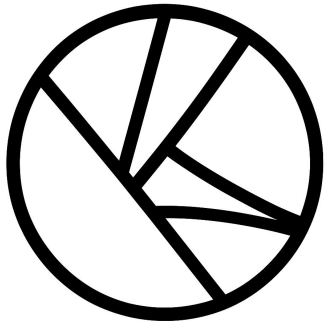
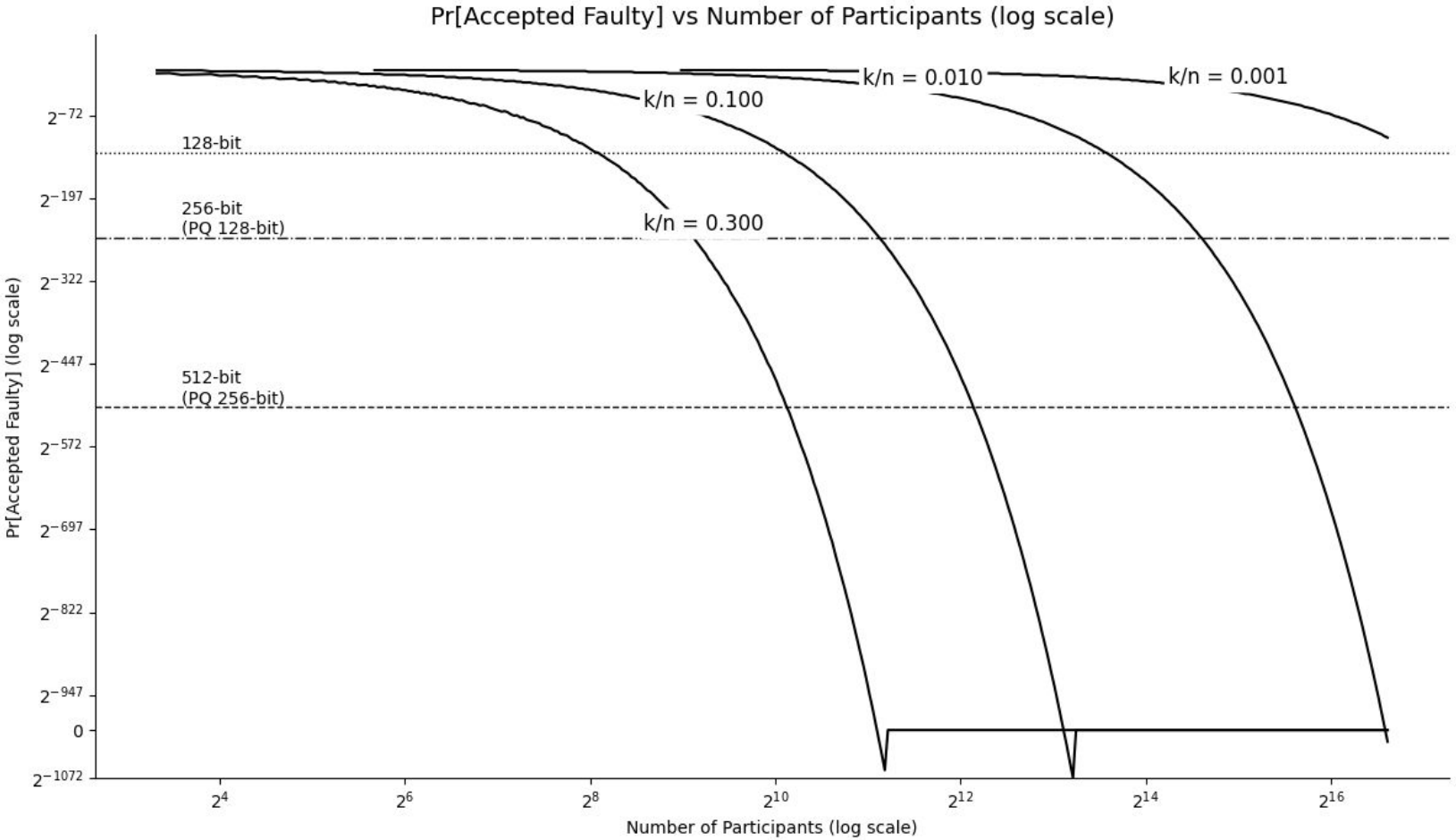


Ordered Atomic Collaboration (OAC)

OAC is a paradigm for decentralized consequence.

Build large-footprint coordination.

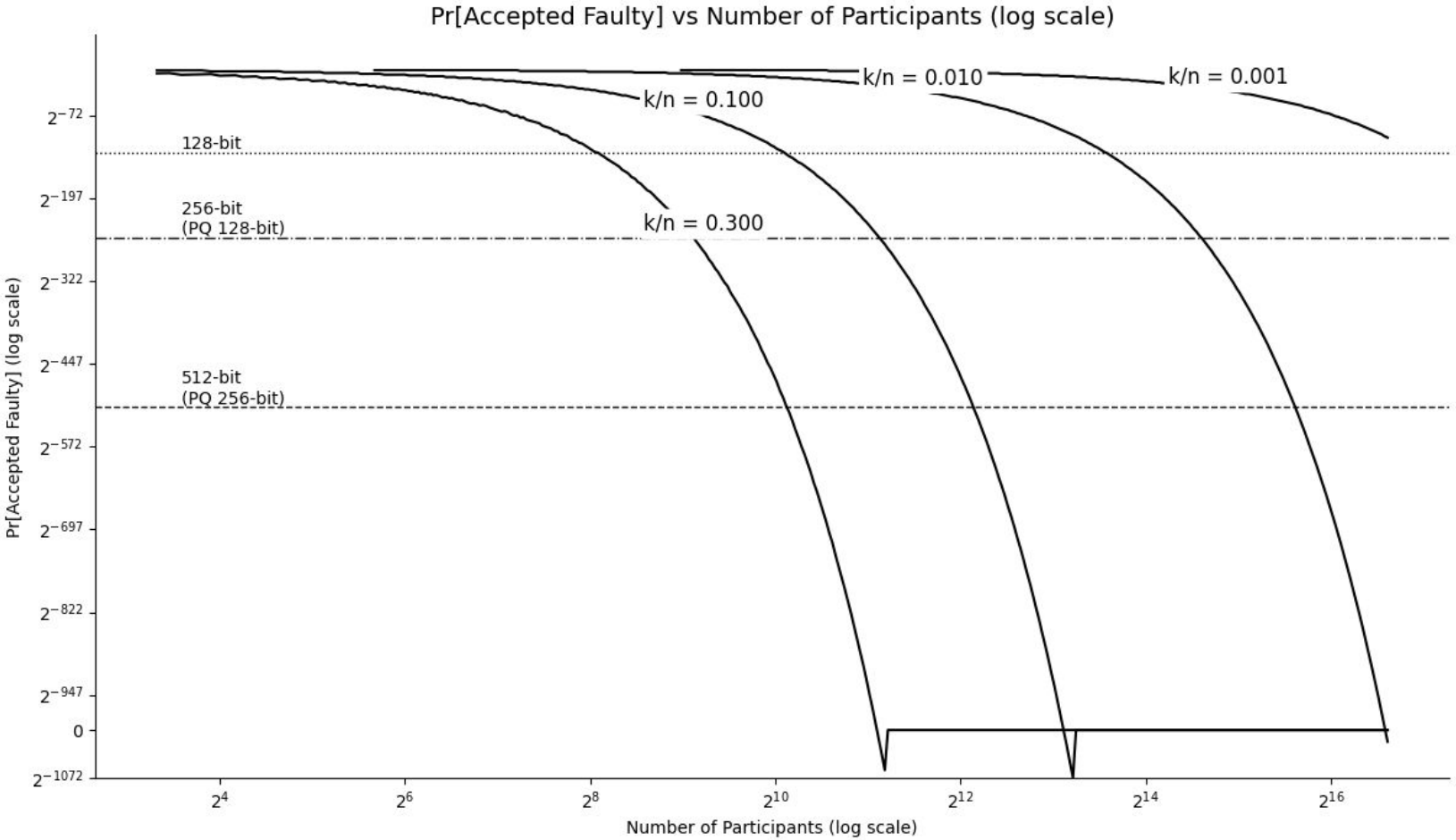

Pr[Accepted Faulty] vs Number of Participants (log scale)
k/n = 0.010
k/n = 0.001
k/n = 0.100
k/n = 0.300
128-bit
256-bit
(PQ 128-bit)
512-bit
(PQ 256-bit)
Pr[Accepted Faulty] (log scale)
2^{-72}
2^{-197}
2^{-322}
2^{-447}
2^{-572}
2^{-697}
2^{-822}
2^{-947}
0
2^{-1072}
2^{4}
2^{6}
2^{8}
2^{10}
2^{12}
2^{14}
2^{16}
Number of Participants (log scale)

1. BFA
2. Collaborative Transaction Routing
3. RIS-STM

BFA

Allow Byzantine faults with some known probability.

$$
\begin{aligned}
BFT &\subset BFA \\
\alpha \cdot Loss(BFT) + \epsilon &\geq Loss(BFA)
\end{aligned}
$$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(PQ 256-bit)
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2^{-447}
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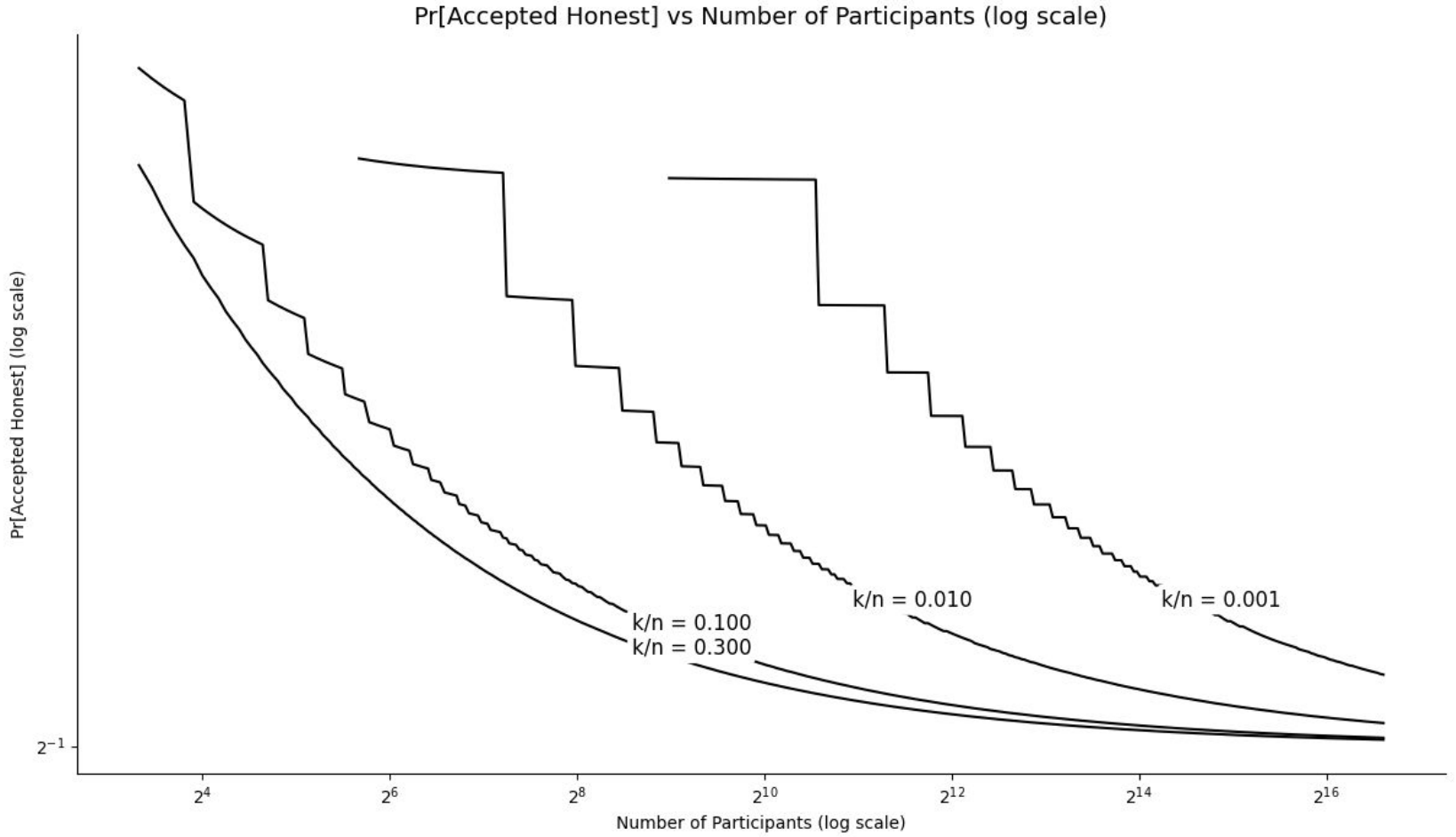
2^{-822}
2^{-947}
0
2^{-1072}
2^{4}
2^{6}
2^{8}
2^{10}
2^{12}
2^{14}
2^{16}
Number of Participants (log scale)


Pr[Accepted Honest] vs Number of Participants (log scale)
Pr[Accepted Honest] (log scale)
2^{-1}
k/n = 0.100
k/n = 0.300
k/n = 0.010
k/n = 0.001
2^4
2^6
2^8
2^{10}
2^{12}
2^{14}
2^{16}
Number of Participants (log scale)

$$
\begin{aligned}
&Pr[\text{Accepted}](n,k) = Pr[\text{Accepted Honest}](n,k) + Pr[\text{Accepted Faulty}](n,k) \\
&\lim_{n \to \infty} Pr[\text{Accepted Honest}](n,k) \\
&\quad = \frac{1}{2} \forall k \in N : k < n \\
&\wedge Pr[\text{Accepted Faulty}](n,k) \approx \mu \\
&\Rightarrow \Theta(BFA) \\
&\quad \approx Pr[\text{Accepted}](n,k) \cdot k \\
&\qquad + (1 - Pr[\text{Accepted}](n,k)) \cdot (n+k) \\
&\quad \approx \frac{k}{2} + \frac{n+k}{2} \\
&\quad = \frac{n}{2} + k \\
&\Omega(BFA) = k
\end{aligned}
$$

$$
\begin{aligned}
P(\text{Resample Count} = n) &= \left(1 - \frac{1}{2}\right)^{n-1} \cdot \frac{1}{2} = \frac{1}{2^n} \\
\Theta(\text{BFA}) &= k \cdot E[\text{Resample Count}] \\
&= k \cdot \sum_{n=1}^{\infty} n \cdot \frac{1}{2^n} \\
&= 2k
\end{aligned}
$$

Collaborative Transaction Routing

Induce collaborative requirements on including transactions to access broader class of incentivization structures.

Not all incentivized protocols need tokens.

$$B(CTR) \subset AB$$

$$\prod^{k} P[B(CTR_{BFA}(\zeta)) = 0] \leq \mu$$

$$E[Loss(CTR_{BFA})] \leq \mu \cdot Loss(BFA)$$
$$\rightarrow U(B(CTR_{BFA}(\zeta)) = 1) > U(F)$$

RIS-STM

Play forward best-case execution
across n-shards.

RIS-STM(i', B, C):

loop:

for $i \in C_i$:

$C_i := C_i + \text{recv}(i, B)$

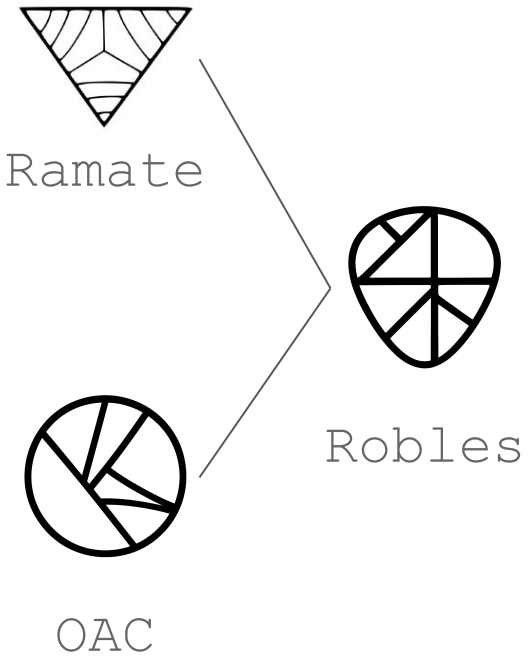
for $C_{i,k} \in C_i$:

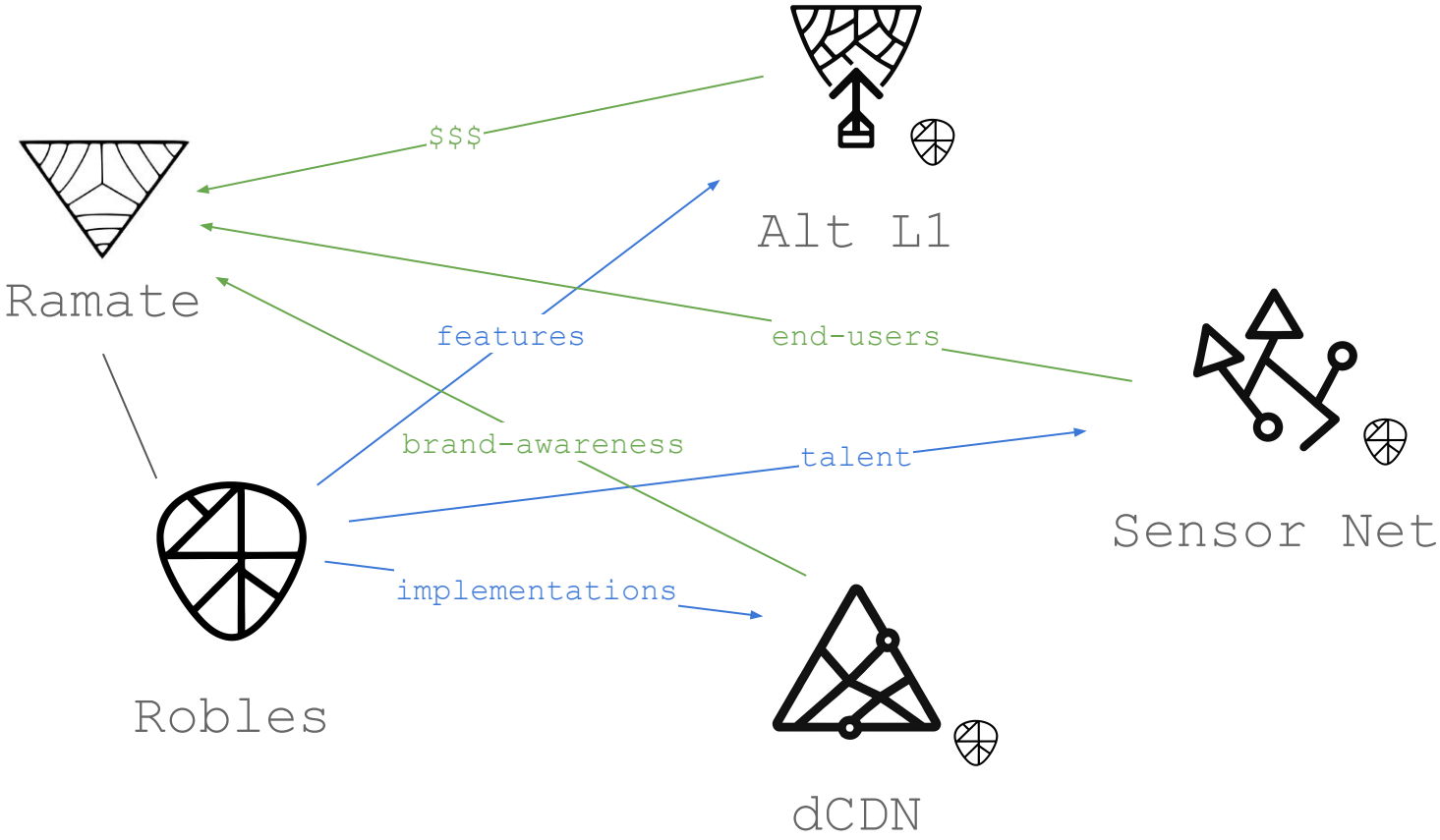
$C_{i',k} := \text{compute}(i', C_{i,k})$

if $C_{i,k} \in \text{FIN}$:

return $C_{i',k}$

Organization

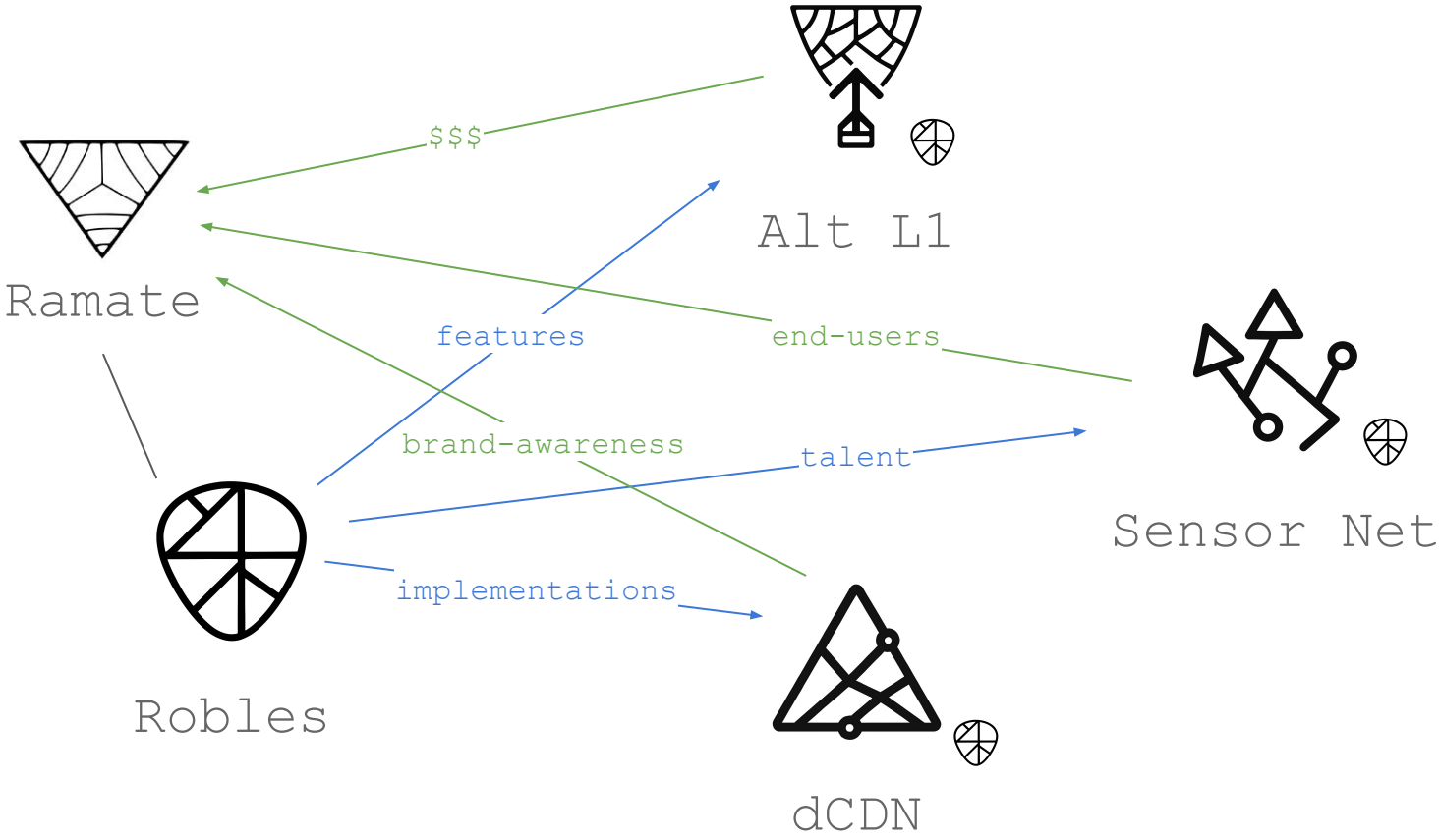

Ramate
Robles
OAC


$$$
Alt L1
Ramate
features
end-users
brand-awareness
talent
Sensor Net
implementations
Robles
dCDN


$$$,
personnel
OAC
Ramate

Ramate is a guild for large-footprint computing technology.

Applications


$$$
Alt L1
Ramate
features
end-users
brand-awareness
talent
Sensor Net
implementations
Robles
dCDN

Build broadcast-limited, participation-required network; reserve minter and charge for limit increases.

Generate revenue from utility.