



Protocol Labs



## CNSM 2020 Tutorial on The InterPlanetary File System and the Filecoin Network



Protocol Labs  
Research

### Motivation and Scope

IPFS and libp2p are becoming the de facto standard for data storage in the Decentralised Web and as such they are being used by a vast number of researchers, projects, companies and initiatives in this space, including among many others the Ethereum blockchain. With more than 250,000 active network users per month, IPFS and its supporting protocols are undergoing speedy research and active development. All of Protocol Labs' projects (including IPFS and libp2p) are open-source projects with thousands of contributors and a bright community.

Come along to find out the latest developments in research, deployment and operation of permissionless, P2P, incentivised networks.



IPFS is the ultimate protocol stack that will decentralize the Web for good.



Libp2p is the library that dominates peer-to-peer systems today.



Filecoin is the first of its kind token-based, permissionless and decentralised storage network that successfully launched its mainnet only a couple of weeks ago.

Come and learn the details of the entire IPFS protocol stack, how to use it and how to get involved in its vast community. There are many opportunities for involvement and contribution.

### Technical Issues to be addressed

- Understand how IPFS brings content addressing as a core primitive for data distribution
- Learn how to use CIDs (content identifiers) to find content and interpret what the content is programmatically
- Learn how to create custom data structures using IPFS and its underlying data format, IPLD (InterPlanetary Linked Data)
- Understand how libp2p brings process addressing as a core primitive for P2P and runtime-independent applications
- Understand Filecoin, the incentive structure on top of IPFS and its main building blocks

### Program Outline

**Session 1:** Introduction to Decentralisation, Web3 and the IPFS Ecosystem

**Session 2:** The Lifetime of Data in IPFS

**Session 3:** File Exchange in IPFS using Bitswap

**Session 4:** Solving distributed networking problems with libp2p

**Session 5:** Filecoin: The incentive layer for IPFS

### Presenters

David Dias, Research Engineer, Protocol Labs, Portugal, [david@protocol.ai](mailto:david@protocol.ai)

Yiannis Psaras, Research Scientist, Protocol Labs, UK, [yiannis@protocol.ai](mailto:yiannis@protocol.ai)

Alfonso de la Rocha, Research Engineer, Protocol Labs, Spain, [alfonso.rocha@protocol.ai](mailto:alfonso.rocha@protocol.ai)