

cipher //



Understand
ETHEREUM
Technology

API

BLOCKCHAIN TECHNOLOGY APPLICATIONS, BY SERVING NEW TYPES OF USE-CASES AND PRIVACY IMPROVEMENTS, THEY DEVELOPED ALTERNATIVE SOLUTIONS FOR CENTRALIZED CORPORATION COMMON ISSUES; THEY SIMPLIFIED PROCESSES; THEY CREATED NEW JOBS.

"PRIVACY IS NECESSARY FOR AN OPEN SOCIETY IN THE ELECTRONIC AGE. PRIVACY IS NOT SECRECY." (ERIC HUGHES — "A CYPHERPUNK'S MANIFESTO")

"TECHNOLOGY TRUST IS A GOOD THING, BUT CONTROL IS A BETTER ONE."
(STÉPHANE NAPPO — CISO AT GROUPE SEB);

"ANYONE KNOWS BLOCKCHAIN ONLY IN THE SCALE OF HOW MUCH ILLEGAL, OR FRAUDULENT, THE PROJECT THEY PRE-KNOW IS:

BOB: "BLOCKCHAINS, EVER HEARD OF THEM?"

ALICE: "MMH NO?"

BOB: "... LIKE BITCOIN?"

IF THEY KNOW WHAT SOME CRYPTOCURRENCY IS, THEY FLEE THE CONVERSATION, LIKE THEY FORGOT THAT CASH IS AN EXPERIMENT BASED ON PRINTED AIR.

ANYONE ELSE GETS FASCINATEDLY CONFUSED. IN BOTH CASES, THE FINAL AGREEMENT IS THAT ANY MONEY SUCKS." (C2 — "THE CRYPTO WORD");

#RELATABLE / GENERAL

WHY SHOULD YOU CHOOSE TO GIVE UP ON EITHER YOUR PRIVACY OR SECRECY ACCESSING A SERVICE LIKE ANY SOCIAL, ANY PRIVATE SOCIAL, OR ANY SERVICE WITH A DATA RECORD?

BECAUSE YOU BELIEVE IN THE PROJECT;

YOU ENJOY THE SERVICE IT GIVES;

IT'S UPDATED, IT'S FREE OR WELL-PRICED;

BUT BASICALLY, YOU PUT YOUR TRUST AND HOPES THAT NOTHING TERRIBLE HAPPENS IN "THE HEADQUARTERS".

IT MAKES THE WHOLE SYSTEM WEAK IN ONE SPECIFIC SPOT. IT USUALLY INVOLVES YOUR DATA WHEN IT BREAKS, AND IT DOES BREAK, BY DESIGN. AS IT MIGHT NOT BE SUCH AN ISSUE FOR SOME, YOUR INFORMATION USUALLY COSTS MONEY, AND IT GETS SOLD OR LOST AROUND WITH YOUR CONSENSUS. EMAIL APOLOGIES OR THE UNCERTAINTY OF BEING ONE OF THE BIG NUMBERS SOME NEWS DISPENSED ON THE MEDIA IS JUST A BROKEN MODEL OF SERVICE.

WE AGREED ON THE COMPROMISE. IT "KINDA WORKS", AND IT "KINDA WORKED TILL NOW". WHY CHANGE IT?

"ACTION CLASS SUITS ARE NOT RELATED TO DATA AT ALL." (C2 — "FREE DATA")

#OUCHY / THE MAIN ISSUE

WHEN CUSTOMERS GET PAID IN DATA OR BY CREATING DATA, THERE ARE SEVERAL SCENARIOS WHERE THIS METHOD DOESN'T WORK:

- BOB SPENT 7H A DAY TRYING TO CLIMB A PLATFORM TO GET VISIBILITY AND SELL HIS PRODUCTS.
- KINDA_BOB USES CASH TO BUY HIS LADDER TO A NOT-SO-TARGETED AUDIENCE AND STARTS SELLING WORSE PRODUCTS IN NO TIME, WHICH END UP STEALING BOB'S EXPOSURE.
- ALICE PHOTOGRAPHED A SUNSET FOR AN UNPOPULAR BLOG WHERE SHE GETS DONATIONS ON HER POSTS.
- KINDA_ALICE COPY/PASTES ALICE'S PICTURE ON ANOTHER PLATFORM. BY DOING A BETTER \$SEO, SHE REDUCES THE CHANCES OF ALICE'S CONTRIBUTIONS.

THIS PROCESS RESULTS IN GENERAL DISILLUSION.

THE ACT OF DATA SHARING, RELATED TO COMPETENCES THAT COST EITHER CAPITAL OR TIME AND EFFORT, IS SEEN AS A WASTE OF TIME IN AN ALREADY SATURATED AND MANIPULATED MARKET.

#PHILOSOPHY / ACCUSE

BEHIND EVERY ORGANIZATION WITH AN EXCELLENT SERVICE OR A BIG VISION, THERE ARE GROUPS OF EMPLOYERS DEALING WITH PORTIONS OF THESE VERY DIFFERENT KINDS OF DATA DAILY.

"YOU CAN AUTOMATIZE THE READINGS, MINIMIZE THE RISKS WITH PAPER CONTRACTS, BUT DATA OUTPUTS ARE STILL VULNERABLE AND ARTIFICIALLY DISTRIBUTED. THE FACT THAT THESE DATA ARE ONLY ACCESSIBLE BY PRIVILEGED HUMANS, FORCES YOU TO TRUST THE READERS. HUMANS AS ONE, ARE NOT YET TRUSTABLE AT SUCH A LOW LEVEL." (C2 — "DATA ARE \$TRUSTLESS, HUMANS ARE NOT")

STATISTICS ARE NOT HARMFUL IF THEY REMAIN UNRELATED FROM YOUR REAL-LIFE IDENTITY ON YOUR PICK. ANALYTICS SERVE MANY SCOPES. THE ORGANIZATIONS YOU USUALLY PUT YOUR "FAITH" IN, MAY VARY IN NATURE AND ABUSE OF THEM WITHOUT WARNING.

#HISTORY / HIGH-LEVEL INTRODUCTION TO FACTS

IT'S '08, AND WILD BLOCKCHAIN CALLED \$BITCOIN STARTS TO DEMONSTRATE HOW \$P2P TECHNOLOGY SHOULDN'T BE AVOIDED OR UNDERVALUED JUST BECAUSE IT'S HARD TO BULLETPROOF. THE FIRST SECURE AND ACCESSIBLE DIGITAL CURRENCY IS CREATED.

IT'S '11, BITCOIN IS STILL RUNNING MOSTLY ON THE DEEP WEB, AND FEW KNOW ITS MORALS. THE DEVELOPER TEAM DISAPPEARS WITH A MASSIVE PORTION OF THE COINS PRODUCED IN THE MOST PROFICIENT MINING PHASE. THEY ARE STILL UNTOUCHED NOWADAYS.

IT'S '13, \$SILKROAD, A WELL-KNOWN MARKETPLACE THAT USED BITCOIN FOR ANY DRUG AND OTHER UNLAWFUL GOODS, GETS SHOT DOWN. CONDEMNED TO A DOUBLE LIFE SENTENCE PLUS FORTY YEARS, ROSS ULBRICHT, ACCUSED OF BEING DREAD PIRATE ROBERTS (THE LEADING BUSINESS OWNER OF SILKROAD), STATES HIS PROFILE:

"I AM CREATING AN ECONOMIC SIMULATION TO GIVE PEOPLE A FIRST-HAND EXPERIENCE OF WHAT IT WOULD BE LIKE TO LIVE IN A WORLD WITHOUT THE SYSTEMIC USE OF FORCE." (ROSS ULBRICHT — "ROSS' LINKEDIN BIO")

IT'S '15, AND A GENIUS TEAM OF DEVELOPERS LAUNCHES A BLOCKCHAIN WITH PROGRAMMABLE INTERACTIONS BETWEEN VIRTUAL IDENTITIES, AKA \$ETHEREUM.

IT'S '16, THE \$DAO HACK, ONE OF THE BIGGEST HACKS EVER ON ETHEREUM. IT DIFFERS PROFOUNDLY FROM ALL THE THIRD-PARTY-EXCHANGES MANGLED SO FAR. THE HACK OCCURRED ON A FLAW THAT THE DAO LEFT UNRESTRICTED IN ETHEREUM. THE COMMUNITY DECIDES TO PUT ETHEREUM'S ATTRIBUTED MARKET VALUE ON A RISK BY HARD-FORKING THE BLOCKCHAIN TO PENALIZE THE THEFT.

THEY LEFT BEHIND \$ETHEREUM CLASSIC, THE BLOCKCHAIN WITH A SINGLE BROKEN FILE WORTH 50M\$, MOVING TO BRIGHTER FUTURES.

IT'S '17, AND \$BIG WHALES START TO UNDERSTAND BLOCKCHAIN POTENTIALS OR WANT TO GAMBLE WITH BIG MONEY IN A SMALL POND. PRICE PEAKS, EVERYBODY TALKS ABOUT IT, AND EVERYBODY IS BUYING. AKA \$FOMO. THE ETHEREUM \$MARKET CAP TOUCHES ~130P\$; BITCOIN IS ~320P\$.

IT'S '18, WHALES DUMP THE MARKET, AND CRYPTO BECOMES A PSEUDONYM FOR SCAM OR GAMBLING. ETHEREUM'S \$ALL-TIME HIGH/\$ALL-TIME LOW IS ~1.2K\$/~0.9K\$ AND BITCOIN'S ~20K\$/~3K\$

IT'S '19, AND THE FIRST \$DE-FI APPLICATIONS ON ETHEREUM ACCRUE TREMENDOUS VALUES AND COLLABORATIONS, STABILIZING THE TOTAL MARKET VALUE OF ETHEREUM ABOVE ~10P\$. THE NETWORK HAS A MAJORITY OF FISHY, POINTLESS, OR SIMILAR PROJECTS, BUT YOU CAN TELL THE DIFFERENCE NOW BECAUSE WE HAVE IDEALS.

2020 IT'S CLOSE TO AN END, MORE CODERS APPEAR IN THE SCENE, WITH EITHER ONE-MAN PROJECTS (\$YEARN - CREATED FOR PERSONAL-USE, SCALED TO ANYONE) OR CONTROVERSIAL PROJECTS (\$SUSHISWAP - PROVING THAT LIQUIDITY IS NOT A MOAT). YET, THESE COMMUNITIES ARE STABLY GROWING TOWARDS SELF-MANAGEMENT AS A FUNDAMENTAL ORGANIZATION'S IDEAL.

1 DEC '20, AN EXPONENTIAL FILL UP OF THE ETH2.0 INITIALIZATION'S CONTRACT ALLOWED IT TO DEPLOY IN A MONTH OF PUBLIC FUNDING. THE MAIN DIFFERENCE WILL BE THAT PROOF OF WORK (THE HARD PUZZLE A MINER SOLVES, LIKE BTC) TURNS INTO PROOF OF STAKE (BY FUNDING, YOU PARTECIPATE AS A VALIDATOR, THE NEW HARDWARE-CHEAP MINER, LIKE PEERCOIN).

THIS TECHNOLOGICAL EVOLUTION ALLOWS THE BLOCKCHAIN TO REACH THE SPEED OF VISA IN A FEW YEARS; IT DOESN'T ONLY TRANSFER MONEY THOUGH.

Q1 2021 PRICES OF COMMON CRYPTO ARE CLOSE TO TWICE THEIR LAST ATH, EXCEPT ETH, WHICH IT'S STILL ACCOMULATING IN A SMALL RANGE. DAPPS ARE MOVING TO \$L2, MEANING ETH2.0 IT'S ALREADY HAPPENING.

AT THE TIME OF WRITING, ETHEREUM HAS DOZENS OF REVOLUTIONARY FULLY DECENTRALIZED-AUTONOMOUS APPLICATIONS VALUED FROM 20M\$ TO 500M\$ IN MARKET CAP. THE TOP 12 MOVE AT LEAST 10M\$ EVERY 7D. LITTLE TEAMS SHAPING A PROTOCOL; SOME EVOLVE IN "STATES".

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#GENERIC / HOW SHOULD WE INTERPRET BLOCKCHAINS

BLOCKCHAIN MEANS HAVING ACCESS TO A REMOTE OS CAPABLE OF RUNNING TASKS WRITTEN IN ITS SPECIFIC LANGUAGE THAT CAN RUN ON THOUSANDS OF MACHINES SIMULTANEOUSLY. IT CAN PERFORM FROM ANY DEVICE WITH AN INTERNET CONNECTION AND PROPERLY CODED CALLS. IT OBTAINS IT WITH DIFFERENT PRACTICES, ALL INTRINSICALLY BASED ON THE ART OF \$CRYPTOGRAPHY.

"TODAY BITCOIN WOULD BE PAYPAL OS WITH EXTREME PRIVACY AND INFINITE RECORD HISTORY; ETHEREUM, INSTEAD, WOULD BE MORE LIKE A GENERAL PURPOSE BACK-END OS, FOR ANY APP." (C2 — "BLOCKCHAINS' PARADIGM")

ETHEREUM IS A GROUND LAYER MEANT TO CALCULATE AND STORE THE RESULT OF ALL THE "IMPORTANT" ACTIONS SECURELY.

LIKE MANY OTHER BLOCKCHAINS 2.0, DATA STAY PERMANENTLY IN A PROGRAMMABLE FASHION, AND IT'S SCALABLE WITH NO PENALTIES ON EITHER HUGE NUMBERS OR TINY DATA. SO LIGHT, IT RUNS ON RASPBERRY PIS.

"THE MORE ANYONE TREATS IT LIKE WATER = THE BETTER IT PERFORMS; FOR EVERYONE." (C2 — "BLOCKCHAINS' ARCHETYPE")

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#ADDRESS / IDENTITIES

ETHEREUM USES \$ADDRESSES AS IDENTITIES. THEY CAN BE STORED AS A \$KEY AND USED LOCALLY TO VALIDATE \$CALLS TO THE \$OS, MAINTAINING YOUR \$RL DETACHED. THEY CAN GET RESTORED WITH A BUNCH OF WORDS, AKA \$MNEMONIC. BECAUSE THE OS GENERATES THEM, IT CAN ALSO AUTHENTICATE NEW DEVICES WITH THESE WORDS.

IF YOU WANT A WAY TO MOVE THE KEY AROUND (WHICH IS THE SAFEST), YOU CAN VERIFY YOUR IDENTITY TO THE OS WITH ONE HARDWARE THAT LOOKS LIKE A USB FLASH DRIVE, AKA \$COLD STORAGE WALLET.

THE COMBINATION OF 12/24 WORDS, AS WELL AS THE KEY, IS YOUR EVERYDAY PURSE, DON'T LOSE IT. SHARE YOUR ADDRESS INSTEAD. IT IS SIMILAR TO A \$HYPERLINK FOR IDENTITIES.

"A BLOCKCHAIN ADDRESS IS A PROFILE IN SOME FORUM MADE BY MACHINES. POSTS REPRESENT 'ADDRESS STORIES' AS A SERIES OF CALLS AND HARD TO INTERPRET IRRELEVANT PIECES OF DATA. TOPICS ARE LIKE A BUNCH OF WEIRD EXCELS." (C2 — "ADDRESSES' PARADIGM")

#TX / INTERACTIONS

AN ADDRESS CAN INTERACT WITH ANY OTHER ADDRESS IN THE OS, BUT WITHOUT EXTENSIONS, THEY CAN ONLY MOVE \$COINS AROUND, PAYING SOME \$GAS.

"VERY VAGUELY, THIS IS HOW BITCOIN WORKS. ETHEREUM IS SO DIFFERENT. WOW." (C2 — "\$DOGECOIN IS A SICK MEME")

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ADDRESSES WITH FUNCTIONS, AKA \$SMART CONTRACTS, ARE THE SOLUTION TO THAT LIMIT. ANY ADDRESS CAN CREATE OR INTERACT WITH THEM AS IF THEY WERE A REGULAR ADDRESS, BUT ONCE YOU CALL A FUNCTION, HERE IS WHERE THE MAGIC HAPPENS.

#CALL / FUNCTIONS

SMART CONTRACTS CAN HAVE TASKS THAT CHECK SOME REQUIREMENTS WHILE RUNNING, GIVING A REVERT IF IT FAILS.

IT USUALLY HAPPENS WHEN FORCING A CALL THAT DOESN'T ALLOW YOU TO DO CERTAIN THINGS.

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EVIL_BOB HAS 120 COINS AND PAYS(\$TX) ALICE 200 COINS IN TWO TRANSACTIONS OF 100 EACH.

THE SECOND ONE FINISHES ONLY IF HIS REMAINING BALANCE IS ABOVE 0.

EVIL_BOB PAYS ALICE 100 (+GAS FOR A SUCCESSFUL TX ~0.25\$), AND THEN JUST THE GAS FOR THE REVERTED OPERATION (IF ANY COINS WERE MOVING, A FULL REFUND WOULD OCCUR).

GAS FOR A REVERTED PROCESS MAY VARY, BUT IT'S PRETTY MUCH AS A SUCCESSFUL TX.

??? WHAT HAPPENS IF: BOB, EVIL_BOB'S COUSIN, PAYS ON HIS BEHALF WITH 201 COINS?

-[X] HE'D HAVE ~1.00 COIN;

-[] HE'D BE IN DEBT OF ~1.00 COIN;

-[] HE'D HAVE EXACTLY 1.00 COIN;

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THIS EXAMPLE IS THE BASIC RULE WITH TRANSFERS, BUT APPLICATIONS ARE INFINITE.

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DIFFERENTLY FROM A GROUP OF INDIVIDUALS, CODE IS DETERMINISTIC. FUNCTIONS CAN'T CARE ABOUT JUDGMENT OUT OF ITS PROGRAMMED BOUNDARIES. IT IS A CODED ASSURANCE WHEN DEALING WITH DATA, THANKS TO THE FACT THAT IF A SMART CONTRACT HAS TO DO SOMETHING OUT OF ITS KNOWLEDGE, IT JUST DOESN'T WORK. ANY ATTEMPT AT ALTERING THE CONTRACT WILL RESULT IN A NEW SMART CONTRACT, WITH A DIFFERENT ADDRESS.

#FEE / GAS

GAS COST DEPENDS ON HOW HARD IT IS TO COMPUTE THE TX. YOU CAN SEE IT AS A VAT FOR REMOTE MACHINE USAGE. OPTIMIZATION OF GAS IS IN THE HANDS OF PROGRAMMERS THAT CODE THESE SMART CONTRACTS. THE COST FOR MOST TYPES OF INTERACTIONS, ARCHITECTURE, OR ANY DATA STORING, SHOULDN'T EXCEED 0.5\$ PER MASSIVE OPERATION TO OBTAIN HEAVY DISTRIBUTION. THE GAS COST WILL INCREASE THE MORE PEOPLE USE THE BLOCKCHAIN WITHOUT OWNING A \$NODE.

SAY FOOL_BOB WANTS TO UPLOAD A 4KVIDEO HE FILMED FOR ALICE'S WEDDING ON ETHEREUM. HIS PAYCHECK IS 1KETH ~234,5KUSD. AFTER HIS VIDEO IS DONE EDITING, FOOL_BOB WILL CHUCK IT INTO ~1MB BECAUSE OF THE \$BLOCK DATA LIMIT. THE VIDEO IS ~1GB, IT IS ~1K FILES ON HIS PC.

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N ??? WOULD IT COST HIM LESS GAS BECAUSE HE'S PAYING NO ONE?
D -[] YES, GAS COSTS ARE SIMILAR TO A COMMON TRANSACTION.
E -[X] NO, HE'S FEEDING A VIDEO AS INFORMATION, THAT'S BIGGER THAN A TRAN-
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DIGGING THE ISSUE A LITTLE DEEPER:

- ALL RAW DATA HE CAN FIT IN A TX DATA ~1MB ARE ~30USD

- 1K FILES OF ~1MB WOULD BE AROUND ~30K USD

THINGS GET WORSE AS THEY PROGRESS.

ALICE SENDS THE WORK BACK TO FOOL_BOB WITH FINAL CORRECTIONS ON A PDF (~500KB ~20 USD)

FOOL_BOB HAS NO WAY TO CO-PROGRESS WITH THE CLIENT OR OBTAIN ANY INSURANCE OF SOME KIND.

IF HE UPLOADS THE CORRECTED VIDEO, IT WOULD COST HIM ANOTHER ~30K USD.

ETHEREUM IS NOT INTENDED FOR THIS TYPE OF RAW CONTENT USAGE, THAT 1GB WOULD ROT ON EVERYONE'S \$FULL NODE FOREVER.

#PRACTICE / EXAMPLES

BOB COULD HAVE HIS VIDEO ON SOME FREE TO A CAP CLOUD SERVICE. SET IT TO "NOT PUBLIC", GENERATE A SHARE LINK, AND WRITE THE URL ON A SMART CONTRACT.

OTHER THAN CHEAP, IT ALSO GAINS AN EVENT LOG, SO HE CAN KEEP TRACK OF THE JOB!

"ALICE, IF YOU SEND IT BACK FOR CORRECTIONS MORE THAN 3 TIMES, WE SPLIT THE 1KETH AND YOU TAKE MY 4TH AND LAST WORK ON THIS PROJECT. I'M PRETTY FULL THIS WEEK" (BOB — "BOB TO ALICE BUSINESS PROPOSAL")

THESE CODED RULES MUST BE IN THE SMART CONTRACT, WHERE ALICE WOULD THEN STAKE THE 1KETH AND WHERE BOB WOULD SEND THE LINKS TO THE FILES.

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ALICE WOULD HAVE THE "RELEASE COINS TO BOB", "SEND CORRECTIONS" FUNCTIONS, AND THE "CHECK THE LAST LINK" CALL.

BOB WOULD THEN HAVE THE "RELEASE COINS TO ALICE", "UPDATE LINK" AND THE "SUE ALICE AT A TIME" (PREVENTS ALICE FROM RUNNING AWAY WITH THE LINKS AS THEY HAVEN'T DEFINED AN OFFICIAL DEADLINE YET) FUNCTIONS. IF BOB CAN'T FIT THIS JOB IN HIS SCHEDULE, HE CAN RELEASE ALICE'S COINS BACK AUTOMATICALLY. WHILE UPDATING LINKS WOULD COST HIM NOWHERE CLOSE TO 30K\$. ALL OF THESE IN THE REACH OF ONE CLICK.

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??? HOW MUCH GAS WOULD IT COST?

-[X] CLOSE TO A SIMPLE TRANSACTION.

-[] EXACTLY AS A SIMPLE TRANSACTION.

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WHAT IF ALICE WOULD LIKE TO RETRIEVE THE COINS BECAUSE BOB DISAPPEARS?

WHAT IF ALICE DOESN'T WANT TO STAKE IN ADVANCE?

WHAT IF BOB DOESN'T WANT TO RISK HIS PAYCHECK BEING ETH (PRETTY VOLATILE) BUT ALICE STILL WANTS TO PAY IN ETH?

YET, SOME OTHER CODABLE FUNCTIONS.

IPFS SOLVES THE ISSUE IF YOU WANT THE VIDEO FILE TO STAY PERMANENTLY WHILE NOT RELYING ON A CENTRALIZED CLOUD SERVICE PROVIDER.

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#C2_COMPONENTS / TOOLS TO STORE SMALL CUSTOM DATA

WE STORE USERS, WHICH ARE A HYPERLINK OF STATISTICS AND AUTHORITY RIGHTS. IT'S A NON-UNIQUE NICKNAME AND ADDRESS PAIR. WHAT MAKES IT A UNIQUE PAIR IS YOUR ADDRESS.

WE MEMORIZE ITEMS THAT ARE SIMILAR TO USERS, BUT THEY CONTAIN LINKS TO DATA AND PARAMETERS OF A SPECIFIC \$DIGITAL ASSET, OWNED BY SOMEBODY.

ITEMS CAN BE TRADED OR USED IN MANY WAYS ON THE PLATFORM. YOU CAN MANIPULATE THE DATA WITH ANY THIRD-PARTY SOFTWARE OF CHOICE IF THE LICENSE TYPE AND THE STATE OF THE ITEM ALLOW IT.

WE ALSO USE ETHEREUM TO VOTE WITH A STRENGTH. YOU CAN HAVE 100 SPEAKING FORCE EVERY 24H. USE IT FROM 1 TO 100 PER VOTE. IT'S NOT CUMULATIVE.

YOU CAN VOTE ANYTHING. FROM USERS TO INVENTORIES (COLLECTIONS OF DIGITAL ASSETS BY CREATOR), FROM ITEMS TO ETH ADDRESSES. YOU CAN'T VOTE THE SAME ENTITY TWICE.

VOTES SHOULD PASS A COMMENT ABOUT SOMETHING CONSTRUCTIVE OR INFORMATIVE REGARDING THE SUBJECT.

"DON'T GO AROUND POINTLESSLY COMMENTING STUFF. IT CAN BE EDITED, BUT IT CAN'T BE DELETED, COMPROMISING YOUR ACCOUNT IN THE LONG RUN. YOU CAN CHANGE YOUR NAME, BUT YOU CAN'T ALTER YOUR USER FAME DIRECTLY." (C2 — "MESSING UP YOUR TIME ADVENTURE")