3.0 **Ethereum Clients**

Ethereum client is the miner’s machine, software application (also a full node) that is the implementation of Ethereum specification.

Ethereum network is managed by differently as compared to Bitcoin. Ethereum release the specification and expect the software implementation from the community and developers.

Different Ethereum clients made up on different platform (using the different languages) can interoperate (can communicate each other, can validate the transaction and flood the transaction)

The full node features (sync the database, connect in peer-to-peer network, validate the transaction, making new address, deploy and execute the smart contracts) are present in clients.

In a bitcoin Satoshi write the white paper and provide the software implementation of bitcoin network.

In a bitcoin software the whole client implementation is available with wallets.

If any developer wants to make the software, wallet and clients related to Bitcoin then he will see the implementation of Bitcoin core network, read its code then he can provide its own implementation that’s how bitcoin interface.

As compared to Bitcoin Ethereum usually run according to specification, Ethereum only provide the specification i.e. **Yellow Paper** and the developers provide the implementation according to this **Yellow Paper** and the developers can made the application by using different platform and languages according to this **Yellow Paper**.

(In a yellow paper all the technical specifications are mentioned how the network is made and how it will be work).

The client features in Ethereum are managed by Yellow Paper and  **Ethereum Improvement Proposal.**

The small upgradation(improvements) are upgraded by **EIP** and the large(major changes) updates are upgraded by **Yellow Paper**.

**Benefits of Specifications:**

1. Diversification reduces the chances of hacking the network and enhance the fault tolerance
2. While the clients can be written in different languages so the change in specifications are validated by different languages by multiple time i.e. the right specification.

Currently there are six main implementations of Ethereum protocol written in six different languages.

* **Parity**, written in **RUST**
* **Geth**, written in **Go**
* **Cpp-Ethereum**, written **in C++**
* **Pyethereum**, written in **Python**
* **Mantis**, written in **Scala**
* **Harmony**, written in **java**

**Both have command Line(**console base **) and GUI interface**

**Ganesh** a local private blockchain