Hyperledger:
https://www.hyperledger.org/wp-content/uploads/2018/07/HL_Whitepaper_IntroductiontoHyperledger.pdf

ABOUT HYPERLEDGER:
-Hyperledger is an open source collaborative effort created to advance cross-industry blockchain technologies.
-It is a global collaboration including leaders in banking, finance, Internet of Things, manufacturing, supply chains, and technology.
-The Linux Foundation hosts Hyperledger under the foundation. Hyperledger does not promote a single blockchain codebase or a single blockchain project.
-Rather, it enables a worldwide developer community to work together and share ideas, infrastructure, and code.

Many databases today are shared today but it raises certain questions:
• Who do you trust to share your data?
• How can you tell that someone is who they say they are online?
• What are they allowed to do to the database?
• What happens if both head office and the sales rep want to sell the same items?
• Who settles any conflicts or disputes? Clearly, there are many practical issues with sharing a database

3 The Greenhouse for Enterprise Blockchain Hyperledger

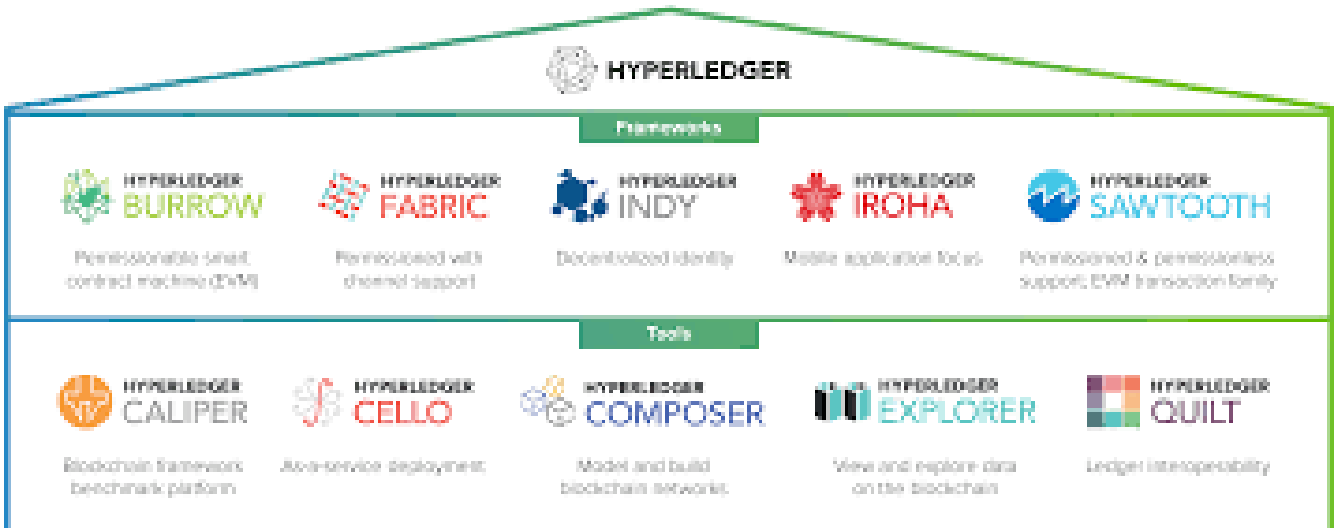
-It serves as a “greenhouse” that brings together users, developers, and vendors from many different sectors and market spaces.
-All these participants have one thing in common: All are interested in learning about, developing, and using enterprise blockchains. While blockchain is a powerful technology, it is not one-size-fits-all. Every enterprise needs special features and modifications to help a blockchain achieve its intended purpose.
-Since different organizations have different needs, there will never be one single, standard blockchain. Instead, we expect to see many blockchains with different features that provide a wide range of solutions across many industries.
-Hyperledger provides a greenhouse structure that can incubate new ideas, support each one with essential resources, and distribute the results widely. A greenhouse structure can support many different varieties while consuming far fewer resources.
-As the greenhouse organization for open source blockchain development, Hyperledger provides these benefits:
• Help keeping up with developments
• Better productivity through specialization
• Collaboration to avoid duplicate efforts
• Better quality control of code
• Easier handling of intellectual property

Advantages of a Hyperledger:

- Help keeping up with developments: Hyperledger reduces this research burden by creating a collaborative environment that streamlines communication. Better communication helps new participants to catch up, by gaining faster access to necessary information. As newer participants quickly join the collaborative effort, this speeds up development for the benefit of the entire community
- Better productivity through specialization: Hyperledger's greenhouse structure encourages specialization, which yields better productivity. And participants who happen to specialize in similar areas aren't competing against each other. In a greenhouse organization, specialists are encouraged to join forces to accelerate their research and development
- Collaboration to avoid duplicate efforts: In a greenhouse organization, collaboration between participants is highly encouraged. This can avoid duplication, streamline the development of new projects, and encourage the creation of common components that benefit the entire community.
    - Interoperability between various distributed ledgers is also enhanced by a better understanding of other projects. And the governing structure provided by Hyperledger can help solve any interoperability disputes that could potentially arise.

* Better quality control of code: This greenhouse structure also fosters interoperability between new and existing projects

* Easier handling of intellectual property: A single, consistent approach to intellectual property removes the need for complex and expensive contractual relationships among members. Since all participants have clearly communicated their expectations, anyone building and using Hyperledger technologies can participate without fear of running into hidden legal encumbrances



Hyperledger Design Philosophy:

To address this diversity, all Hyperledger projects follow the same design philosophy. All our projects must be:

• Modular : extensible frameworks with common building blocks that can be reused. This modular approach enables developers to experiment with different types of components as they evolve, and to change individual components without affecting the rest of the system

• Highly secure : Hyperledger projects embrace security by design and follow the best practices specified by the Linux Foundation's Core Infrastructure Initiative. To find out more, visit coreinfrastructure.org/. As such, all Hyperledger algorithms, protocols, and cryptography are reviewed and audited by security experts, as well as the wider open source community, on a regular basis

• Interoperable : smart contracts and applications should be portable across many different blockchain networks. This high degree of interoperability will help meet the increased adoption of blockchain and distributed ledger technologies

• Cryptocurrency-agnostic : Hyperledger will never issue its own cryptocurrency; this is decidedly not our purpose. Hyperledger exists to create blockchain software for enterprises, not to administer any cryptocurrency.

• Complete with APIs: All Hyperledger projects provide rich and easy-to-use APIs that support interoperability with other systems. A well-defined set of APIs enable external clients and applications to interface quickly and easily with Hyperledger's core distributed ledger infrastructure.

CORDA:

R3's Corda is a scalable, permissioned peer-to-peer (P2P) distributed ledger technology (DLT) platform that enables the building of applications that foster and deliver digital trust between parties in regulated markets.

R3 is a leading provider of enterprise technology and services that enable direct, digital collaboration in regulated industries where trust is critical. **R3** (R3CEV LLC) is an enterprise software company founded in 2015 and headquartered in New York.

Corda's development framework enables the building of future-proof apps quickly in financial services and other regulated markets.

Why choose Corda?

While regulated companies may start on public blockchains, they soon realize when they get to production, they require capabilities native to Corda such as privacy, security, scalability and ease-of-integration with existing systems. That's why we are also exploring interoperability with assets that originate on a non-Corda network.

Advantages:

1. **Modular APIs** enable developers to build with speed using Corda's core suite of capabilities and easily plug into more features as your business grows
2. **Create apps and digital assets fast** with standard toolkits and smart contracts that evolve with the asset lifecycle
3. **Develop in languages you already use** such as Java, Kotlin and any JVM compatible language
4. **Easily map multi-party business processes** to automate agreements using a resilient workflow framework
5. **Business logic workflow** to easily map and automate multi-party business processes with reliability
6. **Peer-to-peer network** to securely move assets and agreements directly across untrusting parties
7. **Shared ledger** to define and store assets and agreements with data consistency
8. **Smart contracts** to model assets on ledger and transfer value with pre-agreed upon rules
9. **Optimize deployment** with flexible application and end-user hosting, network options and R3 services
10. **Scale dynamically** as transaction volumes increase with Corda's peer-to-peer architecture
11. **Built-in network management** with user permissions, governance and operations through a defined interface
12. **End-to-end support** from R3 customer support, Professional Services and access to the R3 product team

UTXO: Unspent transaction Output: The term UTXO refers to the amount of digital currency someone has left remaining after executing a cryptocurrency transaction such as bitcoin. The letters stand for **unspent transaction output**. Each bitcoin transaction begins with coins used to balance the ledger.

In the UTXO model, **the movement of assets is recorded in the form of a directed acyclic graph made of transaction outputs**. New outputs are added with each additional block. In the account model, balances are stored as a global state of accounts, kept by each node, and updated with every block. On the protocol layer of UTXO chains, there are no accounts or wallets. Instead, coins are stored as a list of UTXOs stored in vaults.