



HYPERLEDGER
FOUNDATION

Hyperledger FireFly 1.0 is here!

Build full-stack Web3 apps faster with
FireFly SuperNodes

PROJECT



Steve Cerveny

*Founder and CEO
Kaleido*



Nicko Guyer

*Senior Full Stack Engineer
Kaleido*



Sophia Lopez

*founder and COO of
Kaleido*



Kyle Culver

*Director, Emerging
Technologies at Humana &
Co-founder
Synaptic Health Alliance*



Patrick Schmid

*Vice President
The Institutes RiskStream
Collaborative*

All are Welcome in the Hyperledger Community



Hyperledger is committed to creating a safe and welcoming community for all. For more information please visit our [Hyperledger Code of Conduct](#)

Housekeeping



Antitrust Policy

Linux Foundation meetings involve participation by industry competitors, and it is the intention of the Linux Foundation to conduct all of its activities in accordance with applicable antitrust and competition laws.

For full policy,

<http://bit.ly/HyperledgerAntiTrust>



Recording

Session is being recording and will be available in hyperledger.org/resources/webinars



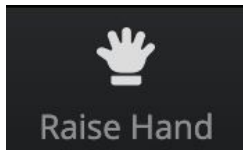
Slide Download

The slides will be available for download in the video description



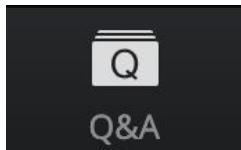
HYPERLEDGER
FOUNDATION

Stay Active and Get the Most Out of it!



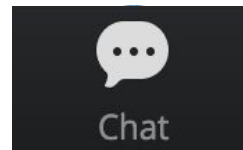
Raise Hand

Use the Raise Hand button to get unmuted and speak up. The more activity and participation we will have the better experience everyone will have



Ask Questions

If you are shy, use the Q&A box. We will be answering the questions towards the end of the session



Talk and Comment

Use the chat to talk to others on the line and comment on the presentation? Do you agree? Or maybe you have a very different opinion? Either way it will make for best discussion



HYPERLEDGER
FOUNDATION

Hyperledger FireFly 1.0 is here!

Build full-stack Web3 apps faster with
FireFly SuperNodes

PROJECT



Steve Cerveny

*Founder and CEO
Kaleido*



Nicko Guyer

*Senior Full Stack Engineer
Kaleido*



Sophia Lopez

*founder and COO of
Kaleido*



Kyle Culver

*Director, Emerging
Technologies at Humana &
Co-founder
Synaptic Health Alliance*



Patrick Schmid

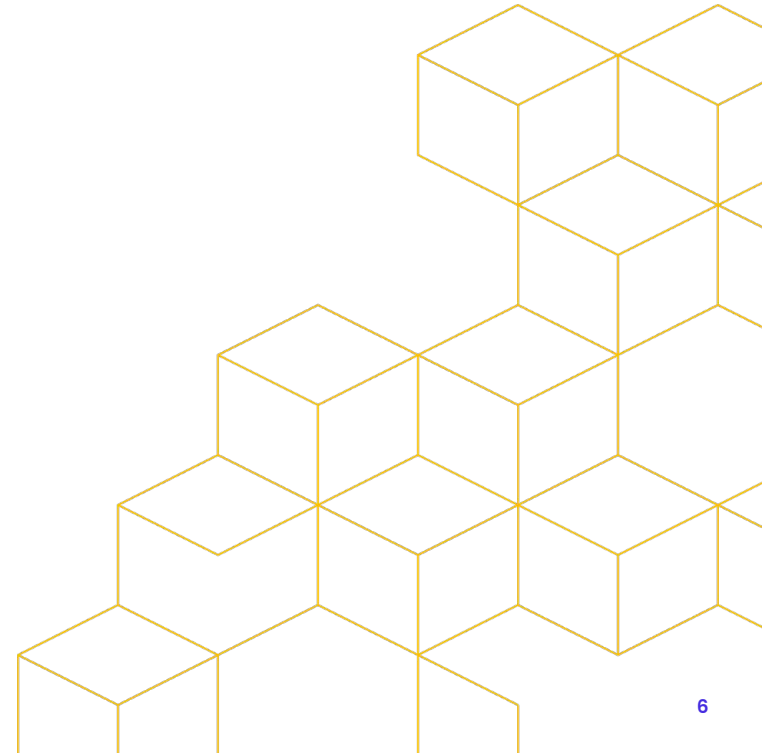
*Vice President
The Institutes RiskStream
Collaborative*



Introducing Hyperledger FireFly v1

WEBINAR

April 13, 2022





AGENDA

Overview
Panel discussion
Live demo

Q&A

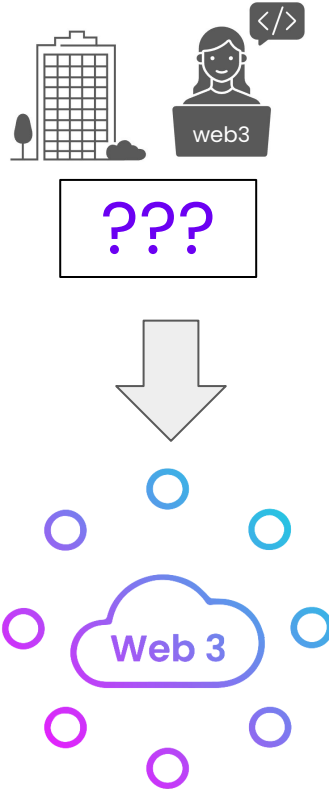
Building a web3 app is complex



You want to build a blockchain app... now what?

Table stakes problems to solve:

- Decentralized app **architecture**
- Protocol + Chain selection
- **Token**omics of use case
- Accounting for the **digital assets**
- Wallet **security** and key management
- **Data privacy** – on chain vs off chain
- Data streaming
- Reliable **event delivery**
- Robust **transaction management**
- Private **data store** and caching layer



Advanced problems you discover:

- **Multi-chain** is the end state
- Production still means **reliability**
- Manage digital assets at scale
- **Audit trail** for tokens
- **B2B data transfer** with e2e security
- Transaction **error handling** complexity
- Transaction **sequencing** is hard
- Public blockchains are tricky
- **Back office integration** is still the hardest problem

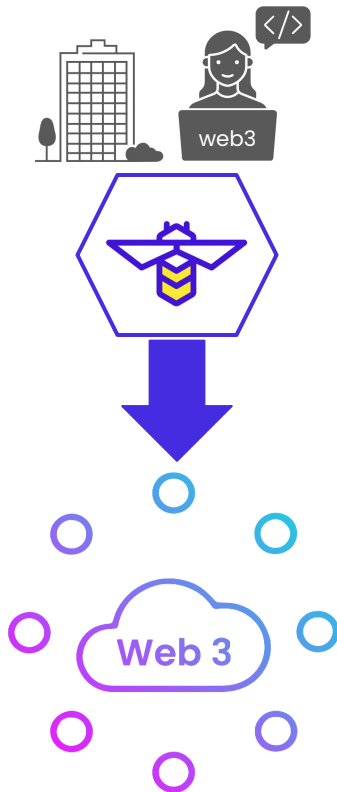
FireFly simplifies web3 app development



What if there was a platform that solved all of this for you?

FireFly handles out of the box:

- Decentralized app **architecture**
- Supports **multiple** protocols + chains
- **Native** token + digital assets
- **Pluggable** Wallet and key mgmt
- **Data privacy** – on chain to off chain
- Data streaming
- Reliable **event delivery**
- Robust **transaction management**
- Private **data store** and caching layer



FireFly is also:

- ✓ **Enterprise friendly Open Source**
- ✓ Multi-protocol
- ✓ Microservice and cloud-ready
- ✓ Built for **production** and **scale**
- ✓ A rapidly growing code base to **future-proof your project**



FireFly High Level Timeline

June 2021

- New Hyperledger Lab
- Initial contribution of 75k lines of code from Kaleido

September 2021

- Moved to project status

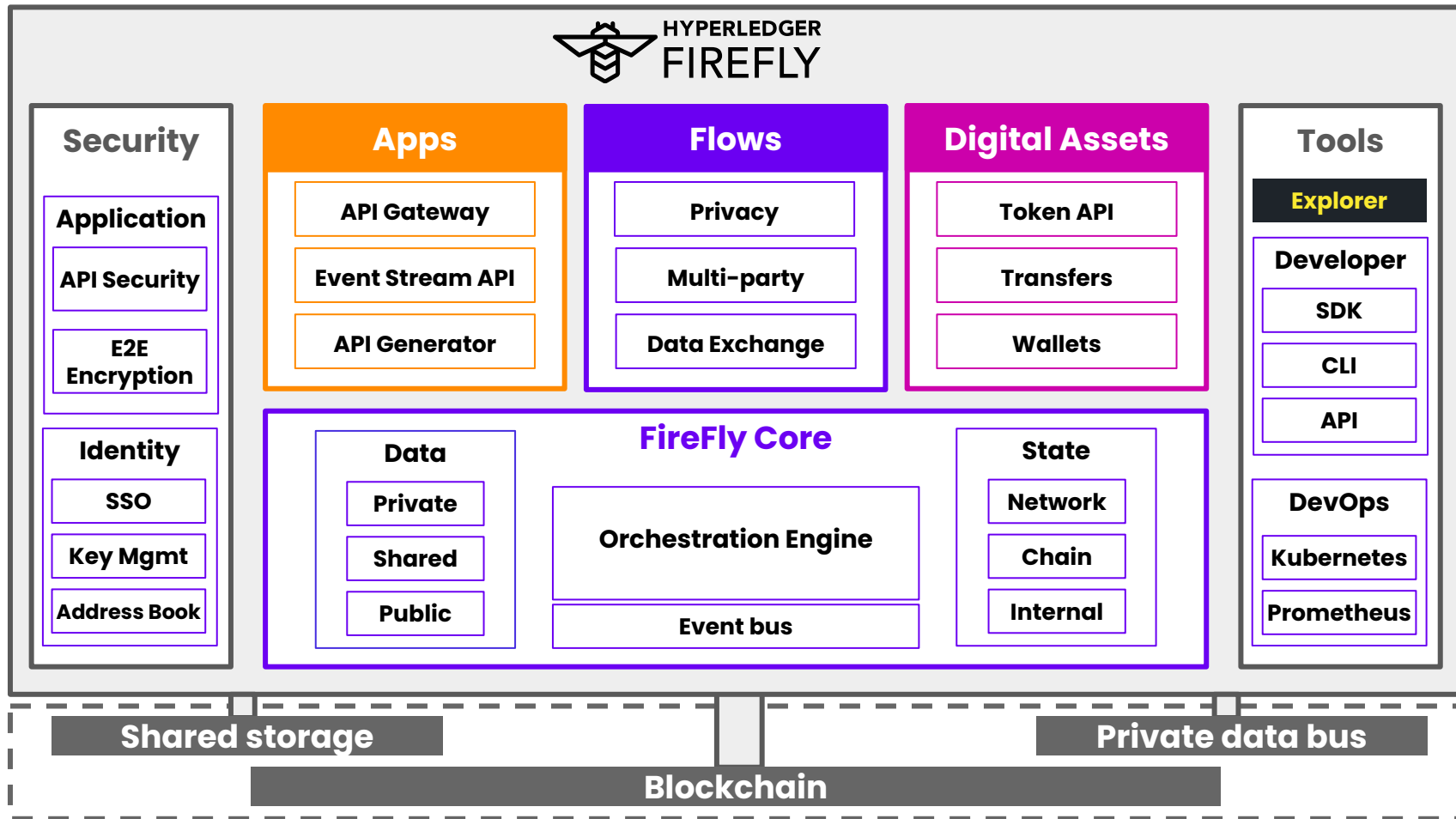
April 2022

- v1.0 launch
- Over 200k lines of code across 12 repos

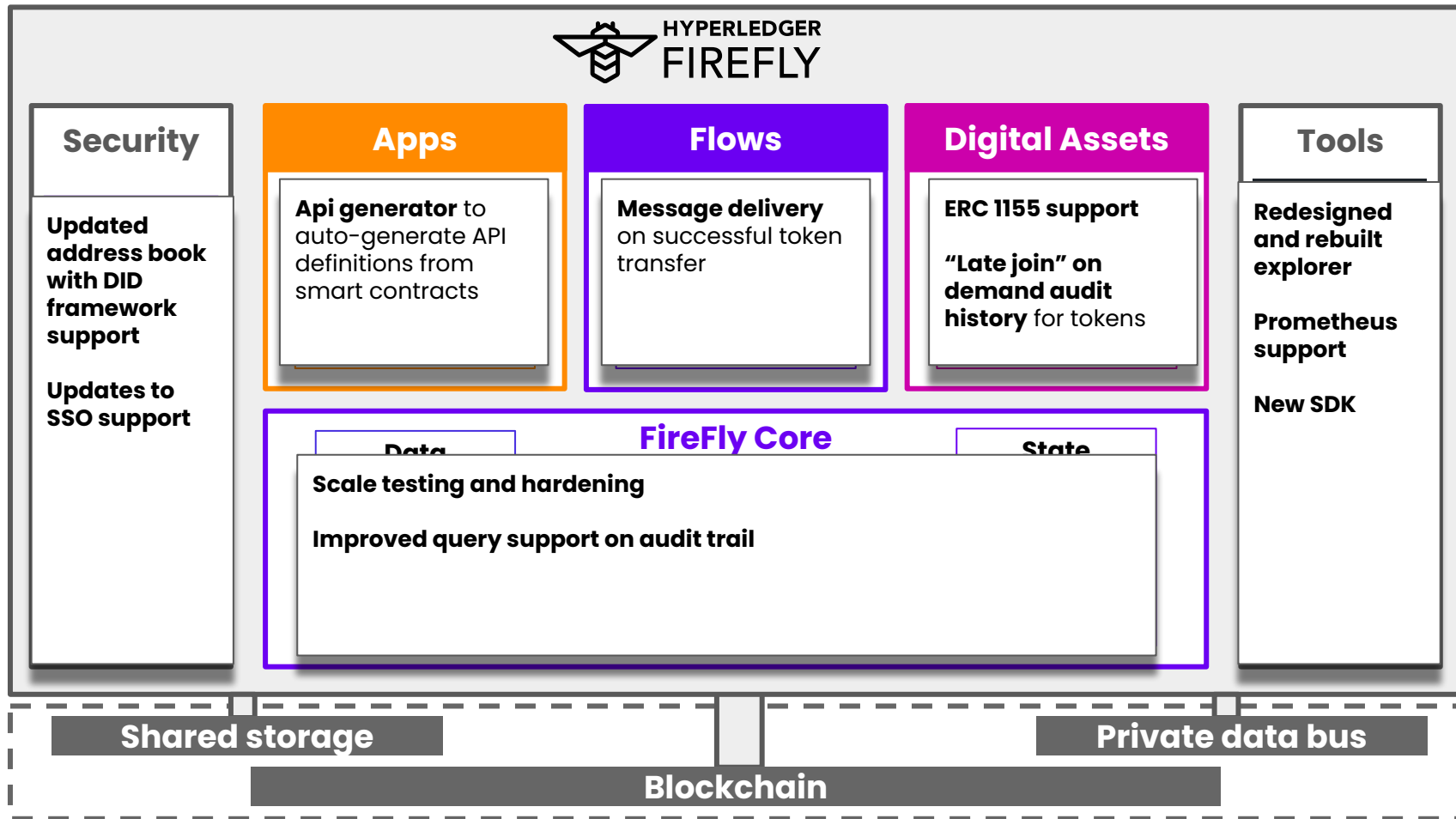
1.0 Features

- API gateway and event bus for multi-chain Smart Contracts
- Orchestration engine for off-chain data flows
- Tokens support
 - Fully pluggable
 - ERC-20, ERC-721, ERC-1155
- Protocol/Chain support
 - Ethereum
 - Fabric
 - Corda (preview)
 - Public EVM based chains (beta)
- Comprehensive UI, CLI and SDK tooling
- Hardened HA runtime, with Kubernetes deployment

Introducing FireFly: the Web3 SuperNode



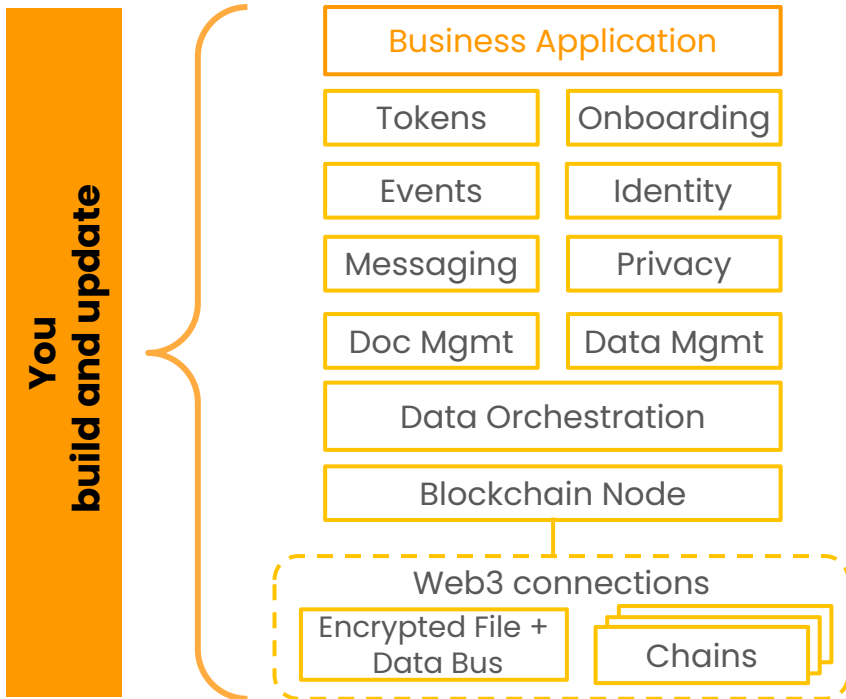
Introducing FireFly: the Web3 SuperNode



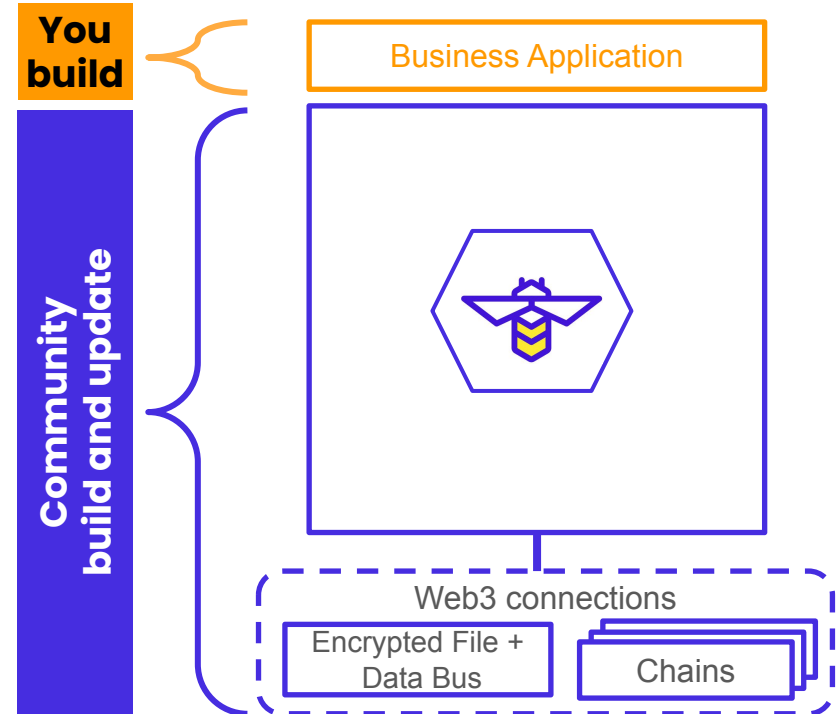
Build Web3 apps without reinventing the wheel

FireFly's gen2 approach eliminates custom code and plumbing

Without FireFly

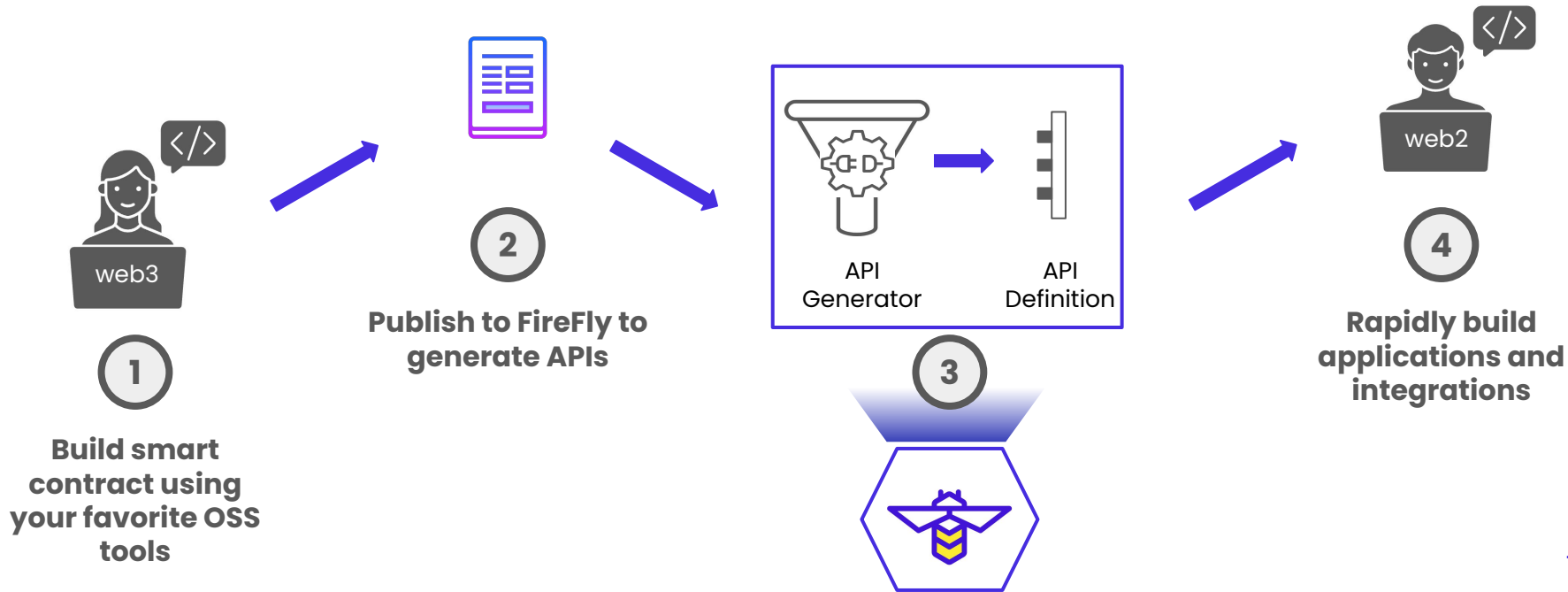


With FireFly



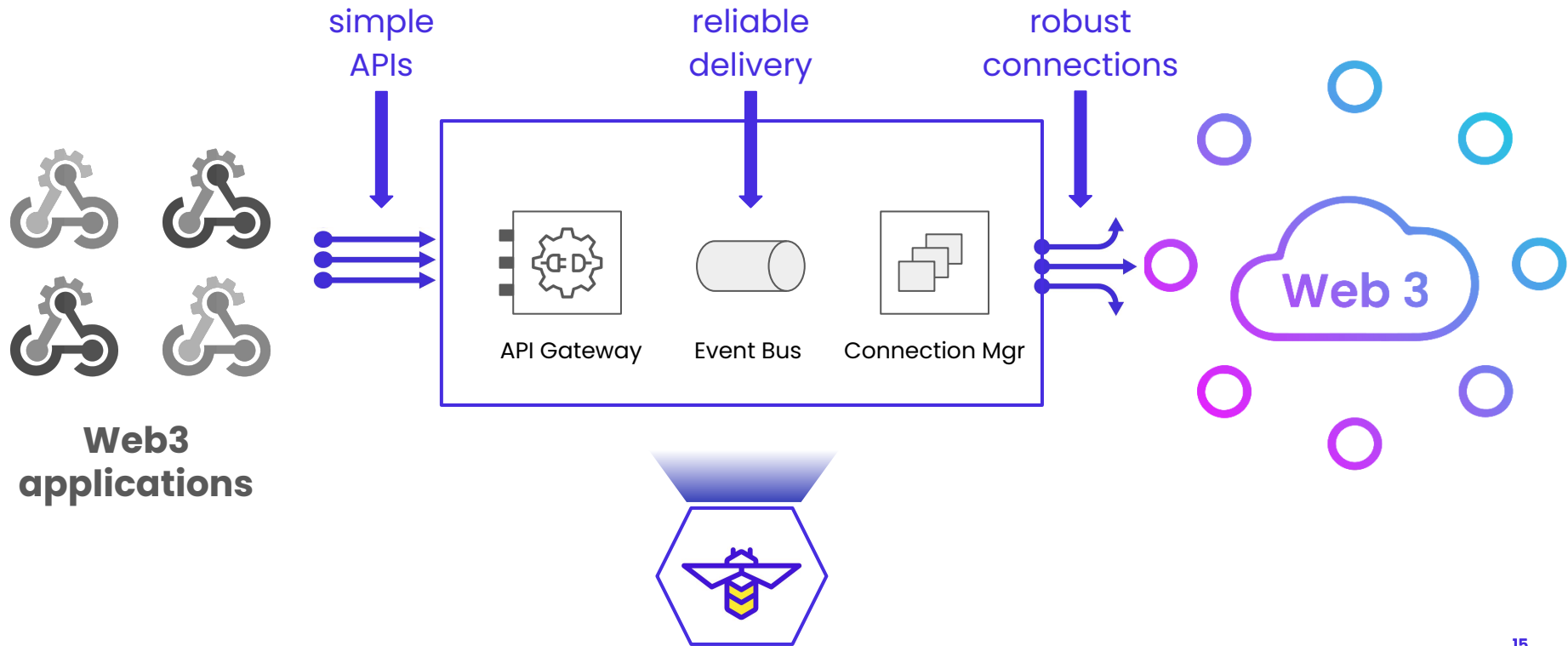
Build Web3 apps quickly

FireFly turns smart contracts into APIs



Deploy Web3 apps to production

FireFly is your gateway to Web3



Data Flows – on and off chain

FireFly has a complete stack for consortium B2B networks

Document Transfer

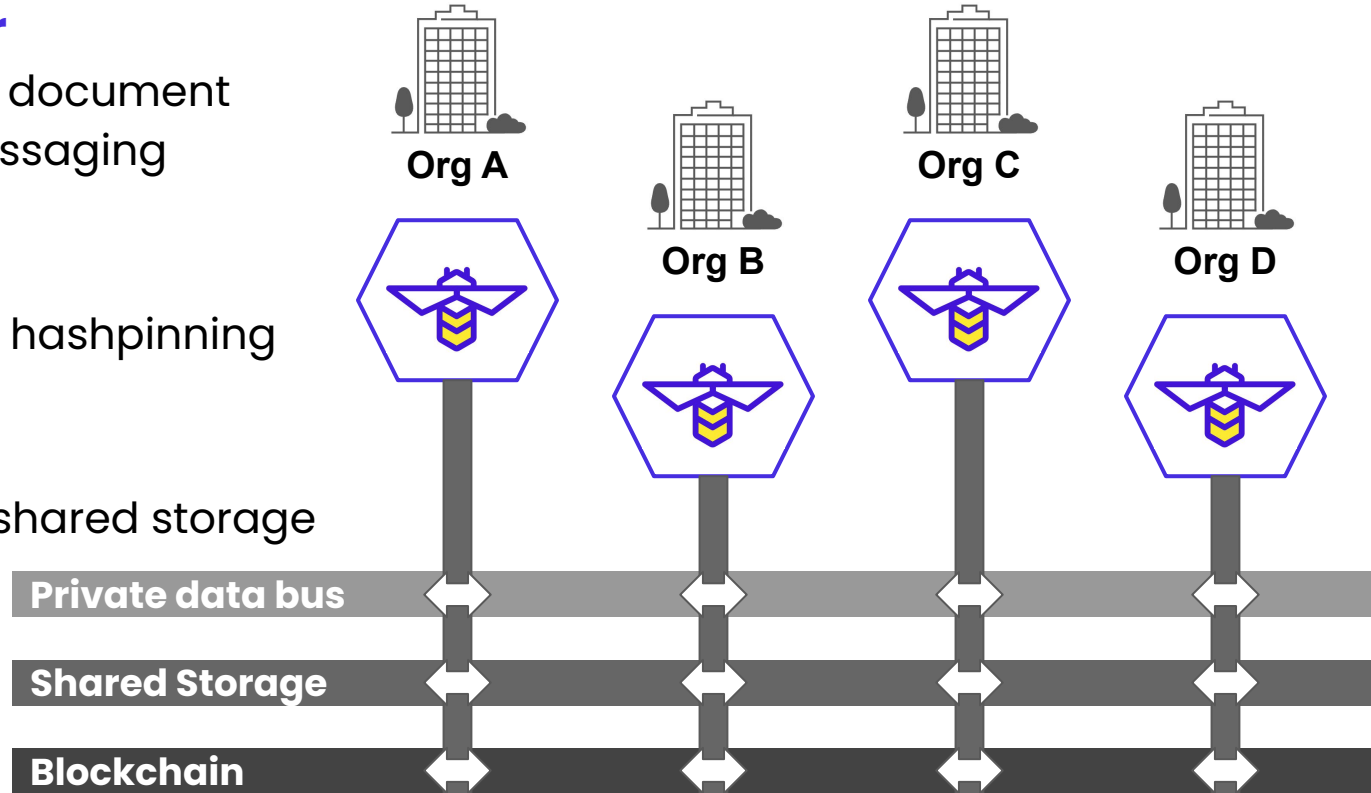
Native off-chain P2P document transfer and B2B messaging

On Chain Proofs

Automatic on-chain hashpinning

Shared storage

Native IPFS-backed shared storage



Manage digital assets at scale

FireFly can manage tokens at institutional scale

Token API

Native support for coins and NFTs
Mint, burn, transfer, check balance

Token history & audit trail

Tracks token history and lineage
in a fast-query database

Simple wallet integration

Easily integrate enterprise wallets
for institutional custody

The screenshot displays the Hyperledger FireFly web interface. On the left is a sidebar with navigation options: Dashboard, Activity, Blockchain, Off-Chain, Tokens, Pools (selected), Balances, Approvals, Network, My Node, and Docs. The main content area is titled 'Token Pools / ACME_COIN'. It shows details for a token pool with ID 'cc13161d-d643-407c-b8f2-07c4...', Standard 'ERC1155 (fungible)', Connector 'erc1155', and State 'CONFIRMED'. It also lists transaction and message hashes, and the creation time '04/12/2022 9:40:47.994 PM (4 minutes ago)'. To the right, there's a 'Pool Info' section with JSON data and an 'Accounts in Pool' table. Below these is a 'Transfers In Pool' table.

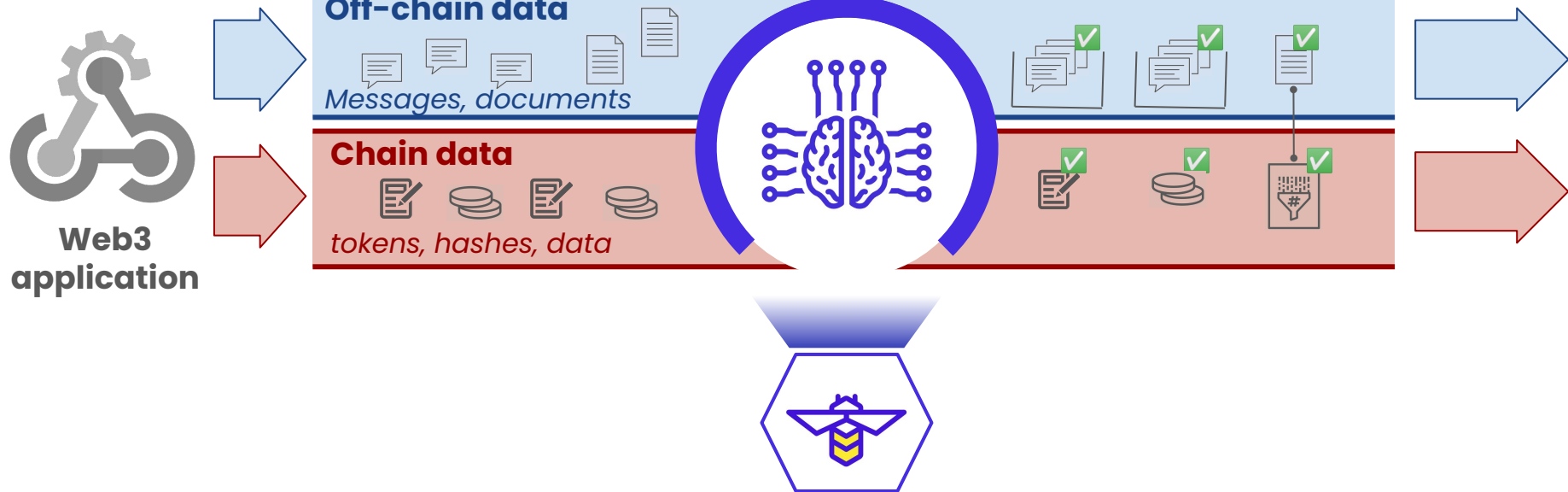
KEY	BALANCE
0xe12...f36e1	4
0x931...382d6	5

ACTIVITY	FROM	TO	AMOUNT	BLOCKCHAIN EVENT	SIGNING KEY	TIMESTAMP
Burn	0xe12...f36e1	0x000...00000	1	2f116...1ac71	0xe12...f36e1	3 minutes ago
Transfer	0x931...382d6	0xe12...f36e1	5	a6c36...7f202	0x931...382d6	3 minutes ago
Mint	0x000...00000	0x931...382d6	10	4e418...adfee	0x931...382d6	4 minutes ago

Orchestrate event-driven flows

Orchestration Engine

- ✓ Reliable delivery
- ✓ State management
- ✓ Batching
- ✓ Event correlation
- ✓ Sequencing
- ✓ Retry
- ✓ Routing
- ✓ Error Handling



Data Management on FireFly

Chain state

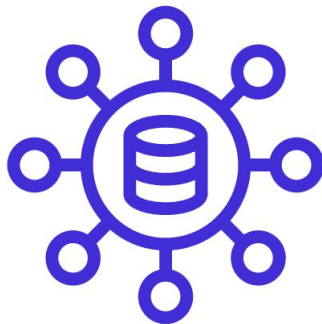
Block event index
Transaction index

Core Data Store

Structured data
Unstructured data
Data validation
Origin audit trail

Network State

Network map
Org Address Book
Chain Connection Mgmt



Digital Asset Manager

Token API
History and Audit Trail
Coin balance

Network Data

B2B data store
Shared storage
Common data formats



FireFly has a complete set of tools

Explorer

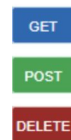


Developer

CLI



API



SDK



DevOps

Logs + Metrics

kubernetes





Runs on Kubernetes

- ✓ Use your favorite DevOps tools
- ✓ Easy for developers
- ✓ Faster to production

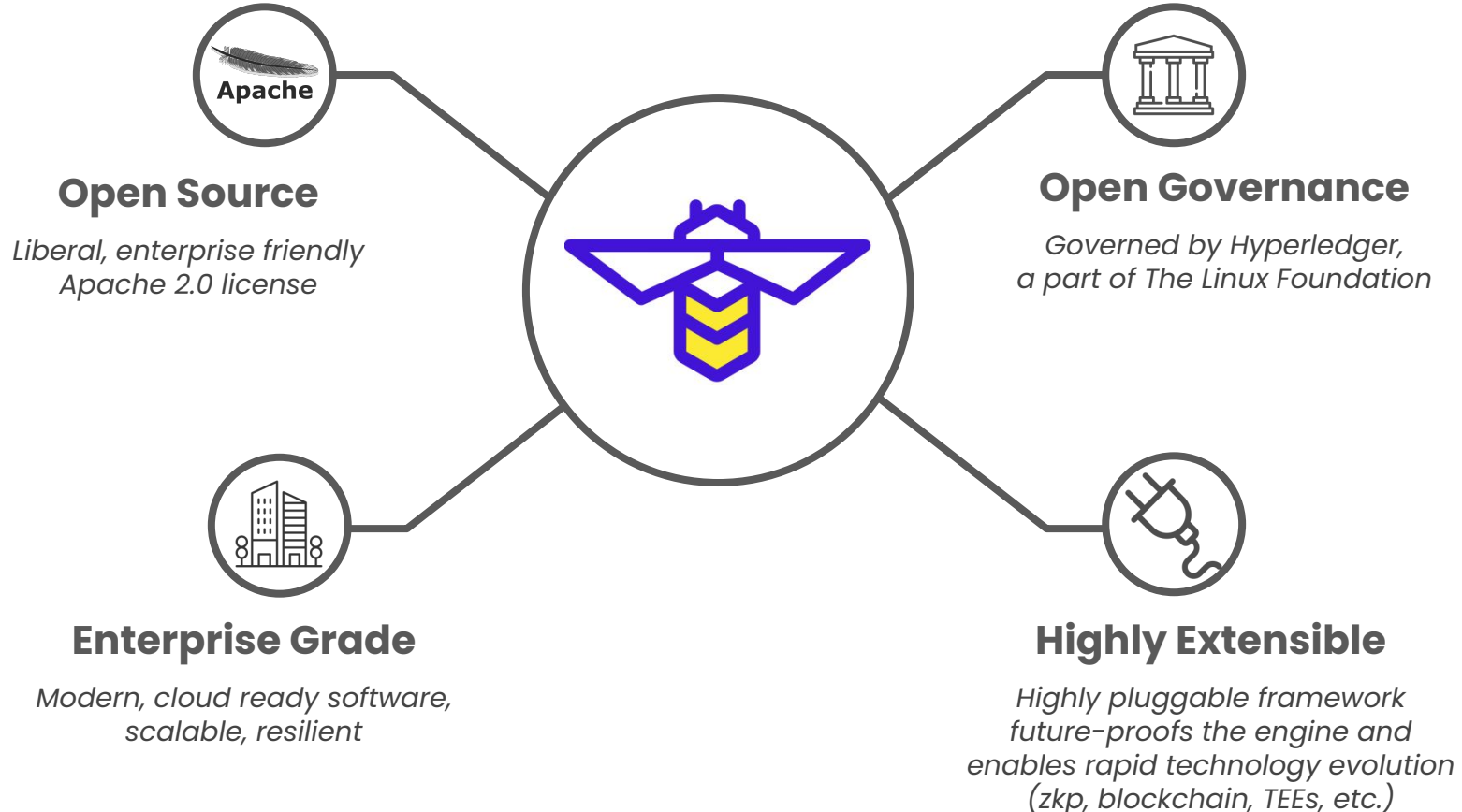
Cloud Ready

- ✓ Ready for public
- ✓ Roll out in your private cloud
- ✓ Hosting options available through HL vendors

Designed to scale

- ✓ microservice architecture
- ✓ Stateless design
- ✓ Achieve HA and scalability

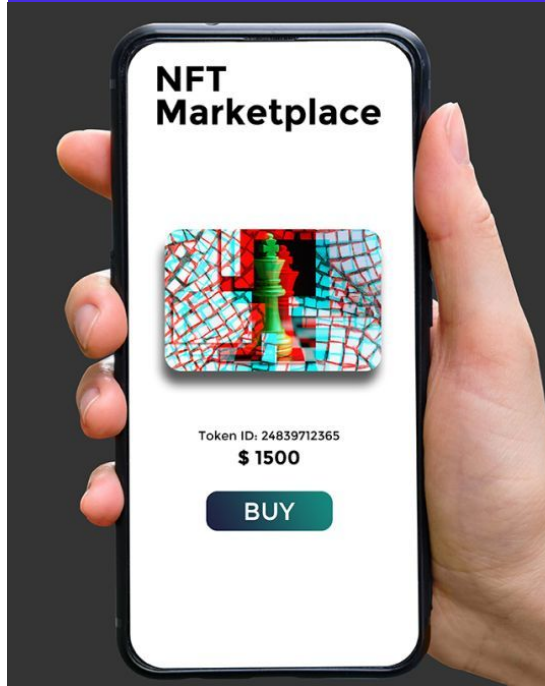
Enterprise Ready Open Source



What will you do with FireFly?



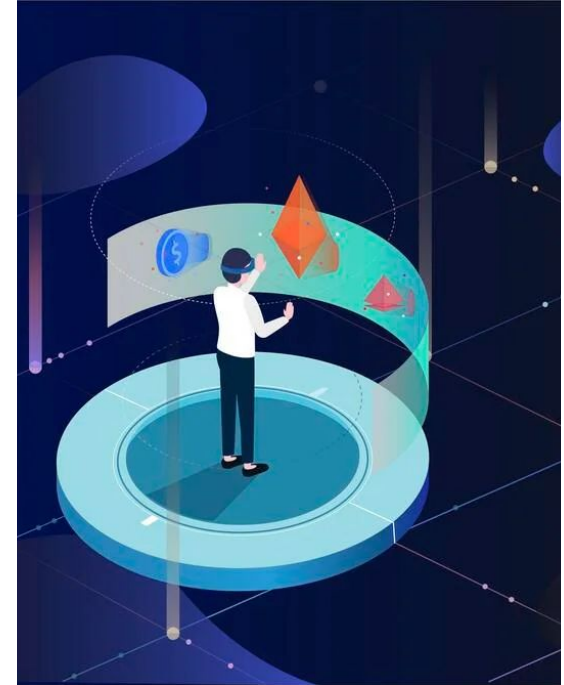
Offer new Digital Experiences



Modernize legacy B2B data flows



Find new business opportunities





Active Development

- Enhanced support for public blockchains
- Additional sample apps
- Code SDKs for the FireFly API in additional languages

Coming Soon

- Support for multiple ledgers and blockchain connectors simultaneously
- Enhanced Web3 Gateway management tooling
- Pluggable API security



Sophia Lopez
Founder and COO, Kaleido



Kyle Culver
Co-Founder, Synaptic Health Alliance

Expert Panel



Steve Cerveney
Founder and CEO, Kaleido



Patrick Schmidt
Vice President, RiskStream Collaborative



Developer Experience + Live Demo



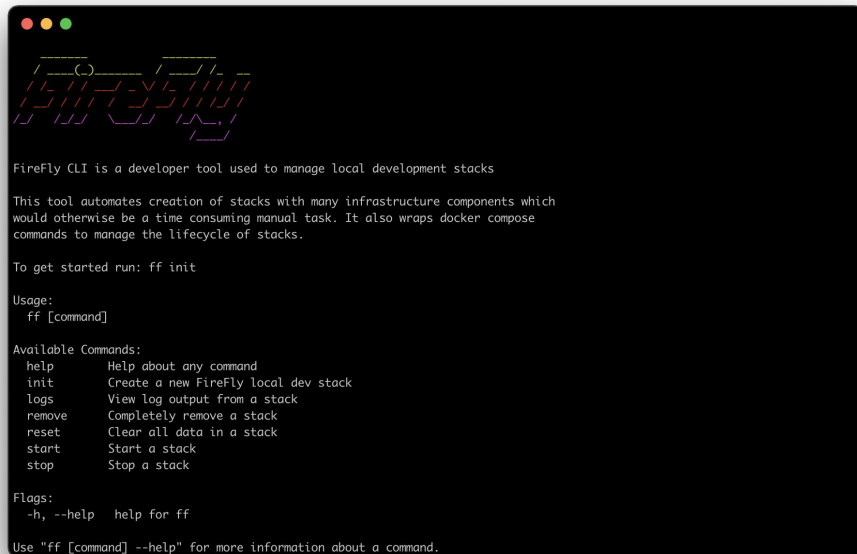
We wanted to build a developer experience that:

- Is **quick** and **easy** for anyone to get started, with or without prior Web3 experience
- Is **powerful** enough to meet the needs of experienced Web3 developers
- Uses **familiar tools** that developers have experience with
- Lets you run an entire developer stack “**offline**” on a laptop

Here's what we're going to run



- The FireFly CLI will set up a machine for local development
- It uses **docker-compose** to run all of the components of a SuperNode right on your laptop

A terminal window with a dark background and a title bar with red, yellow, and green buttons. It displays the FireFly CLI help text, including a description of the tool, usage instructions, a list of available commands, and flags.

```
FireFly CLI is a developer tool used to manage local development stacks

This tool automates creation of stacks with many infrastructure components which
would otherwise be a time consuming manual task. It also wraps docker compose
commands to manage the lifecycle of stacks.

To get started run: ff init

Usage:
  ff [command]

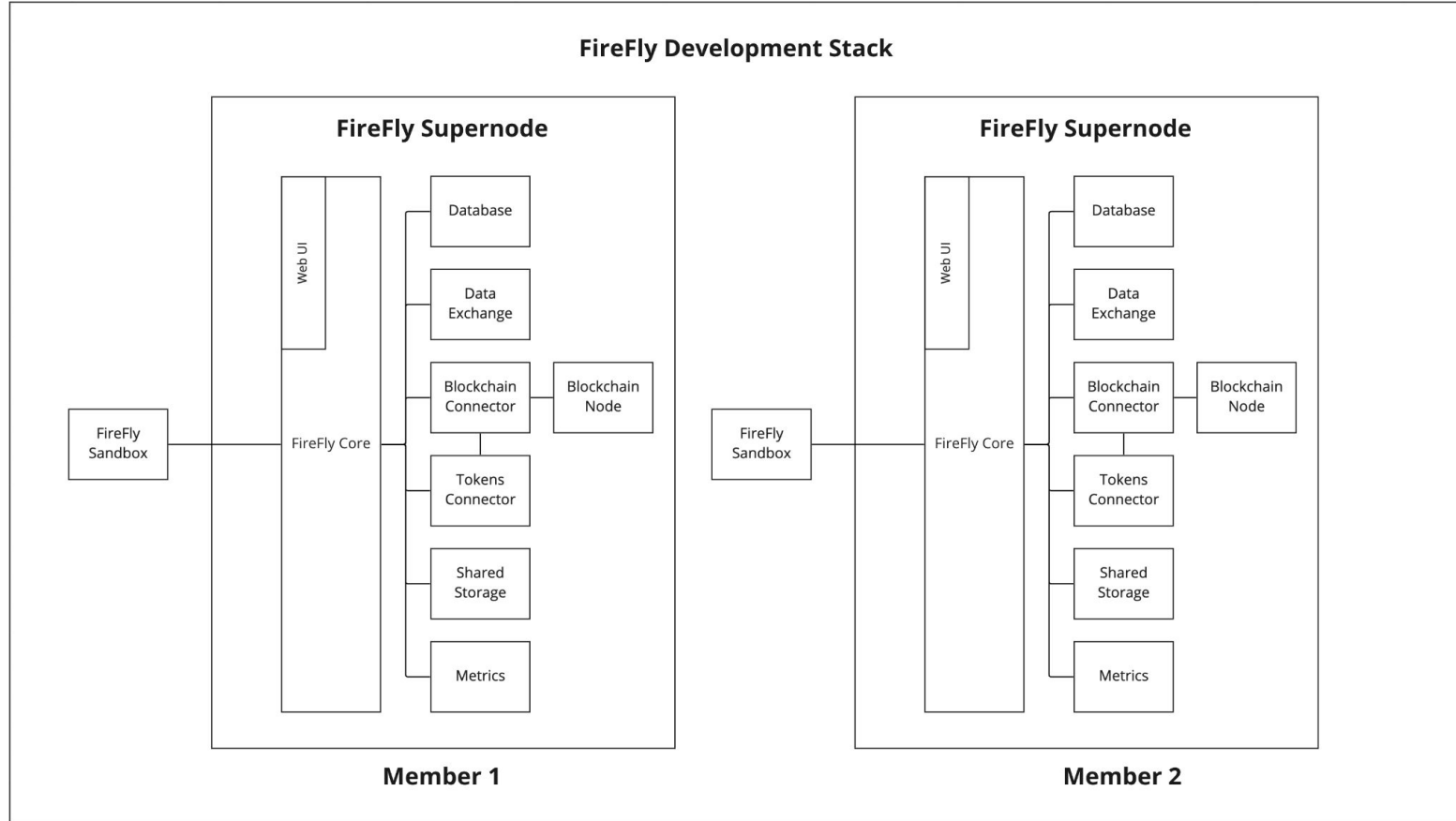
Available Commands:
  help      Help about any command
  init      Create a new FireFly local dev stack
  logs      View log output from a stack
  remove    Completely remove a stack
  reset     Clear all data in a stack
  start     Start a stack
  stop      Stop a stack

Flags:
  -h, --help  help for ff

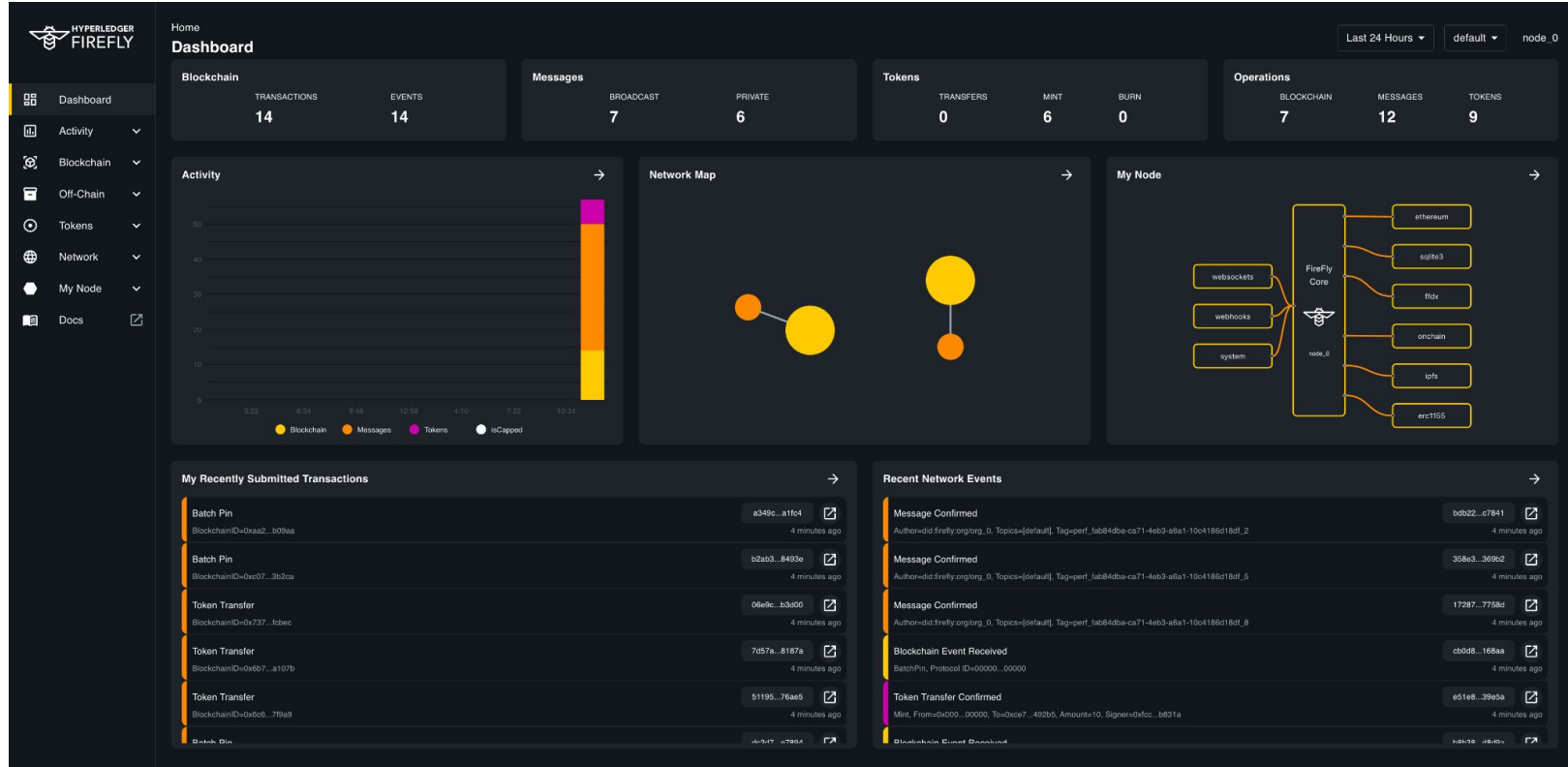
Use "ff [command] --help" for more information about a command.
```

<https://github.com/hyperledger/firefly-cli>

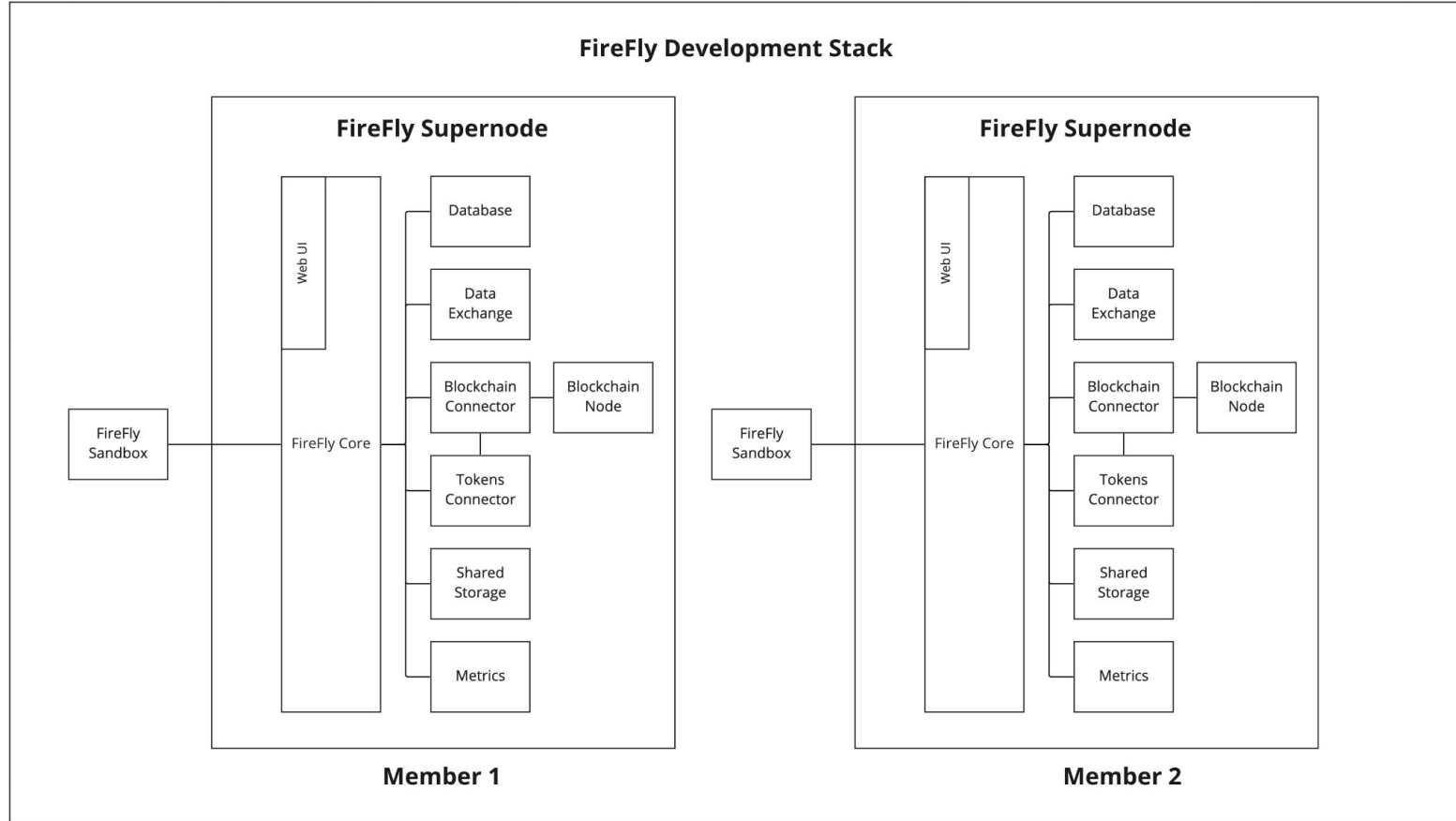
Here's what we're going to run



Here's what we're going to run



Here's what we're going to run





HYPERLEDGER
FIREFLY

Sandbox

Connected

MESSAGING

TOKENS

CONTRACTS

Messaging

Send a Broadcast Message

Sends a message visible to all parties in the network

Message *

This is a message

Tag

Topic

Send a Private Message

Sends a message to a restricted set of parties

Code

Typescript SDK

```
1 const message = await firefly.sendBroadcast({
2   header: {
3     tag: undefined,
4     topics: undefined,
5   },
6   data: [{value: 'This is a message'}],
7 });
8 return { type: 'message', id: message.header.id; }
```

RUN >

API Response

```
1 {
2   "type": "message",
3   "id": "b84a9bc7-0373-4574-a778-b630b15299ac"
4 }
```

202 Accepted

Events

Transaction ID

e93889a2-d314-413d-97d6-9...

a few seconds ago ^

Transaction Submitted

1:21:19.252 PM

Transaction ID: e93889a2-d314-413d-97d6-97c75f2e110a

Transaction Type: batch_pin

Blockchain Event Received

1:21:20.735 PM

Blockchain Event ID: 87141300-c865-49f4-8e67-3449bd2ea99f

Name: BatchPin

Protocol ID: 000000000009/000000/000000

Message Confirmed

1:21:20.755 PM

Message ID: b84a9bc7-0373-4574-a778-b630b15299ac

Message Type: broadcast

Tag: ---

Topics: default



Demo Time!



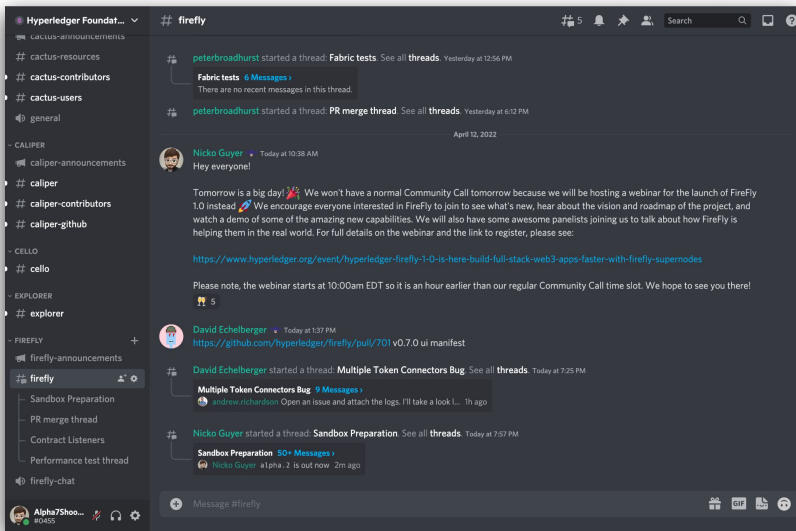
Join the FireFly Community



All are welcome!

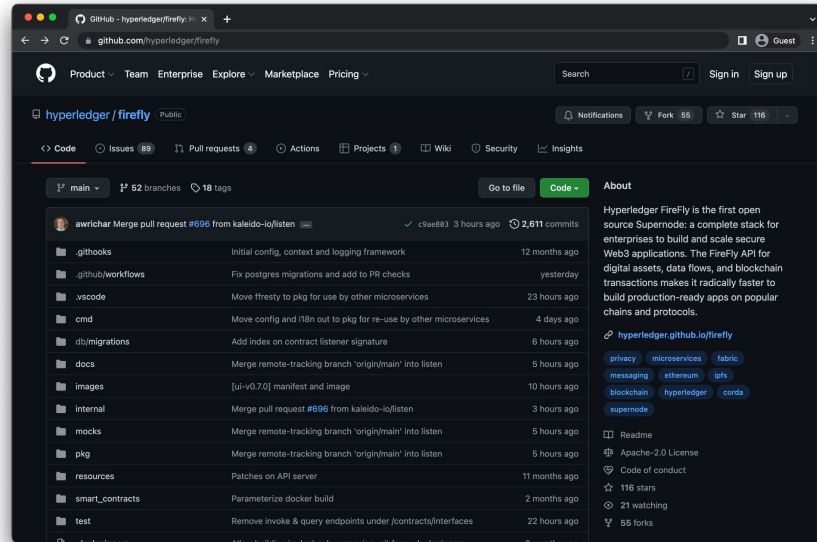
Join the conversation on Discord

<https://discord.gg/Fy7MJuw86>



Join the activity on GitHub

<https://github.com/hyperledger/firefly>





THANK YOU





HYPERLEDGER
FOUNDATION

Hyperledger FireFly 1.0 is here!

Build full-stack Web3 apps faster with
FireFly SuperNodes

PROJECT



Steve Cerveny

*Founder and CEO
Kaleido*



Nicko Guyer

*Senior Full Stack Engineer
Kaleido*



Sophia Lopez

*founder and COO of
Kaleido*



Kyle Culver

*Director, Emerging
Technologies at Humana &
Co-founder
Synaptic Health Alliance*



Patrick Schmid

*Vice President
The Institutes RiskStream
Collaborative*



HYPERLEDGER
MEETUP

Workshop: How to Build Web3 Apps with Hyperledger FireFly SuperNodes

www.meetup.com/Hyperledger-Raleigh/events/284964161/



Nicko Guyer
Kaleido

Online | Wednesday, April 20 @ 10AM Eastern

Introducing Hyperledger FireFly 1.0: The SuperNode for Enterprise Web3 Applications

By The Hyperledger FireFly team | April 13, 2022 | Blog, Hyperledger Firefly



HYPERLEDGER FIREFLY

It's been a busy 10 months for [Hyperledger FireFly](#). From its inception as a [Hyperledger Lab](#) contributed by [Kaleido](#) in June of 2021, FireFly moved quickly to be a full [Hyperledger project](#) just four months later. And today the community is excited to announce that version 1.0 of Hyperledger FireFly is now generally available.

Hyperledger FireFly 1.0 combines a number of technical and market milestones. At its core, it offers a composable Web3 stack to help speed up decentralized application (dApp) development by a factor of 10x-100x, making it the first open-source SuperNode for enterprises to build and scale secure Web3 applications.

It is already in production deployments with a number of leading blockchain consortia today, including [RiskStream Collaborative](#) in the insurance industry, [Synaptic Health Alliance](#) in healthcare, and [TradeGo](#) in commodity trade finance.

A Composable Web3 Stack To Support Decentralized Apps

www.hyperledger.org/blog



HYPERLEDGER FIREFLY

<https://discord.gg/Fy7MJuw86>

Hyperledger FireFly GitHub:

<https://github.com/hyperledger/firefly>

Hyperledger FireFly wiki

<https://wiki.hyperledger.org/display/FIR/Hyperledger+FireFly+Home>

Join our monthly Hyperledger FireFly community calls:

<https://lists.hyperledger.org/q/firefly/calendar>

Recordings of prior Hyperledger FireFly calls:

https://www.youtube.com/playlist?list=PL0MZ85B_96CFVEdbNsHRoX_f15AJacZJD



Join the Hyperledger Discord!

[Join our Discord community](#) and explore channels related to:

- Hyperledger Projects
- Special Interest Groups
- Working Groups
- Regional Chapters
- ...and more!





HYPERLEDGER FOUNDATION

In Depth with...



IntellectEU

Worst mistakes to avoid when
creating/managing your
Hyperledger Fabric network



Yana Koldra
*Head Of Product
Management*
IntellectEU



**Vladyslav
Kopaihorodskyi**
Technical Lead
IntellectEU

MEMBER

Wednesday, April 26th, 2022

10:00am PST | 6:00pm GMT | 1:00am HKT, SGT



Chainyard

Finding Business Value in Trust
Through Blockchain



Gary Storr
*General Manager of
Trust Your Supplier*
Chainyard



Murali Sappa
VP Engineering
Chainyard

MEMBER

Wednesday, May 18th, 2022

10:00am PST | 5:00pm GMT | 1:00am HKT, SGT



KrypC

Enterprise Blockchain
Simplified with KrypCore



Akshaya Ravi
Vice President
KrypC



Mohit Sethi
*VP Technology &
Research*
KrypC



Ravi Jagannathan
Managing Director
KrypC

MEMBER

Wednesday, May 4th, 2022

8:00am PST | 3:00pm GMT | 11:00pm HKT, SGT

hyperledger.org/events



HYPERLEDGER GLOBAL FORUM



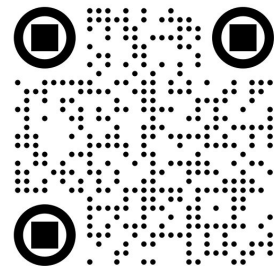
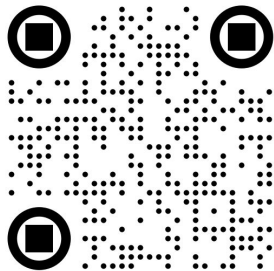
September 12–13, 2022 | Dublin, Ireland
#hyperledgerforum









REGISTER

CALL FOR PROPOSALS

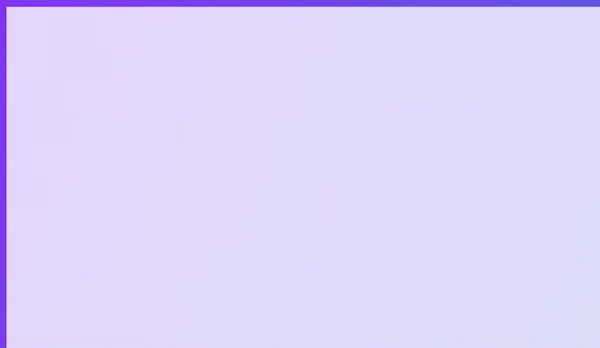
[Visit Event Website](#)

Get Involved!



-  info@hyperledger.org
-  hyperledger.org/community
-  hyperledger.org/resources
-  chat.hyperledger.org
-  wiki.hyperledger.org
-  github.com/hyperledger
-  lists.hyperledger.org
-  hyperledger.org/members/join

THANKS FOR WATCHING!



WATCH NEXT

Questions?

membership@hyperledger.org



WWW.HYPERLEDGER.ORG



[@HYPERLEDGER](https://twitter.com/HYPERLEDGER)



HYPERLEDGER
FOUNDATION

