**Section 4: Setting The Stage**

**Consortiums and Blockchain Networks**

**This will cover:**

1. **an overview of what a consortium, and**
2. **how decisions are made in a decentralized blockchain network that is driven by the consortium members.**

**Consortium:**

Consortium is defined as an association of two or more individuals, companies, organization or governmentwith the objective of achieving a common goal.

**two types of consortiums:**

1. The **Industry consortium** is a consortium in which the members are from the same industry.These consortiums are also known as the business consortiums or the consortia.
2. **Technology Consortium:**The technology consortiums are focused on the technology.

**For example**, W3C is a consortium for Internet technologies and standards.Hyperledger and Enterprise Ethereum Alliance are consortiums which are focused on distributed ledger technologies or the blockchain technologies.

Typically**, blockchain business networks are driven by industry consortiums**.

In the case of Acme Airline, there may be a industry consortium formed by the airline companies, but a key point to note about such consortiums is that the members are just not the airline companies.

But it may be some regulatory agencies such as FAA and even the aircraft manufacturers such as Boeing and Airbus.

focus in this repository is on Industry Consortium, and I'll give you a **quick example** of the industry Consortium.

R3 is an **industry consortium** for the financial industry, and B3 is an industry consortium for the insurance companies.

I suggest that you visit their websites to get a better feel of what their common goals are.

These are the typical benefits of a consortium

* standardization,
* collaboration and
* efficiency.

From the blockchain perspective, we can think of the consortium as launching a common network for the participants, which means there will be a common set of ledgers for the members, and the processes may be standardized by way of chain codes.

Members of the consortium make many decisions and these decisions may fall in two categories

* rules and
* regulations.

**some examples of rules and regulation:**

* There will be some rules around the addition and removal of members in the consortium,
* for example, access and authorization policies. Which member can do what?
* And then there may be decisions related to the technology,

for example,

* which blockchain technology to adopt or
* how the blockchain will be configured.

**who can make the changes to a blockchain network which is owned by multiple members of the consortium?**

The answer can be it can be centralized.

For example,

**Centralized:**

* the founding members can retain the authority to make changes to the blockchain network,
* they may create a dedicated organization who is in control of making the changes.

**De-Centralized:**

Another way to deal with this is by way of decentralized mechanism, which involves consensus based changes.

* **For example,** majority of organizations must agree to the change, but this can cause bottleneck
* When it comes to making org level changes in that case, some of the changes, such as **org level changes**, may be left to the **organization's admin** as those changes are not going to impact all of the members in the network.

Typically, consortiums use a decentralized mechanism for these kind of decision making.

* Changes are consensus driven, so we are moving away from that single administrator taking care of all the changes to a consensus driven model where the administrators from multiple organizations are involved to make a decision on any change that impacts all the members of the network.
* And once you have such processes, you need governance and you need decision making models that need to be supported by the technology which you are using for your blockchain network.

**Hyperledger Fabric Technology supports decentralized administration by way of policies.**

Policies are created by the members of the consortium, and these policies enforce the rules for changes.

1. What changes can be made?
2. Who can make those changes, and
3. how those changes are made to the network.

All of these are governed by policies.

**Summary**

Three key points about consortiums.

* **Drives the blockchain network**

Consortiums are formed by legally separate entities and they form the basis for the blockchain networks.

* **Decisions are consensus driven**

Since there is no central authority that can make decisions in a consortium, the decisions are consensus driven.

* **HLF supports consensus driven decisions by way of policies**

These consensus driven decisions are supported by the Hyperledger Fabric technology by way of policies.

**Case Study: The Airlines Industry Consortium**

**Acme, a case study:**

This lecture is just a story of Acme Airline that has decided to adopt Hyperledger fabric technology.

I'll discuss the case study in two parts.

1. **Part 1:**is the story of Acme Airlines journey from the past,
2. **Part 2:**is going to focus on what happens next.

**Part 1:is the story of Acme Airlines journey from the past:**

* Acme Airlines started to experiment with Hyperledger Fabric a few months back as a regional airlines.
* Acme Air was doing great, but then they started to see a decline in profits.
* They carried out a survey to understand what was the reasoning behind it, and they found out that their partners were unhappy and their customers were dissatisfied.
* As a result, the partners and customers were taking their business to the competitors.
* After a lot of analysis, it was found out that the old technologies and paper based processes that Acme Air was using was not acceptable to the customers as well as to the partners.
* The CTO of Acme Air was tasked to transform the technology, so the CTO put out this statement We needa seamless collaboration platform with no boundaries.
* After doing some research, the chief architect of Acme Air came back with a proposal.
* Let's leverage Hyperledger fabric for creating a business network.
* The chief architects proposal was approved.
* The team went to work and created business network applications using the Hyperledger Fabric Composer framework, and they used the development environment to test out the application.
* Recently, the chief architect and the technology team of Acme Air demonstrated the proof of concepts that they had created using the Hyperledger Fabric composer toolset, and these proof of concepts were a huge success.
* It boosted the confidence of the Acme Airline Management team that blockchain technology can really make things interesting in the airline industry.

**Part 2: What happens after that?**

The CTO team addressed the technology team.

Now that we have tested Hyperledger, next step is to create a business network and go for a pilot.

In response to the CTO, the chief architect discussed a challenge and a solution.

He said that the **challenge** is that there is no airline industry consortium to launch a blockchain network.

But he also gave a solution with support from Acme Management and Business team.

We can work with other companies to launch an industry consortium.

The CTO liked the idea of Acme Air, leading the effort to create an industry consortium.

The plan was approved by the management team as well, so that was the good news.

Acme's CTO is a good friend of budget air CTO.

As a result, he was able to convince the budget CTO to join the airline consortium as a founding member and they both were able to then convince the CTO of Expo Air to become part of the consort team.

Members of this consortium decided that since Acme Air had the most experience with blockchain technologies, Acme Air will lead the pilot and the work will be done in three phases.

1. **Phase 1**: Acme Air will set up the network with just two organizations

* Acme Air and
* an Order organization

which will be managed by Acme Air itself

1. **Phase 2**:, the budget organization will be added to the network, and in
2. **Phase 3:**Expo Air will be onboarded as a member to the network.

So at the end of phase one, we will have two organizations, **order organization**, which will take **care of the order** and one **peer organization**, which will be the **Acme Organization**.

At the end of Phase two, there will be one order organization, but there will be two peer organizations, **Acme and Budget**.

And after Phase three, there will be three peer organizations, **Acme Budget and Expo.**

You have been assigned the role of lead engineer on this initiative and you have been told by your chief architect that you need to learn how to set up Hyperledger fabric infrastructure and you are responsibleto support all phases of the pilot.