and operates the scanning suite, the gunner operates the missile launcher.

AESTHETIC

- Anvil Aerospace-style (Hornet, Hurricane, Terrapin, Gladiator, Arrow) in a ground vehicle.

Length	17m
Width	7m
Height	5.5m (Without missiles)
Mass	TBD
Speed	33m/s
Max Crew	2
Turrets	1 x S2 Twin Link Automated Turret - 2 x S2 GATS Ballistic Gatling
Missiles	2 x S7 Missile Rack - 1 x S7 Talon Hellion Missile Each 2 x S5 Missile Rack - 4 x S5 Talon Scimitar Missiles Each
Armor	Medium
Radar	2 x S0 GRNP Prevenir
Cargo Capacity	0 SCU

Specifications and appearance are subject to revision during development.

KEY CONTRIBUTORS :
LEAD DESIGNERS: JOHN CREWE
CONCEPT ART: ANDRIAN LUCHIAN
ADDITIONAL CONCEPT: ALEX AKSTINAS
ART DIRECTOR: PAUL JONES

A LAUNCHER THAT CAN'T MISS!

The Anvil Ballista is *Star Citizen*'s first anti-aircraft platform intended to keep ground-based assets safe from spacecraft. The Ballista has its origins in late 2017 as the team planned out the future of the game's latest locations - the massive planet surfaces allowed by new procedural technologies. While the team started with the relatively straightforward Tumbril Nova tank, Chris Roberts had already sketched out a much more complex set of needs that would balance this theater of operations, which included everything from the Hercules starlifter to transport equipment to a then-unnamed anti-aircraft vehicle to protect ground units and installations. As planets began to be built, the team knew that combined operations would be a major part of future gameplay.

Each new vehicle designed for *Star Citizen* is a new adventure, with different paths taken, different lessons learned, and different tweaks to the game's overall mechanics, though most follow a tried and true pattern. Designers determine a need and devise a plan, then the Ship Art Team brings in a concept artist to flesh out the idea and produce a series of art pieces that explain the idea to players and the developers who will eventually implement it. However, the Ballista would follow in the contrails of the Anvil Valkyrie and Arrow by skipping the traditional concept stage and be available to use immediately upon launch. To make this possible, the ship pipeline would be adjusted and the missile launcher would go directly into the implementation process all, hopefully, under wraps in order to provide an exciting surprise for the release of Alpha 3.6.

WE HAVE LIFTOFF

The challenge: design a ground-based vehicle capable of fighting off marauding spacecraft. This would be especially important to implement by Alpha 3.6, as changes to the game's hover mode were expected to make space-to-ground combat more effective. With armadas of Rovers and other vehicles already on the ground and more complex mechanics like homesteading in the forecast, such a vehicle would be incredibly important. Lead Designer John Crewe and his team set about planning a vehicle capable of making hotshot fighter pilots think twice about conducting airstrikes. Conceptually, the Ballista went through several different ideas. An early take built the platform around a large gun with missiles for support while others focused on turrets until the team finally settled on missiles being the centerpiece. The Ballista would be built around a missile launcher with special scanners that would allow it to target spacecraft outside of visual range. It would carry its own type of missile but would be able to launch other weapons of the same size. Since the missile payload would be limited, it would also carry a pair of turrets that could also serve an anti-aircraft role.

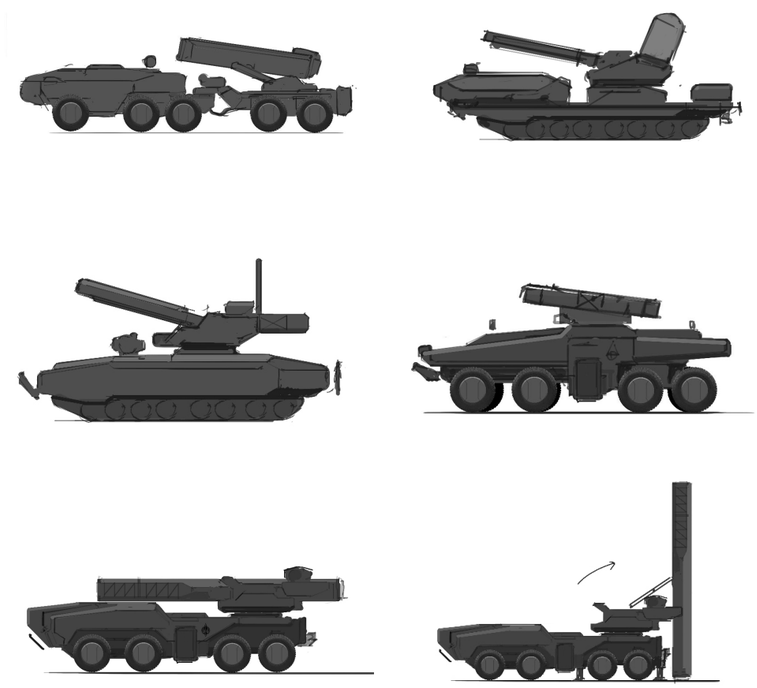
While the concept artists would need to design the new missile and launching system, implementation would not be the biggest challenge. *Star Citizen*'s ships already fire missiles and operate turrets effectively - technology that could easily be adapted for the Ballista. If anything, the most significant design challenge would be the scanning mode that allows the missile to target at range. There was also concern about using the missiles incorrectly, prompting a design note:

"When deploying for firing, the vehicle should root itself to the ground. Weapon should not be usable unless in firing mode – entering scanning mode could automatically power the weapon on or off and trigger the deployment animation."

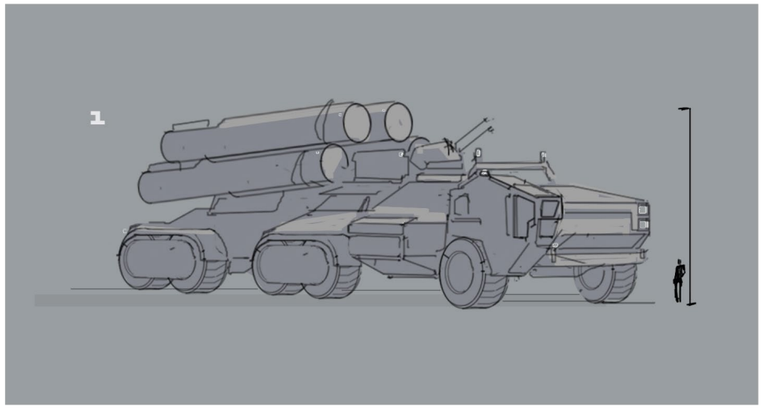
The overall size was also a concern as it would need to be carried by the Hercules starlifter, prompting Design to ask that it be no larger than the Nova when in undeployed mode.

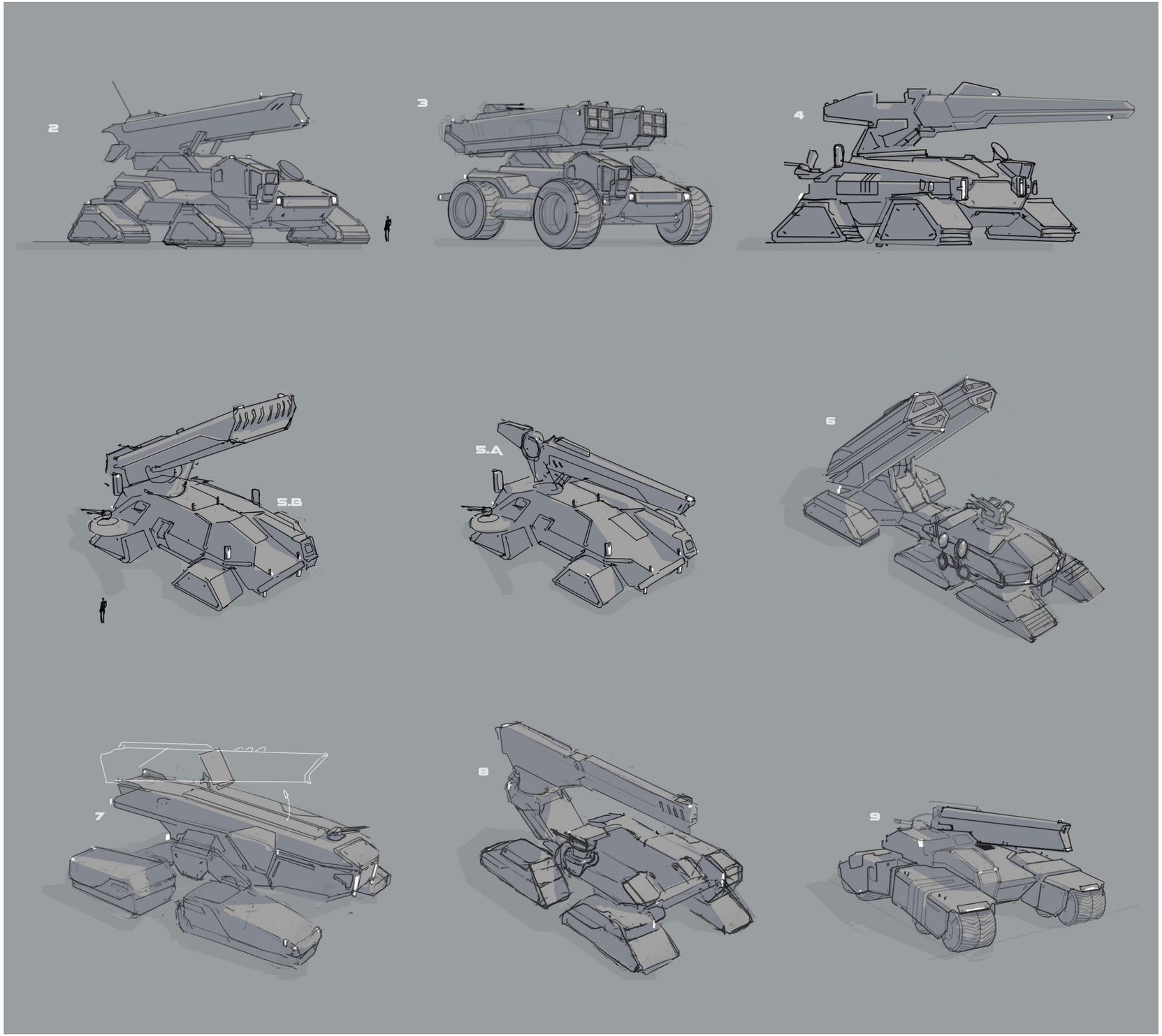
INITIAL CONCEPT PHASE

The Anvil Ballista, at this point known as the Anvil Mobile Defense Vehicle (MDV), began the concept phase like most others. Paul Jones selected concept artist Andrian Luchian (veteran of the Origin 100i, Tumbril Ranger, RSI Apollo, and others) as the prime contractor. Before making its way to Luchian, internal concept artist Alex Akstinas attempted the first pass, producing six rough takes based on Anvil's overall lineup and the existing Tumbril Nova tank.



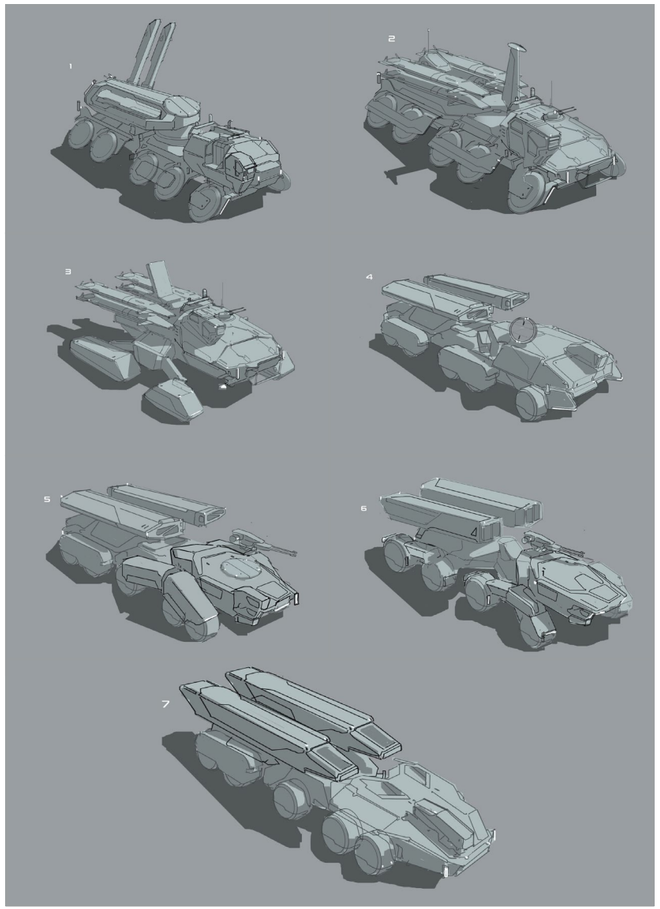
Jones liked the look and feel but had some concerns that they looked too much like present-day armored equipment. In the end, however, he notes that they were "actually right on the money!" Luchian began his concept by offering up ten sketch-up-style variations that went in a variety of different directions.





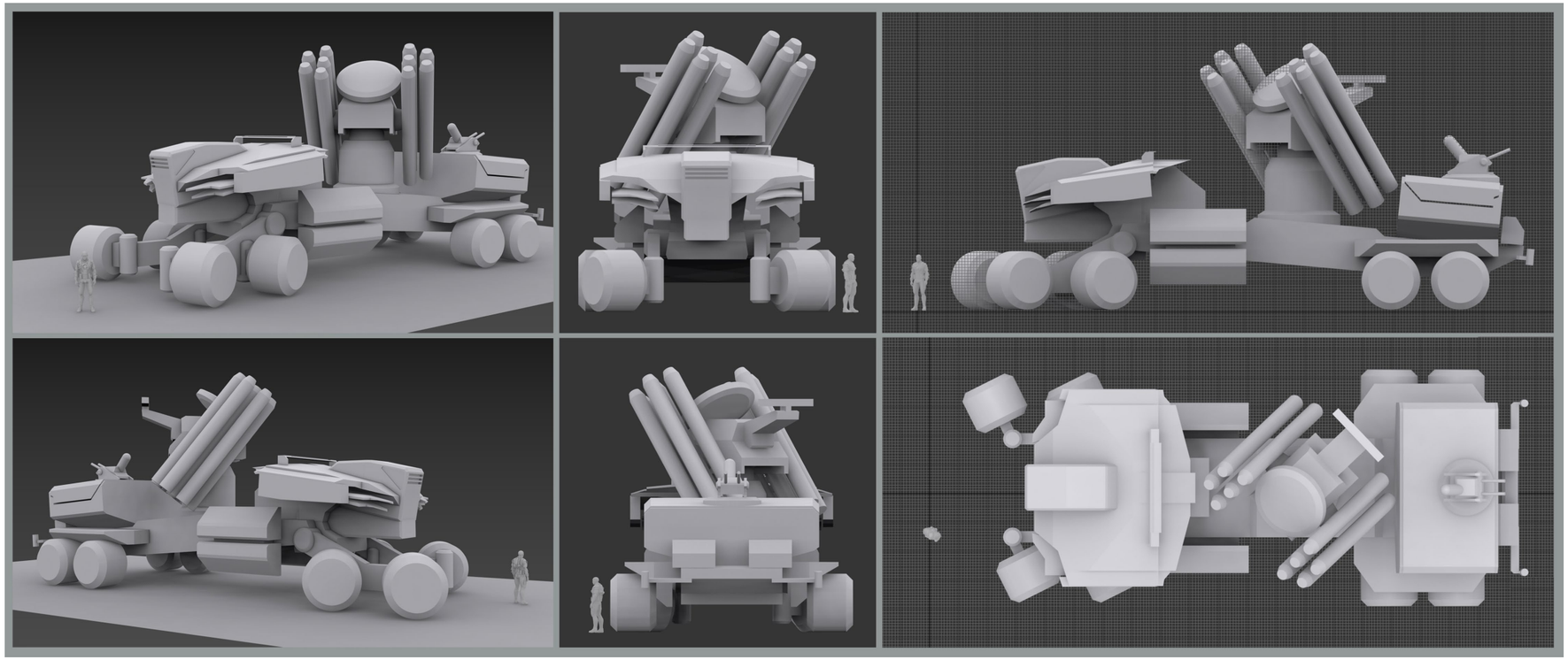
For the next pass, Jones wanted more thought about the visual hook, silhouette, how it would deploy missiles, and additional visual connections to Anvil. He even provided a toy missile launcher he remembered from childhood as a mechanical point of reference.

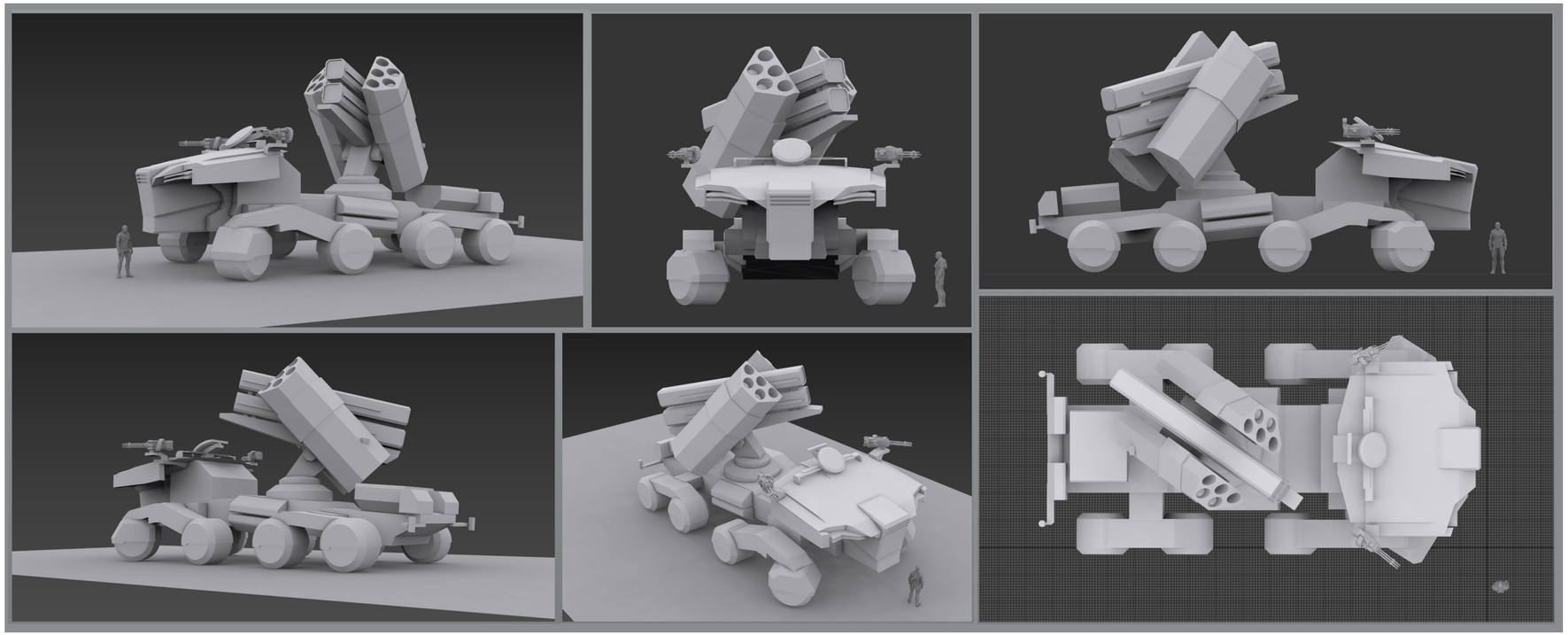
Luchian produced seven sketches of wheeled launchers of different types, some with a sort of tarantula feel with expansive, armored wheel wells. This arachnid design was well received but was deemed too difficult to implement as the wheels potentially wouldn't turn properly.

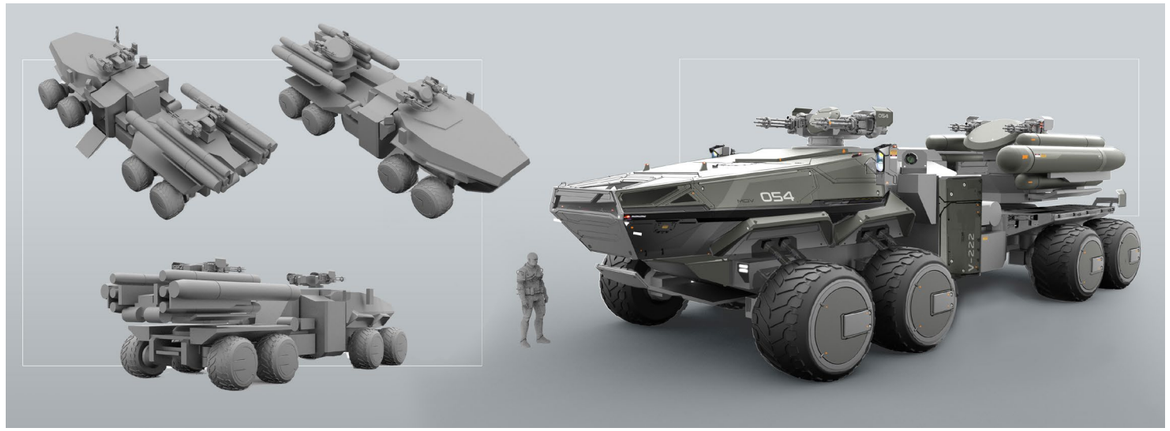


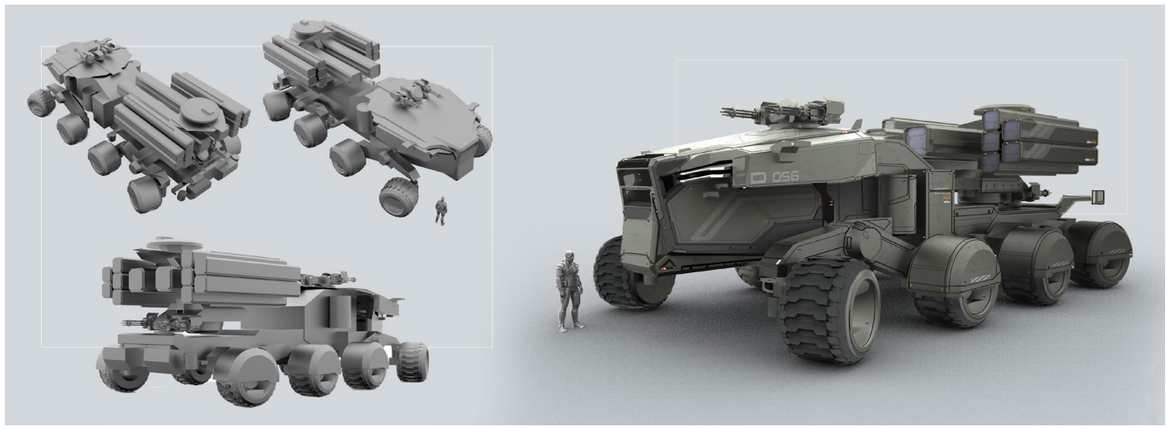
Jones particularly liked #7 and asked for variants with "a more dramatic chassis and missiles that fill the negative space." The number of missiles and turrets were also decreased as it was deemed to be pushing too much firepower onto what was planned as a smaller vehicle. Suggestions at this point included bulking up the cabin and using a chassis that could adopt entry/exit animations already created for the RSI Aurora.

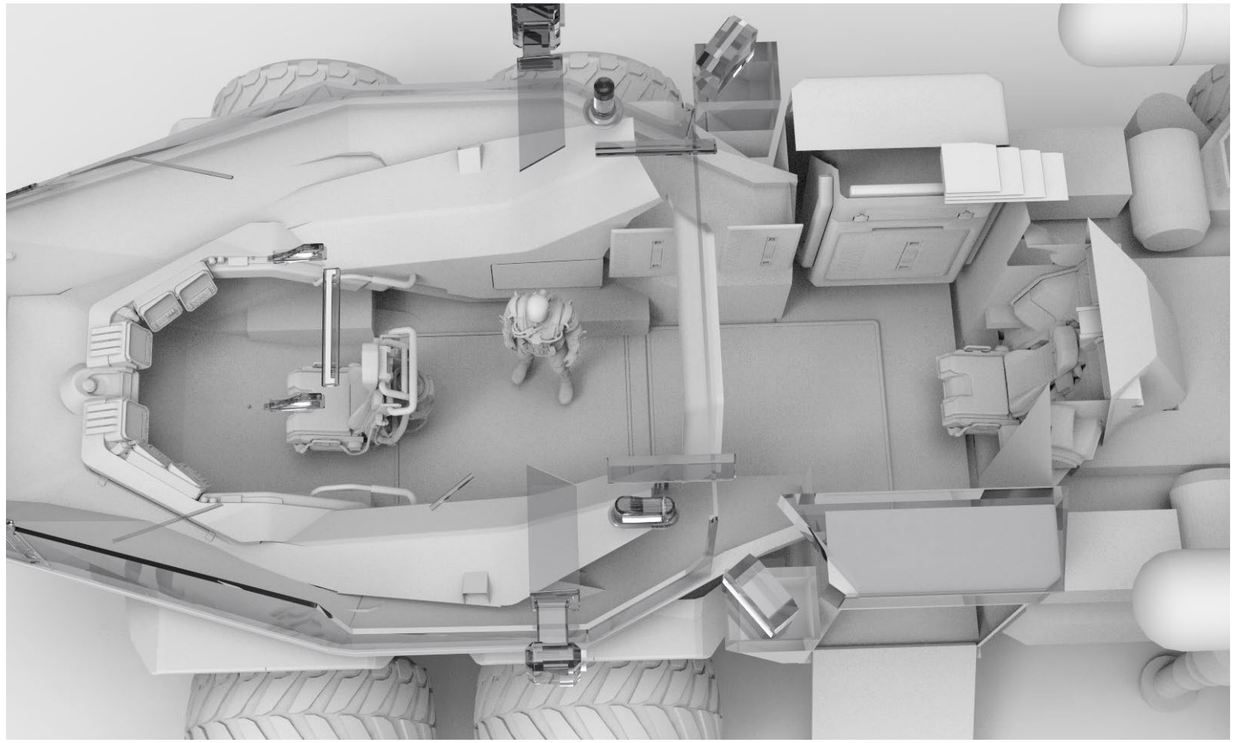
Taking the feedback into account, Luchian carried on with rough blockings to get a better feel for shape, form, mass, how the vehicle would read from a distance and the overall relationship of the body to the vehicle. Jones notes that "*in a case like this, it's especially important not to just think about a single image, as the missile launcher needs to look correct when unloaded and when firing.*"

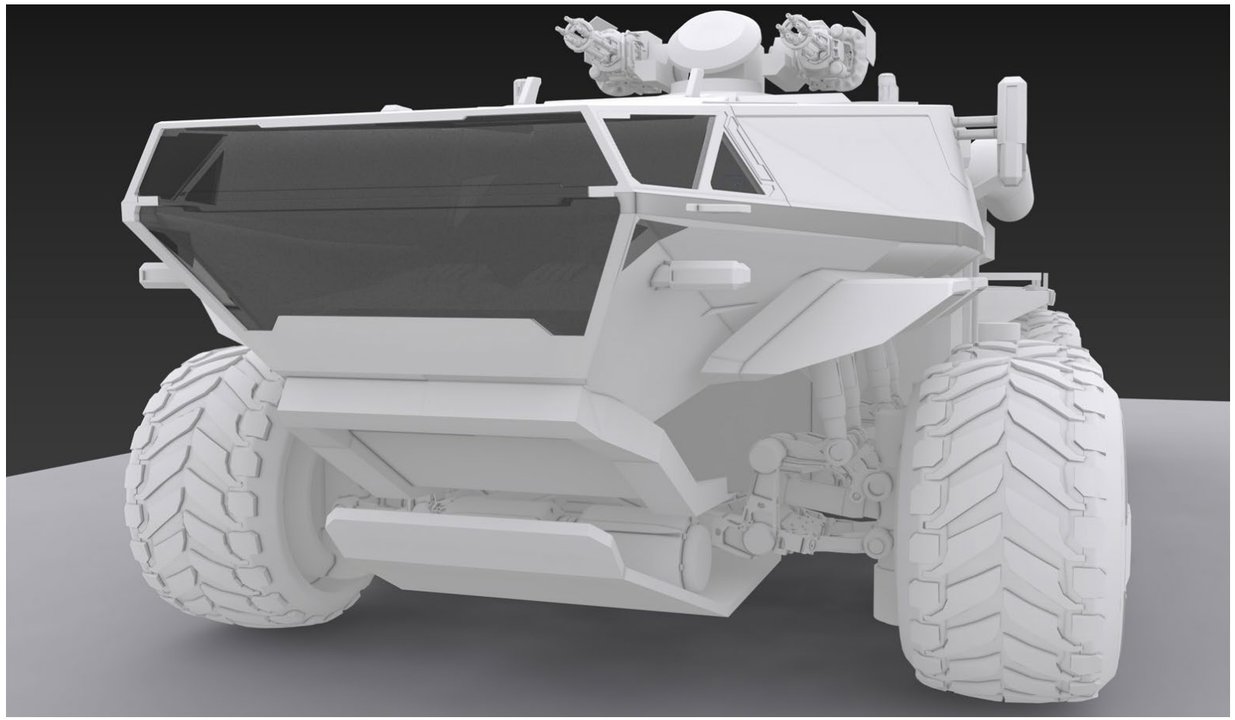












FEEDBACK PHASE

To prepare for the review presentation, Jones brought all of the current concepts into KeyShot and mixed them to create several options. As part of this process, he also brought back one of Akstinas' initial concepts which had a clearer divide between the cab and the missile launching area.

Putting early blocking meshes into KeyShot was a new process for the Ship Team which quickly proved effective, allowing Jones to add quick detailing that would better imply the final form when presenting to Chris Roberts. Jones ultimately decided on two versions to present: one which mated Akstinas' overall shape with styling from Luchian on top and another taken more directly from Luchian's pitches.

Roberts liked the combined version with some notes. He suggested referencing a modern close-in weapon system (CIWS) turret for combining the guns and missiles, noting he preferred the missiles be visible rather than obscured and he asked that the overall length be kept slightly shorter. Jones passed the feedback (along with a series of reference images of modern military hardware) back to the team for the next pass.

From here, the overall look was finally decided and it was time to block out the exterior and interior and place components. Interior work included developing a station for the remote turret gunner and working on the cockpit glass. Here, Jones suggested looking at common themes from Anvil, taking the interior of an unreleased ship as reference. Externally, the team worked to get the shape of the belly armor just right, somewhere between a modern vehicle and something futuristic. Jones himself took the model to figure out rough animations for firing and reloading missiles. The team went on to ask themselves a variety of important questions which might be overlooked if they were building a traditional ship: How does the suspension work? How does it steer? What's on the underside? How do we keep the chassis looking interesting? Jones worked on visual updates to get the correct feel and spacing for the interior, making sure characters would be able to navigate without crouching. He also asked for angular blast shielding to match other Anvil ships, finally selling the connection with the brand.

This review also eliminated the full-length drive shaft that had been located across both halves of the vehicle; Jones noted that while it looked great, it didn't make sense as the Ballista would be powered by several small power plants. A review of the cabin visibility resulted in the addition of more windows. Finally, the last phase of detailing added bumpers, brake lights, hitch points, hydraulics, and other smaller details that separate *Star Citizen* from the competition.

A VERY DIFFERENT PROCESS

At this stage in previous ships' development, members of the Art Team would spend several weeks developing artwork to show the given vehicle in action. This helps explain to players how the ship will function in the final game and shows how Chris Roberts envisions its role. Rough renders of the vehicle in action, unique livery options, and other detailing still needed to be generated, as did rough animations and a 3D concept model... but without the need for specialty paintovers and other marketing material, the length of time needed was reduced roughly by four weeks.

Instead of moving to Marketing for a presentation, the assets went to a team of developers charged with implementing the Ballista in time for Alpha 3.6. The implementation team included systems designers Michael Sizemore and Stephen Hosmer and artist Byungjin Hyun. Their task was, taking *Star Citizen* as it exists today, to make the carefully developed look and design of the Ballista work. Sizemore's assignment was the setup of the vehicle, ensuring that it matched the original concept and pitch as well as making the tough calls when things needed to change to suit the realities of gameplay. Senior Systems Designer Hosmer oversaw the process and the overall effort to implement the Ballista alongside the US Vehicle Content Team. Hyun's job was taking the concept model and then building the same vehicle within the limitations of the game engine. He notes that much of his work is considering functional parts and building spaces to allow the players to exist. For the Ballista, he adapted the suspension at the bottom and worked the interior to make sure it was accessible to the player model.

The biggest benefit of the Ballista's introduction was the lack of new technology needed. When a ship includes a major new mechanic (like deploying drones or scanning planets) a great deal of additional work is needed to make sure it works throughout the game. In the case of the Ballista, the focus on designing it using "off the shelf" mechanics paid off in the end. "*We were able to take other pieces and combine them in a way that had not been done before*," Hosmer reported. "*For example, we've had turrets in the game as well as missiles, but this is the first time we've created an operational missile turret.*" Like concept work, implementation is an iterative process. The team went through several reviews to identify issues with bugs and gameplay early on before signing off on the vehicle and sending it to QA for further review. Feedback from QA provides a valuable additional perspective, allowing additional fixes and further balancing.

The implementation team needed to answer one final question: Why does the game need the Ballista? Sizemore summarized the role perfectly.

"The Ballista is unique, as far as players wanting to control an area. Let's say you're a UEE-aligned militia org and you want to stop the flow of drugs. You and some mates grab some fighters and a pair of Ballistas - the fighters act as a cover screen while the Ballistas pick things out of the sky. Alternately, you can flip this. Pirates may want to spawn it in the exact same scenario but use it instead to stop UEE-aligned players from disrupting the flow out of a drug lab. It is intended to be an anti-air defense vehicle and it serves that role well. Later on, as player land and houses come online, the Ballista will prove to be an invaluable land protection asset."

The Ballista shipped with *Star Citizen* Alpha 3.6 on July 19th, 2019 and the team spent the weekend eagerly watching surprised players try it for the first time and the future of *Star Citizen*'s combined forces battles evolve.

ANVIL BALLISTA PAGE:

https://robertsspaceindustries.com/pledge/ships/anvil-ballista/Anvil-Ballista

ANNOUNCEMENT:

https://robertsspaceindustries.com/comm-link/transmission/17153-Anvil-Ballista

GALACTAPEDIA

XI'AN CUISINE

Xi'an cuisine is the traditional method by which Xi'an prepare their food for consumption. Rather than using heat to alter the nutrient bioavailability of ingredients as is traditionally done by Humans, Xi'an utilize aging and fermentation. Xi'an cannot digest the majority of fresh fare and are intolerant of hot or cold meals. Level of ageing, type of fermentation, strength of flavor, and texture are the most important aspects of Xi'an food preparation. Humans consider Xi'an food to be harshly flavored.

HISTORY

The first indications of cultivated Xi'an cuisine arose when Xi'an established permanent homesteads. Before this time, they travelled in nomadic family groups, scouring the landscape for sustenance while protecting one another from predators. The hot, humid environment of their homeworld was conducive to rapid decay of potential food sources. Food with rich microbiomes such as carrion and rotted leaves made up the bulk of the early Xi'an diet. Predators kept them on the move. It wasn't until agriculture and animal husbandry were discovered that families were able to create long-term settlements fortified against natural predators, allowing them time and space to experiment with meal preparation techniques.

Major characteristics of contemporary Xi'an cuisine soon emerged. Bacteria, molds, yeasts, and spices that enhanced food with intense textural sensations and robust flavors were sought after and cultivated. Aged eggs collected from abandoned *s.āoth* nests became so popular that the lizard was domesticated. Meat harvested from animals allowed to die of natural causes became famous among prosperous families for being more tender and flavorful than meat from slaughtered animals; this attitude persists among Xi'an chefs today. Meat that was heavily spiced, left to age in the sun until soft and pungent, and served alongside strips of the leafy vegetable *nga.u'ii'yēl* became a favorite dish.

The discovery of fermentation revolutionized the Xi'an diet. Plants they couldn't previously digest, such as grain *pai'pun* and legume *pai'lio*, became staples of their new diet. Vessels used for fermentation doubled as long-term food stores, allowing families to stockpile their resources and expand beyond homesteads into state-like powers called Houses. Demand for spice and other food additives opened trade routes between distant locations. As Houses continued to grow, so did the Xi'an palate.

FLAVOR AND TEXTURE

Every Xi'an dish is constructed to balance texture with intensity of flavor. 13 favorable tastes, 13 favorable textures, and 13 unfavorable qualities were identified by members of House Uai'i in their treatise *Three Leaves of Flavor*. These were compiled into a text and sold to traders en route to other Houses. The treatise was hugely influential to Xi'an cuisine as an art. Even today, the ideal *y.iy'atin'tang* (multitextured) meal described in the treatise remains the end goal for Xi'an chefs.

FERMENTATION AND AGING

Fermentation is the foundation of the Xi'an diet. Ingredients are typically cut into large pieces, then seasoned and placed inside a *tyixa'yetui* (fermentation vessel). The vessel is then placed inside the *nyuntui* (fermentation chamber), a temperature-controlled room with deeply grooved walls inoculated with colonies of yeast, mold, and bacteria. These *tya e Yii'ua* (House strains), unique to each House and closely guarded, are cultivated over generations. At first, the vessels are left open to invite the strains into the process. The vessels are then sealed, usually for months, before being opened again, cut into bite-sized pieces, placed on large dishes, and served alongside other meals, most often at room temperature (30 C).

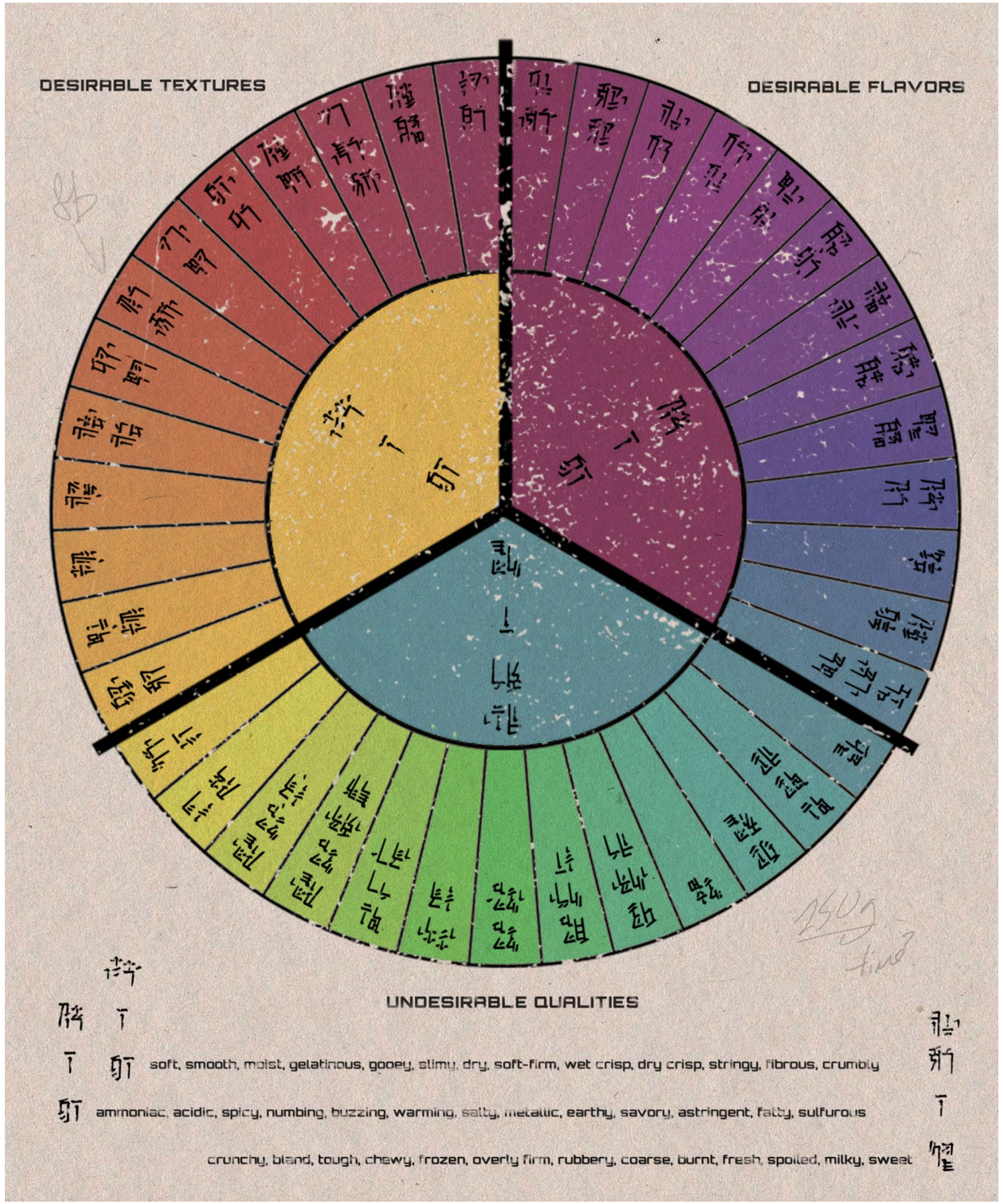
Food that isn't fermented is aged via air-curing, sun-ripening, drying, controlled rot, the addition of micro-organisms, or other methods. If a dish has been prepared well, a Xi'an might say that it is "properly rotted." A bland dish might be described as "lacking rot." This applies to beverages as well. One popular drink, *chui.y'o'sui*, is made from the aged blood of various animals and mixed with complimentary vinegars. Even purified water would be considered unpalatable to Xi'an; on Xi'an worlds, drinking water is enhanced with minerals and various micro-organisms for health and flavor.

CONDIMENTS

Xi'an eat only a few times per week. Shared meals are considered a big family affair. Even Xi'an who are travelling alone will choose to share tables with strangers at restaurants. At the center of a communal table filled with various dishes one can always find a *thauil* (condiments platter) loaded with seasonings and dressings that will impart various favorable flavors on one's food, such as *ki.s'a* (ammoniac; chemical; bitter), *ngi'pi* (itching; buzzing; pain), or *p.ūnt.a* (alcoholic, warming). Xi'an do not experience intoxication from consuming alcohol, and some more forward-leaning Xi'an restauranteurs on Oya III have added Human-influenced alcoholic seasonings to their menus.

MODERN TRENDS

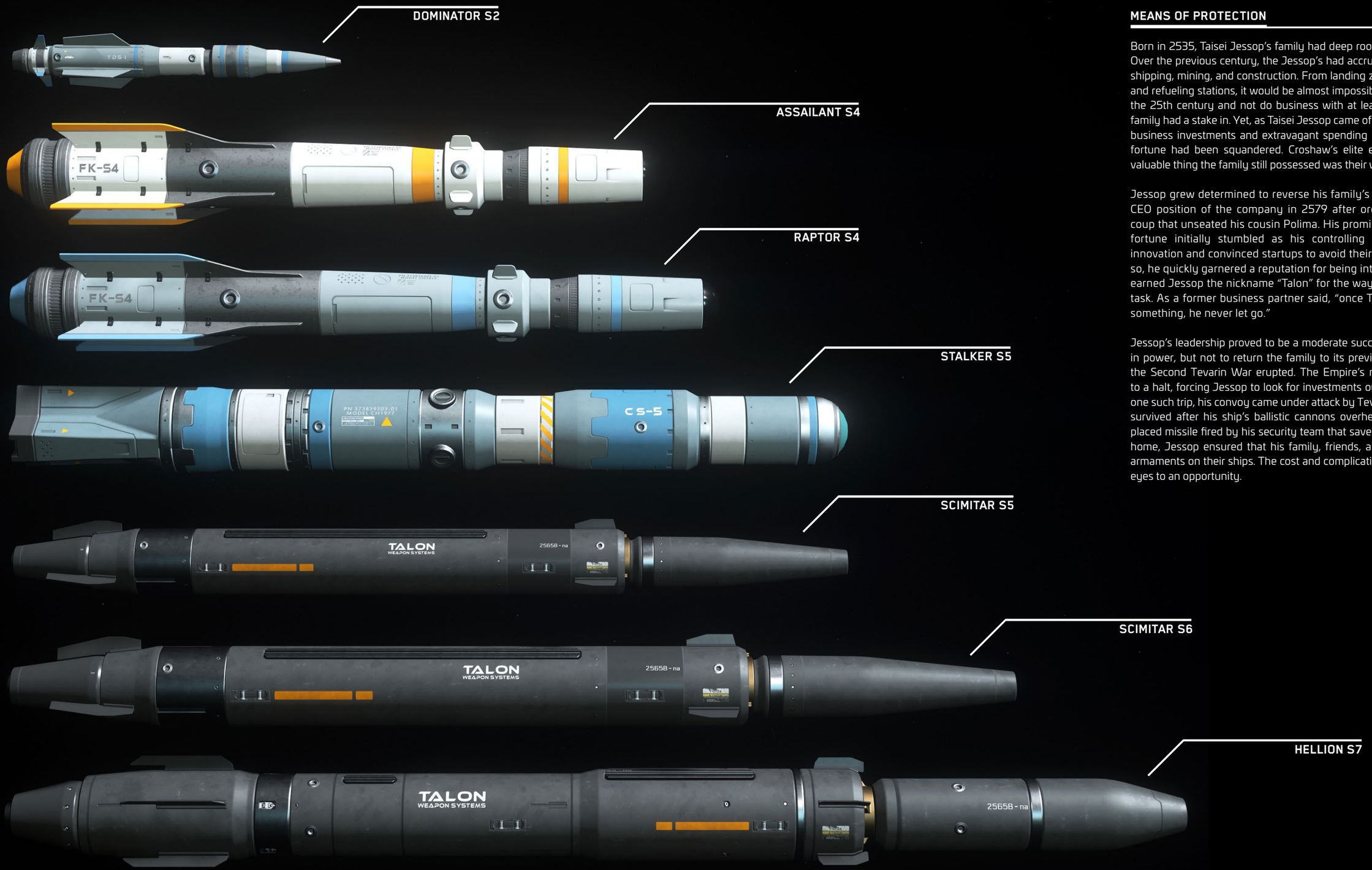
Since the thawing of tensions between the United Empire of Earth and the Xi'an Empire, Xi'an have begun to explore Human styles of cooking. Dishes such as shikara, blue cheeses, and lutefisk have been unreservedly embraced by Xi'an chefs. Cold-brewed pu'er tea has made waves due to its similarity to *hai'pe*, a beverage steeped in sunlight from the leaves of a tropical pine tree. The beverage rotik is similarly popular among adventurously-minded Xi'an. This is especially notable because *nginguichui* (milky; creamy; like animal milk) has been considered an unfavorable food quality for hundreds of millennia. However, hot and cold food, also ill-regarded in the Xi'an tradition, seems unlikely to catch on.



TALON WEAPON SYSTEMS

Prior to the Second Tevarin War, spaceflight was a very different endeavor than today. Many civilian ships confidently explored the unknown without weapons, instead preferring to haul extra water, food, oxygen, and components. Adding armaments to private ships was legal but required a rigorous permitting process. Ship weapons were considered a niche industry geared mainly toward the military and security forces and some civilian spacecraft didn't even come with weapon mounts.

However, during the seven-year conflict, Tevarin warlord Corath'Thal strategically scattered heavily armed and shielded ships to create a much more nimble and agile fleet. These units were capable of attacking Humanity on every front and disappearing before authorities could organize armed resistance. With the military and local militias stretched thin, civilians needed to arm their ships for personal protection. Unfortunately, the era's standard civilian weapons were no match for the Tevarin's powerful phalanx shields. Bigger and more powerful weapons were required, and Taisei 'Talon' Jessop had a plan and the means to better arm the public for their own protection.



MEANS OF PROTECTION

Born in 2535, Taisei Jessop's family had deep roots in the Croshaw system. Over the previous century, the Jessop's had accrued a vast fortune through shipping, mining, and construction. From landing zone hangars to rest stops and refueling stations, it would be almost impossible to visit Croshaw during the 25th century and not do business with at least one company that the family had a stake in. Yet, as Taisei Jessop came of age, a combination of bad business investments and extravagant spending meant most of the family fortune had been squandered. Croshaw's elite even joked that the most valuable thing the family still possessed was their well-respected name.

Jessop grew determined to reverse his family's fate. He ascended to the CEO position of the company in 2579 after orchestrating a boardroom coup that unseated his cousin Polima. His promise to reverse the family's fortune initially stumbled as his controlling managerial style stifled innovation and convinced startups to avoid their investment capital. Even so, he quickly garnered a reputation for being intense and intelligent. This earned Jessop the nickname "Talon" for the way he tenaciously tackled a task. As a former business partner said, "once Talon hooked himself into something, he never let go."

Jessop's leadership proved to be a moderate success - enough to keep him in power, but not to return the family to its previous glory. Then, in 2603, the Second Tevarin War erupted. The Empire's normal commerce ground to a halt, forcing Jessop to look for investments outside of Croshaw. During one such trip, his convoy came under attack by Tevarin forces. Jessop barely survived after his ship's ballistic cannons overheated. It was only a well-placed missile fired by his security team that saved the day. Upon returning home, Jessop ensured that his family, friends, and confidants had proper armaments on their ships. The cost and complication of doing so opened his eyes to an opportunity.

As most companies clamored for government contracts related to the war effort, Jessop focused on providing the public a means of protection. After exclaiming that "guns are too damn complicated," he decided to produce missiles and torpedoes. As a nod to his nickname, Jessop called the company Talon. And like his reputation, once it sunk its hooks into the ship munitions market, it never let go.

EXPLOITING THE AFTERMATH

Arming civilians with devastating ordnance proved to be popular during the Second Tevarin War. Jessop emptied the family coffers and exploited his deep business connections to secure the proper funding, facilities, and most importantly during a time of strict rationing, a steady stream of supplies. Though countless others started similar businesses at the time, Jessop had the wherewithal to make it a reality and a lasting success.

During one particularly successful marketing campaign, missile racks were given away and installed for free if purchased with enough munitions to fill them. Talon distributors flouted the onerous UEE permitting process and even told customers to contact the company if a government representative bothered them about the installation. Members of the board feared that this tactic could lead to an altercation with the UEE government. It turned out that was exactly what Jessop wanted.

The UEE wouldn't turn their attention to Talon until they had won the Second Tevarin War, because while a well-armed populace proved to be a helpful and popular idea during the war, it had considerably less appeal in its aftermath. When the government eventually opened an investigation into Talon, Jessop was able to unleash a phalanx of lawyers to protect the business in conjunction with a well-prepared public relations team that leaned hard on the perception that Talon had saved countless civilian lives during the war. This sparked a vigorous debate about the role of the UEE in personal security with Talon's name at the center. For years, Jessop bragged that this free advertising was the best thing to ever happen to the brand. Of course, it didn't hurt that Talon's missiles and rockets also earned a reputation for being both powerful and reliable.

Eventually, the UEE loosened its regulations and allowed each system to set its own standards. A deregulation race ensued as systems realized that stricter laws scared away some commercial traffic and took plenty of personnel to enforce. It wasn't long before ships armed with heavy ordnance were the standard, not the exception, across the Empire.

Today, there are few pilots not familiar with Talon's line of missiles, torpedoes, ordnance racks, and grenades. The company's reputation for making dependable military-grade munitions for the public remains intact. Yet, Jessop's role in the creation of the company still divides many. Some historians consider Jessop a heroic freedom fighter, while others describe his legacy as that of a greedy war profiteer. Despite this divide, there's one thing everyone can agree on - if it can fly, there's a Talon that can blow it up.