

# LF AI & Data

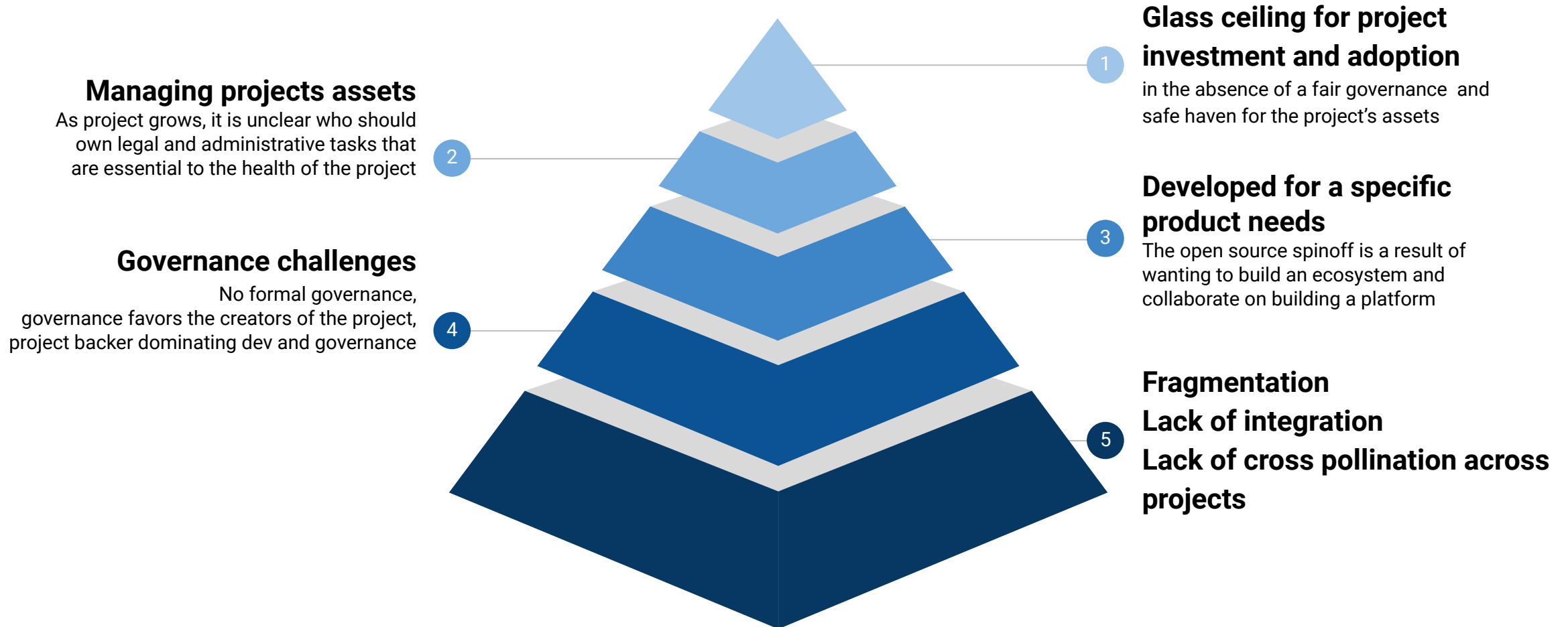
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 LF AI & DATA

# Ecosystem Overview

# Open Source AI & Data - 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 & Data

## 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

# Enter LF AI & Data

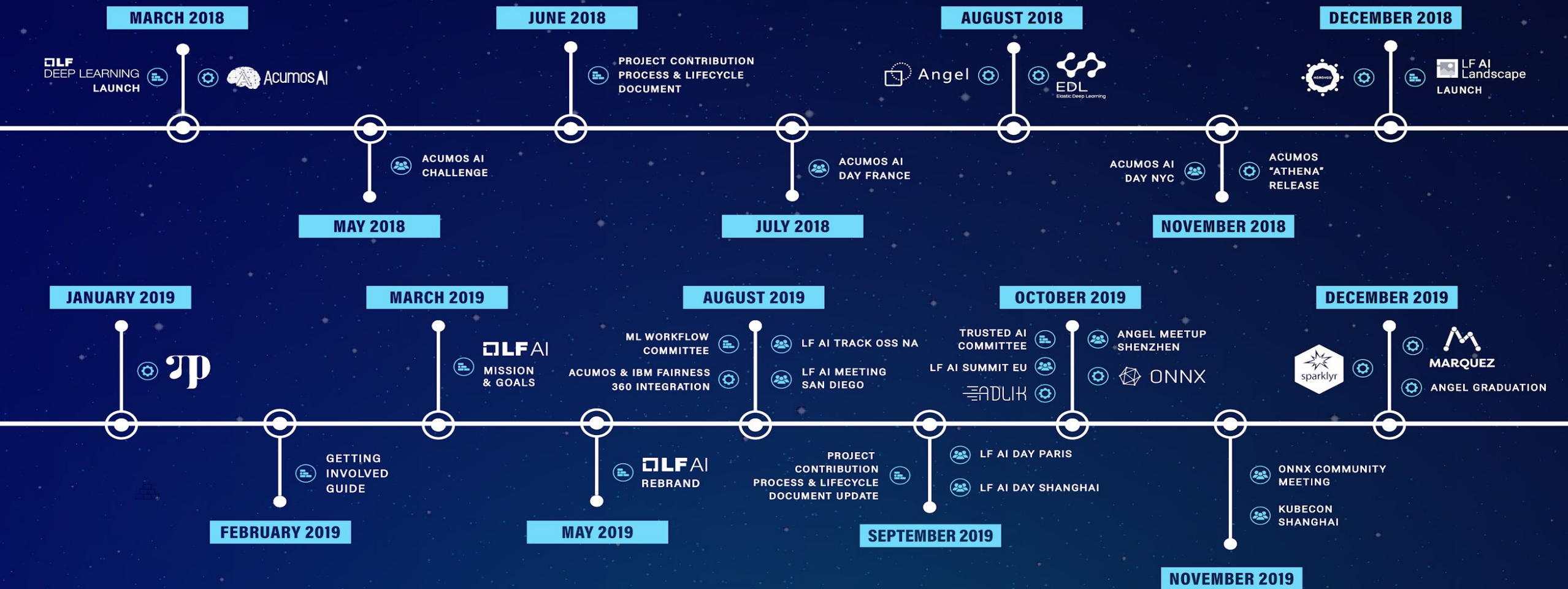
 **LF** AI & DATA

# LF AI & Data - Mission

To build and support an open community and a growing ecosystem of open source AI, data and analytics projects, by accelerating innovation, enabling collaboration and the creation of new opportunities for all the members of the community

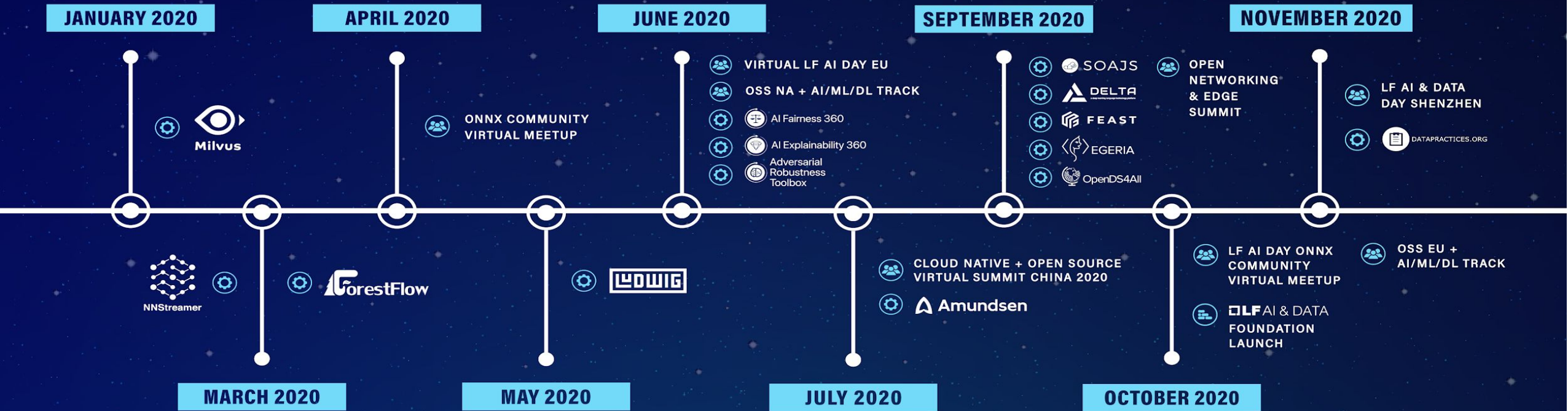


# LF AI TIMELINE 2018-2019

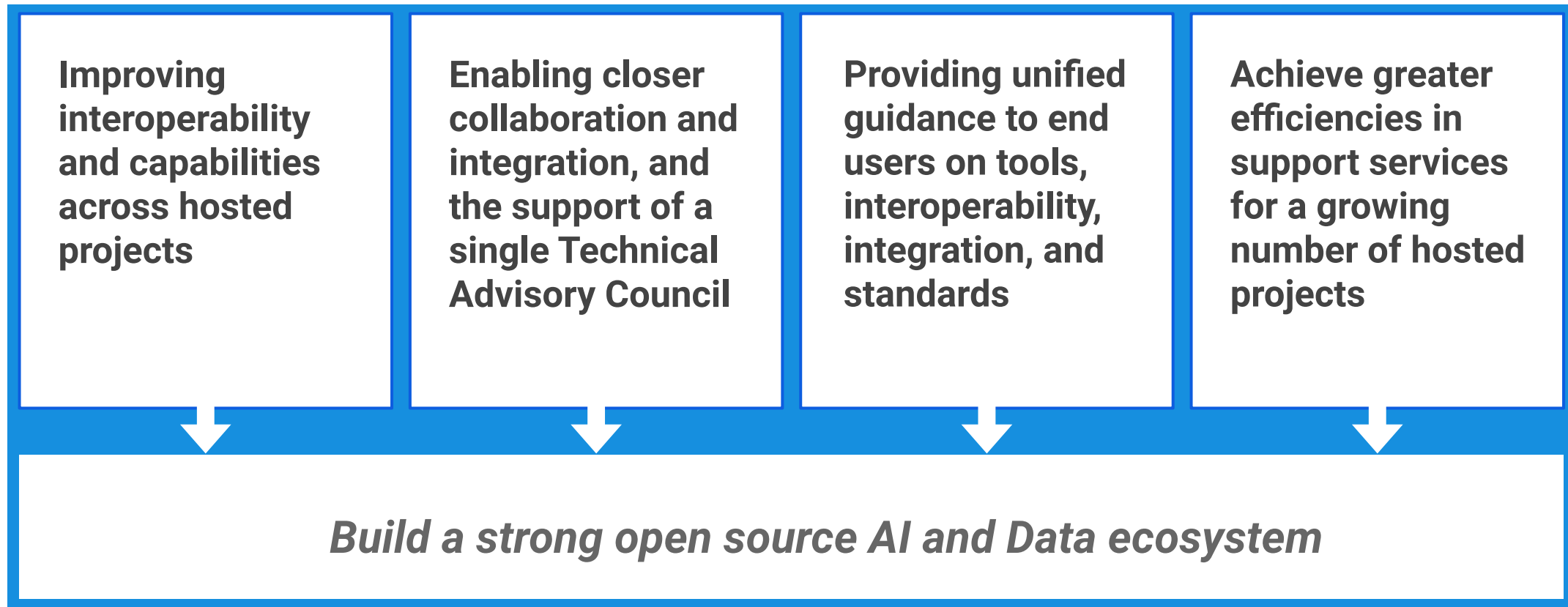




# LF AI & DATA TIMELINE 2020



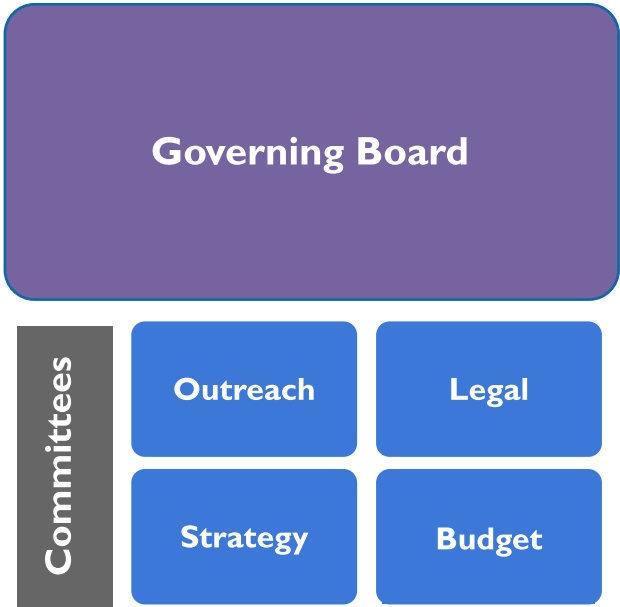
# Motivations for Harmonization



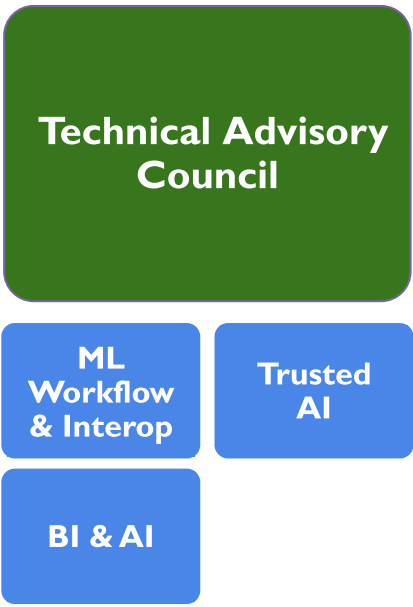
# Structure and Governance

## Foundation Governance

Funding effort to support hosted technical projects



## Technical Coordination, New Initiatives



## Hosted Projects

Projects have their own independent technical governance

A grid of 20 hosted projects, each with its logo, name, and star rating. The projects are:

Project	Star Rating
Acumos	12
ADLIK	213
Adversarial Robustness Toolkit	1,868
AI Explainability 360	723
AI Fairness 360	1,152
Amundsen	1,572
Angel	6,062
DATA PRACTICES	5
DELTA	1,346
EGERIA	283
EDL	110
FEAST	1,227
ForestFlow	39
HOROVOD	10,507
JanusGraph	3,695
LUDWIG	7,314
MARQUEZ	408
Milvus	4,688
NNStreamer	310
ONNX	9,423
OpenDS4All	138
Pyro	6,621
SOAJS	41
sparklyr	761

# Major Efforts

## Neutral Environment

Provide an neutral environment and an open governance that fosters collaboration and cross-pollination across projects and communities



**Vendor neutral**  
#  
**Not-for profit**  
#  
**Open governance**  
#  
**IP clarity**

## Harmonization, Interoperability

Increase efforts to harmonize AI/ML/DL open source projects and reduce fragmentation; increase interoperability among technical projects



**TAC**  
**ML Workflow & Interop**  
#  
**Cross Foundation Collaboration**  
#  
**Integration efforts**

## Trusted and Responsible AI

Become the home of open source trusted and responsible AI, both at the level of technical projects and also at the level of principles and guidelines



**Trusted AI Committee**  
#  
**3 Core Projects**  
#  
**edX Training**

## Data

Develop the only vendor neutral, open source standards to enable best practices for data governance, connectivity, business intelligence, and analytics.



**BI & AI Committee**  
#  
**Large number of Data hosted projects**

## Model Marketplace

Host open source models and provide supporting tools; publish best practices; offer a marketplace for AI/ML/DL models



**Open Source Model marketplace**

## Funding and Awareness

Provide a funding model for key projects

Increase awareness via a number of marketing and outreach activities

Training courses published in edX



**Funding model**  
#  
**LF AI & Data Days, LF AI & Data Summit**  
#  
**Services: Marketing, Legal, Events and PM**

# Members

Premier	     
	    
General	       
	      
Associate	       
	      

# 2020 in numbers

**+15**

























Projects

**+16**

Members



# Projects

 <p><b>Acumos</b> ★ 12 LF AI &amp; Data Foundation</p>	 <p><b>Adlik</b> ★ 213 LF AI &amp; Data Foundation</p>	 <p><b>Adversarial Robustness Toolkit</b> ★ 1,868 LF AI &amp; Data Foundation</p>	 <p><b>AI Explainability 360 Toolkit</b> ★ 723 LF AI &amp; Data Foundation</p>	 <p><b>AI Fairness 360 Toolkit</b> ★ 1,152 LF AI &amp; Data Foundation</p>
 <p><b>Amundsen</b> ★ 1,572 LF AI &amp; Data Foundation</p>	 <p><b>Angel-ML</b> ★ 6,062 LF AI &amp; Data Foundation</p>	 <p><b>DataPractices</b> ★ 5 LF AI &amp; Data Foundation</p>	 <p><b>DELTA</b> ★ 1,346 LF AI &amp; Data Foundation</p>	 <p><b>Egeria</b> ★ 283 LF AI &amp; Data Foundation</p>
 <p><b>EDL</b> Elastic Deep Learning ★ 110 LF AI &amp; Data Foundation</p>	 <p><b>Feast</b> ★ 1,227 LF AI &amp; Data Foundation</p>	 <p><b>ForestFlow</b> ★ 39 LF AI &amp; Data Foundation</p>	 <p><b>Horovod</b> ★ 10,507 LF AI &amp; Data Foundation</p>	 <p><b>JanusGraph</b> ★ 3,695 LF AI &amp; Data Foundation</p>
 <p><b>Ludwig</b> ★ 7,314 LF AI &amp; Data Foundation</p>	 <p><b>Marquez</b> ★ 408 LF AI &amp; Data Foundation</p>	 <p><b>Milvus</b> ★ 4,688 LF AI &amp; Data Foundation</p>	 <p><b>NNStreamer</b> ★ 310 LF AI &amp; Data Foundation</p>	 <p><b>ONNX</b> ★ 9,423 LF AI &amp; Data Foundation</p>
 <p><b>OpenDS4All</b> ★ 138 LF AI &amp; Data Foundation</p>	 <p><b>Pyro</b> ★ 6,621 LF AI &amp; Data Foundation</p>	 <p><b>SOAJS</b> ★ 41 LF AI &amp; Data Foundation</p>	 <p><b>sparklyr</b> ★ 761 LF AI &amp; Data Foundation</p>	



# Very active community

Jan 1 - Nov 24

**8.01K**

Contributors

**205.89K**

Contributions

**97.60K**

Commits

**232**

Repositories

Source: <https://insights.lfx.linuxfoundation.org/projects/lfai>

# 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 & Data Technical Advisory Committee (TAC)** is an independent signal of the quality of your project
- › **Open and neutral governance model**
- › **Program and project management services**
- › **Access to full-time 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** including China and Japan

# Companies hosting projects in LF AI & Data

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

amazon

AT&T

Baidu 百度

data.world

DiDi

DREAMWORKS

FACEBOOK

Herron Tech

IBM

lyft

Microsoft

gojek

R Studio

SAMSUNG

Tech Mahindra

Tencent 腾讯

Uber

wework

ZILLIZ  
Reinvent Data Science

ZTE

# Why these top companies host with LF AI & Data?

## The Linux Foundation is the leading commons for community assets

- The Linux Foundation (LF) is a recognized and respected brand and can activate communications across tech, business, and social media channels.
- The LF is the largest open source foundation, providing management of community assets for over 400 projects:
  - Over 3,400 source code repositories.
  - Over 700 trademark registrations and applications, plus hundreds of unregistered marks.
  - Over 700 project domains and DNS records.
  - Over 12,000 Contributor License Agreements signed for project communities that decide to require one.
- The LF offers neutral sponsorship for managing fundraising.
  - Over 1,600 unique member company relationships.
- Our communities raised over \$100 million in 2019 via 6,500+ invoices.
  - Our communities spent funds in 180,000+ separate transactions in 2019.
  - The LF reports its audited financials to its board.

# Why incubate with us?

Building large, sustainable ecosystems requires collective resources



**Events** - We gathered over 45,000 attendees from over 12,000 organizations across 113 countries in 2019.



**Legal** - We manage IP for the world's most important tech and have one of the world's top open source legal teams in house.



**Training** - We trained millions of students (free and paid online), online skills certification, and on-site e-learning.



**Certification** - We designed and executed software and hardware testing and certification programs.



**Developer Marketing** - We have the largest share of voice of any open source foundation and a proven method to build large scale developer programs.



**Developer Operations** - We host the infrastructure that develops the world's largest software communities and provide release management, IT ops, and support.



**Application Security**- our projects are regularly audited and pen tested. We offer bug bounties, dependency analysis, and code scanning.

# Strong LF AI & Data Marketing/PR Effort

**37 announcements between LF AI and ODPI in 2019**

**27 announcements between LF AI and ODPI 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



# Events and Community

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





# Incubating Projects

- › 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](#)

# Joining LF AI & Data is Easy!



General Inquiries:

[info@lfaidata.foundation](mailto:info@lfaidata.foundation)

 **LF** AI & DATA