

# JUMP POINT

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ISSUE 02.05

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## GREETINGS, CITIZENS!

I was right — no Idris this month, either. Instead, we feature the M50, a quick little racer that'll get you there faster than just about anything else. We've also got GNP, who makes the HUDs you're about to become very familiar with, Taranis (a system you're about to become just as familiar with), a behind-the-scenes look into how cap ship systems are being designed, and last but not least: our very first fan-written fiction, by Charles Duncan. Charles is also very professional, and it's nice to have someone who gets it right away.

As I write this, the entire team is hammering on the dog-fight module, or (as it's now known officially) *Arena Commander*. It is painfully close, but not quite there, and as you are being told in other channels, we're going to make sure it's right, just as soon as we can.

While I am little use as a playtester, I have been crunching hard on the AC manual, which is supposed to release with AC itself. Not to mention the work needed to finish ... ah, I'm told not to mention it. At least for a week ...

Last issue I asked how you wanted to handle upcoming **Jump Point** contents — specific lists ahead of time, teasers, or nothing at all. I appreciate the confidence that the majority of you have placed in me; the consensus is that we fly blind. You've find out for sure what's in each **JP** when you open it.

A couple of other notes. A significant part of our team are British, and it's reflected in their writing. I've decided to keep their spelling when they write for us, unless it gets awkward. And speaking of awkward, I've been an editor for decades



(let's just leave it at that), and I have not yet found an elegant way to write pronouns that serve for both the masculine and feminine. Until I do, we're stuck with the generic 'him.' I apologize to those of you of the feminine persuasion.

And here's another acronym definition: **HOTAS = Hands On Throttle and Stick**. With the right system, you don't ever have to switch over to the keyboard.

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

David

David.Ladyman@cloudimperiumgames.com

## M50 STATS

**Builder:** Origin Jumpworks

**Length/Beam/Height:** 11/10/3 meters

**Crew (max):** 1

**Mass (empty):** 4,875 Kg

**Role:** Racing

## STRUCTURE STATS

**Cargo Capacity:** 4 cargo units

**Factory Power Plant:** ACOM StarHeart III (S2)

**Factory Engine:** 2x Hammer Propulsion HM 4.3 (TR3; max TR4)

**Factory Maneuvering Thrusters:** 6x Origin Scalpel Precision B  
2x Origin Omni Precision B (8x TR2)

**Factory Shield:** Gorgon Defender AllStop

## HARDPOINTS

**2 x Class 2 (size 3):** 2x Behring M5A Laser Cannon

**2 x Class 3 (size 2):** 4x Talon ASIM-20/c Stalker II (IR lock,  
Conventional)

**EDITOR:** DAVID LADYMAN, INGAN MONKEY GOD STUDIOS

**ROVING CORRESPONDENT:** BEN LESNICK

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**COVER:** STEFANO TSAI

**PAGE 24:** LOGO, CLINT SCHULTZ

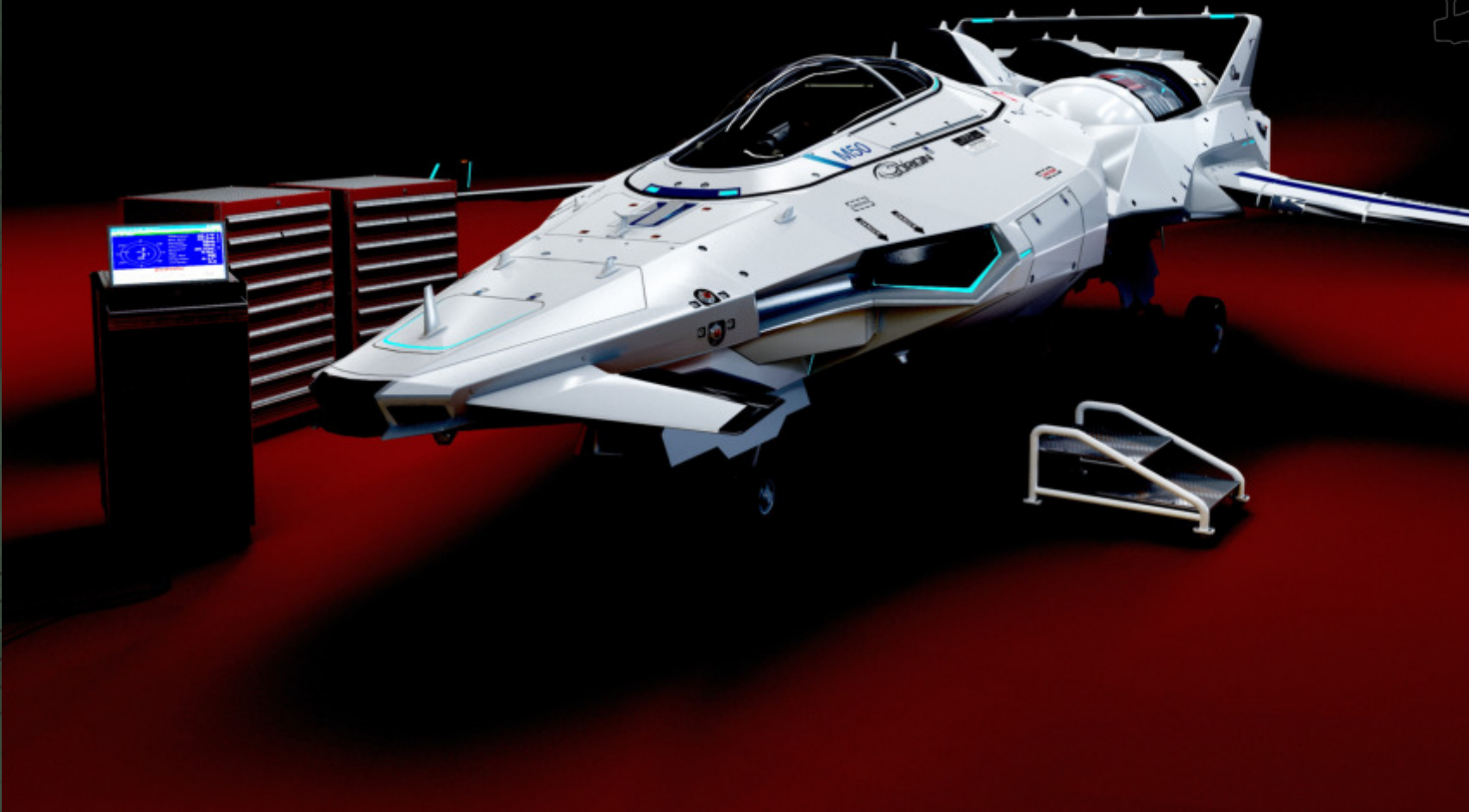
**PAGES 40, 42:** DENNIS CHAN

**PAGE 43:** DENNIS CHAN



FROM THE HICKORY

# M50



WORK IN PROGRESS

*We're still in heavy crunch mode for Arena Commander, so we asked a new freelancer, Stefano Tsai, to take a pass at the M50. A few comps were created last year, but it didn't get beyond that stage. Stefano started with those comps (shown on the next page) and took it all*

*the way to completion from there. He did a wonderful job!*

In addition to Stefano (ST), people contributing comments include:

Chris Roberts (CR)

Sean Murphy (SM) Art Outsource Manager

Chris Smith (CS) Lead Vehicle Artist

Mark Skelton (MS) Art Director

Chris Olivia (CO) Chief Visual Officer





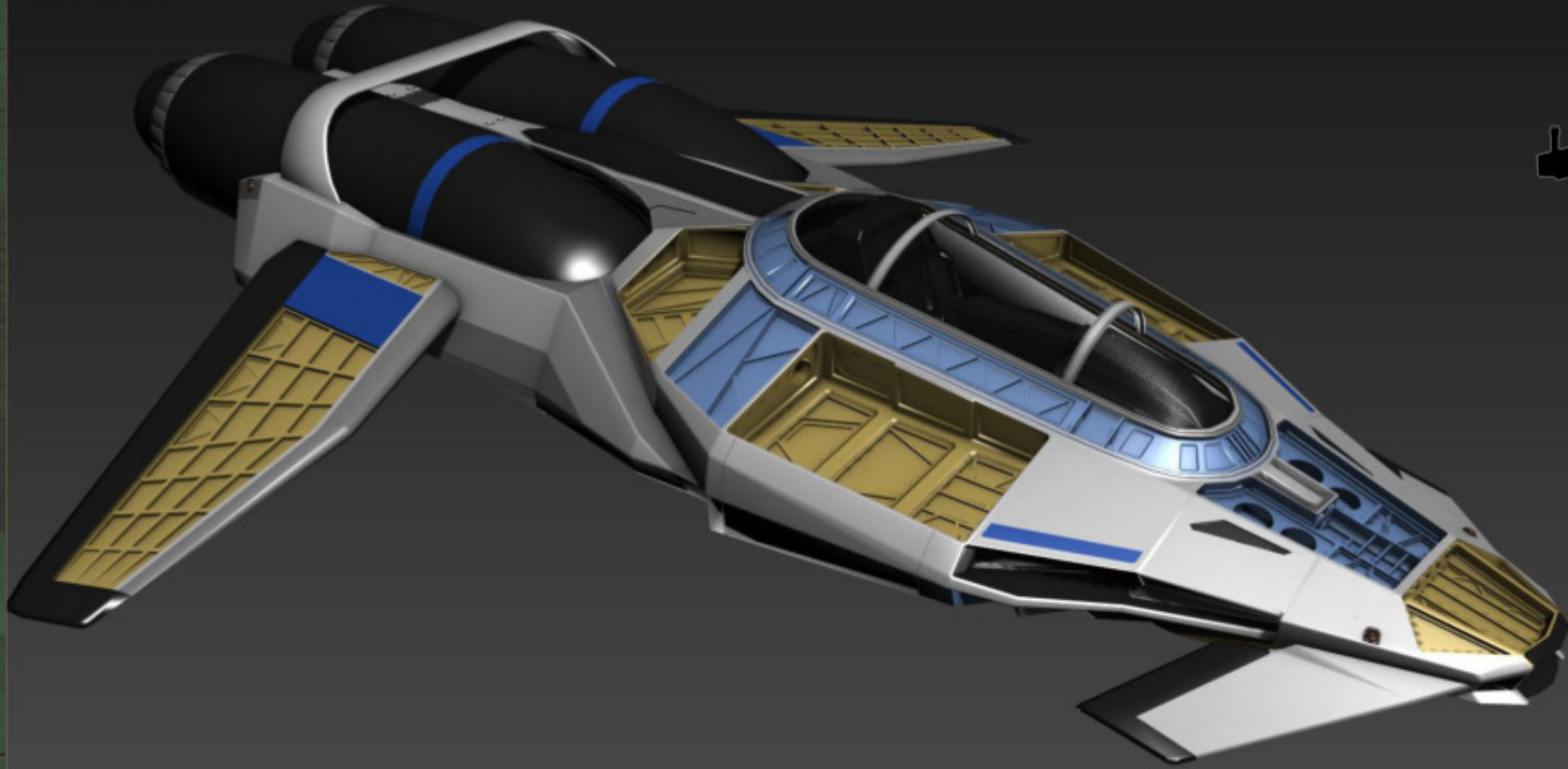
WORKING IN PROGRESS



Original comps of the M50.



[+][Career a502][Realistic]



WIKI IN PROGRESS

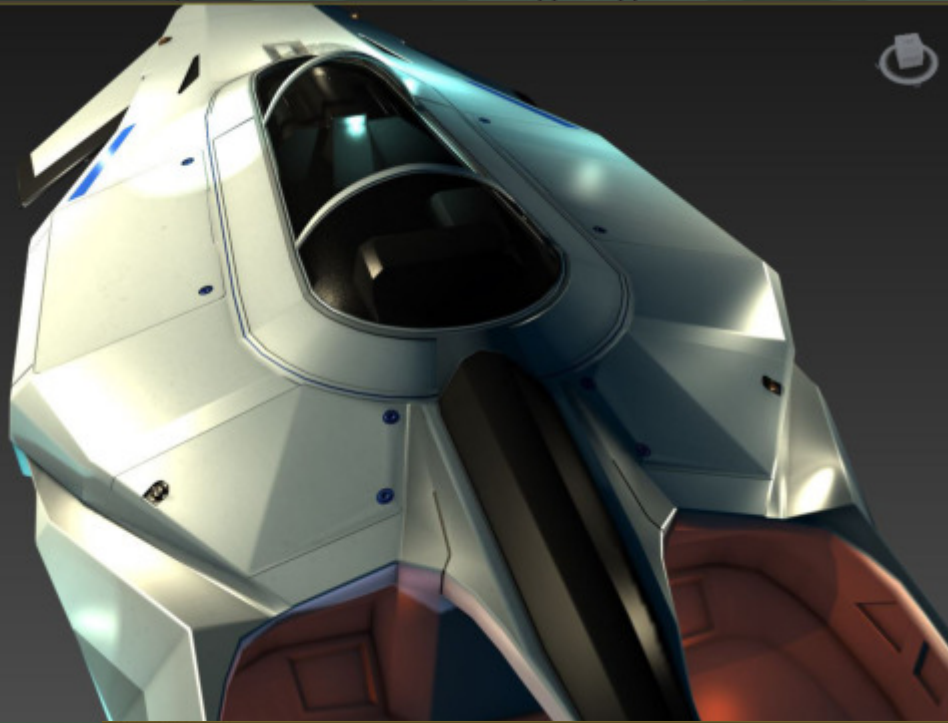
**ST:** First, I have to say I love CryEngine; it is so cool and powerful.

I've attached what I have so far. I based it on the way a real-world ship should be built, so you can see all of the bay. When your ship is hit by enemy fire, the panels above the bay might be broken and all of the equipment inside the bay can be seen, including almost everything, from blackbox, electricity, battery, navigation, computer sys, fuel sys, fly sys, etc., so I modelled it inside out.

Is this too much detail? Please let me know and I can modify.



[+] [Perspective] [Render]



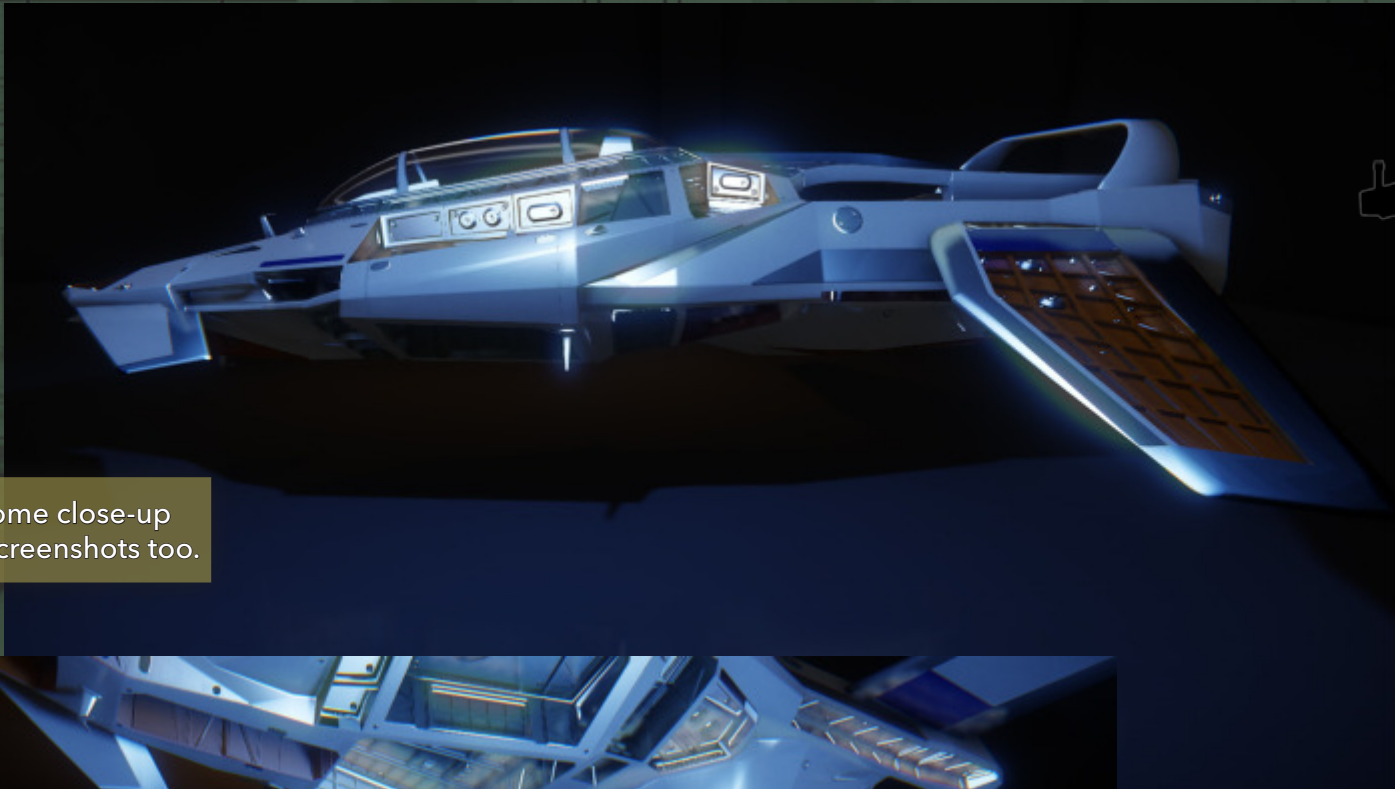
**ST:** Here I updated some bay interior and exterior details.

[+] [Perspective] [Render]

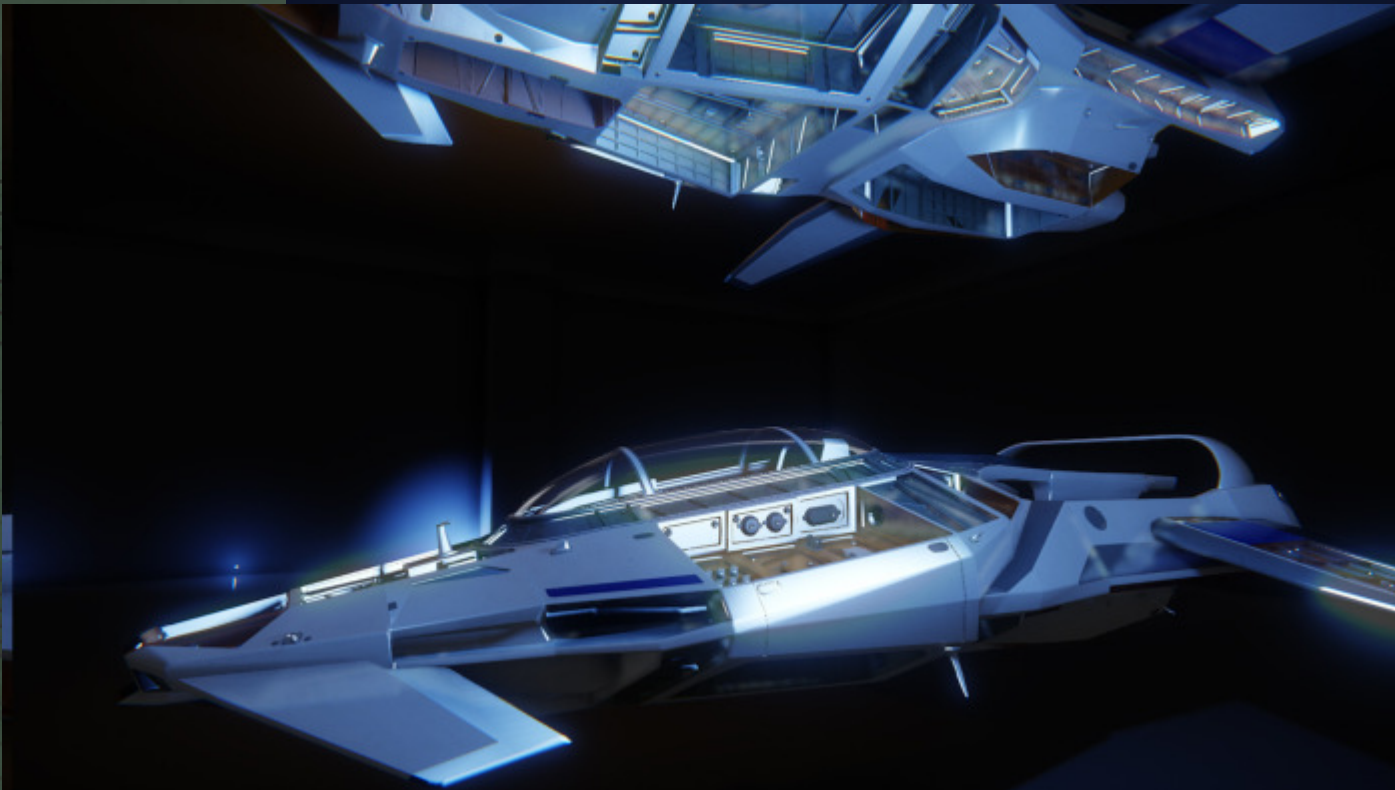


WORK IN PROGRESS



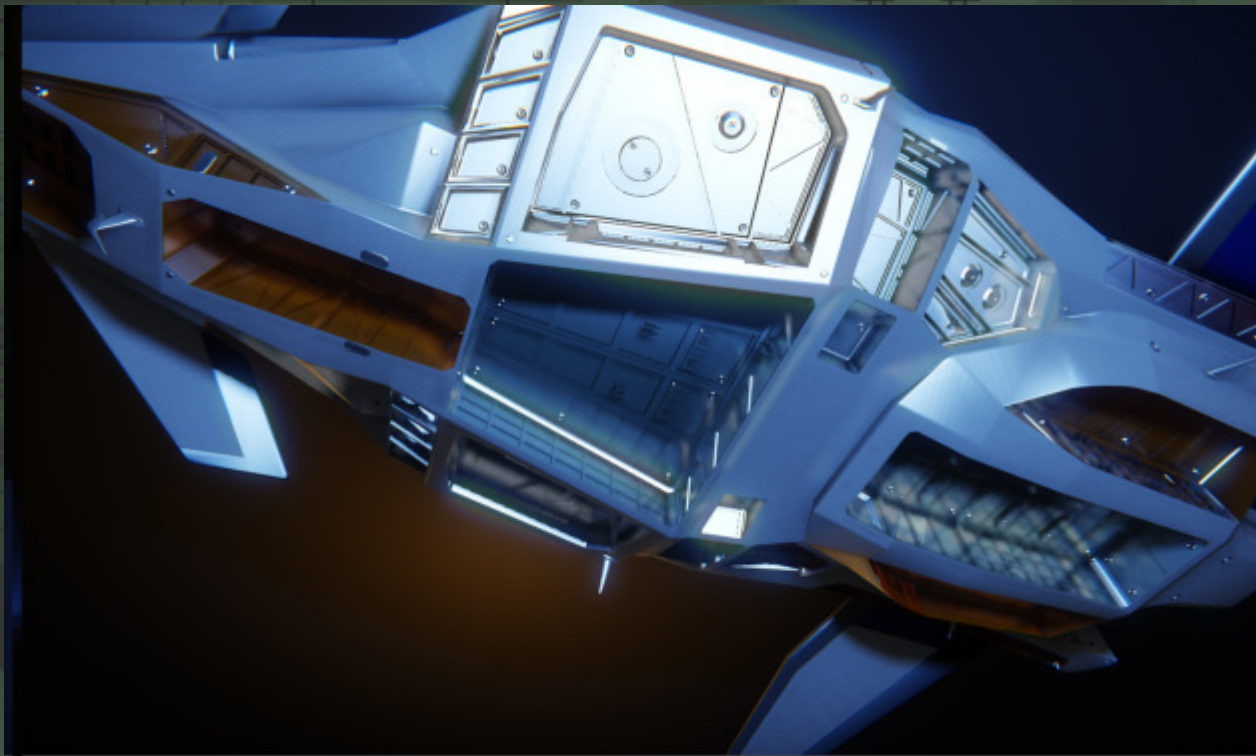


**ST:** Here are some close-up and in-game screenshots too.

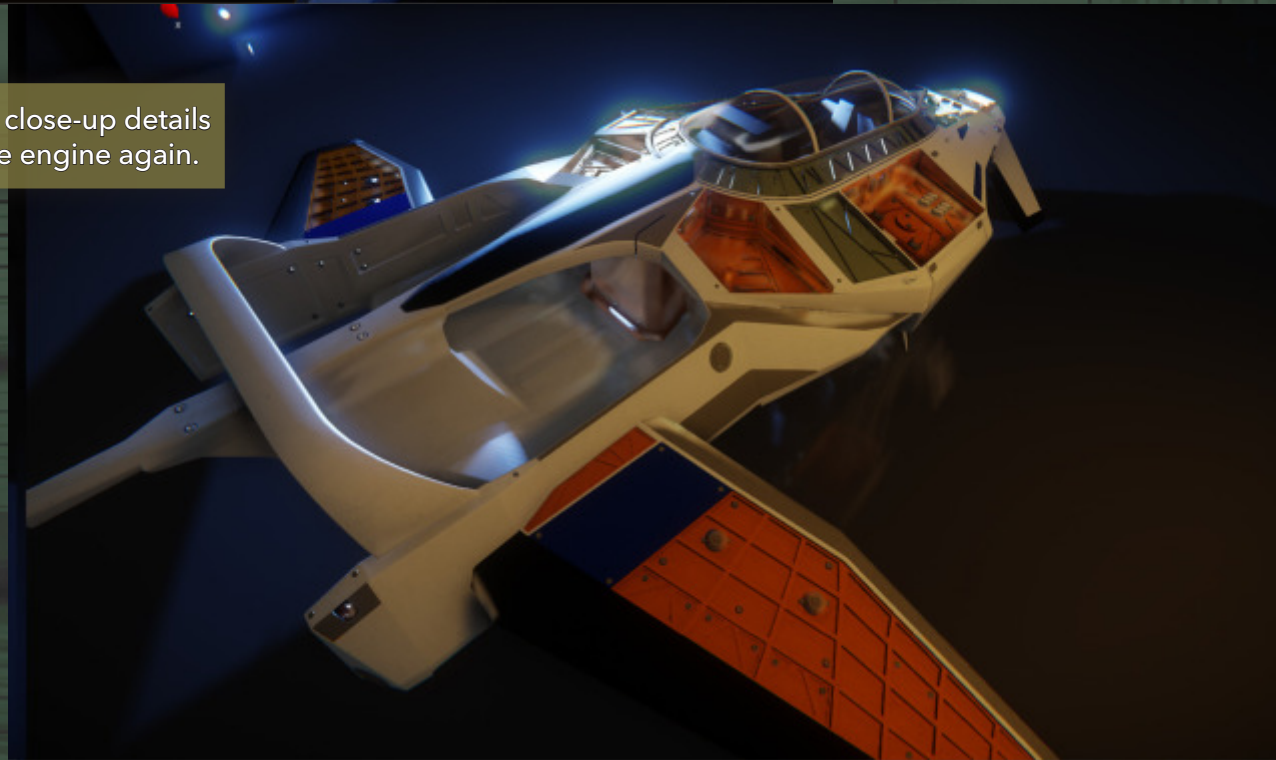


WORK IN PROGRESS





**ST:** And more close-up details from the game engine again.



WORKING IN PROGRESS

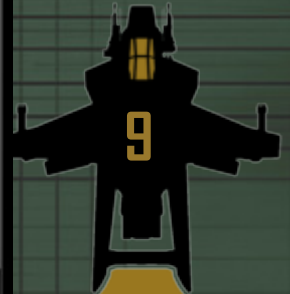




# ORIGIN M50 WIP

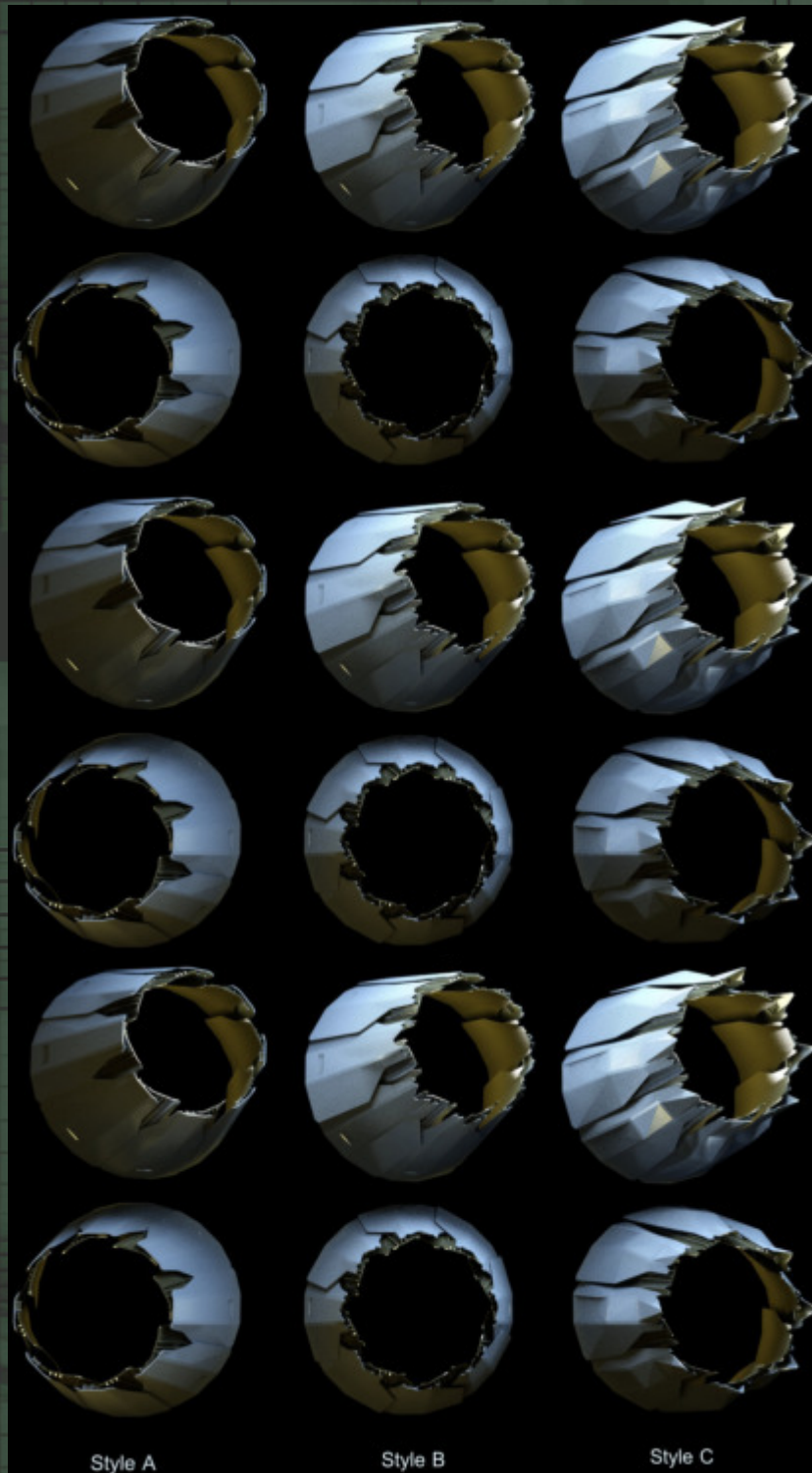
**SM:** Here's a summary of what we discussed:

1. You should be looking at options for how the pilot will get in and out of the cockpit on the ship – how will it open, will there be a retracting ladder, etc.
2. Consider the placement of maneuvering thrusters on the ship – where are those likely to go?
3. Look at ways for the engines to articulate and animate.
4. Start thinking about placing running lights.
5. In general, be thinking about how parts “work” – since they will actually function in the game, we need to be sure they can do so without problem. For example, landing gear needs to be able to fold up and retract within the body of the ship without clipping through geometry.



WORK IN PROGRESS





**ST:** I've attached 3 different stage of nozzles animation, frame 0, frame 10, frame 20 ( pretty rough, but you can get a idea how it moves). They are rendered by vray.

**CS:** I would go with style A. That one is more in line with the manufacturer's (Origin) style.



WORK IN PROGRESS

**CS:** The ship is looking great; I really like your detail and model quality. I just have one concern – while we do want a lot of detail in these ships, your ship at the moment features a little too much detail (which is not a bad thing necessary ;)).

I've attached an image for reference. The problem is, some of the areas that I point out will not be seen by the player. While we do have a good amount of interaction with these ships, what you currently have will make it a little too complex to work with efficiently for this game. The ships and its files we have are already very complex and complicated, with all the damage states and effects we put on them.

Detail like this is good in the landing gear area and a cargo area (if applicable). We could also perhaps keep one panel that would be possible to open (the big one by the cockpit).

As far as a destroyed states go, we have our own system that we use, by utilizing a model/ kit-bash system to create damage states quickly. Unfortunately the great detail you included in some parts will be lost when the ships are 100-400ft away and exploding. ;)

So, moving forward, I really would like to see some shots with the panels on and landing gear out (front side, perspective)

And I would model the ship more straightforward (create hull and cut in most panel lines); don't worry about putting so much interior detail into things that might not be seen by the player (except obvious areas like the landing gear).

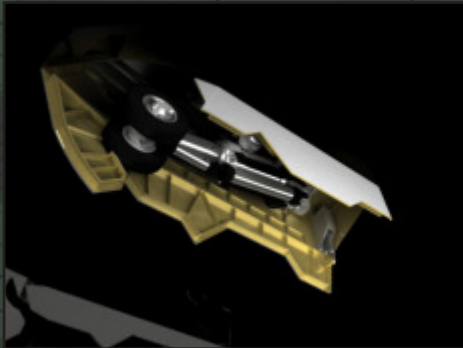
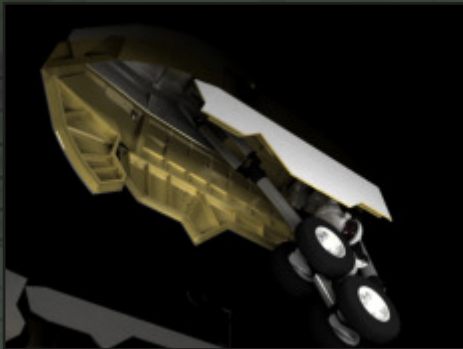
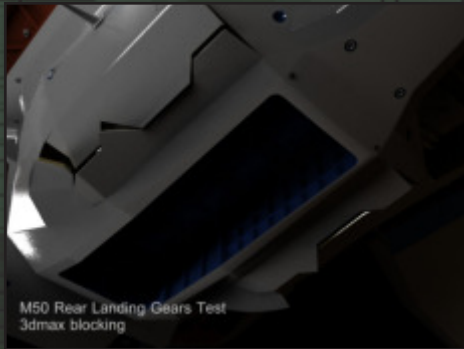
And if you have an idea for extra detail somewhere, please ask us first so we can let you know whether it will be necessary/possible for the game.

Again, your work is really great so far and I look forward to seeing your updates on this, we just have to 'align' the modeling direction a bit more towards our practices and make sure everything is also practical. :)



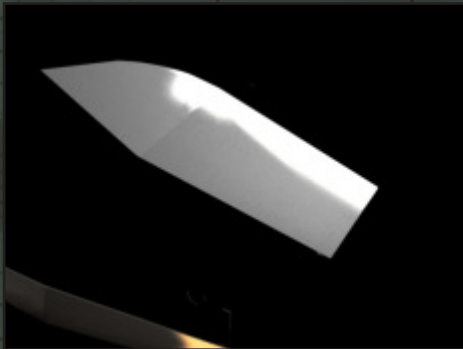
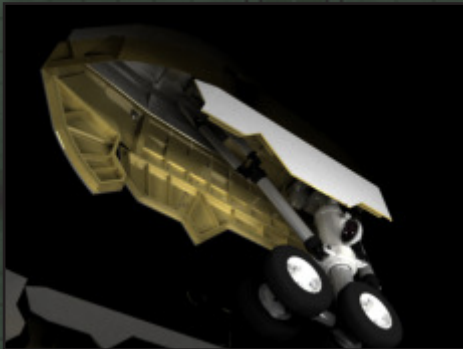
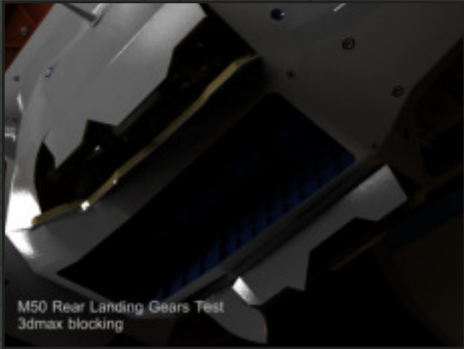
WORKING ON THE SHIP





**ST:** I worked on landing gear blocking next. Here is the rough blocking.

**SM:** The landing gear looks cool! I would like to see some shots of the ship with its LG out from the side and front.



# WORK IN PROGRESS



## ORIGIN M50 WIP

**ST:** Here's the latest update on the M50.

**MS:** One of the things that we've asked Stefano to do is to redesign the landing gear to give it a wider stance. As of right now the gear is too close together – looks like it would fall over.

**CR:** What's the poly count of the model? Seems to be light on polygonal detail and is relying on textures / normal

maps. I feel the detail can be cranked up. It feels the panels and handles, etc. are in the texture, not the geo.

Also I feel we need to go sleeker, more F1 car feeling – more aggressive profile on the front and I'm not a big fan of the cockpit. It feels like something off a WW2 divebomber / torpedo aircraft like the Dauntless.

**MS:** There are no textures in that model. It's all high rez.



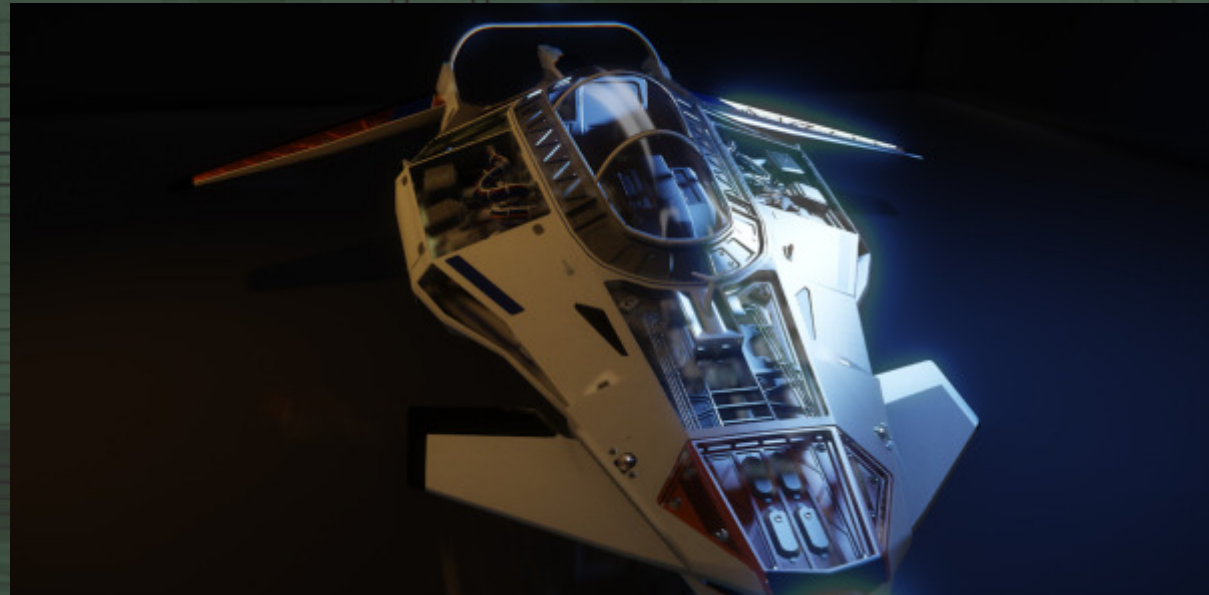
WORKING PRIORITIES





**ST:** More M50 updates.

**CR:** I do like the interior bits; I wonder if we can have a docked mode where the panels lift up to see the engine, etc., kind of like you do on fancy sports cars (like some Ferrari's having perspex section in the rear to see the engine).



WORK IN PROGRESS



**ST:** After last Friday's meeting, I spent few hours today to quickly block out a few new nose designs.

It's based on the reference Sean collected for me – there are 300i models and so many good sexy sport cars.

I made three blocking, the last two are more extreme.

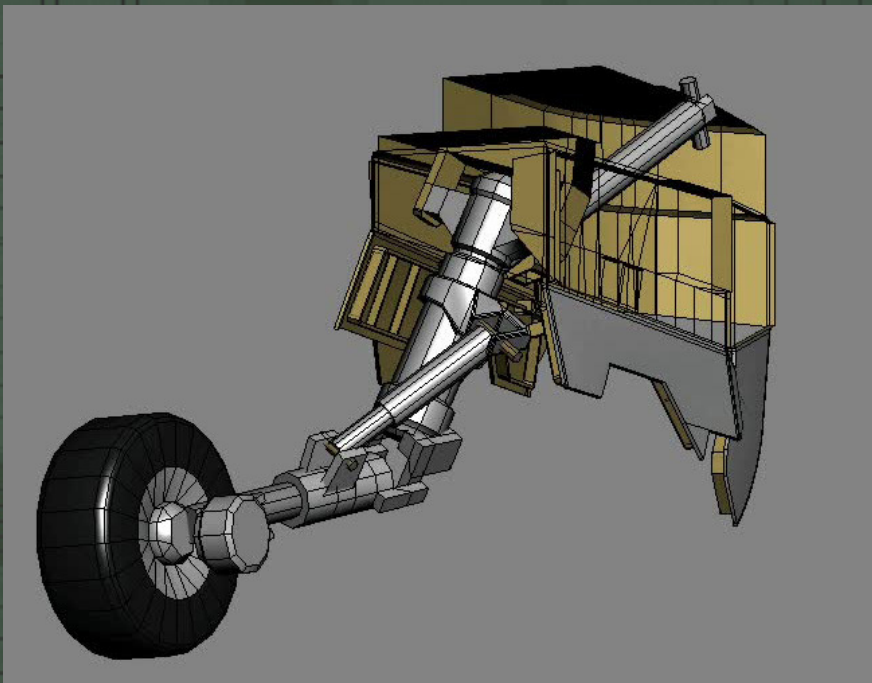
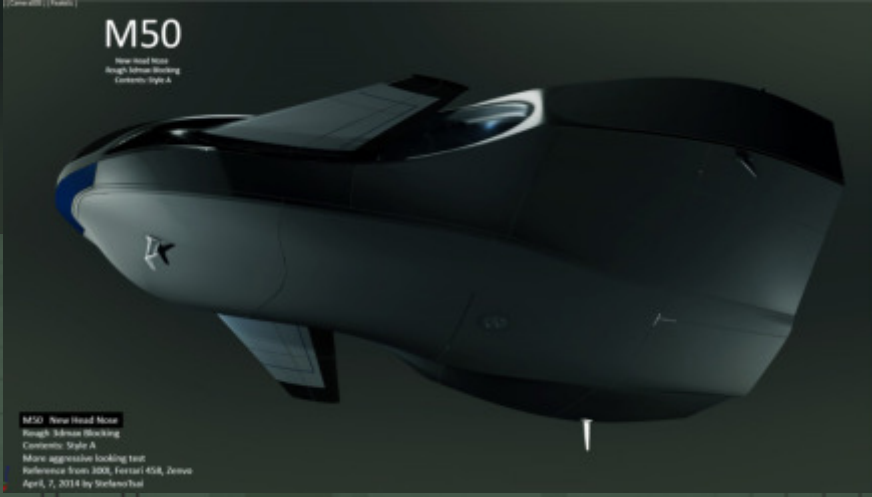
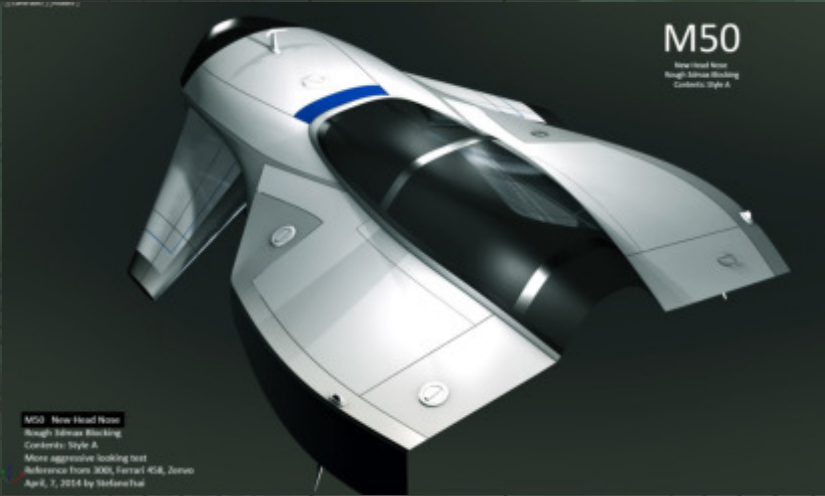
**CS:** In the future I would like to see shots of the whole ship (included with closeups). Especially with big form changes. It's hard to tell from these pics how it all balances out. Right now I don't think any of those versions look too hot or give me a sense of 'speed' or style. I think the bottom of nose tips are a little too fat perhaps. I would try and converge the lines a bit more and make the line towards the front a bit sleeker. The blunt top shape on the nose makes it look like an animal beak to me.

**CR:** Yeah the noses all feel pretty goofy to me – I don't think F1, I think ugly / ungainly.



WORKING IN PROGRESS

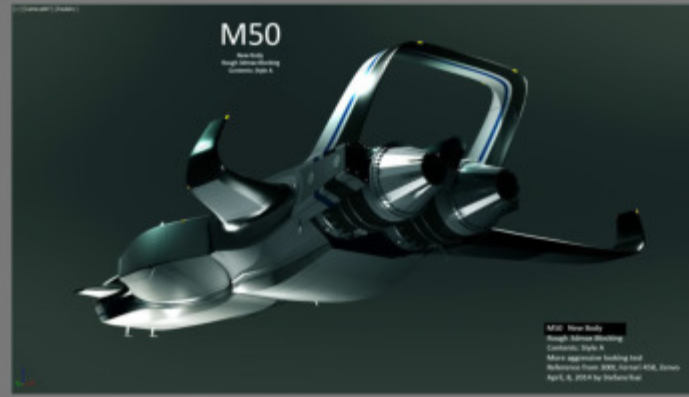
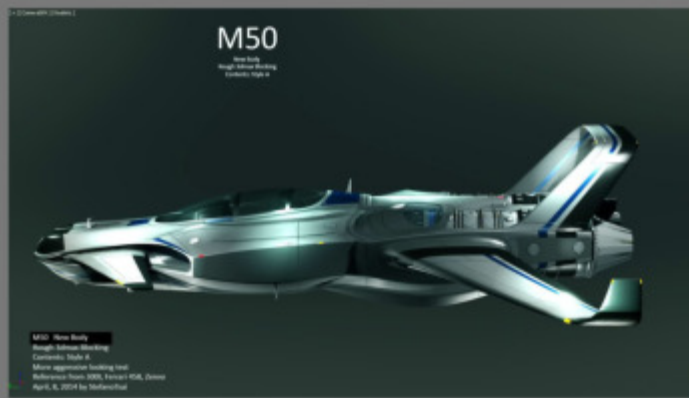
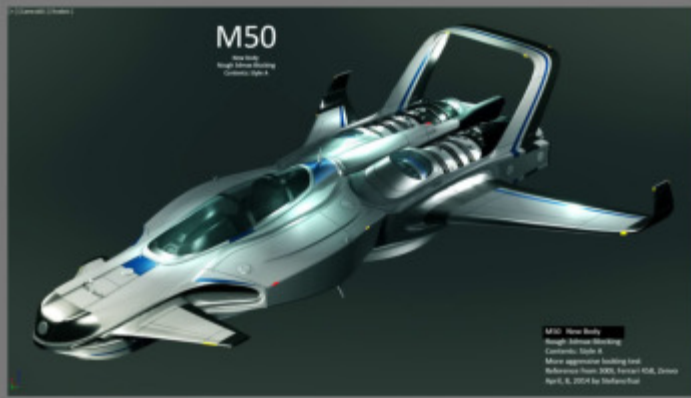




ST: A couple more shots of "A."  
And new M50 landing gear blocked out.



WORK IN PROGRESS



## M50 WIP STYLE 'A'

**ST:** I've continued working on blocking out the new body hull (this page and next).

I have two quick blockings down; they are all pretty rough, but the main forms are there.

They were pushed to a more aggressive and more sports car look, and most important is a speedy feeling.

Also, I added a glass (or plastic) cover on the top of the front part of engine. However, the engine below the glass needs to be more interesting. For now I'm still placing the same engine models.

I've attached two styles.



WORK IN PROGRESS





**M50**  
**WIP STYLE 'B'**



WORK IN PROGRESS



**SM:** Here are Stefano's latest M50 updates (this page and next).

**CR:** Wow! That's looking much better! Very nice! One note though – the ship is an Origin ship, but there is an RSI badge on the engine and I believe the engine is actually manufactured by Hammer Propulsion. (Do we have a logo for Hammer?)

**SM:** I don't believe we have a Hammer logo yet; I'll ask Dave Scott to get on it.



WORK IN PROGRESS



M50  
Front 3/4 camera  
with landing gears down



M50  
Front 3/4 camera  
with landing gears Up



M50  
Rear 3/4 camera  
with landing gears down



M50  
Rear 3/4 camera  
with landing gears Up



WORK IN PROGRESS

**SM:** Sorry for the delay on getting this back to you – our big movie stars, Chris Smith and Mark Skelton, are out in Hollywood shooting some video for the Next Great Starship series we’re doing and were hard to get hold of!

However, we were able to get some notes from them. It seems like we’re closing in on the look of this guy – we’re making refinements now. Take a look over the attached paintovers; the biggest changes are the removal of one of the “spoilers” on the back and refining the shape of the remaining one; and changing the shape of the fuselage where the rear wings connect in and adjusting the shape of the wings. There may be a few small tweaks and adjustments after that but Chris thinks this will go a long way towards getting a final shape for this ship.

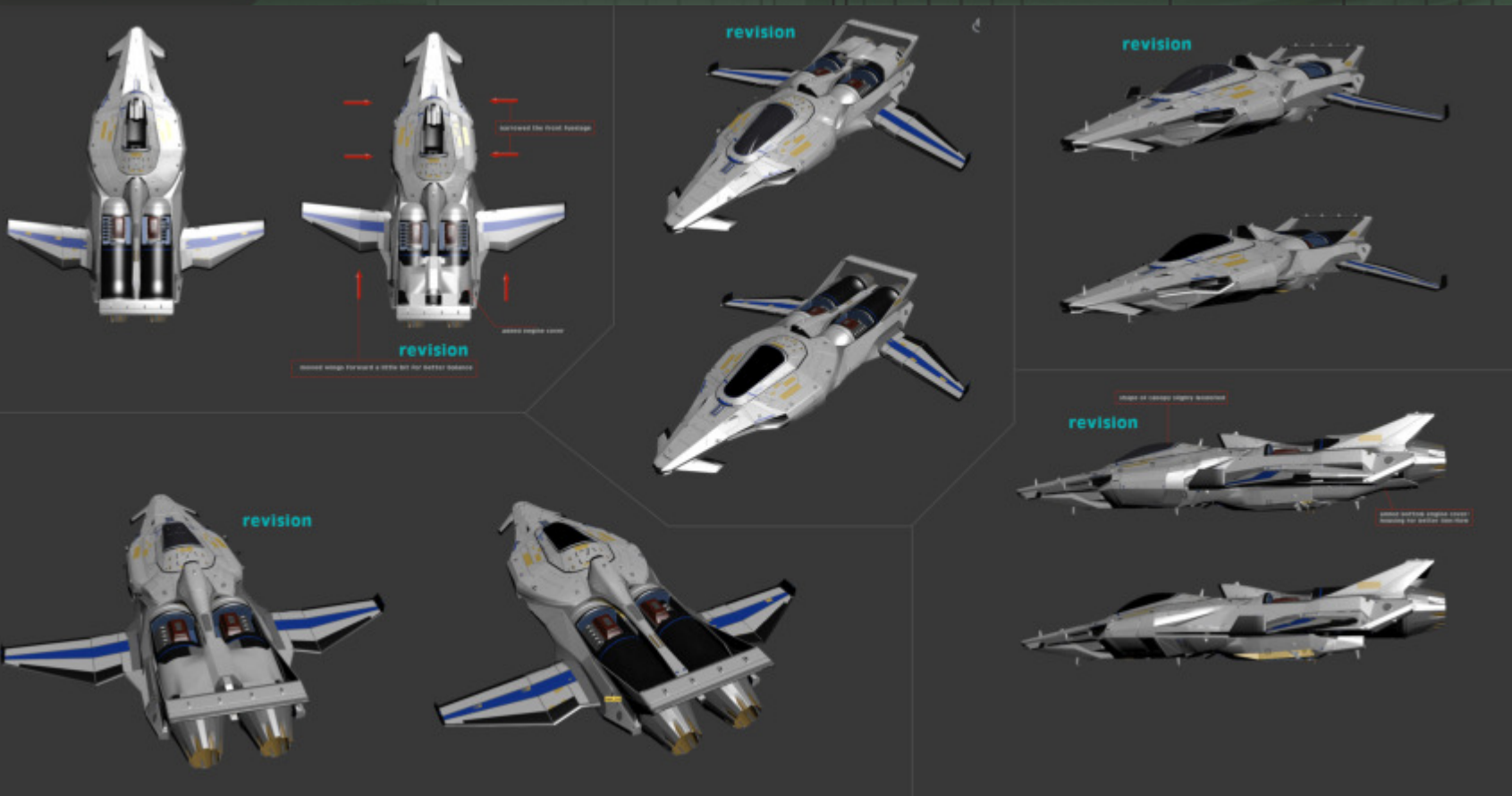
**CS:** Here is a revision of the latest concept stage of the

M50. The last drop we got from Stefano looked cool – there were only a few things that stood out to me, so I made some model changes and posted them up. I narrowed the front end a bit for a overall sleeker silhouette and added a rear engine cover. I also moved the wings forward a little as they felt a little unbalanced all the way in the back. Chris, let me know if this looks good to you, and we’ll have him finish this ship up.

**CR:** Looks good – I want to get cool engine pipes / detail greeble in there when we finish it up.

**CS:** Yeah, the engine bay (see-through part) will need more detail, and the engines will get a pass as well.

**CR:** Also don’t forget we need thruster placement and weapon mounts.



WORKING DRAFTS



**ORIGIN**

M50  
Front 3/4 camera  
with landing gears down



M50  
Front 3/4 camera  
with landing gears up



**ORIGIN**

M50  
Rear 3/4 camera  
with landing gears up



M50  
Rear 3/4 camera  
with landing gears down



**ST:** I have updated the new progress base on the previous paintovered notes you sent me.

I have updated the thrusters location and added glasses to the cockpit.



WORKING IN PROGRESS



WORK IN PROGRESS

**SM:** "Glory renders" done by Stefano Tsai. These are based on low-res versions he submitted for us to choose from.

**CR:** These are all great – can't we use them all? As for a cover shot maybe this or the next one in situ?

**SM:** We can! I've asked Stefano to do up all of them as high-res renders.

[The other two in this issue are on the cover and page 3.]

**CS:** wow!



# GNP



Helios. Odin. Charon. Baker. These systems, far from Earth or the UEE's military research and development framework, don't seem like the kind of systems that would gain a reputation for high-end aerospace equipment. But that's exactly what has happened in the case of GNP. Seeking to stand out in the crowded field of ship manufacturers and to compete with the more developed "homeworlds," the governments of these four systems banded together to subsidize the creation of GNP, an entirely new kind of company.

The basis for GNP's corporate structure was the Tangaroo (Helios II)-based FarSeer Corporation. FarSeer was incorporated in 2908 and developed high-end sensor suites for almost thirty years. Despite the acknowledged quality of their goods, FarSeer could not navigate the aerospace recession of the late twenties, and the company's assets were turned over to the Helosian government for dispersal. Rather than sell off FarSeer to the lowest bidder, officials maintained the corporation using tax dollars as they developed their cross-colonial alliance plan. The former FarSeer's corporate infrastructure was soon joined by government-repossessed engine labs in the Odin System, a series of refineries and factories in Charon and

a massive influx of UEC from Baker's unique spoils system.

The most startling thing about the company is that it entirely avoids the single most profitable segment of starship R&D: direct application weapons. Where companies like Behring and MaxOx are making trillions selling consumer grade lasers and missiles, GNP's charter strictly forbids putting armament in the hands of civilians (and similarly shies away from developing such tools for governments). Instead, the company's output is focused entirely on essential high grade equipment that most users don't generally consider when outfitting spacecraft in their heads: sensors, engines, navigation markers, piping control surfaces, software and the like.

## Sensors

GNP's first triumph was the adoption of their V601-11 RADAR by the UEE Navy. The V601-11, a high resolution multi-sync radar system capable of independently tracking dozens of items and interfacing with hundreds of ship sub-systems, now forms the basis of the Navy's signature 'top gun' F7A Hornet fighters. The Hornet contract, which most expected

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to go to AllTell or Skanix, changed everything for GNP and shocked the aerospace industry's foundations.

The contract was just the first punch, though. The sheer superiority of the system was immediately made clear, and other manufacturers began licensing or cloning the V601. GNP made billions of credits, 100% of which was funneled back into development and manufacturing. While other companies have released similar grades of radar in recent years, the modularity and the customizability of the V601 has left it with the lion's share of sensor suite integration coverage.

True to their word, there is absolutely no difference between the civilian and the milspec version of the V601-11; the same rugged technology and software used to fly the F7A Hornet is available standard (or as an upgrade) on a variety of civilian ships (including most notably the MISC Freelancer line, which actually adopted the system before it had become a navy-supported industry standard).

The V601-11 system is more than just physical scanners; it's a whole-spacecraft solution which includes both physical modules and the Heads Up Display. Developed by a software team that included some of the galaxy's most advanced interface designers, the V601-11's HUD is a thing of beauty. Integrated directly with a pilot's helmet display, subdued colors provide a massive amount of flight information without being distracting. The HUD layout is reactive, with the computational power to predict and arrange information as needed; it may display targeting data one moment and then navcom range finding data another. Furthermore, the standard GNP HUD is now familiar to millions of non-pilots, as it was used in Original System's *Arena Commander* game. Fearful that the HUD would become commonplace public domain, GNP insisted that Original license the design from them rather than simply reproducing it themselves (the licensing fee was a single UEC).

## Engines

If the V601-11 birthed GNP, then the Tonnerre line of engines is what secured its positioning as a diversified, broad-spectrum aerospace corporation. Tested on Odin under

extreme deep space conditions and produced on Charon, the Tonnerre represents an interesting way at targeting the starship engine market. Previous companies have always attempted to make a name for their engines by addressing the single most PR-friendly role: fast ships. What GNP realized is that while other companies were climbing over one another for the ORIGIN 350R or the Anvil Super Hornet slot, there was little competition (or even quality) being directed towards larger transport ships.

Design teams set out to create a range of high durability fission engines powered by liquid fluoride thorium reactors, focusing only on this larger-ship technology rather than something that could be adapted for starfighters and snubs. From this was born a line of truly high-quality engines designed with the user in mind. Tonnerre-brand engines are easy to repair and maintain, with a common core of parts that can be easily changed (in many cases during flight). The resulting complete Tonnerre line, currently produced in nine separate models, was designed from Day One to replace the aging engines found on MISC's Freelancer and Starfarer chassis lines. The gambit worked exactly as intended: MISC adopted the GNP Tonnerre-00 for their all-duty Freelancer model and the GNP Typhon-00 for the massive Starfarer.

There are three lines of GNP Tonnerre engines, each with three different sizes. The smallest, designed for the Freelancer, is the Tonnerre (Tonnerre-00, -55 and -77). The second range, SuperTonnerre, has not yet been adopted by a manufacturer, although corporate rumors suggest Aegis is in talks for the new advanced civilian model of the Retaliator. The massive Typhons, designed for the Starfarer tankers and larger transport ships, complete the range. MISC's happiness with the line to date suggests that the biggest of these engines, the Typhon-77, may be mounted on the Hull C as soon as next year. Because liquid fluoride thorium reactors can theoretically increase in size endlessly, it is also likely that GNP will unveil even bigger engines for true capital ships within the next five years.





# CAPITAL SHIP SYSTEMS



BEHIND THE SCENES

*This month we go behind the scenes to take a look at how we're designing capital ship stations. Mike Northeast (Senior Designer, Foundry 42) has been the primary impetus behind the design of these systems; here are both the development and the current status (very much subject to change) for these stations. We begin about five months ago.*

Crew Stations are like the science and engineering consoles on a *Star Trek* vessel. A larger ship requires multiple people to manage it, but is capable of more complicated actions than a fighter. The core idea is that larger ships require multiple players (or NPCs) to run, and that each player must rely on other players for certain information. We don't have

specific names for these stations ( e.g., science station) as we expect the player to customise the stations with numerous tasks, then assign a player to that station.

In particular, this is a change from crew roles ("I am a Science Officer," "I am a Weapons Officer," etc.) to the concept of Crew Stations that allow the players to decide which stations do what.

Here is the development and current status of capital ship stations.

#### **MIKE NORTHEAST**

When the idea of "seats" came up yesterday I made a very quick list of possible roles and tasks for crew members:



### Command

Monitor battles and gives orders

### Comms

Send / receive transmissions

Coordinate external fleet actions

Receive communication from pilots

Broadcast orders to pilots and fleet

Manage "fleet chat" channels

### Sensors / Scanners

Scanners

Sensors

Proximity

Monitoring systems and scanners ("we have more fighters incoming!")

### Pilot

set waypoint

auto-pilot

jump gates

steer ship

receive input from tactical

emergency manoeuvres

### Engineer ( power management )

Take all or specific sections offline

Reroute power

Shut down power per section

Manage hazard systems

Manage general power

### Tactical

Radar

Ship information

Shut down areas of ship

Weapons readouts ( ammo, etc.)

Hull integrity

Shields: designate power to shields

Damage report

### CHRIS PARRY (SENIOR DESIGNER, FOUNDRY 42)

Looks cool.

I think one or two of the tasks perhaps need shifting around between roles a little, based on what was said in the meeting (and the voices in my head).

For example, I'd assume it'd be the ship's Captain who sets waypoints to fly to, issues orders to roll 'x' amount on whichever axis (or perhaps just selects one part of the ship and where it needs to point), whereas the pilot/helmsman then actually performs the manoeuvre.

One thing I'm unclear on (just in general, not from what you've said), is the relationship between the Tactical Officer and the Captain. Does the Captain mark out the targets he wants fired on, covering fire given towards, etc., and Tactical assigns targets to turrets and squadrons to fulfil the role — so the Tactical Officer effectively delegates out the orders given by the Captain?

Or does the Tactical Officer take more of a command role in combat, ordering the turrets and fighters himself, whilst the Captain concentrates more on the running of the ship, its heading and orientation to the enemy, shields, etc.?

### MIKE NORTHEAST

I imagine the captain would be saying "target the enemy ship" and the Tactical Officer would be able to target the ship and fire the rail gun, for example. However the Captain may also want his squadron to move away from the ship whilst the rail gun is firing. I imagine comms / ops would issue the orders to the squadron.

These were initially done before the meeting, so I know there's some work to be done. It does feel like some roles may be work-heavy and some too light.

### BEN SHARPLES (DESIGNER, FOUNDRY 42)

I've been putting a doc together containing all of the stuff that came out of the meeting this morning and that we were talking about afterward. It isn't finished yet; it's lack-



BEHIND THE SCENES



ing the actual way in which each crew member interacts with the world/ship (except for the Commander; I had a crack at that one). Could you guys have a quick look and see if I've missed anything or included rubbish or anything like that.

The Bolt-Ons thing came out of our discussion earlier about wanting to be able to manage multiple roles; it's only one possible solution.

### **CREW ROLES**

Crew roles are available to other players who choose to join your game for co-op play. These essentially provide roles for other people to fill, with vital roles and optional ones. Any vital role that isn't fulfilled by a human player will have to be filled by an NPC hired by the player. Any optional role can be assumed at will by a player or by any NPC crew members currently without a role of their own.

### **Restrictions**

The owner of any ship is able to set restrictions on what the crew are able to access, so that they can control the ability of a single crew member to cause damage. The ship owner can then allow crew members greater access to systems based on trust. This would make it difficult for a player to breeze onto someone else's ship and destroy them immediately, but still possible for a sleeper agent to board a ship under the guise of working in the crew, only to destroy critical systems after earning trust with the owner (Mutiny!).

### **Full Roles**

*Command.* The commander is the leader of a crew on board a ship. The commander will usually be the owner of the ship (unless control is handed to the Commander by the actual owner because he wants to fulfil a different role). Outside of combat the Commander's role includes:

- Choosing a mission.
- Hiring and firing.

- Ordering specific events to occur ("Fly here," "Hail them," "Repair that").

In combat, the Commander has to fulfil the role of battle-field officer. His job is to observe the local battlefield on a tactical Holomap display and issue orders to the crew and to the pilots of any support craft the ship may be carrying. This will play out in the manner of an RTS game, with features such as base-building and resource mining stripped out. The Commander has a visual overview of the local battlefield and the resources available to him and he must use that to achieve victory (*Mech Commander* is a good example of this style of RTS, but we can go even smaller than that).

Voice commands given during gameplay should be broadcast on a ship-wide PA system for the benefit of players who aren't on the bridge.

*Helm.* The Helm Officer's responsibility is to pilot the ship both in and out of combat. Outside of a combat situation his responsibility is to:

- Carry out the orders of their commander by laying courses and flying the ship along them.
- Piloting the ship at sub-light speeds through local space.

A large proportion of this flight will constitute selecting a destination and then fast travelling to the location using a jump point.

In combat the Helm Officer is responsible for making sure that:

- The ship is oriented correctly during the fight in order to protect damaged sections of the ship.
- Offensive weaponry is brought to bear.

He is still responsible for managing the course and speed of the ship during this time.

*Engineering.* The Chief Engineer is responsible for the mechanical well-being of the ship. Outside of combat this means:



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ENGINEER

- Repairing any damaged systems.
- Balancing power needs for whatever the Commander has decided is the current objective.
- Maintaining the every-day wear and tear that will build up in ship systems.

Engineers are in control of all the available mechanical systems on the ship. In a Combat situation they are responsible for:

- Power regulation.
- Damage control.
- System upgrades.
- System patching.

**Grunt.** Grunts are the base class. Grunts fill all of the crew roles not provided for by the main roles and are diverse but simple and have no lasting connection with the ship or crew beyond their employment contract. The Grunt's responsibilities include:

- Fire Suppression.
- Medical Care.
- Gunnery.
- Torpedo loading.
- Emergency repairs.
- Sneaking notes.
- Moving all boxes from one side of the room to the other.
- Basically whatever the player might want done.

### **Bolt-Ons**

Bolt-Ons are responsibilities that aren't specifically attached to a role. This means that the responsibility can be handled by a player *in addition* to their currently assigned role, taken on by an NPC crew member that does not currently have a role, or left alone. Each of these methods of crew configuration have their own sets of benefits and drawbacks.

**Comms.** The Comms Bolt-On can be assigned out to a member of the crew to create a dedicated Comms Officer whose responsibilities include:

- Communications
- Scanning/Sensors

**Tactical.** The Tactical Bolt-On can be assigned out to a member of the crew to create a dedicated Tactical Operations Officer whose responsibilities include:

- Battlefield lieutenant
- Internal Security

**Deck Officer.** The Deck Officer Bolt-On can be assigned out to a member of the crew to create a dedicated Deck Officer whose responsibilities include:

- Single-man ship maintenance

Most likely, and proficiently, each Bolt-On duty would be handled by a dedicated officer. However, the commander, for instance, may feel that he wants direct control over Bolt-On responsibilities and therefore could take on a Bolt-On alongside his Role.

### **MIKE NORTHEAST**

I was reading the Cap Ship crew roles and had a couple of comments which mainly relate to the command, tactical and weapons roles. Apologies if this is going over old ground, but it's the first time I've had a real chance to take a look. I feel that, in brief, the roles should be:

- **Command.** Commands including priority target, etc. (unless tactical is told to "fire at will").
- **Tactical.** Weapons ( prioritise targets / fire weapons ) and Shields (buff, etc.).
- **Weapons.** Rolled back into tactical.

My primary concern relates to the Idris having a unique weapons/helm hybrid role. To me it feels like this is making a fair bit more work than is necessary — we would have to design a unique panel for this ship only. My suggestion would be to combine the tactical and weapons roles — sure, this might mean that on a larger ship such as the Bengal the role might be too complex, however on such a large ship perhaps 2 tactical officers may be required (fore and aft for example).

If I'm right, the phalanx weapons are automated turrets designed to repel fighter-class ships/torpedo's, aren't they? If so, I'm unsure why the tactical officer would want to don a VR helm to control these turrets (as they are automated by design). I would imagine that they would simply detect



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enemy fighters within their killzone and fire at will.

- Radar detects enemy fighters — they are added to holomap sphere.
- Tactical activates turrets.
- Turrets are automated — if enemy fighters are within their killzone, fire.
- Tactical may prioritise targets that command has given them.

#### **MICHAEL NORTHEAST**

I've been thinking about the crew stations after the UI meeting last night. CR expressed that he wanted the consoles to have strong 3D elements, which made me re-evaluate how the player might interact with the consoles. I've made a couple of basic mockups for the engineering station based on a suggestion by Tom Johnson that the MobiGlas might be used to interact with the station itself. The hologram and interface on the station might represent overview data, whereas the MobiGlas would be used in AR mode to select components and adjust value in a more precise fashion.

This goes back to what CR was saying about the systems being integrated with each other — the station itself is the high-spec Mac, whereas the MobiGlas is the iPhone that interfaces with it. This suggestion fits in nicely with the current fiction and technology.

#### **MOBIGLAS ENGINEERING INTERFACE**



**ENGINEERING STATION**

#### **TOM JOHNSON**

The idea is more or less paraphrased from something that was mentioned during the meeting summit.

I'm reasonably certain that CR and Behavior plan for players to walk around a ship and hold the MobiGlas over hardpoints to then select something to buy / place there. So essentially, this use of the MobiGlas with the crew station would be a smaller scale of the same concept of 'right-click' functionality by hovering over any given point.

#### **ROBERT IRVING (LEAD DESIGNER, ATX)**

That looks awesome! (And I really like the "always connected" future.)

#### **TOM JOHNSON (PRODUCER, FOUNDRY 42)**

Mathieu, does this line up with what you guys have planned for MobiGlas and room customisation?

#### **MATHIEU BEAULIEU (LEAD, BEHAVIOR)**

Perfectly in synch. The high level design makes sense and uses functionality we plan to build.



# Shields Sidebar

**CHRIS ROBERTS**

Last time we discussed the shields there was some confusion about how they will work. So — what's the current implementation?

In discussing some of the Cap Ship stuff and things you would do at the various stations, we may want to have more functionality / flexibility on cap ship shields than fighter shields — more along the lines of being able to juice the amount of damage (rather than just the recharge) on a shield segment (maybe at the expense of power efficiency / extra heat / having to drop another segment) rather than just the recharge rate.

So maybe we should have the ability to increase the damage a shield can absorb (but with the kind of penalties above). Doing this would reduce the shield damage on other segments (or even require dropping a segment). It would also not be something that could happen quickly — i.e., you would need to reconfigure, re-route power and then it would take some time for new shield segment to “power up” — so by making this choice you have to make some significant tradeoffs as you can't just raise the other segments quickly if you wanted to go back to even power / shield distribution. I would think this set up would be more useful for Cap Ship combat rather than fighter combat (where your facing can change rapidly) and maybe would only be available on bigger / more sophisticated shield generators (like the one on cap ships).

So to sum up you can adjust power distribution for recharge rate OR (on possibly more sophisticated / larger) shield generators also reconfigure the segment power / shield on a per-segment basis, but it is a slower process that has drawbacks (charge up time, etc.).

Thoughts?

**JEFFERY ZHU (PROGRAMMER, ATX)**

Right now you can increase the maximum level on a segment, reducing the maximum on other segments evenly. The segment that is increased has to recharge to the new maximum.

**ROBERT IRVING**

Are capital ships going to have a single large shield that covers the whole surface, or multiple smaller shields?

**CHRIS ROBERTS**

Potentially, multiple shield generators, but even if one generator it would have multiple segments.

**PETE MACKAY (DESIGNER, ATX)**

My approach to the fighter/sub-capital shield design so far has been the following:

Shields have a number of segments (1, 2, 4, 6).

Shield generators have a max SP (shield points) value that is divided equally by the number of segments.

Each segment has a maximum SP value that is higher than the total SP/segments value (the difference between the average and the max is how much each segment can be reinforced).

Reinforcing a segment to its maximum requires that other segments drop below their 'even reinforcement' value.

The more segments a generator has, the fewer SP each segment has, although the total SP is much higher.

Players can throttle their shields up and down at will, just like using a thruster throttle (this maps very neatly to HO-TAS scroll wheels, and to other sticks that have two throttle levers, and I've mapped it to keys in setups without these extra control surfaces).

Throttling up or down adjusts the power consumption of the shield generator on the fly (100 points of shielding might cost 100 points of power and generate 100 points of



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signature, but bringing the throttle back on the shield level will reduce the EM signature generation, power consumption, and heat load from inefficiency).

Shielding costs approximately 1 point of power to 1 point of shielding, modified for efficiency (subject to tuning).

Recharging costs 3 points of power to one point of shielding, modified for efficiency (subject to tuning).

Shields can be boost-charged (akin to afterburners for thrusters or could even be compared to a block button in an RPG). Boost charging costs significantly more power and generates significantly more signature than standard recharge (cost will need to be playtested/tuned).

All generators can be boost-charged, but this feature requires the appropriate SM avionics package (see below).

Shield generators have a maximum (non-boosted) recharge rate. This rate is divided by the number of shield faces currently recharging. If a shield has a recharge rate of 10/s and 2 faces are charging up, each charges at 5/s (this is currently implemented and working in the dogfight demo).

Recharge only begins after a short delay of no incoming damage (currently around .8 s on the default Hornet generator). The more total SP a generator has, the longer this delay will be (this will help balance out some of the really big shield generators on the Constellation, Retaliator and Starfarer). This will not be a Halo-style 'wait 4 seconds to start charging' scenario though. The goal is to find a sweet spot where low per-hit projectiles with high rates of fire can stall the recharge out.

Shields generate EM signature at a rate of  $x:1$  point of SP ( $x$  needs to be figured out to make it slot neatly into the SNR system that we implemented for cross-section).

Shields create heat by consuming power. A 100-point shield with a 1.5 efficiency multiplier will consume 150 points of power. 100 goes to maintaining the shields, the other is dumped overboard as heat load. Charging/boost-charging is subject to the same efficiency multipliers.

To move SP around requires the use of the Shield Management avionics package.

All ships come with a basic SM package.

The lowest tier does not allow for shield reinforcement. Rather, it's a dummy package that just enables the functions of the shield generator (if the SM package is disrupted, so is the function of the shield generator).

Lower tiers only have a few preset shield reinforcement options such as 'front/back/even, front/back/top/bottom/even' and may enable the shield boost-charge feature, depending on model.

Higher tiers allow players to customize exactly the level at which they would like to maintain each shield segment, then save that setting as a custom preset.

Moving SP around requires a segment to charge up to the new maximum (moving SP around for free mitigates the disadvantages of having more overall SP for lower local SP).

We can extend this system to Cap ship shields pretty easily.

This has just been my approach to the design, which I think matches up pretty well with what you've described, Chris. The only major difference that I see is that you were thinking about letting fighters move shield points around without having to charge up to the new level. One of the advantages of multi-segment shields is that they have a much larger total pool of SP, which is offset by a much larger power cost and by reducing the local SP pool for any given segment. If players can move SP from segment to segment at will, then I think this might remove an important balance mechanic.

The big question for me is shield pierce-ability, which I don't have a solid grip on. This was one of the primary topics that I wanted to work out with Paul while I was in LA, but with the demo crunch, got pushed to the back burner.

Let me know what you think and I'll revise as necessary!

**CHRIS ROBERTS**

This works for me.



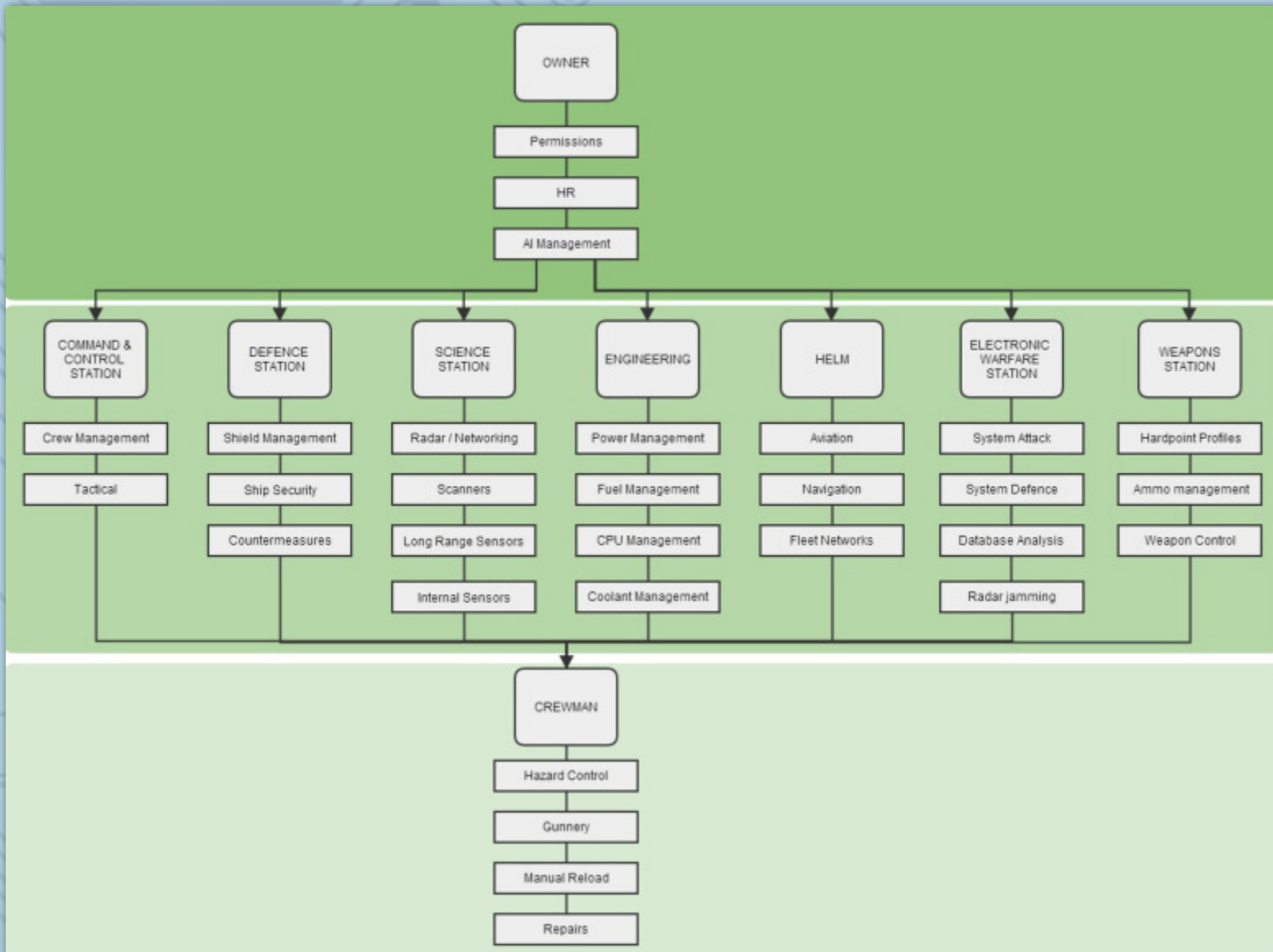
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**MIKE NORTHEAST**

Based on the feedback here's a new overview:

Possible issues:

- Countermeasure ( Defence ) and Weapons may try to do the same job?
- Radar jamming should be Electronic Warfare ( needs a better name ) or Science?
- Ship security ( open/close doors, etc.) to Defence or Command/Control?



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#### WHAT IS YOUR NAME?

Mike Northeast

#### WHAT IS YOUR QUEST?

To find the Holy Grail!

I've been a designer in the industry for about 10 years now, working on everything from third-person action games to LEGO titles. I was with Erin, Phil and Nick in my last position so I was deeply honoured when they wanted me on board for *Squadron 42*. The concept of working alongside the community to create the best game possible also appeals to me and it's a tool that already has produced results. For example when WIP on the Idris frigate deck plan was released in a previous Jump Point I spent the weekend scouring through comments and feedback on the forums.

#### WHAT IS YOUR FAVOURITE COLOUR?

Black — my wardrobe look like the Nights Watch are staying over for the weekend. In my spare time I'm an avid table-top gamer and traditional RPG fanatic. I love to GM and my last campaign used the fantastic *Firefly* RPG rules. Sadly, I don't have a lot of time to play at the moment but, rest assured, I'm still looking at ways to sneak dice rolls into *Squadron 42*. I also like to read, play piano and have an unhealthy interest in MMO design (another reason why being part of *Star Citizen* is amazing!) I'd like to shout out to my long-suffering fiancée, Zoe who has stayed by my side through some epic crunch times. We get married on August 24th.

#### MIKE NORTHEAST

We are trying to lock down the systems needed on a cap ship. This is the list so far — we may be able to condense these down to fewer or expand some into their own systems. If you think any need adding/removing etc let me know.

- Shield Generators (generate Shields)
- Comms Array (communications, scramble signal)
- Sensor Array (info & detect)
- Engines (speed)
- Thrusters (manoeuvrability)
- Power Plant (reactor — provides power)
- Batteries/Capacitors (supplement the reactors)
- Hardpoints (weapons, tractor beams, etc.)
- Quantum Drive (powers the quantum drive)
- Jump Drive (powers the jump drive)
- Coolant Pump (pumps coolant)
- Main Computer (crew stations)
- Life Support (lights, lifts, doors)
- Gravity

#### DAVID LADYMAN (ROOKIE DESIGNER, ATX)

- Should Nav (determines where we're going) be a separate system from Engines, Thrusters and Drives?
- Typically, there's a Repair/Damage Control system, isn't there? (but this list of systems may just be for combat, in which time might be too short for any significant repairs to be made)
- Similarly: medical facilities
- Does there need to be a separate system that determines where your onboard manpower is deployed? (missile room, repairs, repelling boarders, the flight line, etc.)
- Drones, guided missiles (if these will be in the game)



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## MIKE NORTHEAST

I think I've confused people a bit here. By "ship systems" I was referring to critical components of the ship, i.e., the actual shield generators or power reactors. Primarily they are components which, for example, the engineer can modify the power levels of. Perhaps I will refer to them as "Ship Components" from now on ;)

Additional to the ship systems will be "seat actions." These make up all the player abilities on the ship. For example, a "medical" seat action would give the player the ability to heal themselves or others via a prompt.

So in answer to your queries:

- *Should Nav be separate from Engines and Drives?*  
I imagined the Nav "software" to be part of the main computer component, which provide data to the helm station. The player then uses a seat action to plot waypoints and jumps, etc.
- *Typically, there's a Repair/Damage Control system.*  
Hazard Control could indeed be added as a separate component, or we might consider that system passive. I originally thought that the ship's internal sensors (part of the sensor array component) would be capable of detecting a fire/breach, etc.
- *Similarly: medical facilities*  
There will be an individual seat action for these which are attached to medical beds.
- *Does there need to be a separate system that determines where your onboard manpower is deployed?*  
This is part of the Command & Control seat action set.
- *Drones, guided missiles?*  
Part of the "Weapons" seat action set.

## TRAVIS DAY, ASSOCIATE PRODUCER, LA (WITH RESPONSES FROM MIKE)

- *Turrets*  
Each turret will have a seat action, much as we have now.

- *Placement of the actual computers/units that drive the station consoles. I.e., Avionics computers, targeting computers, power management computers, etc.*  
I was thinking of using a "main computer" that manages all the above "software." However, CPU power priority can be given to these stations, allowing some actions to be performed faster than others. So if the navigation seat has been given more priority than weapons, the ship will be able to plot a jump faster (for example) but might target slower.
- *Fuel tanks — both where the ship's fuel is stored and also any fuel to be used for refueling other ships.*  
Fuel storage should be a consideration of ship design. Do we want players to refuel other players?
- *Cargo control & ingress/egress, both in space & landed.*  
Cargo and flight control are seat actions, although I'm keeping these separate from the "bridge crew" stations at the moment, i.e., the ones used primarily for combat.
- *Hangar bay and ship placement/storage, if any.*  
Definitely something that should be added to the ship building checklist, if it hasn't been already.
- *Onboard repair capability, ability to repair other ships.*  
We are looking into onboard repairs. I would have thought that to repair a ship you have to be part of the crew — I imagine this to be like forming a group in any MMO. If a player wants to help repair another ship, he would have to temporarily join that ship's crew. This feels like the cleanest method.
- *Airlock control system for people-sized hatches and larger ship/cargo hatches.*  
This is a seat action attached to the panel interface.
- *Damage control systems for locking off sectors of the ship that are on-fire, venting atmosphere, etc.*  
Part of the "Ship Security" set of seat actions.
- *Missile/Torpedo racking/loading system. (Maybe this is done with a weapon control or fire control station.)*  
Currently these must be reloaded manually and will be a seat action.



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# Crew Stations & Seat Actions (Current Status)

MIKE NORTHEAST

**Crew Stations** are consoles that players use to manage and control a cap ship's numerous systems.

**Seat actions** are the equivalent of software programs installed at each Crew Station. Each seat action performs a certain task, such as shield management or weapons control; to run a ship efficiently, the players must communicate. Each station is capable of one or more tasks — for example, a player (usually the "Captain" of the ship) can assign three tasks to a single station or spread the three tasks over three stations, depending on the size of the ship and how many PC crew members there are. Each task is called a "Seat Action" and I'll list our current seat actions below. We are currently looking at four variations of ship stations:

**Command and Control (BattleSphere).** The main Command and Control stations on the ship, used primarily by the Captain or EXO — usually on the bridge. This is a large holographic sphere of the ship's surrounding area and allows the user to get an overview of the tactical battlefield and command ships in the vicinity. C&C stations include:

**Fleet Management.** This seat manage the ships under the player's command — sending orders, etc.

**Ship and Crew Management.** This manages the ship's crew — sending orders, etc., but also has the ability to shut and lock doors, etc., when there is a hostile boarding party.

**Standard panel.** This is the most versatile station and the most common station on the ship. These are mostly found on the bridge. Standard seats include:

**Weapons Control.** This seat action is primarily for managing AI turrets and weapons banks on the ship. Often, the player using the Command and Control station will highlight a target that it wishes to prioritise, etc.

**Shield Management.** As its name suggests, this seat action is strictly for managing the ship's shield (multiple

generators, etc.).

**Radar/Scanners/Long-Range Sensors.** This seat action allows the player to monitor surrounding space, adding targets to the map so that the tactical and weapons officers can use them in battle. This seat action is also useful for getting more granular details about a target through scanning.

**Comms.** This seat action is used to communicate with both friendly and enemy ships/objects.

**Countermeasures.** This seat manages the numerous countermeasures on the ship, such as chaff and flares.

**Hacking.** The Hacking seat action allows the player to compromise enemy systems, taking them offline and making them more vulnerable.

**Helm station.** This is similar to the standard console, but with manual HOTAS and joystick controls. The Helm station also sits in front of a very large screen that acts as a "reality enhancer," showing additional information when viewed, like the HUD on a fighter. Helm seats include:

**Navigation.** This seat allows the player to set waypoints and destinations.

**Aviation.** This seat action gives more precise control over the ship's movement, such as being able to rotate precisely 10°.

**Engineering station.** A more rugged station that sits in the engineering power plant room and allows a player to manage power to ship's systems, etc. The player stands at this console, giving it a smaller profile that allows it to fit into more cramped spaces. Engineering seats include:

**Power management.** This allows the player to manage power to all the ship's systems and the heat they produce. This includes the power required by all other ships systems.

**Fuel management.** This seat manages which tanks are currently in use and which are recharging.

**CPU management.** The player can prioritise some stations over others in terms of CPU cycles. These stations would then perform tasks faster than lower-priority stations.

**Overclocking.** This is a station for overclocking systems, much like the workbench.



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## List of Stations & Seat Actions

There are four physical crew station assets:

**BattleSphere:** A large globe used for command and control

**Engineer's Station:** A station where the user stands at the panel.

**Standard Panel:** A station where the player sits down. Usually on the bridge.

**Helm Station:** Adds a joystick and HOTAS to the standard panel.

Crew stations follow these rules:

Each station is capable of running a number of seat actions (tasks).

The player can configure the stations to use as many seat actions as they like (up to the maximum - TBC)

The player can remove all seat actions from a station rendering it inert.

Seat actions specific to a station of a single type cannot be shared with a station of a different type.

### C&C (BattleSphere)

#### FLEET MANAGEMENT

Group Ships

- o Create group
- o Add to group
- o Remove from group
- o Delete group

Send Order to ship/group

- o Move
- o Attack
- o Defend
- o Investigate
- o Hide

Monitor weapons

Monitor shields

Monitor power

Monitor targets

#### SHIP & CREW MANAGEMENT

Group Crew

- o Create group
- o Add to group
- o Remove from group
- o Delete group

Send Order to ship/group

- o Move
- o Defend
- o Man post
- o Abandon post
- o Repair

Set crew security level

Manage ship objects

- o Set security level by group
- o Set security level by object
- o Set Permissions by group
- o Set Permission by object
  - Doors
  - Lights

- Airlocks / docking points
- Vents / hatches
- Lifts
- Escape pods
- Crew stations
- Player Storage

### Standard Panel

#### WEAPONS CONTROL: Manage & fire weapons

Group weapons

- o Create group
- o Add to group
- o Remove from group
- o Delete group

Weapon and Target Management

- o View information
  - View weapon info
  - View target info
  - Compare weapon vs target
  - Change power to weapon
  - Request power to weapon
- o Missile loading queue

#### SHIELD MANAGEMENT: Manage shield generators & segments

Group Segments

- o Create group
- o Add to group
- o Remove from group
- o Delete group



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#### Manage All shields segments

- o Equalise all
- o Prioritise fore / aft / port / starboard / upper / lower
- o Reinforce fore / aft / port / starboard / upper / lower

#### Manage Shield Generators

- o Reinforce Segments
- o Equalise Segments
- o Choose recharge/SP ratio
- o Boost regen
- o Change power level
- o Request power level

#### Manage Grouped Segments

- o Reinforce Segments
- o Equalise Segments
- o Add segment
- o Remove Segment
- o Delete group

#### Manage Single Segment

- o Reinforce
- o Add to group
- o Remove group

#### **RADAR/SCANNING/LONG-RANGE SENSORS: Monitor radar and add targets to the BattleSphere**

##### Change radar focus

- o Omni
- o 90
- o 45

- o 20

- o 10

#### Monitor Long Range Sensors

##### Scan targets

- o Combat details
- o System details
- o Cargo
- o Mining
- o Mobile jump point

##### Manage power to long range scanners, radar and scanners

##### Request power to long range scanners, radar and scanners

#### **COMMS: Manage communication between ships, both AI and Players**

##### Manage channels

- o Open channel — transmit
- o Open channel — receive
- o Close channel
- o Add recipient to channel
- o Remove recipient from group

##### Automated response

- o Distress call
- o Docking request

#### **COUNTERMEASURES: Manage and fire countermeasures**

##### Group countermeasures

- o Create group
- o Add to group
- o Remove from group

- o Delete group

#### Countermeasure Management

- o View information
  - View CM info
  - View Incoming info
  - Compare CM vs incoming ordnance

#### **HACKING: Shut down enemy seat actions**

##### Hacking offence

##### Hacking defence

#### **Helm Station**

#### **NAVIGATION: Creating routes for the pilot or autopilot to follow**

##### Create Route

- o Add waypoint
- o Remove waypoint
- o Modify Waypoint
  - Speed
  - Time / Fuel

##### Manage Route

- o Set Default Condition
  - Average time/fuel
  - Most Fuel Efficient
  - Least time
- o Set Route
- o Clear Route
- o Save Route



## AVIATION: Steering the ship

### Set Heading

- o Set Yaw / Pitch / Roll
  - Increment
  - Absolute
  - Estimated

### Set Speed

- o Set Main Thrust / Velocity
- o Set Preset Speed
  - Full
  - 75%
  - 50%
  - 25%
  - Stop
  - Reverse
  - Match Speed
- o Set Decoupled
  - Strafe left
  - Strafe right
  - Strafe up
  - Strafe Down

### Automated Commands

- o Activate Quantum Drive
- o Activate Jump Point
- o Request Dock
- o Autopilot

### Manage Power

- o View engine status

- o Set Thrusters / Manoeuvrability thruster ratio
- o Request Power

## Engineer's Station

### POWER MANAGEMENT

#### Group Systems

- o Create group
- o Add to group
- o Remove from group
- o Delete group

#### Change power levels to group

- o Manage heat levels

#### Change power level to system

- o Manage heat levels

#### Change power status to group / system

- o Off
- o Standby
- o On

#### Reroute power

### FUEL MANAGEMENT

#### Switch tank currently in use

#### Switch tank currently using scoops

#### Refuel

### CPU MANAGEMENT

#### Assign CPU cycles to seat actions

### OVERCLOCKING

#### Overclock ship systems and weapons

## Other Design Considerations

**UI Structure.** The theory behind the UI is to be able to share as much interface between the different seat actions as possible.

**Unique.** Each type of crew station has a unique interface.

**3D Hologram & View Control Interface.** Each seat action has a default 3D hologram view. The player can also change the hologram to one of the following using the View Control interface:

- o Star map
- o Long range
- o Tactical
- o Short range
- o Ship exterior
- o Ship interior

**Shared UI.** Shared UI are tables and additional information that can be brought up in any seat action by pressing a key.

- o Targets
- o Weapons
- o Systems
- o Crew list
- o Shields



BEHIND THE SCENES





# TARANIS SYSTEM BETHOR



The rocky heart of the frontier! Taranis is best known as one of the systems of Kellar's Run, and it allows transport crews a way to avoid transit through the pirate warrens of the Nexus System. It's a questionable bargain, though. Taranis' is free of all the most brazen pirates for a good reason: a pair of extremely dense asteroid belts that must be traversed to travel from one jump point to another. The asteroid and lunar debris fields of the Taranis system have proven an early graveyard for many pilots who did not have the skill to negotiate such hazards.

Taranis itself is an A Type Main Sequence star, blue-white in appearance. It was discovered in 2401 by the famed UEN survey ship *Mythic Horizon*. Taranis' discovery was routine, done almost in passing. The system was considered non-viable at the time, with only a single high-risk candidate for terraforming. Further, the star's location offered no visible

strategic advantage at the time and the raw resources were rated as low-to-middling. The system's initial exploration was the site of a minor tragedy: one of *Mythic Horizon's* survey boats was lost with all hands in a meteor strike. A plaque located near the landing zone on Taranis III eulogizes them as noble sacrifices to mankind's expansion.

Taranis has also recently entered the popular culture because of its role in Original Systems' *Arena Commander*. The "Broken Moon of Taranis" map is one of two included in the massively popular simulator's public demo. The setting pits players against one another in the debris field near

**TRAVEL WARNING** Visitors to Taranis should be extremely cautious; transit through the system should be attempted only by top pilots and ship crews who are prepared with asteroid depth maps.



Taranis II. Hornet, Aurora and 300i pilots dodge both flying rocks and massive pulsating terraformers as they fight it out in an ultra-realistic battle royale. The choice of Taranis in *Arena Commander* has even lead to increased (and very dangerous) tourism in the system, as self-titled "Arena Nuts" travel from far and wide to have their holographs taken in front of the lunar remnants.

## TARANIS I

The first planet in the Taranis system is a typical sun-kissed inner dwarf, too hot for Human settlement, totally lacking in atmosphere and largely devoid of minerals or other interesting resources. The planetoid was the source of an unusual incident in the mid-25th century: a review of the initial survey data (radar scanning, interferometry and long-range imaging) produced an image with what looked distinctly like a Human face superimposed on the planet's north polar region. The so-called "Face of Taranis" was a brief cultural craze on Earth and ultimately inspired a privately funded expedition to the world to confirm that the picture was simply a mountain range photographed from an unusual position. Conspiracy theorists continue to insist that the government is covering up evidence of an alien civilization living there (despite the ready proof that sentient species exist throughout the galaxy today).

## TARANIS II & ASTEROID BELT

Now best known as the site of the "broken moon," Taranis II was (like so many other planets) a victim of the gung-ho terraforming craze of the Messer era. A coreless world just inside the system's green band, Taranis II was initially classified as a poor choice for terraformation and colonization. But with a government more concerned with 'we can' than 'we should,' Taranis became one of dozens of worlds to be wrecked by a terraforming blunder. In this case, the issue

was laid squarely at the foot of CRABSOS Inc., the cheap geo-development outfit assigned to process the world. Standard operating procedure at the time for terraforming a coreless planet was to harness the energy in orbiting moons. In the case of Taranis II, substandard parts and near-slave-labor meant that CRABSOS managed to crack the mantle of Taranis' small moon, splitting it into a million dangerous chunks. In addition to a deadly debris field that will continue to strike the planet for hundreds of years, the process super-ignited the terraforming machinery in orbit. Several of the stacks continue to burn unabated to this day, further rendering the surface of the planet worthless slag.

Beyond Taranis II and its former moon is an extremely dense asteroid belt which must be traversed to pass the system. While it is a hazard to navigation, the First Taranis Belt is not particularly mineral-rich and very few mining claims have ever been placed on it. The best-of-the-best smugglers consider it to be a good place to hide, and the occasional top level pirate will set up an ambush point in the belt, but even these types frequently find themselves the victim of rock strikes.

## TARANIS III & ASTEROID BELT

Taranis III is a smoggy, stormy world located on the edge of the system's habitable zone. The planet's constant storms are the origin of the system's name (Taranis, Celtic God of Thunder). The planet lacks a Human-breathable atmo-

### MARKET DEALS — BETHOR

BUY: NARCOTICS	+1
BUY: UNREFINED ORE	+1
SELL: BASIC FOODSTUFFS	+3
SELL: ELECTRONICS	+1





sphere, but has nonetheless become the site of Human settlement. Bethor research station, established in 2436 to study weather control techniques, has organically expanded over the centuries to become a full-fledged settlement of Tevarin refugees and Human ex-pats. The initial corporate owners are long gone, and Bethor is now rumored to be in the control of a syndicate or similar quasi-organization, although they keep their activities obscured from visitors.

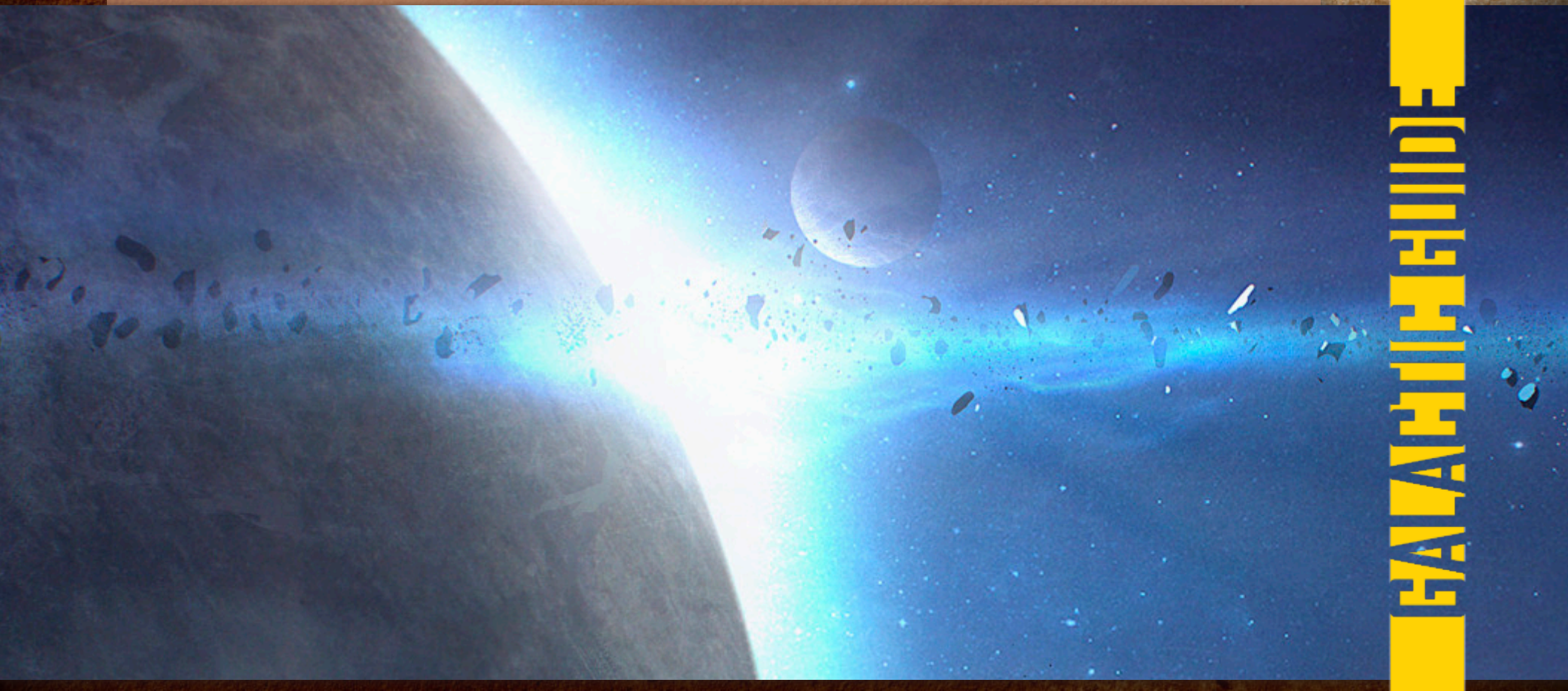
The second Taranis Belt is located past Taranis III. It is similar to the inner belt, but less dense with a number of safe approach vectors (to the point of making transit to Taranis III slightly less dangerous than crossing the system). In 2930, the Bengal-class carrier *Indomitable* famously suffered extensive damage trying to move through Second Taranis in pursuit of a pirate Q-ship.

## TARANIS IV

Taranis IV is a mid-sized gas giant consisting of hydrogen and helium. It is located within spitting distance of one of the system's jump points and is an occasional stopover for ships equipped to refine their own fuel. Such stopovers are few and far between, though: it is rare that anyone would have arrived in the Taranis System without adequate fuel in the first place, and beyond this it is entirely unremarkable. No orbiting station has ever been established.



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# Lost & Found

by Charles Duncan

## Part 1

“You know, this is beginning to border on obsessive behavior, don’t you?” Jonas Stark leaned back in chair and sighed at his crewman. “I mean it, Oskar; you really need to let this go.”

Oskar Gruber sat upright across the desk from Stark. “I understand your feelings on the matter, sir. But with all due respect, I don’t think you have a proper outlook on the situation.”

“Oh, I understand it perfectly well. We find a derelict ship with a dead man onboard, we claim it as legal salvage, we sell it, and then the situation is resolved.”

“You really don’t care at all about why it’s there, why he was out so far from everyone else? Why the ship seems so different?”

“No, Mr. Gruber, I don’t care and neither should you. We’re a salvage operation. We’ve got a clear find, it’s legal, and no

one is questioning it. It’s a Cutlass, not some Xi’An ship. Nobody cares. They’re a deci-credit a dozen. This is not some miraculous find of the century you seem to want it to be.”

“Fine then, sir. If that is your position, I won’t try to change your mind.”

“Good.” Stark leaned forward. “Then I trust this issue is closed.”

“Not quite, sir. I want to buy it.”

Stark laughed. “Buy it? What for?”

“As you said sir, it’s a clear find, it’s legal, and we’re a salvage operation, not a merchant shipper. We’re just going to sell it anyway, so I would like to buy it.”

Stark laughed at Gruber again. “And what do you plan to buy it with? Technical expertise? Good looks and charm?” he scoffed. “I know how much you make, remember.”



Gruber turned red, but his face remained resolute. “I’ve invested my mustering out pay well, thank you very much. But it’s really none of your concern, sir. I’ll pay fair market value for it. As you said, it’s just a Cutlass.”

Stark looked at Gruber intently and then shook his head. “Fine, Gruber. Do what you want.” He waved his hand towards the door. “Go see Maureen at disbursing. Buy the blasted ship. It’s your money.”

Gruber stood up. “Thank you, sir.”

Stark waved his hand towards the door again. “Just go. And I don’t want to hear about it again.”

Gruber nodded and left the captain’s office.

An hour later, Oskar Gruber was the owner of the Cutlass *Outbound Light*. The necessary registration regulations were all met, taxes paid, legal obligations resolved, and his savings severely reduced. He only had one task left to do. He steeled himself and walked back into the captain’s office.

Stark looked up from his desk. “Again, Gruber? Don’t you have something useful to do besides bother me?” He gestured to the MobiGlas displays set up. “I do have a business to run here, you know. Maureen already told me that you paid for that old ship.”

Gruber straightened his shoulders. “I’m very aware of that, sir. I just wanted to let you know personally. I quit.”

Gruber turned his back on the stunned face of Jonas Stark and walked out.

Oskar Gruber sat in the empty cargo hold of the *Outbound Light*. He was shaking slightly. He might have been a little rash in quitting his job. But it was the right thing; he knew it was the right thing to do. He still had some money. And despite what Jonas Stark might think or say, this ship was special. Gruber could feel it. More importantly, Gruber knew what the captain didn’t. Gruber knew about the specs for this ship.

And Gruber knew about the locket.

\* \* \*

They had found the ship two months earlier. It was in orbit around a particularly large asteroid, in a particularly large field, in a particularly remote system. Gruber wasn’t involved in the planning of the operations the salvage company did (he had been part of the operating crews) so he was not sure exactly why they had come out this far from their normal areas. He had rumors of some hush-hush operations the UEE was doing against the Xi’An. Maybe the captain had thought there would be some opportunity to get some military salvage. That always paid well. But in the end, they had found a few sub-standard mineral deposits and the one Cutlass.

The ship had been a victim of one of those rare accidents out in space: a meteor had hit the cockpit, and the ship suffered instant depressurization. The owner hadn’t been in a suit at the time; Gruber was told that the results had not been pretty, although he himself had not seen the remains. He had been part of the crew that went in to do the field repairs and get the ship functional. He had only been on board for a few minutes before he began to have a strange suspicion that something was off with the ship. It didn’t feel right. The other two members of the crew decided that he was just being superstitious; after all, someone had died on board.

But that wasn’t it. Gruber was one of the company’s relative “experts” on Drake ships. When he had entered the ship through the docking collar and looked around, something began to nag at the back of his mind. Like almost all Cutlass ships, this one had been modified by its owner. The hold wasn’t even set up for cargo anymore; it was more like a small living space. It was still cramped, but whoever had set it up did so with some regard for comfort. It wasn’t until they had towed it back that he finally realized what had been bothering him. The walls of the cargo hold were round. Very round. But Gruber knew that Cutlasses weren’t



CHRONICLES



built like that. The others on the team were quick to point out that the ship had been modified and repaired several times; all the signs of that were obvious. Gruber didn't disagree with them, but neither could he convince them that this was something more than just a modification. The ship had been built with the rounded hold. He knew enough of ship engineering to know that it would have taken a massive modification to retrofit the hull that way.

He started taking measurements on the ship, noting subtle differences in layouts of the front wings, how the landing gear seemed more to tuck under than inside. Everyone still scoffed; it was a modified Cutlass, certainly not the discovery of the millennium. He had almost convinced himself that it really was nothing more than a modified Cutlass. Gruber had always been a technophile; anything new about a ship always excited him. He supposed he had picked up that trait while he was in the Navy. Going over a ship in minute detail could find a problem on the flight deck before it killed you out in space. But when he found the locket, his attitude changed from simple technical curiosity. He had been tracing out some of the power routing lines (certainly not the standard layout) when he discovered an installed junction box that had no connections. When he opened the junction box, he found a small golden locket on a fine chain. He picked it up; the weight alone told him it was real gold. When he opened the locket, he found a small engraving: "*To dreams unfulfilled, and to dreams realized.*" This wasn't something someone had lost or misplaced. It was in the box deliberately. Someone had put it there for a reason. Gruber gripped the locket tightly in his hand. During his career in the Navy, he had been an RIO flying on Gladiator bombers. He had seen little charms like these. The flight crews used to add things to ship, totally against regulations of course. Starmen can be a superstitious lot. Little good luck charms would find their way into cockpits, bomb bays and gunner stations. Gruber's partner, Lt. John Velnova, had kept a small, crudely sculpted statue of a cat hanging from the portside interface. Johnnie's son had

made it for his father, and the pilot often talked about the lucky charm becoming a family heirloom when he got home. Gruber had his own lucky charm, a certain hologram of excellent quality but questionable taste of a popular actress. During their last campaign, neither one of the charms proved to be lucky when their bomber was shot to pieces. The one difference was that Gruber spent days in medical recovery and then shipped home. Velnova never recovered. Gruber didn't like to remember those days, what little he could of them. He looked down at his closed fist. At that moment, he promised himself that this one would make it home.

\* \* \*

Gruber sat in the cockpit of his newly purchased Cutlass. He had been deliberating several days over his best course of action. As he sat there, he fidgeted around with the controls, nervously looking over the readouts. He didn't want to have to contact Michaels, but he also didn't know much in the way of options about it. If he wanted to know more about where the ship came from, Michaels would be the one who could tell him. Gruber activated the comms unit and called UEE Customs. He tried to smile when Michaels' face appeared on the screen.

"Oskar! It's been a long time. How are you?"

"I'm fine, Serge. How's the life of an inspector?"

"Oh, it's the same as always. Boring reports following exhilarating boarding actions." Michaels chuckled. "I hear you're starting a new profession."

Gruber grimaced. "Stark told you?"

"Well, he might have mentioned something about you buying a ship. And quitting. I believe the words *insane*, *obsessed*, and *damned stupid* might have been used."

"Well, we don't exactly have the same opinion regarding my career choices."

"So I could guess. And speaking of guessing, I bet you've called to ask me a favor."



CHRONICLES



"I just need some information on the history of this ship I bought. The previous owner was named Gregori Zharkov. It was registered out of Quinton; I've got the registration numbers and the ship I.D. codes."

"Oskar, you know that could be considered a breach of confidentiality if I were to tell you anything about it."

"The owner's dead, Serge. I'm just . . . trying to establish the legitimacy of my purchase. You know . . . make sure it wasn't stolen. Or something."

"And this has nothing to do with some kind of crazy idea that this ship is extraordinary? Stark was saying that you kept bugging him and the whole crew with some wacked-out ideas that the ship was unusual."

"Dammit Serge, I'm not crazy. There is something different about this ship. I just want to find out more about it."

"Different? What do you mean different? What did you find?"

"Well. The docking collar, for instance."

"The docking collar is unusual?"

"It's 5 centimeters off the center beam of the ship."

Michaels' face looked disbelieving. "And that's the kind of thing you're getting all wound up about?"

Gruber thought about trying to explain how the Cutlass class was a mass-produced ship; the manufacturing process was always the same. How reconfiguring the frame of the hull in order to move the position of the docking collar was a massive undertaking. Michaels wouldn't care about those kind of details though. The thought of mentioning the locket entered Gruber's mind and just as swiftly left. He would rather Michaels think him merely obsessed than get into that discussion.

"Look, it's a simple request, Serge. Are you going to help me or not?"

Michaels sighed. "If you weren't family, I would have already terminated this call."

Gruber's face brightened. "But I am family." He smiled.

"Send me the information you have on the ship and give me a few days. I'll see what I can find out. And you owe me."

"I know. I appreciate it."

"And call your aunt for her birthday. I'm tired of hearing her complain."

"I will."

Gruber leaned back in the pilot's chair as the comm unit went dark. After a few moments, he got up and walked back out of the cockpit towards the cargo hold. He thought about what he would need to send to Serge; probably it was best to just send the registration information the salvage company had managed to get on the ship and its former owner. It wasn't much, but Gruber knew that would start the trail that Serge could follow. Serge was very good at ferreting out information; after all, his job was tracking down ships and shipments.

Gruber thought about what he knew about the ship. It wasn't a lot, but he had a few details. The salvage report listed it as an "exploration" ship, but that wasn't really the truth. Oh, it had been outfitted for extended runs into space. The jump drive was a clear aftermarket modification. The upper turret had all the weapons removed and replaced with a fairly sophisticated sensor suite. But Gruber had read through the previous captain's logbook. He knew there were more to the modifications than just exploration aids. He walked over to a small workstation that been installed on the port side of the cargo hold. He brought up a display of the logbook and reread one of the entries.

*Xander thinks I'm crazy but let me buy out his share of the company anyway. Honestly, at this point I don't care what Xander or anyone else thinks. I've been tinkering with this boat for a long time now. The last refit is complete. The way I calculate it, I can stay out for the better part of year now and never even have to dock if I don't*



CHRONICLES



want to. With the profits from the mineral rights in that asteroid belt, and the finder's fees from the anomaly, money isn't going to be an issue. I think that's what scares Xander about this whole idea. He's young still, hungry for fortune and glory. I'm not anymore. I just want to get away. I changed the charter for the company. Technically, it's a merchant exploration business now. But everyone knows that exploration isn't really the point. I just want to get away. I want freedom again.

That's what the ship is to me: freedom. I don't have to go anywhere I don't want to go; I don't even need to get off board. Oh it's not the best of living conditions, but I've seen hab blocks on some of those frontier planets. The accommodations I've got on board look like a paradise compared to some of the places people back into just to survive. It's better I go alone. I think I could rig things up to support two people living on board, but who would go? Xander certainly wouldn't. Even if I had the room, I wouldn't want him along. We've done enough cargo runs together that the thought of being trapped in a hull with him for months on end would be enough to actually drive me crazy.

Gruber could understand Zharkov's sentiments. He sat at the workstation and gathered up what information he thought would help track down the history of the ship, and sent it to Michaels. As he sat there, he began to get that feeling again that something was off. He stared across the cargo hold for several minutes then picked up a data slate and laser measure. He walked thoughtfully across the hold towards the cockpit and stopped by the bulkhead door. He took a few measurements and then added a note to the list on the data slate. "Port jump seat is 50 cm further from cargo door." He nodded to himself and went back to the workstation. It probably was obsessing over minor details, but it kept his mind occupied.

Gruber had done a search of the ship's computer and the logbook. There had been no mention of the locket that the computer could find. Nor did the logbook tell him where Gre-

gori Zharkov had gotten the ship. But there were hints about what Zharkov had done to modify it. As Gruber continue to read through the entries, an earlier one caught his attention.

*I knew the ship was unarmed when I bought it. That's not really an issue; I'm not trained for heavy weaponry anyway. But I'm guessing it might have had some serious hardware on it before. Someone's come through and stripped it down; they did a quick and dirty job of it too. The front pods have got pretty crude cuts where the mounting points were removed. And I'll have to have the whole upper turret assembly rebuilt. They cut every power line going into it and I think the control system has pretty much seized up. Now that I think about it, that gives me an idea. The maneuvering system is still intact and functional. Pretty good one too; the little bit of flight time I was able to get showed me that. I wonder if I could get one of the new AS sensor suites? They're supposed to be fairly compact. I could wire in the sensor pod instead of weapons on the turret. Use the maneuverability of the ship to position for scanning. And use it to get out quick if the scanners show me something I don't want to see. It will take a while to get this, between the next two runs and that excavation we're slated to do in Odin. But it's definitely something to look into.*

*I know a lot of people don't have too high an opinion of the Cutlass. Hell, I bought this just because it was cheap and could be used for parts if nothing else. But now that I've had a chance to go over it, I think I may have been hearing the wrong things about it. Oh this one's not pretty, and it's not state of the art. It's been gutted, clearly beat up, and not maintained. But it's still space-worthy. It says a lot about a ship if it can take that kind of abuse and neglect and keep going. A ship that could take all that; now that's a ship you could trust when it's just you and the void. I think I'll go pay a visit to Ravvie over at the yards. He and I haven't had a good talk in a while. Maybe that plan I had to use a 'Lancer needs to be changed.*



CHRONICLES



Gruber tried to imagine what the ship had been like when Zharkov first encountered it. The entries gave him a good feel for how the ship must have been: gutted, basically, little more than a hull. Whatever had happened to it, crews had been over it removing parts. Gruber looked around the hold. He stood up and began walking towards the cockpit. On second thought, he turned and strode towards the stern of the ship, lowered the cargo ramp, and walked outside. He paced around the exterior of the ship. As he walked, he thought to himself of the notes made in the journal. He could see some of the weld and cut marks where the ship's systems had been rebuilt, but on the whole Zharkov had done an excellent job in repairing the ship. It wasn't factory, by any means, but most Cutlasses didn't last a month without customization for a specific purpose anyway. It was part of the allure of the ship, emphasized by Drake Interplanetary. Well, that and the cost, he thought to himself. As Gruber continued to circle the ship, his hand reached out and began to run along the outer skin of the hull. It was a good ship, and no matter what Stark or Michaels thought, or anyone else for that matter, he knew it was special.

Gruber spent the next two days waiting for Michaels to contact him. He stayed at the ship the whole time, going over it, making sure it was space-worthy. In truth, Zharkov's logs had gotten to him. The inside of the *Outbound Light* was small and cramped, but it was comfortable. His own apartment, a small two-room affair in the middle of a habitat near the spaceport, wasn't so grand. Staying onboard the ship seemed more like "home" than home did.

While he waited, he spent more time reading through the log. Most of it was bland; entries about planning routes, sensor scan data, a few on-loads of fuel or supplies. At times though, Zharkov had written more than just simple sentences. Gruber found another entry that piqued his interest.

*The quantum drive is total slag. Ravvie did an inspection on*

*it. He says it's worthless, and I agree. It doesn't seem to have been much to begin with. Honestly, it almost seems underpowered for the ship. It certainly couldn't have been used for much range. It's not the standard drive, or so Ravvie tells me. But whatever it is, it's got to be replaced. If I keep on with this hare-brained scheme, I'll need to make sure the drives are better suited to my needs. No good trying to be an explorer if you can't get beyond what everyone knows anyway. It will take a bit of doing, and probably a good bit of money as well, but I think I could have it jump-capable within six months. Maybe longer. Depends on how the market does the next few weeks.*

*The more time I spend working on the ship, though, the better I feel. I haven't felt this good in a long time. It's nice to take something that has potential and watch that potential become reality. Xander mentioned that he thought I was going to buy a Freelancer. I haven't bothered to correct him yet. No doubt he would come up with a thousand reasons why it was a bad idea to refit a Cutlass for this kind of work. He did the same thing when I mentioned the Freelancer. I bet I could hand him the keys to his very own Idris, and all he would do is complain about the docking fees.*

*It is strange about the quantum drive though. I'm not sure what had to happen to overload it like that. Even with it being a bit underpowered, it shouldn't have melted. And trying to find a replacement is looking harder and harder. I know there have been a few variants of the Cutlass made over the years, but I can't seem to find out exactly which model this is. Doesn't match up with the spec sheets that Drake puts out, and the Thorn's manuals haven't been much help either. Still, this old girl has been through a lot. I can tell that much just by looking at her. Modifications all over the place. I guess it really doesn't matter now what she started out as. She's my ship now, and I'll get her running like a charm. And she'll need a name. A good name. Something worthy of an old man's dream.*



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Gruber wished he could have had the chance to talk with Zharkov about the ship. In a way, reading the man's logs gave Gruber some insight into how he thought and what he had been like. But it wasn't the same as actually sitting down and talking with him. Gruber's own investigation into the ship's systems had shown him that whatever damage had been present initially was totally repaired. He knew the jump drive was functional now; that's how they got the ship back to port. The sensor turret was likewise working just fine. In fact, the only real problem with the ship had been the damage to the cockpit. The repair crew for the salvage company had fixed that, although it was done in the cheapest possible manner to facilitate a quick turnaround sale. Gruber did feel better that Zharkov had also noticed discrepancies in the ship, even if the former owner hadn't attached the same level of significance to them.

The morning of his third day of waiting, Gruber was contacted by Michaels.

"Oskar, I've got some information on that ship of yours." Michaels' face looked troubled. "But I'm not sure it's such a good idea looking into it."

"Why," asked Gruber, "what did you find out?"

Michaels sighed. "Well, the ship was registered like you said, out of Quinton. Zharkov appears to have been the sole owner of a small company, and the ship was one of the assets. Normally, it would revert back to the company. But Stark knows admiralty law fairly well. The salvage claim was done perfectly, and it was legal to seize the ship and resell it. Since I can't find any mention of relatives of Zharkov, or partners in the company, it would appear to be yours free and clear."

Gruber looked impatient. "Yes, I knew all of that already. But where did the ship come from?"

Michaels sighed again. "I traced it back to a UEE impound lot. Apparently, Zharkov bought it as salvage from the Advocacy."

Gruber went from impatient to confused. "But the Advo-

cacy doesn't use Drake ships."

"I know. They seized it in a raid."

"A raid? A raid on whom? Or what?"

"It would seem the Advocacy got it from a rather disreputable pirate outfit called the Redjack Dragoons. Don't ask me about the name. They were quite the pack a few years ago; they caused all sorts of problems for the Advocacy in the region. But most of them are dead or scattered now. Trying to trace the history of a ship once it's been in the hands of pirates is almost impossible. They change the names and registries of the ship so often, half of them are fictitious anyway. It's futile trying to figure it out."

Gruber's face became forlorn. "But there has to be something, right? I mean dead or scattered, some of them had to make statements. Reports, or bragging, or something."

Michaels shook his head. "The only one who made any kind of statement is James Quister. Coincidentally the leader of the pack; the Advocacy went to some pains to take him alive. He's rotting in a prison on Lorona. No one questioned him about the ship when he was captured, and I don't think anyone in the Advocacy is going to care about one Cutlass," Michaels smirked, "with an abnormal docking collar."

Gruber looked down at the comm screen intently. "If anyone would know how the pirates got the ship, it would have to be the pack alpha." Gruber thought back to the remarks in Zharkov's log. "And he'd remember this ship. I know he would. All it would take is someone to ask him."

Michaels looked stunned. "Ask him? I don't have any pull with the Advocacy. And Quister isn't going to admit to anything that might implicate him in more crimes. Oskar, the ship is yours, free and clear. Just let it go."

Gruber looked away from the screen and studied the cockpit of the *Outbound Light*.

"Well, I *do* have a ship now. I guess I'll just go ask him myself."

***To be continued***



**CHRONICLES**