



The Power of Together

Antitrust Policy Notice

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Antitrust Policy Notice

The Linux Foundation is a **pre-competitive** platform that

Examples of typical connections with other organizations include the Linux Foundation's Antitrust Policy, which provides legal counsel to the Linux Foundation. If you have questions about these matters, please contact your company counsel, or if you are a member of the Linux Foundation, feel free to contact Andrew Updegrove of the firm of Gesmer Updegrove LLP, which provides legal counsel to the Linux Foundation.

The Linux Foundation is a **pre-competitive** platform that enables cooperation and leveraged development.

Remove carbon from our **power, buildings,**
and **transportation** systems to provide **75%**
of the reduction in CO² emissions that we
need to stay below 1.5°C

Design Challenge

Not enough time

Not enough resources

We need interoperability

And, no vendor lock-in

A photograph of a bright blue sky with scattered white clouds. A large, bright sun is visible in the upper left quadrant, casting a warm glow. In the lower right quadrant, there is a large, fluffy white cloud.

Providing a 21st century plan of action to decarbonization through open source, open frameworks, reference architectures, and a support ecosystem of complementary projects.

LF Energy Members

Strategic



Le réseau
de transport
d'électricité



General



HITACHI
Inspire the Next



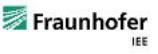
Associate

Carbon Co-op



EPRI

ELECTRIC POWER
RESEARCH INSTITUTE



Lucerne University of
Applied Sciences and Arts
HOCHSCHULE LUZERN



LF Energy Projects (+1)



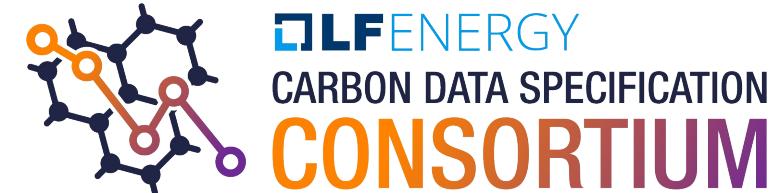
LF ENERGY
FlexMeasures



LF ENERGY
OpenSTEF



LF ENERGY
**FLEDGE
POWER**



LF ENERGY
CARBON DATA SPECIFICATION
CONSORTIUM



LF Energy Project growth



2018



2019



2020



2021

Forecasting Exponential Growth



OCPP Cloud
Connector



100s of projects
R & D Sandboxes
A thousand members
10s of thousands of developers

2022

2023

2024

2025

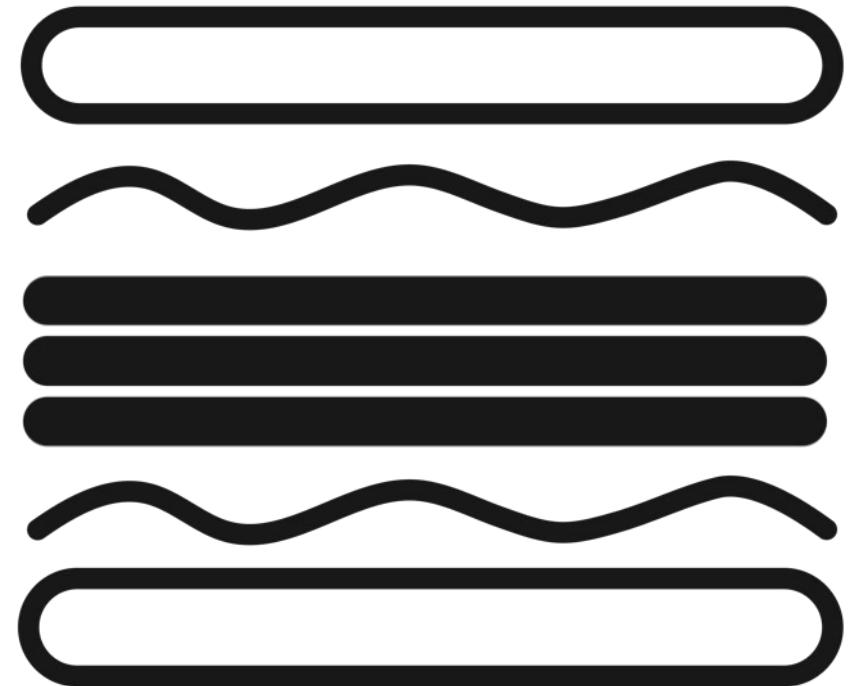


THE
LINUX
FOUNDATION



Open Source
is simply defined as a permissive IP license
that enables shared investment
and leveraged development

Today open source generally comprises 80-90% of a modern system's total codebase



Use Open Source
Libraries to Solve Problems
Open Source Code (~70%)

Write Custom Code
Custom Code (~10%)

Choose a Reference
Implementation
Open Source Code (~20%)

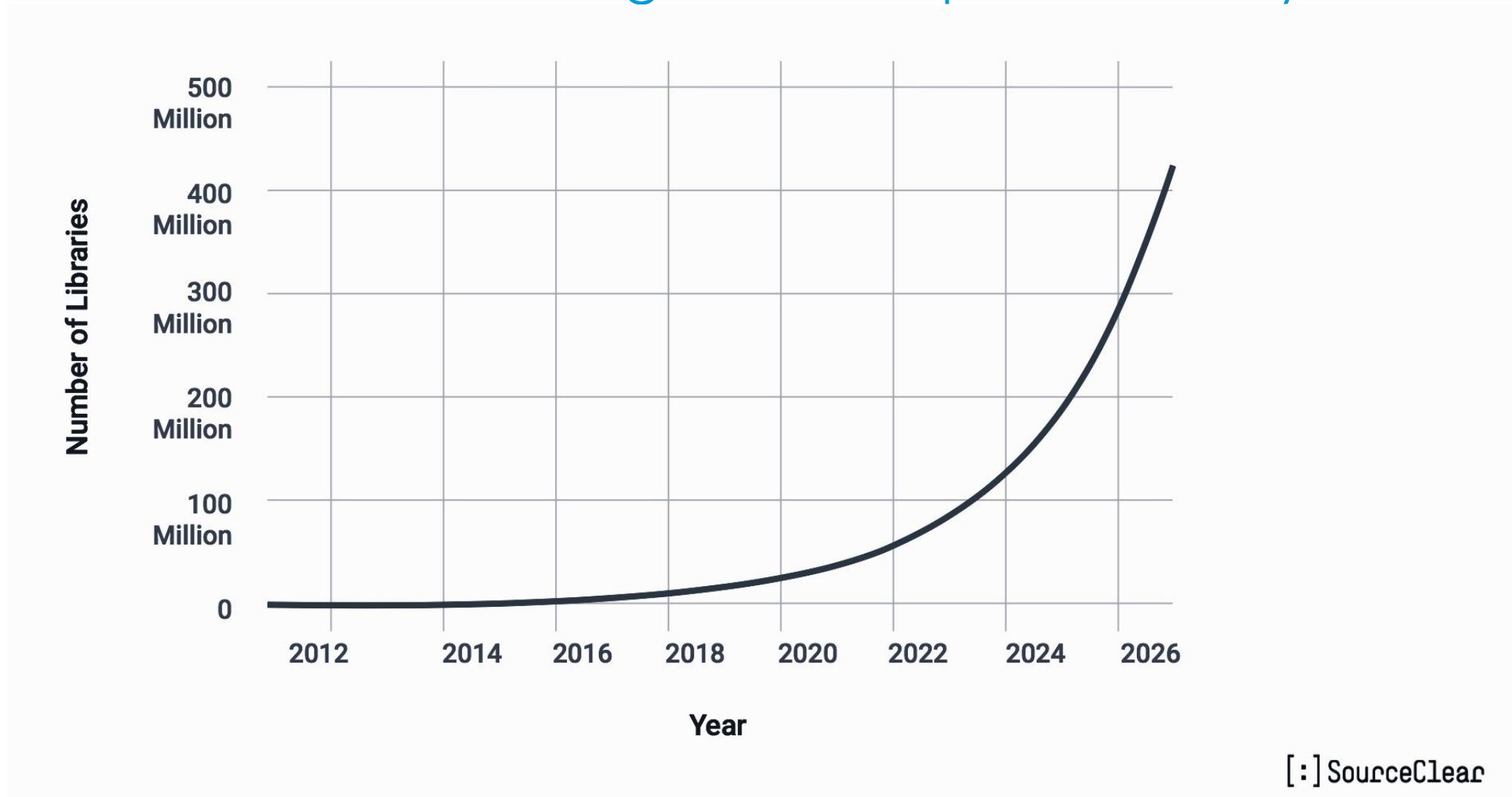
Hundreds of monitored projects, 1B lines of code



24.4M Lines of Code Added Weekly	14.4M Lines of Code Removed Weekly	722,330 Technical Contributors	118,556 Ecosystem Contributors	12,925 Contributing Companies
12.2M Commits	1.4M Pull Requests	2.1M Builds Monitored	933,150 Logged Issues	11.2B Container Downloads
4.4M Email Messages	5.1M Chat Messages	32,517 CLA Contributors	82,939 Event Attendees (12 months)	1100+ Project Domains
				28,028 Community Meetings

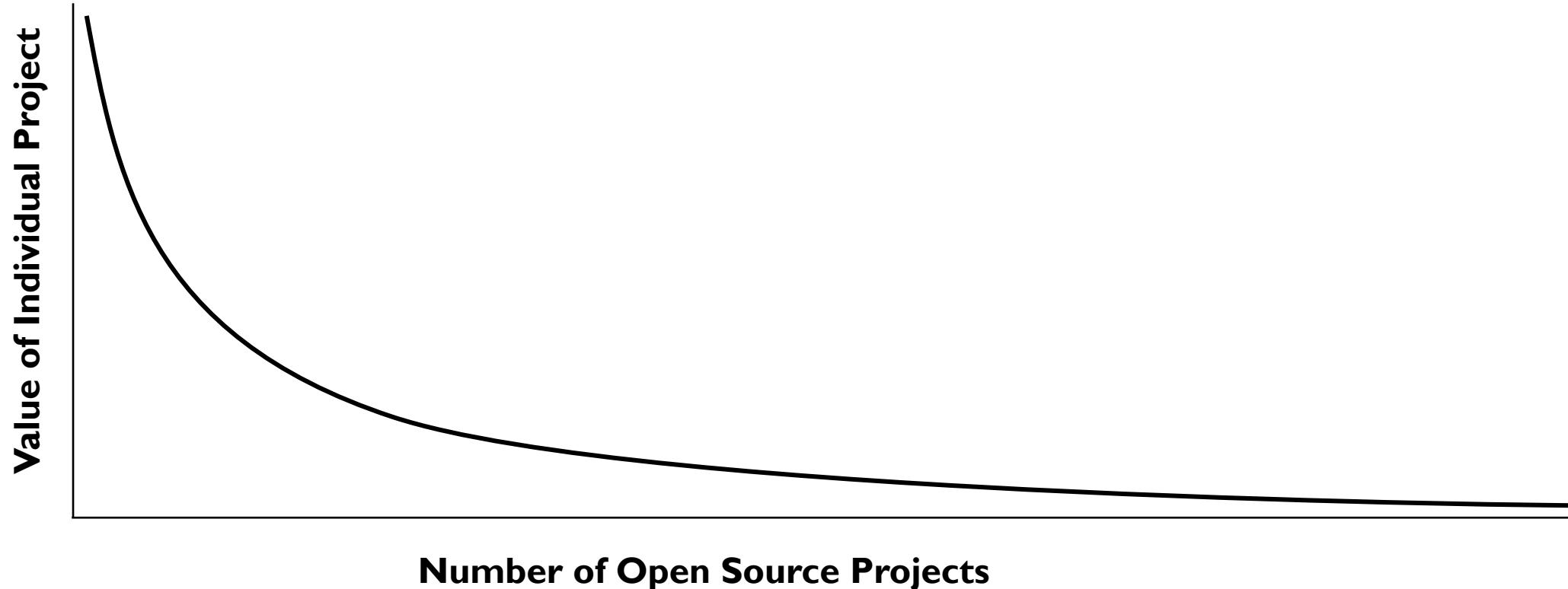
The Power of Together

Open Source is on an exponential growth curve, developers use it as a universal building block for production systems

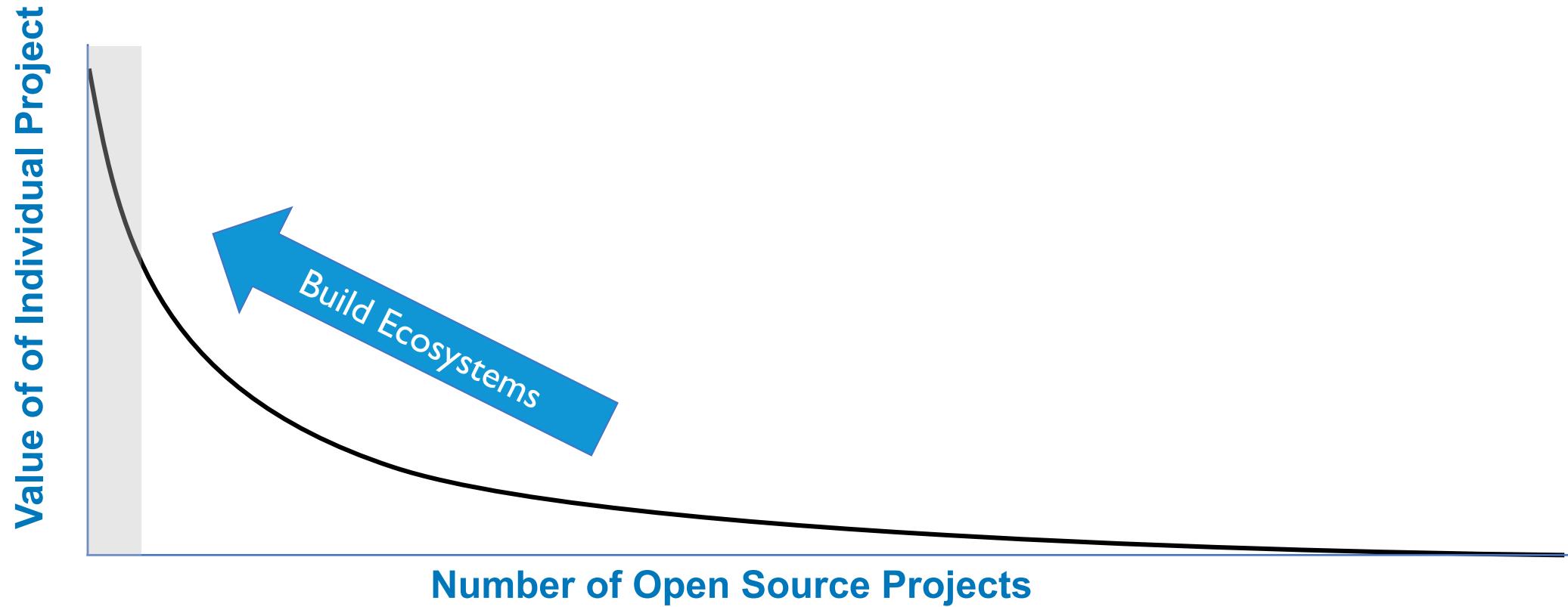


[:] SourceClear

There are millions of open source projects and growing. But not all projects are the same

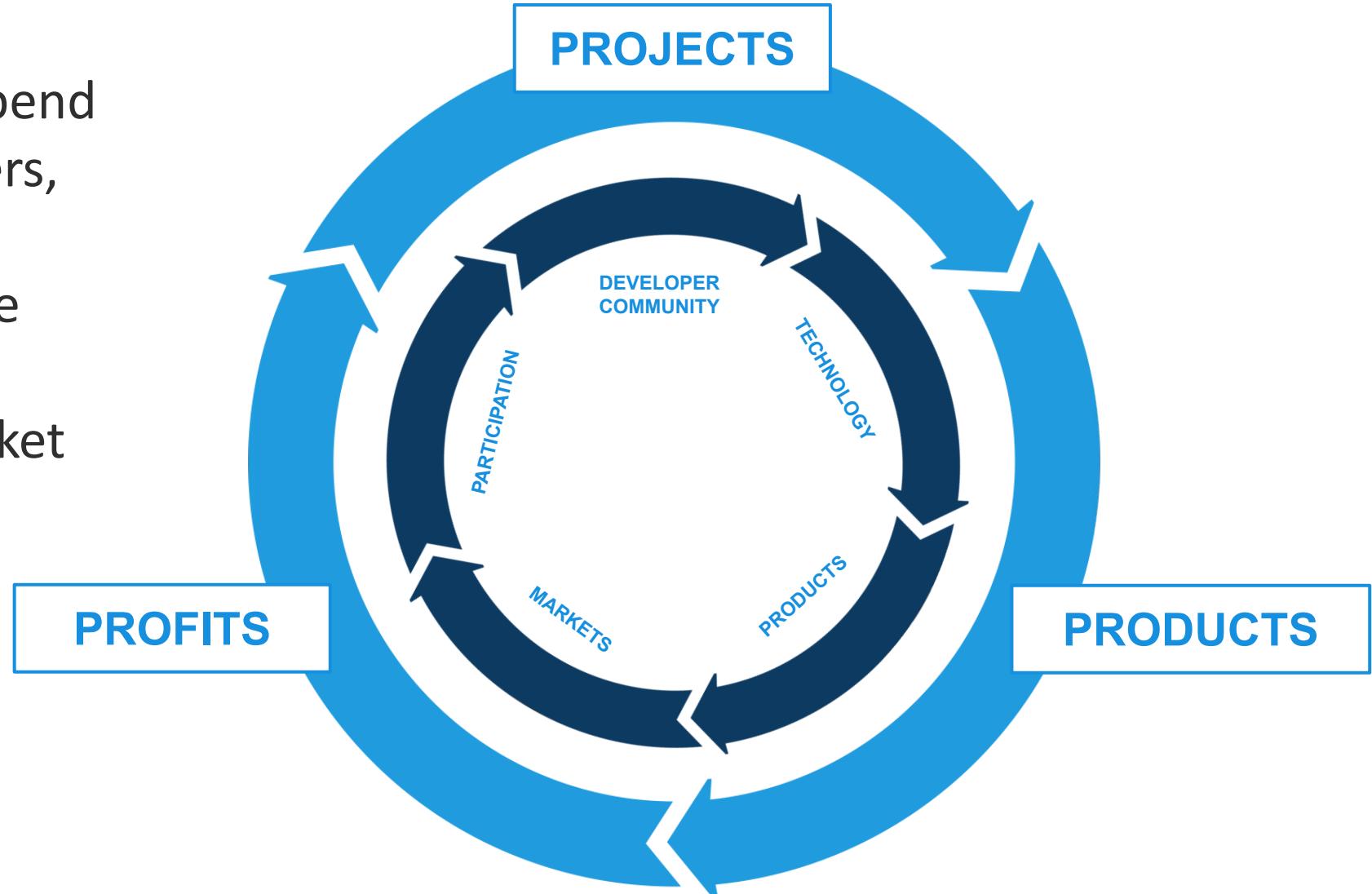


Projects that are **critical to society and industry**
need healthy, neutral ecosystems



Our goal is to ignite a positive feedback loop of sustainability

Successful projects depend on members, developers, standards, and infrastructure to enable commercialization pathways that the market will adopt



The Linux Foundation provides unparalleled ecosystem support

Support and Resources

Self Service

- FAQ
- Forum
- Knowledgebase
- Onboarding

Community/Responsive

- Slack/IRC
- Email
- Stackoverflow
- IT operations/Release Mgmt

IT Beyond Version Control

- CI/CD technical architecture design
- CI environment delivery
- Release engineering services
- Project planning, build & system go-live
- Delivery of project collaboration solutions, domain registrations & websites

Marketing Programs

- Advocate/Influence Programs
- Rewards/Recognition
- Startup/Incubator Engagement
- Student programs
- PR/AR

Content

Technical

- Code samples
- Getting started guides
- How to's/FAQ
- API/SDK

Research

- Use cases/Case Study
- Whitepapers
- Blogs
- Webinars
- Articles

Value

- Define problem project/code solving
- Recruit widely deployed projects/communities
- Curate projects with natural adjacency to existing project
- Demonstrate where project fits in to broader tech innovation

Neutral Management

- Provide home for IP assets
- Define a governance structure for decisions
- Separate business decisions from technical
- Curate sense of identity superseding individuals or firms
- Maintain IT infrastructure

Developer Recruitment and Relations

In person

- Meetups
- Events
- Hackathons
- 3rd Party Events
- Evangelism

Online

- Email lists and calls/meetings
- IRC/Slack
- Github, Gitlab, etc.
- Stackoverflow
- 3rd party repos

Training

Engage

- Massive Open Online Course (EdX)
- Webinars
- Snackable learning

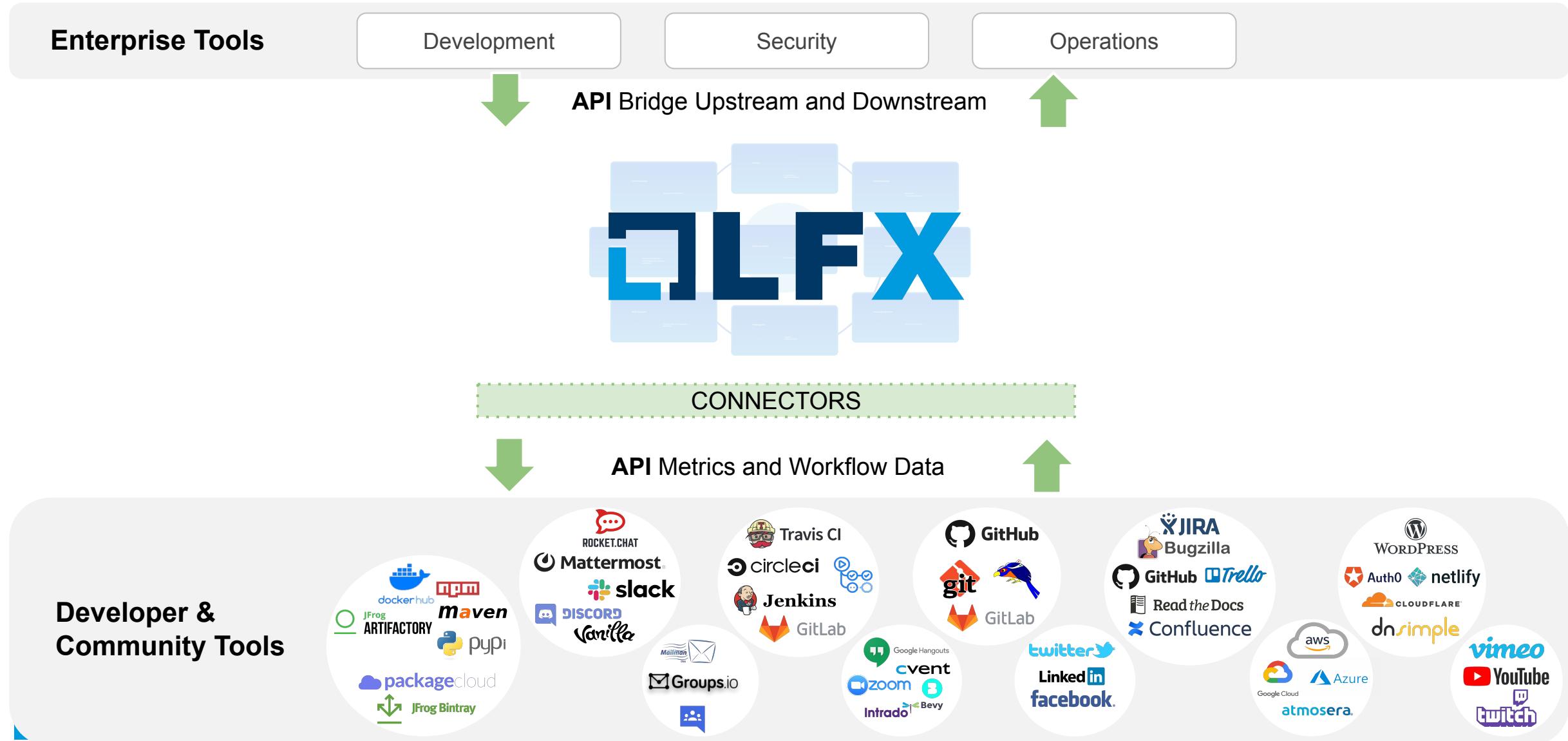
Train

- eLearning
- Classroom learning
- Subscription learning

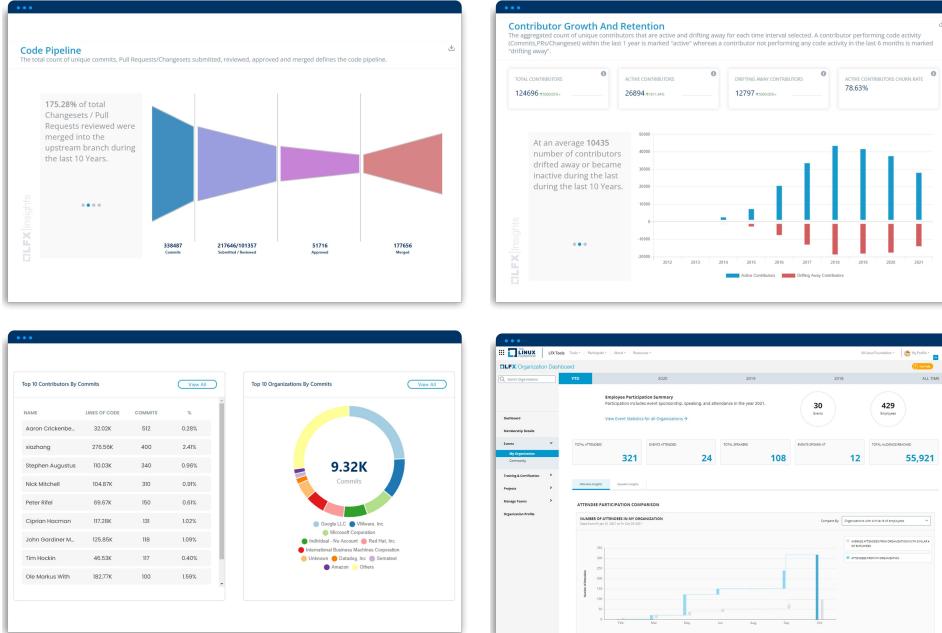
Certify

- Skills based testing
- Ongoing engagement

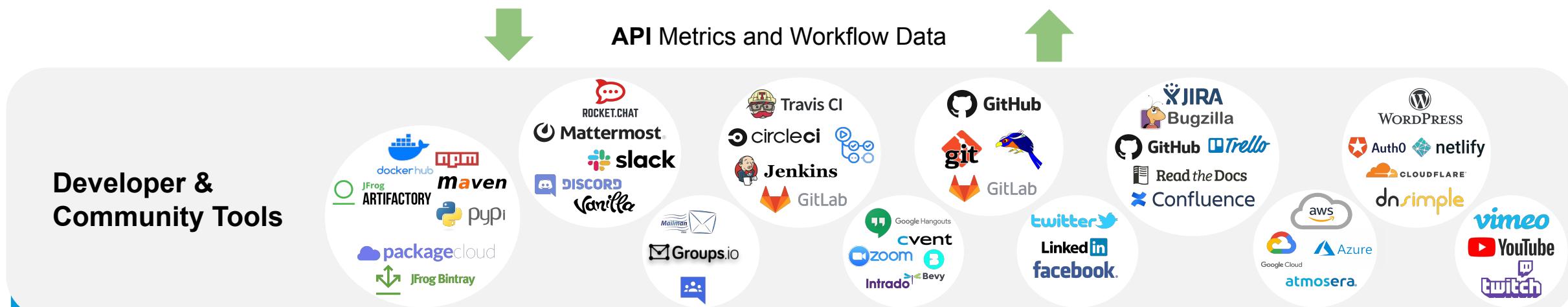
What enables our success is the LFX platform - designed from the ground up for scale and extensibility



Focused on impact & outcomes while being non-intrusive to development process



- ✓ Identify developer pipeline bottlenecks
- ✓ Measure and reduce contributor churn
- ✓ Benchmark against leaders
- ✓ Measure reach at events
- ✓ Analyze social media outreach
- ✓ Drive investments to improve security



Watch this short overview video on LFX



Our highest concern?

Institute tooling that supports secure coding practices

What impacts code security?

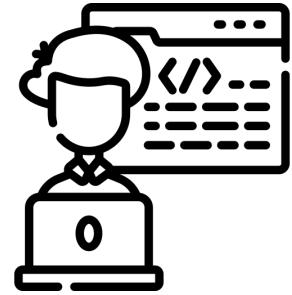
Most project maintainers are **not** security experts



Project Maintainers simply do not have the time to focus on code security – which includes finding and fixing vulnerabilities

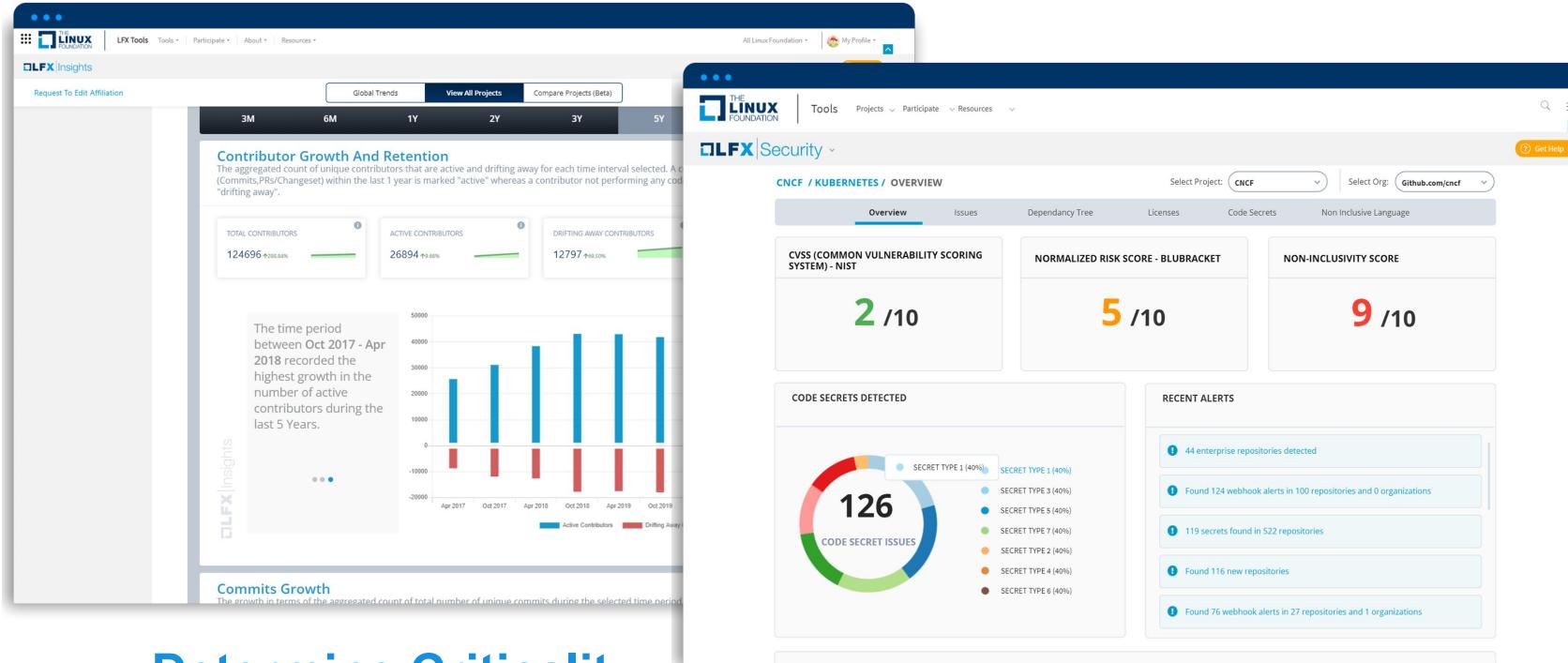


Identifying and activating the security engineers needed to address code vulnerabilities is very difficult for most Project Maintainers.



Maintainers understand that code security is important – but priority is given to project functionality and not on a mature security posture.

How we are addressing this challenge with LFX?

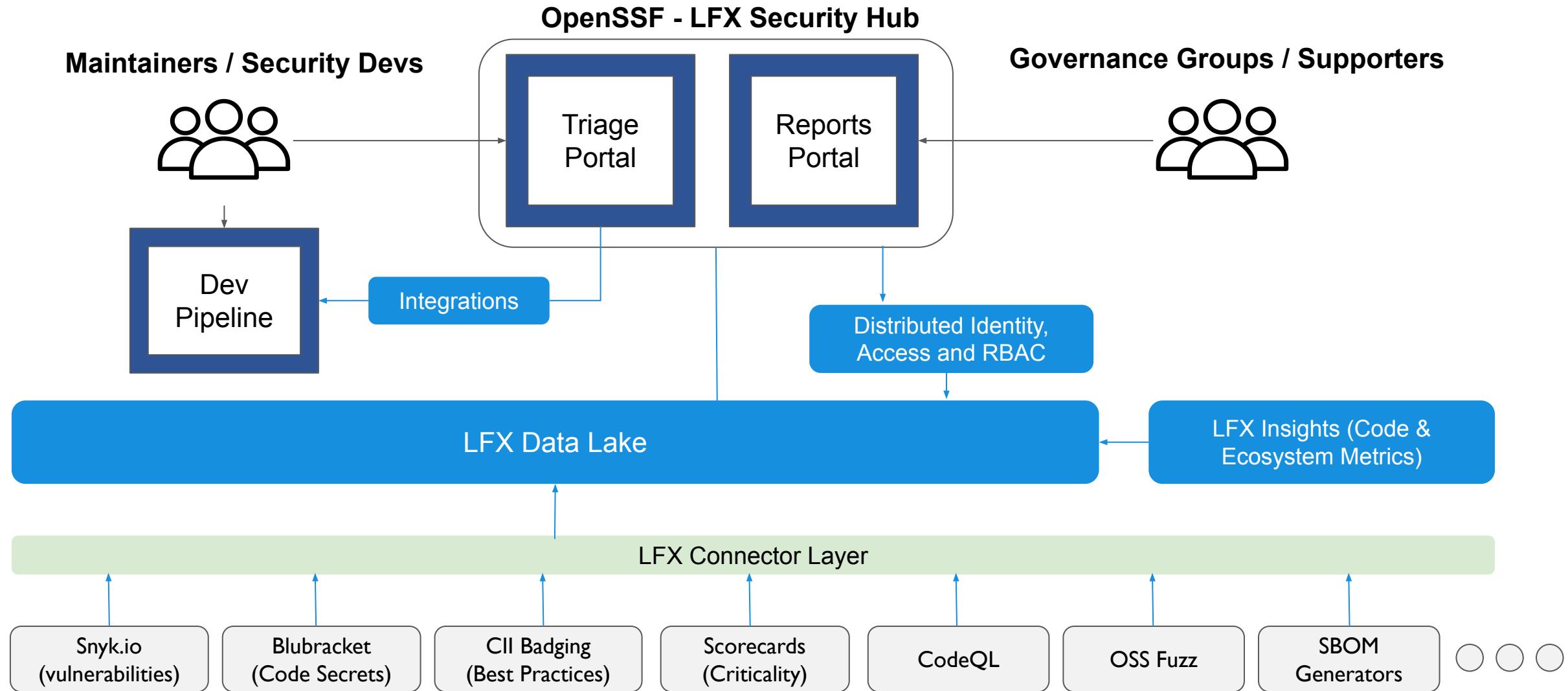


Determine Criticality
LFX Insights

Prioritize Real Issues
LFX Security

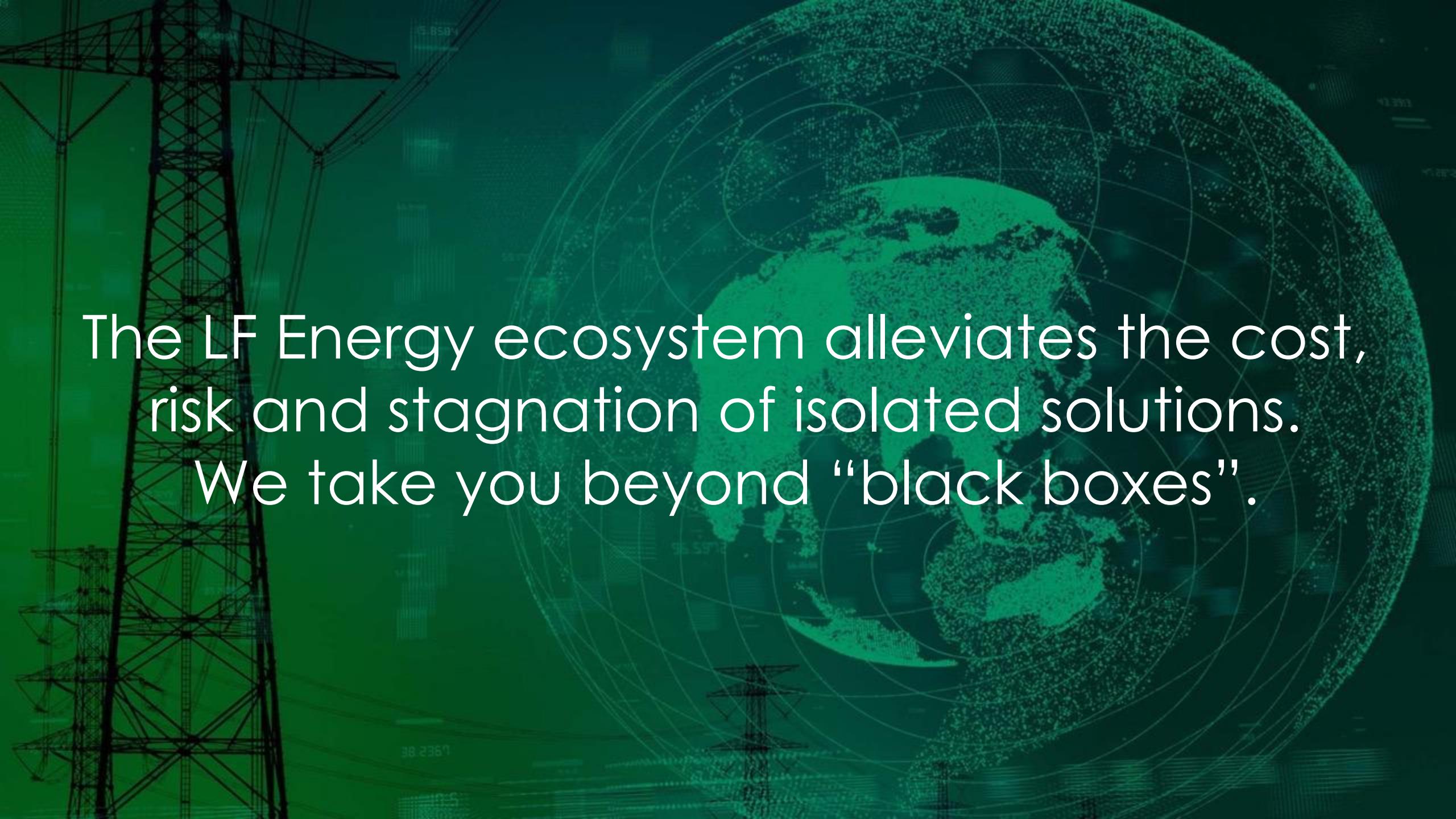
Drive Results With Investment
LFX Crowdfunding

Through LFX Security, LF Energy leads with Secure by Design



Watch this short video on LFX Security

[https://drive.google.com/file/d/1u4QwvZeWVAN6AiYP42B7
wp9DUAmu4NDW/view?usp=sharing](https://drive.google.com/file/d/1u4QwvZeWVAN6AiYP42B7wp9DUAmu4NDW/view?usp=sharing)



The LF Energy ecosystem alleviates the cost, risk and stagnation of isolated solutions.
We take you beyond “black boxes”.



Isolation and going
it alone are no longer viable.



We need speed, scale,
enhanced security, accelerated
innovation, and global talent.

A photograph of a massive flock of birds, likely starlings, captured in flight against a warm, orange and yellow sunset sky. The birds are concentrated in the upper half of the frame, forming a dense, swirling mass. In the lower right corner, the dark silhouettes of bare trees are visible against the bright sky.

We need mass collaboration.

LF ENERGY



OUR COMMITMENT

To achieve our climate and energy transition goals we have joined together to create a common functional architecture defining a fit-for-the-future grid. Our goal is a common understanding of required functional capabilities. The architecture starts with a top-level view and progresses to a finer granularity. The final slide shows existing and near-future LF Energy projects fits into this architecture.

This is a start. We want your feedback and involvement. With this we proclaim a commitment under LF Energy to find shared strategic dependencies. By utilizing open source we can accelerate a technology revolution that enables rapid decarbonization by digitalizing the global energy grid. We see that cooperation and working together is the only path to individual and collective success.

Join us.

Capabilities related to customer and markets and other third parties

Capabilities related to managing the physical flow and balance of a power system

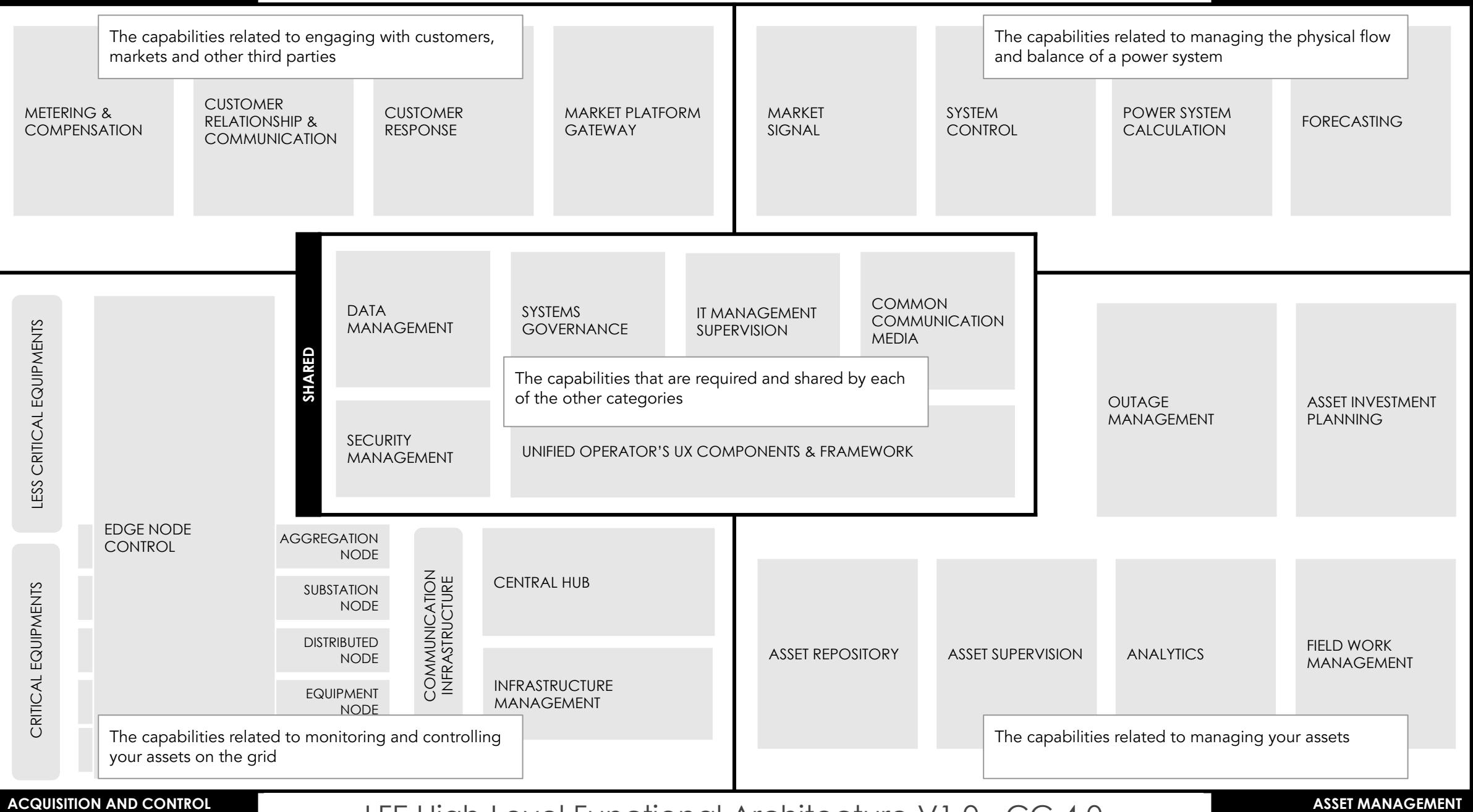
This is the top-level view that shows the five main “blocks” of the functional architecture that we also call categories.

SHARED

Capabilities that are required by each of the other categories

Capabilities related to monitoring and controlling your assets on the grid

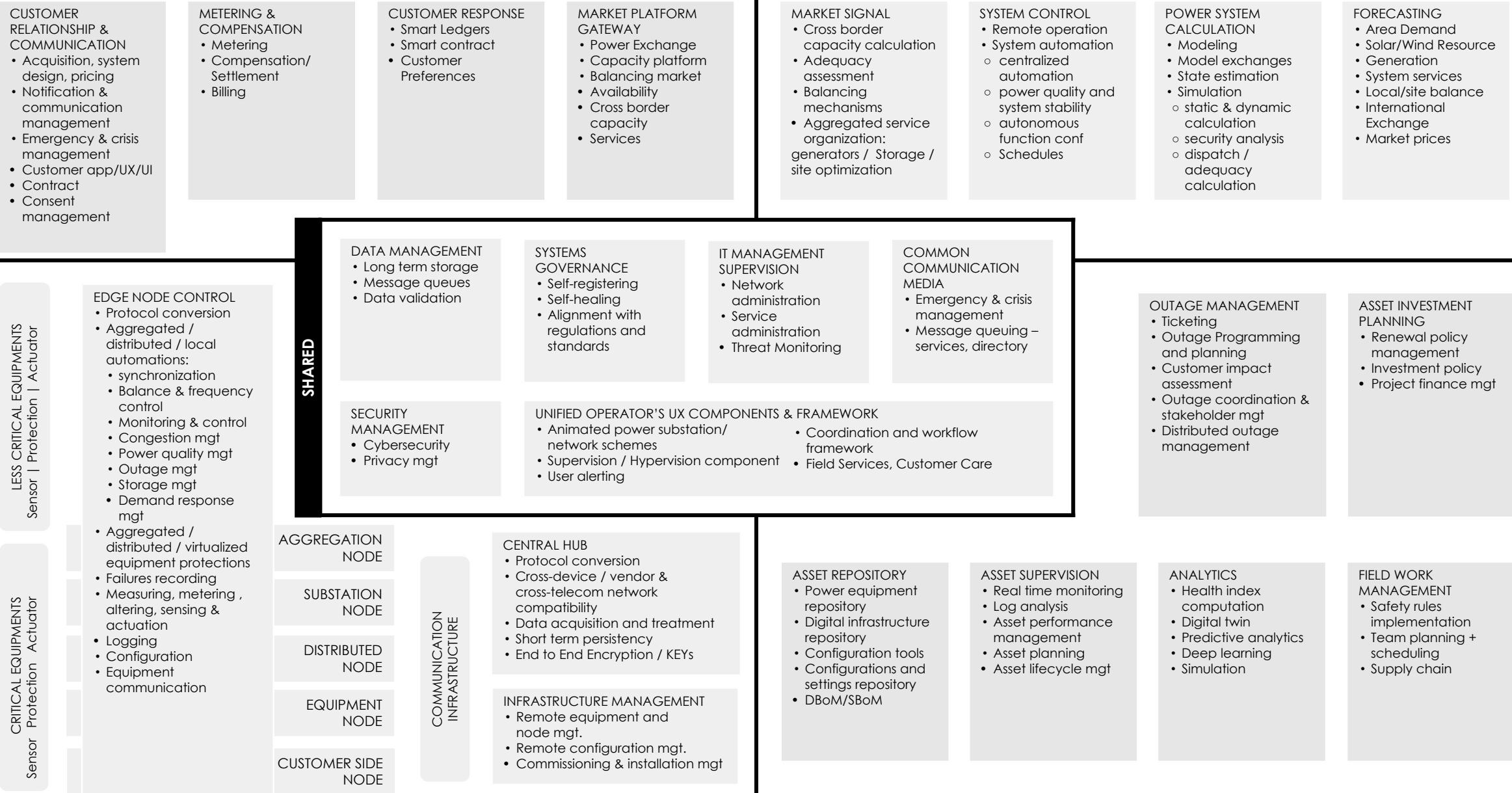
Capabilities related to managing your assets



This is the framework for the LF Energy Application Catalogue

CUSTOMER & MARKET

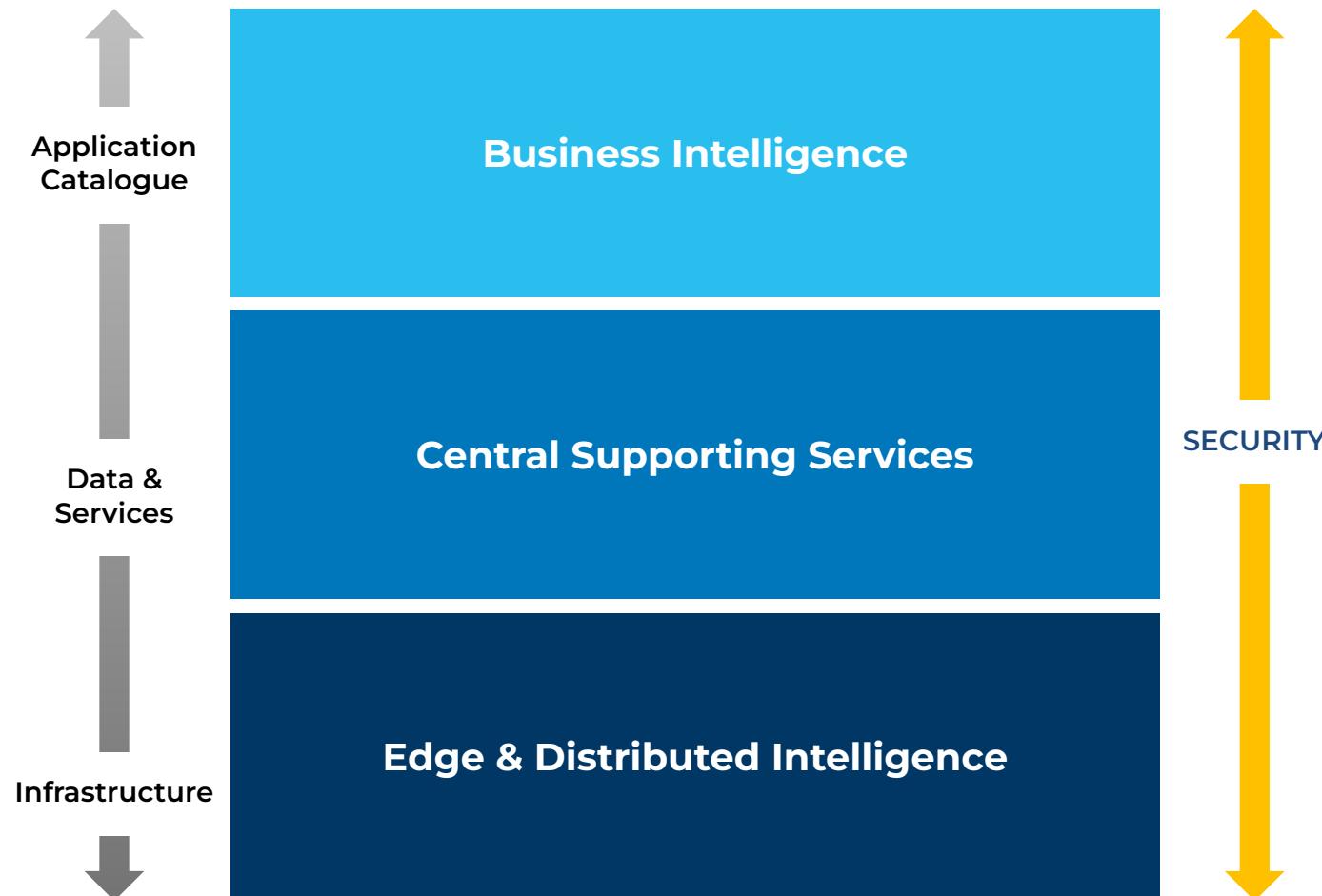
SYSTEM MANAGEMENT



ACQUISITION AND CONTROL

ASSET MANAGEMENT

LFE High-Level Functional Architecture V1.0 - CC 4.0



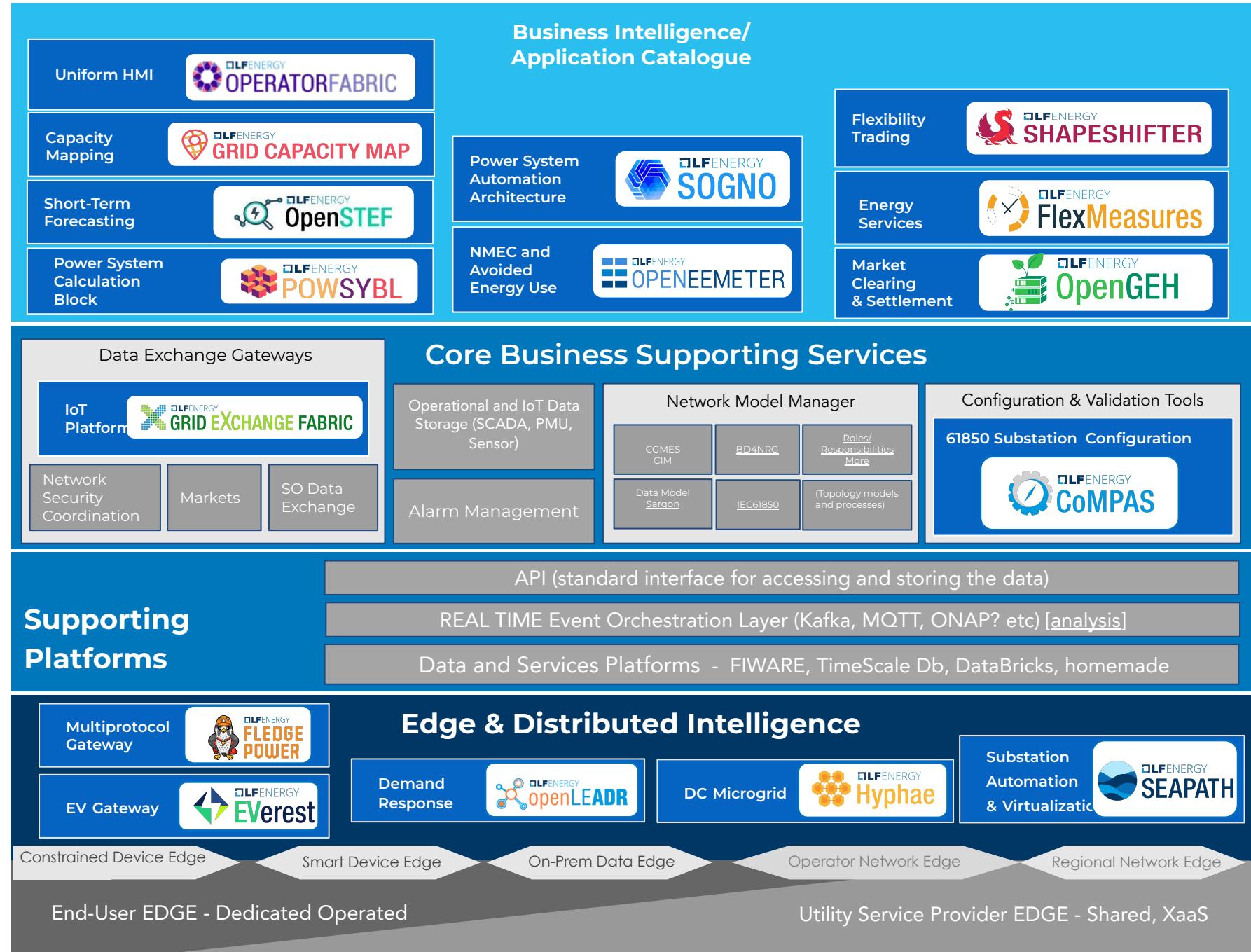
Application Catalogue

Data & Services

Infrastructure

SECURITY

For more background on Edge see [this](#).



Better security practices in projects

2020

1. OpenSSF Badging introduced to all existing projects

2021

2. Project Lifecycle strengthened to require OpenSSF Badges at different stages

- Incubation: Passing
- Early Adoption: Silver
- Graduated: Gold

2022

3. License Scanning Service added with all projects having SBOMs built on a regular basis

4. LFX Security and Insights enabled for all projects

5. Focus on project maturity, which will bring projects to have higher levels of OpenSSF badges

6. Third-party security audit funding for Graduated Project (pending funding)

LF Energy can host three sorts of projects

1. Open Source software
2. Open specifications using either the [Joint Development Foundation](#) framework or the [Community Specification 1.0](#)
3. Open hardware design using the Community Specification 1.0

Other areas of focus - research, training, case studies, policy



THE LINUX FOUNDATION | Research LFE ENERGY THE LINUX FOUNDATION | Training & Certification ESR Energy Research Center | RWTH AACHEN UNIVERSITY

LF Energy Seeks Partners in Upcoming Research Study on Transformation Readiness of System Operators

January, 2021

OVERVIEW
A fundamental part of meeting the objectives of the United Nations Climate Conference will depend on the acceleration of power system network transformation.

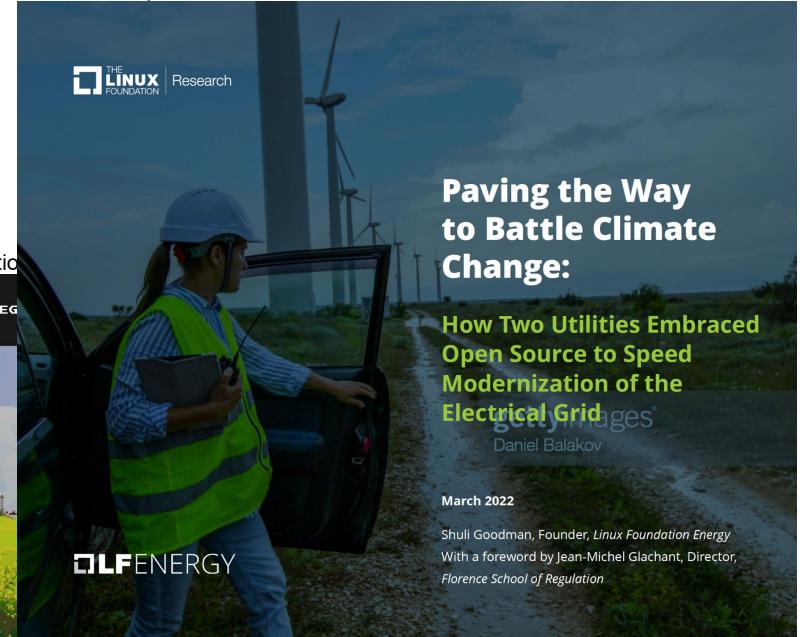
ets22

GET INVOLVED EVENTS ZPRYME SPONSORS REGISTRATION

ets22
POWER UP!
APRIL 11-14
HOTEL ZAZA, AUSTIN TX

TC TechCrunch The New York Times NBC HOUSTON CHRONICLE Forbes Chicago Tribune Bloomberg Businessweek Austin American-Statesman abc THE TEXAS TRIBUNE

Video games have created spaces for autonomy, authenticity and self expression, but how do we have that same kind of freedom in the real world? At ETS22 Power Up we will bring together



Governance

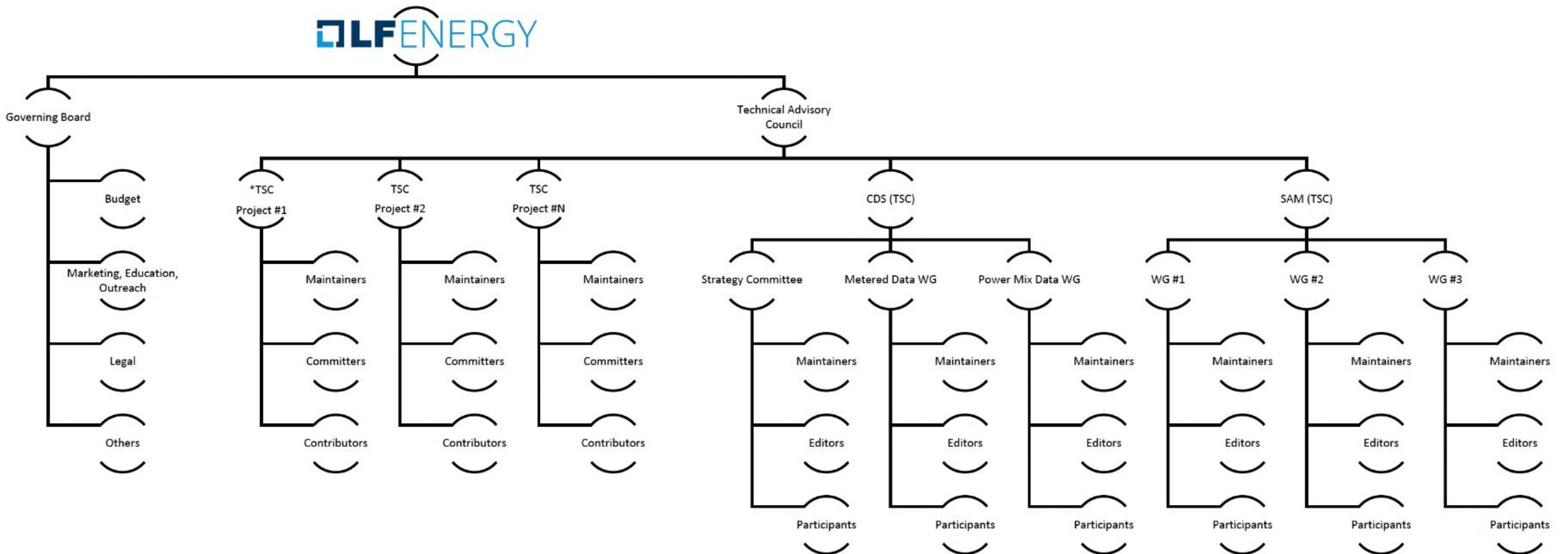
At the heart of LF Energy is Governance



LF Energy Governance in Roles

- A Technical Steering Committee (TSC) oversees each project. Each TSC has an elected Chair who both leads a project TSC and represents the concerns of a project to the Technical Advisory Committee (TAC). Participation on the TSC is based on merit, expertise, and contribution to the code or artifacts (e.g. testing, documentation) of the community.
 - Strategic Members can appoint 1 representative to a TSC for an initial 6-month basis to jump start engagement
 - Membership on a TSC thereafter is based on technical contribution—e.g., contributing a new project
- A Technical Advisory Committee (TAC) addresses technical community concerns such as: new projects, release planning, cross-project collaboration, and documentation practices. The TAC is composed of the Chairs for each project TSC, plus a Governing Board representative to ensure alignment between technical and business concerns. There is an elected TAC Chair who represents the technical community on the Governing Board.
 - Strategic Members can appoint one voting representative to the TAC
 - Each project from Early Adoption has one vote on the TAC
- The Governing Board (GB) is limited to Strategic members and the elected TAC Chair. The GB determines allocation of funding to priorities and provides members with control over where their funding goes.
 - Strategic Members each appoint 1 representative
 - General Members can elect 1 representative for every 10 General Members, up to 3 total
 - Governing Board establishes additional committees to address topics (e.g. legal, marketing, budget)

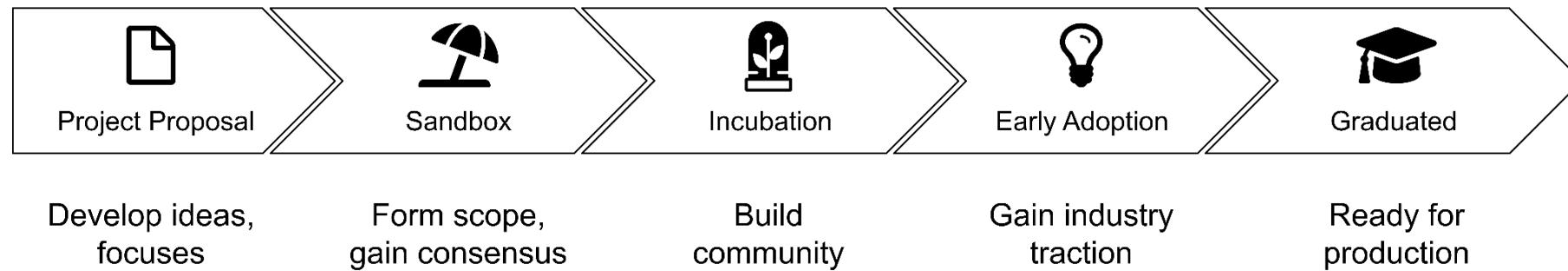
Governance model



*Technical Steering Committee (TSC)

LF Energy project lifecycle

- Projects can become part of LF Energy through the submission of a mature code base.
- Projects can also be formed through special interests groups that submit a proposal and then form as an incubation project.
- Learn more at <https://www.lfenergy.org/host-your-project/>



Transparency

All project governance documentation can be found at:

<https://wiki.lfenergy.org/display/HOME/LF+Energy>

The screenshot shows the LF Energy Foundation website's dashboard. On the left, there is a sidebar with links to the LF Energy blog, team files, space shortcuts, and a page tree. The main content area features a brief introduction about LF Energy, mentioning its focus on building shared open source infrastructure for renewable energy, power electronics, and electric mobility. It also highlights the LF Energy Guiding Principles and the Technical Advisory Council and Governing Board. Below this, a section titled "Current Projects" lists various projects under "Early Adoption" and "Incubation". Each project is represented by a logo and a name: GXF, OPERATOR FABRIC, POWSYBL, SOGNO, CoMPAS, EVEREST, FLEDGE POWER, GRID CAPACITY MAP, Hyphae, OPENEEMETER, OpenGEH, and openLEADR. At the bottom of the page, there are links for "Space tools" and "Create". The right side of the page includes a sidebar with contact information and links to resources like the presentation template.

Membership Model

Membership and Participation Levels

Membership Level	Annual Fee	Plus Linux Foundation Membership: Silver (if not a member)	Board Seat	TSC Seat	Outreach Committee	Suggested Minimum FTE*	Notes
Strategic	Flat fee: \$150k	\$20k	Yes	Yes	Yes	1	Two year minimum commitment
General	\$5k-50k based on org size ¹	Based on number of employees \$20K (5000+) \$15K (499-4999) \$10K (100-499) \$5,000 (0-99)	(Possible) 1 per every 10 General members	Based on Merit	Yes	N/A	A TSC seat may be earned by technical contribution as a project leader
Associate	No fee	No	(Provisional at start-up)	Based on Merit	Yes	N/A	Limited to academic, research and NGO organizations

General Annual Fee Scale

\$50K - > 5,000 employees
 \$30K - 1,000 – 4,999 employees
 \$20K - 200 – 1,000 employees
 \$10K -100 – 200 employees
 \$5K -< 100 employees

* FTE = Full Time Equivalent (e.g. 2 employees each spend 50% of their time on a project). This suggestion is meant to provide a minimum resource investment to ensure members are contributing technically. Most projects see much higher investment of resources than the minimum requirement.

LF Energy Membership Benefits

Tier	New to LF	Existing LF member	Benefits
Strategic	\$170,000	\$150,000	<ul style="list-style-type: none"> • Appoint one (1) voting representative to the LF Energy Governing Board. • Appoint one (1) voting representative to the LF Energy Technical Advisory Council (TAC) • 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. • 1 guest LF Energy blog post per quarter • 1 LF Energy hosted webinar per quarter • 1 Linux.com blog post per year • 10 complementary LF Training course/certification tickets • Create an individualized press release to announce membership with LF Energy PR. • Receive greater insight into LF Energy strategy and project roadmaps through increased engagement with the LF Energy Executive Director and staff. • Receive ongoing, monthly 1:1, individual engagement and guidance from LF Energy Executive Director • Increased access to invitation-only Linux Foundation Member Summit. • Receive discounts on LF Energy conferences + event sponsorship.
General	<p>\$70,000 (USD) 5,000+</p> <p>\$40,000 (USD) 2,000 – 4,999</p> <p>\$25,000 (USD) 500 – 1,999</p> <p>\$15,000 (USD) 100 – 499</p> <p>\$10,000 (USD) Up to 99</p>	<p>\$50,000 (USD) 5,000+</p> <p>\$25,000 (USD) 2,000 – 4,999</p> <p>\$10,000 (USD) 500 – 1,999</p> <p>\$5,000 (USD) 100 – 499</p> <p>\$5,000 (USD) Up to 99</p>	<ul style="list-style-type: none"> • (Possible) Governing Board seat 1 per every 10 General and Academic and Research Institutions members collectively as a class, with a maximum of 3. • 1 guest LF Energy blog post per year • 1 LF Energy hosted webinar per year • 10 complementary LF Training course/certification tickets • Participate in all marketing, community, thought leadership opportunities. • Receive discounts on LF Energy conferences + event sponsorship. • Identify your organization as a member and display your logo on the LF Energy website and in marketing materials. • Access to The Linux Foundation's invitation-only Linux Foundation Member Summit.
Non-Profit	Free	Free	<ul style="list-style-type: none"> • The Non-Profit category of membership is limited to non-profit/non-governmental organizations. This requires approval by the Governing Board. • Participate in all marketing, community, thought leadership opportunities. • Receive discounts on LF Energy event sponsorship. • Identify your organization as a member and display your logo on the LF Energy website and in marketing materials.

For Further Information

Shuli Goodman

Executive Director

Linux Foundation Energy

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Our Website: <https://lfenergy.org>

Membership: <https://www.lfenergy.org/join>

Mailing Lists: <https://lists.lfenergy.org>

Our Wiki: <https://wiki.lfenergy.org>

