EMBEDDED MESH

Sovereign Authentication | Private Routing | Decentralized Communications

RF

Radio Frequency communication decentralizes communications by taking ownership of the medium.

Frequency hopping algorithms.

Bluetooth

Bluetooth is a commonly available free medium which is also mostly decentralized except that the source code is standards driven and not a private protocol.
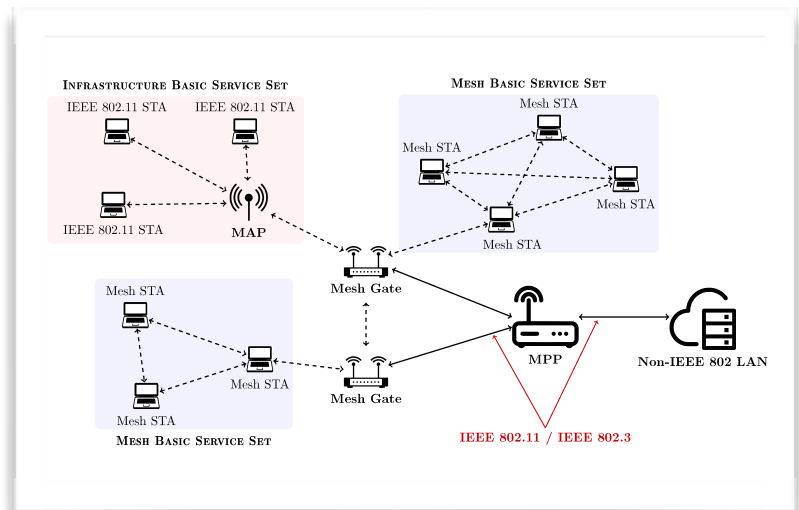
Insecure to use a protocol not owned by the owner's device.

WiFi

WiFi has better range than Bluetooth but is also based on a standard but better than goin through an ISP or Telecom company.

UDP or TCP/IP

Most common standard communication protocol and can be tailored to avoid the pitfalls of WiFi or Bluetooth which is based on hardware.


Trustless Communications

Building and using a trust-less communication system is highly achievable and offers both basic simplicity and performance.

Nodes and Coordinators

Nodes are what user would run to participate and validate the data movements. Coordinators are responsible to building the network routes based on price, reputation, speed and distance factors. Acting as a routing agent is akin to mining the TX block.

Ultimately it should be the Node that acts as a dedicated coordinator.
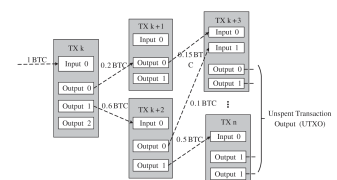
Sovereign Authentication
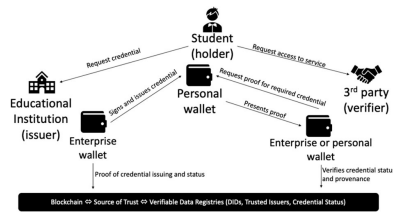
Authentication is a critical component in achieving an honest messaging system. Account owner decides what counter parties to transact and share data with by providing only the necessary data that is revocable, verifiable, mutable and fully controlled by the owner of the node. Furthermore, there may even more of a reduction as nutria and reliable reference data services or

Blockchain Integration

Integrating ERC20 Smart Contracts or Bitcoin or any of the other similar chains should be a plug-in system where you stand up a node for any blockchain then drop in an .so library file which implements a redefined interface. The node/system will detect this new plug-in and offer routing capabilities between blockchains using pre-signed transactions that can be either be ignored or signed by the other interested parties then published to any blockchain flavor. This would require a common implementation interface to be well defined to handle the many blockchains available that work under different standards.

Blockchain

Bitcoin seems to be the best choice for the monetization and transaction blockchain. Using raw transactions to build the custom process or transaction allows entities to initiate or participate with other counter parties and not require publishing to the blockchain. This would be part of the node logic and the script would be persisted to IPFS for centralized immutability and open sharing of the code.

The node would have the ability to use CIDs of approved or agreed and understood bitcoin scripts based on the UTXO which are available on the blockchain for visibility. This would be similar to Cords R3 except be decentralized on the Bitcoin network and not use R3's Oracle's. Or any predefined Oracle which is simply a centralized database.

Ethereum

Ethereum would seem to be a logical component with its smart contract capabilities and maturity in development tools and compiler, debugger, and publishing. Short comings are security, complexity, centralization, mutability in outstanding ETH and high gas fees.

IPFS

IPFS acts as a P2P document repository which also handles numerous protocols including RF, Bluetooth and WiFi. It can provide the critical system for pushing encrypted documents which are revealed to the process with references to CID's. In order to maintain state there needs to be a persistent layer that is also run on consensus and scriptable.