Osmosis Bridge Proposal

PREPARED FOR

Osmosis Community

PREPARED BY

Gravity Bridge Team

February 18, 2022

Summary

The Gravity Bridge blockchain is the trustless, neutral bridge between Ethereum and the Cosmos ecosystem.

Neutral means that the entire focus of the Gravity community is on providing the most effective and secure bridge possible, instead of on a DeFi application on the local chain.

Gravity Bridge protocol is a radically simple bridge design, focused on providing better security by eliminating design complexity.

Osmosis is the financial epicenter of the Cosmos ecosystem, a testament to the simplicity of its UI, reliability of its infrastructure, the community's trust in its security, and the rich feature set it offers. The bridging solution the Osmosis community elects to adopt should follow this precedent.

The Gravity Bridge blockchain is the purpose-built bridge designed for trustlessness and neutrality, with permissionless integration of front end architecture. These values make Gravity Bridge the ideal bridge service provider for Osmosis.

Question 1: *How does your bridge work (at a medium or high level of detail)? What are its best features? Is it permissionless, non-custodial, trust-minimized, and decentralized? What additional trust assumptions does it put upon Osmosis users? If there are new trusted parties, how are/were they chosen*

Gravity Bridge is trustless, decentralized and highly efficient.

New Assumptions:

The Gravity Bridge protocol requires no new assumptions by Osmosis users and offers the closest approximation of IBC security possible for interaction with Ethereum, which for now remains a proof of work chain.

Trusted Parties:

All control over the bridge is handled entirely by the Gravity Bridge validator set.

Best features:

- **Highly decentralized, all funds are directly controlled by validators**
- **Advanced slashing ensures that validators cannot sign or submit bridge messages not agreed upon by consensus**
- **Purpose Built for Cosmos Ecosystem as a neutral platform**
- **Rollup-style batch transactions reduces individual users' gas costs by up to 96%**[1]
- **Robust relaying reward systems combined with reduced gas costs creates extremely fast & reliable transfers with a decentralized, self-funded, relayer community**

How does it work?:

Our team focused on building the simplest protocol possible, refining our solution and continuously reiterating—building better and better versions of the remaining parts.

This results in a trustless bridge that costs less to operate than a custodial one, with a design so simple and refined that three other production chains have integrated their own version.
The Gravity Bridge, like all bridges, has two components. A Solidity contract on Ethereum and a CosmosSDK module on the Gravity Bridge blockchain.

---

[1] Computed per tx savings by comparing a multi-sig verification from a xDai withdraw vs. a batched transaction on Gravity.
xDai bridge withdraw, cost 150k gas
https://etherscan.io/tx/0x3fcff9138e778778cb13f3d56fbcc7f2d8699d8df27eca05690642793371856a
Plus deposit to Gravity Bridge, 50k gas
https://etherscan.io/tx/0xa94ac64c838204b7ffe6ef3a7286660d08551432546fb683ecea42696ae39bd1
By comparison, batched Transaction on Gravity
https://goerli.etherscan.io/tx/0xeff9ab0de766215868742c277ec2b1c94f77e8936c85db63708680de30cf4293

The way all cross chain bridges work is to lock up a native token on one side of the bridge and mint a representation on the other. This representation is then used by the user before it is returned to the bridge and redeemed for the native asset on the other chain.

For bridges to and from Ethereum the most critical component is the Solidity contract. It holds the native assets being sent across the bridge and is therefore the most appealing target.

Gravity.sol is the solidity contract that holds funds for Gravity Bridge on Ethereum. In contrast to the prevailing trend in other bridge designs, at a mere 580 lines of code, this Gravity.sol is compact and easy to review. It has been audited by three independent teams (Certik, Least Authority, and Code4rena) and it is not upgradable. It does not contain any trusted parties, of any kind.

Gravity.sol is fully controlled by the validators of the Gravity Bridge blockchain in proportion to their stake. Meaning the security and decentralization of the bridge is the same as the Gravity Bridge blockchain itself.

Deposits:

Depositing assets to Gravity Bridge from Ethereum is permissionless and censorship resistant. Each validator attests to every deposit event as they occur on Ethereum. When an event is attested by more than ⅔ of the validator set representative tokens are minted. Validators must submit all attestations in order without skipping any, making it impossible to censor individual deposits.

Withdraws:

Gravity Bridge batches withdraw transactions, placing multiple *SendToEth* messages together in an individual batch. This works like a rollup on Ethereum. Executing many transactions in a single shared context is far more efficient than doing so individually.

This process provides huge efficiency gains, up to 96% reduction in gas cost.

That means if an ERC20 transaction costs $20 to send, moving tokens from Gravity Bridge to Ethereum will cost only $4. The result is that Gravity Bridge can charge transaction fees in the token transferred, achieving economic self-sufficiency, while still dramatically reducing the overall transaction cost for the user.

The second advantage of batching is in censorship resistance, since the Gravity Bridge protocol itself defines what transactions go into each batch and then requires that validators produce valid signatures. It is not possible for a validator to avoid signing a specific transaction or for a relayer to avoid relaying it.

Slashing and security:

To ensure that Gravity Bridge blockchain consensus remains in control of the bridge and the assets it holds, the Gravity Bridge protocol institutes several rules.

- The protocol generates what messages should be signed next by the validators
- When signatures are submitted they are validated as part of consensus and rejected if they do not sign the correct message.
- If a validator does not produce the correct signature within the slashing period they are slashed and kicked out of the Gravity Bridge validator set (this also removes them from the Ethereum side of the bridge)
- Anyone can submit evidence of a signature over a non-protocol message to slash a validator.

Evidence based slashing for Gravity Bridge signatures is the strongest possible protection, it makes it extremely difficult for validators to collude to steal funds from the bridge. In doing so they risk any single defector getting them slashing while they endeavor to collect the required signatures.

Question 2: *What are the liveness and/or censorship resistance guarantees of your bridge solution (including both the protocol itself and the interfaces used to interact with it)?*

The Gravity Bridge protocol *does not allow for individual bridge transactions to be censored*. The Ethereum to Cosmos oracle requires each validator to attest to each event in order, excluding the possibility of censoring any subset of messages. Similarly, all validators must sign transaction batches going through to Ethereum and the batching process is objectively defined in consensus, based on fee. Finally a relayer must relay a whole batch, as created by the protocol, and has no ability to exclude any individual tx.

The Cosmos SDK governance system does allow for addresses to be blacklisted by an explicit governance vote. Similarly the Gravity module allows for Ethereum addresses to be blacklisted by governance vote, or the bridge to be temporarily paused by governance vote.

The Gravity Bridge protocol provides strong censorship resistance guarantees and the bridge will remain live as long as the chain remains live, i.e. with more than 2/3 of validators active.

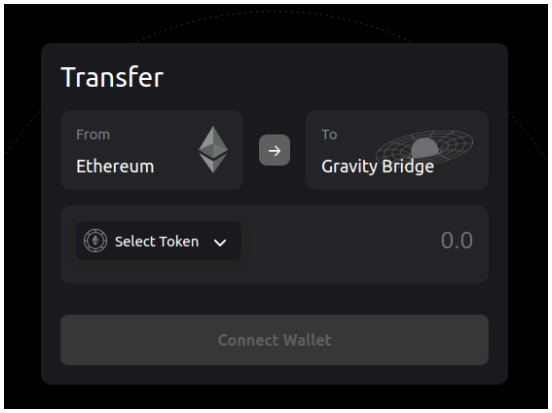
From the perspective of interfaces, Gravity Bridge uses and encourages many different front ends and integrators to prevent any single interface from monopolizing and censoring use.

Question 3. *Describe your current and future UX. What concrete steps are you taking to get there, and what is the timeline? Will users be able to deposit/withdraw assets directly between Ethereum and Osmosis? Or will they have to make a transaction on an intermediary blockchain?*

The goal of the Gravity Bridge blockchain community is to provide a neutral bridge that is easy to use and integrate with. Therefore UX efforts are focused on having a thriving community of different bridge interfaces and providing features that make life easier for integrators.

Since the launch of the Gravity Bridge just three months ago, several different front ends are already available. This marketplace of front ends encourages user choice, competitive improvements to UX, and demonstrates how integrators can seamlessly add Gravity Bridge support to their application.

Spacestation.zone Blockscape Skynet



Spacestation.zone - One of the easy-to-use interfaces available today

Gravity Bridge has launched a “Gravity Grants”, ecosystem fund from the Gravity community pool. This will include funding not only for a variety of bridge interfaces but also features and functionalities, visibility tools and other UX enhancements.

The next phase of Gravity Bridge UX is a focus on making the bridge easier to use from the perspective of a destination chain. Gravity Bridge is adopting and integrating the Osmosis bech32-ibc forwarding module directly into the bridge.

While Gravity Bridge will require an intermediary blockchain whenever the tokenholder wishes to transfer assets between Cosmos, Ethereum and EVM-compatible chains this forwarding will offer a “one-click” option to route transactions directly to/from Osmosis. The Gravity Bridge team believes Osmosis is a financial hub of the Cosmos; users transferring assets to the Cosmos deserve an introduction to Osmosis that removes the complexity commonly experienced.

Question 4. *How does your bridge plan to support itself economically? Will it be self-supporting? When?*

Gravity Bridge currently funds development, operations, and maintenance through a community pool, which was allocated half of all tokens at genesis. This has been proposed to be administered partially through the *Gravity Grants* program, which will establish a community org and structure for release of GRAV.

Once bridge traffic has matured, tx fees could be enabled by the community to sustain the community pool. These tx fees are payable in a wide variety of tokens, not solely in GRAV. Other mechanisms, like a portion of the inflation, could be used to fund the community pool.

Since transfers to and from Ethereum using Gravity Bridge are dramatically less expensive than with other bridge protocols, lower costs will both attract more traffic and provide a healthy margin for tx fees, *while remaining far lower cost to the user* than other bridges.

In addition to Ethereum-to-Cosmos bridge operations of interest to Osmosis, Gravity Bridge also empowers any Cosmos chains to create an Ethereum representation of their tokens.

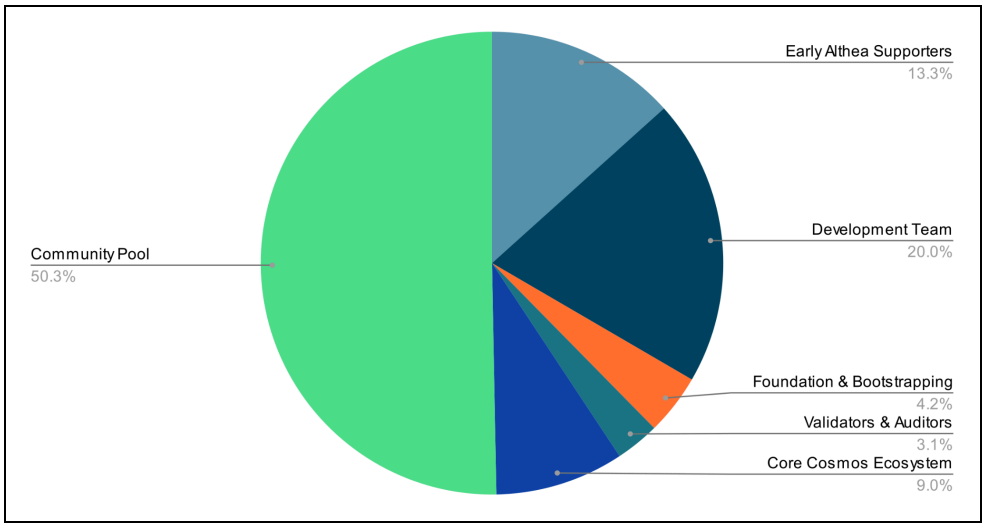
Moving Cosmos based tokens to Ethereum both provides additional traffic and serves as a potential source of revenue, in the form of a community fee charged to enable transfer.

A large portion of the community pool remains to fund operations while bridge traffic grows.

Question 5. *Who owns the bridge? Is there a token, vested shares, etc? Who are the stakeholders?*

Validators operate the bridge. Gravity Bridge is maintained by the Gravity Bridge Foundation, which serves a decentralized body of token holders.

Once the Community Pool has been distributed, the stakeholders of the bridge will be a decentralized pool of developers and bridge maintainers, ATOM and other Cosmos ecosystem holders, Cosmos core entities, and users of the bridge.



Token allocation of Gravity Bridge

The initial Genesis accounts for the multiple funding and development sources (development support & team) for the bridge included, in order of value, Althea contributions, Peggy JV and crowd sourced funding, and grants from the Interchain Foundation. Genesis also supports a robust development team and ecosystem alignment. The Early Althea Supporters and Team categories represent close to 50 different entities and individuals who shared the blood, sweat, and tears of the many years building the talent and code necessary to bring the bridge to life and who will be supporting the bridge in its future. Gravity Bridge also exists as an open source module which has already, and continues to, benefit many other Cosmos chains in the ecosystem.

GRAV was minted and granted from the Gravity Foundation without any prior sales of GRAV tokens or contributions from the ATOM community pool. The genesis supports the Cosmos community alignment with 9% of the total allocated to the hub community pool and “Core Cosmos Ecosystem,” which refers to entities like the Interchain Foundation and Tendermint.

Core ecosystem	**Total 9.000%**	Interchain Foundation	44,000,000	2.000%
		Cosmos Hub Community Pool	110,000,000	5.000%
		Peggy JV	22,000,000	1.000%
		Tendermint	22,000,000	1.000%

7% was allocated to the ICF for funding and coordinating part of the development of the Gravity Bridge technology. The ICF is dedicating ~71% of the 7% (5% of the total genesis) to the Cosmos Hub Community Pool. Until Interchain Accounts launch and they are sent to the

Cosmos Hub Community Pool, the ICF will be delegating the tokens to validators of the Cosmos hub who operate on gravity chain.

All genesis tokens, other than the genesis validators, are in a 4 year locked schedule: one year lock up, followed by an incremental release over the remaining 3 years.

Voting and Community Participation

The Gravity Bridge Commonwealth forum is the repository for token proposals and discussion. Initial governance parameters allowed for ease of bootstrapping and early updates, however, the expectation is that governance proposal parameters will be updated by the community to conform to existing Cosmos ecosystem norms.

Several proposals post-launch updated bridge code and efficiency. Several other proposals airdropped GRAV to ATOM holders who participated in governance and the Osmosis community (OSMOSIS community pool and ion holders). These later proposals enable ATOM community members to participate in the Gravity ecosystem and align a synergistic partnership with the Osmosis community, the prominent Cosmos DEX. These initial distributions are in addition to the Cosmos ecosystem alignment in the genesis allocation. Tokens allocated from the community pool are not subject to a locked period, and may be freely traded.

The over 130+ validators operate and maintain the bridge infrastructure. Like other Cosmos blockchains, holders of GRAV can delegate their tokens to be staked with a validator of their choosing and earn inflationary rewards. The inflation schedule is set to the same parameters of the Cosmos hub, but can be changed by governance.

The governance module supports numerous on-chain functions including updates and community pool spending. Because there is no lockup for community pool tokens, the Gravity Bridge community may wish to take a measured and long term approach to further spending to ensure that it aligns with the core principles of security, growth and sustainability.

Gravity Bridge is a decentralized blockchain, not in the control of any single entity, and the community will vote on updates and spend from the community pool.

Question 6. *What costs will users of the bridge experience, and how do you plan to minimize these?*

Costs and Batching

Deposits from Ethereum to the Gravity Bridge blockchain have the same cost as a normal ERC20 transfer. From there the user will pay any applicable Gravity Bridge tx fee for transfer over IBC to their destination chain of choice.

During the process of sending tokens from Gravity Bridge to Ethereum batches are formed, placing multiple *SendToEth* messages together in a batch. This works like a rollup on Ethereum, executing many transactions in a single shared context is far more efficient than doing so individually.

This process provides huge efficiency gains, up to a 96% reduction in gas cost.

That means if an ERC20 transaction costs $20 to send, moving tokens from Gravity Bridge to Ethereum will cost only $4.

Users will pay a Gravity Blockchain tx fee when sending their *MsgSendToEth* in addition to a bridge fee, paid in the token they are sending across the bridge, which will be distributed to a relayer on Ethereum.

Efficiency is an extremely important focus on the Gravity Bridge design and as you can see we have achieved the lowest bridging costs possible in our design. This will drive more volume and allow us to keep the Gravity tx fees extremely low and ensure that users of Gravity Bridge will pay a lower total amount in fees than even a competitive bridge charging no fees.

Question 7. *How will the bridge and any related contracts, modules, and chains be secured? How could funds be attacked, and what mitigation strategies are in place? Are there any other recovery systems to help recover any sort of locked funds?*

Gravity Bridge Security

Gravity.sol is the solidity contract that holds funds for Gravity Bridge on Ethereum, unlike many other bridges this contract is compact and easy to review at only 580 lines of code. It has been audited by three independent teams and it is not upgradable. Nor does it contain any trusted parties of any kind.

This design means that the only way to attack the bridge is to go through the validators themselves.

A number of measures have been implemented to ensure that Gravity Bridge blockchain consensus remains in control of the bridge and the assets it holds.

- The protocol generates what messages should be signed next by the validators
- When signatures are submitted they are validated as part of consensus and rejected if they do not sign the correct message.

- If a validator does not produce the correct signature within the slashing period they are slashed and kicked out of the Gravity Bridge validator set (this also removes them from the Ethereum side of the bridge)
- Anyone can submit evidence of a signature over a non-protocol message to slash a validator.

Evidence based slashing for Gravity Bridge signatures is the strongest possible protection, it makes it extremely difficult for validators to collude to steal funds from the bridge. In doing so they risk any single defector getting them slashing while they try to collect the required signatures.

Furthermore there's no way to avoid slashing once an attack has been submitted to the Ethereum mempool, attackers get only one shot before all the validators they have compromised are removed from the set.

As a final layer of protection the Gravity Bridge blockchain performs a series of integrity checks that will halt the chain on any unexpected behavior. The validator set for the Gravity Bridge blockchain is extremely responsive and can get the chain moving again in less than 6 hours.

While the chain is halted the funds in the bridge remain secure, this is one of the strongest advantages of being a neutral and independent bridge chain. Gravity Bridge can make operational decisions optimized solely for ensuring bridge security.

The Gravity Bridge community can use a special endpoint on Gravity.sol to send any locked funds, such as ETH or tokens accidentally sent directly to the Gravity.sol instead of transferred using MsgSendToEth.

Audits Performed:

- Informal
- Code4Arena
- Least Authority

Question 8. *Are there any sort of insurance funds or anything of the like to compensate users in the case of stolen or irrecoverable funds?*

While there is not currently a set-aside for an insurance fund, one could easily be set aside from the community pool and could contain a collection of assets.

Interchain security, or leasing security from other blockchains, could also be considered as a way to incorporate security from other chains (like the hub) and also distributing a portion of the rewards of the blockchain.

Question 9. *When users experience problems, what is your plan to provide easily reachable support?*

Gravity Bridge has established several community outreach programs for various sorts of users of the network. A variety of organizations could also be incentivized to provide additional or ancillary support, through funding from the *Gravity Grants* program.

- LEET team for validator and relay coordination
- Customer support DAO for Discord (under development)
- Various front ends maintain independent support with additional teams

Question 10. *How would you describe the likely network effects of your bridge and your team's reputation within the ecosystems you are bridging, both among DeFi users and among developers?*

Gravity Bridge has already established itself as a leader in recruitment of collaborative resources and has demonstrated a unique ability to broaden recruitment and Defi users from the ethereum, EVM and web2 ecosystems.

- Ran the first crowd sourced audit in the Cosmos ecosystem, which invited a large number of participants including teams like Nascent from the ethereum ecosystem.
- Developed Gravity as an open source protocol, which is now used as a module in many Cosmos blockchains.
- Hold regular Developer syncs and test nets.
- Recruited a large validators set, many of whom are new entrants to the Cosmos ecosystem, who participated over years in bridge testing and now operations. Many of these validators also now contribute development and documentation.

Question 11. *How would you describe your incentive-alignments with the Osmosis community, now and in the future.*

Gravity Bridge has used the Osmosis DEX to inform many of the deployment and development considerations. Gravity Bridge is a neutral bridge, incentivized to bring in additional traffic, which is aligned with the Osmosis community value capture. Gravity Bridge is not operating it's own DEX, and is aligned as a neutral platform bridge provider.

- Bech32 Forwarding and a "one click" UX is one example of how the development teams have already worked together towards better user experience for Osmosis users

- A good will community pool drop was also executed according to governance:

Details of this proposal:

This is a CommunitySpendProposal requesting 13,750,000 GRAV tokens from the Gravity Bridge community pool to distribute to the Osmosis community pool, via a 2 of 3 multi-sig, and 1,100,000 GRAV to ION token holders as of block height 2397435. By voting Yes on this proposal token holders will signify approval and funding from the pool will distribute upon it's passing. The members of the multi-sig include: Zygimantas Magelinskas, Figment Zaki Manian Ethan Kravitz, AGE

Upon the passing of this proposal, the multi-sig will transfer the GRAV into the Osmosis Community Pool.

Background: The goal of this proposal is to create a market for the GRAV token. While the Osmosis community will determine the best way to deploy these tokens, we hope a distribution strategy that aligns the entire Cosmos ecosystem with the Cosmos Gravity Bridge chain is prioritized and adopted. Examples include GRAV airdrops to Osmosis LPs, OSMO stakers, and offering liquidity mining incentives to LPs that include GRAV tokens. The Osmosis community is an incredibly creative governing body and we are excited to see which novel proposals are discussed & approved. The Osmosis community has previously signaled a desire for a diversified Treasury; Osmosis contributors have expressed this sentiment before, and the Osmosis community at large has signaled this by agreeing to a loan of OSMO to Stargaze to launch their LBP. The Osmosis community will be able to launch a liquidity pool for GRAV<>OSMO pairs, engage in Gravity governance, or run a community validator with help from this GRAV. Contributors to Osmosis could also request being compensated for work in GRAV tokens. This is a great opportunity to increase the circulation of GRAV.

Question 12. *How would you rate your team on its ability to quickly ship excellent upgrades, patches, and new features? How focused is the product towards bridging Cosmos and EVM assets? Is it the primary focus of the project or one of many features and/or projects that the development team is building?*

The Gravity Bridge blockchain has a vibrant development community with many external contributors and teams using the bridge. Many of these teams, including the Althea founding team, are also users of the bridge, ensuring long term alignment and capacity.

The founding team has a track record at Althea of maintaining innovative protocols that demand high up-time. Further, because the Gravity module is integrated with other Cosmos blockchain as well, the code is being collectively developed and improved by several teams within the cosmos ecosystem.

Gravity Bridge is focused on EVM assets, with Ethereum/Erc-20 as a highest priority.

Question 13 & 14. *What is your timeline for adding other EVM chains beyond Ethereum? Do you have any plans for non-EVM chains? What is your timeline for adding non-token cross-chain messages (e.g. Interchain accounts and NFT transfers)?*

Timeline for additional EVM chains is before the end of 2022. Gravity Bridge has no current intention to focus on non-EVM chains, it's our intent to be the most optimized and reliable EVM bridge.

NFT transfers are under active development, together with the Stargaze team, and targeted for Summer 2022. Interchain accounts will be available as soon as they are stable in CosmosSDK.

Addendum, documentation

Osmosis Airdrop Proposal:

Link: https://commonwealth.im/gravity-bridge/proposal/16-grav-airdrop-osmosis-and-ion-holders

Status: Passed and executed

This is a CommunitySpendProposal requesting 13,750,000 GRAV tokens from the Gravity Bridge community pool to distribute to the Osmosis community pool, via a 2 of 3 multi-sig, and 1,100,000 GRAV to ION token holders as of block height 2397435. By voting Yes on this proposal token holders will signify approval and funding from the pool will distribute upon it's passing. The members of the multi-sig include: Zygimantas Magelinskas, Figment Zaki Manian Ethan Kravitz, AGE

Upon the passing of this proposal, the multi-sig will transfer the GRAV into the Osmosis Community Pool.

Background: The goal of this proposal is to create a market for the GRAV token. While the Osmosis community will determine the best way to deploy these tokens, we hope a distribution strategy that aligns the entire Cosmos ecosystem with the Cosmos Gravity Bridge chain is prioritized and adopted. Examples include GRAV airdrops to Osmosis LPs, OSMO stakers, and offering liquidity mining incentives to LPs that include GRAV tokens. The Osmosis community is an incredibly creative governing body and we are excited to see which novel proposals are discussed & approved. The Osmosis community has previously signaled a desire for a diversified Treasury; Osmosis contributors have expressed this sentiment before, and the Osmosis community at large has signaled this by agreeing to a loan of OSMO to Stargaze to launch their LBP. The Osmosis community will be able to launch a liquidity pool for GRAV<>OSMO pairs, engage in Gravity governance, or run a community validator with help from this GRAV. Contributors to Osmosis could also request being compensated for work in GRAV tokens. This is a great opportunity to increase the circulation of GRAV.

Details about the Airdrop: Total Amount of GRAV: 14850000 Amount Distributed to Osmosis Community Pool: 13,750,000 Amount Distribute to ION token holders: 1,100,000

Gravity Bridge Grants Proposal

Link: https://commonwealth.im/gravity-bridge/discussion/3824-introducing-gravity-grants-a-proposed-grants-program-for-gravity-bridge

Status: Pending

The Cosmos Gravity Bridge puts the Cosmos ecosystem at the center of the DeFi universe. Despite having an abundance of dedicated builders, the undisputed best tooling and infrastructure for application specific blockchains, and the most passionate community in all of crypto, Cosmos has never had a DeFi Summer for one simple reason: No access to leading stablecoins.

Gravity Bridge is a protocol and DAO, and we are asking for the Cosmos' community's help to make the summer of 2022 the Summer of Cosmos.

We are focusing on two specific areas:

- Gravity Bridge Public Goods
- Cosmos Ecosystem Public Goods

All distributions of GRAV from the community pool are allocated by governance proposal vote. Prospective participants in the *Gravity Grants* Program should include with their proposal a desired budget to facilitate the completion of their contribution. Price discovery of the GRAV token should occur prior to governance vote for approval, so as to help in determining the correct GRAV amount.

Initial Proposed Grants for Gravity Bridge Ecosystem

Gravity Bridge Grant #1: GUI for bi-directional GRAVITY BRIDGE transactions

Build and maintain an independent front end to integrate with the Gravity Bridge. Selected front end teams will partner together with the Gravity Bridge team, to iterate on UX (user experience) and integration with new EVM chains and Cosmos Blockchains.

The front end interface should be able to perform the following functions:

- A menu displaying ERC-20 tokens and Ethereum, from which the user can select the token they wish to send
- Integration of Keplr wallet and MetaMask for signing Cosmos and Ethereum transactions
- A "send to Cosmos-chain" functionality, and a send to Gravity Bridge

- Allow users to withdraw EVM tokens/Ethereum from Gravity Bridge to their native tokens, while providing the user with the following options:

    - Send as a withdraw transaction that will be processed once a batch is filled (batches will be completed at a minimum interval of 1x per day)
    - Send a withdraw transaction immediately
    - Optionally: ability to connect with additional wallets

Gravity Bridge Grant #2: Dashboard for batching and gas statistics

- Display the frequency at which batches are being relayed
- Display the profit made on relayed batches, including average profit
- Display pending batches, and their current value
- Fee suggestion function – i.e. examining past and present data, estimating a suggested fee for transactions sending tokens from Cosmos to Ethereum (front ends will query one of a set of provided gas APIs) (gas estimation being separate from front end development)
- Ability for users to track the status their pending token transfers

Gravity Bridge Grant #3: Automated snapshot service for Gravity Bridge (.torrent / wget capable URLs) and an aesthetically pleasing website to present the snapshots on

- Establish a periodic, automated snapshot service for Gravity Bridge
- Snapshots should be retrievable via wget and torrent clients
- A easy to navigate website for user to locate relevant snapshots and intuitive instructions on how to retrieve them

Note: For a good example of similar features, you might wish to review quicksync.io

Gravity Bridge Grant #4: Dashboard for Gravity Bridge Usage

- Tokens deposited into Gravity Bridge
- How many grav tokens are being used by cosmos chains
- How many cosmos tokens are being used in Ethereum
- CSV export to let others analyze this data.

Cosmos Public Goods

CPG #1: Public Nodes for Osmosis, Cosmos HUB, Juno, and other Cosmos-chains.

The intended outcome of CPG1 is the separation of the relayers (requires tokens) from the node runners (requires HD space)

CPG #2: Research and Development of IBC Queries. Goal: Implement the IBC Query Spec so that Gravity Bridge can query IBC token metadata instead of requiring Governance to manually set it for each asset.

CPG #3: Construct an informative website, similar to https://weth.io/ or https://erc721.org/, which relates different cross-chain bridge architectures and how Gravity Bridge differentiates itself from from other cross-chain bridges

CPG #4: A web app that simplifies the Gravity Bridge governance proposal process necessary for adding metadata to different IBC assets (so they can be bridged to ERC20 assets).

CPG #5: Create a new set on http://tokenlists.org/ that consists of all Cosmos native ERC20s that have been bridged to Ethereum, so they can be easily searched and imported on https://app.uniswap.org.

Gravity Bridge Ecosystem, Initial Proposed Grant (#1):

GUI for bi-directional GRAVITY BRIDGE transactions:

Build and maintain an independent front end integrated with the Gravity Bridge. The front end interface should be able to perform the following functions:

- A menu displaying ERC-20 tokens and Ethereum, from which the user can select the token they wish to send
- Integration of Keplr wallet and MetaMask for signing Cosmos and Ethereum transactions
- A “send to Cosmos-chain” functionality, and a send to Gravity Bridge
- Allow users to withdraw EVM tokens/Ethereum from Gravity Bridge to their native tokens, while providing the user with the following options:
    - Send as a withdraw transaction that will be processed once a batch is filled (batches will be completed at a minimum interval of 1x per day)
    - Send a withdraw transaction immediately
    - Optionally: ability to connect with additional wallets

Selected front end teams will partner together with the Gravity Bridge development team, to iterate on UX (user experience) and integration with new EVM chains and Cosmos Blockchains.

This announcement is a preview of the *Gravity Grants* program, an overview of potential proposal requests, as well as the tentative initial proposal request (see: GUI for bi-directional GRAVITY BRIDGE transactions).

Details on the application process, eligibility, selection criteria, budget and compensation will be covered in a further post. In the interim, if you are interested in participating, we would invite you to join the Gravity Bridge Discord Server and request the *Gravity Grants* role. For more information on Gravity Bridge, visit www.gravitybridge.net

Additional links

Other resources

Website
gravitybridge.net

Commonwealth Forum
https://commonwealth.im/gravity-bridge

Gravity Bridge Tokenomics
commonwealth.im/gravity-bridge/discussion/3798-gravity-bridge-token-economics

YouTube:
youtube.com/channel/UCPzMs_MmnBk7GZ2mM3_ufOA

Twitter:
twitter.com/gravity_bridge

Discord:
https://discord.gg/d3DshmHpXA

Blog:
www.gravitybridge.net/blog

Front ends/Block Explorers:

Space Station	https://spacestation.zone/
Blockscape	https://gravity.blockscape.network/
EZ Staking	https://gravity-bridge.ezstaking.io/
Skynet Explorer	https://www.skynetexplorers.com/gravity-bridge
Mintscan	https://www.mintscan.io/gravity-bridge