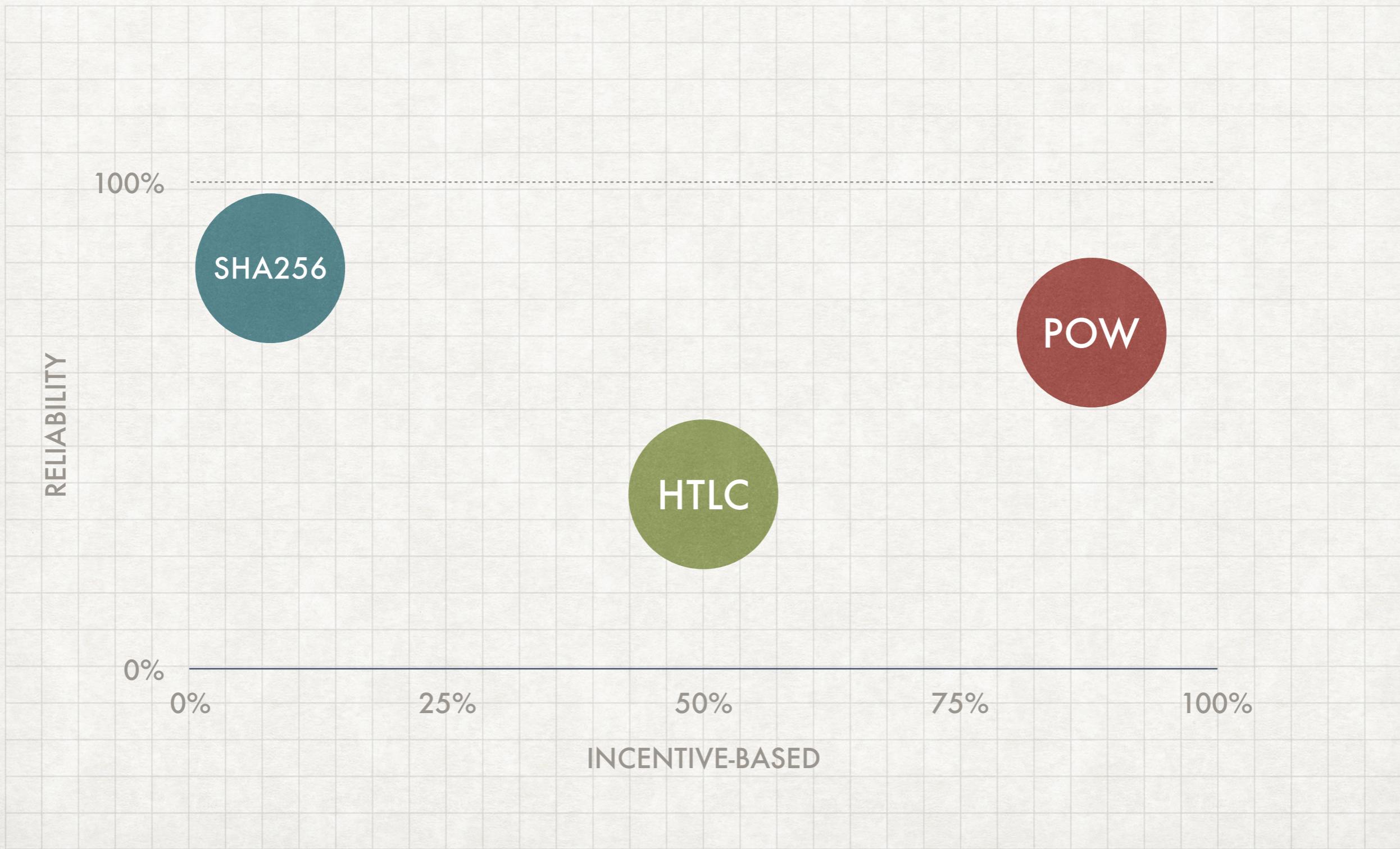


LIGHTNING NETWORK INCENTIVE PROBLEMS

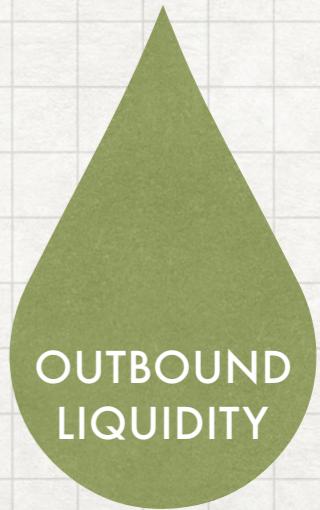
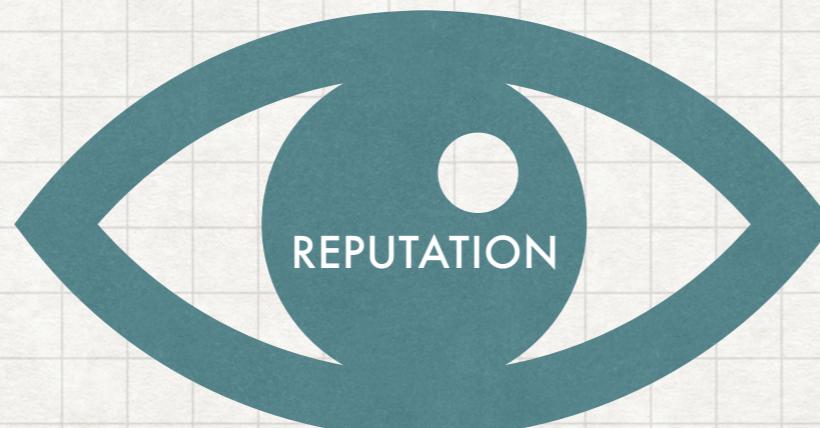
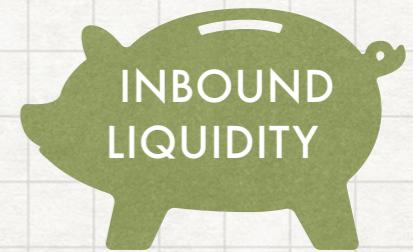
MECHANISMS

LOGICAL VS INCENTIVES



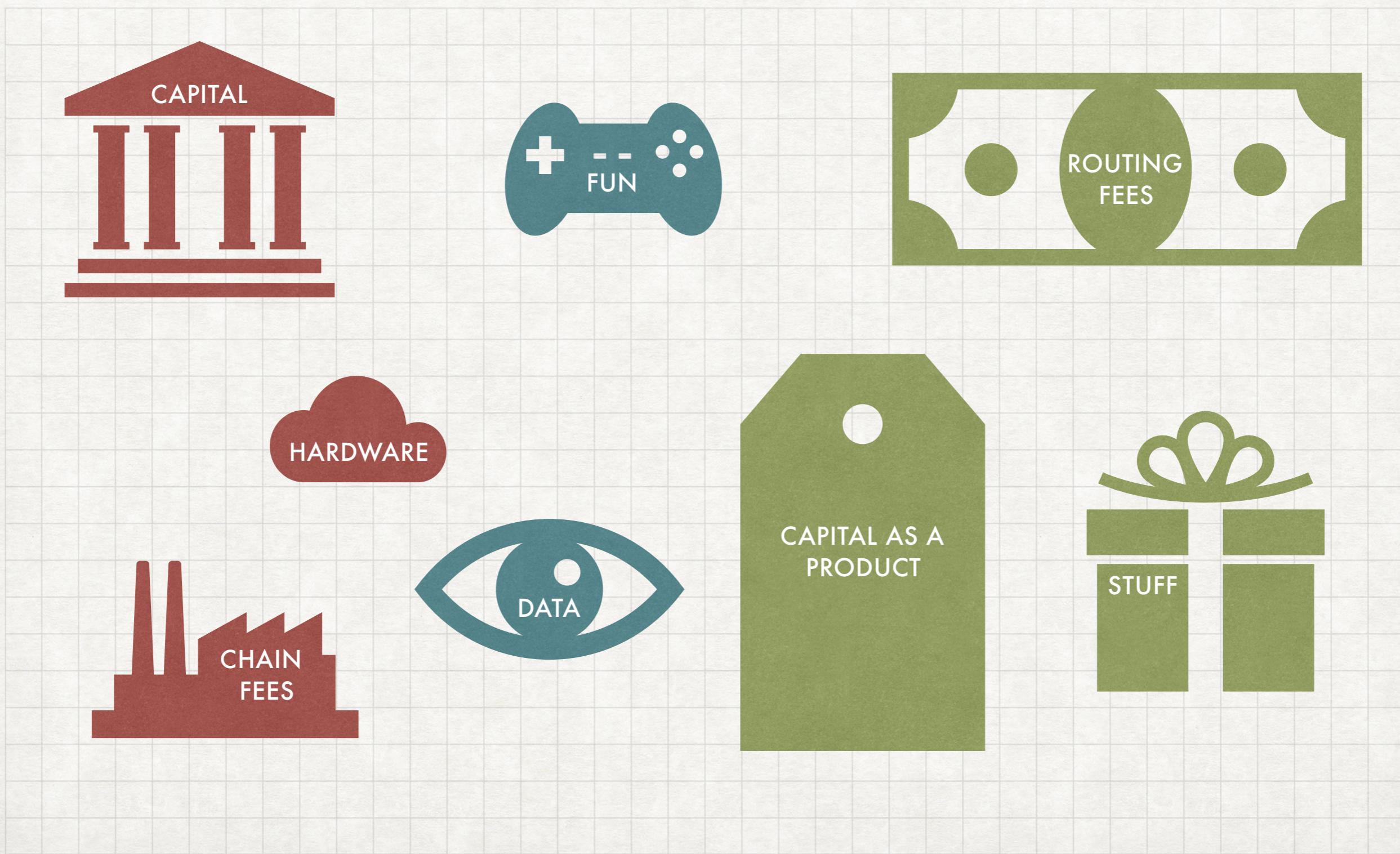
COSTS AND BENEFITS

INCENTIVES = BENEFITS - COSTS



LIQUIDITY

BASIC CAPITAL REQUIREMENT FOR LIGHTNING



LIQUIDITY

WHY SHOULD I COMMIT MY CAPITAL TO YOU?



MY HOT WALLET RISK INCREASES

RISK YOU TAKING MY OUTBOUND LIQUIDITY OFFLINE

I CAN POTENTIALLY SELL MY LIQUIDITY TO SOMEONE

I COULD POTENTIALLY GET ROUTING FEES ELSEWHERE

I RISK FUNDS GETTING INTO CSV OR CLTV



SINGLE FUNDED CHANNELS ARE BECAUSE OF LIQUIDITY COST

SINGLE FUNDER + ROUTING SINK = DUAL FUNDER

LAYER 1

L2 INHERITS THE INCENTIVE MODEL OF POW

REORG COST

ELIMINATE JUSTICE

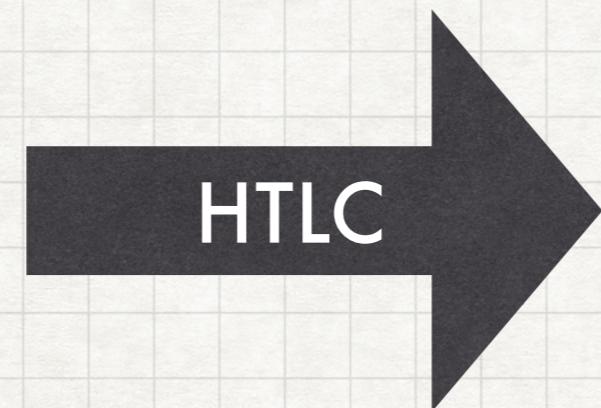
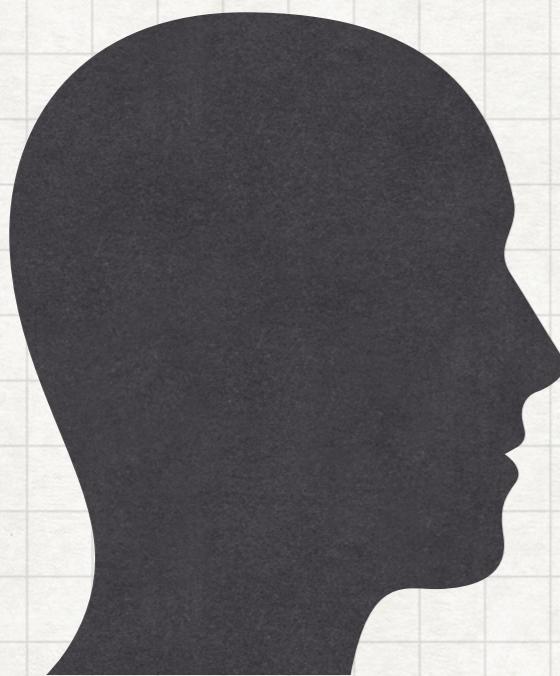


REORG BENEFIT

PRIOR STATE RESTORE

FORWARDING CHAIN RISK

LAYER 2 REQUIRES LAYER 1 ENFORCEMENT



TIME UNLOCK COST

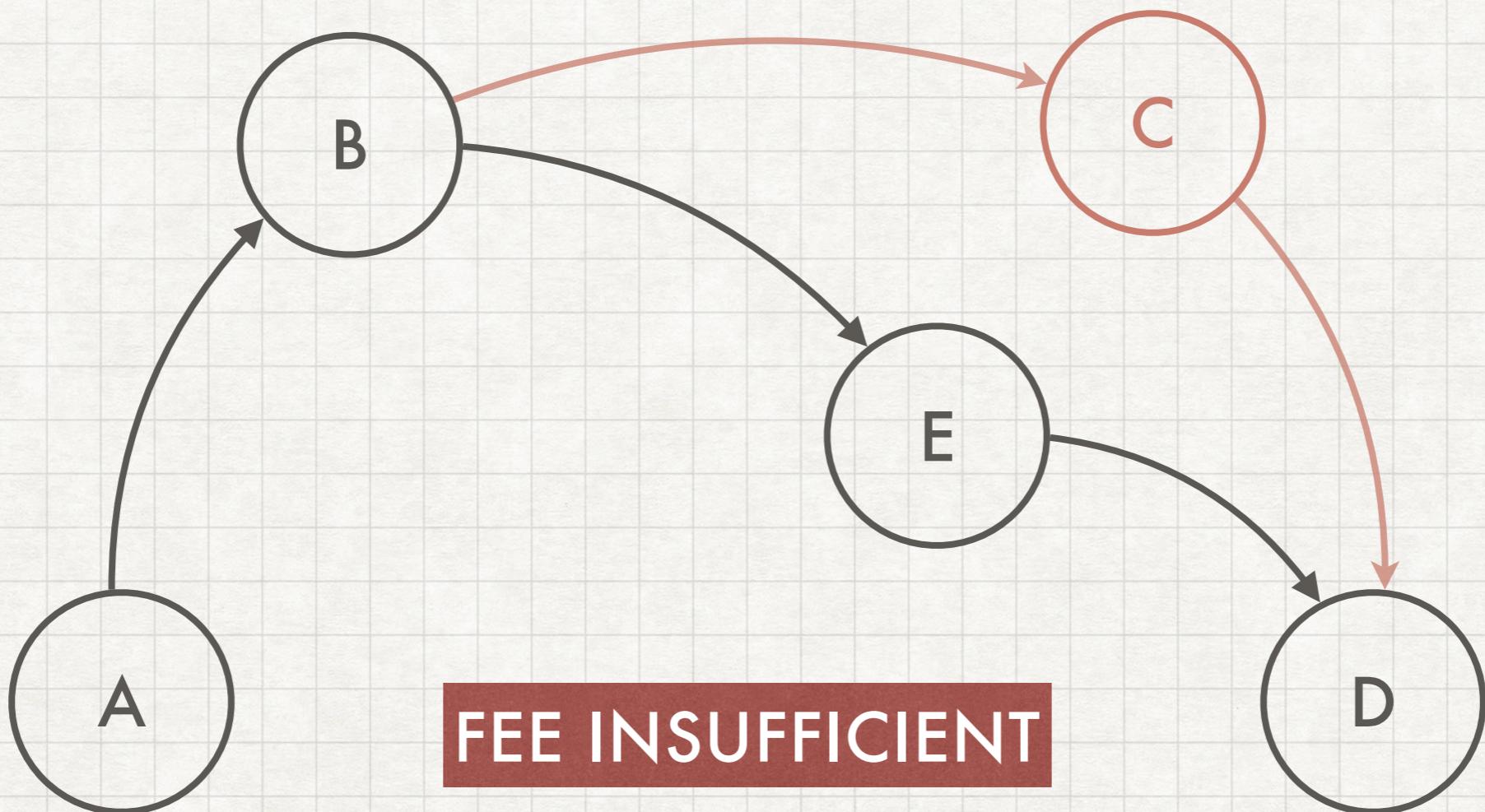


HASH UNLOCK REVENUE



FORWARDING ERROR ATTRIBUTION

WASN'T ME



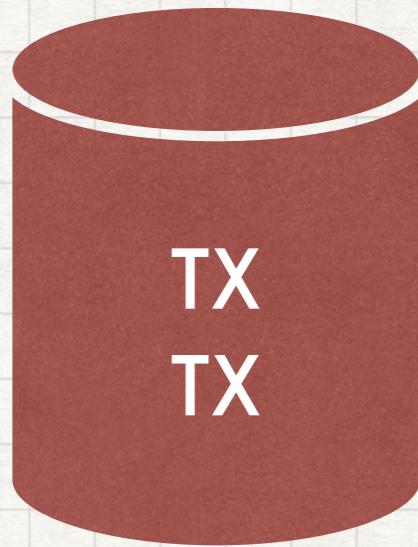
FEE INSUFFICIENT

TEMPORARY CHANNEL FAILURE

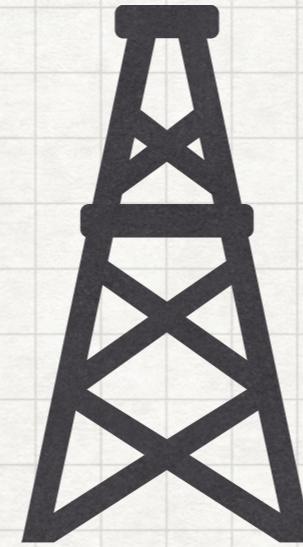
UNKNOWN NEXT PEER

WATCHTOWERS

HOW DO THEY WORK



REWARD OUTPUT MODEL

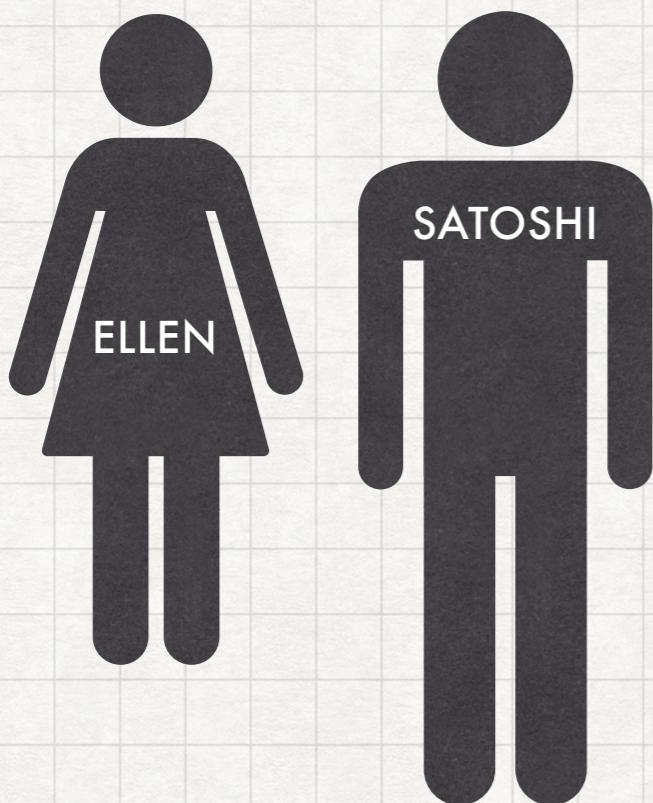


RELIABLE PROVIDER MODEL



PRACTICAL INCENTIVES

PROBLEMS OF THE CURRENT PROTOCOL



DIFFERENT CUSTOMERS: SAME FEES

PEERS CAN GET FAST CLOSE, FREE

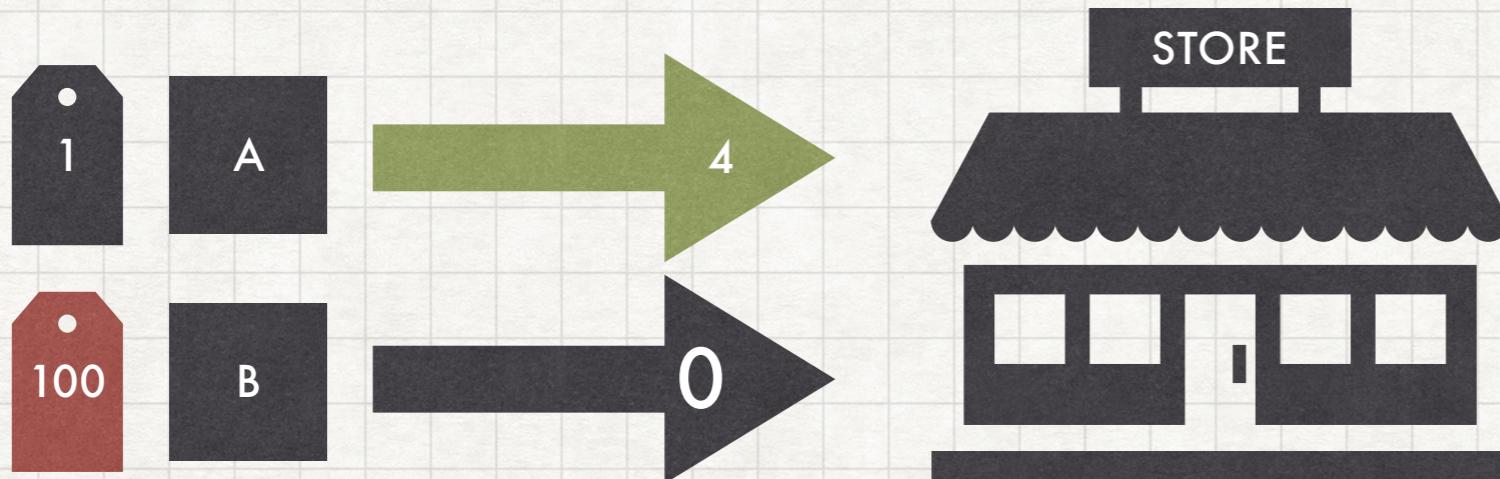
HELD OR FAILED HTLCS ARE FREE

SAVED NONCES FOR FORCE CLOSES

OFF-CHAIN REBALANCING

WHAT HAPPENS WHEN THERE IS AN OFF-CHAIN REBALANCE?

INITIAL STATE



REBALANCED STATE

