



## HYPERLEDGER PROJECT

Meetup Series – Intro & Foundation

## Centrum Community

Connect | Collaborate | Create

## **Agenda**



☐ Introductions and Expectations ☐ Why we are here? Philosophy of DCentrum ☐ Who we are? ☐ Founding Members ☐ What we do? ☐ Why permissioned Blockchains are important? ■ Why 'Hyper'ledger platform? ■ What is Hyperledger? ☐ Which frameworks to pickup from the umbrella project? ☐ Hyperledger Fabric Architecture ☐ Hyperledger Demo using a sample

## Why we are here?



- ☐ Connect to come together
- ☐ Collaborate to learn together
- ☐ Create Assets and Use cases
  - ☐ That will help us explore the technology
  - ☐ Better our understanding about technology
  - ☐ Understand the business imperatives and relation to Blockchain
  - ☐ Implement Use Cases that can be leveraged by any of us later
- ☐ Decentralized and Democratized community
- ☐ How the meetup series is organized



## THE TEAM



**DEEPAK BHATTAD** 

A seasoned professional with 14+ years of experience. Currently co-founder of a technology services company, BRADSOL. An Avid reader, loves sports and of-course Blockchain ©.

DHARMEN DHULLA

Blockchain Enthusiast with 16+ years of IT industry experience. Loves Crypto and Blockchain world

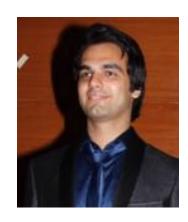






MAHESH
Blockchain Associate with 8+ years of IT industry experience "love to developed web application"

Experienced IT Product Manager || Avid Thinker || Passionate about building solutions on Blockchian



**MOHIT** 



**RAGHU**Blockchain Enthusiast with 8.5 years of IT industry experience.



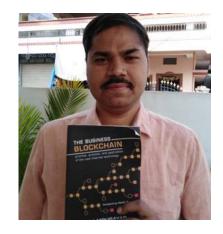


#### **RISHI CHERUKURI**

Rishi has been a Blockchain enthusiast for more than two years and is interested in building communities that work in synergy with the ecosystem, he happens to work as a Technology Architect with Nagarro.

Technical Project Manager gaining experience in Machine Learning and Blockchain technologies





#### **SREENIVAS CHINNI**

Blockchain Enthusiast with 12+ years of IT industry experience. Interested in Decentralized and IoT technologies.

**SAM NAIDU** 

## DCentrum's 3 Month Blockchain Series:

## Hyperledger

Join to experience perfect way to learn and solve real world problems using Hyperledger Fabric with the group of highly motivated Blockchain enthusiasts



Nov 2018 - Feb 2019



Hyderabad





#### First and Second Meeting:



Level Setting Concepts

During initial two meetings, we all will get to know each other and understand the basics of Blockchain to build solid foundation.



#### Third Meeting:

- Real World Use Case Selection
- Architecture Decisions

Will pick a real world use-case by looking at the domain expertise and interest of majority of participants. Group will also work to architect the solution to during this period.



Format for each meeting:

- · Welcome and General Discussion: 30 mins
- Presentation from members: 60 mins
- Shared Learning and Discussion: 60 mins
- News Briefs: 10 mins
- Open discussions on general topics: 20 mins

#### Sixth Meeting:

- Use Case Demo
- Hackathon

Will host and participate in an open Hackathon, which will be judged by esteemed jury of who's who of Blockchain World









Fourth and Fifth Meeting:

**Building Solution with** 

collaboration

end-to-end

During this period

of 45 days we all will

robust enterprise

level solution on

chosen use-case





## **Permissioned Blockchains**



<b>□</b> Public	
	anyone can be a user or run a node
	□ value anonymity, immutability, and transparency over efficiency
	□ Identity is safe
	☐ Eg: Crypto currencies like Bitcoin
□ Permissioned	
	<ul> <li>□ who can be a user to run a node is permissioned by an authority</li> <li>□ value immutability and efficiency over anonymity and transparency</li> <li>□ Eg: Industry bodies like Banks to settle international transactions</li> </ul>
□Private	
	operated by one entity
	□ value efficiency over anonymity, immutability and transparency
	☐ Eg: Limited usecases, can be used with in an Organization

## Why 'Hyper'leger Platform



- ☐ Distributed Ledger Technology
- ☐ Open Platform
- Permissioned blockchain (Built in permissions).
- ☐ Supports smart contracts
- ☐ Pluggable consensus mechanism
- ☐ Transaction Consensus
- ☐ Wide support for programming languages
- ☐ No cryptocurrency needed
- ☐ No Proof of work/proof of stake

## What is Hyperledger?



"Hyperledger is an open source collaborative effort created to advance cross-industry Blockchain technologies. It is a global collaboration, hosted by The Linux Foundation, including leaders in finance, banking, Internet of Things, supply chains, manufacturing, and Technology."

- In December 2015, the Linux Foundation announced the creation of the Hyperledger Project.
- Brian Behlendorf was appointed executive director of the project.

Note: Hyperledger does not support **Bitcoin**\_or any other **cryptocurrency**. But the platform is inspired by Blockchain technology.



## **Hyperledger Frameworks**



#### <u>Fabric</u>

Fabric is Hyperledger's most active project to date. IBM initiated the Fabric project. It's intended as a foundation for developing blockchain distributed ledger applications with a modular architecture. It allows components, such as consensus and membership services, to be plug-and-play.

#### **Sawtooth**

The Sawtooth project originally came from Intel. It includes a novel consensus algorithm called Proof of Elapsed Time. Consensus is a critical element of all blockchains. Generally, it is the technique by which new information is reviewed and confirmed before being accepted as the next entry in the ledger.

#### **Indy**

The Indy project was originally the brainchild of the nonprofit group the Sovrin Foundation. The idea is to provide digital identities for individuals and give them the power to share their identity with whom they chose.

## **Hyperledger Frameworks**



#### **Burrow**

The Burrow project includes a permissioned, smart-contract interpreter built in part to the specification of the Ethereum Virtual Machine (EVM).

#### <u>Iroha</u>

Finally, the Iroha project is a bit of an outlier within Hyperledger. It originated with some developers in Japan who had built their own blockchain technology for a couple of mobile use cases. It's implemented in C++ which can be more high performance for small data and focused use cases.

## **Hyperledger Tools**



#### **Composer**

This is the most actively developed and powerful tool. One could call it a framework for Hyperledger Fabric. The use of Composer brings along simpler concepts for Fabric, called Business Network Definitions.

#### **Explorer**

The name of this tool is already very meaningful. The Explorer can also be used in conjunction with Fabric. It is to be configured for one or multiple channels in a Fabric network. From then on, a web interface can be used to make the state and history visible in the distributed ledger.

#### Cello

Cello is a tool to efficiently provision and manage blockchain networks. It can also handle homogeneous infrastructure: bare metal, virtual clouds, and container orchestration clusters such as Kubernetes and Docker Swarm. It can manage multiple blockchain networks, not just one. So far only Fabric 1.0 networks are supported in Cello.



### What is Hyperledger Fabric?

Hyperledger fabric is intended as a foundation for developing applications or solutions with a modular architecture, Hyperledger fabric allows components such as consensus and membership services, to be plug-and-play. Hyperledger Fabric leverages container technology to host smart contracts called "chaincode" that comprise the application logic of the system.

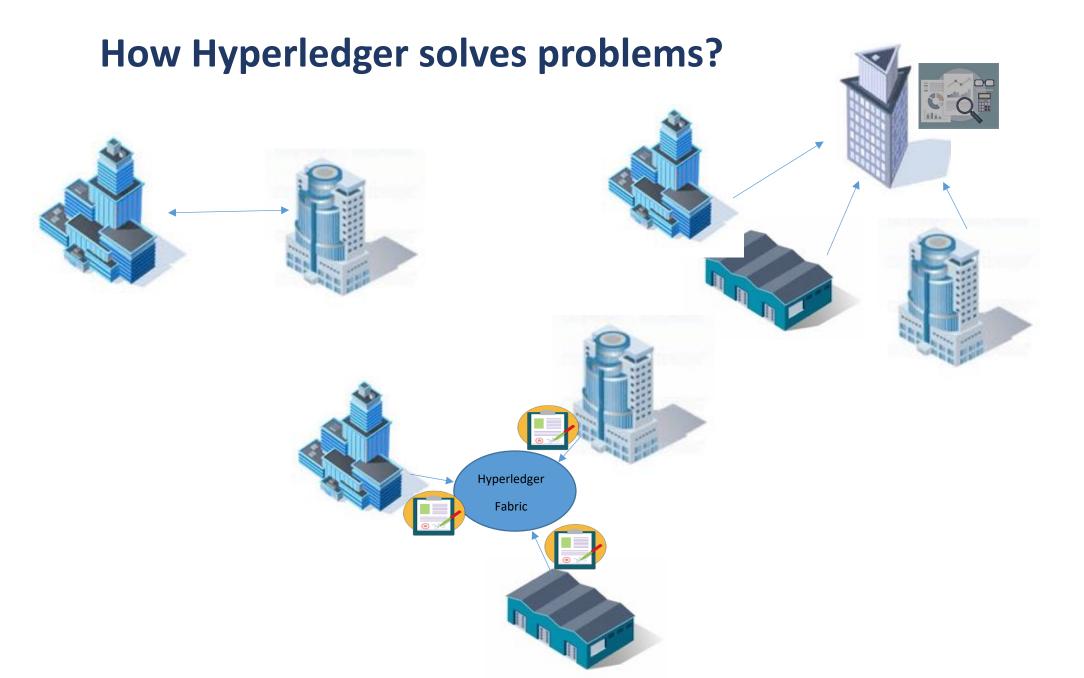
 Hyperledger Fabric was initially contributed by Digital Asset and IBM, as a result of the first hackathon.





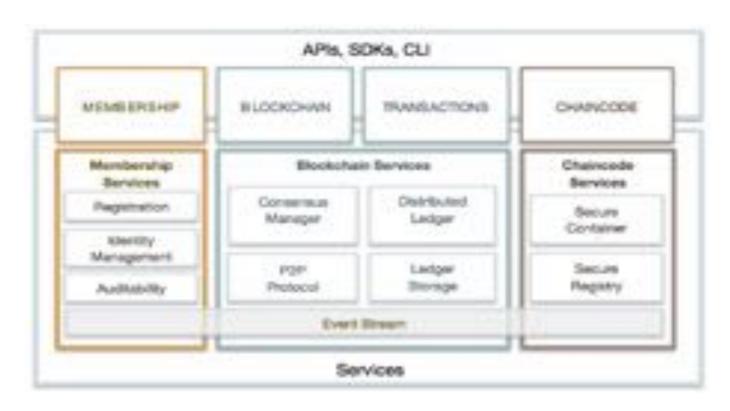








## **Hyperledger Architecture**



#### **IDENTITY**

Pluggable, Membership, Privacy and Auditability of transactions.

#### **LEDGER | TRANSACTIONS**

Distributed transactional ledger whose state is updated by consensus of stakeholders

#### **SMART-CONTRACT**

"Programmable Ledger", provide ability to run business logic against the blockchain (aka smart contract)

#### **APIs, Events, SDKs**

Multi-language native SDKs allow developers to write DLT apps

## Things to know..!



#### Channel

A Hyperledger Fabric channel is a private "subnet" of communication between two or more specific network members, for the purpose of conducting private and confidential transactions.

#### Certificate Authority (CA)

The Hyperledger Fabric CA is a Certificate Authority (CA) for Hyperledger Fabric. It provides features such as:

- a. registration of identities, or connects to LDAP as the user registry
- b. issuance of Enrollment Certificates (ECerts)
- c. certificate renewal and revocation

## Things to know..!



#### **Endorser Peer**

Upon receiving the "transaction invocation request" from the Client application the Endorser peer

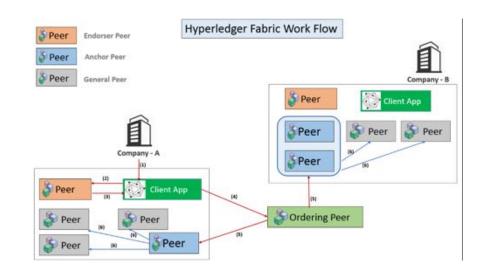
- Validates the transaction.
- Executes the Chaincode(ie Smart Contract)

#### **Anchor Peer**

Anchor peer or cluster of Anchor peers is configured at the time of Channel configuration. Anchor peer receives updates and broadcasts the updates to the other peers in the organization. Anchor peers are discoverable.

#### **❖** Orderer Peer

Orderer peer is considered as the central communication channel for the Hyperledger Fabric network. Orderer peer/node is responsible for consistent Ledger state accross the network.





## What do I do over the next 15 days

#### Hands on

- Install Hyperledger Fabric
- Run a sample solution (may use composer)

#### Understanding

- Fabric Components
- Fabric Architecture
- Architectural Decision Making
- Understanding on what qualifies to be good use case for Hyperledger

# nagarro

is hiring

Please email us@ namrata.jhamnani@nagarro.com jobs@nagarro.com