**Dev Vlog 8: Transcript**

Dear Earth2 players and community, welcome to vlog number 8 where we'll be sharing visuals and further details related to our terrain rendering shown in real time, including the confirmed uniform size of every Earth-2 tile. Please note that the visuals shown here are works in progress and do not represent final results. For example, the terrain is only displayed in low detailed view, and no close-up detail layers or realistic biomes have been added yet.

Here we're in the Austrian Alps at sunrise. We'll be placing a reference cube in the world, which corresponds to the exact size of an Earth2 land tile. The grid lines overlaid on the terrain show how Earth-2 land tiles are located on the map. It's important to note that final close-up artist-authored biomes have not been displayed during today's footage.

This is a scenic view of Iceland. Note that Earth-2 land tiles are 19.08 meters on each side, which is equivalent to the circumference of the Earth divided by the number of tiles around the equator. All tiles in Earth 2 are equally sized in our 3D representation of the world, no matter where the tile is located.

Now, let's visit the Krenitzen volcano in Russia. Even though the scale of our world is massive, and we're traveling great distances, the rendering is shown in real time with a high frame rate in our editor. In this location, we'll be overlaying actual Mapbox satellite imagery on top of our terrain system to demonstrate the accuracy of our rendering. Note how closely the 3D-rendered lake shoreline matches real-world satellite data.

Whether land tiles are located at water level on the equator or on the highest mountain peak at the poles, all land tiles are the same size since we transform and stretch the world geometry onto a spherical surface, which allows us to be compatible with Mapbox. Our team is excited to see what players choose to build inside our clean slate, pristine digital version of Earth as E2V1 progresses over time.

For the next location, we'll head over to the East Coast of the US and visit New York City. You may recognize Ellis Island in New York Harbor, home to the iconic historical landmark of the Statue of Liberty. As we turn on the Mapbox satellite overlay, you can see again how closely our Earth-2 rendering matches one-to-one with the real world. To cross-check the location, we'll copy the coordinates and then switch over to Google Earth and plug in the same spot. As you can see, we're looking at Flagpole Plaza on Liberty Island. Again, next, we'll copy the coordinates from Google Earth into Earth 2 and locate the same property on the Earth 2 website corresponding to 4 land tiles. We can now go back to our terrain rendering and highlight those same four tiles on Earth 2 by placing reference cubes at that location. Finally, we can toggle the Mapbox overlay off and on, showing the actual Earth 2 terrain system underneath. Note how land tiles on the Earth 2 website match up perfectly with Earth 2 rendered terrain and Mapbox.

Let's find the nearby Passaic River, which stretches from New York to New Jersey here on the East Coast. Even in a densely populated area with high curvature along the shoreline, enabling the Mapbox overlay shows how closely the Earth 2 rendering matches up with real-world data.

Although square land tiles don't work especially well from a long-range globe view perspective, they're a perfect fit for the web Mercator map coordinate system that everybody is familiar with from online map services. Overlays like this will make it very interesting to see what players have decided to build inside Earth 2.

When compared back to the same Earth 1 location, we're now rotating the globe to bring Southern California into view below. We can see the Sierra Nevada Mountain range. We'll zoom down to Mount Langley. This natural mountain peak is an excellent location to verify the uniformity of our land tile sizes. We'll place a series of 10 reference cubes along the mountain ridge above the terrain. Note how the size and position align perfectly with the grid lines.

Next, we'll fly over to Mount Rainier using a camera speed of 250,000 kilometres per hour and leave the reference cubes behind as markers. Although Earth 2 tile size is often described using a rough measurement of 10 by 10 meters, as stated in this video, the precise size is 19.08 meters on each side. When zooming in for a close-up view, we see the world stretched in the same way as in Mapbox but spherified, which means the surface is projected onto a sphere from the top down. Designing and building our own system in a similar way allowed us to be fully compatible with what is presented on Mapbox and in turn perfectly match player-owned tile locations. It also means our solution is fully compatible with what is presented by the world's biggest mapping companies and globally accepted and used by millions of people every day.

Now, we'll leave Mount Rainier and head back to Mount Langley to check on the 10 reference cubes we placed there. One challenge when working with a large-scale data set, which is the size of Earth, is to maintain accurate numerical precision. This can be problematic as floating-point numbers grow larger in scale, leaving less space for precision. The resulting loss of data precision can cause many issues, including placing objects in the wrong location. We've addressed this in our terrain system, and as we return to our original location, we see that the cubes we positioned earlier are still correctly located in the exact same spot.

We're glad we could share this update with you and hope the first part of this video has been interesting and informative. Welcome to part two of our vlog.

We'd like to introduce you to a group of new buildings before displaying our inter-building road system. The first is the Petrifier, a layer 1 building of the cements branch. As with most layer 1 buildings, the Petrifier blueprint can be researched in the research lab as soon as Ecosim buildings are released. Once the blueprint is researched, the player will be able to select an area to place the blueprint as a hollow building and then command construction droids to use previously woven and locally transported limestone sand and fresh water to build the Petrifier in its layer one form. The Petrifier has a rectangular footprint spreading across two tiles and has the ability to transform limestone sand and fresh water into concrete, the key building block of the cements branch.

Next, we have the Steel Mill, which is the first building in the Steels branch. The Steel Mill can be researched in the research lab, after which time it can be placed as a hollow building and built with construction droids using previously woven and locally transported iron ore, wood, and industrial water. In its layer one form, the Steel Mill has a rectangular footprint spread across two tiles and has the ability to transform iron ore, wood, and industrial water into rolled steel, the core building block of the Steels branch.

We will now showcase some residential and commercial building options. The first one here is an example of a medium-sized residential building spread across four tiles, with a particularly sleek-looking hover car being spread across four tiles. This house can support small gardens, parking spaces, and more. There will be options to have houses on small tile lots as well. Even buildings like this can provide multiple utility inside of Earth too.

For instance, this building could be used to set up a virtual personal space for the owner or occupier, which other players could visit. This same small building could also be tailored to reproduce civilians such as sycophants, proteges, or votaries, depending on property-affiliated factions. Remember, we are now using the correct tile size of 19.08 by 19.08 meters, while all previous vlogs have used 10 by 10 meters as the tile size.

Players looking for more building space may opt to construct larger residential buildings, which can provide more utility. These larger buildings will be able to support more internal spaces usable by the owner for either personal use, to house faction civilians, or even to lease out to other players. Some buildings will support multi-purpose zones for added utility. These are buildings that can be used not only as personal spaces to house civilians or lease to players but also to provide facilities that train or educate civilians and avatars to learn new skills. Larger residential buildings will have specialized purposes, making them important for different reasons depending on the player's goals or strategies. As always, each building will be customizable and support the ability to display billboards for advertising or promotion of personally chosen messages.

A common misconception is that Earth 2 will force players to only be able to purchase buildings directly from Earth 2, but this is incorrect. We want players to play the eco-sim, trade, buy, sell, transport, manage, intercept, and similar activities, which will allow players to acquire key game assets and currencies that will then provide the ability to own and build themselves, all made possible from successfully participating inside of Earth 2. Should they wish to, players not Earth 2 will then be able to sell properties along with the buildings they have diligently constructed over time. This approach is another clear representation of our long-term goal to design features which have focus to benefit the player first, not Earth 2.

Each player looking to play the eco-sim and earn inside of Earth 2 will require a personal virtual space for their avatar to reside. These players will have the ability to lease spaces from building owners or otherwise lease spaces based on an eco-sim agreement with other players who can provide virtual spaces in return for services. Once those services are completed by the leasing player, that player may conduct their own business to earn more within the ecosim. If smart and the opportunity is available, they may even be able to conduct some of their own business while on ecosim agreement service work for other players. Players will be able to earn essence resources, building blocks, and similar digital items for themselves by transporting, trading, buying, selling, intercepting, and more.

We've known for some time that tiles on Earth 2 were larger than 10 by 10 meters. The actual tile size of 19 by 19 meters allowed us the space we needed to develop an inter-building road system that would function even in heavily purchased areas where every adjacent tile is actively owned by multiple players. We like to think of part of this additional space as kind of a community area for infrastructure that supports transportation and allows for better navigational access. Over time, players will have the option to select different building combinations, which will result in different-shaped inter-building road systems. These systems have the core goal of enabling every building to be directly accessible by a vehicle if so desired.

As cities grow, there will be new types of road infrastructure and traffic systems available, and these will be displayed in future Earth 2 vlogs. We also plan to demonstrate how the construction of buildings on non-flat terrain, such as mountains or hilly areas, will be possible outside of cities. Earth 2 will, of course, also support a wide variety of population settlements, similar to what we have in Earth 1. Low-density rural areas, as well as small towns with lower population, will be enabled as well and can be connected to city centres in some cases via hover roads.

You'll note that some buildings in this view appear to occupy parts of the same tile. This is because we plan to support multiple options when placing certain groups of buildings, so players can merge their structures into different layouts for varying benefits. For example, a player could reduce the number of tiles required for some buildings when they're constructed together in a group, such as the two medium-sized houses spread over six tiles, as opposed to the eight tiles that would normally be required to support those two houses.

Although this is just a prototype using digital assets, the city scene shown here is fully dynamic and interactive. Lighting, shadows, and reflections are calculated and updated in real-time and can represent day or night and will support various weather conditions in the future. Vehicles move smoothly through the scene, both on land and in the air. Rooftop billboards rotate to display advertising images, and the camera can be placed anywhere in the scene.

It's been mentioned that ether is life and essence is power. The control and use of ether will be a strategic decision for players in the future, as ether will have the ability to create and support life on Earth too. Most living things on Earth too will have some form of connection back to ether. An example of ether creating life will first become apparent when players look to begin their civilian workforce. Ether will be required to form and breathe life into player-owned civilians and other biological life forms planned for future release inside of Earth 2. But be careful, players who create more life than what they can house or support will run the risk of having their civilians lured and converted to serve other players.

In exciting news, our team has been exploring with avatars moving around inside of these virtual city spaces in first and third person view. We are researching solutions that will allow these avatars to navigate all over E2V1 in a multitude of ways, which will include entering buildings and navigating to different virtual room spaces inside of these buildings and much more. These avatars will be customizable.

This marks the end of our first vlog series consisting of vlogs one to eight. It's been a pleasure to share some of our progress with you via these vlogs. The Earth2 team has an extremely busy schedule of building and delivering products throughout the second half of 2022, and we anticipate a gap between our next vlog series. The next significant footage we showcase of E2V1 will be released in close proximity to the Essence token trading live. This scheduled footage will introduce, show, and prove a number of things inside our vast and open digital Earth. It will be a great addition to build excitement toward the launch of the Earth 2 Essence token and a glimpse at some of the possibilities we're aiming to introduce on E2V1 and beyond.

In the meantime, the Earth2 team will continue to work toward the release of E2V1 and supporting features to provide more utility to Essence and more things for players to do inside of Earth 2. We thank you for joining us during this vlog series and look forward to showing you more exciting Earth-2 developments in the near future. Until then, we thank you for your ongoing support, so keep safe and keep following to be part of each and every little step of the way as we build toward our end goals and the bigger picture of what will become Earth 2.