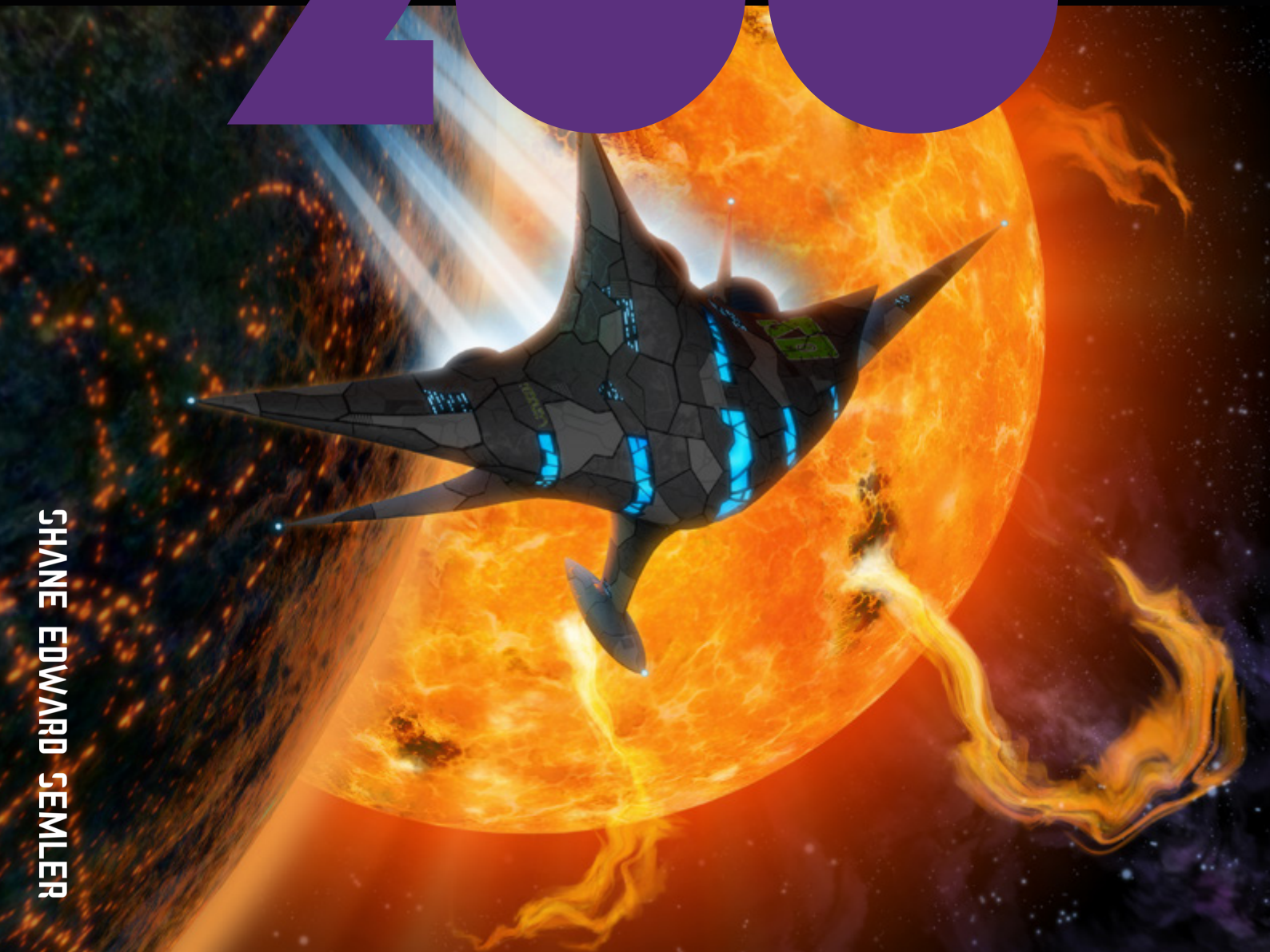
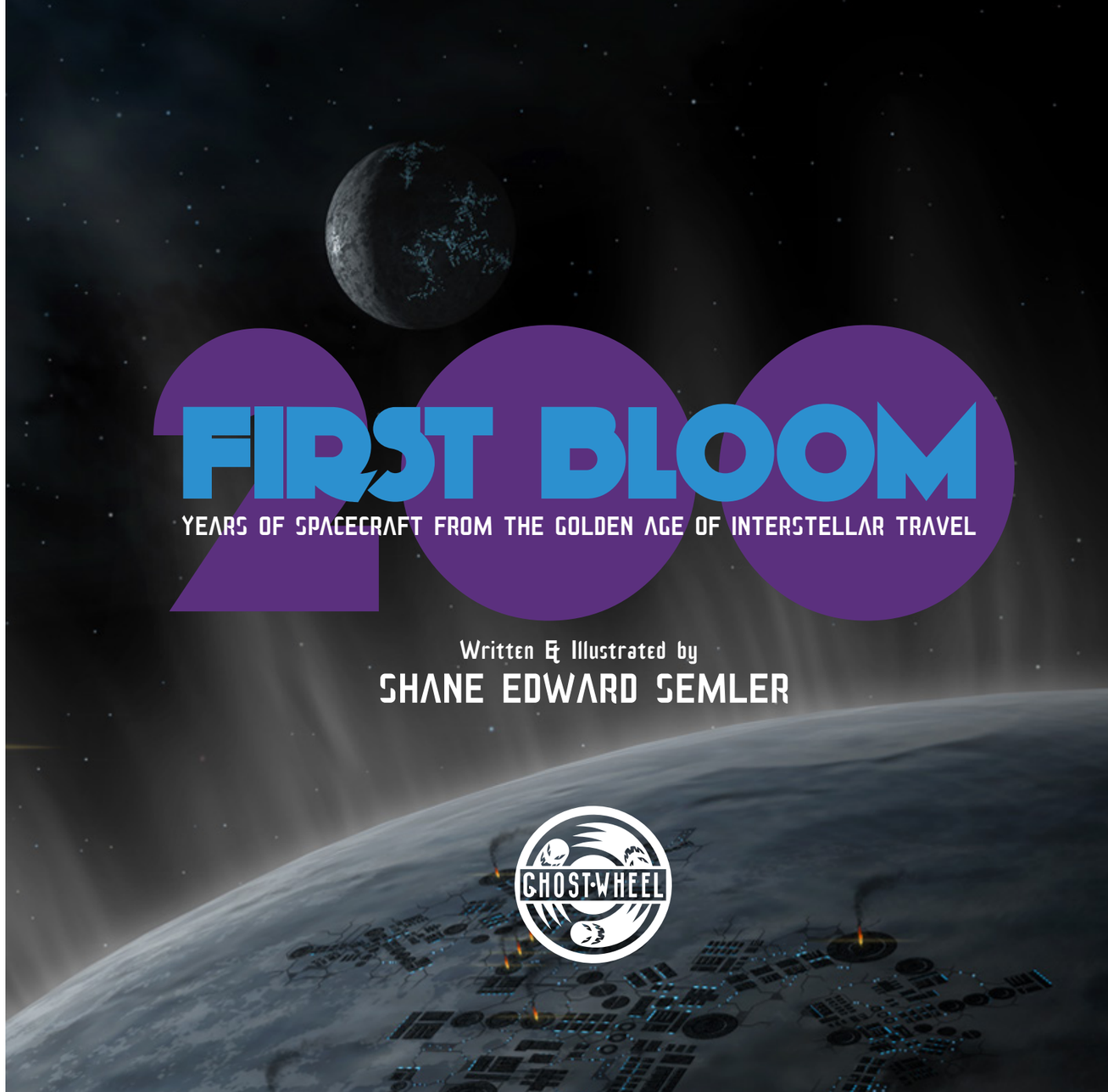
# FIRST BLOOM

## 200 YEARS OF SPACECRAFT FROM THE GOLDEN AGE OF INTERSTELLAR TRAVEL



SHANE EDWARD SEMLER


FIRST BLOOM
200
YEARS OF SPACECRAFT FROM THE GOLDEN AGE OF INTERSTELLAR TRAVEL
Written & Illustrated by
SHANE EDWARD SEMLER
GHOST·WHEEL

*This book is dedicated to the memory of Paul and Marydell Semler.*
*A special thanks goes to my wife for putting up with my nonsense all these years.*
*First Bloom would not have been possible without the contributions from supporters of my Indiegogo campaign. Thank you all; your encouragement keeps me going!*

First Bloom: 200 Years of Spacecraft from the Golden Age of Interstellar Travel



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# Introduction

By the 23rd century, humanity had spread to the edge of the solar system. While resources were plentiful, suitable space for habitation was not. Earth's ability to support a large human population was pushed to its limits.

Progress on terraforming Mars was very slow and estimates, at the time, projected at least another 150 years before people could walk safely on the surface without breathing apparatus or protection from cosmic rays and solar radiation. It was determined that Venus was impossible to terraform. An attempt to paraterraform Luna using the "worldhouse" method ended in failure after massive budgetary overruns, mismanagement and a series of engineering disasters. Massive space habitats relieved the problem somewhat but were not ideal, took a long time to build and were costly to maintain. The spectre of the Transhumanist War of the early 22nd century made altering humans to suit more hostile environments out of the question.

The only answer was to expand beyond the solar system.

# Timeline

**2077** Armstrong International moon base founded.

**2089** People's Republic of China establishes first permanent colony on Mars. Colonies from several other nations follow.

**2103** Sustained fusion power.

**2115** Beginning of the Transhumanist War. Martian colonies cut off from Earth.

**2127** Transhumanist Wars ends.

**2131** Martian colonies declare independence from Earth nations, Martian Tribal Union is formed.

**2264** The Megatherium outer system transport *Buran* makes a record breaking 36 month flight to Oberon's Reach Station on Uranus' Moon Oberon.

**2290** Eris Colony facility established for fields of research determined to be too dangerous to pursue within the solar system.

**2301** D-Tron battery, first exotic matter power source developed.

**2312** First successful Alcubierre drive test flight.

**2441** Near perfect Earth match discovered. No intelligent, technological life.

**2445** Development of the Einstein-Rosen Bridge Generator.

**2466** First broadcast detected from an alien civilisation, the Serpentarians.

**2498** Battle of Gliese 876 gamma.

**2499** All official contact is severed between Humans and Serpentarians. End of the *First Bloom* era.

# Ignition Sequence

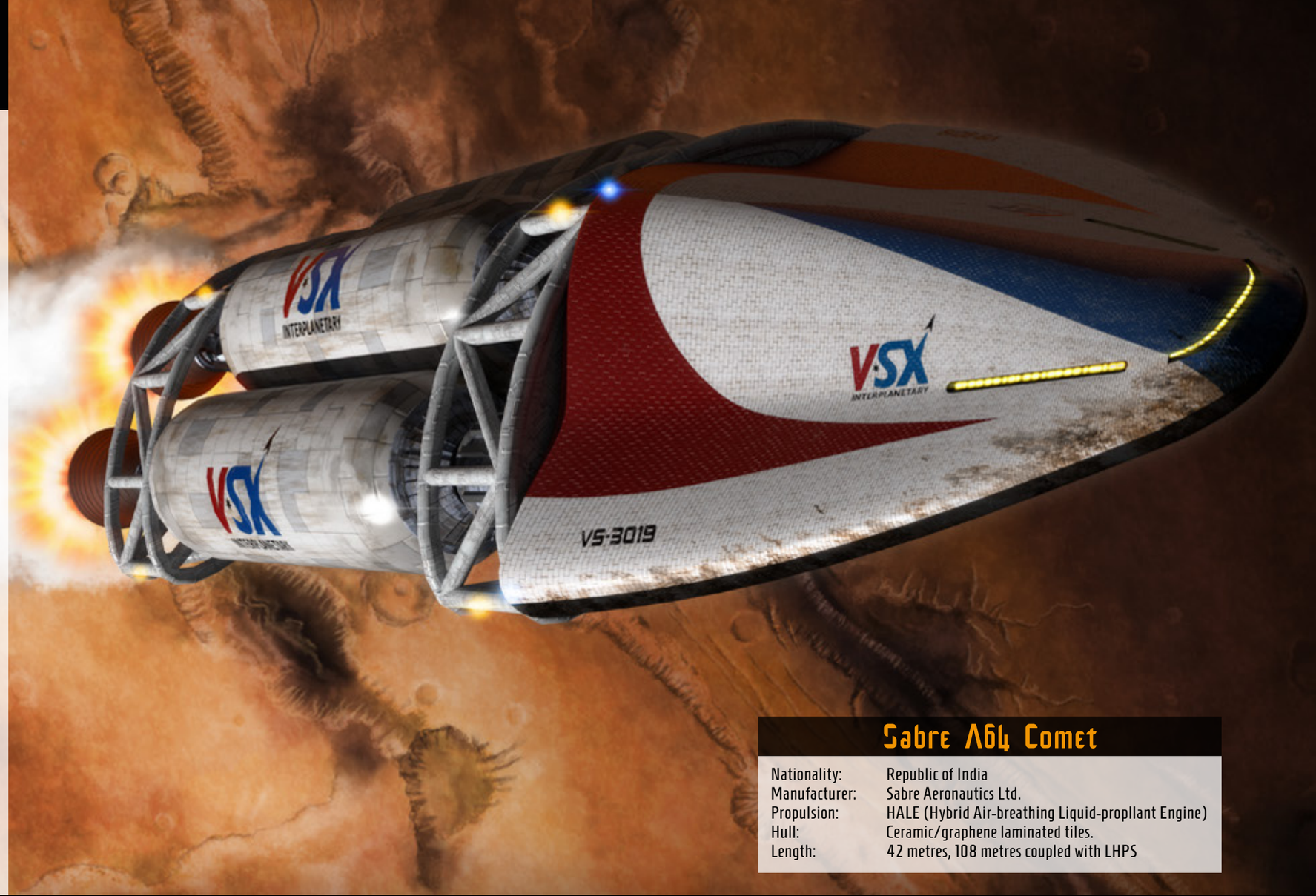
**2249** • *A Sabre A64 Comet coupled to a Bashkir LHPS leaves Mars.*

Prior to the development of the Alcubierre warp drive, space travel was unimaginably slow. As voyages to other continents would mean weeks or months on board ancient ocean-going vessels so too were travel times between Mars, Earth, and Ceres. In the case of the Outer Planets and the Kuiper belt, it could take many years. Expeditions to the outer system were, more often than not, one-way.

The workhorse of these early days of interplanetary excursions was the Sabre A64 Comet. Designed specifically to operate both in the atmospheres of Earth, Mars, Titan and in the vacuum of space, the HALE (Hybrid Air-breathing Liquid-propellant Engine) jet/rocket that made this possible was, at the time, a wonder of engineering. These hybrid systems were so reliable and effective they were used in tandem with warp technology for over 200 years until superseded by hyperdrive shortly after the Gliese 876 Conflict.

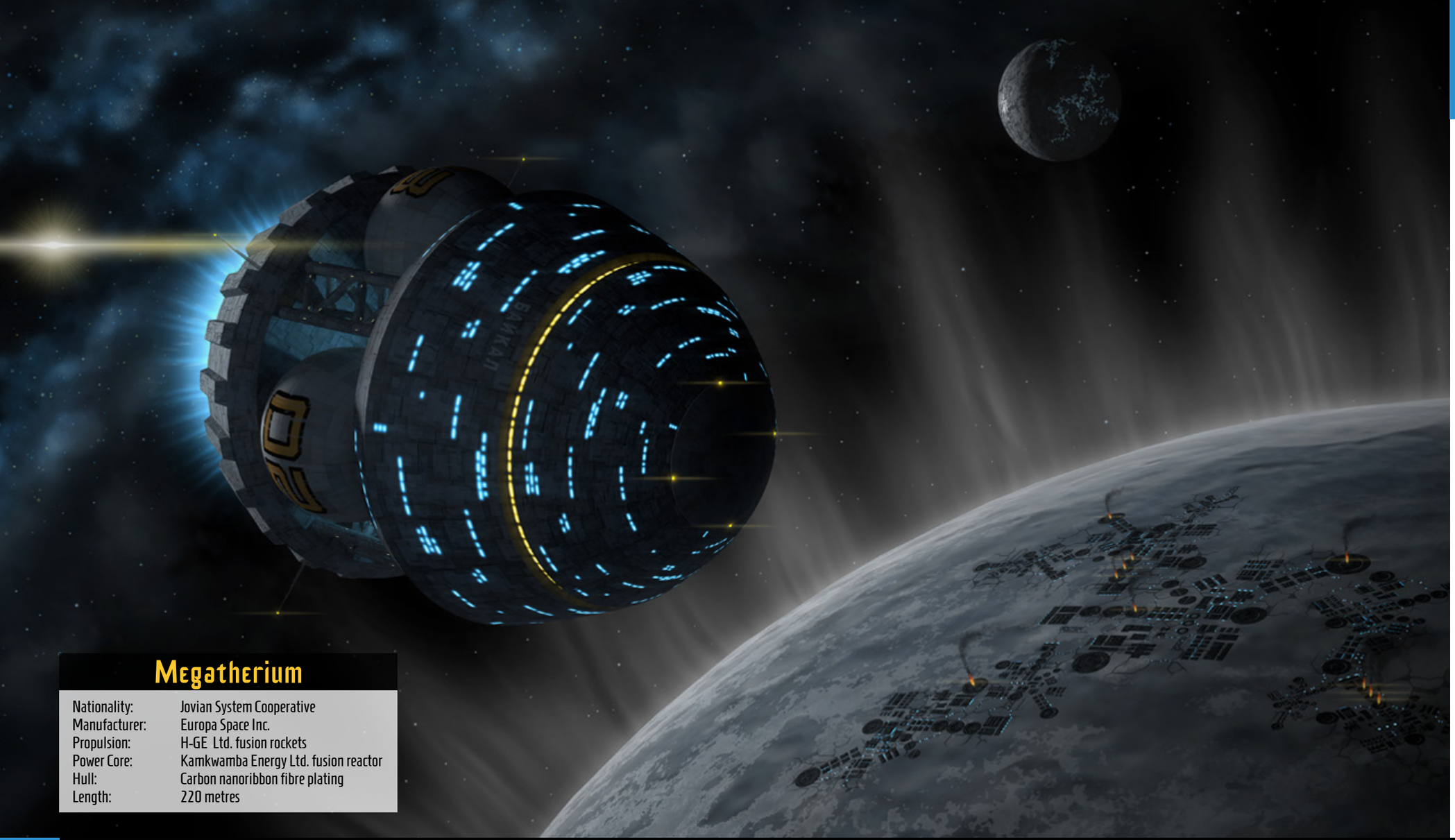
Once in free fall, the Comet would dock with the Bashkir LHPS (Long Haul Propulsion System). The Bashkir's efficient and powerful nuclear thermal engines made trips between the inner planets, and within the Jovian and Saturnian systems, relatively comfortable and fast (for the time).

Recently, week-long luxury cruises have come into vogue featuring replica Comet/Bashkir ships, fuelled by a rose-tinted nostalgia for those early days of space flight.




## Sabre A64 Comet

| | |
|---|---|
| Nationality: | Republic of India |
| Manufacturer: | Sabre Aeronautics Ltd. |
| Propulsion: | HALE (Hybrid Air-breathing Liquid-propllant Engine) |
| Hull: | Ceramic/graphene laminated tiles. |
| Length: | 42 metres, 108 metres coupled with LHPS |



## Megatherium

| | |
|---|---|
| Nationality: | Jovian System Cooperative |
| Manufacturer: | Europa Space Inc. |
| Propulsion: | H-GE Ltd. fusion rockets |
| Power Core: | Kamkwamba Energy Ltd. fusion reactor |
| Hull: | Carbon nanoribbon fibre plating |
| Length: | 220 metres |

# Eris Colony

**2299** • *A massive Europa Space Megatherium outer planets transport enters orbit above the Eris Colony ARP (Advanced Research & Propulsion) facility.*

## As with the distant reaches of most stars, the outer Sol system is vast.

Although the gravitational effects of Sol reach out nearly 2 light years (or about half way to Alpha Centauri), the "real" edge of the Sol system, is for all practical purposes, the Kuiper Belt. Even so, traversing these distances in any reasonable amount of time prior to warp technology required a fast, powerful ship.

The Megatherium has its roots in a concept from the 20th century for a subluminal interstellar vessel. While using such a spacecraft for missions to other stars is clearly ludicrous, even to most people of the time, it was ideal for navigating the home system.

# New Technology

**2312** • *Emergency repairs are made to the X-1DA research vessel after coming out of warp in a treacherous, and previously unknown, Kuiper belt ice field.*

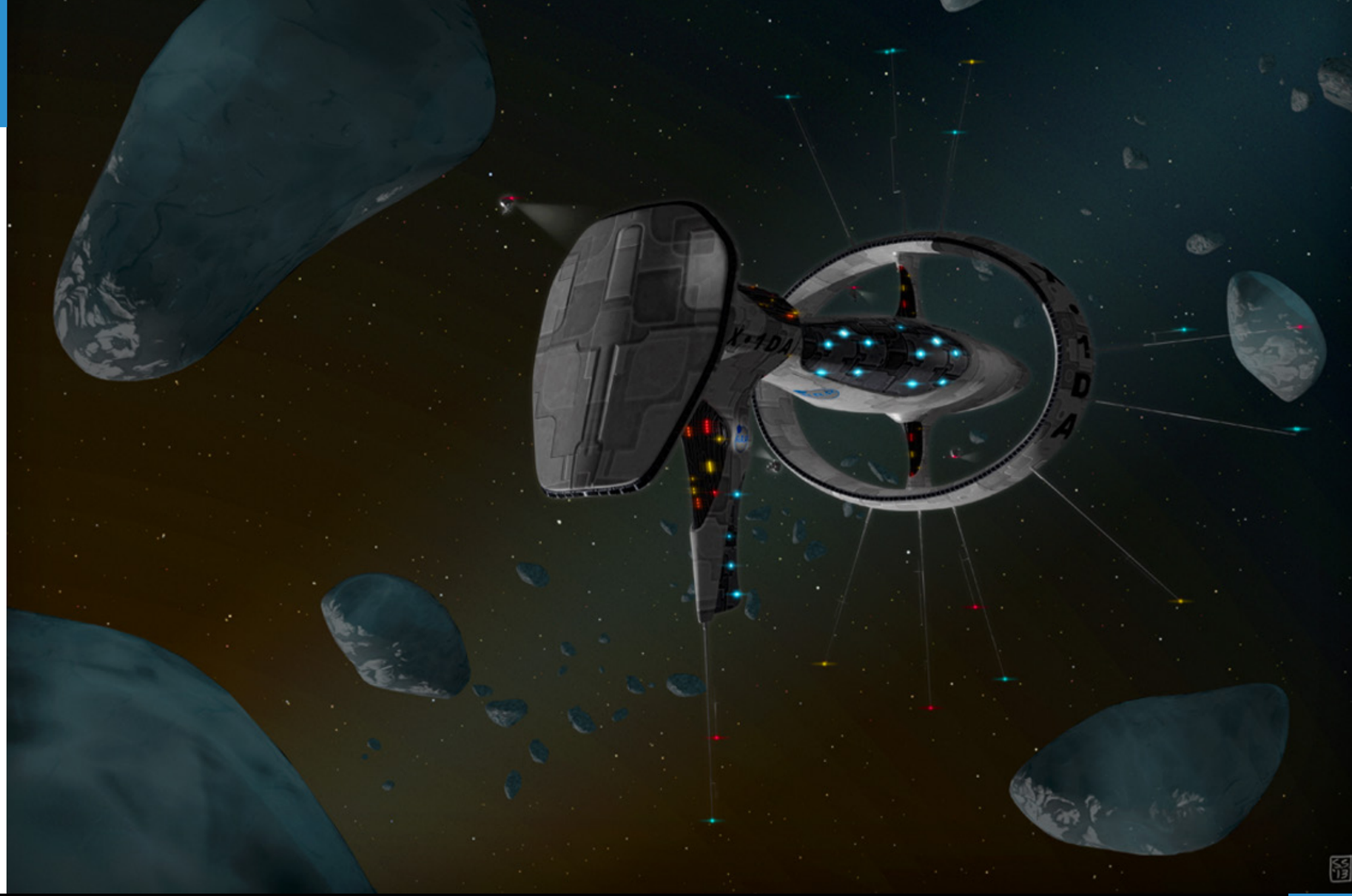
Astronomers had long ago discovered many worlds that were suitable candidates for colonisation. There was however the ever present problem of getting to them. Even with the fastest ships it would take decades or even centuries to get to the nearest. At the turn of the 23rd century ARP was established on the dwarf planet Eris. Its goal, to crack the light barrier. Despite being underfunded and nearly shut down on at least two occasions, after 20 years, ARP developed "faster than light" propulsion.

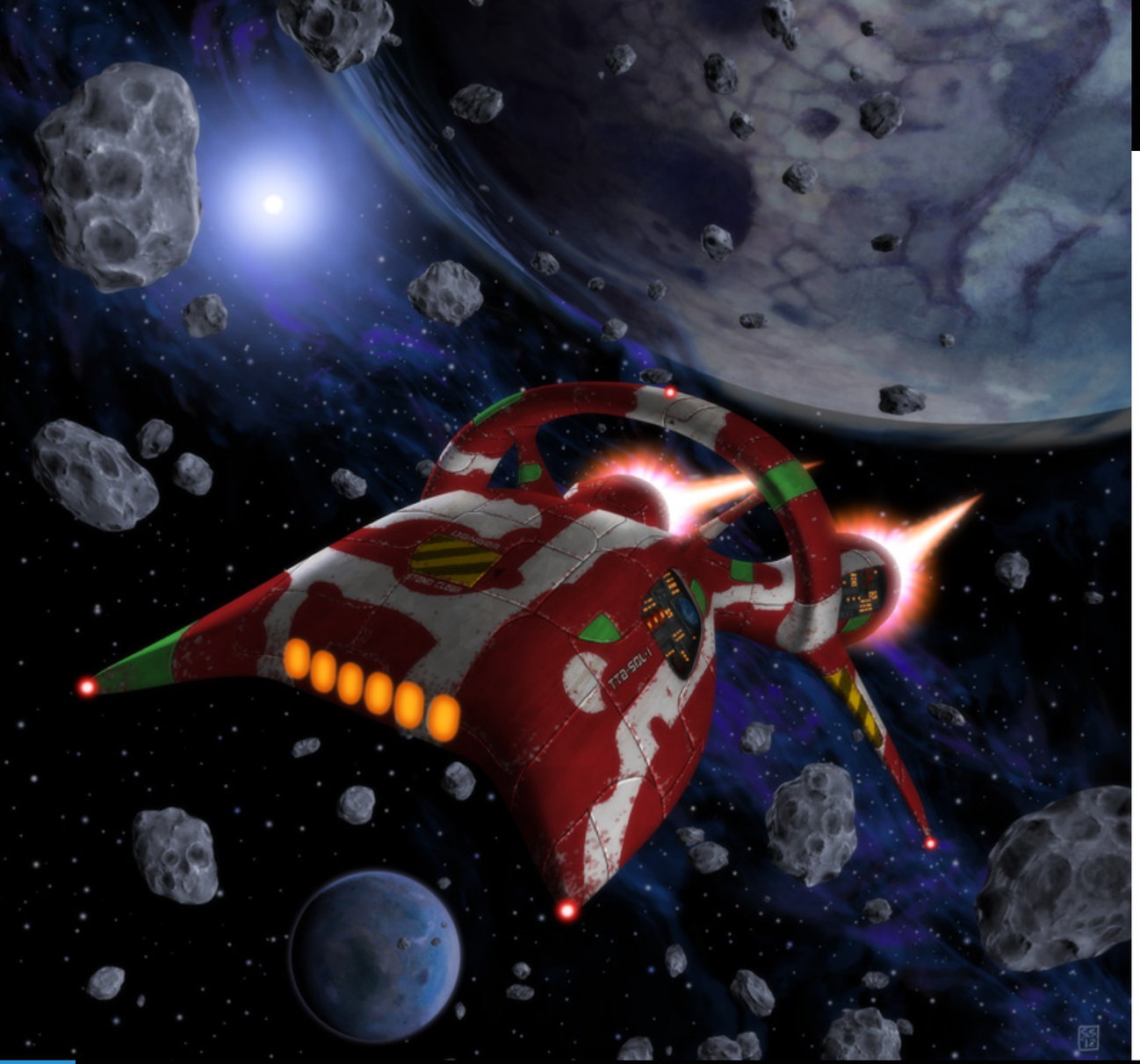
The Alcubierre (named after 20th century theorist Miguel Alcubierre Moya) or so-called "warp" drive is arguably the greatest technological achievement of humankind. Even so it does have substantial problems. Not least of which is its tendency to build up a massive charge of lethal radiation on the surface of the warp bubble when travelling at super-luminal speeds. These particles release in a massive burst of deadly radiation as soon as the spacecraft leaves warp. Under the right conditions, the release of energy can be powerful enough to kill all life on the surface of a planet unlucky enough to receive a visiting spacecraft.

Coupled with the parallel development of the first exotic matter power source, the D-Tron ("Degenerate neuTron" microscopic sun-like mass) battery, the Alcubierre drive fuelled an explosion of human exploration and colonisation beyond the home solar system.

## X-1DA

| | |
|---|---|
| Nationality: | Outer System Democratic Confederation |
| Manufacturer: | ARP/Eunomia Manufacturing |
| Subluminal Propulsion: | P&G CM30 nuclear thermal rockets |
| Superluminal Drive: | ARP AEON (Alcubierre Experimental Operational eNgine) |
| Power Core: | Bermin-Waits G120 D-Tron battery, 100 tonne mass |
| Hull: | Carbon polymide composite laminate plating |
| Length: | 125 metres |





# The Call of Distant Fires

**2357** • A *Titan Corporation Manta flies through the rings of HD 108147 delta's moon.*

## The speed at which humanity spread across our arm of the galaxy was astonishing.

Between 2320 and 2340 it is estimated that of the 40 billion souls in the home system, nearly 20% left for other stars. It was an exodus of unprecedented proportions. From massive colony ships to small cargo carriers, if it moved people and freight, it was used. Ships literally could not be built fast enough. Even some pre-warp ships were fitted with Alcubierre drives, sometimes with disastrous results.

To meet the demand, a number of manufacturers switched over from traditional orbital dry docks to gigantic mobile assembly line factories. One of the first of these mass produced interstellar ships was the Manta; a relatively small, fast, light, and flexible use ship. The crew section was small and uncomfortable but the cargo space was large and could be pressurised. Of course all this room would be offset if hundreds of seats for immigrating families were installed.

A fleet of Mantas were an affordable, no-frills alternative to the enormous colony ships.

Instead of a large forward dust shield, the Manta was fitted with a powerful magnetic field to deflect radiation and debris. This cut down substantially on the mass of the vehicle and allowed it to fly through planetary atmospheres and land, instead of having to park itself in orbit like so many larger ships. The trade off was that, while it could also deflect the tiniest microscopic dust, anything larger than a few nanometres could potentially be catastrophic.

Despite the drawbacks, the Manta was hugely successful. After the initial expansion many were sold off and served for decades in the secondary market. Even today, refitted Mantas can occasionally be spotted plying the spaceways.

### Manta

| | |
|---|---|
| Nationality: | Outer System Democratic Confederation |
| Manufacturer: | Titan Corporation |
| Subluminal Propulsion: | Podkletnov CP219 photon pulse engines |
| Superluminal Drive: | Emery 22L-56 warp drive |
| Power Core: | Kamkwamba G9 D-Tron, 200 tonne mass |
| Hull: | Vat-cultivated synthetic chitin plating |
| Length: | 214 metres |

# First Bloom

**2411** • *A Shatterstar luxury yacht blasts out of orbit from Kepler-42 gamma.*

## This was the height of the First Bloom. In a one hundred year time span humanity had spread to thousands of worlds.

Humans push out further and faster. It was an unprecedented time of peace, prosperity, exploration and knowledge.

As space travel became more common and the technology more refined, reliable and accessible, coupled with a booming post-scarcity economy, a demand arose for more elegant and comfortable spacecraft. One of the more fanciful hull designs is the Hycomp Systems Shatterstar. Only 1000 were built and all were sold before they got out of the drydock.

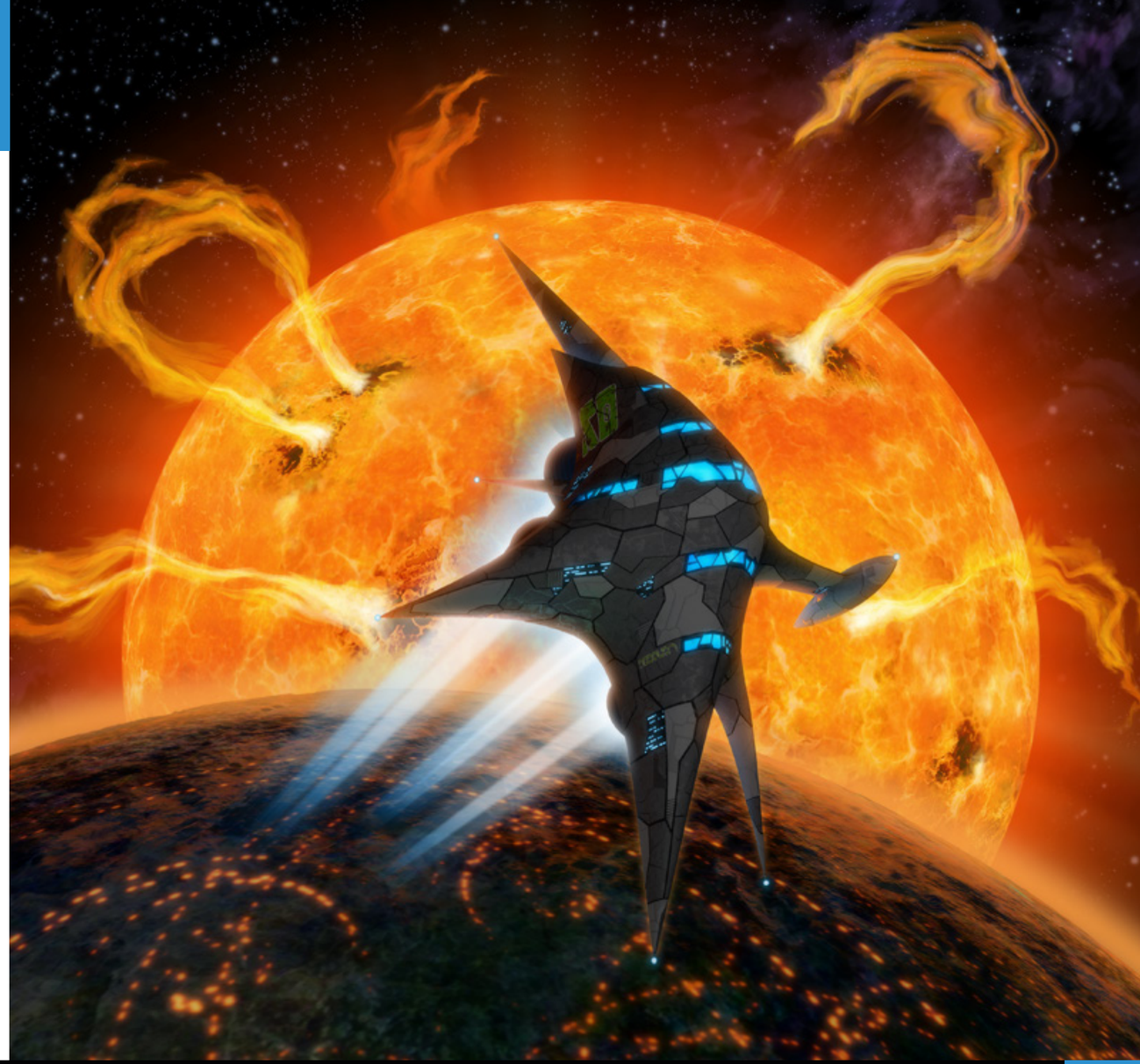
It is also notable for being one of the first warp capable vessels from an extrasolar ship builder. Hycomp was desperate to prove they were as capable as any Sol system shipyard. The Shatterstar wasn't simply a spacecraft, it was a prestige ship that rivalled anything from the home star.

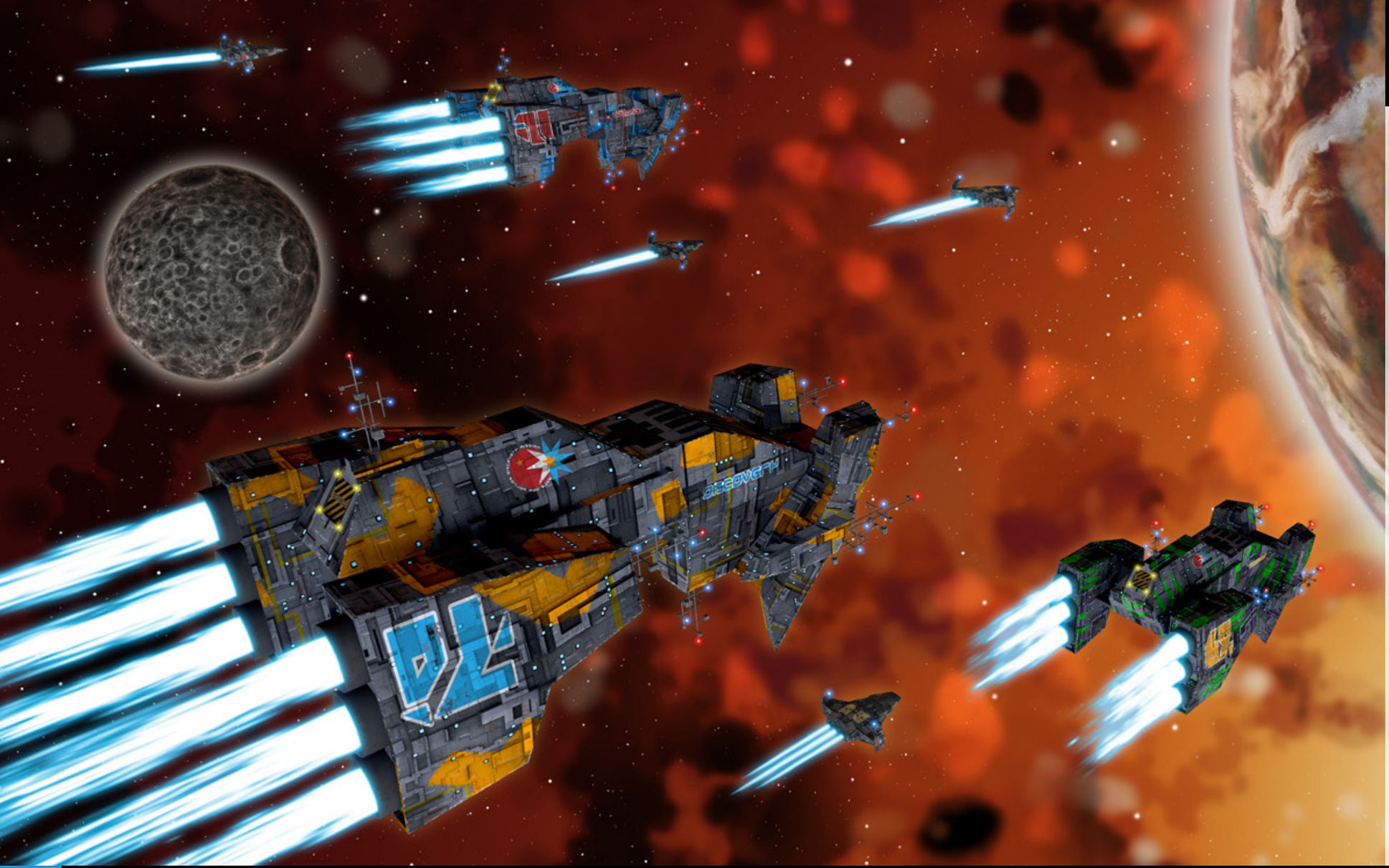
As well has being decadently appointed, it had a number of new technologies including an advanced dust and radiation deflector field. It also had an innovative gravity manipulation device similar to the later GMAP/hyperdrive technologies employed in the X-560 (see page 20) though it was strictly for the comfort of the passengers and did not assist with propulsion. This early gravity manipulation system required a secondary power core and was far too expensive and impractical for anything other than an extravagant yacht like the Shatterstar.

Only a few are left and those are in the hands of collectors. There is one on display in the Rakesh Sharma Aerospace Museum orbiting Luna.

### Shatterstar

| | |
|---|---|
| Nationality: | OSDC - Alpha Centauri Colony |
| Manufacturer: | Hycomp Systems |
| Subluminal Propulsion: | Hycomp high capacity ion engines |
| Superluminal Propulsion: | Alpha Prime K72-3000 |
| Power Cores: | Hycomp T3 D-Tron, 45t/20t mass |
| Hull: | Nickel-Rhenium superalloy plating |
| Length: | 100 metres |






# Discovery

**2439** • *The Mars New Worlds Discovery Mission approaches Gliese 667 gamma-beta.*

The highly versatile Ceres Shipyard Kakapo was in production for nearly 30 years. This particular model (SSL-B) has the distinction of being one of the last ships to be fitted with an Alcubierre drive. After the development of the E-RBG (Einstein-Rosen Bridge Generator) in 2445, coupled with the Gliese 581 gamma outpost disaster only 2 years earlier, all use of the Alcubierre drive was banned except in military and subliminal propulsion applications.

The Kakapo is pictured here with the distinctive "claw hammer" interstellar dust shield. The dust shield became redundant as many ships were refitted with E-RBGs and were either removed or replaced with an extended hull. Additionally, the massive nuclear thermal thruster nacelles were often replaced with smaller, less massive, more efficient engines as the long burn times to reach destinations were no longer a necessity. A wormhole bridge could be opened far closer to planets as the massive, deadly charged particle burst released by Alcubierre drives was not an issue with E-RBGs.

All standard Kakapo could carry up to two Ceres SC-10 landing shuttles, seen here flying along side.

## Kakapo SSL-B

| | |
|---|---|
| Nationality: | Martian Tribal Union |
| Manufacturer: | Ceres Shipyard |
| Subluminal Propulsion: | Ceres VB500 nuclear thermal rockets |
| Superluminal Drive: | JSC-Europa SDW-20 |
| Power Core: | Oberon L2 D-Tron, 1000 tonne mass |
| Hull: | Multielectric crystalline smart plating |
| Length: | 400 metres |


FIRST BLOOM

# A Voice in the Deep

**2466** • *A researcher reviews data collected by a deep space radio telescope on rogue planet Oph351626.*

Because the horrors of the Transhumanist War had faded from memory and necessity demanded it, humans began to alter themselves genetically, medically and mechanically to adapt to various harsh alien environments. Various human populations were becoming more and more alien with respect to each other. Yet humans had not actually encountered any intelligent, technological alien life.

This all changed when a radio signal was detected coming from the constellation Serpentarius with a deep space radio telescope like the one seen here. The Serpentarians were a technologically advanced species and despite all of the obvious differences, it was amazing how much alike the two species were. Humans and Serpentarian cultures had developed at an approximately similar time scale. Both had also developed FTL (faster than light) technologies. While Serpentarians had a substantially different chemical makeup, they were carbon-based, oxygen breathing humanoids.

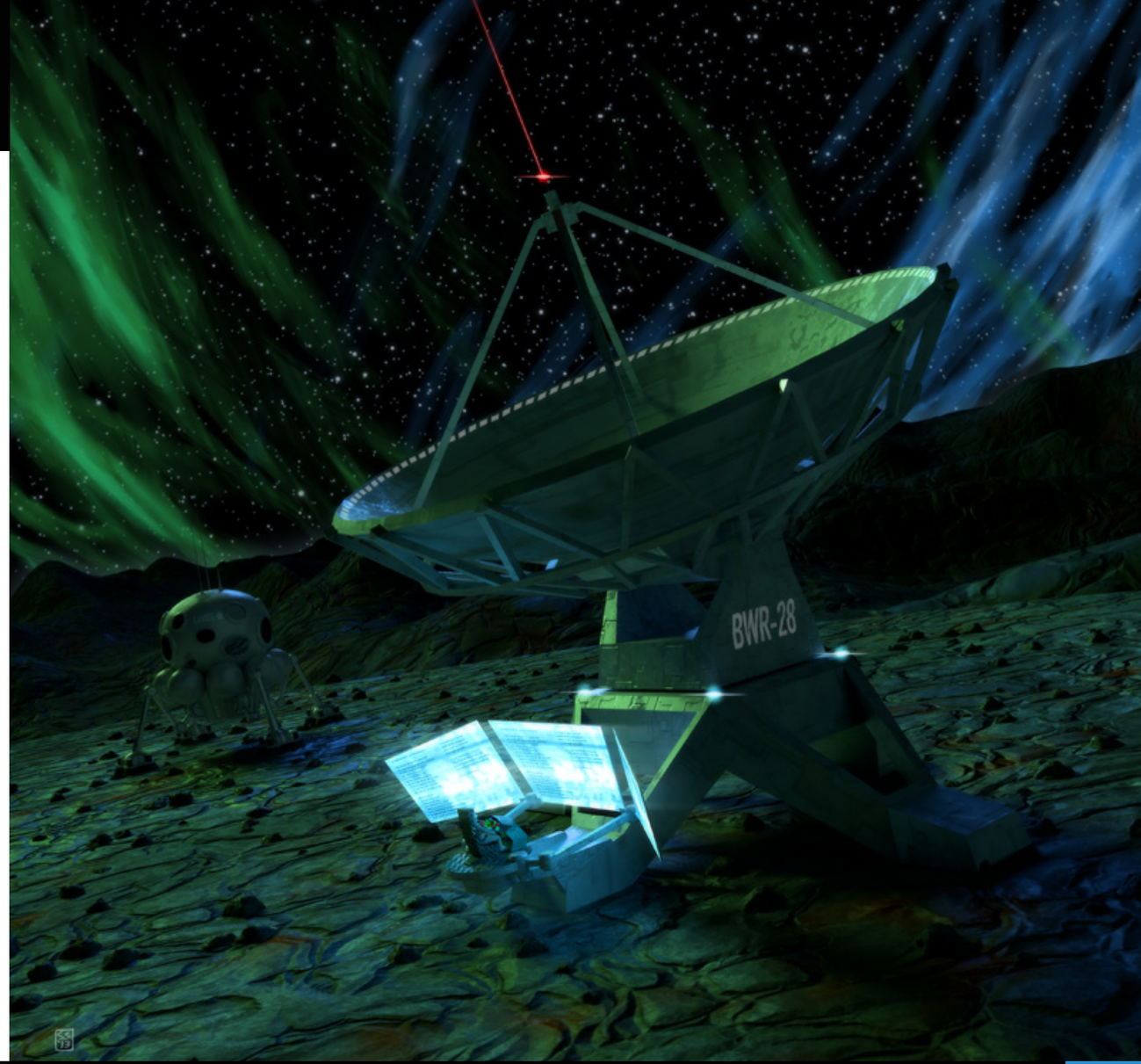
Both species were excited about first contact as neither had, until this point, discovered any other technological, intelligent life in all of their explorations. On a societal basis the two species began to integrate at a remarkable pace.

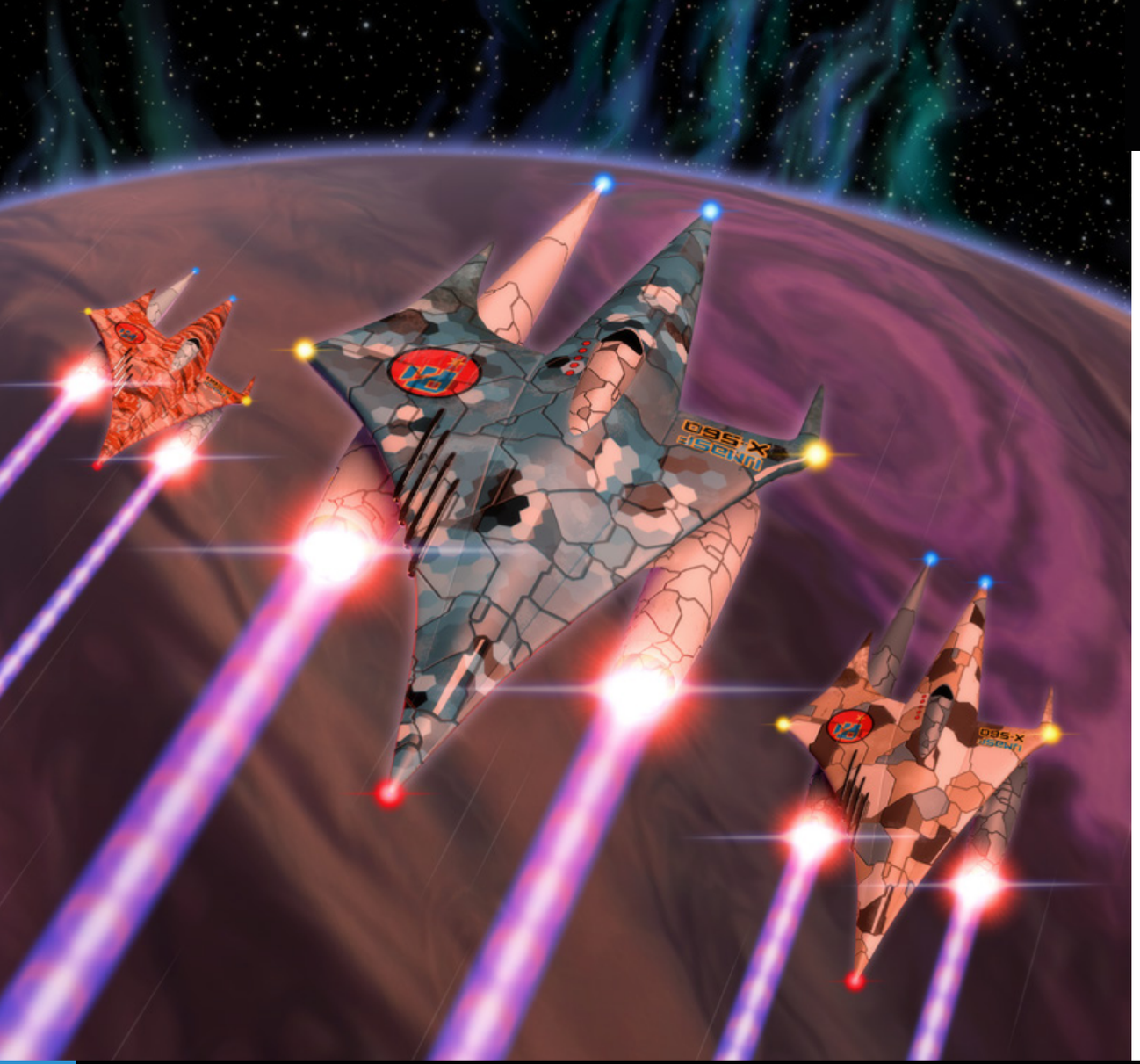
Unfortunately, the political situation lagged far behind. Even as the peoples of both species grew closer, the political and military leaders became increasingly suspicious and paranoid. This lead to an escalation of weapons technology research and build up not seen since the dark days of the 22nd century, culminating in a series of skirmishes, and finally the battle of Gliese 876 Gamma.

Seen here in the background is a Pondskater LM MkIII. Though the Pondskater bears a passing resemblance to the Lunar and Martian landers of early space explorers, it is larger, more comfortable and far more advanced. It's tough and built for repeated use and abuse. The lander can touch down on surfaces from ice as hard as concrete to soft dusty rubble piles and launch from planets with gravities of up to 1.5g. Ships like this are still the lander of choice for exploring undeveloped, rough terrain.

## Pondskater LM MkIII

| | |
|---|---|
| Nationality: | Engur Cooperative |
| Manufacturer: | Kishar Aerospace |
| Propulsion: | Amon 26C pulse detonation antimatter rocket |
| Power Core: | Murlin JKL5500 fusion reactor |
| Hull: | Metalloid nanomachine structure |
| Length: | 14 metres |





# The Battle of Gliese 876 Gamma

**2498** • *High above the surface of the gas giant Gliese 876 Gamma, the Shenyang Mars Dynamics X-560 flies toward the largest engagement of the Human-Serpentarian Conflict.*

## While never acknowledged as an official war, the scale of the Battle of Gliese 876 Gamma was enormous.

It was a perfect storm of politics, misunderstanding and a dangerous escalation of weapons technology development. One of the most advanced weapons was the X-560 manned spaceplane fighter.

The X-560 never lost its "X" designation as it was quickly pushed into production in anticipation of hostilities with Serpentarian forces. It was originally a platform for a mix of radical experimental technologies both old and new. The port nacelle is a powerful high capacity ion thruster and the starboard a HALE. Thus, the X-560 could operate both in atmospheres (that have available combustible gases) and vacuum. Both were ancient but reliable technologies. However, the stand out among them was the GMAP (Gravity Manipulation Assisted Propulsion) mounted above the port nacelle. Also referred to informally as "hyperdrive" the GMAP allowed for radical, aerodynamics-defying shapes when operating in-atmosphere. Until the development of GMAP, there had been very little progress in ship propulsion, beyond the Alcubierre drive. This early version of GMAP drew massive amounts of power; even so, it allowed the X-560 to pull off manoeuvres that would have been impossible previous to its development.

It also allowed for an even more innovative weapons design, the so-called "phantom barrel". A combination of magnetic and gravitational fields could direct blasts of plasma in any direction from the warp bubble around the hull, essentially making the entire ship an omnidirectional energy weapon.

Until the development of the GMAP, human space technology was considered somewhat inferior to the Serpentarian. Though early relations were very good and there was some technological exchange, they were very protective of their space and weapons technology capabilities.

### X-560

| | |
|---|---|
| Nationality: | Martian Tribal Union |
| Manufacturer: | Shenyang Mars Dynamics |
| Subluminal Propulsion: | Ion/HALE/GMAP |
| Superluminal Drive: | Arcturus M3130 warp drive |
| Power Core: | Omni DSC D-Tron, 10 tonne mass |
| Hull: | Nanomachine mesh plating |
| Length: | 21 metres |

# Dark Millennium

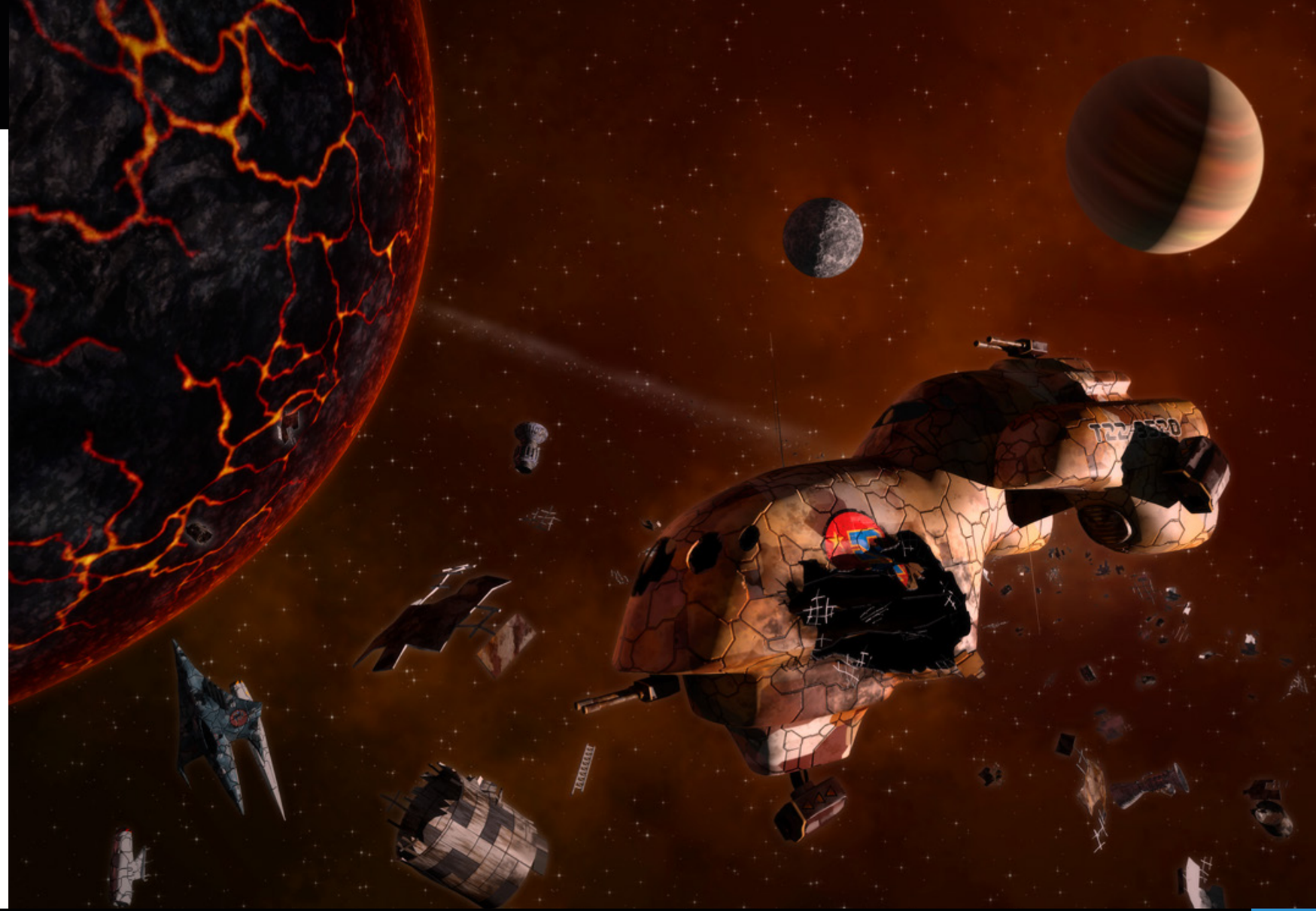
**3499** • *A Chalos Mi-2800 gunship wreck floats among the dense debris that can still be found orbiting planets where massive battles took place. A graveyard memorial, an ugly reminder of the evils of war.*

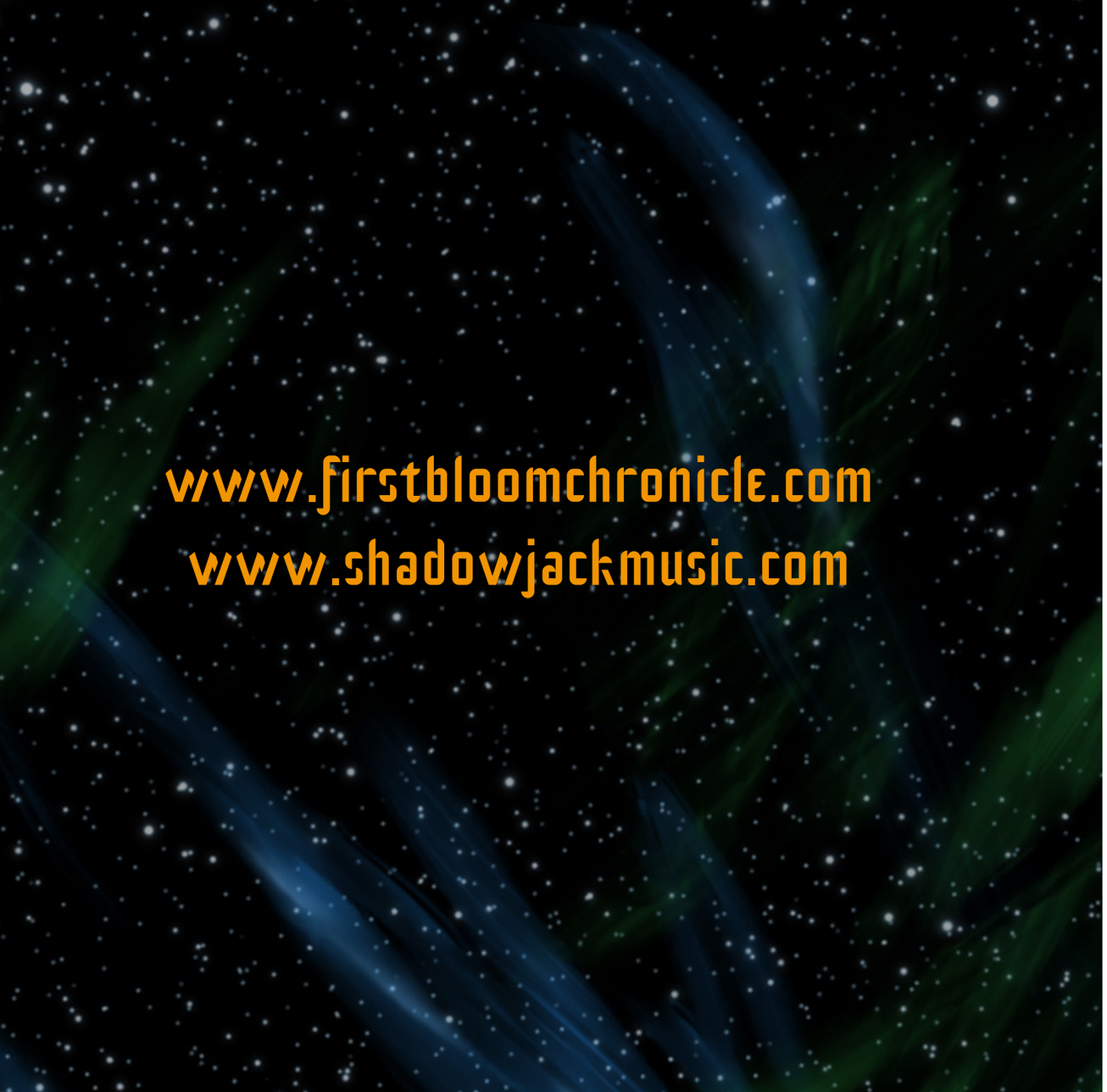
The Chalos Mi-2800 was initially developed for the Martian Wargames. The Mi-2800 could mount a variety of weapons but most often it was fitted with plasma launchers and railguns, as seen here. Despite its bulky appearance it was actually quite manoeuvrable. Up until this point in spaceship development most ships only used the Alcubierre drive's subluminal capabilities as a secondary propulsion system to assist in rapid acceleration and deceleration. The Mi-2800 reversed this role and the fusion rocket system was used mainly as an afterburner while the Alcubierre drive was the main mode of propulsion and manoeuvring. It was an obvious move to adapt the Mi-2800 for the Human-Serpentarian Conflict.

The conflict was such a profound and devastating event to both Humans and Serpentarians that both species drew back to their home systems. For two advanced species that thought they had progressed, evolved beyond the pettiness and greed that leads to war, it was a sobering reminder that neither was as far from the vicious, aggressive days of their ancestors as they would have wished to believe. The result of a millennium long cold war was that exploration and scientific endeavour came to a virtual standstill. Only now, nearly 1000 years later, we are reaching out to one another again.

## Chalos Mi-2800

| | |
|---|---|
| Nationality: | Martian Tribal Union |
| Manufacturer: | Phobos Corporation |
| Subluminal Propulsion: | Shenyang TT40 fusion rockets |
| Superluminal Drive: | Arcturus M3137 warp drive |
| Power Core: | Oberon 900 D-Tron, 25 tonne mass |
| Hull: | Nanomachine mesh plating |
| Length: | 34 metres |

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# 200 FIRST BLOOM

YEARS OF SPACECRAFT FROM THE GOLDEN AGE OF INTERSTELLAR TRAVEL

**Humans pushed out further and faster into the galaxy. It was an unprecedented time of peace, prosperity, and exploration.**

**This was the *First Bloom*.**

**Collected here is a selection of interesting, beautiful and strange spacecraft from the dawn of human expansion throughout the solar system and across the stars.**