

LF AI: Accelerating Open Source AI Innovation and Collaboration

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 THE **LINUX** FOUNDATION

 LF AI

Ecosystem Overview

Machine Learning

Framework

Platform

Library

Framework

Platform

Library

Tool

Reinforcement Learning

Programming

Notebook Environment

Versioning

Store & Format

Operations

Stream Processing

SQL Engine

Feature Engineering

Visualization

Pipeline Management

Labeling and Annotation

Governance

Benchmarking

Training

Parameter

Format & Interface

Marketplace

Workflow

Inference

Tool

Explainability

Adversarial

Bias & Fairness

Distributed Computing


Computing & Management

Interface


Security & Privacy

Natural Language Processing

Education



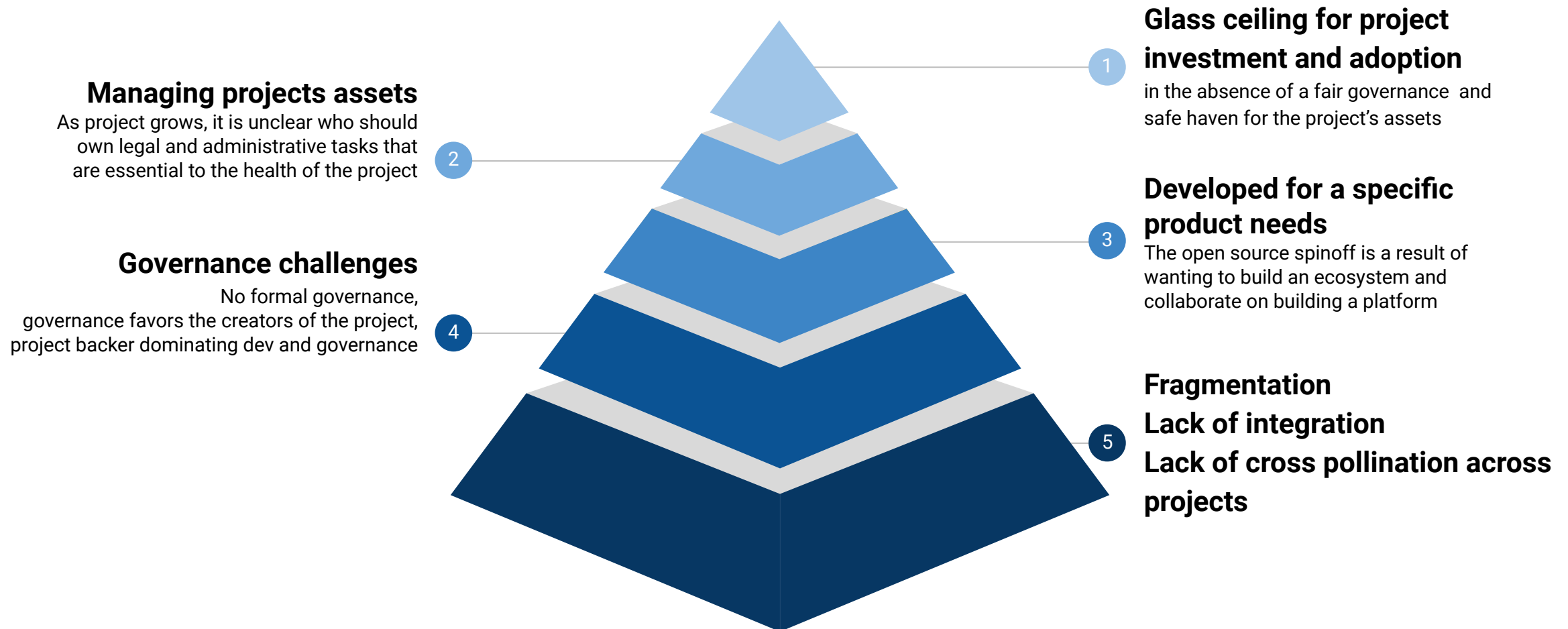
The LF AI landscape explores open source projects in the domains of artificial intelligence, machine learning, and deep learning.



LF AI Landscape

l.fai.foundation

Open Source AI - Ecosystem Challenges



We all are aware of the advantages of open source ...

**Access to
source code**

**Ability to
customize**

**Rapid
development**

Peer review

**Improved
quality and
security**

**Reduce dev
time and TTM**

**Flexible
licensing model**

**Community
driven
innovation**

**Influence
roadmap via
participation**

**Transparent
technical
discussions**

But, Open Source offers *unique* benefits to AI

Fairness

Methods to detect and mitigate bias in datasets and models, including bias against known protected populations

Robustness

Methods to detect alterations/tampering with datasets and models, including alterations from known adversarial attacks

Explainability

Methods to enhance understandability and interpretability by persona/roles in process of AI model outcomes/decision recommendations, incl ranking and debating results and decision options

Lineage

Methods to ensure provenance of datasets and AI models, including reproducibility of generated datasets and AI models

Open Data

Methods to clean, sort, tag and track provenance and a governance structure for doing these things

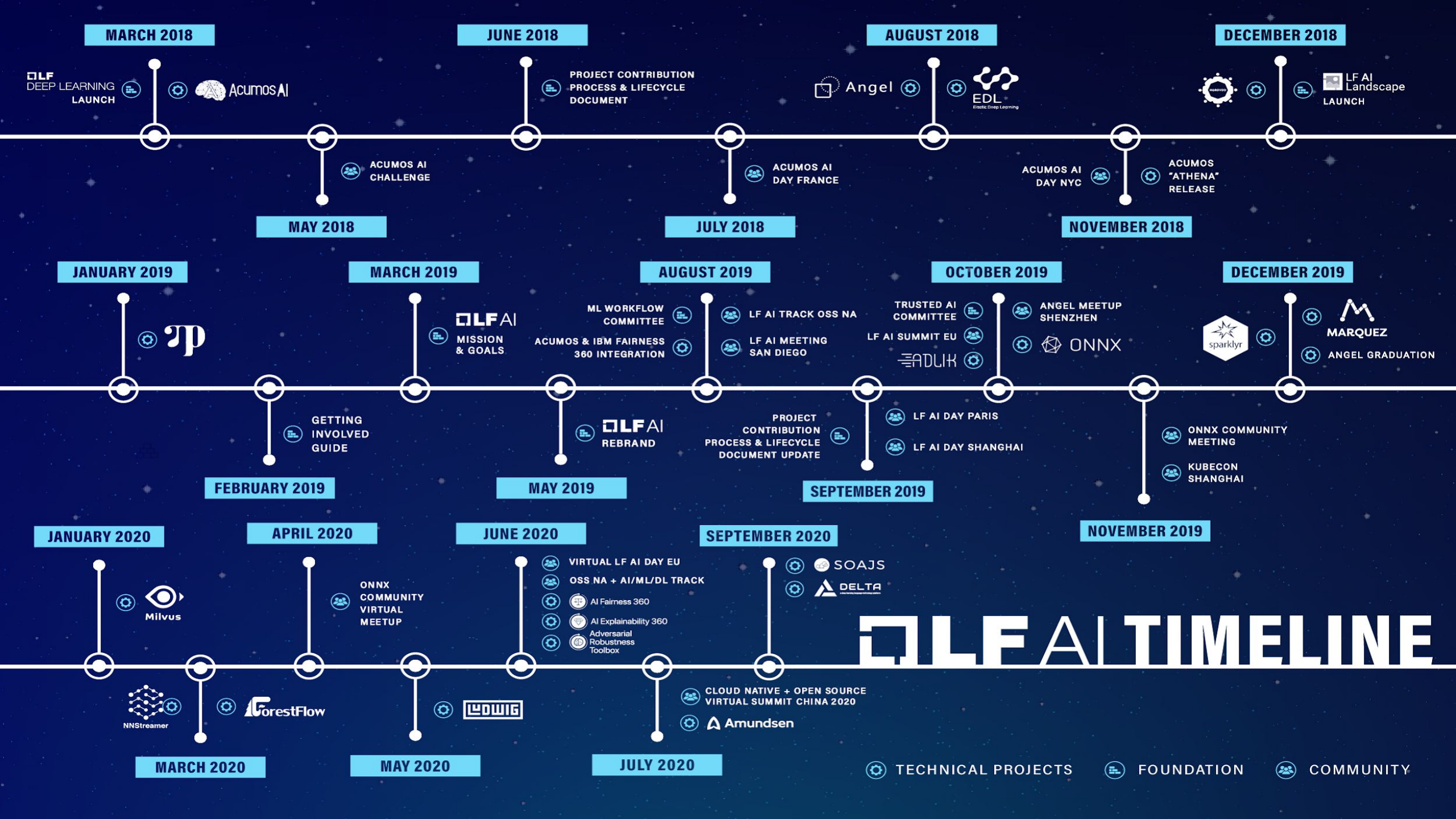


LF AI is an LF umbrella foundation founded in March 2018 to support collaboration and open source innovation in the AI, ML, and DL

<https://lfai.foundation>

Motivations for Harmonization

1. **Better interoperability and capabilities** across projects
2. Hosting projects under a single umbrella enables **closer collaboration and integration** across projects and is a proven recipe for building a strong open ecosystem and growing the ecosystem
3. **Unified guidance for end users** on tools, interoperability, integration, standards, and the future of AI, Data and Analytics as its use continues to grow in every industry
4. **Greater efficiency** for members across various costs spent on supporting



LF AI Structure and Governance

Foundation Governance

Funding effort to support technical projects hosted under the Foundation

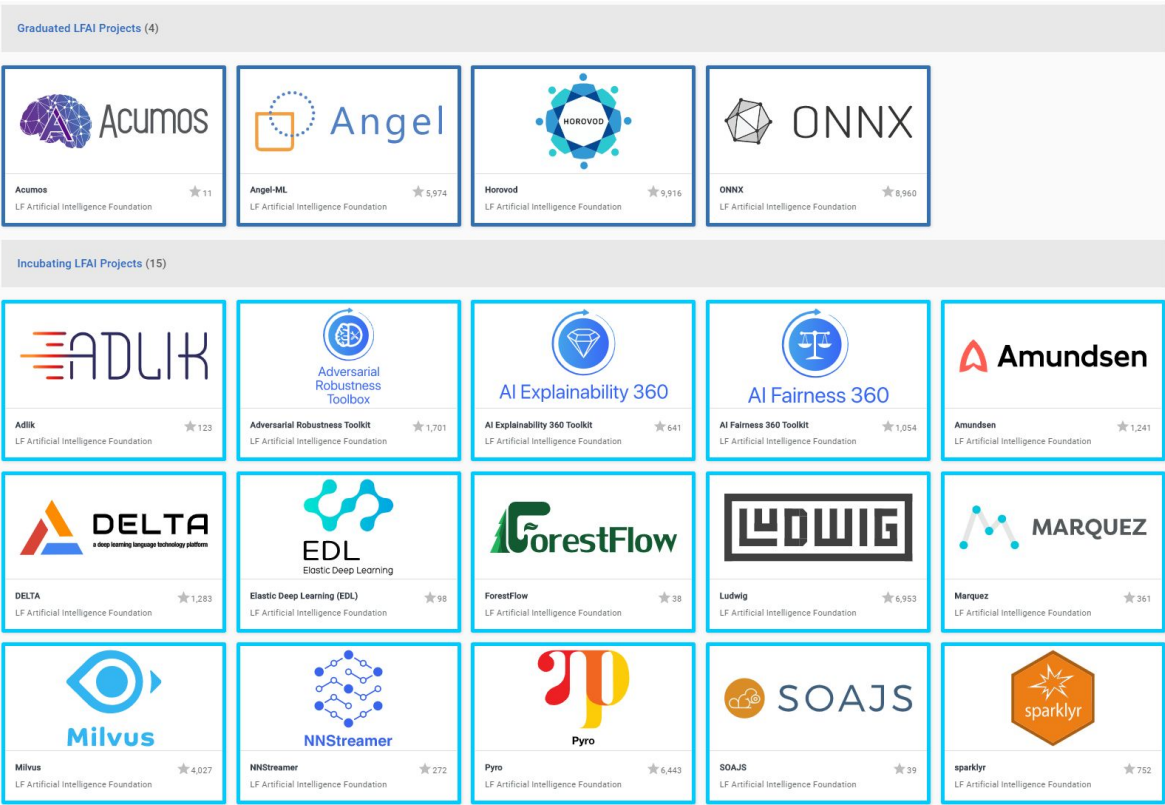


Technical Coordination and New Initiatives

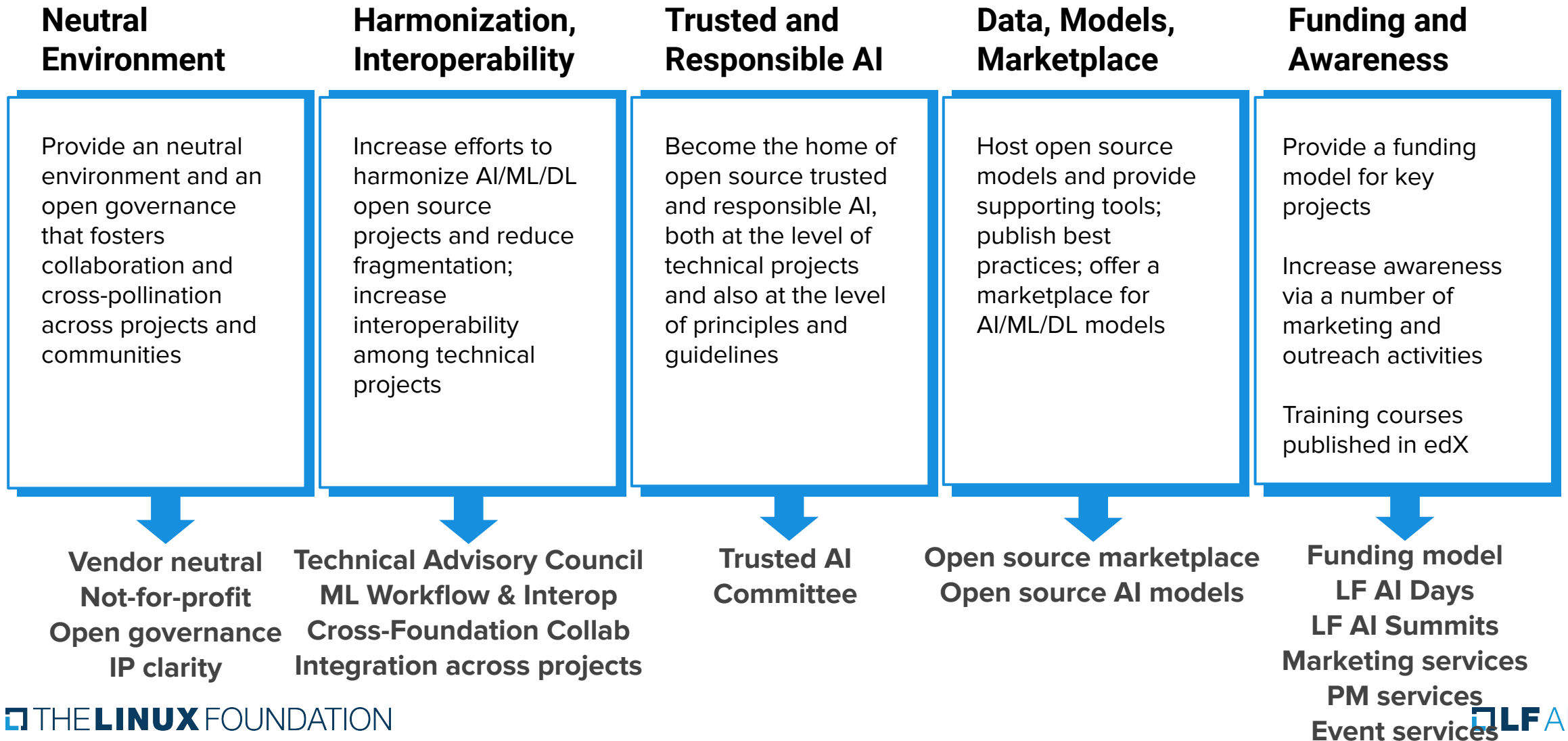


Hosted Projects

Projects have their own independent technical governance




LF AI Major Efforts




Members

LF AI Member Company - Premier (10)




AT&T
AT&T

MCap: \$199.79B




Baidu
Baidu

MCap: \$42.66B




Ericsson
Ericsson

MCap: \$36.23B




Huawei
Huawei Technologies

MCap: \$105.17B




IBM
IBM

MCap: \$22.02B




Tech Mahindra
Tech Mahindra

MCap: \$624.38B



Tencent
Tencent Holdings


Funding: \$10M



Zilliz
ZILLIZ


MCap: \$20.51B

LF AI Member Company - General (7)




DiDi
DiDi Chuxing

Funding: \$21.25B




Herron Tech
Herron Tech

MCap: \$27.97B




inwinSTACK
inwinSTACK

MCap: \$105.17B



RStudio
RStudio


MCap: \$13.4M



XenonSTACK
XenonStack


MCap: \$13.4M

LF AI Member Company - Associate (8)




AI for people
AI For People

Funding: \$5M




Ambianic
Ambianic

Funding: \$13.4M




Institute of Ethical AI and Machine Learning
The Institute for Ethical AI & Machine Learning

Funding: \$5M




International Society of Service Innovation Professionals
International Society of Service Innovation Professionals

Funding: \$5M




Montreal AI Ethics Institute
Montreal AI Ethics Institute

Funding: \$5M




New York University
New York University

Funding: \$13.4M



Penn State University
Pennsylvania State University

Funding: \$13.4M







Pranveer Singh Institute Of Technology
Pranveer Singh Institute Of Technology
















Funding: \$13.4M

Projects

Graduated LFAI Projects (4)

 Acumos ★ 11 LF Artificial Intelligence Foundation	 Angel ★ 5,974 Angel-ML LF Artificial Intelligence Foundation	 Horovod ★ 9,916 LF Artificial Intelligence Foundation	 ONNX ★ 8,960 ONNX LF Artificial Intelligence Foundation
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Incubating LFAI Projects (15)

 ADLIK ★ 123 Adlik LF Artificial Intelligence Foundation	 Adversarial Robustness Toolkit ★ 1,701 Adversarial Robustness Toolkit LF Artificial Intelligence Foundation	 AI Explainability 360 ★ 641 AI Explainability 360 Toolkit LF Artificial Intelligence Foundation	 AI Fairness 360 ★ 1,054 AI Fairness 360 Toolkit LF Artificial Intelligence Foundation	 Amundsen ★ 1,241 Amundsen LF Artificial Intelligence Foundation
 DELTA ★ 1,283 a deep learning language technology platform LF Artificial Intelligence Foundation	 EDL ★ 98 Elastic Deep Learning (EDL) LF Artificial Intelligence Foundation	 ForestFlow ★ 38 ForestFlow LF Artificial Intelligence Foundation	 LUDWIG ★ 6,953 Ludwig LF Artificial Intelligence Foundation	 MARQUEZ ★ 361 Marquez LF Artificial Intelligence Foundation
 Milvus ★ 4,027 LF Artificial Intelligence Foundation	 NNStreamer ★ 272 NNStreamer LF Artificial Intelligence Foundation	 Pyro ★ 6,443 Pyro LF Artificial Intelligence Foundation	 SOAJS ★ 39 SOAJS LF Artificial Intelligence Foundation	 sparklyr ★ 752 sparklyr LF Artificial Intelligence Foundation

What does it mean to be a Foundation project?

- › A neutral home for the project increases the willingness of developers from organizations to collaborate, contribute, and become committers
- › Endorsement by members of the LF AI's Technical Advisory Committee (TAC) is an independent signal of the quality of your project
- › Open governance model
- › Program management support
- › Access to full-time LF AI staff who are eager to assist your project
- › Access to marketing and communications services to support community and ecosystem engagement
- › Access to a full range of events services to help the project build and grow a community around it
- › Legal support ranging from hosting the trademark in a neutral organization to CLA and DCO system integration with GitHub, regular compliance scans, etc.
- › Presence across multiple geographies

Companies hosting projects in LF AI

<https://landscape.lfai.foundation/format=hosting>



FACEBOOK

Herron Tech



LF AI - A Growing Community



- 19 projects
- Over 8 M LoC
- 1250+ active developer
- 55+ known organizations
- 22+ universities contributing code

Strong LF AI Marketing/PR Effort

37 announcements in 2019

26 announcements in 1H 2020

- › Events announcements and promotion
- › Project release
- › Project incubation
- › New members joining
- › Project cross collaboration
- › Invited posts

LF AI provides marketing services to support community and ecosystem engagement.

- › Content ranging from the LF AI blog, white papers, posters, presentations, and more
- › Oversee blog editorial calendars and writing, editing, and/or identifying and funding freelancers to develop content
- › Help develop the project website and other required creative work

LF AI Events - Community Driven

- › LF AI Summit - co-located event with major LF conferences + Booth
- › LF AI Track at Open Source Summit (NA, EU, China) - Supporting 18-20 talks over 3 days + Booth
- › LF AI Days - a whole day (in person and virtual) hosted in collaboration with an LF AI member with audience ranging from 50-250. Multiple/year.
- › Project specific events
- › Sponsorship and booth at KubeCon
- › Strong presence & event participation in China



Incubating Projects

- › LF AI's TAC committee is responsible to voting in new incubation projects.
- › The TAC meets bi-weekly and generally booked 4-6 weeks in advance.
- › Proposing projects for incubation in LF AI:
<https://lfai.foundation/proposal-and-hosting-process/>

Project Resources

Hosted project stages and life cycle:

<https://lfai.foundation/project-stages-and-lifecycle/>

Offered services for hosted projects:

<https://lfai.foundation/services-for-projects/>

Stay Connected with LF AI

Social



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



[LF AI Foundation](https://www.linkedin.com/company/lf-ai-foundation)

Mail Lists

- › [TAC](#) - Participate in technical governance and hear about LF AI projects
- › [Events](#) - Learn about upcoming events
- › [Announce](#) - Stay in the loop on top level Foundation announcements

Blog

- › Check the latest news on our [Blog](#)

Joining LF AI Foundation is easy!

Please follow up with Ibrahim Haddad

Web site	https://lfai.foundation
Email	info@lfai.foundation
Landscape	https://l.lfai.foundation
GitHub	https://github.com/lfai
Wiki	https://wiki.lfai.foundation
Mailing lists	https://lists.lfai.foundation/groups