



JUMP POINT

A ROBERTS SPACE INDUSTRIES PUBLICATION ISSUE 03.09

IN THIS ISSUE

- Work in Progress: FPS Weapons & Gadgets . . 3
by many artists & others
- Portfolio: InterDimension Software 45
by Ben Lesnick
- Behind the Scenes: Persistence Commences . . 47
by the Persistent Universe team
- Galactic Guide: Croshaw 65
by Adam Wieser
- One Last Job (Part 1) 69
fiction by Amanda McCarter

GREETINGS, CITIZENS!

For those Idris-lovers who doubt whether I can keep my word and deliver a follow-up article that I promise, check out all the FPS equipment and SataBall uniforms in this month's WIP.

This **Jump Point** isn't as long as last month's (perhaps because last month's was the longest we've ever done), but it's got plenty of equipment development and other information of all sorts.

It hasn't been all that long since we last checked in the with the PU team, but they achieved a major accomplishment last month, and it was worth talking about. When you're not strolling around the newly opened Area18 (or trying to reach places and do things you're clearly not intended to reach or do), take a look at what they have to say about it, Behind the Scenes.

Jared, Alyssa and the IT team (IT gang? troop? syndicate?) give us their reports on the prep and execution for Gamescom, still the biggest con that CIG attends. Their Spotlights were delayed from last month, when that **JP** went over 80 pages; I appreciate their patience.

Meanwhile, thanks to the Centurions and Imperators who contributed questions to this month's Behind the Scenes interview of the PU team, including Feronas, Eizo, Switch-D, Odig, Jethro E-7, Fara-Salt, Rank_Badjin, Far-Seeker, Kin-shadow and Schrike. (I think that's all of you!)

(And a quick note on questions. Sometimes we skip questions simply because we don't know the answer. For example, we're still working out the economy (there's still a lot



of work to do on it). We can't tell you what we don't know, and we don't yet know the details of how the economy will work. So I know it's frustrating when I skip your economy questions, but please realize we're not ignoring you.)

I also want to thank those of you who gave us screenshots to illustrate the PU interview, including DocAndy, J0sh and Pyq. We have a special shout-out to ThomBozworth, who was apparently bugging our interview, based on how many screens he gave us that specifically illustrate what we discussed.

And a nod to STARMEDIC, who gave us a shot we liked a lot . . . but it was almost a duplicate of our cover shot. Check out STARMEDIC's other screenshots and art at <https://robertsspaceindustries.com/community/citizen-spotlight/419-STARMEDICs-Wallpaper-Collection> It's an interesting take on the 'verse.

Till next month ...

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

David

David.Ladyman@cloudimperiumgames.com

SPOTLIGHT!

Page 59: Jared Huckaby, Community Manager

Page 61: Jared Huckaby and Alyssa Delhotal, Associate Marketing Producer, CIG-LA

Page 63: IT Team at Gamescom

EDITOR: DAVID LADYMAN, INCAN MONKEY GOD STUDIOS

ROVING CORRESPONDENT: BEN LESNICK

© 2015 CLOUD IMPERIUM GAMES CORPORATION & ROBERTS SPACE INDUSTRIES CORP. STAR CITIZEN IS A TRADEMARK OF CLOUD IMPERIUM GAMES CORPORATION.

COVER: ANDREW HESSE & RYAN ARCHER

PAGE 45: ETIENNE BEAULIEU

PAGE 65, 68: KEN FAIRCLOUGH

PAGE 69: KEN FAIRCLOUGH



FROM THE HICKET!

FPS Guns, Grenades & Gadgets

As we said last issue, the initial releases of *Star Marine* will include:

- 6 suits of armor (three each for Marines and outlaws)
- 2 Sataball teams
- 6 guns
- 3 grenades
- 4 gadgets

Last month we covered the armor, which was about half of all the FPS material. This month, we cover everything else – the guns, grenades and gadgets, plus uniforms for two

Sataball teams. (The Sataball teams won't go live as early as the items, but we wanted to show you what we have on them, as well.)

And we'll repeat our other note from last issue: Usually we can credit a single artist or two with what you see here. However, with all this armor, there are literally dozens of artists who contributed to these designs. It doesn't help that the person who posted an image isn't always the one who created it. We've listed the person who posted each image, but we confess now that we can't tell you for sure who actually did each piece here.



Model II Arclight Laser Pistol



Spec: A handheld laser made famous as Kyle Fenris' sidearm on the hit vid show The Frontier, the Model II Arclight has become extremely popular on the civilian market. Despite its media appeal, the Model II offers a higher rate of fire than any of its ballistic counterparts. While that may diminish the weapon's stopping power, its PS-10 compatible power cell offers more than enough shots to finish the job.

Matt Hubel, Senior VFX Artist, Illfonic: A new version.

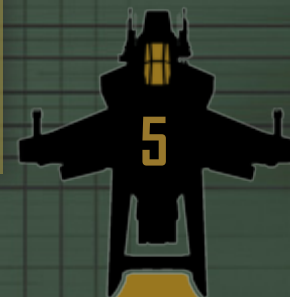
Paul Jones, Art Director (S42), F42: It would be good to soften that light. The fall-off appears to be too tight (and the light is very bright). [See attached image.]





Matt: Version 0.2 of the Model II Arclight Laser Pistol VFX

Chris R: This feels like an electric blast, not a laser blast.



Chris Arden, Art Producer, Illfonic:
Updated VFX for Arclight.

Mike Snowden, Lead VFX Artist, F42:
1st-person view, pretty neat and tidy. If I were going to nit-pick, I feel the 3rd-person muzzle could do with some variety/randomness to the shape/direction. In addition, it possibly stays on a frame too long? Also, the muzzle light occasionally doesn't trigger (and not at all in 1st-person as far as I see).



WORKING IN PROGRESS

ze-ev Harris, Illfonic: New default sights for the Arclight Laser Pistol. This replaces the hard to use "v" sight.

Jason Hutchins, Senior Game Producer, CIG-ATX: Chris, approved?

Chris R: I feel like the front post of the gun feels pretty blocky and this will have the same issues I had with the original P4-AR sight.



WORKING IN PROGRESS



Jason: So, you'd like a thinner front post? Like the red line on the attached?



Current version of Arclight Pistol, now with traditional iron sight rather than holographic sight.
New (left) and worn (below)



WORKING IN THE DARK

Behring P4-AR



The current P4-AR doesn't really have a development history. Or, to look at it another way, it has a thoroughly convoluted history. This we know:

- the original P4-AR didn't fit as an assault rifle
- we didn't need a subcompact gun immediately, and the subcompact gun we had (the P4-SC) actually had features that resembled an assault rifle (image above)

So we converted the core of the P4-SC into an assault rifle, renamed it the P4-AR, pretty much in one step (hence no development images) and the result is a solid gun for the game. (Current version is on next page.)



WORK IN PROGRESS



Spec: Behring's classic P4-AR rifle. The P4-AR features a collapsible stock and shortened barrel, making it an ideal choice for close-quarter firefights. Its accuracy and general ease of use make it universally valued among security, military and civilian users.

Current version



WORK IN PROGRESS

LH-86 Ballistic Pistol

Spec: The LH-86 from Gemini is a compact kinetic handgun designed for personal defense and close-quarter combat. A keen eye on ergonomics and balance coupled with hardy construction makes this pistol a natural fit for a shooter in any number of hostile conditions. The LH-86 also comes with Tritium low-light sight and a thirteen-round magazine.



A

Matt: FPS Release 1.2.



B



C



D

Mike: This is looking great, nice and refined. In particular, I love the intensity and shape of the muzzle flash, and the lingering projectile trail. A couple of minor points: the fall-off of your muzzle flash's particle light is a bit harsh outside of 1st-person view. I know this is tricky to avoid with the limited particle light options, but I tend to try lowering the intensity and/or increasing the radius a bit. Also, regarding lighting, the projectile has a fairly strong light but when the impact effect kicks in, there's no light at all; this just looks a bit jarring. Finally, the muzzle and projectile light colors are a little at odds with each other (again, noticeable outside of 1st-person view). I'm nit-picking though; all in all, this is looking great!



WORK IN PROGRESS

Matt: Version 0.2 of LH-86 Combustion Pistol VFX



Chris A: Updated FX for LH-86



WORKING ON THE
FRONTIERS



WORK IN PROGRESS

Mike: Updated muzzle and impact effects for Gemini LH-86 pistol.

Note, there are still problems with the tracers, noticeable here when firing close to the wall and in 3rd person.

Chris R: I'm not sure a ballistic pistol should have a tracer ...

Forrest: Agreed. We will get the tracer removed.

Jason: Agreed! No one is going to waste a valuable pistol round on a tracer. The only reason to use a pistol is because your rifle is broken. :)

Michael Barclay, Senior Level Designer, F42: It really doesn't help that our tracers currently look like fat laser

bolts. They're way too big for ballistic ammo. I can think of a couple of reasons for tracers in pistols however; having them every few rounds helps players understand the physics of their rounds (bullet drop, spread) and lets them "learn" the weapon. Tracers also introduce unique balancing features, such as giving players the option to apply a silencer/suppressor to completely remove the tracer effect (so players can choose to keep their shots completely hidden at the expense of damage). I agree they shouldn't be every round. However, some mags have tracer rounds near the end so the shooter knows when it's close to the end of the mag. (You also get "cold" tracers now, that are visible to the shooter only.) Or, maybe you could obtain some of this info from an AR display add-on? <*Draw tracers*>?

Devastator-12 Shotgun

Spec: Kastak Arms' Devastator-12 is a pump-action electric shotgun capable of delivering sustained medium range, high-impact plasma blasts for close combat, room clearances and other combat operations. If the situation requires a high-power presence, look no further than the Devastator.

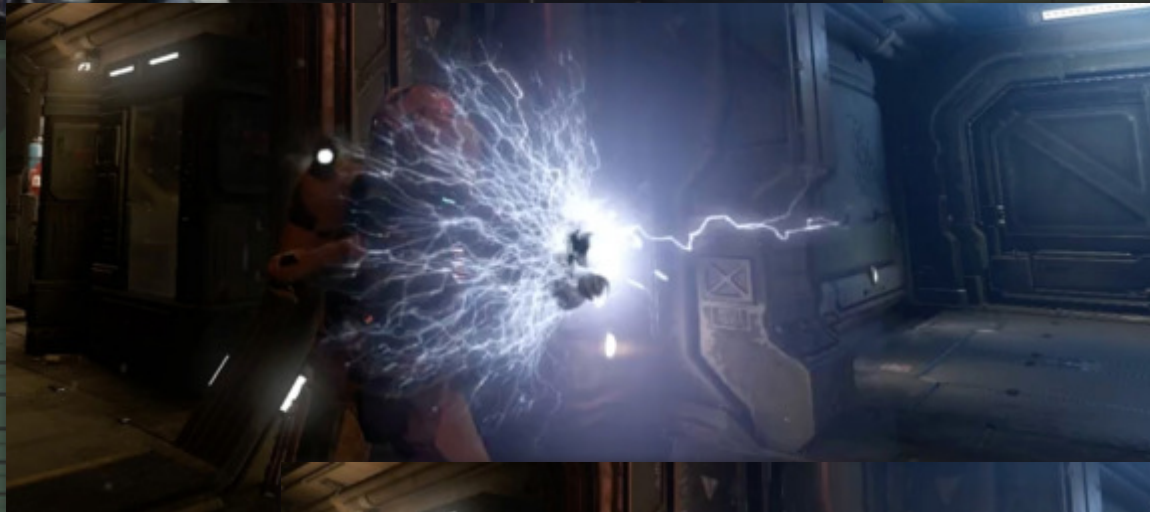


Matt: FPS Release 1.2.

David Haddock, Lead Writer, CIG-LA: That's really cool. Really conveys the force of the blast well.

WORK IN PROGRESS

Matt: Version 0.2 of Devastator-12
Electric Shotgun VFX



WORKING DRAFTS



Chris A: Updated FX for Devastator shotgun



Chris A: Vent FX update for Devastator



WORKING IN PROGRESS

Current version, now with foregrip shortened for animation purposes.



WORK IN PROGRESS

ATT-4 Laser Assault Rifle

Spec: Despite all the advances in weapon technology, there will always be a place for a dependable assault weapon. Klaus and Werner maintains that proud tradition with the ATT-4. This selective fire energy-based assault rifle is capable of providing accurate and sustained fire for up to medium range. Perhaps the greatest asset of the ATT-4 is the high-capacity battery system, allowing operators to fire considerably more rounds per battery, meaning that they need to carry fewer magazines.



Matt: FPS Release 1.2.

Mike: This is looking great; love that impact effect! My main comment would be that the particle light doesn't always appear when the muzzle flash does, which looks a little odd when viewed under scrutiny. Quick question, are the flashing lights caused by the nearby environment? Or are all the light flashes coming from the firing effects?



WORKING IN PROGRESS



Matt: Version 0.2 of ATT-4
Laser Assault Rifle VFX



Chris A: Edits on ATT-4 FX



WORKING IN PROGRESS

Mike: New version of the laser assault rifle VFX. The brief was to dial back the previous version, focusing on subtle muzzle effects, as this is a laser rather than a ballistic weapon. Neatened up the projectile and impact effects, too.

John Crewe, Senior Technical Designer, F42: I like it, especially because it doesn't feel like a simply recoloured ballistic effect. Possibly need a little more of a core in 1P view, but nothing too solid.

The tracer/laserbolts need work, but we know there's bugs outstanding with those currently.



ze-ev: New default ghost ring sights for the ATT-4.

Chris R: Can we be further down the sight? I still feel like we see too much of the back of all the guns, both stocked and pistol. I want to see more of the target area; contrast and compare to BF4.

Also I think this kind of sight would be great for the Behring.

Jason: Re: further down the gun, we talked about getting Crewe the ability to be able to tune those values. Not something we can or should do in art. So, that's in progress.

Re: Good sight for the Behring, we are making these modular components so that we can eventually put these on any gun. Do you want us to put this ghost ring on the P4-AR and make something new for the ATT-4?

Meanwhile, is the sight component itself approved? We can tweak the Y value of the camera separately without changing the art of the gun or the sight.

Chris R: Yes, approved.



WORK IN PROGRESS



Chris R: This would be my preferred sight for the Behring! Is it a major deal to implement the various sights as items plugging in with the item ports? Easy stuff for people to earn / buy and would let people customize ...

Charles Brungardt, President, Illfon-ic: No, this shouldn't be too bad. There are a few things we need to finish up with selecting from different sights, but it shouldn't be too bad.

Jason: Just to be clear, this would be the preferred default sight for the Behring P4-AR.

Does this mean we'll want to put different default sights on the K&W ATT-4?

Chris R: Perhaps a scope / red dot?

Jason: I'll have ze'ev put some options together for you.



WORKING IN PROGRESS



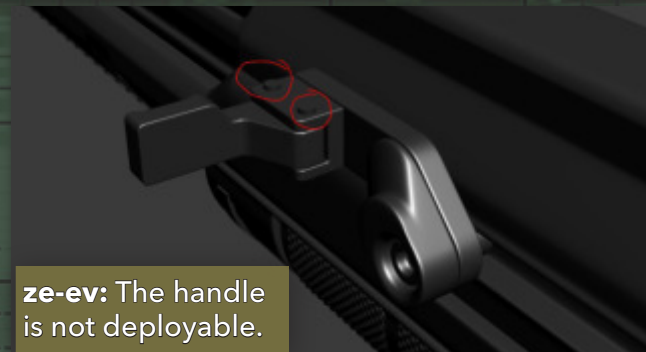
Arrowhead Model VI Sniper Rifle

Spec: Klaus & Werner's Arrowhead Model VI long-range energy rifle features a fiberglass composite body capable of withstanding any number of rigorous environments both in atmosphere and out. Built with a precision stock, compound scope and built-in bipod, the Arrowhead offers a stable and devastating weapon for operators who want to keep their distance, but stay in the fight.



ze-ev: This highpoly has been approved; posting for visibility. I'm tweaking the scope and bipod + rail attachments to fit with Bjorn's templates.

Brandon Evans, UI Programmer, CIG-LA: It looks like the handle on the magazine release lever folds out, but the way it folds out would require you to push forward before pulling it back, assuming it somehow doesn't collapse again when pulled back on. It seems like the ideal design for that would be to reverse and spring load the hinge, so pulling back the lever and deploying the handle are a single motion – releasing the handle closes it, and then locking in a new magazine releases the slide lock to reset the lever.



ze-ev: The handle is not deployable.



ze-ev: Actually, maybe something more like this might feel more sturdy.

Brandon: Yeah, that looks much more solid.



WORKING ON THIS



ze-ev: This is the Klaus and Werner Arrowhead, in-game model. This is not using the Master materials yet since we're on 1.2, but we will port it over to them after. The blend works right now. So in the future, you'll be able to buy this gun clean, and over time it will accumulate wear and tear.

Chris R: Looks really nice! Materials / PBR look slick. Is there an ADS render?

Also would love to see it in action in a weapon video.

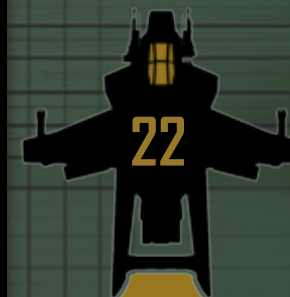
ze-ev: Thanks! We're still working on the ADS/zoom view right now.

Declan Troughton, Level Designer (S42), F42: Looking forward to seeing the wear and tear over time, that should look awesome! Does the whole underside of the barrel act as a grip, or is it the area next to the trigger? Also, are there any plans to include a bi-pod accessory and if so, where would the player put it?

ze-ev: Thanks! Left hand goes on the fore grip in front of the trigger. And yeah, we'll have a bipod for this later.



ze-ev: This is the way the blend works on the KW sniper rifle. You buy the gun clean, and over time, it's supposed to accumulate wear and tear. All you do is tweak the blend slider in the material (probably through code).



WORKING ON PROGRESS

Current version, now with additional vent holes in the barrel.



WORKING IN PROGRESS

Grenades



WORK IN PROGRESS



1. DS-12 GRAVITY GRENADE



2. EP-S EMP GRENADE



3. PM-3 INCENDIARY GRENADE



4. CR-7 CLUSTER GRENADE



5. MK-4 FRAG GRENADE



6. RADAR SCATTER

Weapon Name	Behring Grenades
Part	Multi-Grenades
Manufacturer	Behring
Artist	Sarah McCulloch
Revision	First Pass



Sarah McCulloch, Junior Concept Artist, F42: Behring Manufactured Grenades: Gravity pulse, EMP, Incendiary, Cluster, Frag and Radar Scatter [not all of which are currently implemented in the game]. Continuing with the modularity theory, common polymer frame, articulated base enables manufacturer to supply different 'bodies.' Thinking a two-stage animation; you click down on the top cover which is spring-loaded and pops off revealing the primer button. Player pushes it down and lobs it down the corridor: boom.

One other note: the grenades are very much a work in progress. None of them are final, and some haven't advanced to the art phase.

FORCE GRENADE

Spec: This is the latest in pacification technology, delivering a non-lethal force push intended to displace opponents in low or zero gravity situations.

It can be used in normal conditions but only shoves players around.

When there is Low Gravity, it can apply enough force to push players into vulnerable positions or dislodge their hiding spots in vents or other locations.



Matt: Version 0.1 of the Force Propulsion Grenade VFX



WORKING IN PROGRESS



A



B



C



D



E



F



G



H

Chris A: FX updates on Force Propulsion grenade

Mike: I think the "embers" are making this look a little too fantasy for my tastes. I'd be tempted to get rid of these entirely, or make them more subtle in scale, and try some very light turbulence/gravity. I also feel the refractive sphere's opacity is little too strong; perhaps you could tone it down and use "screen effects" blur/brightness to get that oomph up close?



26

WORK IN PROGRESS

EMP GRENADE

Matt: Version 0.1 of the EMP Grenade VFX



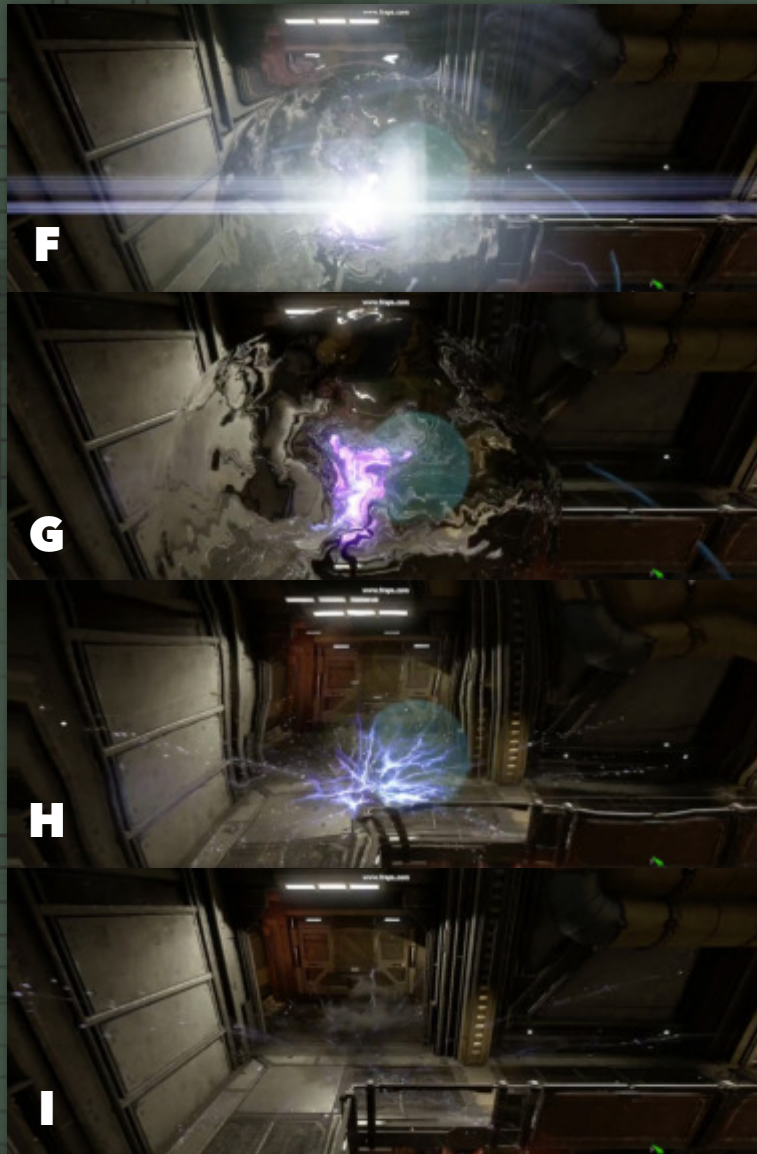
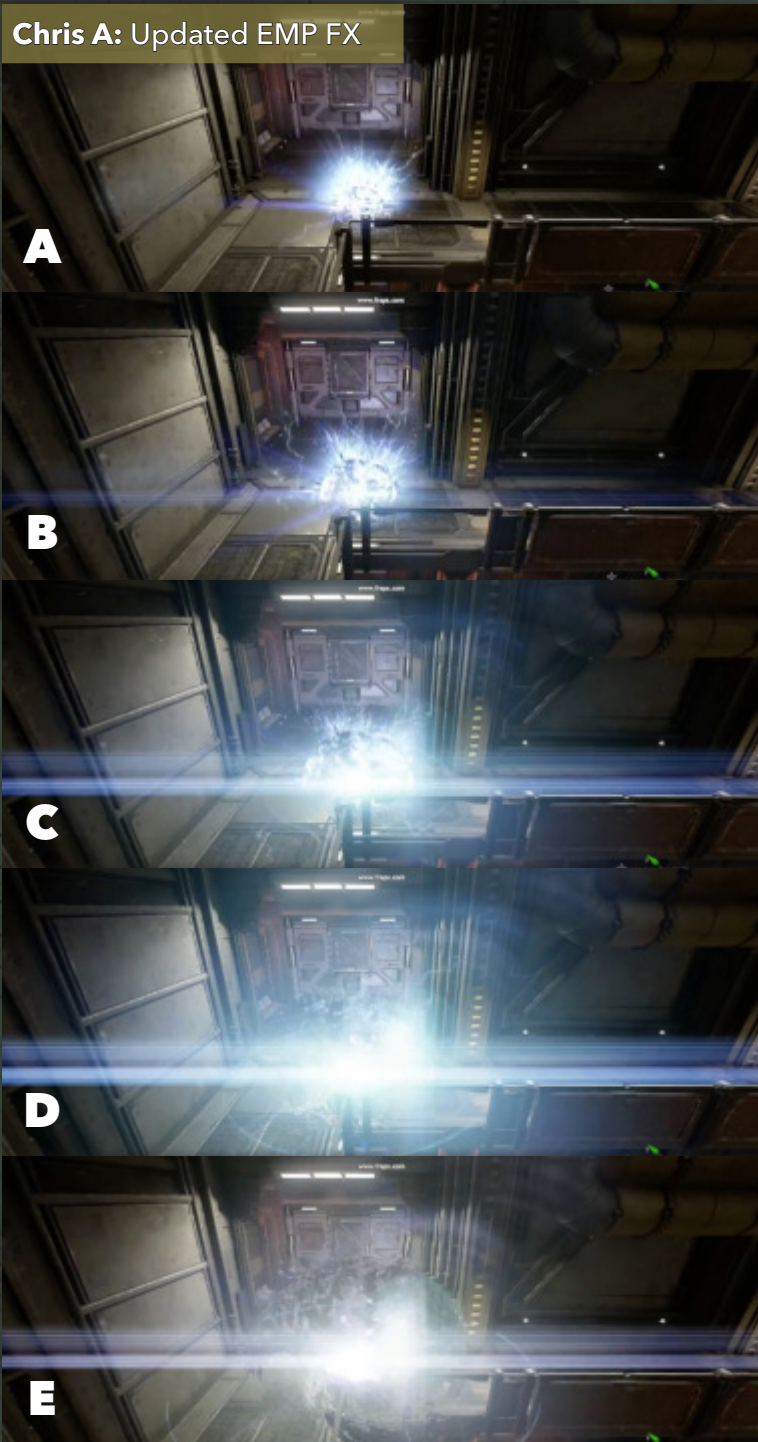
Spec: This produces a controlled electromagnetic burst to disrupt unshielded electronics for a short time, making it an invaluable addition to the loadout of military and law enforcement operators.

It disrupts electronics caught in its path, such as lights and visors.



WORKING PROGRESS

Chris A: Updated EMP FX



Mike: I really like the initial flash of light/flare; feels nice and Hollywood sci-fi! Not so keen on the purple that creeps in, though (I'd stick towards blue/cyan) and the refraction feels too opaque for me. Other than that though, this is rocking!

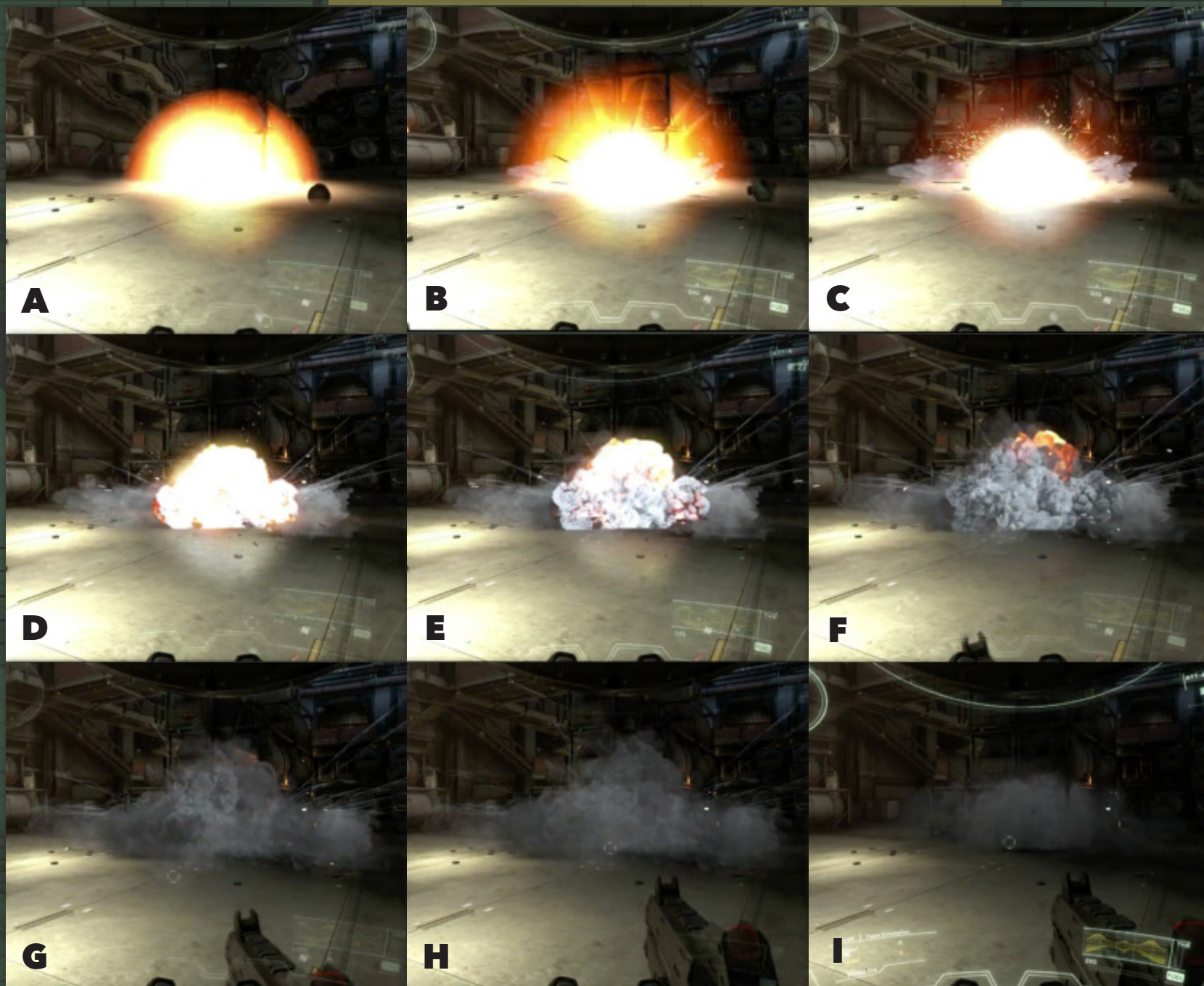
Would it be possible to view this effect when the grenade is properly thrown in game? When viewing the particle directly in the editor, we're missing out on the screen effects this grenade uses (so we're not seeing the full effect).



WORK IN PROGRESS

FRAG GRENADE

Matt: Version 0.1 of Frag Grenade VFX [discussion on next page]



WORKING IN PROGRESS

Spec: This is an anti-personnel fragmentation grenade capable of saturating the kill-zone with lethal projectiles and a devastating concussive blast.

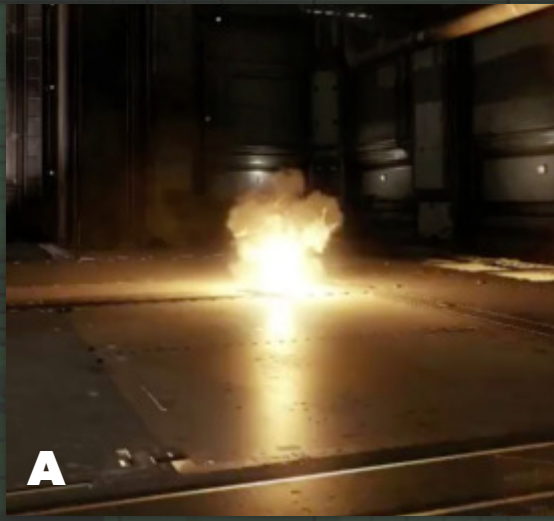
Hannes: Nice. Smoke could stay in the air a bit longer before it fades out, though?

Mike: Matt, I had a go at tweaking this effect, with the following feedback:

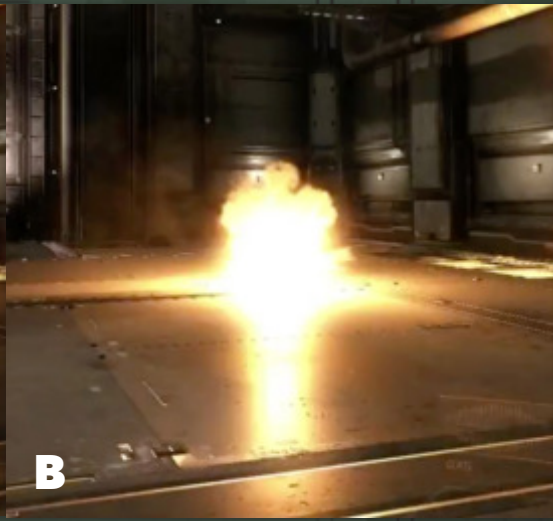
- Too many different smoke textures. One of which is an SSL shader which although it gives you the glow pass, is broken lighting-wise (and looks too bright/diffuse). Dial these back so there's only one smoke material being used. Use a smoke texture sequence that dissipates in the sequence rather than relying on fading the particle's opacity (looks unnatural and the blends between different child particles are too jarring).
- Scale discrepancies between the various smoke child particles. All this considered, it would be better to stick to one, maybe two smoke particles.
- Opacity of smoke/dust is too thick. This would make more sense in a dusty, desert environment (as per lots of the available frag grenade references) but looks jarring in our mostly metal environments (further down the line we may need to consider having different effects per environment surface).
- Glow textures are too low res for the scale they're seen at. In fact the scale is too big for this effect. In reality, there's barely any incendiary element to a frag explosion. As we're doing "Hollywood Realism," we can get some initial glow but it needs scaling down. The light shards are too fantasy-esque; tone this down or consider removing. General glow remains for much longer than actual light does. These need syncing up (short blast of light though, no lingering flames).
- The sparks need their curvature setting to 0 and emissive rather than diffuse lighting. They look like blobs currently. Consider using "sparks_with_detail" texture, or if that looks too "texturey," check with John to see which texture he is using for level sparks. Scale of sparks is a little off; reduce the overall scale and lessen the initial stretch.
- Sparks trail particles: the texture is very defined so looks very repetitive with multiple trails existing at same time. Use a less defined texture, consider fading opacity and also reduce scale to match smaller sparks.
- Initial refraction circle needs opacity toning down; shape is too clear. Also consider using soft particle if hard edge is still present after opacity change.
- Consider using screen blur as well as brightness. Just needs to be on for a very short time, but will help sell the feeling of impact/oomph. Don't forget this only appears when explosion node is triggered, so you won't see the effect while editing the particle directly.



WORK IN PROGRESS



A



B



C



D



E

Chris A: Updated frag grenade FX

Mike: Looking nice! Feels more true to real-life reference. I suspect others will expect more lingering smoke/dust, but for me, you've nailed this nicely given the mostly metal environment. I do feel the light is a lot more intense/nuclear than it should be, but it does help to make the blast feel more concentrated. A couple of suggestions: perhaps try adding more shrapnel/debris bits to help sell the danger, and try using the screen-based blur/brightness when closer to the impact.



WORK IN PROGRESS

Gadgets

As with grenades, FPS gadgets are still in development. Even those that can currently be used in game still have a way to go before they are ready for final release. Here's what we have so far.

PERSONAL SHIELD

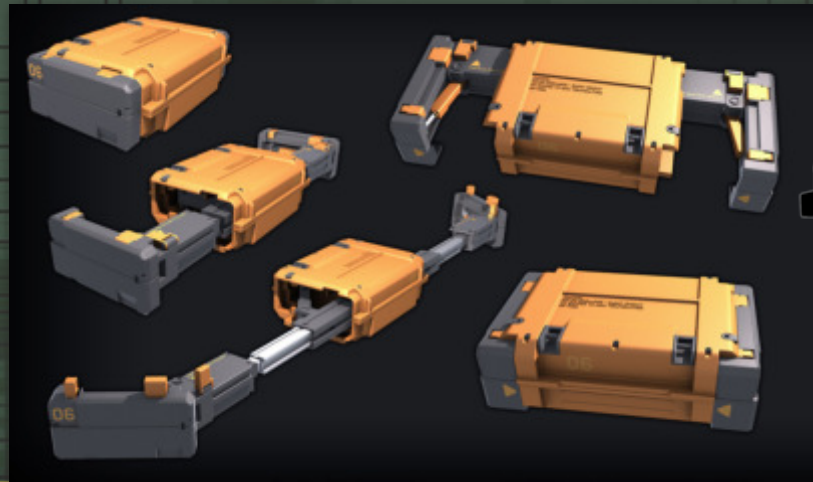
Cole Eggen, Lead Artist, Illfonic: High-poly version of the Deployable Personal Shield. Creates 'crouch' cover enough to shield 1 user. Takes damage to destroy. Can be turned off and picked up to redeploy as needed. Cannot heal/be repaired. Actual Shield Effect to follow.

Michael: This is cool, but I'm worried that there's not many signifiers on this that communicate how it's used. Some things it would be useful for gadgets to convey:

How is it deployed? Can I throw it like a physics object? If it flips upside down can it project the shield both ways? Can it self-right? How is it picked up to redeploy? Can it be knocked over when the shield is deployed? If not, how does it support itself? (Maybe the yellow case top can fold back to offer a wider base when deployed?)

Just a suggestion, but maybe it can have a handle somewhere on the case that fulfills several functions: indicates how it's carried, allows it to be attached to armour; when deployed the handle could be "rotated" to activate the shield (like a lock). Same when it's deactivated: twist the handle to shut it down and in the same animation you can pick up the whole unit.

It also looks a lot like many other crates in the game when it is folded up. Maybe we can get some branding on it to make it stand out?



Kedhrin Gonzalez, Creative Director, Illfonic: It's a one use, it'll only deploy on flat ground that has enough space. If it can't deploy, it won't and you can pick it up again. Once deployed you can't pick it back up; if it flips over it stops working – it's 1-way protection. The other stuff is all aesthetics that I think can be taken into consideration, but I'm not sure if there's time to do it right now.

<later> Rodney pointed out the doc said it can be picked up after deployment; I'm changing that. I also want to point out it'd take a pretty intense force/zero G to flip it over.

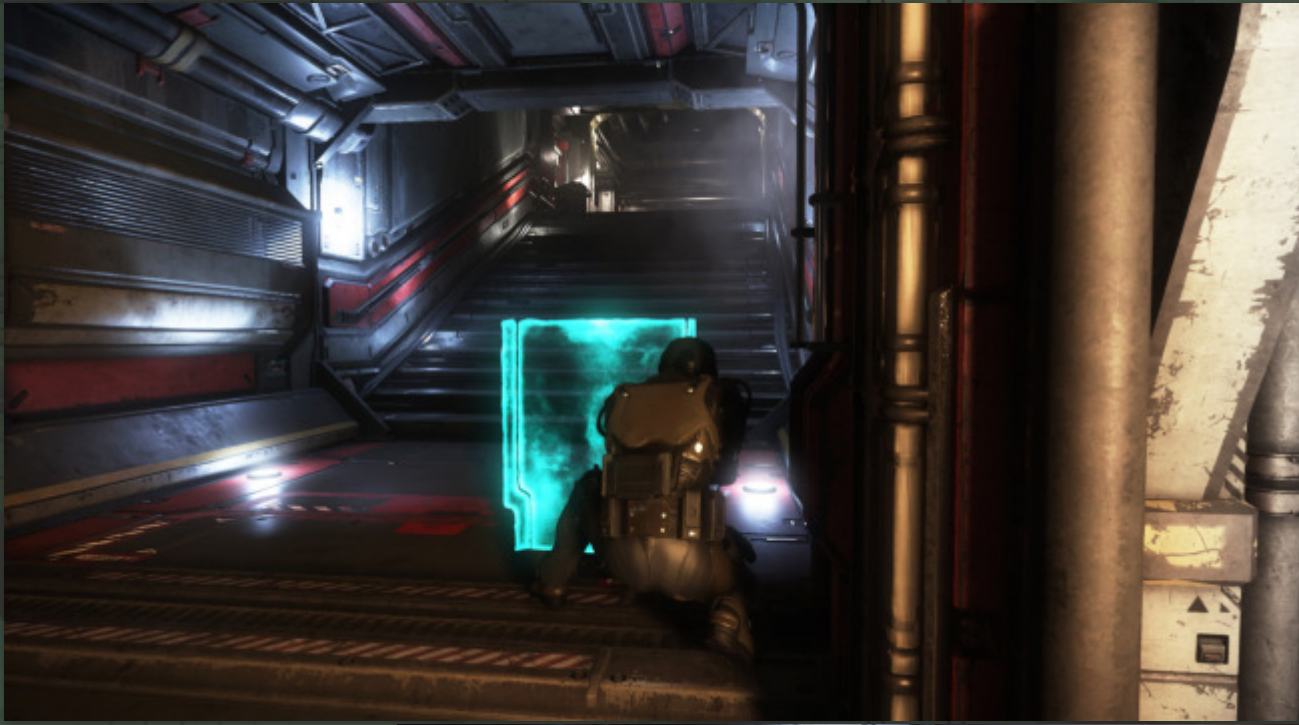
Michael: Yeah that's cool, I was just commenting on its aesthetics mostly.

For the handle example: A handle that was on the top of the box would signify what way down the unit is placed. Currently the box is symmetrical so as a product that shoots a beam of solid light into the air it's a bit dangerous to not make that clear. As for branding, maybe a "hazard" stripe on the forward facing part of the unit? Also some arrows on the lid (point this way at baddies!). A handle would also imply how it is carried and maybe even attached to armour.

Just something we might want to think about, and it might help drive some cool designs for how it's activated in the future.



WORK IN PROGRESS



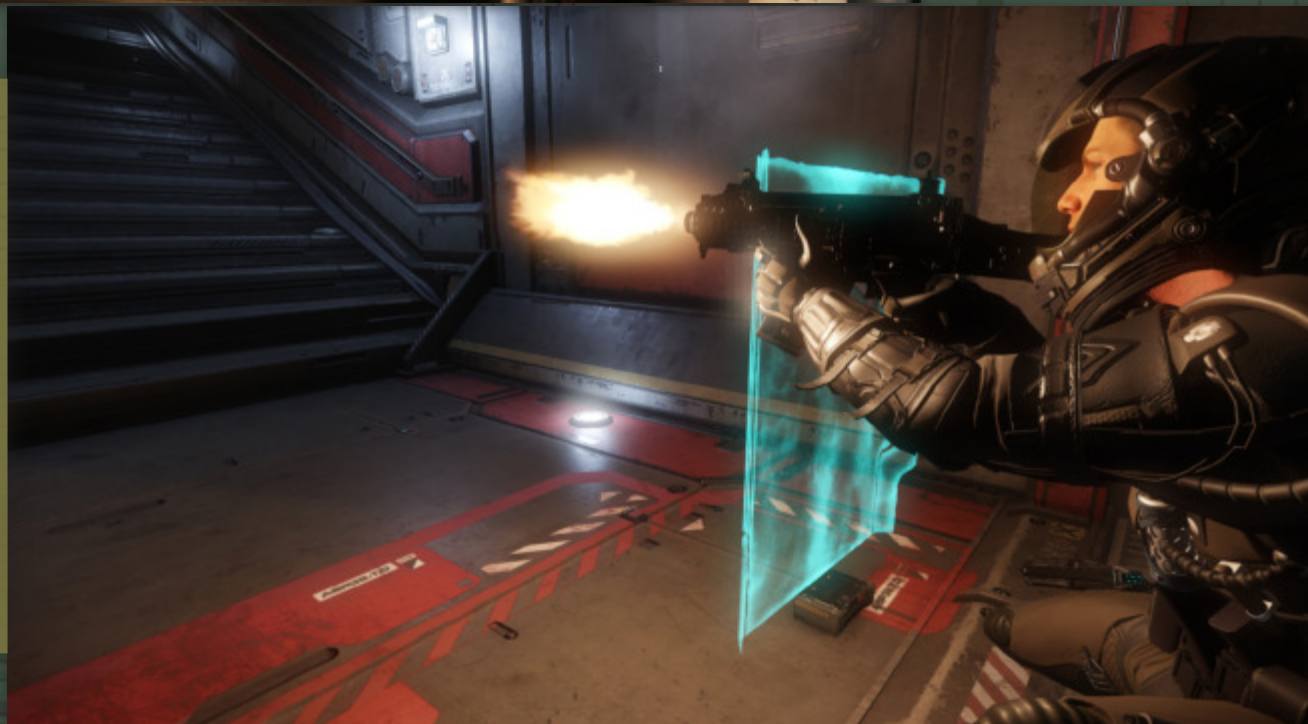
Spec: This is a mobile system capable of projecting a localized protection field capable of temporarily shielding two operators from incoming fire.

Creates a 'crouch' cover enough to shield 2 users.

Can be destroyed.

Can be turned off and picked up to redeploy as needed.

Cannot heal/be repaired.



WORKING IN PROGRESS

HOLOGRAM DECOY

Spec: This projects a holographic reproduction of the user in an effort to confuse and distract hostile forces and allow the operator to change the dynamic of the battle.

Creates a realistic hologram of the user.

The effect is lost the closer you are to the hologram, but from far away it blends with lighting in the environment.

If placed near cover, the hologram will loop the cover animation to draw fire.

Cole: Hologram Decoy Generator highpoly.

Chris R: Looking good for an in-engine render – I thought it was concept art!

Hologram Decoy Generator

(in-game mesh)



In-game hologram in transition.



WORK IN PROGRESS

BEHRING PK-1 SWEEPER (AREA DENIAL SYSTEM)

Spec: This is a non-lethal anti-personnel mine that projects a dual-axis concussive and EMP energy to stun opponents and disrupt electronics caught in the blast.

Like a Claymore, except it has a more vertical/horizontal field of view.

Burstwave of energy will disrupt electronics and stun people caught in the field. Has only one detonate usage.

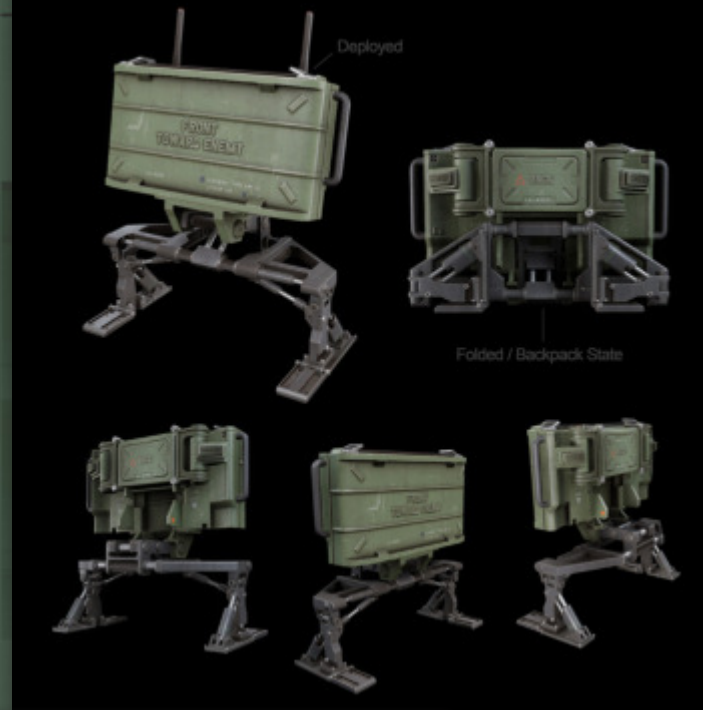
Device can be disabled from a distance.

Vulnerable to EMP grenades.

Cole: Area denial system highpoly (giant claymore), carried on the back utilizing the backpack slot.

Area Denial System

(in-game mesh)



WIP
HIGHPOLY MODEL



INSTRUCTIONS:

1. With two hands, hold device away from body.
2. Press two side buttons marked "Release" to deploy support feet.
3. Support feet will deploy to the sides.
4. Place device on ground with "Front Towards Enemy" side facing enemy.
5. The explosive charge will self adjust its angle.
6. Motion sensors will deploy, and the device will detonate when enemies are detected.



WORKING IN PROGRESS

LOADED



EXPLODED



WORK IN PROGRESS

CURELIFE DYNAPAK PERSONAL MEDICAL AID

Spec: This is designed and constructed for the rigors of field use. A single dose will promote healing in non-serious wounds to get you back on your feet.

Heals limbs to one state below their current status, except for ruined.

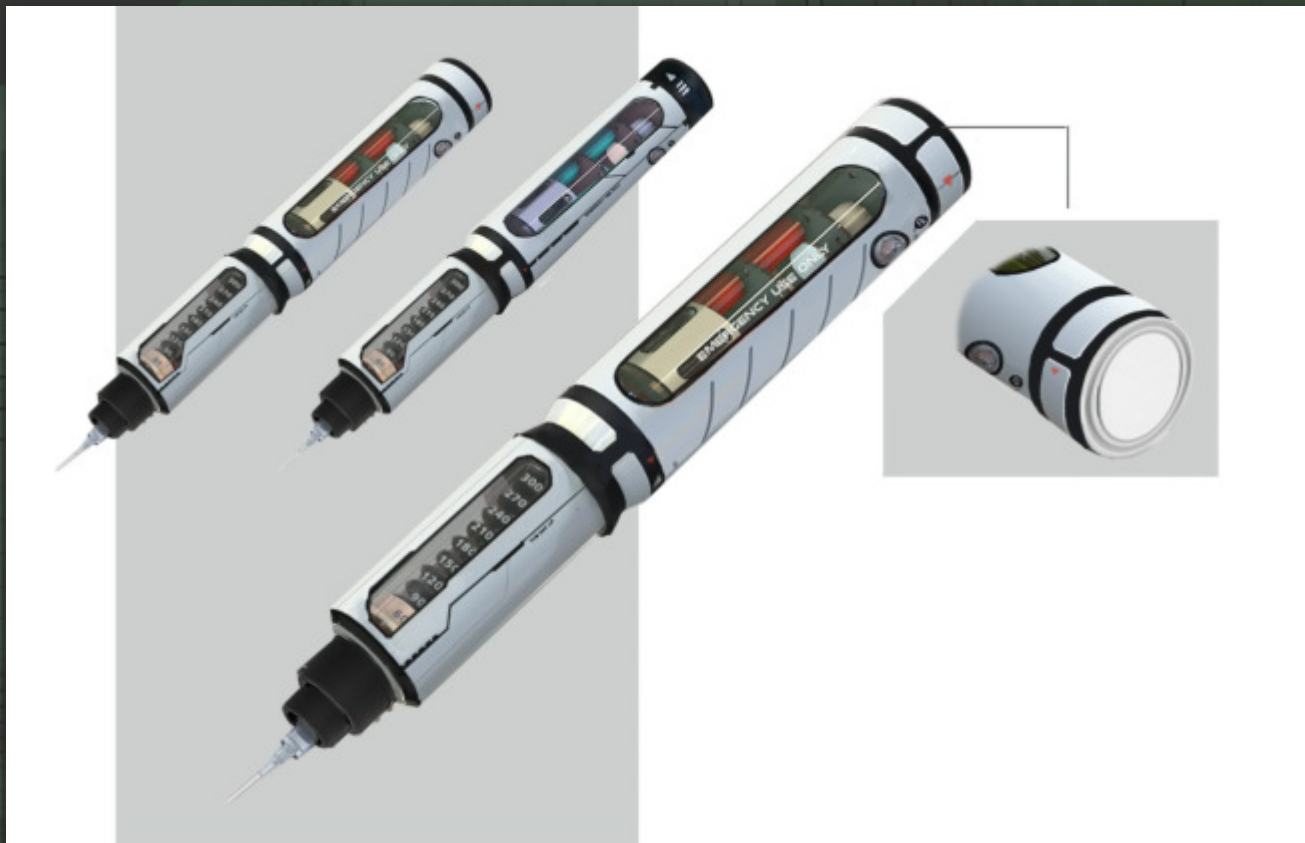
Can stop bleed outs.

Player aims it at limb/area that needs to be healed, then holds down the fire button.

The Personal Medical Aid emits a short healing beam that repairs the area.

Sarah: Here is concept for the S42 portable Med-Pack with a 3-ampule cartridge. The unit is not throw-away and could be located on the player. It can be refilled with new healing ampule cartridges or system-enhancing drugs to help the player in certain circumstances (speed, stamina, etc.).

Chris R: Works for me!



WORK IN PROGRESS

SataBall



WORKING IN PROGRESS

Team A

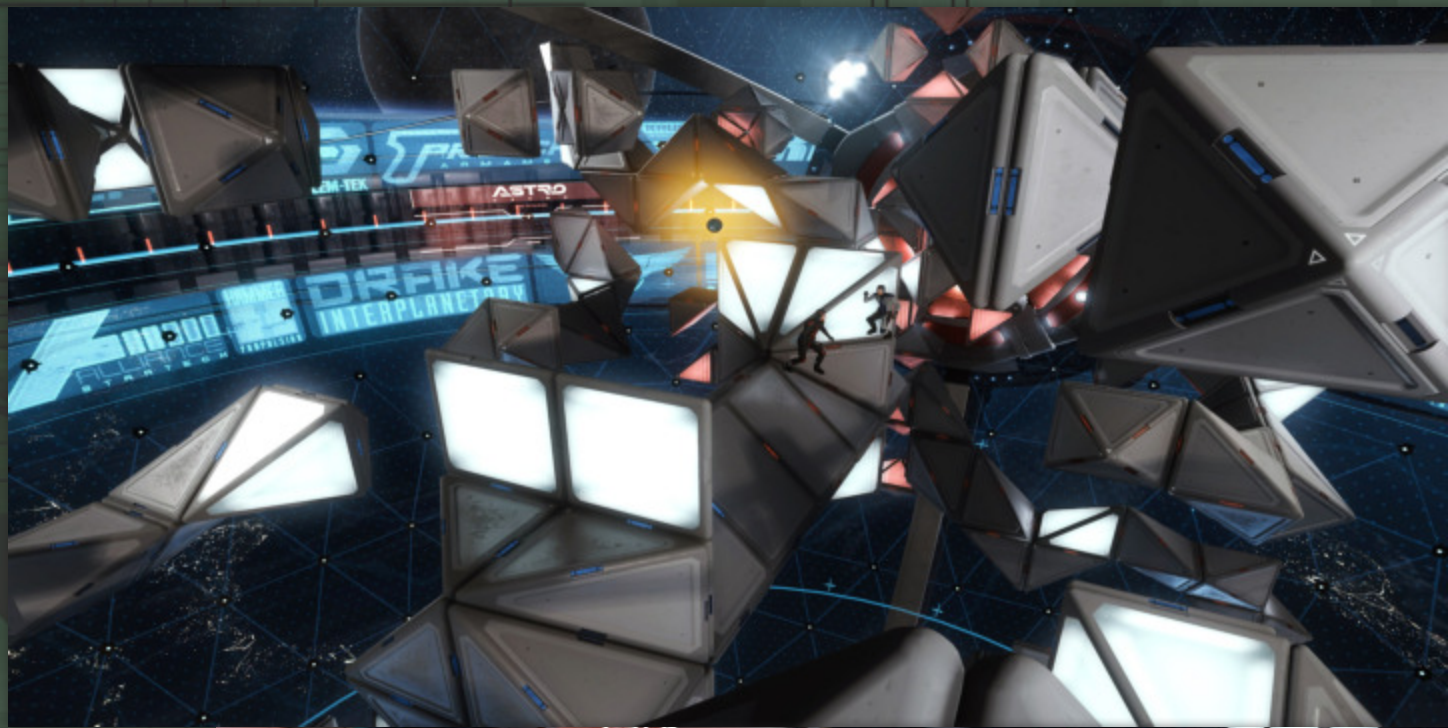
Forrest: Astro Arena color adjusted to Red color theme as requested. Color adjustment for one team black as requested. No geometry fixes are in this version. This is for team color reviews.

Chris Roberts: Color looks good – be good to see in game condition – maybe it's too much of an advantage to be black against red?

Forrest: In-game condition shots attached. [next page]

Mark Skelton, Lead Artist, CIG-ATX: I feel like these players would need some glow bits on them so they would be more visible in the complexity of the arena. Plus it would look cool.

Forrest: True ... any ideas where? A paint-over would help, then if we can get that approved we can make the adjustments.



WORKING IN PROGRESS



WORKING PRIORITIES

Team B

Forrest: Astro Arena color adjusted to Blue color theme as requested. Color adjustment for one team white as requested. No geometry fixes are in this version. This is for team color reviews.

Chris R: Any need for a Snoopy cap in SataBall? (I'm not thinking so.)

Is the belt appropriate for SataBall? (probably not). May need a simpler magnetic attachment for the grapple gun.

Also be good to get those geometry fixes.

Color looks good to me, though!

Forrest: Thanks for the feedback! Agreed, agreed and agreed. We're on it.

I was curious about the reasoning for the snoopy cap myself. Personally, I would go with an athletic helmet with a half visor and some lights inside the helmet, similar to the Ant Man concepts.

Chris R: Yep – that would be great. I would think the Battle Sphere would have atmosphere, just not gravity.

Forrest: Cool!



Lisa Ohanian, Production Coordinator, CIG-LA: WIP Sataball helmet

Chris R: I love it – looks like a futuristic sports helmet!

Forrest: Cool stuff. Once we approve a final helmet, let's get the source and retopo the high poly.

Chris R: I assume the red is the team color and can be changed.

Is the idea with team logo area that it is a display / illuminated? If not I could see this also being the team color with logo if appropriate.



WORKING IN PROGRESS

David Jennison, Lead Character Artist:
Sataball Helmet text options

Chris R: I like this. I tend to go dot matrix as I think it matches up with the ads — either 1 or 3.



WORKING IN PROGRESS

Forrest: Raw footage of pregame calisthenics for viewing the new Sataball character in the Astro Arena in-engine. Also would like to make a teaser and build out more cinematic shots for marketing just before the initial release.

Hannes: DO IT.

I am curious: how will we create characters that need more dirt/grunge with this new method? Will we get the ship damage/blend shader on characters?

Forrest: The characters will be using a similar method to what Unreal does in the *Infiltrator* demo (<https://youtu.be/W8rEpjuoG6o?t=2m23s>). Color masks are used to define material(s) from an existing library. Then blending of materials will be defined by the masks. The dirt/grunge support allows for a map that defines where the surface is dirty, similar to a custom cavity map. Also there is a map for the scratches/wear similar to a custom curvature map. The system was coded to optimize the draw calls down to a single call by using an alias sheet behind the scenes.



WORKING IN PROGRESS



David J: Sataball game outfits

Chris R: Looking really promising, David!

It will be nice when the rest of the material tech stuff is in so you can add layers and POM decals.

It will also be nice to have eyeballs in the character head so it doesn't look so possessed!

David J: Thanks, Chris. Yeah, we'll be updating this when the new character shader comes on-line. Billy rocked the helmet, btw!

ART BY DAVID JENNISON AND BILLY LORD



WORKING ON THE
SATABALL

INTERDIMENSION

SOFTWARE



Two Jims

To tell the story of InterDimension Software is to tell the story of the 'two Jims,' level builder James Romanov and tech designer James Vandyke. They may have begun their game development careers in disparate ways, but once introduced, they became (and continue to be) an apparently unstoppable force for developing a string of massively successful releases, from the kid-friendly *Admiral Cool* to the highly realistic *Star Marine*.

Shy, quiet and difficult to approach, James Vandyke very much fits the classic stereotype of the spectrum game developer. Underneath his cold exterior, however, lies unquestionable brilliance: from his early childhood it was apparent that he had a natural empathy with machines, and a level of understanding that allowed him to make them sing. Vandyke naturally gravitated towards game development not only because he was as a player himself, but because the game industry tended to push hardware and logical systems to their extremes. Fueled by a genuine desire to further technology on all levels,

Vandyke skipped a formal education in favor of a job offer to develop his own game technologies through indie-publisher Perigree Press.

Oakhurst & Perigree

Seemingly Vandyke's polar opposite, Romanov was an outgoing young game designer brimming with such confidence that he quickly inspired a cadre of fans eager to follow his career personally. He was inspired to begin building his own games at a young age, designing his own stylized versions of popular titles for release on the Spectrum. At age twenty, with a host of simple mobiGlas games under his belt, he took his first formal job at the industry powerhouse Oakhurst Online. His first project was an aborted port of *3400 AD*, followed by six months making dungeons, quests and monsters for Henry Garrity's *ULTIMATE III*. Unfortunately, he was clashing with his bosses over creative direction to such a degree that, shortly before the release of *ULTIMATE III*, when Perigree approached him with an offer to be their Lead Designer, he quickly accepted.

And with that, lightning struck. Vandyke and Romanov, the cardinal introvert and the shameless self-promoter, struck up an unlikely friendship that lead directly to their first co-authored game, *Admiral Cool versus the Karate Dogs from Mars*, released by Perigree under a 'try before you buy' license, that helped make the pair household names. Bright, colorful and fun, *Admiral Cool's* kid-friendly outlook belied outstanding technical achievements under the hood. As he has done with all projects since, Vandyke viewed the project as a technical challenge: how could he recreate the experience found in arcade machines and dedicated gaming rigs on the common mobiGlas? Turning to an encyclopedic knowledge of assembly language and machine logic, he created a stunning interface unlike anything else available for wearable systems at the time. Two additional *Admiral Cool* games followed, including a final title, *Admiral Cool in Vegetable Panic*, created solely to fulfill a publishing contract. Romanov built the levels for each game, turning colorful blocks, cartoon dogs, hamburgers, Opi-Ola bottles and glittering candies into an immersive, fast-paced world.

Upon seeing a demo of Original's *ULTIMATE* spinoff series, *ULTIMATE: Downbelow*, Vandyke sought an even greater technical challenge for their next project: replicate and then surpass the total immersion interface being developed by high-end publishers, but in a faster-paced, action-oriented world that better suited the design aesthetics of Romanov and his growing team. This time around, Romanov opted to forgo the kid-friendly graphics that defined *Admiral Cool*, and instead turned to the gritty details of history: an action title based on the internecine warfare of the Messer era. The result was named *Tiger 3D*, and the response was immediate. Players everywhere hailed the impossibly realistic environments, the sheer speed of movement allowed by the engine . . . and countless others focused on what they saw as a tasteless

appropriation of history. While the gaming industry is no stranger to unwarranted protests, there's some truth to the claim that the team at Perigree intentionally hit a nerve. From levels covered in totalitarian banners to the final episode in which the player must battle a titan-suited parody of Ivar Messer, the game's design seemed intended to offend more delicate sensibilities.

InterDimension

Despite the outrage, *Tiger 3D* was a hit and catapulted the pair to the next level. In 2941, Romanov and Vandyke quietly exited Perigree and set up their own shop, founded on the idea of building out innovative technology and flavoring it with great game design. InterDimension Software sought to be a different kind of game creator, with a small-scale ethos that appealed to hardcore players around the Empire. Their first title, announced well in advance via Romanov's over-stuffed personal Comm-Link updates, was *Star Marine*. Building on the technology premiered in *Tiger 3D*, *Star Marine* was intended as the most ultra-realistic ground combat simulator ever attempted. Building around carefully constructed maps of a Gold Horizon station, *Star Marine* was crafted from Day One to immerse the player in the very heart of an epic life-or-death struggle.

After a series of unexpected and much publicized delays, *Star Marine* premiered recently to great acclaim. Based in the present-day and featuring incredibly realistic design, *Star Marine* has become the "it game" of the year, with the response ranging from the creation of massive communities of competitive players and other fanatics to headlines about companies bemoaning the productivity lost to employees playing it on extended lunch breaks. It seems that nearly everyone in the universe has become a *Star Marine*. Asked at their launch event why they thought their latest title would be successful, Romanov, speaking for the pair, responded simply, "because it's pretty damn fun."





PERSISTENCE COMMENCES

*This was planned to be an interview with the entire PU team (something over twenty staff, between CIG ATX and Behaviour), but several were taking a well-earned break, and others were deep into further work. Rob Reininger was taking time off for the birth of his new child – congrats, Rob! – and so you’ll see that he had more time than most to discuss the new release with JP. Here is the interview, or as we call it here, **Rob and Friends in the Morning**.*

JP: *So, standard first question. What is your title, and what did you contribute to the recent PU release?*

Guillaume Bourque: I’m Lead Designer at BHVR; mostly I coordinated the effort to make the Area18 level playable with

the level designers and art team, designed the Hangar-to-Area18 flow, designed and set up AR mode and AR items, and (finally) the always exciting bug tracking.

Evan Manning: Designer. I worked on emotes (animation callouts, data setup assist, etc.), viz areas (TDD vista), collision (and other bug fixes), and rain (entity issues and occluders).

Rob Reininger: Senior Technical Designer. I was responsible for figuring out the best way to get ships randomly flying around the Area18 map without destroying frame rate, oversaw and helped a bit with the implementation of the emote system and initial emotes, and helped fix several bugs that came up along the way.

Ahmed Shaker: I'm a DevOps Engineer. As a part of the DevOps team I've worked every night during the PU release week during which we were pushing a new build to PTU every night. On Friday we pushed the final build to live and spent the whole weekend monitoring servers and maintaining service availability and stability as much as we could. Also during this week we worked on using shared SSD drives on game servers to increase the I/O channel to help load POI maps faster.

Cort Soest: Global Technical Environment Lead. Worked primarily on feature support and performance for the Area18 release. Got to get my hands dirty messing around with just about every element of ArcCorp's underbelly.

Christine Marsh: Lead UI Designer at Behaviour Interactive. I worked on the Chat UI, and my colleague Etienne Beaulieu is the man behind mobiGlas Augmented Reality (AR mode) visuals and the hangar elevator UI. We also worked on the logo design for all the businesses found around ArcCorp, as well as a lot of the signage and decals.

Frédéric Dissaux: I'm a Lead Engineer at Behaviour Interactive. For the PU release I was responsible for coordinating efforts between engineers on the BHVR team to implement functionalities regarding the Augmented Reality Item Detection, Chat User Interface, Fixing Door synchronization issues over the network, loadout switching in the Hangar, and Player spawning at the appropriate location in Area18.

JP: *What is "Augmented Reality Item Detection"?*

Frédéric: Augmented Reality Item Detection is the algorithm that is executed when the user goes into AR Mode



SCREENSHOT BY JOSH

using the F10 key. Whenever you enter this mode, we want you to be able to obtain additional information on certain items in your surroundings. For example, when looking at Items/Weapons that are displayed in the Cubby Blast store with AR Mode activated, you'll notice that additional information will be displayed on screen (i.e., manufacturer logo and item name).

Now, depending how close to the center of the screen this item is, you'll obtain more information on the Item you are viewing. Items in your peripheral view will have a small dot on top of them, just to indicate that items of interest are present in these locations. As you start to orient your view to one item so that it comes to the center of the screen, you'll notice that more and more details will start to appear on screen. We want to make sure that your view is not overly crowded with information on items in your surroundings, but at the same time we want to give you an easy way to obtain more information on an item of interest in your surroundings (without requiring a separate menu or any additional button presses or mouse clicks).



BEHIND THE SCENES

Emre Switzer: Lighting Artist. My job was to light ArcCorp in accordance with both lore and technical guidelines, to insure it makes sense in both respects, looks good, and runs on as many hardware configurations as possible.

Vanessa Landeros: As an Animator I was responsible for taking our mocap that was shot overseas to create timely and entertaining emote animations for our chat system. That includes evaluating the data upon receiving it, dividing it into sections, and doing a full first edit pass.

Patrick Thomas: Lead Environment Artist at CIG ATX. Worked with directors and Behaviour. Worked with the art and design team to build the world within the desired direction. Worked with and tested out different modelling, texturing, and lighting techniques and tools appropriate to the game technology, with oversight from the Lead Technical Artist.

Stéfan Beauchamp: Team Lead Engineering @ BHVR. Worked with Frédéric to manage the engineering team at Behaviour, coordinate with external teams in Austin and UK, and provide support to our internal Design, UI and Art teams.

Mark Hong: Production Coordinator for ATX Engineering. For the Social Module release, I helped manage the tasking, workload and schedules of the engineers out of Austin, Wyrnbyte and some of the UK engineers. I also worked closely with QA to help facilitate testing of Social Module features.

Tom Sawyer: CIG ATX Server Programmer. I focused on creating a server framework and service architecture for hundreds (and soon thousands) of server processes to communicate with each other in realtime in a distributed



fashion – providing both community building features and in-game experiences.

JP: *In other words, you're working to make sure that more and more players can enjoy playing in the area?*

Tom: Yes – helping players get into games and maximizing the number of players in a given game. And helping them find their friends.

Jake Ross: Associate Producer of the PU. I managed the development of various features in the Social Module, including the Area18 environment (supporting Mathieu at BHVR) and the emotes. I made sure that any blockers that hindered any of the developers were communicated, assigned and prioritized. I also tracked the day-to-day work and ensured that deadlines wouldn't be missed. Last but not least, I ordered food for all the developers crunching to make the Social Module a reality.

Mark Skelton: Persistent Universe Artistically Inclined Director. My job on this release was to make ArcCorp visuals consistent and make sure it looks the very best that it can with the resources and time available.



BEHIND THE SCENES

JP: How far along is Area18? How close is it to “finished”? Or “ready for Gold release”?

Guillaume: Tough one; I’d say 25%. Area18 is going to grow in size (like Derek Zoolander once said, at least three times bigger than this). Plus, it’s missing tons of planned features.

Cort: Guillaume nailed it; the beating heart of ArcCorp is still missing: the shops, trade and experiences of the final product are still in production. This only shows a very early state of what Area18 will be like once fully released. Once the expansions, shops and life of the area are released the feel will change drastically.

Evan: The Area18 environment has come a long way already, but there is still much to do. The layout itself is in the process of being expanded and polished as well as adding functionality and NPCs. The map itself is a fun place to explore, but it hasn’t yet been brought to life by all the details.

Rob: We’ve still got a ways to go. There are many elements that still need to be added. On that list are ...

- Get shopkeepers into the world, along with their store’s inventory that is available for purchase/consumption.
- Get non-shopkeeper NPCs in and around the world to make it feel like an area that’s “lived in.”
- Get the Medical Bay up and running, properly respawning characters if/when they die.
- Get the “from space down to the planet” landing sequence implemented.

SCREENSHOT BY
THOMBOZWORTH



- Get AR Mode functional on as many things in the world as possible. There are a number of props that will go along with many of these elements.
- Get the first pass of the mission system up and running and available through the TDD and other mission givers.
- New areas will be added to the map to expand its playable space and functionality.

All of the above will require a significant amount of animation and code support and will take some time to deliver. That said, we have the intention of having regular (monthly?) releases to continue to show the progress to the public.

JP: What is your favorite part of this new release?

Rob: CHAT!!! For a social game, people can finally talk to each other from within the game and not just over their personal email or forum posts. It’s an essential system for a game like this and its capabilities will only expand over the next few releases.



BEHIND THE SCENES

Christine: Finally seeing players together on one map . . . talking to each other, seeing them running around exploring all of Arc-Corp's the little corners, and then reading comments like, "Beautiful! Amazing!"

It's really great to see everything starting to come together. :)

Cort: My favorite part definitely was watching the players do everything in their ability to break and generally explore the environment – from them having dance parties in off-limits areas like the M50, to loading into Area18 with ships and flying around to explore all of the hidden treasures. It just goes to show that the players can never be trusted. :-P

Ahmed: My favorite moment was right after the Live re-release on Friday night when we were watching hundreds of players filling up the ArcCorp game instances.

Tom: From a technical point of view, I love our new generalized instance manager – what this means is that as new content (locations, maps, levels) becomes available, we can easily plug them in to allow players to go explore. Area18 was the first.

Vanessa: Being able to explore was a really great thing for me. I enjoyed running around and seeing all the hard work the team has done.

Evan: Watching the level fill with players for the first time was pretty special. It really brought a sense of life to the level that had been missing.

Guillaume: My favorite part is to be able to walk your character around in a new environment than the hangars, and explore whole new locations like the shops, stores



and medical unit. From a developer perspective, it really opens up to our next deliveries and all the features we want to add to the game. It creates needs. Needs = more work = good thing!

Emre: Cort nailed it. Seeing the players do things we never imagined possible is awesome. I remember flying around in the editor and noticing the patio above Gloc Bar and getting a view of ArcCorp from up there. It was incredible, and I hoped we would get to go up there at some point down the line. To then see the players glitch out of the map and get up there was really cool, even if it wasn't intended.

Frédéric: Seeing people explore this new area for the first time, able to chat with one another and basically get a sense of things to come (i.e., entering shops lead will eventually lead to shopping experience).

Patrick: My favorite part was seeing the level come together and evolve. It really is a work of art from an artistic, technical & design aspect.



BEHIND THE SCENES

JP: *What part took far more time than it should have?*

Guillaume: Doors to open. :P

Cort: DOOOOORS!!!

Christine: Yeah . . . doors. :p

Guillaume: Doors are never easy, in any game, but we still take them for granted.

Rob: Getting the build to reliably run fast enough, without any missing assets, in a stream of our Perforce directory that the level wasn't initially intended to be released in, was a real challenge. It's kind of hard to explain to someone who may not know much about how development is done on live projects, but normally you work in the most current/up-to-date version of code and assets. Because we had to release our build using the FPS branch, that code wasn't as up to date as what we were typically used to dealing with, and caused some headaches. Thankfully, it was a problem that we were able to throw manpower at and just power through it, but we're definitely looking forward to having access to all of the tech that we missed out on for this release. (Oh god, and doors . . . wow. For something that sounds so simple, they could be so picky . . .)

Cort: How about getting mechanical objects to properly animate? That was an absolute joy.

JP: *Were there lots of bloop-reel moments, with characters running into doors that weren't opening?*

Guillaume: Yep, animated objects that used to work were a mess.

Frédéric: That's true. In our case, there were a lot of issues



with doors being properly synced over the network.

Mark H: Internal testing of the increase in player count in ArcCorp took longer than it should have, because it was a huge cross-studio effort and communicating with a large group of people (including some folks unfamiliar with our tools for getting the builds set up) in a timely manner, while many were experiencing individual issues, was a bit of an endeavor.

JP: *Here are several questions that subscribers have asked:*

From Feronas: *My question is about the level itself. How many polygons are used for the level? We know you guys are using streaming to load the additional geometry from the shops and more; what is the constant poly count you wanna hold stable while running Area18?*

Frédéric: it's over 9000. At least. :D

Cort: Sorry I definitely don't have enough fingers to answer that question. (Loading map now, we can get a solid answer to that question.)



BEHIND THE SCENES

Frédéric: Until we gather information to answer it properly, it's hard to say off the top of our heads.

Rob: Well, there's a difference between draw calls and just having polygons in the world. The engine is very good at drawing a lot of polys if the draw call count is still low. But last time I checked, there was over 15-20 million polys in the level as a whole. (I know some things were optimized towards the end, but the number is up there.) But keep in mind that with the help of occlusion technology, not all of that is being considered when drawing any particular frame.

Cort: (Where is Corentin when you need him . . .)

Rob: Haha. Cort, weren't we up to 22+ mil at one point?

Cort: Our geometric density is far higher than any game I have previously worked on. In some of the more intense shots, the poly count is above 5.3 million polys. The average sits more around 2.6 million. As Rob mentions, this is less of a concern than draw calls, which are an accumulative count of individual objects, sub-objects, and objects that cast shadows. On that front we try to stay well below 4000 draw calls.

JP: A "draw call" is how many polygons are visible on the screen at any one time?

Cort: It's a bit more complicated than that. Suffice to say it is the data needed by the engine to render the entirety of a single sub-object. Also note that *draw* and *cast shadow* are two specific steps for any given object.



SCREENSHOT BY DOCANDY

Cort: (After running the numbers) Wow, I just blew my own mind a bit. As of two months ago, Area18 weighed in at a total of ~23.7 million polys across the entire map. After all of the incredible optimization by the guys at Behaviour Interactive, the entire map only contains 12.6 million polygons.

Rob: Wow. First, good job Behaviour guys. Second, DAMN that's still a lot of polys . . . just wait till we add a few hundred NPCs . . .

We're still faster than the target fps, we can add more . . .

JP: From Eizo: Last month Jump Point posted a very interesting article about design and the concept of "reads" (second, third, etc.).

When designing ships, characters or entire levels, how do you distinguish "third read" from clutter? Are there metrics/standards to go by, or is it pure gut feeling?

Mark S: Actually, Ted and I were just discussing this. Here's a chart we put together. [on next page]



Mark S: So the frequency of any given object depends on its place in the tech chain. The frequency of details in a low-tech set is about 50% greeble and 50% eyerest.

As you go up, the percentage changes. High tech is 75% eyerest or low frequency and 25% greebles.

JP: "Eyerest" means details to focus on?

Mark S: Eyerest is lower detail concentrated areas.

JP: And on this chart, what's the difference between "red" and "green"?

Mark S: red areas = concentrated details.

Mark S: green areas = rest or low frequency areas.

JP: So the Low-Tech areas will have the most third Read details?

Guillaume: art . . .




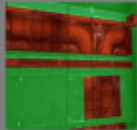
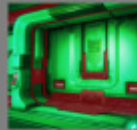





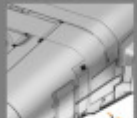

Mark S: Well, they all should have third to fourth read areas . . . it's just low tech will have more exposed detailed areas. It's like a vintage submarine – it has tons of high frequency detail because everything is exposed. But a modern jet has a lot of smooth areas.

JP: Gotcha.

Mark S: But that doesn't mean that the peek that you get between the panels of the jet wouldn't have the same amount of high frequency details as the sub; it's just less exposed.

JP: From Switch-D: The map currently feels like I'm in a story mode game, very restricted. Will it eventually be opened up where if I see it I can walk to it?

Guillaume: The Area18 level is going to get bigger. Areas that are blocked with see-through fence might (or might not ;)) be opened up in the near future.

	Low-Tech	High-Tech	S. Modernism
Shape language			
	45° squared	45° Rounded	Rounded
RHYTHM / Frequency of details			
	50% 50%	75% 25%	90% 10%
Red Areas			
	Industrial Mechanical electrical	Electrical Techno	Techno covered
Green Areas			
	Visible & obvious	Visible but INTEGRATED	Mostly hidden
Fasteners, clamps, latches, etc..	Visible & obvious	Visible but INTEGRATED	Mostly hidden

Rob: There is always going to be a balance of playable space versus decorative vistas. If we allowed you to walk to the edge of the world, it certainly breaks the illusion a bit. So, regardless of where you can walk, you will always be able to see further than that. However, yes, we will be expanding the playable areas out so you have more places to go in the world. And as our tech expands, and our streaming tech gets better and better, it will open the door for us to expand the environments even more. But we had to start somewhere . . . ;)



BEHIND THE SCENES

JP: Also Switch-D: Do you plan to have vehicle-accessible areas in any landing zones?

Rob: As in the buggy? Technically, you will be flying your own vehicle down to the landing zones in the future . . .

JP: I think he means other than to/from/in hangar activity.

Guillaume: It might or might not. ;)

Jake: The answer to that one is a work in progress. :)

Rob: It's our intention to have areas where vehicles will be allowed someday, but we're not sure when that is slated in the schedule.

JP: From Odig: The place looks a little dirty in areas . . . will I be able to pick up some of the trash and by doing so improve the safety and business environment? If not that, then as you have said in the past that looks of a place will change depending on what is happening in the economy . . . does this look include the trash? Give a Hoot, Don't Pollute !!

Rob: The intention is to have the economy drive the overall "dirty" factor in the levels for now. (Although we're still a ways out on that.) Players will be able to impact the economy through missions and overall consumption of goods on any given system. This will in turn affect the overall look/feel of a given landing zone. Places that are not visited on a regular basis will eventually look that way. There may be some businesses that end up going out of business and other such economical realities that would happen in low-traveled areas. Although being able to clean up the environment isn't out of the question, that will definitely be a feature we work on at a later date. (There are a few other things that we need to focus on before we get to things like that.)



SCREENSHOT BY
THOMBOZWORTH

JP: From Jethro E-7: One thing that struck me was the randomness of the ships that flew overhead and under the bridge, some of them very close. It made that area come alive!

My question is how important is that "random element" – not just there, but in the entire Area18 – and what tricks are you using now / going to use to keep these areas fresh and exciting?

Rob: Being the one that set those up, I think that randomness is essential for things like this. Imagine that you're sitting on a street corner watching traffic go by. You would be hard pressed to predict what car would drive by next. And while we are limited to the ships that we currently have available and would make sense to be flying over a cityscape like this, we did our best to make sure that not only the timing was unpredictable, but the selection as well. As for the rest of the world, yes, the more random the better. As soon as you can start predicting things, it gets boring, and that's not a sensation that we want anyone playing our game to feel.



BEHIND THE SCENES

JP: From Fara-Salt: I've had a great time exploring the Area18 level, including getting to areas that you probably didn't expect players to make it to. What are your feelings seeing people go into the area and immediately try to escape your carefully crafted area to explore beyond the boundaries?

Christine: I think it's great!

Guillaume: Go ahead, be my guest. Players are stress testing our maps on every level, including collisions. In that case, it re-iterates that the collision system needs improvement.

Cort: I honestly loved seeing them explore and break our boundaries. I always remember back to WoW Alpha days, when I loved trying to explore and get past areas I wasn't allowed, to see if there were any treats left by the devs, only to be disappointed once I did make it past. I think for our next release we will have to leave little easter eggs to make them try harder, because we will be doing our best to make it much harder to abuse so easily.

Rob: I think it's great to see the types of things players do to have fun. EVERY game has issues that get released, and we're no different. And while we will do our best to fix a lot of these, things like this will exist for a while. Thankfully we can continue to update the game and make it better over time.

JP: From Rank_Badjin: There seems to be a potential to monetize unused space. Will some of those doors into areas (eventually) allow us into player-leased spaces? When the economy goes live, I can see a need for being able to remove cash from the market (or maybe even inject cash, though less likely). Allowing us to lease offices/



hangars, etc. is a good way of doing that while increasing the immersion.

Rob: We're not sure what the long-term plan is for this. I think it's a cool idea and we're hardly done exploring ways to engage the player in the long term. While I don't think it will be anytime in the near future, I wouldn't rule out an idea like that just yet. Like many aspects though, we still have a lot to do before we can focus on things like this.

JP: From Far-Seeker: How does the eventual (future) existence of unimplemented features (mobile NPCs, expanded PC augmented reality, etc.) impact the design process (if at all), and can you give any specific examples?

Rob: Not sure what they mean by mobile NPCs . . .

JP: I think that means NPCs able to move from location A to location B, rather than staying in one area.

Christine: It's a tricky balance of planning for the future, while getting something in the hands of players now.



BEHIND THE SCENES

Guillaume: I would say one thing that impacts our design are the needs created by a release like Area18. That means sometimes we have a plan for a specific set of features or a specific release schedule, and then once it's "in the game" and available to the public, like Area18, we discover new things we want to do next – either improving or adding to existing features or just creating a whole new thing like a new environment.

For example, we allowed player to change outfits by using the F6 key, for variation's sake. That is not the final way players will customize their characters, but then you start touching "Character Customization" territory. You start realizing that you might want to work on customization and improve that part of the game. What started as a tiny add-on is becoming something bigger that needs design and to be thought through.

Rob: To add to Guillaume's comment, we knew that we wanted the ability to use AR mode to "investigate" the world and other players, but going through this process has really opened our eyes as to the amount of information that we're going to need to embed with the objects in the world. So in that sense, it's definitely impacting our process moving forward a lot more than it's impacted us so far.

JP: *So unimplemented features both impact current design, and are impacted by the design, as well?*

Christine: That is a good example. The current implementation of the Chat UI is really the bare bones of what we needed to allow players to communicate with each other during the initial Social Module release. However,



the more finished design doc contains a much longer list of features that will be needed in order for players to efficiently communicate with each other as they explore/ conquer the Persistent Universe.

JP: From Kinshadow: *Has player wall glitching – the drive of players to explore and get to interesting places they see in the distance and the lengths they will go to get there – changed the way you think about future level design?*

Guillaume: Not really; humans will always want to explore the boundaries of things, to discover the universe. I guess it also means: "Make it bigger!"

JP: From Schrike: *Seeing that there are Greycat charging stations, are you planning on opening up a road of some sort to another area where it's too far to walk?*

Guillaume: Mmm . . .

JP: *Is that another "Probably. Sometime. In the future." question?*



BEHIND THE SCENES

Guillaume: Yes, kinda. Area18 is a packed city and everything is close by. However, there are definitely other landing zones on other planets that are more open and will require “transport” to go from one area to another.

JP: Also from Schrike: *As you open up the Area18 stores for shopping, will the items from the Web VD store be transferred or duplicated in the shops?*

Rob: (Web VD, do we need to see a doctor for that?)

Guillaume: There will certainly be a correlation between both.

Rob: Yes, the intention is that things that are currently available on the web will be inserted into a shop, or multiple shops, somewhere in the universe. The web is a temporary solution until we can get things up and running properly. The end goal is to make it so you never need to leave the game to get what you’re looking for.

Guillaume: Most likely, Voyager Direct will be part of the PU universe, as one of the “online” store perhaps.

JP: *OK, I have a couple more general questions, and then we’ll be done.*

What part of this new release impresses you the most? In what ways have we broken new ground?

Rob: Although we’ve been working on it for a while, this is the beginning of a very long journey. There were a lot of things that needed to come together for us to be able to release this first level, and I personally think that better things are yet to come. While I think the level is visually amazing, we didn’t start with our biggest, most difficult level for the first implementation. This is just the beginning of great things to come.

Guillaume: Opening doors impresses me most. :)

Cort: First release with large user count, first release using the general instance manager, first release using updated environment techniques – while currently none of these are ground breaking, they are a visual glimpse of things to come.

JP: *What is your next specific personal goal for Area18? What do you want to improve/implement/modify/whatever?*

Guillaume: I’m looking forward to doing actual shopping, tons of NPCs, and missions.

Cort: Active dynamic skyboxes!

JP: *What are active dynamic skyboxes?*

Cort: We are pushing forward to have moving clouds that will allow us to breath a bit of life into the skybox. This will only be the first step, as we intend to develop entire volumetric solutions for this in the future.

Evan: I want to fill Area18 with easter eggs and fine details for all the super dedicated exploring players.

Rob: Personally, I want to see its full vision come to life. This is only the beginning of the level. I’m really looking forward to adding all of the shopkeepers, NPCs living their lives, AR mode fully implemented into the world objects, players landing on the landing pad, mission givers and updates to the emote and chat systems. (Plus a few other surprises that we currently have planned . . .)

JP: *Any last words?*

Guillaume: PU is a marathon and we are just off the starting line. We are at milepost 1; every step of the way is going to be hard but so rewarding. Crossing the finish line will be glorious. See you there!



SENEKSEH
BEHIND THE SCENES

Spotlight: Jared Huckaby, Community Manager (Part 1): Event Swag

When I came on board, one of my first tasks was sprucing up our live events. To this end, we undertook several initiatives, such as sending the bulk of the Community Team to events, adding the on-site Concierge Store, and improving the overall quality of the items presented to our attendees.

Our first order of business was to create a series of collectible ship pins, something that could be collected from each event a person attends.



Since we knew Gamescom was going to feature multi-crew predominantly, the Constellation became the logical choice for our first pin. I took existing artwork used for a patch series and was able to repurpose that for our needs.

A free fly promotion has become a staple, but we wanted something more than just a card with a code. Working with

Ryan Archer in Austin, we developed a foam version of the Gladius that was just as much collectible as it was a way for potential fans to discover the game.



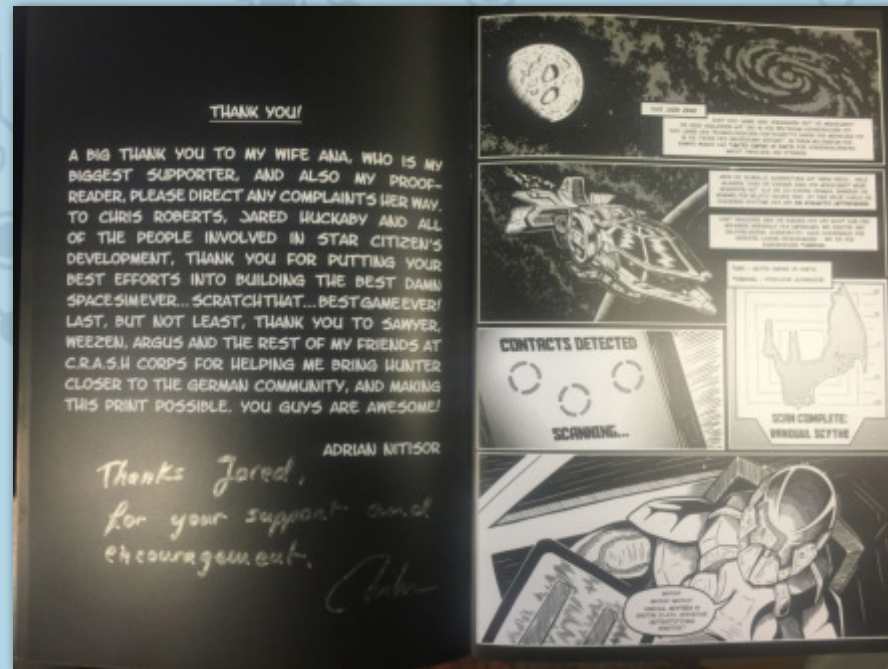
Posters have become a Gamescom tradition, but in our efforts to increase the quality of overall presentation, we commissioned BHVR to imagine Köln, Germany in the year 2945. Working with art from Nicholas Ferrand, I designed the limited edition poster that we gave out to attendees, complete with the signatures of our studio heads and members of the Community Team.



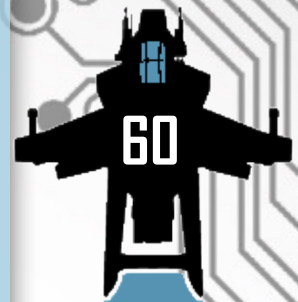
BEHIND THE SCENES

Coming from the community, I have an affinity for the truly great works that our fans create, and there is no finer creation than the Hunter web comic by Adi Nitoris. Working with Adi, I was able to point him in the right direction and get the necessary clearances to print up physical copies of his first issue for our attendees. Our fans truly make Star Citizen, and it seemed right to include a little piece of their work along with our own this Gamescom.

Finally, when decorating the E-Werk event space, I wanted something that would truly evoke the sense of what multi-crew gaming could look like. To that end, I worked with fan content creator FiendishFeather for nearly a month to create the giant banner that hung over the heads of our fans in the venue. It is rendered entirely in the game engine, using 100% Star Citizen assets. Rendered as a single scene with zero compositing, it measured out a whopping 27325x7200 at 100dpi. I have to thank Feather for trusting in me that he could do this, and that the crazy things I was



asking him to do would work out. It's just another example how working with our fans allows us to create something greater than either of us could alone.



BEHIND THE SCENES

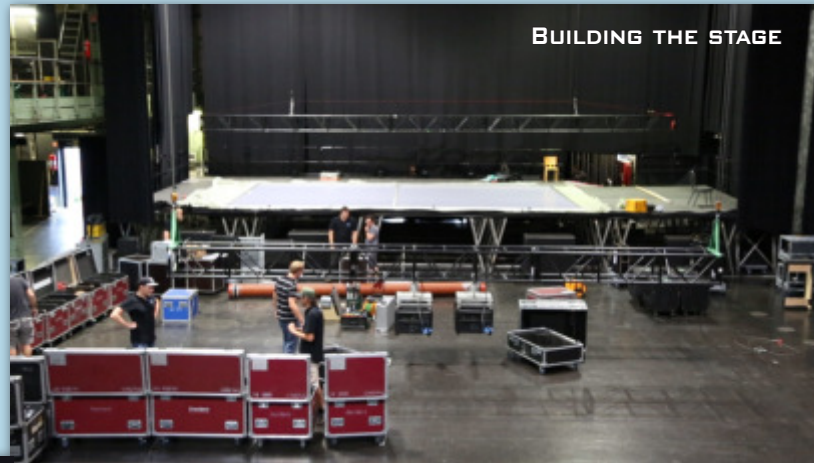


Spotlight: Jared Huckaby (Part 2), & Alyssa Delhotal, Associate Marketing Producer, CIG-LA: Gamescom Prep

Jared: With Gamescom we wanted to return to livestreaming. Due to the costs involved, we'd refrained from livestreaming in the first half of this year, but Gamescom has always been special to the history of Star Citizen thus far. To that end, Thomas Hennessy, Alyssa Delhotal and I worked to ensure that we'd have a plan in place that would address many of the issues from our past livestreams, principle of which were available bandwidth and the proper configuration and use of our in-house streaming equipment.



When the time came for the actual presentation, we got to have some fun with our fans by utilizing an hour-long countdown I created. Once the curtain opened, Hennessy worked the controls for the livestream and both directed and operated the switching between cameras, while I worked with the A/V company who was responsible for the



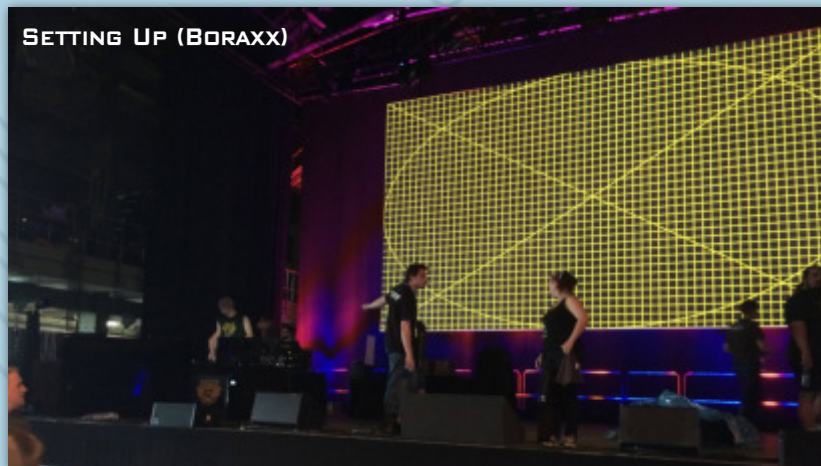
camera operation, the demo switching for the presentation screen and livestream, and the audio.

After the presentation, because we know not everyone can watch it live, Hennessy and I stayed in the Crow's Nest until 3am editing the demo segments and posting everything to YouTube as quickly as technology would allow. Challenges aside, we consider the entire event a tremendous success.



BEHIND THE SCENES

Alyssa: We had two separate areas Gamescom show floor that needed some very different and specific setups. First, we had the press booth where we showed a shorter version of the livestream presentation. Everything from the internet to chairs needed to be spec'd out, ordered and precisely arranged. Sandi and I worked very closely together to find the best people to man the PCs and help Chris show how amazing *Star Citizen* is. Patrick Probst, Hassan Kamran and Paul Vaden were total rock stars in getting this area set up and torn down.



SETTING UP (BORAXX)

The other area was the main show floor where the public was able to try out *Arena Commander*. We had 4 PCs set up with patch 1.1.6; this proved rather tricky as our booth had no internet access. Code needed to be first loaded up in the press booth, then the towers had to be carted all the way across the convention center to the main show floor booth. Once set up there, they were ready for fans! There was a pretty good sized crowd waiting to play every day.

Now E-Werk is where the planning got tricky. Sandi had an amazing vision for what she wanted this presentation to look like and we did our absolute best to make it a reality

(and I think we did!). James Pugh, Jared Huckaby, Thomas Hennessy and I arrived at the venue at about 7am that morning and met with our awesome volunteers. We had tons to get done – it was frantic! We jumped into the setup with both feet and began setting folks to their tasks. Volunteers were rolling the posters while I worked the security staff discussing the layout of the show. We managed to get all the furniture in place, the truck unloaded, and the stage set up without too much trouble. Once the show started, we had a small window to relax but got right back to it about half way through in order to get swag tables set up outside. I think it was something like a 22-hour workday but it was a smashing success and am so happy I got to help out!



ALYSSA (FAR LEFT) AND THE REST OF THE CONCIERGE CREW (BORAXX)



BEHIND THE SCENES

Spotlight: IT Team at Gamescom

Before, during and after each public event, the CIG IT department handles all the technical details to make sure that every demo, show and presentation is a total success. The critically important work that goes on behind the scenes goes largely unnoticed because it has become commonplace and frankly, IT professionals tend to stay outside the spotlight knowing that their reward is a smooth operation. At Jump Point's request, we will pull back the curtains and take a look at how much real work goes into a show by highlighting the most recent Gamescom event in Cologne, Germany.

Early planning begins months before any show, with meetings between Marketing, IT and many other teams. In the early planning, IT learns what will be showing and more about the venues in question. As planning continues, a strike team is formed, based on the needs of the event. For Gamescom Paul Vaden and Hassan Kamran were selected as the ground team, with Mike Jones as team leader and the rest of the team in tight support. Preparation and planning included everything from setting up computers to planning how much power and spot internet is required at each of three venues. All logistical aspects are reviewed by IT and planned out, from the amount of carpet needed to cover a booth to the type and color of tape used to cover power and network cables.

As planning progresses, the event equipment is gathered and tested. Since Gamescom was in Germany, equipment was sourced from our office in the UK this time, which saved us considerably on shipping. Hassan and Kyle set up all the demo computers in groups organized to simulate the three venues. For this setup, Hassan restricted the bandwidth on each network to match what we had



BACK ROW: PAUL VADEN, GERARD MANZANARES, DENNIS DANIEL, KYLE CUNNINGHAM, CHRIS GRAVES. FRONT ROW: HASSAN KAMRAN, MIKE PICKETT, MIKE JONES.

planned for the event, so the environments would match conditions expected on the ground. The UK QA team was then brought in to test builds and do demo runs over and over again to work out any kinks. We have found this type of testing to be invaluable for our events, because we can stress test the equipment, fixing any problems, prior to sending it into the field.

As soon as configurations are locked, the ground team packs up all computer and networking equipment for transport to Germany. This year a van was used to pack 24 computers, monitors, networking gear and all peripherals. The team also packed a good portion of our marketing materials, including banners, fliers, posters and other equipment required for the event.

Once on site, the ground team went to work unloading gear and beginning the setup at each venue, aided by a team of very helpful volunteers from our community. Thanks to careful planning and organization of equipment, our ground team had both the Gamescom show floor and Press Area built and running early on the first day.



BEHIND THE SCENES

One aspect that is never seen is the back-end networking that goes on to support these events. The IT team has developed a strategy that allows contingency for nearly every conceivable problem. Backup computers, monitors, cables, tools and parts are obvious. The ability to receive last-minute bug fixes and polish on-site is also important, up to and including the ability to compile a copy of the game on site if required. In order to accomplish this, the rest of the IT team works to support the ground team by setting up secure pipelines back to the development teams, ensuring that they have access to the very latest code. This year we also provided constant builds to be used "just in case." Due to time zones, this meant that IT worked very closely with the DevOps & QA teams to setup a 24-hour schedule to create and provide tested builds in case they were required. Chris Roberts makes the final decision, but if we can get a build to him that has a few fixes or one more piece of gloss, we'll do everything we can to make that happen. Everyone knows that Star Citizen is a big game, so sending builds halfway around the world can take a while. Mike Pickett built a secure delivery system for this purpose which allows us to deliver only the changes between builds and also deploy those changes to all demo machines on the floor simultaneously, saving hours of network transfer time.

Our main event at the E-Werk venue was larger than the other two and included a live stream, so the IT ground team worked hand in hand with the lighting and camera crews to wire in all the PCs to the control station for video switching and splitting. The larger deployments used to take hours but now take only a fraction of that time. This extra time is used for practice runs and continued testing and tuning of all systems. It seems inevitable that no matter how much planning and testing goes into each one of these, the unexpected always happens and this event was no exception.

During the live stream, the pressure is on for IT and many other departments. Everyone is sitting on the edge of their seats waiting for the things they did to show well. If any little thing doesn't go as planned, dozens of people on the dev teams will notice and scramble to get word to the IT ground team to let them know, in hopes the issue can be resolved quickly. Having so many people reaching out at once creates chaos, so we devised a 'central command' for this type of communication within IT. Everyone in the company knows to reach out to a single place and the ground team knows they will receive spot details from a central point of communication. The QA and Support teams monitor chat channels and live chat on Twitch for audience feedback as well. Once an issue is verified, it is reported to the central command so it can be quickly relayed to someone on the ground team. This is how we're able to quickly respond to live audio problems or any other issues with the stream, all the way down to sending last minute details to a presenter on stage in real time. User feedback from the Twitch channel led us to getting a new microphone out to Sandi and Ben on stage at the beginning of the Gamescom show, for example.

Once it's all over, the IT ground team stays behind to pack up all the gear for transport back to the office it came from. For Gamescom, this was a much larger effort due to the three venues that needed to be cleaned up, but our volunteer fans were there to help for portions of the tear down and clean up. A show doesn't end here though. Even after an event, each member of the IT team is required to participate in a post mortem meeting to identify anything that could be done better for the next show. These reports are sent in with other reports throughout the company so that everyone gets a voice. The result is a better show each and every time.



BEHIND THE SCENES



CROSHAW SYSTEM

ANGELI & VANN

ANGELI



The Jump that changed the course of Humanity.

In 2271, after ten years investigating a space anomaly in the Sol System, scientist and explorer Nick Croshaw made history when he became the first known Human to traverse a jump point and enter a new star system. As a tribute to his monumental accomplishments, the system he discovered would come to bear his name.

It was a turbulent and contentious hundred years between Croshaw's discovery and when a planet in Croshaw was terraformed. Lacking an organization to oversee expansion into the system created a plethora of issues. Humans had figured out a way to reach the stars, but were still struggling with how to inhabit them.

At first, a number of private and state-owned terraforming companies raced into Croshaw to lay claim to its planets. None of them succeeded. Each company had failed to calculate exactly how expensive it would be to continually transport supplies to maintain their operations. It was obvious that an organized Human response was needed, but, instead of focusing on a solution, countries and corporations squabbled over how land rights and mineral resources should be divided once terraforming was complete.

At the same time, there was still a good deal of fear about inter-system travel. Many people who entered the jump point between Croshaw and Sol vanished. With jump drive technology still in its infancy, ships had to be

manually piloted between the two systems. Out of this, a new breed of pilot was born. Nicknamed "Jumpers," these pilots sold themselves as the only reliable way to get between the two systems, and charged handsomely for their services. It was only after auto-piloted jump drives became widely accessible that "Jumpers" changed their focus to discovering new jump points, making them the forefathers of the "NavJumpers" that still exist today.

Amidst all the chaos and confusion, a committee appointed by the World Summit, a gathering of Earth's leaders, finally took control of expansion into the Croshaw System. The committee organized the linking of resources from various countries and companies to tackle the terraforming of Croshaw II and Croshaw III, established a lottery to grant land and mineral rights once the process was complete, and, most importantly, figured out how to pay for it all.

The committee's masterstroke was the Freeman Act, a piece of legislation that helped fund the terraforming of Croshaw while also populating it through the sale of one-way tickets. Not only were people buying passage aboard government-subsidized shuttles, they were guar-

TRAVEL WARNING Before setting out to enjoy Vann's beautiful auroras, please make sure to wear gear that is safety-rated for extreme cold. With nighttime temperatures regularly reaching -50° Celsius, frostbite is the least of your concerns.

anteed a place to live on the new planet. Sales were slow at first. While the public had acclimated to the notion of living on another planet, the thought of living in a new system entirely proved to be a truly scary concept. Further assurances eased their fears and gradually got the public excited at the prospect. The influx of ticket sales kept the committee's terraforming fund solvent and created an entire class of people who counted down the days until they could start a new life in another system as Humanity's first interstellar settlers.

The committee's successful stewardship convinced Humanity's leaders that a cohesive voice and vision was needed to aid our ascension out to the stars. In 2380, the World Summit ended with a historic announcement that created the United Nations of Earth (UNE). Humanity had realized that to succeed in the stars, we had to stop thinking of ourselves as many and start seeing ourselves as one.

ASTEROID BELT (ICARUS)

Current scientific research suggests that the Icarus asteroid belt is the remainder of a planet that failed to form. Sitting between the system's type-G main-sequence star and Croshaw I, it shields enough of the star to leave the system with a very narrow habitable zone. As one of the Empire's oldest mining fields, there is little of value left here.

CROSHAW I

This is a planet known for its colorful yellow and orange clouds. What makes this tiny planet beautiful also makes it deadly, since the dense atmosphere is highly corrosive and toxic.



CROSHAW II: ANGELI

Angeli's natural beauty is as much of a marvel today as it was when it was first discovered. The planet's biosphere is reminiscent of Earth's, featuring massive bodies of water and large expanses of land dotted by mountain ranges.

Angeli's natural beauty does not come without its dangers. Geologists continue to classify the planet as a severe seismic hazard. Strict engineering codes require buildings on the planet to have extremely thick foundations and tuned mass dampers to counteract earthquakes. Even if most of the native population is apathetic about the big one, most scientist believe it is not a question of if a large earthquake will happen, but when. Due to this seismic instability, mining is severely restricted on Angeli.

Connoisseurs of fine food and spirits consider Angeli a must-stop destination. The eclectic mix of Earth's cul-

tures and classes during the planet's early days created a unique cuisine. Angeli's trademark dish is boumbo, a thick stew usually featuring either meat or seafood.

Considered a sign of true luxury, Angeli produces some of the 'verse's most expensive whiskeys. Distilled and barreled on Earth, they are then sent to Angeli, preferably in a depressurized compartment, to complete the aging process. Bottles of Angeli whiskey sold on Earth are stamped with a special 'round trip' label signifying its long journey. Aficionados claim that Angeli's light, temperature and air gives its whiskey a distinct and complex taste profile. Special facilities have been built just to store the barrels and best control their exposure to those elements. One such facility even needed to be soundproofed after neighbors complained of the loud music being blasted by the owners, who believed the vibrations helped optimize the whiskey's time in the barrel.

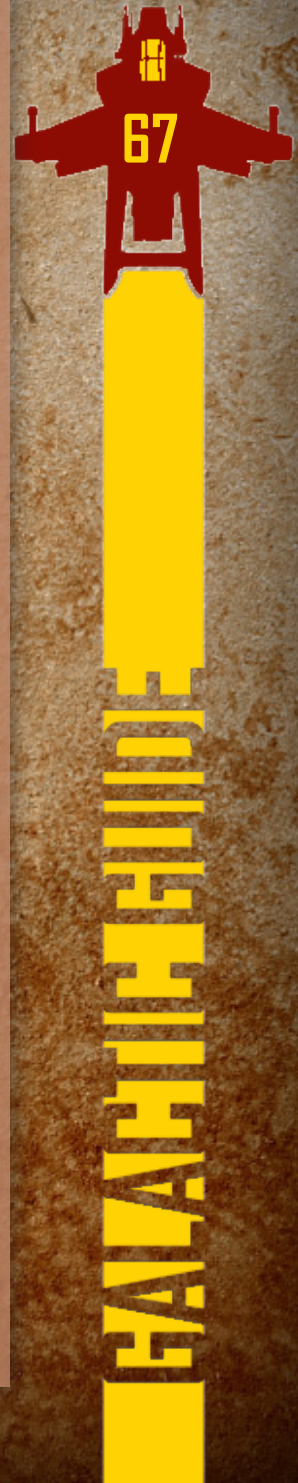
CROSHAW III: VANN

Vann is far from an ideal planet for Human habitation. Located on the outer edge of Croshaw's habitable zone, the planet is mostly frozen over and permanently cold. Yet since mining was restricted on Angeli, terraforming Vann became essential to create a source of commodities in the system.

As the Empire expanded, many residents left Vann for greener pastures. Jele City remains the planet's most populated city, though its most prosperous days are considered long past. All things considered, it still does brisk business as an affordable tourist destination for

winter sport enthusiasts.

Vann's night skies, known for its beautiful auroras, feature a stunning curtain of colors, the result of strong solar activity reacting with the planet's magnetosphere. Inspired by the phenomenon, a burgeoning artistic culture has made a name for itself on Vann. Many artists have set up studios in large, long-abandoned buildings. Some bought the real estate cheap, while others are simply squatting. The self-proclaimed "SpartVann" style features a minimalist aesthetic and prominent use of colors displayed in the aurora.



CROSHAW IV

Planetary analysis indicates that Croshaw IV was formerly a super-Earth that lost its atmosphere. Anything of value was picked off this dead world long ago. After its resources were exhausted, locals stopped using the planet's colloquial name and it subsequently faded from memory – a good indicator of exactly how much Croshaw IV has left to offer.

HEARD IN THE WIND

"Though we might not know exactly what makes Angeli-aged whiskeys stand out, it is easy to distinguish what makes them so special. Their rich and dignified flavors excite the palette but never overpower it. It is almost as if their flavors were granted a crisp subtlety with age that has yet to be achieved anywhere else in the 'verse."

- David Kurtz, *A Beginner's Guide to Angeli-Aged Whiskey*, 2912

"What we do here will shape the future of interstellar expansion. Let's make sure we get this right."

- Clarence Ludwig,
Chair of the Croshaw Expansion Committee, 06.23.2281



EDITH HILLYARD

VANN





One Last Job

by Amanda McCarter

Part 1

The bar stank of sour beer and ship fuel. It was a favorite dockside watering hole, though Jonah couldn't figure out why. His feet squelched on the sticky floor and a crusted piece of God only knew what crunched beneath the toe of his boot. The lighting was poor and the bartender gave him a dirty look as he wiped a greasy towel on a dirty glass.

Jonah took a seat in a wobbly plastic chair made up to look like wood. The table had a large scratch down the center of it, likely made by a knife or broken bottle.

The bartender's eyes jerked to the entrance and his nostrils flared as the door slid open.

Jonah only came here when he had to meet someone, and

there was only one person who ever wanted to meet him here. And at this moment, he owed that person money. A lot of money. In fact, he was behind on payments. Jonah sank into the chair as an uneasy feeling settled over him. The man he was about to meet took late payments personally.

This was going to hurt.

"Ain't you a sight," said Mickey "Gills" Black. He slapped Jonah on the back. Mickey's right eye bulged and his skin was splotchy and purple. The story was, Mickey survived being sucked into space without a suit. Granted, it was only for maybe a second at the longest, but it was enough to permanently disfigure his face.

Jonah wished Mickey had stayed out there in the vacuum. It would have made his life so much easier.

CHRONICLES

"Mickey," said Jonah. He tried to sound cheerful, but his voice still came out sour. They had a long-standing arrangement, but Jonah's opinion of Mickey Black had not improved with time.

Mickey snapped to the bartender who gave him just as dirty a look as he had given Jonah and stalked off.

"No respect," said Mickey. "His bar wouldn't even be open if it weren't for me. Gonna have to remind him, but not till I've had a nice chat with my dear old friend Jonah."

Jonah swallowed. "Dear" and "friend" were not the words he would use, but he bit his tongue.

"How ya been, Jonah? Business good?"

"As good as can be expected," said Jonah, trying to keep his voice even.

"Fair 'nough, fair 'nough," said Mickey. "S'pose it could be better though, yeah?"

Mickey leaned in closer, careful to turn his half-ruined eye to Jonah. Jonah backed away and Mickey only grinned and fell back into his chair with a laugh.

Jonah gave him a small smile. "It can always be better." He chose his words carefully. He didn't want to give too much of an opening. This was a dance he was used to, one he and Mickey had played out dozens of times in their dealings over the last decade.

The surly bartender plodded over and thumped two beers on the table. Jonah tried to tell him he didn't want any, but the man had already walked away, shoulders hunched and muttering to himself.

Mickey took a big swig and slammed the mug down. "If that ain't the biggest glass o' sewage water I ever swilled." He spat on the floor and the bartender looked daggers at him. Jonah squirmed uncomfortably. The man either had a short memory or a death wish. Anyone else would have hidden

under the bar or scurried to wipe up the mess. Jonah began to fear for the man, but Mickey just laughed.

Jonah shivered and sipped at his beer. He grimaced. It was sour with a moldy aftertaste.

"I assume you have work for me?" said Jonah. He really hoped it was work and not a collection.

Mickey took another swig of beer, sloshing it down his front, and sidled his chair around the table to lean on Jonah's shoulder.

"As it so happens, I do," he said.

Jonah felt his shoulders sag with relief. A knot at the base of his skull unwound. Maybe this wouldn't be so painful.

"Very, very simple," said Mickey. "Just run some light cargo, supplies and such. You'll take it out on your next run, divert your course, meet with the client, drop it off, then go about your merry way. We'll take, what, five thousand off what you owe me?"

Jonah's stomach squirmed. Five thousand was very generous for simple work. But usually when Mickey said simple, it was anything but.

"What's the catch?" said Jonah.

"No catch," said Mickey. "Just a drop off."

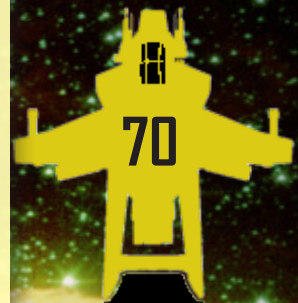
Jonah's thinned his lips. "Who's the client?"

"It really is just a simple drop off," said Mickey. "I swear on the life of me mother."

"For all I know, you killed your mother," said Jonah. "Who's the client?"

"An old friend of yours," said Mickey. "Pietro."

A cold sweat broke out on Jonah's skin. Pietro was an old acquaintance, but certainly not someone Jonah would call a friend. If anything, they were colleagues in Mickey's network of spies and couriers, Pietro being a spy.



Pietro Marquez was a disgraced Advocacy Agent. His old partner found out he was working for Mickey and things got messy. Most recently, Pietro had left a path of destruction escaping the Advocacy, and he was currently on the top of their most wanted list. His image was everywhere.

“No,” said Jonah, “I won’t do it. He’s too hot right now.” Jonah started to get up and Mickey grabbed his arm.

“Thought you might feel that way,” said Mickey. “Way I see it, you owe me and you’re behind on payment.”

The knot in his shoulders was back and tighter than before. Jonah almost would have preferred the pain of a collection over the mess that was Pietro Marquez.

“I’ll have it for you in a few days. Really,” Jonah assured. “I would have had it sooner, but my oldest girl, she got sick. Had to spring for a medbay visit. You’ll get it end of the week, tops.”

“Such a good father. It’d be a shame for those girls to grow up without you,” said Mickey.

Jonah sank back into his chair, his eyes fixated on the hand that gripped his arm. He couldn’t really back away from a job, and he’d never tried to, but this was too much.

“Pietro knows you,” said Mickey. “He trusts you. And I trust you. We both know you’ll get him what he needs. He requested you. By name. He thinks very highly of you.”

Jonah doubted that. Pietro called him a spineless lapdog the last time they worked together. And considering what Jonah was about to agree to, Pietro was probably right.

“Do this for me,” said Mickey, “and consider your debt settled. You’ll be free and clear and never have to do another job for me.”

Jonah raised his eyes to look Mickey in the face, bulging eye and all.

“You have my word,” said Mickey. “And you know me. I never go back on my word, do I?”

“You don’t,” said Jonah, dejected. Everything inside him screamed that this job was a mistake, but he couldn’t afford to miss the chance to get away from Mickey once and for all.

“Okay,” said Jonah. “I’ll do it.”

A grin spread across Mickey’s face. “Fantastic. Shake on it?” Jonah nodded and took Mickey’s proffered hand.

“I appreciate this, lad,” said Mickey. “Really.”

He squeezed Jonah’s hand harder.

“Conversely, if you don’t do this, or decide you’re better off running, I will collect on my debt. Do you understand?”

Jonah swallowed and nodded.

“I didn’t hear you,” said Mickey.

“I understand,” said Jonah.

“Good,” said Mickey. He released Jonah’s hand and slapped him on the shoulder. “I’ll send all the details and the cargo to your ship.” He finished his beer and pushed away from the table.

Jonah watched as he walked up to the bar, hopped over it and proceeded to pummel the bartender into a bloody pulp. Several of the other customers pretended nothing was going on, but Jonah watched. He watched every brutal moment of it.

Satisfied that he’d made his point, Mickey stood, washed his hands in the ice bucket, climbed back over the bar without a word to anyone. He sauntered out the door, whistling as he went.

His mouth suddenly dry, Jonah took another sip of putrid beer and pushed away from the table. Slowly, he made his way to the bar. His stomach tied itself in a knot. He peered over.



CHRONICLES

The bartender lay in a puddle of beer and other fluids. His face was a bloody mess and he'd probably need reconstructive surgery. He groaned and rolled over into a fetal position. The man would live, but he would never forget that you don't piss off Mickey "Gills" Black.

* * *

"You're grounded, Ardoss."

Ardoss glanced up from his flight bag to see Junior Director Vami leering over his desk. Her dark hair was pinned back in a tight bun. She wore a dove gray, vintage pant suit with charcoal pinstripes.

He went back to packing. He was used to her melodrama. He took in her appearance only out of habit. An Advocacy Agent had to take in all of his surroundings, no matter how mundane or ordinary.

"Don't make threats you can't keep," he said as he checked his gun.

"This isn't a threat," she said. "You're done. Early retirement."

She touched her Glas and a form flashed onto his terminal screen.

Ardoss blinked. "Retirement? I've got two more years."

"Your last mission turned into a raging gun battle that killed one person and injured eight more. Two of the injured were Citizens. Not to mention the millions of Credits of damage you did. I don't know if that shopping complex will be usable again. I've gotten at least a hundred complaints from business owners, the city council, Citizens' groups, you name it. This is a mess. To top that off, your quarry escaped."

Ardoss licked his lips. "I'm very close. He's hiding with outlaws; they've given him safe harbor. But I know his associates. I know his friends. It's only a matter of time before I find him."

Vami tucked her Glas into a thin black carrier. "I don't care if you've got him locked in your desk, you're out. You have your orders."

"Just like that," said Ardoss. "You'd destroy my career. Because Pietro was one of us? I didn't know. How could I know?"

She placed her hands on his desk and leaned forward. "You couldn't. It's not about what happened, it's about how you handled it. Someone died in the crossfire. You ignored the safety of those around you. The higher-ups wanted to fire you on the spot."

"It's happened before," he said, "to other Agents."

"It happened to you," she said, "you're too high profile. Catching Pietro is a priority. It's a black eye to the Agency. I'm trying to help you, Ardoss. Let someone else take it."

"You're gunning for Section Chief," he said.

Vami pushed away from the desk and turned. She glanced sideways at him and shook her head.

"My concern is for the image of this Agency, the safety of its agents, and the people we are supposed to protect."

"Right," he said. "It looks pretty bad that one of your Agents was a rat. You wanna show your bosses you've got it all under control."

"Someone died, Ardoss."

"And how many people do you think Pietro has killed while he spied on us for Mickey Black?" said Ardoss.

Vami dropped her head. "You're making this personal."

"It is personal," said Ardoss. "Pietro Marquez was my partner. I should have seen it sooner. Let me have this, Vami, just this last capture. If he makes it to Banu territory, we'll never find him again."



CHRONICLES

She pinched the bridge of her nose and sighed. "You don't even know where he is."

"No, not yet," insisted Ardoss, "but I screwed up his escape when I found him out. His exit ship was damaged. All he has now is his Agency ship. His ship tags are still active and I know he went back to Black. I've talked to a few informants. Black's given him a place to lay low until he can swap out his tags or get a new ship. Trust me, I can find him."

Vami sank into the chair on the other side of Ardoss' desk. "Give me all the information you have and we'll assign the case to someone else. You're too close."

"Exactly. I trained him, Vami," said Ardoss. "Twenty years together. We were side-by-side for hundreds of jobs. I know Pietro better than anyone in this organization. I didn't see it before, but I know what to look for now. There's this cargo pilot, Jonah Ruskella, I've seen his name a few places."

Vami shrugged. "So they're drinking buddies."

"Nope," said Ardoss. "Ruskella is a courier for Mickey Black. They've been seen together. I got it from three different sources."

"Okay, so what does that have to do with Pietro?" said Vami.

"They say Ruskella is moving equipment and supplies for Mickey in the next twenty-four hours."

Vami crossed her arms and thinned her lips. "That's a lot of speculation, Ardoss. A lot."

"What else do I have to go on?" he said. "I could stake out the jump points into Banu space, hope I get lucky, or follow a lead."

"You're assuming I'm going to let you," she said.

"Don't do this to me, Vami," he said. "Don't end my career like this. Let me finish it out with one last recovery."

She dropped her arms. "Even if your information is correct . . ."

"It is," he said. "These guys wouldn't lie to me. Not at the prices I pay them."

She clenched her jaw.

"I need this," he said.

She sighed. "I don't want a repeat of the mall. You keep it quiet."

"I will," he said. "I'll board Ruskella's ship, incognito, follow him to the rendezvous with Pietro, and make the arrest."

"Just like that?" she asked.

"Just like that."

"And if the drop isn't for Pietro?"

He shrugged. "I'll find another lead."

"No, you won't," she said, standing. "This is it. This is all you get. You board this ship and you look for your old partner. If you don't find Pietro, you come back."

He ground his teeth. He knew his hunch was right. It had to be. He didn't need Vami clouding his judgment. This had to work. There weren't any other options.

"Fine," he said.

"I want to make something very clear," she said. "Any deaths, accidental or otherwise, any damages, any complaints and you can forget about retirement. You'll find yourself in a cell."

"Understood," Ardoss said, nostrils flaring.

With that, she left his office. She didn't even look at him.



So that was the way it had to be. He could live with that. All he wanted was Pietro Marquez. He wanted to ask him why. He wanted to understand. He didn't think he ever would.

* * *

Jonah stared at the manifest, his hands shaking. It was just supposed to be cargo. No passengers this time. But there they were, four passengers.

He went to his boss, the dock master.

"There aren't supposed to be any people on this flight," he said. He slapped the manifest down on the man's desk.

Dock Master Haru gazed at him through rheumy, wrinkled eyes. A WiDoW addict who didn't bother to hide it, he was tall and wiry. The stained black veins made his arms look infected. The spider tattoos didn't help. Jonah had only ever seen a spider once, but the memory of it was burned into his brain. It had gotten into some cargo from Earth. He'd seen other insects from other planets, but that spider was the one that crawled into his nightmares. Too many legs. Char, his co-pilot, told him he should see a centipede sometime. Jonah didn't like the sound of that.

Haru placed those frightful hands on the rickety desk and pushed himself up. He licked his lips, which were thin and papery. "You have passengers when I say you have passengers."

Haru was a bully. He had a reputation of withholding payments, grounding ships, and suspending pilots just because someone pissed him off. Jonah had to tread carefully.

"I leave in four hours," he said. "I don't have time to prepare."

"Then leave in five," said Haru. "I really don't care when you leave as long as you leave with what's on the manifest." He raised a hairless eyebrow and stared at Jonah.

He couldn't leave in five hours. He had a schedule to keep. Haru wouldn't care, and Jonah didn't want to have to tell Mickey why his shipment was late.

"I'll leave in four," said Jonah, his shoulders sagging. "I'll keep the schedule."

Haru smiled. "Excellent news. I'll tell the drop-off port to expect you at the normal time."

Jonah gave his boss an uneasy smile. Haru was almost as bad as Mickey. The only difference was, Haru wouldn't beat you to a pulp or shove you in a vacuum for defying him.

If Jonah had the money, he could go into business on his own, then he could tell Haru if he was taking on passengers or not. As it was, all his spare cash went to Mickey or into a trust fund for his kids. It wasn't much, but he wanted them to have a better life than he did.

That would change after this job. Jonah could start building his business and break away from Haru and Mickey.

Provided, of course, that Mickey kept his word.

He turned away from Haru and hurried to his ship, the Open Sky. He had a lot to prepare before they left. Secure the airlock, clean the passenger area, arrange for food for the trip. These things took time. Normally, twenty-four hour notice was standard for passenger manifests, but Jonah couldn't be too surprised since Haru was always pulling shit like this. Give the man enough Credits, and he'd pretty much ignore any protocol.

He boarded and went straight for the cockpit.

"We have passengers," he said, catching his breath as he pushed through the doorway.

"I know," replied Char, not looking up from her pre-flight check. Her long dark hair was pulled back loosely. A few gray strands escaped the mass and blended in with her silver flight suit.



Jonah sighed; she always knew. After well over a decade flying together, he struggled to think of a single time his co-pilot had been caught off guard.

“Some pop-off, low-level politician was in here about an hour ago making a big fuss about his arrangements,” she said. “Demanded private quarters and shoved his Glas in my face trying to show me some sort of document for preferential treatment.” She laughed. “Like we’re a starliner.”

A bureaucrat, no matter how low-level, was just the type Haru would bend over backwards to please. That explained a lot. Jonah still didn’t like it. It made the job harder.

“What did you tell him?” he said.

She laughed again. “I sent him to our ‘VIP lounge’ and told him to come back when we called for boarding. If all he can get is a little ship like ours, he gets what we give him.”

“We don’t have a VIP lounge,” he said.

“He knows that now,” she said. “He’s probably still sitting in that break room.”

“What about the other passengers?” he said.

She shrugged. “I think one is a businesswoman. I haven’t met her, but nothing alarming on her documentation. Another one is some nineteen-year-old kid. He’s probably headed out looking for work or visiting family.”

Safe enough. They’d probably stay out of the way.

“What about the fourth one?” said Jonah.

“A retiree,” she said. “Old codger on vacation most likely. It should be a cake run. I’ve already got the food packs ordered and I managed to requisition some cleaners from one of the bigger ships. We’ll make the schedule.”

“What would I do without you, Char?” said Jonah.

She gave a wicked grin. “Die in a vacuum, most likely. Or get murdered by a pirate.”

That was still a possibility.

“I picked up some packages for you in port,” he said. “Looks like some stuff from your sister.”

“Ugh, what does she want now?” Char said.

Jonah shrugged. “Guess you’ll have to open them. Oh, also found some licorice in the market.” He dug in his satchel and pulled out a small, plastic sealed packet.

Char’s eyes lit up. “Wonders never cease.” She tore open the package and took out a piece. She popped it in her mouth and closed her eyes.

“So good.”

He made a face. “If you say so.”

She grinned. “More for me.”

“We need to take a detour before our last stop,” he said.

“Got another side job?” she said.

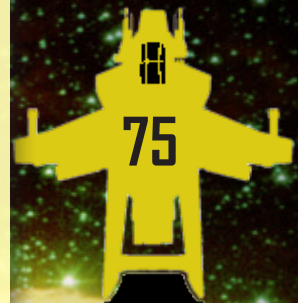
“Yeah,” he said. He’d never told Char about Mickey, didn’t want to cause her trouble. She was ex-military, so she could probably handle herself, but Jonah admired her too much to dirty her hands. After flying together for sixteen years, Char was his oldest and dearest friend. And there were just some things you didn’t do to your friends. Mickey Black was one of them.

They finished the pre-flight with some help from a couple of day laborers and started to board the passengers with half an hour to spare.

The politician, a man by the name of Nickolas Thrumm, was just as bad as Char said.

He was an oily man, with slicked back hair, well-manicured hands, and an expensive suit. He carried leather luggage and smelled like wood. Char said it was sandalwood, some kind of rare tree or such.

Thrumm gave one look at the ship and frowned.



"It's so small," he said.

Char shrugged. "It's a small ship."

He glanced at the passenger area.

"And cramped." His voice took on a nasal quality that made Jonah wince.

"Where are my quarters?" Thrumm asked.

"There are no private quarters on a ship this size," said Jonah. "As it is, the co-pilot and I share a bunk off the engine room." No way he was giving his sleeping space to a jumped up peacock anyways.

"The passenger area's not so bad," added Char. "The seats are fully reclining and you get your own stow space for luggage. There's even sleep netting for zero-g."

"I have to sleep out here?" said Thrumm.

Char shrugged. "It's the best we have. If you don't like it, you should have considered that when you pushed through the booking on such a small flight. Now, if you don't mind, we need to finish boarding."

Thrumm moved on in a huff and they welcomed the remaining passengers.

The teenager, a young man who only went by Mitt, grunted at them and took a seat at the back. The businesswoman, one Winona Crim, sat next to the teen. She didn't even acknowledge Char or Jonah. She sat down with a sigh, dug in her bag and pulled out a bottle of pills. She downed a handful and laid back with a pinched look on her face that said she'd rather be anywhere but on that ship.

"Not an easy flier," said Char.

Jonah nodded in agreement.

The last passenger, the retiree, was a gnarled looking man. He had white hair and was missing part of his left ear. The name on the manifest said Tom White. He sat

across from Thrumm.

"That's everyone," said Jonah. "Strap in folks. We'll be leaving just as soon as flight control gives us the all clear."

The passengers were silent as Jonah and Char settled into the cockpit. Everything was good to go and they got the signal for take-off shortly after. They pulled out of space dock and keyed in the jump point. Jonah switched over to the nav computer and turned to see if the passengers were buckled in.

Thrumm was staring at the retiree, White.

"You look familiar," said Thrumm.

"I just have one of those faces," said White. "I get that all the time."

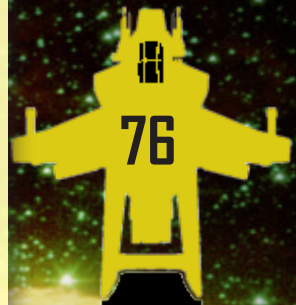
"No," said Thrumm, shaking his head. "I've seen you before. You weren't in a Vid, were you?"

White smiled. "If only."

"That's it," said Thrumm. "I saw you on the news. You're an Advocacy Agent aren't you? Ardoss, isn't it?"

Jonah felt all the blood drain from his face and he turned back to his console. Ardoss. That was the name of Pietro's partner. He was screwed.

To be continued



CHRONICLES