

# Overview of the LF Deep Learning Foundation

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 THE **LINUX** FOUNDATION

 **LF** DEEP LEARNING

# What is LF DL Foundation?

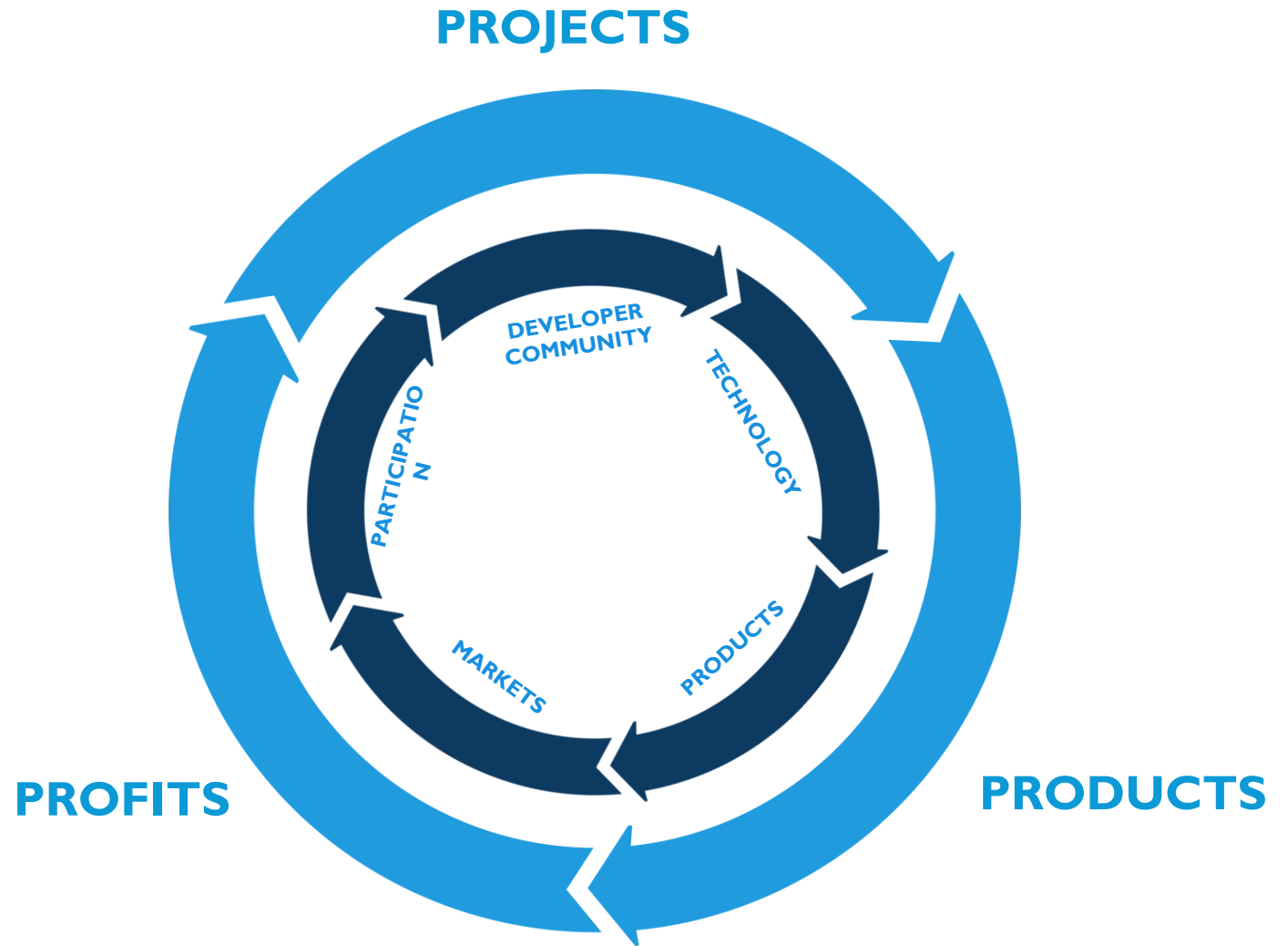
- LF DL is a Linux Foundation project founded in March 2018 to support collaboration and open source innovation in the AI, ML, and DL domains.
- LF DL members are collaborating to create a neutral space for harmonization and acceleration of separate technical projects focused on AI, ML, and DL technologies.

# Current Members



# LF DL: Creating a Sustainable Open Source AI Ecosystem

Successful open source projects depend on members, developers, standards and infrastructure to develop products that the market will adopt.



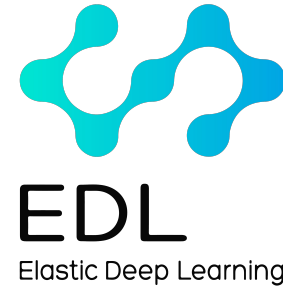
# Current Projects



Marketplace for ML models.  
<https://github.com/acumos>



A high-performance distributed ML platform based on Parameter Server, running on YARN and Apache Spark.  
<https://github.com/Angel-ML/angel>



A framework designed to help DL cloud service providers to build cluster cloud services using different DL frameworks.  
<https://github.com/PaddlePaddle/edl>



Distributed training framework for TensorFlow, Keras, and PyTorch.  
<https://github.com/uber/horovod>

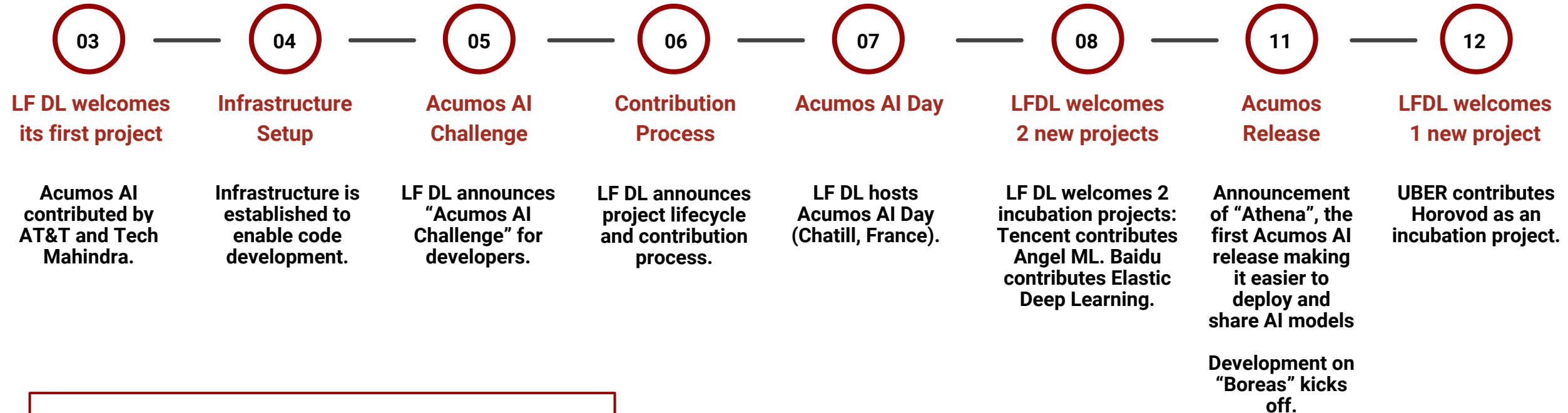
# 2018 Major Milestones

LF DL launches  
to drive growth  
and innovation in  
open source AI

LF DL hosts  
Acumos AI Day  
in NYC

LF DL releases  
its landscape  
(<https://l.lfdl.io>)

Acumos AI Day  
AI/ML/DL  
Landscape



<https://github.com/LFDLFoundation>



<https://lfdl.io>



[info@lfdl.io](mailto:info@lfdl.io)

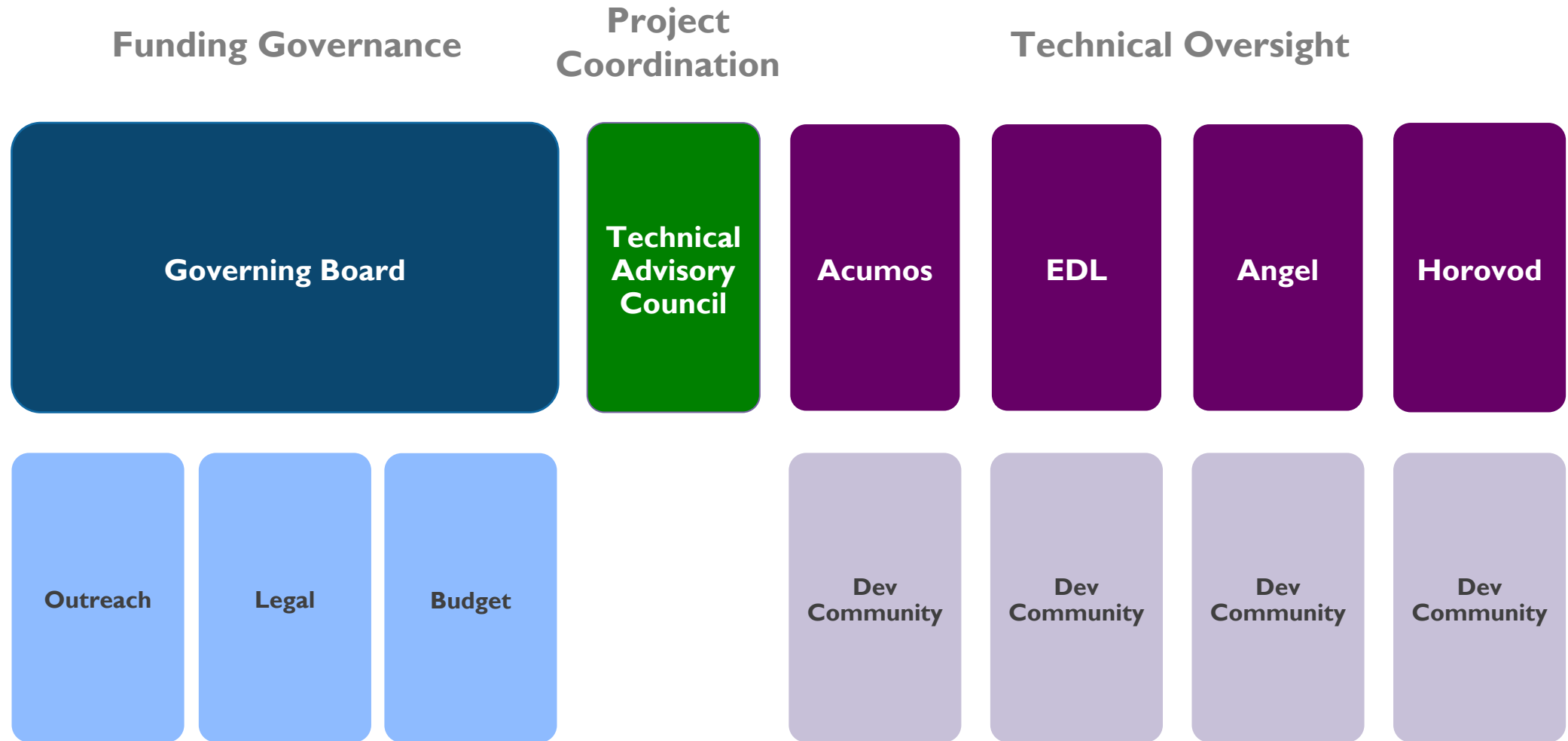


<https://l.lfdl.io>

# Governance and Structure 1/2

- › LF DL is a single funding effort to support technical projects hosted under in the Foundation.
- › Technical projects have their own technical governance following our principle of separation of technical governance from funding governance.
- › The Foundation's Charter is available from <https://lfdl.io>.

# Governance and Structure 2/2





# Hosting Projects under LF DL: Project Contribution Process

<https://github.com/LFDLFoundation/proposing-projects>

# Hosting a Project under an Open Source Foundation

- › There may come a time in the life of an open source project that the team considers moving it into an open source foundation.
  - › You believe the project will gain wider community adoption if it's no longer solely affiliated with the corporate partner.
  - › Several companies are working on very similar projects, and transferring management to an open source foundation would unite people under a common project.
  - › There are legal or administrative tasks essential to the health of the project, and it's not clear which current participant should own these tasks. These types of needs typically only arise after a project has already become reasonably established, with an active contributor community and often one or more dedicated corporate partners.

# On-boarding Projects into LF DL

- › Projects are on-boarded and progress pursuant to the LF Deep Learning Foundation's Lifecycle and Project Contribution Process Documents.
  - › Three stages: Incubation, Graduation and Archive.
  - › These documents can be found on GitHub:  
<https://github.com/LFDLFoundation/proposing-projects>

# LF DL Project Maturities

## › Incubation projects

Projects join LF DL as incubation by meeting the requirements set forth in the “Project Lifecycle Document”.

TAC Vote.

## › Graduate projects

Incubation requirements.

Additional requirements as set in the “Project Lifecycle Document”.

TAC Vote + GB Vote.

# Criteria to Accept Incubation Project Under LF DL

1. Submit a completed Project Contribution Proposal to the TAC
  - › Process and proposal are available on [Github](#) and on the LF DL web site
2. Present the project and the proposal to the TAC and, if requested, to the Governing Board
3. Be deemed by the TAC and Governing Board to fall within the mission and scope of LF DL Foundation and to add value to the AI/ML/DL space
4. Have an OSI-approved open source license
5. Agree to transfer any relevant trademarks to The Linux Foundation or its affiliate, LF Projects, LLC, and to assist in filing for any relevant unregistered ones

# Criteria to Accept Graduation Project Under LF DL

In addition to the Incubation stage requirements, a project must meet these requirements:

1. Have a healthy number of committers from at least two organizations\*
2. Have achieved and maintained a [Core Infrastructure Initiative Best Practices Badge](#)
3. Demonstrate a substantial ongoing flow of commits and merged contributions
4. Document current project owners and current and emeritus committers in OWNERS.md and COMMITTERS.md files
5. A copy of the project's charter (or other governance document) shall be included or linked to in a GOVERNANCE.md or in a similar file
6. Have a technical lead appointed for representation of the project to the TAC
7. Receive the affirmative vote of 2/3 of the TAC and the affirmative vote of the Governing Board



LF Deep Learning has a modular approach to hosting projects.

Think of LF Deep Learning as a greenhouse growing and sustaining open source AI/ML/DL projects from seed to fruition. The Linux Foundation and LF Deep Learning provide the infrastructure and support for open development to occur among a diverse and thriving community, in addition to a number of enabling services (legal, PR/marketing, events, compliance scans, etc.).

# Benefits of Hosting Projects at the LF DL Foundation

1. Maintain your committers and define your own project governance (as long as its neutral)
2. A not-for-profit, neutral home increases contributions from external organizations
3. LF DL staff eager to assist (Executive Director, Project Manager, IT staff, PR, marketing, events, etc.)
4. LF DL blog announcement or similar announcing the inclusion of the project
5. Infrastructure resources (wiki, build, jira, mailing lists, support staff, etc.)
6. Neutral hosting of the project's trademark
7. An initial license scan of the project's codebase
8. Cross pollination opportunities with other LF DL projects
9. Endorsement by LF DL Technical Advisory Committee (TAC) - Appointment of an existing TAC member as a sponsor of the project and provide recommendations regarding governance best practices
10. Right to refer to the project as a "LF Deep Learning Foundation Project," with the right, subject to applicable trademark usage guidelines, to display the Deep Learning logo on the project's code repository
11. Graduation stage may receive support as determined by the Governing Board



# LF DL Core Support Areas for Projects

- › Offer a legal framework for IP and trademark management in which commercial companies can work with open source projects and contributors.
- › Offer technical services, such as software repositories and issue tracking, mailing lists, file servers, code signing certifications, technical mentorship, etc.
- › Offer support with business operations and governance, which includes financial and banking services, membership management, communications and PR around projects, and event services.

# Contact Us!

- › LF DL is actively reaching out to open source AI/ML/DL projects for contribution and collaboration. If you have a project that could benefit from:
  - › Community building
  - › Marketing and brand outreach strategies
  - › Developer support
  - › Collaboration with other projects
- › Please reach out to us!
  - › [info@lfdl.io](mailto:info@lfdl.io)
  - › [@IbrahimAtLinux](https://twitter.com/IbrahimAtLinux)

# Joining the LF Deep Learning Foundation

# Membership Benefits

Organizations join LF DL because they want to take an active role in supporting the growth and evolution of the open source **AI/ML/DL** ecosystem.

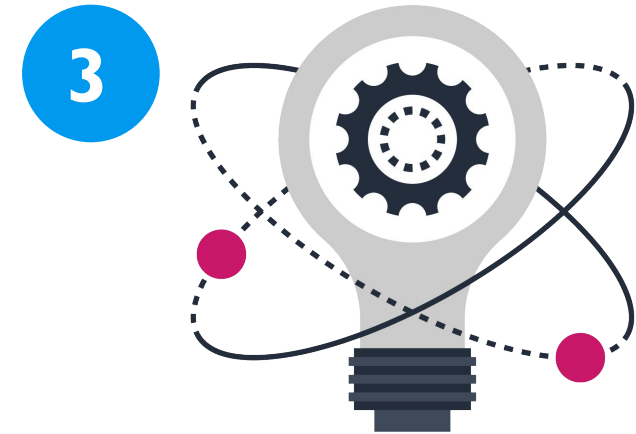
## LF DL Membership Provides:



Marketing Amplification  
and Brand Awareness



Community Engagement



Thought Leadership

# LF Deep Learning Foundation Annual Dues

	Not Yet a Linux Foundation Member	Existing Linux Foundation Member
Premier Member	\$120,000	\$100,000
General Member	5,000 employees +: \$45,000 2,000 - 4,999: \$30,000 500 - 1,999: \$25,000 Up to 499 employees: \$10,000	5,000 employees +: \$25,000 2,000 - 4,999: \$15,000 500 - 1,999: \$10,000 Up to 499 employees: \$5,000

# General Membership

Targeted for organizations that want to put their organization in full view in support of LF DL and our mission. Organizations that join at the General level are deeply committed to using open source technology, helping LF DL grow, voicing the opinions of their customers, and giving back to the community.

## General members are eligible to:

- Participate in elections to appoint one (1) representative to the LF DL Governing Board per every ten (10) General members, up to three (3) maximum General representatives.
- Receive greater insight into LF DL strategy and project roadmaps through increased engagement with the LF DL Executive Director and staff.
- Create an individualized press release upon membership announcement with the LF DL PR team.
- Participate in all Marketing, Community, Thought Leadership opportunities.
- Demonstrate your support for LF DL by displaying your logo on the LF DL website and in marketing materials.

# Premier Membership

Highest tier of membership – For organizations who contribute heavily to open source AI, ML and DL and bring in their own projects to be hosted at the Foundation. They work in concert with LF DL + LF team members. These companies want to take the most active role in enabling open source AI, ML and DL.

## Premier members are eligible to:

(Enjoy all the benefits of General level, plus;)

- Appoint one (1) representative to the LF DL Governing Board.
- Appoint one (1) representative as a voting member in any subcommittees or activities of the Governing Board.
- Enjoy most prominent placement in displays of membership including on the website and in marketing materials.
- Increased access to Linux Foundation's invitation-only Open Source Leadership Summit.
- Create an individualized press release upon membership announcement with the LF DL PR team.
- Receive ongoing, individual engagement and guidance from LF DL Executive Director and staff.

The logo icon is a white square with a stylized landscape inside. It features a dark blue circle representing the sun or moon, and two light blue mountain peaks. The square has a thick white border.

# LF DEEP LEARNING Landscape



# LF Deep Learning Foundation – Interactive Landscape

This landscape is intended as a map to explore open source artificial intelligence, machine learning, and deep learning projects; it also features the member companies of the LF Deep Learning Foundation.

<https://l.lfdl.io>

Please [open](#) a pull request to correct any issues.

CNCF Cloud Native Interactive

https://landscape.fdl.io/grouping=no

Primary Bookmarks LF Tools LF Research LF DL HBS AI References LF Compliance Github NEXT ML Workflow 961 Online training for... Other Bookmarks

LF DEEP LEARNING Landscape

Reset Filters

Grouping: No Grouping

Sort By: Alphabetical (a-z)

Category: Any

LFDL Relation: Any

License: Any

Organization: Any

Headquarters Location: Any

Example filters: Open source by age Landscape categories Open source by stars Group by location Sort by MCap/Funding Download as CSV

Kubeflow: CloudNative May 20 23 Barcelona, Spain

TensorFlow: Google June 24 26 1 Shanghai, China

LF Deep Learning Foundation Interactive Landscape

The LF Deep Learning Foundation landscape (png, pdf) is dynamically generated below. It is modeled after the CNCF landscape and based on the same open source code. Please open a pull request to correct any issues. Greyed logos are not open source. Last Updated: 2019-01-07 02:22:58Z

You are viewing 124 cards with a total of 657,161 stars, market cap of \$3.22T and funding of \$47.4B.

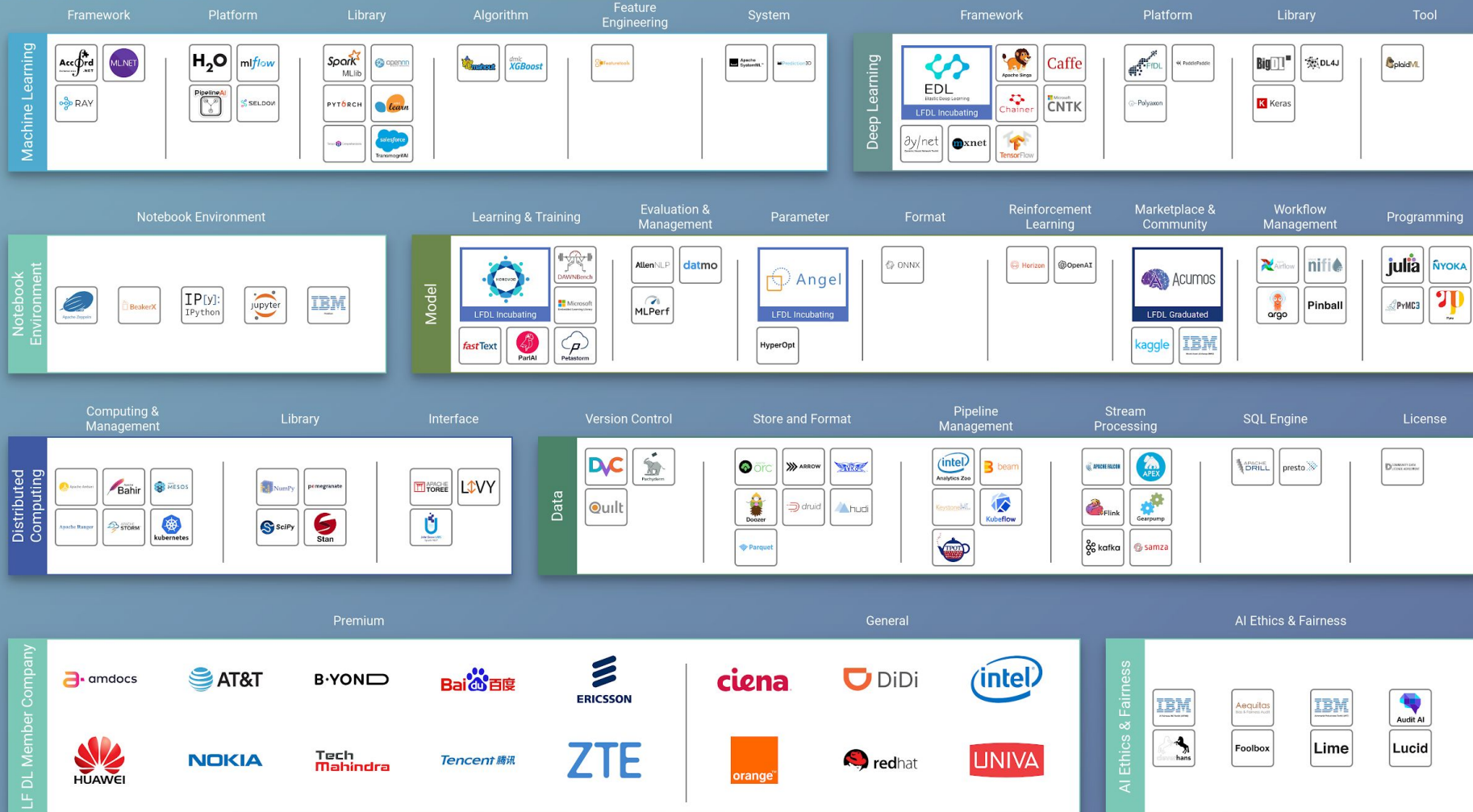
Card Mode Landscape

No Grouping (124)

 Accord.NET Accord.NET Framework ★3,221	 Acumos LF Deep Learning Foundation ★4	 Adversarial Robustness Toolkit IBM ★10	 Aequitas Bios & Fairness Audit ★9	 AI Fairness 360 Toolkit IBM ★388	 AllenNLP Allen Institute for Artificial Intelligence ★4,898	 Amdocs ★148	 Analytics Zoo Intel ★332	 Angel LF Deep Learning Foundation ★3,892	 Apache Airflow Apache Software Foundation ★10,460	 Apache Ambari Apache Software Foundation ★998	 Apache Bahir Apache Software Foundation ★189	 Apache Drill Apache Software Foundation ★1,086	 Apache Falcon Apache Software Foundation ★87	 Apache Mesos Apache Software Foundation ★3,997
 Apache Nifi Apache Software Foundation ★1,233	 Apache ORC Apache Software Foundation ★199	 Apache Ranger Apache Software Foundation ★206	 Apache SINGA Apache Software Foundation ★1,540	 Apache Storm Apache Software Foundation ★5,484	 Apache SystemML Apache Software Foundation ★732	 Apache Toree Apache Software Foundation ★565	 Apache Zeppelin Apache Software Foundation ★3,925	 Apex Apache Software Foundation ★304	 Argo Intuit ★2,231	 Arrow Apache Software Foundation ★3,050	 AT&T ★221B	 Audit AI Pyometrics ★566	 Avro Apache Software Foundation ★1,096	 B-YOND Byond ★2.6M
 Baidu ★56.1B	 BeakerX Two Sigma ★1,988	 Beam Apache Software Foundation ★2,440	 BigDL Intel ★2,751	 Caffe University of California, Berkeley ★26	 Chainer Preferred Networks ★4,413	 Ciena ★5,418	 CleverHans CleverHans Project ★3,344	 CNTK Microsoft ★15,643	 Community Data License Agreement (CDLA) The Linux Foundation ★0	 datmo ★215	 DAWN Bench Stanford University ★163	 DiDi ★20.6	 Doozer ★3,058	 Druid Apache Software Foundation ★7,438
 DVC ★1,667	 dynamic neural network toolkit ★2.6	 DL4J ★10.1	 EDL ★26	 Embedded Learning Library Microsoft ★1,917	 Ericsson ★328.45	 fastText Facebook ★17,043	 Featuretools ★1,043	 fDL IBM ★433	 Flink Apache Software Foundation ★5,608	 Foolbox University of Tübingen ★774	 Gearpump Apache Software Foundation ★305	 H2O.ai ★3,704	 Horizon Facebook ★1,647	 Horovod LF Deep Learning Foundation ★4,896
 HUAWEI Huawei Technologies	 hudi Uber ★356	 HyperOpt ★2.9	 Intel ★216B	 IPython ★13,252	 Julia ★19,459	 Jupyter Notebook ★5,153	 Kafka Apache Software Foundation ★10,688	 Kaggle Google ★1,969	 Keras ★37,116	 Keystone ML ★566	 Kubeflow ★5,514	 Kubernetes ★46,475	 LIME ★57	 Livy ★225
 Lucid ★2,002	 mahout ★1,582	 ML.NET ★4,724	 mlflow ★22	 MLlib ★20,127	 MLPerf ★647	 MXNet ★15,940	 Nokia ★32.9B	 NumPy ★9,150	 NYOKA ★32	 ONNX ★5,225	 OpenAI Gym ★14,972	 OpenNN ★581	 Orange ★43.3B	
 Pachyderm ★5	 PaddlePaddle ★4,020	 PariAI ★396B	 Parquet ★424	 Petastorm ★52	 Pinball ★95	 PipelineAI ★3	 PixieDust ★713	 PloidML ★1,689	 Polyaxon ★1,748	 Pomegranate ★1,774	 PredictionIO ★11,613	 Presto ★3,857	 PyMC3 ★5,814	 Pyro ★4,844
 PyTorch ★23,491	 Quilt Data ★697	 RAY ★5	 redhat ★30.8B	 samza ★503	 SciKit-learn ★32,680	 SciPy ★5,272	 Seidon ★619	 Spark ML ★512	 Stan ★1,462	 Tech Mahindra ★386B	 Tencent ★386B	 Tensor Comprehensions ★117.9	 TensorFlow ★5,074	 TPOT ★5,074
 Salesforce ★14,549	 UNIVA ★54.8M	 dmlc XGBoost ★14,549	 ZTE											

Crunchbase data is used under license from Crunchbase to CNCF. For more information, please see the [license](#) info.

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[l.lfdl.io](https://l.lfdl.io)

This landscape is intended as a map to explore open source artificial intelligence (AI), machine learning (ML), and deep learning (DL) projects, and also shows the member companies of the LF Deep Learning Foundation.

LF DEEP LEARNING  
Landscape

LF  
DEEP LEARNING

# Joining LF DL Foundation is easy!

Please follow up with [Ibrahim Haddad](#)

Web site: <https://lfdl.io>

Landscape: <http://l.lfdl.io>

GitHub: <https://github.com/LFDLFoundation>