WORLDBUILDING WHITEPAPER

THE WORLD OF EVERDOME

CHAPTER ONE

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EVERDOME

May 2022

Last update: May 2023

A new interplanetary world

Concept art: Wojciech Fikus

We're building a Martian outpost in the Metaverse. A future-set, fictional world facilitating new forms of experiences and value at the intersections of cutting-edge technologies.

This white-paper unpacks some of our ideas, so that you can judge the narrative potential of that ecosystem for yourselves. The more our community and interested partners know about where we're heading, the better they can contribute to what we're doing, and the faster we can improve and grow.

Why are we setting our activities on Mars? First, because this exciting new frontier is unfolding before us, year on year. Some possibilities for exploration and settlement might well be realised in our lifetimes. Mars might also be the biggest sandbox we have ever thought to play in. Once we get there, we'll be on our own, making a world for ourselves, one decision, one act, one invention at a time.

Science, technology, fiction, and entertainment have always leaned on each other and fed off of each other. In Everdome, we press these elements up against one other, creating a hybrid narrative and a thrilling ecosystem for entertainment and new forms of value creation.

The Everdome project is a dry run, if you like, for humanity's next and most ambitious venture. We're making our interplanetary spaces, and Mars in particular, as realistic as possible. And just as Mars provides a place for future experiment, so does our metaversal Mars provides us with a place to expand upon what's possible at the intersection of speculative fiction, gaming and web3 technologies.

May 2022

Last update: May 2023

A world in the making

Concept art: Wojciech Fikus

Behind every great story there is a backstory – an explanation for why things are the way they are.

We will get to Mars aboard credible spaceships, propelled by technologies that obey known physical laws. We will live, thrive, grow and prosper in Everdome by enriching and extending its environment. Together with our world-class concept artists, writers, gaming developers and scientific advisors, we'll strive to build a one-of-a-kind world.

We've rooted Everdome's backstory in the innovations, adventures and ambitions taking shape in our own day. We've asked ourselves what might inspire and drive Martian settlement, and make life on Mars as enticing and glamorous as it is challenging.

What businesses and cultures will thrive in Everdome? What technical and practical challenges will they face? What kind of society will emerge? What will it achieve? What will happiness look like on Mars?

We're in this process for ideation, new opportunities, and the sheer pleasure of creation. Our interstellar design space is almost limitless.

We're going to evolve just a fraction of a step ahead of our community. We'll be listening to what you say, building all the while, experimenting, always learning, so that Everdome evolves into a living, breathing reality: a convincing, immersive human Mars outpost in the Metaverse.

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We are building our world within the hyper-realistic graphic engine of Unreal 5, the setting for the first, narrative driven VR experiences. We will then conflate and populate this environment with high fidelity objects, assets and animation constructed using:

- Blender, an open source 3D creation suite supporting the entirety of the 3D pipeline—modeling, rigging, animation, simulation, rendering, compositing and motion tracking.
- Autodesk Maya, used by top feature film animation studios like Blue Sky Studios, Framestore, Moving Picture Company, and Industrial Light & Magic.

These will be our foundations as we explore new ways to create content, develop experiences and, ultimately, generate cultural, commercial and educational value.

For this, we'll be developing new tools and new business models, new partnerships between brands, stakeholders and communities, new kinds of cultural and economic activity. We will learn to weave together the disparate elements that make up the Everdome experience: narrative, design, infrastructure and content, underpinned by a vibrant, decentralised crypto economy and gameplay.

UNREAL ENGINE 5

EVERDOME

We want Everdome to feel like it's just a matter of time, not some far-fetched future that could as well be magic.

—Robert Gryn, Everdome Founder

We took a long, hard look at the current technological, biological and economical boundaries and asked ourselves how the settlement of the solar system could possibly unfold.

In our world, human beings are extraordinarily inventive, creative and energetic, but mistakes have been made in the past. We have not dedicated enough care and attention, at the right time, to our own fragile, planetary ecosystem on Earth.

Things started to become really grim at the middle and end of the 21st century. To save life on Earth, and protect its only home, we made extraordinary efforts to develop technologies and societal innovations that would help to preserve, secure and regenerate our fragile home.

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For inspiration, as we sought to recreate and support our world, we looked up into the stars.

The Everdome project is the fruit of decades of entrepreneurial and scientific development of the inner solar system. The Moon, Mars and Phobos all boast settlements that are cradles of creativity and invention. Elsewhere, the hard-scrabble process of exploration still continues: heroic efforts are being made to establish sustainable mining facilities at the Belt. The outer planets, Jupiter and Saturn and their many moons, remain the object of laborious and risky scientific explorations.

Source: NASA

In this world, Everdome is a chartered, joint venture of merchants, scientists and investors creating the furthest – and arguably finest – outpost of human civilization. Its technological, trade and social initiatives realise dreams of expansion, settlement and radical self-sufficiency that were rarely possible (or even excusable!) on Earth.

The opportunities Everdome provides and the intellectual property it generates help our home planet to heal. We're in space to save the Earth and grow as an interplanetary civilization.

Collective imagination

Each member of our diverse, multicultural team nurses their own fantasy of space. Early on, however, we agreed that our world should obey known physical parameters. This, we agreed, would be the best way of developing a collective vision of space, full of wonder and mystery.

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Looking for inspirations, we loved the eerie, speculative realism of Erik Wernquist's "Wanderers" and the conceptual art from Simon Stålenhag's "Tales from the Loop". We loved Andy Weir's "The Martian", S. A. Corey's "The Expanse" and their visions of ordinary people struggling for a decent life in a hostile environment.

Wanderers – Erik Wernquist

Tales from the Loop – Simon Stålenhag / Amazon

The Martian – Drew Goddard / Ridley Scott

Ad Astra – James Gray

The Passengers – Morten Tyldum

Valerian and the City of a Thousand Planets – Luc Besson

We were deeply impressed by the way James Gray's "Ad Astra" fused meticulous design to a compelling human story. We also liked some of the more sci-fi touchstones, including Morten Tyldum's "Passengers" and Luc Besson's "Valerian and the City of a Thousand Planets", adoring and embracing their glamour and optimism.

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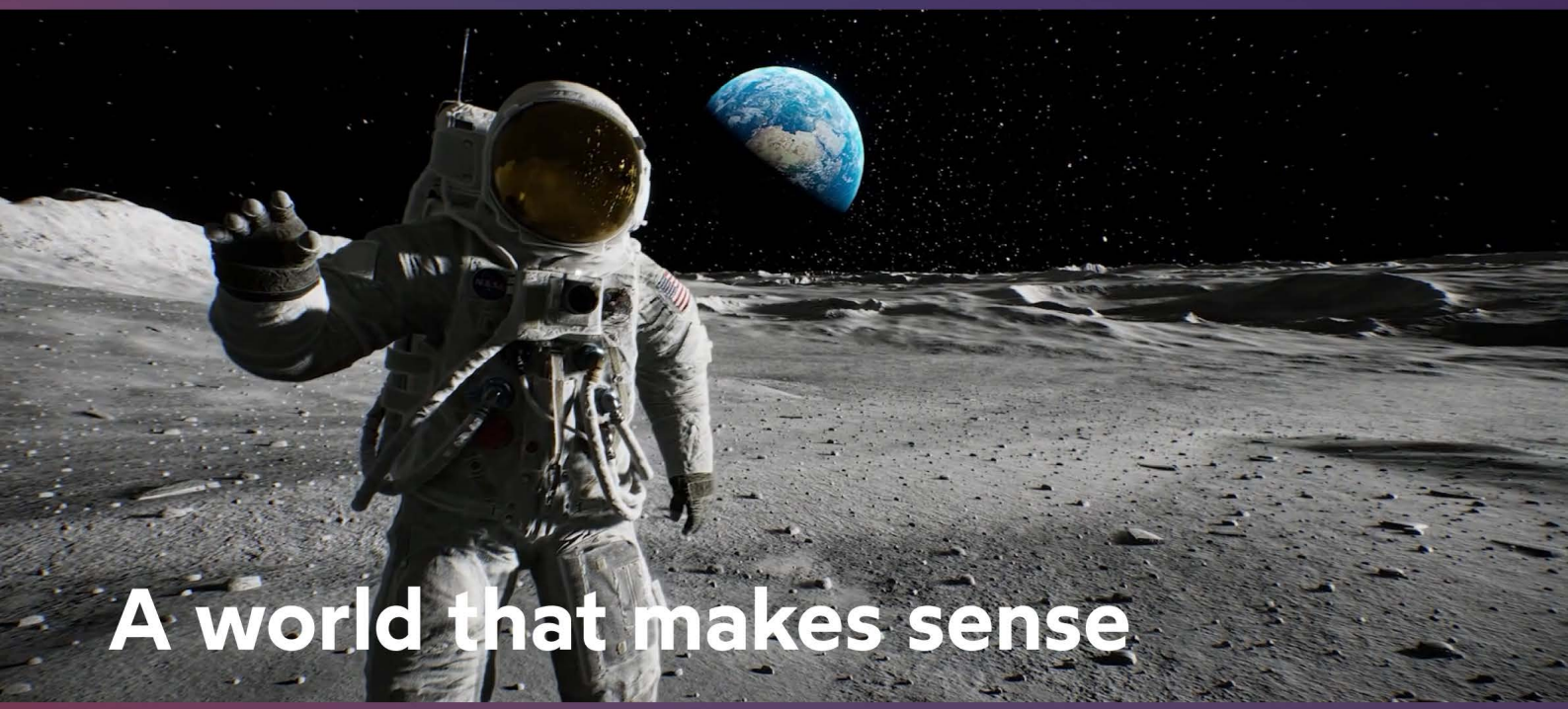
Still, we want, as far as possible, to develop our own vision, letting it emerge from our own research and study. We're not looking to create some arbitrary utopian or dystopian world. While we can give the people of Everdome a rather easier time of things than in "The Martian", the stakes will be absolutely the same. Mars is a hostile environment, but Everdome aspires to overcome all difficulties and become something extraordinary.

We want Everdome to feel pioneering, thrilling and entertaining.

In our future history of humans in space, our venture sits neatly between the death-defying survival tactics of "The Martian"'s Mark Watney, and the goofy, stylised adventures of Luc Besson's Valerian. Everdome is the bridge we need to get from one to the other. It's the missing piece in the stories we're telling about the future.

Everdome Mars settlement is a working and thriving outpost.
It knows it will survive.



A world that makes sense

We're putting a lot of effort into getting the right balance between fact and fiction, between what we know about space and how to explore it, and what we can expect to discover in the future.

Rockets will continue to grow more powerful. Astronauts will continue to suffer from muscle atrophy and high radiation exposure, though solutions are even now in development. Space will still be a high-risk environment for many years – until, at last, it isn't.

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Our guiding principle is simple: our technologies will advance, in sometimes unpredictable ways, but the physical parameters of our world will stay the same. What goes up will always come down under gravity. Radio messages will take however long they take over interplanetary distances. And a spaceship that leaves at the right time for Mars will have a much easier time of it than a rocket that leaves at the wrong time.

We won't be jumping into hyperspace or discovering any wormholes. We won't be ignoring magnetism, gravity or radiation. Travel to the Lower Earth Orbit and to Mars will probably take the same amount of time in 150 years as it would take today. By then, though, it'll be a lot safer and more enjoyable.

Getting things as right as we can get them, and knowing how far we can speculate, involves a lot of research in a dizzying array of fields: materials science, urbanism, architecture, health sciences, biology, economics, vehicle design. It's all exciting territory.

So we're building a network of talented scientific consultants to help us.

We've already partnered with the research and development team at LunAres Research Station, an analog habitat for crewed space mission simulations, located at a former military airport in Poland. The LunAres team, led by the conceptual space architect Leszek Orzechowski, is helping us understand the major decisions behind the design of spaceports, mission architectures, and plans for survival, settlement and development away from Earth.

Lunares Orpheus Mission - Marcin Baraniecki

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The Everdome Spaceport

Concept art: Maciej Drabik

The beginning of our Metaverse journey starts in one of Everdome's international spaceports, located in the mountainous Hatta region of the near-future United Arab Emirates.

It's just one of hundreds of spaceports located in various locations around the world, some belonging to international bodies, others to governments and corporations.

Passengers arrive at the Everdome Spaceport either in autonomous, multipurpose vehicles, helicopters, or via the Everdome Hyperloop train. And not just passengers: from the Launch Viewing Area, spectators can watch the Everdome Spaceship (EVR Phoenix) begin its flight to Mars.

The journey to Mars will involve several vehicles, each designed to make every stage of the journey as safe, comfortable and rewarding as possible. Of course hauling passengers out from Earth's gravitational clutches is certainly one of the more dramatic stages of the journey!

In the Everdome Spaceport itself, visitors will explore the first attractions in the Everdome Metaverse: the Space Pioneers Hall, the Rockets Silos, the space-inspired NFT art galleries, and some initial space-related entertainments. They will learn about their up-coming journey, and mingle with other passengers making their last-minute preparations for their trip to Mars.

Other important elements of the Everdome Spaceport include the ship's massive Vertical Assembly Building, the Mission Control Centre, perched on top of a mountain peak, and the various infrastructural complexes that have come to surround both mountain and lake.

May 2022

Last update: May 2023

The Everdome Phoenix

Concept art: Wojciech Fikus

The Everdome Spaceship (EVR Phoenix) is a massive reusable passenger craft, designed to take passengers to and from the surface of a planet in the inner solar system. Docked with the Everdome Cycler, it permits long-distance interplanetary travel.

The spaceship is almost 200 meters tall and is designed to take over 450 passengers and crew in one flight. It sits on top of massive rocket boosters that make the spaceship almost double the size of SpaceX's Starship and its Big Falcon Rocket. At the Everdome Hatta Spaceport, a significant part of the rocket boosters are located in underwater silos, below the lake surface. This innovative design, conceived purely to make such a craft a practical possibility, proved gratifyingly photogenic in this beautiful mountain-lake landscape!

On Earth, where the forces of gravity are significant, Everdome's Spaceships take-off in a vertical position. Other celestial bodies permit different launch configurations. In the absence of a substantial atmosphere, landing the Spaceship requires a series of complex braking manoeuvres. On Earth, the spaceships land the way any aeroplane would.

The journey from rocket launchpad past the Kármán line to Lower Earth Orbit will take seven to eight minutes. The spaceships will then go way up, more than 500km above the Earth's surface to reach the Cycler queuing orbit. Here, a group of around forty spaceships and other ancillary craft will queue up and dock with the Everdome Cycler - a transit vehicle built for interplanetary travel, orbiting around 700km above the Earth.

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Last update: May 2023

The Cycler

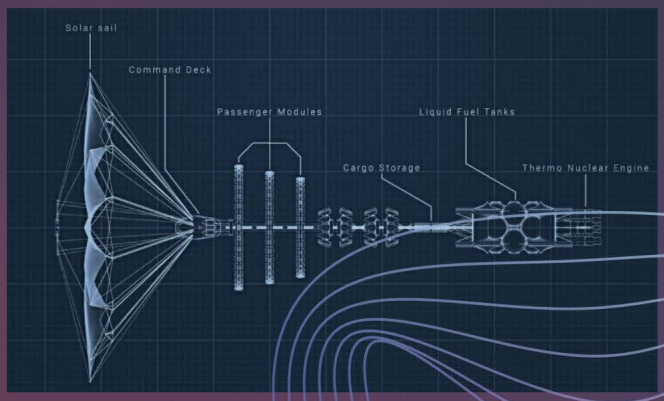
Concept art: Lino Thomas

The Everdome Cycler is almost 3 kilometres long – an impressive sight, even from the Earth's surface. It has two propulsion systems: a thermo-nuclear engine at the rear end of the spaceship and a massive solar sail at the front.

The solar sail provides constant, gentle acceleration while the Cycler is in transit between planets. Unnoticed by passengers, this extra acceleration will cut precious transit time. The nuclear powered engines are used to inject the Cycler into planetary orbit, and to provide quick, powerful course correction.

The Everdome Cycler can carry up to forty whole spaceships, which gives it a passenger manifest of around 9000. The journey to Mars takes between 95 to 120 days depending on the chosen trajectory and mutual positions of both planets. The passengers spend the majority of their time in the passenger rings of the Cycler, enjoying leisure, entertainment and educational opportunities in environments that will prepare them for the new conditions on Mars. The centrifugal forces on the rings are adapted according to the direction and stage of travel. Passengers will be able to acclimatise to Mars gravity en route to the Red Planet.

The Everdome Cycler approaches Mars on a trajectory which allows it to deploy its full compliment of the Everdome Spaceships in a single slingshot manoeuvre. Leaving the Cycler and landing on Mars takes around seven minutes for each spaceship.



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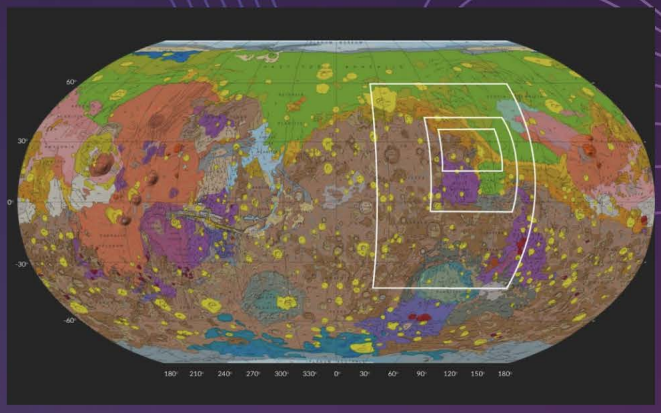
Mars, Isidis Planitia

Source: ESA Mars Express

In choosing a location for Everdome, we pored over the flight plans of Mars missions past and present. We needed a location that a spacecraft from Earth could reasonably reach with minimum course adjustment; a landing field stable enough for continuous heavy use, and a geological make-up that would provide the city with as many local resources as possible.

A site at low altitude will provide spacecraft with a greater opportunity to decelerate through the planet's thin atmosphere. Choosing a site away from the planet's poles lends useful rotational energy to departing spacecraft. Minerals containing hydrogen and metals will be key to the development of any settlement. The richer the area's geological past, the more deposits there will be, containing elements ready for extraction.

So: welcome to Jezero (18.4386 N 77.5031 E), a crater floor over two and a half kilometres lower than Mars's surface average. Jezero sits within the Isidis Planitia, the site of an ancient meteor impact. Ancient, and vast: the impact crater has a diametre of around 1,200 kilometres – 750 miles!



Source: NASA

We're not the first here. The 2020 NASA Mars Perseverance mission deployed a car-sized rover here to explore the crater surface; also a proof-of-concept helicopter drone called Ingenuity, which disappeared in 2048 and has yet to be found.

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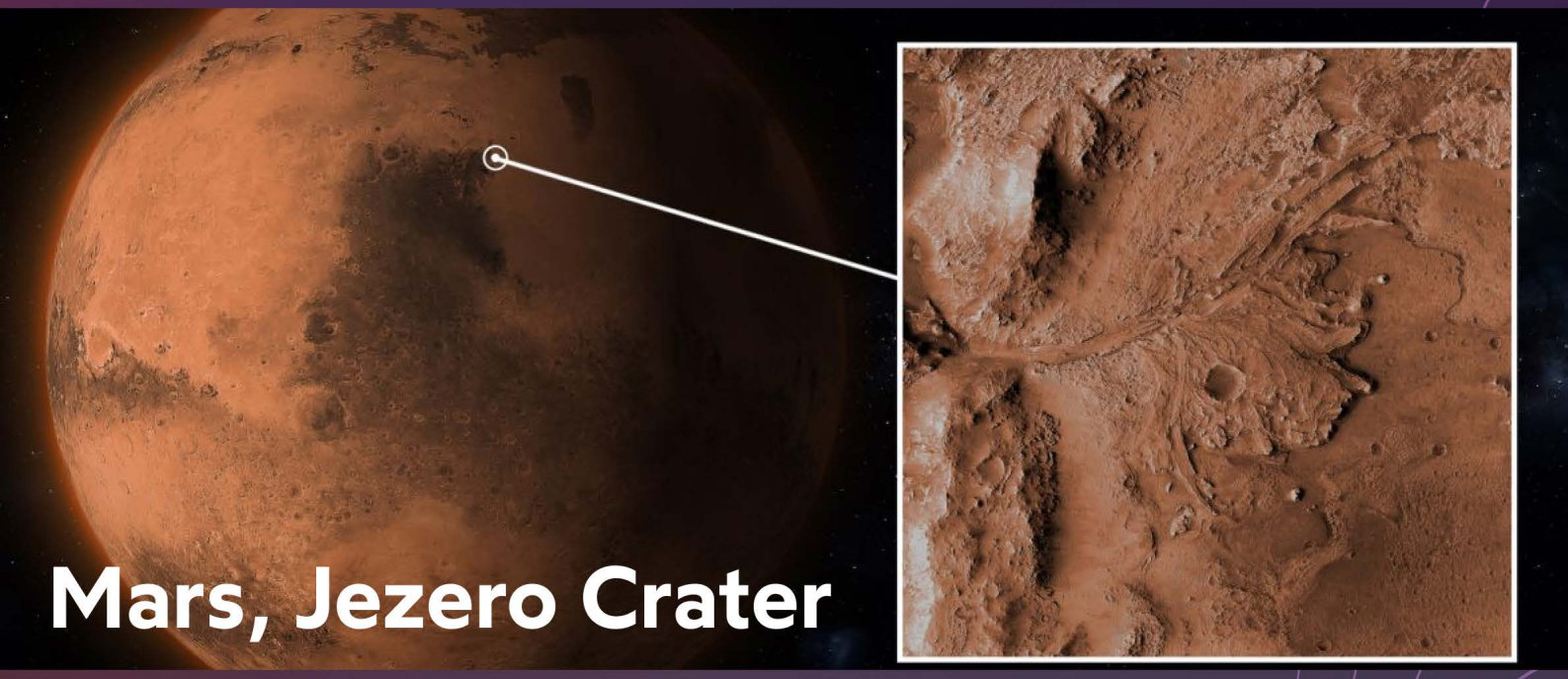
NASA didn't pick this place for nothing: the ancient impact turned this once water-rich region into a flood delta and exposed the planet's deep past. It's a fascinating place: also, a rich one. The abundance of geological structures here hint at a wide range of resources yet to be identified. The minerals created in the crater during Mars's wet period are represented mainly by iron-rich clay. The crater ejecta contain the remains of the ancient meteorite. Some observers suggest that Jezero could have harboured life - and are still searching for it.

Even more resources can be found beyond the crater at the plateau which can be reached by the gentle slopes of an ancient river inlet - the route taken by Perseverance in the 2020s. This water flow has carved a path that allows Everdome to benefit both from the riches of Jezero crater and its surroundings.



Mars, Jezero Crater

Passengers land at Jezero Spaceport, at the very centre of the Jezero crater – site of the first human landing on Mars in 2028. Anyone expecting a wilderness will have to wait a while. Open-pit regolith mines, a spaceship graveyard, the Deep Space observatory and an extensive and ever-growing mining village testify to the speed and scale of human settlement here.

Everdome City itself lies at the western part of the Jezero Crater, nestled in the smaller Belva Crater at the end of the Nerteva Valley. The monumental Everdome Gates straddle the monorail track into the city, testament to the possibilities of low-gravity printed architecture.

May 2022

Last update: May 2023

Everdome City

Concept art: Wojciech Fikus

If you made a quick sketch of Everdome, you would end up with a sprawling hexagon made of smaller hexagons. Six districts cluster round and connect to a main plaza and City HQ. This serves as the city's central control, communications and commercial hub. Each district boasts its own centre and aspires to its own unique commercial and cultural identity. The whole structure shelters from radiation, micro-meteors and sand storms under a vast, transparent, partly pressurised tarpaulin.

The plots between the Everdome HQ's and the district centres are privately owned. Everdome's economy and currency, the $DOME, reflect on-going experiments in finance, stakeholding and investment. Over time, Mars's economy is likely to become as rich, strange and distinctive as its architecture.

Concept art: Wojciech Fikus

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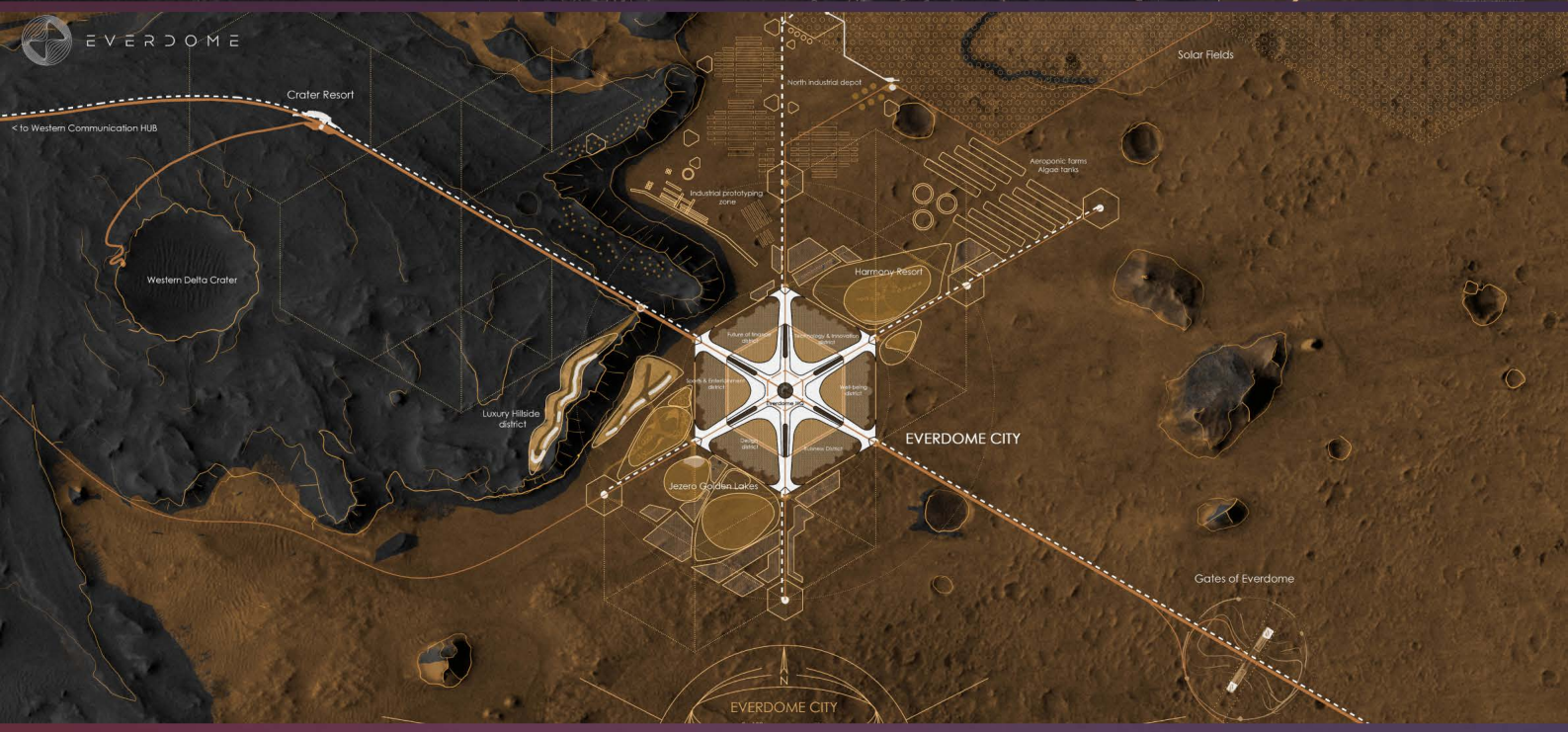
A world with a future

This is where our worldbuilding stands today, in May 2022.
We'll soon be revealing further developments.

But do remember. Everdome will always be a work in progress. The whole point of Everdome is to live in Everdome, and bring Everdome to life. We have a lot of surprises in store, but we want to be guiding, not leading. Please feel free to let us know, either directly or on community streams, how you like what you see, and what other ideas should Everdome explore.

It's your new world.



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