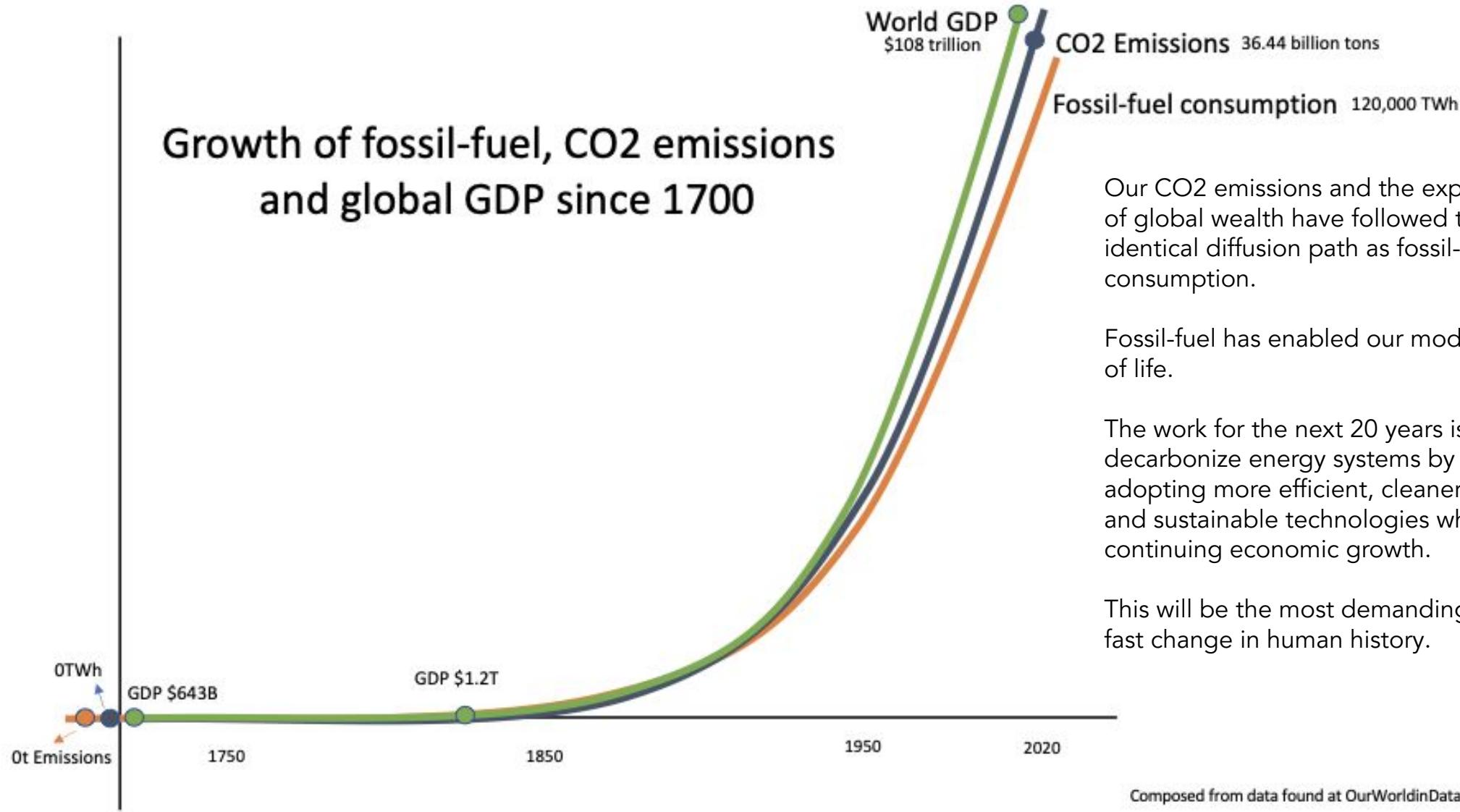




The Power of Together

What did you do during the Great Transition?



Composed from data found at OurWorldinData.org

Grand Challenge

Design the energy and power systems
of the future as if creating the
conditions for our grandchildren's
children to thrive.

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 sun in a dark blue sky. The sun is partially obscured by a large, white, fluffy cloud in the bottom right corner. The overall mood is serene and hopeful.

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



EPRI
ELECTRIC POWER
RESEARCH INSTITUTE



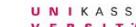
entsoe



Lund University
of Applied Sciences and Arts
HOCHSCHULE
LUZERN



The
Alan Turing
Institute



WASHINGTON STATE
UNIVERSITY



THE
LINUX
FOUNDATION



The world's dominant open source platform.



100%

Supercomputer
Market



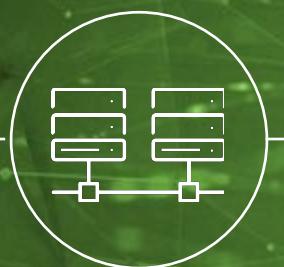
82%

Smartphone
Market Share



2nd

To Windows
in Enterprise



90%

Mainframe
Customers



90%

Public Cloud
Workload



62%

Embedded
Systems Market



#1

Internet
Client

A new member joins The Linux Foundation every day.



\$54.1B

Shared
Value



242,960+

Developers
Contributing Code



100%

of Fortune 100
Tech & Telecom



420+

Open Source
Projects



1900+

Members From
70 Countries

LF Energy:

part of The Linux Foundation ecosystem of sustainable open source



For the last 16 years, The Linux Foundation has provided unparalleled support for open source communities through financial and intellectual resources, governance structure, IT infrastructure, services, events, and training.

Dedicated to building sustainable ecosystems around open source projects, The Linux Foundation is working with the global technology community to solve the world's hardest problems through open source and **creating the largest shared technology investment in history**.

The Linux Foundation is the umbrella organization for **more than 425 open source projects** accelerating open technology development and commercial adoption. Some of the game-changing initiatives hosted by The Linux Foundation include:

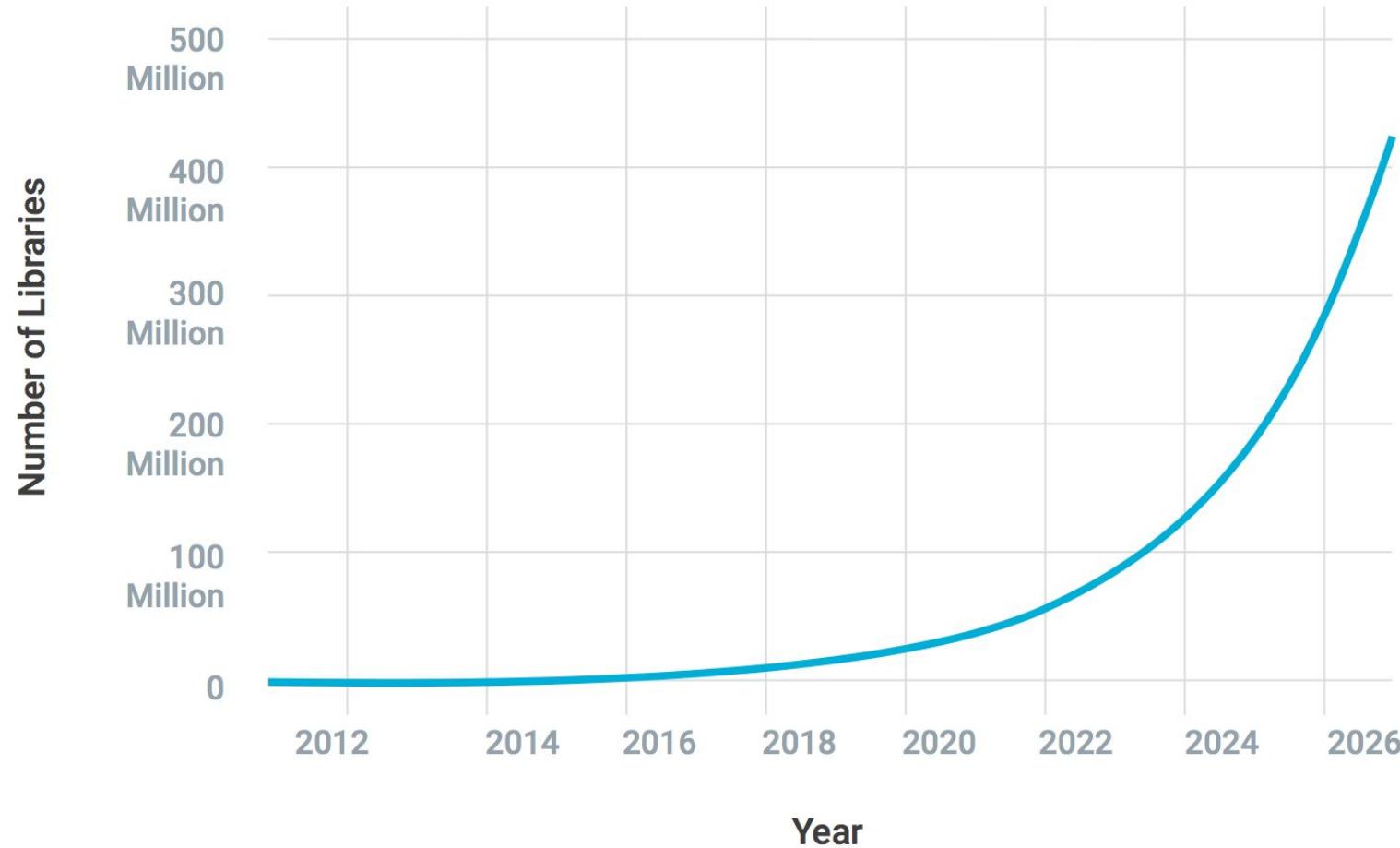


The Power of Together

Our projects span a range of technologies and vertical industries

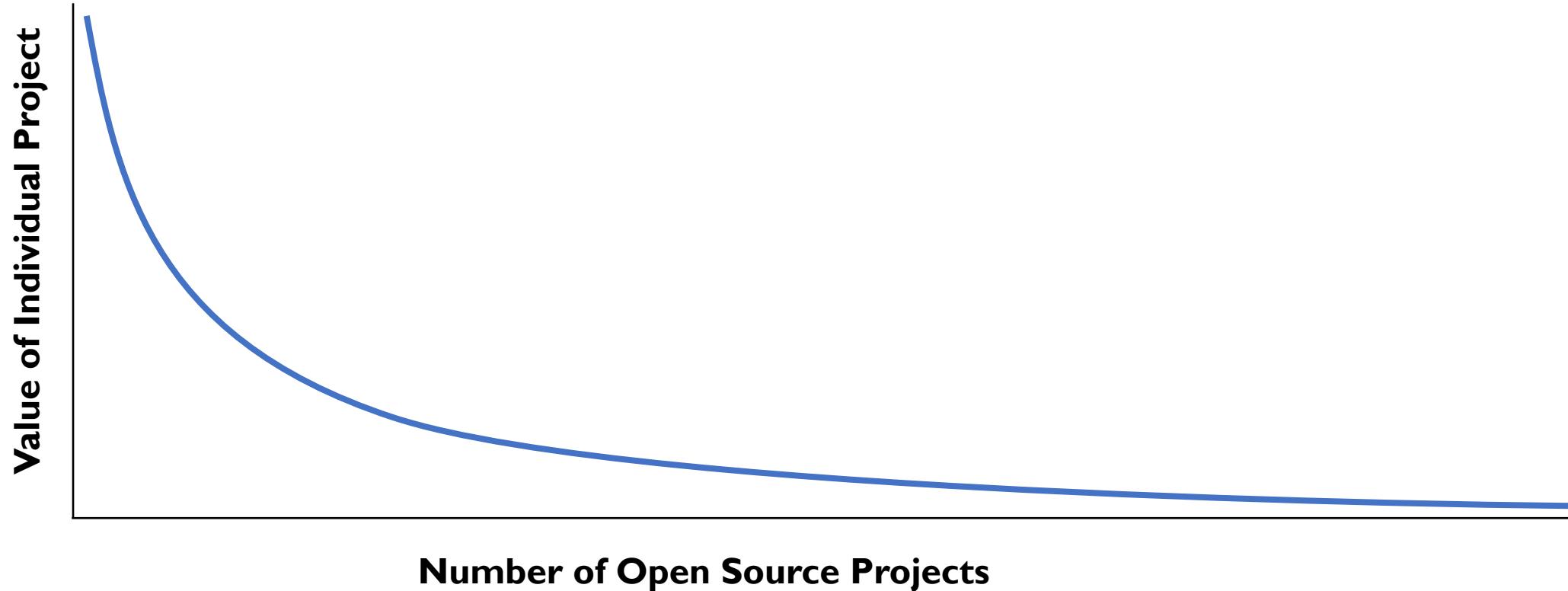
Security	 	 	 	 
Networking	 	 		 
Cloud	 	 		 
Automotive	 			
Blockchain	 			 
Edge/IoT	 	 	 	 
Web	 	 	 	 
AI	 	 		 
Film	 	 	 	 
CI/CD	 	 	 	 
Energy	 	 	 	 
Hardware	 		 	
Standards	 	 	 	

Open Source Isn't Slowing Down Any Time Soon

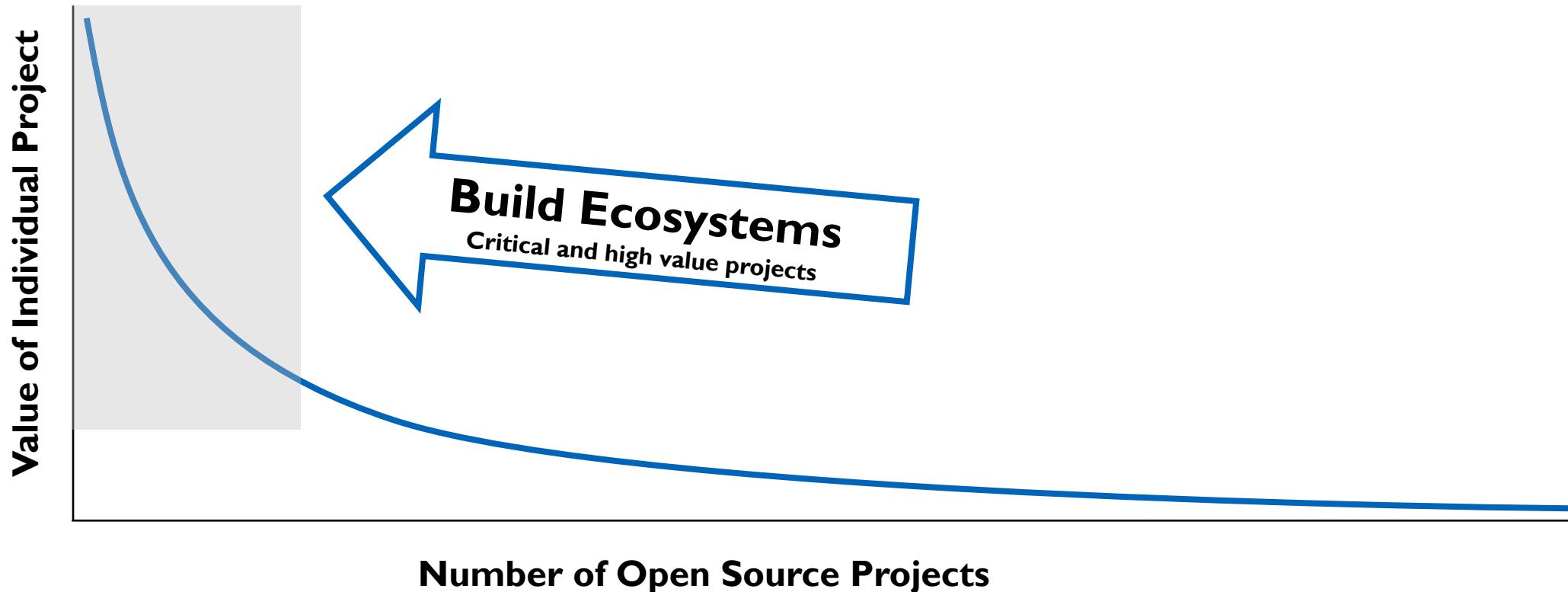


[:] SourceClear

The real question is: Which projects really matter?



Linux Foundation seeks to accelerate new projects to adoption and sustainability





- AT&T saved \$1.6B through dis-aggregation
- In 12 months 80% of the worlds telecom subscribers (~3.5 billion people)
- \$576M of shared development by +2,500 developers.
- Reduced deployment from six months to 15 minutes.



AUTOMOTIVE
GRADE **LINUX**

- Five of Top 10 Automakers aligned and account for 70% of the worldwide vehicle shipments.
- 130+ Members
- Nine Major OEMs and their entire supply chains participating



- 530 Members
- Kubernetes de facto standard for container management
- Home to 25 additional projects beyond Kubernetes
- 75 Kubernetes certified providers including 10/10 top public clouds

Compete on Products & Services

Marketplace

Leveraged Development & Open Source Software Ecosystem

LF ENERGY

Leadership & Support



We insure the neutral ecosystem. Collaborate and form strategic relationships across key stakeholders.

Marketing & PR



Promote your innovations and share definitive action to ALL stakeholders. Gain leading-edge insights, driving faster/better ME&O.

Training & Talent



Access to top talent and training. Expand your resources cost effectively. Develop deeper understanding of specialized subject matter.

Security



Global strength testing; beyond what any one in-house team can do. Surface and drive enhanced cyber security doctrine through insights.

Badging & Certification



Elevate the skills of your team and keep them engaged with emerging breakthroughs.

IP Legal Support



Removes IP ownership issues and costs. Access to global thought leaders and influencers. Seamlessly transitioned to virtual events.

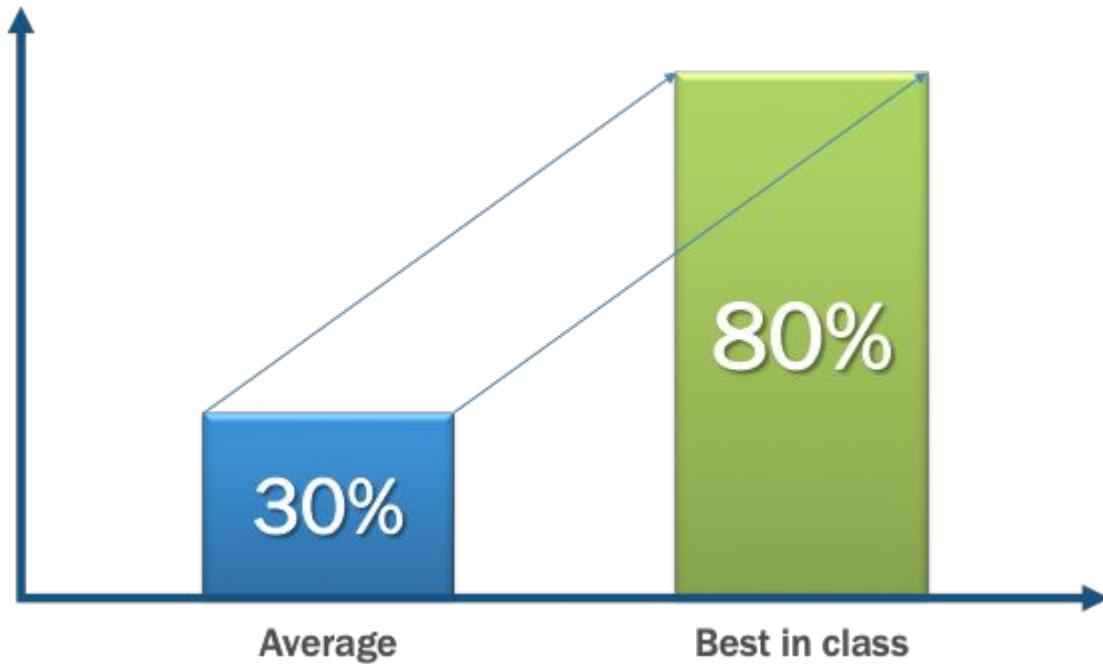
Global Events



Membership Benefits

Open source software is a strategic asset

Shift from smaller part to majority of code being open source across industries: Embedded, Supercomputing, Telecom, Finance, Healthcare, Entertainment, Automotive, and ENERGY!



Open source software is a market accelerant

**Standardization
on open
technologies**

**Neutral
environment for
collaboration &
cross-pollination**

**Innovation
multiplier**

**Enables better
interoperability**

**Minimizes
fragmentation**

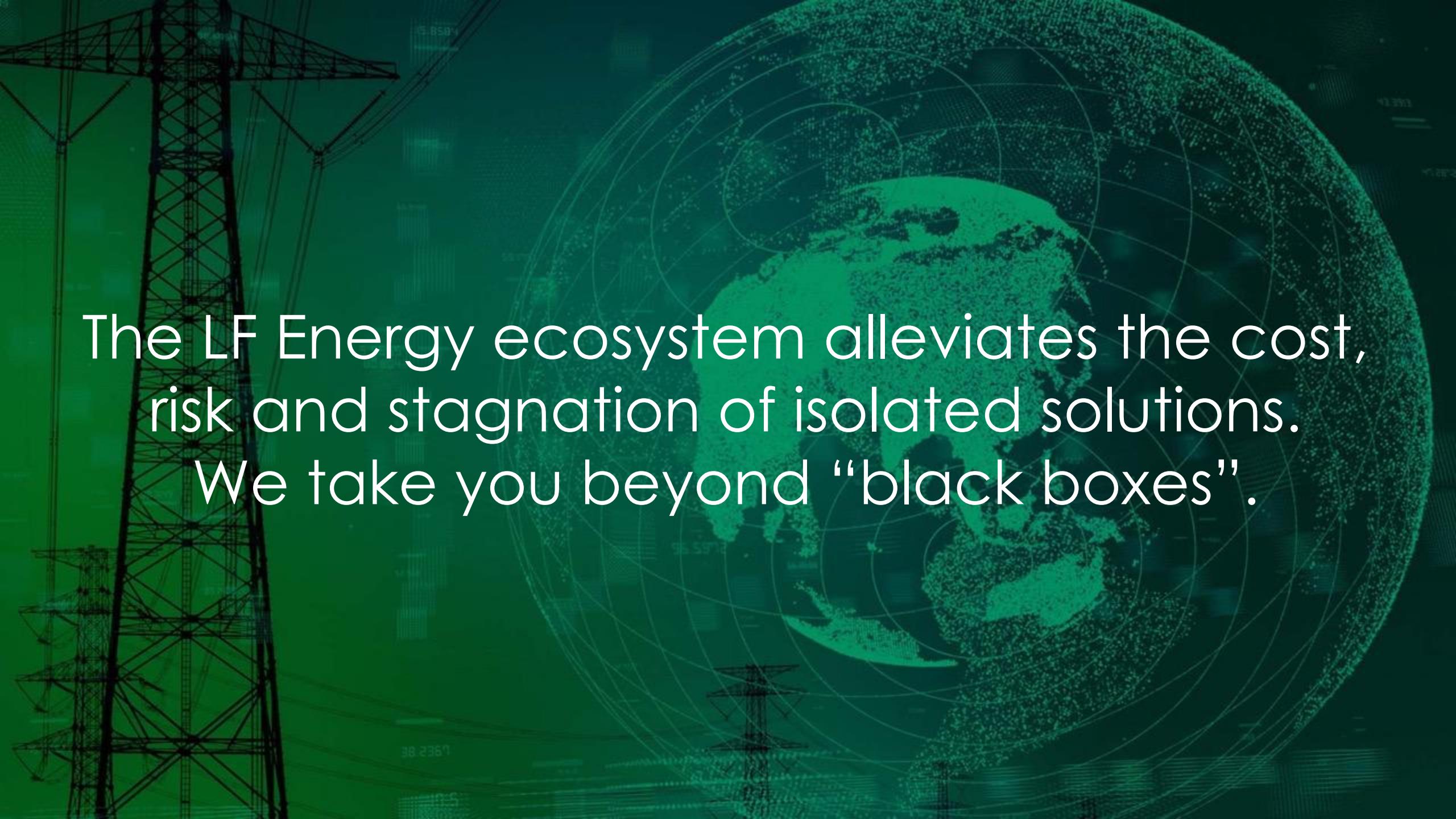
**Qualifies
reference
architectures**

**Lowers barriers
to enter a new
domain**

**Enables new
business
opportunities**

**Leads to better
products**

**Allows shared
cost of
development**



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



ALF ENERGY

Projects

LF Energy Projects (+3)

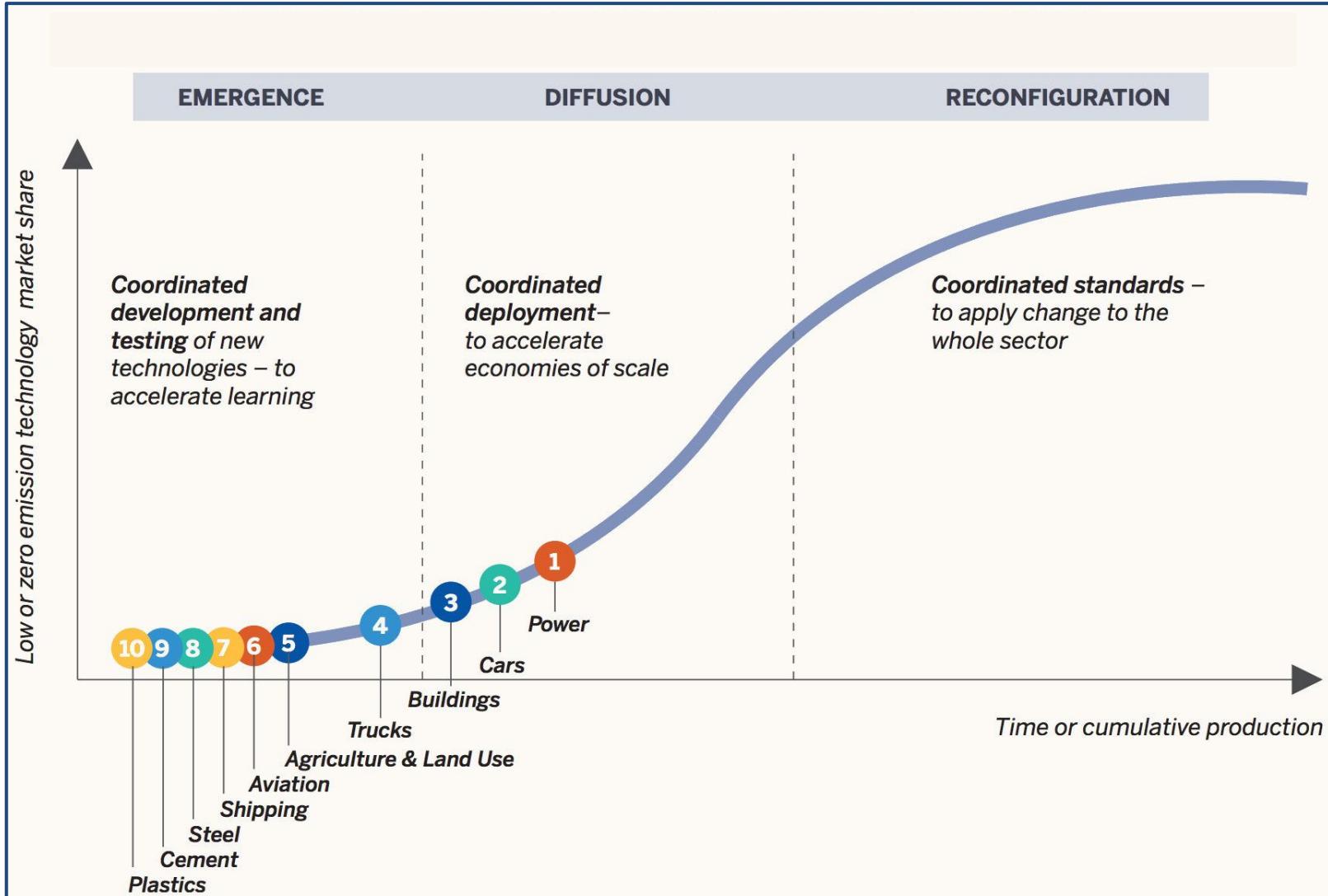




ELF ENERGY

The future is shared
technology innovation!

Power systems lead global decarbonization efforts





Call to Action

LF ENERGY

VISION:

The grid of the future is composed of loosely coupled systems that are resilient, manageable, and observable. Combined with robust automation, the digitalization of energy enables engineers and markets to make high-impact changes frequently and predictably with minimal toil.

MISSION:

- The LF Energy Foundation's mission is to accelerate the energy transition by fostering and sustaining an ecosystem of open source, vendor-neutral projects.
- We democratize state-of-the-art patterns to make these innovations accessible for everyone.

**We are building a grid that is beyond
our ability to intellectually “manage”**

**50% of the effort of the energy
transition is digital**

Energinet, Danish TSO - 2020

**80% of the software will be
open source**

The Linux Foundation has found this to
be true across their projects

**40% of the effort of
decarbonization
will be open source**



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

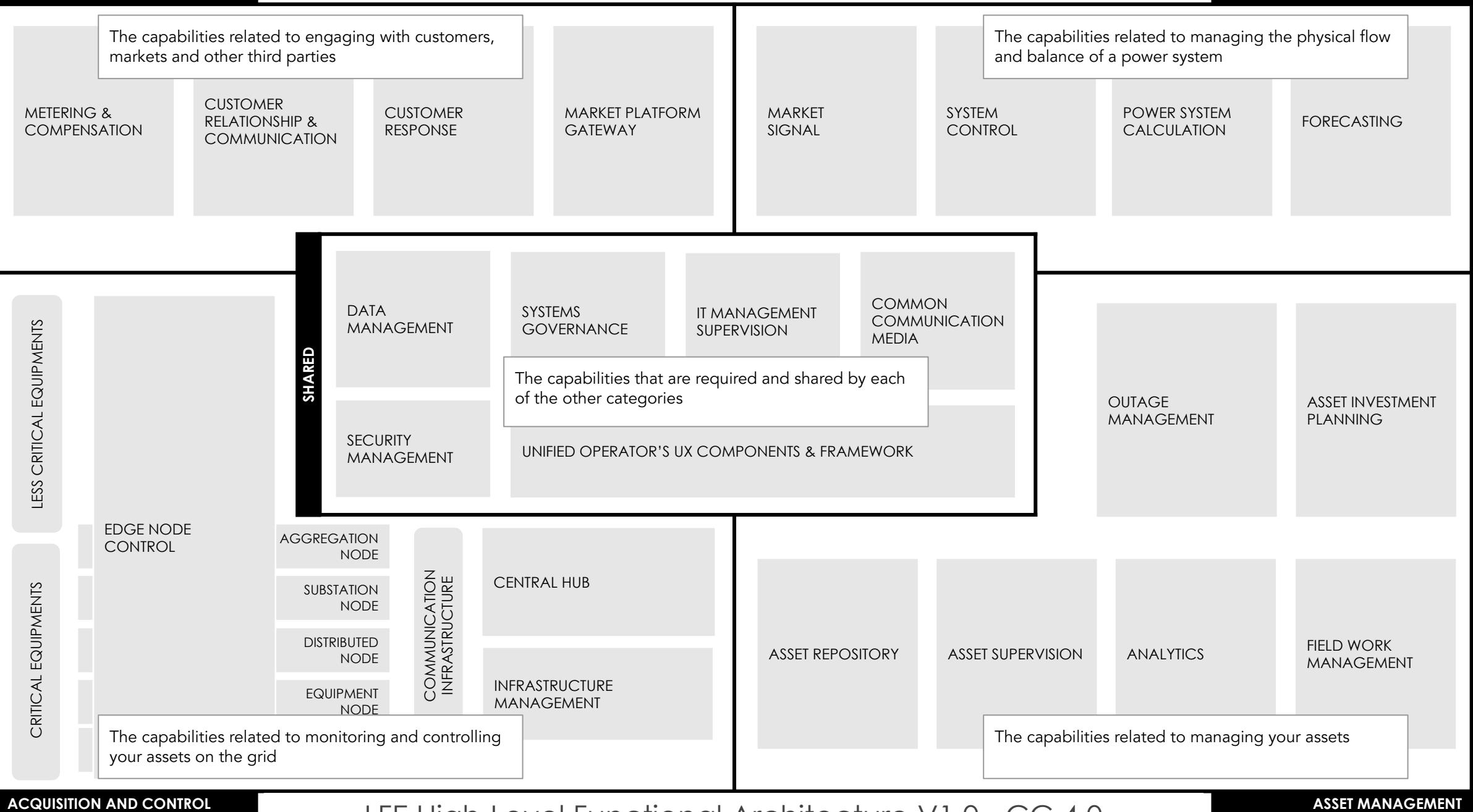
This is the top-level view that shows the five main “blocks” of the functional architecture that we also call categories.

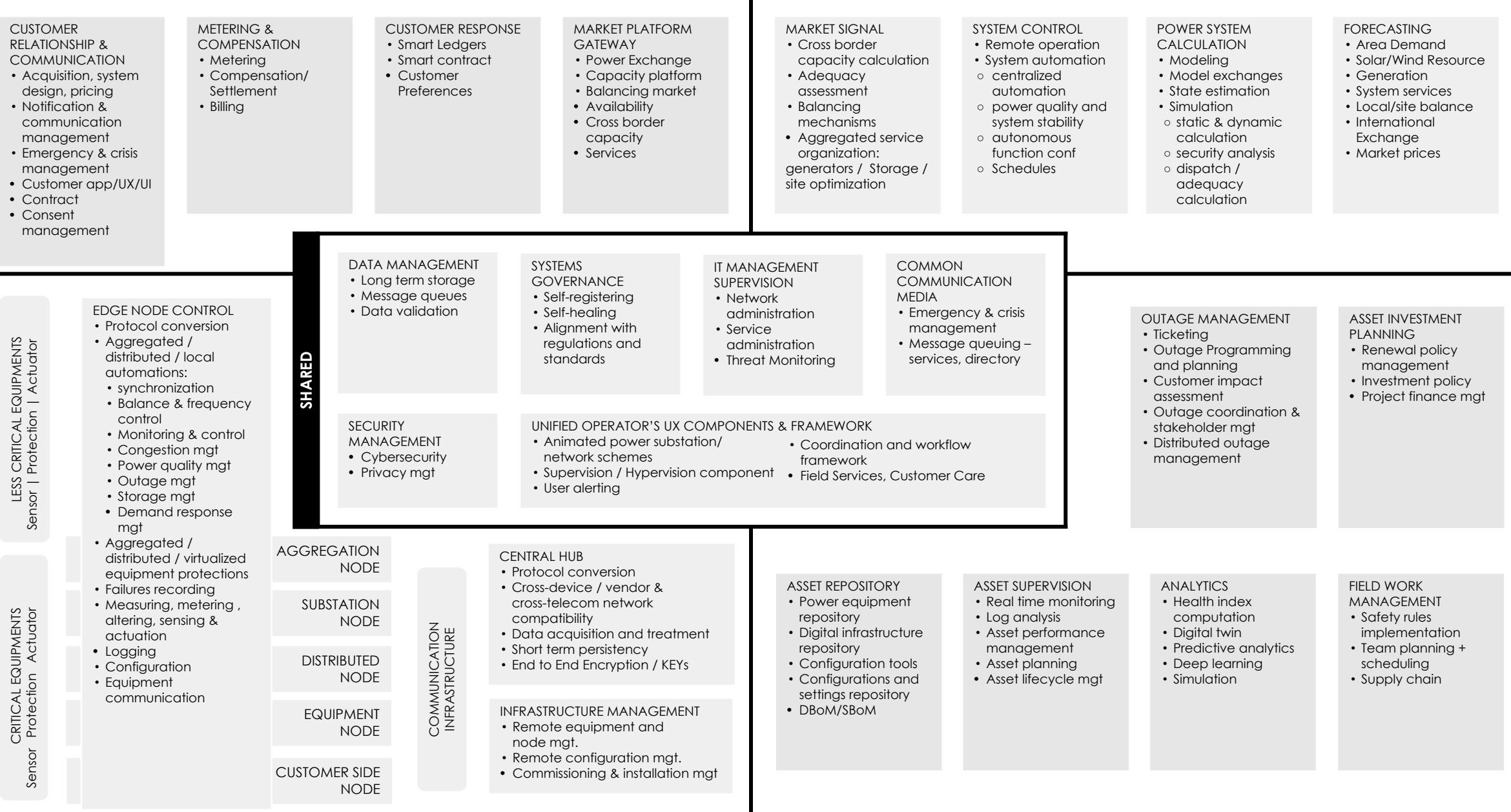
SHARED

Capabilities that are required by each of the other categories

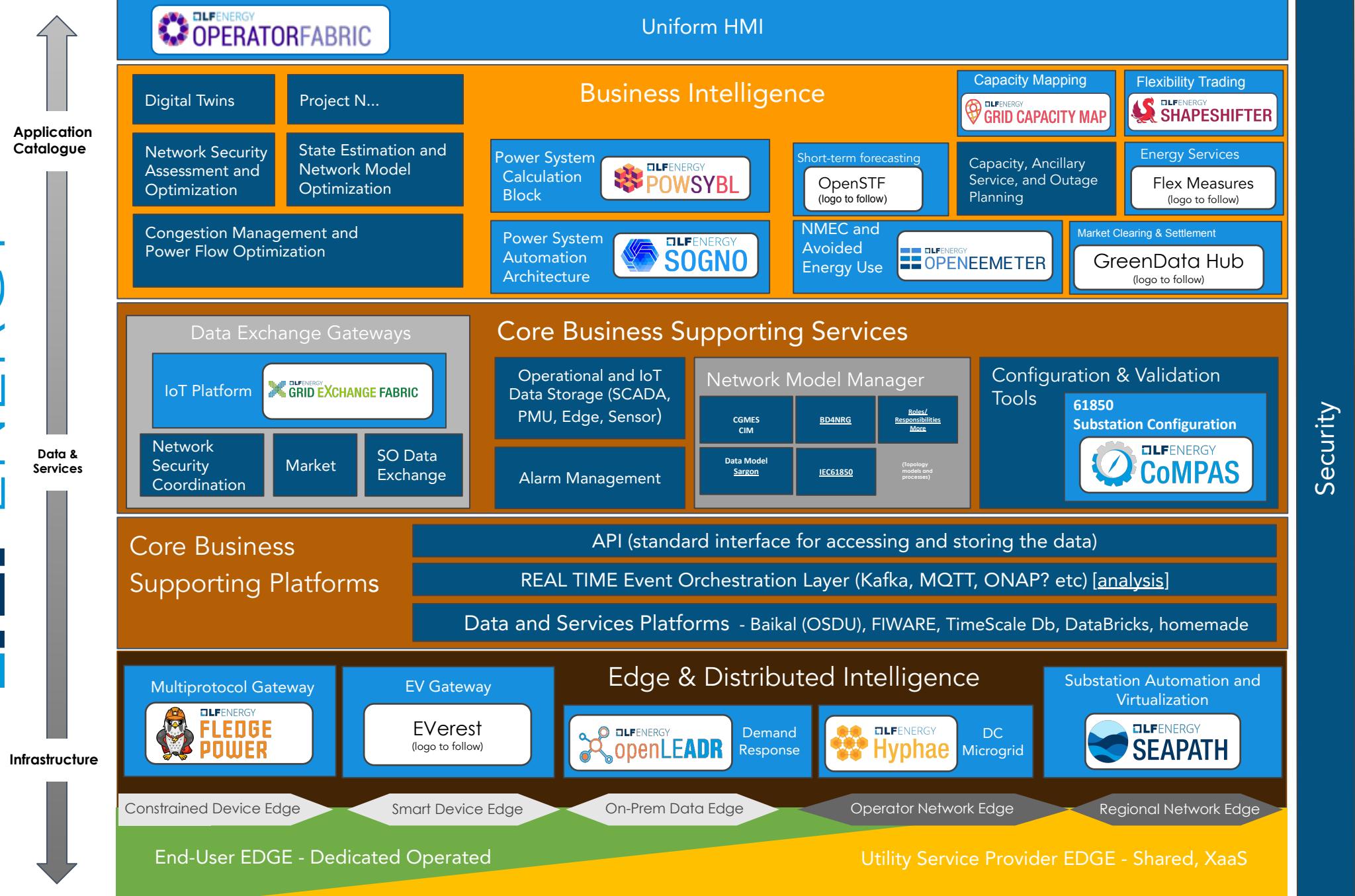
Capabilities related to monitoring and controlling your assets on the grid

Capabilities related to managing your assets









LF Energy Current Projects

Future LF Energy Projects

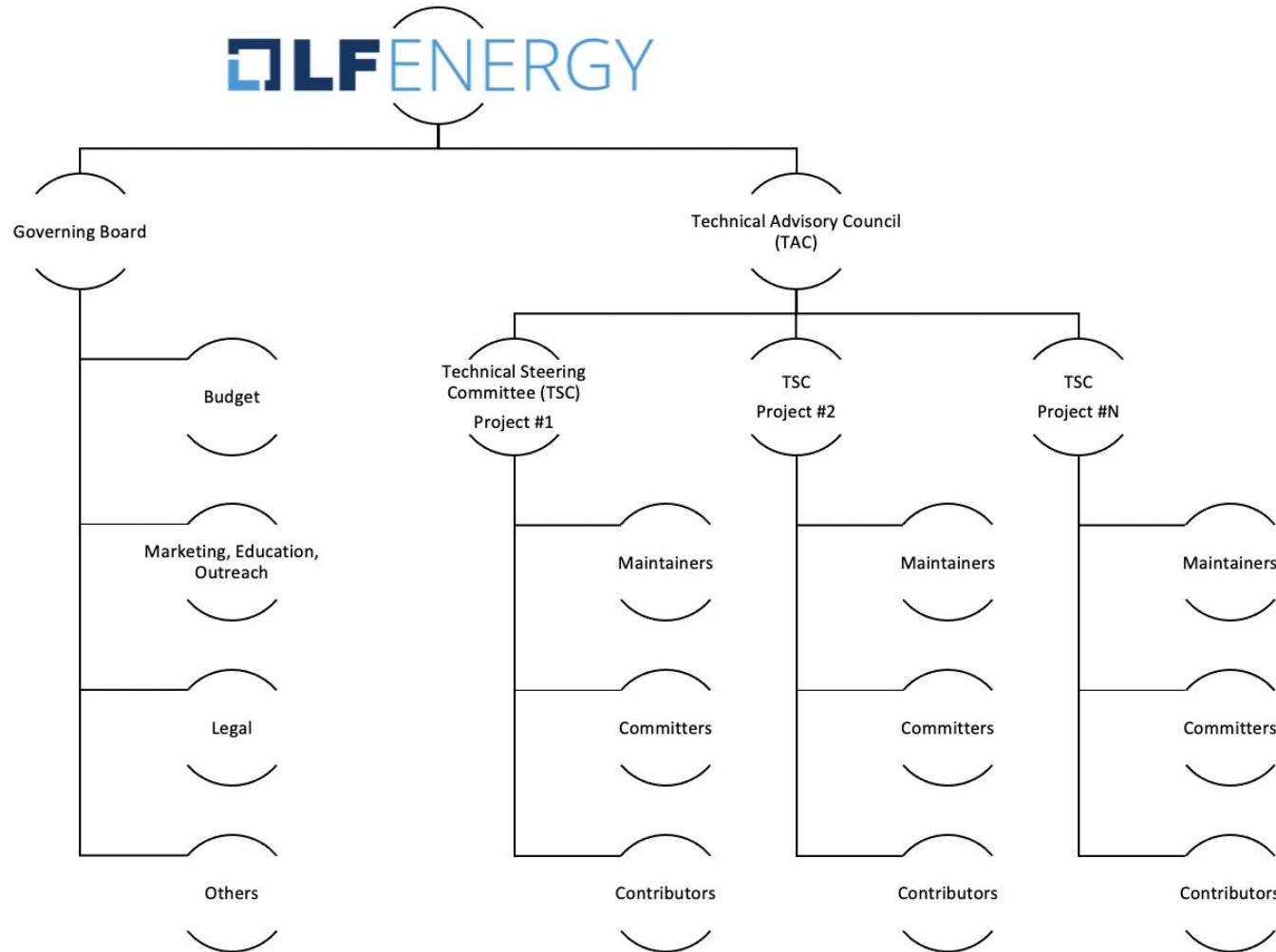
For more background on Edge see [this](#).

Governance

At the heart of LF Energy is Governance



Governance Model

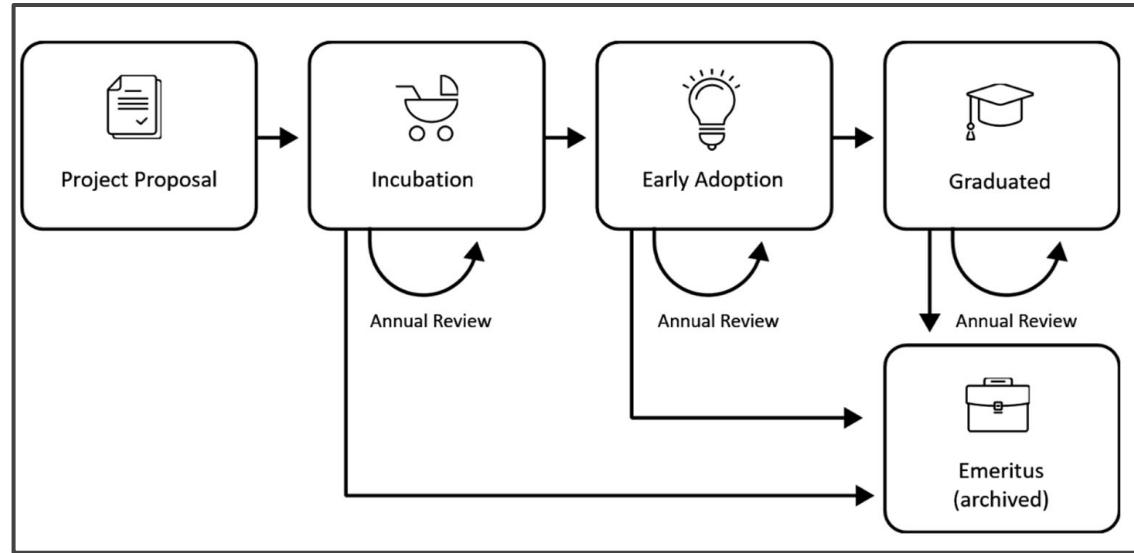


LF Energy Governance in Roles

- 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.
- 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)

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.
- <https://www.lfenergy.org/projects/host-your-project/>
- <https://wiki.lfenergy.org/display/HOME/New+Project+Proposals+Process>



Transparency

All project governance documentation can be found at:

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

The screenshot shows the LF Energy Wiki homepage. The left sidebar contains links for LF Energy, Blog, Space Shortcuts (Charter, Code of Conduct, GitHub, Landscape, New Project Proposals), Page Tree (LF Energy Community Calendar, Governing Board, Technical Advisory Council, Project Governance, LF Energy Projects, Technical Frameworks, Special Interest Groups, Resources), and Space tools. The main content area features the LF ENERGY logo and a welcome message: "Welcome to the LF Energy Wiki. Here you can access information with a cross project focus. For individual projects, follow the links below. You will need a Linux Foundation ID (created at https://identity.linuxfoundation.org/) to contribute. In the upper right corner, select Log in to contribute." Below this is a large "LF ENERGY" logo with the tagline "LF Energy is a Linux Foundation project that provides a vendor-neutral home focused on building shared open source infrastructure to deliver unprecedented innovation in renewable energy, power electronics, electric mobility, and more." To the right, there are sections for "Get Involved!" (Ask questions, email info@lfenergy.org, Join the mailing lists, Follow us on Twitter and LinkedIn) and "Resources" (Presentation Template). The central part of the page displays a table titled "Current Projects" with the following data:

Name	Description	Assets	Stage
GXF Grid eXchange Fabric Control and Monitor Smart Devices	Grid eXchange Fabric (GXF) allows you to monitor and control hardware in the public space. With several (generic) functions ready to use, the main benefits of GXF are: scalability & high availability, high security, its generic design, and no vendor lock-in.	Wiki page on this server Web page on lfenergy.org Code repository on github.com ► Grid eXchange Fabric (GXF) Mailing List	EARLY ADOPTION
RIAPS An Effective Distributed Software Platform for Smart Grid Apps	The Resilient Information Architecture Platform for Smart Grid (RIAPS) provides core infrastructure and services for building effective, secure and powerful distributed Smart Grid applications.	Wiki page on this server Web page on lfenergy.org Code repository on github.com ► RIAPS Mailing Lists	EARLY ADOPTION
PowSyBl A High-Performance Computing Framework For Grid Simulation and Planning	PowSyBl provides the code building blocks for the simulations and analyses of power systems, for horizons from real-time operation to investment planning.	Wiki page on this server Web page on lfenergy.org Code repository on github.com ► PowSyBl Mailing Lists	EARLY ADOPTION
OperatorFabric A Smart Assistant For System Operators	OperatorFabric is a modular, extensible, industrial-strength and field-tested platform for use in electricity, water, and other utility operations.	Wiki page on this server Web page on lfenergy.org Code repository on github.com ► OperatorFabric Mailing Lists	EARLY ADOPTION
OpenEEmeter		Wiki page on this server	

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	\$1,000	\$1,000	<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

sgoodman@lfenergy.org

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

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

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

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

