

Hoard

THE CRYPTOCURRENCY APP YOU CAN BANK ON

Simplifying cryptocurrency for everyone.

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v1.3

Disclaimer

The white paper you are currently reading is a draft and stands as a work in progress. The documentation below outlines our company, our vision, and the underlying technology currently in development. This document will be updated on a regular basis to reflect advancements and milestones through our development process. The white paper will be finalized before the upcoming token distribution event.

Anyone considering participation in the OAR token distribution event should carefully read all of the following documentation and disclaimers to understand any potential risks.

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ABSTRACT

=dVgY`h`b ea[Zh`YZXZcigVabZY[`cVcXZ`VcY`ZcWZh`ig hiZh`h`ciZgdeZgVafn`VXgdhh
WdX`X]V`ch#l]Z`D6G`id`Zc`L`D6G`]ZgZV[iZg`h`V`aXZchZ`id`igVchVXi`chiVciVcZdj h`a`VcY
d[["X]V`c!`hZgk`c`j`hZgh`l`↑]`V`j`i`a`n`i`Vi`egdk`YZh`af`j`Y`↑n`[dg`chiVci`VcY`V`j`idb`ViZY`Xd`c
XdchdaYVi`dc!`cXj`Y`c`V`Zb`WZYZY`gZej`iVi`dc`h`nhiZb`#l]Z`ej`gedhZ`h`id`[VX`af`ViZ`ig`Z
`ciZgdeZgVafn`VXgdhh`X]V`c`h`XV`ac`V`cY`X`g`j`b`kZci`i`]Z`W`gZg`h`d[`h`a`dZY`WdX`X]V`ch`VcY
igY`↑`dc`Va`X`neidXj`gZcXn`ZnX]Vc`Z`h`#l]Z`=dVgY`ZXdh`nhiZb`L`=dVgY`]ZgZV[iZg`h`V`h`Zi`d[
[`cVcX`Vaidda`W`Y`a`id`b`V`Z`X`neidXj`gZcXn`ckZhi`c`!`igY`c`!`eVnb`Zcih`VcY`hidg`V`Z`h`b`ea!
VXXZhh`WZ!`VcY`Xdchj`b`WZ`V`h`ZkZgndcZ#

*"[Hoard]: a stock or store of money or valued objects,
typically one that is secret or carefully guarded."*

1. THE PROBLEM AND HOARD'S VISION TO CREATE A BETTER EXPERIENCE

Digital and financial services experiences are fragmented and challenging. What do we mean?

Consider this:

- 8db eaZmXgneidXj gZcXn`veeh`hi {a`X`dchj`b`Zg`V`Y`dei`dc#
- 7adX`X]V`c`c`Xdb`eVi`Wafn`b`V`Zh`X`neidXj`gZcXn`igVchVXi`dch`Xdb`eaXViZY#
- ;`cVcX`Vab`VcV`Zb`Zci`i`]g`j`V`igY`↑`dc`Va`Wc`c`h`d[iZc`h`adl`VcY`XZcigVabZY!
[dX]h`c`V`dc`i`]Z`egdXZhhZh`gVi`]Zgi`Vc`i`]Z`X`j`hidb`Zgh`VcY`i`]Z`gZmeZgZcXZh#

†fhi`b`Z`[dgV`eZdea`[dX]hZY`hdaj`i`dc#`=dVgY`h`i`]Z`X`neidXj`gZcXn`vee`ndj`XVc`Wc`dc#`=dl
l`a`il`Z`hdakZ`i`]ZhZ`X]Vaz`c`V`Zh`[dgndj`4

- : ab ĉViZ`gZaVcXZ`dc`b j á ěaZ`VeeaXVi`đch`i`d`b VcV\Z`ndj gXgneidXj gZcXZh#7j n#l gYZ# HZa#l gVX` #HeZcY#HidgZ#6aĉ`c`dcZ`ciZ\gMZY1 VaZi#
- EgdkYZ`V`ig hiZY`VcY`hZXj gZ`WgY\Z`WZil ZZc`i] Z`[Vi`b dcZn`VcY`XgneidXj gZcXn Zck`g`dcb Zcih`""; ĄG6\$B H7`gZ\j aViZY`VcY`@N8\$6B A`Xdb eaVci#
- 9ZakZgXVeVWaf`Zh`VcY`Vc`ciZg`VXZ`i] Vi`VgZ`Wj`á`[dgi] Z`egd[Zhh`đcVá`čkZhidg`Wj`i YZh`cZY`[dgi] Z`cdk`XZ#Hb eaZ`Wj`i`hde] ħi XViZY#
- : cVWZ`chiVci`Xgdhh`X] V`c`igVchVXi`đch`i] Vi`VYYgzh`b` ħhZY`deedgj`c`f`Zh`gzhj`á`c` \ [gdb`egdXZh`c`c`YZa`nh`VcY`a`X` `d`[ig`hi#
- : mZcY`i] ZhZ`WdX`X] V`c`YgkZc`WZcZ`[ĥ`i`d`igVY`đcVá`[c`VcX`VáhZgk`XZh`dg`Vc`bVi`đch`i`d` egdeZá] Z`gY`^`VáigVch[dgb`Vi`đc`Z`[dgh`VcY`b`ZZi`Xj`hidb`ZgZmZXiVi`đch#

I] Z`iV`ZVI`Vn`/=dVg`f`h`YZkZade`c`V`YZXZcigV`abZY`b`j`á`Xj`gZcXn`l`VaZi`!`ciZa`Zci`[Vi`WWhZY`XgneidXj`gZcXn`ZnX] Vc`Z`VcY`" cY`a`nZg`Xgdhh`X] V`c`eVnb`Zcih`eglidXda`[dgZkZgnYVn`j`hZ`"" hZgk`c`V`h`V`kVj`VWZ`j`i`átn`gZ`c`[dgXZY`Wh`dj`g`cVi`kZ`Xj`gZcXn`[gdb`YVn`dcZ#

2. BACKGROUND

L`Z`hiVcY`[dgh`b`eaX`tn`h`XVa`Wafn`VcY`ciZ`g`tn`#`č`V`l`dgf`l`] ZgZ`ZkZgndcZ`l`Vcih`ZkZgni`c` \`čhiVci`a`n`WdX`X] V`c`WWhZY`XgneidXj`gZcXZh`VcY`i] Z`geaVi`[dgb`h`Xdb`Z`l`^`ab`^Vi`đch` `cdi`Yj`Z`id`i] Z`c`VWaf`Zh`d`[iZVb`h`dgiZX] cdad`n`Wj`i`WZXVj`hZ`i] ħ`c`Yj`hig`h`hi`aĉ`c`ĥ`c`[VcXn#

7adX`X] V`c`h`egdkYZ`Vc`b`b`j`i`VWZ`c`[gVhig`Xij`gZ`[dg`[c`VcXZ`c`VYY`^`đc`i`d`b`Vcn`di] ZghZXidgh#`7adX`X] V`c`iZX] cdad`n`h`YZXZcigV`abZY`i`ig`hi`a`hh`VcY`YdZh`cdi`gZfj`gZ`V`XZcigV`aVj`i] dgtn#`čhiZVY`!`^`gZfj`gZ`h`Xdb`b`j`c`^`n` `c`Y`k`Yj`V`h`dgZci`^`Zh`l``aĉ`c`i`d`XdcigWj`iZ`id`i] Z`cZil`dg`h`i] Zn`hZgkZ#`č`hdb`Z`XVhZh`i] Zn`VgZ`[c`VcX`Vaf`c`XZci`k`bZY`!`c`di] Zgh`i] Z`b`di`kVi`đc`h`b`dgV#

I] ħ`cZl`iZX] cdad`n`!`Xdj`eaZY`l`^`V`gdI`c` \`[c`VcX`VáhZXidg`V`[[dg`h`i] Z`[gZYZdb`id`VcndcZl`Vcnl`] ZgZ`i`d`iV`Z`Xdcigdad`[dcZh`[c`VcXZh#`=dl`ZkZg`i] ħ`Xdb`Zh`l`^`gZ`hedch`Waf`Zh`i] Vi`b`dhi`VgZ`cdi`VXXj`hidb`ZY`id`#8dchj`b`ZgVYdei`đc`h`ea`^`j`ZY`Wh`hiZZe`aZVg`c`c`Xj`gkZh`!`Xdb`eaXViZY`j`hZgZmZXgZcXZh`VcY`Xdb`eaZm`ciZg`VXZh#`=dVg`f`h`hdak`c` \`i] ħ`Wh`gZc`c`ZZg`c` \`i] Z`Xdchj`b`Zg`[VX`c` \`XdccZXi`k`^`n`ed`ci`h`d`[XgneidXj`gZcXn#

L Z g'hdak'e\i] h'i ↑] i] Z'Hb Vj \EgdidXda'Vi'g hiāzh'h'b ZX] Vc'hb '[dg'chiVci!'d[['X] V'e
ig/chVXi'dch#

3. INTRODUCTION TO THE SMAUG PROTOCOL

I] Z'ej g'dhZ'd[i] Z'Hb Vj \egdidXda'h'id'[VX'atViZ/
Vi'chiVci'ig hiāzh'h'eVnb Zcih'VXgdhh'Vcn'Xj g'ZcXn'dghb Vg'Xdcig/Xi'WWhZY'WdX' X] V'e#
W'chiVciān'VcY'Vj idb Vi'XVān'h' Vee'] dā'c'h'Vi'ig/chVXi'dc'kZghj h'b Vcj VāXd'c'XdchdaYVi'dc#
Xi'YZXdj eā'g'ZaVcXZ'dc'Vcn'heZX'X'X] V'e!'[dj cYVi'dc'dg'ZmX] Vc\Z#

Our mission is to simplify and improve cryptocurrency commerce. Everyone is familiar with the lackluster experience when a coffee shop chooses to accept bitcoin: while your coffee takes a few minutes to prepare, it can take over an hour for your bitcoin transaction to be safely validated. Current solutions convert cryptocurrency to fiat through centralized services like Visa & Mastercard on the customer's behalf at the point of sale. Hoard's solution focuses solely on cryptocurrency. We remove the need for centralized parties to confirm transactions or rely on fiat currencies. By providing an instant and trustless mechanism for value exchange, the Smaug protocol enables:

Vi'chiVci'ig hiāzh'h'eVnb Zcih'VXgdhh'Vcn'XgneidXj g'ZcXn'dghb Vg'Xdcig/Xi'WWhZY
WdX' X] V'e'hd'ZcY'j hZgh'VcY'Wj h'eZhhZh'XVc'ig/chVXi' ↑] 'ZVX] 'di] Zgi' ↑] dj i'l V↑c\
[dg'WdX' i'b Zh'd[Vcn'dcZ'heZX'X'WdX' X] V'e#DI c'e\ 'dgb' c'e\ 'D6G'h'i] Z'[gh'i'hiZe'c'
i] Z'egdXZhh#D6G'h'WdYZY^{R,R}'id'i] Z'cZil dg'Vh'V'aXZchZ'VcY'g'ej iVi'dc'[VX'atVidg'^R[dg
ig hiāzh'h'eZZg'id'eZZg'VcY'b ZgX] Vci'ig/chVXi'dch#I] Z'ig/chVXi'dch'Vg'chiVciVcZdj han
Xdc[gh ZY'k'V'V'cZil dg'd[Dg'Vā'ZcVWZY'B VhiZgdYZh^{R,R}#I] Z'dc'X] V'e'hZiāzb Zci'd/nZg
h'V' c'id'GV'YZc'VcY'A^] ic'e\CZil dg'!Wj i'l ↑] V'[dXj h'dc'h'b eā'hiV' Z'WWhZY
Vj Vg/ciZZh'c'aZj 'd[i'b Z'WWhZY'Xdb b ↑b Zcih#

W'chiVciān'h' Vee'e\] dā'c'h'Vi'ig/chVXi'dc'Vh'deedhZY'id'b Vcj VāXd'c'XdchdaYVi'dc#
I] h'Zb edl Zgh'ZcY'j hZgh'id'c'kZhi!] dā'VcY'ciZg/Xi' ↑] 'Vcn'XgneidXj g'ZcXn'i] Zn
eg[Zg#I] h'Vān'd'ZcVWZh'V'g'X'e'Zci'id'g'XZ'kZ'i] Z'XgneidXj g'ZcXn'd[i] Z'gX] d'XZ'Vi'i] Z
i'b Z'd[ig/chVXi'dc#ε'h'b eā'iZgb h/>XVc'Wj n'ndj g'XVgj h'e\XgneidXj g'ZcX'Zh'a^ Z'C: D

VcY: I = VcYndj gZXZkZi] ZkVj ZVh7I 8dg96H= #Di] Zg hZ!] dZgVgZ[dgXZYidhZæ
VXdcdgXdchid'ej g] VhZVW ncl'edi ZgdcVcdi] ZgWdX'X] Vc'id'b V' Zi] Z
ig/chVXi'dc#

Xi i] ZVWafnid'ig/chVXi'Z[[XZcian' 1] dj i'gZancl'dcVcn'heZXf'X'X] Vc!'[dj cYVi'dc!dg
XZcig/abZY'hZgkXZ#l] h'h'l] Vi'XgneidXj gZcXn'l Vh'[dj cYZY'dc#l] Z'XdcXZei'd[
WdX'X] Vc'WWhZY'WdgZgh'Vg'V' cl'id'[Vi'VcY'cVi'dcVaWdgZgh/l] Z'XgneidXj gZcXZh
Vg'Z[id'Xgdhh'Vcn'e] nh'XVaWdgZg'i] Zg'Vg'ab 1Vi'dch'Vh'id'l] Vi'Y^1VaWdgZgh'i] Zn
Xgdhh#6hd!'i] Z'gZaVcXZ'dc'Vcn'dcZ'heZXf'X'WdX'X] Vc'dgdgVc'obVi'dc'id'gZb Vc'V[adVi
h'hj WZXi'id'[V'g'Z#7] X'cl'cl'g/hig Xij g'XVeWZ'd[h'l 1X] cl'X] Vch'VcY'Xdcig/Xi
cl'g/hig Xij g'egdiZXih'Wdi] =dVg'VcY'i] Z'ZcY'j hZgh'[gdb'ediZci'VaX] Vc'Xdav'ehZl'dg
i] Z'chdkZcXn'd[1ZnX] Vc\Zh!'ij g'egdd[cl'ciZgdeZg/Wafn'VcY'hXVacl'#

h'dj gedh'cl'i] Vi'[ij g'ZXdcdb Zh'l XW'edi ZgZY'Wh'XgneidXj gZcXn'l 1] dj i'i] Z'hdZ
gZaVcXZ'dc'[Vi'Xj gZcXZh'dgXZcig/abZY'Zci'Zh# =dVg'VcY'i] X'cl'cl'g/hig Xij g'i] Vi'h'j hVWZ
cdl VcY'[dgi] Z'[ij g'j cYZg Vn#

4. SMAUG NETWORK FEATURES

CfUWYg'UbX'A UghfbcXYg'

The Hoard ecosystem requires public, trustless, and transparent auditing of cross-chain balances and transactions. To this end, Hoard will provide oracles to examine the blockchains of various tokens and report information to the smart contracts platform that Hoard is deployed on. In addition, this oracle software will eventually be provided to the public, so that they can participate in the analysis and dissemination of this information, as well as increase the decentralization and assurance of the platform. In the future, we plan to open source our oracle software and to increase its functionality to cover the other centralized aspects of the Hoard platform, such as analyzing exchange information.

The Hoard masternodes will also provide direct smart contract and off-chain capabilities similar to lightning and raiden networks. The Masternodes will require a specific amount of OAR tokens

held in a specialized escrow contract. This is to ensure masternode administrations have “skin in the game” and to avoid bad actors flooding the masternode network without having to risk significant financial holdings. This will be the primary mechanism through which OAR tokens are distributed during block rewards.

Consensus on oracle data and transaction validity will be achieved by a vote of node owners. The escrowed OAR tokens required to run masternodes will be seized in cases where masternodes maliciously report inaccurate data. The determination of this seizure is similarly done by a vote of node owners.

7 fcgg!W Ujb`6 UUbWf J Yf JZWHjcb`

The Hoard ecosystem will also work with non-Hoard-affiliated products and services, such as wallets, exchanges, ICO platforms, and more. To this end, Hoard will be providing oracle nodes for supported smart contract platforms that will enable Hoard smart contracts to have accurate and timely information on the state of various blockchains, transactions, and user balances. These oracles will at first be centralized, and in the future we have plans to decentralize these functions and incorporate them into the Hoard masternode program. This will enable full transparency for our users, and allow seamless integration of the Hoard platform with other products and services.

Utilizing private key signed messages, Hoard masternodes will be able to verify the existence of holdings on supported blockchains. This work will at first be done off-chain, and verified through consensus of the masternodes. As more mature smart contract platforms come to maturity, this work will be done on-chain, taking into consideration mining fees and available opcodes.

I] Z`D6G`i d` Zc

D6G`h`WdcYZY`Vh`V`aXZchZ`id`VXXZaZg`iZ`ig`chVXi`dch`k`V`i] Z`Hb Vj `cZil dg #D6G`XVc`WZ
hiV`ZY`dc`Vc`cY`k`Yj VaWWh`h`id`VXXZaZg`iZ`eZZgid`eZZgid`chVXi`dch`VcY`ZcVWZ
b`Xgdig`chVXi`dch`Xj`gZci`a`idd`ZmeZch`kZ`id`XgZ`ViZ`dc`X] V`c`#D6G`XVc`WZ`j`hZY`id`VXXZaZg`iZ
XdckZgh`dc`d`[`Vi`id`Xgneid`i] Zc`Wj`n`c`Xgneid`Xj`gZcXn`VcY`Xgneid`id`[`Vi`i] Zc`XVh]`c`d`dj`i!`dg

VhVYVAnhZiiāZb Zci'b ZX] Vc'hb '[dgb ZgX] Vcih#D6GZcVWZh] dāZgh'idVidb XVan'igVchVXi""
heZcYj h'c\ 'EM'dgEMz Nf'Xj gZcXn'] 'ā'i] Z'gZ'X'e Zci'gZXZ kZh'LO' Xj gZcXn!'ēchiVcian#

I d` Zc': Xdcdb Xh

D6G'h'ēig'chXVanWZcZ[X'Vā'id'] dāZgh'd[Vcn'Xj gZcXn'] j h'i] Z'cZZY'idWY 'ā'dj i'dj gdl c
ZmX] Vc\Z'VcY'b j ā'Xj gZcXn' Vāzi#D6GZcVWZh'Xdchj b Zgh'] ↑'ē'YZXZcigVāōZY'ZXdcdb Z'h'id
'ēkZhi!'] dā'VcY'j hZ'Vcn'Xj gZcXn'i] Zn'YZZb '[↑'X'gX] b kZci'c\ 'Vcn'e] nhXVādgy^↑VāWdgZgh#
: Xdcdb XVan!D6G] dāZgh'VgZ'cXZci'k'ōZY'id'] dVgY' 'dj gXj gZcXn'hd'i] Zn'b Vn'igVchVXi '[gZan
I] ↑'Vcn'di] ZgXj gZcXn#

I] Z'b dgZ'D6G'dcZ'] Vh!'Xdj eāZY'] ↑'h'kVā Z!'i] Z'\gZViZgi] Z'VWāfn'id'igVchVXi'ēchiVcian#] Z
D6G'id' Zc'Vj \b Zcih'i] Z' kZādX'n'd['b dcZn'] ↑'ē'i] Z'XgneidXj gZcXn'ZXdhniZb '] ZgZWh'D6G
h'āzkZg\ZY'Vh'V'hidgZ'd[kVā Z'id'Wdhi] j hVWāfn'id[Vcn'hj eedgZY'id' Zch'dc'i] Z'deZc'b Vg Zi
VcY'\j VgVciZZ'i] Z'dc'X] V'ē'hZiiāZb Zci'd[Hb Vj \cZil dg'igVchVXi'ēch#

8gdl Y[j cY'c\ 'i] Z'Egd ZXi

D6G'b j hi'WZ'Y'higWY iZY'id'i] Z'=dVgY'ZXdcdb n'id'edl Zgi] Z'Hb Vj \cZil dg'VcY'\j VgVciZZ
Hb Vj \ēgldXdāhZiiāZb Zcih#] gdl \] Y'higWY i'dc'VcY'i] Z'gV'h'c\ 'd['j cYh'i] Z'iZVb 'Vi'=dVgY
XVc'ZnZXj iZ'i] Z'gdVYb Ve'[VhiZgVcY'b dgZ'Z[[ZXi kZan#Dj ghhd[i] VgZ'Vād l h'D6G'] dāZgh'id'WZ\ē
j h'c\ 'i] Z'Hb Vj \cZil dg'dc'YVn'dcZi'VcY'Zb edl Zgh'WY h'ēZhhZh'ā/gZ'VcY'hb Vāid'VXXZei
XgneidXj gZcXn'Vh'V'[dgb 'd['eVnb Zci#

=dVgY'] 'ā'WZ'XdcYj Xi'c\ 'Vc'ēkZhidgēgZhVāZ'id'WY 'ā'i] Z'cZXZhhVgn'gZ'hZgkZh'id'Xdb eāZiZ'dj g
gZ\j ā'idgn'Xdb eaVcXZ'gZfj 'gZb Zcih[dgV'J H'WWhZY'B H7'WY h'ēZhh[dgb dcZn'igVchb 'hh'dc!id
dWV'c'V'7'āXZchZ'c'CN!VcY'ā\Van['ā'c' Vā' *%HiViZh#B dgZdkZgi] Z'=dVgY'ZXdcdb n'h'WZ'c\
WY 'ā'[dgi] Z'ēciZgcVi'dcVāVYdei'dc'd[\ādVWāXgneidXj gZcXn'eVnb Zcih'gZb ↑iVcXZh'VcY
ZmX] Vc\Zh#'=dVgY'] 'ā'WZ'Vh'ZY'] ↑'Vcn'VcY'VāicZXZhhVgn'gZ\j ā'idgn'['ā'c\h'c'di] ZgXdj cigZh!
I] ZgZ'VeēaXVWZ#

=dVgY'] 'ā'Vāhd'deZc'j e'V'id' Zc'Y'higWY i'dc'gdj cY'id'i] Z'ej WāX#] h'i' 'ā'WZ'i] Z'hZXdcY'VcY'[c'Va
gdj cY'd[XgdI Y[j cY'c\ 'cZXZhhVgn'id'Y'higWY iZ'D6G'id'i] dhZ'] Vci'c\ 'id'eVg'X'ēViZ'c'i] Z'=dVgY'
ZXdcdb n#

I] Z [cVāY hīgWj i dēgXcē \ VcY idiVāhj eean] Vh nZi id WēYZiZgb cZY#ZZI] h hZXi dēc i āWZ
j eYViZY1 ↑] idiVāhj eean!hd[i XVe!] VgY XVe!VcY j hV\Z WZ[dgZ i] Z WZ \ cēcē \ d[i] Z ēgZ hVāZ#

5. PLATFORM TOOLS AND SERVICES

8gneidXj ggZcXn VcY; Vi : mX] Vc\Z

=dVgY ZmX] Vc\Z h i] Z afj Y nZc \ cZ [dg i gY cē \ cēkZhi cē \ VcY i g/chVXi dch#L Z gZ ēVg cZgē \
I ↑] VēgZb ↑ b ZmX] Vc\Z Vi [gēhi id cē i gYj XZ i] Z cZXZhhVgn b Vg Zih [dgXdchj b Zgh VcY
b Zg] Vcih Wj i l Z l āā b V Z dj gZmX] Vc\Z eā i [dgb cēYZeZcYZci VcY cē i ZgēZgWZ l ↑] di] Zg
ēgZb ↑ b VcY YZXZcig/āāZY ZmX] Vc\Zh#] Z ZmX] Vc\Z d [[Zgē \ h Vh [dāā h/

&# I] Z Vcn id Vcn XgneidXj ggZcXn ZmX] Vc\Z ZcVWZ h i g/YZgh id i g/YZ Vcn XgneidXj ggZcXn [dg
Vcdi] ZgXgneidXj ggZcXn#l] h Y h g eih i] Z hi Vij h f j d d [dca i gY cē \ āā ↑ZY ēV gē d [7l 8!
: l = VcY J H9l #

' # 6 [Vi id Vcn XgneidXj ggZcXn ZmX] Vc\Z ZcVWZ h cēkZhidgh id cēkZhi cē Vcn XgneidXj ggZcXn
j h cē \ [Vi Xj ggZcXn#L Z l āā WZ \ cē l ↑] J H9 VcY deZc i] Z ZmX] Vc\Z j e id cē i Zgē Vi dēc Va
Xj ggZcXZh Vh l Z Zmē VcY#

(# 6YkVcXZY XVh] "dj ih ZcVWZ Xdchj b Zgh VcY Wj h cē Zhh l ↑] b b ZY Vi Z [Vi l ↑] YgVl Vāid
i] Z gXdccZXiZY Wcē VXXdj cih k V 68=#J hZgh XVc dei [dghVb Z YVn cZm YVn dg
hiVcYVgY YZedh ↑ i b Zh#

)# ; 9>8 cēhj gZ hVk cē h VXXdj cih/i] ZhZ VXXdj cih l āā dā [Vi Xj ggZcXn cē V hVk cē h
VXXdj ci [dgā i Zgj hZ VcY VgZ [ZYZgVān cēhj gZ Y id i ' *%&%%J H9#l] ZhZ VXXdj cih VgZ
ēgdkYZY Wh dj gWcē cē \ cē i Z gVi dēc ēVg cZgh Wj i l] dāā d l cZY Wh i] Z ZcY j hZg#L Z Yd
cdi] V k Z VXXZh h id i] Z [j cYh#

I] Z ZmX] Vc\Z YZh \ c VcY i g/YZ b ZX] Vc h b h l ZgZ YZkZadeZY [dgh b eā X n VcY hē ZZY #H b āVg
id 8d cē WWh Z VcY di] ZgZmX] Vc\Zh! Vāā b Vg Zih VgZ b b ZY Vi Z dg Zg b Vi X] ZY Wj n Sh Zāā i g/YZ h#L Z
YZX YZY id Y hīgWj i Z i] Z ZmX] Vc\Z cē V b VccZgi] Vi VcndcZi Vi Vcn h āā kZā l dj ā ZVh n

Xdb eǵ ZcY1 1 dj i hiZZeǵVgc ǵ\ Xj gkZh# = dl ZkZgVid\ǵ1 ǵWVkvǵWǵid hi 1X
Wzil ZZc h b eǵ VcY Xdb eǵmVgX 1ZXij gǵ [dgigYZgh1] d hZZ ǵ b dgǵ igY 1dcVai gY ǵ \ iddh#

Hb eǵ Gǵ ǵ WWhZY ǵckZhi ǵ\

= dVgǵ h d [[Zgǵ \ Vj c f j Z egdYj Xi ǵ ǵ i] Z [dgb d [Vgǵ ǵ WWhZY ǵckZhi ǵ \ Zc \ ǵ Z i] Vi b V Zh
XgeidXj gǵcXn ǵckZhi ǵ \ h b eǵ [ZY! Z [[dgǵhh VcY ǵ ci Z \ g/i kZ#] Z ej gedhZ [dgYZkZǵeb Zci ǵ h
il d [dǵ / & d [[ZgZVhn id j cYZghiVcY VcY Z [[dgǵhh ǵckZhi ǵ \ deedgj c 1 Zh [dgVcndc Z 1 1
ǵb 1ZY ǵ cdl ǵY \ Z d [XgeidXj gǵcXn dg ǵckZhi ǵ \ VcY ǵ 1 VY V hZ XdcYVgn ǵ nZgd [ǵckZhi ǵ \ iddh
[dgb dgǵ VYkVcXZY ǵckZhidgh# = Zgǵ Vgǵ [Zi ǵ ZmVb eǵ h d [ǵ] dl ǵ dj g [ǵ i] h i] Zc i] Vi gǵ ǵ WWhZY
ǵckZhi ǵ \ 1 dg h dc ǵ = dVgǵ #

&# HZi ǵ VcY [dgǵ Zi ǵ 1 i] Z ǵckZhidgh [dXj hZY dc Ydaǵ gXdhi V kZg \ ǵ \ #] Z gǵ ǵ h VXi kViZY!
V Xd ǵ dgVWh Zi ǵ h hZǵ XiZY VcY Vc VXXdj ci ǵ h ǵ ǵ ZY #] h h ǵckZhi ǵ \ dc Vj ide ǵ di #

' # ; ǵ VcXVa] VWh Xǵ Z ǵ dc i] Z c j VcXZh d [i] Z ǵckZhidgh ǵ VV ǵ n a [Z #; gdb ǵ b V ǵ \
ej gǵ] VhZh id \ Zii ǵ \ eVY! gǵ ǵ h Xvc Wǵ VXi kViZY id VXXg Z ǵ Xgǵ b ZciVaVb dj cih d [J H9
WWhZY dc eZgZci V \ Zh! gǵ j cYj eh dgWǵ cX] b Vg h id ǵckZhi ǵ ǵ i] Z gǵ egǵ [Zgǵ Y
XgeidXj gǵcXn #] Z Hb Vj \ c Zil dg ǵ ZcWǵ h i] Z b Xgdig/chVXi ǵ ch Vh Vǵ dl ǵ \ ndj id
] dVgǵ 7I 8 ZkZc dc Z h Vidh] ǵ Vi V i b Z #

(# GZVX) ǵ \ [ǵ VcXVa \ dVh ǵ a Z gǵ i gǵ b Zci! YZW gǵ Yj Xi ǵ dc dgǵ / gǵ Z ej gǵ] VhZ ǵ h h b eǵ 1 1
= dVgǵ # ǵckZhidgh YZ [ǵ Z i] Z gǵ \ dVh! hZǵ Xi Xd ǵ ch dgVWh Zi h! VXi kViZ i] Z gǵ ǵ h VcY
gǵ Wǵ / cXZ VXXdgǵ ǵ \ id V \ \ gǵ hh kZc Zh # GZWǵ / cX ǵ \] VeeZch ǵ chi Vci a VcY 1 1 dj i [ZZh
k V i g hi ǵ hh d [[X] V ǵ b Xgdig/chVXi ǵ ch #

) # 6j id gǵ Wǵ / cX ǵ \ h V dc Z XaX hZgk XZ i] Vi egdk YZh Vc Vj idb ViZY hZǵ d [[! Vj n WWh VcY
gǵ h Zi iddǵ i] Vi h b eǵ [Zh b dY ǵ XVi ǵ ch id i] Z gǵ ǵ dgVWh Zi Ob V ǵ \ V Y kZgh ǵ ZY
edg [daǵ ZVh Zgǵ id b Vc V \ Z [dgWǵ \ ǵ cZgh VcY [Vhi Zg [dgVYkVcXZY ǵckZhidgh #

EZgdgb VcXZ ig/X ǵ \ h egdk YZY Wh hde] hi XViZY X] Vg ǵ \ VcY iddh id] Zǵ ǵckZhidgh
j cYZghiVcY edh ǵ dc ǵ \ 1 1 ǵ Vcn \ kZc i b Z [g/b Z #] Z YViV 1 ǵ Wǵ Y hea nZY Vh Vc dkZg/ǵ
b ZigX dgY k h Wǵ ǵ cid ǵ cY k Yj Vǵ b ZigXh [dgXdb eVghdc V Xgdhh ǵckZhib Zci kZ] Xǵ h #L Z kZ a V

dj i`ea/ch`id`YZkZæde`V`Yd`↑`ndj`ghZā`iddāi`] Vi`Zb`edl`Zg`ckZhidgh`i` ↑`i`] Z`VWā`n`id`b`V`Z`j`e`Vcn`
g`ā`h`i`V`ā`dg`Y`id`[↑`heZX`{`X`c`ZZYh`#`

8d`ch!`7Vh` Zih`VcY`=neZ

Dj`g`ZmX`] Vc`Z`i` ā`h`j`eedg`V`ā`gd`l`ē`ā`h`i`d`[`X`g`neid`X`j`g`Z`c`X`Z`h`V`c`Y`i` dg`id`b`V`ē`i`V`ē`i`] Z`]`^`] Zhi`d`[`
hi`V`c`Y`V`g`h`ē`d`[[Z`g`ē`ā`h`#`L`Z`i` ā`ā`j`c`X`] `V`c`Y`h`j`eedg`V`k`V`g`Z`i`n`d`[`ā`Z`V`Y`ē`ā`V`c`Y`Z`b`Z`g`ē`ā`
X`g`neid`X`j`g`Z`c`X`Z`h`W`h`F`(``%`&`-`#`=`d`V`g`f`V`X`] `Z`k`Z`h`h`j`W`h`i`V`c`i`V`ā`ā`f`j`Y`↑`n`d`c`Y`V`n`d`c`Z`#`

&#`ē`d`g`Y`Z`g`i`d`ē`g`d`k`Y`Z`ē`c`h`i`V`c`i`Y`k`Z`g`h`{`X`V`i`ē`d`c`i`Z`k`Z`Y`Z`k`Z`æ`d`e`Z`Y`X`j`hi`d`b`ē`V`W`Z`X`d`ē`V`W`h`Z`ih`#`
l`]`Z`V`W`h`Z`ih`V`g`ē`h`e`Z`X`V`ā`b`Z`Y`ā`gd`j`e`ē`ā`h`d`[`V`h`h`Z`ih`h`e`ā`f`W`h`i`Z`^`]`i`V`c`Y`ā`gd`j`e`Z`Y`W`h`j`h`Z`
X`V`h`Z`#`ē`k`Z`hid`gh`X`V`c`b`d`c`↑`d`g`W`h`Z`i`ē`Z`g`d`g`b`V`c`X`Z`h`b`ā`g`i`d`V`c`i`l`!`W`j`i`ē`c`g`Z`V`ā`f`n`j`ā`n`
d`l`c`Z`V`X`]`X`d`ē`ē`c`Y`k`Y`j`V`ā`n`!`ē`X`j`Y`ē`ā`X`d`c`i`g`l`ā`d`k`Z`g`i`]`Z`g`d`l`c`ē`g`k`V`i`Z`Z`nh`#`7`Z`n`d`c`Y`
d`c`Z`X`ā`X`Y`k`Z`g`h`{`X`V`i`ē`d`c`i`!`dj`g`ā`d`V`ā`h`i`d`ē`g`d`i`Z`X`i`ē`c`k`Z`hid`gh`[`g`d`b`ē`Z`ā`ā`Z`Y`V`h`h`Z`i`d`Z`ch`
Y`Z`e`Z`c`Y`Z`c`i`d`c`V`X`Z`c`i`g`V`ā`b`Z`Y`ē`V`g`n`l`]`d`b`V`n`W`Z`X`d`b`Z`ē`c`h`d`k`Z`c`i`#`l`]`Z`=`d`V`g`f`b`j`ā`ā`l`V`ā`Z`i`l`ā`ā`
ā`k`Z`j`h`Z`g`h`j`ā`V`X`Z`h`h`i`d`i`]`Z`g`d`l`c`V`h`h`Z`ih`!`i`]`ē`g`k`V`i`Z`Z`nh`[`d`g`Z`V`X`]`X`d`ē`ē`c`i`]`Z`V`W`h`Z`i`
]`Z`ā`V`h`i`]`Z`j`h`Z`g`#`

'`#`=`neZ`h`V`c`ē`c`k`Z`hib`Z`c`i`h`ā`c`V`ā`ā`Z`V`g`Z`Y`i`d`l`V`g`f`X`g`d`l`Y`h`d`j`g`X`Z`Y`h`Z`c`i`b`Z`c`i`#`l`]`gd`j`ā`]`d`j`g`
ē`g`d`ē`g`Z`i`V`g`f`6`>`V`ā`d`g`f`]`b`h`i`Z`X`d`ā`Z`X`i`!`V`c`V`ā`o`Z`!`V`c`Y`i`Z`^`]`i`X`g`d`l`Y`h`d`j`g`X`Z`Y`h`Z`c`i`b`Z`c`i`
ē`l`n`e`Z`i`d`[`k`V`g`d`j`h`X`d`ē`h`V`X`g`d`h`h`i`]`dj`h`V`c`Y`h`d`[`X`]`V`c`c`Z`h`#`l`]`h`ā`k`Z`h`ē`c`k`Z`hid`gh`V`ē`Z`Z`V`i`
W`ā`d`ch`d`[`Y`V`i`V`ē`d`ē`c`i`h`V`ā`ā`g`V`i`Z`Y`ē`c`i`d`V`h`ē`ā`Z`h`X`d`g`b`V`i`X`]`Z`Y`i`d`k`V`g`V`W`Z`i`b`Z`[`g`V`b`Z`h`#`
l`]`Z`Y`V`i`V`i`Z`X`d`ā`Z`X`i`l`ā`ā`V`Z`ē`j`V`ā`X`V`ā`n`V`k`V`ā`W`Z`i`]`gd`j`ā`]`[l`i`i`e`h`\\$`\\$`n`e`Z`X`d`#`c`!](#)V`c`d`e`Z`c`h`d`j`g`X`Z`
6`>`h`ā`c`V`ā`h`Z`g`k`X`Z`W`j`ā`V`h`=`d`V`g`f`#`

(`#`7`V`h`Z`ih`ā`n`i`]`Z`ā`gd`j`c`Y`l`dg`[`d`g`f`j`ij`g`Z`ē`d`ē`d`g`j`c`↑`Z`h`i`d`i`g`Y`Z`g`Z`]`ā`i`Z`Y`X`g`neid`V`h`h`Z`i`
:`l`!`h`#`E`Z`c`Y`ē`ā`H`8`V`ē`e`g`d`k`V`ā`=`d`V`g`f`ē`c`i`Z`c`Y`h`i`d`Z`m`i`Z`c`Y`i`]`Z`h`Z`i`n`e`Z`h`d`[`b`d`Y`Z`g`ē`c`k`Z`hib`Z`c`i`
k`Z`]`X`ā`Z`h`i`d`ē`c`k`Z`hid`gh`ē`c`i`]`Z`j`ij`g`Z`#`

B`j`ā`V`h`h`Z`i`8`g`neid`X`j`g`Z`c`X`n`L`V`ā`Z`i

=`d`V`g`f`l`V`ā`Z`i`h`V`b`j`ā`V`h`h`Z`i`h`id`g`ā`Z`V`ē`e`ā`X`V`i`ē`d`c`i`]`V`i`l`ā`ā`d`ā`V`ā`ē`g`Z`b`↑`b`X`g`neid`X`j`g`Z`c`X`Z`h`#`
l`]`Z`i`V`ā`Z`i`h`X`d`c`c`Z`X`i`Z`Y`i`d`d`j`g`Z`m`X`]`V`c`Z`h`k`V`i`]`Z`H`b`V`j`ā`C`Z`i`l`dg`h`d`i`g`Y`Z`g`h`X`V`c`Z`Z`e`j`c`Y`h`d`[[`
Z`m`X`]`V`c`Z`h`V`c`Y`ē`h`Y`Z`i`V`ā`Z`i`h`i`]`ā`Z`]`V`k`ē`ā`i`]`Z`ā`f`j`Y`↑`n`c`Z`Z`Y`Z`Y`[`d`g`g`Z`V`ā`i`b`Z`i`g`Y`Z`h`#`l`]`h`

gZb dkZhi] Z`aWdgDj h`VcY`d[i Zc`ZmeZch`kZ`egdXZhh`d[`VhhZi`ig/vch[Zgh!`Xdc[`gp Vi`dc`i`b Zh`VcY`
b`cZg[ZZh`VhhdX`ViZY`! `] `ZnX] Vc\Z`YZedh`h#

; dgB Vmb j b`ig hi`zhhcZhh!`i] Zj hZgh`! `aWZ`gZhedch`WZ`[dgi] Z`hVcXi`n`d[`i] Z`gegkViZ` Znh/
i] ZhZ` Znh`! `a`cdi`WZ`hidgZY`Vh`i] Z`=dVgY`iZVb #J hZgh`! `aWZ`c`hig XiZY`id`b V` Z`WX` j eh`d[
i] Z`g` Znh`VcY`gZXdKZgn`e] g/hZh`j h`c`i] Z`=dVgY`Vee#; dgj hZgh`!] d`dei`c`i`d`dj gZb Zg\ZcXn
WX` j e`hZgk`XZ!`=dVgY`! `a`hidgZ`j hZgZcXgneiZY`gZegZ`hZciVi`dch`d[`i] Z`gZXdKZgn`e] g/hZh`c`
iVb eZg`egd[`e] nh`XVa`gZegZ`hZciVi`dch`#]] Z`gZigZkVad`[`i] Z`gZXdKZgn`e] g/hZh`h`c`iZcYZY`[dgj hZ
hdZ`an`c`Zb Zg\ZcX`Zh!`VcY`! `a`gZfj` gZ`V`Xdb WcVi`dc`d[`YZci`n`kZg[`XVi`dc!`b j a`^[VXi`dg
Vj i] Zci`XVi`dc!`i`b Z`YZa`/nh!`[ZZh!`e] nh`XVa`egZ`hZcXZ`VcY`di] ZghZkZgZ`hZjXj g`n`b ZVhj`gZ`h#]] Vi
hVY!`dj ghj eedg`hiV[[`h`j] a`n`YZY`XViZY`id`\Zii`c`\`=dVgY`j hZgh`WX` `dca`cZ`! `] `i] Z`g[j cYh`Vh
hddc`Vh`edhh`WZ`#

I] Z`! Vaz`i`! `a`hZgkZ`Vh`i] Z`c`iZg[VXZ`[dg`c`hiVci`ig/vchVXi`dch`! `] `c`i] Z`=dVgY`e`d/i[dgb`#]] `h
gZb dkZhi] Z`cZZY`id`Xden\$eVhiZ`VYYg`hhZh`dgj hZ`Vcn`i] gY`eVgn`hl Vee`c`\`hZgk`XZh`#`=dZ`Zg
XVc`ZnZ`Xj iZ`ig/YZh`c`hiVci`a`[gdb`i] Z`! Vaz`i`c`iZg[VXZ`#

I] Z`! Vaz`i`h`YZh`^cZY`[dgZkZgnYVn`j hZ`W`h`dj giZVb`d[`c`VcX`Va`c`Yj hign`kZiZg/vch`#]] Z`c`iZg[VXZ`
h`Xdb eVg/WZ`id`VcY`Xdb eZi`kZ`! `] `b dYZg`Y`^`Val Vaz`ih`j hZY`[dg[`Vi`idYVn`#8db WcZY`! `] `i
i] Z`D6G`id`Zc!`i] Z`! Vaz`i`h`ZgkZ`Vh`i] Z`[VX`a`Vidgd[`eZZg`id`eZZg`c`hiVci`eVnb Zcih!`b ZgX] Vci
eVnb Zcih!`ig/YZh`VcY`Xgdhh`e`d/i[dgb`edg[da`d`ig/X`c`\`#

Dei`c`Xdc`iVXi`hncX`c`\`! `a`hegZ`VY`=dVgY`VXgdhh`b j a`eZ`kZg`XVh`c`XgZ`Vh`c`\`j hZgVYdei`dc
I] `Z`hj eean`c`\`! Vaz`i`j hZgh`! `] `[Vb`aVg[VXZh`id`ig/vchVXi`! `] `!Zab`c`Vi`c`\`i] Z`cZZY`id`Xden
VcY`eVhiZ`Xdb eZm`VYYg`hhZh`#`j`i] Zn`VgZ`c`i`XdccZXiZY`id`ndj`! `] `c`=dVgY`ndj`XVc`hi`a`hZcY`dg
gZfj`Zhi`eVnb Zci`k`V`XZae] dcZ`HB`H!`Zb V`adghdX`Vab`ZY`V`X] VccZ`h#

<UW_Yf!dfccZ7c`X`GtcfUj`Y`

We've developed a simplistic approach to consumer asset protections with a systematic process for moving crypto assets offline and storing in air-gapped cold storage vaults. The security protocols and authentication layers are strict, global and under 24 hour surveillance. Extracting funds requires multiple signatures and identity checks with a 48 hour maximum verification and withdrawal period.

A YfW UbhGYfj JWg'

6hZneqzhZYZVgZgdj g\ dVa'h'id'Wj 'A'i] Z'cZXzhVgn'c[dg/hig Xij g' [dgb ZgX] Vcih'id'ig/chVXi
'chiVcian'VcY'Vidb 'XVan' 1] 'Xdchj b Zgh' 1] 'c'i] Z'=dVg'ZXdhnhizb 'j h'e\ 'dca'XgneidXj g'ZcXn#
8dchYZgi] Z'egzb 'hZ' 1] Zg'c'ndj '] da' h'M'N!'VcY'Of'Xd'c'nzi'i] Z'b ZgX] Vci'dca'VXXZeih'eE
Xd'c# 1] gdj \] 'D6G'VcY'i] Z'b VhiZgdYZh'g cc'e\ 'kVaYVi 'dc'VcY'VYj 'Y'XVi 'dc'ndj 'XVc'hZcY
keVn'i] Z'b ZgX] Vci'hM'N'Z'Of'VcY'i] Zn' 1] 'ag'XZ'kZ'f'Vh'eE'chiVcian#h'V'kVaj Z'b ViX] 'e\
ZmX] Vc\Z'eglidXdai] Vi 'Va'ch'ndj g] da'c'h'id'i] Z'kVaj Z'd[i] Z'eZcY'c'e'ej gX] VhZ#D['Xdj ghZ!
] da'Zgh'XVc'j hZ'V'h'e'a'Xj g'ZcXn'hM'id'ig/chVXi 'Wj i'c'XVhZh' 1] Zg'i] Z'kVaj Z'ZmXZZYh'V
h'e\j a/g] da'c'e\!hM'N'Z'Of'Vg'hiVX'ZY'id'Z'fj Vai] Z'kVaj Z'ZmX] Vc\Z# 1] Z'egldXzh'Zab 'c'ViZh
b j a'e'a'eV'c'ed'c'h'c'XgneidXj g'ZcXn'Xdb b ZgXZ/

& Wj nZgh'Yd'cdi'cZZY'id'XdchdaYViZ'] da'c'h'id'b ViX] 'i] Z'kZcYd'ge'g'Z'Zg'Y'XgneidXj g'ZcXn#
' 1'hZa'gh'Vg'Z'c' i' [dg'ZY'id'VXXZe'icZ'Xj g'ZcXn'dkZg'Vcdi] Zg#
(1'Wj nZgh'ig/chVXi'] dl 'i] Zn'hZZ' [1#
) 1'hZa'gh'g'XZ'kZ'] j cYh'chiVcian'k'V'i] Z'Hb Vj \ 'cZil dg #

æ'dgYZgid'ZmXj iZ'i] 'h'e'a/c' =dVg' 1] 'a'W'YZkZade'c'\ 'h'Xgdhh'X] V'c' b j a 'VhhZi'b VhiZgdYZ'id
egdkYZ'i] Z'hnhizb 'd[ig'hi'zh'h'VcY'chiVci'ig/chVXi 'dc'h' 1] 'a'YZakZg'e\ 'Wj h'eZhh' 1] Va'Zih' 1]
heZX'Va'Z'Y'VXXzh'id'Wc' 'c'\ 'ciZ\g'Vi 'dc'hnhizb h'VcY'hZii'ab Zci'eglidXdai] [dg'ed'ci'd] ["hVa'
E'DH'kZcYdgh#h'i] Z'h'b ea'Zhi' 1] Vn'id'fj 'X' an'VcY'Xdhi'Z[[ZXi'kZan'ciZ\g'Vi Z'kVaj Z'ZmX] Vc\Z
 1] 'XgneidXj g'ZcXn#

6. UI ENGINEERING AND ADOPTION METHODS

1] Z'iZVb 'Vi' =dVg'] Vh'YZZe'ZneZgZcXZ' 1]] j b Vc'[VXidg'e\!j hZg'ciZg'VXZ!'VcY'j hZg
ZneZgZcXZ'Zc\ 'cZZg'e\!Vh' 1] Za'Vh'hZb Vci'X'c'[dgb Vi 'dc'VgX] 1ZXij g'c'i] Z'Xdchj b Zg['cVcXZ
VcY' [ciZX] 'hZxidgh'Vi'chi' 1] j 'dc'Va'akZah#L Z kZ' 1] dg ZY'[dgi] Z'a'g'Zhi'Xdchj b Zg' 1] da'zhVa'
VcY'c'kZhib Zci'Wc' 'c'\ 'Xdb eVc'Zh'c'i] Z' 1] dg' 'dc'hig'Vi Z\ 'X'c' 1] Vi'kZ'VcY'XdcXZeij Va
b dW'a'W'hZY'Wc' 'c'\ 'egdyj Xih#Dj g'ch' 1] i'VcY'hj WZXi'b ViiZgZneZg'hZ'Vg'c'ig'ch'X'id'Wj 'A'c'

V°[dg VgY"i] c` c\!j ij g"egdd[°egdyj XiOvYdeiVWZ`WhZkZgnYVn°Xdchj b Zgh°VcY°VWZ`id°Xdb eZiZ
l ↑] igY↑dcVāVcY°cdc"igY↑dcVāWc` c\`VcY[°ciZX] °Xdb eVc Zh#

ε°VYY↑dc!i] Z°=dVgY°iZVb °h°Xdb eghZY°d[! Zæ` cdl c°VcY°ZmēZgZcXZY°\gdli i] °VcY°X] VccZa
hVāzh°ZmēZgh°] gZY°id°[dgb j ā/iZ°VcY°°b eāzb Zci°i] Z°cZXZhVgn°]j ccZāh°[dgb Vmb j b °j hZg
\gdli i] id°hXVāZ°i] Z°ZXdhnhizb °VcY°egdyj Xi°j hV\Z#

l] Z°W\Zhi°VYkVciV\Z°h°\ k°c\°XgneidXj gZcXn°id°VcndcZ!°ZkZc°[°i] Zn°] VkZ°cZkZgWdj \] i°dg
] Zā°XgneidXj gZcXn#°! °āj b ehiVg°i] Z°gZci°gVcXZ°°cid°XgneidXj gZcXn! ↑] dj i°i] Z°cZZY°id°WY n
Xgneid°VhhZih°dg°cVk°\ViZ°Xdb eāzm°YZci ↑n°kZg[°XVi °dc°egdxZYj gZh#εk↑Vi °dch°XVc°WZ°Y°higWY iZY
kV°HB Hi°Zb Vā°b ZhhV\ c\!°VcY°hdX°Vāb ZY°V°eā/i [dgb h#

l] Z°hVb Z°j cYZgn°c\°iZX] cdæ\ n! °āWZ°j hZY°id°hZcY°XgneidXj gZcXn°eVnb Zcih°id°cdc"] dVgYZgh
VcY°cdc"] dāZgh#] Z°hVb Z°b ZY↑ b h°hiViZY°VWdkZ°id°Y°higWY iZ°D6G! °āWZ°Vkv°āWZ°id°hZcY
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°h°V° c°id°hZcY°c\°V°7↑Xd°c°eVnb Zci°id°hdb ZdcZ°l ↑] dj i°V°7↑Xd°c°l VāZi°/V°b V_dgb °āZhidcZ°c
XgneidXj gZcXn°VYdei °dc°b Zi] dYh#

7. SECURITY AND SUPPORT PROTOCOLS

; dg=dVgY!°hZXj gfn°h°V°eVgVb dj ci°Xdch°YZgVi °dc#: Vx] °b V_dggZāVhZ°l °ā\ d°i] gdl \] °V
i] dgdl \] °VcY°j cWWhZY°(g°°eVgn°hZXj gfn°Vj Y↑id°Zchj gZ°cdi] c\°h°gZāVhZY°ej WāXan! ↑]
ediZci°Vākj æZgVWā↑ Zh#: Vx] °gZāVhZ°XVcY°YViZ°l °āWZ°deZc°hdj gZY°VcY°Vkv°āWZ°[dgeZZg
gZk°Zl °eg°dgid°gZāVhZ#

Hj eedg°] Vh°WZc°ā°X° c\°l ↑] °XgneidXj gZcXn°Xdb eVc Zh#L Z°[ZZāi] Vi°id°l °c!°l Z°b j hi°WZ°WZ
id°hj eedg°Vāj hZgh°i] gdl \] °Y°gZXi°Xdb b j c°XVi °dc#=dVgY°eā/ch°id°deZc°j e°°b b ZY°ViZ°gZhedchZ
iZVb h°k°V°e] dcZ!°Zb Vā°VcY°X] Vi°dc°i] Z°[°ghi°YVn°d[°dj gej WāX°gZāVhZ#L] Zc°↑°Xdb Zh°id
°ckZhi°c\!°WY n°c\°VcY°hZā°c\!°igY°c\°dgl VāZi°j hV\Z!°=dVgY°l °ā] VkZ°hdb ZdcZ°Vkv°āWZ°id°] Zæ
ndj °)] dj gh°eZgYVn#

8. HOARD PARTNERS

To explore banking relationships with traditional enterprise financial institutions, Hoard is partnering with INV Fintech. This accelerator is affiliated with technology providers, banks and venture capital organizations.

As an offshoot of the Bank Innovation blog, INV FinTech helps financial industry segment startups from around the world. With support from Fiserv, their dedicated technology partner, and a selection of top financial institutions as both members and mentors, INV FinTech propels ideas and innovation.

Launched in 2015, INV FinTech relies on its strong global network — they maintain operations in New York, Europe, Israel and Silicon Valley, and leverage Bank Innovation's more than 75,000 readers worldwide—with the understanding of financial services that comes from industry experience stretching back to 1993.

INV FinTech's partners include top-tier financial institutions such as US Bank and BB&T. Technology partners include AWS, Plaid and Open Bank Project. For additional details, visit <https://www.invfintech.com/>.

9. A CLOSER LOOK AT THE SMAUG NETWORK

The Smaug Network is an off-chain, 2nd layer solution for instant payments and microtransactions, enabled by the OAR token. In this section, we'll explain the details of how this network operates, the roles of users, masternodes, and the Hoard team, as well as our inspirations and goals that led us to propose our solution.

With traditional cryptocurrency exchanges, much of the activity is performed off-chain. For example, some exchanges offer free user-to-user transfers of the most popular cryptocurrencies. They accomplish this by having an internal ledger, backed by on-chain

deposits, that record the balances of their users. These balances are not recorded on-chain until users decide with withdraw their assets outside of their networks.

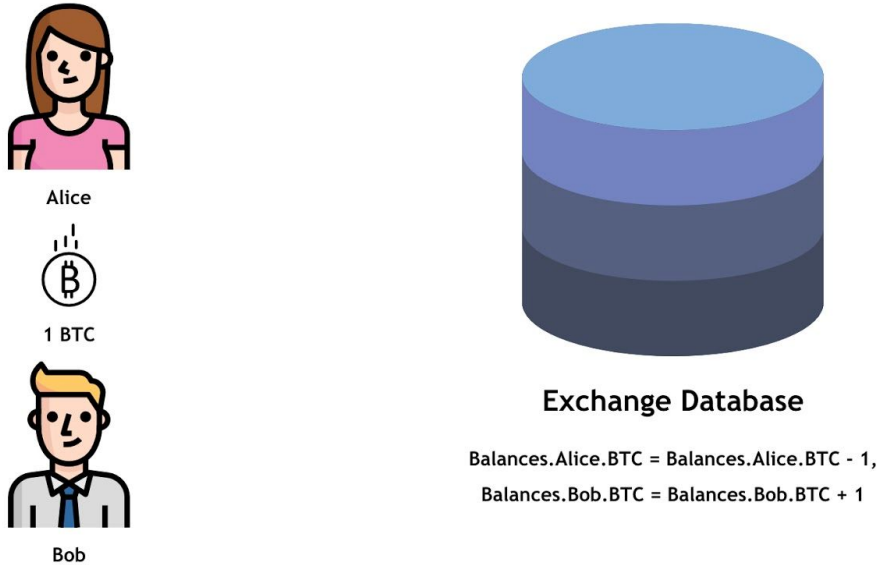


Figure 1. - A common intra-network exchange transaction

There is inherent risk in these types of transactions; the user who has been sent these funds intra-network does not have access to the private keys that store this balance (and in fact, neither does the user who sent this funds intra-network). In the case of an exchange becoming insolvent, there is little one can do to claim these funds.

The only safe way to exchange these funds is to make these transactions on-chain, commonly referred to as a withdrawal.

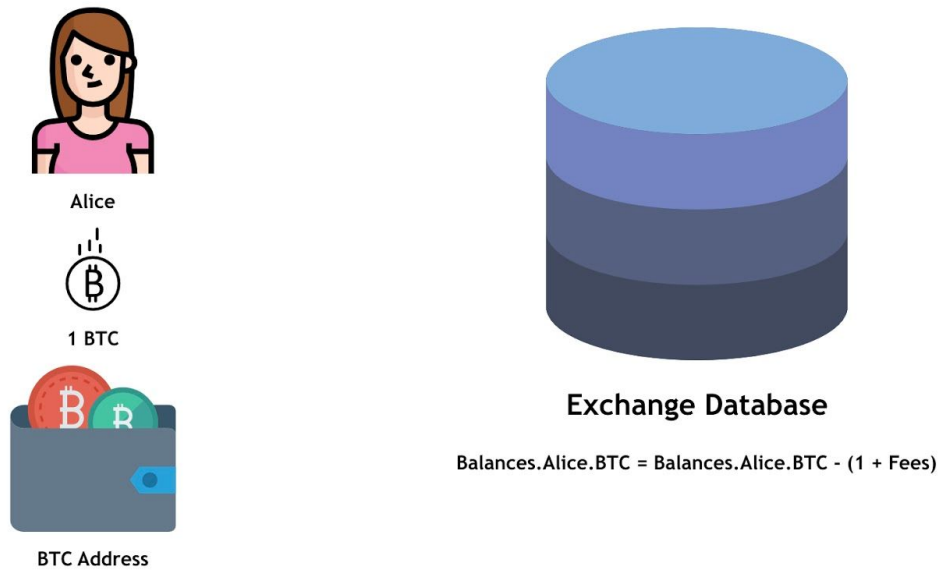


Figure 2a. - A withdrawal request on a traditional exchange

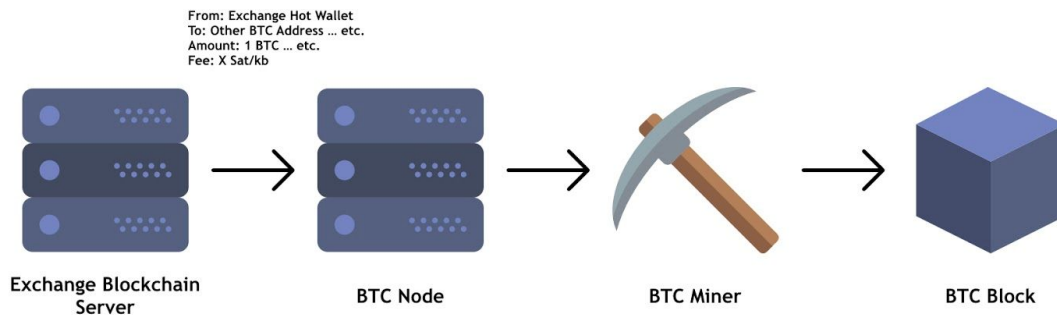


Figure 2b. - The on-chain settlement of a traditional exchange withdrawal

Withdrawals from traditional exchanges are plagued with issues: long confirmation times, complicated and user-unfriendly interfaces, high fees, and more. Exchanges utilizing the Smaug Network have a better proposition.

To begin, users who want to utilize the Smaug Network will first escrow an amount of OAR tokens greater than or equal to the amount of funds they would like to transact instantly across the network. These users deposit OAR tokens in a specialized smart contract, and these escrow operation is verified by the network of Hoard masternodes.

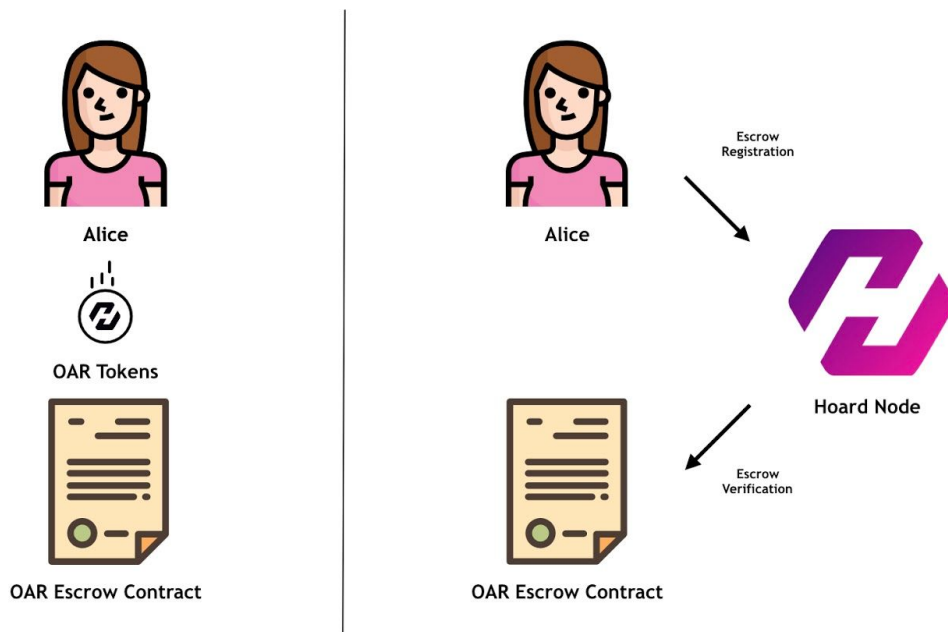


Figure 3 - A Smaug Network OAR stake operation

Once this has been accomplished, the user can begin trustlessly and instantly transacting funds using the Smaug Network for peer-to-peer transactions, exchange deposits, microtransactions, etc. This off-chain ledger is recorded in a database, similar to those used by traditional exchanges. However, with the Smaug Network, this database is distributed among the Hoard masternodes, adding decentralization and lowering insolvency risks. This off-chain transaction is backed by the escrowed OAR tokens to guarantee future settlement.

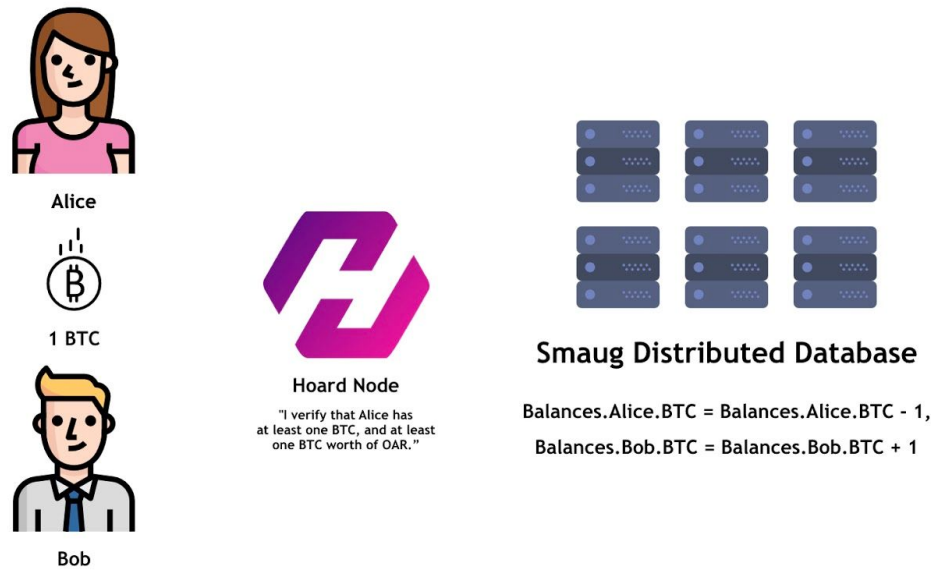


Figure 4. - A Smaug Network transaction

At some point, the user receiving the funds (Bob) may want to spend their funds on-chain, outside of the Smaug Network. However, Bob has no on-chain funds. To accomplish this, the user who sent Bob the funds using the Smaug Network is responsible for settling this transaction on-chain to its final destination.

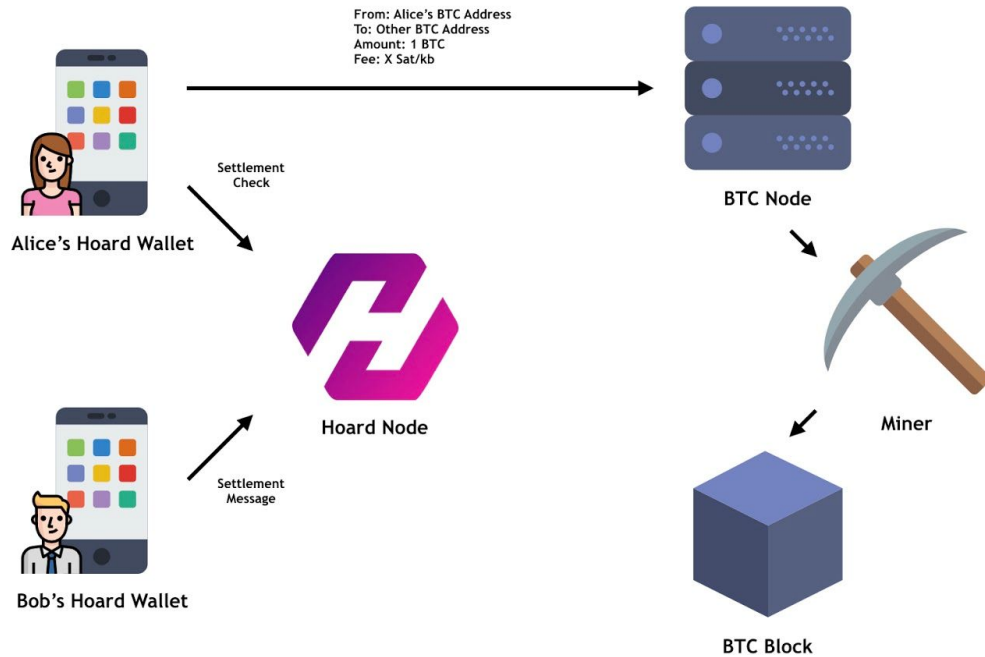


Figure 5. - On-chain settlement of a Smaug Network transaction

In the above figure, Bob sends a Settlement Message to the Smaug Network. Alice is periodically checking in with the Hoard Nodes to ensure final on-chain settlement. When a Settlement Message is received, Alice uses her keys to sign the on-chain settlement transaction on behalf of Bob.

There are many potential issues with this concept. While other solutions make use of on-chain opcodes and hash passing between users, we simplify the process and require Alice to make these settlements at the risk of losing her escrowed funds. Doing this prevents the following issues:

1. Alice is offline and not checking for settlement messages
2. Alice no longer has the required assets to settle the transaction
3. Alice refuses to make the settlement transaction behalf of Bob

If Alice is offline, she will never receive the message to complete the transaction. To prevent this, the Hoard wallet software will periodically check the distributed messaging service for messages instructing her to disburse her on-chain funds to intended recipient on-chain on behalf of the node user(s) she has transacted with.

In the absence of this check, a concept called Automated Settlement will be initiated by the nodes, wherein Alice's OAR token stake is forcefully seized and used to repay the intended receiver of the on-chain settlement.

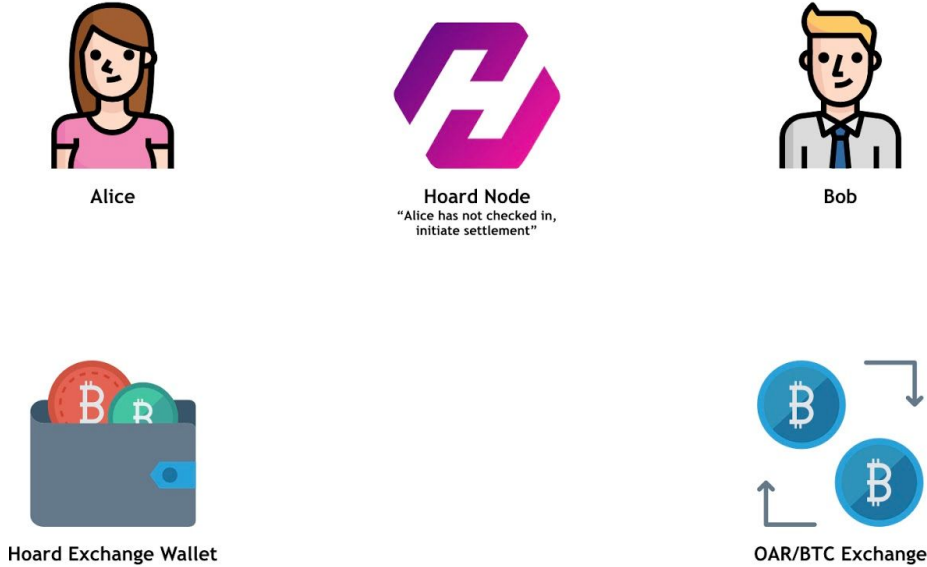


Figure 6a. - Alice is offline and Automated Settlement is initiated

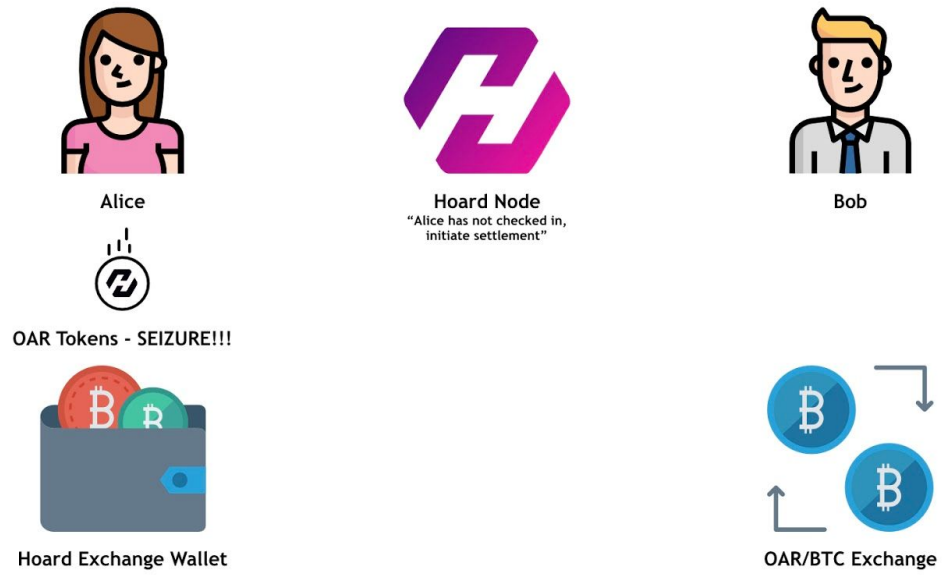


Figure 6b. - The OAR tokens are seized from escrow

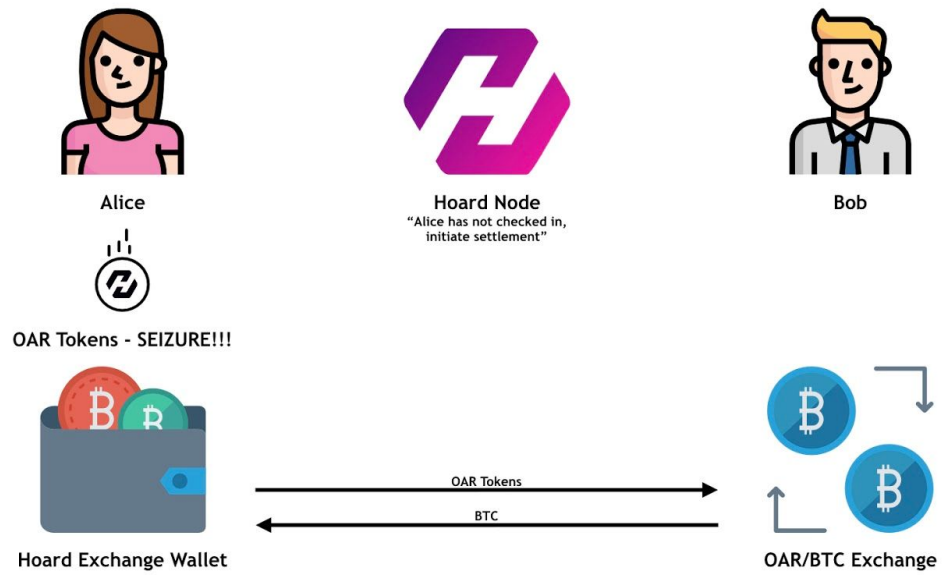


Figure 6c. - The OAR tokens are exchanged for BTC

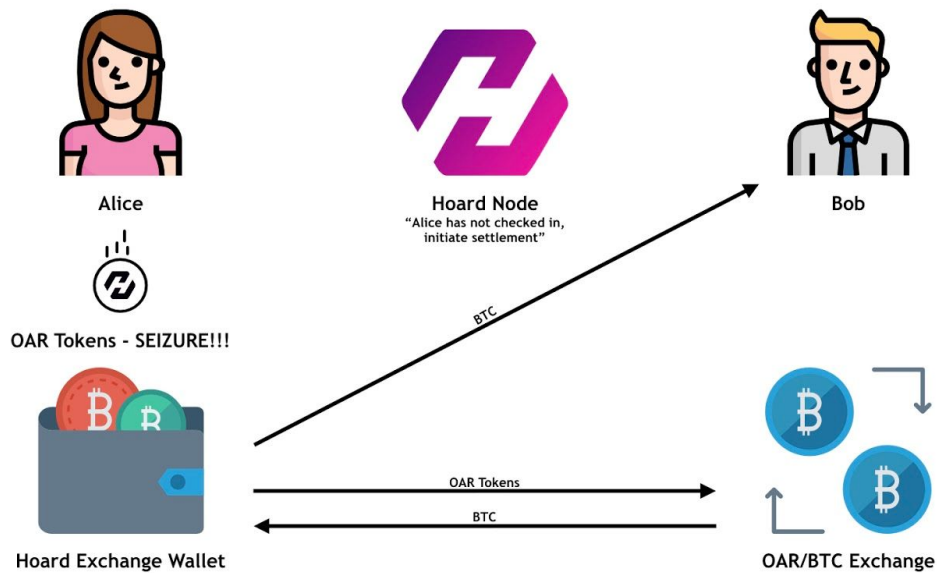


Figure 6d. - The Smaug Transaction is settled on-chain, and the intended recipient is paid

In the above figures, Bob has requested on-chain settlement of the Smaug Transaction from Alice, but Alice is non-responsive, either acting maliciously or offline. The OAR Token stake is seized via a consensus of the masternodes adjudicating the network and maintaining the messaging system that indicates settlement requests. This OAR stake is exchanged with our liquidity providers for the desired asset. This asset is disbursed on-chain to the intended recipient, settling the transaction. This Automated Settlement covers the cases wherein Alice is offline, non-responsive, or has spent the original assets on-chain apart from the Smaug Network.

There is another cause for Smaug Network transactions to undergo Automated Settlement and seizure of OAR tokens: This occurs when the OAR take used to guarantee the transaction has lost value, and is no longer sufficient to exchange with our liquidity partners in the event that Automated Settlement is required. We call this scenario Stake Value Deficit (SVD), and once again this scenario is prevented and adjudicated by the network of Hoard Masternodes.

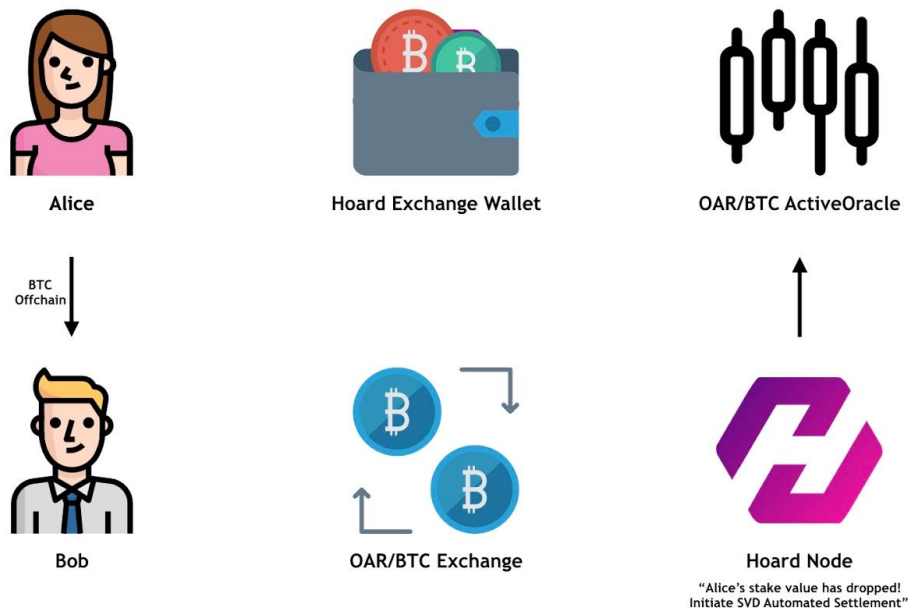


Figure 7a. - SVD Automated Settlement Initiation after Smaug Network transaction

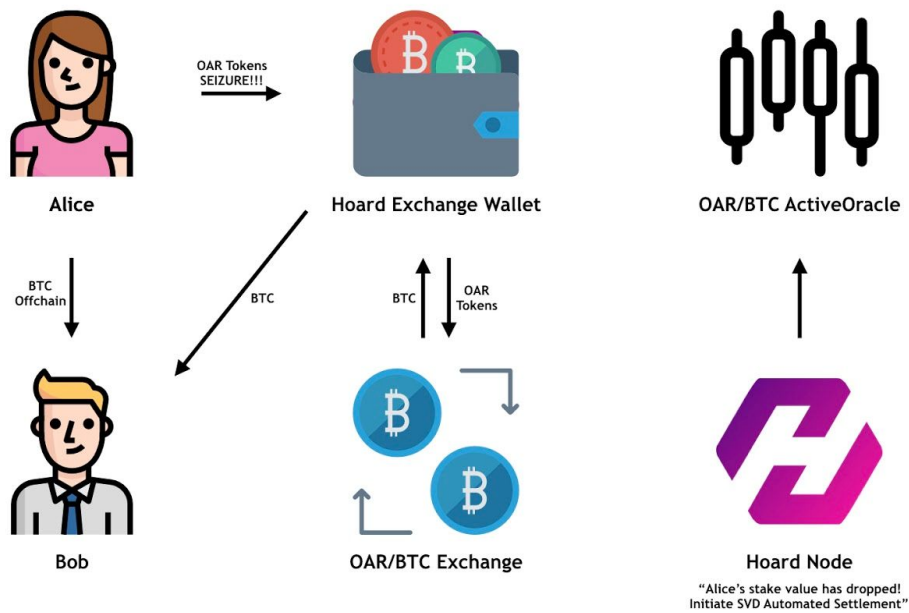


Figure 7b. - Completed Automated Settlement after SVD

In the above figures, Alice has utilized the Smaug Network to transact BTC instantly with Bob. However, after a period of time, the value of the OAR tokens in BTC has decreased due to market fluctuations. The network of Hoard Masternodes are provided Hoard-maintained “Active Oracle” smart-contracts that continually update with market prices for our supported cryptocurrencies. The Node analyzes this information and realizes that the stake guaranteeing on-chain settlement has dropped below some threshold. This threshold is above the break-even value of the transaction, but still at a manageable level that allows efficient utilization of user assets.

When this threshold is reached, Automated Settlement of the Smaug Network transaction is initiated via consensus of the Hoard masternodes. The OAR tokens are seized, exchanged for BTC, and the transaction is settled on-chain.

Similar to Automated Settlement described previously, these same mechanisms enable cross-chain transactions and instant exchanging for the desired assets.

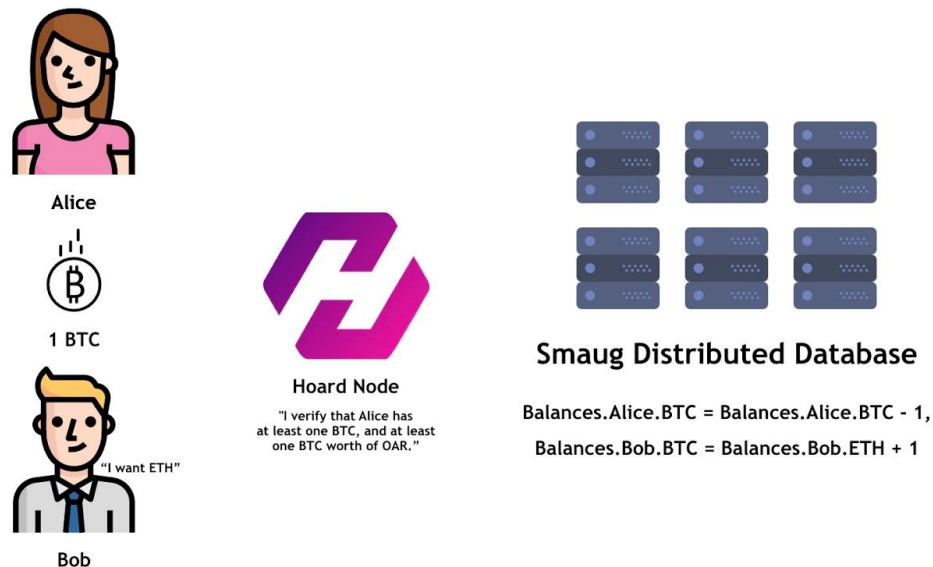


Figure 8a. - The use-case for cross-chain transactions

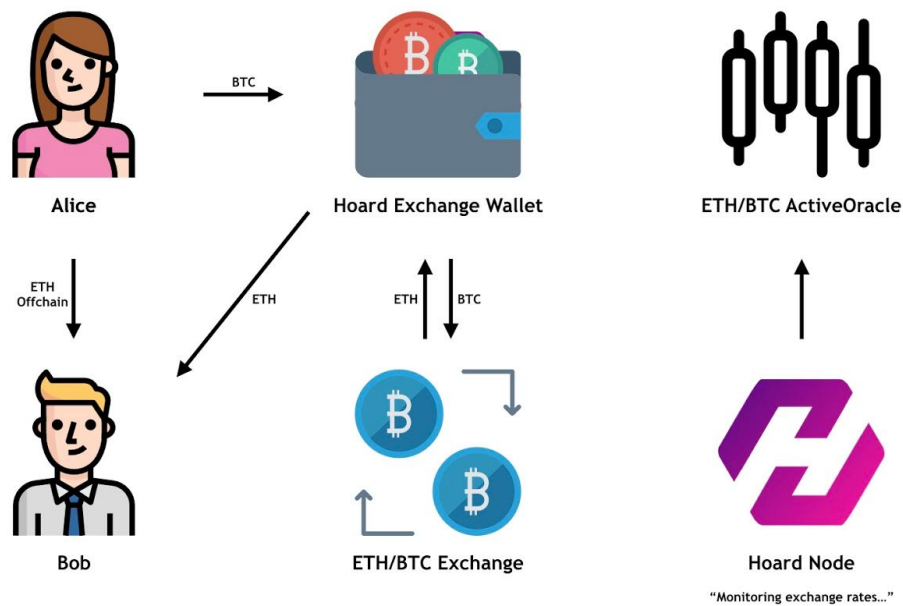


Figure 8b. - Settlement of cross-chain transactions utilizing the Smaug Network

To enable cross-chain transactions, the Hoard Masternodes monitor multiple Active Oracle smart contracts to determine the potential value of Smaug Network transactions in any support cryptocurrency. Assuming the OAR token value staked is enough to support the sequential off-chain deposit, exchange, and withdrawal operations, the receiving user will be presented with the potential value of incoming Smaug Network transactions in a variety of cryptocurrencies, allowing the receiver to determine the best way they'd like to receive funds, agnostic from the cryptocurrency used to transfer the value from the sender.

This concludes the detailed look at the Smaug Network. Our goals in presenting this protocol are to bolster the safety of exchange users everywhere, and increase the fungibility of all cryptocurrencies. We see Hoard not as a competitor to other blockchains and assets, but rather a supporting force that places user concerns first and foremost. We are striving for a cryptocurrency ecosystem where insolvency is no longer a concern, and where users

maintain full control of their assets at all times. We believe the Smaug Protocol is a massive improvement to the way exchanges currently operate.

We welcome feedback from the community. Contact us with questions, ideas and collaboration opportunities about the Smaug Network or Hoard. Together, we can improve our ecosystem and make it safer, faster, and easier for the next generation of participants.

10. NEXT STEPS

To learn more about the team and token sale details, please visit our site at www.HoardInvest.com and join our growing community on Telegram at [www.t.me/hoardinvest](https://t.me/hoardinvest). If you're interested in driving the future of Hoard, check out our open opportunities in engineering, marketing, business development and beyond on <https://angel.co/hoardinvest>