

Web3 Security is Embarrassing



Why we can and must do better

Andrew MacPherson

Principal Security Engineer, Privy.io

Disclaimer

I love security.

I love drama.

I love ranting /complaining.

./whoami

- Andrew MacPherson // AndrewMohawk
- Paterva, BitMEX, Robinhood, Uniswap, Privy
- Many Talks, Blackhat, Defcon, etc
- BH Review Board
- All @ Paterva - Maltego
- IR @ BitMEX + Robinhood, Head of Sec @ Uniswap
- Sec @ privy! (thanks for letting me rage about wallets)
- SEAL

A Short rant in 4 Parts

(Because there aren't longer slots)

Four components where we can do better

- dApps
- Infrastructure Providers
- Wallets
- Security Culture

Web3 = Web2 + 1

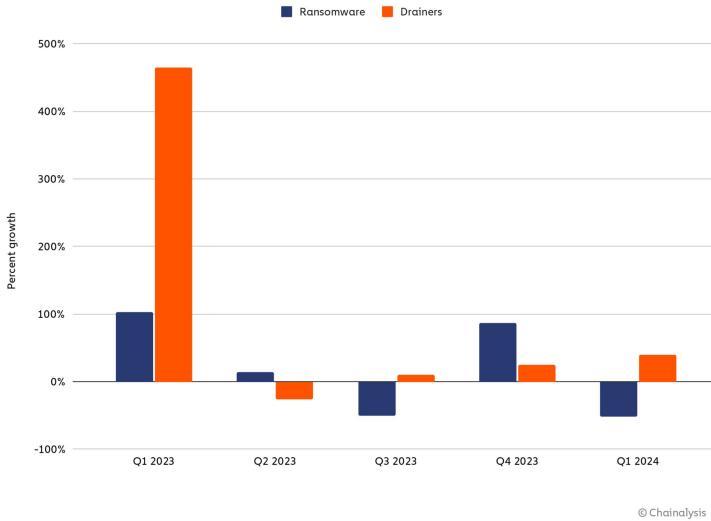
Web2 +

- Inherently more financial
- High ROI for attackers
- User -> Chain, no safety net of providers
 - Esp compared to Web2 finance
- Digital - 24 hour coverage
- Irreversible Actions

We are failing our users

We are failing our users and it's our fault.

Quarterly growth rate in value stolen by drainers vs. Value extorted in ransomware attacks, Q1 2023 - Q1 2024



A dashboard displaying real-time threat intelligence. It includes sections for 'Recently stolen' funds, 'Scam attacks detected in 24h', 'Current attacks', and 'Poisoning attack rate'. The 'Recently stolen' section lists several large amounts of money taken in various transactions. The 'Current attacks' section lists multiple ongoing scam attempts with their respective transaction details and timestamps.

Recently stolen	Current attacks
\$69M	0xd9a1...853d91
\$1M	0x15...b2413
\$1M	0xcac0...8f066c
\$750K	0xd7f3...7b7403
\$674K	0x724a...906c
\$646K	0x8fc...8a02
\$400K	0xa29e...4ff5
\$200K	0x4ca0...ec77cd
\$180K	0x904a...9792
\$150K	0xda37...7ae0
	0x90400f...778ce1e
	0xe290...50600c6
	0xc8fb15...b321af1
	0xe294...00d00c6
	0x1c0fedf...a82d20e
	0xfe442c...7fb029
	0x79920db...8cd5859
	0x2f23...43ef761
	0x9a1005d...5514c4b
	0x2d4b...632f139

As sec people protecting users is our job - we have to do better

314 Million in H1 2024

@scam-sniffer / H1 2024 - ScamSniffer Phishing Report

☆ 1 Share Mint Run

Scam Sniffer

Harnessing the power of combined off-chain and on-chain data to deliver cutting-edge, real-time anti scam protection for the web3 ecosystem.

NOTE: cause Dune has no price for LP tokens and other complicated cases, the real stolen amount could be more.

Powered by [ScamSniffer](#)

Total Victims Overview

266,713
Total Victims

@scam-sniffer

Total Stolen Overview

\$314,123,032
Total Stolen

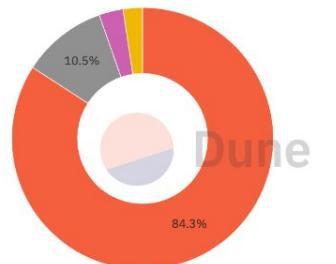
@scam-sniffer

Trend



@scam-sniffer

By Phishing Method



@scam-sniffer

... 3mo

Drainers are common and cheap



AceDrainer - Inner Circle
Forwarded from Ace [Official]
Drainer Update

For the last 3 days we've been working hard to fix the issues with the flagging of our backend domains, now it's time to get us back online.
The bypass has been pushed, so if you recompile you will be able to use it.

In the next update we will automate affiliate payouts (all existing ones will be processed as well) and all statistics will be visible in the panel as well.

More great features are coming this week. We appreciate your patience.

Important! Today you MUST recompile.

This update is experimental. If anything unexpected happens, please contact: @hitterace, @triggerpulled or @aaaaaaaaaaaaaa01

4 3

691 18:28

November 2

AceDrainer - Inner Circle

Some of our team members are getting banned. Nothing to worry about. We got panel up 24/7. They can't stop us like they did to others. Posting our @s on panel incase we do also get banned

10 5 3

528 13:19

\$600 for full featured drainer

No need to understand crypto

They have automation

They have redundancy

(do we even have that?)

App stores rife with fake apps



Rabby Wallet

@Rabby_io

...



A FAKE iOS app has resurfaced. Please note that our iOS app is still under review.

Identify the real app by Developer: DeBank (Android) & DeBank Global Ltd. (iOS).



Dependency

October 31, 2024



Supply chain attack stemming from JavaScript animation library results in losses for users of 1inch and other platforms

Attackers were able to inject malicious code into the popular "LottieFiles" JavaScript animations library. Visitors to websites using the library saw a prompt to connect their crypto wallets to what was ultimately a cryptocurrency wallet drainer. This affected some crypto platforms that used the library, including the 1inch decentralized exchange aggregator. One victim who connected their wallet suffered the loss of 10 BTC (~\$723,000).

Other crypto platforms affected included TEN Finance and Movement. Because the animations library is widely used, other non-crypto-related websites also showed the prompt.

- "[Crypto apps see malicious popups after Ace Drainer hacks animation library](#)", *CoinTelegraph*
- "[LottieFiles hacked in supply chain attack to steal users' crypto](#)", *BleepingComputer*

NPM

Ledger-connect

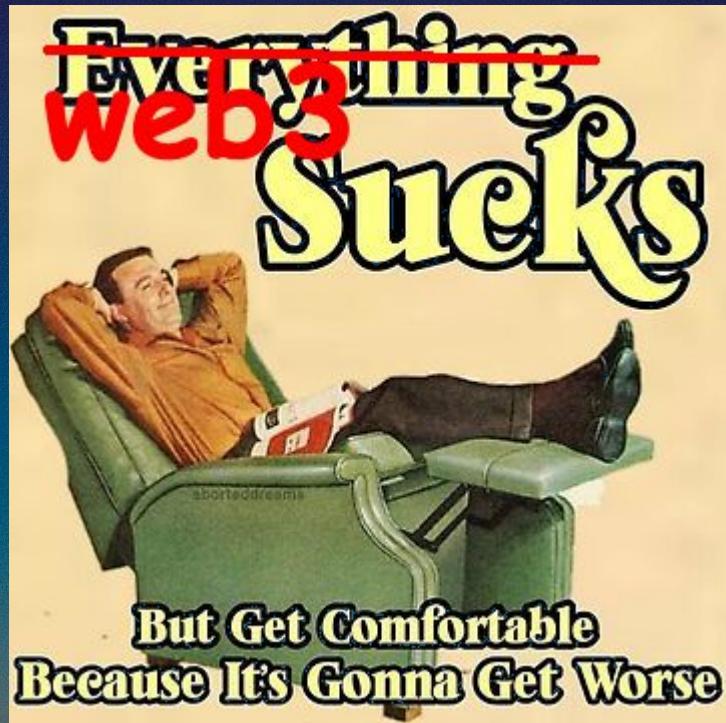
We don't see this in web2?

When was the last time
robinhood served malware
from their frontend

We aren't getting into smart contracts

- LOTS of attention
- LOTS of audits
- Outside scope of this talk
- Most web3 security relates to SC/EVM
- In old terms, this is a layer8 talk

Web3 Security



dApps

dApps / Crypto Applications

- dApps are the pivotal point between users + wallets and providers + underlying crypto
- You have a responsibility to your users
- Users are putting their life savings in your app, at least turn on logs.
- DPRK **are** coming/her, but we have defenses

“All engineering is security engineering.”

Help users

- Super high value attack vector
- Web2 before Web3
 - We don't HAVE to speedrun web2 security problems
- Goals should be to help users make safer choices that are easier to make and users **want** to make
 - Yubikey and Passkey integration!
- Not just externally facing
 - Password manager + Yubikey/Passkey for staff

Secure your code

- If you have the \$ you can audit your web2 code!
 - Audits aren't only for smart contracts!
- If you don't (and if you do) -> <https://frameworks.securityalliance.org/>
- Logging counts
 - Especially if you start fixing from most damaging to least
 - You might not stop it this time, but at least you know how it happened
- Basic scanning for secrets / code / dependencies
 - Trufflehog is **free** (**secrets**)
 - Socket.dev is **free** for small + OSS (**dependencies**)
 - Snyk Code is **free** for small + OSS (**code**)
- Plan for when not if
 - Big red buttons - Disabling interfaces
 - Rotating credentials



dApps / Crypto Applications

Promote good engineering and security culture

“All engineering is security engineering”

Providers

Infrastructure Providers

Security is an arms race, Everything is hackable

- We need to make attackers have to put in effort
- Demand providers do bare minimums
 - **Renewal season is once a year**
- Vote with your wallet

You usually don't have a choice :(

Difficult to get providers to change

- They don't have to
- It could lose them business

MetaMask community Blocklist

SEAL blocklist

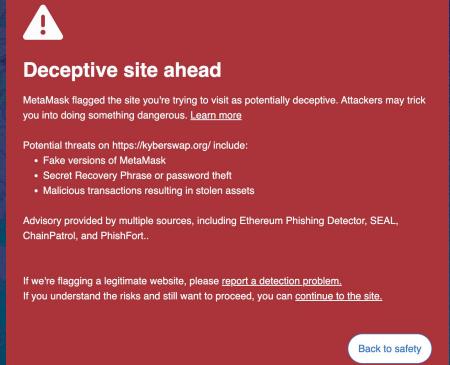
- Init myself + samczsun, now samczsun + others + 0.1 me
- Scanning, Seal Phishing bot,

MM blocklist:

- ~ 226,955 blocked domains
- ~ 173,123 still have whois/data
- ~ 127,543 still resolve



WhoisXML did lookups all for free! They rock!



Reviewing data

```
~/Private/scratchpad/mm-domain-stats » python3 parse-whois-json.py
Parsing Summary:
Total lines processed: 219060
Total unique domains processed: 173123
Total duplicates found: 0
Total ignored entries (JSON errors): 0
Total unknown entries (all fields missing): 45937

Top 10 Registrar Usage Summary:
OwnRegistrar, Inc.: 21947 domains (12.68%)
NameSilo, LLC: 17928 domains (10.36%)
NICENIC INTERNATIONAL GROUP CO., LIMITED: 17150 domains (9.91%)
CloudFlare, Inc.: 9972 domains (5.36%)
HOSTINGER operations, UAB: 9277 domains (5.36%)
PDR Ltd. d/b/a PublicDomainRegistry.com: 8
TUCOWS, INC.: 6856 domains (3.96%)
MarkMonitor Inc.: 6148 domains (3.55%)
NameCheap, Inc.: 3788 domains (2.19%)
```

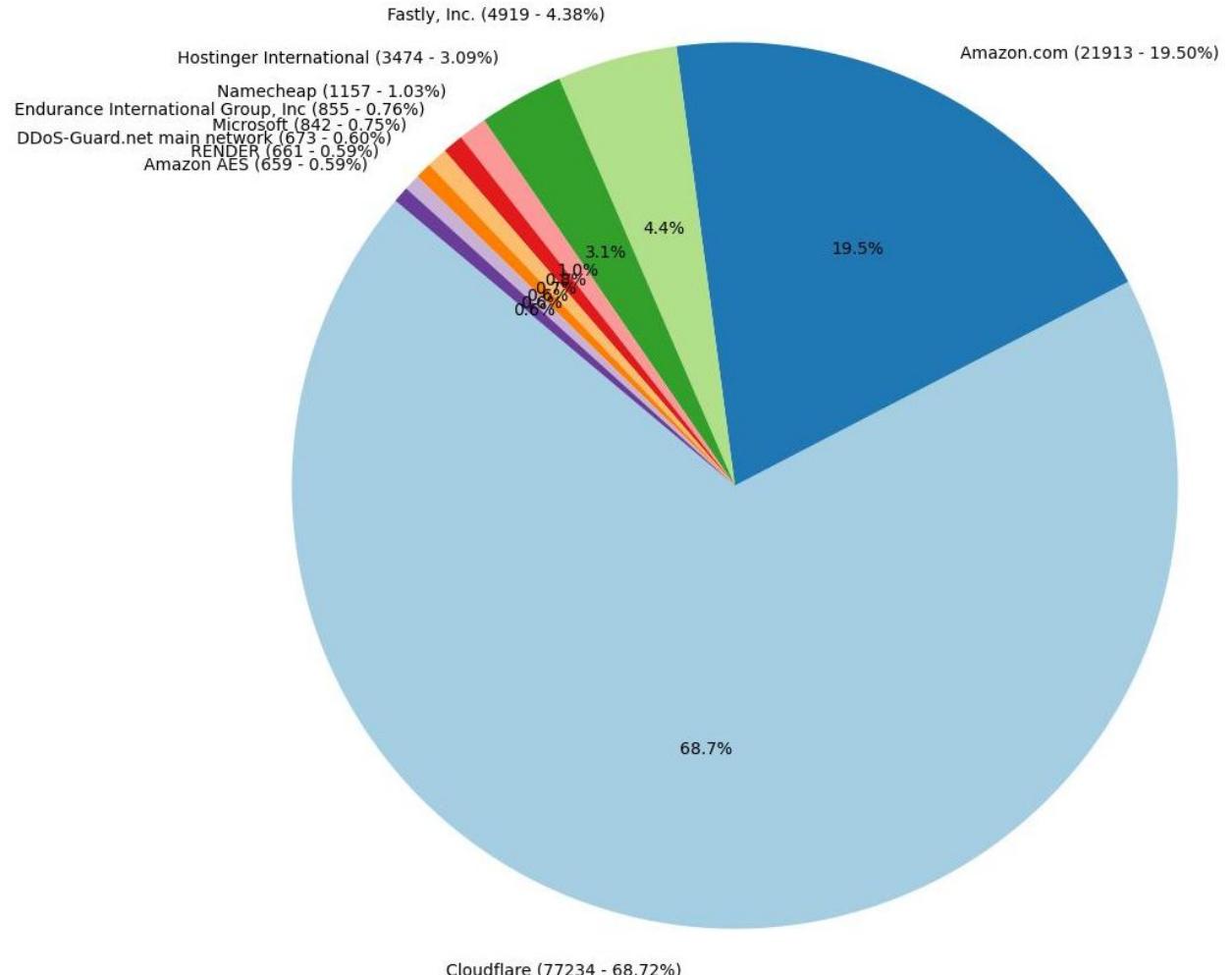
```
● ~/Private/scratchpad/mass_worker » npm run deploy -- -c 3 -n deploylotsplz-worker
> hello-worker@1.0.0 deploy
> node deploy.js -c 3 -n deploylotsplz-worker

Starting deployment of 3 workers with base name 'deploylotsplz-worker'
Deploying worker deploylotsplz-worker-1...
✓ Deployed deploylotsplz-worker-1 to https://deploylotsplz-worker-1.cloudflare-471.work...
Deploying worker deploylotsplz-worker-2...
✓ Deployed deploylotsplz-worker-2 to https://deploylotsplz-worker-2.cloudflare-471.work...
Deploying worker deploylotsplz-worker-3...
✓ Deployed deploylotsplz-worker-3 to https://deploylotsplz-worker-3.cloudflare-471.work...
```

```
Summary of ISP Hosting Data:
Total domains processed: 256896
Domains with valid ISP data: 123277
Domains without ISP data: 133619

Top 10 ISPs by domain count:
Cloudflare: 77234 domains (62.65%)
Amazon.com: 21913 domains (17.78%)
Fastly, Inc.: 4919 domains (3.99%)
Hostinger International: 3474 domains (2.82%)
Namecheap: 1157 domains (0.94%)
Endurance International Group, Inc: 855 domains (0.69%)
Microsoft: 842 domains (0.68%)
DDoS-Guard.net main network: 673 domains (0.55%)
RENDER: 661 domains (0.54%)
Amazon AES: 659 domains (0.53%)
```

Cloudflare report from Q3 2023 says they do 16% of the net



CLOUDFLARE.

Of all the providers, they do:

- 68.2% of all the blocked URLs we currently have in mm list (that resolve)
- ~10% of all malicious domain registrations



Provided value has invalid size: You may only submit up to 250 URLs at a time.

OK



You have entered URLs that contain more than 1 unique hostname. A single report may only include 1 unique hostname (i.e., www.example.com). To report URLs related to another hostname (i.e. other.example.com) you'll need to file a separate report.

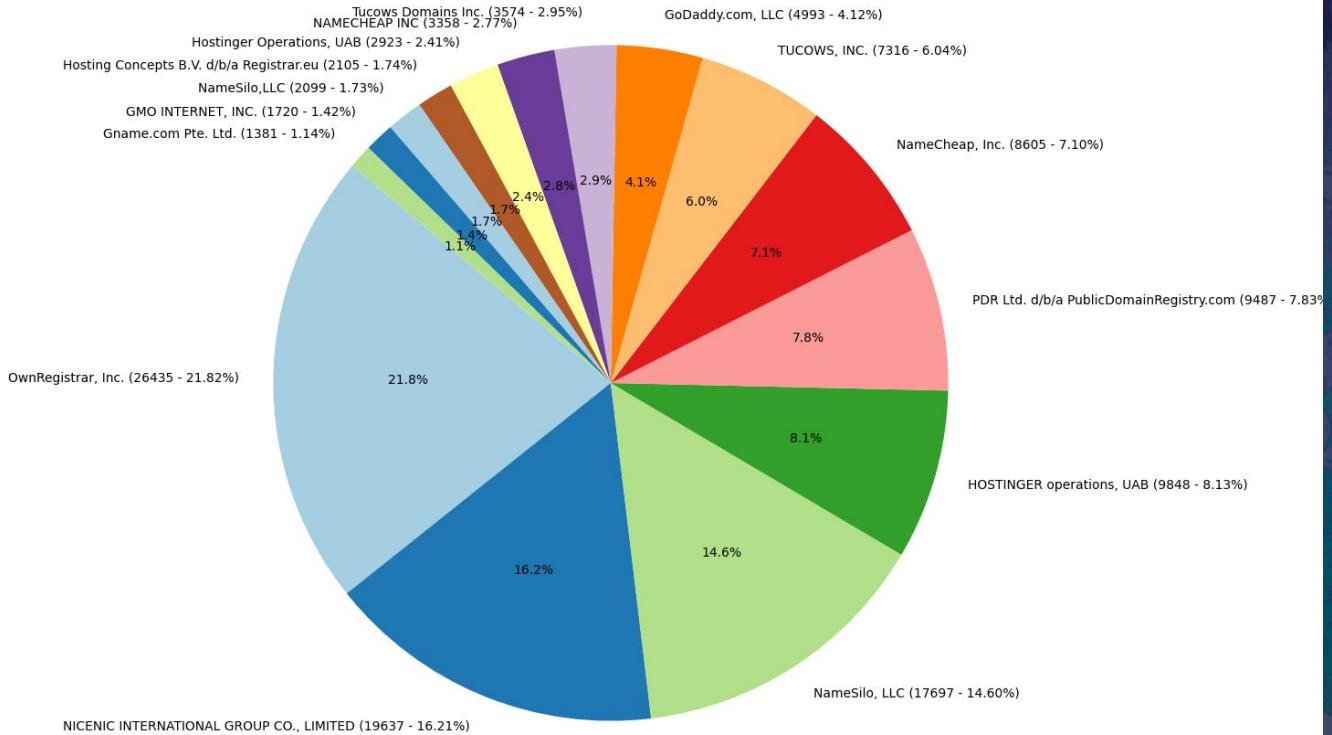
OK

68.2%

“This is too much”
— Andrew

Registrars

Top 15 Registrar Usage Summary



Twitter

Will give away your account

- Prepare for it

Warn users

Follow SEAL guidelines:



Who can reply?

Pick who can reply to this post. Keep in mind that anyone mentioned can always reply.



Everyone



Verified accounts



Accounts you follow



Your Subscribers



Only accounts you mention

Disable links in replies

AT&T / Verizon

Where is our simswap protection!

(Adding a note to an account doesn't offer real protection!)

How Google Fi helps protect your info

Your Google Fi number is tied to your Google Account. This means that anything related to your Google Fi service - including your phone number, your phone contacts, and your billing information - has all the [security protections that come with your Google Account](#).

Wallets

Wallets

- Evolving rapidly – I'm mostly talking extensions
- Complexity of underlying crypto is tough
- Wallets make it easier
 - UI/UX
 - cute animation / sound / colours
 - Easier to onboard to crypto
- Don't have the same guarantees as Web2 Fintech
 - No intermediary
- What do wallets **know?**
 - Where you are right now - IP, Timezone , etc
 - Where you connect to now and previous - Which dApps
 - Who you have sent funds to (in your current wallet)* -
 - What you usually do when you connect - After 5pm pump.fun

* yes, you can spoof ERC-20's but the wallet knows your exact actions so can easily ignore those!

Wallets: lookalike addresses

- Lookalike addresses
 - Because of UX/UI we don't see entire addresses, attackers pre-compute addresses where first x and last x look the same
 - If the wallet knows who you sent to before, when do you ever want to send to another address with the same first 6 and last 6?
 - $= 1/(256^8) = 1/18,446,744,073,709,551,616$ (this is first and last 4)
 - BLOCK IT

Airdrop	18060599	427 days ago	Circle: USDC Token		0x003667F9...831260f65		3,999.99		ERC-20 TOKEN*	
Airdrop	17958609	442 days ago	Circle: USDC Token		0x003667F9...831260f65		3,999.99		ERC-20 TOKEN*	
Airdrop	17913290	448 days ago	Circle: USDC Token		0x003667F9...831260f65		1,049		ERC-20 TOKEN*	
Transfer	17892056	451 days ago	Rocket Pool: Eth2 Dep...		0x003667F9...831260f65		4,414		Rocket Pool (RPL)	

Wallets: similar URLs

```
1 "Apex Domain", "First Seen"
8 "unichain-distribution.com", "2024-11-02T15:31:43.331Z"
9 "unichain.org", "2024-11-01T20:08:49.926Z"
10 "unichain.org", "2024-11-01T20:08:49.926Z"
11 "unichain.meme", "2024-10-29T13:38:12.293Z"
12 "unichain.art", "2024-10-29T06:59:58.358Z"
13 "unichain.run", "2024-10-29T06:55:43.383Z"
14 "unichain.run", "2024-10-29T06:55:43.383Z"
15 "unichain.trade", "2024-10-29T03:03:28.956Z"
16 "bdnodes.com", "2024-10-28T11:24:53.740Z"
17 "bdnodes.com", "2024-10-28T11:08:47.225Z"
18 "unichain.meme", "2024-10-28T10:22:36.254Z"
19 "symbol-track.com", "2024-10-26T05:26:03.910Z"
20 "symbol-track.com", "2024-10-26T05:26:03.910Z"
21 "linkpool.io", "2024-10-25T13:04:05.808Z"
22 "linkpool.io", "2024-10-25T13:04:05.537Z"
23 "Linkpool.io", "2024-10-25T13:04:04.670Z"
24 "unichain-iaunch.co", "2024-10-23T21:31:38.553Z"
25 "unichain-iaunch.co", "2024-10-23T21:31:38.553Z"
26 "unichain.life", "2024-10-23T21:07:22.724Z"
27 "unichain.life", "2024-10-23T21:07:22.724Z"
28 "battledogs.fun", "2024-10-23T20:18:40.053Z"
29 "unichain-iaunch.app", "2024-10-22T20:46:18.575Z"
30 "unichain-iaunch.app", "2024-10-22T20:46:18.575Z"
31 "lznodes.com", "2024-10-21T13:57:49.263Z"
32 "lznodes.com", "2024-10-21T13:13:53.783Z"
33 "lznodes.com", "2024-10-21T12:17:31.763Z"
34 "unichain-iaunch.net", "2024-10-20T05:03:29.008Z"
```

```
"unichain-iaunch.net", "2024-10-20T05:03:29.008Z"
"unichain-iaunch.net", "2024-10-20T05:03:29.008Z"
"unichain.top", "2024-10-20T04:46:41.505Z"
```

- Wallets know where you connected to before
 - unichain.org
 - unichain.life?
 - unichain.top?
- Levenshtein distance?
- Known good?
- SSDeep Hash?
- Domain age?
- Block it

Expect users to be crypto native

Function: `get_my_money(address recipient)`

MethodID: `0x30f75647`

[0]: `0000000000000000000000000000000062f8fa6f79e296ad399332649d2b8e61b28bb76c`
`0x30f756470062f8fa6f79e296ad399332649d2b8e61b28bb76c`

Basics

- What Is a Crypto Wallet?
- What Are Tokens?
- What Are NFTs?

Token Approvals

- What Are Token Approvals?
- How to Revoke Token Approvals
- What Are Permit Signatures?
- What Is Permit2?

Security & Scams

You've Been Scammed, Now What? Common Scam: Address Poisoning

Wallets

Add a Network to Your Wallet

FAQ

Benefits of Permit2

Permit2 has many of the same benefits as the original EIP2612 Permit signatures: less friction for users because they don't need to send a separate approval transaction, and potentially less security risk because there is no need for applications to request unlimited approvals when using Permit or Permit2 signatures.

On top of that, Permit2 solves one of the main drawbacks of EIP2612 Permit signatures: the fact that they are not supported by most tokens. Permit2 solves this issue by enabling gasless Permit signatures for every token.

One additional benefit of Permit2 is that it also adds an expiration time to approvals. This reduces friction for users because they don't need to manually revoke all approvals. It also reduces security risk, since there will be fewer lingering approvals that can be exploited by hackers.

Drawbacks and Risks of Permit2

While Permit2 does have important benefits, it is also important to note that it also introduces some new security risks compared to regular approvals or EIP2612 Permit signatures.

PermitBatch

- Checking call data is equivalent to checking headers of every email
- Understanding Permit/Permit2 Approval flows

Safe mode

If you love your mom you wouldn't let her go on twitter and use metamask as her first crypto experience

Wallets don't have ability to go into safe / only allowlisted sites mode.

Wallets don't warn users when unexpected things happen (ie all of asset x just left)

Wallets: Seed Phrases

- | | | |
|-----------|-----------|-------------|
| 1. walk | 5. cancel | 9. security |
| 2. oven | 6. file | 10. churn |
| 3. happy | 7. basket | 11. artwork |
| 4. visual | 8. spoon | 12. pig |

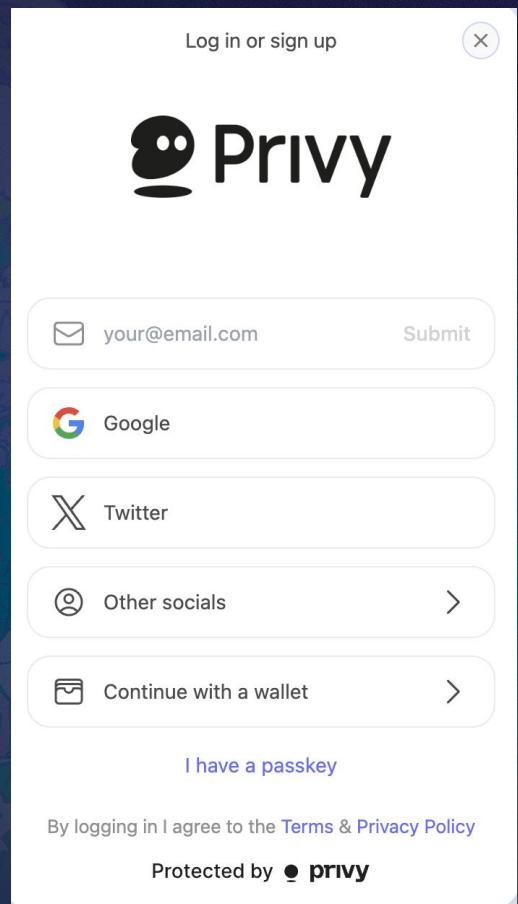
We suck at remembering
passwords

We suck at keeping
things safe

Seed Phrases?!

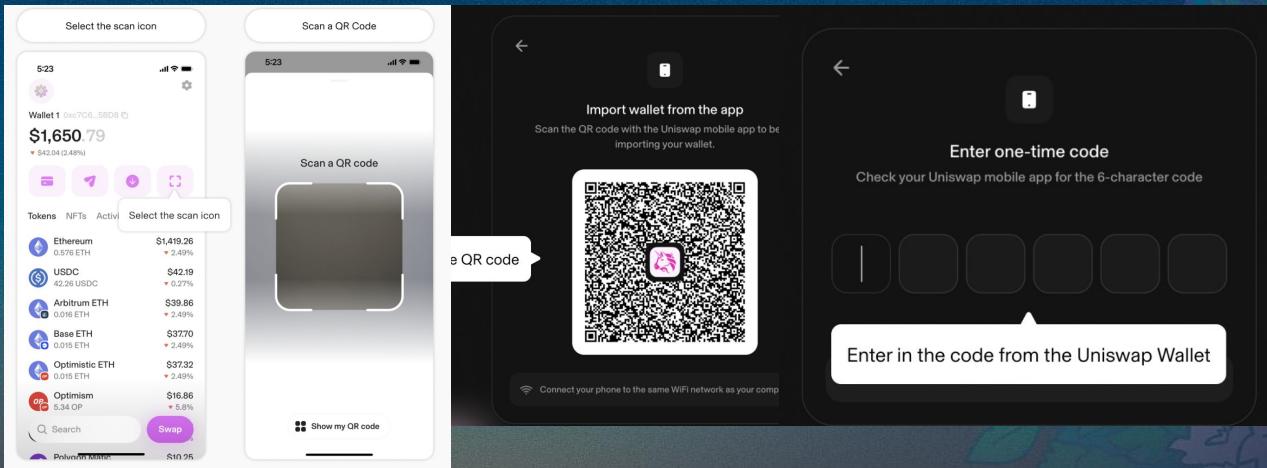
STOP

There are alternatives



Privy does usual + **Passkey**

Uniswap does encrypted handshake for seed from wallet <> extension



Wallet Improvements

WebAuthN, Passkey - phish proof authentication!

Allowlisting/Mom Mode - put the wallet in safe mode

HNW - spin up a new wallet for random sites!

Emergency Buttons - Revoke all, warn total asset movement

Rethink approval flows - UX people rock, let them cook!

Clear signing

** I know many wallets already do these – **thank you!** **

Security Folks need empathy

You know what is sad! I know victims who have literally sold their house for a scam.

The world can be a shit place

More sad that I warned a project 7 days ago about their vulnerabilities and they say all good close the ticket, I feel sorry for their members when a scam comes for them.

Real people are getting scammed, stop punching down

It has significant impact on them

It takes a lot to admit you got owned, dont neg them

Security Folks should dogfood

- Lots of security advice is difficult
- Do it yourself if you want to give it out as advice
 - Are you using different email + number for every account you have?
 - Are you running your devices in lockdown mode?
 - Do you only use a hardware wallet?
 - Faraday bags?
 - Have you enabled FIDO2 WebauthN on everything?
 - Need to authenticate before signing **every** transaction?
- Helps find good + **workable** solutions and improve the state of the world

Security Folks should support

- Call out good security work
 - Tell me about your cool things, I love talking about security!
- Share your knowledge
 - You aren't going to lose all your IP by sharing guidelines
- You can submit a bug without being paid \$1M



**Lets make Crypto safe enough for
Andrew's mom.**

fin.

Thank you!

Andrew MacPherson

Principal Security Engineer

@AndrewMohawk

Also please tell me about your cool security things!

Section 1

Section 1 title here.

Section 1 title here.

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 - Magna
 - Ligula

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statement here.**

Section 1 details with a main point. Enter title here.

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Section 2

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Section 2 title here.

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Section 2 details with an image. Enter title here.

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 anim id est laborum.

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Section 3

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Section 4

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Section 4 details with a main point. Enter title here.

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**Enter your main point /
statement here.**

Here's the timeline.

Event 1



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Event 2



Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam.

Event 3



Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam.

99.99%

“Number rules the universe.”
— Pythagoras

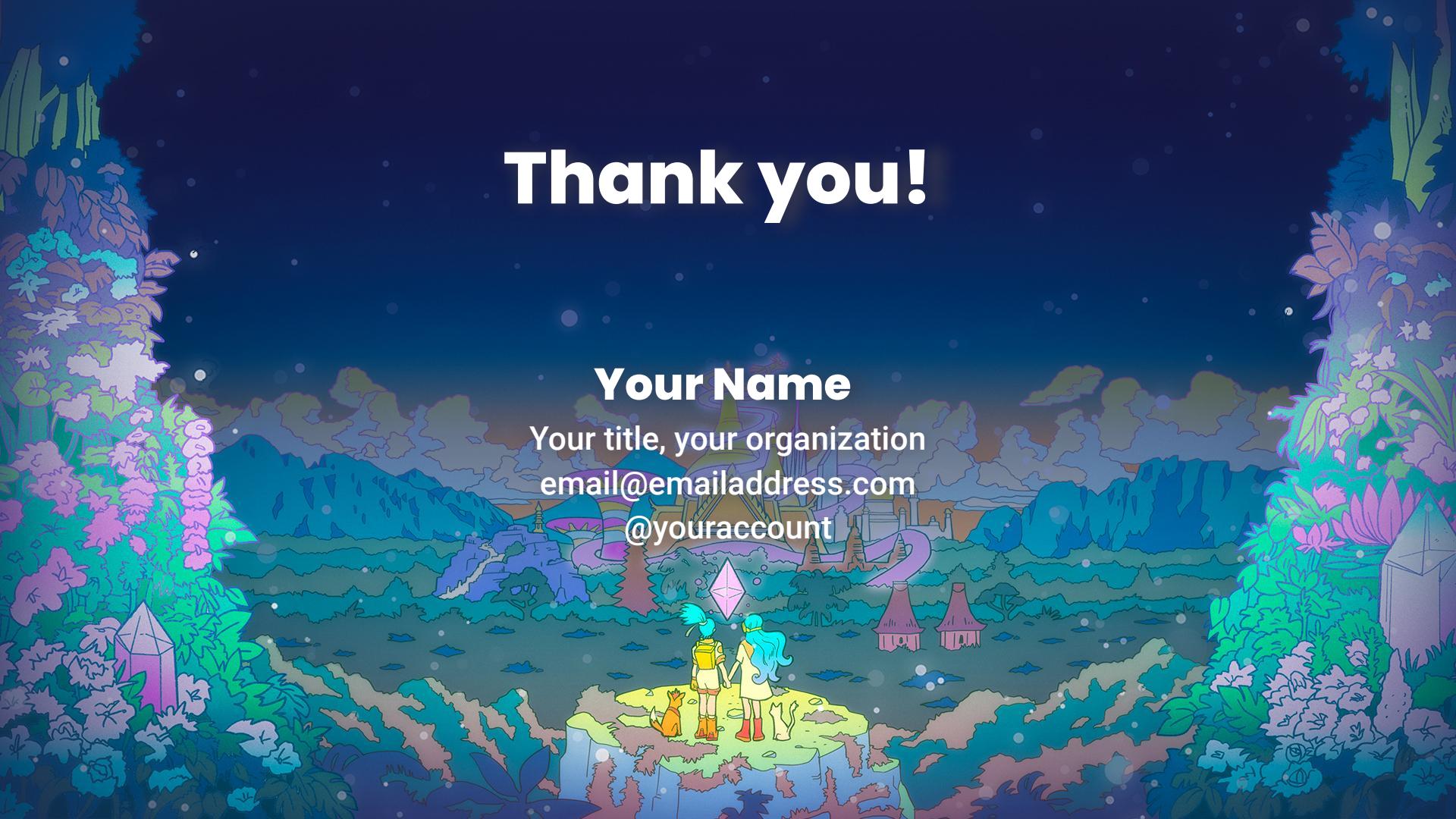
Thank you!

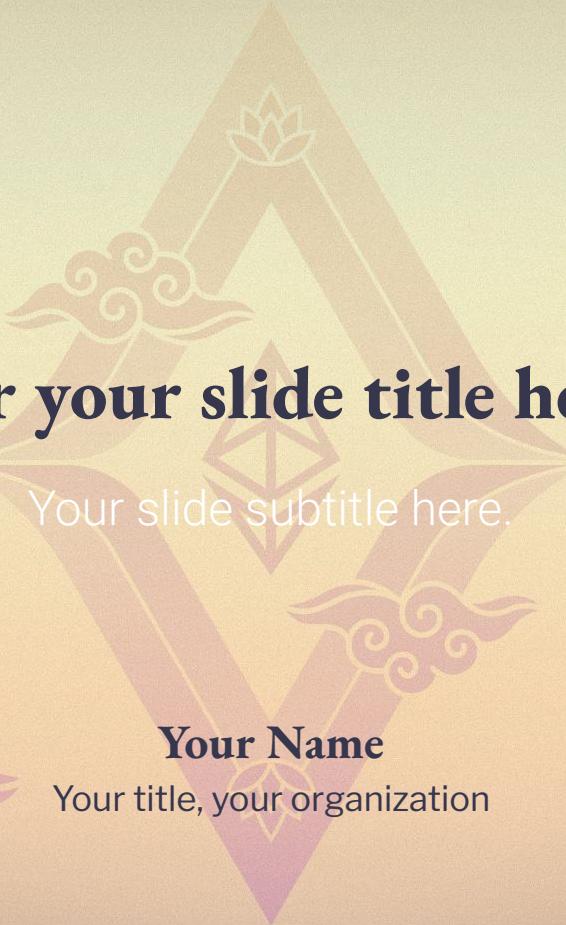
Your Name

Your title, your organization

email@emailaddress.com

@youraccount





Enter your slide title here

Your slide subtitle here.

Your Name

Your title, your organization



Section 1

Section 1 title here.

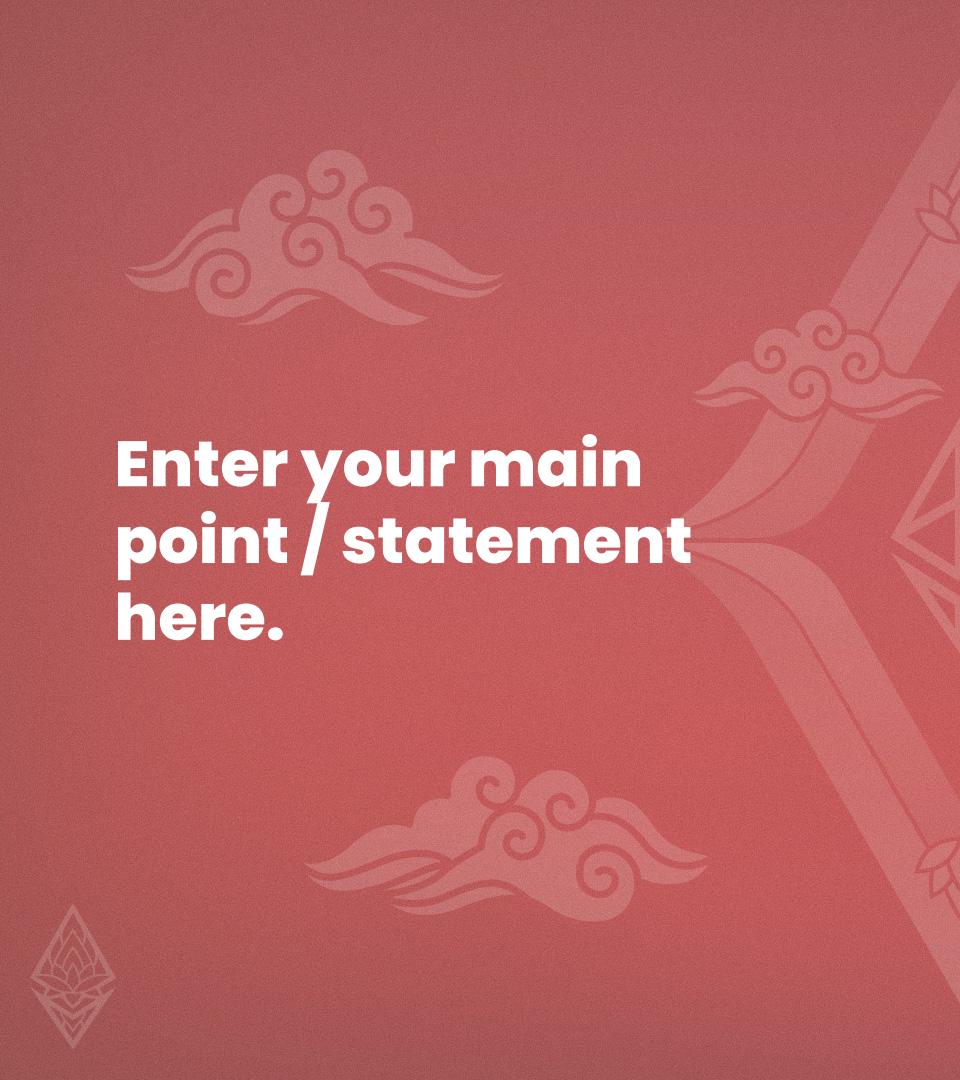
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Section 2

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Section 3

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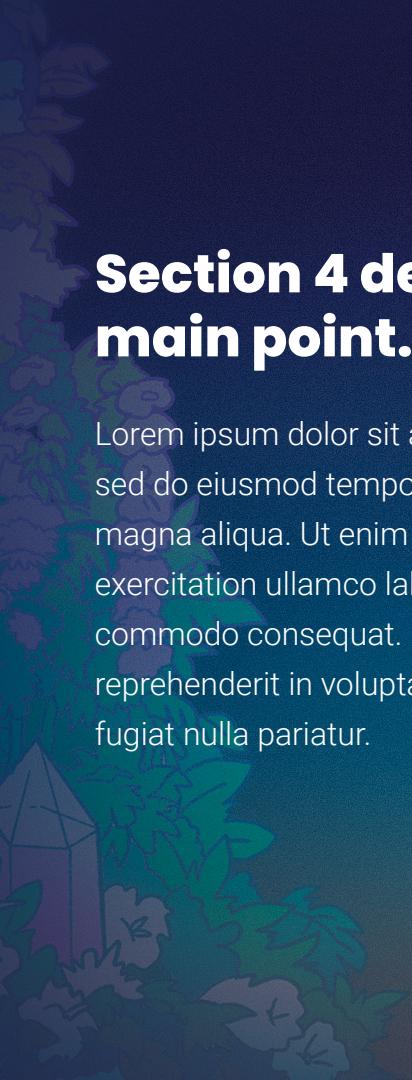
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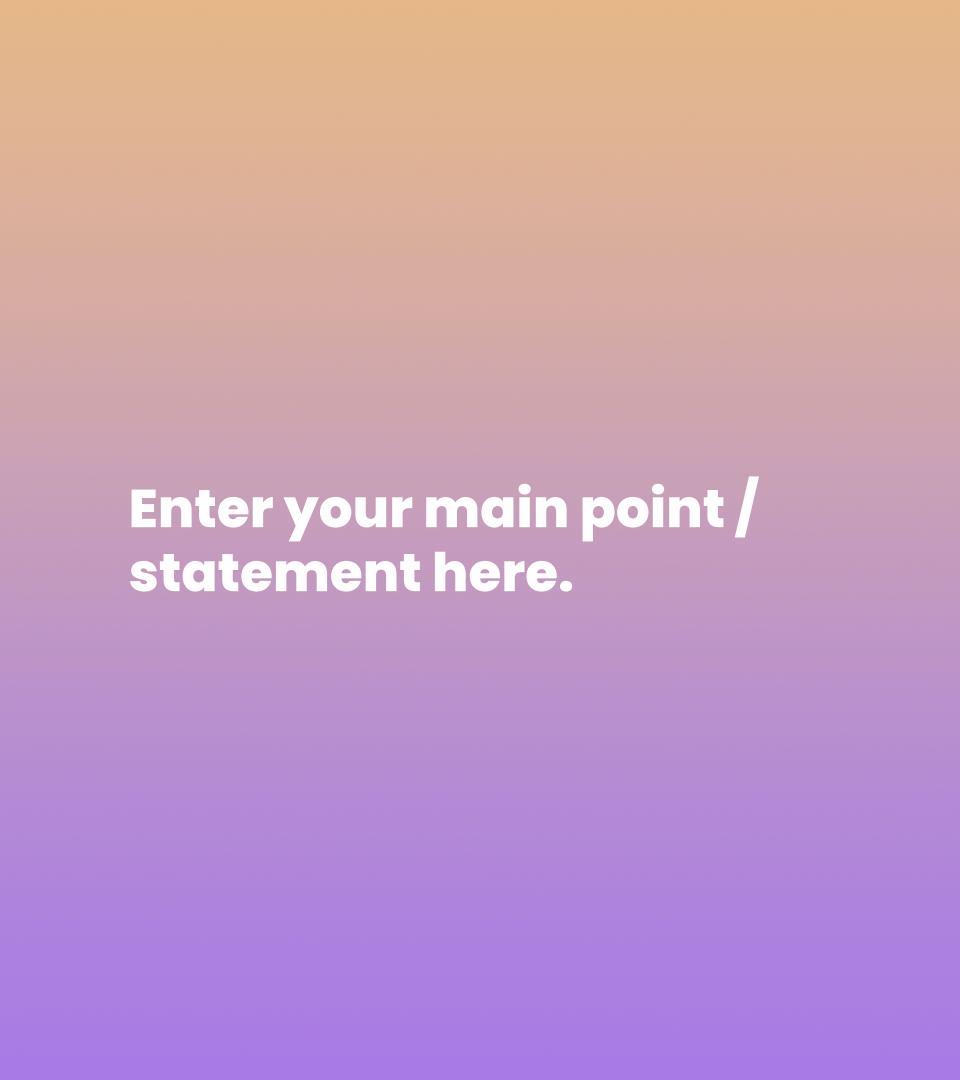
Section 4

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Event 2



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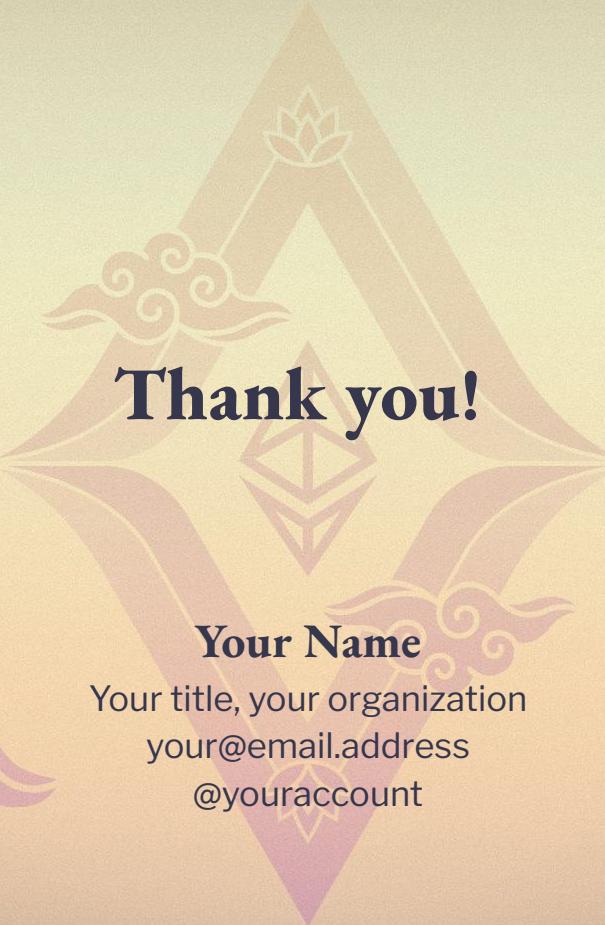
Event 3



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“Number rules the universe.”
— Pythagoras





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Your slide subtitle here.

Your Name

Your title, your organization



Section 1

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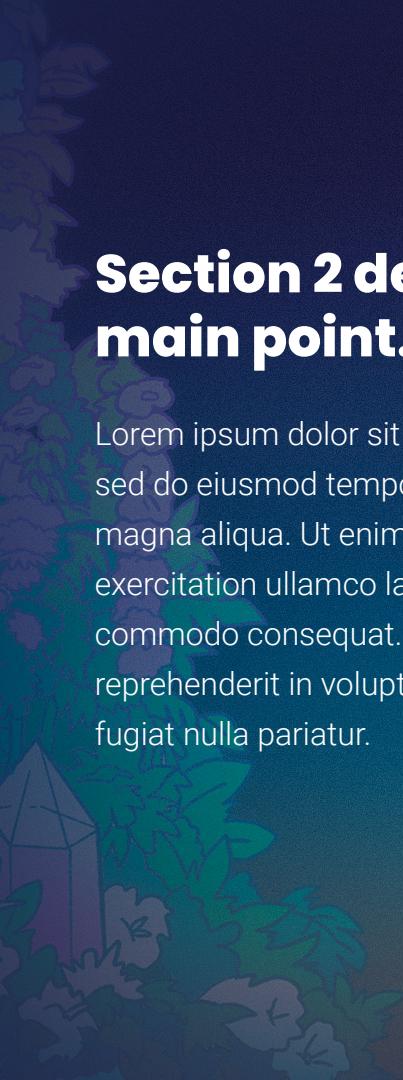
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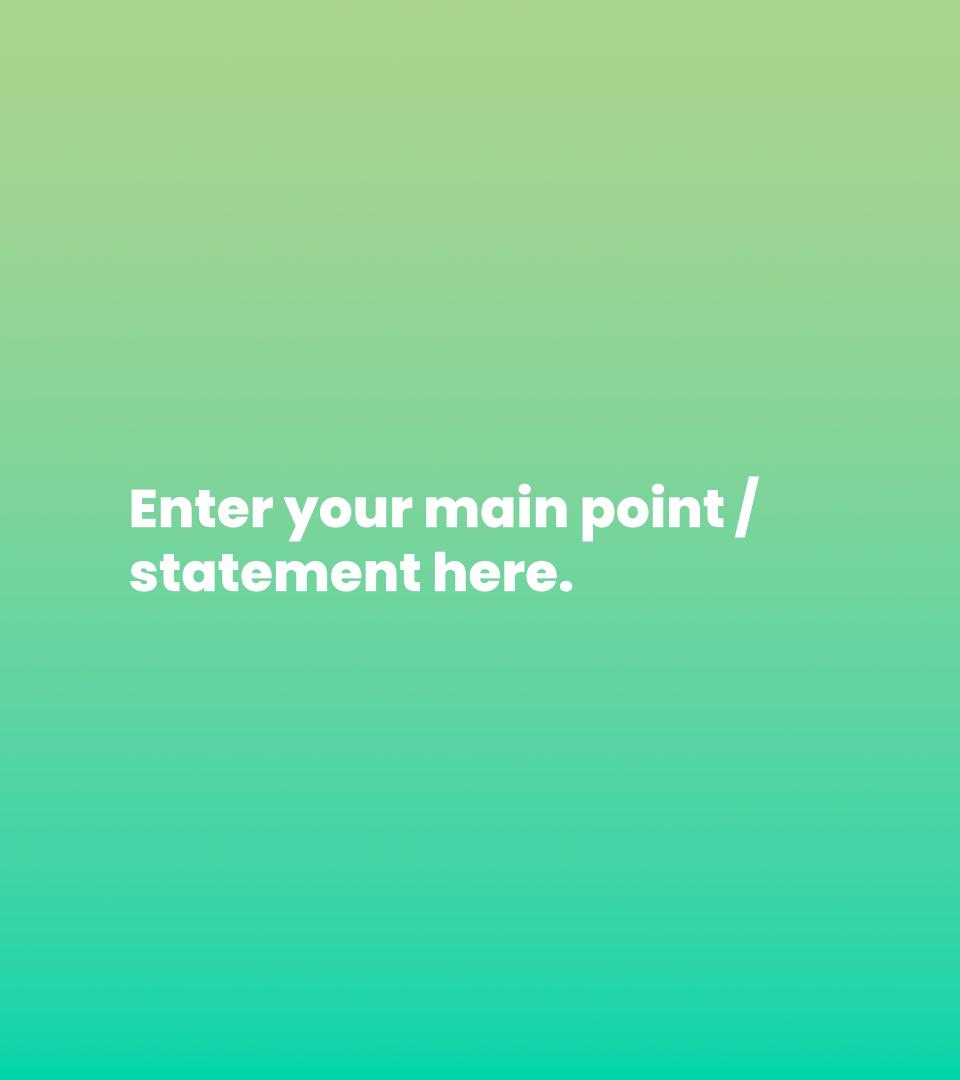
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Section 3

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Section 4

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Event 1

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Event 2

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Event 3

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“Number rules the universe.”
— Pythagoras



Your title, your organization
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